

REGULATIONS

AUGUST 15 1919

U.S. GOVERNMENT PRINTING OFFICE

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DEPARTMENT OF COMMERCE
BUREAU OF NAVIGATION
RADIO SERVICE

RADIO COMMUNICATION LAWS OF THE UNITED STATES

AND THE
INTERNATIONAL RADIOTELEGRAPHIC CONVENTION

REGULATIONS
GOVERNING RADIO OPERATORS AND THE USE
OF RADIO APPARATUS ON SHIPS
AND ON LAND

EDITION AUG. 15, 1919



WASHINGTON
GOVERNMENT PRINTING OFFICE

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CONTENTS.

Part I.—RADIO COMMUNICATION LAWS AND INTERNATIONAL TREATIES.

| | Page. |
|---|-------|
| An act approved July 23, 1912, and the amended act approved June 24, 1910, entitled "An Act to require apparatus and operators for radio communication on certain ocean steamers" | 5 |
| An act approved Aug. 13, 1912, entitled "An Act to regulate radio communication" (Public 264) (S. 6412) | 6 |
| London International Radiotelegraphic Convention, proclaimed by the President July 8, 1913. | 15 |

Part II.—REGULATIONS GOVERNING SHIP AND LAND RADIO STATIONS.

| | |
|--|----|
| Ship stations..... | 49 |
| Classification of ship stations and grades of operators required..... | 51 |
| Land stations..... | 52 |
| Classification of land stations and grades of operators required..... | 54 |
| Regulations common to land and ship stations..... | 56 |
| Applications for land and ship station licenses, renewals, and duplicates..... | 57 |

Part III.—REGULATIONS GOVERNING RADIO OPERATORS.

| | |
|--|----|
| Grades and requirements..... | 60 |
| Examinations..... | 64 |
| Places where examinations are held..... | 65 |
| Applications for examinations for radio operators' licenses, renewals, and duplicates..... | 66 |

Part IV.—GENERAL INFORMATION.

| | |
|---|----|
| Administration and administrative districts..... | 68 |
| Reporting of violations..... | 69 |
| Inspection of ship stations..... | 69 |
| Operators on foreign vessels..... | 71 |
| Official international list of radio stations of the world and station rates..... | 72 |
| Miscellaneous information..... | 73 |

APPENDIX.

| | |
|--|----|
| Station and operator license forms..... | 75 |
| International Morse code and conventional signals..... | 80 |
| INDEX..... | 81 |

DEPARTMENT OF COMMERCE,
BUREAU OF NAVIGATION,
Washington, D. C., July 27, 1914.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued for the guidance and instruction of United States officers engaged in and concerned with the enforcement of the radio laws and for the information of all owners and operators of apparatus for radio communication.

In this issue are printed the act of June 24, 1910, as amended July 23, 1912, "An act to require apparatus and operators for radio communication on certain steamers"; the act of August 13, 1912, "An act to regulate radio communication"; the International Radiotelegraphic Convention; regulations made pursuant to the above mentioned acts; and general information. This edition supersedes Department Circular No. 241; "Regulations for radio apparatus and operators on steamers"; "Regulations governing radio communication," and all general letters concerning the enforcement of the wireless communication laws.

The act of August 13, 1912 (Public 264), the London Radiotelegraphic Convention and the Regulations hereafter will not be printed as separate pamphlets.

The subject matter is divided into parts and each part is divided under subheadings, as shown by the table of contents. The index is at the end.

Owners and operators of radio stations and others concerned may obtain copies of this publication from the radio inspectors at the addresses given in the list of districts or from the Commissioner of Navigation, Department of Commerce, Washington, D. C. Additional copies may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C., at a nominal price.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:

WILLIAM C. REDFIELD,
Secretary.

RADIO LAWS AND REGULATIONS OF THE UNITED STATES.

Part I.—RADIO COMMUNICATION LAWS AND INTERNATIONAL TREATIES.

An Act Approved July 23, 1912, amending section 1 of an act entitled "An act to require apparatus and operators for radio communication on certain ocean steamers," approved June 24, 1910.¹

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, * * *

Ship acts.

"SECTION 1. That from and after October first, nineteen hundred and twelve, it shall be unlawful for any steamer of the United States or of any foreign country navigating the ocean or the Great Lakes and licensed to carry, or carrying, fifty or more persons, including passengers or crew or both, to leave or attempt to leave any port of the United States unless such steamer shall be equipped with an efficient apparatus for radio communication, in good working order, capable of transmitting and receiving messages over a distance of at least one hundred miles, day or night. An auxiliary power supply, independent of the vessel's main electric power plant, must be provided which will enable the sending set for at least four hours to send messages over a distance of at least one hundred miles, day or night, and efficient communication between the operator in the radio room and the bridge shall be maintained at all times.

Auxiliary.

"The radio equipment must be in charge of two or more persons skilled in the use of such apparatus, one or the other of whom shall be on duty at all times while the vessel is being navigated. Such equipment, operators, the regulation of their watches, and the transmission and receipt of messages, except as may be regulated by law or international agreement, shall be under the control of the master, in the case of a vessel of the United States; and every willful failure on the part of the master to enforce at sea the provisions of this paragraph as to equipment, operators, and watches shall subject him to a penalty of one hundred dollars.

Operators.

Penalty.

¹ The amended act applies to vessels licensed to carry as well as those actually carrying 50 or more persons, etc.

"That the provisions of this section shall not apply to steamers plying between ports, or places, less than two hundred miles apart."

SEC. 2. That this Act, so far as it relates to the Great Lakes, shall take effect on and after April first, nineteen hundred and thirteen, and so far as it relates to ocean cargo steamers shall take effect on and after July first, nineteen hundred and thirteen: *Provided*, That on cargo steamers, in lieu of the second operator provided for in this Act, there may be substituted a member of the crew or other person who shall be duly certified and entered in the ship's log as competent to receive and understand distress calls or other usual calls indicating danger, and to aid in maintaining a constant wireless watch so far as required for the safety of life.

The remaining sections of the act of June 24, 1910, which are unchanged, read as follows:

Intercommunication. **SEC. 2.** That for the purpose of this Act apparatus for radio communication shall not be deemed to be efficient unless the company installing it shall contract in writing to exchange, and shall, in fact, exchange, as far as may be physically practicable, to be determined by the master of the vessel, messages with shore or ship stations using other systems of radio communication.

Penalty. **SEC. 3.** That the master or other person being in charge of any such vessel which leaves or attempts to leave any port of the United States in violation of any of the provisions of this Act shall, upon conviction, be fined in a sum not more than five thousand dollars, and any such fine shall be a lien upon such vessel, and such vessel may be libeled therefor in any district court of the United States within the jurisdiction of which such vessel shall arrive or depart, and the leaving or attempting to leave each and every port of the United States shall constitute a separate offense.

SEC. 4. That the Secretary of Commerce shall make such regulations as may be necessary to secure the proper execution of this Act by collectors of customs and other officers of the Government.

[PUBLIC—No. 264.]

[S. 6412.]

An Act To regulate radio communication, approved August 13, 1912.

Radio act.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That a person, company, or corporation within the jurisdiction of the United States shall not use or operate any apparatus for radio communication as a means of commercial intercourse among the several States, or with foreign nations, or upon any vessel of the United States

engaged in interstate or foreign commerce, or for the transmission of radiograms or signals the effect of which extends beyond the jurisdiction of the State or Territory in which the same are made, or where interference would be caused thereby with the receipt of messages or signals from beyond the jurisdiction of the said State or Territory, except under and in accordance with a license, revocable for cause, in that behalf granted by the Secretary of Commerce upon application therefor; but nothing in this Act shall be construed to apply to the transmission and exchange of radiograms or signals between points situated in the same State: *Provided*, That the effect thereof shall not extend beyond the jurisdiction of the said State or interfere with the reception of radiograms or signals from beyond said jurisdiction; and a license shall not be required for the transmission or exchange of radiograms or signals by or on behalf of the Government of the United States, but every Government station on land or sea shall have special call letters designated and published in the list of radio stations of the United States by the Department of Commerce. Any person, company, or corporation that shall use or operate any apparatus for radio communication in violation of this section, or knowingly aid or abet another person, company, or corporation in so doing, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be punished by a fine not exceeding five hundred dollars, and the apparatus or device so unlawfully used and operated may be adjudged forfeited to the United States.

License.

Penalty.

SEC. 2. That every such license shall be in such form as the Secretary of Commerce shall determine and shall contain the restrictions, pursuant to this Act, on and subject to which the license is granted; that every such license shall be issued only to citizens of the United States or Porto Rico or to a company incorporated under the laws of some State or Territory or of the United States or Porto Rico, and shall specify the ownership and location of the station in which said apparatus shall be used and other particulars for its identification and to enable its range to be estimated; shall state the purpose of the station, and, in case of a station in actual operation at the date of passage of this Act, shall contain the statement that satisfactory proof has been furnished that it was actually operating on the above-mentioned date; shall state the wave length or the wave lengths authorized for use by the station for the prevention of interference and the hours for which the station is licensed for work; and shall not be construed to authorize the use of any apparatus for radio communication in any other station than that specified. Every such license shall be subject to the regulations contained herein, and such regulations as may be established from time to time by authority of this Act or subsequent Acts and treaties of

License form.

the United States. Every such license shall provide that the President of the United States in time of war or public peril or disaster may cause the closing of any station for radio communication and the removal therefrom of all radio apparatus, or may authorize the use or control of any such station or apparatus by any department of the Government, upon just compensation to the owners.

Operators.

SEC. 3. That every such apparatus shall at all times while in use and operation as aforesaid be in charge or under the supervision of a person or persons licensed for that purpose by the Secretary of Commerce. Every person so licensed who in the operation of any radio apparatus shall fail to observe and obey regulations contained in or made pursuant to this Act or subsequent Acts or treaties of the United States, or any one of them, or who shall fail to enforce obedience thereto by an unlicensed person while serving under his supervision, in addition to the punishments and penalties herein prescribed, may suffer the suspension of the said license for a period to be fixed by the Secretary of Commerce not exceeding one year. It shall be unlawful to employ any unlicensed person or for any unlicensed person to serve in charge or in supervision of the use and operation of such apparatus, and any person violating this provision shall be guilty of a misdemeanor, and on conviction thereof shall be punished by a fine of not more than one hundred dollars or imprisonment for not more than two months, or both, in the discretion of the court, for each and every such offense: *Provided*, That in case of emergency the Secretary of Commerce may authorize a collector of customs to issue a temporary permit, in lieu of a license, to the operator on a vessel subject to the radio ship Act of June twenty-fourth, nineteen hundred and ten.

Suspension of license.

Penalty.

Temporary permit.

SEC. 4. That for the purpose of preventing or minimizing interference with communication between stations in which such apparatus is operated, to facilitate radio communication, and to further the prompt receipt of distress signals, said private and commercial stations shall be subject to the regulations of this section. These regulations shall be enforced by the Secretary of Commerce through the collectors of customs and other officers of the Government as other regulations herein provided for.

Regulations.

The Secretary of Commerce may, in his discretion, waive the provisions of any or all of these regulations when no interference of the character above mentioned can ensue.

Experimental stations.

The Secretary of Commerce may grant special temporary licenses to stations actually engaged in conducting experiments for the development of the science of radio communication, or the apparatus pertaining thereto, to carry on special tests, using any amount of power or any wave lengths, at such hours and under such conditions as will insure the least interference with the sending

or receipt of commercial or Government radiograms, of distress signals and radiograms, or with the work of other stations.

In these regulations the naval and military stations shall be understood to be stations on land.

REGULATIONS.

NORMAL WAVE LENGTH.

First. Every station shall be required to designate a certain definite wave length as the normal sending and receiving wave length of the station. This wave length shall not exceed six hundred meters or it shall exceed one thousand six hundred meters. Every coastal station open to general public service shall at all times be ready to receive messages of such wave lengths as are required by the Berlin convention. Every ship station, except as hereinafter provided, and every coast station open to general public service shall be prepared to use two sending wave lengths, one of three hundred meters and one of six hundred meters, as required by the international convention in force: *Provided*, That the Secretary of Commerce may, in his discretion, change the limit of wave length reservation made by regulations first and second to accord with any international agreement to which the United States is a party.

OTHER WAVE LENGTHS.

Second. In addition to the normal sending wave length all stations, except as provided hereinafter in these regulations, may use other sending wave lengths: *Provided*, That they do not exceed six hundred meters or that they do exceed one thousand six hundred meters: *Provided further*, That the character of the waves emitted conforms to the requirements of regulations third and fourth following.

USE OF A "PURE WAVE."

Third. At all stations if the sending apparatus, to be referred to hereinafter as the "transmitter," is of such a character that the energy is radiated in two or more wave lengths, more or less sharply defined, as indicated by a sensitive wave meter, the energy in no one of the lesser waves shall exceed ten per centum of that in the greatest.

USE OF A "SHARP WAVE."

Fourth. At all stations the logarithmic decrement per complete oscillation in the wave trains emitted by the transmitter shall not exceed two-tenths, except when sending distress signals or signals and messages relating thereto.

RADIO LAWS AND REGULATIONS.

USE OF "STANDARD DISTRESS WAVE."

Fifth. Every station on shipboard shall be prepared to send distress calls on the normal wave length designated by the international convention in force, except on vessels of small tonnage unable to have plants insuring that wave length.

SIGNAL OF DISTRESS.

Sixth. The distress call used shall be the international signal of distress ● ● ● ~~■■■■ ■■■■ ■■■■~~ ● ● ●

USE OF "BROAD INTERFERING WAVE" FOR DISTRESS SIGNALS.

Seventh. When sending distress signals, the transmitter of a station on shipboard may be tuned in such a manner as to create a maximum of interference with a maximum of radiation.

DISTANCE REQUIREMENT FOR DISTRESS SIGNALS.

Eighth. Every station on shipboard, wherever practicable, shall be prepared to send distress signals of the character specified in regulations fifth and sixth with sufficient power to enable them to be received by day over sea a distance of one hundred nautical miles by a shipboard station equipped with apparatus for both sending and receiving equal in all essential particulars to that of the station first mentioned.

"RIGHT OF WAY" FOR DISTRESS SIGNALS.

Ninth. All stations are required to give absolute priority to signals and radiograms relating to ships in distress; to cease all sending on hearing a distress signal; and, except when engaged in answering or aiding the ship in distress, to refrain from sending until all signals and radiograms relating thereto are completed.

REDUCED POWER FOR SHIPS NEAR A GOVERNMENT STATION.

Tenth. No station on shipboard, when within fifteen nautical miles of a naval or military station, shall use a transformer input exceeding one kilowatt, nor, when within five nautical miles of such a station, a transformer input exceeding one-half kilowatt, except for sending signals of distress, or signals or radiograms relating thereto.

INTERCOMMUNICATION.

Eleventh. Each shore station open to general public service between the coast and vessels at sea shall be bound

to exchange radiograms with any similar shore station and with any ship station without distinction of the radio systems adopted by such stations, respectively, and each station on shipboard shall be bound to exchange radiograms with any other station on shipboard without distinction of the radio systems adopted by each station, respectively.

It shall be the duty of each such shore station, during the hours it is in operation, to listen in at intervals of not less than fifteen minutes and for a period not less than two minutes, with the receiver tuned to receive messages of three hundred meter wave lengths.

DIVISION OF TIME.

Twelfth. At important seaports and at all other places where naval or military and private or commercial shore stations operate in such close proximity that interference with the work of naval and military stations can not be avoided by the enforcement of the regulations contained in the foregoing regulations concerning wave lengths and character of signals emitted, such private or commercial shore stations as do interfere with the reception of signals by the naval and military stations concerned shall not use their transmitters during the first fifteen minutes of each hour, local standard time. The Secretary of Commerce may, on the recommendation of the department concerned, designate the station or stations which may be required to observe this division of time.

GOVERNMENT STATIONS TO OBSERVE DIVISION OF TIME.

Thirteenth. The naval or military stations for which the above-mentioned division of time may be established shall transmit signals or radiograms only during the first fifteen minutes of each hour, local standard time, except in case of signals or radiograms relating to vessels in distress, as hereinbefore provided.

USE OF UNNECESSARY POWER.

Fourteenth. In all circumstances, except in case of signals or radiograms relating to vessels in distress, all stations shall use the minimum amount of energy necessary to carry out any communication desired.

GENERAL RESTRICTIONS ON PRIVATE STATIONS.

Fifteenth. No private or commercial station not engaged in the transaction of bona fide commercial business by radio communication or in experimentation in connection with the development and manufacture of radio apparatus for commercial purposes shall use a transmitting wave length exceeding two hundred meters, or a transformer input exceeding one kilowatt, except by

Amateur
license.

special authority of the Secretary of Commerce contained in the license of the station: *Provides*, That the owner or operator of a station of the character mentioned in this regulation shall not be liable for a violation of the requirements of the third or fourth regulations to the penalties of one hundred dollars or twenty-five dollars, respectively, provided in this section unless the person maintaining or operating such station shall have been notified in writing that the said transmitter has been found, upon tests conducted by the Government, to be so adjusted as to violate the said third and fourth regulations, and opportunity has been given to said owner or operator to adjust said transmitter in conformity with said regulations.

SPECIAL RESTRICTIONS IN THE VICINITIES OF GOVERNMENT STATIONS.

Sixteenth. No station of the character mentioned in regulation fifteenth situated within five nautical miles of a naval or military station shall use a transmitting wave length exceeding two hundred meters or a transformer input exceeding one-half kilowatt.

SHIP STATIONS TO COMMUNICATE WITH NEAREST SHORE STATIONS.

Seventeenth. In general, the shipboard stations shall transmit their radiograms to the nearest shore station. A sender on board a vessel shall, however, have the right to designate the shore station through which he desires to have his radiograms transmitted. If this can not be done, the wishes of the sender are to be complied with only if the transmission can be effected without interfering with the service of other stations.

LIMITATIONS FOR FUTURE INSTALLATIONS IN VICINITIES OF GOVERNMENT STATIONS.

Eighteenth. No station on shore not in actual operation at the date of the passage of this Act shall be licensed for the transaction of commercial business by radio communication within fifteen nautical miles of the following naval or military stations, to wit: Arlington, Virginia; Key West, Florida; San Juan, Porto Rico; North Head and Tatoosh Island, Washington; San Diego, California; and those established or which may be established in Alaska and in the Canal Zone; and the head of the department having control of such Government stations shall, so far as is consistent with the transaction of governmental business, arrange for the transmission and receipt of commercial radiograms under the provisions of the Berlin convention of nineteen hundred and six and future international conventions or treaties to which the

United States may be a party, at each of the stations above referred to, and shall fix the rates therefor, subject to control of such rates by Congress: At such stations and wherever and whenever shore stations open for general public business between the coast and vessels at sea under the provisions of the Berlin convention of nineteen hundred and six and future international conventions and treaties to which the United States may be a party shall not be so established as to insure a constant service day and night without interruption, and in all localities wherever or whenever such service shall not be maintained by a commercial shore station within one hundred nautical miles of a naval radio station, the Secretary of the Navy shall, so far as is consistent with the transaction of governmental business, open naval radio stations to the general public business described above, and shall fix rates for such service, subject to control of such rates by Congress. The receipts from such radiograms shall be covered into the Treasury as miscellaneous receipts.

SECRECY OF MESSAGES.

Nineteenth. No person or persons engaged in or having knowledge of the operation of any station or stations, shall divulge or publish the contents of any messages transmitted or received by such station, except to the person or persons to whom the same may be directed, or their authorized agent, or to another station employed to forward such message to its destination, unless legally required so to do by the court of competent jurisdiction or other competent authority. Any person guilty of divulging or publishing any message, except as herein provided, shall, on conviction thereof, be punished by a fine of not more than two hundred and fifty dollars or imprisonment for a period of not exceeding three months, or both fine and imprisonment, in the discretion of the court.

PENALTIES.

For violation of any of these regulations, subject to which a license under sections one and two of this Act may be issued, the owner of the apparatus shall be liable to a penalty of one hundred dollars, which may be reduced or remitted by the Secretary of Commerce, and for repeated violations of any of such regulations, the license may be revoked.

For violation of any of these regulations, except as provided in regulation nineteenth, subject to which a license under section three of this Act may be issued, the operator shall be subject to a penalty of twenty-five dollars, which may be reduced or remitted by the Secretary of Commerce, and for repeated violations of any such regulations, the license shall be suspended or revoked.

Interference.

SEC. 5. That every license granted under the provisions of this Act for the operation or use of apparatus for radio communication shall prescribe that the operator thereof shall not willfully or maliciously interfere with any other radio communication. Such interference shall be deemed a misdemeanor, and upon conviction thereof the owner or operator, or both, shall be punishable by a fine of not to exceed five hundred dollars or imprisonment for not to exceed one year, or both.

SEC. 6. That the expression "radio communication" as used in this Act means any system of electrical communication by telegraphy or telephony without the aid of any wire connecting the points from and at which the radiograms, signals, or other communications are sent or received.

False signals.

SEC. 7. That a person, company, or corporation within the jurisdiction of the United States shall not knowingly utter or transmit, or cause to be uttered or transmitted, any false or fraudulent distress signal or call or false or fraudulent signal, call, or other radiogram of any kind. The penalty for so uttering or transmitting a false or fraudulent distress signal or call shall be a fine of not more than two thousand five hundred dollars or imprisonment for not more than five years, or both, in the discretion of the court, for each and every such offense, and the penalty for so uttering or transmitting, or causing to be uttered or transmitted, any other false or fraudulent signal, call, or other radiogram shall be a fine of not more than one thousand dollars or imprisonment for not more than two years, or both, in the discretion of the court, for each and every such offense.

Foreign vessels.

SEC. 8. That a person, company, or corporation shall not use or operate any apparatus for radio communication on a foreign ship in territorial waters of the United States otherwise than in accordance with the provisions of sections four and seven of this Act and so much of section five as imposes a penalty for interference. Save as aforesaid, nothing in this Act shall apply to apparatus for radio communication on any foreign ship.

SEC. 9. That the trial of any offense under this Act shall be in the district in which it is committed, or if the offense is committed upon the high seas or out of the jurisdiction of any particular State or district the trial shall be in the district where the offender may be found or into which he shall be first brought.

SEC. 10. That this Act shall not apply to the Philippine Islands.

SEC. 11. That this Act shall take effect and be in force on and after four months from its passage.

Approved, August 13, 1912.

LONDON INTERNATIONAL RADIOTELEGRAPHIC CONVENTION, PROCLAIMED BY THE PRESIDENT JULY 8, 1913.

The International Radiotelegraphic Convention was signed at London July 5, 1912. The convention was ratified by the Senate of the United States on January 22, 1913, with the proviso set forth in the following resolution of concurrence: London
convention.

Resolved (two-thirds of the Senators present concurring therein), That the Senate advise and consent to the ratification of the radiotelegraphic convention signed at London on July 5, 1912, with the final protocol and service regulations connected therewith: Provided, That the Senate advise and consent to the ratification of said convention with the understanding to be expressed as a part of the instrument of ratification that nothing in the Ninth Article of the Regulations affixed to the convention shall be deemed to exclude the United States from the execution of her inspection laws upon vessels entering in or clearing from her ports.

The London Convention was proclaimed by the President, and took effect July 8, 1913, "to the end that the same and every article and clause thereof may be observed and fulfilled with good faith by the United States and the citizens thereof," and supersedes the Berlin Radiotelegraphic Convention.

The London Convention and Regulations do not modify or repeal the act of August 13, 1912, to regulate radio communication or the acts of June 24, 1910, and July 23, 1912, to require apparatus and operators for radio communication on certain ocean steamers.

**INTERNATIONAL RADIOTELEGRAPH CONVENTION,
LONDON, 1913.**

[Translation.]

International Radiotelegraph Convention concluded between Germany and the German Protectorates, the United States of America and the Possessions of the United States of America, the Argentine Republic, Austria, Hungary, Bosnia-Herzegovina, Belgium, the Belgian Congo, Brazil, Bulgaria, Chile, Denmark, Egypt, Spain and the Spanish Colonies, France and Algeria, French West Africa, French Equatorial Africa, Indo-China, Madagascar, Tunis, Great Britain and the various British Colonies and Protectorates, the Union of South Africa, the Australian Federation, Canada, British India, New Zealand, Greece, Italy and the Italian Colonies, Japan and Chosen, Formosa, Japanese Sakhalin and the leased territory of Kwantung, Morocco, Monaco, Norway, the Netherlands, the Dutch Indies and the Colony of Curacao, Persia, Portugal and the Portuguese Colonies, Roumania, Russia and the Russian Possessions and Protectorates, The Republic of San Marino, Siam, Sweden, Turkey, and Uruguay.

The undersigned, plenipotentiaries of the Governments of the countries enumerated above, having met in con-

ference at London, have agreed on the following Convention, subject to ratification:

ARTICLE 1.

Scope.

The High Contracting Parties bind themselves to apply the provisions of the present Convention to all radio stations (both coastal stations and stations on shipboard) which are established or worked by the Contracting Parties and open to public service between the coast and vessels at sea.

They further bind themselves to make the observance of these provisions obligatory upon private enterprises authorized either to establish or work coastal stations for radiotelegraphy open to public service between the coast and vessels at sea, or to establish or work radio stations, whether open to general public service or not, on board of vessels flying their flag.

ARTICLE 2.

Coast stations.

By "coastal stations" is to be understood every radio station established on shore or on board a permanently moored vessel used for the exchange of correspondence with ships at sea.

Every radio station established on board any vessel not permanently moored is called a "station on shipboard."

ARTICLE 3.

Intercommunication.

The coastal stations and the stations on shipboard shall be bound to exchange radiograms without distinction of the radio system adopted by such stations.

Every station on shipboard shall be bound to exchange radiograms with every other station on shipboard without distinction of the radio system adopted by such stations.

However, in order not to impede scientific progress, the provisions of the present Article shall not prevent the eventual employment of a radio system incapable of communicating with other systems, provided that such incapacity shall be due to the specific nature of such system and that it shall not be the result of devices adopted for the sole purpose of preventing intercommunication.

ARTICLE 4.

Limited service.

Notwithstanding the provisions of Article 3, a station may be reserved for a limited public service determined by the object of the correspondence or by other circumstances independent of the system employed.

ARTICLE 5.

