(5) of this paragraph shall be acceptable as positive entries: *Provided*, Operating conditions are such as to prevent additional entries being made.

(4) The date and time of each occurence or incident required to be entered in the log shall be shown opposite the entry and the time shall be expressed in Greenwich mean time (GMT),[1] except that in the Great Lakes region the time shall be expressed in eastern standard time (e.s.t.) (counted from 0000 to 2400 o'clock beginning at midnight). The first entry in each hour shall consist of four figures; additional entries in the same hour may he expressed in two figures by omitting the hour designation. The abbreviation "GMT" (e.s.t. in the Great Lakes region) shall be marked at the head of the column in which the time is entered.

(5) During the period a watch is maintained by an operator, an entry shall be made twice per hour stating whether or not the international silence period was observed. In addition, entries shall be made indicating any signals or communications heard on 500 kilocycles during this period. If no signals are heard on 500 kc/s, an entry to that effect shall be made. The use of rubber stamps for making entries to show observation of the silence period is not authorized.

(6) All distress calls, automatic-alarm signals, urgent and safety signals made or intercepted, the complete text, if possible, of distress messages and distress communications, and any incidents or occurrences which may appear to he of importance to safety of life or property at sea, shall be entered, together with the time of such observation or occurrence, and the position of the ship or other mobile unit in need of assistance, if it can be determined.

(7) Whenever harmful interference is experienced, an entry shall be made to that effect, stating the source of the interference, if known.

(8) The approximate geographical location of the ship, preferably the noon position, shall be entered each day of each voyage, either in terms of latitude and longitude, or as the distance in nautical miles and the direction from a known fixed point. For this purpose, the master of the ship shall furnish this information to the radio operator. The position report so furnished shall correspond to any entry of the same position made in other official records of the ship.

(9) An entry shall be made of the date and time of departure and arrival of the vessel at each port, including in each entry the name of the port.

(10) A daily entry shall be made regarding comparison of the radio station clock with standard time, including an indication of any errors observed and corrections made. For this purpose, authentic radio time signals received from land or fixed stations shall be acceptable as standard time.

(11) All test transmissions shall be entered, together with the time of such transmissions and the approximate geographical location of the vessel, without regard to whether two-way communication with any other station is established.

(12) Any failure of equipment to operate as required, any failure of power supply, any inability to obtain sufficient power to charge storage batteries or to properly operate the radio installation and any incidents tending to unduly delay communications shall he entered.

(b) In addition to the radio log requirements stipulated in paragraph (a) of this section, the radio log of each ship station authorized to use telegraphy on frequencies within the band 90 to 535 kc/s, shall, when the ship is required by law and regulations to keep a radiotelegraph watch on 500 kc/s for safety purposes by means of a qualified operator, comply also with the following provisions:

(1) Entries shall be made of the results of tests of the emergency installation including transmitter antenna current, hydrometer readings of lead-acid storage batteries, voltage readings of other types of batteries, and quantity of fuel available for engine generators.

(2) An entry shall be made each time the emergency power supply is used (when the vessel is in the open sea) to carry on communication (other than a watch for safety purposes), stating the approximate period of time of such use.

(3) Results of inspections and tests of survival craft radio equipment, when installed in compliance with requirements of law, prior to departure of the vessel from a harbor or port and the results of weekly inspections of such survival craft equipment shall be entered.

(4) On a cargo vessel equipped with an auto-alarm, the entry "auto-alarm on", "sensitivity set at (the actual setting of the sensitivity control at the time the auto-alarm is placed in operation should be designated)", and the entry "auto-alarm off", respectively, shall be made whenever the operator places the auto-alarm in and out of operation. Results of the required auto-alarm tests shall be entered daily, including the sensitivity-control setting and the minimum number of 4-second dashes from the testing device which were necessary to properly operate the alarm.

(5) On a cargo vessel equipped with an auto-alarm, an entry shall be made in the radio station log whenever the visual indicator installed on the bridge (to indicate when the alarm becomes inoperative due to prolonged atmospherics or other interference), remains actuated for a continuous period of 5 minutes. A statement shall be included giving particulars as to the time the operator was called to make the necessary repairs or adjustments; any reason for the failure; the names of any parts removed, added, or substituted; repairs effected; and the time the alarm was restored to proper operating conditions.

(6) On a cargo vessel equipped with an auto-alarm, an entry shall be made in the radio station log whenever the auto-alarm becomes inoperative due to causes

[1] For example, 8:01 p.m. eastern standard time should be entered as 0101 GMT; 8:30 a.m. eastern standard time should be entered as 1330 GMT; 7:45 p.m. eastern standard time should be entered as 0045 GMT.

not indicated by the audible warning or the visual indicator, or whenever the audible warning is actuated. The entry shall include a statement showing the time the operator was called to make any necessary repairs or adjustments; the reason for the audible alarm being actuated or failing to be actuated, any parts removed, added, or substituted; repairs effected; and the time the auto-alarm was restored to proper operating condition.

(7) A daily entry shall be made while the ship is at sea showing whether the storage batteries forming part of the main installation or the emergency installation were brought up to the normal full charged condition that day.

(8) Entries shall be made stating when each storage battery used as the power supply for the main and emergency installations is placed on charge or off charge.

(9) Entries shall be made stating details of maintenance of survival craft radio equipment, including a record of charging of any storage batteries supplying power to such equipment. The record of charging shall show when such storage battery is placed on charge and when it is taken off charge.

(c) Each ship station authorized to use telegraphy, on frequencies above 550 kc/s exclusively (except ship stations on the Great Lakes and on board vessels navigated solely on inland waters of the United States), shall maintain an accurate radiotelegraph log as prescribed in paragraph (a) of this section: *Provided*, That paragraph (a) (3) and (5) of this section shall, in this case, not be applicable.

(d) Each ship station on the Great Lakes and on board a vessel navigated solely on inland waters of the United States which is authorized to use telegraphy, on frequencies above 550 kc/s exclusively, shall maintain an accurate radiotelegraph log as follows:

(1) Each sheet of the log shall be numbered in sequence and shall include the name of the vessel, official call letters of the ship station and the signature of the licensed operator in attendance at the time communication is effected.

(2) An entry shall be made for each complete exchange of communications with any station, stating the approximate geographical location of the vessel, the call letters or the name of the station communicated with, the time of the communication, the nature of the messages or signals exchanged, and designation of the transmitting frequencies.

(3) All test transmissions shall be entered, including designation of the transmitting frequency, together with the time of commencement and completion of such transmissions and the approximate geographical location of the vessel without regard to whether two-way communication with any other station is established.

(4) All distress calls, urgent and safety signals made or intercepted; the complete text, if possible, of distress messages and distress communication; and any incidents or occurrences which may appear to be of importance to safety of life or property shall be entered, together with the time of such observation of occurrence, designation of the frequency on which such transmissions were received, and the position of the ship or other mobile unit in need of assistance, if it can be determined.

(5) Any failure of equipment to operate as required, any failure of power supply, any inability to obtain power to charge storage batteries or to properly operate the radio installation and any incidents tending to unduly delay communication shall be entered.

(6) The date and time of making an entry shall be shown opposite the entry and the time shall be expressed as follows:

(i) For vessels navigated on the Great Lakes:

Eastern standard time (e. s. t.) (counted from 0000 to 2400 o'clock beginning at midnight).[2] The first entry in each hour shall consist of four figures; additional entries in the same hour may be expressed in two figures by omitting the hour designation. The abbreviation "e. s. t." shall be marked at the head of the column in which the time is entered.

(ii) For vessels navigated on inland waters of the United States, other than the Great Lakes:

Local standard time (e. s. t., c. s. t., etc.) counted from 0000 to 2400 o'clock, beginning at midnight).[2] The first entry in each hour shall consist of four figures; additional entries in the same hour may be expressed in two figures by omitting the hour designation. The abbreviation "e. s. t." or "c. s. t.", etc., shall be marked at the head of the column in which the time is entered. However, this provision shall not prohibit the use of time entries expressed in GMT (and so indicated) in lieu of local standard time.

(e) The ship radiotelegraph log currently in use shall be kept by the licensed operator(s) of the station and while in use it shall be located in the radiotelegraph operating room of the ship. At the conclusion of each voyage terminating at a port of the United States, the original station log or duplicate thereof dating from the last departure of the ship from a United States port shall be retained under proper custody on board the ship for a sufficient period of time, but not necessarily in excess of 24 hours, to be available for inspection by a duly authorized representative of the Commission. Thereafter the original log, and the duplicate log, if provided, may be filed at an established shore office of the ship station licensee, and shall be retained as stipulated by § 83.115.

§ 83.331 Station records.

In all ship stations authorized to transmit on frequencies within the band 405–535 kc/s, a written record shall be maintained of the adjustments of the transmitting and receiving equipment for operation on the assigned frequencies 410 kc/s and 500 kc/s and at least two authorized working frequencies within this band. This record shall be posted at all times in a conspicuous place on or near the particular equipment involved.

[2] For example, 7:01 p. m. eastern standard time would be entered as 1901 e. s. t.; 7:30 a. m. eastern standard time would be entered at 0730 e. s. t.; 6:45 p. m. eastern standard time would be entered as 1845 e. s. t.

228-058 O—66——3

SUBPART O—USE OF RADIOTELEPHONY

§ 83.351 Frequencies available.

(a) In the bands designated on the station license, the following carrier frequencies (kc/s) are available:

(1)

2003	2158	2382	2638
2009	2166	2390	2738
2031.5	2182	2400	2782
2118	2198	2406	2784
2126	2206	2430	2830
2134	2214	2458	
2142	2366	2572	

(2)

4072.4	8242.8
4091.6	8249.2
4104.4	8261.9
4117.2	12154.5
4123.6	12361.5
4129.9	12375.5
4377.4	12382.5
6240—Mississippi	12396.5
River system only.	16477.5
6455—Mississippi	16491.5
River system only.	16512.5
8204.4	16526.5
8210.8—Mississippi	22031.5
River system only.	22045.5
8217.2	22066.5
8223.6	

(3)

4069.3	8239.7
4088.5	8246.1
4101.3	8258.8
4114.1	12351.2
4120.5	12358.2
4126.8	12372.2
4374.3	12379.2
6236.9—Mississippi	12393.2
River system only.	16474.2
6451.9—Mississippi	16488.2
River system only.	16509.2
8201.3	16523.2
8207.7—Mississippi	22028.2
River system only.	22042.2
8214.1	22063.2
8220.5	

(4)

4133.0	8276.5	16540.5	22078.0
4136.5	12407.0	16544.0	22081.5
6200.5	12410.5	16547.5	22085.0
6204.0	12414.0	16551.0	22088.5
6207.5	12417.5	16554.5	22092.0
8273.0	16537.0	16558.0	22095.5

[*§ 83.351(a) amended in IV(64)-2; (a)(1) amended eff. 8-9-66; IV(64)-7*]

(b) Assignment of the specific carrier frequencies designated in paragraph (a) of this section shall be subject to the express limitations and conditions hereinafter set forth in this paragraph:

(1) Except in event of distress, use of the frequency 2206 kc/s in the Great Lakes area by ship stations of the United States is prohibited.

(2) The frequency 2182 kc/s is authorized for use on a shared basis primarily by ship stations and secondarily by coast stations.

(3) The frequency 2214 kc/s is authorized for use exclusively at locations at which interference is not caused to the service of any United States Government station.

(4) The frequencies 2638 and 2738 kc/s are authorized for use on a shared basis with ship stations of

(1) In addition this frequency may be used for transmission of:

(i) The international urgency signal, and very urgent messages (preceded by this signal) concerning the safety of a ship, aircraft, or other vehicle, or the safety of some person on board or within sight of such ship, aircraft, or vehicle.

(ii) The international safety signal, and messages (preceded by this signal) concerning the safety of navigation or giving important meterological warnings; however, safety messages shall be transmitted, when practicable, on a working frequency after a preliminary announcement on 2182 kc/s.

(iii) Brief radio operating signals.

(iv) Brief test signals in accordance with the provisions of § 83.365, as may be necessary to determine whether the radio transmitting equipment of the station is in good working condition on this frequency.

(b) The frequency 156.8 Mc/s is the international safety and calling frequency for the maritime mobile radio-telephone service in the band 156–174 Mc/s.

§ 83.354 Frequencies below 5000 kc/s for public correspondence.

(a) Carrier frequencies which are authorized for use by public ship stations employing telephony by means of amplitude modulation for the transmission of public correspondence exclusively are designated herewith: ship stations shall use the radio-channels of which these frequencies are the authorized carrier frequencies exclusively for working with public coast stations located at, or in the vicinity of, the specific harbors, ports or places designated hereinafter opposite the respective ship transmitting frequency, and shall receive transmission from the particular coast stations on the associated receiving frequencies also designated herewith:

(1) Frequencies available for use when the mobile station and the coast station transmit alternately on different radio channels:

For communication with coast stations located in the vicinity of—	Mobile station transmitting carrier frequency		Associated coast station carrier frequency	
	Frequency (kc/s)	Specific limitations imposed upon availability for use [3]	Frequency (kc/s)	Specific conditions relating to use of these frequencies by coast stations for transmission as shown in § 81.806(b) of this chapter [2]
Boston, Mass	2406	None	2506	None.
	2366	do	2450	Do.
New York, N.Y.	2126	None	2522	None.
	2166	do	2558	Do.
	2198	do	2590	Do.
	2382	Available on condition that harmful interference is not caused to the service of any ship station which is within 300 nautical miles of New Orleans, La., and is transmitting on this frequency to a coast station located in the vicinity of that port.	2482	Available on condition that harmful interference is not caused to the service of any coast station located in the vicinity of New Orleans, La., to which this carrier frequency is assigned for transmission.
	[1] 4088.5	None	4393.5	None.
	4091.6	do	4396.6	Do.
	[1] 4101.3	do	4406.3	Do.
	4104.4	do	4409.4	Do.
	[1] 4126.8	Available for use annually during period Dec. 15 to Mar. 15.	4431.8	Available for use annually during period Dec. 15 to Mar. 15.
	4129.9	do	4434.9	Do.
Wilmington, Del.	2166	None	2558	None.
Baltimore, Md.	2166	None	2558	None.
Norfolk-Quantico, Va.	2142	None	2538	None.
	2366	Day only, available on condition that no harmful interference will be caused to any service or any station which in the discretion of the Commission may have priority on the frequency or frequencies used for the service to which interference is caused.	2450	Day only, available on condition that no harmful interference will be caused to any service or any station which in the discretion of the Commission may have priority on the frequency or frequencies used for the service to which interference is caused.
Charleston, S.C.-Jacksonville, Fla.	2390	None	2566	None.
Lake Allatoona-Lake Sidney Lanier, Ga.	2366	Available on condition that no harmful interference will be caused to any service or any station which in the discretion of the Commission may have priority on the frequency or frequencies used for the service to which interference is caused.	2450	Available on condition that no harmful interference will be caused to any service or any station which in the discretion of the Commission may have priority on the frequency or frequencies used for the service to which interference is caused.

See footnotes at end of table.

For communication with coast stations located in the vicinity of—	Mobile station transmitting carrier frequency		Associated coast station carrier frequency	
	Frequency (kc/s)	Specific limitations imposed upon availability for use [2]	Frequency (kc/s)	Specific conditions relating to use of these frequencies by coast stations for transmission as shown in §81.306(b) of this chapter [2]
Miami, Fla	2031.5	None	2490	Available on condition that harmful interference shall not be caused to the police radio service in southern California.
	2118	Unlimited hours of use from Dec. 15 to Apr. 1, annually, and day only from Apr. 1 to Dec. 15, annually; and also on condition that harmful interference shall not be caused to the service of any ship station in the Great Lakes area which in the discretion of the Commission has priority on the frequency or frequencies used for the service to which interference is caused.	2514	Unlimited hours of use from Dec. 15 to Apr. 1, annually, and day only from Apr. 1 to Dec. 15, annually, on condition that harmful interference shall not be caused to the service of any coast station located in the vicinity of Miami, Fla., to which the carrier frequency 2490 kc/s is assigned for transmission; and also on condition that harmful interference shall not be caused to the service of any coast station in the Great Lakes area which in the discretion of the Commission has priority on the frequency or frequencies used for the service to which interference is caused.
	2158	Unlimited hours of use from Dec. 15 to Apr. 1, annually, and day only from Apr. 1 to Dec. 15, annually, on condition that harmful interference is not caused to the service of any ship station which is within 300 nautical miles of Tampa, Fla., and is transmitting on this frequency to a coast station located in the vicinity of that port.	2550	Unlimited hours of use from Dec. 15 to Apr. 1, annually, and day only from Apr. 1 to Dec. 15, annually, on condition that harmful interference shall not be caused to the service of any coast station located in the vicinity of Tampa, Fla., to which this carrier frequency is assigned for transmission.
	2406	Day only	2442	Day only.
	[1] 4120.5	None	4425.5	None.
	4123.6	do	4428.6	Do.
Tampa, Fla	2009	None	2466	None.
	2158	Unlimited hours of use from Dec. 15 to Apr. 1, annually, and day only from Apr. 1 to Dec. 15, annually, on condition that harmful interference shall not be caused to the service of any ship station in the Great Lakes area which in the discretion of the Commission has priority on the frequency or frequencies used for the service to which interference is caused.	2550	Unlimited hours of use from Dec. 15 to Apr. 1, annually, and day only from Apr. 1 to Dec. 15, annually, on condition that harmful interference shall not be caused to the service of any coast station in the Great Lakes area which in the discretion of the Commission has priority on the frequency or frequencies used for the service to which interference is caused.
Mobile, Ala	2430	None	2572	None.
New Orleans, La	2206	None	2598	None.
	2166	Day only	2558	Day only; on condition that harmful inteference is not caused to the service of any coast station located in the vicinity of Mobile, Ala., to which the carrier frequency 2572 kc/s is assigned for transmission.
	2382	None	2482	None
Delcambre, La	2458	Day only; on condition that no harmful interference will be caused to any service or any station which in the discretion of the Commission may have priority on the frequency or frequencies used for the service to which interference is caused.	2506	Day only; on condition that no harmful interference will be caused to any service or any station which in the discretion of the Commission may have priority on the frequency or frequencies used for the service to which interference is caused.
Galveston, Tex	2134	None	2530	None.
	2366	Day only; on condition that harmful interference is not caused to the service of any ship station which is within 300 nautical miles of Boston, Mass., and is transmitting on this frequency to a coast station located in the vicinity of that port.[3]	2450	Day only; on condition that harmful interference is not caused to the service of any coast station located in the vicinity of Boston, Mass., San Francisco, or Eureka, Calif., to which this carrier frequency is assigned for transmission.[3]
Corpus Christi, Tex	2142	Available on condition that no harmful interference will be caused to the service of any ship station which is within 300 nautical miles of Norfolk-Quantico, Va., and is transmitting on this frequency to a coast station located in the vicinity of that port.	2538	Available on condition that no harmful interference will be caused to the service of any coast station located in the vicinity of Norfolk-Quantico, Va., to which this carrier frequency is assigned for transmission.
San Juan, P.R	2134	None	2530	None.
Great Lakes	2118	None	2514	Subject to the applicable provisions of § 81.304(d) of this chapter.
	2158	do	2550	Do.
	[1] 4114.1	do	4419.1	None.
	4117.2	do	4422.2	Do.
	[1] 4126.8	do	4431.8	Do.
	4129.9	do	4434.9	Do.

See footnotes at end of table.

For communication with coast stations located in the vicinity of—	Mobile station transmitting carrier frequency		Associated coast station carrier frequency	
	Frequency (kc/s)	Specific limitations imposed upon availability for use [2]	Frequency (kc/s)	Specific conditions relating to use of these frequencies by coast stations for transmission as shown in §81.306(b) of this chapter [3]
Los Angeles-San Diego, Calif.	2009	None	2566	None.
	2382	Available on condition that harmful interference is not caused to the service of any ship station which is within 300 nautical miles of New Orleans, La., and is transmitting on this frequency to a coast station located in the vicinity of that port.	2466	Available on condition that harmful interference is not caused to the service of any coast station located in the vicinity of Tampa, Fla., to which this carrier frequency is assigned for transmission.
	2206	7 a.m. to 7 p.m., P.s.t., only	2598	7 a.m. to 7 p.m., P.s.t., only.
	2126	do	2522	Do.
San Francisco-Eureka, Calif.	2003	Available on condition that harmful interference shall not be caused to the service of any ship station which is within 300 nautical miles of Los Angeles or San Diego, Calif., and is transmitting on 2009 kc/s to a coast station located in the vicinity of those ports.	2450	Available on condition that harmful interference is not caused to police radio service in Kansas or Wisconsin.
	2406	None	2506	None.
	[1] 4069.3	do	4374.3	Do.
	4072.4	do	4377.4	Do.
Astoria, Oreg.	2009	Day only, on condition that no harmful interference will be caused to any service or station which in the discretion of the Commission may have priority on the frequency or frequencies used for the service to which interference is caused.	2442	Day only, on condition that no harmful interference will be caused to any service or station which in the discretion of the Commission may have priority on the frequency or frequencies used for the service to which interference is caused.
Astoria-Portland, Oreg.	2206	None	2598	None.
Coos Bay, Oreg.	2031.5	7 a.m. to 7 p.m., P.s.t., only; on condition that no harmful interference will be caused to any service or any station which in the discretion of the Commission may have priority on the frequency or frequencies used for the service to which interference is caused.	2566	7 a.m. to 7 p.m., P.s.t., only.
Seattle, Wash.	2126	None	2522	None.
	2430	Authorized for use south of 51° north latitude and east of 142° west longitude exclusively during the following daily periods on condition that harmful interference is not caused to the service of any station in the Alaska area authorized in accordance with Part 85 of this chapter to which this carrier frequency is assigned for transmission: annually from Apr. 1 to Sept. 30, inclusive, from 5 a.m. to 9 p.m., P.s.t., only; and annually from Oct. 1 to Mar. 31, inclusive, from 6 a.m. to 11 p.m., P.s.t., only.	2482	Authorized for use during the following daily periods on condition that harmful interference is not caused to the service of any coast station located in the vicinity of New Orleans, La., nor to the service of any station in the Alaska area authorized in accordance with Part 85 of this chapter to which this carrier frequency is assigned for transmission: annually from Apr. 1 to Sept. 30, inclusive, from 5 a.m. to 9 p.m., P.s.t., only; and annually from Oct. 1 to Mar. 31, inclusive, from 6 a.m. to 11 p.m., P.s.t. only.
Kahuku, Hawaii	2134	None	2530	None.
	[1] 4114.1	do	4419.1	Do.
	4117.2	do	4422.2	Do.
Hilo, Hawaii	2198	None	2582	None.
Palmyra Island, Hawaii	2134	Available on condition that harmful interference shall not be caused to the service of any ship station which is within 300 nautical miles of Kahuku, Hawaii and is transmitting on this frequency to a coast station located in the vicinity of that port.	2530	Available on condition that harmful interference is not caused to the service of any coast station located in the vicinity of Kahuku, Hawaii to which the carrier frequency 2530 kc/s is assigned for transmission.
St. Thomas Island, V.I.	2009	8 a.m. to 9 p.m., A.s.t., only; on condition that no harmful interference will be caused to any service or any station which in the discretion of the Commission may have priority on the frequency or frequencies used for the service to which interference is caused.	2506	8 a.m. to 9 p.m., A.s.t., only; on condition that no harmful interference will be caused to any service or any station which in the discretion of the Commission may have priority on the frequency or frequencies used for the service to which interference is caused.

[1] Available for single sideband emissions only.

[2] With respect to each specific date set forth, the associated limitation or condition imposed shall terminate or begin as applicable, at 3:00 a.m. eastern standard time.

[3] This carrier frequency is to be made available by the Commission, for use (on a 24-hour basis except where specific hours of use are designated) by the maritime mobile service for ship to shore communication in respect to the particular coast station areas designated, on a specific beginning date to be designated in future rule-making as soon as practicable after its use (or the use of its associated transmitting or receiving frequency) by other radio services is terminated or is reduced to the extent necessary to avoid harmful interference to or from the maritime mobile service.

[§ *83.354(a) table amended in IV(64)-1; as further amended re San Francisco-Eureka, Calif., eff. 1-24-66; and Boston, Mass., eff. 2-14-66; IV(64)-5*]

(2) Frequencies available for use when the mobile station and the coast station transmit alternately on the same radio channel:

For communication with coast stations located in the vicinity of—	Carrier frequency (kc/s)	Specific limitations imposed upon availability for use
Baltimore, Md.	2400	Available on condition that harmful interference is not caused to the service of any coast station in the vicinity of Boston, Mass. Transmitter power at night shall not exceed 150 watts.
Chicago, Ill.; Pittsburgh, Pa.; Louisville, Ky.; St. Louis, Mo.; Memphis, Tenn.; and other locations as required to serve vessels on the Mississippi River and connecting inland waters (other than the Great Lakes).	2782 [1] 4069.3 4072.4 [1] 4274.3 4377.4	None. Subject to applicable provisions of § 83.351(b). Do. Do. Do.
Lake Dallas, Tex.; Lake Texoma, Tex.	2738	None.
Lake Mead, Nev.; and other locations as required to serve vessels on inland waters of the southwestern continental United States.	2782	The use of this frequency in areas other than Lake Mead, Nev., is subject to the condition that harmful interference is not caused to the service of any other station.
The Dalles, Oreg.; Umatilla, Oreg.; and other locations as required to serve vessels on inland waters of the northwestern continental United States, excluding Alaska.	2784	The use of this frequency at locations other than in the vicinity of The Dalles, Oreg., and Umatilla, Oreg., is subject to the condition that harmful interference is not caused to the service of any other station.

[1] Available for single sideband emissions only.

