1965 No. 1107

MERCHANT SHIPPING

The Merchant Shipping (Radio) Rules 1965

Made - - - - 11*th May* 1965
Laid before Parliament 21*st May* 1965
Coming into Operation 26*th May* 1965

ARRANGEMENT OF RULES

PART I—GENERAL

	Rule
Interpretation, repeal and transitional provisions	1
Application and classification of ships	2
Provision of radio installations	3
Climatic and durability tests	4
Interference with reception	5
High voltage parts	6
Charging of batteries	7

PART II—RADIOTELEGRAPHY

Electrical independence of main and reserve radiotelegraph equipments	8
Radiotelegraph room	9
Aerials	10
Range of transmitters	11
Supply of electrical energy	12
Tools, measuring instruments, spare parts, etc.	13
Provision of radio officers	14
Qualifications of radio officers	15
Radio watch	16
Watchkeeping and other radio duties of radio officers	17
Restriction in the use of the reserve transmitter	18
Radiotelegraph log	19

PART III—RADIOTELEPHONY

Aerial	20
Range of transmitters	21
Supply of electrical energy	22
Miscellaneous requirements	23
Provision and qualifications of radiotelephone operators	24

PART III—RADIOTELEPHONY—(*continued*)

Radio watch 25
Duties of radiotelephone operators 26
Radiotelephone log 27

PART IV—RADIO EQUIPMENT FOR LIFEBOATS AND SURVIVAL CRAFT

Motor lifeboat fixed radio equipment 28
Portable radio equipment for survival craft 29
Test of radio equipment for lifeboats and survival craft 30

SCHEDULES

Page
1. Transitional provisions 3083
2. Radiotelegraph installation:—
Part I: Main radiotelegraph transmitter 3085
Part II: Main radiotelegraph receiver 3086
Part III: Reserve radiotelegraph transmitter 3087
Part IV: Reserve radiotelegraph receiver 3087
Part V: Radiotelegraph automatic keying device 3088
Part VI: Radiotelegraph loudspeaker watchkeeping receiver 3089
3. Radiotelephone installation:—
Part I: Main radiotelephone installation 3090
Part II: Radiotelephone alarm signal generating device ... 3091
Part III: Radiotelephone loudspeaker watchkeeping receiver 3092
4. Climatic and durability tests 3093
5. Radio equipment for lifeboats and survival craft:—
Part I: Motor lifeboat fixed radio equipment 3094
Part II: Portable radio equipment for survival craft 3095
6. Tools, measuring instruments, spare parts, etc.:—
Part I: Radiotelegraph ships 3097
Part II: Radiotelephone ships 3099
7. Radiotelegraph auto-alarm equipment 3099
8. Table of watch hours 3101
9. Radiotelegraph log 3102
10. Radiotelephone log 3104
11. Range of radiotelegraph transmitters 3105

The Board of Trade in exercise of their powers under Section 3 of the Merchant Shipping (Safety Convention) Act 1949(a), as amended by Section 11 of the Merchant Shipping Act 1964(b) and of the powers conferred upon them by Section 10 of the said Act of 1964 and as having effect by virtue of the Transfer of Functions (Shipping and Construction of Ships) Order 1965(c), and of all other powers enabling them in that behalf hereby make the following Rules:—

(a) 12, 13 & 14 Geo. 6. c. 43. (b) 1964 c. 47.
(c) S.I. 1965/145 (1965 I, p. 438).

PART I

GENERAL

Interpretation, repeal and transitional provisions

1.—(1) These Rules shall come into operation on the 26th May 1965 and may be cited as the Merchant Shipping (Radio) Rules 1965.

(2) The Interpretation Act 1889(a) shall apply to the interpretation of these Rules as it applies to the interpretation of an Act of Parliament and as if these Rules and the Rules hereby revoked were Acts of Parliament.

(3) In these Rules, unless the context otherwise requires, the following expressions have the following meanings respectively—

" Board " means the Board of Trade;

" Cargo Ship " means a ship other than a passenger steamer;

" Connected " means electrically connected;

" Existing installation " means

(*a*) an installation wholly installed before the date on which these Rules come into operation; and

(*b*) an installation part of which was installed before the said date and the rest of which consists either of parts installed in replacement of identical parts or parts which comply with the relative requirements of these Rules;

" Fishing boat " has the same meaning as in Section 370 of the Merchant Shipping Act 1894(b);

" Interference " has the same meaning as in the Wireless Telegraphy Act 1949(c);

" Mile " means a nautical mile of 6,080 feet;

" Operating position " in relation to any equipment means the position normally occupied by a person when operating that equipment;

" Radiotelegraph operator " means a person who has had experience at sea as an operator of radiotelegraph apparatus on board a fishing boat or a ship to which these Rules do not apply;

" Radiotelegraph ship " means a ship, being a ship to which these Rules apply, which is provided with a radiotelegraph installation and which is not a radiotelephone ship;

" Radiotelephone ship " means a cargo ship, being a ship to which these Rules apply, of not less than 300 tons but less than 1,600 tons the owner of which has given the Board notice in writing (which has not been withdrawn) that the ship is provided with a radiotelephone installation in compliance with these Rules;

" Radio watch ", in the case of radiotelegraph ships, means listening for signalling on the international distress frequency of 500 kc/s, and in the case of radiotelephone ships means listening for signalling on the international distress frequency of 2182 kc/s;

" Silence periods " means the periods of 3 minutes beginning for the purposes of radiotelegraphy at 15 minutes and at 45 minutes after each hour, and for the purposes of radiotelephony at each hour and at 30 minutes after each hour, in every case determined according to Greenwich Mean Time;

(a) 52 & 53 Vict. c. 63. (b) 57 & 58 Vict. c. 60.
(c) 12, 13 & 14 Geo. 6. c. 54.

"Steamer" includes a ship propelled by electricity or other mechanical power;

"Tons" means gross tons;

In relation to classes of emission:—

"Class A1" means telegraphy by on-off keying without the use of a modulating audio frequency;

"Class A2" means telegraphy by the on-off keying of an amplitude-modulating audio frequency or audio frequencies, or by the on-off keying of the modulated emission;

"Class A3" means double sideband amplitude modulated telephony; and

"Class B" means damped waves.

(4) The Merchant Shipping (Radio) Rules 1952(a) are hereby revoked.

(5) The provisions of Schedule 1 to these Rules shall have effect for the purpose of the transition from the law in force before these Rules come into operation to the provisions of these Rules.

Application and classification of ships

2.—(1) These Rules shall apply to ships which are

(*a*) sea-going British ships registered in the United Kingdom;

(*b*) other sea-going ships while they are within any port in the United Kingdom;

and are not

(i) troopships not registered in the United Kingdom;

(ii) ships not propelled by mechanical means;

(iii) pleasure yachts;

(iv) fishing boats, or

(v) cargo ships of less than 300 tons.

(2) The ships to which these Rules apply shall be classified as follows:—

Class I—Steamers carrying more than 250 passengers or in respect of which there is in force a certificate issued by the Board, or by any authority empowered in that behalf by the laws of any country other than the United Kingdom, to the effect that they are fit to carry more than 250 passengers, and which

(*a*) in the case of British ships registered in the United Kingdom are at sea for more than 16 hours between two consecutive ports;

(*b*) in the case of ships other than British ships registered in the United Kingdom, arrive at a port in the United Kingdom having been at sea for more than 16 hours since last leaving port, or in respect of which clearance or transire is sought from a port in the United Kingdom for a voyage requiring more than 16 hours at sea before reaching port.

Class II—(*a*) Passenger steamers other than those of Class I.

(*b*) Cargo ships of 1,600 tons and upwards.

Class III—Cargo ships of 500 tons and upwards but of less than 1,600 tons.

Class IV—Cargo ships of 300 tons and upwards but of less than 500 tons.

(a) S.I. 1952/1956 (1952 II, p. 1932).

(3) Notwithstanding the provisions of paragraph (1) of this Rule, these Rules shall not apply to British ships registered in the United Kingdom while such ships are being navigated within the Great Lakes of North America and their connecting and tributary waters as far east as the lower exit of the St. Lambert Lock at Montreal in the Province of Quebec, Canada.

Provision of radio installations

3.—(1) Every ship of Class I and Class II shall be provided with a radiotelegraph installation which shall include the equipment specified in Schedule 2 to these Rules. Provided that the radiotelegraph loudspeaker watchkeeping receiver may be combined with the reserve radiotelegraph receiver or with the radiotelegraph auto-alarm equipment specified in Schedule 7 to these Rules in a single instrument, if that instrument is capable of complying with the requirements of Parts IV and VI of Schedule 2 or, as the case may be, with the requirements of Part VI of Schedule 2 and Schedule 7 to these Rules.

(2) Every ship of Class III and Class IV shall be provided with a radiotelephone installation which shall include the equipment specified in Parts I and II of Schedule 3 to these Rules or with a radiotelegraph installation which shall include the equipment specified in Schedule 2 to these Rules. Provided that the main and reserve radiotelegraph transmitters in a ship of Class III or Class IV may be combined in a single instrument, if that instrument is capable of complying with the requirements of Parts I and III of Schedule 2.

Climatic and durability tests

4.—(1) All equipment the requirements for which are specified in these Rules, other than test measuring instruments provided in accordance with Rule 13 or paragraph (*f*) of Rule 23 of these Rules, shall be such that it will be free of mechanical defects and comply with the said requirements—

(*a*) while undergoing the vibration, dry heat and low temperature tests required by Schedule 4 to these Rules:

(*b*) when subjected to the damp heat test required by the said Schedule; and

(*c*) immediately after undergoing such of the other tests required by the said Schedule as are applicable to the equipment in the circumstances.

(2) Any such equipment which is intended for use in the open or in an open boat shall be such that after undergoing the mould growth test required by Schedule 4 to these Rules no mould growth will be present on it.

Interference with reception

5.—(1) At no time while the ship is at sea shall the interference or mechanical noise produced by the radio installation required by these Rules or by other equipment in the ship be sufficient to prevent the effective reception of radio signals by means of such installation.

(2) Any ship to which these Rules apply which is provided with a radiotelegraph installation not being an existing installation shall also be provided with a communal aerial system for all broadcast receivers in respect of which it is impracticable to erect efficient and properly installed aerials which do not interfere with the efficiency of such radiotelegraph installation.

High voltage parts

6.—(1) All parts and wiring of the equipment specified in these Rules in which the direct and alternating voltages (other than radio frequency voltages) combine at any time to give an instantaneous voltage greater than 50 volts shall be protected from accidental access.

(2) All parts and wiring of the equipment specified in these Rules (other than the parts and wiring of a rotating machine) in which the direct and alternating voltages (other than radio frequency voltages) combine at any time to give an instantaneous voltage greater than

(*a*) 50 volts in the case of equipment specified in Schedule 3 and Schedule 5 to these Rules; or

(*b*) 250 volts in the case of other equipment,

shall be isolated automatically from all sources of electrical energy when the means of protection are removed.

Charging of batteries

7. If batteries are provided as a source of electrical energy for any part of the equipment required by these Rules means shall be provided on board every ship to which these Rules apply for the charging of such batteries from the ship's main source of electrical energy.

PART II

RADIOTELEGRAPHY

Electrical independence of main and reserve radiotelegraph equipments

8. Subject to the provisions of Rule 3(2) of these Rules, the main and reserve radiotelegraph equipments provided on board a radiotelegraph ship shall be electrically independent of each other.

