



INTERNATIONAL CONFERENCE ON
SAFETY OF LIFE AT SEA, 1974

Drafting Committee

IMCO

DRAFT TEXT OF CHAPTER IV

RADIOTELEGRAPHY AND RADIOTELEPHONY

Prepared by the Drafting Committee

Insert Chapter IV of the 1960 Safety Convention with the following amendments:

Regulation 1 - Application

1. The footnote to paragraph (b) is replaced by the following:

Such ships are subject to special requirements relative to radio for safety purposes, as contained in the relevant agreement between Canada and the United States of America.

Regulation 2 - Terms and Definitions

2. The existing text of Regulation 2 is replaced by the following:

Regulation 2

Terms and Definitions

For the purpose of this Chapter the following terms shall have the meanings defined below. All other terms which are used in this Chapter and which are also defined in the Radio Regulations shall have the same meanings as defined in those Regulations:

- (a) "Radio Regulations" means the Radio Regulations annexed to, or regarded as being annexed to, the most recent International Telecommunication Convention which may be in force at any time.
- (b) "Radiotelegraph auto alarm" means an automatic alarm receiving apparatus which responds to the radiotelegraph alarm signal and has been approved.

- (c) "Radiotelephone auto alarm" means an automatic alarm receiving apparatus which responds to the radiotelephone alarm signal and has been approved.
- (d) "Radiotelephone station", "Radiotelephone installation" and "Watches - radiotelephone" shall be considered as relating to the Medium Frequency Band, unless expressly provided otherwise.
- (e) "Radio Officer" means a person holding at least a first or second class radiotelegraph operator's certificate, or a radiocommunication operator's general certificate for the maritime mobile service, complying with the provisions of the Radio Regulations, who is employed in the radiotelegraph station of a ship which is provided with such a station in compliance with the provisions of Regulation 3 or Regulation 4 of this Chapter.
- (f) "Radiotelephone operator" means a person holding an appropriate certificate complying with the provisions of the Radio Regulations.
- (g) "Existing installation" means:
 - (i) an installation wholly installed on board a ship before the date on which the present Convention comes into force irrespective of the date on which acceptance by the respective Administration takes effect; and
 - (ii) an installation part of which was installed on board a ship before the date of coming into force of the present Convention and the rest of which consists either of parts installed in replacement of identical parts, or parts which comply with the requirements of this Chapter.
- (h) "New installation" means any installation which is not an existing installation.

Regulation 6 - Watches - Radiotelegraph

3. Paragraphs (c) and (d) are replaced by the following:

- (c) (i) Each cargo ship which in accordance with Regulation 3 of this Chapter is fitted with a radiotelegraph station, if fitted with a radiotelegraph auto alarm, shall, subject to the provisions

of paragraph (d) of this Regulation, and while at sea, listen on the radiotelegraph distress frequency by means of a radio officer using headphones or a loudspeaker, for at least 8 hours a day in the aggregate.

- (ii) Each cargo ship of 300 tons gross tonnage and upwards but less than 1,600 tons gross tonnage which is fitted with a radiotelegraph station as a consequence of Regulation 4 of this Chapter, if fitted with a radiotelegraph auto alarm shall, subject to the provisions of paragraph (d) of this Regulation, and while at sea, listen on the radiotelegraph distress frequency by means of a radio officer using headphones or a loudspeaker, during such periods as may be determined by the Administration. Administrations shall, however, have regard to the desirability of requiring, whenever practicable, a listening watch of at least 8 hours a day in the aggregate.
- (d) (i) During the period when a radio officer is required by this Regulation to listen on the radiotelegraph distress frequency, the radio officer may discontinue such listening during the time when he is handling traffic on other frequencies, or performing other essential radio duties, but only if it is impracticable to listen by split headphones or loudspeaker. The listening watch shall always be maintained by a radio officer using headphones or loudspeaker during the silence periods provided for by the Radio Regulations.

