

Serial Number **1954/171**



## THE SHIPPING DIRECTION FINDERS RULES 1954

C. W. M. NORRIE, Governor-General  
ORDER IN COUNCIL

At the Government House at Wellington this 6th day of October 1954

Present:

HIS EXCELLENCY THE GOVERNOR-GENERAL IN COUNCIL

PURSUANT to the Shipping and Seamen Act 1952, His Excellency the Governor-General, acting by and with the advice and consent of the Executive Council, hereby makes the following rules.

### RULES

1. (1) These rules may be cited as the Shipping Direction Finders Rules 1954.
- (2) These rules shall come into force on the date of their notification in the *Gazette*.
- (3) In these rules, unless the context otherwise requires,—
  - “Interference” has the same meaning as in the Shipping Radio Rules 1954\*:
  - “Mile” means a nautical mile of 6,080 ft.:
  - “Tons” means gross tons:
 In relation to emissions and signals,—
  - “Class A1” means radiotelegraphy by the keying of a continuous emission on and off:
  - “Class A2” means amplitude modulated radiotelegraphy by the keying of a modulating audio frequency or of an emission continuously modulated by an audio frequency:
  - “Class B emissions” means damped emissions.
- (4) The provisions of the First Schedule to these rules shall have effect for the purpose of the transition from the law in force before these rules come into force to the provisions of these rules.

\* Statutory Regulations 1954, Serial number 1954/170, page 1,000.

### *Application*

2. These rules shall apply to ships which are—

- (a) Sea going New Zealand ships of 1,600 tons and upwards;
- (b) Other sea going ships of 1,600 tons and upwards while they are within any port in New Zealand,—

and are not—

- (c) Troopships that are not New Zealand ships;
- (d) Ships not propelled by mechanical means;
- (e) Pleasure yachts; or
- (f) Fishing boats.

### *Provision of Direction Finders*

3. Every ship to which these rules apply shall be provided with a direction finder complying with the requirements specified in the Second Schedule to these rules.

### *Climatic and Durability Tests*

4. (1) The direction finder required by these rules shall be such that it will be free from mechanical defects and will comply with the requirements of these rules—

- (a) While undergoing the vibration, dry heat, and low temperature tests specified in the Third Schedule to these rules;
- (b) When subjected to the damp heat test specified in subclause (4) of clause 3 of the said Schedule; and
- (c) Immediately after undergoing the other tests specified in the said Schedule.

(2) The loop aerial system referred to in the Second Schedule to these rules shall be such that, after undergoing the mould growth tests specified in the Third Schedule to these rules, no mould growth will be present on it.

### *Interference With Reception*

5. At no time when the ship is at sea shall interference or mechanical noise produced by the direction finder required by these rules or by other equipment in the ship be sufficient to prevent the efficient determination of radio bearings by means of the direction finder.

### *High Voltage Parts*

6. 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 250 volts shall be protected from accidental access and, except in the case of a generator or converter, shall be isolated automatically from all sources of electrical energy when the means of protection are removed.

### *Supply of Electrical Energy*

7. There shall be available in every ship to which these rules apply, at all times she is at sea, a supply of electrical energy sufficient for the operation of the direction finder. When the ship is in port that supply shall also be available for testing purposes at all reasonable times.

*Charging of Batteries*

8. Equipment shall be provided on board every ship to which these rules apply for the charging of any batteries which are provided as a source of electrical energy for the direction finder, and the ship's main source of electrical energy shall always be available for charging the batteries when the ship is at sea. The master of the ship shall cause those batteries to be tested once a day by voltmeter and once a month by hydrometer, and shall cause any battery which is found not to be fully charged to be brought up to that condition as soon as may be.

*Installation of Direction Finder*

9. (1) The direction finder shall be installed in such a position that efficient determination of radio bearings by means of the direction finder will not be hindered by extraneous noises.

(2) The loop aerial system referred to in the Second Schedule to these rules shall be mounted in such manner that the efficient determination of radio bearings by means of the direction finder will be hindered as little as possible by the proximity of aerials, derricks, wire halyards, and other large metal objects.

(3) Unless the feeder cables connecting the loop aerial system with the receiver forming part of the direction finder consists of solid-dielectric screened cable, they shall be protected by metal tubes which are bonded to earth. The joints of the feeder cables shall be watertight.