(b) The frequency 2638 kc/s is authorized to public ship stations as a working frequency to communicate with public coast stations authorized to operate on 2638 kc/s for the transmission of safety and operational communications.

(1) Except for safety communications, communications with such public coast stations shall be limited to day only: *Provided*, That operational communications may be continued beyond such time to the extent necessary for compliance with the provisions of § 83.183.

(2) Stations on board aircraft may not use the frequency 2638 kc/s for communication with coast stations except in the event of distress.

(c) The use of the working frequencies authorized in paragraphs (a) and (b) of this section is subject to the applicable conditions and limitations set forth in § 83.351(b). Further, and insofar as is practicable, ship stations shall use frequency assignments within the band 4000 kc/s to 5000 kc/s only when frequency assignments below 4000 kc/s or above 30 Mc/s will not provide effective communication.

[§ *83.354(a)(2) amended eff. 8–9–66; IV(64)–7*]

§ 83.355 Frequencies from 5000 kc/s to 27.5 Mc/s for public correspondence.

(a) Carrier frequencies within the band 5000 kc/s to 30 Mc/s which are authorized for use by public ship stations employing telephony by means of amplitude modulation for the transmission of public correspondence exclusively are designated in this section; ship stations shall use the radio channels of which these frequencies are the authorized carrier frequencies exclusively for working with public coast stations:

(1) Frequencies authorized for use by ship stations on board oceangoing vessels primarily for long-distance communication, when the ship station and the coast station transmit alternately on different radio channels; except as expressly provided otherwise in this subpart, these frequencies shall not be used by ship stations on the Great Lakes or inland waters of the continental United States:

Ship station transmitting carrier frequency (kc/s)	For communication with coast stations located in the vicinity of—	Ship station receiving carrier frequency (kc/s)
8201.3 [1]	San Francisco, Calif.	8751.3
8204.4	do	8754.4
8214.1 [1]	Hawaii	8764.1
8217.2	do	8767.2
8220.5 [1]	New York, N.Y.	8770.5
8223.6	do	8773.6
8239.7 [1 2]	Miami, Fla.	8789.7
8242.8 [2]	do	8792.8
8258.8 [1]	New York, N.Y.	8808.8
8261.9	do	8811.9
12351.2 [1 2]	Miami, Fla.	13151.2
12354.5 [2]	do	13154.5
12358.2 [1]	New York, N.Y.	13158.2
12361.5	do	13161.5
12372.2 [1]	Hawaii	13172.2
12375.5	do	13175.5
12379.2 [1]	San Francisco, Calif.	13179.2
12382.5	do	13182.5
12393.2 [1]	New York, N.Y.	13193.2
12396.5	do	13196.5
16474.2 [1]	Hawaii	17304.2
16477.5	do	17307.5
16488.2 [1]	New York, N.Y.	17318.2
16491.5	do	17321.5
16509.2 [1]	San Francisco, Calif.	17339.2
16512.5	do	17342.5
16523.2 [1]	New York, N.Y.	17353.2
16526.5	do	17356.5
22028.2 [1]	do	22678.2
22031.5	do	22681.5
22042.2 [1]	San Francisco, Calif.	22692.2
22045.5	do	22695.5
22063.2 [1]	New York, N.Y.	22713.2
22066.5	do	22716.5

[1] Available for single sideband emissions only.
[2] Available to ship stations in the Gulf of Mexico and the Caribbean area for communication with coast stations in the vicinity of Miami, Florida. Use of the frequency is upon the express condition that interference shall not be caused to the service of any station which may have priority on the frequency or frequencies used for the service to which interference is caused.

[§ *83.355(a) as amended eff. 2–24–65; IV(64)–2*]

(2) Carrier frequencies (kc/s) authorized for use by ship stations on board vessels while navigated on

the Great Lakes; exclusively for communication with coast stations in the Great Lakes area, when the ship station and the coast station transmit alternately on different frequencies. Ship stations shall receive transmission from the particular coast stations on the designated associated receiving frequency:

Ship station transmitting carrier frequency	*Ship station receiving carrier frequency*
8246.1 [1]	8796.1
8249.2	8799.2

[1] Available for single sideband emissions only.

(3) Carrier frequencies (kc/s) authorized for use by ship stations on board vessels while navigated on the Mississippi River and connecting inland waters (other than the Great Lakes); exclusively for communication with coast stations located in the vicinity of any harbor, port, or place on the Mississippi River and connecting inland waters (other than the Great Lakes), when the ship station and the coast station transmit alternately on the same frequency:

6236.9 [1]	6455
6240	8207.7 [1]
6451.9 [1]	8210.8

[1] Available for single sideband emissions only.

(b) The use of the working frequencies authorized in paragraph (a) of this section is subject to the applicable conditions and limitations set forth in § 83.351 (d). Further, insofar as is practicable, ship stations shall use frequency assignments within the band 5000 kc/s to 30 Mc/s only when frequency assignments below 5000 kc/s or above 30 Mc/s will not provide effective communication.

§ 83.357 Additional frequencies for ship to shore communication.

In addition to the frequencies designated in this part or in the license of a ship station, such station, when working by telephony with a foreign coast station shall, unless otherwise directed by the Commission, transmit to such coast station when directed to do so by that station on a specific frequency designated by the coast station for the service being carried on.

§ 83.358 Frequencies below 3000 kc/s for safety purposes.

(a) The following carrier frequencies are authorized for intership safety communications in the respective geographic areas. In addition, on a noninterference basis to safety communications, the frequencies may be used for operational communications and, in the case of commercial transport vessels and vessels of municipal or state governments, for business communications. Use of these carrier frequencies is prohibited when the use of a licensed frequency above 27.5 Mc/s in lieu thereof would provide effective communication.

Frequency (kc/s)	*Geographic area*
2003	Great Lakes only.
2142	Pacific coast area south of latitude 42 degrees north, on a day only basis.
2638	All areas.
2738	All areas except the Great Lakes and the Gulf of Mexico.
2830	Gulf of Mexico only.

[§ 83.358(a) *as amended eff. 1-24-66; IV(64)-5*]

(b) The carrier frequency 2003 kc/s is authorized for use by ship stations for communication with government coast stations concerning passage of vessels through the respective areas as follows:

(1) On the St. Lawrence Seaway on condition that harmful interference will not be caused to any ship-to-ship communications authorized in paragraph (a) of this section.

(2) On the St. Mary's River on condition that harmful interference will not be caused to ship-to-ship safety communication authorized in paragraph (a) of this section.

(c) The geographic limitations relating to the frequencies 2738 kc/s and 2830 kc/s:

(1) Shall not apply in event of distress or emergency;

(2) Shall not prohibit ship-to-ship communication

over any distance less than 200 statute miles when only one of the ship stations is within a geographic area in which use of the respective frequency is permissible;

(3) Shall not prohibit communications between a ship and a limited coast station on either or both frequencies where the limited coast station has been authorized under the provisions of § 81.365(h) of this chapter.

(d) The frequency 2003 kc/s is authorized for use by ship stations on the Great Lakes for communication with United States Coast Guard coast stations concerning port security when the vessel is not equipped to transmit on 2670 kc/s or a suitable frequency in the band 156 to 174 Mc/s. Such use is authorized on condition that harmful interference will not be caused to any ship-to-ship communications authorized in paragraph (a) of this section.

§ 83.359 Frequencies above 156 Mc/s available for assignment.

(a) The frequencies listed in the following table are available as indicated therein. (These frequencies are not authorized for communication with stations on board aircraft.)

Channel designator	Frequency (Mc/s)		Points of communication	Authorized communications
	Ship	Coast		
6	156.3		Intership only	Safety.
7A	156.35	156.35	Intership and Ship to Coast.	Business and operational.
8	156.4		Intership only [4]	Do.
9	156.45	156.45	Intership and Ship to Coast.	Do.
10	156.5	156.5	do	Do.
11	156.55	156.55	do	Do.
12	156.6	156.6	do	Port operations.
13	156.65	156.65	do	(1)
14	156.7	156.7	do	Port operations.
16	156.8	156.8	do	Safety and calling.[2]
18A	156.9	156.9	do	Business and operational.
19A	156.95	156.95	do	Do.
20	[3] 157.0	[3] 161.60	Ship to Coast	Port operations.
24	[3] 157.2	[3] 161.8	Ship to Public Coast.	Public correspondence.
25	[3] 157.25	[3] 161.85	do	Do.
26	157.3	161.9	do	Do.
27	157.35	161.95	do	Do.
28	157.4	162.0	do	Do.

[1] Business and operational in the Great Lakes area only. In other areas, communication is authorized primarily with other ship stations for the exchange of navigational information (including radar information) concerning the passage of ships, or as an at-the-scene aid in any maritime emergency; secondarily with land stations used in connection with the passage of ships through locks, bridge areas, and Government controlled waterways and with land stations as necessary to exchange marine navigational information with shore radar stations.

[2] This frequency is authorized for call, reply, and safety purposes. It may also be used for messages preceded by the urgency and safety signals and, if necessary, for distress messages.

[3] These frequencies are not available in Puerto Rico or the Virgin Islands.

[4] Ship stations in the Great Lakes area authorized to use 156.4 Mc/s prior to Oct. 1, 1962, for communication with limited coast stations may continue to use the frequency until Jan. 1, 1963.

§ 83.360 Frequencies between 4 and 27.5 Mc/s for business and operational purposes.

(a) The carrier frequencies specified in § 83.351 (a)(4) are available for business and operational communications with limited coast stations and other ship stations using the same carrier frequency. Each of the frequencies is available on a shared basis only and shall not be construed as available for the exclusive use of any one station licensee. The frequencies are not authorized for use in communicating with stations aboard aircraft.

§ 83.362 Frequencies below 3000 kc/s for safety, business, and operational purposes.

(a) The frequencies 2738 kc/s, 2830 kc/s and 2214 kc/s may be used for safety, operational, or business communication with limited coast stations authorized to engage in such communication: *Provided*, That with respect to the frequency 2214 kc/s, specific authorization for such use must be obtained, in which event intership use of the frequency between such ship stations is also authorized.

(b) Use of 2738 kc/s, 2830 kc/s and 2214 kc/s as specified in paragraph (a) of this section will be subject to the same conditions under which they are authorized to be used by limited coast stations under the provisions of § 81.365(a) of this chapter.

(c) The frequencies 2738 kc/s and 2830 kc/s may be used for safety and related navigational communication with limited coast stations authorized to engage in such communication: *Provided*, That use of these frequencies will be subject to the same conditions under which they are authorized to be used by limited coast stations under the provisions of § 81.365(b) of this chapter.

(d)(1) In addition to availability of the carrier frequencies 2738 kc/s and 2830 kc/s, primarily for intership communication as prescribed in § 83.358, either of these carrier frequencies may, in response to proper application therefor, be specifically authorized in private aircraft station licenses for communication (in areas where their use is authorized for ship stations using telephony as prescribed in § 83.358) by means of telephony (amplitude modulation) with a ship station or stations: *Provided*,

(i) The applicant makes a showing satisfactory to the Commission that such communication is necessary to serve an important business or operational need of each particular ship while such ship is engaged in commercial fishing activities in the open sea or on any bay, sound, strait, or comparable waters adjacent to the open sea; and

(ii) Harmful interference is not caused to ship-to-ship communications; and

(iii) The maximum plate input power used for such communication shall not exceed 50 watts; and

(iv) The aircraft-to-ship and ship-to-aircraft communication which takes place on the radio-channel of which either 2738 kc/s or 2830 kc/s is the authorized carrier frequency shall be limited exclusively to that which is necessary to serve an important business or operational need of the vessel on which the ship station is located while such vessel is engaged in commercial fishing activities in the open sea or on any bay,

sound, strait, or comparable waters adjacent to the open sea; and

(v) Except as otherwise provided in this paragraph all of the provisions of this part in respect to authorization and use of the carrier frequencies 2738 kc/s and 2830 kc/s for ship to ship communication shall apply to all aircraft stations when operating under the provisions of this paragraph.

(2) As an alternative to one of the specific carrier frequencies designated in subparagraph (1) of this paragraph, the carrier frequency 2638 kc/s may be authorized in accordauce with all other provisions of this paragraph only in behalf of those private aircraft stations which were licensed prior to July 23, 1951, to transmit on this carrier frequency for communication by telephony with ship stations for the purpose expressed in this paragraph.

NOTE: Commission Order (FCC 62-724) adopted July 13, 1962, appearing at 27 F.R. 6833, July 19, 1962, waived regulations contained in § 83.362 to permit ship stations to communicate with the limited coast station of Michigan State Highway Department on 2003 kc/s.

§ 83.363 Use of U.S. Government frequencies for telephony.

(a) In addition to use of the frequency assignment designated for telephony in the license of a ship station, such statiou when communicating by telephony with a mobile or land statiou of the United States Government, may transmit on a government frequency assignment when anthorized or directed to do so by the government station responsible or by the government department or agency for which use of such frequency assignment is authorized; on condition that the emission-bandwidth and freqnency tolerance of the ship station shall be within the respective limits thereof required to be maintained by the government station. Under these circumstances, the ship station carrier frequency, the class of emission, and the permissible class of traffic shall be designated and controlled by the responsible government station, department, or agency.

(b) Freqnencies assigned to government radio stations are assignable to non-Government ship radio stations for communication with other non-Government stations by telephony when such communication is necessary in connection with activities performed in coordination with or in behalf of the Federal Government and where the Commission determines, after consultation with the appropriate government agency or agencies, that such assignment is necessary.

§ 83.364 Identification of station.

(a) Ship and survival craft stations nsing radiotelephony shall identify all transmissions by announcement in tbe English language, or hy telegraphy using A2 emission, of the station's call sign: *Provided*, That on 156.65 Mc/s transmissions may be identified hy the name of the ship in lieu of the station call sign. This identification shall be made:

(1) At the beginning and upon completion of each communication with auy otber station;

(2) At the beginning and upon conclusion of each transmission made for any other purpose; and

(3) At intervals not exceeding 15 minutes whenever transmission is sustained for a period exceeding 15 minutes.

(b) When an official call sign is not assigned by the Commission to a ship station using telephony, the complete name of the ship on which the station is located and the name of the licensee shall be transmitted by voice in the Euglish language for the purpose of station identification.

(c) The provisions of paragraphs (a) and (b) of this section shall apply also to ship stations of a portable nature when using telephony and operated on board ship pursuant to §§ 83.40 and 83.71.

§ 83.365 Procedure in testing.

(a) Ship stations must use every precaution to insure that, when conducting operational transmitter tests, the emissions of the station will not cause harmful interference. Radiation must be reduced to the lowest practicable value and if feasible shall be entirely suppressed. When radiation is necessary or unavoidable, the testing procedure described below shall be followed:

(1) The licensed radio operator or other person responsible for operation of the transmitting apparatus sball ascertain by careful listening that the test emissions will not be likely to interfere with transmissions in progress; if they are likely to interfere with the working of a coast or aeronautical station in the vicinity of the ship station, the consent of the former station(s) must be obtained before the test emissions occur;

(2) The official call sign of the testing station, followed by the word "test", shall be announced on the radio-channel being used for the test, as a warning that test emissions are about to be made on that frequency;

(3) If, as a result of the announcement prescribed in subparagraph (2) of this paragraph, any station transmits by voice tbe word "wait", testing shall be suspended. When, after an appropriate interval of time, such announcement is repeated and no response is observed, and careful listening indicates that harmful interference should not be cansed, the operator shall proceed as set forth in subparagraph (4) of this paragraph;

(4) The operator shall announce the word "testing" followed in the case of a voice transmission test by the count "1, 2, 3, 4, * * * etc." or by test phrases or sentences not in conflict with normal operating signals; or followed, in tbe case of other emission, by appropriate test signals not in conflict with normal operating signals. The test signals in either case shall have a duration not exceeding ten seconds. At the conclusion of the test, there shall be voice announcement of the official call sign of the testing station, the name of the ship on which the station is located, and the general location of the ship at the time the test

is being made. This test transmission shall not be repeated until a period of at least one minute has elapsed; on the frequency 2182 kc/s or 156.8 Mc/s in a region of heavy traffic, a period of at least five minutes shall elapse before the test transmission is repeated.

(b) When testing is conducted on any frequency within the bands 2170 to 2194 kc/s, 156.75 to 156.85 Mc/s, 480 to 510 kc/s (survival craft transmitters only), or 8362 to 8366 kc/s (survival craft transmitters only), no test transmissions shall occur which are likely to actuate any automatic alarm receiver within range. Survival craft stations using telephony shall not be tested on the frequency 500 kc/s during the 500 kc/s silence periods.

§ 83.366 General radiotelephone operating procedure.

(a) *Calling coast stations.* (1) Use by ship stations of the frequency 2182 kc/s for calling coast stations, and for replying to calls from coast stations, is authorized; however, whenever practicable such calls and replies shall be made on the appropriate ship-shore working frequency.

(2) Use by ship stations and marine utility stations on board ship of the frequency 156.8 Mc/s for calling coast stations and marine utility stations on shore, and for replying to calls from such stations, is authorized; however, whenever practicable such calls and replies shall be made on the appropriate ship-shore working frequency.

(b) *Calling ship stations.* (1) Except when other operating procedure is used to expedite safety communication, ship stations, before transmitting on the intership working frequencies 2003, 2638, 2738, or 2830 kc/s, shall first establish communication with other ship stations by call and reply on 2182 kc/s: *Provided,* That calls may be initiated on an intership working frequency when it is known that the called vessel maintains a simultaneous watch on such working frequency and on 2182 kc/s.

(2) Except when other operating procedure is used to expedite safety communication, the frequency 156.8 Mc/s shall be used for call and reply by ship stations and marine utility stations on board ship before establishing communication on either of the intership working frequencies 156.3 or 156.4 Mc/s.

(c) *Change to working frequency.* After establishing communication with another station by call and reply on 2182 kc/s or 156.8 Mc/s, stations on board ship shall change to an authorized working frequency for the transmission of messages which, under the provisions of this subpart, cannot be transmitted on the respective calling frequencies.

(d) *Authorized use of 2003, 2638, 2738, and 2830 kc/s.* The intership working frequencies 2003, 2638, 2738, and 2830 kc/s shall be used for transmissions by ship stations in accordance with the provisions of §§ 83.176, 83.177, and 83.358.

(e) *Simplex operation only.* All transmission on 2003, 2638, 2738, and 2830 kc/s by two or more stations, engaged in any one exchange of signals or communications, shall take place on only one of these frequencies, i.e., the stations involved shall transmit and receive on the same frequency: *Provided,* That this requirement is waived in the event of emergency when by reason of interference or limitation of equipment single-frequency operation cannot be used.

(f) *Limitation on duration of calling.* Calling a particular station shall not continue for more than 30 seconds in each instance. If the called station is not heard to reply, that station shall not again be called until after an interval of 2 minutes. When a station called does not reply to a call sent three times at intervals of 2 minutes, the calling shall cease and shall not be renewed until after an interval of 15 minutes; however, if there is no reason to believe that harmful interference will be caused to other communications in progress, the call sent three times at intervals of 2 minutes may be repeated after a pause of not less than 3 minutes. In event of an emergency involving safety, the provisions of this paragraph shall not apply.

(g) *Limitation on duration of working.* Any one exchange of communications between any two ship stations on 2003, 2638, 2738, or 2830 kc/s, or between a ship station and a limited coast station on 2738 or 2830 kc/s, shall not exceed 3 minutes in duration after the two stations have established contact by calling and answering. Subsequent to such exchange of communications, the same two stations shall not again use 2003, 2638, 2738, or 2830 kc/s for communication with each other until 10 minutes have elapsed: *Provided,* That this provision shall in no way limit or delay the transmission of communications concerning the safety of life or property.

(h) *Transmission limitation on 2182 kc/s and 156.8 Mc/s.* Any one exchange of signals by ship stations on 2182 kc/s or 156.8 Mc/s (including calls, replies thereto, and operating signals) shall not exceed 2 minutes: *Provided,* That this time limitation is not applicable to the transmission of distress, alarm, urgency, or safety signals, or to messages preceded by one of these signals.

(i) *Limitation on business and operational communication.* On frequencies above 30 Mc/s, the exchange of all business and operational communication shall be limited to the minimum practicable transmission time. In the conduct of ship-shore communication, other than distress, stations on board ship shall comply with instructions given by the limited coast station or marine utility station on shore with which they are communicating, in all matters relative to operating practices and procedures and to the suspension of transmission in order to minimize interference.

(j) *2182 kc/s silence period in Regions 1 and 3.* Transmission by ship or survival craft stations when in Regions 1 and 3 (except in the territorial waters of Japan and the Philippines) is prohibited on any frequency (including 2182 kc/s) within the band 2170–2194 kc/s during each 2182 kc/s silence period, i.e., for

3 minutes twice each hour beginning at x h. 00 and x h. 30, Greenwich mean time: *Provided*, That this provision is not applicable to the transmission of distress, alarm, urgency, or safety signals, or to messages preceded by one of these signals.

§ 83.367 Station documents.

(a) Ship radiotelephone stations subject to the radio provisions of the Safety Convention shall be provided with the following documents:

(1) A valid station license;

(2) The necessary operator license(s);

(3) The station log required by this part for stations of this category;

(4) The List of Coast Stations, or, alternatively, a list of coast stations with which communications are likely to be conducted, showing watchkeeping hours, frequencies, and charges;

(5) The International Radio Regulations, Geneva, 1959;

(6) Part 83 of this chapter.

(b) Ship radiotelephone stations not subject to the Safety Convention shall be provided with the documents listed in subparagraphs (1), (2), (3), and (6) of paragraph (a) of this section: *Provided*, That, at the option of the licensee of a voluntarily equipped radiotelephone station the required copy of Part 83 of the Commission's rules may be retained in a suitable place on shore in lieu of being provided aboard the vessel.

[*§ 83.367(b) as amended eff. 8-20-65; IV(64)-4*]

§ 83.368 Radiotelephone station log.

(a) A station log shall be maintained during the hours of service of ship stations using radiotelephony, in which the entries required by this section shall be made. Pages of the log shall be numbered in sequence and each page shall include the name of the vessel and the radio call sign of the station. All entries which show transmitter operation shall be made and signed by the licensed operator (or other person in accordance with § 83.155). Watch entries, and signatures of each person keeping the required watch, shall be so related that they constitute a certification by each such person as to when he began and ended each period of his watch during the voyage. The date and time of each occurrence or incident required to be entered in the log shall be shown opposite the entry, and the time shall be counted from 0000 to 2400, beginning at midnight. Stations on board vessels engaged on international voyages, other than on the Great Lakes or inland waters, shall use Greenwich mean time (GMT); stations on board vessels navigated on the Great Lakes may use either GMT or Eastern standard time (e.s.t.); other stations may use GMT or local standard time. The appropriate symbol, GMT, e.s.t., c.s.t., p.s.t., etc., shall be entered at the head of the column in which time is entered.

(b) The log of ship radiotelephone stations subject to Title III, Part II of the Communications Act of 1934 or to the radio provisions of the Safety Convention shall include the following entries:

(1) All radiotelephone distress, alarm, urgency, and safety signals and communications transmitted or

intercepted, the text in as complete form as possible of distress messages and distress communications, and any information connected with the radio service which may appear to be of importance to maritime safety, together with the time of such observation or occurrence, the frequencies used, and the position of the ship or other mobile unit in need of assistance if this can be determined;

(2) The times when the required watch is begun, interrupted, and ended. When the required watch is interrupted for any reason, except for the purpose of communications with other stations, the reason for such interruption shall be stated;

(3) The call signs of all stations called or communicated with, a notation of messages exchanged, and the frequency(s) used for such call or communication;

(4) A daily entry of the ship's position;

(5) All test transmissions, including the frequency(s) used;

(6) The times when storage batteries provided as a part of the required radio-telephone installation are placed on charge and taken off charge;

(7) Results of required equipment tests, including specific gravity of lead-acid storage batteries and voltage reading of other types of batteries provided as part of the compulsory installation;

(8) Results of inspections and tests of compulsorily fitted lifeboat radio equipment;

(9) A daily statement concerning the operating condition of the required radiotelephone equipment, as determined by either normal commnnication or test communication;

(10) Pertinent details of all installation, service, or maintenance work performed which may affect the proper operation of the station. The entry shall be made, signed, and dated by the responsible licensed operator who supervised or performed the work, and unless such operator is regularly employed on a full-time basis at the station and his operator license is properly posted, such entry shall include his mail address and the class, serial number, and expiration date of his operator license.

(c) The log of ship stations subject to the Great Lakes Agreement shall include those entries specified by subparagraphs (1), (2), (3), (5), (6), (7), (9), and (10) of paragraph (b) of this section, and in addition shall include the name and radio license number of each operator actually on board and designated by the master to operate the radiotelephone installation.

(d) The log of ship stations subject to Title III, Part III of the Communications Act shall include the following entries:

(1) All radiotelephone distress and alarm signals and communications transmitted or intercepted, all urgency and safety signals and communications transmitted, the text in as complete form as possible of distress messages and distress communications, and any information connected with the radio service which may appear to be of importance to maritime safety, together with the time of such observation or occurrence, the frequencies used, and the position of the ship or other mobile unit in need of assistance if this can be determined;

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(2) The entries specified by subparagraphs (2), (9), and (10) of paragraph (b) of this section.

(e) The log of ship radiotelephone stations not required by law to be provided shall include the following entries:

(1) The entries specified by subparagraph (1) of paragraph (d) of this section;

(2) The entries specified by subparagraphs (2) and (10) of paragraph (b) of this section.

(f) The log of marine utility stations on board ships shall include the entry specified by subparagraph (10) of paragraph (b) of this section.

§ 83.369 Operation under interim ship station license.

