

# RADIO SERVICE BULLETIN

ISSUED MONTHLY BY RADIO DIVISION

**Washington, June 30, 1928—No. 135**

**CONTENTS**

|   | Page |   | Page |
|---|------|---|------|
| Abbreviations and symbols.....  | 1    | Miscellaneous—Continued.  |      |
| New stations.....   | 2    | International prefixes for call signals of<br>amateur stations tentatively assigned.... | 23   |
| Alterations and corrections.....  | 7    | List of frequencies below 4,000 kilocycles<br>allocated to Government stations.....     | 23   |
| Miscellaneous:  |      | Lost commercial radio operators' licenses....   | 24   |
| Changes in radiobeacon stations of the<br>United States.....  | 10   | Short-wave transmissions of time signals<br>by Rio de Janeiro, Brazil.....              | 24   |
| Examination of radio operators in Canal<br>Zone discontinued.....                                       | 10   | Radiobeacon established at Holyhead<br>Bay, England.....                                | 25   |
| New call signals assigned to land and ship<br>stations.....   | 10   | Radio fading in the broadcast range.....  | 25   |
| Amateur and special (experimental and<br>technical training school) station calls to<br>be changed..... | 22   | References to current radio literature.....   | 26   |

**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. O = west longitude. N = north latitude. S = south latitude.
- Call** = Call signal (letters) assigned.
- System** = Radio system used and sparks per second.
- Range** = Normal range in nautical miles.
- W. l.** = Wave lengths in meters; normal wave lengths in italics.
- Fy.** = Frequency in kilocycles; normal frequency in italics.
- Service** = Nature of service maintained:  
 FX = Point-to-point (fixed service).  
 PG = General public.  
 PR = Limited public.  
 RC = Radio compass.  
 FA = Aeronautical station.  
 AB = Aviation beacon.  
 B = Beacon.  
 P = Private.  
 O = Government business exclusively.
- Hours** = Hours of operation:  
 N = Continuous service.  
 X = No regular hours.
- F. T. Co.** = Federal Telegraph Co.
- I. R. T. Co.** = Intercity Radio Telegraph Co.
- I. W. T. Co.** = Independent Wireless Telegraph Co.
- K. & C.** = Kilbourne & Clark Manufacturing Co.
- M. R. T. Co.** = Mackay Radio and 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.
- U. R. Corp.** = Universal Radio Corp.
- W. S. A. Co.** = Wireless Specialty Apparatus Co.
- C. w.** = Continuous wave.
- I. c. w.** = Interrupted continuous wave.
- A. c.** = Alternating current.
- V. t.** = Vacuum tube.
- 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, 1927, and to the International List of Radiotelegraph Stations published by the Berne bureau]

| Station   | Call signal | Wave lengths  | Service | Hours | Station controlled by—          |
|---|-------------|---|---------|-------|---------------------------------|
| Bolinas, Calif. <sup>1</sup>                                    | KEJJ<br>KEJ | 33.296  | FX      | N     | R. C. A.                        |
| Do. <sup>1</sup>  | KERR<br>KER | 28.874  | FX      | N     | Do.                             |
| Do. <sup>1</sup>  | KKQQ<br>KKQ | 25.105  | FX      | N     | Do.                             |
| Do. <sup>1</sup>  | KRRR<br>KKR | 19.405  | FX      | N     | Do.                             |
| Do. <sup>1</sup>  | KZZZ<br>KKZ | 21.914  | FX      | N     | Do.                             |
| Do. <sup>1</sup>  | KQJJ<br>KQJ | 16.648  | FX      | N     | Do.                             |
| Do. <sup>1</sup>  | KQZZ<br>KQZ | 16.685  | FX      | N     | Do.                             |
| Elizabeth, N. J. <sup>2</sup>                                   | WMU         | 15.167, 38.58   | FX      | N     | Standard Oil Co. of New Jersey. |
| Hollywood, Calif.   | KGGZ        | 48.50   | FX      | X     | United Artists Studio.          |
| Honolulu, Hawaii <sup>3</sup>                                   | KGHH<br>KGS | 13.24, 15.94, 20.15,<br>20.19, 27.45, 31.88,<br>40.29, 40.38. | FX      | N     | Robert Dollar Co.               |
| Kahuku, Hawaii <sup>4</sup>                                     | KQHH<br>KQH | 15.773  | FX      | N     | R. C. A.                        |
| Los Angeles, Calif. <sup>5</sup>                                | KGHE<br>KGX | 13.24, 15.94, 20.15,<br>20.19, 27.45, 31.88,<br>40.29, 40.38. | FX      | N     | Robert Dollar Co.               |
| New Brunswick, N. J. <sup>6</sup>                               | WAZZ<br>WAZ | 20.107  | FX      | N     | R. C. A.                        |
| New York, N. Y. <sup>7</sup>                                    | WSBA<br>WGA | 13.24, 15.94, 20.15,<br>20.19, 27.45, 31.88,<br>40.29, 40.38. | FX      | N     | Robert Dollar Co.               |
| Do. <sup>8</sup>  | WKWW<br>WKW | 18.715  | FX      | N     | R. C. A.                        |
| Port Graham, Alaska <sup>9</sup>                                | KGGW<br>KFG | 600, 731, 1,440   | P       | X     | T. H. Killam.                   |
| Rocky Point, N. Y. <sup>9</sup>                                 | WEDD<br>WED | 28.222  | FX      | N     | R. C. A.                        |
| Do. <sup>9</sup>  | WEGG<br>WEG | 39.894  | FX      | N     | Do.                             |
| Do. <sup>9</sup>  | WETT<br>WET | 31.879  | FX      | N     | Do.                             |
| Do. <sup>9</sup>  | WKQQ<br>WKQ | 18.75   | FX      | N     | Do.                             |
| Do. <sup>9</sup>  | WKUU<br>WKU | 20.229  | FX      | N     | Do.                             |
| Do. <sup>9</sup>  | WQGG<br>WQG | 19.947  | FX      | N     | Do.                             |
| Do. <sup>9</sup>  | WQV         | 15.907  | FX      | N     | Do.                             |
| Do. <sup>9</sup>  | WQWW<br>WQW | 14.085  | FX      | N     | Do.                             |
| San Francisco, Calif. <sup>9</sup>                              | KGHK<br>KQQ | 13.24, 15.94, 20.15,<br>20.19, 27.45, 31.88,<br>40.29, 40.38. | FX      | N     | Robert Dollar Co.               |
| San Juan, P. R. <sup>9</sup>                                    | WGXX<br>WGX | 43.541  | FX      | N     | R. C. A.                        |
| Santa Cruz Island, Calif.                                       | KGGX        | 48.50   | FX      | X     | United Artists Studio.          |
| Scow No. 5 (moored vessel near Nushagak, Alaska). <sup>10</sup> | WGDM<br>KHY |   | P       | X     | Alaska Salmon Co.               |
| Seattle, Wash. <sup>3</sup>                                     | KGHJ<br>KGR | 13.24, 15.94, 20.15,<br>20.19, 27.45, 31.88,<br>40.29, 40.38. | FX      | N     | Robert Dollar Co.               |
| Tandag, P. I. (Surigao) <sup>11</sup>                           | KZTG        | 600, 775, 925   | PG      |       | Philippine Insular Government.  |
| Todd, Alaska <sup>12</sup>                                      | JGGV<br>KFP | 90, 720   | FX      | X     | Peril Straits Packing Co.       |

<sup>1</sup> Loc. (approximately) 122° 40' 45" W., 37° 54' 30" N.; system, R. C. A.-composite v. t. telegraph, c. w.<sup>2</sup> System, composite v. t. telegraph.<sup>3</sup> System, composite v. t. telegraph, c. w. and i. c. w., and phone.<sup>4</sup> Loc. 157° 53' 33" W., 21° 42' 12" N.; system, R. C. A.-composite v. t. telegraph, c. w.<sup>5</sup> Loc. 74° 29' 15" W., 40° 30' 10" N.; system, R. C. A.-composite v. t. telegraph, c. w.<sup>6</sup> System, R. C. A.-composite v. t. telegraph, c. w.<sup>7</sup> Loc. (approximately) 151° 50' 00" W., 59° 21' 00" N.; system, composite v. t. telegraph, i. c. w.<sup>8</sup> Loc. (approximately) 72° 58' 30" W., 40° 55' 45" N.; system, R. C. A.-composite v. t. telegraph, c. w.<sup>9</sup> Loc. (approximately) 66° 03' 00" W., 18° 28' 00" N.; system, R. C. A.-composite v. t. telegraph, c. w.<sup>10</sup> System, composite v. t. telegraph, c. w.<sup>11</sup> Loc. (approximately) 128° 11' 30" E., 9° 04' 30" N.; system, R. C. A., 1,000; hours, 8 a. m. to 12 noon, and 2 to 5.30 p. m. daily, 9 to 11 a. m. Sundays and holidays; ship service, 15-25 of each hour; rates, 6 cents per word.<sup>12</sup> Loc. (approximately) 135° 10' 00" W., 57° 36' 00" N.; system, composite v. t. telegraph, i. c. w.

NOTE.—Where a station has 2 call signals, the 4-letter signal is to be used until Oct. 1, 1928, when it will be canceled; after that date the 3-letter signal is to be used.

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, 1927, and to the International List of Radiotelegraph Stations published by the Berne bureau]

| Name of vessel                  | Call-signal | Rates | Service | Hours | Owner of vessel                           | Station controlled by— |
|---------------------------------|-------------|-------|---------|-------|---|------------------------|
| Ansonia <sup>1</sup>            | WGDF        |       | P       | X     | Crosby Fisheries                          | Owner of vessel.       |
| Barranca                        | KIFR        | 8     | PG      | X     | New Orleans Coal and Bisso<br>Towboat Co. | Do.                    |
| Blue Sea <sup>1</sup>           | WGDE        |       | P       | X     | Crosby Fisheries                          | Do.                    |
| City of Victoria                | WSBB        |       |         |       | Edmonds-Victoria Ferry Co.                |                        |
| Eastern Guide <sup>2</sup>      | KUCN        | 8     | PG      | X     | Pacific Coast S. S. Co.                   | M. R. T. Co.           |
| Fernandez Hermanos <sup>3</sup> | KZCY        | 8     | PG      | X     | Compania Maritima                         | Owner of vessel.       |
| Gladys                          | WSBD        |       |         |       | Francis W. Payne                          |                        |
| Haida                           | WGDC        |       |         |       | Max Fleischmann                           |                        |
| Irene L. <sup>4</sup>           | WGDG        |       | P       | X     | Crosby Fisheries                          | Do.                    |
| Iroquois <sup>4</sup>           | KGGY        |       |         |       | Bellingham Barge & Tug Co.                |                        |
| Karluk <sup>5</sup>             | WGDK        |       | P       | X     | George G. Williams                        | Do.                    |
| Memory III                      | WGDN        |       |         |       | A. E. Fitkin                              | Do.                    |
| Neil MacLeod <sup>4</sup>       | KZAG        | 8     | PG      | X     | Compania Maritima                         | Do.                    |
| North Dakota                    | WRBZ        |       |         |       | Eutopian Fisheries Co.                    |                        |
| Queen Anne                      | WGDD        |       |         |       | Isaac E. Emersen                          |                        |
| Yloilo <sup>6</sup>             | KZCW        | 8     | PG      | X     | Hijos de I. de la Rama                    | Do.                    |
| Zodiac <sup>7</sup>             | WGDL        | 8     | PG      | X     | R. W. and J. S. Johnson                   | R. M. C. A.            |

<sup>1</sup> Range, 50; system, composite v. t. telephone; w. l., 53.57, 132.4.

<sup>2</sup> Range, 300; system, Navy-Marconi, 1,000; w. l., 600, 705, 800.

<sup>3</sup> Range, 250; system, U. S. Navy, 1,000; w. l., 600.

<sup>4</sup> W. l., 600, 705, 800.

<sup>5</sup> Range, 50; system, composite v. t. telephone and telegraph, c. w. and i. c. w.; w. l., all amateur bands.

<sup>6</sup> Range, 200; system, v. t. telegraph, c. w.; w. l., 600, 750.

<sup>7</sup> Range, 150; system, R. C. A. v. t. telegraph, i. c. w.; w. l., 600, 640, 705, 750, 800.

Commercial land and ship stations, alphabetically, by call signals

[b, ship station; c, land station]

| Call signal | Name of station  | Call signal | Name of station               |
|-------------|--|-------------|-------------------------------|
| KEJ         | Bollnas, Calif.-----c                                  | KZCY        | Fernandez Hermanos-----b      |
| KEJJ        |  | KZTG        | Tandag, P. I. (Surigao)-----c |
| KER         | do-----c   | WAZ         | New Brunswick, N. J.-----c    |
| KERR        | do-----c   | WAZZ        |                               |
| KFP         | Todd, Alaska-----c                                     | WED         | Rocky Point, N. Y.-----c      |
| KGGV        |  | WEDD        |                               |
| KFQ         | Port Graham, Alaska-----c                              | WEG         | do-----c                      |
| KGGW        |  | WEGG        |                               |
| KGGX        | Santa Cruz Island, Calif.-----c                        | WET         | do-----c                      |
| KGGY        | Iroquois-----b   | WETT        |                               |
| KGGZ        | Hollywood, Calif.-----c                                | WGA         | New York, N. Y.-----c         |
| KGQ         | San Francisco, Calif.-----c                            | WSBA        |                               |
| KGHK        | Seattle, Wash.-----c                                   | WGDC        | Haida-----b                   |
| KGR         |  | WGDD        | Queen Anne-----b              |
| KGHJ        | Honolulu, Hawaii-----c                                 | WGDE        | Blue Sea-----b                |
| KGS         |  | WGDG        | Ansonia-----b                 |
| KGHH        | Los Angeles, Calif.-----c                              | WGDG        | Irene L.-----b                |
| KGX         |  | WGDK        | Karluk-----b                  |
| KGHE        | Scow No. 5 (moored vessel near Nushagak, Alaska)-----c | WGDL        | Zodiac-----b                  |
| KHY         |  | WGDN        | Memory III-----b              |
| WGDM        | Barranca-----b   | WGX         | San Juan, P. R.-----c         |
| KIFR        | Bollnas, Calif.-----c                                  | WGXX        |                               |
| KKQ         | do-----c   | WKQ         | Rocky Point, N. Y.-----c      |
| KKQQ        |  | WKQQ        |                               |
| KKR         | do-----c   | WKU         | do-----c                      |
| KKRR        | do-----c   | WKUU        | do-----c                      |
| KKZ         | do-----c   | WKW         | do-----c                      |
| KKZZ        | do-----c   | WKWW        | do-----c                      |
| KQH         | Kahuku, Hawaii-----c                                   | WMU         | Elizabeth, N. J.-----c        |
| KQHH        |  | WQG         | Rocky Point, N. Y.-----c      |
| KQJ         | Bollnas, Calif.-----c                                  | WGGG        |                               |
| KQJJ        | do-----c   | WQV         | do-----c                      |
| KQZ         | do-----c   | WQW         | do-----c                      |
| KQZZ        | do-----c   | WQWW        | do-----c                      |
| KUCN        | Eastern Guide-----b                                    | WRBZ        | North Dakota-----b            |
| KZAG        | Neil Macleod-----b                                     | WSBB        | City of Victoria-----b        |
| KZCW        | Yloilo-----b   | WSBD        | Gladys-----b                  |

NOTE.—Where a station has 2 call signals, the 4-letter signal is to be used until Oct. 1, 1928, when it will be canceled; after that date the 3-letter signal is to be used.

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

[Additions to the List of Radio Stations of the United States, edition of June 30, 1927, and to the International List of Radiotelegraph Stations published by the Berne bureau]

| Station           | Call signal | Wave length | Service | Hours | Station controlled by—     |
|-------------------|-------------|-------------|---------|-------|----------------------------|
| Floyd Bennett.... | WSX         | 30.29.....  | P       | X     | Byrd Antarctic Expedition. |

*Commercial aircraft stations, alphabetically, by call signals*

| Call signal | Name of station | Call signal | Name of station |
|-------------|-----------------|-------------|-----------------|
| WSX         | Floyd Bennett.  |             |                 |

*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, 1927, and to the International List of Radiotelegraph Stations published by the Berne bureau]

| Station               | Call signal | Wave length | Service | Hours | Station controlled by—   |
|-----------------------|-------------|-------------|---------|-------|--|
| Portable.....         | KGHM        | .....       | O       | X     | Department of Commerce, Coast and Geodetic Survey.<br>Do.<br>U. S. Navy. |
| Do.....               | KGHS        | .....       | O       | X     |  |
| San Diego, Calif..... | NDT         | .....       | O       | X     |  |

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

[Additions to the List of Commercial and Government Radio Stations of the United States, edition of June 30, 1927, and to the International List of Radiotelegraph Stations published by the Berne bureau]

| Station                | Call signal | Wave length     | Service | Hours | Station controlled by—                                |
|------------------------|-------------|-----------------|---------|-------|---|
| Apo <sup>1</sup> ..... | KZDB        | 450, 600, 700.. | PG      | X     | Bureau of Commerce and Industry (Philippine Islands). |

<sup>1</sup> Range, 566; system, Marconi, 1,600; rates, 4 cents per word.