Radiotelegraph room

9.—(1) Every radiotelegraph installation provided on board a radiotelegraph ship shall be installed in one or more radiotelegraph rooms. The radiotelegraph rooms shall not be used for any purposes other than those associated with the function or duty of the radio officer. The radiotelegraph rooms shall be—

(*a*) in such a position that there will be no disturbance by extraneous noises or otherwise to the effective reception of radio signals;

(*b*) as high as practicable in the ship;

(*c*) of such dimensions as will be sufficient to enable efficient operation at all times of the radiotelegraph equipment installed therein; and

(*d*) adequately ventilated.

(2) Every radiotelegraph installation provided on board a radiotelegraph ship shall be installed in such a position that it will be protected against disturbance of its effectiveness by water or by extremes of temperature and shall at all times when the ship is at sea be readily accessible both for immediate use and for repair.

(3) Every radiotelegraph room shall be provided with—

(*a*) an efficient two-way means of calling and voice communication with the bridge and any other place from which the ship is normally navigated. Such means of communication shall be a voicepipe or a tele-

phone or some other means equally efficient and shall be independent of the main communication system of the ship and of the ship's main source of electrical energy.

(*b*) a reliable clock, equipped with a dial not less than 5 inches in diameter and a centre seconds hand, the face of which shall be marked to indicate the silence periods. It shall be securely mounted in such a position that the entire dial can be easily and accurately observed from the radiotelegraph operating position and, if the ship is provided with a radiotelegraph auto-alarm equipment, from the position normally occupied by a person testing the radiotelegraph auto-alarm equipment;

(*c*) an electric lamp, operated from the source of electrical energy required by Rule 12(2) of these Rules and permanently arranged so as to be capable of providing adequate illumination of the operating controls of the main and reserve radiotelegraph installations and of the clock required by this Rule and controlled by two-way switches placed respectively near the entrance to the radiotelegraph room and at the radiotelegraph operating position. These switches shall be clearly labelled to indicate their purpose;

(*d*) an additional electric lamp, for use as an inspection lamp, operated from the aforesaid source of electrical energy and provided with a flexible lead of sufficient length to enable all parts of the radiotelegraph installation to be easily seen;

(*e*) a chair capable of being fixed at the radiotelegraph operating position.

(4) A complete list of spare equipment and spare parts carried on board the ship for the maintenance of the radiotelegraph installation shall always be available in every radiotelegraph room and shall indicate where such equipment and parts are kept.

(5) A calibration table or calibration curve for each transmitter and receiver forming part of the radiotelegraph installation shall always be available in a radiotelegraph room, unless the transmitter or receiver, as the case may be, is directly calibrated.

(6) A complete diagram of the wiring of the radiotelegraph installation shall always be available in a radiotelegraph room. Provided that this requirement shall not apply to an existing radiotelegraph installation in a ship of Class IV.

Aerials

10.—(1) Every radiotelegraph ship shall be fitted with a main aerial and a reserve aerial; provided that the Board may exempt any ship from the requirement of a reserve aerial if they are satisfied that the fitting of such an aerial is impracticable or unreasonable in the circumstances. Any ship so exempted shall carry—

(*a*) if the main aerial is a supported wire aerial, a spare aerial completely assembled for rapid replacement of the main aerial;

(*b*) if the main aerial is not a supported wire aerial, a spare aerial complete with supporting structures and capable of rapid erection while the ship is at sea.

(2) In the case of a ship of Class I, Class II or Class III each of the halyards used for supporting such main aerial shall be fitted with a safety loop between

the masthead or other aerial support and an aerial insulator. Such safety loop shall consist of part of the halyard not less than three feet long, the loop being closed by a link not more than one foot three inches long with a breaking load not more than one-third of the breaking load of the aerial or the halyard, whichever is the less.

(3) A rigging plan of such aerials shall be available in the radiotelegraph operating room and shall show the following:—

(*a*) elevation and plan views of the aerials;

(*b*) the measurements of the aerials; and

(*c*) the height of the aerials in metres measured in the manner specified in Schedule 11 to these Rules.

(4) The main aerial and the reserve aerial (if any) shall, where practicable, be so rigged that damage to the one will not affect the efficiency of the other.

(5) Means shall be provided for quickly connecting—

(*a*) either the main aerial or reserve aerial (if any) to the main transmitter and also to the reserve transmitter; and

(*b*) the main and reserve receivers, the radiotelegraph auto-alarm equipment and the loudspeaker watchkeeping receivers, to any aerial with which they may require to be used.

Range of transmitters

11.—(1) The normal ranges of the radiotelegraph transmitters provided in accordance with the foregoing provisions of these Rules when connected to the main aerial shall not be less than—

(*a*) in the case of a ship of Class I, 175 miles for the main transmitter and 150 miles for the reserve transmitter;

(*b*) in the case of a ship of Class II, 150 miles for the main transmitter and 100 miles for the reserve transmitter;

(*c*) in the case of a ship of Class III, 100 miles for the main transmitter and 75 miles for the reserve transmitter;

(*d*) in the case of a ship of Class IV, 75 miles for the main transmitter and 75 miles for the reserve transmitter.

(2) The normal range of a transmitter for the purposes of these Rules shall be determined at the option of the owner of the ship, either by calculation or by test.

(3) For the purposes of these Rules the normal range of a radiotelegraph transmitter, when determined by calculation on a frequency of 500 kc/s, shall be calculated in the manner specified in Schedule 11 to these Rules.

(4) For the purposes of these Rules the normal range of a radiotelegraph transmitter, when determined by test, shall be the distance to which signals can be transmitted by such transmitter over the sea by day under normal conditions on a frequency of 500 kc/s so as to set up at the receiver a total root mean square field strength of at least 50 microvolts per metre.

Supply of electrical energy

12.—(1) There shall be available in every radiotelegraph ship while she is at sea and at all reasonable times when she is in port, a supply of electrical energy from the ship's main source of electrical energy sufficient for the

operation of the main radiotelegraph equipment in accordance with these Rules and for testing purposes and for the charging of any batteries which are a source of electrical energy for the radiotelegraph installation. The rated voltage of the supply of electrical energy for the main equipment shall be maintained within plus or minus 10 per cent. The supply of electrical energy shall, if it is a direct current supply, be of correct polarity. Provided that in any ship not engaged on an international voyage the aforesaid supply of electrical energy may be derived from a battery, in which case a duplicate battery shall also be provided for that purpose.

(2) The reserve equipment shall include a source of electrical energy, independent of the propelling power of the ship and of the ship's electrical installation and situated as high as practicable in the ship. This source of electrical energy shall be capable of being brought into immediate operation by means of a switchboard which shall be capable of being illuminated by an electric lamp and shall be situated in a radiotelegraph room or be readily accessible therefrom. It shall be of such capacity and shall be maintained at all times when at sea in such condition as to be able to supply continuously for a period of 6 hours, whether or not it is in use for any other purpose, a total current equal to the sum of

(*a*) the current required to operate the reserve transmitter with the key up;

(*b*) three-fifths of the difference between the current required to operate the reserve transmitter with the key down and the current required to operate it with the key up;

(*c*) the current required to operate the reserve receiver; and

(*d*) the current consumed by the lamps required by this paragraph and by paragraph (*c*) of Rule 9(3) of these Rules.

(3) The source of electrical energy provided under paragraph (2) of this Rule shall not be used at any time except for the operation of—

(*a*) the reserve transmitter and receiver;

(*b*) the lamps required by paragraph (2) of this Rule and by paragraphs (*c*) and (*d*) of Rule 9(3) of these Rules;

(*c*) the automatic keying device;

(*d*) a radiotelegraph auto-alarm equipment;

(*e*) a direction-finder.

(4) Notwithstanding the provisions of paragraph (3) of this Rule, in any ship of Class III or Class IV the reserve source of electrical energy required by paragraph (2) of this Rule may if the Board so permit be used to supply any low-power emergency circuits which are wholly confined to the upper part of the ship. Provided that such circuits shall be capable of being readily disconnected and that the said source shall be capable of supplying the additional load or loads without falling below the capacity required by paragraph (2) of this Rule.

Tools, measuring instruments, spare parts, etc.

13. Every radiotelegraph ship shall be provided with the tools, measuring instruments, spare parts and other material specified in Part I of Schedule 6 to these Rules.

Provision of radio officers

14.—(1) Every radiotelegraph ship which upon proceeding to sea is not provided with a radiotelegraph auto-alarm equipment complying with the

requirements specified in Schedule 7 to these Rules shall be provided with radio officers as follows:—

Class I.—three radio officers.

Class II.—two radio officers if at sea for not more than 48 hours between consecutive ports, and three radio officers if at sea for more than 48 hours between consecutive ports.

Class III and Class IV.—one radio officer if at sea for not more than 12 hours between consecutive ports, two radio officers if at sea for more than 12 but not more than 48 hours between consecutive ports, and three radio officers if at sea for more than 48 hours between consecutive ports.

(2) Every radiotelegraph ship which upon proceeding to sea is provided with a radiotelegraph auto-alarm equipment complying with the requirements specified in Schedule 7 to these Rules shall be provided with radio officers as follows:—

Class I.—two radio officers.

Class II.—one radio officer.

Class III.—one radio officer.

Class IV.—one radio officer.

Qualifications of radio officers

15.—(1) For the purposes of these Rules no person shall be qualified to be a radio officer on board a British ship registered in the United Kingdom unless he holds—

(*a*) a valid certificate of proficiency or competence in radiotelegraphy of the first or second class granted by the Postmaster General or by an authority empowered in that behalf by the laws of some part of the Commonwealth or the Irish Republic and recognised by the Postmaster General as the equivalent of such a certificate granted by him; and

(*b*) a valid authority issued by the Postmaster General to operate a wireless telegraphy station established on a ship under a licence issued by him.

In the case of one at least of the radio officers on board a British passenger steamer registered in the United Kingdom, the certificate required by subparagraph (*a*) of this paragraph shall be of the first class.

(2) For the purposes of paragraph (1) of this Rule no certificate of proficiency or competence shall be deemed to be valid at any date if granted more than 2 years before that date and either

(*a*) the holder's periods of experience do not total three months, or

(*b*) the holder's last experience was more than 2 years before that date,

unless the holder satisfies the Postmaster General by re-examination or otherwise that he still possesses all the qualifications described in his certificate. For the purposes of this paragraph the expression " experience " means experience as the operator of radiotelegraph apparatus—

(i) at sea, as a radio officer or a radiotelegraph operator, or

(ii) on land, as an operator at a radiotelegraph station maintained on land by the Postmaster General for communication with ships.

(3) At least one of the radio officers on board a British ship of Class I or Class II registered in the United Kingdom shall be a person who has had experience at sea as a radio officer or radiotelegraph operator for a total of not less than—

(*a*) two years in the case of ships of Class I;

(*b*) one year in the case of ships of Class II (*a*);

(*c*) six months in the case of ships of Class II (*b*), being ships of 3,000 tons and upwards;

(*d*) three months in the case of ships of Class II (*b*), being ships of 1,600 tons and upwards but under 3,000 tons.

(4) For the purposes of these Rules no person shall be deemed to be a radio officer on board a ship not registered in the United Kingdom unless he holds a valid certificate of proficiency or competence in radiotelegraphy granted by an authority empowered or recognised in that behalf by the laws of the country in which the ship is registered and recognised by the Postmaster General as the equivalent of such a certificate granted by him.

Radio watch

16.—(1) Subject to the provisions of Rule 17(1) of these Rules radio watch shall be maintained at sea on board every radiotelegraph ship by a radio officer as follows:—

(*a*) if the ship upon proceeding to sea is not provided with a radiotelegraph auto-alarm equipment complying with the requirements specified in Schedule 7 to these Rules, a continuous watch;

(*b*) if the ship upon proceeding to sea is provided with a radiotelegraph auto-alarm equipment as aforesaid—

(i) in the case of a ship of Class I a watch of sixteen hours a day at the times specified in Column 4 of Schedule 8 to these Rules in relation to the zone in which the ship then is;

(ii) in the case of a ship of Class II, Class III or Class IV a watch of eight hours a day at the times specified in Column 5 of Schedule 8 to these Rules in relation to the zone in which the ship then is.