(a) The use and operation of a ship radiotelephone station under the authority conferred by an interim ship station license shall be subject to and in accordance with all applicable rules of the Commission: *Provided*, That the class of station, the use of frequencies, the class of emission, and the transmitting equipment shall be limited at all times under such license to the authorization hereinafter designated:

(1) Class of ship station:

(i) Public, if equipped to operate on one or more of the frequencies designated by this section for transmission to public coast stations;

(ii) Limited, if not equipped to operate as prescribed in subdivision (i) of this subparagraph.

(2) Authorized carrier frequencies:

(i) 2182 kc/s for calling and distress; 156.8 Mc/s for calling and safety communication;

(ii) For ship-to-ship communication: 156.3 Mc/s, 156.4 Mc/s, and the frequencies set forth in § 83.358.

(iii) For communication between ships and public coast stations:

Frequencies below 30 Mc/s as set forth in §§ 83.354 and 83.355;

Frequencies above 156 Mc/s as set forth in §§ 83.359(a), 85.257, 85.258, and 85.265 of this chapter.

(iv) In addition in the Alaska area:

1622 kc/s: For communication between ship stations aboard vessels of less than 500 gross tons and for communications between public ship stations on board vessels of any size and public coast stations;

2134 kc/s: For communication between ship stations and coast stations of the Alaska Communication System open to public correspondence;

2382 kc/s: For communication between ship stations aboard vessels of 500 gross tons or more and for communication between public ship stations on board vessels of any size and public coast stations.

(3) Classes of emission are authorized in accordance with § 83.132.

(4) The transmitting equipment shall be the radiotelephone equipment specified in the formal application simultaneously filed for regular ship station license and which is capable of operation on the frequencies authorized under this section.

[§ *83.369(a)(2)(ii) as amended eff. 1-24-66; IV(64)-5*]

SUBPART P—USE OF RADIODETERMINATION

§ 83.401 Assignable frequencies for direction finding.

(a) The frequency 410 kc/s is the assigned frequency for direction finding.

(b) As an exception, on condition that signals of distress, urgency and safety, and calls and answers, are not interfered with, the calling channel of which 500 kc/s is the assigned frequency may be used additionally and with discretion, by ship stations for direction-finding; exclusively in Regions 1 and 3 outside areas of heavy radio traffic.

(c) In the event of distress, the following frequencies may be used for radio direction finding for purposes of search and rescue by any licensed ship or survival craft station:

410 kc/s 500 kc/s 2182 kc/s 8364 kc/s

§ 83.403 Radiodetermination by cable-repair ship.

Provided radio transmitting equipment attached to a cable-marker buoy has been adequately described in an application for ship radio station license for a cable-repair ship with which the buoy is associated, and provided further that such equipment is authorized in the related ship station license, that equipment may be operated (outside the territorial waters of a foreign country) on such radio channels within the band 285–325 kc/s (285–315 kc/s only in Region 1) as may be expressly authorized in each case by the Commission under authority of the ship station license, with A1 or A2 emission and a maximum plate input power of 30 watts: *Provided*, That interference shall not be caused by such operation to any maritime radionavigation service. The call signals that must be used for a transmitter operating under the provisions of this section shall be the regularly assigned call of the ship station with which the buoy is associated, to be followed by the letters "BT", and the identifying number of the buoy. The buoy transmitter shall be continuously monitored by a licensed radiotelegraph operator on board the associated cable-repair ship. Should a frequency deviation in excess of the authorized frequency tolerance, or interference to the service of any other station, be reported or observed, the radiation of the transmitter shall be suspended until the excessive deviation is eliminated or until the transmitter can be operated without causing interference.

§ 83.404 Assignable frequencies above 2400 Mc/s.

(a) The following frequency bands, when designated in the station license, are authorized for use by ship radio-navigation stations (including ship radar stations):

2900 to 3100 Mc/s
5460 to 5650 Mc/s
9300 to 9500 Mc/s

The nse of the band 5460 to 5650 Mc/s is limited to shipborne radar. Transmitters in ship radionavigation stations (including developmental stations) which are authorized for operation in the 3000 to 3246 Mc/s band as of April 16, 1958, and which operate on frequencies between 3100 and 3246 Mc/s may continue to be authorized for operation on the same vessel provided that any renewal of the authorization shall be subject to the condition that no protection shall be given from any interference caused by emission from United States Government stations operating in the 3100 to 3246 Mc/s band.

(b) The following frequency bands, when designated in the station license, are authorized for use by ship radiolocation stations:

(1) 2450 to 2500 Mc/s, on condition that harmful interference shall not be caused to the fixed and mobile services, and on the condition that no protection shall be given from interference caused by emission from industrial, scientific, or medical equipment;

(2)

2900 to 3100 Mc/s
5460 to 5650 Mc/s
9300 to 9500 Mc/s

The use of frequencies within these bands for radiolocation shall not cause harmful interference to the radionavigation service and to the Government radiolocation service. Each ship radiolocation station authorized to operate in the band 3000 to 3246 Mc/s as of April 16, 1958, and which operates on frequencies between 3100 and 3246 Mc/s may continue to operate in the band 3100 to 3246 Mc/s for the duration of the term of its authorization in effect as of that date. Renewals of such authorizations, however, shall be contingent upon the condition that each such station shall not cause harmful interference to United States Government services.

§ 83.405 Special provisions applicable to ship-radar stations.

(a) A ship radar station may be operated under an interim ship station license. The use and operation of a radar station on board ship under the authority conferred by an interim ship station license shall be subject to and in accordance with all applicable rules of the Commission.

(b) Each ship-radar station installation the manufacture of which was completed on or after 1947 shall be furnished with a durable name plate with the manufacturer's name, transmitter model number; and month and year of completion of manufacture permanently inscribed thereon. Such name plate shall be affixed to the indicator housing at the principal radar operating position or to some other component of the radar installation which is readily accessible for inspection.

(c) Each ship-radar station license issued shall be subject to the condition that the station licensee, in relation to the proper operation of the station in accordance with radio law, and rules and regulations of the Commission, will be represented on hoard the radar-equipped vessel by the person who at any given time occnpies the position of master.

(d) The following provisions shall apply to ship-radar stations:

(1) The station licensee of each sbip-radar station sball provide and require to be kept at the station a permanent installation and maintenance record. Entries in this record shall be made by or under the personal direction of the responsible installation, service, or maintenance operator concerned in each particular instance, but the station licensee shall have joint responsibility with the responsible operator concerned for the faithful and accurate making of such entries as are required by this paragraph.

(2) Each entry in this record shall be personally signed by the responsible operator concerned.

(3) The following entries shall be made in this record:

(i) The date and place of initial installation.

(ii) Any necessary steps taken to remedy any interference found to exist at the time of such installation.

(iii) The nature of any complaint (including interference to radio communication) arising subsequent to initial installation, and the date thereof.

(iv) The reason for the trouble leading to the complaint, including the name of any component or component part which failed or was misadjusted.

(v) Remedial measures taken, and date thereof.

(vi) The name, license number, and date of the ship-radar operator endorsement on the first or second class radio operator license of the responsible operator performing or immediately supervising the installation, servicing, or maintenance.

(e) [Reserved]

(f) In addition to the installation and maintenance record required by paragraph (d) of this section, the following documents shall be available for reference on board each radar-equipped vessel:

(1) Part 83 of this chapter.

(2) At least one set of instructions from the respective manufacturer relative to the use and operation of the particular type of ship-radar installation.

(g) No provisions of this part shall require any ship-radar station to transmit any signal(s) intended solely for the purpose of identifying that station.

[*§ 83.405(e) deleted and (f) amended eff. 7-15-66; IV(64)-7*]

SUBPART Q—DEVELOPMENTAL STATIONS

§ 83.431 Supplemental eligibility.

An authorization for developmental operation of a station on board ship in any of the services under this part will be issued only to those persons who are eligible to operate such stations on a regular basis.

§ 83.432 Showing and statement required.

(a) Except as provided in paragraph (c) of this section, each application for authorization for a developmental station on board ship shall be accompanied by a showing that:

(1) The applicant has an organized plan of development leading to a specific objective;

(2) A point has been reached in the program where actual transmission by radio is essential to the further progress thereof;

(3) The program has reasonable promise of substantial contribution to the expansion or extension of the use of radio for a maritime purpose, or is in a field of maritime operation not already investigated;

(4) The program will be conducted by qualified personnel;

(5) The applicant is legally and financially qualified, and possesses adequate technical facilities for conduct of the program proposed;

(6) The public interest, convenience, or necessity will be served by the proposed operation.

(b) Every application for authority to engage in developmental operation shall be accompanied by a statement signed by the applicant in which it is agreed that any authorization issued pursuant thereto will be accepted with the express understanding of the applicant that it is subject to change in any of its terms or to cancellation in its entirety at any time, upon reasonable notice but without a hearing, if, in the opinion of the Commission, circumstances should so require.

(c) The provisions of paragraph (a) of this section do not apply when an application is made for a developmental station solely for the reason that the frequency requested is restricted to such developmental use.

§ 83.433 Assignable frequencies.

(a) Stations engaged in developmental operation may be authorized to use a frequency or frequencies available for the service and class of station which they propose to operate. The number of frequencies assignable to a particular station shall depend upon the specific requirements of the developmental program and the number of frequencies available for such use in the particular area where the station is to be operated.

(b) The following frequency bands, when designated in the station license, are authorized for use by developmental ship stations subject to the applicable provisions of this part:

2450	to	2500	Mc/s [1]
6425	to	6575	Mc/s
11700	to	12200	Mc/s
16000	to	18000	Mc/s [1]
28000	to	30000	Mc/s

[1] On the condition that no protection shall be given from interference caused by emissions from industrial, scientific, or medical equipment. The class of emission, the frequency tolerance, the emission bandwidth, and the maximum transmitter power for use on frequencies within these bands above 2400 Mc/s shall be designated in each station authorization.

(c) The frequency bands 5350–5460 Mc/s and 9000–9200 Mc/s, when designated in the station license, are authorized for use by developmental ship radiolocation stations: *Provided*, That use of frequencies within these bands shall not cause harmful interference to the aeronautical radionavigation service or the Government radiolocation service.

§ 83.434 Use of developmental stations.

(a) Developmental stations on board ship shall be constructed and used in such manner as to conform with all applicable technical and operating requirements contained in this part, unless deviation therefrom is specifically provided in the station authorization or in other sections of this subpart.

NOTE: Such requirements are those applicable to the corresponding established class of station including provisions relating to operator requirements, station records, station documents, and assignments of call signs.

(b) Communication with any station of a country other than the United States is prohibited unless specifically authorized by the terms of the station authorization or by other sections of this subpart.

(c) The operation of a developmental station is subject to the condition that harmful interference is not caused to the operation of stations regularly licensed in an established service under any part of the Commission's rules, nor to the service of any United States Government station or any foreign station which, in the discretion of the Commission, may have priority on the frequency or frequencies used for the service to which interference is caused.

§ 83.435 Developmental program.

(a) The developmental program as described by the applicant in the application for authorization shall be

substantially followed unless the Commission shall otherwise direct.

(b) Where some phases of the developmental program are not covered by the geueral rules of the Commission and the rules in this part, the Commission may specify supplemental or additional requirements or conditions in each case as deemed necessary in the public interest, convenience or necessity.

(c) The Commission may, from time to time, require a station engaged in developmental work to conduct special tests which are reasonable and desirable to the authorized developmental program.

§ 83.436 Report of operation required.

(a) A report on the results of the developmental program shall be filed with and made a part of each application for renewal authorization, or in cases where no renewal of authorization is requested, such report shall be filed within 60 days of the expiration of such authorization. Matters which the applicant does not wish to disclose publicly may be so labelled; they will be used solely for the Commission's information and will not be publicly disclosed without permission of the applicant. The report shall include comprehensive and detailed information on the following:

(1) The final objective of the developmental operation;

(2) Pertinent results of operation to date;

(3) Analysis of the results obtained;

(4) Copies of any published reports;

(5) Need for continuation of the program if such need exists;

(6) Number of hours of operation on each authorized frequency during the term of the license to the date of the report.

§ 83.437 Identification of station.

(a) The radiotelegraph and radiotelephone emissions of a developmental station on board ship shall be clearly identified in the manner provided in §§ 83.326 and 83.364, respectively.

(b) The facsimile emissions of a developmental station on board ship shall be identified either by telegraphy or by telephony as provided in §§ 83.326 and 83.364, respectively.

(c) All other classes of emission of a developmental station on board ship shall be identified as prescribed in the respective station authorization.

SUBPART R—RADIOTELEGRAPH STATIONS PROVIDED FOR COMPLIANCE WITH PART II OF TITLE III OF THE COMMUNICATIONS ACT OR THE RADIO PROVISIONS OF THE SAFETY CONVENTION

§ 83.441 Inspection of station.

(a) Every ship of the United States subject to part II of title III of the Communications Act and/or the radio provisions of the Safety Convention shall have the equipment and apparatus prescribed therein inspected at least once every 12 months. The issuance of an appropriate certificate (see section 361 of the Communications Act) in behalf of any vessel of the United States concerning the radio particulars provided for in the Safety Convention is subject to a finding by the Commission that such vessel complies with the applicable radio provisions of that Convention. The issuance date of Cargo Ship Safety Radiotelegraphy Certificates and Cargo Ship Safety Radiotelephony Certificates issued by the Commission shall be the date the station is found to be in compliance or not later than one business day following such incompliance date.

[*§ 83.441(a) as amended eff. 5–26–65; IV(64)–3*]

(b) Every ship of the United States holding a Safety Convention certificate is subject when in a port of a foreign country which is a party to the Safety Convention to control by officers duly authorized by the government of that country, insofar as that control is directed towards verifying that there is on board a valid Safety Convention certificate and, if necessary, that the condition of the ship or of its equipment corresponds substantially with the particulars of that certificate.

(c) The privileges of the Safety Convention may not be claimed in favor of any ship unless it holds appropriate valid Convention certificates. In the event of control giving rise to intervention of any kind in a foreign port, the officer carrying out the control is required to notify the United States Consul in writing forthwith of all the circumstances in which intervention was deemed to be necessary.

(d) Certificates issued under and in accordance with the Safety Convention shall be posted in a prominent and accessible place in the ship.

emergency electric lights, and a reserve antenna system: *Provided*, That, a cargo ship the keel of which was laid prior to June 1, 1954 may either be equipped with a reserve antenna or provided with a spare antenna consisting of a single-wire transmitting antenna (including suitable insulators) completely assembled for immediate installation.

§ 83.444 Requirements of main installation.

All main radiotelegraph installations shall comply with the following conditions, in addition to all other requirements:

(a) The main antenna shall be as efficient as is practicable and shall be installed and protected so as to insure proper operation of the station. If the main antenna is suspended between masts or other supports liable to whipping, an approved device (safety link) which, under heavy stress, will operate to greatly reduce such stress without breakage of the antenna, the halyards, or any other antenna-supporting elements, shall be installed.

(b) The main transmitter shall be capable of meeting the requirements of § 83.552.

(c) The main receiver shall be capable of efficiently receiving A1 and A2 emission on all frequencies within the bands 100–200 kc/s and 405–535 kc/s, and B emission within the band 485–515 kc/s. It shall be fitted with headphones capable of effective operation. Where a loudspeaker is additionally provided for use in accordance with the provisions of § 83.204, such device shall also be capable of effective operation. The main receiver shall have sufficient sensitivity to effectively operate headphones or a loudspeaker when the receiver input is as low as 50 microvolts.

(d) There shall be readily available for use under normal load conditions, at all times when required including times of inspection of the ship radio station by a Commission representative, a main power supply for the main installation sufficient to simultaneously (1) energize the main transmitter at its required antenna power, and the main receiver, (2) charge at any required rate all storage batteries forming part of the radiotelegraph station, and (3) charge at any required rate all other storage batteries which are connected to the main power supply for this purpose. Under this load condition the potential of the main power supply at the radio room terminals shall not deviate from its rated potential by more than 10 percent on vessels completed on or after July 1, 1941, nor by more than 15 percent on vessels completed before that date. While at sea, storage batteries forming part of the main installation shall be brought up to the normal fully charged condition daily.

(e) For the purpose of determining the potential(s) of the main power supply at its radio room terminals, a suitable voltmeter or voltmeters of standard accuracy and reliability shall be permanently installed in the radiotelegraph operating room.

(f) The main installation shall be provided with a device permitting changeover from transmission to reception and vice versa without manual switching.

(g) The main installation shall be capable of being quickly connected with and tuned to the main antenna, and the reserve antenna if one is installed.

§ 83.446 Requirements of reserve installation.

(a) All reserve radiotelegraph installations shall comply with the following conditions, in addition to all other requirements:

(1) The reserve installation shall be capable of being placed in operation within a maximum time of 1 minute after the need arises for its use.

(2) The reserve antenna shall be as efficient as is practicable and shall be adequately installed and protected so as to insure proper operation in time of an emergency.

(3) The reserve transmitter shall be capable of meeting the requirements of § 83.533.

(4) The reserve receiver shall be capable of efficiently receiving A1 and A2 emission on all frequencies within the band 405–535 kc/s, and B emission within the band 485–515 kc/s. It shall be fitted with headphones capable of effective operation. Where a loudspeaker is additionally provided for use in accordance with the provisions of § 83.204, such device also shall be capable of effective operation. The reserve receiver shall have sufficient sensitivity to effectively operate headphones or a loudspeaker when the receiver input is as low as 100 microvolts.

(5) The reserve installation shall be capable of being quickly connected with and tuned to the main antenna, and the reserve antenna if one is installed.

(6) Emergency electric lights shall be provided of not less than 10 watts per unit, capable of being energized solely by the reserve power supply and connected thereto through individual fuses. The emergency electric lights shall be arranged so as to provide satisfactory illumination of the operating controls of the main and reserve radiotelegraph installations and of the radio station clock. The emergency lighting electrical circuits shall be arranged so as to avoid the application of excessive voltage to the emergency lights during the charging of any batteries forming part of the reserve installation. The provisions of this subparagraph shall not preclude the use of any other power supply for energizing these lights solely as an additional provision. If a separate emergency radiotelegraph operating room is provided, the requirements of this subparagraph shall apply to it.

(7) The emergency electric lights shall be controlled by two-way switches placed near the main entrance to the radiotelegraph operating room and at the radiotelegraph operating position, in all cases where the distance between these points is greater than 8 feet: *Provided*, That this requirement shall be applicable to stations when the main or reserve radiotelegraph transmitter is replaced or initially installed in such station on and after the effective date of the Safety Convention, 1960.

(8) There shall be readily available for use under normal load conditions, at all times when required

including times of inspection of the ship radio station by a Commission representative, a reserve power supply for the reserve installation which shall be independent of the propelling power of the ship and of any other electrical system and shall be sufficient to simultaneously energize the reserve transmitter at its required antenna power and the reserve receiver for at least 6 hours continuously under normal working couditions, and of energizing the automatic radiotelegraph alarm signal keyer continuously for a period of 1 hour.

(9) Tbe reserve power supply shall be used to energize the reserve installation and the automatic radiotelegraph alarm signal keyer, and may be used to energize the audible warniug apparatus included as a component of an approved radiotelegraph auto alarm.

(10) The reserve power supply shall be located as near to the reserve transmitter and reserve receiver as is practicable: *Provided,* That the location of such power supply complies with all applicable rules and regulations of the United States Coast Guard. The switchboard of the reserve power supply shall, wherever possible, be situated in the radiotelegraph operating room; if it is not, it shall be capable of being illumiuated.

(11) All reserve power supply circuits shall be appropriately protected from overloads or short circuits which could damage any component thereof.

(12) Means shall be provided for adequately charging any storage batteries forming part of the reserve installation, and such batteries shall be brought to their normal fully charged condition daily while at sea. There shall be provided a device which, during charging of the batteries, will give a continuous indication of the rate and polarity of the charging current.

(13) The cooling system of each internal combustion engine used as a part of the reserve power supply shall be adequately protected or treated to prevent freezing or overheating consistent with the season and route to be traveled by the particular vessel involved.

(b) (1) The shipowner, operating company, or station licensee, if directed by the Commission or its authorized representative shall prove by demonstration prescribed in subparagraphs (2), (3), (4), and (5) of this paragraph or hy such other means as may be deemed necessary, that the reserve installation satisfies the 6-hour operating requirement of law.

(2) When the reserve power supply, on board a vessel required by law to be equipped with a radiotelegraph station, consists of or includes a storage battery, proof of the ability of such battery to operate continously and effectively over the 6-hour period of time is authorized to be established by a discharge test over a prescribed period of time, when supplying power at the voltage required for normal and effective operation to an electrical load as prescribed by subparagraph (4) of this paragraph.

(3) When the reserve power supply on board a vessel required by law to be equipped with a radiotelegraph station, consists of or includes an engine-driven generator, proof of the adequacy of the engine fuel supply to operate the unit continuously and effectively over the 6-hour period of time may be established by using as a basis the fuel consumption during a continuous period of 1 hour when supplying power, at the voltage required for normal and effective operation, to an electrical load as prescribed by subparagraph (4) of this paragraph.

(4) For the purpose of determining the electrical load to be supplied by the reserve power supply, the following formula shall be used:

(i) One-half of the reserve transmitter current consumption with the key closed (mark); plus

(ii) One-half of the reserve transmitter current consumption with the key open (space); plus

(iii) One-sixth of the current consumption of the automatic radiotelegraph alarm signal keyer when this device is properly energized; plus

(iv) Current consumption of the reserve receiver; plus

(v) Current consnmption of emergency lights.

(5) At the conclusion of the tests specified in subparagraphs (2) and (3) of this paragraph, no part of the reserve power supply shall have an excessive temperature rise, nor shall the specific gravity or voltage of the storage battery be below the 90 percent discharge point as determined from information (such as voltage curves or specific gravity tables) supplied by the manufacturer for the type of battery involved.

§ 83.447 Routing of power supply wiring.

The conductors connecting the main power supply to the main installation, and the conductors connecting the reserve power supply to the reserve installation, shall be so routed as to ensure adequate protection from mechanical injury, shall be protected from overload, and shall be kept clear of electrical grounds.

§ 83.448 Use of reserve installation.

The reserve transmitter, and the reserve power supply for the reserve transmitter, are primarily authorized to be nsed only for safety and test communication: *Provided,* Tbat this equipment may be used for other communication for a period not to exceed 1 hour per day in the aggregate. The reserve receiver, and the reserve power supply for the reserve receiver if a storage battery, may be used at any time to maintain a watch for safety purposes if such use will not reduce the ability of such reserve power supply to energize the associated component or components of the reserve installation for at least 6 consecutive hours.

§ 83.449 Tests of reserve installation and automatic radiotelegraph alarm signal keyer.

(a) The condition of the reserve installation and of the automatic radiotelegraph alarm signal keyer shall be determined (with the exception noted in paragraph (b) of this section) prior to the vessel's departure from each port and on each day the vessel is outside of a harbor or port: *Provided,* That in the case where the

vessel is in two or more ports within 1 day, the required tests need be made only once during such day: *Provide further*, That in the case where the vessel is in a port for less than 1 day, the required tests for that day may be made either prior to the vessel's arrival in that port or prior to the vessel's departure from that port. When the ship is in a foreign port, transmitter tests are subject to such limitations as may be imposed by the Administration having jurisdiction. The following tests shall be made and the results entered in the radiotelegraph station log:

(1) Check the reserve power supply as follows:

(i) Test battery charging circuits for correct polarity and charging rate;

(ii) In the case of lead-acid batteries, determine the specific gravity of the electrolyte of a pilot cell and such other cells as may be necessary to determine the state of charge;

(iii) In the case of other types of batteries, take voltage readings under normal battery load of a pilot cell and such other cells as may be necessary to determine the state of charge;

(iv) When an engine-driven generator is used, check the quantity of fuel in the engine fuel tank;

(2) Test the emergency lighting circuits and emergency electric lights by actual operation;

(3) Determine the proper functioning of the reserve receiver, while energized by the reserve power supply, by actual operation and comparison of received signals with similar signals received by means of the main receiver;

(4) Test the reserve transmitter, while energized by the reserve power supply, by actual operation when connected to the main antenna and to the reserve antenna, if one is installed, noting antenna currents;

(5) Test the automatic radiotelegraph alarm signal keyer for correct timing adjustment of keying mechanism, taking precaution to ensure that any radiotelegraph transmitter to which this device is connected is not energized, in order to preclude actual transmission of alarm signals.

(b) In the case of vessels loading or discharging inflammable or unstable and dangerous cargo, or while berthed at oil terminals or in other comparable areas, it is recognized that predeparture transmitter tests may not safely be made. Accordingly, in all such cases the provisions of paragraph (a)(4) of this section, in connection with predeparture tests, are waived: *Provided*, That suitable explanation is entered in the radio station log.

§ 83.451 Automatic radiotelegraph alarm signal keyer.

The radiotelegraph station required to be provided on a ship of the United States by reason of the provisions of part II of title III of the Communications Act shall include one or more devices, of a type approved by the Commission in accordance with § 83.555, capable of automatically operating the normal keying circuits of a required radiotelegraph transmitter as specified by § 83.452 so as to transmit the international radiotelegraph alarm signal.

§ 83.452 Installation of automatic radiotelegraph alarm signal keyer.

(a) The automatic radiotelegraph alarm signal keyer required by § 83.451 shall be installed in a readily accessible place in the radiotelegraph operating room. Means shall be provided in the radiotelegraph operating room to permit instant use of this device to key, non-simultaneously, the main transmitter and the reserve transmitter, and to permit the device to be taken out of operation at any time in order to permit immediate manual transmitter operation. When, pursuant to § 83.442, one transmitter is employed as both a main and reserve transmitter, the automatic radiotelegraph alarm signal keyer shall only be required to be capable of keying this transmitter. Only one control shall be provided for each automatic radiotelegraph alarm signal keyer; this control shall be located in the radiotelegraph operating room.