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

[b, ship station; c, land station]

| Call signal | Name of station | Call signal | Name of station        |
|-------------|-----------------|-------------|------------------------|
| KGHM        | Portable.....c  | KZDB        | Apo.....b              |
| KGHS        | do.....c        | NDT         | San Diego, Calif.....c |

*Government aircraft stations, alphabetically, by names of stations*

[Additions to the list of Commercial and Government Radio Stations of the United States, edition of June 30, 1927, and to the International List of Radiotelegraph Stations published by the Berne bureau]

| Station   | Call signal | Wave length | Hours | Owner       |
|---|-------------|-------------|-------|-------------|
| (U. S. S.) Arizona—any aircraft attached to.....        | NMGY        |             |       | U. S. Navy. |
| (U. S. S.) Arkansas—any aircraft attached to.....       | NMHL        |             |       | Do.         |
| (U. S. S.) California—any aircraft attached to.....     | NMBC        |             |       | Do.         |
| (U. S. S.) Cincinnati—any aircraft attached to.....     | NMAC        |             |       | Do.         |
| (U. S. S.) Colorado—any aircraft attached to.....       | NMFA        |             |       | Do.         |
| (U. S. S.) Concord—any aircraft attached to.....        | NMDK        |             |       | Do.         |
| (U. S. S.) Detroit—any aircraft attached to.....        | NMKS        |             |       | Do.         |
| Fifteenth naval district—any aircraft attached to.....  | NMGN        |             |       | Do.         |
| Fifth naval district—any aircraft attached to.....      | NMGD        |             |       | Do.         |
| First naval district—any aircraft attached to.....      | NMGA        |             |       | Do.         |
| Eighth naval district—any aircraft attached to.....     | NMGJ        |             |       | Do.         |
| Eleventh naval district—any aircraft attached to.....   | NMGL        |             |       | Do.         |
| (U. S. S.) Florida—any aircraft attached to.....        | NMOT        |             |       | Do.         |
| Fourteenth naval district—any aircraft attached to..... | NMGQ        |             |       | Do.         |
| Fourth naval district—any aircraft attached to.....     | NMGC        |             |       | Do.         |
| Guam naval district—any aircraft attached to.....       | NMGS        |             |       | Do.         |
| Guantanamo naval district—any aircraft attached to..... | NMGT        |             |       | Do.         |
| (U. S. S.) Idaho—any aircraft attached to.....          | NMCH        |             |       | Do.         |
| (U. S. S.) Jason—any aircraft attached to.....          | NMAD        |             |       | Do.         |
| (U. S. S.) Langley—any aircraft attached to.....        | NMVR        |             |       | Do.         |
| (U. S. S.) Lexington—any aircraft attached to.....      | NMPO        |             |       | Do.         |
| (U. S. S.) Marblehead—any aircraft attached to.....     | NMDF        |             |       | Do.         |
| (U. S. S.) Maryland—any aircraft attached to.....       | NMWD        |             |       | Do.         |
| (U. S. S.) Medusa—any aircraft attached to.....         | NMWM        |             |       | Do.         |
| (U. S. S.) Memphis—any aircraft attached to.....        | NMFL        |             |       | Do.         |
| (U. S. S.) Milwaukee—any aircraft attached to.....      | NMWB        |             |       | Do.         |
| (U. S. S.) Mississippi—any aircraft attached to.....    | NMHD        |             |       | Do.         |
| (U. S. S.) Nevada—any aircraft attached to.....         | NMHC        |             |       | Do.         |
| (U. S. S.) New Mexico—any aircraft attached to.....     | NMJK        |             |       | Do.         |
| (U. S. S.) New York—any aircraft attached to.....       | NMKL        |             |       | Do.         |
| Ninth naval district—any aircraft attached to.....      | NMGK        |             |       | Do.         |
| (U. S. S.) Oklahoma—any aircraft attached to.....       | NMBF        |             |       | Do.         |
| (U. S. S.) Omaha—any aircraft attached to.....          | NMQG        |             |       | Do.         |
| (U. S. S.) Patoka—any aircraft attached to.....         | NMHB        |             |       | Do.         |
| (U. S. S.) Raleigh—any aircraft attached to.....        | NMVC        |             |       | Do.         |
| (U. S. S.) Richmond—any aircraft attached to.....       | NMNS        |             |       | Do.         |
| (U. S. S.) Saratoga—any aircraft attached to.....       | NMUF        |             |       | Do.         |
| Seventh naval district—any aircraft attached to.....    | NMGH        |             |       | Do.         |
| Sixteenth naval district—any aircraft attached to.....  | NMGR        |             |       | Do.         |
| Sixth naval district—any aircraft attached to.....      | NMGF        |             |       | Do.         |
| (U. S. S.) Tennessee—any aircraft attached to.....      | NMLN        |             |       | Do.         |
| (U. S. S.) Texas—any aircraft attached to.....          | NMAB        |             |       | Do.         |
| Third naval district—any aircraft attached to.....      | NMGB        |             |       | Do.         |
| Thirteenth naval district—any aircraft attached to..... | NMGP        |             |       | Do.         |
| (U. S. S.) Trenton—any aircraft attached to.....        | NMXA        |             |       | Do.         |
| Twelfth naval district—any aircraft attached to.....    | NMGM        |             |       | Do.         |
| (U. S. S.) Utah—any aircraft attached to.....           | NMVP        |             |       | Do.         |
| (U. S. S.) West Virginia—any aircraft attached to.....  | NMNP        |             |       | Do.         |
| (U. S. S.) Wright—any aircraft attached to.....         | NMND        |             |       | Do.         |
| (U. S. S.) Wyoming—any aircraft attached to.....        | NMKN        |             |       | Do.         |

## Government aircraft stations, alphabetically, by call signals

| Call signal | Name of station                                     | Call signal | Name of station                                     |
|-------------|---|-------------|---|
| NMAB        | (U. S. S.) Texas—any aircraft attached to.          | NMGS        | Guam naval district—any aircraft attached to.       |
| NMAC        | (U. S. S.) Cincinnati—any aircraft attached to.     | NMGT        | Guantanamo naval district—any aircraft attached to. |
| NMAD        | (U. S. S.) Jason—any aircraft attached to.          | NMGY        | (U. S. S.) Arizona—any aircraft attached to.        |
| NMBC        | (U. S. S.) California—any aircraft attached to.     | NMHB        | (U. S. S.) Patoka—any aircraft attached to.         |
| NMBF        | (U. S. S.) Oklahoma—any aircraft attached to.       | NMHC        | (U. S. S.) Nevada—any aircraft attached to.         |
| NMCH        | (U. S. S.) Idaho—any aircraft attached to.          | NMHD        | (U. S. S.) Mississippi—any aircraft attached to.    |
| NMDF        | (U. S. S.) Marblehead—any aircraft attached to.     | NMHL        | (U. S. S.) Arkansas—any aircraft attached to.       |
| NMDJ        | (U. S. S.) Maryland—any aircraft attached to.       | NMJK        | (U. S. S.) New Mexico—any aircraft attached to.     |
| NMDK        | (U. S. S.) Concord—any aircraft attached to.        | NMKL        | (U. S. S.) New York—any aircraft attached to.       |
| NMFA        | (U. S. S.) Colorado—any aircraft attached to.       | NMKN        | (U. S. S.) Wyoming—any aircraft attached to.        |
| NMFL        | (U. S. S.) Memphis—any aircraft attached to.        | NMKS        | (U. S. S.) Detroit—any aircraft attached to.        |
| NMGA        | First naval district—any aircraft attached to.      | NMLN        | (U. S. S.) Tennessee—any aircraft attached to.      |
| NMGB        | Third naval district—any aircraft attached to.      | NMND        | (U. S. S.) Wright—any aircraft attached to.         |
| NMGC        | Fourth naval district—any aircraft attached to.     | NMNP        | (U. S. S.) West Virginia—any aircraft attached to.  |
| NMGD        | Fifth naval district—any aircraft attached to.      | NMNS        | (U. S. S.) Richmond—any aircraft attached to.       |
| NMGF        | Sixth naval district—any aircraft attached to.      | NMOT        | (U. S. S.) Florida—any aircraft attached to.        |
| NMGH        | Seventh naval district—any aircraft attached to.    | NMPO        | (U. S. S.) Lexington—any aircraft attached to.      |
| NMGJ        | Eighth naval district—any aircraft attached to.     | NMQG        | (U. S. S.) Omaha—any aircraft attached to.          |
| NMGK        | Ninth naval district—any aircraft attached to.      | NMUF        | (U. S. S.) Saratoga—any aircraft attached to.       |
| NMGL        | Eleventh naval district—any aircraft attached to.   | NMVC        | (U. S. S.) Raleigh—any aircraft attached to.        |
| NMGM        | Twelfth naval district—any aircraft attached to.    | NMVP        | (U. S. S.) Utah—any aircraft attached to.           |
| NMGN        | Fifteenth naval district—any aircraft attached to.  | NMVR        | (U. S. S.) Langley—any aircraft attached to.        |
| NMGP        | Thirteenth naval district—any aircraft attached to. | NMWB        | (U. S. S.) Milwaukee—any aircraft attached to.      |
| NMGQ        | Fourteenth naval district—any aircraft attached to. | NMWM        | (U. S. S.) Medusa—any aircraft attached to.         |
| NMGR        | Sixteenth naval district—any aircraft attached to.  | NMKA        | (U. S. S.) Trenton—any aircraft attached to.        |

## Special 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, 1927]

| Station                 | Call signal | Wave length (meters) | Frequency (kilocycles) | Power (watts) | Station controlled by—                     |
|-------------------------|-------------|----------------------|------------------------|---------------|--|
| Beacon, N. Y.           | 2XBU        | 61.22-63.83          | 4,900-4,700            | 100           | H. E. Smith.                               |
| Chicago, Ill.           | 9XAG        | 61.22-63.83          | 4,900-4,700            | 1,000         | Aero Products (Inc.).                      |
| East Pittsburgh, Pa.    | 8XAV        | 61.22-63.83          | 4,900-4,700            | 1,000         | Westinghouse Electric & Manufacturing Co.  |
| Lexington, Mass.        | 1XAY        | 61.22-63.83          | 4,900-4,700            | 500           | J. Smith Dodge, Adams Street.              |
| Long Island City, N. Y. | 2XBT        | 131.6-140.2          | 2,280-2,140            | 1,000         | F. L. Carter, 3978 Bliss Street            |
| Los Angeles, Calif.     | 6XBW        | 131.6-140.2          | 2,280-2,140            | 250           | P. S. Lucas, 422 Holland Avenue.           |
| New York, N. Y.         | 2XBS        | 61.22-63.83          | 4,900-4,700            | Variable.     | R. C. A.                                   |
| Portable                | 7XAP        | 75-150               | 4,000-2,000            | 10-50         | Department of Agriculture, Forest Service. |
| Do.                     | 7XAQ        | 75-150               | 4,000-2,000            | 10-50         | Do.  |

*Special land stations, grouped by districts*

| Call signal | District and station                | Call signal | District and station                 |
|-------------|-------------------------------------|-------------|--------------------------------------|
| 1XAY        | First district: Lexington, Mass.    | 7XAP        | Seventh district:                    |
| 2XBS        | Second district:                    | 7XAQ        | Portable.                            |
| 2XBT        | New York, N. Y.                     | 8XAV        | Do.                                  |
| 2XBU        | Long Island City, N. Y.             | 9XAG        | Eighth district: East Pittsburgh, Pa |
| 6XBW        | Beacon, N. Y.                       |             | Ninth district: Chicago, Ill.        |
|             | Sixth district: Los Angeles, Calif. |             |                                      |

**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, 1927, and to the International List of Radiotelegraph Stations published by the Berne bureau]

- AKRON, OHIO.—System, composite v. t. telegraph; w. l., add 15.167, 38.58.  
 BIG PORT WALTER, ALASKA.—W. l., add 600, 731.  
 BOLINAS, CALIF. (KEL).—W. l., 43.732.  
 BOLINAS, CALIF. (KEMM).—System, R. C. A. v. t. telegraph; w. l., 19.367.  
 BOLINAS, CALIF. (KEN).—System, R. C. A. v. t. telegraph; w. l., 43.828.  
 BOLINAS, CALIF. (KEWE).—W. l., 38.885.  
 BOLINAS, CALIF. (KMM).—System, R. C. A. v. t. telegraph; w. l., 14.437.  
 BOLINAS, CALIF. (KUN).—System, R. C. A. v. t. telegraph; w. l., 16.611.  
 BOLINAS, CALIF. (KWE).—W. l., 19.443.  
 BOWLING GREEN, KY.—Owner of station, Illinois Pipe Line Co.  
 BRISTOL BAY, ALASKA.—Strike out all particulars.  
 CATANUAN, P. I.—Location (approximately) altitude 13° 14' 30".  
 HILO, HAWAII.—W. l., add 52.45, 72.39.  
 HONOLULU, HAWAII (KNN).—W. l., 17.222, 23.02, 27.75, 28.6, 33.08, 34.4, 37.14, 38.66.  
 HONOLULU, HAWAII (KOG).—W. l., add 50.46, 74.18.  
 KAUNAKAKAI, HAWAII.—System, add composite v. t. telegraph; w. l., add 52.45, 72.39.  
 KILLISNOO, ALASKA.—W. l., add 900.  
 KVICHAK, ALASKA (KYM).—W. l., add 86.  
 LIHUE, HAWAII.—System, add composite v. t. telegraph; w. l., add 52.45, 72.39.  
 MIAMI, FLA. (WRB).—W. l., 70.54.  
 NUSHAGAK, ALASKA (KZV). W. l., add 86.  
 PALO ALTO, CALIF. (KNW).—W. l., 16.429, 16.988, 23.08, 33.44, 33.9, 38.73, 44.02.  
 PILLAR BAY, ALASKA.—W. l., drop 725.  
 STEAMBOAT BAY, ALASKA.—W. l., 90.8, 600.  
 UZINKI, ALASKA.—W. l., 600, 731.  
 WAILUKU, HAWAII.—W. l., add 52.45, 72.39.  
 WILMINGTON, CALIF. (Los Angeles).—Changed to Torrance, Calif. (Los Angeles); w. l., 2,343.

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, 1927, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

- ALASKA.—W. l., 600, 705, 800; station controlled by owner of vessel.  
 ANNAPOLIS.—Range, 50; w. l., 600, 705; service, PG; rates, 8 cents per word.  
 BEARPORT.—Name changed to Golden Mountain.  
 BETTY R.—System, composite v. t. telegraph; w. l., 109, 600.  
 CITY OF ROME.—Name changed to Veramar; owner of vessel, Sunnyland S. S. Co.  
 CITY OF SPOKANE.—Name changed to Olympia; owner of vessel, Tacoma-Oriental S. S. Co.  
 CLAREMONT.—W. l., 600, 705, 800.  
 CURLEW.—Range, 25; system, composite v. t. telegraph; w. l., 53.57, 90.4; service, P; hours, X; station controlled by owner of vessel.

- DOYLESTOWN.—W. 1., 600, 705, 800.
- EASTERN VICTOR.—Name changed to Pacific Cedar.
- EL CICUTA.—Name changed to Texada; owner of vessel, Kingsley Navigation Co. of California.
- F. C. LATROBE.—Range, 100; w. 1., 600, 705; service, PG; rates, 8 cents per word.
- FOREST KING.—W. 1., 600, 705, 800; station controlled by owner of vessel.
- FRANK D. STOUT.—Range, 200; system, Gray & Danielson, 240 w. 1., 600, 705, 800; station controlled by owner of vessel.
- FREDELUCK C.—Range, 25; system, Western Electric v. t. telegraph; w. 1., 109.7; service, P; hours, X; station controlled by owner of vessel.
- G. N. WILSON.—Name changed to Thomas Britt.
- HUGH KENNEDY.—Owner of vessel, American S. S. Co.
- HYADES.—Owner of vessel, Red Salmon Canning Co.
- H. W. BAXTER.—System, Navy-Marconi, 1,000; w. 1., 600, 705, 800.
- LA BREA.—System, F. T. Co. arc; w. 1., 600, 705, 800, 1,887, 1,987, 2,098, 2,128.
- LAKE FARBER.—Name changed to Commercial Navigator; owner of vessel, Commercial Courier S. S. Co.
- LAKE GORIN.—W. 1., 600, 705, 800; rates, Great Lakes service, 4 cents per word; transoceanic, 8 cents per word.
- LAKE INGLENOOK.—Owner of vessel, Newtex S. S. Corporation.
- LAKE MIRAFLORES.—W. 1., 600, 705, 800; station controlled by M. R. T. Co.
- LANSING.—System, F. T. Co., arc and F. T. Co., spark, 1,000; w. 1., 600, 705, 800, 1,875, 1,987, 2,098, 2,190; hours, N.
- LA PURISIMA.—System, F. T. Co. arc; w. 1., 600, 705, 800, 1,875, 1,987, 2,098, 2,190.
- LAS VEGAS.—Owner of vessel, States S. S. Co.
- LAUREL.—W. 1., 600, 705, 800.
- LEVIATHAN.—W. 1., add 26.93, 26.95, 35.51, 35.59, 35.86.
- LOS ANGELES.—Range, 300; system, F. T. Co. arc; w. 1., 600, 705, 800, 1,911, 1,987, 2,098, 2,190.
- LUBRICO.—W. 1., 600, 705, 800, 1,875, 1,987, 2,098, 2,128.
- M. A. REEB.—Name changed to O. S. McFarland.
- MEMNON.—W. 1., 600, 705, 800, 2,098, 2,190; hours, N and X.
- MERIDA.—W. 1., 600, 705, 800.
- MIRAMICHI.—Name changed to Walucia III.
- NORTH KING.—System, Marconi, 1,000; w. 1., 600, 705, 800.
- ONEONTA.—Name changed to Sea King; owner of vessel, Shipowners & Merchants Tugboat Co.
- PETREL (WRBS).—Range, 25; system, Western Electric v. t. telegraph; w. 1., 109.7; service, P; hours, X; station controlled by owner of vessel.
- POINT BONITA.—Owner of vessel, Gulf Pacific Line.
- POINT SUR.—Owner of vessel, Gulf Pacific Line.
- PRESIDENT GRANT.—W. 1., 600, 705, 800, 1,887, 1,987, 2,098, 2,190.
- PRESIDENT MADISON.—W. 1., 600, 705, 800, 1,875, 2,098, 2,222, 2,440.
- RADIANT.—Range, 200; w. 1., 600, 705, 800.
- ROBERT JOHNSON.—W. 1. 600, 705, 800.
- SAN DIEGO.—W. 1., 600, 705, 800.
- SANTA MARIA (KFTI).—W. 1., 600, 705, 800, 1,887, 1,987, 2,098, 2,190.
- SIALIA.—Range, 200; w. 1., 600, 705, 800, 1,935, 1,987, 2,098, 2,128; rates, 4 cents per word.
- SIERRA (KRW).—W. 1., 600, 705, 800.
- SOLANA.—W. 1., 600, 705, 800, 1,875, 1,987, 2,098, 2,190.
- SUOLCO.—Owner of vessel, Matson Navigation Co.
- SUSHERICO.—Name changed to Manini.
- TILLICUM.—W. 1., 600, 705.
- TULSAGAS.—W. 1., 600, 705, 800, 1,875, 1,987, 2,098, 2,190.
- UTACARBON.—System, Marconi, 1,000; w. 1., 600, 705, 800.
- WARWICK.—W. 1., 600, 705, 800, 1,887, 1,987, 2,098, 2,128.
- WEST CAYOTE.—Name changed to Washington; owner of vessel, States S. S. Co.
- WEST CONOB.—Owner of vessel, Oceanic & Oriental Navigation Co.
- WEST FARALON.—Name changed to Golden Hind; owner of vessel, Oceanic & Oriental Navigation Co.
- WEST HIMROD.—Name changed to Bellingham.
- WEST KADER.—Name changed to New York; owner of vessel, States S. S. Co.
- WEST NIVARIA.—Name changed to Golden Coast.
- WEST PROSPECT.—Owner of vessel, Oceanic & Oriental Navigation Co.
- WEST SEQUANA.—Name changed to Golden Cloud; owner of vessel, Oceanic & Oriental Navigation Co.



WEST TOGUS.—Owner of vessel, Oceanic & Oriental Navigation Co.

WHEATON.—Name changed to Alaskan.

Strike out all particulars of the following-named vessels: *A. M. Scott, Arizonan, Commercial Pilot, Concho, Finland* (KSF), *Kershaw, Ransom B. Fuller, Republic* (WSU), *Venetia, William F. Herrin*.

COMMERCIAL LAND AND SHIP STATIONS, ALPHABETICALLY, BY CALL SIGNALS

KDDQ, read Manini; KDIY, read Texada; KDSX, read Golden Hind; KDUX, read Thomas Britt; KDUZ, read O. S. McFarland; KFCS, read Walucia III; KILL, read Olympia; KIRB, read Commercial Navigator; KIRF, read Washington; KOSL, read New York; KQZ, read Veramar; KUBK, read Golden Mountain; KUDQ, read Bellingham; KUNR, read Pacific Cedar; KUQJ, read Golden Coast; WMUA, read Alaskan; WPX, read Sea King; WSOI, read Golden Cloud; strike out all particulars following the call signals KEC, KFSF, KGGR, KPF, KQK, KRF, KSF, WKB, WOV, WSU, WTN.

COMMERCIAL AIRCRAFT STATIONS, ALPHABETICALLY, BY NAMES OF VESSELS

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1927, and to the International List of Radiotelegraph Stations, published by the Berne Bureau]

SPIRIT OF CALIFORNIA.—(KHAB—renamed Southern Cross), strike out all particulars.

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, 1927]

KFON (Long Beach, Calif.).—Power, 1,000.  
 KFPW (Cartersville, Mo.).—Changed to Suplhur Springs, Ark.  
 KFYO (Breckenridge, Tex.).—Power, 100.  
 KGEK (Yuma, Colo.).—Power, 50.  
 KGHM (Billings, Mont.).—Power, 500 day, 250 night.  
 KP (State College, N. Mex.).—Power, 10,000 day only.  
 KBJM (Prescott, Ariz.).—Now permanently located.  
 KSTP (Westcott, Minn.).—Power, 5,000, for experimental use during June and July.  
 WCBA (Allentown, Pa.).—Owner, B. Bryan Musselman.  
 WKEN (Amherst, N. Y.).—Changed to Grand Island, N. Y.  
 WLBN (Little Rock, Ark.).—Call changed to KLRA.  
 WMAQ (Chicago, Ill.).—Power, 5,000.  
 WRBT (Wilmington, N. C.).—W. 1., 227.1; fy., 1,320.  
 WVVA (Wheeling, W. Va.).—Owner, West Virginia Broadcasting Corporation. Strike out all particulars of the following-named stations: KGHP (Hardin, Mont.), WEBJ (New York, N. Y.), WLBM (Cambridge, Mass.).

