

**Recognition of Iridium mobile satellite system in the GMDSS**

Submitted by IHB

**SUMMARY**

Executive Summary: This document provides up-date details of the application for consideration of Iridium Satellite LLC to become a Global Maritime Distress and Safety System (GMDSS) mobile satellite services provider, which are relevant to WWNWS-SC; in particular it provides details on a draft revised Performance Standard for shipborne GMDSS equipment to accommodate additional providers of GMDSS satellite services.

Action to be taken: Paragraph 2.

Related documents: NCSR 3/12 dated 25 November 2015

1. See attached document.
2. The Sub-Committee is invited to note the information provided and take action as appropriate.

SUB-COMMITTEE ON NAVIGATION,  
COMMUNICATIONS AND SEARCH AND  
RESCUE  
3rd session  
Agenda item 12

NCSR 3/12  
25 November 2015  
Original: ENGLISH

**PERFORMANCE STANDARDS FOR SHIPBORNE GMDSS EQUIPMENT TO  
ACCOMMODATE ADDITIONAL PROVIDERS OF GMDSS SATELLITE SERVICES**

**Draft performance standards for shipborne GMDSS equipment to accommodate  
additional providers of GMDSS satellite services**

**Submitted by the United States**

**SUMMARY**

<i>Executive summary:</i>	This document provides draft performance standards for shipborne GMDSS equipment to accommodate additional providers of GMDSS satellite services
<i>Strategic direction:</i>	5.2
<i>High-level action:</i>	5.2.5
<i>Planned output:</i>	5.2.5.6
<i>Action to be taken:</i>	Paragraph 6
<i>Related document:</i>	MSC 95/19/10

**Introduction**

1 This document is submitted in accordance with paragraph 6.12.3 of the *Guidelines on the organization and method of work of the Maritime Safety Committee and the Marine Environment Protection Committee and their subsidiary bodies* (MSC-MEPC.1/Circ.4/Rev.4). It provides the Sub-Committee in the annex draft Performance standards for shipborne GMDSS equipment to accommodate additional providers of GMDSS satellite services.

**Discussion**

2 The Maritime Safety Committee, at its ninety-fifth session (MSC 95), considered document MSC 95/19/10 (United States), proposing to develop a new generic performance standard for shipborne GMDSS equipment to accommodate additional providers of GMDSS satellite services, and agreed to include in the 2016-2017 biennial agenda of the NCSR Sub-Committee and the provisional agenda for NCSR 3, an output on "Performance standards for shipborne GMDSS equipment to accommodate additional providers of GMDSS satellite services", with a target year of 2016.

3 MSC 95 also decided that this matter should be considered by MSC 96 as an urgent matter emanating from NCSR 3.

4 In document MSC 95/19/10, the United States indicated that it would provide a working draft of the performance standard to the Sub-Committee for its review and editing at its 3rd session. That working draft is attached to this document as an annex.

5 The attached draft Performance standard was prepared based upon existing performance standards for current GMDSS ship earth stations. While functionality remains the same, in accordance with resolution A.1001(25) and other existing requirements, certain changes were necessary to accommodate different types of systems which may be used for providing GMDSS Satellite services.

**Action requested of the Sub-Committee**

6 The Sub-Committee is requested:

- .1 to review and, if necessary, edit the working draft provided in the annex; and
- .2 recommend it to the Committee for adoption.

\*\*\*

## ANNEX

### DRAFT PERFORMANCE STANDARDS FOR SHIPBORNE GMDSS EQUIPMENT TO ACCOMMODATE ADDITIONAL PROVIDERS OF GMDSS SATELLITE SERVICES

#### 1 INTRODUCTION

1 The ship earth station installation capable of two-way radiocommunications should comply with the general requirements set out in resolution A.694(17) and with the following minimum requirements.

#### 2 TECHNICAL REQUIREMENTS

##### .1 General

- .1 The ship earth station should operate using a recognized mobile-satellite system and meet the functional requirements of resolution A.1001(25). The ship earth station should be certified by the recognized mobile-satellite system operator to ensure operational reliability, including electromagnetic environmental conditions, and electromagnetic compatibility requirements specified in IEC 60945<sup>1</sup>.
- .2 The equipment should sound a specific aural and visual alarm when the ship earth station is unable to detect or otherwise make contact with the satellites of the mobile-satellite system, according to the link control and/or network management mechanisms used by that system, for a period of six minutes or more.

##### .2 Functional requirements

- .1 The ship earth station should be capable of at least the following radiocommunication functions:
  - .1 ship-to-shore distress communications;
  - .2 shore-to-ship distress relay communications;
  - .3 ship-to-shore and shore-to-ship urgency and safety communications;
  - .4 ship-to-shore, shore-to-ship and ship-to-ship search and rescue coordinating communications;
  - .5 ship-to-shore transmissions of information about the safety of navigation;
  - .6 receipt of shore-to-ship broadcasts of Maritime Safety Information; and
  - .7 ship-to-shore, shore-to-ship, and ship-to-ship general communications.