*Means of Communication*

10. (1) In every ship to which these rules apply an efficient two-way means of calling and voice communication shall be provided between the receiver forming part of the direction finder and the bridge from which the ship is normally navigated.

(2) In every such ship an efficient means of signalling shall be provided between the receiver forming part of the direction finder and the ship's standard compass or gyro compass repeater, if any.

*Restriction of Use of the Direction Finder*

11. The direction finder required by these rules shall not be used—

- (a) For any purpose other than the business of the ship; or
- (b) For keeping the radio watch required by rule 17 of the Shipping Radio Rules 1954\*.

*Calibration*

12. (1) The master of every ship to which these rules apply shall cause the direction finder required by these rules to be calibrated in accordance with this rule by two persons, the one experienced in taking of radio bearings and the other experienced in taking visual bearings.

(2) The direction finder shall be so calibrated as soon as may be after it has been installed in the ship and whenever any change is made in the position of the loop aerial system.

\* Statutory Regulations 1954, Serial number 1954/170, page 1,000.

- (3) The direction finder shall be calibrated in the following manner:
- (a) The calibration of the direction finder shall be carried out by taking simultaneously visual bearings upon a calibrating transmitter and radio bearings thereon by means of the direction finder, the ship being either—
- (i) Swung through a complete circle; or
  - (ii) Circled by another ship carrying the calibrating transmitter,—
- and in either case the bearings being taken throughout 360 degrees at intervals of 5 degrees or as close thereto as may be. The calibrating transmitter upon which the bearings are taken, whether it is situated on shore or on board another ship, shall be a transmitter operating on a frequency between 285 kc/s and 325 kc/s:
- (b) Calibration tables and curves shall be prepared on the basis of the bearings taken in accordance with paragraph (a) of this subclause.
- (4) The master of the ship shall cause the calibration tables and curves prepared in accordance with the foregoing provisions of this rule to be verified by means of check bearings taken in the manner therein specified—
- (a) At intervals not exceeding fifteen months; and
  - (b) Whenever any change is made in any structure or fitting on deck which is likely to affect the accuracy.
- (5) If that verification shall show that the calibration tables or curves are materially inaccurate, the master of the ship shall cause the direction finder to be recalibrated as soon as may be in the manner specified in the foregoing provisions of this rule.

#### *Records of Calibration and Verification*

13. The master of every ship to which these rules apply shall cause the following records to be kept on board in a place accessible to any person operating the direction finder, and to be available for inspection at any reasonable time by a Surveyor of Ships, namely:

- (a) A list or diagram indicating the conditions and position, on the most recent occasion on which the direction finder was calibrated, of—
  - (i) The aerials; and
  - (ii) All moveable structures—  
on board the ship which might affect the accuracy of the direction finder;
- (b) The calibration tables and curves which were prepared on the most recent occasion on which the direction finder was calibrated;
- (c) A certificate of calibration, in the form specified in the Fourth Schedule to these rules, relating to the most recent occasion on which the direction finder was calibrated, and signed by the persons making the calibration; and
- (d) A record, in the form specified in the Fifth Schedule to these rules, of check bearings taken for the verification of calibration, the bearings being numbered in the order in which they were taken.

*Wiring Diagram and Instructions*

14. A schematic wiring diagram of the direction finder and a book containing adequate instructions as to the use of the direction finder shall be provided and shall be available at all times for use by any person operating or testing the direction finder.

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 SCHEDULES
 

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## FIRST SCHEDULE

## TRANSITIONAL PROVISIONS

Rule 1 (4)

1. Any ship which is provided with a direction finder which was installed in the ship before these rules come into force or which is installed before 19 November 1956 shall not be required to comply with the requirements of rules 3 and 4 of these rules if the direction finder—

- (a) Complies with such of the requirements of the Merchant Shipping (Wireless Telegraphy) Rules 1938 of the United Kingdom\* as would have been applicable to it had those rules been in force in New Zealand at the commencement of these rules and continued so to be in force after the commencement of these rules; and
- (b) Is capable of—
  - (i) Receiving Class A1, A2, and B emissions on all frequencies from 255 kc/s to 525 kc/s; and
  - (ii) Taking radio bearings when the field strength at the loop aerial system is as low as 50 microvolts per metre.