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, 1927, and to the International List of Radiotelegraph Stations, published by the Berne Bureau]

BAR HARBOR, ME. (Seawall—NBD).—Strike out all particulars.

GOVERNMENT LAND AND SHIP STATIONS, ALPHABETICALLY, BY CALL SIGNALS

NBD, BAR HARBOR, ME. (Seawall).—Strike out all particulars.

SPECIAL LAND STATIONS, BY NAMES OF STATIONS

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1927]

BABYLON, N. Y. (2XC).—Owner, Radiomarine Corporation of America.  
 LOS ANGELES, CALIF. (6XBA).—Strike out all particulars.  
 LOS ANGELES, CALIF. (6XBC).—Strike out all particulars.  
 WASHINGTON, D. C. (3XK).—W. 1., 61.22–63.83, 131.6–140.2; fy., 4,900–4,700, 2,280–2,140.

## MISCELLANEOUS

## CHANGES IN RADIOBEACON STATIONS OF THE UNITED STATES

*Little Gull Island Light Station, N. Y.*—Beacon changed to operate continuously during thick or foggy weather and daily in clear weather from 11 p. m. to 1 a. m. and from 12 noon to 12.30 p. m., seventy-fifth meridian time.

*Stratford Shoal (Middle Ground) Light Station, N. Y.*—Beacon changed to operate continuously during thick or foggy weather and daily in clear weather from 2 to 3.30 a. m., 12 noon to 12.30 p. m., and from 8 to 10 p. m., seventy-fifth meridian time.

*Execution Rocks Light Station, N. Y.*—Beacon changed to operate continuously during thick or foggy weather and daily in clear weather from 5 to 6.30 a. m., 12 noon to 12.30 p. m., and 6.30 to 7.30 p. m., seventy-fifth meridian time.

## EXAMINATION OF RADIO OPERATORS IN CANAL ZONE DISCONTINUED

Beginning July 1, 1928, the examination of radio operators at the naval stations in the Canal Zone will be discontinued.

## NEW CALL SIGNALS ASSIGNED TO LAND AND SHIP STATIONS

Under article 14 of the International Radiotelegraph Convention, Washington, 1927, requiring land and ship stations to use only three and four letter call signals, respectively, the stations named hereunder should use the new call signals shown in the column headed "To," beginning October 1, next. While the requirements of the convention are not actually effective until January 1, 1929, it has been deemed advisable to make the change as of October 1, in order to take advantage of having the new signals published in the fall edition of the "International List of Radiotelegraph Stations Alphabetically by Call Signals," and the June 30, 1928, edition of the list of "Commercial and Government Radio Stations of the United States."

*Commercial land stations, alphabetically, by names*

| Name of station                  | Call signal |     | Name of station               | Call signal |     |
|----------------------------------|-------------|-----|-------------------------------|-------------|-----|
|                                  | From—       | To— |                               | From—       | To— |
| Annette Island, Alaska.....      | KGAF        | KFA | Nushagak, Alaska.....         | KKAE        | KNO |
| Anniston (moored vessel).....    | KIDM        | WPK | Pilot Point, Alaska.....      | KUDT        | KUL |
| Bacharof, Alaska.....            | KUDV        | KUD | Pirate Cove, Alaska.....      | KOXN        | KOX |
| Baytown, Tex.....                | KDPS        | KJV | Point Warde, Alaska.....      | KGGB        | KLH |
| Bolinas, Calif.....              | KEMM        | KEM | Portable.....                 | KGEV        | KNB |
| Do.....                          | KESS        | KES | Do.....                       | KGFT        | KNC |
| Do.....                          | KEWE        | KEE | Do.....                       | KGFB        | KND |
| Do.....                          | KEUN        | KEN | Do.....                       | KGFR        | KNE |
| Bowling Green, Ky.....           | WJAV        | WJA | Do.....                       | KGFR        | KNF |
| California (portable).....       | KGGP        | KLC | Quincy, Mass.....             | KDQU        | WPC |
| Cascada, Calif.....              | KDPU        | KLF | Rocky Point, N. Y.....        | WEAJ        | WEJ |
| Charleroi, Pa.....               | WJBF        | WBV | Do.....                       | WEDS        | WES |
| Cheboygan, Mich.....             | KUXM        | WPJ | Do.....                       | WEEM        | WKM |
| Chicago, Ill.....                | WCFL        | WCF | Do.....                       | WEFX        | WEF |
| Dallas, Tex.....                 | WFAA        | KFB | Do.....                       | WEHR        | WER |
| Daly, Alaska.....                | KDJT        | KDJ | Do.....                       | WELL        | WEL |
| Detroit, Mich.....               | KDPH        | WBM | Do.....                       | WEOP        | WKP |
| Do.....                          | WDYC        | WCZ | Do.....                       | WEPE        | WEE |
| East Pittsburgh, Pa.....         | KDKA        | WKA | Do.....                       | WEQA        | WEA |
| Harrisburg, Pa.....              | WBAK        | WBA | Do.....                       | WEQB        | WEB |
| Do.....                          | WKBX        | WKB | Do.....                       | WEQC        | WEC |
| Hyder, Alaska.....               | KDFA        | KDF | Do.....                       | WEQK        | WEX |
| Flagstaff, Ariz.....             | KGGC        | KLU | Do.....                       | WEQY        | WIY |
| Flagstaff, Ariz. (portable)..... | KGGD        | KLV | Do.....                       | WGO         | WKO |
| Fort Worth, Tex.....             | WBAP        | KMB | Ruby (moored vessel).....     | KDRH        | KDR |
| Hawk Inlet, Alaska.....          | KKAI        | KPD | San Benito, Tex.....          | KFRH        | KFW |
| Johnswood, Mich.....             | KUVQ        | WMF | San Juan, P. R.....           | WEGT        | WJT |
| Kahuku, Hawaii.....              | KEIO        | KRO | Santa Barbara, Calif.....     | KGFY        | KHR |
| Do.....                          | ESIO        | KKH | Santa Cruz Island, Calif..... | KGFD        | KGJ |
| Keke, Alaska.....                | KGAG        | KGP | Superior, Mich.....           | KDPI        | WRH |
| Koggiung (moored vessel).....    | KUBX        | KUB | Tenakee, Alaska.....          | KOSC        | KOU |
| Lazy Bay, Alaska.....            | KEPS        | KPS | Warren, Alaska.....           | KDJU        | KHU |
| Marysville, Mich.....            | KDPJ        | WPV | Zachar Bay, Alaska.....       | KFWQ        | KFX |
| New York, N. Y.....              | KUVS        | WPY |                               |             |     |

Commercial land stations, alphabetically, by call signals

| Call signal |       | Station                      | Call signal |       | Station                   |
|-------------|-------|------------------------------|-------------|-------|---------------------------|
| To—         | From— |                              | To—         | From— |                           |
| KDF         | KDFA  | Hyder, Alaska.               | KUB         | KUBX  | Koggiung (moored vessel). |
| KDJ         | KDJT  | Daly, Alaska.                | KUD         | KUDV  | Bacharof, Alaska.         |
| KDR         | KDRH  | Ruby (moored vessel).        | KUL         | KUDT  | Pilot Point, Alaska.      |
| KEE         | KEWE  | Bolinas, Calif.              | WBA         | WBAK  | Harrisburg, Pa.           |
| KEM         | KEMM  | Do.                          | WBM         | KDPH  | Detroit, Mich.            |
| KEN         | KEUN  | Do.                          | WBV         | WJBF  | Charleroi, Pa.            |
| KES         | KESS  | Do.                          | WCF         | WCFL  | Chicago, Ill.             |
| KFA         | KGAF  | Annette Island, Alaska.      | WCZ         | WDYC  | Detroit, Mich.            |
| KFB         | WFAA  | Dallas, Tex.                 | WEA         | WEQA  | Rocky Point, N. Y.        |
| KFW         | KFWR  | San Benito, Tex.             | WEB         | WEQB  | Do.                       |
| KFX         | KFWQ  | Zachar Bay, Alaska.          | WEC         | WEQC  | Do.                       |
| KGJ         | KGFU  | Santa Cruz Island, Calif.    | WEE         | WEPE  | Do.                       |
| KGP         | KGAD  | Kaka, Alaska.                | WEF         | WEFX  | Do.                       |
| KHR         | KGFY  | Santa Barbara, Calif.        | WEJ         | WEAJ  | Do.                       |
| KHU         | KDJU  | Warren, Alaska.              | WEL         | WELL  | Do.                       |
| KJV         | KDPS  | Baytown, Tex.                | WER         | WEHR  | Do.                       |
| KKH         | KSIO  | Kahuku, Hawaii.              | WES         | WEDS  | Do.                       |
| KLC         | KGGP  | California (portable).       | WEX         | WEQX  | Do.                       |
| KLF         | KDPU  | Cascada, Calif.              | WIY         | WEQY  | Do.                       |
| KLH         | KGGB  | Point Warde, Alaska.         | WJA         | WJAV  | Bowling Green, Ky.        |
| KLU         | KGGC  | Flagstaff, Ariz.             | WJT         | WEGT  | San Juan, P. R.           |
| KLV         | KGGD  | Flagstaff, Ariz. (portable). | WKA         | KDKA  | East Pittsburgh, Pa.      |
| KMB         | WBAP  | Fort Worth, Tex.             | WKB         | WKBX  | Harrisburg, Pa.           |
| KNB         | KGEV  | Portable.                    | WKM         | WEEM  | Rocky Point, N. Y.        |
| KNC         | KGET  | Do.                          | WEO         | WQO   | Do.                       |
| KND         | KGFT  | Do.                          | WKP         | WEOP  | Do.                       |
| KNE         | KGFS  | Do.                          | KUVQ        | WQVQ  | Johnswood, Mich.          |
| KNF         | KGFR  | Do.                          | WPC         | KDGV  | Quincy, Mass.             |
| KNO         | KKAE  | Nushagak, Alaska.            | WPJ         | KUXM  | Cheboygan, Mich.          |
| KOU         | KOSC  | Tenakee, Alaska.             | WPK         | KIDM  | Anniston (moored vessel). |
| KOX         | KOXN  | Pirate Cove, Alaska.         | WPV         | KDPJ  | Marysville, Mich.         |
| KPD         | KKAI  | Hawk Inlet, Alaska.          | WPY         | KUVS  | New York, N. Y.           |
| KPS         | KEPS  | Lazy Bay, Alaska.            | WRH         | KDPI  | Superior, Mich.           |
| KRO         | KEIO  | Kahuku, Hawaii.              |             |       |                           |

Commercial ship stations, alphabetically, by names

| Name of vessel         | From— | To—  | Name of vessel                   | From— | To—  |
|------------------------|-------|------|----------------------------------|-------|------|
| Abangarez.....         | KDI   | KDAI | Ann Arbor No. 5.....             | WDP   | WDCP |
| A. C. Bedford.....     | KNZ   | WOCJ | Ann Arbor No. 6.....             | WDQ   | WDCQ |
| Achilles.....          | KPT   | WHCS | Ann Arbor No. 7.....             | WDK   | WDCK |
| Acme.....              | KIJ   | WSCF | Annetta.....                     | WRG   | WEDP |
| Admiral Dewey.....     | WAY   | WGCA | Antilla.....                     | KWD   | WECS |
| Admiral Evans.....     | KICZ  | WGCB | Any or all merchant vessels..... | WKW   | WBGV |
| Admiral Farragut.....  | WAF   | WGCO | Apache.....                      | KVA   | WBCA |
| Admiral Fiske.....     | WGS   | WGCD | Arapahoe.....                    | KVB   | WBCB |
| Admiral Moser.....     | WDF   | WGCE | Archer.....                      | KXG   | WLCQ |
| Admiral Peary.....     | KPL   | WGCF | Arctic.....                      | KYS   | WQCM |
| Admiral Rodman.....    | WOA   | WGGG | Ardmore.....                     | KIA   | WBCQ |
| Admiral Rogers.....    | WGE   | WGCH | Arizona.....                     | WFG   | WPCU |
| Admiral Schley.....    | WAZ   | WGCI | Artemis.....                     | WQS   | WEDL |
| Admiral Seabee.....    | WAG   | WGCI | Ashtabula.....                   | WEZ   | WBDG |
| Admiral Watson.....    | WAW   | WGCK | Astral.....                      | KIQ   | WSCG |
| Agwidale.....          | WDOA  | WHCA | Atenas.....                      | KDK   | KDAK |
| Agwistar.....          | KEPG  | WEOR | Atlantic.....                    | KEE   | WBCO |
| Alabama.....           | WFB   | WPCT | Atlas.....                       | KWP   | WSCH |
| Alameda.....           | WAA   | WCCQ | Avalon.....                      | WFH   | WQCV |
| Albert Hill.....       | KHR   | WFCV | Bantu.....                       | KLM   | WDCU |
| Aleutian.....          | KMH   | WCCR | Belfast.....                     | KRD   | WECA |
| Aloha.....             | KYH   | WLOU | Benjamin Brewster.....           | KPS   | WOCK |
| Alpena.....            | WCS   | WADU | Beta.....                        | WQD   | WEDB |
| A. M. Byers.....       | WMY   | WADD | Bethlehem.....                   | WLW   | WCDR |
| Amelia.....            | WRF   | WEDO | Big Bill.....                    | WHU   | WBDX |
| American.....          | WKF   | WACA | Black Point.....                 | KXT   | WFDH |
| American Banker.....   | WEC   | WBDA | Boston.....                      | WEL   | WECB |
| American Farmer.....   | WEG   | WBDB | Bowdoin.....                     | WNP   | WDDE |
| American Merchant..... | WTP   | WFDF | Brazos.....                      | KKZ   | WHCB |
| American Shipper.....  | WTB   | WEDZ | Bremerton.....                   | WSZ   | WEDY |
| American Trader.....   | WTU   | WFDC | Broad Arrow.....                 | KSY   | WSOJ |
| Amolco.....            | KMB   | WCCD | Cabrillo.....                    | WBV   | WADK |
| Ancon.....             | KMS   | WCCI | C. A. Canfield.....              | WIH   | WPCA |
| Ann Arbor No. 3.....   | WDN   | WDCN | Cacique.....                     | WBE   | WMCQ |
| Ann Arbor No. 4.....   | WDO   | WDCO | Caddo.....                       | KSK   | WOCL |

## Commercial ship stations, alphabetically, by names—Continued

| Name of vessel        | From-- | To--  | Name of vessel         | From-- | To-- |
|-----------------------|--------|-------|------------------------|--------|------|
| Calamares             | KLO    | KDAW  | Delecto                | KYT    | WNCP |
| California            | WRS    | WMCM  | D. G. Scofield         | WRD    | WCOA |
| Californian           | KDYD   | WACB  | Dixie                  | KGGQ   | WICO |
| Caloria               | KSP    | WKCP  | Dodeca                 | KXO    | WLOR |
| Calvin Austin         | KRN    | WECC  | Dorothy Alexander      | WGP    | WGCM |
| Camaguey              | KWI    | WECT  | Dorothy Bradford       | KNA    | WFDK |
| Cambria               | WPY    | WDDY  | Dulcino                | KTV    | WKCU |
| Cambridge             | KGR    | WBCE  | Eagle                  | KIR    | WSCL |
| Camden                | KRC    | WECD  | Eastern States         | WEE    | WTCB |
| Captain A. F. Lucas   | WTV    | WOCB  | Ecuador                | WBN    | WNCW |
| Carabobo              | WCN    | WQCH  | Edgar F. Luckenbach    | KGK    | WLCA |
| Caracas               | KDB    | WQCA  | Edith                  | KZF    | WKCD |
| Carolina              | WFE    | WPCV  | Edna Christenson       | WSJ    | WEDV |
| Carolyn               | KZG    | WKCA  | Edward L. Doheny       | WIE    | WPCC |
| Carrillo              | KDE    | KDAE  | Edward Luckenbach      | KGQ    | WLCB |
| Cartago               | KDD    | KDAA  | Edwin Christenson      | KJH    | WCCG |
| Casiana               | KYE    | WLCT  | El Alba                | KKL    | WICD |
| C. A. Snider          | KRR    | WQCS  | El Almirante           | KKG    | WICE |
| Castle Town           | KOF    | WHCO  | El Capitan             | KKH    | WICF |
| Cauto                 | KWF    | WECU  | El Cid                 | KKT    | WICG |
| C. B. Watson          | KTN    | WFDI  | El Coston              | KFSL   | WICH |
| Celilo                | WME    | WCDU  | El Dia                 | KKY    | WICI |
| Central West          | WPW    | WDDV  | El Estero              | KDKT   | WICI |
| Charles E. Harwood    | WID    | WPCB  | El Isleo               | KDNA   | WICK |
| Charles Pratt         | KSQ    | WOCM  | El Lago                | KDNW   | WICL |
| Charlton Hall         | KLU    | WDCV  | El Mundo               | KKU    | WICM |
| Cherokee              | WEO    | WTCI  | El Norte               | KKN    | WICN |
| Chester Sun           | WAS    | WPCS  | El Occidente           | KKX    | WICP |
| Chester W. Chapin     | KXQ    | WRCQ  | El Oceano              | WNF    | WICO |
| Chincha               | KJZ    | WCCCE | El Oriente             | KKV    | WICQ |
| Christopher Columbus  | WFJ    | WPCW  | El Segundo             | WTQ    | WOCO |
| Cities Service Fuel   | KNS    | WHOP  | El Siglo               | KKS    | WICR |
| City of Albany        | KOFQ   | WFCI  | El Valle               | KKW    | WICS |
| City of Atlanta       | KFB    | WFCJ  | Emma Alexander         | KKEE   | WGCN |
| City of Bangor        | KRH    | WECM  | Enterprise             | WMN    | WMCB |
| City of Benton Harbor | WDV    | WPCX  | Eocene                 | KTM    | WSCO |
| City of Birmingham    | KFKC   | WFCK  | Ernest H. Meyer        | WMJ    | WCDX |
| City of Buffalo       | WFQ    | WTCR  | E. R. Sterling         | WIS    | WCDA |
| City of Chattanooga   | KFMA   | WFCL  | Esparta                | KDO    | KDAO |
| City of Cleveland III | WEA    | WNCM  | Essex                  | KQE    | WMCS |
| City of Columbus      | KFA    | WFCM  | Eurana                 | KJG    | WCCF |
| City of Detroit III   | WEP    | WNCN  | Evelyn                 | KZP    | WKCE |
| City of Erie          | WFP    | WTCB  | Everett                | KZT    | WJCC |
| City of Honolulu      | WES    | WSCS  | Fabia                  | WJJ    | WODC |
| City of Lowell        | KXB    | WRCB  | Favorite               | WCF    | WADP |
| City of Montgomery    | KFY    | WFCN  | Fayette Brown          | WQG    | WEDF |
| City of St. Louis     | KFX    | WFCP  | Felix Tausig           | KXZ    | WJCR |
| City of Savannah      | KFK    | WFCQ  | Feltore                | KFG    | WQCU |
| City of Seattle       | WGA    | WBDK  | Firmore                | KDX    | WQCF |
| Clare                 | KNE    | WKCB  | Fisherman              | KNT    | WHCN |
| Olemens A. Reiss      | WNH    | WADE  | F. J. Luckenbach       | WNZ    | WLCO |
| Coamo                 | WTA    | WKCW  | Florence Luckenbach    | WNM    | WLCI |
| Coastwise             | KUZ    | WK CZ | Florence Olson         | WRI    | WEDQ |
| Colombia              | WBH    | WNCT  | Florida                | WLR    | WACE |
| Colonel               | WPT    | WDDS  | F. Q. Barstow          | KNQ    | WGCN |
| Colorado              | KUGL   | WHCC  | Frank H. Buck          | WTO    | WQCQ |
| Columbian             | WBA    | WACC  | Fred Baxter            | WOG    | WDDH |
| Comal                 | KEM    | WHCD  | Frederic Ewing         | WNQ    | WPCD |
| Comerio               | KWN    | WFC A | Frederic R. Kellogg    | WIQ    | WPCE |
| Commercial Courier    | KWJ    | WLCP  | Fred W. Weller         | KNY    | WOCO |
| Commercial Guide      | WJO    | WCDD  | Freeman                | WMW    | WBIC |
| Commercial Pathfinder | WJU    | WCDE  | Freeport Sulphur No. 2 | KRG    | WHCY |
| Commercial Trader     | WMZ    | WDDC  | Frieda                 | KFF    | WQCT |
| Commonwealth          | KXC    | WRCC  | Gene Crawley           | KQF    | WHCW |
| Comus                 | KKD    | WICA  | General W. C. Gorgas   | KIP    | WQCZ |
| Concord               | KNC    | WRCY  | George G. Henry        | WIT    | WPCF |
| Conneaut              | WCU    | WADV  | George Washington      | WFR    | WECJ |
| Coppename             | KDF    | KDAF  | Georgian               | KOVH   | WACF |
| Cordova               | WAR    | WDCS  | Glenpool               | KOH    | WOCF |
| Cornelia              | KZD    | WKCC  | Gloucester             | KQG    | WMCT |
| Coronado              | WFZ    | WBDJ  | Gold Shell             | WIB    | WBCY |
| Corsair               | KYC    | WLCS  | Goodtime               | WCP    | WTCU |
| Costa Rica            | WQI    | WEDJ  | Governor Cobb          | KRB    | WHCX |
| Creole                | KKR    | WEDN  | Governor Dingley       | KRV    | WECE |
| Creole                | WRA    | WICB  | Greater Buffalo        | WJA    | WSBH |
| Cristobal             | KMD    | WCOH  | Greater Detroit        | WJT    | WSBI |
| Crofton Hall          | KLR    | WDCW  | Grecian                | KQR    | WMCU |
| Curacao               | WGK    | WGCL  | Guardian               | WGZ    | WBDP |
| Currier               | KNU    | WJCA  | Gulfoast               | KUE    | WJCC |
| Cythera               | KYO    | WLCY  | Gulfhand               | KUD    | WJOD |
| Dakotan               | WKD    | WACD  | Gulflight              | KUA    | WJCE |
| Dauntless             | KYR    | WLCZ  | Gulfmaid               | KUB    | WJCF |
| D. E. Callender       | WEV    | WBDF  | Gulf of Mexico         | KUC    | WJOB |