---

<sup>1</sup> IEC 60945 incorporates by reference international standard IEC 60533 on EMC requirements.

- .2 The ship earth station should be capable of processing maritime distress, urgency, safety and routine communications in accordance with the message priority defined by the ITU Radio Regulations. The order of processing these communications should be:
- .1 distress;
  - .2 urgency;
  - .3 safety; and
  - .4 routine (general communications).

### **.3 Integrated systems and machine-to-machine interfaces**

- .1 Where the ship earth station is part of an Integrated Communication System (ICS), Integrated Navigation System (INS) or Integrated Bridge System (IBS), the equipment should also meet the requirements of the Organization for Bridge Alert Management system (BAM)<sup>2</sup>. Machine-to-machine communications should meet the appropriate international standard in the IEC 61162 series. Integration of the ship earth station into an ICS should not impair any of the GMDSS functions.
- .2 The ship earth station should provide the following interfaces in accordance with relevant international standards<sup>3</sup>:
- .1 an interface from which data from Group call communications, including Maritime Safety Information (MSI) can be provided to navigation display systems; and
  - .2 an interface from which ship's identifier and location data, if available, for received distress and urgency communication can be provided to navigation display systems.

## **3 OPERATION**

### **.1 Ship earth station identity**

- .1 No control external to the equipment should be available for alteration of the ship station identity.

### **.2 Transmission of distress communications**

- .1 It should be possible to initiate distress communications at any time. It should be possible to initiate distress communications whilst the ship earth station is transmitting lower priority communications, and whilst it is receiving communications of any priority, if necessary by pre-emption of those communications.

---

<sup>2</sup> Resolutions A.811(19), MSC.252(83) and MSC.302(87); guideline SN.1/Circ.288; international standards IEC 62940, IEC 61924-2, IEC 62923.

<sup>3</sup> Refer to Publication IEC 61162.

- .2 The human-machine interface (HMI) should include a dedicated distress button that has no other function than activating distress communications. The equipment should include an option making it possible to initiate transmission of distress communications at a position remote from the primary HMI of the equipment.
  - .3 The dedicated distress button should not be any key of a digital input panel or a keyboard provided on the equipment. The distress button should be clearly identified and protected against inadvertent activation, requiring at least two independent actions.
  - .4 The distress button should be red in colour and marked "DISTRESS". Where a non-transparent protective lid or cover is used, it should also be marked "DISTRESS".
  - .5 The required protection of the distress button should consist of a spring-loaded lid or cover permanently attached to the equipment by e.g., hinges. It should not be necessary for the user to remove additional seals or to break the lid or cover in order to operate the distress button.
  - .6 The equipment should indicate the status of the distress communication transmission. The operation of the distress button should generate a visible and audible indication. The distress button should be kept pressed for at least 3 seconds. A flashing light and an intermittent acoustic signal specified in table 1 should start immediately. After the 3 seconds the transmission of the distress communication is initiated and the indication should become steady.
  - .7 It should be possible to initiate repetitive initial distress communications, which are repeated until cancelled on the ship or acknowledged by an MRCC. It should be possible to interrupt repetitive initial distress communications. Such operation should not interrupt the transmission of a distress communication in progress but should prevent repetitive transmissions of a distress communication.
  - .8 It should be possible to send a cancellation communication after an initial distress communication. This cancellation communication should not be initiated by cutting the power supply to the ship earth station or by the operator switching it off.
  - .9 The equipment should be capable of transmitting and receiving subsequent communications.
- .3 Test facilities**
- .1 It should be possible to test the distress capability of the ship earth station without initiating a distress communication.
- .4 Reception of distress and urgency communications**
- .1 It should be possible for the ship earth station to receive distress, urgency and safety priority communications whilst it is being used to transmit communications of a lower priority than that being received.

- .2 Provision should be made for a specific aural warning, defined in table 1, and visual indication at the position from which the ship is normally navigated, to indicate receipt of a distress or urgency priority group call communication. It should not be possible to disable this warning and it should only be possible to reset it manually and only from the position where the message is displayed or printed.

**.5 Aural indications:**

- .1 The following audible signals should be activated in relation to
- .1 distress communications or distress relay communications;  
and
- .2 urgency communications:

Fixed alarm sounds	Frequency (Hz) Tone 1	Frequency (Hz) Tone 2	Duration (ms) Tone 1	Duration (ms) Tone 2
Two-tone (see Note)	2 200	1 300	250	250
Distress Ack (see Note)	2 200	1 300	500	500
Urgency (see Note)	2 200	Silence	250	250
Urgency Ack (see Note)	2 200	Silence	500	500
Count	2 000	Silence	500	500

NOTE  
The Two-tone, Distress Ack, Urgency and Urgency Ack alarms should not be able to be customized.  
These alarms should be continuously repeated until manually terminated.

