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Agenda item 10

**RESOLUTION A.803(19)**  
adopted on 23 November 1995

**PERFORMANCE STANDARDS FOR SHIPBORNE VHF RADIO  
INSTALLATIONS CAPABLE OF VOICE COMMUNICATION  
AND DIGITAL SELECTIVE CALLING**

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECALLING ALSO regulations IV/7.1.1, 7.1.2 and 14.1 of the 1988 amendments to the International Convention for the Safety of Life at Sea (SOLAS), 1974 concerning radiocommunications for the Global Maritime Distress and Safety System (GMDSS), which require respectively that ships be provided with a VHF radio installation capable of voice communication and digital selective calling and that such VHF radio installations shall conform to appropriate performance standards not inferior to those adopted by the Organization,

RECOGNIZING the need to prepare performance standards for VHF radio installations capable of voice communication and digital selective calling to be used in the GMDSS in order to ensure the operational reliability of such equipment and to avoid, as far as practicable, adverse interaction between such equipment and other communication and navigation equipment on board ship,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its sixty-fifth session,

1. ADOPTS the Recommendation on Performance Standards for Shipborne VHF Radio Installations Capable of Voice Communication and Digital Selective Calling set out in the Annex to the present resolution;
2. RECOMMENDS Governments to ensure that shipborne VHF radio installations capable of voice communication and digital selective calling which will form part of the GMDSS:
  - (a) if installed on or after 23 November 1996, conform to performance standards not inferior to those specified in the Annex to the present resolution;
  - (b) if installed before 23 November 1996, conform to performance standards not inferior to those specified in the Annex to resolution A.609(15);
3. REQUESTS the Maritime Safety Committee to keep these Performance Standards under review and to adopt amendments thereto, as necessary.

## ANNEX

**RECOMMENDATION ON PERFORMANCE STANDARDS FOR SHIPBORNE  
VHF RADIO INSTALLATIONS CAPABLE OF VOICE COMMUNICATION  
AND DIGITAL SELECTIVE CALLING****1 INTRODUCTION**

The VHF radio installation, in addition to meeting the requirements of the Radio Regulations, the relevant ITU-R Recommendations and the general requirements set out in resolution A.694(17), should comply with the following performance standards.

**2 GENERAL**

2.1 The installation, which may consist of more than one piece of equipment, should be capable of operating on single-frequency channels or on single- and two-frequency channels.

2.2 The equipment should provide for the following categories of calls using both voice and digital selective calling (DSC):

- .1 distress, urgency and safety;
- .2 ship operational requirements; and
- .3 public correspondence.

2.3 The equipment should provide for the following categories of communications using voice:

- .1 distress, urgency and safety;
- .2 ship operational requirements; and
- .3 public correspondence.

2.4 The equipment should comprise at least:

- .1 a transmitter/receiver including antenna;
- .2 an integral control unit or one or more separate control units;
- .3 a microphone with a press-to-transmit switch, which may be combined with a telephone in a handset;
- .4 an internal or external loudspeaker;
- .5 an integral or separate digital selective calling facility; and
- .6 a dedicated DSC watchkeeping facility to maintain a continuous watch on channel 70.

- 2.5 The installation may also include additional receivers.
- 2.6 A distress alert should be activated only by means of a dedicated distress button. This button should not be any key of an ITU-T digital input panel or an ISO keyboard provided on the equipment.
- 2.7 The dedicated distress button should:
  - .1 be clearly identified; and
  - .2 be protected against inadvertent operation.
- 2.8 The distress alert initiation should require at least two independent actions.
- 2.9 The equipment should indicate the status of the distress alert transmission.
- 2.10 It should be possible to interrupt and initiate distress alerts at any time.

### **3 CLASS OF EMISSION, FREQUENCY BANDS AND CHANNELS**

- 3.1 The equipment may be designated for operation on one or more channels selected from and in accordance with Appendix 18 of the Radio Regulations.
- 3.2 The radiotelephone facility should be capable of operating as follows:
  - .1 in the band 156.3 MHz to 156.875 MHz on single-frequency channels as specified in Appendix 18 to the Radio Regulations; and
  - .2 in the band 156.025 MHz to 157.425 MHz for transmitting and the band 160.625 MHz to 162.025 MHz for receiving on two-frequency channels as specified in Appendix 18 to the Radio Regulations.
- 3.3 The digital selective calling facility should be capable of operating on channel 70.
- 3.4 Class of emission should comply with Appendix 19 of the Radio Regulations.

### **4 CONTROLS AND INDICATORS**

#### **4.1 General**

- 4.1.1 Change of channel should be capable of being made as rapidly as possible, but in any event within 5 s.
- 4.1.2 The time taken to switch from the transmit to the receive condition, and vice versa, should not exceed 0.3 s.
- 4.1.3 An on/off switch should be provided for the entire installation with a visual indication that the installation is switched on.
- 4.1.4 A visual indication that the carrier is being transmitted should be provided.