Commercial ship stations, alphabetically, by names—Continued

| Name of vessel         | From— | To—   | Name of vessel               | From— | To—   |
|------------------------|-------|-------|------------------------------|-------|-------|
| Gulfoil                | KTG   | WJCG  | Macom                        | KIN   | WBCD  |
| Gulf Queen             | KVS   | WJCH  | Mahoe                        | KZR   | WNCR  |
| Gulfstream             | KTB   | WJCI  | Maine                        | KUQ   | WKCX  |
| Halcyon                | KZL   | WNCQ  | Maitland No. 1               | WLE   | WCDJ  |
| Hamilton               | KFAM  | WECK  | Makiki                       | WCW   | WMCD  |
| Harold Walker          | WIX   | WPCG  | Malabar                      | KTO   | WKCR  |
| Harry Farnum           | KQA   | WHCU  | Malolo                       | KII   | WMCE  |
| Harry W. Croft         | WQF   | WEDD  | Manchuria                    | WWE   | WCCM  |
| Harvard                | WRH   | WSCR  | Mangore                      | KHP   | WQCG  |
| Harvey H. Brown        | WQE   | WEDO  | Manitou                      | WFW   | WBDH  |
| Hatteras               | WNV   | WDDF  | Manoa                        | WMQ   | WMCF  |
| Hawaiian               | WKU   | WACG  | Maracaibo                    | KIM   | WQCB  |
| Hawaiian Standard      | WTX   | WOCG  | Margaret                     | KZO   | WKCH  |
| H. C. Folger           | KHS   | WFGW  | Marquette and Bessemer No. 2 | WEX   | WFDQ  |
| Helen                  | KZH   | WKCF  | Maryland                     | WLU   | WCDQ  |
| Henry M. Flagler       | KOX   | WCOK  | Matinicock                   | KID   | WBCT  |
| Henry R. Mallory       | KEF   | WHCF  | Matsonia                     | WMP   | WMCG  |
| Herbert G. Wylie       | WIF   | WPCB  | Maul                         | WMR   | WMCH  |
| Herbert L. Pratt       | KOY   | WFCX  | Medina                       | KEI   | WHCG  |
| Heredia                | KDH   | KDAH  | Melrose                      | KZW   | WJCU  |
| H. F. Alexander        | KDYK  | WGOO  | Metapan                      | KLF   | KDAY  |
| H. H. Rogers           | KSI   | WOCQ  | Mexican                      | WKL   | WACK  |
| Hilton                 | KZK   | WKGQ  | Mexico                       | KWX   | WECV  |
| H. M. Flagler          | KER   | WOCR  | Miami                        | KOZ   | WHCR  |
| Horace X. Baxter       | WOF   | WDDG  | Millinocket                  | KNM   | WKCI  |
| Howard                 | KQH   | WMCV  | Minnesota                    | WFM   | WQCY  |
| Howick Hall            | KLT   | WDCX  | Minnesotan                   | WKM   | WACL  |
| Humboldt               | WHX   | WBDZ  | Missouri                     | WFD   | WFDT  |
| Huron                  | KVH   | WADQ  | Missourian                   | KFAA  | WACM  |
| Huron                  | WCH   | WBCC  | Mohawk                       | KXE   | WRCE  |
| Hyades                 | WMK   | WCDY  | Mohegan                      | KXM   | WRCM  |
| Illinois               | WCZ   | WPCY  | Momus                        | KKM   | WICT  |
| Indiana                | WFC   | WPCZ  | Mongolia                     | WVN   | WCCN  |
| Iowan                  | WKJ   | WACH  | Montanan                     | WKN   | WACN  |
| Iris                   | WOJ   | WDDI  | Monterey                     | KWY   | WECW  |
| Isaac T. Mann          | KOU   | WBCJ  | Mount Baker                  | KEN   | WQCN  |
| J. A. Bostwick         | KJN   | WOCB  | Mount Hope                   | KOL   | WHCQ  |
| James McGee            | KTP   | WOCT  | Multnomah                    | WMA   | WCDT  |
| J. A. Moffett          | WRE   | WOCI  | Munaires                     | WJN   | WNCA  |
| J. C. Donnell          | WJM   | WFCY  | Munabro                      | KUX   | WNCB  |
| J. C. Fitzsimmons      | WFA   | WOCE  | Munamar                      | KUI   | WNCC  |
| Jeannette Skinner      | WQW   | WEDM  | Munbeaver                    | KRZ   | WKOQ  |
| Jefferson              | KOD   | WECL  | Mundelta                     | KUF   | WNCD  |
| J. E. O'Neil           | KSB   | WFCZ  | Munindies                    | KVE   | WNCE  |
| J. M. Danziger         | WIW   | WPCI  | Munisia                      | KJO   | WNCF  |
| John Anderson          | WPZ   | WDDZ  | Munorleans                   | KMZ   | WNCG  |
| John McCartney Kennedy | WPK   | WDDN  | Munplace                     | KUG   | WNCH  |
| John W. Ailes          | WJP   | WDDO  | Munrio                       | KVD   | WNCI  |
| Joseph R. Parrott      | KJP   | WCCJ  | Munsomo                      | KUK   | WNCJ  |
| Julia Luckenbach       | KGZ   | WLCD  | Muskogee                     | KIB   | WBCR  |
| Juniata                | KQJ   | WMCW  | Mystic                       | KHZ   | WBCP  |
| Juniata                | WCB   | WADM  | Nantucket                    | KQN   | WMCY  |
| Kanak                  | KOT   | WQCW  | Nebraskan                    | WMV   | WACO  |
| Kansan                 | KQII  | WACI  | Nelson                       | KNL   | WHCM  |
| Katrina Luckenbach     | KWU   | WLCF  | Nevadan                      | WLZ   | WACP  |
| Kentuckian             | WKE   | WACJ  | New Hampshire                | KXF   | WRCF  |
| K. I. Luckenbach       | KHY   | WLCE  | New Haven                    | KXN   | WRON  |
| Kvichak                | WNS   | WQCP  | Newport                      | WWH   | WFDD  |
| La Brea                | WON   | WFDM  | Newton                       | KZX   | WJCV  |
| Lackawanna             | WLT   | WCDP  | New York                     | KUW   | WBCG  |
| Lake Charles           | KHW   | WBCM  | New York                     | WJK   | WECF  |
| Lakina                 | WNB   | WCCT  | Nizina                       | WAE   | WCCY  |
| Lansing                | WTC   | WFDA  | Norman Bridge                | WIG   | WPCJ  |
| La Perla               | KFYS  | KDCK  | North American               | WEN   | WTBA  |
| Latouche               | WAI   | WCCU  | North Land                   | KJD   | WECG  |
| Lebanon                | WLK   | WFDS  | Northwestern                 | WAN   | WCCW  |
| Lehigh                 | WLN   | WCDN  | Norwood                      | WSG   | WEDT  |
| Lemuel Burrows         | KLY   | WJCS  | Noyo                         | WRJ   | WEDB  |
| Leviathan              | WSN   | WSBN  | Oakey L. Alexander           | WFF   | WBCK  |
| Levisa                 | KDL   | KDAL  | Octorara                     | WCD   | WADO  |
| Lewis K. Thurlow       | KXY   | WJCT  | Ohioan                       | WKQ   | WACQ  |
| Lexington              | KNB   | WR CZ | Oleum                        | WTD   | WFDO  |
| Libby Maine            | KDV   | WQCD  | Oleida                       | KYP   | WLCX  |
| Ligonier               | KTD   | WJQJ  | Ontario                      | KQO   | WMCZ  |
| Lillian Luckenbach     | KNK   | WLCG  | Oregon                       | WGD   | WBDN  |
| Limon                  | KDR   | KDAB  | Oregonian                    | WKO   | WACR  |
| L. J. Drake            | WZAA  | WOCU  | Orizaba                      | KMEI  | WECX  |
| Los Alamos             | KRO   | WSCP  | Ormidale                     | WGB   | WB DL |
| Los Angeles            | WOL   | WFDN  | Oscar D. Bennett             | WIV   | WPCK  |
| Louisiana              | KUL   | WBCF  | Otsego                       | WDG   | WQ CJ |
| Lurline                | WML   | WMCC  | O. T. Waring                 | KJW   | WOCV  |
| Lynford E. Gear        | WNG   | WADF  | Owego                        | KFQ   | WQ CX |
| M. A. Bradley          | WQH   | WEDG  |                              |       |       |

## Commercial ship stations, alphabetically, by names—Continued

| Name of vessel    | From— | To—  | Name of vessel      | From— | To—   |
|-------------------|-------|------|---------------------|-------|-------|
| Panaman           | WKR   | WACS | Seminole            | WAK   | WNCK  |
| Panuco            | KWM   | WECY | S. B. Coolidge      | WHH   | WBDQ  |
| Parimina          | KDG   | KDAG | S. B. Way           | WPO   | WDDF  |
| Pastores          | KLA   | KDBD | Seeandbee           | WFS   | WTCT  |
| Paul Luckenbach   | WLY   | WLCH | Senator             | WPV   | WDDU  |
| Paulsboro         | KRS   | WKCL | Senator Bailey      | KGS   | WJCM  |
| Pearl Shell       | WIC   | WBCZ | Sewalls Point       | KGX   | WJCW  |
| Peary             | WAP   | WPCR | Sialia              | WFY   | WBDI  |
| Pecos             | KKQ   | WHCH | Siboney             | WRN   | WECZ  |
| Pennsylvania      | KUP   | WKCV | Sierra              | WHJ   | WBDR  |
| Pennsylvanian     | WKP   | WACT | Sierra              | KRW   | WKCM  |
| Pequonnock        | KXP   | WRCP | Silver Shell        | WIA   | WBCX  |
| Pere Marquette 15 | WDA   | WDCA | Sizaola             | KDS   | KDAQ  |
| Pere Marquette 17 | WDC   | WDCO | Skagway             | WAT   | WPCQ  |
| Pere Marquette 18 | WDD   | WDCD | S. M. Spalding      | WKG   | WPCM  |
| Pere Marquette 19 | WDB   | WDCB | S. O. Co. No. 93    | WTFY  | WOCG  |
| Pere Marquette 20 | WDE   | WDCE | S. O. Co. No. 95    | WTZ   | WOCH  |
| Pere Marquette 21 | KFTA  | WDCP | Socony              | KTX   | WBCV  |
| Pere Marquette 22 | KFUD  | WDCG | Sonoma              | WHM   | WBDT  |
| Peter Reiss       | WNX   | WADG | South American      | WJW   | WGCW  |
| Philip D. Block   | WKC   | WGDG | Standard            | KIC   | WOCZ  |
| Pioneer           | KIG   | WOCW | Standard Arrow      | KSV   | WSCW  |
| Plymouth          | KND   | WCCL | Stanley Dollar      | WLM   | WCDM  |
| Plymouth          | KXH   | WRCH | Star of Zealand     | KDW   | WQCE  |
| Point Loma        | WAU   | WFDU | Starr               | WPS   | WDDR  |
| Polarine          | KOI   | WOCX | Steelton            | WLX   | WCDS  |
| Ponce             | KGP   | WFCB | Stephen R. Jones    | KXX   | WJCX  |
| Porto Rico        | WJG   | WFCC | Suriname            | ELI   | KDBO  |
| Princess Montagu  | WGQ   | WBDO | Sylvan Arrow        | ESX   | WSCX  |
| Princeton         | KST   | WOCY | Tamahua             | KDVA  | WICU  |
| Priscilla         | KXI   | WBCI | Tampa               | KVK   | WLCM  |
| Providence        | KXJ   | WBCJ | Texas               | WKT   | WACU  |
| Puget Sound       | WER   | WBDD | Texas               | KUM   | WBCH  |
| Puritan           | WDU   | WADX | The Harvester       | WCR   | WADS  |
| Queen             | WGX   | WGCP | Tiger               | KIT   | WSCY  |
| Radiant           | KTR   | WFDP | Tillamook           | WHP   | WBDU  |
| Rajah             | WAO   | WNCZ | Tionasta            | WCA   | WADL  |
| Rayo              | KTL   | WSCQ | Tivives             | KMI   | KDCD  |
| Redman            | WEB   | WADZ | Topila              | KKE   | WICV  |
| Redondo           | WBM   | WCCX | Torres              | KKF   | WICW  |
| Redwood           | WSD   | WEDS | Trinidadian         | KNO   | WJCK  |
| Relay             | KVZ   | WLCO | Trujillo            | KHU   | WQCL  |
| Relief            | KRJ   | WHCZ | Turrialba           | KDT   | KDAU  |
| Republic          | WSU   | WEDX | T. W. Robinson      | WMX   | WDDB  |
| Republic          | KSN   | WTCW | Tyce                | WPC   | WDDM  |
| Resolute          | KRM   | WKCW | Ulysses             | KPU   | WHCT  |
| Restorer          | WIU   | WDCB | Vega                | KYO   | WLCV  |
| Richard J. Reiss  | WNK   | WADH | Velero II           | WHV   | WBDY  |
| Richard Peck      | KXR   | WRCR | Venezuela           | WBG   | WNCB  |
| Richfield         | KTI   | WKCQ | Ventura             | WHL   | WBDS  |
| Richmond          | WTR   | WOCF | Veramar             | WFCC  | KQZ   |
| Robert E. Lee     | WDT   | WTCB | Vesta               | KTS   | WBCZ  |
| Robert P. Clark   | KTH   | WJCN | Victoria            | WAD   | WOCY  |
| Rosamond          | KZZ   | WNCU | Virginia            | KUV   | WKCY  |
| Rose City         | WWR   | WFDG | Virginia Express    | KDJE  | WECH  |
| Royal Arrow       | KSW   | WSCU | Virginia Limited    | WEL   | WBCI  |
| Ruth              | KZQ   | WECJ | Virginian           | WKV   | WACV  |
| Ruth Alexander    | WDR   | WADW | Waban               | KJT   | WBCU  |
| R. W. Stewart     | WBJ   | WPCL | Wabash              | WDL   | WDCI  |
| Sabine Sun        | WLO   | WCDO | Wahkeena            | WMS   | WCDZ  |
| Samuel Mitchell   | WEJ   | WBDC | Walter D. Munson    | KVJ   | WNCK  |
| San Francisco     | KRT   | WDCY | Walter D. Noyes     | KDY   | WJCY  |
| San Jacinto       | KES   | WHCF | Wapama              | WMG   | WCDV  |
| San Jose          | KDJ   | KDAJ | W. C. Teagle        | KTY   | WSOB  |
| San Juan          | KGJ   | WFCD | West Arrow          | WKS   | WCDH  |
| San Juan          | WWM   | WFDE | West Celeron        | KKJ   | WCCB  |
| San Lorenzo       | KEZ   | WFCE | Westerner           | KIK   | WBCS  |
| San Mateo         | KLV   | KDBE | Western States      | WED   | WTCA  |
| San Pedro         | WMT   | WDDA | West Gotomska       | WET   | WBDE  |
| Santa Ana         | WAL   | WNCY | West Haven          | KJV   | WBCV  |
| Santa Ana         | WBX   | WADT | Westlake            | WTH   | WFDB  |
| Santa Cecilia     | WIN   | WBDW | Westland            | KJX   | WBCW  |
| Santa Cecilia     | WBB   | WNCO | Westward Ho         | WKX   | WCDI  |
| Santa Cruz        | WBD   | WMCP | W. F. Burrows       | WHG   | WQCK  |
| Santa Inez        | WSI   | WEDU | W. F. White         | WGC   | WBDM  |
| Santa Marta       | KLG   | KDBI | W. H. Tilford       | KPD   | WSCC  |
| Santa Rosalia     | KLO   | WDCZ | Wheaton             | WMUA  | WACW  |
| Santore           | KDQ   | WQCC | Wilhelmina          | WMO   | WMOI  |
| Saramacca         | KLH   | KDBK | Williamette         | WSW   | WCDW  |
| Saucun            | WBK   | WCDK | Willabeco           | WLJ   | WCDL  |
| Saucun            | WLH   | WQCO | William A. McKenney | WOM   | WJ CZ |
| Saugerties        | WAB   | WNCV | William A. Reiss    | WNI   | WADI  |
| Sea King          | WPX   | WDDX | William C. Atwater  | WPB   | WDDL  |

Commercial ship stations, alphabetically, by names—Continued

| Name of vessel             | From— | To—  | Name of vessel                                      | From— | To—  |
|----------------------------|-------|------|---|-------|------|
| William G. Mather.....     | WBS   | WADJ | Wyandotte.....                                      | WCO   | WADR |
| William Green.....         | WTY   | WPCN | Yale.....   | WRY   | WSCT |
| William Isom.....          | KVY   | WLCN | Yosemite.....                                       | WPU   | WDDT |
| Wilson.....                | KEJ   | WBOL | Yukon.....  | KMX   | WCCZ |
| Winifred.....              | KTE   | WJOL | Zacapa.....   | KLE   | KDCI |
| W. L. Connelly.....        | KQB   | WHCV | Zapora.....   | WPQ   | WDDQ |
| Wm. G. Warden.....         | KNF   | WSCD | Tropical Radio Telegraph Co.<br>(general call)..... | KUS   | KUFC |
| W. M. Tupper.....          | WDW   | WADY |   |       |      |
| W. R. Chamberlain, jr..... | WHS   | WBDV |   |       |      |