The term "essential radio duties" in this paragraph includes urgent repairs of:

- (1) equipment for radiocommunication used for safety;
 - (2) radio navigational equipment by order of the master.
- (ii) In addition to the provisions of sub-paragraph (i) of this paragraph, on ships other than multi-radio officer passenger ships, the radio officer may, in exceptional cases, i.e. when it is impractical to listen by split headphones or loudspeaker, discontinue listening by order of the master in order to carry out maintenance required to prevent imminent malfunction of:

- equipment for radiocommunication used for safety;
 - radio navigational equipment;
 - other electronic navigational equipment including its repair;
- provided that:

- (1) the radio officer, at the discretion of the Administration concerned, is appropriately qualified to perform those duties; and
- (2) the ship is fitted with a receiving selector which meets the requirements of the Radio Regulations;
- (3) the listening watch is always maintained by a radio officer using headphones or loudspeaker during the silence periods provided for by the Radio Regulations.

Regulation 7 - Watches - Radiotelephone

4. The existing text of Regulation 7 is replaced by the following:

Regulation 7

Watches - Radiotelephone

- (a) Each ship which is fitted with a radiotelephone station in accordance with Regulation 4 of this Chapter shall, for safety purposes, carry at least one radiotelephone operator (who may be the master, an officer or a member of the crew holding a certificate for radiotelephony) and shall, while at sea, maintain continuous watch on the radiotelephone distress frequency in the place on board from which the ship is usually navigated, by use of a radiotelephone distress frequency watch receiver, using a loudspeaker, a filtered loudspeaker or radiotelephone auto alarm.
- (b) Each ship which in accordance with Regulation 3 or Regulation 4 of this Chapter is fitted with a radiotelegraph station shall, while at sea, maintain continuous watch on the radiotelephone distress frequency in a place to be determined by the Administration, by use of a radiotelephone distress frequency watch receiver, using a loudspeaker, a filtered loudspeaker or radiotelephone auto alarm.

Regulation 7 bis - Watches - VHF Radiotelephone

5. The following new Regulation 7 bis is added:

Watches - VHF Radiotelephone

Each ship provided with a VHF radiotelephone station, in accordance with Regulation 18 of Chapter V, shall maintain a listening watch on the bridge for such periods and on such channels as may be required by the Contracting Government referred to in that Regulation.

Regulation 9 - Radiotelegraph Installations

6. Sub-paragraph (a)(ii) is replaced by the following:

(ii) The main installation shall include a main transmitter, main receiver, radiotelephone distress frequency watch receiver, and main source of energy.

7. Paragraph (e) is replaced by the following:

(e) The main and reserve transmitters shall be capable of transmitting on the radiotelegraph distress frequency using a class of emission assigned by the Radio Regulations for that frequency. In addition, the main transmitter shall be capable of transmitting on at least two working frequencies in the authorized bands between 405 kHz and 535 kHz, using classes of emission assigned by the Radio Regulations for these frequencies. The reserve transmitter may consist of a ship's emergency transmitter, as defined in and limited in use by the Radio Regulations.

8. Paragraph (h) is replaced by the following:

(h) (i) The main and reserve receivers shall be capable of receiving the radiotelegraph distress frequency and the classes of emission assigned by the Radio Regulations for that frequency.

(ii) In addition, the main receiver shall permit the reception of such of the frequencies and classes of emission used for the transmission of time signals, meteorological messages and such other communications relating to safety of navigation as may be considered necessary by the Administration.

(iii) The radiotelephone distress frequency watch receiver shall be preset to this frequency. It shall be provided with a filtering unit or a device to silence the loudspeaker if on the bridge in the absence of a radiotelephone alarm signal. The device shall be capable of being easily switched in and out and may be used when, in the opinion of the master, conditions are such that maintenance of the listening watch would interfere with the safe navigation of the ship.

- (iv) (1) A radiotelephone transmitter, if provided, shall be fitted with an automatic device for generating the radiotelephone alarm signal, so designed as to prevent actuation by mistake, and complying with the requirements of paragraph (e) of Regulation 15 of this Chapter. The device shall be capable of being taken out of operation at any time in order to permit the immediate transmission of a distress message;
- (2) arrangements shall be made to check periodically the proper functioning of the automatic device for generating the radiotelephone alarm signal on frequencies other than the radiotelephone distress frequency using a suitable artificial aerial.

9. Paragraph (i) is replaced by the following:

- (i) The main receiver shall have sufficient sensitivity to produce signals in headphones or by means of a loudspeaker when the receiver input is as low as 50 microvolts. The reserve receiver shall have sufficient sensitivity to produce such signals when the receiver input is as low as 100 microvolts.

