

Chapter 14

RADIOCOMMUNICATIONS

Reference should be made to the Instruction to Surveyors of Radio Installation of GMDSS ships

14.1 Application

14.1.1 This chapter applies to all craft specified in 1.3.1 in Chapter 1.

14.1.2 This chapter does not apply to craft to which the present code would otherwise apply while such craft 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. *

14.1.3 No provision in this chapter should prevent the use by any craft, survival craft or person in distress, of any means at their disposal to attract attention, make known their position and obtain help.

14.2 Terms and definitions

14.2.1 For the purpose of this chapter, the following terms should have the meanings defined below:

- .1 "Bridge-to-bridge" communications means safety communications between craft and ships from the position from which the craft is normally navigated.
- .2 "continuous watch" means that the radio watch concerned should not be interrupted other than for brief intervals when the craft's receiving capability is impaired or blocked by its own communications or when the facilities are under periodical maintenance or checks.
- .3 "Digital selective calling (DSC)" means a technique using digital codes which enables a radio station to establish contact with, and transfer information to, another station or group of stations, and complying with the relevant recommendations of the International Radio Consultative Committee (CCIR).
- .4 "Direct-printing telegraphy" means automated telegraphy techniques which comply with the relevant recommendations of the International Radio Consultative Committee (CCIR).
- .5 "General radiocommunications" means operational and public correspondence traffic, other than distress, urgency and safety messages, conducted by radio.

- .6 "INMARSAT" means the Organisation established by the Convention on the International Maritime Satellite Organisation (INMARSAT) adopted on 3 September 1976.
- .7 "International NAVTEX Service" means the co-ordinated broadcast and automatic reception on 518 kHz of maritime safety information by means of narrow-band direct printing telegraphy using the English language.
- .8 "Locating" means the finding of the ships, craft, aircraft, units or persons in distress.
- .9 "Maritime safety information" means navigational and meteorological warnings, meteorological forecasts and other urgent safety related messages broadcast to ships and craft.
- .10 "Polar orbiting satellite service" means a service which is based on polar orbiting satellites which receive and relay distress alerts from satellite EPIRBs and which provides their position.
- .11 "Radio Regulations" means the Radio Regulations annexed to, or regarded as being annexed to, the most recent International Telecommunication Convention which is in force at any time.
- .12 "Sea area A1" means an area within the radiotelephone coverage of at least one VHF coast station in which continuous DSC alerting is available, as may be defined by a Contracting Government to the Convention.
- .13 "Sea area A2" means an area, excluding sea area A1, within the radiotelephone coverage of at least one MF coast station in which continuous DSC alerting is available, as may be defined by a Contracting Government to the Convention.
- .14 "Sea area A3" means an area, excluding sea areas A1 and A2, within the coverage of an INMARSAT geostationary satellite in which continuous alerting is available.
- .15 "Sea area A4" means an area outside sea areas A1, A2 and A3.

14.2.2 All other terms and abbreviations which are used in this chapter and which are defined in the Radio Regulations should have the meanings as defined in those Regulations.

14.3 Exemptions

14.3.1 It is considered highly desirable not to deviate from the requirements of this chapter; nevertheless the Administration, in conjunction with the base port state, may grant partial or conditional exemptions to individual craft from the requirements of 14.6 to 14.10 provided:

- .1 such craft comply with the functional requirements of 14.4; and
- .2 the Administration has taken into account the effect such exemptions may have upon the general efficiency of the service for the safety of all ships and craft.

14.3.2 An exemption may be granted under paragraph 14.3.1 only:

- .1 if the conditions affecting safety are such as to render the full application of 14.6 to 14.10 unreasonable or unnecessary;
- .2 in exceptional circumstances, for a single voyage outside the sea area or sea areas for which the craft is equipped; or
- .3 prior to 1 February 1999, when the craft will be taken permanently out of service within two years of a date prescribed by 14.1 for the application of requirements of this chapter.

14.3.3 Each Administration should submit to the Organisation, as soon as possible after the first of January in each year, a report showing all exemptions granted under 14.3.1 and 14.3.2 during the previous calendar year and giving the reasons for granting such exemptions.