Commercial ship stations, alphabetically, by call signals

| Call signal |       | Name of vessel                                  | Call signal |       | Name of vessel         |
|-------------|-------|---|-------------|-------|------------------------|
| To—         | From— |   | To—         | From— |                        |
| KDAA        | KDD   | Cartago.  | WADQ        | KVH   | Huron.                 |
| KDAB        | KDR   | Limon.  | WADR        | WCO   | Wyandotte.             |
| KDAE        | KDE   | Carrillo.                                       | WADS        | WCR   | The Harvester.         |
| KDAF        | KDF   | Coppename.                                      | WADT        | WBX   | Santa Ana.             |
| KDAG        | KDG   | Parismina.                                      | WADU        | WCS   | Alpens.                |
| KDAH        | KDH   | Heredia.  | WADV        | WCU   | Conneaut.              |
| KDAI        | KDI   | Abangarez.                                      | WADW        | WDR   | Ruth Alexander.        |
| KDAJ        | KDJ   | San Jose.                                       | WADX        | WDU   | Puritan.               |
| KDAK        | KDK   | Atenas.   | WADY        | WDW   | W. M. Tupper.          |
| KDAL        | KDL   | Levisa.   | WADZ        | WEB   | Redman.                |
| KDAO        | KDO   | Esparta.  | WBCA        | KVA   | Apache.                |
| KDAQ        | KDS   | Sixaola.  | WBCE        | KVB   | Arapahoe.              |
| KDAU        | KDT   | Turrialba.                                      | WBCC        | WCH   | Huron.                 |
| KDAW        | KLE   | Calamares.                                      | WBCE        | KIN   | Macom.                 |
| KDAY        | KLF   | Metapan.  | WBCE        | KGR   | Cambridge.             |
| KDBD        | KLA   | Pastores.                                       | WBCE        | KUL   | Louisiana.             |
| KDBE        | KLV   | San Mateo.                                      | WBCG        | KUW   | New York.              |
| KDBI        | KLG   | Santa Marta.                                    | WBCH        | KUM   | Texas.                 |
| KDBK        | KLH   | Saramacca.                                      | WBCE        | WMM   | Freeman.               |
| KDBO        | KLI   | Suriname.                                       | WBCE        | KOU   | Isaac T. Mann.         |
| KDCD        | KMI   | Tivives.  | WBCE        | WFF   | Oakey L. Alexander.    |
| KDCI        | KLE   | Zacapa.   | WBCE        | KEJ   | Wilson.                |
| KDCK        | KFYS  | La Perla.                                       | WBCE        | KHW   | Lake Charles.          |
| KUFC        | KUS   | Tropical Radio Telegraph<br>Co. (general call). | WBCE        | KEE   | Atlantic.              |
| WACA        | WKF   | American.                                       | WBCE        | KHZ   | Mystic.                |
| WACB        | KDYD  | Californian.                                    | WBCE        | KIA   | Ardmore.               |
| WACC        | WBA   | Columbian.                                      | WBCE        | KIB   | Muskogee.              |
| WACD        | WKD   | Dakotan.  | WBCE        | KIK   | Westerner.             |
| WACE        | WLR   | Floridian.                                      | WBCE        | KID   | Matfincoek.            |
| WACF        | KOVP  | Georgian.                                       | WBCE        | KJT   | Waban.                 |
| WACG        | WKU   | Hawaiian.                                       | WBCE        | KJV   | West Haven.            |
| WACH        | WKJ   | Iowan.  | WBCE        | KJX   | Westland.              |
| WACI        | KQII  | Kansan.   | WBCE        | WIA   | Silver Shell.          |
| WACJ        | WKE   | Kentuckian.                                     | WBCE        | WIB   | Gold Shell.            |
| WACK        | WKL   | Mexican.  | WBCE        | WIC   | Pearl Shell.           |
| WACL        | WKM   | Minnesotan.                                     | WBCE        | WEC   | American Banker.       |
| WACM        | KFAA  | Missourian.                                     | WBCE        | WEG   | American Farmer.       |
| WACN        | WKN   | Montanan.                                       | WBCE        | WEJ   | Samuel Mitchell.       |
| WACO        | WMV   | Nebraskan.                                      | WBCE        | WER   | Puget Sound.           |
| WACP        | WLZ   | Nevadan.  | WBCE        | WET   | West Gotomska.         |
| WACQ        | WKQ   | Ohioan.   | WBCE        | WEV   | D. E. Callender.       |
| WACR        | WKO   | Oregonian.                                      | WBCE        | WEZ   | Ashtabula.             |
| WACS        | WKR   | Panaman.  | WBCE        | WFV   | Manitou.               |
| WACT        | WKP   | Pennsylvanian.                                  | WBCE        | WFY   | Sialia.                |
| WACU        | WKT   | Texan.  | WBCE        | WFZ   | Coronado.              |
| WACV        | WKV   | Virginian.                                      | WBCE        | WGA   | City of Seattle.       |
| WACW        | WMUA  | Wheaton.  | WBCE        | WGB   | Ormidale.              |
| WADD        | WMY   | A. M. Byers.                                    | WBCE        | WGC   | W. F. White.           |
| WADE        | WNH   | Clemens A. Reiss.                               | WBCE        | WGD   | Oregon.                |
| WADF        | WNG   | Lynford E. Geer.                                | WBCE        | WGG   | Princess Montagu.      |
| WADG        | WNX   | Peter Reiss.                                    | WBCE        | WGH   | Guardian.              |
| WADH        | WNK   | Richard J. Reiss.                               | WBCE        | WHH   | S. B. Coolidge.        |
| WADI        | WNI   | William A. Reiss.                               | WBCE        | WHJ   | Sierra.                |
| WADJ        | WBS   | William G. Mather.                              | WBCE        | WHL   | Ventura.               |
| WADK        | WBV   | Cabrillo.                                       | WBCE        | WHM   | Sonoma.                |
| WADL        | WCA   | Tionesta.                                       | WBCE        | WHP   | Tillamook.             |
| WADM        | WCB   | Junjata.  | WBCE        | WHS   | W. R. Chamberlain, jr. |
| WADO        | WCD   | Octorara.                                       | WBCE        | WLN   | Santa Cecilia.         |
| WADP        | WCF   | Favorite.                                       | WBCE        | WHU   | Big Bill.              |
|             |       |   | WBCE        | WHV   | Velero II.             |

## Commercial ship stations, alphabetically, by call signals—Continued

| Call signal |       | Name of vessel          | Call signal |       | Name of vessel       |
|-------------|-------|-------------------------|-------------|-------|----------------------|
| To—         | From— |                         | To—         | From— |                      |
| WBDZ        | WHX   | Humboldt.               | WDDQ        | WPQ   | Zapora.              |
| WCCB        | KKJ   | West Celeron.           | WDDR        | WPS   | Starr.               |
| WCCD        | KMB   | Amolco.                 | WDDS        | WPT   | Colonel.             |
| WCCF        | KJZ   | Chincha.                | WDDT        | WPU   | Yosemite.            |
| WCCG        | KJG   | Eurana.                 | WDDU        | WPV   | Senator.             |
| WCCH        | KJH   | Edwin Christenson.      | WDDV        | WPW   | Central West.        |
| WCCI        | KMD   | Cristobal.              | WDDX        | WPX   | Sea King.            |
| WCCJ        | KMS   | Ancon.                  | WDDY        | WPY   | Cambria.             |
| WCCK        | KJP   | Joseph R. Parrott.      | WDDZ        | WPZ   | John Anderson.       |
| WCCL        | KOX   | Henry M. Flagler.       | WECA        | KRD   | Belfast.             |
| WCCM        | KND   | Plymouth.               | WECE        | WEL   | Boston.              |
| WCCN        | WWE   | Manchuria.              | WECC        | KRN   | Calvin Austin.       |
| WCCO        | WWN   | Mongolia.               | WECD        | KRC   | Camden.              |
| WCCP        | WAA   | Alameda.                | WECE        | KRV   | Governor Dingley.    |
| WCCQ        | KMH   | Aleutian.               | WECF        | WJK   | New York.            |
| WCCR        | WAR   | Cordova.                | WEGG        | KJD   | North Land.          |
| WCCS        | WNB   | Lakina.                 | WECH        | KDJE  | Virginia Express.    |
| WCCU        | WAI   | Latouche.               | WECI        | WFL   | Virginia Limited.    |
| WCCV        | WAE   | Nizina.                 | WECJ        | WFR   | George Washington.   |
| WCCW        | WAN   | Northwestern.           | WECK        | KFAM  | Hamilton.            |
| WCCX        | WBM   | Redondo.                | WECL        | KOD   | Jefferson.           |
| WCCY        | WAD   | Victoria.               | WECM        | KRH   | City of Bangor.      |
| WCCZ        | KMX   | Yukon.                  | WEER        | KEPG  | Agwistar.            |
| WCDA        | WIS   | E. R. Sterling.         | WECS        | KWD   | Antilla.             |
| WCDB        | WIU   | Restorer.               | WECT        | KWI   | Camaguey.            |
| WCDC        | WJJ   | Fabia.                  | WECU        | KWF   | Cauto.               |
| WCDD        | WJO   | Commercial Guide.       | WECV        | KWX   | Mexico.              |
| WCDE        | WJU   | Commercial Pathfinder.  | WECW        | KWY   | Monterey.            |
| WCDF        | WKC   | Philip D. Block.        | WECX        | KMEI  | Orizaba.             |
| WCDH        | WKS   | West Arrow.             | WECY        | KWM   | Panuco.              |
| WCDI        | WKX   | Westward Ho.            | WECZ        | WRN   | Siboney.             |
| WCDJ        | WLE   | Maitland No. 1.         | WEDB        | WQD   | Beta.                |
| WCDK        | WBK   | Satcon.                 | WEDC        | WQE   | Harvey H. Brown.     |
| WCDL        | WLJ   | Willabaco.              | WEDD        | WQF   | Harry W. Croft.      |
| WCDM        | WLM   | Stanley Dollar.         | WEDF        | WQG   | Fayette Brown.       |
| WCDN        | WLN   | Lehigh.                 | WEDG        | WQH   | M. A. Bradley.       |
| WCDO        | WLQ   | Sabine Sun.             | WEDJ        | WQI   | Costa Rica.          |
| WCDP        | WLT   | Lackawanna.             | WEDL        | WQS   | Artemis.             |
| WCDQ        | WLU   | Maryland.               | WEDM        | WQW   | Jeannette Skinner.   |
| WCDR        | WLV   | Bethlehem.              | WEDN        | KKR   | Creole.              |
| WCDS        | WLX   | Steelton.               | WEDO        | WRF   | Amelia.              |
| WCDT        | WMA   | Multnomah.              | WEDR        | WRG   | Annetta.             |
| WCDU        | WMF   | Celilo.                 | WEDQ        | WRI   | Florence Olson.      |
| WCDV        | WMG   | Wapama.                 | WEDR        | WRJ   | Noyo.                |
| WCDW        | WSW   | Willamette.             | WEDS        | WSD   | Redwood.             |
| WCDX        | WMJ   | Ernest H. Meyer.        | WEDT        | WSG   | Norwood.             |
| WC DY       | WMK   | Hyades.                 | WEDU        | WSI   | Santa Inez.          |
| WCDZ        | WMS   | Wahkeena.               | WEDV        | WSJ   | Edna Christenson.    |
| WCDA        | WDA   | Pere Marquette 15.      | WEDX        | WSU   | Republic.            |
| WCDB        | WDB   | Pere Marquette 19.      | WEDY        | WSZ   | Bremerton.           |
| WCDC        | WDC   | Pere Marquette 17.      | WEDZ        | WTB   | American Shipper.    |
| WCDD        | WDD   | Pere Marquette 18.      | WFCA        | KWN   | Comerio.             |
| WCDE        | WDE   | Pere Marquette 20.      | WFCE        | KGP   | Ponce.               |
| WCDF        | KFTA  | Pere Marquette 21.      | WFCC        | WJG   | Porto Rico.          |
| WDCG        | KFUD  | Pere Marquette 22.      | WFCD        | KGJ   | San Juan.            |
| WDCK        | WDK   | Ann Arbor No. 7.        | WFCE        | KEZ   | San Lorenzo.         |
| WDCL        | WDL   | Wabash.                 | WFCE        | KOFQ  | City of Albany.      |
| WDCN        | WDN   | Ann Arbor No. 3.        | WFCE        | KFB   | City of Atlanta.     |
| WDCO        | WDO   | Ann Arbor No. 4.        | WFCE        | KFKC  | City of Birmingham.  |
| WDCP        | WDP   | Ann Arbor No. 5.        | WFCE        | KFMA  | City of Chattanooga. |
| WDCQ        | WDQ   | Ann Arbor No. 6.        | WFCE        | KFA   | City of Columbus.    |
| WDCU        | KLM   | Bantu.                  | WFCE        | KFY   | City of Montgomery.  |
| WDCV        | KLU   | Charlton Hall.          | WFCE        | KQZ   | Veramar.             |
| WDCW        | KLR   | Crofton Hall.           | WFCE        | KFX   | City of St. Louis.   |
| WDCX        | KLT   | Howick Hall.            | WFCE        | KFK   | City of Savannah.    |
| WDCY        | KRT   | San Francisco.          | WFCE        | KHR   | Albert Hill.         |
| WDCZ        | KLO   | Santa Rosalia.          | WFCE        | KHS   | H. C. Fogler.        |
| WD DA       | WMT   | San Pedro.              | WFCE        | KOY   | Herbert L. Pratt.    |
| WDDB        | WMX   | T. W. Robinson.         | WFCE        | WJM   | J. C. Donnell.       |
| WDDC        | WMZ   | Commercial Trader.      | WFCE        | KSB   | J. E. O'Neil.        |
| WDD E       | WNP   | Bowdoin.                | WFCE        | WTC   | Lansing.             |
| WDD F       | WNV   | Hatteras.               | WFCE        | WTH   | Westlake.            |
| WDD G       | WOF   | Horace X. Baxter.       | WFCE        | WTU   | American Trader.     |
| WDD H       | WOG   | Fred Baxter.            | WFCE        | WWH   | Newport.             |
| WDD I       | WOJ   | Iris.                   | WFCE        | WWM   | San Juan.            |
| WDD L       | WPB   | William C. Atwater.     | WFCE        | WWR   | Rose City.           |
| WDD M       | WPC   | Tyee.                   | WFCE        | KXT   | Black Point.         |
| WDD N       | WPI   | John McCartney Kennedy. | WFCE        | KTN   | C. B. Watson.        |
| WDD O       | WPK   | John W. Ailes.          | WFCE        | KPF   | Commercial Pilot.    |
| WDD P       | WPO   | S. B. Way               | WFCE        | KNA   | Dorothy Bradford.    |



Commercial ship stations, alphabetically, by call signals—Continued

| Call signal |       | Name of vessel                | Call signal |       | Name of vessel       |
|-------------|-------|-------------------------------|-------------|-------|----------------------|
| To—         | From— |                               | To—         | From— |                      |
| WFDM        | WON   | La Brea.                      | WJCG        | KTG   | Gulfoil.             |
| WFDN        | WOL   | Los Angeles.                  | WJCH        | KVS   | Gulf Queen.          |
| WFDO        | WTD   | Oleum.                        | WJCI        | KTB   | Gulfstream.          |
| WFDP        | KTR   | Radiant.                      | WJGJ        | KTQ   | Ligonier.            |
| WFDQ        | WEX   | Marquette and Bessemer No. 2. | WJCK        | KNO   | Trinidadian.         |
| WFDS        | WLK   | Lebanon.                      | WJCL        | KTE   | Winifred.            |
| WFDT        | WFD   | Missouri.                     | WJCM        | KGS   | Senator Bailey.      |
| WFDU        | WAU   | Point Loma.                   | WJCN        | KTH   | Robert P. Clark.     |
| WGBB        | WKW   | Any or all merchant vessels.  | WJCO        | KZT   | Everett.             |
| WGCA        | WAY   | Admiral Dewey.                | WJCR        | KXZ   | Felix Tausig.        |
| WGCB        | KICZ  | Admiral Evans.                | WJCS        | KLY   | Lemuel Burrows.      |
| WGCG        | WAF   | Admiral Farragut.             | WJCT        | KXY   | Lewis K. Thurlow.    |
| WGCD        | WGS   | Admiral Fiske.                | WJCU        | KZW   | Melrose.             |
| WGCE        | WDF   | Admiral Moser.                | WJCV        | KZX   | Newton.              |
| WGCF        | KPL   | Admiral Peary.                | WJCW        | KGX   | Sewalls Point.       |
| WGCG        | WOA   | Admiral Rodman.               | WJCX        | KXX   | Stephen R. Jones.    |
| WGCH        | WGE   | Admiral Rogers.               | WJCY        | KDY   | Walter D. Noyes.     |
| WGCI        | WAZ   | Admiral Schley.               | WJGZ        | WOM   | William A. McKenney. |
| WGCI        | WAG   | Admiral Sebree.               | WKCA        | KZG   | Carolyn.             |
| WGCK        | WAW   | Admiral Watson.               | WKCB        | KNE   | Clare.               |
| WGCL        | WGK   | Curacao.                      | WKCC        | KZD   | Cornelia.            |
| WGCM        | WGP   | Dorothy Alexander.            | WKCD        | KZF   | Edith.               |
| WGCN        | KKEE  | Emma Alexander.               | WKCE        | KZP   | Evelyn.              |
| WGCO        | KDYK  | H. F. Alexander.              | WKCF        | KZH   | Helen.               |
| WGCP        | WGX   | Queen.                        | WKCG        | KZK   | Hilton.              |
| WGCV        | WJW   | South American.               | WKCH        | KZO   | Margaret.            |
| WHCA        | WDOA  | Agwidale.                     | WKCI        | KNM   | Millinocket.         |
| WHCB        | KKZ   | Brazos.                       | WKCJ        | KZQ   | Ruth.                |
| WHCC        | KUGL  | Colorado.                     | WKCL        | KRS   | Paulsboro.           |
| WHCD        | KEM   | Comal.                        | WKCM        | KRW   | Sierra.              |
| WHCF        | KEF   | Henry R. Mallory.             | WKCN        | KRM   | Resolute.            |
| WHCG        | KEI   | Medina.                       | WKCO        | KRZ   | Munbeaver.           |
| WHCH        | KKQ   | Pecos.                        | WKCP        | KSP   | Caloria.             |
| WHCI        | KES   | San Jacinto.                  | WKCQ        | KTI   | Richfield.           |
| WHCM        | KNL   | Nelson.                       | WKCR        | KTO   | Malabar.             |
| WHCN        | KNT   | Fisherman.                    | WKCU        | KTV   | Dulcino.             |
| WHCO        | KOF   | Castle Town.                  | WKCV        | KUP   | Pennsylvania.        |
| WHCP        | KNS   | Cities Service Fuel.          | WKCW        | WTA   | Coamo.               |
| WHCQ        | KOL   | Mount Hope.                   | WKCX        | KUQ   | Maine.               |
| WHCR        | KOZ   | Miami.                        | WKCY        | KUV   | Virginia.            |
| WHCS        | KPT   | Achilles.                     | WKCZ        | KUZ   | Coastwise.           |
| WHCT        | KPU   | Ulysses.                      | WLCA        | KGK   | Edgar F. Luckenbach. |
| WHCU        | KQA   | Harry Farnum.                 | WLCB        | KGQ   | Edward Luckenbach.   |
| WHCV        | KQB   | W. L. Connelly.               | WLCC        | WNZ   | F. J. Luckenbach.    |
| WHCW        | KQF   | Gene Crawley.                 | WLCD        | KGZ   | Julia Luckenbach.    |
| WHCX        | KRB   | Governor Cobb.                | WLCE        | KHY   | K. I. Luckenbach.    |
| WHCY        | KRG   | Freeport Sulphur No. 2.       | WLCF        | KWU   | Katrina Luckenbach.  |
| WHCZ        | KRJ   | Relief.                       | WLCG        | KNK   | Lillian Luckenbach.  |
| WICA        | KKD   | Comus.                        | WLCH        | WLY   | Paul Luckenbach.     |
| WICB        | WRA   | Creole.                       | WLCI        | WNM   | Florence Luckenbach. |
| WICC        | KGQ   | Dixie.                        | WLCM        | KVK   | Tampa.               |
| WICD        | KKL   | El Alba.                      | WLCN        | KVY   | William Isom.        |
| WICE        | KKG   | El Almirante.                 | WLCO        | KVZ   | Relay.               |
| WICF        | KKH   | El Capitan.                   | WLCP        | KWJ   | Commercial Courier.  |
| WICG        | KKT   | El Cid.                       | WLQQ        | KXG   | Archer.              |
| WICH        | FTSL  | El Ceston.                    | WLQR        | KXO   | Dodeca.              |
| WICI        | KKY   | El Dia.                       | WLCS        | KYC   | Corsair.             |
| WICJ        | KDKT  | El Estero.                    | WLCT        | KYE   | Casiana.             |
| WICK        | KDNA  | El Isleo.                     | WLCU        | KYH   | Aloha.               |
| WICL        | KDNW  | El Lago.                      | WLCV        | KYO   | Vega.                |
| WICM        | KKU   | El Mundo.                     | WLX         | KYP   | Onelda.              |
| WICN        | KKN   | El Norte.                     | WLZY        | KYQ   | Cytherea.            |
| WICO        | WNF   | El Oceano.                    | WLZZ        | KYR   | Dauntless.           |
| WICP        | KKX   | El Occidente.                 | WMCB        | WMN   | Enterprise.          |
| WICQ        | KKV   | El Oriente.                   | WMCC        | WML   | Lurline.             |
| WICR        | KKS   | El Siglo.                     | WMCD        | WCW   | Makiki.              |
| WICS        | KKW   | El Valle.                     | WMCE        | KII   | Malolo.              |
| WICT        | KKM   | Momus.                        | WMCF        | WMQ   | Manoa.               |
| WICU        | KDVA  | Tamiabua.                     | WMCJ        | WMP   | Matsonia.            |
| WICV        | KKE   | Topila.                       | WMCH        | WMR   | Maui.                |
| WICW        | KKF   | Torres.                       | WMCI        | WMO   | Wilhelmina.          |
| WJCA        | KNU   | Currier.                      | WMCM        | WRS   | California.          |
| WJCB        | KUC   | Gulf of Mexico.               | WMCP        | WBD   | Santa Cruz.          |
| WJCC        | KUE   | Gulfcoast.                    | WMCQ        | WBE   | Cacique.             |
| WJCD        | KUD   | Gulfland.                     | WMCS        | KQE   | Essex.               |
| WJCE        | KUA   | Gulflight.                    | WMCT        | KQG   | Gloucester.          |
| WJCF        | KUB   | Gulfmaid.                     | WMCU        | KQR   | Greecian.            |
|             |       |                               | WMCV        | KQH   | Howard.              |