(b) The required automatic radiotelegraph alarm signal keyer shall be capable of operating efficiently for a continuous period of at least 1 hour when energized solely by the reserve power supply.

§ 83.453 Radiotelegraph auto alarm.

(a) A radiotelegraph auto alarm which is installed and used on board a cargo ship of the United States pursuant to the provisions of § 83.205 comprises a complete receiving, selecting, and warning device of a type approved by the Commission in accordance with section 3(x) of the Communications Act, capable of being actuated automatically by intercepted radio frequency waves forming the international radiotelegraph alarm signal.

(b) The following radiotelegraph auto alarms are acceptable for use pursuant to § 83.205:

(1) A radiotelegraph auto alarm that was type approved by the Commission prior to January 1, 1954 and installed prior to the effective date of the Safety Convention, 1960, is acceptable for a period of 4 years from the latter date. All radiotelegraph auto alarm type approvals dated prior to January 1, 1954 are cancelled as of the date which is 4 years after the effective date of the Safety Convention, 1960.

(2) A radiotelegraph auto alarm that was type approved by the Commission subsequent to January 1, 1954, pursuant to § 83.554.

§ 83.454 Installation of radiotelegraph auto alarm.

(a) A vessel shall be considered as fitted with a radiotelegraph auto alarm pursuant to § 83.453 when the installation on board such vessel complies with the conditions prescribed in the following paragraphs of this section.

(b) The radiotelegraph auto alarm shall be located in the radiotelegraph operating room and shall be installed and protected so as to insure proper operation. Means shall be provided in the radiotelegraph operating room for placing the entire radiotelegraph auto alarm

system in or out of operation. A changeover switch shall be provided to: (1) Disconnect the main antenna from all other equipment and connect it to the radiotelegraph auto alarm receiver and place the system in effective operating condition; and, conversely, (2) deenergize the system and reconnect the main antenna to other equipment. A suitable voltmeter shall be provided for the purpose of determining that the supply voltages are within the limits required for proper operation of the system.

(c) Approved apparatus shall be provided for giving an audible warning in the radiotelegraph operating room, in the radio officer's cabin, and on the navigating bridge. This apparatus shall operate continuously after the radiotelegraph auto alarm has been actuated by a radiotelegraph alarm signal or by failure of the system, until manually stopped. Only one switch for stopping the audible warning apparatus from functioning is authorized, and this shall be located in the radiotelegraph operating room and shall be capable of manual operation only.

(d) Failure of the radiotelegraph auto alarm (if of a type approved prior to July 23, 1951) to function normally because of prolonged atmospherics (static) or other prolonged interference, or both, shall operate a visual indicator on the bridge. The type and method of installation of such visual indicator shall comply with the requirements of the United States Coast Guard.

(e) When a radiotelegraph auto alarm is dependent for effective operation upon a power supply having a voltage within definite upper and lower limits, it shall be fitted with an auxiliary device which: (1) will energize the audible warning apparatus if and when this power supply fails or its voltage exceeds the limits specified by the Commission for the particular type of radiotelegraph auto alarm involved; or (2) will automatically connect the radiotelegraph auto alarm to an auxiliary power supply, the voltage of which is within the specified limits.

§ 83.456 Radiotelegraph auto alarm instructions.

There shall be furnished at least two sets of written instructions for the guidance of the radio officer and ship's officers relative to the radiotelegraph auto alarm, which shall include:

(a) A general technical description of the radiotelegraph auto alarm, including a circuit diagram of its receiver, a wiring diagram of its complete installation on shipboard, and a general explanation of its principles of operation;

(b) A list of faults which may be indicated by the sounding of the audible warning apparatus;

(c) An explanation of how to correct faults, remove and replace defective parts, and perform limited repairs at sea;

(d) An explanation of how to test the radiotelegraph auto alarm and adjust the sensitivity control to the "optimum" setting, and of the effect of various sensitivity control settings upon its operation, which shall be summarized upon a card and permanently attached to the front of the radiotelegraph auto alarm in a conspicuous position;

(e) A description of procedure to be followed with respect to adjustments to be made by the radio officer when the audible warning apparatus sounds, and also in making log entries.

§ 83.457 Tests of radiotelegraph auto alarm.

(a) The radio officer shall, at least once every 24 hours while the ship is in the open sea outside of a harbor or port:

(1) Test the efficiency of the radiotelegraph auto alarm by using the testing device to determine whether the apparatus will respond to not less than 4 nor more than 12 consecutive dashes having an approximate duration of 4 seconds and approximate spacing between dashes of 1 second, the timing to be made by refereuce to the seconds hand of the radiotelegraph station clock;

(2) Determine the proper functioning of the radiotelegraph auto alarm receiver while connected to its normal antenna, by actual operation and comparison of received signals with similar signals received on 500 kc/s by means of the main receiver.

(b) If the radiotelegraph auto alarm is not in proper operating condition, the radio officer shall report that fact to the master or officer on watch on the bridge.

(c) A statement that the tests specified in this section have been made, and entry of the results of such tests, shall be inserted daily in the radiotelegraph station log.

§ 83.458 Direction finder.

Each ship of 1,600 gross tons or over which is subject to the requirement set forth in subparagraph (a)(2) of section 351 of the Communications Act, or which is subject to Regulation 12 of Chapter V of the Safety Convention, shall be equipped with efficient radio direction finding apparatus properly adjusted in operating condition and approved by the Commission.

§ 83.459 Requirements for direction finder.

(a) To be approved by the Commission the radio direction finding apparatus shall:

(1) Be capable of efficiently receiving signals, A1, A2, and B emission, with the minimum of receiver noise, on each frequency within the band 285–515 kc/s assigned by the International Radio Regulations for the purposes of distress and direction finding and for maritime radio beacons, and be accurately calibrated for the purpose of taking bearings on such signals from which the true bearing and direction may be determined; and

(2) Possess a sensitivity, in the absence of interference, sufficient to permit the taking of accurate bearings on a signal having a field strength as low as 50 microvolts per meter.

(b) The calibration of the direction finder shall be verified by check bearings or by a further calibration

whenever any changes are made in the physical or electrical characteristics or the position of any antennas, and whenever any changes are made in the position of any deck structures, which might appreciably adversely affect the accuracy of the direction finder. In addition, the calibration particulars shall be verified by check bearings at yearly intervals, or as near to yearly intervals as possible. A record of the calibrations, and of the check bearings made of their accuracy, shall be kept on board the ship for a period of not less than 1 year from the date of the related action.

§ 83.461 Installation of direction finder.

(a) The direction finder shall be so located that as little interference as possible from mechanical or other noise will be caused to the efficient determination of bearings.

(b) The direction finder antenna system shall be erected in such a manner that the efficient determination of bearings will be hindered as little as possible by the close proximity of other antennas, cranes, wire halyards, or large metal objects.

§ 83.462 Contingent acceptance with respect to direction finder calibration.

(a) Under conditions where it is impracticable for the Commission to determine the accuracy of calibration or where it is impracticable to make the required calibration prior to departure of a vessel from a harbor or port for a voyage in the open sea, the direction finder may be tentatively approved on condition that:

(1) Prior to departure of the vessel from the particular harbor or port, the master certifies in writing to the Commission's inspecting engineer that, before the vessel is navigated on that voyage in the open sea beyond a radio beacon located in close proximity to that port, the direction finder will be properly calibrated by a competent technician; and

(2) During a subsequent inspection of the direction finder, the master shall make available to the Commission's inspecting engineer the appropriate written records resulting from calibration of the direction finder pursuant to said certification. If the information contained in these written records is satisfactory to the Commission's inspecting engineer, approval of the direction finder will be continued.

(b) In the absence of acceptable evidence of calibration at the time of the subsequent inspection mentioned in subparagraph (2) of paragraph (a) of this section, the Commission may withdraw approval of the direction finder until such evidence is available.

§ 83.463 Check bearings by authorized ship personnel.

The requirement for verification of calibration particulars by check bearings at yearly intervals, as set forth in paragraph (b) of § 83.459, may be complied with when performed by authorized ship personnel if conducted and recorded as follows:

(a) The required verification by check bearings shall be made during the 90-day period of active service of the ship immediately preceding the date of the annual detailed inspection of the radiotelegraph station;

(b) The verification shall consist of a comparison of simultaneous visual and radio direction finder bearings. At least one comparison bearing shall be taken in each quadrant, within plus or minus 10 degrees from the following bearings relative to the ship's heading: 45 degrees; 135 degrees; 225 degrees; 315 degrees;

(c) The verification shall be recorded in such a manner as to show the visual bearing relative to the ship's heading and the difference between the visual and radio direction finder bearing, and the date each check bearing is taken. If the master is satisfied as to the adequacy of the verification for the purpose of determining the accuracy of the direction finder's calibration, and the direction finder is capable of taking bearings on radio signals from which the true bearing and direction may be determined, he shall so certify in writing, and make the records and such certification available to the Commission's inspecting engineer during the subsequent annual detailed inspection. If the master is not satisfied as to the adequacy of the check bearings or if such check bearings indicate a need for recalibration, a recalibration shall be obtained prior to the date of the annual detailed inspection of the radiotelegraph station.

§ 83.464 Auxiliary receiving antenna.

An effective auxiliary receiving antenna or other approved arrangement shall be provided whenever necessary to avoid unauthorized interruption or reduced efficiency of the required watch by reason of unavailability of the normal receiving antenna for use during the period of time when a radio direction finder on board the vessel is being operated.

§ 83.466 Interior communication systems.

(a) An efficient interior communication system shall be provided between the bridge of the ship and the radiotelegraph operating room in all cases where the radiotelegraph operating room does not adjoin or open onto the navigating bridge structure. An efficient interior communication system shall also be provided between the bridge and the location of the radio direction finding apparatus whenever the latter is not located on the bridge or within any compartment adjoining or opening onto the navigating bridge structure. When the operating position of the reserve radio installation is not located in the radiotelegraph operating room normally used for operating the main radio installation, an efficient interior communication system shall be separately provided between the bridge and each of these radio operating positions.

(b) If a vessel is provided with more than one location from which it is normally controlled and steered, the interior communication system between the radiotelegraph operating room and bridge shall include in the system a point of communication to each such location. The existence at a location of all of the following factors will be considered to be evidence that a point of communication should there be established: (1) Provision of a steering wheel; (2) provision of a

compass; (3) provision of an engine order telegraph; (4) provision of apparatus to contol the whistle; and (5) enclosure of the location to form a wheelhouse.

(c) The requirement of paragraph (h) of this section shall not apply to locations established solely for emergency use in event of failure of the normal steering facilities or locations used solely while docking or maneuvering a ship while in port or occasionally for brief periods while navigating the ship in close quarters on inland waters.

§ 83.467 Requirements for interior communication systems.

The interior communication systems required hy § 83.466 shall be capable of providing efficient two-way calling and voice communication, shall be independent of any other communication system in the ship, and shall be of a type of system approved by the United States Coast Guard. Further, the location and termination of individual systems shall be subject to approval by the Commission.

§ 83.468 Radiotelegraph station clock.

A reliable clock equipped with a sweep seconds hand and having a dial not less than 5 inches in diameter, the face of which is marked to indicate the silence periods prescribed for the radiotelegraph service by the International Radio Regulations, shall be provided. It shall be securely mounted in the radiotelegraph operating room in such a position that tbe entire dial can be easily and accurately observed by the radio officer from the normal radiotelegraph operating position, from the operating position at which he would ordinarily transmit the international radiotelegraph alarm signal by hand, and from the position used for testing the radiotelegraph auto alarm (if installed) for response to signals from the testing device. If a separate emergency radiotelegraph operating room is provided, the requirements of this section shall apply to it also.

§ 83.469 Survival craft nonportable radiotelegraph installation.

(a) A survival craft nonportable radiotelegrapb installation required by law to be provided in a motor lifeboat shall include the following components as a minimum:

(1) An antenna for transmitting and receiving together with such antenna accessories as are necessary;

(2) An artificial antenna for testing purposes;

(3) A transmitter with keying arrangements for use of radiotelegraphy, an associated radio receiver with headphones, and a suitable device for converting from the power supply hattery voltage to the voltages used by the transmitter and receiver;

(4) A power supply;

(5) The necessary material or device for a ground connection to the water when the lifeboat is afloat.

(b) Components of a survival craft nonportable radiotelegraph installation specified in subparagraphs (2) and (3) of paragraph (a) of this section shall be type approved by the Commission as capable of meeting the provisions of §§ 83.556 and 83.558.

(c) The radiotelegraph equipment shall he installed in a cabiu large enough to accommodate both the equipment and the person using it, and arrangements shall be such that the efficient operation of the radiotelegraph installation shall not be interfered with by the survival craft engine while it is running, whether or not a battery is on charge.

(d) The antenna shall be a single wire inverted-L type with a horizontal section of the maximum practicable length and a beight above the mean waterline of not less than 20 feet, and shall be so designed that it can be quickly erected and utilized by a person in the lifeboat while afloat.

(e) The ground system shall comply with the following requirements:

(1) The radio installation when installed in a metal hull lifeboat shall be effectively grounded to the hull of the lifeboat. The ground connection shall be physically located in a position where it is inaccessible to the normal movement of occupants or accessories in the lifeboat;

(2) The radio installation when installed in a lifeboat having a nonmetallic hull shall be effectively grounded to a bare plate and/or strips of corrosion resistant metal having a total area of at least 6 square feet and located on tbe hull of the lifeboat below the waterline.

(f) When the lifeboat is afloat the installation shall be capable of developing an antenna current such tbat the product of the maximum heigbt of the antenna above tbe mean surface of the water, expressed in feet, and the r.m.s. antenna current on the frequency 500 kc/s, expressed in amperes, is not less than 32.

§ 83.471 Power supply for survival craft nonportable radiotelegraph installation.

(a) The power supply for the snrvival craft nonportable radiotelegraph installation shall consist of a storage battery capable at all times of operating the entire survival craft radiotelegraph installation for a period of at least 6 hours continuously under normal working conditions.

(b) The storage battery may be used to operate equipment other than the radiotelegraph installation (except that it shall not be used to supply power to any engine starting motor or ignition system) provided such additional use will not adversely affect the required capabilities of the battery. All individual circuits connected to the battery shall be independently and properly fused.

(c) The storage battery shall be kept adequately charged at all times while at sea. The charging of the battery shall not require its removal from the survival craft in which it is installed. The necessary charging equipment shall be arranged so as not to interfere with the launching of the survival craft, and for this purpose shall be easily and quickly removable. The charging circuit for the storage battery shall be

routed through the radiotelegraph operating room, and shall include a device located in the radiotelegraph operating room which will give continuous indication of the polarity and the rate of charge.

(d) Installations shall provide for charging of the storage battery by means of a generator on the survival craft engine.

(e) Subject to approval of the United States Coast Guard, the storage battery shall be mounted in a suitable container that will provide protection from salt water spray and also allow proper ventilation.

§ 83.472 Survival craft portable radiotelegraph equipment.

(a) Survival craft portable radiotelegraph equipment required by law to be provided shall be type approved by the Commission as capable of meeting the provisions of §§ 83.556 and 83.557.

(b) The equipment shall be kept in the radiotelegraph operating room, the chart room, or other suitable location ready to be moved to one or other of the survival craft in the event of an emergency. However, in tankers of 3,000 gross tons and over in which lifeboats are fitted amidships and aft this equipment shall be kept in a suitable place in the vicinity of those lifeboats which are furthest away from the ship's main transmitter.

§ 83.473 Tests of survival craft radio equipment.

(a) Inspections and tests of survival craft radio equipment shall be conducted by a qualified representative of the survival craft station licensee at weekly intervals while the ship is at sea, and within 24 hours prior to the ship's departure from each port but not necessarily more than once each week. When the ship is in a foreign port, transmitter tests are subject to such limitations as may he imposed by the Administration having jurisdiction. The inspection and tests shall include operation of the transmitter connected to an artificial antenna, and determination of the specific gravity in the case of a lead-acid battery, or voltage under normal load in the case of other types of batteries, of any battery provided as a part of the survival craft radio equipment.

(b) When the ship is in a harbor or port of the United States an authorized representative of the Commission may require:

(1) Inspection and test of the survival craft radio equipment in the survival craft afloat, including an operational test of the transmitter and receiver connected to the required antenna to determine that the equipment is in effective operating condition;

(2) Proof by demonstration in accordance with the principles of § 83.446 (b) that a storage battery used as a part of the survival craft nonportable radio installation is capable of energizing the installation for the required 6-hour period of time.

(c) The results of the inspections and tests shall be made known to the master, and shall be entered in the ship's radio station log, or in the ship's log if the ship is not provided with a radio station.

§ 83.474 Ship station spare parts, tools and testing equipment.

(a) Each ship station shall be provided with the following spare parts:

(1) One complete set of spare parts for the radiotelegraph auto alarm installed, as specifically designated in special spare-parts lists available for inspection at any of the Commission's field engineering offices;

(2) One complete set of spare parts for type approved main and reserve transmitters installed, as specifically designated in special spare-parts lists available for inspection at any of the Commission's field engineering offices: *Provided*, That pending Commission approval of the type of transmitter installed and promulgation of a special spare-parts list for such transmitter, one complete set of spare parts as designated in § 83.477 shall be provided;

(3) A minimum of 300 feet of antenna wire of good electrical conductivity and at least 2 strain insulators for the erection of a single-wire transmitting antenna;

(4) When a reserve antenna is not installed under the elective provisions of § 83.443(b), a spare transmitting antenna completely assembled for immediate erection shall be carried. If the installed main transmitting antenna is suspended between supports, this spare antenna shall be a single-wire transmitting antenna (including suitable insulators) of the same linear dimensions as the main transmitting antenna. If the main transmitting antenna is of the self-supported vertical type, this spare antenna when erected shall be as efficient as practicable;

(5) One sleeve bearing of each type used by all rotating machines which are a component part of the reqnired radio installation;

(6) One spare electric light bulb for each required emergency light;

(7) One gallon or more of distilled, or otherwise suitable, water for use in the required storage batteries;

(8) One pair headphones complete with a connecting cord and, if used, a cord-terminal plug;

(9) One complete set of electron tubes for the main receiver;

(10) One complete set of electron tnbes for the reserve receiver;

(11) One complete set of electron tubes for the radio receiver incorporated in the required radio direction finding apparatus.

(b) Each ship station shall be provided with the following tools and testing equipment:

(1) An instrument or instruments capable of measuring 2 and 6 volts a.c. and d.c. and the ship's main power voltage supplied to the radioroom. Such instrument or instruments shall have at least 3 voltage ranges with full-scale readings of 2.5 to 5, 10 to 15, and 150 to 300 volts, shall be capable of measuring d.c. voltages with an accuracy of at least 3 percent of full-scale reading and a.c. voltages with an accuracy of at least 5 percent of full-scale reading at a sensitivity of

at least 1,000 ohms per volt, and shall be capable of resistance measurements in suitable ranges to a maximum of at least 5 megohms;

(2) One 100-watt or larger electric soldering iron capable of operating from a source of power available in the room or rooms housing the required radio apparatus; and at least one-half pound of rosin-core solder or equivalent;

(3) One complete electric flashlight, two-cell or larger, or 1 portable electric inspection lamp (protected from mechanical injury) with at least 10 feet of flexible cord, and means for rapid connection to the reserve power supply. One spare bulb of the type used shall be provided;

(4) One hydrometer for use with lead-acid batteries when this type of battery is installed;

(5) One pair 5- to 8-inch side-cutting pliers;

(6) One set of assorted end wrenches or socket wrenches, or in lieu thereof one adjustable end wrench;

(7) One 4- to 6-inch screwdriver;

(8) One 1- to 2-inch screwdriver with a blade of approximately ⅛ inch.

§ 83.476 Instruction books and circuit diagrams.

In addition to the radiotelegraph auto alarm instructions specified by § 83.456, instruction books and circuit diagrams, including modifications, shall be provided for the types of required transmitters, receivers, and radio direction finding equipment installed.

§ 83.477 Transmitter spare parts pending type approval.

(a) In lieu of the requirements of § 83.474(a)(2), the following spare parts shall be furnished for a main or a reserve radiotelegraph transmitter pending Commission type approval of such transmitter and the issuance of an associated spare-parts list:

(1) One radiofrequency oscillator tube;

(2) One tube for each radiofrequency amplifier stage;

(3) One audiofrequency oscillator tube, if used to provide A2 emission;

(4) Two tubes for a reserve transmitter which is of the self-rectified simple oscillator type;

(5) One power supply rectifier tube for each such tube used;

(6) One resistor of each type used as a grid leak;

(7) One resistor of each type used in the voltage divider of a grid-blocking keying circuit;

(8) One resistor of each type used in series with the keying relay winding;

(9) One complete set of brushes for each rotating machine which utilizes brushes;

(10) Renewable fuse cartridges of each type used in connection with units of the radio installation in the amount of at least one-half the number of each size and type in actual use. For each renewable fuse cartridge in actual use, there shall be available 6 spare fuse links of appropriate capacity. For each nonrenewable fuse in use, there shall be available 6 spare fuses of the same type and of appropriate capacity.

(b) The value of each space resistor specified in paragraph (a) of this section shall be clearly indicated on that resistor.

§ 83.478 Survival craft station spare parts.

(a) Each survival craft station shall be provided with:

(1) One electron tube of each type required for operation of the radio installation. If more than 2 electron tubes of one type are used, at least 2 spare electron tubes of that type shall be provided;

(2) One neon or any other type of tube or lamp used as resonance indicator;

(3) Renewable fuse cartridges of each type used in connection with the units of the survival craft radio installation, or which are used in circuits connected to the survival craft radio installation power supply, in the amount of at least one-half the number of each size and type in actual use. For each renewable fuse cartridge in actual use, there shall be available 6 spare fuse links of appropriate capacity. For each nonrenewable fuse in use, there shall be available 6 spare fuses of the same type and appropriate capacity. If fuse wire is used, sufficient wire shall be provided to permit 6 complete fuse replacements.

(b) Each survival craft station fitted with nonportable radiotelegraph equipment shall be additionally provided with:

(1) At least 35 feet of insulated antenna wire;

(2) Two transmitting antenna insulators;

(3) One pair side-cutting pliers;

(4) One screwdriver;

(5) One panel electric light bulb, if used.

§ 83.479 Location of spare parts, tools, testing equipment, and instruction books.

(a) Spare parts for the direction finder receiver shall be kept in the same room in which this receiver is located;

(b) Spare parts and tools for the survival craft nonportable radiotelegraph installation shall be kept in the survival craft cabin housing this installation;

(c) Spare parts for the survival craft portable radiotelegraph equipment shall be so kept as to be immediately available for maintenance of this equipment;

(d) Spare bulb(s) for the emergency lights shall be mounted in close proximity to the corresponding emergency light socket(s);

(e) Spare antenna wire, antenna insulators, and distilled water shall be so kept as to be immediately available to the radio officer;

(f) All other spare parts, tools, testing equipment, and instruction books shall be securely kept in a single space in the radiotelegraph operatiug room or, if desired, in auy associated room adjacent to and opening directly into the radiotelegraph operating room, and shall be readily accessible to the radio officer;

(g) The space allocated in accordance with paragraph (f) of this section shall be used only for this purpose, and such space shall be appropriately and conspicuously marked;

(h) All required spare parts, tools, testing equipment, and instruction books shall be available for inspection at any reasonable time by authorized representatives of the Commission.

SUBPART S—RADIOTELEPHONE STATIONS PROVIDED FOR COMPLIANCE WITH PART II OF TITLE III OF THE COMMUNICATIONS ACT OR THE RADIO PROVISIONS OF THE SAFETY CONVENTION

§ 83.481 Inspection of Station.

The requirements for station inspection, and provisions pertaining to certificates issued under the Safety Convention, are set forth in § 83.441.

§ 83.482 Radiotelephone station.

(a) The provisions of this subpart are applicable to the radiotelephone station required to be provided on a ship by reason of the provisions of part II of title III of the Communications Act, or on a United States ship by reason of the Safety Convention. The radiotelephone station so provided comprises a radiotelephone installation and such other equipment as may be necessary for the proper use and operation of such installation.

(b) The radiotelephone station shall be installed so as to insure safe and effective operation of the equipment, and shall be arranged to facilitate repair. Adequate protection shall be provided against the effects of vibration, moisture, and temperature.

(c) The radiotelephone station and all necessary controls shall be located at the level of the main wheelhouse or at least one deck above the vessel's main deck.

(d) The principal operating position of the radiotelephone station shall be in the room from which the vessel is normally steered while at sea. If the station can be operated from any location other than the principal operating position, except as provided in paragraph (e) of this section, a direct and positive means shall be provided at the principal operating position to take full control of the station.

(e) The use of a readily available, reliable, effective, and completely independent communication system between the principal operating position and all other operating locations is acceptable as a method for taking control at the principal operating position: *Provided, however,* That in the case of stations first placed in service on or after June 1, 1956 the use of snch a method for taking control at the principal operating position is acceptable only for operating locations in the chartroom or master's quarters.

§ 83.483 Radiotelephone installation.

The radiotelephone installation includes:

(a) A radiotelephone transmitter;

(b) A preset receiver as specified by § 83.488(a);

(c) A mauually tuned receiver as specified by § 83.488(b);

(d) A main source of energy;

(e) A reserve source of energy, when required by § 83.491(a);

(f) An antenna system.

§ 83.484 Radiotelephone transmitter.