4.1.5 The equipment should indicate the channel number, as given in the Radio Regulations, to which it is tuned. It should allow the determination of the channel number under all conditions of external lighting. Where practicable, channels 16 and 70 should be distinctively marked.

4.1.6 Control of the equipment should be possible at the position from which the ship is normally navigated. Control from that position should have priority if additional control units are provided. When there is more than one control unit, indication should be given to the other units that the equipment is in operation.

4.1.7 The equipment should not be able to transmit during a channel switching operation.

4.1.8 Operation of the transmit/receive control should not cause unwanted emissions.

## **4.2 Radiotelephone facility**

4.2.1 Provision should be made for changing from transmission to reception by use of a press-to-transmit switch. Additionally, facilities for operation on two-frequency channels without manual control may be provided.

4.2.2 The receiver should be provided with a manual volume control by which the audio output may be varied.

4.2.3 A squelch (mute) control should be provided on the exterior of the equipment.

## **5 PERMISSIBLE WARMING-UP PERIOD**

The equipment should be operational within 1 min of switching on.

## **6 SAFETY PRECAUTIONS**

The equipment, when operating, should not be damaged by the effects of open-circuited or short-circuited antenna terminals.

## **7 TRANSMITTER OUTPUT POWER**

7.1 The transmitter output power should be between 6 and 25 W.

7.2 Provision should be made for reducing the transmitter output power to a value of between 0.1 and 1 W. However, this reduction of the power is optional on channel 70.

## **8 RECEIVER PARAMETERS**

### **8.1 Radiotelephone facility**

The sensitivity of the receiver should be equal to or better than  $2\mu\text{V}$  e.m.f. for a signal-to-noise ratio of 20 dB.

## **8.2 Digital selective calling facility**

With a DSC modulated input signal having a level of  $1\mu\text{V}$  e.m.f. to its associated VHF receiver, the DSC equipment should be capable of decoding the received message with a maximum permissible output character error rate of  $10^{-2}$ .

## **8.3 Immunity to interference**

The immunity to interference of the receiver should be such that the wanted signal is not seriously affected by unwanted signals.

## **9 ANTENNA SYSTEM**

The VHF antenna or antennae should be vertically polarized and, as far as practicable, be omnidirectional in the horizontal plane. The installation should be suitable for efficient radiation and reception of signals at the operating frequencies.

## **10 LOUDSPEAKER AND TELEPHONE HANDSET (radiotelephone facility)**

10.1 The receiver output should be suitable for use with a loudspeaker or a telephone handset. The audio output should be sufficient to be heard in the ambient noise level likely to be encountered on board ships.

10.2 It should be possible to switch off the loudspeaker without affecting the audio output of the telephone handset, if provided.

10.3 In the transmit condition during simplex operation, the output of the receiver should be muted.

10.4 In the transmit condition during duplex operation, only the telephone handset should be in circuit. Care should be taken to prevent any electrical or acoustic feedback, which could cause singing.

## **11 DIGITAL SELECTIVE CALLING FACILITY**

11.1 The facility should conform to the provisions of the relevant ITU-R Recommendations pertaining to the DSC system.<sup>1</sup>

11.2 The DSC facility should comprise:

- .1 means to decode and encode DSC messages;
- .2 means necessary for composing the DSC message;
- .3 means to verify the prepared message before it is transmitted;

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<sup>1</sup>Class A or B DSC equipment conforming to Recommendation ITU-R M.493 should be used to meet this requirement.

- .4 means to display the information contained in a received call in plain language;
- .5 means for the manual entry of the position information; additionally, automatic entry may be provided; and
- .6 means for the manual entry of the time at which the position was determined; additionally, automatic entry may be provided.

### **11.3 Distress message storage**

11.3.1 If the received messages are not printed immediately, sufficient capacity should be provided to enable at least 20 received distress messages to be stored in the DSC facility.

11.3.2 These messages should be stored until readout.

11.4 It should be possible to initiate and make distress and safety calls from the position from which the ship is normally navigated. The means for initiating a distress call should be as prescribed in 2.6.

11.5 Initiation of DSC distress calls should supersede any other operation of the facility.

11.6 Self-identification data should be stored in the DSC unit. It should not be possible for the user easily to change these data.

11.7 Means should be provided to enable routine testing of the DSC facilities without radiation of signals.

11.8 Provision should be made for:

- .1 a specific aural alarm and visual indication to indicate receipt of a distress or urgency call or a call having distress category. It should not be possible to disable this alarm and indication. Provision should be made to ensure that they can be reset only manually; and
- .2 aural alarms and visual indication for calls other than distress and urgency.

## **12 POWER SUPPLY**

The VHF radio installation should be powered from the ship's main source of electrical energy. In addition, it should be possible to operate the VHF installation from an alternative source of electrical energy.