## Commercial ship stations, alphabetically, by call signals—Continued

| Call signal |       | Name of vessel         | Call signal |       | Name of vessel         |
|-------------|-------|------------------------|-------------|-------|------------------------|
| To—         | From— |                        | To—         | From— |                        |
| WMCW        | KQJ   | Juniata.               | WPCX        | WDV   | City of Benton Harbor. |
| WMCY        | KQN   | Nantucket.             | WPCY        | WCZ   | Illinois.              |
| WMCZ        | KQO   | Ontario.               | WPCZ        | WFO   | Indiana.               |
| WNCA        | WJN   | Munaires.              | WQCA        | KDB   | Caracas.               |
| WNCB        | KUX   | Munabro.               | WQCB        | KIM   | Maracaibo.             |
| WNCC        | KUI   | Munamar.               | WQCC        | KDQ   | Santore.               |
| WNCB        | KUF   | Mundelta.              | WQCD        | KDV   | Libby Maine.           |
| WNCE        | KVE   | Munindies.             | WQCE        | KDW   | Star of Zealand.       |
| WNCF        | KJO   | Munisia.               | WQCF        | KDX   | Firmore.               |
| WNCG        | KMZ   | Munorleans.            | WQCG        | KHP   | Mangore.               |
| WNCH        | KUG   | Munplace.              | WQCH        | WCN   | Carabobo.              |
| WNCI        | KVD   | Munrio.                | WQCI        | WDG   | Otsego.                |
| WNCJ        | KUK   | Munsono.               | WQCK        | WHG   | W. F. Burrows.         |
| WNCM        | KVJ   | Walter D. Munson.      | WQCL        | KHU   | Trujillo.              |
| WNCN        | WEA   | City of Cleveland III. | WQCM        | KYS   | Arctic.                |
| WNCN        | WEF   | City of Detroit III.   | WQCN        | KEN   | Mount Baker.           |
| WNCO        | WBB   | Santa Cecilia.         | WQCO        | WLH   | Saucon.                |
| WNCP        | KYT   | Delecto.               | WQCP        | WNS   | Kvichak.               |
| WNCQ        | KZL   | Halcyon.               | WQQQ        | WTO   | Frank H. Buck.         |
| WNCR        | KZR   | Mahoe.                 | WQCS        | KRR   | C. A. Snider.          |
| WNCS        | WBG   | Venezuela.             | WQCT        | KFF   | Frieda.                |
| WNCT        | WBH   | Columbia.              | WQCU        | KFG   | Feltore.               |
| WNCU        | KZZ   | Rosamond.              | WQCV        | WFH   | Avalon.                |
| WNCV        | WAB   | Saugerties.            | WQCW        | KOT   | Kanak.                 |
| WNCW        | WBN   | Ecuador.               | WQCX        | KFQ   | Owego.                 |
| WNCX        | WAK   | Seminole.              | WQCY        | WFM   | Minnesota.             |
| WNCY        | WAL   | Santa Ana.             | WQOZ        | KIP   | General W. C. Gorgas.  |
| WNCZ        | WAO   | Rajah.                 | WRCB        | KXB   | City of Lowell.        |
| WOC         | WRD   | D. G. Scofield.        | WRCC        | KXC   | Commonwealth.          |
| WOCB        | WTV   | Captain A. F. Lucas.   | WRCE        | KXE   | Mohawk.                |
| WOCC        | WTQ   | El Segundo.            | WRCF        | KXF   | New Hampshire.         |
| WOCD        | WTX   | Hawaiian Standard.     | WRCH        | KXH   | Plymouth.              |
| WOCE        | WFA   | J. C. Fitzsimmons.     | WRCI        | KXI   | Priscilla.             |
| WOCF        | WTR   | Richmond.              | WR CJ       | KXJ   | Providence.            |
| WOCG        | WTY   | S. O. Co. No. 93.      | WR CM       | KXM   | Mohegan.               |
| WOCH        | WTZ   | S. O. Co. No. 95.      | WR CN       | KXN   | New Haven.             |
| WO CI       | WRE   | J. A. Moffett.         | WRCP        | KXP   | Pequonnock.            |
| WO CJ       | KNZ   | A. C. Bedford.         | WR CQ       | KXQ   | Chester W. Chapin.     |
| WO CK       | KPS   | Benjamin Brewster.     | WR CR       | KXR   | Richard Peck.          |
| WO CL       | KSK   | Caddo.                 | WR CY       | KNC   | Concord.               |
| WO CM       | KSQ   | Charles Pratt.         | WR CZ       | KNB   | Lexington.             |
| WO CN       | KNQ   | F. Q. Barstow.         | WSBH        | WJA   | Greater Buffalo.       |
| WO CO       | KNY   | Fred W. Weller.        | WSBI        | WJT   | Greater Detroit.       |
| WO CP       | KOH   | Glenpool.              | WSBN        | WSN   | Leviathan.             |
| WO CQ       | KSI   | H. H. Rogers.          | WSCB        | KTY   | W. C. Teagle.          |
| WO CR       | KER   | H. M. Flagler.         | WSCC        | KPD   | W. H. Tilford.         |
| WO CS       | KJN   | J. A. Bostwick.        | WSCD        | KNF   | Wm. G. Warden.         |
| WO CT       | KTP   | James McGee.           | WSCF        | KIJ   | Acme.                  |
| WO CU       | WZAA  | L. J. Drake.           | WSCG        | KIQ   | Astral.                |
| WO CV       | KJW   | O. T. Waring.          | WSCH        | KWP   | Atlas.                 |
| WO CW       | KIG   | Pioneer.               | WS CJ       | KSY   | Broad Arrow.           |
| WO CX       | KOI   | Polarine.              | WSCL        | KIR   | Eagle.                 |
| WO CY       | KST   | Princeton.             | WSCO        | KTM   | Eocene.                |
| WO CZ       | KIC   | Standard.              | WSCP        | KRO   | Los Alamos.            |
| WPCA        | WIH   | C. A. Canfield.        | WSCQ        | KTL   | Rayo.                  |
| WPCB        | WID   | Charles E. Harwood.    | WSCR        | WRH   | Harvard.               |
| WPC C       | WIE   | Edward L. Doheny.      | WSCS        | WES   | City of Honolulu.      |
| WPCD        | WNQ   | Frederic Ewing.        | WSC T       | WRY   | Yale.                  |
| WPCE        | WIQ   | Frederic R. Kellogg.   | WSCU        | KSW   | Royal Arrow.           |
| WPCF        | WIT   | George G. Henry.       | WSCV        | KTX   | Socony.                |
| WPCG        | WIX   | Harold Walker.         | WSCW        | KSV   | Standard Arrow.        |
| WPC H       | WIF   | Herbert G. Wylie.      | WSCX        | KSX   | Sylvan Arrow.          |
| WPC I       | WIW   | J. M. Danziger.        | WSCY        | KIT   | Tiger.                 |
| WPC J       | WIG   | Norman Bridget.        | WSCZ        | KTS   | Vesta.                 |
| WPC K       | WIV   | Oscar D. Bennett.      | WTBA        | WEN   | North American.        |
| WPC L       | WIJ   | R. W. Stewart.         | WTCA        | WED   | Western States.        |
| WPC M       | WKG   | S. M. Spalding.        | WT CB       | WEE   | Eastern States.        |
| WPC N       | WIY   | William Green.         | WTCH        | WDT   | Robert E. Lee.         |
| WPC Q       | WAT   | Skagway.               | WT CI       | WEO   | Cherokee.              |
| WPC R       | WAP   | Peary.                 | WT CR       | WFQ   | City of Buffalo.       |
| WPC S       | WAS   | Chester Sun.           | WT CS       | WFP   | City of Erie.          |
| WPC T       | WFB   | Alabama.               | WTCT        | WFS   | Seandbee.              |
| WPC U       | WFG   | Arizona.               | WT CU       | WCP   | Goodtime.              |
| WPC V       | WFE   | Carolina.              | WT CW       | KSN   | Republic.              |
| WPC W       | WFJ   | Christopher Columbus.  |             |       |                        |

Government land stations, alphabetically, by names

| Station                                     | Call signal |     |
|---|-------------|-----|
|   | From—       | To— |
| Fort Lauderdale, Fla. (section base 6)..... | NEFX        | NBI |
| Newport, R. I. (torpedo station).....       | NIFT        | NBK |
| Newport, R. I. (torpedo station).....       | NIFV        | NHB |
| Staten Island, N. Y. (section base 2).....  | NABD        | NBH |

Government ship stations, alphabetically, by names

| Name of vessel                 | From— | To—  | Name of vessel   | Call signal |      |
|--------------------------------|-------|------|------------------|-------------|------|
|                                |       |      |                  | From—       | To—  |
| Acushnet.....                  | NRU   | NEZQ | Frederick.....   | NJS         | NEGV |
| Albany.....                    | NBJ   | NABT | Fulton.....      | NZD         | NEDD |
| Algonquin.....                 | NRA   | NEXD | Galveston.....   | NGD         | NANF |
| Allen.....                     | NJD   | NEGN | Genesee.....     | NKG         | NEKD |
| Ammen.....                     | NBP   | NABV | Goldsbrough..... | NGJ         | NAPT |
| Annapolis.....                 | NBR   | NABX | Gresham.....     | NRG         | NEZC |
| Any or all U. S. warships..... | NOB   | NERK | Guam.....        | NHP         | NECS |
| Arapaho.....                   | NSP   | NIDS | H-2.....         | NYD         | NIFF |
| Arizona.....                   | NBW   | NACV | H-3.....         | NYE         | NERF |
| Arkansas.....                  | NBV   | NACT | Hannibal.....    | NGU         | NAQV |
| Aroostook.....                 | NMK   | NENR | Helena.....      | NGY         | NASC |
| Aylwin.....                    | NIH   | NEDN | Henderson.....   | NOH         | NESD |
| Bache.....                     | NLK   | NEND | Henley.....      | NHA         | NASD |
| Bagley.....                    | NVU   | NIQS | Huntington.....  | NWG         | NIRK |
| Balch.....                     | NCF   | NADZ | Huron.....       | NSX         | NIDV |
| Baltimore.....                 | NH    | NEDP | Idaho.....       | NHN         | NAVX |
| Barney.....                    | NCH   | NAFD | Isabel.....      | NHF         | NASG |
| Bath.....                      | NVV   | NIQT | Jarvis.....      | NIB         | NEDK |
| Beale.....                     | NHY   | NEDF | Jason.....       | NNB         | NEQB |
| Bear.....                      | NCL   | NAFK | Jenkins.....     | NID         | NEDL |
| Benham.....                    | NRB   | NEXK | Jouett.....      | NIE         | NEDM |
| Biddle.....                    | NLI   | NEDQ | K-1.....         | NYF         | NEDP |
| Birmingham.....                | NVW   | NIQX | K-2.....         | NYG         | NELD |
| Blakeley.....                  | NCN   | NAFM | K-3.....         | NYH         | NELF |
| Bridge.....                    | NVX   | NIQZ | K-4.....         | NYI         | NELM |
| Bridgeport.....                | NOI   | NESF | K-5.....         | NYJ         | NELP |
| Burrows.....                   | NGR   | NAPV | K-6.....         | NYK         | NELQ |
| Bushnell.....                  | NCV   | NAPF | K-7.....         | NYL         | NELS |
| Caldwell.....                  | NZC   | NESF | K-8.....         | NYM         | NELT |
| California.....                | NSI   | NIDQ | Kanawha.....     | NND         | NEQD |
| Cassin.....                    | NDF   | NAFT | Kilkenny.....    | KKI         | WRCX |
| Charleston.....                | NIK   | NEDR | Kittery.....     | NHW         | NECX |
| Charlotte.....                 | NFE   | NAKV | L-2.....         | NYO         | NELZ |
| Chattanooga.....               | NMN   | NEPK | L-3.....         | NYP         | NEKK |
| Chester.....                   | NGI   | NANV | L-9.....         | NYV         | NEGS |
| Cheyenne.....                  | NDG   | NAFV | L-11.....        | NYX         | NEFF |
| Chicago.....                   | NDH   | NAGD | Langley.....     | NNC         | NEQC |
| Cleveland.....                 | NDI   | NAGM | Little.....      | NBT         | NEZM |
| Commanche.....                 | NDM   | NAGV | Luzon.....       | NHT         | NEGJ |
| Commodore.....                 | NRW   | NIDC | Lydonia.....     | NDR         | NAJT |
| Conner.....                    | NLE   | NENB | Manley.....      | NSH         | NIDP |
| Conyngham.....                 | NSN   | NIDR | Manning.....     | NBN         | NEZG |
| Craneship No. 1.....           | NJE   | NEGP | Maunee.....      | NNE         | NEQL |
| Cummings.....                  | NIP   | NEDZ | Mayflower.....   | NJV         | NEGZ |
| Cushing.....                   | NIL   | NEDT | Mayrant.....     | NJU         | NEGX |
| Cuyama.....                    | NIM   | NEDV | McCall.....      | NJW         | NEJV |
| Dahlgren.....                  | NOD   | NERP | McDougal.....    | NIT         | NEFP |
| Davis.....                     | NVZ   | NIRD | Melville.....    | NKA         | NEJX |
| Denver.....                    | NJF   | NEGR | Mercy.....       | NKK         | NEKM |
| Des Moines.....                | NEM   | NAJV | Mindanao.....    | NHU         | NEPC |
| Downes.....                    | NEN   | NAKD | Mississippi..... | NKO         | NEKT |
| Drayton.....                   | NIN   | NEDX | Missoula.....    | NKM         | NEKR |
| Dreadnaught.....               | NET   | NAKN | Monaghan.....    | NKL         | NEKP |
| Dubuque.....                   | NCX   | NAFQ | Monocacy.....    | NQQ         | NETN |
| Duncan.....                    | NEU   | NAKP | Morrill.....     | NBC         | NEXL |
| Dupont.....                    | NIR   | NEFB | Morris.....      | NWS         | NITS |
| Elcano.....                    | NWC   | NIRF | N-1.....         | NZE         | NEDS |
| Ericsson.....                  | NFD   | NAKS | N-2.....         | NZF         | NAJJ |
| Essex.....                     | NIS   | NEFD | N-3.....         | NZG         | NAKK |
| Fairfax.....                   | NMY   | NEPN | Nantucket.....   | NFU         | NAMS |
| Fanning.....                   | NTN   | NIJC | Navajo.....      | NKZ         | NEMR |
| Farragut.....                  | NFM   | NALS | Neptune.....     | NMS         | NEMM |
| Florida.....                   | NVS   | NIQR | Nereus.....      | NNF         | NEQP |
| Foote.....                     | NFR   | NAMB | Nevada.....      | NCA         | NADK |
| Fox.....                       | NWF   | NIRJ | New Mexico.....  | NQW         | NEVN |
|                                | NWJ   | NIRQ | New Orleans..... | NMG         | NENP |