14.4 Functional requirements

14.4.1 Every craft, while at sea, should be capable:

- .1 except as provided in 14.7.1.1 and 14.9.1.4.3, of transmitting ship-to-shore distress alerts by at least two separate and independent means, each using a different radiocommunication service;
- .2 of receiving shore-to-ship distress alerts;
- .3 of transmitting and receiving ship-to-ship distress alerts;
- .4 of transmitting and receiving search and rescue co-ordinating communications;
- .5 of transmitting and receiving on-scene communications;
- .6 of transmitting and, as required by 13.5 receiving signals and locating;
- .7 of transmitting and receiving marine safety information;
- .8 of transmitting and receiving general radiocommunications to and from shore-based radio systems or networks subject to 14.14.8; and
- .9 of transmitting and receiving bridge-to-bridge communications.

14.5 Radio installations

14.5.1 Every craft should be provided with radio installations capable of complying with the functional requirements prescribed by 14.4 throughout its intended voyage and, unless exempted under 14.3, complying with the requirements of 14.6 and, as appropriate for the sea area or areas through which it will pass during its intended voyage, the requirements of either 14.7, 14.8, 14.9 or 14.10.

14.5.2 Every radio installation should:

- .1 be so located that no harmful interference of mechanical, electrical or other origin affects its proper use, and so as to ensure electromagnetic compatibility and avoidance of harmful interaction with other equipment and systems;
- .2 be so located as to ensure the greatest possible degree of safety and operational availability;
- .3 be protected against harmful effects of water, extremes of temperature and other adverse environmental conditions;
- .4 be provided with reliable, permanently arranged electrical lighting, independent of the main sources of electrical power, for the adequate illumination of the radio controls for operating the radio installation; and
- .5 be clearly marked with the call sign, the ship station identity and other codes as applicable for the use of the radio installation.

14.5.3 Control of the VHF radiotelephone channels, required for navigational safety, should be immediately available on the navigating bridge convenient to the conning position, and where necessary, facilities should be available to permit radiocommunications from the wings of the navigating bridge. Portable VHF equipment may be used to meet the latter provision.

14.5.4

In passenger craft:

- .1 A distress panel should be installed at the conning position. This panel should contain either one single button which, when pressed, initiates a distress alert using all radiocommunication installations required on board for that purpose or one button for each individual installation. The panel should clearly and visually indicate whenever any button or buttons have been pressed. Means should be provided to prevent inadvertent activation of the button or buttons. If the satellite EPIRB is used as the secondary means of distress alerting and is not remotely activated, it should be acceptable to have an additional EPIRB installed in the wheelhouse near the conning position.

- .2 Information on the craft's position should be continuously and automatically provided to all relevant radiocommunication equipment to be included in the initial distress alert when the button or buttons on the distress panel is pressed.
- .3 A distress alert panel should be installed at the conning position. The distress alarm panel should provide visual and aural indication of any distress alert or alerts received on board and should also indicate through which radiocommunication service the distress alerts have been received.
(2000 HSC Code, paragraphs 14.6.4 to 14.6.6)

14.6 Radio equipment _ General

14.6.1 Every craft should be provided with:

- .1 a VHF radio installation capable of transmitting and receiving:
 - .1.1 DSC on the frequency 156.525 MHz (channel 70). It should be possible to initiate the transmission of distress alerts on channel 70 from the position from which the craft is normally navigated; and
 - .1.2 radiotelephony on the frequencies 156.300 MHz (channel 6), 156.650 MHz (channel 13) and 156.800 MHz (channel 16);