(2) Any radiotelegraph auto-alarm equipment provided on board a radiotelegraph ship shall be in operation at all times at which a radio watch is not maintained. Provided that if the ship is fitted with a direction-finder in compliance with the Merchant Shipping (Direction-Finders) Rules 1965(a) and if—

(*a*) it has been proved by test that the aerial of the radiotelegraph auto-alarm equipment when in operation affects the accuracy of radio bearings obtained by means of the direction-finder; and

(*b*) it is impracticable to erect an aerial for the radiotelegraph auto-alarm equipment in any position on the ship without affecting the accuracy of those bearings when the equipment is in operation;

this Rule shall not apply during such time as radio bearings are being determined by means of the direction-finder.

Watchkeeping and other radio duties of radio officers

17.—(1) Every radio officer on board a radiotelegraph ship shall keep radio watch by means of headphone reception throughout his period of duty

(a) S.I. 1965/1112 (1965 II, p. 3144).

except when another radio officer keeps radio watch by headphone reception. Provided that—

(*a*) radio watch may be maintained by means of loud-speaker reception, or

(*b*) if loud-speaker reception is impracticable radio watch may be dispensed with except during a silence period,

for such periods as may be necessary to enable the radio officer to perform other duties in compliance with these Rules or with the Merchant Shipping (Direction-Finders) Rules 1965 or to handle traffic on another frequency.

(2) Subject to the provisions of Rule 16 of these Rules, every radio officer on board a radiotelegraph ship provided with a radiotelegraph auto-alarm equipment complying with the requirements specified in Schedule 7 to these Rules shall, whenever radio watch ceases to be maintained during or at the end of his period of duty, connect the radiotelegraph auto-alarm equipment with the ship's main aerial, or with any other efficient aerial, and shall put the radiotelegraph auto-alarm equipment into operation. Every radio officer who leaves a radiotelegraph auto-alarm equipment in operation when he goes off duty shall before going off duty

(*a*) test the efficiency of the radiotelegraph auto-alarm equipment;

(*b*) immediately inform the master or the officer in charge of the navigation of the ship if the radiotelegraph auto-alarm equipment is found not to be operating effectively.

(3) Every such radio officer who finds a radiotelegraph auto-alarm equipment connected to an aerial when he goes on duty shall immediately test the efficiency of the radiotelegraph auto-alarm equipment before making any adjustment thereto.

(4) While a radiotelegraph ship is at sea, the radio officer, or if there is more than one, the first radio officer, shall cause the following tests to be made:—

(*a*) a test once a day of the reserve radiotelegraph transmitter connected with the artificial aerial provided in accordance with paragraph 7 of Part III of Schedule 2 to these Rules;

(*b*) if the ship is engaged on an international voyage a test once during every voyage of the reserve radiotelegraph transmitter connected with the reserve aerial (if any);

(*c*) a test once a day by voltmeter and once a month by hydrometer of any batteries which are a source of electrical energy for the radiotelegraph installation;

(*d*) a test once a day of any other source of electrical energy provided for the reserve radiotelegraph equipment;

(*e*) a test once a day of the audible alarm circuits and of the bells forming part of the radiotelegraph auto-alarm equipment; and

(*f*) a test once a day to check the proper functioning of the radiotelegraph auto-alarm receiver connected to its normal aerial, by listening to signals received by means of that receiver, and by comparing them with similar signals received on a frequency of 500 kc/s by means of the main receiver.

(5) While a radiotelegraph ship is at sea, the radio officer, or if there is more than one, the first radio officer, shall take all steps within his power to

cause the equipment referred to in these Rules to be properly maintained and when necessary to be repaired and adjusted. Such officer shall arrange for all batteries, being a source of electrical energy for any part of the radiotelegraph installation, which are found not to be fully charged to be brought up to that condition as soon as possible.

Restriction in the use of the reserve transmitter

18. The transmitter forming part of the reserve radiotelegraph equipment shall not be used to transmit messages other than those relating to the safety of life at sea, unless such transmitter complies with the additional requirements specified in paragraph 6 of Part III of Schedule 2 to these Rules.

Radiotelegraph log

19.—(1) A radiotelegraph log-book in the form specified in Schedule 9 to these Rules shall be kept in a radiotelegraph room on board every British radiotelegraph ship registered in the United Kingdom and shall be available for inspection by any person authorised in that behalf by the Board or by the Postmaster General.

(2) Every radio officer on board such a ship shall, when on duty, enter in such log-book:—

(*a*) his name;

(*b*) the times at which he goes on and off duty;

(*c*) the identifying number of each message transmitted by him, or received by him, together with the time and date of such transmission or reception, the station to which each message is transmitted by him and the station from which each message is received by him; and

(*d*) a record of all incidents occurring during his period of duty which relates to the radiotelegraph installation and the operation thereof and which would appear to him to be of importance to the safety of life at sea; in particular he shall make the following entries:—

(i) the full text of all messages transmitted by him or received by him which relate to immediate assistance required by persons in distress at or above the sea;

(ii) the full text of all messages transmitted by him or received by him which are preceded by a signal in general international use as an urgency signal or a safety signal;

(iii) a record of the radio watch maintained by him during each of the silence periods;

(iv) a record of any incident occurring during his period of duty which affects the efficiency of the radiotelegraph installation; and

(v) a record of the tests conducted by him in accordance with paragraphs (2) and (3) of Rule 17 of these Rules and of the results of such tests.

(3) The radio officer, or, if there is more than one, the first radio officer shall cause the following entries to be made in such log-book:—

(*a*) a record of the tests conducted in accordance with Rule 17(4) and Rule 30(1) of these Rules;

(*b*) a record of the charging of any batteries used as a source of electrical energy for the radiotelegraph installation; and

(*c*) if the ship is provided with a radiotelegraph auto-alarm equipment details of any failure or repair thereof.

(4) The radio officer, or, if there is more than one, the first radio officer shall cause an entry to be made in such log-book recording the time shown by the clock in each radiotelegraph room in comparison with Greenwich Mean Time and any correction made in respect of that clock at least once a day when the station is open.

(5) The radio officer, or if there is more than one, the first radio officer shall, if the ship's rules permit, cause an entry to be made in such log-book recording in latitude and longitude, or by reference to a place, the approximate position of the ship at least once per day when the station is open.

(6) If there is more than one radio officer, the first radio officer shall inspect and sign each day the entries for that day in such log-book.

(7) The master of the ship shall inspect and sign each day's entries in such log-book.

(8) Section 242 of the Merchant Shipping Act 1894 (which provides for the delivery of the official log-book to the Superintendent) and Section 256 of that Act (which provides among other things for the custody of the official log-book) shall apply to the radiotelegraph log-book as they apply to the official log-book.

PART III

RADIOTELEPHONY

Aerial

20.—(1) Every radiotelephone ship shall be fitted with an aerial and in addition shall carry—

(*a*) if the main aerial is a supported wire aerial, a spare aerial completely assembled for rapid replacement of the main aerial;

(*b*) if the main aerial is not a supported wire aerial, a spare aerial complete with supporting structures and capable of rapid erection while the ship is at sea.

(2) Each of the halyards used for supporting the aerial on a radiotelephone ship of Class III shall be fitted with a safety loop between the masthead or other aerial support and an aerial insulator. Such safety loop shall consist of a part of the halyard not less than three feet long, the loop being closed by a link not more than one foot three inches long with a breaking load not more than one-third of the breaking load of the aerial or the halyard, whichever is the less.

(3) A rigging plan of the fitted aerial shall be available on board and shall show—

(*a*) elevation and plan views of the aerial;

(*b*) the measurements of the aerial; and

(*c*) the height of the aerial in metres measured in the manner specified in Rule 21(3) of these Rules.

Range of transmitters

21.—(1) The normal range of the radiotelephone transmitter provided in accordance with the foregoing provisions of these Rules shall not be less than 150 miles.

(2) The normal range of a radiotelephone transmitter for the purposes of these Rules shall be determined at the option of the owner of the ship either by calculation or by test.

(3) For the purposes of these Rules the normal range of a radiotelephone transmitter, when determined by calculation on a frequency of 2182 kc/s, shall be calculated by ascertaining the product of the root mean square current in amperes at the base of the aerial and the maximum height of the aerial measured from the lead-out insulator. The transmitter shall be deemed to comply with the requirements of this Rule if the product so ascertained is not less than

(*a*) 7.5 metre-amperes if the aerial has a horizontal top-length of not less than one-half of its maximum height measured from the lead-out insulator;

(*b*) 12.8 metre-amperes in the case of any other aerial.

(4) For the purposes of these Rules the normal range of a radiotelephone transmitter, when determined by test, shall be the distance to which signals can be transmitted by such transmitter over the sea by day under normal conditions on a frequency of 2182 kc/s so as to set up at the receiver by the unmodulated carrier a total root mean square field strength of at least 25 microvolts per metre.

Supply of electrical energy

22.—(1) There shall be available in every radiotelephone ship while she is at sea and at all reasonable times when she is in port, a supply of electrical energy sufficient to operate the radiotelephone installation in accordance with these Rules, and for testing purposes and for the charging of any batteries which are a source of electrical energy for the radiotelephone installation. The supply of electrical energy shall if it is a direct current supply be of correct polarity. In the case of a radiotelephone installation installed in a radiotelephone ship of Class III on or after 19th November 1952 and a radiotelephone installation on a ship of Class IV which is not an existing installation a reserve source of a electrical energy shall be provided in the upper part of the ship unless the main source of electrical energy is so situated. Each source of electrical energy provided in compliance with this Rule shall be of such capacity as to be able to supply continuously for a period of six hours a total current equal to the sum of—

(*a*) one-half of the current required to operate the radiotelephone transmitter for the transmission of speech;

(*b*) the current required to operate the radiotelephone receiver; and

(*c*) the current consumed by the electric lamp required by paragraph (*d*) of Rule 23 of these Rules.

(2) If a single battery is provided for the foregoing purpose means shall also be provided for either

(*a*) operating the radiotelephone installation from the ship's main source of electrical energy, or

(*b*) float-charging the battery while it is in use, in which case there shall be adequate protection against voltage rise.

Such means shall be so designed as not to require the earthing of the ship's main source of electrical energy and adequate filtering shall where necessary be provided to prevent mainsborne interference from entering the radio equipment.

(3) A reserve source of electrical energy provided in compliance with paragraph (1) of this Rule shall not be used at any time except for the operation of—

(*a*) the radiotelephone installation;

(*b*) the electric lamp required by paragraph (*d*) of Rule 23.

(4) Notwithstanding the provisions of paragraph (3) of this Rule, in any radiotelephone ship a reserve source of electrical energy provided in compliance with paragraph (1) of this Rule may if the Board so permit be used to supply—

(*a*) a direction-finder, if fitted; and

(*b*) low-power energency circuits which are wholly confined to the upper part of the ship;

on condition that the said source is capable of supplying the additional load or loads without falling below the capacity required by paragraph (1) of this Rule.

(5) When any battery provided for the radiotelephone installation is not in use, it shall be capable of being fully charged within a period of not more than 16 hours by the means for charging required by Rule 7 of these Rules.

Miscellaneous requirements

23. The following provisions shall apply to every radiotelephone ship:—

(*a*) The radiotelephone installation required by these Rules shall be installed—

(i) as high as practicable in the ship; and

(ii) in a position where there is least disturbance by extraneous noise or otherwise to the effective reception of radio signals.

(*b*) An efficient two-way means of communication independent of the ship's main communication system and main source of electrical energy, shall be provided between the place at which the aforesaid radiotelephone installation is installed and any other place from which the ship is normally navigated.