Each of the High Contracting Parties undertakes to connect the coastal stations to the telegraph system by special wires, or, at least, to take other measures which will insure a rapid exchange between the coastal stations and the telegraph system. Land-line connection.

ARTICLE 6.

The High Contracting Parties shall notify one another of the names of coastal stations and stations on shipboard referred to in Article 1, and also of all data, necessary to facilitate and accelerate the exchange of radiograms, as specified in the Regulations.

ARTICLE 7.

Each of the High Contracting Parties reserves the right to prescribe or permit at the stations referred to in Article 1, apart from the installation the data of which are to be published in conformity with Article 6, the installation and working of other devices for the purpose of establishing special radio communication without publishing the details of such devices.

ARTICLE 8.

The working of the radio stations shall be organized as far as possible in such manner as not to disturb the service of other radio stations. Interference.

ARTICLE 9.

Radio stations are bound to give absolute priority to calls of distress from whatever source, to similarly answer such calls and to take such action with regard thereto as may be required.

ARTICLE 10.

The charge for a radiogram shall comprise, according to the circumstances: Rates.

1. (a) The coastal rate, which shall fall to the coastal station;

(b) The shipboard rate, which shall fall to the shipboard station.

2. The charge for transmission over the telegraph lines, to be computed according to the ordinary rules.

3. The charges for transit through the intermediate coastal or shipboard stations and the charges for special services requested by the sender.

The coastal rate shall be subject to the approval of the Government of which the coastal station is dependent, and the shipboard rate to the approval of the Government of which the ship is dependent.

ARTICLE 11.

The provisions of the present Convention are supplemented by Regulations, which shall have the same force and go into effect at the same time as the Convention.

The provisions of the present Convention and of the Regulations relating thereto may at any time be modified by the High Contracting Parties by common consent. Conferences of plenipotentiaries having power to modify the Convention and the Regulations, shall take place from time to time; each conference shall fix the time and place of the next meeting.

ARTICLE 12.

Such conferences shall be composed of delegates of the Governments of the contracting countries.

In the deliberations each country shall have but one vote.

If a Government adheres to the Convention for its colonies, possessions or protectorates, subsequent conferences may decide that such colonies, possessions or protectorates, or a part thereof, shall be considered as forming a country as regards the application of the preceding paragraph. But the number of votes at the disposal of one Government, including its colonies, possessions or protectorates, shall in no case exceed six.

The following shall be considered as forming a single country for the application of the present Article:

German East Africa
 German Southwest Africa
 Kamerun
 Togo Land
 German Protectorates in the Pacific
 Alaska
 Hawaii and the other American possessions in Polynesia
 The Philippine Islands
 Porto Rico and the American possessions in the Antilles
 The Panama Canal Zone
 The Belgian Congo
 The Spanish Colony of the Gulf of Guinea
 French East Africa
 French Equatorial Africa
 Indo-China
 Madagascar
 Tunis
 The Union of South Africa
 The Australian Federation
 Canada
 British India
 New Zealand

Eritrea
 Italian Somaliland
 Chosen, Formosa, Japanese Sakhalin and the leased
 territory of Kwantung.
 The Dutch Indies
 The Colony of Curacao
 Portuguese West Africa
 Portuguese East Africa and the Portuguese posses-
 sions in Asia
 Russian Central Asia (littoral of the Caspian Sea)
 Bokhara
 Khiva
 Western Siberia (littoral of the Arctic Ocean).
 Eastern Siberia (littoral of the Pacific Ocean).

ARTICLE 13.

The International Bureau of the Telegraph Union shall be charged with collecting, coordinating and publishing information of every kind relating to radiotelegraphy, examining the applications for changes in the Convention or Regulations, promulgating the amendments adopted, and generally performing all administrative work referred to it in the interest of international radiotelegraphy.

Bernese Bureau.

The expense of such institution shall be borne by all the contracting countries.

ARTICLE 14.

Each of the High Contracting Parties reserves to itself the right of fixing the terms on which it will receive radiograms proceeding from or intended for any station, whether on shipboard or coastal, which is not subject to the provisions of the present Convention.

Rates.

If a radiogram is received the ordinary rates shall be applicable to it.

Any radiogram proceeding from a station on shipboard and received by a coastal station of a contracting country, or accepted in transit by the administration of a contracting country, shall be forwarded.

Any radiogram intended for a vessel shall also be forwarded if the administration of the contracting country has accepted it originally or in transit from a non-contracting country, the coastal station reserving the right to refuse transmission to a station on shipboard subject to a non-contracting country.

ARTICLE 15.

The provisions of Articles 8 and 9 of this Convention are also applicable to radio installation other than those referred to in Article 1.

ARTICLE 16.

Governments which are not parties to the present Convention shall be permitted to adhere to it upon their request. Such adherence shall be communicated through diplomatic channels to the contracting Government in whose territory the last conference shall have been held, and by the latter to the remaining Governments.

The adherence shall carry with it to the fullest extent acceptance of all the clauses of this Convention and admission to all the advantages stipulated therein.

The adherence to the Convention by the Government of a country having colonies, possessions or protectorates shall not carry with it the adherence of its colonies, possessions or protectorates unless a declaration to that effect is made by such Government. Such colonies, possessions and protectorates, as a whole or each of them, separately, may form the subject of a separate adherence or a separate denunciation within the provisions of the present Article and of Article 22.

ARTICLE 17.¹

The provisions of Articles 1, 2, 3, 5, 6, 7, 8, 11, 12 and 17 of the International Telegraph Convention of St. Petersburg of July 10-22, 1875, shall be applicable to international radiotelegraphy.

ARTICLE 18.

In case of disagreement between two or more contracting Governments regarding the interpretation or execution of the present Convention or of the Regulations referred to in Article 11, the question in dispute may, by mutual agreement, be submitted to arbitration. In such case each of the Governments concerned shall choose another Government not interested in the question at issue.

The decision of the arbiters shall be arrived at by the absolute majority of votes.

In case of a division of votes, the arbiters shall choose, for the purpose of settling the disagreement, another contracting Government which is likewise a stranger to the question at issue. In case of failure to agree on a choice, each arbiter shall propose a disinterested contracting Government and lots shall be drawn between the Governments proposed. The drawing of the lots shall fall to the Government within whose territory the international bureau provided for in Article 13 shall be located.

ARTICLE 19.

The High Contracting Parties bind themselves to take, or propose to their respective legislatures, the necessary measures for insuring the execution of the present Convention.

¹ See translation of Articles of the International Telegraph Convention on p. 47.

ARTICLE 20.

The High Contracting Parties shall communicate to one another any laws already framed, or which may be framed, in their respective countries relative to the object of the present Convention.

ARTICLE 21.

The High Contracting Parties shall preserve their entire liberty as regards radio installations other than provided for in Article 1, especially naval and military installations, and stations used for communications between fixed points. All such installations and stations shall be subject only to the obligations provided for in Articles 8 and 9 of the present Convention.

However, when such installations and stations are used for public maritime service they shall conform, in the execution of such service, to the provisions of the Regulations as regards the mode of transmission and rates.

On the other hand, if coastal stations are used for general public service with ships at sea and also for communication between fixed points, such stations shall not be subject, in the execution of the last named service, to the provisions of the Convention except for the observance of Articles 8 and 9 of this Convention.

Nevertheless, fixed stations used for correspondence between land and land shall not refuse the exchange of radiograms with another fixed station on account of the system adopted by such station; the liberty of each country shall, however, be complete as regards the organization of the service for correspondence between fixed points and the nature of the correspondence to be effected by the stations reserved for such service.

ARTICLE 22.

The present Convention shall go into effect on the 1st day of July, 1913, and shall remain in force for an indefinite period or until the expiration of one year from the day when it shall be denounced by any of the contracting parties.

Such denunciation shall affect only the Government in whose name it shall have been made. As regards the other Contracting Powers, the Convention shall remain in force.

ARTICLE 23.

The present Convention shall be ratified and the ratifications exchanged at London with the least possible delay.

In case one or several of the High Contracting Parties shall not ratify the Convention, it shall nevertheless be valid as to the Parties which shall have ratified it.

In witness whereof the respective plenipotentiaries have signed one copy of the Convention, which shall be deposited in the archives of the British Government, and a copy of which shall be transmitted to each Party.

Done at London, July 5, 1912.

[Translation.]

FINAL PROTOCOL.

At the moment of signing the Convention adopted by the International Radiotelegraph Conference of London, the undersigned plenipotentiaries have agreed as follows:

I.

The exact nature of the adherence notified on the part of Bosnia-Herzegovina not yet being determined, it is recognized that one vote shall be assigned to Bosnia-Herzegovina but that a decision will be necessary at a later date as to whether this vote belongs to Bosnia-Herzegovina in virtue of the second paragraph of Article 12 of the Convention, or whether this vote is accorded to it in conformity with the provisions of the third paragraph of that article.

II.

Note is taken of the following declaration:

The Delegation of the United States declares that its government is under the necessity of abstaining from all action with regard to rates, because the transmission of radiograms as well as of ordinary telegrams in the United States is carried on, wholly or in part, by commercial or private companies.

III.

Note is likewise taken of the following declaration:

The Government of Canada reserves the right to fix separately, for each of its coastal stations, a total maritime rate for radiograms proceeding from North America and destined for any ship whatever, the coastal rate amounting to three-fifths and the shipboard rate to two-fifths of the total rate.

In witness whereof the respective plenipotentiaries have drawn up the present Final Protocol, which shall be of the same force and effect as though the provisions thereof had been embodied in the text of the Convention itself to which it has reference, and they have signed one copy of the same, which shall be deposited in the archives of the British Government, and a copy of which shall be transmitted to each of the Parties.

Done at London, July 5, 1912.

**SERVICE REGULATIONS AFFIXED TO THE INTERNATIONAL
RADIOTELEGRAPH CONVENTION, LONDON, 1912.**

[Translation.]

ORGANIZATION OF RADIO STATIONS.

ARTICLE I.

The choice of radio apparatus and devices to be used by the coastal stations and stations on shipboard shall be unrestricted. The installation of such stations shall as far as possible keep pace with scientific and technical progress.

Service regulations.

Progress.

ARTICLE II.

Two wave lengths, one of 600 meters and the other of 300 meters, are authorized for general public service. Every coastal station opened to such service shall be equipped in such manner as to be able to use these two wave lengths, one of which shall be designated as the normal wave length of the station. During the whole time that a coastal station is open it shall be in condition to receive calls according to its normal wave length. For the correspondence specified under paragraph 2 of Article XXXV, however, a wave length of 1,800 meters shall be used. In addition, each Government may authorize in coastal stations the employment of other wave lengths designed to insure long-range service or any service other than for general public correspondence established in conformity with the provisions of the Convention under the reservation that such wave lengths do not exceed 600 meters or that they do exceed 1,600 meters.

Wave lengths.

In particular, stations used exclusively for sending signals designed to determine the position of ships shall not employ wave lengths exceeding 150 meters.

ARTICLE III.

1. Every station on shipboard shall be equipped in such manner as to be able to use wave lengths of 600 meters and of 300 meters. The first shall be the normal wave length and may not be exceeded for transmission except in the case referred to under Article XXXV (paragraph 2).

Other wave lengths, less than 600 meters, may be used in special cases and under the approval of the managements to which the coastal and shipboard stations concerned are subject.

2. During the whole time that a station on shipboard is open it shall be able to receive calls according to its normal wave length.

3. Vessels of small tonnage which are unable to use a wave length of 600 meters for transmission, may be authorized to employ exclusively the wave length of 300; they must be able to receive a wave length of 600 meters.

ARTICLE IV.

Wave lengths.

Communication between a coastal station and a station on shipboard shall be exchanged on the part of both by means of the same wave length. If, in a particular case, communication is difficult, the two stations may, by mutual consent, pass from the wave length with which they are communicating to the other regulation wave length. Both stations shall resume their normal wave length when the exchange of radiograms is finished.

ARTICLE V.

Service list.

1. The International Bureau shall draw up, publish, and revise from time to time an official chart showing the coastal stations, their normal ranges, the principal lines of navigation, and the time normally taken by ships for the voyage between the different ports of call.

2. It shall draw up and publish a list of radio stations of the class referred to in Article I of the Convention, and from time to time supplements covering additions and modifications. Such list shall contain for each station the following data:

(1) In the case of coastal stations; name, nationality and geographical location indicated by the territorial subdivision and the latitude and longitude of the place; in the case of stations on shipboard; name and nationality of the ship; when the case arises, the name and address of the party working the station;

(2) The call letters (the calls shall be distinguishable from one another and each must be formed of a group of three letters);

(3) The normal range;

(4) The radio system with the characteristics of the transmitting system (musical sparks, tonality expressed by the number of double vibrations, etc.);

(5) The wave lengths used (the normal wave length to be underscored);

(6) The nature of the services carried on;

(7) The hours during which the station is open;

(8) When the case arises, the hour and method of transmitting time signals and meteorological telegrams;

(9) The coastal rate or shipboard rate.

3. The list shall also contain such data relating to radio stations other than those specified in Article I of the Convention as may be communicated to the International Bureau by the management of the Radio Service ("administration") to which such stations are subject, provided that such managements are either adherents to the Convention or, if not adherents, have made the declaration referred to in Article XLVIII.

4. The following notations shall be adopted in documents for use by the International Service to designate radio stations:

- PG Station open to general public correspondence.
- PR Station open to limited public correspondence.
- P Station of private interest.
- O Station open exclusively to official correspondence.
- N Station having continuous service.
- X Station having no fixed working hours.

5. The name of a station on shipboard appearing in the first column of the list shall be followed, in case there are two or more vessels of the same name, by the call letters of such station.

ARTICLE VI.

The exchange of superfluous signals and words is prohibited to stations of the class referred to in Article I of the Convention. Experiments and practice will be permitted in such stations in so far as they do not interfere with the service of other stations. Superfluous signals.

Practice shall be carried on with wave lengths different from those authorized for public correspondence, and with the minimum of power necessary.

ARTICLE VII.

1. All stations are bound to carry on the service with the minimum of energy necessary to insure safe communication. Reduced power.

2. Every coastal or shipboard station shall comply with the following requirements:

(a) The waves sent out shall be as pure and as little damped as possible;

In particular, the use of transmitting devices in which the waves sent out are obtained by means of sparks directly in the aerial (plain aerial) shall not be authorized except in cases of distress.

It may, however, be permitted in the case of certain special stations (those of small vessels for example) in which the primary power does not exceed 50 watts.

(b) The apparatus shall be able to transmit and receive at a speed equal to at least 20 words a minute, words to be counted at the rate of 5 letters each.

New installation using more than 50 watts shall be equipped in such a way as to make it possible to obtain with ease several ranges less than the normal range, the shortest being approximately 15 nautical miles. Existing installations using more than 50 watts shall be remodeled, wherever possible, so as to comply with the foregoing provisions.

(c) Receiving apparatus shall be able to receive, with the greatest possible protection against interference, transmissions of the wave lengths specified in the present Regulations, up to 600 meters.

Fog signals.

3. Stations serving solely for determining the position of ships (radiophares) shall not operate over a radius greater than 30 nautical miles.

ARTICLE VIII.

Range.

Independently of the general requirements specified under Article VII, stations on shipboard shall likewise comply with the following requirements:

(a) The power transmitted to the radio apparatus, measured at the terminals of the generator of the station, shall not, under normal conditions, exceed one kilowatt.

(b) Subject to the provisions of Article XXXV, paragraph 2, power exceeding one kilowatt may be employed when the vessel finds it necessary to correspond while more than 200 nautical miles distant from the nearest coastal station, or when, owing to unusual circumstances, communication can be established only by means of an increase of power.

ARTICLE IX.

License.

1. No station on shipboard shall be established or worked by private enterprise without a license issued by the Government to which the vessel is subject.

Stations on board of ships having their port of registry in a colony, possession, or protectorate may be described as subject to the authority of such colony, possession, or protectorate.

2. Every shipboard station holding a license issued by one of the contracting Governments shall be considered by the other Governments as having an installation fulfilling the requirements stipulated in the present Regulations.

Competent authorities of the countries at which the ship calls may demand the production of the license. In default of such production, these authorities may satisfy themselves as to whether the radio installations of the ship fulfill the requirements imposed by the present regulations.

When the management of the radio service of a country is convinced by its working that a station on shipboard does not fulfill the requirements, it shall, in every case, address a complaint to the management of the radio service of the country to which such ship is a subject. The subsequent procedure, when necessary, shall be the same as that prescribed in Article XII, paragraph 2.

ARTICLE X.

Operators.

1. The service of the station on shipboard shall be carried on by a telegraph operator holding a certificate issued by the Government to which the vessel is subject, or, in case of necessity and for one voyage only, by some other adhering Government.

2. There shall be two classes of certificates:

The first class certificate shall attest the professional efficiency of the operator as regards:

(a) Adjustment of the apparatus and knowledge of its functioning;

(b) Transmission and acoustic reception at the rate of not less than 20 words a minute;

(c) Knowledge of the regulations governing the exchange of radio correspondence.

The second class certificate may be issued to operators who are able to transmit and receive at a rate of only 12 to 19 words a minute but who, in other respects, fulfill the requirements mentioned above. Operators holding second class certificates may be permitted on:

(a) Vessels which use radiotelegraphy only in their own service and in the correspondence of their crews, fishing vessels in particular;

(b) All vessels, as substitutes, provided such vessels have on board at least one operator holding a first-class certificate. However, on vessels classed under the first category indicated in Article XIII, the service shall be carried on by at least two telegraph operators holding first-class certificates.

In the stations on shipboard, transmissions shall be made only by operators holding first or second-class certificates except in cases of necessity where it would be impossible to conform to this provision.

3. The certificate shall furthermore state that the Government has bound the operator to secrecy with regard to the correspondence.

4. The radio service of the station on shipboard shall be under the superior authority of the commanding officer of the ship.

ARTICLE XI.

Ships provided with radio installations and classed under the first two categories indicated in Article XIII are bound to have radio installations for distress calls all the elements of which shall be kept under conditions of the greatest possible safety to be determined by the Government issuing the license. Such emergency installation shall have their own source of energy, be capable of quickly being set into operation, of functioning for at least six hours, and have a minimum range of 80 nautical miles for ships of the first category and 50 miles for those of the second. Such emergency installations shall not be required in the case of vessels the regular installations of which fulfill the requirements of the present Article.

ARTICLE XII.

If the management of the radio service of a country has knowledge of any infraction of the Convention or of the Regulations committed in any of the stations author-

Emergency
equipment.

Violations.

ized by it, it shall ascertain the facts and fix the responsibility.

In the case of stations on shipboard, if the operator is responsible for such infraction, the management of the radio service shall take the necessary measures, and, if the necessity should arise, withdraw the certificate. If it is ascertained that the infraction is the result of the condition of the apparatus or of instructions given the operator, the same method shall be pursued with regard to the license issued to the vessel.

2. In cases of repeated infractions chargeable to the same vessel, if the representations made to the management of the country to which the vessel is subject by that of another country remain without effect, the latter shall be at liberty, after giving due notice, to authorize its coastal stations not to accept communications proceeding from the vessel at fault. In case of disagreement between the managements of the radio service of two countries, the question shall be submitted to arbitration at the request of either of the two Governments concerned. The procedure is indicated in Article 18 of the Convention.

2. HOURS OF SERVICE OF STATIONS.

ARTICLE XIII.

Hours of service.

(a) Coastal stations:

1. The service of coastal stations shall, as far as possible be constant, day and night, without interruption.

Certain coastal stations, however, may have a service of limited duration. The management of the radio service of each country shall fix the hours of service.

2. The coastal stations whose service is not constant shall not close before having transmitted all their radiograms to the vessels which are within their radius of action, nor before having received from such vessels all the radiograms of which notice has been given. This provision is likewise applicable when vessels signal their presence before the actual cessation of work.

(b) Stations on shipboard:

Classification of ship stations.

3. Stations on shipboard shall be classed under three categories:

(1) Stations having constant service;

(2) Stations having a service of limited duration;

(3) Stations having no fixed working hours.

When the ship is under way, the following shipboard stations shall have an operator constantly listening in; 1st, Stations of the first category; 2nd, Those of the second category during the hours in which they are open to service. During the remaining hours, the last named stations shall have an operator at the radio instrument listening in during the first ten minutes of each hour. Stations of the third category are not bound to perform any regular service of listening in.

It shall fall to the Governments issuing the licenses specified in Article IX to fix the category in which the ship shall be classed as regards its obligations in the matter of listening in. Mention shall be made of such classification in the license.

3. FORM AND POSTING OF RADIOGRAMS.

ARTICLE XIV.

1. Radiograms shall show, as the first word of the preamble, that the service is "radio."

Message forms

2. In the transmission of radiograms proceeding from a ship at sea, the date and hour of posting at the shipboard station shall be stated in the preamble.

3. Upon forwarding a radiogram over the telegraph system, the coastal station shall show thereon as the office of origin, the name of the ship of origin as it appears in the list, and also when the case arises, that of the last ship which acted as intermediary. These data shall be followed by the name of the coastal station.

ARTICLE XV.

The address of radiograms intended for ships shall be as complete as possible.

It shall embrace the following:

(a) The name or title of the addressee, with additional designations, if any;

(b) The name of the vessel as it appears in the first column of the list;

(c) The name of the coastal station as it appears in the list.

The name of the ship, however, may be replaced, at the sender's risk, by the designation of the route to be followed by such vessel, as determined by the names of the ports of departure and destination or by any other equivalent information.

2. In the address, the name of the ship as it appears in the first column of the list, shall, in all cases and independently of its length, be counted as one word.

3. Radiograms framed with the aid of the International Code of Signals shall be transmitted to their destination without being translated.

4. RATES.

ARTICLE XVI.

1. The coastal rate and the shipboard rate shall be fixed in accordance with the tariff per word, pure and simple, on the basis of an equitable remuneration for the radio work, with an optional minimum rate per radiogram.

Rates

The coastal rate shall not exceed 50 centimes (11.6 cents) a word, and the shipboard rate shall not exceed

40 centimes (7.7 cents) a word. However, each management shall be at liberty to authorize coastal and shipboard rates higher than such maxima in the case of stations of ranges exceeding 400 nautical miles, or of stations whose work is exceptionally difficult owing to physical conditions in connection with the installation or working of the same.

The optional minimum rate per radiogram shall not be higher than the coastal rate or shipboard rate for a radiogram of ten words.

2. In the case of radiograms proceeding from or destined for a country and exchanged directly with the coastal stations of such country, the rate applicable to the transmission over the telegraph lines shall not, on the average, exceed the inland rate of such country.

Such rate shall be computed per word, pure and simple, with an optional minimum rate which shall not exceed the rate for ten words. It shall be stated in francs by the management of the radio service of the country to which the coastal station is subject.

In the case of countries of the European system, with the exception of Russia and Turkey, there shall be but one rate for the territory of each country.

ARTICLE XVII.

1. When a radiogram proceeding from a ship and intended for the coast passes through one or two shipboard stations, the charges shall comprise, in addition to the rates of the shipboard station of origin, the coastal station and the telegraph lines, the shipboard rate of each of the ships which have participated in the transmission.

2. The sender of a radiogram proceeding from the coast and intended for a ship may require that his message be transmitted by way of one or two stations on shipboard; he shall deposit for this purpose an amount equal to the radio and telegraph rates and, in addition, a sum to be fixed by the office of origin, as surety for the payment to the intermediary shipboard stations of the transit rates fixed by paragraph 1. He shall further pay, at his option, either the rate for a telegram of five words or the price of the postage on a letter to be sent by the coastal station to the office of origin giving the necessary information for the liquidation of the amounts deposited.

The radiogram shall then be accepted at the sender's risk; it shall show before the address the prepaid instruction, to wit: "X retransmissions telegraph" or "X retransmissions letter" according to whether the sender desired the information necessary for the liquidation of the deposits to be furnished by telegraph or by letter.

3. The rate for radiograms proceeding from a ship intended for another ship, and forwarded through one or two intermediary coastal stations shall comprise:

The shipboard rates of the two ships, the coastal rate of the coastal station or two coastal stations, as the case

may be, and the telegraph rate, when necessary, applicable to the transmission between the two coastal stations.

4. The rate for radiograms exchanged between ships without the intervention of a coastal station shall comprise the shipboard rates of the vessels of origin and destination together with the shipboard rates of the intermediary stations.

5. The coastal and shipboard rates accruing to the stations of transit shall be the same as those fixed for such stations when they are stations of origin or destination. In no case shall they be collected more than once.

6. In the case of every coastal station acting as intermediary, the rate to be collected for the service of transit shall be the highest coastal rate applicable to direct communication with the two ships concerned.

ARTICLE XVIII.

The country within whose territory a coastal station is established which serves as intermediary for the exchange of radiograms between a station on board ship and another country shall be considered, so far as the application of telegraph rates is concerned, as the country of origin or of destination of such radiograms, and not as the country of transit.

5. COLLECTION OF CHARGES.

ARTICLE XIX.

The total charge for radiograms shall be collected of the ^{Collection} sender, with the exception of: ^{of} charges.

(1) Charges for special delivery (Art. LVIII, Par. 1, of the Telegraph Regulations); (2) Charges applicable to inadmissible combinations or alterations of words noted by the office or station of destination (Art. XIX, par. 9 of the Telegraph Regulations) such charges being collected of the addressee.

Stations on shipboard shall to that end have the necessary tariffs. They shall be at liberty, however, to obtain information from coastal stations on the subject of rates for radiograms for which they do not possess all the necessary data.

2. The counting of words by the office of origin shall be conclusive in the case of radiograms intended for ships and that of the shipboard station of origin shall be conclusive in the case of radiograms proceeding from ships, both for purposes of transmission and of the international accounts. However, when the radiogram is worded wholly or in part, either in one of the languages of the country of destination, in the case of radiograms proceeding from ships, or in one of the languages of the country to which the ship is subject, in the case of radiograms intended for ships, and contains combinations or altera-

tions of words contrary to the usage of such language, the bureau or shipboard station of destination, as the case may be, shall have the right to recover from the addressee the amount of charge not collected. In case of refusal to pay, the radiogram may be withheld.

6. TRANSMISSION OF RADIOGRAMS.

(A) SIGNALS OF TRANSMISSION.

ARTICLE XX.