10. Paragraph (k) is replaced by the following:

- (k) The reserve installation shall be provided with a source of energy independent of the propelling power of the ship and of the ship's electrical system.

11. Paragraph (1) is replaced by the following:

- (1) (i) The reserve source of energy shall preferably consist of accumulator batteries, which may be charged from the ship's electrical system, and shall under all circumstances be capable of being put into operation rapidly and of operating the reserve transmitter and receiver for at least six hours continuously under normal working conditions besides any of

the additional loads mentioned in paragraphs (m) and (n) of this Regulation*.

- (ii) The reserve source of energy is required to be of a capacity sufficient to operate simultaneously the reserve transmitter and the VHF installation, when fitted, for at least six hours unless a switching device is fitted to ensure alternate operation only. VHF usage of the reserve source of energy shall be limited to distress, urgency and safety communications. Alternatively, a separate reserve source of energy may be provided for the VHF installation.

12. Paragraph (n) is replaced by the following:

(n) The reserve source of energy shall be used to supply the reserve installation and the automatic alarm signal keying device specified in paragraph (r) of this Regulation if it is electrically operated.

The reserve source of energy may also be used to supply:

- (i) the radiotelegraph auto alarm;
- (ii) the emergency light specified in paragraph (g) of Regulation 8 of this Chapter;
- (iii) the direction-finder;
- (iv) the VHF installation;
- (v) the device for generating the radiotelephone alarm signal, if provided;
- (vi) any device, prescribed by the Radio Regulations, to permit change-over from transmission to reception and vice versa.

Subject to the provisions of paragraph (n) of this Regulation, the reserve source of energy shall not be used other than for the purposes specified in this paragraph.

* For the purpose of determining the electrical load to be supplied by the reserve source of energy, the following formula is recommended as a guide:

- $\frac{1}{2}$ of the transmitter current consumption with the key down (mark)
- + $\frac{1}{2}$ of the transmitter current consumption with the key up (space)
- + current consumption of receiver and additional circuits connected to the reserve source of energy.

Regulation 10 - Radiotelegraph Auto Alarms

13. The lead-in sentence of paragraph (a) is replaced by the following:
- (a) Any radiotelegraph auto alarm installed after 26 May 1965 shall comply with the following minimum requirements:
14. Paragraph (f) is deleted.

Regulation 11 - Direction-Finders

15. The existing text of Regulation 11 is replaced by the following:

Regulation 11Direction-Finders

- (a) (i) The direction-finding apparatus required by Regulation 12 of Chapter V shall be efficient and capable of receiving signals with the minimum of receiver noise and of taking bearings from which the true bearing and direction may be determined.
- (ii) It shall be capable of receiving signals on the radiotelegraph frequencies assigned by the Radio Regulations for the purposes of distress and direction-finding and for maritime radio beacons.
- (iii) In the absence of interference the direction-finding apparatus shall have a sensitivity sufficient to permit accurate bearings being taken on a signal having a field strength as low as 50 microvolts per metre.
- (iv) As far as is practicable, the direction-finding apparatus shall be so located that as little interference as possible from mechanical or other noise will be caused to the efficient determination of bearings.
- (v) As far as is practicable, the direction-finding aerial 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 aerials, derricks, wire halyards or other large metal objects.

- (vi) An efficient two-way means of calling and voice communication shall be provided between the direction-finder and the bridge.
 - (vii) All direction-finders shall be calibrated to the satisfaction of the Administration on first installation. The calibration shall be verified by check bearings or by a further calibration whenever any changes are made in the position of any aerials or of any structures on deck which might affect appreciably the accuracy of the direction-finder. The calibration particulars shall be checked at yearly intervals, or as near thereto as possible. A record shall be kept of the calibrations and of any checks made of their accuracy.
- (b) (i) Radio equipment for homing on the radiotelephone distress frequency shall be capable of taking direction-finding bearings on that frequency without ambiguity of sense within an arc of 30 degrees on either side of the bow.
- (ii) When installing and testing the equipment referred to in this paragraph due regard should be given to the relevant recommendation of the International Radio Consultative Committee (CCIR).
 - (iii) All reasonable steps shall be taken to ensure the homing capability required by this paragraph. In cases where due to technical difficulties the homing capability cannot be achieved, Administrations may grant to individual ships exemptions from the requirements of this paragraph.