(a) The transmitter shall be capable of effective transmission of A3 or A3H emission on 2182 kc/s, 2638 kc/s and at least two other frequencies within the band 1605 to 2850 kc/s available for ship to shore or ship to ship communication.

(b) The transmitting duty cycle of the transmitter shall allow for effective transmission of the international radio-telephone alarm signal.

(c) The transmitter shall be capable of transmitting clearly perceptible signals from ship to ship during daytime, under normal conditions and circumstances, over a minimum normal range of 150 nautical miles.

(d) The transmitter shall be considered as capable of complying with the range requirement specified in paragraph (c) of this section when:

(1) The transmitter is capable of being adjusted for efficient use with an actual ship station transmitting antenna meeting the requirements of § 83.494; and

(2) The transmitter has been demonstrated, or is of a type which has been demonstrated, to the satisfaction of the Commission as capable, with normal operating voltages applied, of delivering not less than 25 watts carrier power for A3 emission or 50 watts of peak envelope power for A3H emission on each of the frequencies 2182 and 2638 kc/s into an artificial antenna consisting of a series network of 10 ohms effective resistance and 200 picofarads capacitance: *Provided, however,* That an individual demonstration of the power output capability of the transmitter, witb the radiotelephone installation normally installed on board ship, may be reqnired whenever in the judgment of the Commission this is deemed necessary.

(e) The transmitter shall be equipped with a device which will provide visual indication whenever the transmitter is supplying power to the antenna.

(f) The transmitter shall be adequately protected by suitable devices from excessive currents and voltages which could cause damage to the components thereof.

(g) A durable nameplate shall be mounted on the transmitter or made an integral part thereof showing clearly the name of the transmitter manufacturer and the type or model of the transmitter.

§ 83.486 Automatic radiotelephone alarm signal generator.

The transmitter provided as a component of the radiotelephone station shall be equipped with a device, of a type approved by the Commission pursuant to

§ 83.142, capable of automatically generating the international radiotelephone alarm signal: *Provided*, That this requirement shall be applicable to all such transmitters initially installed on and after the effective date of the Safety Convention, 1960, and to all such transmitters as of the date which is 3 years after the effective date of the Safety Convention, 1960.

§ 83.487 Installation of automatic radiotelephone alarm signal generator.

The controls of the automatic radio-telephone alarm signal generator required by § 83.486 shall be located at the principal radiotelephone operating position only. The controls shall permit instant use of this device to modulate the required transmitter, and to permit the device to be taken out of operation at any time so that the transmitter may be immediately voice modulated for transmission of a distress call and message.

§ 83.488 Radiotelephone receivers.

(a) The receiver used for maintaining the watch required by §§ 83.202(b) and 83.203(b) shall be capable of effective reception of A3 emission, shall be connected to the antenna system specified by § 83.494, and shall be preset to, and capable of accurate and convenient selection of, the frequencies 2182 kc/s, 2638 kc/s, and the receiving frequencies associated with the transmitting frequencies provided pursuant to § 83.484(a).

(b) In addition to the receiver required by paragraph (a) of this section, a manually tuned receiver capable of effective reception of A3 emission on all frequencies within the band 1605–3500 kc/s shall he provided.

(c) One or more loudspeakers capable of being effectively used to maintain the required 2182 kc/s listening watch shall be provided, and so located as to permit reception of 2182 kc/s signals at the principal operating position and at any other place where listening is performed.

(d) Each of the receivers required by paragraphs (a) and (b) of this section shall:

(1) Have sufficient sensitivity, as defined in paragraph (e) of this section, over the required frequency band on any required reception frequency to effectively operate a loudspeaker when the receiver input is as low as 50 microvolts;

(2) Be capable of efficient operation when energized by the main source of energy, and when energized by the reserve source of energy if a reserve source of energy is required by § 83.491(a);

(3) Be adequately protected by means of suitable devices from excessive currents and voltages which could cause damage to any compouent thereof;

(4) Be provided with a durable nameplate, mounted on the receiver or made an integral part thereof, showing clearly the name of the receiver manufacturer and the type or model of the receiver.

(e) The sensitivity of a receiver is the strength in microvolts of a signal, modulated 30 percent at 400 cycles per second, required at the receiver input to prodnce an audio output of 50 milliwatts to the loudspeaker with a signal-to-noise ratio of at least 6 decibels. Evidence of a manufacturer's rating or a demonstration of the sensitivity of a required receiver computed on this basis shall be furnished upon request of a Commission representative.

§ 83.489 Main source of energy.

(a) There shall be readily available for use under normal load conditions, at all times when required including times of inspection of the ship radio station by a Commission representative, a main source of energy sufficient to simultaneously energize the radiotelephone transmitter at its required antenna power, and the required receivers. Under this load condition the potential of the main source of energy at the power input terminals of the radiotelephone installation shall not deviate from its rated potential by more than 10 percent on vessels completed on or after Jnly 1, 1941, nor by more than 15 percent on vessels completed before that date.

(b) Means shall be provided for adequately charging any storage batteries used as a main source of energy, or any part thereof. There shall be provided a device which, during charging of the batteries, will give a continuons indication of the rate and polarity of the charging current.

§ 83.491 Reserve source of energy.

(a) In the case of new installations, a reserve source of energy shall be provided, and shall be located on the same deck as the main wheelhouse or at least one deck above the vessel's main deck, unless the main source of energy is so situated.

(b) The reserve source of energy, when required, shall be independent of the propelling power of the ship and of any other electrical system, and shall be sufficient to simultaneously energize the radiotelephone transmitter at its required antenna power, the required receivers, and the automatic radiotelephone alarm signal generator if installed. Such reserve source of energy shall be readily available for use under normal load conditions at all times when required, including times of inspection of the ship radio station by a Commission representative.

(c) The reserve source of energy shall be used only to energize the required radiotelephone transmitter, the required receivers, the emergency electric light required by § 83.496, and the automatic radiotelephone alarm signal generator required by § 83.486.

(d) The reserve source of energy shall be located as near to the required transmitter and the required receivers as is practicable: *Provided*, Tbat the location of such reserve source of energy complies with all applicable rules and regulations of the United States Coast Guard. (See § 83.113.)

(e) All circuits connected to the reserve source of energy shall be appropriately protected by means of suitable devices from overloads or short circuits which could damage any component thereof.

(f) Means shall be provided for adequately charging any storage batteries used as a reserve source of

euergy, or any part thereof, for the required radiotelephone installation. There shall be provided a device which, during charging of the batteries, will give a continuous indication of the rate and polarity of the charging current.

(g) The cooling system of each internal combustion engine used as a part of the reserve source of energy shall be adequately protected or treated to prevent freezing or overheating consistent with the season and route to be traveled by the particular vessel involved.

(h) Use of tbe reserve source of energy, when required hy paragraph (a) of this section, shall be available within 1 minute after any need arises for its use.

§ 83.492 Required capacity.

If the main source of energy or the reserve source of energy provided for the purpose of complying with §§ 83.489 and 83.491 consists of or includes batteries, such batteries shall have sufficient reserve capacity available at all times while the vessel is leaving or attempting to leave a harbor or port for a voyage in the open sea, and while being navigated in the open sea ontside of a harbor or port, to permit proper operation of the required radiotelephone transmitter and the required receivers for at least 6 hours continuously under normal working conditions.

§ 83.493 Proof of capacity.

(a) The shipowner, operating company, or station licensee, when directed by the Commission or its authorized representative, shall prove by demonstration as prescribed in paragraphs (b), (c), (d), and (e) of this section, or by sucb other means as may be deemed necessary, that the requirements of § 83.492 are met.

(b) Proof of the ability of a storage battery used as a main or reserve source of energy, or any part thereof, to operate continuously and effectively over the 6-hour period of time is authorized to be established by a discharge test over a prescribed period of time, when supplying power at the voltage required for normal and effective operation to an electrical load as prescribed by paragraph (d) of this section.

(c) When tbe reserve source of energy consists of or includes an engine-driven generator, proof of the adequacy of the engine fuel supply to operate the nnit continuously and effectively over the 6-honr period of time may be established by using as a basis the fuel consumption during a continuous period of 1 hour when supplying power, at the voltage required for normal and effective operation, to an electrical load as prescribed by paragraph (d) of this section.

(d) For the purpose of determining the electrical load to be supplied, the following formula shall be nsed:

(1) One-half the current consumption of the reqnired transmitter at its rated output power; plus

(2) One-quarter the current consumption of the automatic radiotelephone alarm signal generator required by § 83.486; plus

(3) Current consumption of the preset receiver required by § 83.488(a); plus

(4) Current consumption of emergency light(s).

(e) At the conclusion of the test specified in paragraphs (h) and (c) of this section, no part of the main or reserve sources of energy shall have an excessive temperature rise, nor shall the specific gravity or voltage of any storage battery be below the 90 percent discharge point as determined from information (such as voltage curves or specific gravity tables) supplied by the manufacturer of the type of battery involved.

§ 83.494 Antenna system.

(a) An antenna system shall be installed which is as nondirectional and as efficient as is practicable for the transmission and reception of radio ground waves over seawater. The installation and construction of the required antenna shall be such as to insure, insofar as is practicable, proper operation in time of emergency.

(b) If the required antenna is suspended between masts or other supports liable to whipping, an approved device (safety link) which, under heavy stress, will operate to greatly reduce such stress without breakage of the antenna, the halyards, or any other antenna-supporting elements, shall be installed.

(c) When an electrical ground connection is used as a necessary element of the antenna system, such connection shall be made in an efficient manner to the hnll of a vessel having a metal hull or, in the case of a vessel not having a metal hull, to a bare plate and/or strips of corrosion resistant metal of good electrical conductivity having a total area of at least 12 square feet in the aggregate, permanently attached to the hull below the waterline and insofar as possible located directly under the antenna structure and radio installation.

§ 83.496 Emergency electric lights.

(a) Reliable emergency electric light(s) of not less than 10 watts per unit shall be installed and permanently arranged so as to provide satisfactory illumination confined as far as practicable to the operating controls of the radiotelephone installation at the principal operating position, the card of instructions, and the radiotelephone station clock if the latter is not self-illuminated.

(b) The emergency electric light(s) shall be energized from the reserve source of energy, if a reserve source of energy is required. In cases where a reserve source of energy is not provided, the emergency lights shall be energized independently of the system which supplies the normal lighting of the required radiotelephone installation.

§ 83.497 Radiotelephone station clock.

A reliable clock having a clearly graduated dial of at least 5 inches in diameter shall be securely mounted in such a position that the entire dial can be easily and accurately observed from the principal operating position.

§ 83.498 Spare antenna.

A spare transmitting antenna completely assembled for immediate erection shall be provided. If the installed transmitting antenna is suspended between supports, this spare antenna shall be a single-wire transmitting antenna (including suitable insulators) of the same linear dimensions as the installed transmitting antenna. If the installed transmitting antenna is of the self-supported vertical type, this spare antenna when erected shall be as efficient as practicable.

§ 83.499 Tools and testing equipment.

(a) The following tools shall be provided in the radiotelephone station:

(1) One pair 5- to 8-inch side-cutting pliers;

(2) One set of assorted end wrenches or socket wrenches, or in lieu thereof one adjustable end wrench;

(3) One 4- to 6-inch screwdriver;

(4) One 1- to 2-inch screwdriver with a blade of approximately ⅛ inch.

(b) For the purpose of determining the state of charge of storage batteries used as a component of the required installation, there shall be provided in the radiotelephone station either:

(1) One hydrometer for use when lead-acid batteries are provided; or

(2) One voltmeter, having an accuracy of at least 3 percent when measuring 2 or 6 volts, for use when batteries of other types are provided.

§ 83.501 Card of instructions.

A card of instructions giving a clear summary of the radiotelephone distress procedure shall be securely mounted and displayed in full view of the principal operating position.

§ 83.502 Test of radiotelephone station.

Unless the normal use of the required radiotelephone station demonstrates that the equipment is in proper operating condition, a test communication for this purpose on 2182 kc/s shall be made by a qualified operator each day the vessel is navigated. When this test is performed hy a person other than the master and the equipment is found not to be in proper operating condition, the master shall be promptly notified thereof.

SUBPART T—RADIOTELEPHONE INSTALLATIONS PROVIDED FOR COMPLIANCE WITH PART III OF TITLE III OF THE COMMUNCATIONS ACT

§ 83.511 Applicability.

The provisions of part III of title III of the Communications Act apply to United States vessels which transport more than six passengers for hire while such vessels are being navigated on any tidewater within the jurisdiction of the United States adjacent or contiguous to the open sea, or in the open sea. The provisions of part III do not apply to vessels which are equipped with a radio installation for compliance with part II of title III of said Act, or for compliance with the Safety Convention, or to vessels navigating on the Great Lakes.

§ 83.512 Inspection of radiotelephone installation.

Every vessel subject to part III of title III of the Communications Act shall have a detailed inspection by the Commission of the equipment and apparatus prescribed therein not less than once every 24 months. If after such inspection the Commission determines that all relevant provisions of part III of title III of the Communications Act, the rules of the Commission made pursuant thereto, and the station license, are complied with in an efficient manner, a Communications Act Safety Radiotelephony certificate will be issued. The issuance date of such certificate shall be the date the installation is found by the Commission to be in compliance, or not later than 1 business day following such in-compliance date. The certificate shall be issued for a period of not more than 24 months.

§ 83.513 Posting of certificate.

A valid Communications Act Safety Radiotelephony Certificate shall he posted in a prominent and accessible place on hoard each vessel subject to the provisions of part III of title III of the Communications Act.

§ 83.514 Radiotelephone installation.

(a) The radiotelephone installation shall include a transmitter capable of effective transmission of A3 or A3H emission and a receiver capable of effective reception of A3 emission within the band 1605 to 2850 kc/s; or alternatively, if the vessel is within communication range of a public coast station operating in the band 156 to 174 Mc/s which maintains an efficient watch for the reception of F3 emission on 156.8 Mc/s at all times while the vessel is navigated in waters specified in § 83.511, and the vessel while so navigated is never more than 20 nautical miles from a 156.8 Mc/s receiving location of such station, the radiotelephone installation may, in lieu of medium frequency equipment, include a transmitter and receiver capable of effective transmission and reception of F3 emission within the band 156 to 174 Mc/s.

(b) The radiotelephone installation shall be installed so as to insure safe and effective operation of the equipment, and shall be arranged to facilitate repair. Adequate protection shall be provided against the effects of vibration, moisture, and temperature.

(c) The radiotelephone installation shall be adequately protected by suitable devices from excessive currents and voltages which could cause damage to the components thereof.

(d) The radiotelephone installation and all necessary controls shall be located at the level of the main wheelhouse or at least one deck above tbe vessel's main deck: *Provided*, That this requirement is applicable only to vessels of more than 100 gross tons.

§ 83.516 Principal operating position.

(a) In the case of vessels of over 100 gross tons, the principal operating position of the radiotelephone installation shall be in the room from wbich the vessel is normally steered while at sea. If the radiotelephone installation can be operated from any location other than the principal operating position, except as provided in paragraph (b) of this section, a direct and positive means shall be provided at the principal operating position to take full control of the installation.

(b) The use of a readily available, reliable, effective, and completely independent communication system between the principal operating position and all other operating locations is acceptable as a method for taking control at the principal operating position: *Provided, however,* That in the case of installations first placed in service on or after March 1, 1957 the use of such a method for taking control at the principal operating position is acceptable only for operating locations in the chartroom or master's quarters.

§ 83.517 Medium frequency transmitter.

(a) The transmitter shall have a carrier power of at least 25 watts for A3 emission or peak envelope power of not less than 50 watts for A3H emission on 2182 kc/s, 2638 kc/s, and at least one ship to shore working frequency within the band 1605 to 2850 kc/s enabling communication with a public coast station serving the region in which the vessel is navigated.

(b) [Reserved]

(c) The transmitter shall be considered as capable of complying with the power output requirement specified in paragraph (a) of this section when:

(1) The transmitter is capable of being adjusted for efficient use with an actual ship station transmitting antenna meeting the requirements of § 83.526; and

(2) The transmitter has been demonstrated, or is of a type which has been demonstrated, to the satisfaction of the Commission as capable, with normal operating voltages applied, of delivering not less than 25 watts carrier power for A3 emission or 50 watts peak envelope power for A3H emission on each of the frequencies 2182 and 2638 kc/s into an artificial antenna consisting of a series network of 10 ohms effective resistance and 200 picofarads capacitance: *Provided, however,* That an individual demonstration of the power output capability of the transmitter, with the radiotelephone installation normally installed on board ship, may be required whenever in the judgment of the Commission this is deemed necessary.

§ 83.518 Very high frequency transmitter.

(a) The transmitter shall have a carrier power output of at least 20 watts, and shall he capable of effective transmission of F3 emission on 156.8 Mc/s, 156.3 Mc/s, and on the ship-to-shore working frequency 157.2, 157.25, 157.3, 157.35, or 157.4 Mc/s as necessary for communication with one or more public coast stations serving the area in which the vessel is navigated.

(b) The transmitter shall be adjusted so that the transmission of speech normally produces peak modulation within the limits 75 percent and 100 percent.

(c) The transmitter shall be considered as capable of complying with the power output requirement specified in paragraph (a) of this section when:

(1) The transmitter is capable of being adjusted for efficient use with an actual ship station transmitting antenna meeting the requirements of § 83.526; and

(2) The transmitter has been demonstrated, or is of a type which has been demonstrated, to the satisfaction of the Commission as capable, with normal operating voltages applied, of delivering not less than 20 watts of carrier power into 50 ohms effective resistance on each of the frequencies 156.3 Mc/s, 156.8 Mc/s, and any one of the frequencies 157.2, 157.25, 157.3, 157.35, or 157.4 Mc/s: *Provided, however,* That an individual demonstration of the power output capability of the transmitter, with the radiotelephone installation normally installed on board ship, may be required whenever in the judgment of the Commission this is deemed necessary.

§ 83.519 Radiotelephone receivers.

(a) If a medium frequency radiotelephone installation is provided, the receiver used for maintaining the watch required by § 83.202(c) shall be capable of effective reception of A3 emission, shall be connected to the antenna system specified by § 83.526, and shall be preset to, and capable of accurate and convenient selection of, the frequencies 2182 kc/s, 2638 kc/s, and the receiving frequency(s) associated with the ship-to-shore transmitting frequency(s) provided pursuant to § 83.517(a).

(b) If a very high frequency radiotelephone installation is provided, the receiver used for maintaining the watch required by § 83.202(c) shall be capable of effective reception of F3 emission, shall be connected to the antenna system specified by § 83.526, and shall be preset to, and capable of accurate and convenient selection of, the frequencies 156.3 Mc/s, 156.8 Mc/s, and the receiving frequency associated with the ship-to-shore transmitting frequency provided pursuant to § 83.518(a).

(c) One or more loudspeakers capable of being effectively used to maintain the listening watch required by § 83.202(c) shall be provided, and so located as to permit reception of 2182 kc/s or 156.8 Mc/s signals, as applicable, at the principal operating position and at any other place where listening is performed.

(d) Any receiver provided as a part of the required radiotelephone installation shall have a sensitivity, as defined in paragraph (f) of this section, on any required receiving frequency of at least 50 microvolts in the case of medium frequency equipment, and 1 microvolt in the case of very high frequency equipment.

(e) The receiver required by paragraph (a) or paragraph (b) of this section shall be capable of efficient operation when energized by the main source of energy, and when energized by the reserve source of

energy if a reserve source of energy is required by § 83.522(a).

(f) The sensitivity of a receiver is the strength in microvolts of a signal, modulated 30 percent at 400 cycles per second, required at the receiver input to produce an audio output of 50 milliwatts to the loudspeaker with a signal-to-noise ratio of at least 6 decibels. Evidence of a manufacturer's rating or a demonstration of the sensitivity of a required receiver computed on this hasis shall be furnished upon request of a Commission representative.

§ 83.521 Main source of energy.

(a) There shall be readily available for use under normal load conditions, at all times when required including times of inspection of the ship radio station by a Commission representative, a main source of energy sufficient to simultaneously energize the radiotelephone transmitter at its required antenna power, and the required receiver. Under this load condition the potential of the main source of energy at the power input terminals of the radiotelephone installation shall not deviate from its rated potential by more than 10 percent on vessels completed on or after March 1, 1957, nor by more than 15 percent on vessels completed before that date.

(b) When the main source of energy consists of or includes batteries, they shall be installed as high above the bilge as practicable, secured against shifting with motion of the vessel, and accessible with not less than 10 inches head room.

(c) Means shall be provided for adequately charging any storage batteries nsed as a mean source of energy, or any part thereof. There shall be provided a device which, during charging of the batteries, will give a continuous indication of the rate and polarity of the charging current.

§ 83.522 Reserve source of energy.

(a) In the case of a vessel of more than 100 gross tons, the keel of which was laid after March 1, 1957, a reserve source of energy shall be provided and shall be located on the same deck as the main wheelhouse or at least one deck above the vessel's main deck, unless the main source of energy is so situated.

(b) The reserve source of energy, when required, shall be independent of the propelling power of the vessel and of any other electrical system, and shall be sufficient to simultaneously energize the radiotelephone transmitter at its required output power, and the reqnired receiver. Such reserve source of energy shall be readily available for use under normal load conditions at all times when required, including times of inspection of the ship radio station by a Commission representative.

(c) When the reserve source of energy consists of or includes batteries, they shall be installed as high above the bilge as practicable, secured against shifting with motion of the vessel, and accessible with not less than 10 inches head room.

(d) The reserve source of energy shall be located as near to the required transmitter and receiver as is practicable: *Provided*, That the location of such reserve source of energy complies with all applicable rules and regulations of the United States Coast Guard. (See § 83.113.)

(e) All reserve power supply circuits shall be appropriately protected by means of suitable devices from overloads or short circuits which could damage any component thereof.

(f) Means shall be provided for adequately charging any storage batteries used as a reserve source of energy, or any part thereof, for the required radiotelephone installation. There shall be provided a device which, during charging of the batteries, will give a continuous indication of the rate and polarity of the charging current.

(g) The cooling system of each internal combustion engine used as a part of the reserve source of energy shall be adequately protected or treated to prevent freezing or overheating consistent with the season and route to be travelled by the particular vessel involved.

(h) Use of the reserve source of energy, when required by paragraph (a) of this section, shall be available within 1 minute after any need arises for its use.

§ 83.523 Required capacity.

If the main source of energy or the reserve source of energy provided for the purpose of complying with §§ 83.521 and 83.522 consists of or includes batteries, such batteries shall have sufficient reserve capacity available at all times while the vessel is subject to part III of title III of the Communications Act and during Commission inspections to permit proper operation of the required transmitter and receiver for at least 3 hours continuously under normal working conditions.

§ 83.524 Proof of capacity.

(a) The shipowner, operating company, or station licensee, when directed by the Commission or its authorized representative, shall prove by demonstration as prescribed in paragraphs (b), (c), (d), and (e) of this section, or by such other means as may be deemed necessary, that the requirements of § 83.523 are met.

(b) Proof of the ability of a storage battery used as a main or reserve source of energy or any part thereof, to operate continuously and effectively over the 3-hour period of time is authorized to be established by a discharge test over a prescribed period of time, when snpplying power at the voltage required for normal and effective operation to an electrical load as prescribed by paragraph (d) of this section.

(c) When the reserve source of energy consists of or includes an engine-driven generator, proof of the adequacy of the engine fuel supply to operate the unit continuously and effectively over the 3-honr period of time may be established by using as a basis the fuel consumption duriug a continuous period of 1 hour

when supplying power, at the voltage required for normal and effective operation, to an electrical load as prescribed by paragraph (d) of this section.

(d) For the purpose of determining the electrical load to be supplied, the following formula shall be used:

(1) One-half the current consumption of the required transmitter at its rated ontput power; plus

(2) Current consumption of the required receiver; plus

(3) Current consumption of electric light, if required by § 83.527; plus

(4) The sum of the current consumption of all other loads to which the reserve source of energy may supply power in time of emergency.

(e) At the conclusion of the test specified in paragraphs (b) and (c) of this section, no part of the main or reserve sources of energy shall have an excessive temperature rise, nor shall the specific gravity or voltage of any storage battery be below the 90 percent discharge point as determined from information (such as voltage cnrves or specific gravity tables) supplied by the manufacturer of the type of battery involved.

§ 83.526 Antenna system.

An antenna shall be provided in accordance with the applicable requirements of § 83.107 which is as nondirectional and as efficient as is practicable for the transmission and reception of radio ground waves. The construction and installation of this antenna shall be such as to insure, insofar as is practicable, proper operation in time of an emergency.

§ 83.527 Electric light.

(a) If the vessel is navigated during hours of darkness, a reliable electric light of not less than 10 watts per unit shall be installed and permanently arranged so as to provide satisfactory illumination confined as far as practicable to the operating controls at the principal operating position.

(b) The electric light shall be energized from the main source of energy and, if a reserve source of energy for the radiotelepbone installation is required, means shall be provided for energizing the light from such source of energy also.

§ 83.528 Antenna radio frequency indicator.

The transmitter shall be equipped with a device which will provide visual indication whenever the transmitter is supplying power to the antenna.

§ 83.529 Nameplate.

A durable nameplate shall be mounted on the required radiotelephone transmitting and receiving equipment or sball be made an integral part thereof. When the transmitter and receiver comprise a single unit, one nameplate shall be sufficient. The nameplate shall show at least the name of the manufacturer and the type or model number.

§ 83.531 Test of radiotelephone installation.

Uuless the normal use of the required radiotelephone installation demonstrates that the equipment is in proper operating condition, a test communication for the purpose on 2182 kc/s or 156.8 Mc/s shall be made by a qualified operator each day the vessel is navigated. When this test is performed by a person other than the master and the equipment is found not to be in proper operating condition, the master shall be promptly notified thereof.