Code. The signals to be employed are those of the Morse International Code.

ARTICLE XXI.

Distress. Ships in distress shall use the following signal:

● ● ● ■■■■ ■■■■ ■■■■ ● ● ●

repeated at brief intervals, followed by the necessary particulars.

As soon as a station hears the signal of distress it shall cease all correspondence and not resume it until after it has made sure that the correspondence to which the call for assistance has given rise is terminated.

Stations which hear a signal of distress shall conform to the instructions given by the ship making such signal as regards the order of the messages or their cessation.

In case the call letters of a particular station are added at the end of the series of calls for assistance, the answer to the call shall be incumbent upon that station alone unless such station fails to reply. If the call for assistance does not specify any particular station, every station hearing such call shall be bound to answer it.

ARTICLE XXII.

Abbreviations. For the purpose of giving or requesting information concerning the radio service, stations shall make use of the signals contained in the list appended to the present Regulations.

(B) ORDER OF TRANSMISSION.

ARTICLE XXIII.

Order of business. Between two stations radiograms of the same order shall be transmitted one by one, by the two stations alternately, or in series of several radiograms, as the coastal station may indicate, provided the duration of the transmission of each series does not exceed fifteen minutes.

(C) METHOD OF CALLING RADIO STATIONS AND TRANSMISSION OF RADIOGRAMS.

ARTICLE XXIV.

1. As a general rule, it shall be the shipboard station that calls the coastal station whether it has radiograms to transmit or not. Calling.

2. In waters where the radio traffic is very great (British Channel, etc.), a coastal station should not, as a general rule, be called by a shipboard station unless the former is within normal range of the shipboard station and not until the distance of the vessel from the coastal station is less than 75 per cent of the normal range of the latter.

3. Before proceeding to call, the coastal station or the station on shipboard shall adjust its receiving apparatus to its maximum sensibility and make sure that no other correspondence is being carried on within its radius of action; if it finds otherwise, it shall wait for the first pause, unless it is convinced that its call will not be likely to disturb the correspondence in progress. The same applies in case the station desires to answer a call.

4. For calling, every station shall use the normal wave of the station it wishes to call.

5. If in spite of these precautions the transmission of a radiogram is impeded at any place, the call shall cease upon the first request from a coastal station open to public correspondence. The latter station shall in such case indicate the approximate length of time it will be necessary to wait.

6. The station on shipboard shall make known to every coastal station to which it has signaled its presence the moment at which it proposes to cease its operations and the probable duration of the interruption.

ARTICLE XXV.

1. The call shall comprise the signal

■■■ ● ■■■ ● ■■■

the call letters of the station called transmitted three times, the word "from" (de) followed by the call letters of the sending station transmitted three times.

2. The called station shall answer by making the signal

■■■ ● ■■■ ● ■■■

followed by the call letters of the corresponding station transmitted three times, the word "from," its own call letters, and the signal

■■■ ● ■■■

3. Stations desiring to enter into communication with ships, without, however, knowing the names of the ships

within their radius of action, may employ the signal **• • • • •** (signal of inquiry). The provisions of paragraphs 1 and 2 are likewise applicable to the transmission of a signal of inquiry and to the answer to such signal.

ARTICLE XXVI.

Repeating.

If a station called does not answer the call (Article XXV) transmitted three times at intervals of two minutes, the call shall not be resumed until after an interval of fifteen minutes, the station issuing the call having first made sure of the fact that no radio correspondence is in progress.

ARTICLE XXVII.

High power.

Every station which has occasion to transmit a radiogram requiring the use of high power shall first send out three times the signal of warning **• • • • •** with the minimum of power necessary to reach the neighboring stations. It shall not begin to transmit with high power until 30 seconds after sending the signal of warning.

ARTICLE XXVIII.

Order of information.

1. As soon as the coastal station has answered, the shipboard station shall furnish it with the following data in case it has messages to transmit; such data shall likewise be furnished upon request from the coastal station:

(a) The approximate distance, in nautical miles, of the vessel from the coastal station;

(b) The position of the vessel indicated in a concise form and adapted to the circumstances of the case;

(c) Her next port of call;

(d) The number of radiograms, if they are of normal length, or the number of words, if the messages are unusually long.

The speed of the ship in nautical miles shall also be given if specially requested by the coastal station.

2. The coastal station shall answer stating, as provided in paragraph 1, either the number of radiograms or the number of words to be transmitted to the ship, and also the order of transmission.

3. If the transmission can not take place immediately, the coastal station shall inform the station on shipboard of the approximate length of time that it will be necessary to wait.

4. If a shipboard station called can not receive for the moment, it shall inform the station calling of the approximate length of time that it will be necessary to wait.

5. In the exchange of messages between two stations on shipboard, it shall fall to the station called to fix the order of transmission.

ARTICLE XXIX.

When a coastal station receives calls from several shipboard stations, it shall decide the order in which such stations shall be admitted to exchange their messages. Authority
coast stations

In fixing this order the coastal station shall be guided exclusively by the necessity of permitting each station concerned to exchange the greatest possible number of radiograms.

ARTICLE XXX.

Before beginning the exchange of correspondence the coastal station shall advise the shipboard station whether the transmission is to be effected in the alternate order or by series (Article XXIII); it shall then begin the transmission or follow up the preliminaries with the signal

— • —

ARTICLE XXXI.

The transmission of the radiogram shall be preceded by the signal Signals

— • — • —

and terminated by the signal

• — • — •

followed by the name of the sending station and by the signal

— • —

In the case of a series of radiograms, the name of the sending station and the signal — • — shall only be given at the end of the series.

ARTICLE XXXII.

When a radiogram to be transmitted contains more than 40 words; the sending station shall interrupt the transmission by the signal • • — • — • • after each series of about 20 words and shall not resume it until after it has obtained from the receiving station a repetition of the last word duly received, followed by the said signal, or, if the reception is good, by the signal — • — Break

In the case of transmission by series, acknowledgment of receipt shall be made after each radiogram.

Coastal stations engaged in the transmission of long radiograms shall suspend the transmission at the end of each period of 15 minutes, and remain silent for a period of three minutes before resuming the transmission.

Coastal and shipboard stations working under the conditions specified in Article XXXV, par. 2, shall suspend work at the end of each period of 15 minutes and listen in with a wave length of 600 meters during a period of three minutes before resuming the transmission.

ARTICLE XXXIII.

Repeating.

1. When the signals become doubtful every possible means shall be resorted to to finish the transmission. To this end the radiogram shall be transmitted three times at most at the request of the receiving station. If in spite of such triple repetition the signals are still unreadable the radiogram shall be canceled.

If no acknowledgment of receipt is received the transmitting station shall again call up the receiving station. If no reply is made after three calls the transmission shall not be followed up any further. In such case the sending station shall have the privilege of obtaining the acknowledgment of receipt through the medium of another radio station, using, when necessary, the lines of the telegraph system.

2. If in the opinion of the receiving station the radiogram, although imperfectly received, is nevertheless capable of transmission, said station shall enter the words "reception doubtful" at the end of the preamble and let the radiogram follow. In such case the management of the radio service of the country to which the coastal station is subject shall claim the charges in conformity with Article XLII of the present Regulations. If, however, the shipboard station subsequently transmits the radiogram to another coastal station of the same management, the latter can claim only the rates applicable to a single transmission.

(D) ACKNOWLEDGMENT OF RECEIPT AND CONCLUSION OF WORK.

ARTICLE XXXIV.

1. Receipt shall be acknowledged in the form prescribed by the International Telegraph Regulations; it shall be preceded by the call letters of the transmitting station and followed by those of the receiving station.

2. The conclusion of a correspondence between two stations shall be indicated by each of the two stations by means of the signal.



followed by its own call letters.

(E) DIRECTIONS TO BE FOLLOWED IN SENDING RADIOGRAMS.

ARTICLE XXXV.

Nearest station.

1. In general, the shipboard stations shall transmit their radiograms to the nearest coastal station.

Nevertheless, if a shipboard station has the choice between several coastal stations at equal or nearly equal distances, it shall give the preference to the one estab-

lished on the territory of the country of destination or normal transit for its radiograms.

2. A sender on board a vessel shall, however, have the right to designate the coastal station through which he desires to have his radiogram transmitted. The station on shipboard shall then wait until such coastal station shall be the nearest.

In exceptional cases transmission may be made to a more distant coastal station, provided that:

(a) The radiogram is intended for the country in which such coastal station is situated and emanates from a ship subject to that country;

(b) Both stations use for calling and transmission a ^{1,800-meter wave} wave length of 1,800 meters; _{length.}

(c) Transmission with this wave length does not interfere with a transmission made by means of the same wave length by a nearer coastal station;

(d) The station on shipboard is more than 50 nautical miles distant from any coastal station given in the list. The distance of 50 miles may be reduced to 25 miles provided the maximum power at the terminals of the generator does not exceed 5 kilowatts and that the stations on shipboard are established in conformity with Articles VII and VIII. This reduction in the distance shall not be admissible in the seas, bays or gulfs of which the shores belong to one country only and of which the opening to the high sea is less than 100 miles wide.

7. DELIVERY OF RADIOGRAMS AT THEIR DESTINATION.

ARTICLE XXXVI.

When for any cause whatever a radiogram proceeding ^{Delivery of mes-} from a vessel at sea and intended for the coast can not be _{sages.} delivered to the addressee, a notice of nondelivery shall be issued. Such notice shall be transmitted to the coastal station which received the original radiogram. The latter, after verifying the address, shall forward the notice to the ship, if possible, by the intervention, if need be, of another coastal station of the same country or of a neighboring country.

When a radiogram received by a shipboard station can not be delivered, the station shall notify the office of the origin by official notice. In the case of radiograms emanating from the coast, such notice shall be transmitted, whenever practicable, to the coastal station through which the radiogram has passed in transit; otherwise, to another coastal station of the same country or of a neighboring country.

ARTICLE XXXVII.

If the ship for which a radiogram is intended has not signalled her presence to the coastal station within the period designated by the sender, or, in the absence of such

designation, by the morning of the 8th day following, the coastal station shall so notify the office of origin which shall in turn inform the sender.

The latter shall have the right to ask, by a paid official notice, sent by either telegraph or mail and addressed to the coastal station, that his radiogram be held for a further period of 9 days for transmission to the vessel, and so on. In the absence of such request, the radiogram shall be put aside as not transmissible at the end of the 9th day (exclusive of the day of posting).

Nevertheless, if the coastal station is certain that the vessel has left its radius of action before it has been able to transmit the radiogram to her, such station shall immediately so notify the office of origin which shall without delay inform the sender of the cancellation of the message. The sender may, however, by a paid official notice, request the coastal station to transmit the radiogram the next time the vessel shall pass.

8. SPECIAL RADIOGRAMS.

ARTICLE XXXVIII.

Special messages. The following radiograms only shall be accepted for transmission:

(1) Radiograms which answer prepaid. Such radiograms shall show before the address the indication "Answer prepaid" or "R P" supplemented by a statement of the amount paid in advance for the answer, thus: "Response Payco fr. x", or "R P fr. x";

The reply voucher issued by a station on shipboard shall carry with it the right to send, within the limits of its value, a radiogram to any destination whatever from the station on shipboard which has issued such voucher.

(2) Radiograms calling for repetition of message (for purposes of verification);

(3) Special delivery radiograms. Only, however, in cases where the amount of the charges for special delivery collected of the addressee. Countries which can not accept such radiograms shall make a declaration to this effect to the International Bureau. Special delivery radiograms with charges collected of the sender may be accepted when they are intended for the country within whose territory the corresponding station is located.

(4) Radiograms to be delivered by mail;

(5) Multiple radiograms;

(6) Radiograms calling for acknowledgment of receipt. But only as regards notification of the date and hour at which the coastal station shall have transmitted to the station on shipboard the radiogram addressed to the latter.

(7) Paid service notices. Except those requesting a repetition or information. Nevertheless all paid service

notices shall be accepted in transmission over the telegraph lines.

(8) Urgent radiograms. But only in transmission over the telegraph lines and subject to the application of the International Telegraph Regulations.

ARTICLE XXXIX.

Radiograms may be transmitted by a coastal station to a ship, or by a ship to another ship, with a view to being forwarded by mail from a port of call of the ship receiving the radiogram.

Such radiogram shall not be entitled to any radio retransmission.

The address of such radiogram shall embrace the following:

- (1) The paid designation "mail" followed by the name of the port at which the radiogram is to be mailed;
- (2) The name and complete address of the addressee;
- (3) The name of the station on shipboard by which the radiogram is to be mailed;
- (4) When necessary, the name of the coastal station.

Example: Mail Buenosaires 14 Calle Prat Valparaiso Avon Lizard.

The rate shall comprise, in addition to the radio and telegraph rates, a sum of 25 centimes (.048 cents) for the postage on the radiogram.

9. FILES.

ARTICLE XL.

The originals of radiograms together with the documents relating thereto retained by the managements of the radio service shall be kept, with all the necessary precautions as regards secrecy, for a period of at least fifteen months beginning with the month following that of the posting of the radiogram. Records and
Files.

Such originals and documents shall, as far as practicable, be sent at least once a month by the shipboard stations to the management of the radio service to which they are subject.

10. REBATES AND REIMBURSEMENTS.

ARTICLE XLI.

1. With regard to rebates and reimbursements, the International Telegraph Regulations shall be applicable, taking into account the restrictions specified in Article XXXVIII and XXXIX of the present Regulations and subject to the following reservations: Accounts.

The time employed in the transmission of radiograms and the time that radiograms remain in a coastal station in the case of radiograms intended for ships, or in the station on shipboard in the case of radiograms proceeding

from ships, shall not be counted as delays as regards rebates or reimbursements.

If the coastal station notifies the office of origin that a radiogram can not be transmitted to the ship addressed, the management of the radio service of the country of origin shall immediately instigate reimbursement to the sender of the coastal and shipboard rates relating to the radiogram. In such case, the refunded charges shall not enter into the accounts provided for by Article XLII, but the radiogram shall be mentioned therein as a memorandum.

Reimbursements shall be borne by the different managements of the radio service and private enterprises which have taken part in the transmission of the radiogram, each management or private enterprise relinquishing its share of the rate. Radiograms to which Articles 7 and 8 of the Convention of St. Petersburg are applicable shall remain subject, however, to the provisions of the International Telegraph Regulations, except when the acceptance of such radiograms is the result of an error made by the telegraph service.

2. When the acknowledgment of receipt of a radiogram has not reached the station which has transmitted the message, the charges shall be refunded only if the fact has been established that the radiogram is entitled to reimbursement.

11. ACCOUNTS AND PAYMENT OF CHARGES

ARTICLE XLII.

1. The coastal and shipboard charges shall not enter into the accounts provided for by the International Telegraph Regulations.

The accounts regarding such charges shall be liquidated by the managements of the radio service of the countries concerned. They shall be drawn up by the radio managements to which the coastal stations are subject, and communicated by them to the radio managements concerned. In cases where the working of the coastal stations is independent of the management of the radio service of the country, the party working such stations may be substituted, as regards the accounts, for the radio management of such country.

2. For transmission over the telegraph lines radiograms shall be treated, so far as the payment of rates is concerned, in conformity with the International Telegraph Regulations.

3. For radiograms proceeding from ships, the radio management to which the coastal station is subject shall charge the radio management to which the shipboard station of origin is subject with the coastal and ordinary telegraph rates, the total charges collected for answers prepaid, the coastal and telegraph rates collected for repetition of message (for purposes of verification).

charges relating to special delivery (in the case provided for in Article XXXVIII), or delivery by mail, and those collected for additional copies (TM). The radio management to which the coastal station is subject shall credit, when the case arises, through the channel of the telegraph accounts and through the medium of the offices which have participated in the transmission of the radiograms, the radio management to which the office of destination is subject with the total charges relating to answers prepaid. With respect to the telegraph rates and the charges relating to special delivery or delivery by mail, and to additional copies, the procedure shall be as prescribed in the Telegraph Regulations, the coastal station being considered as the telegraph office of origin.

For radiograms intended for a country lying beyond the country to which the coastal station belongs, the telegraph charges to be liquidated in conformity with the above provisions shall be those which result either from tables "A" and "B" annexed to the International Telegraph Regulations, or from special arrangements concluded between the radio managements of adjacent countries and published by such managements, and not the charges which might be collected in accordance with the special provisions of Articles XXIII, par. 1, and XXVII, par. 1, of the Telegraph Regulations.

For radiograms and paid service notices intended for ships, the radio management to which the office of origin is subject shall be charged directly by that to which the coastal station is subject with the coastal and shipboard rates. However, the total charges relating to answers prepaid shall be credited, if there is occasion, from country to country, through the channel of the telegraph accounts, until they reach the radio management to which the coastal station is subject. As regards the telegraph charges and the charges relating to delivery by mail and additional copies, the procedure shall be as prescribed in the Telegraph Regulations. The radio management to which the coastal station is subject shall credit that to which the ship of destination is subject with the shipboard rate, if there is occasion, with the rates accruing to the intermediary shipboard stations, the total charge collected for answers prepaid, the shipboard rates for repetition of message (for purposes of verification), and the charges collected for the preparation of additional copies and for delivery by mail.

Paid service notices and answers prepaid shall be treated in the radio accounts in all respects the same as other radiograms.

For radiograms transmitted by means of one or two intermediary stations on shipboard, each one of such stations shall charge the shipboard station of origin, in the case of a radiogram proceeding from a ship, or that of destination, in the case of a radiogram intended for a ship, with the shipboard rate accruing to it for transit.

4. In general, the liquidation of accounts relating to correspondence between stations on shipboard shall be effected directly between the companies working such stations, the station of origin being charged by the station of destination.

5. The monthly accounts serving as a basis for the special accounts of radiograms shall be made out for each radiogram separately with all the necessary data within a period of six months from the month to which they refer.

6. The Governments reserve the right to enter into special agreements among themselves and with private companies (parties operating radio stations, shipping companies, etc.) with a view of adopting other provisions with regard to accounts.

12. INTERNATIONAL BUREAU.

ARTICLE XLIII.

Expenses
Berne bureau.

of The additional expenses resulting from the work of the International Bureau so far as radio telegraphy is concerned shall not exceed 80,000 francs a year, exclusive of the special expenses arising from the convening of the International Conference.

The managements of the radio service of the contracting states shall, so far as contribution to the expenses is concerned, be divided into six classes, as follows:

1st Class:

Union of South Africa; Germany, United States of America; Alaska; Hawaii and the other American possessions in Polynesia; Philippine Islands; Porto Rico and the American possessions in the Antilles; Panama Canal Zone; Argentine Republic; Australia; Austria; Brazil; Canada; France; Great Britain; Hungary; British India; Italy; Japan; New Zealand; Russia; Turkey.

2nd Class:

Spain.

3rd Class:

Russian Central Asia (littoral of the Caspian Sea); Belgium; Chile, Chosen, Formosa, Japanese Sakhalin and the leased territory of Kwantung; Dutch Indies; Norway; Netherlands; Portugal; Roumania; Western Siberia (littoral of the Arctic Ocean); Eastern Siberia (littoral of the Pacific Ocean); Sweden.

4th Class:

German East Africa; German Southwest Africa; Kamerun; Togo Land; German Protectorates in the Pacific; Denmark; Egypt; Indo-China; Mexico; Siam; Uruguay.

5th Class:

French West Africa; Bosnia-Herzegovina; Bulgaria; Greece; Madagascar; Tunis.

6th Class:

French Equatorial Africa; Portuguese West Africa; Portuguese East Africa and the Portuguese possessions in

Asia; Bokhara; Belgian Congo; Colony of Curacao; Spanish Colony of the Gulf of Guinea; Eritrea; Khiva; Morocco; Monaco; Persia; San Marino; Italian Somaliland.

ARTICLE XLIV.

The management of the radio service of the different countries shall forward to the International Bureau a table in conformity with the annexed blank, containing the data enumerated in said table for stations such as referred to in Article V of the Regulations. Changes occurring and additional data shall be forwarded by the radio managements to the International Bureau between the 1st and 10th day of each month. With the aid of such data the International Bureau shall draw up the list provided for in Article V. The list shall be distributed to the radio managements concerned. The list and the supplements thereto may also be sold to the public at the cost price.

Bureau list.

The International Bureau shall see to it that the same call letters for several radio stations shall not be adopted.

13. METEOROLOGICAL RADIOGRAMS, TIME SIGNALS AND OTHER RADIOGRAMS.

ARTICLE XLV.

1. The managements of the radio service shall take the necessary steps to supply their coastal stations with meteorological radiograms containing indications concerning the district of such stations. Such radiograms, the text of which shall not exceed 20 words, shall be transmitted to ships upon request. The rate for such meteorological radiograms shall be carried to the account of the ships to which they are addressed.

2. Meteorological observations made by certain vessels designated for this purpose by the country to which they are subject, may be transmitted once a day, as paid service notices, to the coastal stations authorized to receive the same by the managements concerned, who shall likewise designate the meteorological offices to which such observations shall be addressed by the coastal stations.

3. Time signals and meteorological radiograms shall be transmitted one after the other in such a way that the total time occupied in their transmission shall not exceed ten minutes. As a general rule, all radio stations whose transmissions might interfere with the reception of such signals and radiograms, shall remain silent during their transmission in order that all stations desiring it may be able to receive the same. Exception shall be made in cases of distress calls and of state telegrams.

Time signals.

Interference.

4. The managements of the radio service shall give to agencies of maritime information such data regarding losses and casualties at sea or other information of general interest to navigation, as the coastal stations may properly report.

14. MISCELLANEOUS PROVISIONS.

ARTICLE XLVI.

Ship to ship
business.

The exchange of correspondence between shipboard stations shall be carried on in such a manner as not to interfere with the service of the coastal stations, the latter, as a general rule, being accorded the right of priority for the public service.

ARTICLE XLVII.

Relaying.

Coastal stations and stations on shipboard shall not be bound to participate in the retransmission of radiograms except in cases where direct communication cannot be established between the stations of origin and destination.

The number of such retransmissions shall, however, be limited to two.

In the case of radiograms intended for the coast, retransmission shall take place only for the purpose of reaching the nearest coastal station.

Retransmission shall in every case be subject to the condition that the intermediate station which receives the radiogram in transit is in a position to forward it.

ARTICLE XLVIII.

If the route of a radiogram is partly over telegraph lines, or through radio stations subject to a non-contracting Government, such radiograms may be transmitted provided the management of the radio service to which such lines or stations are subject have declared that, if the occasion should arise, they will comply with such provisions of the Convention and of the Regulations as are indispensable to the regular transmission of radiograms and that the payment of charges is insured. Such declaration shall be made to the International Bureau and communicated to the offices of the Telegraph Union.

ARTICLE XLIX.

Modifications of the present regulations which may be rendered necessary in consequence of the decisions of subsequent Telegraph Conferences shall go into effect on the date fixed for the application of the provisions adopted by each one of such conferences.

ARTICLE L.

Telegraph regu-
lations. (See p
47.)

The provisions of the International Telegraph Regulations shall be applicable analogously to radio correspondence in so far as they are not contrary to the provisions of the present regulations. The following provisions of the Telegraph Regulations, in particular, shall be applicable to radio correspondence: Article XXVII, paragraphs 3 to 6, relating to the collection of charges; Articles XXVI and XLI relating to the indication of the route to be followed; Article LXXV, paragraph 1, LXXVIII, paragraphs 2 to 4, and LXXIX, paragraphs 2 and 4, relating to the preparation of accounts. However:—(1) The period of

(SUPPLEMENT TO ARTICLE XXII OF THE REGULATIONS.)

List of Abbreviations to be used in Radio Communications.

| Abbreviation. | Question. | Answer or Notice. |
|---------------|---|--|
| CQ | ----- | Signal of enquiry made by a station desiring to communicate. |
| TR | ----- | Signal announcing the sending of particulars concerning a station on ship-board (Art. XXII). |
| (C) | ----- | Signal indicating that a station is about to send at high power. |
| PBB | Do you wish to communicate by means of the International Signal Code? | I wish to communicate by means of the International Signal Code. |
| QRA | What ship or coast station is that? | This is |
| QRB | What is your distance? | My distance is |
| QRC | What is your true bearing? | My true bearing is degrees. |
| QRD | Where are you bound for? | I am bound for |
| QRE | Where are you bound from? | I am bound from |
| QRG | What line do you belong to? | I belong to the Line. |
| QRH | What is your wave length in meters? | My wave length is meters. |
| QRJ | How many words have you to send? | I have words to send. |
| QRK | How do you receive me? | I am receiving well. |
| QRL | Are you receiving badly? Shall I send 20. for adjustment? | I am receiving badly. Please send 20. for adjustment. |
| QRM | Are you being interfered with? | I am being interfered with. |
| QRN | Are the atmospherics strong? | Atmospherics are very strong. |
| QRO | Shall I increase power? | Increase power. |
| QRP | Shall I decrease power? | Decrease power. |
| QRQ | Shall I send faster? | Send faster. |
| QRS | Shall I send slower? | Send slower. |
| QRT | Shall I stop sending? | Stop sending. |
| QRU | Have you anything for me? | I have nothing for you. |
| QRV | Are you ready? | I am ready. All right now. |
| QRW | Are you busy? | I am busy (or, I am busy with). Please do not interfere. |
| QRX | Shall I stand by? | Stand by. I will call you when required. |
| QRY | When will be my turn? | Your turn will be No. |
| QRZ | Are my signals weak? | Your signals are weak. |
| QSA | Are my signals strong? | Your signals are strong. |
| QSB | Is my tone bad? | The tone is bad. |
| | Is my spark bad? | The spark is bad. |
| QSC | Is my spacing bad? | Your spacing is bad. |
| QSD | What is your time? | My time is |
| QSF | Is transmission to be in alternate order or in series? | Transmission will be in alternate order. |
| QSG | | Transmission will be in series of 5 messages. |
| QSH | | Transmission will be in series of 10 messages. |
| QSI | What rate shall I collect for | Collect |
| CSK | Is the last radiogram canceled? | This last radiogram is canceled. |
| QSL | Did you get my receipt? | Please acknowledge. |
| QSM | What is your true course? | My true course is degrees. |
| QSN | Are you in communication with land? | I am not in communication with land. |
| QSO | Are you in communication with any ship or station (or: with)? | I am in communication with (through). |
| QSP | Shall I inform that you are calling him? | Inform that I am calling him. |
| QSQ | Is calling me? | You are being called by |
| QSR | Will you forward the radiogram? | I will forward the radiogram. |
| QST | Have you received the general call? | General call to all stations. |
| QSU | Please call me when you have finished (or: at .. o'clock)? | Will call when I have finished. |
| QSV | Is public correspondence being handled? | Public correspondence is being handled. Please do not interfere. |
| QSW | Shall I increase my spark frequency? | Increase your spark frequency. |
| QSX | Shall I decrease my spark frequency? | Decrease your spark frequency. |
| QSY | Shall I send on a wave length of meters? | Let us change to the wave length of meters. |

¹ Public correspondence is any radio work, official or private, handled on commercial wave lengths.