- .2 a radio installation capable of maintaining a continuous DSC watch on VHF channel 70 which may be separate from, or combined with, that required by 14.6.1.1.1;
- .3 a radar transponder capable of operating in the 9 GHz band, which:
 - .3.1 should be so stowed that it can be easily utilised; and
 - .3.2 may be one of those required by 8.2.1.2 for a survival craft;
- .4 a receiver capable of receiving International NAVTEX service broadcasts if the craft is engaged on voyages in any area in which an International NAVTEX service is provided;
- .5 a radio facility for reception of maritime safety information by the INMARSAT enhanced group calling system if the craft is engaged on voyages in any area of INMARSAT coverage but in which an international NAVTEX service is not provided. However, craft engaged exclusively on voyages in areas where a HF direct-printing telegraphy maritime safety information service is provided and fitted with equipment capable of receiving such service, may be exempt from this requirement.
- .6 subject to the provision of 14.7.3, a satellite emergency position-indicating radio beacon (satellite EPIRB) which should be:
 - .6.1 capable of transmitting a distress alert either through the polar orbiting satellite service operating in the 406 MHz band or, if the craft is engaged only on voyages within INMARSAT coverage, through the INMARSAT geostationary satellite service operating in the 1.6 GHz band;
 - .6.2 installed in an easily accessible position;
 - .6.3 ready to be manually released and capable of being carried by one person into a survival craft;
 - .6.4 capable of floating free if the craft sinks and of being automatically activated when afloat; and
 - .6.5 capable of being activated manually.

14.6.2 Until 1 February 1999, or until such other data as may be determined by the Maritime Safety Committee, every craft should, in addition, be fitted with a radio installation consisting of a radiotelephone distress frequency watch receiver capable of operating on 2,182 kHz.

14.6.3 Until 1 February 1999, every craft should, unless the craft is engaged on voyages in sea area A1 only, be fitted with a device for generating the radiotelephone alarm signal on the frequency 2,182 kHz.

14.6.4 The Administration may exempt craft constructed on or after 1 February 1997 from the requirements prescribed by paragraphs 14.6.2 and 14.6.3.

14.6.5 Every passenger craft should be provided with means for two-way on-scene radiocommunications for search and rescue purposes using the aeronautical frequencies 121.5 MHz and 123.1 MHz from the position from which the craft is normally navigated.

(2000 HSC Code, paragraph 14.7.2)

14.7 Radio equipment - Sea area A1

14.7.1 In addition to meeting the requirements of 14.6, every craft engaged on voyages exclusively in sea area A1 should be provided with a radio installation capable of initiating the transmission of ship-to-shore distress alerts from the position from which the craft is normally navigated, operating either:

- .1 on VHF using DSC; this requirement may be fulfilled by the EPIRB prescribed by 14.7.3, either by installing the EPIRB close to, or by remote activation from, the position from which the craft is normally navigated; or
- .2 through the polar orbiting satellite service on 406 MHz; this requirement may be fulfilled by the satellite EPIRB required by 14.6.1.6, either by installing the satellite EPIRB close to, or by remote activation from the position from which the craft is normally navigated; or
- .3 if the craft on voyages within coverage of MF coast stations equipped with DSC, on MF using DSC; or
- .4 on HF using DSC; or
- .5 through the INMARSAT geostationary satellite service; this requirement may be fulfilled by:
 - .5.1 an INMARSAT ship earth station; or
 - .5.2 the satellite EPIRB, required by 14.6.1.6, either by installing the satellite EPIRB close to, or by remote activation from, the position from which the craft is normally navigated.

14.7.2 The VHF radio installation, required by 14.6.1.1, should also be capable of transmitting and receiving general radiocommunications using radiotelephony.

14.7.3 Craft engaged on voyages exclusively in sea area A1 may carry, in lieu of the satellite EPIRB required by 14.6.1.6, an EPIRB which should be:

- .1 capable of transmitting a distress alert using DSC on VHF channel 70 and providing for locating by means of a radar transponder operating in the 9 GHz band;

- .2 installed in an easily accessible position;
- .3 ready to be manually released and capable of being carried by one person into a survival craft;

.4 capable of floating free if the craft sinks and being automatically activated when afloat; and

.5 capable of being activated manually.