**Table 1**

**.6 Group call communications, including Maritime Safety Information (MSI)**

- .1 Facilities should be provided for the ship earth station to receive maritime safety information (MSI) from the NAVAREA/METAREA where the ship is sailing and from any other NAVAREA/METAREA within 200 NM of where the ship is sailing.
- .2 For the graphical presentation of received group call communications intended as text to be read by the operator, the equipment should include or interface to either:
- .1 a dedicated display device; or
- .2 a printing device.

- .3 If a dedicated display device is used, it should meet the general requirements of the Organization for such devices<sup>4</sup> and the following additional requirements:
  - .1 the capability of showing at least 16 lines by 32 characters, with a non-volatile memory of at least 255 messages of 1,023 characters;
  - .2 an indication of newly received unsuppressed communications should be immediately displayed until acknowledged or until 24 hours after receipt; and
  - .3 the design and size of the display device should be such that displayed communication is easily read under all conditions normally found on a ship's bridge, by observers at normal working distances and viewing angles.
- .4 If a dedicated display device is not used, a printing device compliant with the following requirements should be used:
  - .1 the printing device should be capable of printing at least the standard International Alphabet number 5 (IA5) character set. Other character sets are optionally used according to ISO 2022 standards and ITU-T Recommendations;
  - .2 the printing device should be able to print at least 32 characters per line;
  - .3 means should be provided to prevent the re-printing of a communication once it has been received without error;
  - .4 any communications should be displayed or printed regardless of the character error rate of its reception. The equipment should use an asterisk (the "\*" character) or a low-line or underscore mark (the "\_" character) if a corrupted character is received; and
  - .5 a local audible warning should be sounded if a "paper low" condition occurs on the printing device. It should not be possible to confuse the sound of the "paper low" warning with any audible warnings associated with distress or urgency alarms described in table 1.
- .5 For the graphical presentation of received group call communications intended as text to be read by the operator, or intended as imagery to be viewed by the operator, on another connected device or an integrated system, paragraph 2.3.1 also applies.

---

<sup>4</sup> Resolution MSC.191(79).



## **.7 Position updating**

- .1 Facilities should be provided to automatically update the ship's position and the time at which the position was determined from a suitable electronic position fixing aid which may be an integral part of the equipment. For equipment which does not have an integral electronic position fixing aid, such facilities should include a suitable interface conforming to the appropriate international standard in the IEC 61162 series.
- .2 To enable updating of the position:
  - .1 the state of the position update should be visible to the operator (e.g. offline, manual or automatic);
  - .2 if position data is being updated automatically, a warning should be raised if no update has been performed for a period of 10 minutes. It should be possible to acknowledge the warning manually or remove the cause by receiving new position data;
  - .3 the equipment should have facilities for manually entering the ship's position;
  - .4 if the ship's manually-set position is older than 4 hours, a warning should be raised. It should be possible to acknowledge the warning manually or remove the cause by inputting or receiving new position data; and
  - .5 if the ships' position is older than 23.5 hours, a warning should be raised. It should be possible to acknowledge the warning manually or remove the cause by inputting or receiving new position data.

## **4 POWER SUPPLY AND SOURCES OF ENERGY**

- .1 The ship earth station should normally be powered from the ship's main source of electrical energy. In addition, it should be possible to operate the ship earth station and all equipment necessary for its normal functioning, from a reserve source of energy; and
- .2 Changing from one source of supply to another or any interruption of up to 60 s duration of the supply of electrical energy should not render the equipment inoperative, should not require the equipment to be manually re-initialized and should not result in loss of received communications stored in the memory.

## **5 ANTENNA SITING**

- .1 The siting of the antenna needs careful consideration, taking into account the adverse effect of vibration which might be introduced by the use of a tall mast. The above-deck equipment should be separated, as far as is practicable, from the antennas of other communication and navigation equipment. Siting of the ship earth station antenna should be given priority above other communication equipment on the ship and other antennas relocated, if necessary, to guarantee performance of the ship earth station.

- .2 Where an omni-directional antenna is used, it is desirable that the antenna be sited in such a position that no obstacle likely to degrade significantly the performance of the equipment appears in the fore and aft directions down to  $-15^{\circ}$  and in the port and starboard directions down to  $-15^{\circ}$ .

## **6 RADIO FREQUENCY HAZARDS**

- .1 In order to permit a warning of potential radiation hazards to be displayed in appropriate locations, a label should be attached to the radome indicating the distances external to the radome at which radiation levels of  $100 \text{ W/m}^2$ ,  $25 \text{ W/m}^2$  and  $10 \text{ W/m}^2$  exist. However, the distances which are within a radome need not be indicated.
-