2. Nothing in these rules shall require a home trade cargo ship of less than 5,000 tons to be provided with a direction finder before 19 November 1956.

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 SECOND SCHEDULE

## DIRECTION FINDER

Rule 3

1. *General.*—The direction finder shall include a receiver and a loop aerial system. For the purposes of this Schedule (except clause 10 (2) thereof) any goniometer forming part of the direction finder shall be deemed to be part of the loop aerial system. The loop aerial system, other than ball bearings, hose clips, set screws, and other similar small parts, shall consist of non-magnetic material.

2. *Capability.*—The direction finder shall be capable of headphone reception of emissions of Class A1, Class A2, and Class B of any frequency within the range of 255 kc/s to 525 kc/s, so as to enable the radio bearing and sense of the signal to be determined by reference to the minimum strength thereof.

3. *Controls.*—The receiver shall be provided with—

- (a) A radio-frequency gain control;
- (b) A tuning control; and
- (c) A tuning scale in which, at no point in the tuning range, an interval of  $\frac{1}{8}$  in. corresponds to a frequency change of more than 8 kc/s.

4. *General Method of Testing.*—The receiver shall comply with the requirements of clauses 5 to 12, inclusive, and 16 of this Schedule when tested in the following manner on any frequency within the range 255 kc/s to 525 kc/s:

- (a) Signals (in this Schedule referred to as locally generated signals) shall be obtained from one or more signal generators;
- (b) Locally generated signals shall be injected through a network in such manner that the signal generator or generators, as the case may be, and the network are together equivalent to a constant voltage generator in series with an impedance substantially equal to the impedance of the loop aerial system at the test frequency, when—

\* Statutory Rules and Orders 1938/1546.

SECOND SCHEDULE—*continued*

- (i) The loop aerial system is adjusted for the determination of radio bearings;
- (ii) The sense finder is not in operation; and
- (iii) The impedance is measured between the two terminals to which the receiver is normally connected;
- (c) The effective height ( $h_e$ ) in metres of the loop aerial system shall be the ratio  $E/e$ , where  $E$  is the voltage produced by a vertically polarized field of strength  $e$  volts per metre, when—
- (i) The loop aerial system is adjusted for the determination of bearings and for maximum pick-up;
- (ii) The sense finder is not in operation;
- (iii) The receiver is not connected to the loop aerial system; and
- (iv) The voltage is measured between the terminals of the loop aerial system to which the receiver is normally connected;
- (d) The standard input level shall be the input level obtained when the electromotive force of the equivalent signal generator referred to in paragraph (b) of this clause is  $50 h_e$  microvolts root mean square;
- (e) The standard output level shall be an audio-frequency output of 1 milliwatt into a resistance substantially equal to the modulus of the impedance of the telephone receivers at 1,000 c/s;
- (f) The signal/noise ratio of the direction finder shall be determined either—
- (i) By using vertically polarized emissions for transmission of the input signal, and with the loop aerial system arranged for the determination of bearings and adjusted for maximum pick-up, but without the sense finder in operation; or
- (ii) By using locally generated signals applied to the receiver only in the manner specified in paragraph (b) of this clause.
5. *Signal and Intermediate Frequency Selectivity.*—The signal frequency selectivity of the receiver, or in the case of a superheterodyne receiver the signal and intermediate frequency selectivity, shall satisfy the following requirements:
- (a) The minimum bandwidth for 6 decibels discrimination shall be 2 kc/s;
- (b) The maximum bandwidth in relation to discrimination shall be as follows:

Discrimination	.....	30 Decibels	60 Decibels	90 Decibels
Bandwidth	.....	8 kc/s	16 kc/s	35 kc/s

At any frequency outside the bandwidth of 35 kc/s specified in (b) the discrimination shall not be less than 90 decibels, except in the case of superheterodyne receivers, where at the image frequency the discrimination shall not be less than 80 decibels.

6. *Gain.*—When—

- (a) The input terminals of the receiver are closed solely through an external impedance substantially equal to that of the loop aerial system at the test frequency;
- (b) The sense finder is not in operation; and
- (c) Impedance is measured between the two terminals of the loop aerial system to which the receiver is normally connected,—
- the gain of the receiver shall be such that receiver noise can produce an output level of minus 10 decibels relative to the standard output level at any frequency within the range of frequencies specified in clause 2 of this Schedule.