When an abbreviation is followed by a mark of interrogation, it refers to the question indicated for that abbreviation.

| Station. | EXAMPLES. |
|----------------------|---|
| A Q R A? | What is the name of your station? |
| B Q R A Campania | This is the Campania. |
| A Q R G? | To what line do you belong? |
| B Q R G Cunard Q R Z | I belong to the Cunard Line. Your signals are weak. |

Station A then increases the power of its transmitter and sends:

| | |
|----------|---|
| A Q R K? | How are you receiving? |
| B Q R K | I am receiving well. |
| Q R B 80 | The distance between our stations is 80 nautical miles. |
| Q R C 62 | My true bearing is 62 degrees, etc. |

EXTRACT FROM THE INTERNATIONAL TELEGRAPH CONVENTION, SIGNED AT ST. PETERSBURG, JULY 10-22, 1875.

[See Article 17 of the convention, p. 20.]

ARTICLE 1. The High Contracting Parties concede to all persons the right to correspond by means of the international telegraphs.

ARTICLE 2. They bind themselves to take all the necessary measures for the purpose of insuring the secrecy of the correspondence and its safe transmission.

ARTICLE 3. They declare, nevertheless, that they accept no responsibility as regards the international telegraph service.

ARTICLE 5. Telegrams are classed in three categories:

1. State telegrams: those emanating from the Head of the Nation, the Ministers, the Commanders-in-Chief of the Army and Naval forces, and the Diplomatic or Consular Agents of the Contracting Governments, as well as the answers to such telegrams.

2. Service telegrams: those which emanate from the Managements of the Telegraph Service of the Contracting States and which relate either to the international telegraph service or to subjects of public interest determined jointly by such Managements.

3. Private telegrams.

In the transmission, the State telegrams shall have precedence over other telegrams.

ARTICLE 6. State telegrams and service telegrams may be issued in secret language, in any communications.

Private telegrams may be exchanged in secret language between two States which admit of this mode of correspondence.

The States which do not admit of private telegrams in secret language upon the expedition or arrival of the same, shall allow them to pass in transit, except in the case of suspension defined in article 8.

ARTICLE 7. The High Contracting Parties reserve the right to stop the transmission of any private telegram which may appear dangerous to the safety of the State,

RADIO LAWS AND REGULATIONS.

or which may be contrary to the laws of the country, to public order or good morals.

ARTICLE 8. Each Government also reserves the right to suspend the international telegraph service for an indefinite period, if deemed necessary by it, either generally, or only over certain lines and for certain classes of correspondence, of which such Government shall immediately notify all the other Contracting Governments.

ARTICLE 11. Telegrams relating to the international telegraph service of the Contracting States shall be transmitted free of charge over the entire systems of such States.

ARTICLE 12. The High Contracting Parties shall render accounts to one another of the charges collected by each of them.

ARTICLE 17. The High Contracting Parties reserve respectively the right to enter among themselves into special arrangements of any kind with regard to points of the service which do not interest the States generally.

Part II.—REGULATIONS GOVERNING SHIP AND LAND RADIO STATIONS.

SHIP STATIONS.

1. On vessels coming under the ship acts, an emergency power supply, independent of the vessel's main electric power plant, must be provided which will enable radio messages to be sent for at least four hours over a distance of at least 100 miles day or night. The emergency power supply and equipment should be located and installed in such manner as to afford maximum protection against accident. Emergency apparatus.

2. The radio transmitting apparatus, operated from the emergency power supply, should be capable of functioning within two minutes after unexpected notice to the operator.

3. The complete equipment must be maintained in an efficient condition at sea.

4. The complete emergency equipment should be tested before each sailing and daily at sea by the operator or an inspector and a note of its performance entered in the radio log.

5. Radio inspectors or other duly authorized officers of the Government will occasionally call for test messages, to be sent by means of the emergency apparatus, while the vessel is at sea.

6. An "induction coil" connected to "plain aerial" is not recommended as emergency apparatus, on account of the high voltages produced which frequently damage the antenna insulation and on account of "vibrator troubles."

7. A motor generator or rotary converter operated by storage battery is probably the most satisfactory means available at present of energizing the transmitting apparatus.

8. Any auxiliary engine for wireless purposes must operate on a fuel which will fulfill the requirements of Rule XI, section 5, of the General Rules and Regulations of the Steamboat-Inspection Service, reading as follows:

None of the inflammable articles specified in section 4472, Revised Statutes, or oil that will not stand a fire test of 300° F. shall be used as stores on any pleasure steamer or steamer carrying passengers except that vessels not carrying passengers for hire may transport gasoline or any of the products of petroleum for use as a source of motive power for motor boats or launches of such vessels. (Sec. 4472, R. S.)

Spare parts and
repairs.

9. Every ship station shall carry a reasonable number of spares of such parts of both the main and emergency radiotelegraph equipments as are subject to undue wear, deterioration, or liability to accident.

10. One extra pair of head telephones, extra cords, and extra detectors must always be kept on hand.

11. A storage battery voltmeter, hydrometer, a supply of electrolyte, and distilled water should be a part of the regular equipment, but are not prescribed in terms by statute. The absence of these and similar inexpensive emergency articles will be brought to the attention of the master and of the company installing the apparatus by the radio inspector, in writing, and if after a reasonable interval they have not been supplied, the inspector will communicate the fact to the Commissioner of Navigation.

Power avail-
able.

12. The vessel's electric power for the operation of the main equipment shall, at all times while the steamer is under way, be available for the radio operator's use. On steamers where the dynamo is not run continuously there should be an efficient means of communication between the radio room and the dynamo room, in order that the radio operator may signal for power, as the law provides that he may not leave his post of duty.

Communica-
tion between
radio room and
bridge.

13. Efficient communication between the radio room and the bridge must be maintained. A speaking tube or telephone will comply with this requirement. A bell and messenger service will not be acceptable unless there are special conditions justifying this equipment. The speaking tube or telephone must terminate in the radio room and on the bridge, or in the chart room if readily accessible from the bridge. If the radio room is adjacent to or accessible from the bridge so that orders may be transferred direct, no means of communication will be required. Any arrangement calling for the services of a third person to transmit the message will not be satisfactory. The radio inspectors will notify the ship authorities whether the means of communication provided is satisfactory at the time of inspection.

Continuous
watch.

14. On vessels of the United States it is the statutory duty of the master to see that one operator is on duty at all times. The radio service of the ship is under the supreme authority of the master.

15. Masters should require operators on duty to communicate with the officer on the bridge every half hour.

16. Operators must make entries on the radio log every 15 minutes, as evidence that a continuous watch is being maintained. The entries must, if possible, consist of the call letters of other stations communicating and a few words of the intercepted messages.

Vessels in port.

17. When vessels are in port the key to the radio room must at all times be on board in charge of the proper officer and the radio equipment shall be in such condition as to facilitate Government inspection.

CLASSIFICATION OF SHIP STATIONS AND GRADES OF OPERATORS REQUIRED.

18. **First Class:** Vessels having a continuous service. There shall be placed in the first-class vessels which are intended to carry 25 or more passengers—(1) If they have an average speed in service of 15 knots or more; (2) if they have average speed in service of more than 13 knots, but only subject to the twofold condition that they have on board 200 persons or more (passengers and crew), and that, in the course of their voyage, they go a distance of more than 500 sea miles between any two consecutive ports. First class.
19. **Second Class:** Vessels having a continuous *watch* but a *service* of limited duration. Other vessels placed in the second class *must*, during navigation, maintain a continuous *watch* for at least seven hours a day, and a *watch* of ten minutes at the beginning of every other hour. Second class.
20. **Third Class:** Vessels which have no fixed periods of service. All vessels which are placed neither in the first nor in the second class shall be placed in the third class. Third class.
21. *Service* may be defined as preparedness to transmit and receive radio messages or signals at the rate of at least 20 words per minute. Service and operators required.
22. *Watch* may be defined as preparedness to receive distress signals and call letters slowly. A "watcher" or cargo-grade operator will summon a first or second class operator if necessary.
23. All American vessels required by the act of July 23, 1912, to be equipped with radio apparatus, and operators *must* at all hours maintain a continuous *watch*; that is to say, an operator or *watcher* must be "listening in" continuously. This requirement is outside of and above the requirement based on the classification under which the ship's station is licensed.
24. Vessels voluntarily equipped are not required to maintain this continuous *watch*. Vessels voluntarily equipped are, however, subject to the following requirements as to *watch* according to the class assigned to them in their station licenses.
25. If a license of the second class be issued to a voluntarily equipped vessel, the station *must* maintain a continuous *watch* for at least seven hours a day and a *watch* of ten minutes at the beginning of every hour.
26. The grade of operators required on vessels of each class are prescribed in the London Convention Service Regulations, Article X. A continuous *watch* may be maintained by one commercial second-grade operator and one cargo-grade operator on cargo steamers.
27. Passenger vessels coming under the act of July 23, 1912, which carry or are licensed to carry 25 or more passengers, *must* be placed in the first class: "(a) If they have an average speed in service of 15 knots or more; (b) if they have an average speed in service of more than 13

knots, but only subject to the twofold condition that they have on board 200 persons or more (passengers and crew), and that in the course of their voyage they go a distance of more than 500 sea miles between any two consecutive ports." The *service* shall be carried on by at least two commercial first-grade operators.

28. Cargo vessels coming under the act of July 23, 1912, which are required to maintain a continuous *watch*, must be placed in the second class if continuous *service* is not maintained. On cargo steamers a continuous *watch* may be maintained by at least one commercial second-grade operator and one cargo-grade operator.

29. Passenger vessels coming under the act of July 23, 1912, but which are not *required* to be entered in the first class, may be entered in the first or second class, according to whether continuous *service* or continuous *watch* is maintained. The number and grade of operators required is determined by *service* or *watch*. On passenger vessels coming under the ship act but entered in the second class at least two second-grade operators are required to maintain continuous *watch*.

30. Cargo vessels which come under the act of July 23, 1912, and are required to maintain a continuous *watch*, may be placed in the first class, if continuous *service* is maintained. (For operators, see par. 28.)

31. All vessels voluntarily equipped with radio apparatus and which have no specified hours of *service* or *watch* must be placed in the third class.

32. Any vessel voluntarily equipped may be placed in the first class if continuous *service* is maintained, or in the second class if a continuous *watch*, or a watch of limited duration, such as specified above for vessels of the second class, is maintained.

33. In all ship stations transmissions shall be made only by operators holding commercial first or second grade licenses or higher.

34. Continuous *service* shall be maintained by not lower than commercial first-grade operators.

35. Vessels which are voluntarily equipped with radio apparatus for their own convenience and for the correspondence of officers and crew must employ at least one commercial second-grade operator or higher.

36. Radio telephone apparatus on vessels not coming under the act of July 23, 1912, must be operated by a person holding a cargo-grade license or higher.

37. The owners of ship stations desiring to change the classification of a ship must apply for a new license.

LAND STATIONS.

38. Coast stations are stations which transmit messages to vessels at sea or on the Great Lakes, or whose operations can interfere with the exchange of messages between ship and ship or ship and coast. The principal purpose of the regulation of radio communication, international and national, is to secure the greatest efficiency

Coast stations,
definition of

of maritime communication through this agency, especially as a means of promoting safety to life.

39. Inland stations are stations which can not transmit messages to vessels at sea or on the Great Lakes and whose operations can not affect the transmission of messages between ship and ship or ship and coast. This may be due to their geographical location or to their range, dependent on power and aerial, or conditions. In some instances actual inspection may be necessary to determine whether a station should be licensed as a coast station or an inland station. An operator or owner in doubt as to the classification of his station should communicate the facts to the radio inspector of his district when applying for a license.

Inland stations,
definition of.

40. Stations are bound to give absolute priority to calls of distress from ships, to similarly answer such calls, and to take such action with regard thereto as may be required.

Wave lengths,
distress signals.

41. The working of stations shall be organized as far as possible in such manner as not to disturb the service of other stations.

42. All coast stations (par. 38), excepting general and restricted amateur stations, are required to be able to transmit on the wave lengths of 300 and 600 meters for the purpose of transmitting or relaying distress messages or signals and messages relating thereto, if necessary.

43. Coast stations primarily intended for long waves and long-distance transmission may install an auxiliary antenna and auxiliary transmitter to comply with the short wave length requirements.

44. The international standard wave length is 600 meters, and the operators of all coast stations are required, during the hours the station is in operation, to "listen in" at intervals of not less than 15 minutes and for a period not less than 2 minutes, with the receiving apparatus tuned to receive this wave length, for the purpose of determining if any distress signals or messages are being sent and to determine if the transmitting operations of the "listening station" are causing interference with other radio communication.

45. General public service may be defined as "paid business," conducted on commercial wave lengths between ship and shore or ship and ship.

General public
service.

46. Limited public service may be defined as "paid business" between certain designated land stations, ships or lines of ships, and must be conducted on some authorized wave length other than 300 or 600 meters.

47. All special service must be conducted on some authorized wave length other than 300 or 600 meters, not interfering with general public service.

48. Limited commercial, special amateur, and all stations which have no authorized rates, shall not transmit or accept public correspondence from other stations, except in case of emergency.

49. If a general public-service coast station also maintains a limited commercial service with other stations on land or with vessels at sea, the limited commercial service must be conducted on some authorized wave length other than 300 or 600 meters, but this service can be authorized on a general public-service coast station license without stating the specific hours, it being understood that the limited commercial service is conducted only when no general public service business is on file.

50. If a general public-service coast station also maintains a public service between fixed points on land, the service between the land stations must be conducted on some authorized wave length other than 300 or 600 meters, and a separate form, No. 761, should be submitted covering "Limited public service," giving the exact hours of such service.

CLASSIFICATION OF LAND STATIONS AND GRADES OF OPERATORS REQUIRED.

Classes.

51. Both coast stations (the words "coast stations," "shore stations," and "coastal stations" are used interchangeably) and inland stations are divided for the purposes of the administration of the act into the following classes: (1) Public-service stations, (a) general, (b) limited; (2) limited commercial stations; (3) experiment stations for the development of radio communication; (4) technical and training school stations; (5) special amateur stations; (6) general amateur stations; (7) restricted amateur stations.

Service and operators required.
General public.

52. CLASS 1.—(a) *Public-service stations, general*, are those open to general business between coast and ships and include those operated by common carriers under the act of February 4, 1887, to regulate commerce, amended June 18, 1910. They are required to maintain a constant service when open. Every coastal station open to public service shall at all times be ready to receive messages of such wave lengths as are required by the international convention in force. (Sec. 4, first regulation, act of Aug. 13, 1912.) The station rates are authorized in the license and published in the Official Berne List. Whenever such stations do not insure a constant service, transmitting and receiving day and night without interruption, the Secretary of the Navy is directed to open naval radio stations within 100 miles thereof to public business. (Sec. 4, eighteenth regulation, act of Aug. 13, 1912.) The Secretary of War, is authorized by the act of May 26, 1900 (31 Stat., 206), to open Alaskan military stations to public service.

53. General public service shall be conducted only by operators holding commercial first-grade licenses or higher.

Limited public.

54. CLASS 1.—(b) *Public service stations, limited*, are reserved for a limited public service, determined by the object of the correspondence or other circumstances inde-

pendent of the system employed. Stations of this class transmit and receive public messages to and from certain stations only, which are designated in the license. The rates are authorized in the licenses, and if not published in the official list they may be obtained from the licensee.

55. The service of limited public service *coast* stations shall be carried on by commercial first-grade operators or higher.

56. The service of limited public service *inland* stations shall be carried on by commercial second-grade operators or higher.

57. CLASS 2.—*Limited commercial stations* are not open to public service and are licensed for a specific commercial service or services defined in the license. Stations of this class must not transmit to or accept public messages from other stations. No rates are authorized. Limited com-
mercial.

58. If a coast station, the operators shall hold a commercial second-grade license or higher. (Par. 57.)

59. CLASS 3.—*Experiment stations*.—The Secretary of Commerce is authorized by section 4 of the act to grant special temporary licenses "to stations actually engaged in conducting experiments for the development of the science of radio communication, or the apparatus pertaining thereto, to carry on special tests, using any amount of power or any wave lengths, at such hours and under such conditions as will insure the least interference with the sending or receipt of commercial or Government radiograms, of distress signals and radiograms, or with the work of other stations." Applicants for such licenses should state any technical result they have already produced, their technical attainments, etc. The fact that an applicant desires to experiment with his equipment does not justify or require a license of this class. Most experiments can be made within the limitations of general and restricted amateur station licenses or by use of an artificial antenna to prevent radiation. Experimental.

60. Experiment stations may be operated by a person holding an experiment and instruction grade license or higher.

61. CLASS 4.—*Technical and training-school stations* will be licensed, according to the degree of technical training attained and imparted and to local conditions. Technical.

62. The grade of operators required will be specified when the license is issued.

63. CLASS 5.—*Special amateur stations* may be licensed by the Secretary of Commerce to use a longer wave length and a higher power on special application. Applications for this class from amateurs with less than two years' experience in actual radio communication will not be approved. The application must state the experience and purpose of the applicant, the local conditions of radio communication, especially of maritime radio communication in the vicinity of the station, and a special license will be granted only if some substantial benefit to the art or Special am-
teur.

to commerce apart from individual amusement seems probable. (Sec. 4, fifteenth regulation, act of Aug. 13, 1912.)

64. Special amateur *coast* stations must be operated by a person holding a commercial second-grade license or higher. Inland stations may be operated by persons holding amateur second-grade licenses or higher.

General amateur.

65. CLASS 6.—*General amateur stations* are restricted to a transmitting wave length not exceeding 200 meters and a transformer input not exceeding 1 kilowatt. (Sec. 4, fifteenth regulation, act of Aug. 13, 1912.)

Restricted amateur.

66. CLASS 7.—*Restricted amateur stations*, within 5 nautical miles of a naval or military station, are restricted to a wave length not exceeding 200 meters and to a transformer input not exceeding one-half kilowatt. (Sec. 4, sixteenth regulation, act of Aug. 13, 1912.)

67. Amateur first or second grade operators or higher are required for general and restricted amateur stations.

68. The license does not specify the number of operators required, but provides that the station shall at all times while in operation be under the care of an operator licensed for that purpose. The grade and number of operators as required by law are determined by the service of the station.

Special stations.

69. *Special stations for exceptional distances* are land stations designed to carry on transoceanic radio communication as between the United States and European countries, or between the Pacific coast and Hawaii, or from the United States over similar long distances at sea to another land station, or (inland) to carry on radio communication overland over exceptional distances. These stations will all come under one of the classifications named above, and the license will indicate the stations for which communication is authorized and indicate the range.

REGULATIONS COMMON TO LAND AND SHIP STATIONS.

Changes.

70. Any change in the characteristics of the radio apparatus or service of the station must be authorized by the Secretary of Commerce.

Official list.

71. In order to comply with section 2 of the act of June 24, 1910, as amended July 23, 1912, every land station open to general public service, and every station on board an American vessel of the first or second class engaged in the foreign trade or transoceanic service, shall have as a part of the station equipment a copy of the official Berne list and supplements thereto as issued. Information concerning the use of this list and method of procuring it is given on page 75, paragraph 196.

Reduction of power.

72. The service regulations of the London convention, Article VII, paragraphs 1 and 2b, require a reduction of power or range under certain conditions. A proper resistance, impedance coil, or reactance regulator in the

primary circuit is recommended. In certain cases the reduction of voltage or decreasing of coupling may be approved upon recommendations of radio inspectors.

73. Persons or corporations holding licenses for radio stations, either land or ship, should notify the radio inspector for the district whenever the station or vessel goes out of commission for a period exceeding three months. The Commissioner of Navigation should be notified promptly of any intention to suspend or discontinue the service of any commercial station. Stations out of commission.

74. If there is no intention to resume the same service, or if the station or vessel will enter a different service from that indicated by the license, the radio inspector will submit the license to the Bureau, together with a statement of the facts, so that the license may be amended.

75. When the station goes into commission, the radio inspector will satisfy himself that the station corresponds to the schedule of the station as shown in the license.

76. Stations desiring to conduct tests should communicate with the radio inspector by letter or telephone, stating the probable length of time that will be required. Stations conducting such tests or temporary experiments should "listen in," to determine that no interference is being caused, and during the tests should "listen in" frequently for the interference signal, "Q R M." Stations conducting tests should transmit their official call signal frequently. Attention is invited to the act of August 13, 1912, section 5: Testing.

That every license granted under the provisions of this act for the operation or use of apparatus for radio communication shall prescribe that the operator thereof shall not willfully or maliciously interfere with any other radio communication. Such interference shall be deemed a misdemeanor, and upon a conviction thereof the owner or operator, or both, shall be punishable by a fine not to exceed five hundred dollars or imprisonment for not to exceed one year, or both.

77. The Department holds that interference caused by tests of the character described above (par. 76) is "willful" when no "listening in" precautions are taken and the call signal of the station sending is not repeated at intervals.

APPLICATIONS FOR SHIP AND LAND STATION LICENSES, RENEWALS, AND DUPLICATES.

78. The act does not apply either afloat or ashore to— Apparatus exempt from license.
 (a) Apparatus for radio communication which merely receives radiograms and is not equipped for sending;
 (b) apparatus for the transmission of radiograms exclusively between points in the same State, if the effect of such transmission does not extend beyond the State (so as to interfere with the radio communication of other States), or if the effect of such transmission does not interfere with the reception of radiograms from beyond the

State (so as to interfere with the interstate radio communication of that State); (c) apparatus for radio communication which has been issued to the Organized Militia by the War Department or to the Naval Militia by the Navy Department and is used for official purposes only.

79. The owner or operator of any apparatus who may be in doubt whether his apparatus, under this paragraph, is exempt from license may write the facts to the radio inspector for his district before applying for a license.

Ship sta-
tions.

80. The apparatus for transmission of radiograms, or signals on any vessel of the United States not permanently moored, requires a license.

Land sta-
tions.

81. Apparatus for radio communication on land within the jurisdiction of the United States (excluding the Philippine Islands and excluding apparatus of the Government of the United States) must be licensed if—(a) the apparatus is a means of commercial intercourse among the several States or with foreign nations; or (b) the apparatus transmits radiograms or signals the effect of which at any time extends beyond the State; or (c) the apparatus interferes with the receipt of messages in any State from beyond such State.

Applications
for licenses.

82. Station licenses for the use and operation of apparatus for radio communication under the act may be issued only to citizens of the United States or Porto Rico or to a company incorporated under the laws of some State or Territory or of the United States or Porto Rico.

83. Licenses can be issued to clubs if they are incorporated or if a member will accept the responsibility for the operation of the apparatus, carrying with it the possibility of being penalized for infraction of the laws.

84. Applications for station licenses of all classes should be addressed to the United States Radio Inspector for the district in which the station is located, who will forward the necessary blank forms and information. The limits of the districts and addresses of radio inspectors are given on page 70, paragraph 166.

85. Upon receipt of the forms, properly completed, the radio inspector will make a thorough inspection of the station if practicable.

86. When applications and forms have been properly submitted, the stations may be operated in accordance with the laws and regulations governing the class of station for which application for license has been made, until such time as the application can be acted upon unless the applicant is otherwise instructed and provided temporary official call letters are assigned.

87. General and restricted amateur-station license are issued directly by radio inspectors. Station licenses of all other classes are issued from the office of the Commissioner of Navigation, Department of Commerce. Applications and forms are forwarded by radio inspectors with recommendations by them.

88. Stations desiring to operate different portions of the day under different classifications shall submit application for each service, giving exact hours for each. If approved, each classification will be specified in the license.

89. The owner of an amateur station may operate his station in accordance with the laws if his application for a license has been properly filed but has not been acted upon. An application for an operator's license must also have been filed and every effort made to obtain the license before the station may be operated. Amateur applicants.

90. "Provisional" station licenses are issued to amateurs remote from the headquarters of the radio inspector of the district in which the station is located. These licenses are issued as a matter of convenience and record. If, upon inspection, the station is found to comply with the law, the inspector will strike out the word "Provisional" and insert the date of inspection and his signature at the bottom of the license.

91. If such a station is found not to comply with the law the provisional license may be canceled until such time as the apparatus is readjusted to meet the requirements of the law: *Provided, however,* That consideration will be given to any reports of interference filed against such a station.

92. All persons are warned that it is unlawful to operate stations after licenses have expired unless application for renewal has been properly made. Renewals of station licenses.

93. Hereafter expired station licenses of all classes, commercial and amateur, need not be returned to the radio inspectors with applications for renewals. Owners desiring a renewal license must complete new forms, as prescribed for original applications. New licenses will be issued in every case of renewal.

94. Any person applying for a duplicate license to replace an original which has been lost, mutilated, or destroyed will be required to submit an affidavit to the Bureau of Navigation through the radio inspector of the district, attesting the facts regarding the manner in which the original was lost. The Commissioner of Navigation will consider the facts in the case and advise the radio inspector in regard to the issue of a duplicate license, or a duplicate will be forwarded through the inspector's office. Duplicates of station licenses.

95. A duplicate license will be issued under the same serial number as the original and will be marked "Duplicate" in red across the face.

Part III.—REGULATIONS GOVERNING RADIO OPERATORS.

GRADES AND REQUIREMENTS.