SUBPART U—RADIOTELEPHONE INSTALLATIONS PROVIDED FOR COMPLIANCE WITH THE GREAT LAKES RADIO AGREEMENT

§ 83.536 Applicability.

The Agreement Between the United States and Canada for the Promotion of Safety on the Great Lakes by Means of Radio applies to vessels of all countries (except as otherwise stipulated in Articles 3 and 6 thereof) which are of 500 gross tons or over, to vessels transporting persons for hire which are over 65 feet in length, and to vessels under 500 gross tons engaged in towing another vessel of 500 gross tons or over or engaged in towing any other floating object having a dimension in any direction of 150 feet or more unless the towed vessel complies with the requirements of the Agreement. The Great Lakes Radio Agreement is applicable to such vessels while they are being navigated on the Great Lakes outside of a port, or while being navigated on the St. Mary's River, the St. Clair River, the Detroit River, the Welland Ship Canal, and the River St. Lawrence as far eastward as Montreal. As defined in tbe Great Lakes Radio Agreement, "Great Lakes" includes Lakes Superior, Michigan, Huron, St. Clair, Erie, and Ontario, including their bays and interconnecting waters except the Niagara River and the Black Rock Canal.

§ 83.537 Survey and certification.

Except as provided in § 83.538, each vessel of tbe United States subject to the Great Lakes Radio Agreement shall have a periodical survey of tbe required radiotelephone installation not less than once every 12 months for the purpose of obtaining an appropriate certificate as prescribed by Article 12 of the said Agreement. The survey shall be made while the vessel is in active service or within not more than 1 month before the date on which is it placed in service. The Great Lakes Agreement Radiotelephony Certificate, which is issued to vessels found, as a result of a periodical survey, to be in compliance with the Agreement, shall be prominently posted at the principal operating position of the required radiotelephone installation.

§ 83.538 Occasional navigation on the Great Lakes.

Any vessel of the United State which enters the Great Lakes from Montreal or below and which

engages in not more than two voyages on the Great Lakes in any one calendar year solely between (a) one or more ports outside the Great Lakes and (b) one or more ports on the Great Lakes, may in lieu of complying with the technical radiotelephone requirements of the Great Lakes Radio Agreement, comply with the radiotelephone installation requirements of Regulation 15 of Chapter IV of the Safety of Life at Sea Convention, 1948: *Provided*, That:

(1) The vessel has on hoard a valid Safety Radiotelephony Certificate; and

(2) The radiotelephone installation is equipped to transmit and receive on the frequencies 2003 kc/s and 2182 kc/s.

§ 83.539 Radiotelephone installation.

(a) Each vessel of the United States while subject to the requirements of the Great Lakes Radio Agreement shall, in accordance with the Agreement, be fitted with a radiotelephone installation in effective operating condition which is capable of meeting the provisions set forth in this subpart in addition to the provisions of such other rules in this part, governing ship stations using telephony, as are applicable.

(b) The term "radiotelephone installation", for the purpose of the Great Lakes Radio Agreement, means a ship radio station (including the source of power necessary to energize the apparatus) capable of being used for the effective transmission and reception of speech for the purpose of quickly establishing and effectively carrying on, primarily in time of emergency or distress, radiotelephone communication on the frequencies 2182 kc/s or 2003 kc/s, each of these frequencies being readily available for use at all times. Nothing contained in this paragraph shall be construed either to require or to prohibit the availability of other frequencies by the use of this same "radiotelephone installation" for any class of emission or communication authorized by this part on such other frequencies.

(c) The radiotelephone installation, exclusive of the main source of power for energizing such installation, shall be located as high as practicable in the upper part of the vessel and shall be adequately protected to ensure proper operation and so as not to endanger the vessel and the radio apparatus comprising such installation.

§ 83.541 Principal operating position.

(a) The principal operating position of the radiotelephone iustallation shall be on the bridge. If the radio apparatus of this installation (as distinguished from the normal operating controls) is located other than on the bridge, tbe radiotelephone installation shall be capable of being operated from that location as well as from the principal operating position. In any event, except as provided in paragraph (b) of this section, a direct and positive means shall he provided at the principal operating position to take full control of the installation.

(b) The use of a readily available, reliable, effective, and completely independent communication system between the principal operating position and all other operating locations is acceptable as a method for taking control at the principal operating position: *Provided, however*, That in the case of installations first placed in service on or after April 1, 1955, the use of such a method for taking control at the principal operating position is acceptable only for operatiug locations in the chartroom or master's quarters.

§ 83.542 Radiotelephone transmitter.

(a) The transmitter shall be capable of effective transmission of A3 or A3H emission on the carrier frequencies 2003 and 2182 kc/s.

(b) [Reserved]

(c) The transmitter shall be capable of delivering at least 50 watts carrier power for A3 emission or 100 watts peak envelope power for A3H emission into a ship transmitting antenna of average characteristics.

(d) The transmitter shall be considered as capable of complying with tbe power output requirement specified in paragraph (c) of this section when:

(1) The transmitter is capable of being adjusted for efficient use with tbe actual ship station transmitting antenna; and

(2) The transmitter has been demonstrated, or is of a type which has been demonstrated, to the satisfactiou of the Commission as capable, with normal operating voltages applied, of delivering not less than 50 watts carrier power for A3 emission or 100 watts peak envelope power for A3H emission on each of the frequencies 2182 and 2003 kc/s into an artificial antenna consisting of a series network of 10 ohms effective resistance and 200 picofarads capacitance: *Provided, however*, That an individual demonstration of the power output capability of the transmitter, with the radiotelephone installation normally installed on board ship, may be required whenever in the judgment of the Commission this is deemed necessary.

§ 83.543 Radiotelephone receiver.

(a) The receiver used for maintaining the listening required by § 83.206 shall:

(1) Be capable of effective reception of A3 emission on the frequencies 2003 kc/s and 2182 kc/s;

(2) Be capable of properly energizing a loudspeaker on each of the frequencies 2003 kc/s and 2182 kc/s when the radio field intensity of the received carrier wave (measured when no modulation is present) is as low as 10 microvolts per meter. The receiver may be considered capable of meeting this requirement if on each of the frequencies concerned the numerical value of the sensitivity of the receiver expressed in microvolts is equal to or less than the numerical value of the maximum height of the associated receiving antenna expressed in feet as measured from tbe cabin lead-in insulator. The numerical value of the sensi-

tivity of the receiver may be based on manufacturer's specifications.

(b) The sensitivity of the receiver is expressed as the strength in microvolts of a signal, modulated 30 percent at 400 cycles per second, required at the receiver input to produce an audio output of 50 milliwatts to the loudspeaker with a signal-to-noise ratio of at least 6 decibels.

§ 83.544 Main source of energy.

(a) A main source of energy of sufficient capacity to energize the radiotelephone installation properly and immediately shall be available at all times while the vessel is subject to the requirements of the Great Lakes Radio Agreement;

(b) Means shall be provided for adequately charging any storage batteries used as a main source of energy, or any part thereof. There shall be provided a device which, during charging of the batteries, will give a continuous indication of the rate and polarity of the charging current.

§ 83.545 Auxiliary source of energy.

(a) Vessels transporting persons for hire which are of 1,000 gross tons and over shall be provided with an auxiliary source of energy, independent of the vessel's normal electrical system and capable of properly energizing the radiotelephone installation and the electric light prescribed by § 83.547, in addition to any other electrical loads to which it may supply energy in times of emergency or distress, for at least 4 continuous hours under normal operating conditions. When meeting this 4-hour requirement, such auxiliary source of energy shall be located on the level of the main pilothouse or at least one deck above the vessel's main deck;

(b) Means shall be provided for adequately charging any storage batteries used as an auxiliary source of energy, or any part thereof, for the required radiotelephone installation. There shall be provided a device which, during charging of the batteries, will give a continuous indication of the rate and polarity of the charging current;

(c) Use of the auxiliary source of energy, when required by paragraph (a) of this section, shall be available within 1 minute after any need arises for its use;

(d) The shipowner, operating company, or station licensee, when directed by the Commission or its authorized representative, shall prove by demonstration as prescribed in subparagraphs (1), (2), (3), and (4) of this paragraph, or by such other means as may be deemed necessary, that the auxiliary source of energy is capable of meeting the requirements of paragraph (a) of this section:

(1) When the auxiliary source of energy consists of or includes a storage battery, proof of the ability of such battery to operate continuously and effectively over the 4-hour period of time is authorized to be established by a discharge test over a prescribed period of time, when supplying power at the voltage required for normal and effective operation to an electrical load as prescribed by subparagraph (3) of this paragraph;

(2) When the auxiliary source of energy consists of or includes an engine-driven generator, proof of the adequacy of the engine fuel supply to operate the unit continuously and effectively over the 4-hour period of time may be established by using as a basis the fuel consumption during a continuous period of 1 hour when supplying power, at the voltage required for normal and effective operation, to an electrical load as prescribed by subparagraph (3) of this paragraph;

(3) For the purpose of determining the electrical load to be supplied, the following formula shall be used:

(i) One-half the current consumption of the required transmitter at its rated output power; plus

(ii) Current consumption of the required receiver; plus

(iii) Current consumption of the electric light prescribed by § 83.547; plus

(iv) The sum of the current consumption of all other loads to which the auxiliary source of energy may supply power in time of emergency or distress;

(4) At the conclusion of the test specified in subparagraphs (1) and (2) of this paragraph, no part of the auxiliary source of energy shall have an excessive temperature rise, nor shall the specific gravity or voltage of any storage battery be below the 90 percent discharge point as determined from information (such as voltage curves or specific gravity tables) supplied by the manufacturer of the type of battery involved.

§ 83.546 Radiating system.

The radiating system of the radiotelephone installation provided for use on each of the frequencies 2182 kc/s and 2003 kc/s shall comply with the following requirements:

(a) The antenna shall be adequately protected to ensure proper operation and so as not to endanger the vessel and the radio apparatus comprising the installation.

(b) The conductor or system of conductors comprising the antenna shall, consistent with the prevailing physical limitations affecting the antenna installation, be of such configuration and so located physically with regard to proximity to metallic objects and structures as to allow for the development of as uniform a vertically polarized ground wave in all directions as possible for a given antenna power.

(c) [Reserved]

(d) When an electrical ground connection is used as a necessary element of the radiating system, such connection shall be made in an effective manner to the hull of a vessel having a metal hull or, in the case of a vessel not having a metal hull, to a bare plate or strips of a corrosion resistant metal of good electrical conductivity having a total area of at least 12

square feet in the aggregate, permanently attached to the hull below the waterline and insofar as possible located directly under the antenna structure and radio apparatus.

§ 83.547 Electric light.

Light from an electric source of energy shall be available and permanently arranged to so illuminate the operating controls of the radiotelephone installation at the principal operating position that the installation may be used at any time for quickly establishing and effectively carrying on radiotelephone communication in time of emergency or distress. If an auxiliary source of energy is required to be provided on board the vessel, arrangements shall be provided to utilize or to permit the use of such source of energy for such illumination within 1 minute after the need arises for its use.

§ 83.548 Trial of radiotelephone installation.

At least once during each calendar day in which a vessel of the United States is navigated while subject to the Great Lakes Radio Agreement, a test communication on 2182 kc/s to demonstrate that the radiotelephone installation is in proper operating condition shall be made by a certified person who is required in accordance with § 83.158, unless the normal daily use of the equipment demonstrates that this installation is in proper operating condition for that purpose. Should the equipment be found at any time by a person other than the master not to be in proper operating condition, the master shall be promptly notified thereof. A record shall be made in the radio station log showing the operating condition of the equipment as determined by either the daily normal communication or the daily test communication referred to in this section, and showing that, if an improper operating condition was found, the master was properly notified thereof.

§ 83.549 Failure of radiotelephone installation while en route.

If, when a United States vessel is subject to the Great Lakes Radio Agreement, the vessel's radiotelephone installation required by Article 8 of said Agreement ceases to be in effective operating condition, the master shall forthwith exercise due diligence to restore the radiotelephone installation to effective operating condition at the earliest practicable moment, and, in any event, the effective operating condition of the radiotelephone installation shall be restored at the destination on the Great Lakes of the vessel. In addition to the foregoing, the master shall within 12 hours after the time of arrival of the vessel at the destination, mail to the Secretary, Federal Communications Commission, Washington, D.C., 20554, an explanation of the full particulars of the matter in writing including the date the master became aware of the deficiency in the radiotelephone installation and the nature of such deficiency, a description of steps taken to correct such deficiency, and in the case of a vessel whose destination is on the Great Lakes, a statement that the radiotelephone installation has been, or will be, placed in effective operating condition before the ship leaves that port.

SUBPART V—TYPE APPROVAL OF COMPULSORY SHIPBOARD EQUIPMENT

§ 83.551 Scope of type approval.

(a) Approval by the Commission of a particular type of equipment in accordance with the provisions of any section or sections of this subpart, for use on board ships for the purpose of compliance with Part II of Title III of the Communications Act, is extended to all equipment of the same identical type, design, and construction, which is manufactured by the same person.

(b) For the purpose of determining compliance with sections 351(a), 355 (c), (d), (e), and 358(a) of the Communications Act, the term "transmitter" means a transmitter proper, together with all auxiliary equipment which is deemed necessary to make this unit operate efficiently as a main and/or emergency transmitter in a ship station at sea. For this purpose, each separate motor-generator, rectifier or other unit required to convert the power available as a primary source or sources on the ship, to the phase, frequency, and/or voltage necessary to energize the transmitter proper is construed to be a component of the transmitter.

§ 83.552 Requirements for main transmitter.

(a) A main transmitter will be type approved by the Commission as capable of meeting the relevant requirements of section 355 (c) and (d) of the Communications Act if it is demonstrated to the satisfaction of the Commission that the transmitter involved, or a transmitter of the same identical type, is capable of meeting the requirements of paragraphs (b), (c), and (d) of this section: *Provided*, That if deemed necessary, a demonstration of the capabilities of an individual main transmitter installed on board a ship may be required to determine compliance with any or all of the following provisions of this section before initial or continued type approval of such transmitter will be given by the Commission.

(b) Tabulation of basic technical requirements (for the purpose of these specific requirements, the term "average ship station antenna" means an actual antenna installed on board ship having a capacitance of 750 picofarads and an effective resistance of 4 ohms at a frequency of 500 kilocycles, or an artificial (dummy) antenna having the same electrical characteristics):

Operating carrier frequency	Frequency tolerance (parts in 10^6)	Class of emission	Percentage modulation (for amplitude modulation)	Modulation frequency (for amplitude modulation)	Antenna power
500 kc/s	1,000	A2	Not less than 70; not more than 100.	At least 1 frequency between 300 and 1250 cycles per second; except for transmitters installed after July 1, 1951, at least 1 frequency between 450 and 1250 cycles per second.	Not less than 200 watts into an average ship station antenna.
Do	do	A1			Not less than 160 watts into an average ship station antenna.
410 kc/s and 2 authorized working frequencies in the band 415 to 490 kc/s.	do	A2	Not less than 70; not more than 100.	At least 1 frequency between 300 and 1250 cycles per second; except for transmitters installed after July 1, 1951, at least 1 frequency between 450 and 1250 cycles per second.	Not less than 200 watts into an average ship station antenna.
Do	do	A1			Not less than 160 watts into an average ship station antenna.

(c) A main transmitter shall be capable of efficient operation at its required antenna power when adjusted to any required operating frequency and, when energized by the main power supply of the ship station in which it is installed or by a power supply equivalent thereto, shall be capable of being adjusted rapidly for operation on any one of its required operating frequencies, and shall conform with all other applicable rules of this part.

(d) A main transmitter shall be equipped with suitable indicating instruments of standard accuracy and reliability to measure (1) the current in the antenna circuit, (2) the potential of the heating current applied to the cathode or cathode heater of each electron tube or a potential directly proportional thereto, and (3) the anode current of the radio frequency oscillator or amplifier which supplies power to the antenna circuit, or in lieu thereof, the anode current of such oscillator or amplifier plus the anode current of any other radio or audio frequency oscillator(s) or amplifier(s) normally employed as part of the transmitter.

(e) Measurements for the purpose of demonstrating compliance with the specific requirements of this section shall be made by methods acceptable to the Commission.

(1) The antenna power shall be determined by the product of the square of the antenna current and the antenna resistance at the operating carrier frequency, both measured at the same point in the antenna circuit and at approximately ground potential.

(f) Each transmitter which was not in existence prior to February 1, 1938, but which is installed after that date on board a vessel in order to comply with the provisions of this section, shall be furnished with a durable name plate with the month and year of its completion permanently inscribed thereon.

(g) (1) A main transmitter, completed prior to January 1, 1952, shall be provided with an arrangement for conveniently reducing the plate input power of such transmitter to approximately one-half of its rated plate input power.

(2) A main transmitter, completed in construction subsequent to January 1, 1952, which is capable of a plate input power exceeding 450 watts, shall be provided with an arrangement readily permitting the use of a plate input power for telegraphy which is not in excess of 200 watts; unless there is available in the same station a duly authorized radiotelegraph transmitter capable of operation on the radio-channels required for a main transmitter, capable of being energized by a source of power other than the emergency power supply installed for compliance with applicable provisions of treaty or statute, and not capable of a plate input power in excess of 450 watts when operated on frequencies within the band 405 kc/s to 535 kc/s.

§ 83.553 Requirements for reserve transmitter.

(a) A reserve transmitter will be type approved by the Commission as capable of meeting the relevant requirements of section 355 (c) and (f) of the Communications Act if it is demonstrated to the satisfaction of the Commission that the transmitter involved, or a transmitter of the same identical type, is capable of meeting the requirements of paragraphs (b), (c), and (d) of this section when energized for a period of at least six continuous hours by a power supply equivalent to the radio station reserve power supply which is, or will be, available on board the vessel on which the transmitter is, or will be, installed and operated: *Provided*, That if deemed necessary, a demonstration of the capabilities of an individual reserve transmitter installed on board a ship may be required to determine compliance with any or all of the following provisions of this section before initial or continued type approval of such transmitter will be given by the Commission.

(b) Tabulation of basic technical requirements (for the purpose of these specific requirements, the term "average ship station antenna" means an actual antenna installed on board ship having a capacitance of 750 picofarads and an effective resistance of 4 ohms at a frequency of 500 kilocycles, or an artificial (dummy) antenna having these same electrical characteristics):

Operating carrier frequency	Frequency tolerance (parts in 10^6)	Class of emission	Percentage modulation (for amplitude modulation)	Modulation frequency (for amplitude modulation)	Antenna power
500 kc/s	1,000 except for reserve transmitters whose use is confined solely to safety communications as defined in § 83.6(a). Such transmitters shall maintain a frequency tolerance of 3,000 parts in 10^6.	A2	Not less than 70; not more than 100.	At least 1 frequency between 300 and 1250 cycles per second; except for transmitters installed after July 1, 1951, at least 1 frequency between 450 and 1250 cycles per second.	Not less than 25 watts into an average ship station antenna.
410 kc/s and 1 authorized working frequency in the band 415 to 490 kc/s.	do	A2	do	do	Do.

(c) A reserve transmitter shall be capable of efficient operation at its required antenna power when adjusted to any required operating frequency and, when energized by the reserve power supply of the ship station in which it is installed or by a power supply equivalent thereto, shall be capable of being adjusted rapidly for operation on any one of its required operating frequencies, and shall conform with all other applicable rules of this part.

(d) A reserve transmitter shall be equipped with suitable indicating instruments of standard accuracy and reliability to measure the current in the antenna circuit and, if completed by the manufacturer after January 1, 1944, the potential of the heating current applied to the cathode or cathode heater of each electron tube or a potential directly proportional thereto.

(e) Measurements for the purpose of demonstrating compliance with the specific requirements of this section shall he made by methods acceptable to the Commission. The antenna power shall be determined by the product of the square of the antenna current and the antenna resistance at the operating carrier frequency both measured at the same point in the antenna circuit and at approximately ground potential.

(f) Each transmitter which was not iu existence prior to February 1, 1938, but which is installed after tbat date on board a vessel in order to comply with the provisions of this section, shall be furnished with a dnrable name plate with the month and year of its completion permanently inscribed thereou.

§ 83.554 Requirements for radiotelegraph auto alarm.

(a) To be type approved by the Commission pursuant to section 3(x) of the Communications Act subsequent to January 1, 1954, radiotelegraph auto alarms shall comply with the following requirements:

(1) *Basic technical requirements.* (i) The auto-alarm shall be capable of being operated by either three or four consecutive dashes when the dashes vary in length from 3.5 to as near 6 seconds as possible and the spaces vary in length between 1.5 seconds and the lowest practicable value, preferably not greater than 10 milliseconds.

(ii) In the absence of interference of any kind, without manual adjustment during operation, the auto-alarm shall be capable of positive and reliable operation with a minimum available signal of 100 microvolts from the antenna circuit. It shall be capable under these conditions of operation on signals of the following classes of emission:

(*a*) A2 (carrier modulated 30 percent at each modulation frequency from 300 to 1350 cycles per second, inclusive).

(*b*) B (at each tone frequency from 300 to 1350 cycles per second, inclusive).

(iii) The overload capacity must be sufficient to enable the auto-alarm to operate with inputs from the antenna circuit up to 1 volt, under normal operating conditions.

(iv) The auto-alarm shall respond to the alarm signal through interference (provided it is not continuous) caused by atmospberics and powerful signals other than the alarm signal. In the presence of atmospherics or interfering signals, the auto-alarm shall automatically adjust itself so that within a reasonably short time it approaches, in so far as is practicable, the condition in which it can most readily distinguish the alarm signal.

(v) The auto-alarm receiver shall be capable of operating when the received auto-alarm signals have a radio frequency of 500 kilocycles with a sensitivity as set forth in subdivision (ii) of this subparagraph and shall, in addition, respond without adjustment and with the same sensitivity to signals having any radio frequency from 492 to 508 kc/s, iuclusive. With respect to the reception of signals having a radio frequency outside the band 492 to 508 kc/s, the sensitivity of the auto-alarm shall decrease as rapidly as possible, in conformity with the best engineering practice.

(vi) The auto-alarm must not be operated, so as to actuate the warning device, by atmospherics or by any signal from the antenna circuit other than the alarm signals: *Provided,* That received signals other than the alarm signal itself do not in fact constitute a signal falling within the tolerance limits indicated in subdivision (i) of this subparagraph.

(vii) When operated by an alarm signal, or in the event of failure of the auto-alarm apparatus, the auto-alarm shall cause a continuous audible warning to be given in the principal radiotelegraph operating room, in the radio operator's cabin, and on the bridge. Insofar as may be practicable, the audible alarm shall also be given in the event of any failure of the auto-alarm

system, as a whole, which results in the auto-alarm becoming inoperative.

(viii) For the purpose of regularly testing the auto-alarm, without connection to the antenna, the apparatus shall include a generator pre-tuned to the 500 kc/s distress frequency and a keying device by means of which an alarm signal of minimum strength approximately as indicated in subdivision (ii) of this subparagraph is produced solely for actuating the particular auto-alarm and is not radiated beyond the immediate area of the vessel.

(2) *Requirements as to construction.* (i) The auto-alarm shall consist essentially of:

(*a*) A radio receiver capable of receiving emissions of classes A2 and B over the entire frequency range 492 to 508 kc/s, inclusive.

(*b*) A selector device capable of selecting the alarm signal specified under subparagraph (1) (i) of this paragraph.

(*c*) A suitable form of audible alarm (minimum of 3 units required).

(*d*) A testing device to determine locally that the auto-alarm system is effectively operative.

(ii) The auto-alarm may he constructed in one or more units, but must be independent of the ship's regular radio receiving apparatus.

(iii) A telephone jack shall be provided to permit reception, if desired, by a telephone receiver.

(iv) Tuning and timing controls shall not be accessible to the exterior of the device and shall be so designed and housed as to permit adjustment with special tools only.

(v) Once set into operation the audible alarms must continue to function until switched off in the principal radiotelegraph operating room.

(vi) A nonlocking or momentary-throw switch shall be provided to permit temporary disconnection of the audible alarm on the bridge and in the operator's quarters when the auto-alarm system is being tested.

(vii) The receiver and selector shall be of rugged construction throughout, capable of withstanding continuous and severe vibration equivalent to conditions that may be experienced on board a ship under the worst possible conditions and capable of continuous operation over long periods of time.

(viii) All units of the auto-alarm system shall be designed and constructed in accordance with generally accepted principles and practices of modern electronic engineering.

(ix) The auto-alarm system shall not he affected by sudden changes in ambient temperature between zero degrees centigrade and 50 degrees centigrade, shall not be affected by salt atmosphere, and by humidity conditions as high as 90 percent at a temperature of 40 degrees centigrade.

(x) Condensers, transformers, or other units shall not contain compounds which will flow at temperatures below 85 degrees centigrade, which will crack at temperatures above 0° centigrade, which are hygroscopic or which contain any corrosive substance.

(3) *Requirements as to testing and approval.* (i) Before an auto-alarm receiver will be approved by the Commission pursuant to paragraph (x) of section 3 of the Communications Act, a sample type of such auto-alarm reciever must be submitted for the purpose of demonstrating by means of suitable laboratory and field tests, that it complies with these requirements. Such tests will be conducted hy the Commission, and other cooperating United States Government departments or agencies as may be appropriate, under the test specifications set forth under subparagraph (5) of this paragraph.

(ii) Failure to pass any specified test may result, by order of the Commission, in the discontinuance of all tests on the unit or component involved and the immediate rejection of the entire apparatus.

(iii) Manufacturers' tests of the complete device and/or of any compouents thereof shall be conducted in the laboratory or shop of the manufacturer(s). These tests shall be carried out in accordance with the provisions of subparagraph (4) of this paragraph.