7. *Signal/Noise Ratio.*—(1) When—

- (a) The note filter (if any) is switched out of circuit;
- (b) A Class A1 signal is injected at the standard input level; and
- (c) The receiver gain is manually adjusted to give the standard output level,—
- the signal/noise ratio shall not be less than 20 decibels.
- (2) When—
- (a) The note filter (if any) is switched out of circuit;
- (b) A Class A2 signal modulated to a depth of 30 per cent with a note frequency of 400 c/s is injected at the standard input level; and
- (c) The receiver gain is manually adjusted to give the standard output level,—
- the signal/noise ratio shall not be less than 10 decibels.

SECOND SCHEDULE—*continued*

(3) For the purposes of this clause spurious whistles shall be regarded as noise.

8. *Blocking*.—The change in output of the receiver shall not exceed 3 decibels at any frequency within the range of frequencies specified in clause 2 of this Schedule, and at all levels of wanted signal up to 50 decibels above the standard input level, whether of Class A1 or Class A2, when locally generated signals of Class A1 or Class A2 at a level of 40 decibels above the level of the wanted signal and spaced 10 kc/s from the carrier of the wanted signal are applied.

9. *Intermodulation*.—The input level of each of two unwanted signals shall not be less than plus 75 decibels relative to the standard input level when—

- (a) The receiver is adjusted to give standard output level with a locally generated wanted signal of standard input level modulated to a depth of 30 per cent with a note frequency of 400 c/s at any frequency within the range of frequencies specified in clause 2 of this Schedule;
- (b) The input wanted signal has been removed; and
- (c) Two unwanted locally generated signals each of any frequency which is not less than 50 kc/s from the frequency of the wanted signal but whose frequency sum or frequency difference is equal to the frequency of the wanted signal, one signal being modulated to a depth of 30 per cent with a note frequency of 400 c/s and the other signal being unmodulated, are simultaneously applied at equal input levels so as to give an output equal to that previously obtained with the wanted signal.

10. *Radiation*.—(1) The direction finder shall not in normal service produce a field exceeding 0.1 microvolt per metre when measured at a distance of one mile from the receiver.

(2) The receiver, including the goniometer, if any, shall be deemed to comply with the requirement of subclause (1) of this clause if, when—

- (a) The receiver without the aerial system is placed centrally in a screened earthed enclosure of dimensions at least 6 ft. cube;
- (b) The earth terminal is connected to the inside of the screen;
- (c) Each aerial terminal in turn is connected through an unscreened four-turn rectangular search coil situated within the said enclosure and of dimensions 1 ft. square and an unscreened lead to a resistive measuring instrument mounted outside the enclosure, having its other terminal earthed;
- (d) The aerial terminal or terminals of the receiver, other than the terminal connected to the aforesaid measuring instrument, are earthed one at a time or in any combination or remain unearthed or are interconnected in any combination; and
- (e) The receiver is energized and unscreened headphones are connected thereto,—

the power measured by the said measuring instrument when connected in the manner specified in paragraph (c) of this subclause, does not exceed  $4 \times 10^{-10}$  watts whatever the resistance of the measuring instrument or the adjustment of the receiver, notwithstanding that the search coil be short circuited or moved in any way, provided that it does not approach within 6 in. of the receiver case.

11. *Tuning Drift and Stability*.—(1) After the receiver has been switched on for five minutes and tuned to any frequency within the frequency range specified in clause 2 of this Schedule the tune frequency shall not change by more than one part in one thousand in any period of five minutes.

(2) A change of 5 per cent in any one of the supply voltages to the receiver, or to a power unit associated therewith, shall not cause the tune frequency to change by more than three parts in ten thousand.

(3) A change of ambient temperature of 5° c. within the range of 0° c. to 50° c. applied after the receiver has been switched on for one hour shall not cause the tune frequency to change by more than one in one thousand.

12. *Heterodyne Note Stability*.—The heterodyne note stability of the receiver shall be such that—

- (a) The frequency of a heterodyne note which is initially 1 kilocycle per second shall not vary by more than 100 c/s when an input signal is increased over the range of levels from 0 to 60 decibels above the standard input; and

SECOND SCHEDULE—*continued*

- (b) At all input levels within the range specified in paragraph (a) of this clause a beat note of 200 c/s can be obtained by tuning either towards or away from zero beat.