Regulation 13 - Portable Radio Apparatus for Survival Craft

16. Paragraph (c) is replaced by the following:

- (c) The transmitter shall be capable of transmitting on the radio-telegraph distress frequency using a class of emission assigned by the Radio Regulations for that frequency, and, in the bands between 4,000 kHz and 27,500 kHz, of transmitting on the radio-telegraph frequency, and of using a class of emission, assigned by the Radio Regulations for survival craft. However, the Administration may permit the transmitter to be capable of

transmitting on the radiotelephone distress frequency, and of using a class of emission, assigned by the Radio Regulations for that frequency, as an alternative or in addition to transmission on the radiotelegraph frequency assigned by the Radio Regulations for survival craft in the bands between 4,000 kHz and 27,500 kHz.

17. Paragraph (f) is replaced by the following:

- (f) The receiver shall be capable of receiving the radiotelegraph distress frequency and the classes of emission assigned by the Radio Regulations for that frequency. If the transmitter is capable of transmitting on the radiotelephone distress frequency the receiver shall also be capable of receiving that frequency and a class of emission assigned by the Radio Regulations for that frequency.

Regulation 15 - Radiotelephone Installations

18. Paragraphs (a) and (b) are replaced by the following:

- (a) The radiotelephone installation shall include transmitting and receiving equipment, and appropriate sources of energy (referred to in the following paragraphs as the transmitter, the receiver, the radiotelephone distress frequency watch receiver, and the source of energy respectively).
- (b) The transmitter shall be capable of transmitting on the radiotelephone distress frequency and on at least one other frequency in the bands between 1,605 kHz and 2,850 kHz, using the classes of emission assigned by the Radio Regulations for these frequencies. In normal operation a double sideband transmission or a single sideband transmission with full carrier (i.e., A3H) shall have a depth of modulation of at least 70 per cent at peak intensity. Modulation of a single sideband transmission with reduced or suppressed carrier (A3A, A3J) shall be such that the intermodulation products shall not exceed the values given in the Radio Regulations.

19. Paragraph (d) is replaced by the following:

(d) The transmitter shall be fitted with a device for generating the radiotelephone alarm signal by automatic means so designed as to prevent actuation by mistake. The device shall be capable of being taken out of operation at any time in order to permit the immediate transmission of a distress message. Arrangements shall be made to check periodically the proper functioning of the device on frequencies other than the radiotelephone distress frequency using a suitable artificial aerial.

20. Paragraphs (f) and (g) are replaced by the following:

- (f) The receiver required by paragraph (a) of this Regulation shall be capable of receiving the radiotelephone distress frequency and at least one other frequency available for maritime radiotelephone stations in the bands between 1,605 kHz and 2,850 kHz, using the classes of emission assigned by the Radio Regulations for these frequencies. In addition the receiver shall permit the reception of such other frequencies, using the classes of emission assigned by the Radio Regulations, as are used for the transmission by radiotelephony of meteorological messages and such other communications relating to the safety of navigation as may be considered necessary by the Administration. The receiver shall have sufficient sensitivity to produce signals by means of a loudspeaker when the receiver input is as low as 50 microvolts.
- (g) The radiotelephone distress frequency watch receiver shall be preset to this frequency. It shall be provided with a filtering unit or a device to silence the loudspeaker in the absence of a radiotelephone alarm signal. The device shall be capable of being easily switched in and out and may be used when, in the opinion of the master, conditions are such that maintenance of the listening watch would interfere with the safe navigation of the ship.

21. Paragraph (j) is replaced by the following:

- (j) The reserve source of energy, if provided, may be used only to supply:
 - (i) the radiotelephone installation;
 - (ii) the emergency light required by paragraph (d) of Regulation 14 of this Chapter;
 - (iii) The device required by paragraph (d) of this Regulation, for generating the radiotelephone alarm signal; and
 - (iv) the VHF installation.

22.* Paragraph (n) is replaced by the following:

- (n) An aerial shall be provided and installed and, if suspended between supports liable to whipping, shall in the case of cargo ships of 500 tons gross tonnage and upwards but less than 1,600 tons gross tonnage be protected against breakage. In addition, there shall be a spare aerial completely assembled for immediate replacement or, where this is not practicable, sufficient aerial wire and insulators to enable a spare aerial to be erected. The necessary tools to erect an aerial shall also be provided.