## Government ship stations, alphabetically, by names—Continued

| Name of vessel     | From— | To—  | Name of vessel  | From— | To—  |
|--------------------|-------|------|-----------------|-------|------|
| Newport.....       | NMH   | NENQ | Scorpion.....   | NTT   | NIKJ |
| New York.....      | NCC   | NADT | Seminole.....   | NRS   | NEZL |
| Nicholson.....     | NIU   | NEFR | Seneca.....     | NRE   | NEXP |
| North Dakota.....  | NMO   | NEPL | Shaw.....       | NKU   | NEMB |
| Oahu.....          | NHS   | NEFN | Shubrick.....   | NWU   | NIXD |
| O'Brien.....       | NIV   | NEFV | Snohomish.....  | NRF   | NEXQ |
| Oglala.....        | NML   | NEPJ | Solace.....     | NST   | NIDT |
| Oklahoma.....      | NCB   | NADN | Somers.....     | NWV   | NIZX |
| Olympia.....       | NGG   | NANT | Sonoma.....     | NTG   | NIGT |
| Ontario.....       | NTA   | NIDX | Sterrett.....   | NTV   | NIDZ |
| Orion.....         | NOC   | NERN | St. Louis.....  | NTF   | NIFG |
| Ossiipee.....      | NRJ   | NEZD | Stockton.....   | NEO   | NAKL |
| Paducah.....       | NOG   | NESC | Surveyor.....   | NQU   | NEVG |
| Palos.....         | NOQ   | NETR | Sylph.....      | NTL   | NIGX |
| Pamlico.....       | NBR   | NEZK | Tallapoosa..... | NRV   | NIDB |
| Pampanga.....      | NQT   | NEVF | Tennessee.....  | NBE   | NIDN |
| Panay.....         | NHR   | NEDB | Terry.....      | NUI   | NIKZ |
| Parker.....        | NIX   | NEFZ | Texas.....      | NCD   | NADV |
| Patapsco.....      | NOL   | NESL | Thornton.....   | NWX   | NIZZ |
| Pathfinder.....    | NLJ   | NENC | Tingey.....     | NWY   | NISG |
| Patterson.....     | NOK   | NESG | Topeka.....     | NLY   | NENF |
| Paulding.....      | NON   | NESP | Trippe.....     | NUQ   | NIQC |
| Pawtucket.....     | NUJ   | NIQB | Triton.....     | NVC   | NIQD |
| Pennsylvania.....  | NCE   | NADX | Tucker.....     | NKV   | NEMF |
| Penobscot.....     | NOE   | NESB | Tuscarora.....  | NRL   | NEZF |
| Perkins.....       | NOX   | NETM | Tutuila.....    | NHQ   | NEKC |
| Pittsburgh.....    | NOT   | NETC | Unalga.....     | NRX   | NIDL |
| Porter.....        | NOO   | NESQ | Undaunted.....  | NNX   | NERD |
| Prometheus.....    | NQR   | NETP | Utah.....       | NVE   | NIQJ |
| Proteus.....       | NNG   | NERC | Vestal.....     | NMC   | NENK |
| Pueblo.....        | NDN   | NAJS | Villalobos..... | NVP   | NIQP |
| Rainbow.....       | NFZ   | NAMV | Wadsworth.....  | NKW   | NEMK |
| Rappahannock.....  | NJO   | NEGT | Wainwright..... | NKX   | NEMN |
| Rochester.....     | NTR   | NIKD | Walke.....      | NWL   | NITQ |
| Rodgers.....       | NWT   | NITZ | Warrington..... | NWD   | NIRG |
| Roe.....           | NTZ   | NIKN | Wheeling.....   | NWH   | NIRP |
| Rowan.....         | NKR   | NEKX | Wilkes.....     | NKQ   | NEKV |
| Sacramento.....    | NQV   | NEVJ | Wilmington..... | NWK   | NIRS |
| Salem.....         | NTP   | NIJD | Winslow.....    | NJA   | NEGM |
| Sampson.....       | NKS   | NELC | Wompatuck.....  | NVJ   | NIQN |
| San Francisco..... | NTQ   | NIJZ | Wyoming.....    | NWQ   | NITR |
| Savannah.....      | NGS   | NAQL | Yamacraw.....   | NRV   | NIDM |
| Schley.....        | NKT   | NELJ | Yantic.....     | NHX   | NEDC |

## Government land stations, alphabetically, by call signals

| Call signal |       | Station                                 |
|-------------|-------|---|
| To—         | From— |   |
| NBH         | NABD  | Staten Island, N. Y. (section base 2).  |
| NBI         | NEFX  | Fort Lauderdale, Fla. (section base 6). |
| NBK         | NIFT  | Newport, R. I. (torpedo station).       |
| NBB         | NIFV  | Do.                                     |

Government ship stations, alphabetically, by call signals

| Call signal |       | Name of vessel   | Call signal |       | Name of vessel             |
|-------------|-------|------------------|-------------|-------|----------------------------|
| To—         | From— |                  | To—         | From— |                            |
| NABT        | NBJ   | Albany.          | NEJX        | NKA   | Melville.                  |
| NABV        | NBP   | Annen.           | NEKD        | NKG   | Genesee.                   |
| NABX        | NBR   | Annapolis.       | NEKM        | NKK   | Mercy.                     |
| NACT        | NBV   | Arkansas.        | NEKP        | NKL   | Monaghan.                  |
| NACV        | NBW   | Arizona.         | NEKR        | NKM   | Missoula.                  |
| NADK        | NCA   | Nevada.          | NEKT        | NKO   | Mississippi.               |
| NADN        | NCB   | Oklahoma.        | NEKV        | NKQ   | Wilkes.                    |
| NADT        | NCC   | New York.        | NEKX        | NKR   | Rowan.                     |
| NADV        | NCD   | Texas.           | NELC        | NKS   | Sampson.                   |
| NADX        | NCE   | Pennsylvania.    | NELJ        | NKT   | Schley.                    |
| NADZ        | NCF   | Bailey.          | NEMB        | NKU   | Shaw.                      |
| NAFD        | NOH   | Baltimore.       | NEMF        | NKV   | Tucker.                    |
| NAFK        | NCL   | Beale.           | NEMK        | NKW   | Wadsworth.                 |
| NAFM        | NCM   | Birmingham.      | NEMN        | NKX   | Wainwright.                |
| NAFP        | NCV   | Burrows.         | NEMB        | NKZ   | Narsjo.                    |
| NAFQ        | NCX   | Dreadnaught.     | NENB        | NLE   | Commedore.                 |
| NAFT        | NDF   | California.      | NENC        | NLF   | Pathfinder.                |
| NAFV        | NDG   | Chester.         | NEND        | NLK   | Bache.                     |
| NAGD        | NDH   | Cheyenne.        | NENF        | NLY   | Topeka.                    |
| NAGM        | NDI   | Chicago.         | NENK        | NMC   | Vestal.                    |
| NAGV        | NDM   | Cleveland.       | NENP        | NMG   | New Orleans.               |
| NAJS        | NDN   | Pueblo.          | NENQ        | NMH   | Newport.                   |
| NAJT        | NDR   | Lydonia.         | NENR        | NMK   | Arrowstock.                |
| NAJV        | NEM   | Denver.          | NEPJ        | NML   | Ogala.                     |
| NAKD        | NEN   | Des Moines.      | NEPK        | NMN   | Charlotte.                 |
| NAKL        | NEO   | Stockton.        | NEPL        | NMO   | North Dakota.              |
| NAKN        | NET   | Drayton.         | NEPM        | NMS   | Neptune.                   |
| NAKP        | NEU   | Dubuque.         | NEPN        | NMY   | Essex.                     |
| NAKS        | NFD   | Bleano.          | NEQB        | NNB   | Jason.                     |
| NAKV        | NFE   | Charleston.      | NEQC        | NNC   | Langley.                   |
| NALS        | NFM   | Fanning.         | NEGD        | NND   | Kanawha.                   |
| NAMB        | NFR   | Florida.         | NEQL        | NNE   | Maumee.                    |
| NAMS        | NFU   | Nantucket.       | NEQP        | NNF   | Nereus.                    |
| NAMV        | NFZ   | Rainbow.         | NERC        | NGG   | Proteus.                   |
| NANF        | NGD   | Galveston.       | NERD        | NNX   | Undaunted.                 |
| NANT        | NGG   | Olympia.         | NERK        | NOB   | Any or all U. S. warships. |
| NANV        | NGI   | Chattanooga.     | NERN        | NOC   | Orion.                     |
| NAPT        | NGJ   | Goldsborough.    | NERP        | NOD   | Cuyama.                    |
| NAPV        | NGR   | Bridgeport.      | NESB        | NOE   | Penobscot.                 |
| NAQL        | NGS   | Savannah.        | NESC        | NOG   | Paducah.                   |
| NAQV        | NGU   | Hannibal.        | NESD        | NOH   | Henderson.                 |
| NASC        | NGY   | Helena.          | NESF        | NOI   | Bridge.                    |
| NASD        | NHA   | Henley.          | NESG        | NOK   | Patterson.                 |
| NASG        | NHF   | Isabel.          | NESL        | NOL   | Patapsco.                  |
| NAVX        | NHN   | Idaho.           | NESP        | NON   | Paulding.                  |
| NECS        | NHP   | Guam.            | NESQ        | NOO   | Porter.                    |
| NEKC        | NHQ   | Tutulla.         | NETC        | NOT   | Pittsburgh.                |
| NEDB        | NHR   | Panay.           | NETM        | NOX   | Perkins.                   |
| NEFN        | NHS   | Oahu.            | NETN        | NQQ   | Monocacy.                  |
| NEGI        | NHT   | Luzen.           | NETP        | NQR   | Prometheus.                |
| NEPC        | NHU   | Mindanao.        | NETR        | NQS   | Palos.                     |
| NECX        | NHW   | Kittery.         | NEVT        | NQT   | Pampanga.                  |
| NEDC        | NHX   | Yantia.          | NEVG        | NQU   | Surveyor.                  |
| NEDF        | NHY   | Bath.            | NEVJ        | NQV   | Sacramento.                |
| NEDK        | NIB   | Jarvis.          | NEVN        | NQW   | New Mexico.                |
| NEDL        | NID   | Jenkins.         | NEXD        | NRA   | Algonquin.                 |
| NEDM        | NIE   | Jeuett.          | NEXX        | NRB   | Bear.                      |
| NEDN        | NIH   | Aylwin.          | NEXL        | KRC   | Morrill.                   |
| NEDP        | NII   | Balch.           | NEXF        | NRE   | Seneca.                    |
| NEDQ        | NIJ   | Benham.          | NEXQ        | NRF   | Shoshonish.                |
| NEDR        | NIK   | Cassia.          | NEZC        | NRG   | Gresham.                   |
| NEDT        | NIL   | Cummings.        | NEZD        | NRJ   | Ossipee.                   |
| NEDV        | NIM   | Cushing.         | NEZF        | NRE   | Tuscarora.                 |
| NEDX        | NIN   | Downes.          | NEZG        | NRN   | Manning.                   |
| NEDZ        | NIP   | Craneship No. 1. | NEZK        | NRR   | Pamlico.                   |
| NEFB        | NIR   | Duncan.          | NEZL        | NRS   | Seminole.                  |
| NEFD        | NIS   | Ericsson.        | NEZM        | NRT   | Little.                    |
| NEFP        | NIT   | McDougal.        | NEZQ        | NRU   | Acushnet.                  |
| NEFR        | NIU   | Nicholson.       | NIDB        | NRV   | Tallapoosa.                |
| NEFV        | NIV   | O'Brien.         | NIDC        | NRW   | Commanche.                 |
| NEFZ        | NIX   | Parker.          | NIDL        | NRX   | Unalga.                    |
| NEGM        | NJA   | Winslow.         | NIDM        | NRV   | Yamacraw.                  |
| NEGN        | NJD   | Allen.           | NIDN        | NSE   | Tennessee.                 |
| NEGP        | NJE   | Conyngham.       | NIDP        | NSH   | Manley.                    |
| NEGR        | NJF   | Davis.           | NIDQ        | NSI   | Caldwell.                  |
| NEGT        | NJO   | Rappahannock.    | NIDR        | NSN   | Conner.                    |
| NEGV        | NJS   | Frederick.       | NIDS        | NSP   | Arapaho.                   |
| NEGX        | NJU   | Mayrant.         | NIDT        | NST   | Solace.                    |
| NEGZ        | NJV   | Mayflower.       | NIDV        | NEX   | Huron.                     |
| NEJV        | NJW   | McCall.          | NIDX        | NTA   | Ontario.                   |

## Government ship stations, alphabetically, by call signals—Continued

| Call signal |       | Name of vessel | Call signal |       | Name of vessel |
|-------------|-------|----------------|-------------|-------|----------------|
| To—         | From— |                | To—         | From— |                |
| NIDZ        | NTB   | Sterrett.      | NIRS        | NWK   | Wilmington.    |
| NIFG        | NTF   | St. Louis.     | NITQ        | NWL   | Walke.         |
| NIGT        | NTG   | Sonoma.        | NITR        | NWQ   | Wyoming.       |
| NIGX        | NTL   | Sylph.         | NITS        | NWS   | Morris.        |
| NIJC        | NTN   | Fairfax.       | NITZ        | NWT   | Rodgers.       |
| NLDJ        | NTP   | Salem.         | NIXD        | NWU   | Shubrick.      |
| NLJZ        | NTQ   | San Francisco. | NIZX        | NWV   | Somers.        |
| NIKD        | NTR   | Rochester.     | NIZZ        | NWX   | Thornton.      |
| NIKJ        | NTT   | Scorpion.      | NISG        | NWY   | Tingey.        |
| NIKN        | NTZ   | Roe.           | NIFN        | NYD   | H-2.           |
| NIKZ        | NUI   | Terry.         | NERF        | NYE   | H-3.           |
| NIQB        | NUJ   | Pawtucket.     | NEPP        | NYF   | K-1.           |
| NIQC        | NUQ   | Trippe.        | NELD        | NYG   | K-2.           |
| NIQD        | NVC   | Triton.        | NELF        | NYH   | K-3.           |
| NIQJ        | NVE   | Utah.          | NELM        | NYI   | K-4.           |
| NIQN        | NVJ   | Wompatuck.     | NELP        | NYJ   | K-5.           |
| NIQP        | NVP   | Villalobos.    | NELQ        | NYK   | K-6.           |
| NIQR        | NVS   | Farragut.      | NELS        | NYL   | K-7.           |
| NIQS        | NVU   | Bagley.        | NELT        | NYM   | K-8.           |
| NIQT        | NVV   | Barney.        | NELZ        | NYO   | L-2.           |
| NIQX        | NVW   | Biddle.        | NEKK        | NYP   | L-3.           |
| NIQZ        | NVX   | Blakeley.      | NEGS        | NYV   | L-9.           |
| NIRD        | NVZ   | Dahlgren.      | NEFF        | NYX   | L-11.          |
| NIRF        | NWC   | Dupont.        | NEFS        | NZC   | Bushnell.      |
| NIRG        | NWD   | Warrington.    | NEDD        | NZD   | Fulton.        |
| NIRJ        | NWF   | Foote.         | NEDS        | NZE   | N-1.           |
| NIRK        | NWG   | Huntington.    | NAJJ        | NZF   | N-2.           |
| NIRP        | NWH   | Wheeling.      | NAKK        | NZG   | N-3.           |
| NIRQ        | NWJ   | Fox.           | WROX        | KKI   | Kilkenny.      |

AMATEUR AND SPECIAL (EXPERIMENTAL AND TECHNICAL TRAINING SCHOOL) STATION  
CALLS TO BE CHANGED

Under section 2, paragraph d, of article 14 of the International Radiotelegraph Convention, Washington, 1927; call signals of private experimental stations (which under article 1 are "(1) a private station intended for experiments with a view to the development of radio technique or art; (2) stations used by an "amateur"—that is to say, a duly authorized person who is interested in the radio technique solely with a personal object and without pecuniary interest) shall consist of the letter or letters indicating the nationality and a single figure followed by a group of not more than three letters.

While the requirements of the convention are not actually effective until January 1, 1929, it has been deemed advisable to change the call signals effective October 1, next, as the division desires to show the new signals in the annual list of Amateur Radio Stations of the United States, edition June 30, 1928, rather than to change the calls effective January 1, 1929, and publish the new calls in the June 30, 1929, edition.

Therefore, beginning that date, all stations in the classes above named within the continental limits of the United States are hereby ordered to add to their call signals the letter "W," and those in Alaska, Hawaii, Porto Rico, and the Virgin Islands, should add the letter "K." These letters should precede the call signal; for example, station 4ABC, if within the continental limits of this country, becomes W4ABC and, if in Porto Rico, becomes K4ABC.

INTERNATIONAL PREFIXES FOR CALL SIGNALS OF AMATEUR STATIONS  
TENTATIVELY ASSIGNED

|                          |                           |                        |
|--------------------------|---------------------------|------------------------|
| CI. Chile.               | K. United States.         | TI. Costa Rica.        |
| CF. Canada.              | LA. Norway.               | TS. Sarre.             |
| CL. Cuba.                | LO. Argentine.            | UH. Hedjaz.            |
| CN. Morocco.             | LZ. Bulgaria.             | UI. Dutch East Indies. |
| CP. Bolivia.             | M. England.               | UL. Luxemburg.         |
| CR. Portuguese colonies. | N. United States.         | UN. Yugoslavia.        |
| CS. Portugal.            | OA. Peru.                 | UO. Austria.           |
| CV. Rumania.             | OH. Finland.              | VE. Canada.            |
| CW. Uruguay.             | OK. Czechoslovakia.       | VH. Australia.         |
| CZ. Monaco.              | ON. Belgium and colonies. | VO. Newfoundland.      |
| D. Germany.              | OU. Denmark.              | VP. English colonies.  |
| EA. Spain.               | PA. Holland.              | VT. India.             |
| EI. Ireland.             | PJ. Curacao.              | W. United States.      |
| EL. Liberia, E.          | PK. Dutch East Indies.    | XA. Mexico.            |
| ES. Estonia.             | PP. Brazil.               | XG. China.             |
| ET. Ethiopia.            | PZ. Surinam.              | YA. Afghanistan.       |
| F. France and colonies.  | RA. Russia.               | YH. New Hebrides.      |
| G. England.              | RV. Persia.               | YI. Iraq.              |
| HA. Hungary.             | RX. Panama.               | YL. Lettonia.          |
| HB. Switzerland.         | RY. Lithuania.            | YM. Danzig.            |
| HC. Ecuador.             | SM. Sweden.               | YN. Nicaragua.         |
| HH. Haiti.               | SP. Poland.               | YS. San Salvador.      |
| HI. Dominican Republic.  | SU. Egypt.                | YV. Venezuela.         |
| HJ. Colombia.            | SV. Greece.               | ZA. Albania.           |
| HP. Honduras.            | TA. Turkey.               | ZK. New Zealand.       |
| HS. Siam.                | TF. Iceland.              | ZP. Paraguay.          |
| I. Italy.                | TG. Guatemala.            | ZS. South Africa.      |
| J. Japan.                |                           |                        |

LIST OF FREQUENCIES BELOW 4,000 KILOCYCLES ALLOCATED TO GOVERNMENT STATIONS

Under Executive order of March 30, 1928, the frequencies shown hereunder were allocated for the use of Government stations. The Radio Service Bulletin for last month contains a list of the frequencies above 4,000 kilocycles.