13. *Accuracy of Bearings.*—When the direction finder is tested using Class A2 emissions modulated to a depth of from 80 per cent to 100 per cent and with a vertically polarized field having a level of 40 decibels relative to 1 microvolt per metre, the bearings indicated by the scale of the direction finder shall, at all frequencies in the range of frequencies specified in clause 2 of this Schedule, throughout the whole 360 degrees of azimuth and after due allowance has been made for any site errors, be correct within plus or minus 1 degree of the true bearing.

14. *Quality of Minima.*—When the direction finder is arranged for the taking of bearings and is tested under the conditions specified in clause 13 of this Schedule, but with a field strength sufficient to give a signal/noise ratio of at least 50 decibels with the loop aerial system adjusted for maximum output, changes in the setting of the bearing indicator 5 degrees and 90 degrees in either direction from the position or positions of minimum output shall, at all frequencies in the range of frequencies specified in clause 2 of this Schedule, cause the audio-frequency output to increase by not less than 18 decibels and not less than 35 decibels respectively.

15. *Efficiency of Sense Finder.*—When—

- (a) The equipment is adjusted for the determination of sense, and is tested under the conditions specified in clause 13 of this Schedule, but with a field strength sufficient to give a signal/noise ratio of at least 50 decibels with the loop aerial system adjusted for maximum output; and

- (b) The sense indicator is adjusted to indicate any bearing within plus or minus 10 degrees of the true bearing,—

the audio-frequency output level of the receiver due to the wanted signal shall be at least 20 decibels below the output level that is obtained when the sense indicator is adjusted to indicate any bearing within  $180 \pm 10$  degrees of the true bearing.

16. *Fidelity.*—The maximum change in level of the output of the receiver shall be less than 8 decibels when the modulation frequency of an input signal of constant level and modulation depth is varied continuously from 300 c/s to 1,500 c/s. For the purposes of this clause the output of the receiver shall not exceed the standard output level and the input signal shall be applied at any level in the range from the standard input level to 50 decibels above that level.

## THIRD SCHEDULE

## CLIMATIC AND DURABILITY TESTS

Rule 4

1. In this Schedule—

- (a) References to Class B equipment shall be construed as references to each part of the direction finder other than the loop aerial system:

- (b) References to Class X equipment shall be construed as references to the loop aerial system.

2. (1) Class B equipment shall be subjected to the tests named opposite the letter B in the table given in subclause (4) of this clause, and Class X equipment shall be subjected to the tests named opposite the letter X in that table:

Provided that Class X equipment shall not be subjected to the immersion test if it is subjected to the rain test at a static pressure of not less than 45 lb. or more than 55 lb. per square inch.

(2) All such tests shall be conducted in the order in which they appear in the aforesaid table.

(3) At any time when the equipment is required by the provisions of clause 3 of this Schedule to be kept working for the purposes of those tests, power shall be supplied thereto at the voltage at which such equipment is intended to be operated.



THIRD SCHEDULE—*continued*(4) *Table*

Nature of Test	Class of Equipment
(1) Vibration test	B X
(2) Bump test	B X
(3) Dry heat test	B X
(4) Damp heat test	B X
(5) Low temperature test	B X
(6) Rain test	X
(7) Immersion test	X
(8) Corrosion test—salt water	B X
(9) Corrosion test—acid fumes (if a battery is included in the equipment)	B X
(10) Mould growth test	X

3. The tests referred to in clause 2 of this Schedule shall be conducted respectively as follows:

(1) *Vibration Test*.—The equipment, complete with its chassis covers and shock absorbers (if any), shall in its normal operating position be clamped to a vibration table. The table shall be vibrated at all frequencies between 0 and  $12\frac{1}{2}$  cycles per second at an amplitude of plus or minus 0.16 cm., during which period the equipment shall be kept working continuously. The table shall be so vibrated for three periods each of which shall be of eight minutes' duration. Throughout each such period the direction of the vibrations shall be perpendicular to the direction of the vibrations during the other two periods.