- Grades.** 96. (1) Commercial extra first grade; (2) commercial first grade; (3) commercial second grade; (4) commercial cargo grade; (5) commercial temporary permit; (6) experiment and instruction grade; (7) amateur first grade; (8) amateur second grade.
- General requirements.** 97. The Service Regulations of the International Convention require that "the service of the station on ship-board shall be carried on by a telegraph operator holding a certificate issued by the Government to which the vessel is subject."
98. Such certificate shall attest the professional efficiency of the operator as regards—(a) Adjustment of the apparatus and knowledge of its functioning; (b) transmission and acoustic reception at the rate of not less than 20 words a minute (Continental Morse) for commercial first-grade operators and not less than 12 words per minute for second-grade operators; (c) knowledge of the regulations governing the exchange of wireless telegraph correspondence; (d) the certificate shall furthermore state that the Government has bound the operator to secrecy with regard to the correspondence.
99. The International Convention has been ratified by the principal maritime nations, dominions, and provinces. Radio operators holding valid certificates issued by foreign Governments which are parties to the convention will be recognized by this Department as persons "skilled in the use of such apparatus" within the meaning of the act, unless in the case of a specific individual there may be special reason to doubt the operator's skill and reliability. Such certificates should be ready at hand for the inspection of radio inspectors or customs officers before the steamer departs from the United States.
100. In the case of a vessel subject to the act under the flag of any nation not a party to the International Convention, the radio operator, before the departure of the vessel from the United States, must furnish to the inspector evidence that he is "skilled in the use of the apparatus." This evidence shall consist of an examination on board by the radio inspector.
- Requirements for each grade.** 101. *Commercial extra first grade.*—The Department of Commerce will issue a special license, to be known as commercial extra first grade, to radio operators whose trustworthiness and efficient service entitle them to confidence and recognition.

102. These licenses will be given consideration by the Civil Service Commission in examinations for positions requiring knowledge of radio telegraphy, when experience is rated as a part of such examinations.

103. Applicants for the commercial extra first-grade license must pass a special examination. To be eligible for this examination they must hold commercial first-grade licenses, and their certificates of skill in radio communication, issued under the act of June 24, 1910, or licenses under the act of August 13, 1912, must record 18 months' satisfactory commercial service at sea or at land stations, either or both, during the two years previous to the filing of the application for examination, as shown by indorsement on the license service records, or other satisfactory evidence, and provided that the applicants have not been penalized for a violation of the radio laws and regulations.

104. A speed of at least 30 words per minute, Continental Morse, and 25 words per minute, American Morse (five letters to the word), must be attained. The technical questions and the questions on the radio laws and regulations will be considerably wider in scope than those for commercial first grade, and a higher percentage will be required.

105. All examination papers, including the code test sheets, will be marked and forwarded to the Commissioner of Navigation, with a recommendation by the radio inspector or examining officer. Examination papers will be marked upon the basis of 100, and licenses will be recommended only if 80 or better is attained.

106. Licenses of this grade will be issued by the Commissioner of Navigation, indorsed by the Secretary of Commerce, and delivered to the successful applicant through the examining officer.

107. *Commercial first grade.*—The applicant must pass a satisfactory examination in—(a) The adjustment, operation, and care of the apparatus, including correction of faults and change from one wave length to another; (b) transmitting and receiving by ear at a speed of not less than 20 words a minute in Continental Morse (five letters to the word); (c) use and care of storage battery or other auxiliary power apparatus; (d) knowledge of the international regulations in force applying to radio communication; (e) knowledge of the requirements of the acts of Congress to regulate radio communication (secs. 3, 4, 5, 6, and 7 of the act of Aug. 13, 1912).

108. The commercial extra first grade and the commercial first-grade licenses qualify holders for employment at any ship or land station of any class.

109. *Commercial second grade.*—The applicant must pass a satisfactory examination in all the subjects prescribed above for the first grade, with the exception that the minimum speed in transmitting and receiving shall not be less than 12 words a minute in Continental Morse,

and the examination in the subjects will not be as comprehensive as that given first-grade operators.

Cargo.

110. *Commercial cargo grade.*—Section 2 of the act of July 23, 1912, provides: "On cargo steamers, in lieu of the second operator provided for in this act, there may be substituted a member of the crew or other person who shall be duly certified and entered in the ship's log as competent to receive and understand distress calls or other usual calls indicating danger, and to aid in maintaining a constant wireless watch so far as required for the safety of life."

111. The examination will be conducted so as to determine the following facts: (a) That the applicant is sufficiently familiar with the Continental Morse Code to recognize the distress signal (SOS), when included in a list of other words or signals sent slowly (approximately five words a minute); (b) that the applicant is sufficiently familiar with the Continental Morse Code to recognize radio call letters of the vessel on which he desires to operate when sent slowly and repeated several times; (c) that the applicant is sufficiently familiar with the type of the receiving apparatus of the vessel on which he desires to operate to determine by a buzzer or similar test that the detector or receiving apparatus is properly adjusted to receive signals.

112. Examining officers and radio inspectors are authorized to issue a certificate, in the form of an amateur first-grade license, after examination, to indicate the facts above enumerated in the case of a member of the crew or other person, and experience under this form will be credited by examining officers if the holder later applies for examination for a commercial license. These licenses will be marked "Cargo" in the upper right-hand corner under the serial number.

Temporary permit.

113. *Commercial temporary permit.*—Section 3 of the act of August 13, 1912, provides: "In case of emergency the Secretary of Commerce may authorize a collector of customs to issue a temporary permit, in lieu of a license, to the operator on a vessel subject to the radio ship act of June 24, 1910."

114. The temporary permit, in the form of a letter to the operator, is to be issued only in cases of emergency and will be valid for one voyage from ——— to ———, beginning ———, unless the proper license or properly licensed operator can be obtained en route.

115. The permits should be issued only to persons who the collector of customs has reason to believe are skilled in the use of the apparatus, but have not had the opportunity to present themselves for examination before Government officers authorized to conduct examinations and furnish licenses.

116. The collector of customs will forward to the Department of Commerce (Bureau of Navigation) a report covering each temporary permit issued and the reasons for its issue.

117. *Experiment and instruction grade.*—Experimenters and instructors of scientific attainments in the art of radio communication whose knowledge of the radio laws satisfies the radio inspector or the examining officer may obtain this grade license, provided they are able to transmit and receive in the Continental Morse Code at a speed sufficient to enable them to recognize distress calls or the “keep-out” signals. Experiment
and Instruc-
tion.

118. The operator's license for this grade is a commercial license, indorsed by the Secretary of Commerce with a statement of the special purpose for which it is valid.

119. If the applicant qualifies, the radio inspector or examining officer will forward a blank commercial license, with the papers, to the Commissioner of Navigation, with his recommendation. If approved, the license will be properly indorsed by the Secretary of Commerce and delivered to the licensee through the recommending officer.

120. This license has no reference to the instruction of radio operators as such, but is required by those operating apparatus licensed as experimental stations but who are unable to obtain commercial grade operators' licenses.

121. Amateurs before applying for licenses should read and understand the essential parts of the International Radiotelegraphic Convention in force and sections 3, 4, 5, and 7 of the act of August 13, 1912. The Department recognizes that radio communication offers a wholesome form of instructive recreation for amateurs. At the same time its use for this purpose must observe strictly the rights of others to the uninterrupted use of apparatus for important public and commercial purposes. The Department will not knowingly issue a license to an amateur who does not recognize and will not obey this principle. To this end the intelligent reading of the International Convention and the act of Congress is prescribed as the first step to be taken by amateurs. A copy of the radio laws and regulations may be procured for this purpose from the radio inspectors or from the Commissioner of Navigation, Department of Commerce, Washington, D. C., but they are not for public distribution. Additional copies may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C., at a nominal price.

122. *Amateur first grade.*—The applicant must have a sufficient knowledge of the adjustment and operation of the apparatus which he wishes to operate and of the regulations of the International Convention and acts of Congress in so far as they relate to interference with other radio communication and impose certain duties on all grades of operators. The applicant must be able to transmit and receive in Continental Morse at a speed sufficient to enable him to recognize distress calls or the official “keep-out” signals. A speed of at least 10 words per minute (five letters to the word) must be attained. Amateur
first.

Amateur
second.

123. *Amateur second grade.*—The requirements for the second grade will be the same as for the first grade. The second-grade license will be issued only where an applicant can not be personally examined or until he can be examined. An examining officer or radio inspector is authorized in his discretion to waive an actual examination of an applicant for an amateur license, if the amateur for adequate reasons can not present himself for examination but in writing can satisfy the examining officer or radio inspector that he is qualified to hold a license and will conform to its obligations.

EXAMINATIONS.

Method.

124. The following requirements and method of conducting examination for radio operators' licenses will be adopted at all examining offices.

Code test
(five letters to
the word).

125. The test shall consist of messages with call letters and regular preambles, conventional signals and abbreviations and odd phrases, and shall in no case consist of simple, connected reading matter. The test will be conducted by means of the omnigraph or other automatic instrument wherever possible.

126. The code test shall continue for 5 minutes at a speed of 20 words, 12 words, and 10 words a minute, respectively, for the commercial first, second, and lower grades, 5 letters, numerals, or other characters to the word, and to qualify the applicant must receive 20, 12, or 10 words in consecutive order accurately and legibly written. Operators will not be permitted to break or interrupt while receiving or to correct or alter the transcription after it has been submitted to the examining officer.

127. The code test sheets written by the applicant will be forwarded to the Commissioner of Navigation with other papers and the speed attained noted in the lower left-hand corner of the first sheet.

128. An applicant will be given credit for the maximum speed he can attain.

Written ex-
amination.

129. The practical and theoretical examination shall consist of seven comprehensive questions under the following headings and values:

| | Points, maxi- mum value. |
|---|-----------------------------|
| (a) Experience | 20 |
| (b) Diagram of receiving and transmitting apparatus | 10 |
| (c) Knowledge of transmitting apparatus | 20 |
| (d) Knowledge of receiving apparatus | 20 |
| (e) Knowledge of operation and care of storage batteries | 10 |
| (f) Knowledge of motors and generators | 10 |
| (g) Knowledge of international regulations governing radio communication and the United States radio laws and regulations | 10 |

130. Seventy-five constitutes a passing mark for the first grade commercial. Sixty-five constitutes a passing mark for the second grade commercial. P a s s i n g
mark.

131. Applicants who fail to attain 20 words in the code test but who attain a mark of between 65 and 75 in the written examination may be issued second-grade licenses, if they can receive at least 12 words per minute.

132. Question (a) shall determine the applicant's practical knowledge and experiences in handling radio apparatus. An applicant's experience will be determined largely from the personal question sheet and from satisfactory letters or references submitted. Experience, operating first-class amateur apparatus, or the apparatus provided in good training schools, will be given a reasonable value, but applicants who have had experience as apprentices at commercial shore stations or on board vessels will receive higher marks. E x p e r i e n c e.

133. No applicant who fails to qualify will be reexamined at any examining office within three months from date of the previous examination. All examination papers, whether the applicant qualifies or not, will be forwarded to the Bureau of Navigation for filing as "Operator's record." When the records of the Bureau develop the fact that an applicant has failed to qualify and has applied for reexamination or been reexamined at the same or another office within three months, his existing license may be suspended or revoked by the Secretary of Commerce. Applicants to whom are issued second-grade licenses will not be examined for first grade within three months under the same rule. R e e x a m i n a -
tion.

PLACES WHERE EXAMINATIONS ARE HELD.

135. Naval radio stations: San Juan, P. R.; Colon, Canal Zone; Honolulu, Hawaii. R e g u l a r
examinations.

136. United States Army stations: Fort St. Michael, Alaska; Fort Valdez, Alaska.

137. Bureau of Navigation, Department of Commerce, Washington, D. C.

138. Radio inspectors, at their offices and elsewhere, by special arrangement.

139. Additional opportunities for taking the examination will be afforded as may be deemed necessary, and these special dates and places may be ascertained by communication with the Commissioner of Navigation, or nearest radio inspector.

140. All licenses, when awarded, will be delivered through the officer who conducted the examination.

Examinations
for extra first-
grade licenses.

141. Examinations for the commercial extra first-grade licenses will be held at the following offices only by appointment.

143. United States radio inspectors, customhouses: Boston, Mass.; New York, N. Y.; Baltimore, Md.; New Orleans, La.; San Francisco, Calif.; Seattle, Wash.; Detroit, Mich.; Chicago, Ill.

144. Commissioner of Navigation, Department of Commerce, Washington, D. C.

145. In special cases, upon application to the Commissioner of Navigation, arrangements may be made for examinations at other points.

APPLICATIONS FOR EXAMINATIONS FOR RADIO OPERATORS' LICENSES, RENEWALS, AND DUPLICATES.

Applications. 146. An operator's license may be granted to any person without regard to sex, nationality, or age if the applicant can fulfill the requirements for the class of license desired.

147. Applicants for licenses should communicate in writing with the commandants, commanding officers, or officers in charge, at navy yards and Army posts, with the Commissioner of Navigation, or radio inspectors, in order to fix the date when they can be examined. (See pars. 134-145.)

Special ex-
aminations.

148. Commercial licenses can only be obtained by personal examination. Where applicants are at remote points or can not proceed to examining offices, efforts will be made to examine them through radio inspectors when they are in that vicinity, but special trips can not be made for that purpose.

Amateur ap-
plications.

149. Amateurs should write to the nearest examining officer in their vicinity (see pars. 134-145) for Form 756 "Application for operator's license," and to the radio inspector in their vicinity for Form 762 "Amateur applicant's description of apparatus."

Foreign-born applicants for station licenses must submit satisfactory evidence of their citizenship.

150. Amateur operators at points remote from examining officers and radio inspectors may be issued second-grade amateur licenses without personal examination. Examinations for first-grade licenses will be given by the radio inspector when he is in that vicinity, but special trips can not be made for this purpose. (See par. 123.)

151. Persons holding radio operators' licenses, amateur second grade, should make every effort to appear at one of the examination points to take the examination for amateur first-grade license or higher.

Renewals.

152. Persons holding radio operators' licenses of any grade should, before their licenses expire, apply to the nearest radio inspector or examining officer for renewal and submit Form 756 in duplicate.

Holders of commercial extra first-grade radio operators' licenses may be issued renewal of such licenses without examination, provided the service records on the backs of the licenses properly certify to 12 months' satisfactory service in a land or ship station open to general public service, at least 6 months of which must have been served during the last 12 months of the license period.

However, holders of commercial extra first-grade licenses now employed as radio inspectors, radio instructors, or similar occupations requiring exceptional qualifications where the duties require the testing, or demonstrating, or otherwise using commercial radio apparatus and the telegraph codes, may be issued renewals of their licenses without reexamination, provided, in addition to the above, they can show satisfactory evidence of such service covering a period of 18 months out of the two-year license period. Where the applicant has not used regularly the telegraph codes, he will be given the code examination required in the original examination or, if he has used only one code, he will be examined in the code not used.

The service record shown on the licenses must be transcribed on Form 756.

The license may be marked "Expired" in red across the face and returned to the operator, if desired. The action taken should be noted on Form 756.

Where the record on the reverse side of the license does not show the service performed, the evidence submitted as proof of such service must be transmitted to the Bureau with Form 756.

Transcriptions of code tests must be submitted to the Bureau.

153. (a) Renewal licenses may be issued to commercial grade operators without examination, provided the service records on the backs of licenses properly certify to three months' satisfactory commercial service during the last six months of the license term. If expired licenses have been lost or destroyed, an affidavit must be submitted attesting the facts regarding the manner in which the license was lost. In such cases, evidence of the required satisfactory commercial service may be submitted in the form of letters, signed by masters and employers.

(b) Operators holding licenses of grades other than commercial, who submit satisfactory evidence to the examining officer, showing actual operation of radio apparatus for three months during the last six months of the license term, may be issued new licenses without examination. Otherwise, applicants for renewals will be examined in the usual manner.

(c) Renewals or new licenses may be issued a reasonable length of time previous to the expiration of existing licenses, but must bear the exact date of issue, which must

correspond with the date on the back of Form 756 forwarded to the Commissioner of Navigation.

(d) Operators who fail to apply for renewal of their licenses on or prior to the date of expiration must be re-examined. If, because of circumstances over which the applicant has no control, an operator is unable to apply for renewal of license on or prior to the date of expiration, an affidavit may be submitted to the Commissioner of Navigation through the radio inspector or examining officer, attesting to the facts, which will be considered by the Commissioner of Navigation, who will advise the radio inspector or examining officer in regard to the issue of a renewal of the license without reexamination.

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

(f) Any improper alteration of the service record or the forgery of masters' or employers' signatures constitutes a violation of the regulations, and the operator may suffer suspension of license for a period not exceeding one year, at the discretion of the Secretary of Commerce.

154. Whether or not a new license is issued, the radio inspector or examining officer will forward one copy of Form 756, properly completed, to the Commissioner of Navigation, Department of Commerce. If a new license is not issued, the reason therefor will be stated on the back of the form.

Duplicate li-
censes.

155. Any operator applying for a duplicate license to replace an original which has been lost, mutilated, or destroyed will be required to submit an affidavit to the Bureau of Navigation through the radio inspector or examining officer who issued the original, attesting the facts regarding the manner in which the original was lost. The Commissioner of Navigation will consider the facts in the case and advise the radio inspector in regard to the issue of a duplicate license. A duplicate license will be issued under the same serial number as the original and will be marked "Duplicate" in red across the face.

Oath of se-
crecy.

156. Operators' licenses are not valid until the oath for the preservation of the secrecy of messages is properly executed before a notary public or other officer duly authorized to administer oaths. Licenses must indicate on their faces that the oath has been taken and the officer administering the oath on the back of the license should sign also in the blank provided on the face.

Licenses will not be signed by examining officers until the oath of secrecy has been properly executed.

Posting of li-
censes.

157. Operators' licenses should be framed and posted in the radio room, and licenses for stations should be accessible at all times to inspectors.

Apprentices.

158. Under the supervision of a licensed operator an apprentice or unlicensed person may learn the art by the actual use of the apparatus, but the licensed operator

who fails to enforce obedience to the regulations by the apprentice or unlicensed person serving under his supervision is liable to penalties as if he had himself violated the regulations.

159. An individual record is kept in the Bureau of Navigation, Department of Commerce, at Washington, of each licensed operator. Each operator's examination papers and all reports in regard to interference or violations of the radio laws and regulations are filed for reference. ^{Operators' records.}

160. Radio operators holding licenses of any grade or class and applying for examination for any other grade or class must submit to the examining officer Form 756, in duplicate. Licenses held by them must be submitted to the examining officer. ^{Surrender of licenses.}

161. Radio operators who pass the examination for a higher-grade license are required to submit their existing licenses to examining officers to be marked "Canceled."

162. Expired or canceled licenses will be returned to the licensees, marked "Canceled" or "Expired" in red across their faces, provided the particulars on Form 756, submitted herewith, are found correct by the examining officer. The service record shown on the reverse side of the license must be transcribed on Form 756.

Part IV.—GENERAL INFORMATION.

ADMINISTRATION AND ADMINISTRATIVE DISTRICTS.

Radio districts. 163. The Department has established, for the purpose of enforcing, through radio inspectors and others, the acts relating to radio communication and the International Convention, the following districts, with the principal office for each district at the customhouse of the port named.

Addresses. 164. Communications for radio inspectors should be addressed as follows, and not to individuals: Radio Inspector, Customhouse, ——(city), ——(State).

165. Communications for the Bureau of Navigation should be addressed as follows, and not to individuals: Commissioner of Navigation, Department of Commerce, Washington, D. C.

166. 1. BOSTON, MASS.: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut.

2. NEW YORK, N. Y.: New York (county of New York, Staten Island, Long Island, and counties on the Hudson River to and including Schenectady, Albany, and Rensselaer) and New Jersey (counties of Bergen, Passaic, Essex, Union, Middlesex, Monmouth, Hudson, and Ocean).

3. BALTIMORE, MD.: New Jersey (all counties not included in second district), Pennsylvania (counties of Philadelphia, Delaware, all counties south of the Blue Mountains, and Franklin County), Delaware, Maryland, Virginia, District of Columbia.

4. SAVANNAH, GA.: North Carolina, South Carolina, Georgia, Florida, Porto Rico.

5. NEW ORLEANS, LA.: Alabama, Mississippi, Louisiana, Texas, Tennessee, Arkansas, Oklahoma, New Mexico.

6. SAN FRANCISCO, CALIF.: California, Hawaii, Nevada, Utah, Arizona.

7. SEATTLE, WASH.: Oregon, Washington, Alaska, Idaho, Montana, Wyoming.

8. DETROIT, MICH.: New York (all counties not included in second district), Pennsylvania (all counties not included in third district), West Virginia, Ohio, Michigan (Lower Peninsula).

9. CHICAGO, ILL.: Indiana, Illinois, Wisconsin, Michigan (Upper Peninsula), Minnesota, Kentucky, Missouri, Kansas, Colorado, Iowa, Nebraska, South Dakota, North Dakota.

REPORTING OF VIOLATIONS.

167. The regulations established by law, or by the authority of law, or of the International Convention, will be enforced by the Secretary of Commerce through collectors of customs, radio inspectors, and other officers of the Government. ^{Inspectors' authority.}

168. The service regulations of the radiotelegraphic convention in force provide that "no station on ship-board shall be established or worked by private enterprise without authority from the Government to which the vessel is subject." Such authority shall be in the nature of a license issued by said Government. Stations on foreign ships will be licensed by their Governments, respectively. Inspectors will report to the Commissioner of Navigation stations on foreign ships not so licensed. ^{Foreign vessels.}

169. A radio inspector is authorized in exceptional cases to act outside of his district for the convenience of commerce. In such cases he will communicate before or after acting with the inspector in whose district he has acted. Radio inspectors are authorized to communicate directly with collectors of customs and to cooperate with them in the enforcement of the law. ^{Inspectors acting outside their districts.}

170. Violations of the laws and regulations will be reported to the chief customs officer of the district in which the offense occurs, who will report the case to the Secretary of Commerce (Bureau of Navigation), according to the procedure followed in violations of the navigation laws. Misdemeanors will be reported to the United States district attorney in the usual manner. ^{Violations reported.}

171. Collectors of customs and radio inspectors are enjoined that the reports required by paragraph 170 must be precise statements of the facts as the basis for possible proceedings by the United States attorney.

172. Violations by the master of a vessel of the United States of the provisions of the second paragraph of section 1 of the ship act will be reported to the collector of customs directly, and the usual procedure in cases of fines and penalties will be followed.

INSPECTION OF SHIP STATIONS.

173. The radio inspectors and customs officers, as far as practicable, shall visit steamers subject to the act before they leave port and ascertain if they are equipped with the apparatus in charge of the operators prescribed by law and regulation. ^{Inspection before clearing.}

174. When the radio apparatus is certified as complying with the requirements of law by the competent authorities of a foreign Government, such certificate will be recognized by this department, but the radio inspector or customs officer may, if he deem it necessary or desirable, satisfy himself that the apparatus is in good working order. ^{Foreign vessels.}

Inspector's
certificate.

175. Whenever practicable, the radio inspector shall satisfy himself on his visit before the departure of a steamer subject to the act of June 24, 1910, as amended July 23, 1912, that the radio apparatus is efficient and in good working order within the meaning of the act. If the apparatus does not comply with the law, the radio inspector will furnish the master with the stub of Form 771 "Inspection record" on which will be noted the particulars in which the apparatus does not comply with the law. Where apparatus is found to be in compliance with the law, the stub of Form 771 will not be detached.

176. Masters of vessels entering a port of the United States and expecting to leave under the act of June 24, 1910, as amended July 23, 1912, should file Form 753a "Radio declaration" (Appendix A) in duplicate with the customs officer at the time of entry. The customs officer will furnish one copy to the radio inspector in order that proper inspection of the radio equipment may be made before departure.

Master's cer-
tificate.

177. For each departure of a steamer under the act of June 24, 1910, as amended July 23, 1912, the master is required to furnish to the customs officer a certificate in the form of Appendix B (Form 753b) "Master's certificate of radio apparatus." Such certificates shall be retained in the files of the collectors of customs. The collector of customs will arrange for the collection of these certificates at all times.

Vessels about
to clear in vio-
lation.

178. Where a steamer subject to the radio law is without the apparatus and the operators prescribed, or either of them, and is about to attempt to leave port, the radio inspector or customs officer visiting the vessel shall—
(a) Furnish the master with a memorandum (stub of Form 771) of the particulars in respect of which the law has not been complied with and the penalty; (b) if convenient, notify the vessel's agents or the proper person in charge of the apparatus so that the necessary corrections may be made before sailing.

Vessels clear-
ing in viola-
tion.

179. If a steamer clears in violation of the law, the radio inspector or customs officer shall submit to the collector of customs of the port a written report, stating the exact nature of the violation, the section of the law violated, and the penalties involved and all of the circumstances in connection therewith which will be of service to the collector and to the Secretary of Commerce in determining what action shall be taken. A copy of the report will be forwarded to the Commissioner of Navigation.

180. Statements should be obtained from operators, ships' officers, or other witnesses at the time the violation is discovered and should accompany the report to the collector of customs.

181. The collector of customs will report the case to the Secretary of Commerce in the usual manner as a navigation fine case.

182. Merchant vessels chartered by the United States Government are subject to the act of August 18, 1912, in every case, if the radio apparatus is owned and operated by a commercial company. (Government vessels.)

183. Merchant vessels chartered by the United States Government for the transportation of persons or supplies are subject to the requirements of the ship act (act of July 23, 1912), if the vessel is controlled and operated by the owners. Vessels commanded wholly or in part by Government officers are not subject to the ship act.

184. Government vessels or vessels chartered by the Government are subject to the act of August 18, 1912, if the radio equipment is owned and operated by private interests.

185. The ship act does not authorize the refusal of clearance in case of violation of its provisions, but specifically provides for the imposition of a fine in a sum not more than \$5,000. Clearance.

186. The act does not apply to a vessel at the time of entering a port of the United States. Radio inspectors and customs officers may, however, accept as evidence of the efficiency of the apparatus and the skill of an operator messages shown to have been transmitted and received by him over a distance of at least 100 miles, by day, during the voyage to the United States. Entry.

OPERATORS ON FOREIGN VESSELS.

187. In so far as licensed operators are concerned a sharp distinction should be drawn between the act of July 23, 1912, which requires apparatus and operators for radio communication on steamers, and the act of August 18, 1912, to regulate radio communication. Inspection of operators.