14.8 Radio equipment - Sea areas A1 and A2

14.8.1 In addition to meeting the requirements of 14.6, every craft engaged on voyages beyond sea area A1, but remaining within sea area A2, should be provided with:

.1 an MF radio installation capable of transmitting and receiving, for distress and safety purposes, on the frequencies:

.1.1 2,187.5 kHz using DSC; and

.1.2 2,182 kHz using radiotelephony;

.2 a radio installation capable of maintaining a continuous DSC watch on the frequency 2,187.5 kHz which may be separate from, or combined with, that required by 14.8.1.1.1; and

.3 means of initiating the transmission of ship-to-shore distress alerts by a radio service other than MF operating either:

.3.1 through the polar orbiting satellite service on 406 MHz; this requirement may be fulfilled by the satellite EPIRB, required by 14.6.1.6, either by installing the satellite EPIRB close to or by remote activation from, the position from which the craft is normally navigated; or

.3.2 on HF using DSC; or

.3.3 through the INMARSAT geostationary satellite service; this requirement may be fulfilled by:

.3.3.1 the equipment specified in 14.8.1.3.2; or

.3.3.2 the satellite EPIRB, required by 14.6.1.6, either by installing the satellite EPIRB close to, or by remote activation from, the position from which the craft is normally navigated.

14.8.2 It should be possible to initiate transmission of distress alerts by the radio installations specified in 14.8.1.1 and 14.8.1.3 from the position from which the craft is normally navigated.

14.8.3 The craft should, in addition, be capable of transmitting and receiving general radiocommunications using radiotelephony or direct-printing telegraphy by either:

- .1 a radio installation operating on working frequencies in the bands between 1,605 kHz and 4,000 kHz or between 4,000 kHz and 27,500 kHz. This requirement may be fulfilled by the addition of this capability in the equipment required by 14.8.1.1; or
- .2 an INMARSAT ship earth station.

14.8.4 The Administration may exempt crafts constructed before 1 February 1997, which are engaged exclusively on voyages within sea area A2, from the requirements of 14.6.1.1.1 and 14.6.1.2 provided such crafts maintain, when practicable, a continuous listening watch on VHF channel 16. This watch should be kept at the position from which the craft is normally navigated. Such exemption should be endorsed by the base port State in the Permit to Operate.

14.9 Radio equipment _ Sea areas A1, A2 and A3

14.9.1 In addition to meeting the requirements of 14.6, every craft engaged on voyages beyond sea areas A1 and A2, but remaining within sea area A3, should, if it does not comply with the requirements of 14.9.2, be provided with:

- .1 an INMARSAT ship earth station capable of:
 - .1.1 transmitting and receiving distress and safety communications using direct-printing telegraphy;
 - .1.2 initiating and receiving distress priority calls;
 - .1.3 maintaining watch for shore-to-ship distress alerts, including those directed to specifically defined geographical areas;
 - .1.4 transmitting and receiving general radiocommunications, using either radiotelephony or direct-printing telegraphy; and
- .2 an MF radio installation capable of transmitting and receiving, for distress and safety purposes, on the frequencies:
 - .2.1 2,187.5 kHz using DSC; and
 - .2.2 2,182 kHz using radiotelephony; and
- .3 a radio installation capable of maintaining a continuous DSC watch on the frequency 2,187.5 kHz which may be separate from or combined with that required by 14.9.1.2.1; and
- .4 means of initiating the transmission of ship-to-shore distress alerts by a radio service operating either:
 - .4.1 through the polar orbiting service on 406 MHz; this requirement may be fulfilled by the satellite EPIRB, required by 14.6.1.6, either by installing the satellite EPIRB close to, or by

remote activation from, the position from which the craft is normally navigated; or

.4.2 on HF using DSC; or

.4.3 through the INMARSAT geostationary satellite service, by an additional ship earth station or by the satellite EPIRB required by 14.6.1.6, either by installing the satellite EPIRB close to, or by remote activation from, the position from which the craft is normally navigated;

14.9.2 In addition to meeting the requirements of 14.6, every craft engaged on voyages beyond sea areas A1 and A2, but remaining within sea area A3, should, if it does not comply with the requirements of 14.9.1, be provided with:

.1 an MF/HF radio installation capable of transmitting and receiving for distress and safety purposes, on all distress and safety frequencies in the bands between 1,605 kHz and 4,000 kHz and between 4,000 kHz and 27,500 kHz:

.1.1 using DSC;

.1.2 using radiotelephony; and

.1.3 using direct-printing telegraphy; and

.2 equipment capable of maintaining DSC watch on 2,187.5 kHz, 8,414.5 kHz and on at least one of the distress and safety DSC frequencies 4,207.5 kHz, 6,312 kHz, 12,577 kHz or 16,804.5 kHz at any time, it should be possible to select any of these DSC distress and safety frequencies. This equipment may be separate from, or combined with, the equipment required by 14.9.2.1; and

.3 means of initiating the transmission of ship-to-shore distress alerts by a radiocommunication service other than HF operating either:

.3.1 through the polar orbiting satellite service on 406 MHz; this requirement may be fulfilled by the satellite EPIRB, required by 14.6.1.6, either by installing the satellite EPIRB close to, or by remote activation from, the position from which the craft is normally navigated; or

.3.2 through the INMARSAT geostationary satellite service; this requirement may be fulfilled by:

.3.2.1 an INMARSAT ship earth station; or

.3.2.2 the satellite EPIRB, required by 14.6.1.6, either by installing the satellite EPIRB close to, or by remote activation from, the position from which the craft is normally navigated; and

- .4 in addition, the craft should be capable of transmitting and receiving general radiocommunications using radiotelephony or direct-printing telegraphy by an MF/HF radio installation operating on working frequencies in the bands between 1,605 kHz and 4,000 kHz and between 4,000 kHz and 27,500 kHz. This requirement may be fulfilled by the addition of this capability in the equipment required by 14.9.2.1.

14.9.3 It should be possible to initiate transmission of distress alerts by the radio installations specified in 14.9.1.1, 14.9.1.2, 14.9.1.4, 14.9.2.1 and 14.9.2.3 from the position from which the craft is normally navigated.

14.9.4 The Administration, in conjunction with the base port State, may exempt craft constructed before 1 February 1997 and engaged exclusively on voyages within sea areas A2 and A3, from the requirements of 14.6.1.1.1 and 14.6.1.2 provided such craft maintain, when practicable, a continuous listening watch on VHF channel 16. This watch should be kept at the position from which the craft is normally navigated.

14.10 Radio equipment _ Sea areas A1, A2, A3 and A4

14.10.1 In addition to meeting the requirements of 14.6, craft engaged on voyages in all sea areas should be provided with the radio installations and equipment required by 14.9.2, except that the equipment required by 14.9.2.3.2 should not be accepted as an alternative to that required by 14.9.2.3.1, which should always be provided. In addition, crafts engaged on voyages in all sea areas should comply with the requirements of 14.9.3.

14.10.2 The Administration, in conjunction with the base port State, may exempt craft constructed before 1 February 1997, and engaged exclusively on voyages within sea areas A2, A3 and A4, from the requirements of 14.6.1.1.1 and 14.6.1.2 provided such craft maintain, when practicable, a continuous listening watch on VHF channel 16. This watch should be kept at the position from which the craft is normally navigated.

14.11 Watches

14.11.1 Every craft, while at sea, should maintain a continuous watch:

- .1 on VHF DSC channel 70, if the craft, in accordance with the requirements of 14.6.1.2, is fitted with VHF radio installation;
- .2 on the distress and safety DSC frequency 2,187.5 kHz, if the craft, in accordance with the requirements of 14.8.1.2 or 14.9.1.3, is fitted with an MF radio installation;
- .3 on the distress and safety DSC frequencies 2,187.5 kHz and 8,414.5 kHz and also on at least one of the distress and safety DSC frequencies 4,207.5 kHz, 6,312 kHz, 12,577 kHz or 16,804.5 kHz, appropriate to the time of day and the geographical position of the craft, if the craft, in accordance with the requirements of 14.9.2.2 or 14.10.1,

is fitted with an MF/HF radio installation. This watch may be kept by means of a scanning receiver;

.4 for satellite shore-to-ship distress alerts, if the craft, in accordance with the requirements of 14.9.1.1, is fitted with an INMARSAT ship earth station.