(*c*) A reliable clock shall be securely mounted in such a position that the entire dial can be easily and accurately observed from the operating position of the aforesaid radiotelephone installation.

(*d*) A reliable emergency lamp shall be provided which shall be independent of the main lighting system of the ship, and shall be arranged so as to be capable of providing adequate illumination of the aforesaid radiotelephone installation, the clock required by paragraph (*c*) of this Rule and the card of instructions required by paragraph (*e*) of this Rule. If a reserve source of electrical energy is provided in compliance with Rule 22 of these Rules the emergency lamp shall be an electric lamp operated from the aforesaid source and shall be controlled by two-way switches placed respectively near an entrance to the room in which the said radiotelephone installation is installed and at the operating position thereof in that room. These switches shall be clearly labelled to indicate their purpose.

(*e*) A card of instructions giving a clear summary of the radiotelephone distress, urgency and safety procedures shall be displayed in full view of the radiotelephone operating position.

(*f*) The tools, measuring instrument, spare parts and other material specified in Part II of Schedule 6 to these Rules shall be provided and shall be kept readily available.

Provision and qualifications of radiotelephone operators

24.—(1) Every radiotelephone ship shall be provided with at least one radiotelephone operator.

(2) For the purposes of these Rules no person shall be qualified to be a radiotelephone operator on board a British ship registered in the United Kingdom unless he holds—

(*a*) a valid certificate of proficiency or competence in radiotelephony or radiotelegraphy granted by the Postmaster General or by an authority empowered in that behalf by the laws of some part of the Commonwealth or the Irish Republic and recognised by the Postmaster General as the equivalent of such a certificate granted by him; and

(*b*) a valid authority issued by the Postmaster General to operate a wireless telegraphy station or a radiotelephone station established on a ship under a licence issued by him.

(3) For the purposes of these Rules no person shall be deemed to be a radiotelephone operator on board a ship registered in a country other than the United Kingdom unless he holds a valid certificate of proficiency or competence in radiotelephony or radiotelegraphy granted by an authority empowered or recognised in that behalf by the laws of the country in which the ship is registered and recognised by the Postmaster General as the equivalent of such a certificate granted by him.

Radio watch

25.—(1) Subject to the provisions of paragraph (2) of this Rule, while a radiotelephone ship is at sea continuous radio watch shall be maintained by a radiotelephone operator or by the master or by an officer or member of the crew appointed to keep radio watch at the place on board from which the ship is normally navigated.

(2) Radio watch may be discontinued—

(*a*) when the receiver forming part of the radiotelephone installation required by Rule 3 of these Rules is being used for traffic on a frequency other than 2182 kc/s and a second receiver complying with the requirements specified in Part III of Schedule 3 to these Rules is not available; or

(*b*) when, in the opinion of the master of the ship, conditions are such that maintenance of radio watch would interfere with the safe navigation of the ship.

(3) Notwithstanding the provisions of sub-paragraph (*b*) of the preceding paragraph of this Rule radio watch shall, as far as practicable, be maintained during the silence periods.

Duties of radiotelephone operators

26.—(1) Every radiotelephone operator shall be familiar with the radiotelephone distress, urgency and safety procedures as given in the card of instructions required by paragraph (*e*) of Rule 23 of these Rules.

(2) While a radiotelephone ship is at sea, the radiotelephone operator, or if there is more than one, one designated by the master, shall arrange for any batteries which are a source of electrical energy for the radiotelephone installation to be tested once a day and brought up to fully-charged condition as soon as possible.

Radiotelephone log

27.—(1) A radiotelephone log-book in the form specified in Schedule 10 to these Rules shall be kept at the place where radio watch is maintained in every radiotelephone ship and shall be available for inspection by any person authorised in that behalf by the Board or the Postmaster General.

(2) Every radiotelephone operator shall, when keeping radio watch in compliance with Rule 25(1) of these Rules, enter in such log-book:—

(*a*) his name;

(*b*) the times at which he begins and ends his periods of radio watch;

(*c*) the time at which radio watch is for any reason discontinued, together with the reason and the time at which radio watch is resumed;

(*d*) a summary of communications exchanged between the ship station and coast stations or other ship stations;

(*e*) a record of all incidents occurring during his period of radio watch which relate to the radiotelephone installation and the operation thereof and which appear to him to be of importance to the safety of life at sea; in particular, he shall make the following entries:—

(i) the general sense of all messages transmitted by him and received by him which relate to immediate assistance required by persons in distress at or above the sea;

(ii) the general sense of all messages transmitted by him and received by him which are preceded by a signal in general international use as an urgency signal or a safety signal;

(iii) a record of the radio watch maintained by him during each of the silence periods;

(iv) a record of any incident occurring during his period of radio watch which affects the efficiency of the radiotelephone installation; and

(v) if the ship's rules permit a record in latitude and longitude, or by reference to a place, of the approximate position of the ship at least once per day when the station is open.

(3) Every radiotelephone operator shall enter in such log-book a record of the tests conducted in accordance with Rule 26(2) and Rule 30(3) of these Rules.

(4) The master and every officer or member of the crew shall, when keeping radio watch in compliance with Rule 25(1) of these Rules, enter in such log-book:—

(*a*) his name;

(*b*) the times at which he begins and ends his periods of radio watch;

(*c*) the time at which radio watch is for any reason discontinued, together with the reason, and the time radio watch is resumed;

(*d*) a record of all incidents occurring during his period of watch which relate to the radiotelephone installation and the operation thereof and which appear to him to be of importance to the safety of life at sea; in particular, he shall make the following entries:—

(i) the general sense of all messages received by him which relate to immediate assistance required by persons in distress at or above the sea;

o

(ii) the general sense of all messages received by him which are preceded by a signal in general international use as an urgency signal or a safety signal;

(iii) a record of any incident occurring during his period of radio watch which affects the efficiency of the radiotelephone installation; and

(iv) if the ship's rules permit a record in latitude and longitude, or by reference to a place of the approximate position of the ship at least once per day when the station is open.

(5) The radiotelephone operator or, if there is more than one, one designated by the master, shall inspect and sign each day the entries for that day in such log-book.

(6) The master of the ship shall inspect and sign each day's entries in such log-book.

(7) Section 242 of the Merchant Shipping Act 1894 (which provides for the delivery of the official log-book to the Superintendent) and Section 256 of that Act (which provides among other things for the custody of the official log-book) shall apply to the radiotelephone log-book as they apply to the official log-book.

PART IV

Radio Equipment for Lifeboats and Survival Craft

Motor lifeboat fixed radio equipment

28.—(1) The equipment required by Rule 33(1)(*a*) of the Merchant Shipping (Life-Saving Appliances) Rules 1965(a) shall comply with the specification set forth in Part I of Schedule 5 to these Rules.

(2) The battery included in such equipment shall not be used for any purpose other than the operation of such equipment and the searchlight provided in compliance with the aforesaid Rules.

Portable radio equipment for survival craft

29. The equipment required by Rule 3(6), Rule 4(11), Rule 11(10) and Rule 12(6) of the Merchant Shipping (Life-Saving Appliances) Rules 1965 shall comply with the specification set forth in Part II of Schedule 5 to these Rules.

Test of radio equipment for lifeboats and survival craft

30.—(1) When a radiotelegraph ship provided with the equipment referred to in Rule 28 or Rule 29 of these Rules is at sea the radio officer, or if there is more than one, the first radio officer shall at least once every 7 days, arrange for the transmitter forming part of such installation or equipment to be tested with the artificial aerial provided in accordance with paragraph 9 of Part I or paragraph 9 of Part II of Schedule 5 to these Rules and arrange for any batteries, other than self-priming batteries, which are a source of electrical energy for such installation or equipment to be tested by voltmeter and hydrometer and brought up to fully-charged condition as soon as possible.

(2) The radio officer making the tests referred to in paragraph (1) of this Rule shall enter the results of such tests in the radiotelegraph log-book.

(a) S.I. 1965/1105 (1965 II, p. 2940).

(3) When a radiotelephone ship provided with the equipment referred to in Rule 29 of these Rules is at sea the radiotelephone operator, or if there is more than one, one designated by the master shall, at least once every 7 days test the transmitter forming part of such equipment with the artificial aerial provided in accordance with paragraph 9 of Part II of Schedule 5 to these Rules.

(4) The radiotelephone operator making the test referred to in paragraph (3) of this Rule shall enter the results in the radiotelephone log-book.

Roy Mason,
Minister of State,
Board of Trade.

11th May 1965.

SCHEDULE 1 Rule 1(5)

TRANSITIONAL PROVISIONS

1. *As to Rule* 3.—Subject to the provisions of paragraph 2 of this Schedule any ship which is provided with radiotelegraph equipment forming part of an existing installation or which is installed before 26th May 1967 shall not be required to be provided with the equipment specified in Schedule 2 to these Rules if the radiotelegraph equipment provided in the ship complies with the requirements of the Second Schedule to the Merchant Shipping (Radio) Rules 1952 which would have been applicable to it if the said Rules had not been revoked.

2. *As to Rule* 3.—Nothing in Rule 3(1) of these Rules shall require the automatic keying device forming part of an existing installation to comply with the requirements of Part V of Schedule 2 to the these Rules before 26th May 1967.

3. *As to Rule* 3.—Any ship of Class III or Class IV which is provided with radiotelephone equipment forming part of an existing installation or which is installed before 26th May 1967 shall not be required to be provided with the equipment specified in Part I of Schedule 3 to these Rules if the radiotelephone equipment provided in the ship—

(*a*) in the case of a Class III ship complies with the requirements of the Third Schedule to the Merchant Shipping (Radio) Rules 1952 which would have been applicable to it if the said Rules had not been revoked, or

(*b*) in the case of a Class IV ship has been installed in accordance with the provisions of a ship licence granted by the Postmaster General under section 1 of the Wireless Telegraphy Act 1949 and it continues to comply with the provisions of that licence.

4. *As to Rule* 3.—Nothing in Rule 3(2) of these Rules shall require the device for generating the radiotelephone alarm signal specified in Part II of Schedule 3 to these Rules to be provided before 26th May 1966.

5. *As to Rule* 4.—Nothing in Rule 4 of these Rules shall apply to any equipment forming part of an existing installation or which is installed before 26th May 1967 (not being a radiotelegraph auto-alarm equipment to which paragraph 9 of this Schedule applies)—

(*a*) if it complies with the requirements of the Fourth Schedule to the Merchant Shipping (Radio) Rules 1952 which would have been applicable to it if the said Rules had not been revoked, or

(*b*) if, being installed in a Class IV ship, it complies with the provisions of a ship licence granted by the Postmaster General under section 1 of the Wireless Telegraph Act 1949 and it continues to comply with the provisions of that licence, or

(*c*) if it does not comply with either of the requirements in sub-paragraph (*a*) or (*b*) of this paragraph, before 1st November 1965.

6. *As to Rule* 6.—Nothing in Rule 6 of these Rules shall require any parts or wiring in an existing installation to be isolated automatically from all sources of electrical energy when the means of protection referred to therein are removed in the case of a ship of Class IV or before 1st November 1965 in the case of ships of Class I, II or III.

7. *As to Rule* 8.—Nothing in Rule 8 of these Rules shall require the main equipment and reserve equipment forming part of a radiotelegraph installation being in the case of a ship of Class III an installation installed before 19th November 1954 or, in the case of a ship of Class IV, an existing installation, to be electrically independent of each other if the installation complies with the following requirements:—

(*a*) the main receiver and the reserve receiver shall be electrically independent of each other;

(*b*) the transmitter shall comply with the requirements for the main and reserve transmitters as respectively set forth in Parts I and III of Schedule 2 to these Rules or as set forth in paragraph 1 of this Schedule; and

(*c*) the transmitter shall be capable of operation both from the main source of electrical energy required by Rule 12(1) of these Rules and from the reserve source of energy required by Rule 12(2).