188. The act of July 23, 1912, amending the act of June 24, 1910, is designed to promote safety at sea through the employment of apparatus and operators to transmit and receive distress calls and other calls relating to perils and aids to navigation. It provides that in the case of American and foreign vessels subject to its provisions "the radio equipment must be in charge of two or more persons skilled in the use of such apparatus." This act does not require that the operators shall be licensed, and the penalty prescribed in section 8 of the act is not incurred by the master of a vessel whose operators are "skilled in the use of such apparatus," even though they may not be licensed.

189. The act of August 18, 1912, is designed to execute in behalf of the United States the International Radiotelegraphic Convention and thus to promote orderly exchanges by radio communication. For this purpose the International Radiotelegraphic Convention (Service Regulations) provides that the service of the station on shipboard shall be carried on by a telegraph operator

holding a certificate issued by the Government to which the vessel is subject.

190. Section 3 of the act of August 13, 1912, carries out this provision of the International Convention by providing licenses for operators on American vessels. If an unlicensed person serves in charge or in supervision of the use and operation of the apparatus both he and his employer are liable to a fine of not more than \$100 or imprisonment for not more than two months or both. This section and penalty do not apply to operators on foreign ships. But operators on the ships of foreign nations signatory to the International Radiotelegraphic Convention, as shown above, are required to have certificates or licenses from their own governments, and if not so certificated, the obligations of the convention have not been observed. The convention in the Service Regulations provides for this situation.

191. The act of July 23, 1912, as stated, requires that on American and foreign ships the operators must be "skilled in the use of such apparatus," but does not require that they must be licensed. To facilitate commerce and simplify administration, operators presenting American licenses or foreign certificates are accepted as "skilled in the use of such apparatus," except where there may be special reasons to doubt the operator's skill or reliability. Where operators on American or foreign ships do not have such licenses or foreign certificates, radio inspectors or customs officers under the act of July 23, 1912, may accept other competent evidence of skill or may examine such operators.

**OFFICIAL INTERNATIONAL LIST OF COAST AND SHIP
RADIO STATIONS OF THE WORLD AND STATION
RATES.**

Radio sta-
tions of the
United States.

192. The list of land and ship stations of the United States, including amateurs, giving call letters, wave lengths, nature of service, etc., can be procured from the Superintendent of Documents, Government Printing Office, Washington, D. C., at a nominal price.

Supplements.

193. Supplements to this list are issued monthly under the title "Radio Service Bulletin," and the list is revised annually as of July 1. These monthly supplements contain information concerning Government, commercial, and special stations only, and information regarding amateur stations appears only in the annual edition of the list of Radio Stations of the United States. Amendments to or changes in the Radio Laws and Regulations of the United States are printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication. Items of general interest concerning the enforcement of the radio laws are printed in the bulletin from time to time, as occasion warrants.

194. The introduction to the list of "Radio Stations of the United States" contains information concerning the assignment of international and amateur call letters. Call letters.

195. A copy of the official Berne list and supplements as issued are required as a part of the equipment of every land station open to general public service and every ship station of the first or second class on American vessels engaged in foreign trade or the transoceanic service. Official list.

196. The International List of Radio Stations of the World (edition in English) can be procured from the International Bureau of the Telegraphic Union (Radio-telegraphic Service), Berne, Switzerland. International list.

197. In addition to the information contained in the pamphlet of the United States stations, published by the Bureau of Navigation, the international list shows geographical locations, normal ranges in nautical miles, radio systems, and rates.

198. The international list includes the Government and commercial land and ship stations of the United States. The list is divided into three parts. The first part contains a list of ship stations, grouped by countries and arranged alphabetically; the second part contains a list of land stations arranged in the same manner; and the third part contains tables of land line and cable charges from coast radio stations to inland and various other points. In computing the total word rate applicable to a radiogram from a ship station to an inland point or vice versa, the three rates must be added. The rates in the international list are stated in francs. For approximate purposes 1 franc equals 20 cents and 5 centimes equals 1 cent. Supplements to the international list will be issued monthly, and will contain new stations and tables of alterations. Rates.

199. The International Alphabetical List of Call Letters (stations of the world) is also issued by the international bureau at Berne, and supplements will be issued monthly. International call-letter list.

200. Neither the international list proper nor the supplements will contain a list of amateur stations.

201. Inquiries as to the subscription price of these lists should be made direct to the Berne bureau, at the address given above. (See par 196.) Remittances to Berne should be made by international postal money order. Subscriptions to international list.

MISCELLANEOUS INFORMATION.

202. Stations equipped to receive only do not require licenses. Receiving stations.

203. Operators of receiving stations do not require licenses, but *all persons* are required to maintain secrecy in regard to messages, as provided in the act of August 13, 1912, nineteenth regulation of section 4.

204. Distances under the radio laws are computed in nautical miles. Distances.

- Fees.** 205. No fees are charged for any operator or station license.
- Licenses.** 206. Licensed stations must be operated by or under the direct supervision of properly licensed operators.
207. Amateur stations within 5 miles of naval or military stations need not have been in actual operation on or before August 13, 1912, to obtain a license for a restricted amateur station.
- Censorship of messages.** 208. The master of a vessel shall have the right to censor all messages addressed to or transmitted by a radio telegraph station on board his vessel, but such master shall not divulge to any person (other than the properly authorized officials of the Government, or a competent legal tribunal) or make any use whatever of any message coming to his knowledge through the exercise of such censorship, nor shall the master or any operator divulge to any person (other than the properly authorized officials of the Government, or a competent legal tribunal) or make any use whatever of any message (other than a message of distress) coming to his knowledge and not intended for the said station.
- Superfluous signals.** 209. The transmission of superfluous signals by any ship or coast station is absolutely prohibited; trials and practices are forbidden except under such circumstances as to preclude the possibility of interference with other stations.
- Profane language.** 210. No person shall transmit or make a signal containing profane or obscene words or language.
- Additions or amendments.** 211. Additional or amendatory regulations will be issued from time to time as they may appear necessary.
212. Masters should require radio operators to report for duty at least one hour prior to the sailing time of the vessel; to test the transmitter on ship's power and auxiliary power, test the receiver and communication between the radio room and the bridge and report to him the condition of the equipment, in order that defects may be remedied before sailing.

APPENDIX.

APPENDIX A.—Radio Service Form 752.

CERTIFICATE OF RADIO INSPECTION.

PORT OF
....., 191...

This is to certify that I have to-day examined the apparatus for radio communication on the S. S., of which is master, about to leave this port for, and I have found the same efficient and in good working order, as prescribed by the act of June 24, 1910, as amended by the act of July 23, 1912.

(Signed)
Radio Inspector.

(Or)
Customs Inspector.

APPENDIX B.—Radio Service Form 753.

MASTER'S CERTIFICATE OF RADIO APPARATUS.

NOTICE.

The radio equipment must be in charge of two or more persons skilled in the use of such apparatus, one or the other of whom shall be on duty at all times while the vessel is being navigated. Such equipment, operators, the regulation of their watches, and the transmission and receipt of messages, except as may be regulated by law or international agreement, shall be under the control of the master, in the case of a vessel of the United States; and every willful failure on the part of the master to enforce at sea the provisions of this paragraph as to equipment, operators, and watches shall subject him to a penalty of one hundred dollars. (Act of July 23, 1912.)

PORT OF
....., 191...

This is to certify that I have to-day examined the apparatus for radio communication on the S. S., of which I am master, about to leave this port for, and I have found the same efficient and in good working order, as prescribed by the act of June 24, 1910, as amended by the act of July 23, 1912.

(Signed) Master.

No.

LICENSE FOR GENERAL PUBLIC SERVICE COAST RADIO STATION.

DEPARTMENT OF COMMERCE.

BUREAU OF NAVIGATION.

RADIO SERVICE.

Pursuant to the act to regulate radio communication, approved August 13, 1912, a citizen of the State of
.....
a company incorporated under the laws of the State of having applied therefor, is hereby granted by the Secretary of Commerce for a period of on and subject to the restrictions and conditions hereinafter stated and revocable for

cause by him, this License to use or operate the apparatus for radio communication (identified in the schedule hereinafter) located in the State of city or town of, for the purpose of transmitting to and receiving from ship stations and other land stations general public correspondence, Government and service correspondence, and distress signals and messages, at rates of compensation not in excess of those fixed by the international agreement to which the Government of the United States has adhered, which have been submitted to and approved by the Secretary of Commerce, as included in the schedule hereinafter.

2. The use or operation of apparatus for radio communication pursuant to this License shall be subject also to the articles and regulations established by the International Radiotelegraphic Convention, ratified by the Senate of the United States and caused to be made public by the President "to the end that the same and every article and clause thereof may be observed and fulfilled with good faith by the United States and the citizens thereof," and shall be subject also to such regulations as may be established from time to time by authority of subsequent acts and treaties of the United States.

3. The authority conferred by this License is subject to the provisions of the act of February 4, 1887, entitled "An Act to regulate commerce," as amended by the act of June 18, 1910, so far as the Licensee may be within the operation of said act, and except as provided in the act of August 13, 1912, or in the International Radiotelegraphic Convention and regulations made part thereof, the station shall transmit all messages offered by those who tender lawful rates on equal terms without discrimination, whether as regards rates, order of transmission, or otherwise.

4. The licensee shall render to the Secretary of Commerce such accounts as the Secretary of Commerce shall direct in respect of all charges due or payable under the International Radiotelegraphic Convention in respect of messages exchanged between the station hereby licensed and other stations and shall pay to the Secretary of Commerce, at such times and in such manner as the Secretary of Commerce shall direct, all sums which shall be due from the Licensee under such accounts.

5. The apparatus shall at all times while in use and operation be in charge or under the supervision of a person or persons licensed for that purpose by the Secretary of Commerce, and the operator of the apparatus shall not wilfully or maliciously interfere with any other radio communication.

6. The station shall give absolute priority to signals and radiograms relating to ships in distress; shall cease all sending on hearing a distress signal; and, except when engaged in answering or aiding the ship in distress, shall refrain from sending until all signals and radiograms relating thereto are completed.

7. The station during the hours of operation shall listen in at intervals of not less than 15 minutes and for a period of not less than 2 minutes with the receiver tuned to receive messages of 300 meters wave length.

8. The station shall use the minimum amount of energy necessary to carry out any communication desired, except in case of signals or radiograms relating to vessels in distress.

9. The station shall exchange radiograms with any other commercial station and with any ship station without distinction of the radio systems adopted by such stations.

10. The station shall not use a transmitter during the first 15 minutes of each hour, local standard time, except for distress signals, whenever the Secretary of Commerce by notice in writing shall require it to observe a division of time, pursuant to the Twelfth Regulation of the act of August 13, 1912.

11. The President of the United States in time of war or public peril or disaster is authorized by law to close the station and cause the removal therefrom of all radio apparatus or may authorize the use or control of the station or apparatus by any department of the Government upon just compensation to the owners.

12. The Secretary of Commerce and Collectors of Customs or other officers of the Government authorized by him may at all reasonable times enter upon the station for the purpose of inspecting and may inspect any apparatus for radio communication of such station and the operation and operators of such apparatus.

13. The apparatus shall not be altered or modified in respect of any of the particulars mentioned in the following schedule, except with the approval of the Secretary of Commerce.

SCHEDULE OF STATION AND APPARATUS.

Location: State,; County,
 City or Town,; Street,; No.

Geographical location: Latitude, N.°.....'; Longitude, W.°.....'

Specific hours authorized during which the station must be open to service (local standard time):

Power: Transformer input, KW.

Normal day range in nautical miles with ships at sea,

Time and method, if any, of sending time signals and hydrographic and meteorological radiograms:

Call letters,
; Coast charges: per word, minimum per radiogram
; Coast charges: per word, minimum per radiogram
; Coast charges: per word, minimum per radiogram

Radiotelegraphic system employed:

Characteristics of transmitting system:

Type of spark gap,
 Approximate spark frequency,

Characteristics of receiving system:

Type of receiver,
 Wave length of receiving system: From meters to meters

Antenna: Number of masts,; Height,,,

Type of aerial,
 Wires: Number,; Size and kind,
 Essential dimensions,

WAVE LENGTHS.

The normal sending and receiving wave length shall be meters, and no other wave length shall be used for general public correspondence with any foreign ship or foreign coast station, except for long-range public service or purposes other than general public correspondence.

The station shall at all times, except as provided in the seventh paragraph of this License, be ready to receive messages of such wave lengths as are required by the International Radiotelegraphic Convention; shall be prepared to use two sending wave lengths, one of 300 meters and one of 600 meters, as required by the International Radiotelegraphic Convention in force; and tuning positions on the receiver shall be plainly marked: *Provided*, That the Secretary of Commerce may, in his discretion, change the limit of wave length reservations to accord with any international agreement to which the United States is a party.

For long-range public service and for any service other than general public correspondence the station is authorized to use the following additional wave lengths under 600 or over 1,600 meters:

Meters,; Meters,; Meters,; Meters,; Meters,

The energy, if radiated by the transmitter in two or more wave lengths as indicated by a sensitive wave meter, shall not in any one of the lesser waves exceed 10 per cent of that in the greatest; and the logarithmic decrement per complete oscillation in the wave trains shall not exceed two-tenths, except when sending signals or messages relating to vessels in distress.

| Sending wave length.* | Antenna current (amperes.) | Logarithmic decrement. | Reading of wave meter indicating instrument † | |
|-----------------------|----------------------------|------------------------|---|----------------------|
| | | | Principal wave. | Wave next in energy. |
| 600 meters..... | | | | |
| 800 meters..... | | | | |
| 1000 meters..... | | | | |
| 1200 meters..... | | | | |
| 1400 meters..... | | | | |

* Underscore normal.

† Type of indicating instrument,

The station insures rapid exchange with land wire stations of the

(Company)

(Location telegraph office)

(Company)

(Location telegraph office)

in the following manner:

Satisfactory proof has been furnished that the station was actually operating August 18, 1912.

This license will expire on the day of, 191—

Secretary of Commerce.

Commissioner of Navigation.

Washington, D. C.,, 191—.

INSPECTIONS.

| Date. | Inspector. | Remarks. |
|-------|------------|----------|
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No.

LICENSE FOR SHIP RADIO STATION.

DEPARTMENT OF COMMERCE.

BUREAU OF NAVIGATION.

RADIO SERVICE.

Pursuant to the act to regulate radio communication, approved August 13, 1912, a citizen of the State of
 a company incorporated under the laws of the State of having applied therefor, is hereby granted by the Secretary of Commerce for a period of
; on and subject to the restrictions and conditions hereinafter stated and revocable for cause by him, this License to use or operate the apparatus for radio communication (identified in the schedule hereinafter) on the
 called a vessel of the United States, official number
 (Type of vessel.)
 (Name of vessel.)

for the purpose of transmitting to and receiving from other ship stations and land stations general public correspondence, Government and service correspondence, and distress signals and messages, at rates of compensation not in excess of those fixed by the international agreement to which the Government of the United States has adhered, which have been submitted to and approved by the Secretary of Commerce, as included in the schedule hereinafter.

2. The use or operation of apparatus for radio communication pursuant to this License shall be subject also to the articles and regulations established by the International Radiotelegraphic Convention, ratified by the Senate of the United States and caused to be made public by the President "to the end that the same and every article and clause thereof may be observed and fulfilled with good faith by the United States and the citizens thereof," and shall be subject also to such regulations as may be established from time to time by authority of subsequent acts and treaties of the United States.

3. The authority conferred by this License is subject to the provisions of the act of February 4, 1887, entitled "An Act to regulate commerce," as amended by the act of June 18, 1910, so far as the Licensee may be within the operation of said act, and except as provided in the act of August 13, 1912, or in the International Radiotelegraphic Convention and regulations made part thereof, the station shall transmit all messages offered by those who tender lawful rates on equal terms without discrimination, whether as regards rates, order of transmission, or otherwise.

4. The Licensee shall render to the Secretary of Commerce such accounts as the Secretary of Commerce shall direct in respect of all charges due or payable under the International Radiotelegraphic Convention in respect of messages exchanged between the station hereby licensed and other stations, and shall pay to the Secretary of Commerce, at such times and in such manner as the Secretary of Commerce shall direct, all sums which shall be due from the Licensee under such accounts.

5. The apparatus shall at all times while in use and operation be in charge or under the supervision of a person or persons licensed for that purpose by the Secretary of Commerce, except when in case of emergency the Collector of Customs by authority of the Secretary of Commerce shall issue a temporary permit, in lieu of a license, to the operator. The operator of the apparatus shall not wilfully or maliciously interfere with any other radio communication.

6. The station shall give absolute priority to signals and radiograms relating to ships in distress; shall cease all sending on hearing a distress signal; and, except when engaged in answering or aiding the ship in distress, shall refrain from sending until all signals and radiograms relating thereto are completed.

7. The station shall be prepared to send the international signal of distress and distress signals on the normal wave length designated by the International Radiotelegraphic Convention in force with sufficient power to enable them to be received by day over sea a distance of 100 nautical miles by a ship station equipped with apparatus

for sending and receiving equal in all essential particulars to the apparatus of the station herein licensed.

8. The station shall use the minimum amount of energy necessary to carry out any communication desired, except in case of signals or radiograms relating to vessels in distress.

9. The station shall exchange radiograms with any other ship station without distinction of the radio systems adopted by such stations.

10. The station shall not use, except for sending signals of distress or signals and radiograms relating thereto, or when, owing to unusual circumstances, communication can be established only by means of an increase of power, a transformer input exceeding one kilowatt, or exceeding one-half kilowatt when within 5 nautical miles of a naval or military station.

11. The President of the United States in time of war or public peril or disaster is authorized by law to close the station and cause the removal therefrom of all radio apparatus, or may authorize the use or control of the station or apparatus by any department of the Government upon just compensation to the owners.

12. The Secretary of Commerce and Collectors of Customs or other officers of the Government authorized by him may at all reasonable times enter upon the station for the purpose of inspecting, and may inspect any apparatus for radio communication of such station and the operation and operators of such apparatus.

13. The apparatus shall not be altered or modified in respect of any of the particulars mentioned in the following schedule, except with the approval of the Secretary of Commerce.

SCHEDULE OF STATION AND APPARATUS.

Ship: Name,; Owner,
Home port,; International code letters,

Radio call letters,

Nature of service:

Hours of operation:

Power: Transformer input, K W. Primary source of power,

Normal day range in nautical miles with other ships at sea,

Ship charge: Per word,; Minimum per radiogram,

Per word,; Minimum per radiogram,

Radiotelegraphic system employed:

Characteristics of transmitting system:

Type of spark gap,

Approximate spark frequency,

Characteristics of receiving system:

Type of receiver,

Wave length range of receiving system: From meters to meters

Antenna: Number of masts,; Height,,,

Type of aerial,

Wires: Number,; Size and kind,

Essential dimensions,

Auxiliary apparatus: Type,

Power: Source,; Normal day range with ships,

WAVE LENGTHS.

The normal sending and receiving wave length shall be 600 meters, and the station shall be prepared to use two sending wave lengths, one of 600 meters and one of 300 meters, as required by the International Radiotelegraphic Convention in force; and tuning positions shall be plainly marked: *Provided*, That the Secretary of Commerce may, in his discretion, change the limit of wave length reservations to accord with any international agreement to which the United States is a party.

A wave length of meters and the following additional wave lengths not exceeding 600 meters may be employed as authorized by law and treaty:

Meters,; Meters,; Meters,; Meters,

The energy, if radiated by the transmitter in two or more wave lengths as indicated by a sensitive wave meter, shall not in any one of the lesser waves exceed 10 per cent of that in the greatest and the logarithmic decrement per complete oscillation in the

wave trains shall not exceed two-tenths, except when sending signals or messages relating to vessels in distress and in sending distress signals when the transmitter may be tuned to create a maximum of interference with a maximum of radiation.

| Sending wave length.* | Antenna current (amperes.) | Logarithmic decrement. | Reading of wave meter indicating instrument.† | |
|-----------------------|----------------------------|------------------------|---|----------------------|
| | | | Principal wave. | Wave next in energy. |
| 600 meters..... | | | | |
| 300 meters..... | | | | |
| meters..... | | | | |
| meters..... | | | | |
| meters..... | | | | |

* Understood normal.

† Type of indicating instrument.

The station in general shall transmit its radiograms to the nearest coast station. The sender shall have the right, however, to designate the coast station through which he desires to have his radiograms transmitted, and his wishes shall be complied with only if the transmission can be effected without interfering with the service of other stations, or the shipboard station shall wait until such coast station shall be the nearest as provided by the International Convention in force.

Satisfactory proof has been furnished that the station was actually operating August 13, 1912.

This license will expire on the day of, 191..

[SEAL.]

.....
Secretary of Commerce.

.....
Commissioner of Navigation.

Washington, D. C.,, 191..

INSPECTIONS.

| Date. | Inspector. | Remarks. |
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LICENSE FOR LAND RADIO STATION.

CLASS.....

DEPARTMENT OF COMMERCE.

BUREAU OF NAVIGATION,

RADIO SERVICE.

Pursuant to the act to regulate radio communication, approved August 13, 1912, a citizen of the State of a company incorporated under the laws of the State of having applied therefor, is hereby granted by the Secretary of Commerce for a period of on and subject to the restrictions and conditions hereinafter stated and revocable for cause by him, this License to use or operate the apparatus for radio communication (identified in the schedule hereinafter) for the purpose of transmitting to and receiving from ship stations and other land stations public correspondence, Government and service correspondence, and distress signals and messages, at rates of compensation not in excess of those fixed by the international agreement to which the Government of the United States has adhered, which have been submitted to and approved by the Secretary of Commerce, as included in the schedule hereinafter, or for the purpose of conducting experiments for the development of the science of radio communication or the apparatus pertaining thereto, to carry on special tests, using any amount of power or any wave lengths, at such hours and under such conditions as will insure the least interference with the sending or receipt of commercial or Government radiograms, of distress signals and radiograms, or with the work of other stations, the purpose of the station being designated by the classification at the head of this License.

2. Public correspondence or limited commercial correspondence authorized by this License shall be limited to certain stations, ships or lines of ships named hereinafter, which designation is authorized in view of the nature of the service and is independent of the radio system employed.

3. The use or operation of apparatus for radio communication pursuant to this License shall be subject also to the articles and regulations established by the International Radiotelegraphic Convention, ratified by the Senate of the United States and caused to be made public by the President, and shall be subject also to such regulations as may be established from time to time by authority of subsequent acts and treaties of the United States, in so far as they apply to the class of station indicated by this License.

4. The authority conferred by this License is subject to the provisions of the act of February 4, 1887, entitled "An Act to regulate commerce," as amended by the act of June 18, 1910, so far as the Licensee may be within the operation of said act, and except as provided in the act of August 13, 1912, or in the International Radiotelegraphic Convention and regulations made part thereof, the station shall transmit all messages offered by those who tender lawful rates on equal terms without discrimination, whether as regards rates, order of transmission, or otherwise.

5. The Licensee shall render to the Secretary of Commerce such accounts as the Secretary of Commerce shall direct in respect of all charges due or payable under the International Radiotelegraphic Convention in respect of messages exchanged between the station hereby licensed and other stations and shall pay to the Secretary of Commerce, at such times and in such manner as the Secretary of Commerce shall direct, all sums which shall be due from the Licensee under such accounts.

6. The apparatus shall at all times while in use and operation be in charge or under the supervision of a person or persons licensed for that purpose by the Secretary of Commerce, and the operator of the apparatus shall not willfully or maliciously interfere with any other radio communication.

7. The station shall give absolute priority to signals and radiograms relating to ships in distress; shall cease all sending on hearing a distress signal; and, except when

engaged in answering or aiding the ship in distress, shall refrain from sending until all signals and radiograms relating thereto are completed.

8. The station shall use the minimum amount of energy necessary to carry out any communication desired, except in case of signals or radiograms relating to vessels in distress.

9. The station shall not use a transmitter during the first 15 minutes of each hour, local standard time, except for distress signals, whenever the Secretary of Commerce by notice in writing shall require it to observe a division of time, pursuant to the Twelfth Regulation of the act of August 13, 1912.

10. The President of the United States in time of war or public peril or disaster is authorized by law to close the station and cause the removal therefrom of all radio apparatus or may authorize the use or control of the station or apparatus by any department of the Government upon just compensation to the owners.

11. The Secretary of Commerce and Collectors of Customs or other officers of the Government authorized by him may at all reasonable times enter upon the station for the purpose of inspecting and may inspect any apparatus for radio communication of such station and the operation and operators of such apparatus.

12. The apparatus shall not be altered or modified in respect of any of the particulars mentioned in the following schedule, except with the approval of the Secretary of Commerce.

SCHEDULE OF STATION AND APPARATUS.

Name of owner.....
 Location: State,; County,
 City or town,; Street,; No.

Geographical location: Latitude, N.°.....'....."; Longitude, W.°.....'....."

This station is licensed for communication only with the following land stations, ships, or lines of ships:

.....

Specific hours during which the station ^{must} _{may} be open to service (local standard time):

Power: Transformer input,KW.

Normal day range in nautical miles,

Time and method, if any, of sending time signals and hydrographic and meteorological radiograms:

Call letters,

.....; Coast charges: per word....., minimum per radiogram.....
; Coast charges: per word....., minimum per radiogram.....
; Coast charges: per word....., minimum per radiogram.....

Radiotelegraphic system employed,

(Characteristics of transmitting system:

Type of spark gap,
 Approximate spark frequency,

Wave length range of receiving system: From..... meters to..... meters

Antenna: Number of masts,, Height,,,

Type of aerial,

Wires: Number,; Size and kind,

Essential dimensions,

WAVE LENGTHS.

The normal sending and receiving wave length shall be.....meters.
 If the station be classified as a coast station, it shall be prepared to transmit or relay distress calls or messages using the distress wave length as provided by the International Radiotelegraphic Convention in force.

In view of special conditions the station is authorized to use for communication exclusively with stations licensed by the United States the following additional wave lengths under 600 or over 1,600 meters:

Meters,; Meters,; Meters,; Meters,

The energy, if radiated by the transmitter in two or more wave lengths as indicated by a sensitive wave meter, shall not in any one of the lesser waves exceed 10 per cent of that in the greatest; and the logarithmic decrement per complete oscillation in the wave trains shall not exceed two-tenths, except when sending signals or messages relating to vessels in distress.

| Sending wave length. | Antenna current (amperes). | Logarithmic decrement. | Reading of wave meter indicating instrument.* | |
|----------------------|----------------------------|------------------------|---|----------------------|
| | | | Principal wave. | Wave next in energy. |
| 300 meters..... | | | | |
| 600 meters..... | | | | |
| meters..... | | | | |
| meters..... | | | | |
| meters..... | | | | |

* Type of indicating instrument,

The station insures rapid exchange with land wire stations at

(Company.)