(2) *Bump Test*.—The equipment shall be subjected to not less than five hundred bumps at a constant rate of between one and four bumps per second with a free drop of at least 2.5 cm.

(3) *Dry Heat Test*—

(a) Class B equipment shall be placed in a chamber which is maintained for a period of two hours at a constant temperature of 55°C. within a tolerance of plus or minus 1°C., during which period the equipment shall be kept working continuously:

(b) Class X equipment shall be placed in a chamber which is maintained for a period of ten hours at a constant temperature of 70°C. within a tolerance of plus or minus 1°C., during which period the equipment shall not be worked or tested. The said chamber shall then be cooled to a constant temperature of 55°C. within a tolerance of plus or minus 1°C. and the equipment shall be kept working continuously at that temperature for a period of two hours.

(4) *Damp Heat Test*.—The equipment shall be prepared for the damp heat test in the following manner:

(a) The equipment shall be placed in a chamber which within a period not exceeding two hours shall be heated from room temperature to 40°C., and shall be brought to a relative humidity of not less than 95 per cent:

(b) The chamber shall be kept at a temperature of 40°C. within a tolerance of plus or minus 1°C. for a period of twelve hours, and at a relative humidity of not less than 95 per cent:

(c) At the beginning of the last sixty minutes of that period, all accessible surfaces and components shall be wiped dry and any fans or drying lamps provided in the equipment shall be switched on. After the fans or drying lamps have been in operation for thirty minutes and while the temperature of the chamber is still 40°C., subject to the aforesaid tolerance, the equipment shall be tested.

After the equipment has been tested, the temperature of the chamber shall, in preparation for the low temperature test, be allowed to fall below 25°C., the equipment remaining in the chamber.

(5) *Low Temperature Test*—

(a) Class B equipment shall be exposed to a temperature of minus 15°C. at normal atmospheric pressure for a period of not less than twelve hours:

(b) Class X equipment shall be exposed to a temperature of minus 25°C. at normal atmospheric pressure for a period of not less than twelve hours.

THIRD SCHEDULE—*continued*

(6) *Rain Test*.—The equipment shall be placed in a chamber fitted with eight shower heads, the discharge end of each of which shall consist of a flat, non-rustable metal plate, 0.16 cm. thick, having thirty-six holes each of 0.1 cm. diameter evenly spaced in concentric circles in the following manner:

Sixteen holes on the periphery of a circle of 5.1 cm. diameter:

Eight holes on the periphery of a circle of 3.8 cm. diameter:

Eight holes on the periphery of a circle of 2.5 cm. diameter:

Four holes on the periphery of a circle of 1.3 cm. diameter:

The said shower heads shall be arranged at a distance of not less than 50 cm. and not more than 80 cm. from the equipment in such a manner that spray from four of the shower heads is directed downwards at an angle of 45° at each of the four uppermost corners of the equipment, and the spray from the other four shower heads is directed horizontally at the centre of each area of the four sides of the equipment. Fresh water at room temperature and at a static pressure in accordance with the following table shall be sprayed on the equipment from the aforesaid shower heads for a period of one hour with the equipment in the position in which it is normally operated:

	Minimum Pressure (Pounds per Square Inch)	Maximum Pressure (Pounds per Square Inch)
If the equipment is subjected to the immersion test .....	15	25
If the equipment is not subjected to the immersion test .....	45	55

Throughout the test the equipment shall be rotated at between twelve and twenty revolutions per minute about a vertical axis passing through the centre of the equipment.

(7) *Immersion Test*.—The equipment in the condition in which it will normally be kept on board ship shall be immersed in water the surface of which is at least 10 cm. above the highest point of the equipment, and shall remain for a period of one hour. Upon its removal from the water the equipment shall be drained of water.

(8) *Corrosion Test (Salt Water)*.—The equipment shall be placed in a chamber fitted with apparatus capable of spraying in the form of a fine mist either natural sea water, or tap water containing the following salts in solution:

	Per Cent
Sodium chloride .....	2.7
Magnesium chloride .....	0.6
Calcium chloride .....	0.1
Potassium chloride .....	0.07

The quantity of each salt shall be subject to a tolerance of plus or minus 10 per cent.