8. *As to Rule* 9.—Nothing in Rule 9(6) of these Rules shall require the diagram referred to therein to be available before 26th May 1966 in the case of radiotelegraph installations installed before 19th November 1952.

9. *As to Rule* 4, *Rule* 14 *and Rule* 16.—Nothing in Rules 4, 14 or 16 of these Rules shall apply to:—

(*a*) a radiotelegraph auto-alarm equipment which forms part of an existing installation or which is installed before 26th May 1967 if it complies with the requirements of the Fourth Schedule and the Seventh Schedule to the Merchant Shipping (Radio) Rules 1952 which would have been applicable to it if the said Rules had not been revoked; or

(*b*) a radiotelegraph auto-alarm equipment which forms part of an existing installation and which does not comply with the Fourth Schedule and the Seventh Schedule to the Merchant Shipping (Radio) Rules 1952 before 26th May 1968. Provided that the radiation from the radiotelegraph auto-alarm receiver shall not exceed 0.1 microvolt per metre at a distance of one mile from the receiver.

10. *As to Rule* 21.—Nothing in Rule 21 of these Rules shall in the case of a radiotelephone ship of Class IV require the transmitter forming part of an existing installation to exceed a normal range of 75 miles. The transmitter shall be deemed to comply with this provision if the product ascertained in the manner specified in paragraph (3) of the aforesaid Rule is not less than:—

(*a*) 3.25 metre-amperes if the aerial has a horizontal top-length of not less than one-half of its maximum height measured from the lead-out insulator;

(*b*) 5.5 metre-amperes in the case of any other aerial.

11. *As to Rule* 28.—Subject to the provisions of paragraph 12 of this Schedule any ship which is provided with radiotelegraph equipment forming part of an existing installation or which is installed before 26th May 1967 shall not be required to be provided with the equipment specified in Part I of Schedule 5 to these Rules if the radiotelegraph equipment complies with the requirements of Part I of the Fifth Schedule to the Merchant Shipping (Radio) Rules 1952 which would have been applicable to it if the said Rules had not been revoked.

12. *As to Rule* 28.—Nothing in Rule 28 of these Rules shall require any automatic keying device forming part of an existing radiotelegraph installation in a motor lifeboat to comply with the requirements of Part V of Schedule 2 to these Rules before 26th May 1967.

13. *As to Rule* 29.—Any portable radio equipment for lifeboats provided before 26th May 1965 in a ship to which these Rules apply which complies with such of the requirements of the Merchant Shipping (Radio) Rules 1952 as would have been applicable to it if the said Rules had not been revoked shall be treated as complying with the requirements applicable to the portable radio equipment for survival craft specified in Part II of Schedule 5 to these Rules; provided that when the equipment is intended for use in a liferaft it shall comply with the requirements of Part II of Schedule 5 to these Rules.

SCHEDULE 2 Rule 3(1)

RADIOTELEGRAPH INSTALLATION

PART I

MAIN RADIOTELEGRAPH TRANSMITTER

1. PERFORMANCE.—In addition to compliance with the provisions of this Part of this Schedule the main radiotelegraph transmitter provided on board a ship registered in the United Kingdom shall comply with the Performance Specification for a Main Medium Frequency Radiotelegraph Transmitter 1965 issued by the Postmaster General.

2. GENERAL.—The main radiotelegraph transmitter (in this Part of this Schedule referred to as " the transmitter ") shall be provided with any equipment which may be necessary to enable it to be operated from the source of electrical energy referred to in Rule 12(1) of these Rules and shall be capable of being tuned to the main and reserve aerials referred to in Rule 10 of these Rules.

3. FREQUENCY RANGES AND CLASSES OF EMISSION.—The transmitter shall be capable of transmitting Class A1 and Class A2 emissions on 500 kc/s and at least four other spot frequencies in the range 405 to 525 kc/s.

4. MODULATION.—When Class A2 emissions are being transmitted, the transmitter shall have a depth of modulation of not less than 70 per cent and a note frequency between 450 and 1350 c/s.

5. OPERATING FACILITIES.—(1) It shall be possible for an operator to change the transmitter from operation on any frequency to operation on any other frequency in a period not exceeding 10 seconds.

(2) The transmitter shall be ready for full-power operation within 60 seconds of switching on.

(3) The transmitter shall be capable of being used in conjunction with the automatic keying device specified in Part V of this Schedule.

(4) Means shall be incorporated to provide, in conjunction with an associated receiver, listening-through facilities at normal signalling speeds.

PART II

MAIN RADIOTELEGRAPH RECEIVER

1. PERFORMANCE.—In addition to compliance with the provisions of this Part of this Schedule the main radiotelegraph receiver provided on board a ship registered in the United Kingdom shall comply with the Performance Specification for a Main Radio Receiver 1964 issued by the Postmaster General.

2. GENERAL.—(1) The main radiotelegraph receiver (in this Part of this Schedule referred to as "the receiver") shall be capable of being operated from the source of electrical energy referred to in Rule 12(1) of these Rules.

(2) The receiver shall consist either of a single unit or of separate units each of which is capable of reception on one or more sections of the frequency range specified in paragraph 3 of this Part of this Schedule. Each unit of the receiver shall bear a plate stating the frequency range it is intended to cover.

(3) The receiver shall not employ any vibrators or primary batteries.

3. FREQUENCY RANGES AND CLASSES OF EMISSION.—The receiver shall be capable of receiving signals within the frequency ranges and of the classes of emission specified in the following table.

Frequency Range (inclusive)	Class of Emission
15 kc/s—160 kc/s	A1,
160 kc/s—1500 kc/s	A1, A2,
1500 kc/s—4 Mc/s	A1, A2, A3
4 Mc/s—28 Mc/s	A1, A2, A3

4. RECEPTION FACILITIES.—The receiver shall be capable of headphone and loudspeaker reception throughout the frequency range specified in paragraph 3 of this Part of this Schedule. The loudspeaker shall be rendered inoperative when reception is by headphones.

5. SENSITIVITY.—The 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.

6. CONTROLS.—The receiver shall be provided with—

(1) means for reducing the receiver sensitivity when the telegraph key is depressed so as to permit listening-through at normal signalling speeds when an associated transmitter is operating in the same frequency band;

(2) manual controls, as necessary, for the adjustment of radio and/or intermediate frequency gain and of audio frequency gain;

(3) means for enabling the operator to tune to any frequency in the same maritime mobile band within five seconds and within 15 seconds if the frequencies are in different bands;

(4) a tuning scale calibrated directly in frequency;

(5) a logging scale or other approved means for the accurate resetting of tune; and

(6) a fine control, the knob of which shall be at least two inches in diameter, unless the frequency is adjustable in steps of 100 c/s or less.

7. RADIATION.—The receiver when in use shall not produce a field exceeding 0.1 microvolt per metre at a distance of one mile from the receiver.

PART III

RESERVE RADIOTELEGRAPH TRANSMITTER

1. PERFORMANCE.—In addition to compliance with the provisions of this Part of this Schedule the reserve radiotelegraph transmitter provided on board a ship registered in the United Kingdom shall comply with the Performance Specification for a Reserve Medium Frequency Radiotelegraph Transmitter 1965 issued by the Postmaster General.

2. GENERAL.—The reserve radiotelegraph transmitter (in this Part of this Schedule referred to as " the transmitter ") shall be provided with any equipment which may be necessary to enable it to be operated from the reserve source of electrical energy referred to in Rule 12(2) of these Rules, and shall be capable of being tuned to the main and reserve aerials referred to in Rule 10 of these Rules.

3. FREQUENCY AND CLASS OF EMISSION.—The transmitter shall be capable of transmitting Class A2 emissions on the frequency of 500 kc/s.

4. MODULATION.—The transmitter shall have a depth of modulation of not less than 70 per cent and a note frequency of between 450 and 1350 c/s.

5. OPERATING FACILITIES.—(1) The transmitter shall deliver 15 watts or at least 75 per cent of its full output, whichever is the greater, within six seconds of switching on.

(2) The transmitter shall be capable of being used in conjunction with the automatic keying device specified in Part V of this Schedule.

6. USE FOR NORMAL COMMUNICATIONS.—If the transmitter is to be used otherwise than in an emergency or for the tests required by Rule 17(4) of these Rules, paragraph 3 and sub-paragraphs (1) and (4) of paragraph 5 of Part I of this Schedule shall apply in relation to it as they apply in relation to the main radiotelegraph transmitter.

7. ARTIFICIAL AERIAL.—An artificial aerial shall be provided for testing the transmitter on full power.

PART IV

RESERVE RADIOTELEGRAPH RECEIVER

1. PERFORMANCE.—In addition to compliance with the provisions of this Part of this Schedule the reserve radiotelegraph receiver provided on board a ship registered in the United Kingdom shall comply with the Performance Specification for a Reserve Radio Receiver for Ships 1964 issued by the Postmaster General.

2. FREQUENCY RANGES AND CLASSES OF EMISSION.—The reserve radiotelegraph receiver (in this Part of this Schedule referred to as " the receiver ") shall be capable of receiving:—

(*a*) Class A1 and A2 emissions on frequencies in the range 405 to 535 kc/s, and

(*b*) Class A1, A2 and A3 emissions on frequencies in the range 1605 to 3800 kc/s and throughout each of the maritime mobile bands between 4 and 23 Mc/s.

3. RECEPTION FACILITIES.—(1) The receiver shall be capable of both headphone and loudspeaker reception throughout the frequency ranges specified in paragraph 2 of this Part of this Schedule. The loudspeaker shall be rendered inoperative when reception is by headphones.

(2) When an associated transmitter is operated in the same frequency band, means shall be provided for reducing the receiver gain when the telegraph key is depressed, so as to permit listening-through at normal signalling speeds.

4. SENSITIVITY.—The receiver shall have sufficient sensitivity to produce signals in headphones or by means of a loudspeaker when the receiver input is as low as 100 microvolts.

5. SOURCE OF ELECTRICAL ENERGY.—The receiver shall be capable of operation both from the main source of electrical energy required by Rule 12(1) of these Rules and the reserve source of electrical energy required by Rule 12(2). Arrangements for quickly changing from one source of electrical energy to the other shall be incorporated. No vibrators or primary cells shall be employed.

6. CONTROLS.—The receiver shall be provided with—

(1) manual controls, as necessary, for the adjustment of radio and/or intermediate frequency gain and of audio frequency gain,

(2) a selectivity switch, suitably marked, and

(3) means for switching off the automatic gain control, and such means may be combined with the functions of a service switch.

7. RADIATION.—The receiver when in use shall not produce a field exceeding 0.1 microvôlt per metre at a distance of one mile from the receiver.

PART V

RADIOTELEGRAPH AUTOMATIC KEYING DEVICE

1. PERFORMANCE.—In addition to compliance with the provisions of this Part of this Schedule the radiotelegraph automatic keying device provided on board a ship registered in the United Kingdom shall comply with the Performance Specification for an Automatic Keying Device 1964 issued by the Postmaster General.

2. GENERAL.—(1) The radiotelegraph automatic keying device (in this Part of this Schedule referred to as " the device ") shall be capable of sending automatically the signals specified in paragraph 3 of this Part of this Schedule when switched into circuit in place of the manual key.

(2) Means shall be provided for quickly connecting and disconnecting the device, as required, to and from the main radiotelegraph transmitter, the

reserve radiotelegraph transmitter and the radiotelegraph auto-alarm test signal generator referred to in paragraph 5 of Schedule 7 to these Rules.