*Frequency-kilocycles*

|       |        |        |        |
|-------|--------|--------|--------|
| 17. 6 | 93. 7  | 185. 0 | 215. 0 |
| 19. 8 | 100. 0 | 187. 0 | 216. 0 |
| 26. 1 | 102. 0 | 190. 0 | 217. 0 |
| 28. 5 | 104. 0 | 192. 0 | 218. 0 |
| 30. 6 | 105. 0 | 195. 0 | 219. 0 |
| 32. 8 | 106. 0 | 196. 0 | 220. 0 |
| 33. 8 | 108. 0 | 197. 0 | 221. 0 |
| 38. 0 | 113. 0 | 198. 0 | 222. 0 |
| 42. 8 | 115. 0 | 199. 0 | 223. 0 |
| 46. 0 | 120. 0 | 200. 0 | 224. 0 |
| 48. 0 | 122. 0 | 200. 0 | 225. 0 |
| 51. 0 | 125. 0 | 201. 0 | 226. 0 |
| 54. 0 | 128. 0 | 202. 0 | 227. 0 |
| 54. 0 | 132. 0 | 203. 0 | 228. 0 |
| 56. 0 | 133. 0 | 204. 0 | 229. 0 |
| 58. 0 | 153. 0 | 205. 0 | 230. 0 |
| 64. 0 | 155. 0 | 205. 0 | 231. 0 |
| 66. 0 | 159. 0 | 206. 0 | 232. 0 |
| 66. 0 | 166. 6 | 207. 0 | 233. 0 |
| 68. 0 | 172. 0 | 208. 0 | 234. 0 |
| 72. 0 | 173. 0 | 209. 0 | 235. 0 |
| 75. 0 | 175. 0 | 210. 0 | 236. 0 |
| 78. 0 | 175. 0 | 211. 0 | 237. 0 |
| 81. 0 | 180. 0 | 212. 0 | 238. 0 |
| 83. 0 | 185. 0 | 213. 0 | 239. 0 |
| 86. 0 | 185. 0 | 214. 0 | 240. 0 |

## Frequency-kilocycles—Continued

|             |               |                 |                 |
|-------------|---------------|-----------------|-----------------|
| 241.0       | 445.0         | 738.0           | 2,995.0         |
| 242.0       | 445.0         | 750.0           | 3,005.0         |
| 243.0       | 447.0         | 1,110.0         | 3,035.0         |
| 244.0       | 450.0         | 2,010.0-2,020.0 | 3,065.0         |
| 245.0       | 454.0         | 2,240.0-2,250.0 | 3,095.0         |
| 245.0       | 465.0         | 2,305.0         | 3,155.0         |
| 250.0       | 471.0         | 2,315.0         | 3,195.0         |
| 258.0       | 476.0         | 2,335.0         | 3,235.0         |
| 260.0       | 480.0         | 2,355.0         | 3,265.0         |
| 266.0       | 500.0         | 2,385.0         | 3,295.0         |
| 272.0       | 525.0         | 2,405.0         | 3,340.0         |
| 273.0       | 536.0         | 2,435.0         | 3,345.0         |
| 275.0       | 540.0         | 2,465.0         | 3,345.0         |
| 275.0       | 545.0         | 2,485.0         | 3,350.0         |
| 275.0       | 545.0         | 2,515.0         | 3,355.0         |
| 275.0       | 550.0         | 2,545.0         | 3,360.0         |
| 280.0       | 550.0-1,500.0 | 2,575.0         | 3,365.0         |
| 284.0       | 558.0         | 2,605.0         | 3,370.0         |
| 285.0-315.0 | 566.0         | 2,655.0         | 3,375.0         |
| 315.0-350.0 | 600.0         | 2,675.0         | 3,380.0         |
| 343.0       | 618.0         | 2,685.0         | 3,385.0         |
| 355.0       | 625.0         | 2,705.0         | 3,385.0         |
| 355.0       | 631.0         | 2,715.0         | 3,390.0         |
| 375.0       | 638.0         | 2,745.0         | 3,395.0         |
| 396.0       | 645.0         | 2,885.0         | 3,400.0         |
| 405.0       | 652.0         | 2,915.0         | 3,405.0         |
| 410.0       | 659.0         | 2,955.0         | 3,410.0         |
| 425.0       | 666.0         | 2,960.0         | 3,415.0         |
| 425.0       | 681.0         | 2,965.0         | 3,445.0         |
| 428.0       | 685.0         | 2,970.0         | 3,475.0         |
| 435.0       | 689.0         | 2,975.0         | 3,500.0-4,000.0 |
| 440.0       | 690.0         | 2,980.0         |                 |

## LOST COMMERCIAL RADIO OPERATORS' LICENSES

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

| Name                           | Class  | No.   | Date issued   | Port issued    |
|--------------------------------|--------|-------|---------------|----------------|
| Blair, Douglas Eugene.....     | First  | 7630  | June 14, 1926 | Baltimore.     |
| Cappell, Stanley Belton.....   | do     | 17645 | Feb. 18, 1927 | San Francisco. |
| Cooper, Willard George.....    | do     | 14082 | Jan. 13, 1927 | Do.            |
| Dorsett, Paul V.....           | do     | 2417  | Mar. 2, 1928  | New Orleans.   |
| Drury, Eugene E.....           | do     | 13908 | Aug. 23, 1926 | San Francisco. |
| Ewing, Robert E.....           | do     | 13811 | June 11, 1926 | Do.            |
| Graves, Lindsay Howlette.....  | do     | 2358  | Dec. 21, 1927 | New Orleans.   |
| Grimm, Philip John.....        | do     | 1865  | Dec. 1, 1927  | Atlanta.       |
| Herider, Ernest D.....         | Second | 4524  | Jan. 28, 1927 | Chicago.       |
| Justice, Francis Charles.....  | First  | 15296 | July 30, 1926 | Boston.        |
| Mason, Howard F.....           | do     | 15606 | Feb. 9, 1927  | Seattle.       |
| Milkewitz, Joseph Bernard..... | do     | 1137  | Aug. 5, 1927  | New York.      |
| Pray, Erwin M.....             | Second | 4413  | May 26, 1926  | Chicago.       |
| Schneider, H. M.....           | First  | 166   | June 18, 1926 | Washington.    |
| Sexton, Raymond J.....         | do     | 14491 | Oct. 28, 1926 | New Orleans.   |
| Shafter, Lloyd Arthur.....     | do     | 16103 | June 1, 1926  | New York.      |
| Stark, R. L.....               | Second | 1261  | Jan. 31, 1928 | Seattle.       |

## SHORT-WAVE TRANSMISSIONS OF TIME SIGNALS BY RIO DE JANEIRO, BRAZIL

Station POT, located at the National Observatory, Rio de Janeiro, in approximately longitude 43° 10' 00'' W., latitude 22° 54' 00'' S., now transmits time signals on short waves as shown hereunder.

Three series of time signals on 34.4 meters, transmitted as follows:



## FIRST SERIES

| G. M. T. |    |    |    |    |    |
|----------|----|----|----|----|----|
| h.       | m. | s. | h. | m. | s. |
| 0        | 01 | 00 |    |    |    |

|   |    |         |    |    |  |
|---|----|---------|----|----|--|
| 0 | 06 | 00 to 0 | 10 | 00 |  |
|---|----|---------|----|----|--|

Signal  
 QST DE POT (3 times); VVVVV, etc. Signaos horarios POT (time signals from Rio de Janeiro Observatory).  
 International W/T Time Signals (Onogo system).  
 See List of Wireless Signals, pages 574 and 575.

## SECOND SERIES

| h. | m. | s.      | h. | m. | s. |
|----|----|---------|----|----|----|
| 0  | 10 | 00 to 0 | 15 | 00 |    |

|   |    |         |    |    |  |
|---|----|---------|----|----|--|
| 0 | 15 | 00 to 0 | 20 | 00 |  |
|---|----|---------|----|----|--|

VVVVV, etc. Signaos horarios POT (time signals from Rio de Janeiro Observatory).

Special time signals consisting of 6 dots (••••••) sent every 10 seconds for 5 minutes, thus:—

second: 5 6 7 8 9 10

• • • • •  
 second: 15 16 17 18 19 20

• • • • •  
 second: 25 26 27 28 29 30 etc.

• • • • •

The last dot of the final group is sent at 0<sup>h</sup> 20<sup>m</sup> 00<sup>s</sup> G. M. T., corresponding to 21<sup>h</sup> 20<sup>m</sup> 00<sup>s</sup> Standard Time.

The interval between each dot is one second.

## THIRD SERIES

| h. | m. | s.      | h. | m. | s. |
|----|----|---------|----|----|----|
| 0  | 20 | 00 to 0 | 26 | 00 |    |

|   |    |         |    |    |  |
|---|----|---------|----|----|--|
| 0 | 26 | 00 to 0 | 30 | 00 |  |
|---|----|---------|----|----|--|

VVVVV, etc. Signaos horarios POT (time signals from Rio de Janeiro Observatory).

New International W/T Time Signals (see List of Wireless Signals, pages 608 and 609).

These signals can be received at greater distances than the time signals transmitted on 600 meters by station SPY, Rio de Janeiro (Arpoador).

## RADIOBEACON ESTABLISHED AT HOLYHEAD BAY, ENGLAND

A radiobeacon has been established at the Holyhead Bay Lighthouse in approximately longitude 4° 36' W., latitude 53° 25' N.; call signal GGK, wave length, 1,000 meters.

During foggy weather the signal will be transmitted for one minute, every four minutes, thus: (a) The call signal GGK (— . . — . . — . .) at the rate of 15 words per minute, repeated for 48 seconds, approximately; (b) a long dash (—) of 10 seconds duration, approximately; (c) the call signal GGK made once, of two seconds duration, approximately (the whole transmission of a, b, and c will take 60 seconds); a silent interval of three minutes.

During clear weather, three emissions of the whole of the signal described above will be made consecutively at half-hourly intervals, approximately, commencing at seven minutes past the hour.

## RADIO FADING IN THE BROADCAST RANGE

For the past several months an investigation has been conducted by the Bureau of Standards to determine the factors contributing to the phenomenon known as fading. Special apparatus utilized in conjunction with radio receiving sets make it possible to secure graphic records of the increase and decrease of signal strength such as is commonly experienced when listening to programs from distant stations at night. This apparatus, sufficiently sensitive to indicate variations smaller than the ear can detect, was used with receiving systems employing different types of antennas to analyze the manner in which the waves transmitted from a broadcasting antenna arrive at the receiving antenna.

The factors which may cause variations in the intensity of radio waves are complex, and a critical study of fading has suggested explanations of some of these factors.

Graphic records of a single selected transmission were made, using identical receiving sets except for the antennas. The antenna systems used in the course of the investigation were (1) vertical antenna, (2) coil antenna directed toward the station being received, (3) coil antenna with plane at right angles to the direction of the transmission path, (4) combination of coil antenna and vertical antenna connected in such a way as to eliminate waves received directly from the station. Simultaneous records were made, using two receiving sets with different types of antennas.

Examination of data from simultaneous measurements made with a coil antenna in maximum position and with a vertical antenna, respectively, indicated that for stations 165 to 1,500 kilometers distant the same sort of fading occurred simultaneously in both antennas, but that for stations 13 to 53 kilometers distant similar fading characteristics did not occur simultaneously.

Records made with coil antennas at maximum and minimum positions showed that for a station 300 kilometers distant, for instance, there are considerable periods in which an increase of intensity in one antenna is accompanied by a decrease in the other. Often a relatively rapid and periodic fluctuation of small magnitude is found superposed on the longer-period trend of the records. It was found that, for one station at least, this superposed, rapid fading of periodic type occurs with considerable regularity directly after sunset and lasts for approximately a half hour.

The results may be interpreted to mean that the waves do not reach the receiving antenna in the same position relative to antenna in which they start; that is, their plane of polarization is changed. This change only takes place when the wave has been reflected. Several reflections from different points may take place, resulting in there being at the receiving station two or more waves which started at the same time from the transmitting station and traveled very different paths before reaching the receiving station.

More detail concerning these phenomena will be given in a paper to be published at a later date. Notice of this publication will be given in the Radio Service Bulletin.

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

#### R100.—Radio principles

- R113 Mesny, R. Observations et travaux recents sur la propagation des ondes electromagnetiques. (Recent observations and work on the propagation of electromagnetic waves.) *L'Onde Electrique*, 7, pp. 129-155; April, 1928.  
(Review of work done for two years on the question of propagation.)
- R113 Taylor, A. H., and Young, L. C. Studies of high-frequency radio-wave propagation. *Proc. Inst. Radio Engrs*, 16, pp. 561-578; May, 1928.  
(Studies of multiple signals. Time of propagation of round-the-world signals and also of echoes having a very much shorter transmission distance. Method worked out for predicting in advance when round-the-world signals are likely to appear.)
- R113.3 Pratt, H. Apparent night variations with crossed-coil radiobeacons. *Proc. Inst. Radio Engrs.*, 16, pp. 652-57; May, 1928.  
(Describes night direction shifts and fading of signals from directive type of radiobeacon as received on an airplane in flight.)
- R113.3 Friis, H. T. Oscillographic observations on the direction of propagation and fading of short waves. *Proc. Inst. Radio Engrs.*, 16, pp. 658-665; May, 1928.  
(Observations made on the 16-meter transatlantic signals to determine variation of direction of propagation and amount of fading.)
- R113.5 Nodon, A. Relations entre la propagation des ondes electro-magnetiques, l'activite solaire et l'etat atmospherique. (Relations between the propagation of electromagnetic waves, solar activity, and amount of atmospherics.) *L'Onde Electrique*, 7, pp. 156-161; April, 1928.

- R120 Green, E. Short-wave aerial systems—An elementary theory of the transmission of high-frequency energy along the feeders. *Experimental Wireless* (London), 5, pp. 304-311; June, 1928. (Discussion based on theory of Heaviside. Results of transmission along feeder lines under different conditions.)
- R127 The equivalent inductance and capacity of an aerial. *Experimental Wireless* (London), 5, pp. 297-299; June, 1928. (Calculations of inductance and capacity of antenna by considering it as a transmission line.)
- R130 von Ardenne, M., and Stoff, W. Zusammenfassender Bericht—Über die Kompensation der schädlichen Kapazitäten und ihrer Rückwirkungen bei Elektronenröhren. (Summarized report—On the compensation of the properties, capacities, and their reaction in electron tubes.) *Zeits. für Hochfrequenztechnik*, 31, pp. 122-128, April; pp. 153-157, May, 1928. (Theoretical discussion.)
- R130 Ashworth, M. H. Graphical computations. *Experimental Wireless* (London), 5, pp. 311-314; June, 1928. (Applies graphical method of integration to electron tubes.)
- R131 Döring, E. Über den Einfluss hoher ohmscher Anodenwiderstände auf den Gitterwiderstand von Verstärkeröhren. (Influence of higher plate resistance on the grid resistance of amplifier tubes.) *Zeits. für Hochfrequenztechnik*, 31, pp. 116-120; April, 1928. (Experimental data on the mutual effects of the two internal resistances.)
- R131 Lange, H. Die Stromverteilung in Dreielektrodenröhren und ihre Bedeutung für die Messung der Voltaspannung. (The current distribution in three-electrode tubes and their importance for the measuring of voltages.) *Zeits. für Hochfrequenztechnik*, 31, pp. 105-109, April; pp. 133-140, May 1928. (Theoretical discussion of tube characteristics.)
- R132 Baggally, W. On banks of parallel valves feeding resistance loads without distorting the wave form. *Experimental Wireless* (London), 5, pp. 315-21; June, 1928. (Mathematical theory of design of bank of electron tubes for supplying power to loud-speakers. Treatment confined to case of a nonreactive load.)
- R134 Ballantine, S. Detection by grid rectification with the high-vacuum triode. *Proc. Inst. Radio Engrs.*, 16, pp. 593-613; May, 1928. (Method for experimentally ascertaining frequency distortion in detection. Method of securing efficient grid rectification in superheterodyne systems.)
- R141 Bird, L. T. Reactance and admittance curves applied to tuned circuits with and without resistance. *Experimental Wireless* (London), 5, pp. 327-334; June, 1928. (Reactance and admittance curves developed from considering vector diagrams and properties of inductance and capacity.)
- R143 Reed, M. Damping due to grid current in the case of a valve oscillator. *Experimental Wireless* (London), 5, pp. 329-324; June, 1928. (Calculation of damping introduced in an oscillatory circuit by grid current.)
- R152 Busse, E. Über eine Methode zur Erzeugung von sehr kurzen elektrischen Wellen mittels Hochfrequenzfunken. (On a method of production of very short electric waves by means of high-frequency sparks.) *Zeits. für Hochfrequenztechnik*, 31, pp. 97-105; April, 1928. (Production and measurement of characteristics.)

## R200.—Radio measurements and standardization

- R201.7 Schneider, W. A. Use of an oscillograph for recording vacuum-tube characteristics. *Proc. Inst. Radio Engrs.*, 16, pp. 674-80; May, 1928. (Results obtained with oscillograph for plotting photographically vacuum-tube characteristics.)
- R210 Dellinger, J. H. The status of frequency standardization. *Proc. Inst. Radio Engrs.*, 16, pp. 579-92; May, 1928. (Accuracy of frequency standards. Intercomparison of frequency standards of United States with foreign countries reported.)
- R210 Dellinger, J. H. Finding the "yardsticks" of radio at the Bureau of Standards. *Popular Radio*, 13, pp. 290-291; April, 1928. (Work of radio section of Bureau of Standards in frequency standardization.)
- R214 Jouaust, R. Quelques modes particuliers de vibration des quartz piezoelectriques. (Certain modes of vibration of piezoelectric quartz plates.) *L'Onde Electrique*, 7, pp. 125-128; March, 1928. (Show deformations of quartz plates which are more complex than have been found before.)
- R251.2 Spot-welded thermojunctions. *Experimental Wireless* London, 5, p. 314; June, 1928. (Description of instruments.)
- R270 Judson, E. B. An automatic recorder for measuring the strength of radio signals and atmospheric disturbances. *Proc. Inst. Radio Engrs.*, 16, pp. 666-670; May, 1928. (Apparatus described for automatically recording field intensity of low-frequency signals and atmospheric disturbances.)

## R300.—Radio apparatus and equipment

- R334 Decaux, B. Applications nouvelles des lampes a quatre electrodes. (New applications of four-electrode electron tubes.) *L'Onde Electrique*, 7, pp. 119-124; March, 1928. (Uses of these electron tubes for relays, multivibrators, etc. Plate on electron tube can be small and sometimes the signal itself can be used to operate the tube.)

- R334 Screened grid valves—Informal discussion at meeting of wireless section, Institution of Electrical Engineers of London. *Experimental Wireless (London)*, 5, pp. 335-338; June, 1928.  
(Application of these tubes to radio-frequency amplification.)
- R344.3 Byrnes, I. F. Recent developments in low power and broadcasting transmitters. *Proc. Inst. Radio Engrs.*, 16, pp. 614-651; May, 1928.  
(Description of various types of radio-transmitting equipment ranging in output from 200 to 2,000 watts. Application of master-oscillator power-amplifier circuits for low and medium frequency transmitting sets. Uses of piezo oscillator control for high-frequency and broadcasting transmitting sets. Brief explanation given of equisignal system of radiobeacon transmission.)
- R351 Lampkin, G. F. How to build a beat-frequency oscillator. *Radio Broadcast*, 13, pp. 156-158; July, 1928.  
(Constructional details of laboratory-type oscillator are given.)
- R384.1 Griffiths, W. H. F. Substandard wave meter design. *Experimental Wireless (London)*, 5, pp. 324-326; June, 1928.  
(Design of a radio-frequency frequency meter with new type of inductances for 30,000 kilocycles.)  
R500.—*Applications of radio*
- R525 Eisner, F.; Fassbender, H.; Kuribaum, G. Leistungs- und Strahlungsmessungen an Flugzeug- und Bodenstationen. (Energy and radiation measurements on aircraft and ground stations.) *Zeits. fur Hochfrequenztechnik*, 31, pp. 109-116, April; pp. 141-151, May, 1928.  
(Measurements of power in antennas on aircraft and ground station. T-shaped antenna used at ground station and trailing-wire antenna on aircraft.)
- R526.2 Franck, P. Le radiocompass et la navigation aeriennne. (The radiocompass and aerial navigation.) *L'Onde Electrique*, 7, pp. 109-118; March, 1928.  
(Discusses an ideal radiocompass which could be used on aircraft for direct reading of bearings.)
- R536 Eve, A. S., and Keys, D. A. Geophysical prospecting. *Scientific American*, 138, pp. 414-417 May; pp. 508-511, June, 1928.  
(Description of various methods used. Based on Bureau of Mines Tech. Paper No. 420.)
- R550 Eckersley, P. P. The design and distribution of wireless broadcasting stations for a national service. *Jnl. Institution Elec. Engrs. (London)*, 66, pp. 501-528; May, 1928.  
(Discusses problems in the distribution and design of broadcasting stations.)
- R582 Clarkson, R. P. What hope for real television? *Radio Broadcast*, 13, pp. 125-128; July, 1928.  
(Résumé of the different methods of television.)  
R800.—*Nonradio subjects*
- 621.382 Pages, A. La telegraphie multiple par courantes de frequences audibles. (Multiplex telegraphy for currents of audible frequencies.)  
(Description of cable system used by French company which uses band filters in cable telegraphy so that speed of signal will not be impeded by deformations which occur at certain frequencies.)

---

ADDITIONAL COPIES

OF THIS PUBLICATION MAY BE PROCURED FROM  
THE SUPERINTENDENT OF DOCUMENTS  
U.S. GOVERNMENT PRINTING OFFICE  
WASHINGTON, D. C.

AT

5 CENTS PER COPY  
SUBSCRIPTION PRICE, 25 CENTS PER YEAR