The spraying apparatus shall be such that the products of corrosion cannot mix with the sea water or solution contained in the spray reservoir. The equipment shall be sprayed simultaneously on all its external surfaces with the sea water or solution for a period of one hour and shall be kept working continuously for the last thirty minutes thereof. The equipment shall immediately thereafter be stored for a period of seven days at a temperature of 40°C. within a tolerance of plus or minus 1°C. at a relative humidity of not less than 60 per cent and not more than 80 per cent. The equipment shall be sprayed and stored as aforesaid on four separate occasions.

(9) *Corrosion Test (Acid Fumes)*.—Any battery included in the equipment shall be fully charged and shall then be fitted into the equipment. If the arrangements are such that the battery can be charged without being removed from the equipment, the battery shall continue to be charged at the maximum rate appropriate to it for a period of twenty-four hours. The equipment shall immediately thereafter be stored for a period of four weeks at a temperature of 40°C. within a tolerance of plus or minus 1°C. at a relative humidity of not less than 60 per cent and not more than 80 per cent.

THIRD SCHEDULE—*continued*

(10) *Mould Growth Test*.—The equipment shall be inoculated by spraying with an aqueous suspension of mould spores containing all the cultures named in column A or all the cultures named in column B of the following table:

A	B
Aspergillus niger:	Aspergillus niger:
Aspergillus amstelodami:	Aspergillus amstelodami:
Paecilomyces varioti:	Aspergillus versicolor:
Stachybotrys atra:	Stachybotrys atra:
Penicillium brevi-compactum:	Penicillium brevi-compactum:
Penicillium cyclopium:	Cladosporum herbasum.
Chaetomium globosum.	

Immediately after it has been so sprayed the equipment shall be placed in a chamber, the temperature of which shall be maintained at any fixed value within the range 31°c. to 33°c. inclusive and controlled to within a tolerance of plus or minus 1°c. at a relative humidity of not less than 95 per cent. The equipment shall remain in the said chamber for a period of twenty-eight days.

## FOURTH SCHEDULE

## CERTIFICATE OF CALIBRATION OF DIRECTION FINDER

WE, the undersigned, hereby certify that we have this day— Rule 13 (c)

(a) Calibrated in accordance with the Shipping Direction Finders Rules  
s.s.

1954 the direction finder installed in the —————:

m.v.

(b) Handed to the master of that ship tables of calibration corrections:

(c) Adjusted the said direction finder so that the readings taken thereby, when corrected with those tables differed from the correct bearings by no more than plus or minus 2 degrees.

We hereby further certify that the master of the said ship has been furnished with a list or diagram indicating the conditions and position, at the time of that calibration, of the aerials and of all moveable structures on board the ship which might affect the accuracy of the direction finder.

—————, Radio Observer.

—————, Visual Observer.

————— (Date).

**FIFTH SCHEDULE**  
**RECORD OF CHECK BEARINGS TAKEN BY MEANS OF THE DIRECTION FINDER**  
**Rule 13 (d)**

(1)	Serial No. of Bearings	
(2)	Date	
(3)	Times (G.M.T.)	
(4)	Latitude	Ship's Approximate Position
(5)	Longitude	
(6)	Distance from Transmitter	
(7)	Direction Finder Bearing of (Name)	
(8)	Direction Finder Relative Bearing Corrected for Q.E.	
(9)	Ship's Head by Compass 0/360°	
(10)	Total Compass Error	
(11)	$\frac{1}{2}$ Convergency Applied	
(12)	Ship's Head Corrected (True)	
(13)	True Bearing by Direction Finder [Column (8) and Column (12)]	
(14)	True Bearing by Calculation or by Visual Check (Whether Calculated or Visual to be Indicated)	
(15)	Correction Required to Make Column (13) equal Column (14) (Indicating Whether - or +)	
(16)	Signature of Observer or Observers	

T. J. SHERRARD,  
 Clerk of the Executive Council.

## EXPLANATORY NOTE

[*This note is not part of the rules, but is intended to indicate their general effect.*]

These rules require sea going ships of 1,600 tons gross tonnage and over to be provided with direction finders, and include such requirements as appear to the Governor-General to implement the provisions of the International Convention for the Safety of Life at Sea 1948 relating to direction finders.

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Issued under the authority of the Regulations Act 1936.

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These regulations are administered in the Marine Department.