(3) If the device is electrically operated it shall be suitable for operation from the reserve source of electrical energy required by Rule 12(2) of these Rules.

3. SIGNALS.—The device shall be capable of keying only the following signals when switched into circuit:—

(1) the radiotelegraph alarm signal consisting of twelve four second dashes separated by one second spaces, the length of the dashes and spaces being maintained within a tolerance of plus or minus 0.2 second.

(2) the radiotelegraph distress call consisting of the following signals in the following order:—

(*a*) the radiotelegraph distress signal SOS, sent three times,

(*b*) the word DE,

(*c*) the ship's call sign, sent three times, and

(*d*) two dashes, each of 10 to 15 seconds duration.

4. OPERATING FACILITIES.—The device shall be suitable for operation by an unskilled person.

PART VI

RADIOTELEGRAPH LOUDSPEAKER WATCHKEEPING RECEIVER

1. PERFORMANCE.—In addition to compliance with the provisions of this Part of this Schedule the radiotelegraph loudspeaker watchkeeping receiver provided on board a ship registered in the United Kingdom shall comply with the Performance Specification for a Radiotelegraph Receiver for Loudspeaker Watchkeeping 1964 issued by the Postmaster General.

2. GENERAL.—(1) The radiotelegraph loudspeaker watchkeeping receiver (in this Part of this Schedule referred to as "the receiver") shall be fixed in tune on a frequency of 500 kc/s and shall be suitable for the reception of Class A2 emissions in the range 496 to 504 kc/s.

(2) The receiver shall include a loudspeaker.

(3) Provision shall be made for protecting the receiver when the ship's transmitter is radiating on 500 kc/s.

3. SELECTIVITY.—The selectivity preceding the final detector shall satisfy the following requirements with the automatic gain control inoperative:—

Frequency (kc/s)	Discrimination (db relative to Maximum Response)
496 to 504	Not more than 3
Below 487 and above 513	At least 40
Below 475 and above 525	At least 80

4. STANDARD OUTPUT LEVEL.—The standard audio frequency output level shall be 50 milliwatts into a resistance substantially equal to the modulus of the impedance of the loudspeaker at 1000 c/s.

5. CONTROLS.—(1) The receiver shall be provided with a manual gain control and an automatic gain control. Subject to the provisions of sub-paragraph (2) of this paragraph no controls other than a manual gain control and an on-off switch shall be available at the exterior of the receiver.

(2) If the receiver facilities are incorporated in a combined receiver that is to say in a reserve radiotelegraph receiver complying with Part IV of this Schedule or a radiotelegraph auto-alarm equipment complying with the requirements of Schedule 7 to these Rules—

(*a*) it shall be possible readily to set such combined receiver to the loudspeaker watchkeeping condition. If this setting is not by means of a single control, a positive indication shall be given by means of a lamp or lamps when the receiver is in the 500 kc/s loudspeaker watchkeeping condition;

(*b*) when the combined receiver is in the loudspeaker watchkeeping condition, controls of the reserve radiotelegraph receiver or radiotelegraph auto-alarm equipment as the case may be, other than those referred to in sub-paragraph (1) of this paragraph, shall not affect its operation; and

(*c*) controls of the combined receiver which affect the operation when in a loudspeaker watchkeeping condition shall be clearly labelled.

6. RADIATION.—The receiver when in use shall not produce a field exceeding 0.1 microvolt per metre at a distance of one mile from the receiver.

SCHEDULE 3

RADIOTELEPHONE INSTALLATION

PART I

MAIN RADIOTELEPHONE INSTALLATION

Rule 3(2)

1. PERFORMANCE.—In addition to compliance with the provisions of this Part of this Schedule the main radiotelephone installation provided on board a ship registered in the United Kingdom shall comply with the Performance Specification for a Radio Equipment for use in Ships Compulsorily—Fitted for Radiotelephony 1965 issued by the Postmaster General.

2. GENERAL.—In this Part of this Schedule the expression "the equipment" includes a radiotelephone transmitter and receiver and all other equipment necessary for the operation of the installation, but does not include an aerial or a source of electrical energy.

3. FREQUENCY RANGES AND CLASSES OF EMISSION.—(1) The equipment shall be capable of transmitting Class A3 emissions on a frequency of 2182 kc/s and of transmitting telephony on at least eight other spot frequencies.

(2) the equipment shall be capable of receiving Class A2 and A3 emissions on a frequency of 2182 kc/s and at least 20 other spot frequencies in the range 1605 to 3800 kc/s.

(3) Independent selection of transmit and receive frequencies shall be provided.

4. TRANSMITTER.—(1) The transmitter shall be provided with a device for generating the radiotelephone alarm signal specified in Part II of this Schedule.

(2) In normal operation the transmitter shall have a depth of modulation on 2182 kc/s of not less than 70 per cent at peak intensity.

5. RECEIVER.—(1) The receiver shall have sufficient sensitivity to produce signals by means of a loudspeaker when the receiver input is as low as 50 microvolts.

(2) The receiver when in use shall not produce a field exceeding 0.1 microvolt per metre at a distance of one mile from the receiver.

6. SOURCE OF ELECTRICAL ENERGY.—The equipment shall be capable of operation from the source of electrical energy required by Rule 22 of these Rules.

7. OPERATING FACILITIES.—(1) The equipment shall be capable of being changed rapidly from "transmit" to "receive" and vice versa and means shall be provided for protecting the receiver from damage when the equipment is transmitting.

(2) It shall be possible for an operator to change the transmitter from operation on any frequency to operation on any other frequency in a period not exceeding 10 seconds.

(3) The transmitter shall be ready for full-power operation within 60 seconds of switching on.

(4) The receiver shall have provision for both telephone receiver and loudspeaker reception.

8. CONTROLS.—All controls shall be of such size as to permit normal adjustments to be performed by a person wearing thick gloves.

PART II

RADIOTELEPHONE ALARM SIGNAL GENERATING DEVICE

1. PERFORMANCE.—In addition to compliance with the provisions of this Part of this Schedule the radiotelephone alarm signal generating device provided on board a ship registered in the United Kingdom shall comply with the Performance Specification for a Radiotelephone Alarm Signal Generating Device (Audio Frequency) 1964 issued by the Postmaster General.

2. GENERAL.—(1) The radiotelephone alarm signal generating device (in this Part of this Schedule referred to as "the device") shall be capable of generating the radiotelephone alarm signal specified in paragraph 3 of this Part of this Schedule.

(2) The device shall be ready to generate the radiotelephone alarm signal within a period of 30 seconds from the time the device is energised and shall be capable of generating for a period of not less than 30 and not more than 60 seconds.

(3) After generating the radiotelephone alarm signal the device shall be ready to repeat the signal after an interval of not more than two minutes.

(4) Means shall be provided so that the device can be taken out of service at any time.

3. ALARM SIGNAL.—The radiotelephone alarm signal referred to in sub-paragraph (1) of paragraph 2 of this Part of this Schedule shall consist of two substantially sinusoidal tones, one having a frequency of 2200 c/s plus or minus 1.5 per cent and the other 1300 c/s plus or minus 1.5 per cent, produced alternately; the duration of each tone shall be 250 milliseconds plus or minus 50 milliseconds; the interval between successive tones shall not exceed 50 milliseconds. The ratio of the amplitude of the stronger tone to that of the weaker shall be within the range 1 to 1.2.

4. CONTROLS.—(1) Not more than two operating controls shall be available at the exterior of the device. Each control shall be clearly labelled to show its purpose and shall be such as to permit normal operation to be carried out by a person wearing thick gloves.

(2) Controls, where provided, for the adjustment of frequency, duration or level of the signal elements shall be preset controls not available at the exterior of the device.

PART III

RADIOTELEPHONE LOUDSPEAKER WATCHKEEPING RECEIVER

1. PERFORMANCE.—In addition to compliance with the provisions of this Part of this Schedule the radiotelephone loudspeaker watchkeeping receiver provided on board a ship registered in the United Kingdom shall comply with the Performance Specification for a Receiver (2182 kc/s) for Loudspeaker Watchkeeping 1964 issued by the Postmaster General.

2. GENERAL.—(1) The radiotelephone loudspeaker watchkeeping receiver (in this Part of this Schedule referred to as "the receiver") shall be fixed in tune on a frequency of 2182 kc/s and shall be suitable for the reception of Class A2 and A3 emissions except when the ship's own radiotelephone transmitter is radiating on 2182 kc/s.

(2) The receiver shall include a loudspeaker.

(3) Provision shall be made for protecting the receiver and muting its output when the ship's transmitter is radiating on 2182 kc/s.

3. SELECTIVITY.—The selectivity preceding the detector shall satisfy the following requirements:

Frequency (kc/s)	Discrimination (db relative to Maximum Response)
2178.5 to 2185.5 inclusive	Not more than 6
Below 2172 and above 2192	At least 30
Below 2162 and above 2202	At least 60
Below 2142 and above 2222	At least 80

4. SENSITIVITY.—The receiver shall have sufficient sensitivity to produce signals by means of a loudspeaker when the receiver input is as low as 50 microvolts.

5. CONTROLS.—(1) The receiver shall be provided with

(*a*) a manual control labelled " RANGE " for the adjustment of radio frequency or intermediate frequency gain, or both;

(*b*) a preset control not available at the exterior of the receiver, for the adjustment of radio frequency or intermediate frequency gain, or both;

(*c*) a manual control labelled " VOLUME " for the adjustment of audio frequency gain; and

(*d*) a preset control not available at the exterior of the receiver, for the adjustment of audio frequency gain.

(2) With the exception of the controls specified in sub-paragraphs (*a*) and (*c*) of the preceeding paragraph and a receiver on-off switch, no other control shall be available at the exterior of the receiver.

6. RADIATION.—The receiver when in use shall not produce a field exceeding 0.1 microvolt per metre at a distance of one mile from the receiver.

SCHEDULE 4

Rule 4

CLIMATIC AND DURABILITY TESTS

1. In this Schedule—

(1) references to Class B equipment shall be construed as references to equipment appropriated for use only below deck or in a deckhouse or other similar compartment;

(2) references to Class X equipment shall be construed as references to equipment appropriated for use or storage in the open or in an open boat.

2. Class B and Class X equipment shall be subjected to tests conducted in the order in which they appear in the following Table:—

TABLE

Nature of Test	Classes of Equipment to which the test shall be applied.
Visual Inspection and Performance Test	B and X
Inspection under Vibration	B and X
Bump Test	B and X
Dry Heat Cycle	B and X
Damp Heat Cycle	B and X
Low Temperature Cycle	B and X
Rain Test	X
Immersion Test	X
Corrosion Test	B and X
Mould Growth Test	X
Visual Inspection and Performance Test	B and X

3. The tests referred to in paragraph 2 of this Schedule shall be conducted respectively in the manner described in the Performance Specification for the Climatic and Durability Testing of Marine Radio Equipment 1965 issued by the Postmaster General.

SCHEDULE 5

RADIO EQUIPMENT FOR LIFEBOATS AND SURVIVAL CRAFT

PART I

MOTOR LIFEBOAT FIXED RADIO EQUIPMENT

Rule 28

1. PERFORMANCE.—In addition to compliance with the provisions of this Part of this Schedule the motor lifeboat fixed radio equipment provided on board a ship registered in the United Kingdom shall comply with the Performance Specification for a Motor Lifeboat Radio Equipment 1964 issued by the Postmaster General.

2. GENERAL.—The motor lifeboat fixed radio equipment (in this Part of this Schedule referred to as " the equipment ") shall be so designed that it can be used in an emergency by an unskilled person.

3. TRANSMITTER.—(1) The equipment shall include a transmitter capable of sending continuously, but not simultaneously, Class A2 emissions on frequencies of 500 and 8364 kc/s and Class A3 emissions on a frequency of 2182 kc/s.