(Location telegraph office.)

(Company.)

(Location telegraph office.)

in the following manner:

Satisfactory proof has been furnished that the station was actually operating August 13, 1912.

This License will expire on the day of, 191.....

[Seal of Department of Commerce.]

Secretary of Commerce.

Commissioner of Navigation.

Washington, D. C.,, 191.....

INSPECTIONS.

| Date. | Inspector. | Remarks. |
|-------|------------|----------|
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Number

LICENSE FOR AMATEUR RADIO STATION.
 (General or restricted.)

DEPARTMENT OF COMMERCE.

BUREAU OF NAVIGATION.

RADIO SERVICE.

Pursuant to the act to regulate radio communication, approved August 13, 1912, a citizen of the State of having applied therefor, is hereby granted by the Secretary of Commerce, for a period of year, on and subject to the restrictions and conditions hereinafter stated and revocable for cause by him, this License to use or operate the apparatus for radio communication (identified in the Schedule hereinafter) for the purpose of transmitting private radiograms or signals, notwithstanding the effect thereof extends beyond the jurisdiction of the State or Territory in which the said station is located: *Provided*, That no interference other than may result under the restrictions contained in this License shall be caused with the radio communication of stations of the Government of the United States or licensed stations.

2. The use or operation of apparatus for radio communication pursuant to this License shall be subject also to the articles and regulations established by the International Radiotelegraphic Convention, ratified by the Senate of the United States and caused to be made public by the President, and shall be subject also to such regulations as may be established from time to time by authority of subsequent acts and treaties of the United States.

3. The apparatus shall at all times while in use and operation be in charge of a person or persons licensed for that purpose by the Secretary of Commerce, and the operator of the apparatus shall not wilfully or maliciously interfere with any other radio communication.

4. The station shall give absolute priority to signals or radiograms relating to ships in distress; shall cease all sending on hearing a distress signal; and shall refrain from sending until all the signals and radiograms relating thereto are completed.

5. The station shall use the minimum amount of energy necessary to carry out any communication desired, and the transformer input shall not exceed ^{one} ~~one-half~~ kilowatt.*

6. The station shall not use a transmitting wave length exceeding 200 meters.

7. The station shall not use a transmitter during the first 15 minutes of each hour, local standard time, whenever the Secretary of Commerce by notice in writing shall require it to observe a division of the time, pursuant to the Twelfth Regulation of the act of August 13, 1912.

8. The President of the United States in time of war or public peril or disaster is authorized by law to close the station and cause the removal therefrom of all radio apparatus, or may authorize the use or control of the station or apparatus by any department of the Government upon just compensation to the owners.

9. The Secretary of Commerce and Collectors of Customs or other officers of the Government authorized by him may at all reasonable times enter upon the station for the purpose of inspecting and may inspect any apparatus for radio communication of such station and the operation and operators of such apparatus.

10. The apparatus shall not be altered or modified in respect of any of the particulars mentioned in the following Schedule except with the approval of a radio inspector or other duly authorized officer of the Government.

* Strike out "one" if the station be within 5 nautical miles of a naval or military station; otherwise strike out "one-half."

RADIO LAWS AND REGULATIONS.

SCHEDULE OF STATION AND APPARATUS.

Name of owner,; Age,
 Location: State,; County,
 City or town,; Street,; No.
 Official call,
 Name of naval or military station, if within 5 nautical miles,

Power: Transformer input,, W.*
 Antenna: Type (T, J, fan, umbrella, etc.),
 Height,; Horizontal length,
 (Above ground.)
 Wires: Number in vertical part,; In horizontal part,
 The normal sending and receiving wave length shall be meters
 (Not exceeding 200.)

and the station is authorized to use the following additional wave lengths, not exceeding 200 meters: meters, meters.

Satisfactory proof has been furnished that the station was actually operating August 13, 1912.

This License expires on, 191...

EDWIN F. SWERT,
Assistant Secretary of Commerce.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Delivered by
 (Radio Inspector.)

Place,, Date,, 191..

THE UNITED STATES OF AMERICA.

No.

DEPARTMENT OF COMMERCE.

BUREAU OF NAVIGATION.

LICENSE TO RADIO OPERATOR, COMMERCIAL EXTRA FIRST GRADE.

This is to certify that
 has been examined and passed, pursuant to the Radiotelegraphic Convention, in
 (a) adjustment, operation and care of apparatus;
 (b) transmitting and sound reading at a speed of words a
 minute, Continental Morse, and words a minute,
 American Morse;
 (c) use and care of storage battery or other auxiliary;
 (d) knowledge of international regulations and Acts of Congress to regulate radio
 communication;
 (e) knowledge of United States Naval Radio Regulations;
 and is hereby licensed, as required by law, a Radio Operator, Commercial Extra
 First Grade, for two years.

In testimony of trustworthiness and efficient service as Radio Operator for
 months, of which months were service at sea, and of superior knowledge
 and skill, ascertained by special examination, this extra grade license is granted.

Oath of Secrecy executed.
 (Examining Officer.)
 Secretary of Commerce.

Title
 Notary Public.
 Place Date 191.. Commissioner of Navigation.

* Not to exceed 1,000; or if the station be within 5 nautical miles of a naval or military station, not to exceed 500.

THE UNITED STATES OF AMERICA.

No.

DEPARTMENT OF COMMERCE.

BUREAU OF NAVIGATION.

LICENSE TO RADIO OPERATOR, COMMERCIAL¹ --- GRADE.

This is to certify that has been examined and passed, pursuant to the Radiotelegraphic Convention, in
 (a) adjustment, operation and care of apparatus;
 (b) transmitting and sound reading at a speed of not less than ²..... words a minute, Continental Morse;
 (c) use and care of storage battery or other auxiliary;
 (d) knowledge of international regulations and Acts of Congress to regulate radio communication;
 and is hereby licensed as required by law a Radio Operator, Commercial¹ grade for two years. The candidate's practical knowledge of adjustment was tested on a set of apparatus. His knowledge of other systems is shown below.

..... Oath of Secrecy executed. *WILLIAM C. REDFIELD,*
 (Examining Officer.) *Secretary of Commerce.*
 *E. T. CHAMBERLAIN,*
 (Title.) *Notary Public.* *Commissioner of Navigation.*
 Place Date 191..

THE UNITED STATES OF AMERICA.

No.

DEPARTMENT OF COMMERCE.

BUREAU OF NAVIGATION.

LICENSE TO RADIO OPERATOR, AMATEUR FIRST GRADE.

This is to certify that has been examined and shown to have a knowledge of the adjustment and operation of apparatus and of the regulations of the Radiotelegraphic Convention and the Acts of Congress in so far as they relate to interference with radio communication and impose certain duties on all grades of operators sufficient to entitle him to a license, and he is hereby licensed as required by law Radio Operator, Amateur First Grade for two years.

The candidate was examined and shown to have knowledge (excellent or good) in the following additional subjects:

- (a) general adjustment, operation and care of apparatus³
- (b) transmitting and sound reading Continental Morse at a speed of ⁴..... words a minute;
- (c) general knowledge of international regulations and Acts of Congress to regulate radio communication⁵

..... Oath of Secrecy executed.
 (Examining Officer.)

 (Title.) *Notary Public.*
 Place, Date, 191..

WILLIAM C. REDFIELD,
Secretary of Commerce.
E. T. CHAMBERLAIN,
Commissioner of Navigation.

¹ First or Second,
² Twenty or Twelve.

³ Excellent or good.
⁴ Insert speed.

UNITED STATES OF AMERICA.

DEPARTMENT OF COMMERCE.

BUREAU OF NAVIGATION.

RADIO SERVICE.

LICENSE TO RADIO OPERATOR, AMATEUR SECOND GRADE.

This is to certify that has presented satisfactory evidence that he has a knowledge of the adjustment and operation of apparatus and of the regulations of the Radiotelegraphic Convention and the Acts of Congress, in so far as they relate to interference with radio communication and impose certain duties on all grades of operators, sufficient to entitle him to a license, and he is hereby temporarily licensed as RADIO OPERATOR, AMATEUR SECOND GRADE, for the period of eight months or until he has been duly examined.

He has also shown that he has knowledge (excellent or good) of the following additional subjects:

- (a) General adjustment, operation, and care of apparatus (Excellent or good.)
- (b) Transmitting and sound reading Continental Morse at a speed of words a minute.
- (c) General knowledge of international regulations and Acts of Congress to regulate radio communication (Excellent or good.)

..... Oath of secrecy executed:
(Certifying officer.)
.....
(Title.)

Place, Date, Notary Public, 191...
WILLIAM C. REDFIELD,
Secretary of Commerce.
E. T. CHAMBERLAIN,
Commissioner of Navigation.

[Operators licenses are not valid until the following oath has been executed on the backs of the licenses.]

I,, do solemnly swear that I will faithfully preserve the secrecy of all messages coming to my knowledge through my employment under this license; that this obligation is taken freely, without mental reservation or purpose of evasion; and that I will well and faithfully discharge the duties of the office: So help me God.

.....
(Signature of holder.)

Date of birth, Place of birth,
Sworn to and subscribed before me this
day of, A. D., 191...

.....
Notary Public.

[SEAL.]

SERVICE RECORD.

This is to certify that the holder of this license has served satisfactorily as radio operator under my orders during the period named.

| Name of Ship or Land Station. | Period. | Master, Manager, or Superintendent. |
|-------------------------------|----------------------------------|-------------------------------------|
| | From, 19.., to, 19.. | |
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| | From, 19.., to, 19.. | |
| | From, 19.., to, 19.. | |
| | From, 19.., to, 19.. | |

Operators must have the service record on the backs of their licenses properly completed and signed by the master of their ship or their employer.

DEPARTMENT OF COMMERCE.

RADIO SERVICE.

INTERNATIONAL MORSE CODE AND CONVENTIONAL SIGNALS.

[To be used for all general public service radio communication. (1) A dash is equal to three dots; (2) the space between parts of the same letter is equal to one dot; (3) the space between two letters is equal to three dots; (4) the space between two words is equal to five dots.]

| | |
|-------------------------------|---|
| A | Period..... |
| B _ | Semicolon..... |
| C _ | Comma..... |
| D _ | Colon..... |
| E | Interrogation..... |
| F | Exclamation point..... |
| G _ | Apostrophe..... |
| H | Hyphen..... |
| I | Bar indicating fraction..... |
| J _ | Parenthesis..... |
| K _ | Inverted commas..... |
| L | Underline..... |
| M _ | Double dash..... |
| N _ | Distress Call..... |
| O _ | Attention call to precede every transmission..... |
| P _ | General inquiry call..... |
| Q _ | From (de)..... |
| R | Invitation to transmit (go ahead)..... |
| S | Warning—high power..... |
| T _ | Question (please repeat after .....)—interrupting long messages..... |
| U | Wait..... |
| V | Break (Bk.) (double dash)..... |
| W _ | Understand..... |
| X _ | Error..... |
| Y _ | Received (O. K.)..... |
| Z _ | Position report (to precede all position messages)..... |
| Ä (German) | End of each message (cross)..... |
| Á or Ā (Spanish-Scandinavian) | Transmission finished (end of work) (conclusion of correspondence)..... |
| CH (German-Spanish) | |
| Ê (French) | |
| Ñ (Spanish) | |
| Ö (German) | |
| Û (German) | |
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INDEX.

NOTE.—In the first column are given the subjects and phrases in alphabetical order. In the second column the letters indicate the references as follows: SA, Ship Act; RA, Radio Act; LC, London Convention; R, Department Regulations; A, Appendix. The third column gives the page number, and the fourth column indicates the number of the section, article, or regulation or paragraph, as the case may be.

| Subject. | Refer- ence. | Page. | Section, article, or paragraph. |
|---|-----------------|-------|------------------------------------|
| Abbreviations, Berna list..... | LC | 28 | V |
| International..... | LC | 46 | |
| signals..... | LC | 32 | XXII |
| Accounts, licenses..... | A | 78 | 4 |
| payment of charges..... | A | 78 | 4 |
| radiograms..... | LC | 40 | XLII |
| | LC | 39 | XLI |
| Acknowledgment and omission of radiograms..... | LC | 36 | XXXIII- XXXIV |
| Acts, Feb. 4, 1887..... | A | 76 | 8 |
| June 24, 1910 (ship act)..... | A | 79 | 3 |
| July 23, 1912 (ship act)..... | SA | 5 | |
| Aug. 13, 1912 (radio act)..... | SA | 6 | |
| Aug. 13, 1912 (to execute London Convention)..... | RA | 6 | |
| to regulate commerce, license..... | R | 71 | 199 |
| to regulate radio communication..... | A | 78 | 3 |
| to require radio apparatus and operators on certain steamers..... | A | 79 | 3 |
| Address, Commissioner of Navigation..... | RA | 6 | |
| radio inspectors..... | R | 68 | 163 |
| radiograms..... | R | 68 | 154-166 |
| Adherents to London Convention..... | LC | 20 | XV |
| Age, operators' licenses..... | LC | 20 | 16 |
| Alexis stations..... | R | 66 | 140 |
| Amateurs, applications for examination..... | RA | 12 | 18 |
| first-grade license form..... | R | 66 | 149-151 |
| first-grade operators..... | A | 67 | |
| general..... | R | 68 | 129 |
| operator licenses..... | R | 68 | 65 |
| restricted..... | R | 68 | 121 |
| second-grade license form..... | R | 68 | 64 |
| second-grade operator..... | A | 68 | |
| special..... | R | 64 | 149-151 |
| station license form..... | R | 64 | 123 |
| station licenses..... | R | 66 | 68 |
| provisional..... | A | 68 | |
| stations..... | R | 69 | 87 |
| application for license..... | RA | 11 | 90-91 |
| Answering calls..... | R | 69 | 15 |
| Answering distress signals..... | LC | 23 | 19 |
| Apparatus, auxiliary..... | LC | 23 | XXV |
| changes..... | RA | 10 | 9 |
| efficient..... | SA | 5 | 1 |
| exempt from license..... | R | 55 | 70 |
| licenses..... | SA | 6 | 1 |
| Application, address to..... | R | 67 | 79 |
| amateur station licenses..... | RA | 6 | 1 |
| operators' licenses..... | R | 68 | 84 |
| station licenses..... | R | 69 | 89 |
| stations may operate if application on file..... | R | 67 | 145-162 |
| Appointments for operator examination..... | R | 68 | 78 |
| Apprentices, operators..... | R | 68 | 84 |
| Arbitration, London Convention..... | R | 66 | 147 |
| Arlington station..... | R | 67 | 159 |
| Authority, coast stations..... | LC | 20 | 18 |
| collectors of customs and radio inspectors..... | LC | 35 | 18 |
| duty of master..... | SA | 6 | XXIX |
| radio inspectors..... | R | 6 | 4 |
| regulations, radio act..... | R | 50 | 14-15 |
| Auxiliary apparatus..... | R | 69 | 157 |
| emergency equipment..... | RA | 7 | 8 |
| equipment..... | SA | 5 | 1 |
| gas engines..... | LC | 27 | XI |
| | R | 49 | 1-12 |
| | R | 49 | 8 |

| Subject. | Refer- ence. | Page. | Section, article, or paragraph. |
|--|-----------------|-------|------------------------------------|
| Home bureau..... | LC | 24 | V |
| expenses..... | LC | 19 | 13 |
| International list of stations and call letters..... | LC | 42 | XLIII |
| International list of stations and call letters..... | R | 72 | 192-291 |
| List of stations..... | LC | 45 | XLIV |
| required..... | LC | 45 | |
| required..... | R | 58 | 71 |
| Breaking long transmission..... | LC | 54 | XXXII |
| Call letters..... | RA | 7 | 1 |
| radio..... | R | 72 | 194 |
| Calling and answering..... | LC | 33 | XXV |
| Calling, stations..... | LC | 38 | XXIV |
| Canal Zone stations..... | RA | 12 | 15 |
| Cancellation of undelivered radiograms..... | LC | 38 | XXXVII |
| Cargo grade operators..... | R | 62 | 110-112 |
| Cargo vessels..... | SA | 6 | 2 |
| Cargo vessels..... | R | 32 | 28-30 |
| Censorship of radiograms..... | R | 73 | 208 |
| Certificate of radio inspection..... | R | 70 | 173-176 |
| Certificates, operators'..... | A | 76 | |
| Certificates, operators'..... | LC | 27 | X |
| Changes, amateur stations..... | R | 80 | 97 |
| Changes, amateur stations..... | A | 86 | 10 |
| equipment or service of stations..... | A | 80 | 13 |
| normal wave length..... | RA | 9 | 1 |
| normal wave length..... | LC | 17 | 10 |
| normal wave length..... | LC | 19 | 14 |
| normal wave length..... | LC | 22 | 11-13 |
| normal wave length..... | LC | 29 | XVI |
| normal wave length..... | LC | 30 | XVII |
| normal wave length..... | LC | 31 | XVIII |
| normal wave length..... | LC | 31 | XIX |
| publication of..... | R | 72 | 196 |
| special stations..... | R | 53 | 48 |
| Chartered vessels, by Government..... | R | 70 | 182-184 |
| Citizens, station licenses..... | RA | 7 | 2 |
| Civil Service Commission..... | R | 61 | 102 |
| Classification of land stations..... | R | 54 | 51-69 |
| Classification of ship stations..... | LC | 28 | XIII |
| change in..... | R | 52 | 47 |
| grades of operators..... | R | 51 | 18-37 |
| Clearance of vessels..... | R | 69 | 173 |
| Clearance of vessels..... | R | 71 | 185 |
| Closing of stations..... | RA | 8 | 2 |
| Clubs, radio..... | R | 38 | 34 |
| Coast stations..... | LC | 18 | 2 |
| authority..... | LC | 35 | XXIX |
| definition..... | R | 32 | 38 |
| listening in..... | R | 53 | 44 |
| long range..... | R | 53 | 43 |
| wave lengths..... | R | 53 | 42-43 |
| Code, continental Morse..... | A | 90 | |
| secret..... | LC | 32 | XX |
| secret..... | LC | 47 | VI |
| Code test, operators..... | R | 64 | 126-128 |
| Collection of charges..... | LC | 31 | XIX |
| Collectors of customs, authority..... | SA | 6 | 4 |
| clearance of vessels..... | R | 71 | 185-186 |
| cooperation with radio inspectors..... | R | 60 | 180 |
| letter to..... | R | 4 | |
| temporary operator's permit..... | R | 62 | 113-116 |
| violations, reporting..... | R | 60 | 167-172 |
| Commercial operators, cargo grade..... | R | 62 | 110-112 |
| extra first-grade..... | R | 60 | 101-106 |
| first-grade..... | R | 61 | 107-108 |
| license form, first and second grade..... | A | 57 | |
| extra first-grade..... | A | 66 | |
| second-grade..... | R | 61 | 109 |
| Commercial stations..... | R | 54 | |
| division of time..... | RA | 11 | 12-13 |
| Commissioner of Navigation, address..... | R | 62 | 105 |
| Communication, bridge to radio room..... | R | 50 | 13 |
| engine room to radio room..... | SA | 6 | 1 |
| fixed points..... | R | 50 | 12 |
| nearest shore station..... | LC | 21 | 21 |
| ship to ship..... | RA | 13 | 17 |
| ship to ship..... | LC | 44 | XLVI |
| Computing charges, radiograms..... | R | 72 | 198 |
| Conclusion of transmission, radiograms..... | LC | 36 | XXXIV |
| Confiscation of apparatus..... | RA | 7 | 1 |
| Constant watch..... | SA | 8 | 1 |
| Constant watch..... | R | 50 | 23 |
| Constant watch..... | R | 50 | 23-24 |

| Subject. | Reference. | Page. | Section, article, or paragraph. |
|--|------------|-------|---------------------------------|
| Continental Morse code..... | A | 90 | ..... |
| | SA | 5 | 1 |
| Continuous watch..... | R | 60 | 14 |
| | R | 51 | 23 |
| | R | 52 | 33-34 |
| Control of stations in time of war, public peril, or disaster..... | RA | 5 | 2 |
| | LC | 23 | XX |
| Conventional signals..... | LC | 35 | XXX |
| | LC | 45 | ..... |
| Corporations, station licenses..... | RA | 7 | 2 |
| Counting of words, radiograms..... | LC | 31 | XX |
| Dangerous radiograms..... | LC | 47 | 7 |
| Decrement..... | RA | 9 | 4 |
| Definition, public service..... | R | 53 | 45-46 |
| radio communication..... | RA | 14 | 6 |
| Delivery of radiograms..... | LC | 37 | XXXVI |
| Demarcation of London Convention..... | LC | 21 | 22 |
| Disagreement, London Convention..... | LC | 20 | 19 |
| Discrimination, lawful tender..... | A | 76 | 3 |
| Distances, between ports..... | SA | 2 | 1 |
| distress signals..... | RA | 10 | 3 |
| | SA | 4 | 1 |
| Distances..... | R | 72 | 204 |
| | LC | 17 | 9 |
| | LC | 19 | 15 |
| Distress calls and signals..... | LC | 22 | XXI |
| | R | 53 | 40 |
| distances..... | RA | 10 | 5 |
| false..... | RA | 14 | 7 |
| right of way..... | RA | 10 | 9 |
| ship license..... | A | 79 | 7 |
| wave length..... | RA | 10 | 5-7 |
| Districts..... | R | 68 | ..... |
| violations in..... | SA | 4 | 3 |
| | RA | 14 | 9 |
| Division of time..... | RA | 11 | 12-13 |
| Doubtful radiograms..... | LC | 36 | XXXIII |
| Duplicate licenses, operators'..... | R | 67 | 155 |
| stations..... | R | 59 | 94-95 |
| Duty of operators..... | SA | 5 | 1 |
| Efficient apparatus..... | SA | 5 | 1 |
| | SA | 5 | 1 |
| Emergency apparatus..... | LC | 27 | XI |
| | R | 49 | 1-12 |
| Emergency equipment, location..... | R | 49 | 1 |
| test..... | R | 49 | 4 |
| time limit..... | R | 49 | 2 |
| Employment of unlicensed operators..... | RA | 5 | 3 |
| Entries in radio log..... | R | 50 | 16 |
| Entry of vessels..... | R | 71 | 186 |
| Examination of operators..... | R | 64 | 124-133 |
| failures..... | R | 64 | 133 |
| foreign..... | R | 60 | 100 |
| papers..... | R | 61 | 105 |
| places..... | R | 65 | 134-145 |
| special..... | R | 66 | 143 |
| subjects..... | R | 64 | 129 |
| Exchange of radiograms..... | LC | 16 | 8 |
| fixed points..... | RA | 10 | 11 |
| ship act..... | LC | 21 | 21 |
| Expenses, Berns bureau..... | SA | 6 | 2 |
| | LC | 43 | XLIII |
| Experience, operators'..... | R | 65 | 132 |
| | R | 64 | 129 |
| Experiment and instruction grade operators..... | R | 63 | 117-120 |
| Experimental stations..... | R | 55 | 59 |
| licenses..... | RA | 4 | 4 |
| Expiration of station licenses..... | R | 59 | 92 |
| False signals..... | RA | 14 | 7 |
| Fees, no license fees..... | R | 73 | 26 |
| Film, radiograms..... | LC | 39 | XL |
| Fixed point communication..... | LC | 21 | 21 |
| Fog signals..... | LC | 26 | VII |
| Foreign vessels..... | RA | 14 | 3 |
| inspection..... | R | 59 | 174 |
| operators..... | R | 60 | 99-100 |
| violations..... | R | 71 | 157-161 |
| violations..... | R | 62 | 169 |
| Forfeiture of apparatus..... | RA | 7 | 1 |
| Form of station licenses..... | RA | 7 | 2 |
| Forms of radiograms..... | LC | 29 | XIV |

| Subject. | Refer- ence. | Page. | Section, article, or paragraph. |
|--|-----------------|-------|------------------------------------|
| Forwarding radiograms..... | LC | 19 | 24 |
| Fraudulent signals..... | RA | 14 | 7 |
| Future installations, restrictions..... | RA | 12 | 28 |
| Gasoline engines..... | R | 49 | 8 |
| General amateur stations..... | R | 56 | 65 |
| General instructions..... | | 4 | |
| General public service..... | R | 54 | 49-50 |
| coast stations..... | R | 54 | 62 |
| definition..... | R | 53 | 45 |
| Government stations..... | RA | 13 | 18 |
| license form, coast station..... | RA | 75 | |
| Government stations, division of time..... | RA | 11 | 12-13 |
| general public service..... | RA | 13 | 18 |
| Government vessels, owned or chartered..... | R | 70 | 182-184 |
| Grades of operators, licenses..... | R | 50 | 96-124 |
| required for ship stations..... | R | 51 | 16-37 |
| LC | | 27 | X |
| SA | | 6 | 2 |
| Great Lakes..... | | | |
| High-power warning signals..... | LC | 34 | XXVII |
| High-powered stations..... | R | 56 | 69 |
| Hours of operation of stations..... | LC | 28 | XIII |
| RA | | 12 | 19 |
| Imperfect radiograms..... | LC | 38 | XXXIII |
| Impure wave..... | RA | 9 | 3 |
| Induction coil..... | R | 49 | 6 |
| Information, miscellaneous..... | R | 73 | |
| Inland stations, definition..... | R | 53 | 39 |
| Inspection certificate..... | R | 70 | 175-176 |
| Inspections, emergency equipment..... | R | 49 | 4 |
| foreign vessels..... | R | 69 | 174 |
| key and operators on board..... | R | 50 | 17 |
| London Convention, reservation by United States..... | LC | 15 | |
| ship stations..... | R | 69 | 172-186 |
| ship stations, excepted by United States..... | LC | 26 | IX |
| station licenses..... | A | 78 | 13 |
| vessels, before clearing..... | A | 80 | 12 |
| R | | 66 | 173 |
| Instructions, general..... | | 4 | |
| Intercommunication..... | RA | 10 | 11 |
| LC | | 10 | 3 |
| SA | | 6 | 2 |
| between fixed points..... | LC | 21 | 21 |
| R | | 53 | 41-43 |
| Interference..... | RA | 14 | 5 |
| R | | 32 | 38 |
| LC | | 17 | 8 |
| amateur stations..... | R | 59 | 91 |
| distress signals..... | RA | 10 | 9 |
| testing..... | R | 57 | 76-77 |
| time signals..... | LC | 43 | XLV |
| International abbreviations and signals..... | LC | 46 | |
| LC | | 32 | XXII |
| International Bureau, expenses..... | LC | 42 | XLIII |
| LC | | 45 | |
| LC | | 32 | XX |
| International code..... | A | 90 | |
| International exchange of laws..... | LC | 21 | 20 |
| LC | | 43 | XLIV |
| LC | | 45 | |
| International list of stations and call letters..... | R | 72 | 199-201 |
| R | | 58 | 71 |
| LC | | 17 | 6 |
| LC | | 24 | V |
| LC | | 19 | 13 |
| LC | | 32 | XX |
| LC | | 20 | 17 |
| LC | | 44 | L |
| LC | | 47 | |
| LC | | 35 | XXXII |
| LC | | 4 | |
| Key to radio room on board..... | R | 50 | 17 |
| key West station, United States Navy..... | RA | 12 | 18 |
| Land stations..... | R | 52 | |
| classification..... | R | 54 | 51-66 |
| license forms, special..... | A | 82 | |
| LC | | 39 | XLI |
| LC | | 40 | XLII |
| Landline charges on radiograms..... | LC | | |
| LC | | | 5 |
| Landline connection..... | LC | 17 | |