Regulation 15 bis - VHF Radiotelephone Stations

23. The following new Regulation 15 bis is added:

Regulation 15 bis

VHF Radiotelephone Stations

- (a) When a Very High Frequency radiotelephone station is provided in accordance with Regulation 18 of Chapter V, it shall be in the upper part of the ship and include a VHF radiotelephone installation complying with the provisions of this Regulation and comprising a transmitter and receiver, a source of power capable of actuating them at their rated power levels, and an antenna suitable for efficient radiating and receiving signals at the operating frequencies.

* Applies to English text only.

- (b) Such a VHF installation shall conform to the requirements laid down in the Radio Regulations for equipment used in the VHF International Maritime Mobile Radiotelephone Service and shall be capable of operation on those channels specified by the Radio Regulations and as may be required by the Contracting Government referred to in Regulation 18 of Chapter V.
- (c) The Contracting Government shall not require the transmitter R.F. carrier power output to be greater than 10 watts.
The antenna shall, in so far as is practicable, have an unobstructed view in all directions.*
- (d) Control of the VHF channels required for navigational safety shall be immediately available on the bridge convenient to the conning position and, where necessary, facilities should also be available to permit radiocommunications from the wings of the bridge.

Regulation 15(bis)(1) - Radiotelephone Auto Alarms

24. The following new Regulation 15(bis)(1) is added:

Regulation 15 bis(1)

Radiotelephone Auto Alarms

- (a) The radiotelephone auto alarm shall comply with the following minimum requirements:
 - (i) the frequencies of maximum response of the tuned circuits, and other tone selecting devices, shall be subject to a tolerance of ± 1.5 per cent in each instance; and the response shall not fall below 50 per cent of the maximum response for frequencies within 3 per cent of the frequency of maximum response;

* For guidance purposes, it is assumed that each ship would be fitted with a vertically polarized unity gain antenna at a nominal height of 9.15 metres (30 feet) above water, a transmitter R.F. power output of 10 watts, and a receiver sensitivity of 2 microvolts across the input terminals for 20 db signal-to-noise ratio.

- (ii) in the absence of noise and interference, the automatic receiving equipment shall be capable of operating from the alarm signal in a period of not less than four and not more than six seconds;
 - (iii) the automatic receiving equipment shall respond to the alarm signal, under conditions of intermittent interference caused by atmospheric and powerful signals other than the alarm signal, preferably without any manual adjustment being required during any period of watch maintained by the equipment;
 - (iv) the automatic receiving equipment shall not be actuated by atmospheric or by strong signals other than the alarm signal;
 - (v) the automatic receiving equipment shall be effective beyond the range at which speech transmission is satisfactory;
 - (vi) the automatic receiving equipment shall be capable of withstanding vibration, humidity, changes of temperature and variations in power supply voltage equivalent to the severe conditions experienced on board ships at sea, and shall continue to operate under such conditions;
 - (vii) the automatic receiving equipment should, as far as practicable, give warning of faults that would prevent the apparatus from performing its normal functions during watch hours.
- (b) Before a new type of radiotelephone auto alarm is approved, the Administration concerned shall be satisfied by practical tests, made under operating conditions equivalent to those obtained in practice, that the apparatus complies with paragraph (a) of this Regulation.

Regulation 16 - Radio Logs

25. Sub-paragraph (a)(viii) is replaced by the following:

- (viii) The time at which the listening watch was discontinued in accordance with paragraph (d) of Regulation 6 of this Chapter, together with the reason and the time at which the listening watch was resumed.

Miscellaneous

26. Regulation 7 bis is renumbered Regulation 8 and subsequent Regulations 8 to 15 are renumbered accordingly. Regulations 15 bis, 15 bis(1) and 16 are renumbered Regulations 17, 18 and 19 respectively.
27. References to Regulations are amended in accordance with the new numbering.
28. Wherever appearing in the text:
- (a) "cycles per second" and "kc/s" are replaced by "Hz" and "kHz" respectively;
 - (b) the word "aerial" is replaced by "antenna";
 - (c) metric units are cited first, followed by British units in parenthesis.
29. When in the 1960 Safety Convention or in the amendments listed above both British and metric units are mentioned, only metric units should be cited.
-