(2) In addition to a key for manual transmissions, the transmitter shall be provided with the automatic keying device specified in Part V of Schedule 2 to these Rules.

(3) When Class A2 emissions are being transmitted, the carrier wave shall be modulated to a depth of 100 per cent by an approximately rectangular wave of frequency between 450 and 1350 c/s so that the carrier wave is switched on for 30 to 50 per cent of a modulation cycle.

(4) When Class A3 emissions are being transmitted, full modulation of the carrier wave by speech shall be possible.

(5) On the frequency of 500 kc/s the transmitter shall have a minimum normal range of 25 miles using the aerial referred to in paragraph 6 of this Part of this Schedule. For the purposes of this Part of this Schedule the normal range of the transmitter shall be calculated in accordance with the manner specified in Schedule 11 to these Rules.

4. RECEIVER.—(1) The equipment shall include a receiver tunable over the ranges 488 to 513 kc/s and 8320 to 8745 kc/s for reception of Class A1 and A2 emissions.

(2) The receiver shall also be capable of receiving Class A3 emissions on a spot frequency of 2182 kc/s.

(3) A manual gain control shall be provided.

(4) Reception shall be by watertight headphones shrouded to exclude external noise.

5. SOURCE OF ELECTRICAL ENERGY.—(1) The equipment shall include a battery, composed of secondary cells, having a capacity such that, after continuously operating the transmitter (under full-power mark condition) for four hours, the voltage under full-load conditions shall not fall by more than 10 per cent.

(2) The battery shall not supply power to any engine starting-motor or ignition system.

(3) If it is intended to operate a searchlight from the battery, the capacity thereof shall be sufficient to provide for the additional load of the searchlight.

(4) The battery shall be capable of being recharged without being removed from the lifeboat—

(*a*) from a dynamo driven by the lifeboat's engine, and

(*b*) from the ship's main source of electrical energy; provided that this in no way interferes with the launching of the lifeboat.

6. AERIAL.—The equipment shall include a single-wire aerial of high conductivity stranded or braided wire capable of being supported by the lifeboat mast without the use of top-masts at a height of at least 22 feet above the waterline.

7. CONTROLS.—The controls shall be clearly marked and of such size (in no case smaller than two inches in diameter) as will permit normal adjustments to be made by a person wearing thick gloves.

8. OPERATING FACILITIES.—The transmitter shall be ready for full-power operation within 30 seconds of switching on.

9. ARTIFICIAL AERIAL.—An artificial aerial shall be provided for testing the transmitter on full power.

Rule 29

PART II

PORTABLE RADIO EQUIPMENT FOR SURVIVAL CRAFT

1. PERFORMANCE.—In addition to compliance with the provisions of this Part of this Schedule the portable radio equipment for survival craft provided on board a ship registered in the United Kingdom shall comply with the Performance Specification for a Man-Powered Portable Radio Equipment for Survival Craft 1964 issued by the Postmaster General.

2. GENERAL.—(1) The portable radio equipment for survival craft (in this Part of this Schedule referred to as " the equipment ") shall be capable of use in both lifeboats and liferafts.

(2) The equipment shall be so designed that it can be used in an emergency by an unskilled person.

(3) The entire equipment, including the aerials specified in paragraph 6 of this Part of this Schedule, shall be contained in a single unit and shall not exceed 30 lbs in weight.

(4) The equipment shall be watertight and capable of floating in water. Means shall be provided on the equipment for lowering but it shall be capable of being dropped in the stored condition, from a height of 30 feet into water without damage.

(5) Provision shall be made for securing the equipment, in the operating condition, to the person of the operator.

3. TRANSMITTER.—(1) The equipment shall include a transmitter capable of sending continuously, but not simultaneously, Class A2 emissions on 500 and 8364 kc/s and Class A3 emissions on a frequency of 2182 kc/s.

(2) The equipment shall supply power of at least 10 watts input to the anode of the final stage or a radio frequency output of at least 2.0 watts (A2 emission) at 500 kc/s into an artificial aerial having an effective resistance of 15 ohms and 100 picofarads capacitance in series.

(3) In addition to a key for manual transmission, the transmitter shall be provided with an automatic keying device for the transmission of the radiotelegraph alarm and distress signals and two dashes each of 10 to 15 seconds duration.

(4) The facilities for transmission on the frequency of 2182 kc/s shall include a device for the generation of the radiotelephone alarm signal specified in Part II of Schedule 3 to these Rules except that the duration of the radiotelephone alarm signal may be determined by manual control.

(5) When Class A2 emissions are being transmitted, the carrier wave shall be modulated to a depth of 100 per cent by an approximately rectangular wave of frequency between 450 and 1350 c/s so that the carrier wave is switched on for 30 to 50 per cent of a modulation cycle.

(6) When Class A3 emissions are being transmitted, full modulation of the carrier wave by speech shall be possible.

4. RECEIVER.—(1) The equipment shall include a receiver capable of receiving on 500 and 2182 kc/s.

(2) When the receiver is operating on 500 kc/s it shall be fixed tuned and suitable for reception of Class A2 emissions over the band 495 to 505 kc/s.

(3) When the receiver is operating on 2182 kc/s it shall be fixed tuned and suitable for reception of Class A3 emissions over the band 2177 to 2187 kc/s.

(4) The receiver shall be used with headphones that are watertight and of a form designed to exclude extraneous noise. These headphones shall be permanently attached to the receiver.

5. MAN-POWERED GENERATOR.—(1) The equipment shall include a man-powered generator capable of generating all the required electrical power.

(2) Means shall be provided, visible at all times, to indicate that the generator is being operated within the normal range of generator speeds.

(3) The generator shall be so designed that it can be operated by one person or by two persons simultaneously, and that it cannot be rotated in the wrong direction.

6. AERIALS.—The equipment shall include

(*a*) a single-wire aerial consisting of between 25 and 30 feet of high-conductivity stranded or braided wire capable of being supported from a lifeboat mast without the use of topmasts at the maximum practicable height, and

(*b*) a collapsible rod aerial at least 16 feet in height or an alternative aerial of approved design, the base of which should not be greater than two inches in diameter, capable of being easily and quickly installed in a lifeboat and in a liferaft.

7. CONTROLS.—(1) All manual controls shall be of such size and form as to permit normal adjustment being performed by a person wearing thick gloves. The number of manual controls shall be kept to a minimum.

(2) The equipment shall incorporate manual send/receive switching and where necessary, in order to provide rapid changeover from "receive" to "send" there shall be a "transmitter standby" switch position.

(3) The operation of the manual controls shall not be impeded by nor shall it impede the generation of electrical energy.

8. OPERATING FACILITIES.—The transmitter shall be ready for full-power operation within 30 seconds of switching on.

9. TRANSMITTER TESTING.—There shall be provided—

(*a*) an artificial aerial within the equipment for short period testing of the transmitter on full-power; and

(*b*) means for testing the automatic transmission facilities without the generation of radio-frequency energy.

SCHEDULE 6 Rule 13

TOOLS, MEASURING INSTRUMENTS, SPARE PARTS, ETC.

PART I

RADIOTELEGRAPH SHIPS

TOOLS

1 contact burnisher;
1 6 in. smooth file;
1 jointing knife;
1 pair 7 in. wireman's insulated pliers;
1 pair 6 in. long nose pliers with side cutters;
(*a*) 1 insulated screwdriver, not less than 8 in. in length, with $\frac{1}{4}$ in. blade;
(*a*) 1 insulated grub screwdriver with $\frac{1}{8}$ in. blade;
(*a*) 1 watch screwdriver with 1/16 in. blade;
(*a*) 1 set of spanners (Flat and Box) sizes 0, 2, 4, 6 and 8 B.A.;
(*a*) 1 spanner adjustable to 1 in. gap;
(*b*) 1 $\frac{1}{4}$ in. hand drill;
(*b*) 1 set of high-speed twist drills, tapping and clearance sizes 0-8 B.A.;
1 clamp vice;
1 electric soldering iron to suit ship's voltage with a power consumption of not less than 40 watts or more than 70 watts;
1 electric soldering iron to suit ship's voltage with a power consumption of not more than 25 watts;
1 dusting brush;
1 $\frac{1}{2}$ lb. ball pane hammer;
1 hacksaw and blades;
A tool box or compartment for containing the foregoing tools and capable of being locked.

MEASURING INSTRUMENTS

1 hydrometer;
1 dipping fahrenheit thermometer;
An ammeter capable of measuring direct current from 1 milliampere to 500 milliamperes; a voltmeter capable of measuring alternating and direct current voltage from 1 volt to 1,000 volts; and an ohmmeter capable of measuring resistance from 10 ohms to 20,000 ohms; provided that a measuring instrument in which the require-

ments for an ammeter, a voltmeter and an ohm-meter specified above are combined may be substituted for the said instruments.

SPARE PARTS AND SPARE EQUIPMENT

1 set of brushes for each machine installed;
3 cartridges for each cartridge fuse in use;
1 main aerial made up (wire only);
1 safety loop for aerial;
50 per cent of the number of insulators in use (excluding lead-in insulators);
100 per cent of the number of shackles and thimbles in use;
12 bulldog grips to suit the aerial wire;
1 set of telephones and leads (with plugs if used) for each type of telephones and leads in use;
1 valve for each two of the first six of each type of valve in use, and then 1 valve for each additional 3 valves or part of 3 valves of that type in use;
3 vibrators for each type of vibrator in use;
1 indicator lamp for each indicator lamp in use;
1 emergency lamp;
1 charging mat if a mat-type charging unit is in use.

MISCELLANEOUS ITEMS

4 ozs. petroleum jelly;
3 sheets glass paper;
8 ozs. resin-cored solder;
4 ozs. insulating tape;
2 ozs. lubricating oil for general purposes;
(*c*) ½ pint lubricating oil;
½ lb. grease suitable for machine in use;
10 yards of each rating of fuse wire, 1 ampere, 5 ampere and 15 ampere;
1 length of aerial wire equal to the length of the reserve aerial plus 10 feet (uncut);
4 ozs. copper binding wire;
6 yards flexible wire (5 ampere) for adjustable connections;
4 ozs. trichloroethylene for contact cleaning.

(*a*) where special nuts and screws are used for fastening, suitable tools shall be provided.

(*b*) These items need not be provided in ships other than those engaged on international voyages.

(*c*) This item need only be supplied where a machine lubricated with oil forms part of the installation.

PART II

RADIOTELEPHONE SHIPS

Rule 23(f)

TOOLS

1 6 in. smooth file;
1 jointing knife;
(*a*) 1 insulated screwdriver, not less than 8 in. in length, with ¼ in. blade;
(*a*) 1 spanner adjustable to 1 inch gap;
1 hacksaw and blades.

MEASURING INSTRUMENTS

1 hydrometer.

SPARE PARTS AND SPARE EQUIPMENT

50 per cent. of the number of insulators in use (excluding lead-in insulators).

MISCELLANEOUS ITEMS

10 yards of each rating of fuse wire, 1 ampere, 5 ampere and 15 ampere.

(*a*) where special nuts and screws are used for fastening, suitable tools shall be provided.

Rule 14

SCHEDULE 7

RADIOTELEGRAPH AUTO-ALARM EQUIPMENT

1. PERFORMANCE.—In addition to compliance with the provisions of this Schedule the radiotelegraph auto-alarm equipment provided on board a ship registered in the United Kingdom shall comply with the Performance Specification for a Radiotelegraph Automatic Alarm Equipment for Ships 1964 issued by the Postmaster General.