(iv) Laboratory tests conducted by the Commission and/or by any other cooperating United States Government department or agency as may be appropriate, under test specifications prescribed by the Commission shall be at the expense of the manufacturer or person submitting the device for approval. A report of the tests conducted by the Commission, and/or other Government department will be available to the Commission only: *Provided*, That such reports will be made available to the manufacturer involved at a subsequent date to be determined by the Commission.

(4) *Requirements as to manufacturers' tests.* (i) The following tests shall be conducted by the manufacturer of the auto-alarm device, who shall submit data in a signed statement showing that such tests have been made as hereinafter required prior to submission of a working model for type tests: *Provided, however*, That data obtained from manufacturers of parts used in construction of the device may be submitted in lieu of the results of snch tests conducted by the manufacturer of the complete device. The Commission may require that any or all of the prescribed tests be witnessed by its representative(s).

(*a*) The insulation resistance of the windings and terminals to case and core of transformers and electromagnet coils and the dielectric resistance of condensers shall he measured and data recorded for the information of the Commission.

(*b*) Transformers and/or electromagnet coils shall be energized continuously under normal conditions of operation for a period of one hour at an ambient temperature of 25 degrees centigrade. For purposes of making this test, maximum rated voltage at rated frequency with the secondary of transformers normally loaded and with the frame or enclosure grounded will be applied. Under these conditions the temperature of each transformer and/or electromagnet coil shall not be such as to affect injuriously any of the material used in construction and the temperature rise of the unit

undergoing test shall not exceed 40 degrees centigrade at the end of one hour.

(c) Immediately after each transformer and/or electromagnet coil has been tested under (a) of this subdivision, a test for breakdown capability will be made by applying between windings and between each winding and the core or enclosure, for a period of five minutes, a potential ten times the maximum rated effective potential of the circuit in which the coil or winding is connected.

(d) All components containing wax or other sealing, insulating or electrolytic compounds shall be placed in an oven and the ambient temperatnre brought to 75 degrees centigrade and maintained for a period of 15 minntes. They shall then be placed in a refrigerator and the ambient temperature brought to zero degrees centigrade and maintained for a period of 15 minutes. If sealing, insulating or electrolytic compounds flow during this oven test or crack during this refrigerator test, these units will not be acceptable for use as components in the device. The electrical characteristics of each unit shall be measured at these temperatures and any deviations from their normal ratings that would adversely affect the operation of the auto-alarm device shall preclude the use of that component.

(5) *Requirements as to laboratory tests.* (i) The following tests shall be conducted at the Commission's Laboratory at Laurel, Marylaud, and shall be at the expense of the manufacturer or person submitting the auto-alarm for approval. The report of these tests will be furnished to the Commission only. Tests will be conducted as described in the following paragraphs with the auto-alarm connected to an artificial antenua consisting of a 20 microhenry inductance, a 500 picofarad capacitor and a 5 ohm resistor connected in series. The receiver will be tested with its internal sensitivity control (if provided) set at maximum sensitivity, except where otherwise specified.

(a) Test of sensitivity of the auto-alarm at the radio frequency 500 kc/s to determine operation of the aural warning device.

(1) Measurement of minimum alarm signal input, A2 emission, 30 percent modulated with a 300 cycles per second tone, required to operate aural warning device.

(2) Test of operation using 100 microvolts alarm signal input, A2 emission, 30 percent modulated with a 300 cycles per secoud tone.

(3) Test of operation using 1 volt alarm signal input, A2 emission, 30 percent modulated with a 300 cycles per second tone.

(4) Using A2 emissiou, 30 perceut modulated with a 1350 cycles per second tone, test as in (a) (1), (2), and (3).

(5) Test of aural warning device operation with 50 microvolts noise input and 100 microvolts alarm signal, A2 emission, 30 percent modulated with a 300 cycles per second tone.

(b) Test to determine operation of aural warning device from a 100 microvolts alarm signal, A2 emission, 30 percent modulated with a 300 cycles per second tone transmitted on any radio frequency or frequencies selected by the Commission from 492 to 508 kc/s, inclusive.

(c) Test of auto-alarm operation with internal receiver sensitivity control (if provided) set at minimum setting at which 100 microvolts input on the radio frequency 492 kc/s will operate aural warning device with simultaneous inputs of 100 microvolts auto-alarm signal, A2 emission, 30 percent modulation with an 800 cycles per second tone on 492 kc/s and 200,000 microvolts, A2 emission (800 cycles per second modulation) unkeyed signal on the frequency 350 kc/s; similar tests with the same alarm signal and a 25,000 microvolts, A2 emission (800 cycles per second modulation) unkeyed signal on the frequency 460 kc/s; similar test with internal receiver sensitivity control (if provided) set at minimnm setting at which 100 microvolts input on the frequency 508 kc/s will operate aural warning device with simultaneous input of A2 emission (800 cycles per second modulation) unkeyed signal on the frequency 540 kc/s at 25,000 microvolts; and similar test with this latter signal on the frequency 650 kc/s at 200,000 microvolts.

(d) Test of selector response to dashes from 3.5 up to 6.0 seconds in duration when the spaces between the dashes have a duration from 10 milli-seconds to 1.5 seconds. These tests shall be made on the radio frequeucy 500 kc/s with an input of 100 microvolts, A2 emission, 30 percent modulated with 300 cycles per second tone.

(e) [Reserved]

(f) Test of ability of the aural warning device to operate satisfactorily when tbe auto-alarm becomes inoperative under the following conditions:

(1) Filament burn-out of any electron tube in the apparatus;

(2) Failure of power supply.

(g) Tests to determine capability of proper operation of auto-alarm over long periods of time under any condition which may be expected on board ships while being navigated during extreme weather and sea conditions.

(1) The auto-alarm device shall be placed in operation for a period of one hour while subjected to each of the following conditions of temperature and relative humidity:

(i) 50 degrees centigrade and 50 percent relative humidity;

(ii) 30 degrees centigrade and 95 percent relative humidity;

(iii) Zero degrees centigrade aud 50 percent relative humidity.

(2) The auto-alarm device shall be placed in operation for a sufficieut lengtb of time under the following couditions to determiue whether or not it will operate properly under such conditions:

(*i*) While the device is being rocked in such manner as to stimulate a roll and pitch of 45 degrees from the vertical.

(*ii*) When subjected to severe vibration comparable to that which might be experienced on board ship, as for example when subjected to vibrations having a period between 20 and 30 cycles per second and an amplitude (0.03 inch total excursion, i.e., 0.015 inch each side of the position of rest) of at least 0.03 inch in a direction at an angle of 30 to 45 degrees with the base of the device.

(*h*) Test of the testing device incorporated in the auto-alarm.

(*i*) Tests to determine satisfactory operation of the apparatus on a 500 kc/s alarm signal at temperatures of approximately 20 and 50 degrees centigrade. Tests to be made on the frequencies 492, 500 and 508 kc/s with an input of 100 microvolts, A2 emission, modulated 30 percent with a 300 cycles per second tone.

(*j*) General inspection of electrical and mechanical features.

(6) *Requirements as to field test.* (i) This test shall be conducted 24 hours a day for a period of not less than 30 consecutive days and shall be for the purpose of ascertaining the reliability of the auto-alarm and its freedom from false operation under practical interference conditions. For this test the auto-alarm shall be connected to an antenna typical of the average main antenna on shipboard and its operation shall be observed continuously during this period.

(ii) During this test period a minimum of 500 test alarm signals shall be transmitted locally while the test antenna is connected to the auto-alarm. The power used for the production of this test alarm signal shall be produced by a suitable radio frequency generator coupled to the antenna system. The receiver internal sensitivity adjustment (if provided) shall be set at the value designated by the manufacturer. During the official test period, adjustment of the auto-alarm shall not be made more than once in each 12 consecutive hours.

(iii) Tests for response to the alarm signal shall be made on at least the radio frequencies 492, 500, and 508 kc/s in a proportion on each frequency as determined by the Commission.

(b) No change shall be made in any auto-alarm under the type approval identification issued by the Commission, except upon specific authorization by the Commission to make such change(s). When it is desired to make any change, an application therefor, together with pertinent detailed information shall be submitted to the Commission for consideration and appropriate action.

(c) Type approval of an auto-alarm when given by the Commission, may be for a limited period of time only, and is subject to withdrawal if the device proves defective in service and cannot be relied upon under usual conditions of maintenance and operation encountered on board ships at sea. Withdrawal of approval means that no further devices of the particular model affected may be installed, but will not immediately apply to such devices already installed unless it is found that there has been an unauthorized change in design or construction, or the material or workmanship is defective.

§ 83.555 Requirements for automatic-alarm-signal keying device.

(a) To be approved by the Commission for use in compliance with § 83.451 and to be recognized as being capable of functioning in compliance with §§ 83.451 and 83.452, each type of automatic-alarm-signal keying device shall comply with the requirements set forth in this section.

(b) No change shall be made in any automatic-alarm-signal keying device under the type approval identification issued by the Commission, except upon specific authorization by the Commission to make such change(s). When it is desired to make any change, an application therefor, together with pertinent detailed information shall be submitted to the Commission for consideration and appropriate action.

(c) Type approval of an automatic-alarm-signal keying device when given by the Commission, may be for a limited period of time only, and is subject to withdrawal if the device proves defective in service and cannot be relied upon under usual conditions of maintenance and operation encountered on board ships at sea. Withdrawal of approval means that no further devices of the particular model affected may be installed, but will not immediately apply to such devices already installed unless it is found that there has been an unauthorized change in design or construction, or the material or workmanship is defective.

(1) *Basic technical requirements.* (i) The automatic-alarm-signal keying device may consist of one or more units, either separate and distinct from other units of the ship's radio installation or may be incorporated, if approved by the Commission, as part of any other unit.

(ii) The device shall be designed so as to properly operate, on board ships at sea, the normal keying circuits of any transmitter approved by the Commission for use as a main or as a reserve transmitter in compliance with section 355 of the Communications Act of 1934, as amended. A list of transmitters approved by the Commission for this purpose will be furnished upon request.

(iii) Timing-adjustment controls shall not be accessible from the exterior of the device and shall be designed and housed so as to prevent adjustment by unauthorized persons.

(iv) The keying mechanism shall operate so as to repeatedly transmit the alarm signal. For this purpose the dashes transmitted shall have a duration within the limits of 3.8 to 4.2 seconds, and spaces between each of the twelve dashes constituting a series shall have a duration within the limits of 0.8 to 1.2 seconds. Spaces between each series of twelve dashes shall have a duration within the limits of 0.8 second to one minute.

(v) A single control, protected so as to avoid accidental manipulation, shall be provided for placing the device itself into full operation within a maximum period of 30 seconds. Once set into operation, the device shall be capable of continuously and properly operating without further attention for a period of not less than one hour.

(vi) The automatic-alarm-signal keying device shall be capable of being energized solely by a source of power independent of the propelling power of the ship and independent of any other system: *Provided, however,* That the device may be energized by the radio station emergency power supply and any storage battery power supply regularly used for operating a required automatic alarm receiver.

(vii) When the proper operation of the device is dependent upon the maintenance of any inherent conditions of operating within relatively narrow limits, the Commission, as a provision of its approval, may prescribe such limits and require that the device shall include means for indicating to the operator when deviations from the conditions occur.

(viii) Instructions concerning the proper adjustment of the device and the correct indication of any instrument incorporated for the purpose of revealing improper operation, shall be inscribed in a durable manner on a plate mounted on the device in a position to be easily read by the operator.

(ix) Means shall be provided to insure that when the "on-off" control of the device is placed in the "off" position, the keying circuit to the radio transmitter(s) is automatically opened.

(2) *Requirements as to construction.* (i) The design of the automatic-alarm-signal keying device shall be in accordance with the modern engineering practice and the device shall be capable of operating under conditions of constant and severe vibrations and extreme variations of temperature and humidity equivalent to those experienced on board ships at sea under the worst possible conditions. This requirement applies only to use of the device on board such types of vessels as are normally subject to Title III, Part II of the Communications Act.

(ii) A durable nameplate shall be mounted on each device showing the name of the manufacturer, the type and serial number and the month and year of completion by the manufacturer. However, this nameplate need not be provided on a working model submitted to the Commission for type testing and approval.

(3) *Requirements as to testing and approval.* (i) Before an automatic-alarm-signal keying device is approved by the Commission, a working model of the particular type for which approval is desired shall be submitted for inspection, and it shall be demonstrated by means of suitable type tests that it complies with these requirements. The model equipment will be operated in these tests in the same way and under conditions similar to those encountered in actual service. In connection with such tests, the manufacturer shall supply all instructions and/or services which are intended to be supplied to the purchaser of the equipment, including a proposed instruction book and a tentative list of spare parts as would normally be supplied with shipboard installations.

(ii) Failure to pass any specified test may result, by order of the Commission, in the discontinuance of all tests on the particular device involved and in the immediate rejection thereof: *Provided,* That the Commission, within its discretion, may relax to a reasonable extent the provisions of subparagraph (4) of this paragraph with respect to an automatic-alarm-signal keying device which is included as an integral part of any automatic-alarm receiver approved by the Commission and completed by the manufacturer prior to the effective date of these requirements and type tests.

(iii) Manufacturers' tests of the complete device and/or of any components thereof shall be conducted in the laboratory or shop of the manufacturer(s). These tests shall be carried out in accordance with the following requirements under the heading "manufacturers' tests" and at the expense of the manufacturer or person submitting the device for approval.

(iv) Laboratory tests shall be conducted by the Commission, and/or by any other cooperating United States Government department as may be appropriate, under test specifications prescribed by the Commission and shall be at the expense of the manufacturer or person submitting the device for approval. A report of the tests conducted by the Commission, and/or other government department, will be available to the Commission only: *Provided,* That such reports will be made available to the manufacturer involved at a subsequent date to be determined by the Commission.

(v) Field tests, as deemed necessary or desirable.

(4) *Requirements as to manufacturers' test.* (i) Tests shall be conducted by the manufacturer of the automatic-alarm-signal keying device, who shall submit proof in a signed statement that they have been made as required, together with supporting data: *Provided, however,* That data obtained from manufacturers of parts used in the construction of the device may be submitted in lieu of the results of such tests conducted by the manufacturer of the complete device.

(ii) Sufficient tests shall be applied to all components to determine the durability of materials, character of workmanship, and that the electrical and/or mechanical characteristics are those required for efficient operation of the device.

(5) *Requirements as to laboratory tests.* (i) The automatic-alarm-signal keying device shall be capable of operating the keying circuit of any transmitter approved by the Commission for use as a main transmitter or as a reserve transmitter in compliance with section 355 of the Communications Act of 1934 (a list of the types of transmitters approved by the Commission for this purpose will be furnished upon request). For the purpose of demonstrating compliance with this requirement the transmitter keying circuit of the device shall be tested for a direct current carrying capacity of two amperes through a noninductive resist-

ance of 115 ohms. Terminals, electrical conductors and keying contacts shall be of sufficient size and properly spaced and insulated for these values of current and for the voltage which will necessarily be applied in this test. During this test, arcing shall not occur when the keying contacts are operated which would unduly affect the duration of the dashes and spaces between dashes, or which would otherwise adversely affect the operation of an approved radiotelegraph transmitter keyed by the device.

(ii) The automatic-alarm-signal keying device, if electrically driven, shall he capable of operation when the required electrical energy is furnished solely by an independent power supply. For the purpose of demonstrating compliance with this requirement, the following tests are prescribed:

(*a*) The device shall be operated continuously for a period of one hour from a power supply equivalent to the radio station emergency power supply or the required automatic alarm receiver storage battery power supply of vessels on which the device is to be used. (Radio station emergency power supplies having potentials of 12, 24, and 110 volts are commonly used on board vessels of the United States. Twelve volt emergency power supplies are most common on these vessels. Some of the approved automatic alarm receivers used on board United States ships to date are energized by a storage battery power supply of either 6 or 24 volts, or from a separate and independent source of power furnished as an integral part of the device.) For this operation test the potential of the electrical power supply, if used, shall be varied over a voltage range of plus or minus 15 per cent of the rated potential of such power supply, during which the transmitted dashes shall have a duration within the limits of 3.8 to 4.2 seconds, and spaces between dashes shall have a duration within the limits of 0.8 to 1.2 seconds.

(*b*) The electrical circuits of the device shall be inspected and tested as may be necessary to determine whether or not they are properly fused for adequate protection of the device and the power supply.

(iii) The automatic-alarm-signal keying device shall be capable of properly operating the keying circuit of an approved radiotelegraph transmitter so as to transmit the alarm signal for a continuons period of one hour, under any condition which may be expected on board ships while being navigated during extreme weather and sea conditions. For this purpose the following tests are prescribed in addition to the test prescribed in snbdivision (ii) of this subparagraph.

(*a*) The keying device shall be placed in operation for a period of one continuous hour while subjected to each of the following conditions of temperature and relative humidity:

(*1*) 50 degrees centigrade and 50 percent relative humidity.

(*2*) 30 degrees centigrade and 95 percent relative humidity.

(*3*) Zero degrees centigrade and 50 percent relative humidity.

(*b*) The keying device shall be placed in operation for a sufficient length of time under the following conditions to determine whether or not it will operate properly under such conditions:

(*1*) While the keying device is being rocked in such a manner as to simulate a roll and pitch of 45 degrees from the vertical, that is, over an arc of 45 degrees in two planes normal to the horizon and perpendicular to each other.

(*2*) When subjected to severe vibration comparable to that which might be experienced on board ship, as for example when subjected to vibrations having a period between 20 and 30 cycles per second and an amplitude (0.03 inch total excursion, i.e., 0.015 inch each side of the position of rest) of at least 0.03 inch in a direction at an angle of 30 to 45 degrees with the base of the device.

(*3*) The keying device shall be inspected to determine whether or not all delicate parts are properly enclosed and protected from moisture and from mechanical injury and whether or not components are accessible as may be necessary for inspection and repair, when in service.

(*4*) The keying device shall be inspected and tested as may be necessary to determine the effectiveness of adjustment controls and means for making these adjustments under service conditions, together with precautions taken to prevent tampering with adjustments.

(*5*) Indicating instruments (when provided) and operating controls shall be inspected to determine whether indication is given that the device is in satisfactory operation when the starting control is placed in the "on" position and to determine that a single control for starting and stopping is provided, capable of placing the device in full operation within 30 seconds from the time the control is placed in the "on" position.

§ 83.556 General requirements for survival craft radio equipment.

To be type approved by the Commission pursuant to § 83.469 or § 83.472, survival craft radio equipment shall comply with the following general requirements in addition to the applicable specific requirements set forth in §§ 83.557 and 83.558.

(a) The design and construction of the radio equipment shall be such that no tools are required to place it in operation for routine tests or for emergency communication.

(b) The components and assembly of the entire survival craft radio equipment shall insure the utmost dependable operation and the design shall be such that heavy vibration and physical shocks to which a survival craft is subject will cause no damage. Components sball he housed and treated to withstand saline dampness and to minimize tbe adverse effect of prolonged exposure to salt water or salt spray.

(c) A durable nameplate shall he mounted on the equipment or made an integral part thereof showing

at least the type or model number, the name of the manufacturer, and the month and year of manufacture.

(d) Each survival craft equipment shall he provided with a copy of an instruction manual covering the design, installation, operation, and maintenance of the equipment.

(e) Simple instructions suitable for the guidance of unskilled persons shall he durahly imprinted on a card, which shall be prominently and permanently attached to the equipment. These instructions shall contain information together with sketches covering the erection of the antenna(s) and the operation of the equipment for automatic transmission; also information as to manual transmission of the international radiotelegraph distress signal and the international radiotelegraph alarm signal, and a statement that the latter signal is effective only if transmitted on the frequency 500 kc/s.

(f) An artificial antenna for test purposes shall be provided.

§ 83.557 Requirements for survival craft portable radio equipment.

(a) There shall be provided as a single unit a portable buoyant apparatus consisting of a transmitter, receiver including headphones, power supply, grounding conductor, a collapsihle rod antenna or in lieu thereof a collapsible mast, a single-wire antenna, and a line for lowering the apparatus.

(1) The apparatus, as a single unit, shall be of sufficient buoyancy to float in sea water and shall be sufficiently rugged in construction to withstand physical shocks and rough handling. The apparatus shall be deemed to comply with this requirement if, after being dropped into sea water in various positions from a height of at least 20 feet, it can he operated immediately without any repair or adjustment (other than normal antenna circuit tuning) and without departure from required performance. Suitable protection shall be provided for the operating controls, indicating devices and instruments, including the head receiver, against physical harm from accidental or inadvertent blows and from the adverse effects of prolonged exposure to the weather. Operational parts of the apparatus adversely affected by immersion in sea water shall be enclosed so as to provide the necessary protection. Any such enclosure shall be deemed to be water-tight if it can be suhmerged in sea water so that no part is less than two inches below the surface of the water for a continuous period of two hours without leaking.

(2) The apparatus, as a unit, shall be fitted with durahle handles or grips. These shall be so arranged and the distrihution of the weight of the apparatus shall be such as to provide for convenient carrying by either one or two persons.

(3) Provision shall be made for securely fastening components of the apparatus, by lashing or other acceptable means, to a lifeboat thwart as may be necessary to enable easy and convenient operation of the lifeboat portable radio equipment.

(4) The apparatus exclusive of the line for lowering shall not weigh more than sixty pounds.

(5) The line for lowering shall consist of not less than 40 feet of 9 thread manila or sisal rope, or the equivalent thereof, which shall be in good condition and securely attached to the apparatus at all times.

(6) Components of the apparatus subject to loss by detachment from the unit for operation or test of the equipment shall be so arranged as to insure their availability at all times.

(7) Each apparatus shall be equipped with a durable removable plate showing clearly the survival craft radio call sign in letters and digits and in characters of the International Morse Code.

(b)(1) The radio transmitter shall comply with the following requirements:

Operating frequencies (kilocycles)	Frequency tolerance	Type of emission	Modulation percentage (average of modulation percentage of positive and negative peaks)	Modulation frequency	Power output (into specified artificial antenna)	Artificial antenna
	Parts in 10⁶					
500	5,000	A2	Not less than 70	Not less than 450 nor greater than 1350 cycles per second.	Not less than 0.25 watt	1 ohm resistance, 75 picofarads capacitance.
500	5,000	A2	do	do	Not less than 2 watts [1]	15 ohms resistance, 100 picofarads capacitance.
8364	200	A2	do	do	Not less than 4 watts	40 ohms resistance.

[1] In the case of equipment type approved prior to the effective date of the Safety Convention, 1960, the power output may be 1.7 watts into an artificial antenna of 10 ohms resistance and 75 picofarads capacitance.

(2) The transmitter radio frequency and modulation frequency control circuits shall be pretuned to the required frequencies and shall be of such design and construction that the operating frequencies are maintained within the prescribed tolerances under varying voltages, antenna circuit characteristics, and other normal conditions of adjustment. The frequency control circuit adjustment(s) shall be securely locked to prevent detuning as a result of shock or vibration and shall not be readily available to the person using the transmitter.

(3) Controls shall be provided on the operating panel for efficient transfer of radio frequency energy at each required operating radio frequency to the re-

quired antenna. An initial adjustment of these controls shall effectively resonate the antenna circuit at each required operating radio frequency and this condition shall be maintained without further adjustment of these controls during a normal operating period of the transmitter.

(4) Simple and reliable controls shall be provided so that the operator of the transmitter can quickly and conveniently place it in use for: Manual operation on 500 kc/s, manual operation on 8364 kc/s, and automatic operation alternately on these two frequencies: *Provided*, That not more than one mauual switch adjustment shall be necessary to place the transmitter in operation for automatic transmission. For manual radiotelegraphy the transmitter aud receiver, including their controls, shall be arranged mechanically and electrically so that they can be operated efficiently and conveniently from the same operating positiou for communication on the required operating frequencies and so that the time necessary to change from transmission to reception, and vice versa, on these frequencies is as short as possible and in no event more than two seconds. For automatic operation provision shall be made as follows:

(i) On 500 kc/s for transmission of the international radiotelegraph alarm signal followed by the international radiotelegraph distress signal, the latter to be transmitted in one or more separate groups, each group consisting of three separate distress signals.

(ii) On 8364 kc/s for trausmission of the international radiotelegraph distress signal in one or more separate groups, each group consisting of three separate distress signals; this group or these groups to be followed by a continuous long dash of not less than 30 seconds in duration.

(iii) For transmission of the specified signals hy automatically changing the operating frequency of the transmitter from 500 kc/s to 8364 kc/s aud vice versa with a transfer time interval not to exceed oue second.

(iv) For completely de-energiziug the receiver during such operation of the transmitter.

(v) For testing the required automatic keying arrangement without the generation of radio frequency energy.

(vi) The speed of the automatic transmission of the international radiotelegraph distress signal shall be at a rate not in excess of 16 words per minute nor less than 8 words per minute. The alarm signal dashes shall have a duration within the limits of 3.8 to 4.2 seconds, and the spaces between each of the 12 dashes constituting a series shall have a duration within the limits of 0.8 to 1.2 seconds.

(5) The transmitter shall be equipped with a reliable visual indicator or indicators as may be necessary (sucb as neon tubes) to indicate antenna circuit resonance at each operating frequency with any autenna provided. Failure of the indicator(s) shall have no adverse effect on the actual operation of the transmitter.

(c) The receiver shall comply with the following requirements:

(1) The receiver shall, when used with headphones, be capable without manual tuning of receiving A2 emission over the band 492–508 kc/s, and shall be capable when manually tuned of receiving A1 and A2 emission on any frequency in the hand 8320–8745 kc/s.