14.11.2 Every craft, while at sea, should maintain a radio watch for broadcasts of maritime safety information on the appropriate frequency or frequencies on which such information is broadcast for the area in which the craft is navigating.

14.11.3 Until 1 February 1999 or until such other date as may be determined by the Maritime Safety Committee, every craft while at sea should maintain, when practicable, a continuous listening watch on VHF channel 16. This watch should be kept at the position from which the craft is normally navigated.

14.11.4 Until 1 February 1999 or until such other date as may be determined by the Maritime Safety Committee, every craft required to carry a radiotelephone watch receiver should maintain, while at sea, a continuous watch on the radiotelephone distress frequency 2,182 kHz. This watch receiver should be kept at the position from which the craft is normally navigated.

14.12 Sources of energy

14.12.1 There should be available at all times, while the craft is at sea, a supply of electrical energy sufficient to operate the radio installations and to charge any batteries used as part of a reserve source of energy for the radio installations.

14.12.2 Reserve and emergency sources of energy should be provided on every craft to supply radio installations, for the purpose of conducting distress and safety radiocommunications, in the event of failure of the craft's main source of electrical power. The reserve source of energy should be capable of simultaneously operating the VHF radio installation required by 14.6.1.1 and, as appropriate for the sea area or sea areas for which the craft is equipped, either the MF radio installation required by 14.8.1.1, the MF/HF radio installation required by 14.9.2.1 or 14.10.1 or the INMARSAT ship earth station required by 14.9.1.1 and any of the additional loads mentioned in 14.12.5 and 14.12.8 for a period of at least one hour:

14.12.3 The reserve source of energy should be independent of the propelling power of the craft and the craft's electrical system.

14.12.4 Where, in addition to the VHF radio installation, two or more of the other radio installations, referred to in 14.12.2, can be connected to the reserve source of energy, they should be capable of simultaneously supplying, for the period specified, as appropriate, in 14.12.2 the VHF radio installation and:

.1 all other radio installations which can be connected to the reserve source of energy at the same time; or

- .2 whichever of the radio installations will consume the most power, if only one of the other radio installations can be connected to the reserve source of energy at the same time as the VHF radio installation.

14.12.5 The reserve source of energy may be used to supply the electrical lighting required by 14.5.2.4.

14.12.6 Where a reserve source of energy consists of a rechargeable accumulator battery or batteries:

- .1 a means of automatically charging such batteries should be provided which should be capable of recharging them to minimum capacity requirements within 10 hours; and
- .2 the capacity of the battery or batteries should be checked, using an appropriate method, at intervals not exceeding 12 months, when the craft is not at sea.

14.12.7 The siting and installation of accumulator batteries which provide a reserve source of energy should be such as to ensure:

- .1 the highest degree of service;
- .2 a reasonable lifetime;
- .3 reasonable safety;
- .4 the battery temperatures remain within the manufacturer's specifications whether under charge or idle; and
- .5 that when fully charged, the batteries will provide at least the minimum required hours of operation under all weather conditions.

14.12.8 If an uninterrupted input of information from the craft's navigational or other equipment to a radio installation required by this chapter is needed to ensure its proper performance, means should be provided to ensure the continuous supply of such information in the event of failure of the craft's main or emergency source of electrical power.

14.13 Performance standards

14.13.1 All equipment to which this chapter applies should be of a type approved by the Administration. Subject to 14.13.2, such equipment should conform to appropriate performance standards not inferior to those adopted by the Organisation.