2. GENERAL.—(1) The radiotelegraph auto-alarm equipment (in this Schedule referred to as " the equipment ") shall

(*a*) include an audible alarm system, a receiver, a test signal generator, monitoring facilities and a selector;

(*b*) in the absence of interference of any kind be capable without manual adjustment of giving audible warning of the receipt of a radiotelegraph alarm signal transmitted on a frequency of 500 kc/s and con-

sisting of a series of twelve consecutive dashes, each with a duration of four seconds and separated by intervals of one second, in each case subject to the tolerances specified in paragraph 7 of this Schedule, provided that the strength of the signal at the receiver input is greater than 100 microvolts and less than 1 volt.

(2) In order that the equipment shall distinguish an alarm signal in the presence of interfering signals automatic control of receiver gain shall be provided.

3. AUDIBLE ALARM SYSTEM.—(1) An audible alarm system shall have provision to operate simultaneously a bell on the bridge, a bell in the radiotelegraph room and a bell in the sleeping room of the radio officer.

(2) The audible alarms shall be actuated by a radiotelegraph alarm signal or shall operate in the event of a sustained failure of the power supply.

(3) Only one switch for stopping the audible alarms shall be provided and this shall be situated in the radiotelegraph room.

4. RECEIVER.—(1) The receiver shall be suitable for the reception of Class A1 emissions and of Class A2 and B emissions having a note frequency between 400 and 1400 c/s, the carrier wave being in the frequency range 496 kc/s to 504 kc/s.

(2) The radio frequency response of the receiver shall be uniform to within 3db in the frequency band 496 to 504 kc/s.

(3) The receiver when in use shall not produce a field exceeding 0.1 microvolt per metre at a distance of one mile from the receiver.

5. TEST SIGNAL GENERATOR.—For the purpose of regularly testing the equipment it shall include a generator pretuned to a frequency within plus or minus 3 kc/s of 500 kc/s, a manual key of a non-locking type and means for connecting the automatic keying device specified in Part V of Schedule 2 to these Rules.

6. MONITORING FACILITIES.—The receiver shall have provision for headphone and loudspeaker reception of Class A2 emissions.

7. SELECTOR.—(1) The selector in conjunction with the receiver shall

(*a*) accept dashes of from 3.5 seconds to 6.0 seconds duration and spaces between dashes of not more than 1.5 seconds duration, and

(*b*) reject dashes of a duration of 3.4 seconds or less or dashes of 6.2 seconds or greater and spaces between dashes of 1.6 seconds or greater duration.

(2) The selector shall actuate the audible alarms only after correct registration of a chosen number of consecutive dashes. The chosen number of consecutive dashes shall be either three or four. Correct registration of the fourth consecutive dash may include any time of duration of the fourth dash greater than 3.5 seconds.

SCHEDULE 8 Rule 16

TABLE OF WATCH HOURS

Zones (1)	Western Limits (2)	Eastern Limits (3)	Hours of Watch (Greenwich Mean Time)	
			16 hours (4)	8 hours (5)
			From To	From To
A.—Eastern Atlantic Ocean, Mediterranean, North Sea, Baltic.	Meridian of 30° W., Coast of Greenland.	Meridian of 30° E. to the South of the Coast of Africa, Eastern limits of the Mediterranean, of the Black Sea, and of the Baltic, Meridian of 30° E. northwards from the coastline of Norway.	0 h. 6 h. 8 h. 14 h. 16 h. 18 h. 20 h. 22 h.	8 h. 10 h. 12 h. 14 h. 16 h. 18 h. 20 h. 22 h.
B.—Western Indian Ocean, Eastern Arctic Ocean.	Eastern Limit of Zone A.	Meridian of 80° E. Western Coast of Ceylon to Adam's Bridge, thence westward round the coast of India, Meridian 80° E. to northwards from the coastline of the U.S.S.R.	0 h. 2 h. 4 h. 10 h. 12 h. 14 h. 16 h. 18 h. 20 h. 24 h.	4 h. 6 h. 8 h. 10 h. 12 h. 14 h. 16 h. 18 h.
C.—Eastern Indian Ocean, China Sea, Western Pacific Ocean, Eastern Arctic Ocean.	Eastern Limit of Zone B.	Meridian of 160° E. as far as the coast of Kamchatka, Meridian of 160° E. northwards from the coastline of the U.S.S.R.	0 h. 6 h. 8 h. 10 h. 12 h. 14 h. 16 h. 22 h.	0 h. 2 h. 4 h. 6 h. 8 h. 10 h. 12 h. 14 h.
D.—Central Pacific Ocean.	Eastern Limit of Zone C.	Meridian of 140° W.	0 h. 2 h. 4 h. 6 h. 8 h. 10 h. 12 h. 18 h. 20 h. 24 h.	0 h. 2 h. 4 h. 6 h. 8 h. 10 h. 20 h. 22 h.
E.—Eastern Pacific Ocean.	Eastern Limit of Zone D.	Meridian of 90° W. as far as the coast of Central America, thence Western coast of Central America and of North America.	0 h. 2 h. 4 h. 6 h. 8 h. 14 h. 16 h. 22 h.	0 h. 2 h. 4 h. 6 h. 16 h. 18 h. 20 h. 22 h.
F.—Western Atlantic Ocean and Gulf of Mexico.	Meridian of 90° W., Gulf of Mexico, Eastern coast of North America.	Meridian of 30° W. coast of Greenland.	0 h. 2 h. 4 h. 10 h. 12 h. 18 h. 20 h. 22 h.	0 h. 2 h. 12 h. 14 h. 16 h. 18 h. 20 h. 22 h.

Rule 19

SCHEDULE 9

FORM OF RADIOTELEGRAPH LOG-BOOK

RADIOTELEGRAPH LOG

PART I

Name of Ship	Official Number and International Call Sign	Port of Registry	Gross Tonnage

Name of Company operating the Radio Service.....

Port at which and date when voyage commenced	Nature of the voyage or employment	Port at which and date when voyage terminated
Date		Date .....
Port		Port .....

Delivered to the Superintendent of the Mercantile Marine Office at the Port of ..... on the ..... day of ..... 19.....

together with Radiotelegraph Log Part II, serial numbers ..... to .....

Countersigned ..... Master

.....Superintendent..... Address

SECTION A—PARTICULARS OF RADIO STAFF

Name	Home Address	Certificate Number and Class

SECTION B—PARTICULARS OF BATTERIES ON BOARD

Battery Number	Number of Cells	Type	Date supplied	Voltage and Ampere-hour Capacity	Purpose for which used

SECTION C—DAILY EXAMINATION OF BATTERIES

Date	Battery Number	Voltage off Load	Voltage on Load	Remarks

SECTION D—MONTHLY REPORT OF BATTERIES

Date	Battery Number and Cell Number	Specific Gravity as measured		Remarks	Date	Battery Number and Cell Number	Specific Gravity as measured		Remarks
		Before Charge	After Charge				Before Charge	After Charge	

RADIOTELEGRAPH LOG

PART II

Name of Ship	Official Number and International Call Sign	Port of Registry	Gross Tonnage

Serial No. ..... from ..... to .....

Name of Company operating the Radio Service.....

S.S. .....

M.V.

DIARY OF THE RADIOTELEGRAPH SERVICE

Date and Time (G.M.T.)	Station From	Station To	Full Details of Calls, Signals and Distress Working as prescribed by Rule 19	Frequency

Rule 27

SCHEDULE 10

FORM OF RADIOTELEPHONE LOG-BOOK

RADIOTELEPHONE LOG

Name of Ship	Official Number	Port of Registry	Gross Tonnage

Name of Company operating the Radio Service.....

Period covered by Log—From ..... to .....

Delivered to the Superintendent of the Mercantile Marine Office at the Port of .....on the..... day of .....196.....

Countersigned .....Master

.....Superintendent .....Address

SECTION A—PARTICULARS OF RADIOTELEPHONE OPERATORS

Name	Home Address	Certificate Number and Class

S.S. .....

M.V.

SECTION B—DIARY OF THE RADIOTELEPHONE SERVICE

Date and Time (G.M.T.)	Station From	Station To	Frequency Used	Record of Working, as prescribed by Rule 27

SCHEDULE 11 Rule 11

RANGE OF RADIOTELEGRAPH TRANSMITTERS

1. For the purposes of this Schedule the normal range of a radiotelegraph transmitter when determined by calculation on a frequency of 500 kc/s, shall be calculated in the manner specified in paragraph 2 or paragraph 3 of this Schedule.

2.—(1) In the case of all types of transmitting aerials, except "L" and "T" types, the product of (I_e) the effective radiation current in amperes and (H_e) the effective height in metres of the aerial shall be calculated and converted to miles in accordance with the following table:—

Product in metre-amperes	*Equivalent in miles*
56	175
44	150
21	100
15	75
5	25

(2) The effective radiation current (I_e) shall be obtained by multiplying the root mean square (RMS) current in amperes fed into the aerial system by a factor $\frac{C_r}{C_t}$ which shall be determined by the ratio of the radiation capacitance (C_r) to the total measured capacitance (C_t).

(3) The radiation capacitance (C_r) shall be obtained from the product of the radiation length (L_r) and the capacitance per unit length as given in the following table:—

$\frac{\textit{Radiation Length } (L_r)}{\text{Diameter of aerial}}$	p^F per metre
25	15.4
35	14.0
50	12.9
70	11.9
100	11.1
200	9.8
400	8.7
600	8.2
800	7.8
1,500	7.2
3,000	6.6
6,000	6.0
10,000	5.7

(4) The radiation length shall be as follows:—

(*a*) Single vertical aerial without capacitive loading
Radiation length (L_r)=measured length of aerial in metres;

(*b*) Single vertical aerial with top capacitive loading
Radiation length (L_r)=measured length of aerial+2 times the diameter of loading structure in metres;

(*c*) Other types of aerial
Radiation length (L_r)=total length of conductor (vertical and horizontal).

(5) The radiation capacitance of N similar vertical aerials joined in parallel shall be taken to be N times the radiation capacitance of one provided the spacing between them is greater than $\frac{L_r}{4}$

(6) The total capacitance (C_t) of the aerial shall be obtained by measurement using a capacitance bridge.

(7) The ratio $\frac{C_r}{C_t}$ shall be multiplied by the measured RMS current in amperes fed into the aerial system to give the effective radiation current (I_e).

(8) The effective height of the aerial (H_e) shall be obtained by measurement of the vertical distance from the load line mark indicating the greatest depth to which the ship may at any time or any place be submerged in accordance with the Load Line Rules 1959(a) or, if there is no such mark on the ship, from the mean level of the surface of the water in which the ship is afloat, to the base of the aerial, plus half the radiation length (L_r) of the aerial or its physical height, whichever is the smaller.

3. In the case of transmitting aerials of the "L" and "T" types the product of the root mean square current in amperes at the base of the main aerial and the maximum height in metres of the aerial measured from the load line mark indicating the greatest depth to which the ship may at any time or place be submerged in accordance with the Load Line Rules 1959 or, if there is no such mark on the ship, from the mean level of the surface of the water in which the ship is afloat, shall be converted to miles in accordance with the following table:—

Product in metre-amperes	*Equivalent in miles*
102	175
76	150
45	100
34	75
10	25

(a) S.I. 1959/2238 (1959 I, p. 1699).

EXPLANATORY NOTE

(This Note is not part of the Rules.)

These Rules supersede the Merchant Shipping (Radio) Rules 1952.

They include such requirements as appear to the Board of Trade to implement the provisions of the International Convention for the Safety of Life at Sea 1960 relating to radiotelegraphy and radiotelephony.

The principal changes are:—

(*a*) Cargo ships of between 300 and 500 tons are now required to be provided with radio installations;

(*b*) The principle of continuous radio watch, previously limited to passenger ships and to cargo ships of 1,600 tons and upwards, has now been extended to apply to all ships to which the Rules apply.