(2) The sensitivity of the receiver shall be such that at least 1 milliwatt of audio power is developed in a noninductive load resistor having an ohmic value substantially equal to the value of the impedance of the head receiver at 1,000 cycles per second at a signal to noise power ratio of at least 10 to 1, when the receiver is supplied through the following artificial antennas with the respective radio frequency signals:

Frequency (kilocycles)	Signal strength (microvolts)	Modulation factor	Modulation frequency (cycles per second)	Artificial antenna
500	200	0.3	400	15 ohms resistance and 100 picofarads capacitance.[1]
8364	1000	.3	400	40 ohms resistance.

[1] In the case of equipment type approved prior to the effective date of the Safety Convention, 1960, the artificial antenna may be 10 ohms resistance and 75 picofarads capacitance.

The noise power present in the output of the receiver when the receiver is adjusted for the reception of type A2 emission on the frequencies 500 kc/s and 8364 kc/s shall be determined with an unmodulated input signal of the indicated strength.

(3) The selectivity of the receiver preceding the final detector shall be such that response uniform to within 6 db is obtained over the frequency range 492 to 508 kc/s.

(4) The audio frequency response of the receiver shall be electrically uniform to within 6 decibels over the range of frequencies hetween 400 and 1400 cycles per second.

(5) The receiver shall be equipped with only one manually operated volume control.

(d) The power supply shall comply with the following requirements:

(1) The source of power shall be a manually operated electric generator capable of efficiently energizing the survival craft radio iustallation. The mechanical power applied to the crauk handle(s) or the propelling lever(s) of the generator driving mechanism shall not exceed a maximum of 0.15 horsepower for any required condition of operation of the survival craft radio installation at any temperature of the generator and its associated driving mechanism between minus 30 degrees and plus 125 degrees Fahrenheit. Under these conditions the speed of rotation of the crank handle(s) shall uot be greater than 70 revolutions per minute nor shall the cycles of operation of the propelling lever(s) be greater than 70 cycles per minute. The voltages applied to the radio installation shall not vary from their normal values more than 20 percent

at any generator speed in excess of the normal operating speed which can be manually developed.

(e) The single wire antenna and the collapsible rod antenna or the collapsible mast provided in lieu thereof shall comply with the following requirements:

(1) The collapsible rod antenna shall be of the maximum practicable height as approved by the Commission for each particular type of survival craft radio apparatus. The collapsible mast provided in lieu of the collapsible rod antenna shall be of the maximum practicable height as approved by the Commission for each particular type of survival craft radio apparatus and capable of supporting the required single wire antenna.

(2) The single wire antenna shall consist of a length of at least 40 feet of extra-flexible stranded copper wire having a cross-sectional area of not less than 10,000 circular mils together with means for effective insulation of the antenna, means for fastening the wire to the antenna supports, and means for making electrical connection to the transmitter.

(f) The grounding conductor shall comply with the following requirements:

(1) The grounding conductor shall consist of a length of not less than 20 feet of No. 10 bare stranded copper wire or equivalent copper braid effectively weighted at one end for immersion in the sea. This conductor shall be securely fastened to an effective ground terminal on the apparatus.

(g) The artificial antenna shall comply with the following requirements:

(1) The artificial antenna shall provide a reliable load for the transmitter for test purposes, at the frequencies 500 kc/s and 8364 kc/s, of approximately the same electrical characteristics as the single wire antenna required by this section.

(2) The artificial antenna shall be housed in a single container and provided with appropriate terminals. If more than two terminals are provided on the artificial antenna, all the terminals shall be properly labeled.

§ 83.558 Requirements for survival craft non-portable radio equipment.

(a) (1) The radio transmitter shall comply with the following requirements:

Operating frequencies (kilocycles)	Frequency tolerance	Type of emission	Modulation percentage (average of modulation percentages of positive and negative peaks)	Modulation frequency	Power output (into specified artificial antenna)	Artificial antenna
	Parts in 10^6					
500	5,000	A2	Not less than 70	Not less than 450 no greater than 1350 cycles per second.	Not less than 30 watts	10 ohms resistance and 100 picofarads capacitance.
8364	200	A2	do	do	Not less than 40 watts	40 ohms resistance.

(2) The transmitter radio frequency and modulation frequency control circuits shall be pretuned to the required frequencies and shall be of such design and construction that the operating frequencies are maintained within the prescribed tolerances under varying voltages, antenna circuit characteristics, and other normal conditions of adjustment. The frequency control circuit adjustment(s) shall be securely locked to prevent detuning as a result of shock or vibration and shall not be readily available to the person using the transmitter.

(3) Controls shall be provided on the operating panel for efficient transfer of radio frequency energy at each required operating radio frequency to the required antenna. An initial adjustment of these controls shall effectively resonate the antenna circuit at each required operating radio frequency and this condition shall be maintained without further adjustment of these controls during a normal operating period of the transmitter.

(4) Simple and reliable controls shall be provided so that the operator of the transmitter can quickly and conveniently place it in use for: Manual operation on 500 kc/s, manual operation on 8364 kc/s, and automatic operation alternately on these two frequencies; provided that not more than one manual switch adjustment shall be necessary to place the transmitter in operation for automatic transmission. For manual radiotelegraphy the transmitter and receiver, including their controls, shall be arranged mechanically and electrically so that they can be operated efficiently and conveniently from the same operating position for communication on the required operating frequencies and so that the time necessary to change from transmission to reception, and vice versa, on these frequencies is as short as possible and in no event more than two seconds. For automatic operation provision shall be made as follows:

(i) On 500 kc/s for transmission of the international radiotelegraph alarm signal followed by the international radiotelegraph distress signal, the latter to be transmitted in one or more separate groups, each group consisting of three separate distress signals.

(ii) On 8364 kc/s for transmission of the international radiotelegraph distress signal in one or more separate groups, each group consisting of three separate distress signals; this group or these groups to be followed by a continuous long dash of not less than 30 seconds in duration.

(iii) For transmission of the specified signals by automatically changing the operating frequency of the

transmitter from 500 kc/s to 8364 kc/s and vice versa with a transfer time interval not to exceed one second.

(iv) The speed of the automatic transmission of the international radiotelegraph distress signal shall be at a rate not in excess of 16 words per minute nor less than 8 words per minute. The alarm signal dashes shall have a duration within the limits of 3.8 to 4.2 seconds, and the spaces between each of the 12 dashes constituting a series shall have a duration within the limits of 0.8 to 1.2 seconds.

(v) For testing the required automatic keying arrangement without the generation of radio frequency energy.

(5) The transmitter shall be equipped with a radio frequency ammeter of suitable range and scale, connected so as to indicate the current in the antenna circuit for each operating frequency.

(b) The receiver shall comply with the following requirements:

(1) The receiver shall, when used with headphones, be capable without manual tuning of receiving A2 emission over the band 492–508 kc/s, and shall be capable when manually tuned of receiving A1 and A2 emission on any frequency in the band 8320–8745 kc/s.

(2) The sensitivity of the receiver shall be such that at least 1 milliwatt of audio power is developed in a non-inductive load resistor having an ohmic value substantially equal to the value of the impedance of the head receiver at 1,000 cycles per second at a signal to noise power ratio of at least 10 to 1, when the receiver is supplied through the following artificial antennas with the respective radio frequency signals:

Frequency (kilocycles)	Signal strength (microvolts)	Modulation factor	Modulation frequency (cycles per second)	Artificial antenna
500	25	0.3	400	10 ohms resistance and 100 picofarads capacitance.
8364	100	.3	400	40 ohms resistance.

The noise power present in the output of the receiver when the receiver is adjusted for reception of type A2 emission on the frequencies 500 kc/s and 8364 kc/s shall be determined with an unmodulated input signal of the indicated strength.

(3) Tbe selectivity of the receiver preceding the final detector shall be such that response uniform to within 6 db is obtained over the frequency range 492 to 508 kc/s.

(4) The audio frequency response of the receiver shall be electrically uniform to within 6 decibels over the range of frequencies between 400 and 1400 cycles per second.

(5) The receiver shall be equipped with only one manually operated volume control.

(6) The receiver sball be capable of developing a useful audio power for the purpose of the reception of type A2 emission of at least 6 milliwatts into the non-inductive load resistor prescribed in subparagraph (2) of this paragraph.

(c) The artificial antenna shall comply with the following requirements:

(1) The artificial antenna shall provide a reliable load for the transmitter for test purposes at the frequencies 500 kc/s and 8364 kc/s, of approximately the same electrical characteristics as the antenna required by paragraph (d) of § 83.469;

(2) The artificial antenna shall be housed in a single container and provided with appropriate terminals. If more than two terminals are provided on the artificial antenna, all the terminals shall be properly labeled.

SUBPART W—VIOLATIONS

§ 83.601 Answers to notice of violation.

(a) Any person receiving official notice of a violation of the terms of the Communications Act, any legislative act, Executive order, treaty to which the United States is a party, terms of a station or operator license, or the rules and regulations of the Federal Communications Commission, shall, within 10 days from such receipt, send a written answer, in duplicate, to the office of the Commission originating the official notice. If an answer cannot be sent, or an acknowledgment made within such 10-day period by reason of illness or other unavoidable circumstances, acknowledgment and answer shall be made at the earliest practicable date with a satisfactory explanation of the delay. The answer to each notice shall be complete in itself and shall not be abbreviated by refereuces to other communications or answers to other notices. The answer shall contain a full explanation of the incident involved and shall set forth the action taken to prevent a continuation or recnrrence thereof. If the notice relates to lack of attention to, or improper operation of tbe station, or to log or watch discrepancies, the answer shall give the name and license number of the licensed operator on duty.

(b) When an official notice of violation, impending violation, or discrepancy, pertaining to any provision of Part II of Title III of the Communications Act or the radio provisions of the Safety Convention, is served upon the master or person responsible for a vessel and any instructions appearing on such document as issned by a representative of the Commission are at variance with the content of paragraph (a) of this section, then the instructions issued by the Commission's representative shall supersede those set forth in paragraph (a) of this section.

§ 83.602 Reports of infringements of the International Radio Regulations.

In the event that infringement of the International Radio Regulations by a foreigu station is detected, report thereof may be made by the suhmission to the Commission of a form similar to that set forth in Appendix 7 to the International Radio Regulations.

SUBPART X—[RESERVED]

SUBPART Y—FREQUENCY TABLES AND EXEMPTION ORDERS

§ 83.801 Tables of ship radiotelegraph frequencies from 2 Mc/s to 27.5 Mc/s.

(a) *Table 1a.* High traffic ship radiotelegraph working frequencies.

(b) *Table 1b.* Ship radiotelegraph calling frequencies.

(c) *Table 1c.* Low traffic sbip radiotelegraph working frequencies.

(d) *Table 2.* Ship radiotelegraph frequencies assignment plan.

(e) *Procedures and tables.* The following procedures and tables may be used in applying for license for the frequencies listed in Tables 1a, 1b, and 1c insofar as these frequencies are consistent with the provisions of this chapter. Frequencies, assigned in accordance with this section to a station on a particular vessel, may be retained at the option of the applicant despite subseqnent relicensing of the station to a different licensee. Frequencies appearing in the tables may only be used in the manner and to the extent permitted elsewbere in this part.

(f) *Radiotelegraph, 2 Mc/s to 27.5 Mc/s.* The applicant must consult Table 2 to determine the frequency column symbols which are available for assignment. The frequencies designated hy the symbols shown in Table 2 may be determined from Tables 1a, 1b, and 1c which list all of the frequencies in each series.

(g) *Calling frequencies.* Application may be made for one calling frequency column symbol from the "C" series, which represents one frequency in each of the 2, 4, 6, 8, 12, 16, and 22 Mc/s bands, for each ship. If more than one symbol of the "C" series is allocated for a particular licensee, the general principle to follow is to apply for the first vessel under the first symbol, the second symbol for the second vessel, etc., until the allocated symbols are exhausted. The procedure is then repeated, beginning again with the first symbol.

(h) *Low traffic ship working frequencies.* Application may be made for one low traffic working frequency symhol from the "L" series for each low traffic ship, which will include one frequency from the 2 Mc/s and two frequencies from tbe 4, 6, 8, 12, 16, and 22 Mc/s bands. A primary frequency to be used for working in each frequency band having two frequencies available must be indicated by suffixing the frequency symbol with the letter "A" for the lower frequency in each band and the letter "B" for the higher frequency in each band. If more than one symbol of the "L" series is allocated for a particular licensee, the frequency symbols, to include tbe suffix "A" or "B", should be applied for in rotation for successive vessels as for calling frequencies, otherwise either "A" or "B" may be applied for.

(i) *High traffic ship working frequencies.* High traffic ship working frequencies are normally available only to passenger ships but may be assigned to whaling factory vessels, tankers above 40,000 gross tons, and cargo ships above 12,500 gross tons in lieu of low traffic frequencies if a satisfactory showing is submitted indicating that the vessel concerned handles a large volume of traffic. Application may be made for the number of passenger ship working frequencies which, in the best judgment of the applicant, will be essential for the traffic volume of the particular vessel. Frequency column symbols shall be taken from the "H" series, with a mininum of two symbols. If more than two symbols of the "H" series are allocated for a particular licensee, tbe frequency symbols should be applied for in rotation for successive vessels as for calling frequencies, except that the first symbol for each vessel must be the one after the last of the series of two or more symbols of the previous vessel.

TABLE 1a—HIGH TRAFFIC SHIP RADIOTELEGRAPH WORKING FREQUENCIES (kc/s)

H1: 2080.5, 4161, 6241.5, 8322, 12474, 12478.5, 12483, 16626, 16632, 16638, 16644, 22151, 22157.

H2: 2081.25, 4162.5, 6243.75, 8325, 12474, 12478.5, 12487.5, 16626, 16632, 16638, 16650, 22151, 22163.

H3: 2082, 4164, 6246, 8328, 12474, 12478.5, 12492, 16626, 16632, 16638, 16656, 22151, 22169.

H4: 2082.75, 4165.5, 6248.25, 8331, 12474, 12478.5, 12496.5, 16626,16632, 16638, 16662, 22151, 22175.

H5: 2083.5, 4167, 6250.5, 8334, 12474, 12478.5, 12501, 16626, 16632, 16638, 16668, 22151, 22181.

H6: 2084.25, 4168.5, 6252.75, 8337, 12474, 12478.5, 12505.5, 16626, 16632, 16638, 16674, 22151, 22187.

H7: 2085, 4170, 6255, 8340, 12474, 12478.5, 12510, 16626, 16632, 16638, 16680, 22151, 22193.

H8: 2085.75, 4171.5, 6257.25, 8343, 12474, 12478.5, 12514.5, 16626, 16632, 16638, 16686, 22151, 22199.

H9: 2086.5, 4173, 6259.5, 8346, 12474, 12478.5, 12519, 16626, 16632, 16638, 16692, 22151, 22205.

H10: 2087.25, 4174.5, 6261.75, 8349, 12474, 12478.5, 12523.5, 16626, 16632, 16638, 16698, 22151, 22211.

H11: 2088, 4176, 6264, 8352, 12474, 12478.5, 12528, 16626, 16632, 16638, 16704, 22151, 22217.

TABLE 1b—SHIP RADIOTELEGRAPH CALLING FREQUENCIES (kc/s)

C1: 2089, 4178, 6267, 8356, 12534, 16712, 22225.

C2: 2089.5, 4179, 6268.5, 8358, 12537, 16716, 22230.

C3: 2090, 4180, 6270, 8360, 12540, 16720, 22235.

C4: 2090.5, 4181, 6271.5, 8362, 12543, 16724, 22240.

C5: 2091.

C6: 2091.5, 4183, 6274.5, 8366, 12549, 16732, 22250.

C7: 2092, 4184, 6276, 8368, 12552, 16736, 22255.

C8: 2092.5, 4185, 6277.5, 8370, 12555, 16740, 22260.

C9: 2093, 4186, 6279, 8372, 12558, 16744, 22265.

TABLE 1c—LOW TRAFFIC SHIP WORKING FREQUENCIES[1] (kc/s)

L1	2094	4188	6282	8376	12564	16752	22272.5
		4212.5	6318.75	8425	12637.5	16850	22335
L2	2094.25	4188.5	6282.75	8377	12565.5	16754	22272.5
		4213	6319.5	8426	12639	16852	22335
L3	2094.5	4189	6283.5	8378	12567	16756	22275
		4213.5	6320.25	8427	12640.5	16854	22337.5

See footnote at end of table.

TABLE 1c—LOW TRAFFIC SHIP WORKING FREQUENCIES [1] (kc/s)—Con.

L4	2094.75	4189.5	6284.25	8379	12568.5	16758	22275
		4214	6321	8428	12642	16856	22337.5
L5	2095	4190	6285	8380	12570	16760	22277.5
		4214.5	6321.75	8429	12643.5	16858	22340
L6	2095.25	4190.5	6285.75	8381	12571.5	16762	22277.5
		4215	6322.5	8430	12645	16860	22340
L7	2095.5	4191	6286.5	8382	12573	16764	22280
		4215.5	6323.25	8431	12646.5	16862	22342.5
L8	2095.75	4191.5	6287.25	8383	12574.5	16766	22280
		4216	6324	8432	12648	16864	22342.5
L9	2096	4192	6288	8384	12576	16768	22282.5
		4216.5	6324.75	8433	12649.5	16866	22345
L10	2096.25	4192.5	6288.75	8385	12577.5	16770	22282.5
		4217	6325.5	8434	12651	16868	22345
L11	2096.5	4193	6289.5	8386	12579	16772	22285
		4217.5	6326.25	8435	12652.5	16870	22347.5
L12	2096.75	4193.5	6290.25	8387	12580.5	16774	22285
		4218	6327	8436	12654	16872	22347.5
L13	2097	4194	6291	8388	12582	16776	22287.5
		4218.5	6327.75	8437	12655.5	16874	22350
L14	2097.25	4194.5	6291.75	8389	12583.5	16778	22287.5
		4219	6328.5	8438	12657	16876	22350
L15	2097.5	4195	6292.5	8390	12585	16780	22290
		4219.5	6329.25	8439	12658.5	16878	22352.5
L16	2097.75	4195.5	6293.25	8391	12586.5	16782	22290
		4220	6330	8440	12660	16880	22352.5
L17	2098	4196	6294	8392	12588	16784	22292.5
		4220.5	6330.75	8441	12661.5	16882	22355
L18	2098.25	4196.5	6294.75	8393	12589.5	16786	22292.5
		4221	6331.5	8442	12663	16884	22355
L19	2098.5	4197	6295.5	8394	12591	16788	22295
		4221.5	6332.25	8443	12664.5	16886	22357.5
L20	2098.75	4197.5	6296.25	8395	12592.5	16790	22295
		4222	6333	8444	12666	16888	22357.5
L21	2099	4198	6297	8396	12594	16792	22297.5
		4222.5	6333.75	8445	12667.5	16890	22360
L22	2099.25	4198.5	6297.75	8397	12595.5	16794	22297.5
		4223	6334.5	8446	12669	16892	22360
L23	2099.5	4199	6298.5	8398	12597	16796	22300
		4223.5	6335.25	8447	12670.5	16894	22362.5
L24	2099.75	4199.5	6299.25	8399	12598.5	16798	22300
		4224	6336	8448	12672	16896	22362.5
L25	2100	4200	6300	8400	12600	16800	22302.5
		4224.5	6336.75	8449	12673.5	16898	22365
L26	2100.25	4200.5	6300.75	8401	12601.5	16802	22302.5
		4225	6337.5	8450	12675	16900	22365
L27	2100.5	4201	6301.5	8402	12603	16804	22305
		4225.5	6338.25	8451	12676.5	16902	22367.5
L28	2100.75	4201.5	6302.25	8403	12604.5	16806	22305
		4226	6339	8452	12678	16904	22367.5

TABLE 1c—LOW TRAFFIC SHIP WORKING FREQUENCIES [1] (kc/s)—Con

L29	2101	4202	6303	8404	12606	16808	22307.5
		4226.5	6339.75	8453	12679.5	16906	22370
L30	2101.25	4202.5	6303.75	8405	12607.5	16810	22307.5
		4227	6340.5	8454	12681	16908	22370
L31	2101.5	4203	6304.5	8406	12609	16812	22310
		4227.5	6341.25	8455	12682.5	16910	22372.5
L32	2101.75	4203.5	6305.25	8407	12610.5	16814	22310
		4228	6342	8456	12684	16912	22372.5
L33	2102	4204	6306	8408	12612	16816	22312.5
		4228.5	6342.75	8457	12685.5	16914	22375
L34	2102.25	4204.5	6306.75	8409	12613.5	16818	22312.5
		4229	6343.5	8458	12687	16916	22375
L35	2102.5	4205	6307.5	8410	12615	16820	22315
		4229.5	6344.25	8459	12688.5	16918	22377.5
L36	2102.75	4205.5	6308.25	8411	12616.5	16822	22315
		4230	6345	8460	12690	16920	22377.5
L37	2103	4206	6309	8412	12618	16824	22317.5
		4230.5	6345.75	8461	12691.5	16922	22380
L38	2103.25	4206.5	6309.75	8413	12619.5	16826	22317.5
		4231	6346.5	8462	12693	16924	22380
L39	2103.5	4207	6310.5	8414	12621	16828	22320
		4231.5	6347.25	8463	12694.5	16926	22382.5
L40	2103.75	4207.5	6311.25	8415	12622.5	16830	22320
		4232	6348	8464	12696	16928	22382.5
L41	2104	4208	6312	8416	12624	16832	22322.5
		4232.5	6348.75	8465	12697.5	16930	22385
L42	2104.25	4208.5	6312.75	8417	12625.5	16834	22322.5
		4233	6349.5	8466	12699	16932	22385
L43	2104.5	4209	6313.5	8418	12627	16836	22325
		4233.5	6350.25	8467	12700.5	16934	22387.5
L44	2104.75	4209.5	6314.25	8419	12628.5	16838	22325
		4234	6351	8468	12702	16936	22387.5
L45	2105	4210	6315	8420	12630	16840	22327.5
		4234.5	6351.75	8469	12703.5	16938	22390
L46	2105.25	4210.5	6315.75	8421	12631.5	16842	22327.5
		4235	6352.5	8470	12705	16940	22390
L47	2105.5	4211	6316.5	8422	12633	16844	22330
		4235.5	6353.25	8471	12706.5	16942	22392.5
L48	2105.75	4211.5	6317.25	8423	12634.5	16846	22330
		4236	6354	8472	12708	16944	22392.5
L49	2106	4212	6318	8424	12636	16848	22332.5
		4236.5	6354.75	8473	12709.5	16946	22395

[1] The frequency symbols are suffixed by the letters "A" or "B" to indicate the primary working frequency in each band. [See §§ 83.324(e) and 83.801(h).]

TABLE 2—SHIP RADIOTELEGRAPH FREQUENCY PLAN

[For columns of frequencies designated by these symbols, see Tables 1a, 1b, and 1c]

	Calling frequency column symbols	High traffic ship working frequency column symbols	Low traffic ship working frequency column symbols
RCA Communications, Inc.	C3, C5, C7, C9.	H1, H3, H5, H7, H9.	L1, L3, L5, L7, L9, L11, L13, L15, L17, L19, L21, L23, L25, L27, L29, L31, L33, L35, L37, L39, L41, L43, L45, L47.
ITT World Communications, Inc.	C2, C4, C5, C6.	H4, H6, H8, H10.	L2, L6, L8, L10, L14, L16, L18, L20, L24, L28, L32, L34, L36, L40, L42, L48, L49.
Tropical Radio Telegraph Co.	C1, C5, C8.	H2, H11	L4.
Matson Navigation Co.	do	do	L12.
Other applicants: [1]			
A–C	do	do	L22.
D–L	do	do	L26.
M	do	do	L30.
N–R	do	do	L38.
S	do	do	L44.
T–Z	do	do	L46.

[1] Applicants other than the companies listed must apply for the frequency column symbols shown, in alphabetic groups according to the first letter of their name. As an example, if the applicant's name begins with A, B, or C, he may apply only for frequency column symbols C1, C5, or C8, H2, and H11 for a high traffic ship, or C1, C5, or C8 and L22 for a low traffic ship. For this purpose, the alphabetic group of first letters of the name will be selected by using the first word of a trade name omitting "The"; the last name of a personal name; or the last name of the first person appearing in a series of personal names. As examples, the following names would all apply for the third, or "M", group: Marine Communications, Inc.; A. B. Miller and Co.; C. D. Muncey; E. F. Murphy, Alfred Abrams, et al.

[§ 83.801 as amended eff. 11-29-65; IV (64)-5]

§ 83.803 General exemption orders issued exempting ships from compulsory radio provisions.

(a) Order, May 8, 1957, granting exemption, pursuant to section 352(b)(3) of the Communications Act of 1934, as amended, to all United States passenger vessels of less than 100 gross tons, not subject to the radio provisions of the Safety Convention, from the radiotelegraph provisions of Title III, Part II of the Communications Act of 1934, as amended: *Provided*, That the vessels are equipped with a radiotelephone installation fully complying with the provisions of Part III of Title III of the Communications Act of 1934, as amended, and the Commission's rules and regulations made pursuant thereto including the requirements with respect to certificates, operators, and listening watches: *And provided further*, That during the course of the voyages the vessels are not navigated more than 50 nautical miles from the nearest land.

(b) Order, April 22, 1964, granting exemption, pursuant to section 383 of the Communications Act of 1934, as amended, from the provisions of Title III, Part III of the Communications Act of 1934, as amended, to all United States vessels subject thereto which are of less than 50 gross tons and are navigated not more than 1,000 feet from the nearest land at mean low tide.

(c) These exemptions may be terminated at any time without hearing if, in the Commission's discretion, the need for such action arises.