| Subject. | Refer- ence. | Page. | Section, article, or paragraph. |
|--|-----------------|-------|------------------------------------|
| Lawful tender, discrimination..... | A | 78 | 4 |
| Laws, radio..... | | | |
| License data..... | RA | 7 | 3 |
| License fees, none..... | R | 73 | 205 |
| License forms (operator's)..... | A | 86 | |
| amateur first grade..... | A | 87 | |
| amateur second grade..... | A | 88 | |
| commercial extra first grade..... | A | 88 | |
| commercial first and second grade..... | A | 87 | |
| License forms (station), general public service coast station..... | A | 75 | |
| ship stations..... | A | 79 | |
| special land stations..... | A | 83 | |
| Licensed operators required for stations..... | RA | 8 | 2 |
| Licenses, form..... | HA | 7 | 2 |
| Licenses (operator's)..... | RA | 8 | 2 |
| applications..... | R | 60 | 96-123 |
| duplicates..... | LC | 26 | X |
| foreign vessels..... | R | 66 | 144-162 |
| oath of secrecy, form..... | R | 67 | 155 |
| renewals..... | R | 71 | 187-191 |
| requirements..... | A | 83 | |
| secrecy, oath..... | R | 66 | 152-154 |
| surrender..... | R | 69 | 97-100 |
| suspension..... | R | 67 | 156 |
| Licenses (station)..... | A | 88 | |
| amateur applications..... | R | 67 | 100-162 |
| applications filed, stations may operate..... | RA | 8 | 3 |
| citizens or corporations..... | RA | 6 | 1 |
| clubs..... | R | 50 | 68 |
| duplicates..... | R | 58 | 84 |
| exception to London Convention by United States..... | R | 58 | 82 |
| exemption from license..... | RA | 7 | 2 |
| experimental stations..... | R | 58 | 83 |
| expiration..... | E | 59 | 94-95 |
| must be licensed..... | LC | 26 | IX |
| operators specified by license..... | R | 67 | 78 |
| provisional amateur..... | RA | 8 | 4 |
| renewals..... | R | 53 | 59 |
| ship stations..... | R | 59 | 92 |
| temporary..... | R | 59 | 95 |
| temporary..... | R | 58 | 81 |
| temporary..... | R | 56 | 68 |
| temporary..... | R | 59 | 90-91 |
| temporary..... | R | 59 | 93 |
| temporary..... | R | 58 | 80 |
| temporary..... | RA | 8 | 4 |
| Limitations, future installations..... | RA | 12 | 18 |
| Limited stations, commercial..... | R | 53 | 48 |
| public..... | R | 55 | 37 |
| service..... | R | 54 | 54 |
| Liquidation of accounts, radiograms..... | LC | 16 | 4 |
| List of stations, Berné International..... | LC | 47 | XLII |
| United States..... | LC | 24 | V |
| Listening in..... | R | 73 | 122-163 |
| shore stations..... | LC | 22 | XIII |
| Location of emergency equipment..... | R | 53 | 44 |
| Log, radio..... | RA | 11 | 11 |
| cargo operators entered..... | R | 49 | 1 |
| Logarithmic decrement..... | R | 50 | 16 |
| London Convention, executed by radio act..... | SA | 6 | 7 |
| repeal of United States laws..... | RA | 9 | 4 |
| reservation by United States..... | R | 71 | 189 |
| scope..... | LC | 15 | |
| scope..... | LC | 15 | |
| scope..... | LC | 16 | 1 |
| Long range stations..... | R | 53 | 43 |
| ..... | R | 56 | 69 |
| Masters, authority..... | SA | 6 | 1 |
| certificates of radio apparatus..... | R | 73 | 206 |
| duty..... | R | 70 | 175-176 |
| penalty..... | A | 75 | |
| penalty..... | SA | 5 | 1 |
| penalty..... | R | 50 | 14-15 |
| Merchant vessels chartered by Government..... | SA | 6 | 1 |
| Messenger service to bridge..... | R | 70 | 182-181 |
| Meteorological radiograms..... | R | 50 | 13 |
| Method of conducting operator examinations..... | LC | 43 | XLV |
| Militia stations..... | R | 64 | 124-133 |
| Minimum charges, radiograms..... | E | 58 | 78 |
| Minimum power, primary..... | LC | 30 | XVI |
| Miscellaneous information..... | RA | 11 | 14 |
| Misdemeanors, reporting..... | R | 73 | |
| Motor generator, emergency..... | R | 66 | 179 |
| ..... | R | 49 | 7 |

| Subject. | Reference. | Page. | Section, article, or paragraph. |
|--|------------|-------|---------------------------------|
| Nationality, operators..... | R | 66 | 148 |
| Nearest coast station..... | LC | 38 | XXXV |
| Normal wave length..... | RA | 9 | 1 |
| | LC | 32 | XXIV |
| Northhead Station, U. S. Navy..... | RA | 12 | 16 |
| Notifications, international..... | LC | 17 | 6 |
| Oath of secrecy, form..... | A | 68 | ..... |
| | R | 67 | 154 |
| Obscene language..... | R | 74 | 210 |
| Official list of radio stations and call letters..... | R | 72 | 192-201 |
| Official list of stations, required..... | R | 72 | 195 |
| Operation of amateur stations if applications are filed..... | R | 56 | 71 |
| Operators, apprentices..... | R | 59 | 29 |
| | R | 57 | 153 |
| cargo stations..... | SA | 6 | 2 |
| certificates..... | LC | 27 | X |
| experience..... | R | 45 | 132 |
| experimental stations..... | R | 58 | 60 |
| foreign vessels..... | R | 60 | 99-100 |
| general and restricted amateur stations..... | R | 71 | 157-191 |
| general public-service coast stations..... | R | 54 | 53 |
| grades not specified by license..... | R | 56 | 68 |
| limited commercial land stations..... | R | 55 | 53 |
| limited public-service land stations..... | R | 55 | 45-66 |
| oath of secrecy..... | R | 67 | 136 |
| post of duty..... | A | 58 | ..... |
| post of duty..... | R | 50 | 12 |
| radio log, entry..... | R | 50 | 16 |
| regulations to be obeyed..... | RA | 8 | 3 |
| required..... | LC | 28 | X |
| requirements..... | SA | 5 | 1 |
| required..... | LC | 27 | X |
| requirements..... | LC | 37 | X |
| sending to be done by..... | R | 53 | 33 |
| ship stations, grades required..... | R | 50 | 19-37 |
| special amateur stations..... | R | 51 | 26 |
| supervision by masters..... | R | 54 | 64 |
| technical and training school stations..... | RA | 8 | 3 |
| testing apparatus..... | R | 56 | 62 |
| testing stations..... | R | 74 | 212 |
| time to report for duty..... | R | 57 | 76-77 |
| time to report for duty..... | R | 74 | 212 |
| Operators' examinations..... | R | 64 | 124-133 |
| failures..... | R | 66 | 133 |
| papers..... | R | 61 | 106 |
| passing mark..... | R | 64 | 130-131 |
| places..... | R | 65 | 134-145 |
| Operators' grades, amateur first..... | R | 63 | 122 |
| amateur second..... | R | 64 | 123 |
| commercial, cargo..... | R | 62 | 149-161 |
| extra first..... | R | 60 | 191-196 |
| first..... | R | 61 | 107-108 |
| second..... | R | 61 | 109 |
| experiment and instruction..... | R | 63 | 117-120 |
| Operators' license forms, amateur first grade..... | A | 37 | ..... |
| amateur second grade..... | A | 38 | ..... |
| commercial extra first grade..... | A | 36 | ..... |
| commercial first and second grade..... | A | 37 | ..... |
| Operators' license, amateur..... | R | 63 | 121 |
| applications..... | R | 66 | 145-163 |
| duplicates..... | R | 67 | 156 |
| grades..... | R | 60 | 96-123 |
| posting..... | R | 67 | 157 |
| record, service..... | R | 67 | 159 |
| renewals..... | R | 66 | 152-154 |
| required to be licensed..... | RA | 8 | 3 |
| requirements..... | R | 60 | 97-100 |
| revocation..... | RA | 13 | ..... |
| service record..... | R | 67 | 159 |
| station licenses, provisions..... | A | 69 | 5 |
| station licenses, provisions..... | A | 76 | 5 |
| surrender..... | A | 79 | 5 |
| suspension..... | R | 57 | 190-192 |
| temporary permit..... | RA | 6 | 3 |
| temporary permit..... | RA | 8 | 3 |
| unlicensed..... | R | 62 | 113-118 |
| unlicensed..... | RA | 6 | 3 |
| Order of information from ship to coast..... | LC | 34 | XXVIII |
| Order of transmission..... | LC | 32 | XXIII |
| Organization of service of stations..... | LC | 47 | 5 |
| | R | 53 | 41-43 |

| Subject. | Refer- ence. | Page. | Section, article, or paragraph. |
|---|-----------------|-------|------------------------------------|
| Paid reply radiograms..... | LC | 28 | XXXVIII |
| Passenger vessels..... | R | 51 | 27 |
| Passing marks, operator's examinations..... | R | 52 | 29 |
| Penalties, amateur stations..... | R | 64 | 130-131 |
| false signals or messages..... | HA | 12 | 15 |
| foreign operators..... | RA | 14 | 7 |
| general..... | R | 71 | 120 |
| masters'..... | RA | 13 | |
| operating station without license..... | RA | 5 | 1 |
| operators' licenses suspended or revoked..... | RA | 7 | 1 |
| operators unlicensed..... | RA | 13 | |
| regulations, violations..... | RA | 8 | 3 |
| secrecy of radiograms..... | RA | 8 | 3 |
| ship act, violation of, \$5,000..... | RA | 13 | 19 |
| willful or malicious interference..... | SA | 8 | 3 |
| Permit, temporary operator..... | RA | 14 | 5 |
| Philippine Islands..... | RA | 6 | 3 |
| Places where examinations are held..... | R | 62 | 113-116 |
| Plain arial..... | RA | 14 | 30 |
| Position finders..... | R | 65 | 134-145 |
| Position reports..... | R | 49 | 6 |
| Posting of operator's license..... | LC | 23 | VII |
| Posting of radiograms..... | LC | 28 | VII |
| Power, primary, amateur stations..... | LC | 23 | II |
| available at all hours..... | LC | 34 | XXVII |
| minimum..... | R | 57 | 157 |
| reduction..... | LC | 29 | XIV |
| ship stations..... | RA | 11 | 16 |
| available at all hours..... | RA | 12 | 12 |
| minimum..... | R | 50 | 14 |
| reduction..... | RA | 11 | 10 |
| ship stations..... | RA | 10 | 10 |
| available at all hours..... | LC | 25 | VII |
| minimum..... | R | 36 | 72 |
| reduction..... | LC | 26 | VIII |
| ship stations..... | LC | 25 | VI |
| available at all hours..... | R | 74 | 209 |
| minimum..... | LC | 29 | XIV |
| reduction..... | LC | 27 | XXXVII |
| ship stations..... | RA | 8 | 2 |
| available at all hours..... | RA | 10 | 8 |
| minimum..... | RA | 11 | 15 |
| reduction..... | R | 74 | 210 |
| ship stations..... | LC | 23 | I |
| available at all hours..... | LC | 59 | 90-91 |
| minimum..... | LC | 45 | |
| reduction..... | R | 58 | 45-46 |
| ship stations..... | RA | 13 | 18 |
| available at all hours..... | RA | 4 | |
| minimum..... | RA | 9 | 3 |
| reduction..... | RA | 6 | |
| ship stations..... | RA | 7 | 2 |
| available at all hours..... | R | 71 | 169 |
| minimum..... | RA | 13 | |
| reduction..... | RA | 8 | 4 |
| ship stations..... | R | 72 | 194 |
| available at all hours..... | R | 55 | 83 |
| minimum..... | RA | 14 | 6 |
| reduction..... | R | 68 | |
| ship stations..... | R | 68 | 169 |
| available at all hours..... | R | 68 | 164-166 |
| minimum..... | R | 69 | 167 |
| reduction..... | R | 68 | 169 |
| ship stations..... | R | 68 | |
| available at all hours..... | R | 5 | |
| minimum..... | R | 50 | 16 |
| reduction..... | R | 4 | |
| ship stations..... | R | 72 | 192-193 |
| available at all hours..... | R | 73 | 208 |
| minimum..... | LC | 37 | XXXVI |
| reduction..... | LC | 39 | XL |
| ship stations..... | LC | 26 | XIV-XV |
| available at all hours..... | LC | 39 | XXXIX |
| minimum..... | LC | 32 | XXII |
| reduction..... | LC | 39 | XLI |
| ship stations..... | LC | 30 | XVII |
| available at all hours..... | LC | 38 | XXXVIII |
| minimum..... | LC | 38 | XXXVII |
| reduction..... | LC | 25 | VII |
| ship stations..... | LC | 23 | II |
| available at all hours..... | R | 52 | 36 |
| minimum..... | R | | |
| reduction..... | R | | |
| ship stations..... | R | | |

| Subject. | Refer- ence. | Page. | Section, article, or paragraph. |
|---|-----------------|-------|------------------------------------|
| Range of stations..... | LC | 26 | VIII |
| emergency equipment..... | LC | 27 | XI |
| radio act..... | R | 49 | 1 |
| | RA | 16 | 8-16 |
| | LC | 17 | 10 |
| | LC | 19 | 11 |
| | LC | 22 | 11 |
| Rates..... | LC | 22 | 111 |
| | LC | 29 | XVI |
| | LC | 30 | XVII |
| | LC | 31 | XVIII |
| | LC | 31 | XIX |
| publication..... | R | 72 | 198 |
| special stations..... | R | 83 | 48 |
| Rebates and reimbursements, radiograms..... | LC | 39 | XLI |
| Receiving apparatus..... | LC | 28 | VII |
| Receiving stations..... | R | 73 | 202-203 |
| Records and files, radiograms..... | LC | 39 | XL |
| Records, operators'..... | R | 67 | 159 |
| Records, operators', services licenses..... | A | 69 | |
| | RA | 10 | 10 |
| | R | 56 | 73 |
| Reduction of power, primary..... | LC | 25 | VII |
| | RA | 11 | 14 |
| | R | 65 | 123 |
| Reexamination of operators..... | R | 68 | 162-154 |
| Refusal of clearance..... | R | 71 | 188 |
| Regulations, authority, radio act..... | RA | 7 | 2 |
| London Convention..... | LC | 18 | 11 |
| radio act..... | RA | 8 | 4 |
| ship acts..... | SA | 6 | 4 |
| Relaying radiograms..... | LC | 44 | XLVII |
| Renewal, operators' licenses..... | R | 66 | 152-154 |
| station licenses..... | R | 69 | 93 |
| Repairs to equipment..... | R | 60 | 4-11 |
| Repeal, London Convention..... | LC | 16 | |
| Repeating radiograms..... | LC | 36 | XXXIII |
| | LC | 34 | XXVI |
| Reporting of violations..... | R | 69 | 167-172 |
| in proper districts..... | RA | 14 | 9 |
| Requirements, operators' examination..... | R | 64 | 124-126 |
| Reservation, London Convention..... | LC | 22 | 11 |
| Reserve equipment..... | R | 60 | 11 |
| Restricted amateur stations..... | R | 59 | 66 |
| Retransmission of radiograms..... | LC | 44 | XLVII |
| Revocation, amateur station licenses..... | R | 69 | 91 |
| operators' licenses..... | RA | 13 | |
| station licenses..... | RA | 7 | 1 |
| Right of senders to designate shore stations..... | LC | 37 | XXXV |
| | RA | 12 | 17 |
| | LC | 44 | XLVIII |
| Routing of radiograms..... | LC | 30 | XVII |
| Safety at sea..... | R | 62 | 28 |
| | R | 71 | 182 |
| | LC | 20 | 17 |
| St. Petersburg Telegraph Convention..... | LC | 44 | L |
| | LC | 47 | |
| San Diego, United States naval station..... | RA | 12 | 18 |
| San Juan, station, United States Navy..... | RA | 12 | 18 |
| | LC | 16 | 3 |
| Scientific progress..... | RA | 8 | 4 |
| | LC | 23 | 1 |
| | LC | 16 | 1 |
| Secrecy oath, operators'..... | R | 67 | 156 |
| Secrecy of radiograms..... | RA | 11 | 19 |
| | LC | 47 | 2 |
| Secret code radiograms..... | LC | 47 | 6 |
| Senders designate shore stations..... | RA | 12 | 17 |
| Services, ship stations..... | R | 51 | 31 |
| special..... | R | 53 | 33-34 |
| stations, hours of..... | LC | 18 | 4 |
| Service (stations), changes in..... | LC | 26 | XIII |
| double or multiple..... | R | 54 | 70 |
| hours of operation, ship station..... | R | 54 | 49-50 |
| licenses, special..... | LC | 28 | XIII |
| Service record, operators' licenses..... | A | 69 | |
| | R | 66 | 153 |
| Service regulations..... | LC | 23 | |
| Sex, operators' licenses..... | R | 66 | 146 |
| Sharp wave..... | RA | 9 | 4 |
| Ship acts..... | SA | 6 | |
| penalty for violation, \$5,000..... | SA | 6 | 3 |
| regulations..... | SA | 6 | 4 |

| Subject. | Reference. | Page. | Section, article, or paragraph. |
|---|------------|-------|---------------------------------|
| Ship stations..... | R | 49 | 1-17 |
| classification..... | LC | 28 | XIII |
| classification and grades of operators..... | R | 51 | 18-37 |
| inspection..... | R | 69 | 173-186 |
| license forms..... | A | 79 | |
| licenses required by all..... | R | 58 | 80 |
| nearest shore station communication..... | RA | 12 | 17 |
| vicinity of coast stations..... | LC | 37 | XXXVII |
| within range of coast stations..... | LC | 23 | XXIV |
| Ships in port..... | R | 50 | 17 |
| Ship to ship communication..... | LC | 44 | XLVI |
| Ships voluntarily equipped..... | R | 51 | 24-25 |
| Shore stations listening in..... | R | 52 | 21-25 |
| Signals, abbreviations..... | RA | 11 | 11 |
| conventional..... | LC | 32 | XXII |
| practice..... | LC | 25 | XXX |
| superfluous..... | LC | 32 | XX |
| Skilled operators..... | LC | 25 | VI |
| Small vessels..... | R | 74 | 208 |
| Spare parts..... | R | 71 | 188 |
| Speaking tube, to bridge..... | R | 60 | 100 |
| to engine room..... | SA | 6 | 1 |
| Special, amateur stations..... | LC | 23 | III |
| apparatus..... | R | 50 | 9-11 |
| examinations, operators'..... | SA | 5 | 1 |
| license forms, station..... | R | 59 | 13 |
| radiograms..... | R | 80 | 12 |
| services..... | R | 33 | 43 |
| stations..... | R | 56 | 63 |
| Standard distress wave..... | LC | 17 | 7 |
| Station license forms, amateur..... | R | 66 | 143 |
| general public service..... | R | 65 | 145 |
| ship stations..... | A | 82 | |
| special land stations..... | LC | 38 | XXXVIII |
| Station licenses..... | LC | 16 | 4 |
| amateur provisional..... | R | 53 | 47-48 |
| citizens or corporations..... | R | 64 | 68 |
| duplicates..... | R | 53 | 43 |
| exempt from license..... | RA | 10 | 5-7 |
| required by all ships..... | A | 85 | |
| subject to license..... | A | 75 | |
| Stations, amateur..... | A | 79 | |
| changes in apparatus or services..... | A | 82 | |
| coast..... | RA | 6 | 1 |
| double or multiple service..... | R | 59 | 90-91 |
| hours of operation..... | R | 57 | 2 |
| inspections, exception by United States..... | R | 53 | 22 |
| listening in..... | R | 59 | 94-95 |
| operation of, if application for license filed..... | R | 57 | 73 |
| receiving..... | RA | 7 | 50 |
| required to be licensed..... | RA | 11 | 15 |
| temporarily out of commission..... | R | 96 | 20 |
| testing..... | LC | 16 | 2 |
| Storage battery, emergency..... | R | 59 | 88 |
| Subjects of operator examinations..... | R | 59 | 88 |
| Superfluous signals..... | LC | 28 | XIII |
| Surrender of operators' licenses..... | LC | 26 | IX |
| Suspended service of stations..... | RA | 11 | 11 |
| Suspension of operator's license..... | R | 58 | 86 |
| Systems, intercommunication..... | R | 73 | 202-203 |
| Talooch Island Station, U. S. Navy..... | R | 58 | 81 |
| Technical and training school stations..... | R | 57 | 73-75 |
| Telegraph regulations, St. Petersburg Convention..... | R | 57 | 76-77 |
| Telephone, radio..... | R | 49 | 7 |
| to bridge..... | R | 50 | 11 |
| to engine room..... | R | 64 | 129 |
| | LC | 26 | VI |
| | R | 74 | 209 |
| | R | 67 | 160-162 |
| | R | 57 | 73-75 |
| | LC | 28 | XII |
| | RA | 13 | |
| | RA | 8 | 3 |
| | RA | 10 | 11 |
| Talooch Island Station, U. S. Navy..... | RA | 12 | 18 |
| Technical and training school stations..... | R | 55 | 61 |
| Telegraph regulations, St. Petersburg Convention..... | LC | 14 | L |
| Telephone, radio..... | LC | 47 | |
| to bridge..... | RA | 14 | 6 |
| to engine room..... | SA | 5 | 1 |
| | R | 50 | 12 |
| | R | 50 | 12 |

| Subject. | Refer- ence. | Page. | Section, article, or paragraph. |
|---|-----------------|-------|------------------------------------|
| Temporary amateur station licenses..... | R | 89 | 90-91 |
| Temporary permit, operators'..... | R | 82 | 113-116 |
| Temporary station licenses..... | RA | 8 | 3 |
| Temporary suspension of service of station..... | RA | 8 | 4 |
| Test of emergency equipment..... | R | 57 | 73-75 |
| Test messages..... | R | 49 | 4 |
| Testing of stations..... | R | 49 | 5 |
| Time allowed to start emergency equipment..... | R | 57 | 76-77 |
| Time signals..... | R | 49 | 2 |
| Time of transmission..... | LC | 43 | XLV |
| Training school stations..... | LC | 32 | XXIII |
| Transmission to nearest coast station..... | R | 54 | 61 |
| Transmissions, grades of operators..... | LC | 37 | XXXV |
| Transoceanic stations..... | R | 52 | 23 |
| | R | 58 | 49 |
| Undelivered radiograms..... | LC | 38 | XXXVII |
| Vessels, about to clear in violation..... | R | 70 | 179 |
| clearing..... | R | 60 | 173 |
| clearing in violation..... | R | 89 | 179 |
| Government owned or chartered..... | R | 70 | 182-184 |
| in port..... | H | 50 | 17 |
| range of coast station..... | LC | 33 | XXIV |
| voluntarily equipped..... | R | 51 | 24-25 |
| | R | 52 | 31-35 |
| Violations, districts..... | SA | 6 | 8 |
| districts under radio net..... | RA | 14 | 9 |
| London Convention, reporting..... | LC | 27 | XII |
| reporting..... | R | 60 | 167-172 |
| ships..... | R | 70 | 178-181 |
| Voluntary equipment..... | R | 51 | 24-25 |
| | H | 52 | 31-35 |
| Votes, London Convention..... | LC | 18 | 12 |
| War, peril or disaster..... | RA | 8 | 2 |
| Warning, expiration of licenses..... | R | 59 | 92 |
| Warning signal, high-power..... | LC | 34 | XXVII |
| Watch, continuous..... | R | 40 | 14 |
| on ship stations..... | R | 51 | 29 |
| | R | 52 | 32-34 |
| Wave lengths..... | LC | 23 | II |
| additional..... | RA | 9 | |
| amateur station..... | RA | 9 | 2 |
| | RA | 11 | 15 |
| | RA | 12 | 16 |
| authorized, licenses..... | A | 77 | |
| | A | 80 | |
| coast stations..... | R | 52 | 42-43 |
| communicating, use of same..... | LC | 24 | IV |
| distress..... | RA | 16 | 5-7 |
| normal..... | RA | 9 | 1 |
| position finders..... | LC | 23 | II |
| practice and tests..... | LC | 25 | VI |
| ship stations..... | LC | 23 | III |
| special service..... | R | 53 | 47 |
| Willful interference..... | RA | 14 | 5 |
| Wireless clubs and organizations..... | R | 58 | 83 |
| Wireless telephones..... | R | 14 | 8 |
| Wireless telephone stations on ships..... | R | 52 | 46 |
| Written examination, operators'..... | R | 64 | 100 |