Refer to the following resolutions adopted by the Assembly of the Organisation:

- .1 Resolution A.525(13): Performance standards for narrow-band direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships.
- .2 Resolution A.694(17): General requirements for shipborne radio equipment forming part of the Global Maritime Distress and Safety System (GMDSS) and for electronic navigational aids.
- .3 Resolution A.698(17): Performance standards for ship earth stations capable of two-way communications and resolution A.570(14): Type approval of ship earth stations.
- .4 Resolution A.609(15): Performance standards for shipborne VHF radio installations capable of voice communication and digital selective calling.
- .5 Resolution A.610(15): Performance standards for shipborne MF radio installations capable of voice communication and digital selective calling.
- .6 Resolution A.613(15): Performance standards for shipborne MF/HF radio installations capable of voice communication, narrow-band direct-printing and digital selective calling.
- .7 Resolution A.695(17): Performance standards for float-free satellite emergency position-indicating radio beacons (EPIRBs) operating on 406 MHz (see also Assembly resolution A.696(17): Type approval of satellite emergency position-indicating radio beacons (EPIRBs) operating in the COSPAS-SARSAT system).
- .8 Resolution A.697(17): Performance standards for survival craft radar transponders for use in search and rescue operations.
- .9 Resolution A.612(15): Performance standards for float-free VHF emergency position-indicating radio beacons.
- .10 Resolution A.663(16): Performance standards for INMARSAT Standard-C ship earth stations capable of transmitting and receiving direct-printing communications and resolution A.570(14): Type approval of ship earth stations.
- .11 Resolution A.664(16): Performance standards for enhanced group call equipment.
- .12 Resolution A.661(16): Performance standards for float-free satellite emergency position-indicating radio beacons operating through the geostationary INMARSAT satellite system of 1.6 GHz.

.13 Resolution A.662(16): Performance standards for float-free release and activation arrangements for emergency radio equipment.

.14 Resolution A.699(17): System performance standard for the promulgation and co-ordination of maritime safety information using high-frequency narrow-band direct-printing.

.15 Resolution A.700(17): Performance standards for narrow-band direct-printing telegraphy equipment for the reception of navigational and meteorological warnings and urgent information to ships (MSI) by HF.

14.14 Maintenance requirements

14.14.1 Equipment should be so designed that the main units can be replaced readily without elaborate recalibration or readjustment.

14.14.2 Where applicable, equipment should be so constructed and installed that it is readily accessible for inspection and on-board maintenance purposes.

14.14.3 Adequate information should be provided to enable the equipment to be properly operated and maintained, taking into account the recommendations of the Organisation.

14.14.4 Adequate tools and spares should be provided to enable equipment to be maintained.

14.14.5 The Administration should ensure that radio equipment required by this Chapter is maintained to provide the availability of the functional requirements specified in 14.4 and to meet the recommended performance standards of such equipment.

14.14.6 On crafts engaged on voyages in sea areas A1 and A2, the availability should be ensured by using such methods as duplication of equipment, shore-based maintenance or at-sea electronic maintenance capability, or a combination of these, as may be approved by the administration.

14.14.7 On crafts engaged on voyages in sea areas A3 and A4, the availability should be ensured by using a combination of at least two methods such as duplication of equipment, shore-based maintenance or at-sea electronic maintenance capability, as may be approved by the Administration, taking into account the recommendations of the Organisation.

14.14.8 However, crafts operating solely between ports where adequate facilities for shore-based maintenance of the radio installations are available and provided no journey between two such ports exceeds 6 hours, then the Administration may exempt such crafts from the requirement to use at least two maintenance methods. For such crafts at least one maintenance method should be used.

14.14.9 While all reasonable steps should be taken to maintain the equipment in efficient working order to ensure compliance with all the functional requirements specified in 14.4, malfunction of the equipment for providing the general radiocommunications required by 14.4.8 should not be considered as making a craft unseaworthy or as a reason for delaying the craft in ports where repair facilities are not readily available, provided the craft is capable of performing all distress and safety functions.

14.15 Radio personnel

Every craft should carry personnel qualified for distress and safety radiocommunication purposes to the satisfaction of the Administration. The personnel should be holders of certificates specified in the Radio Regulations as appropriate, any one of whom should be designated to have primary responsibility for radiocommunications during distress incidents.

14.16 Radio records

A record should be kept, to the satisfaction of the Administration and as required by the Radio Regulations, of all incidents connected with the radiocommunication service which appear to be of importance to safety of life at sea.