Proposal on the Revised Draft Interim BDMSS SafetyLink Service Manual

Submitted by China

SUMMARY

Executive Summary:	This document provides the revised *Draft Interim BDMSS SafetyLink Service Manual* based on the outcome of the review by the twenty-second session of the Document Review Working Group. The Sub-Committee is invited to circulate the manual, subject to approval by the Sub-Committee, to relevant body of WMO for review and approval.
Action to be taken:	Paragraph 5.
Related documents:	MSC.1/Circ.1613/Rev.2, WWNWS15/4.2.1, WWNWS 15/Final Report, DRWG 22/Final Report

1. At the fifteenth session of the World-Wide Navigational Warning Service (WWNWS) Sub-Committee in September 2023, the Sub-Committee approved the proposal by China to initiate the review on the *Draft Interim BDMSS SafetyLink Service Manual* and referred the draft manual to the Document Review Working Group (DRWG) for detailed review.

2. In March 2024, the DRWG at its twenty-second session conducted a thorough technical review on the draft manual and provided a list of action items to instruct the service provider of BeiDou Message Service System (BDMSS) to revise the draft manual.

3. Based on the outcome of the technical review by DRWG 22, the service provider of BDMSS revised the draft manual under the instruction of the IMO Enhanced Group Call (EGC) coordinating panel.

4. It is noted that before the draft manual could be submitted to IMO for adoption and issuance, approvals from the WWNWS Sub-Committee of IHO and the Worldwide Met-Ocean Information and Warning Service (WWMIWS) Committee of the World Meteorological Organization (WMO) is needed.

Action to be taken

5. The Sub-Committee is invited to review and approve the *Revised Draft Interim BDMSS SafetyLink Service Manual* at attached, and circulate to WMO for further actions, as appropriate.

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Annex

DRAFT INTERIM BDMSS SAFETYLINK SERVICE MANUAL
2024 Edition

Foreword

In the International Convention for Safety of Life at Sea, 1974, as amended (SOLAS), regulation IV/12.2 states that "Every ship, while at sea, shall maintain a radio watch for broadcasts of maritime safety information and search and rescue (SAR) related information on the appropriate frequency or frequencies on which such information is broadcast for the area in which the ship is navigating".

In May 2018, the Maritime Safety Committee (MSC) of the International Maritime Organization (IMO), at its ninety-ninth session, considered an application for the recognition of the BeiDou Message Service System (BDMSS) and use in the Global Maritime Distress and Safety System (GMDSS). In November 2022, the MSC, at its 106th session, adopted resolution MSC.529(106) on *Statement of Recognition of Maritime Mobile Satellite Services Provided by CTTIC through BDMSS*. The Committee also noted the commitment of China and China Transport Telecommunication Information Group Co. Ltd. (CTTIC) to addressing any outstanding implementation issues, including “IMO to make available an MSI manual for the new Enhanced Group Call (EGC) service (i.e. SafetyLink service)”, before the commencement of services.

To facilitate the implementation of BDMSS, this document provides an interim manual for BDMSS EGC service named “BMDSS SafetyLink”. This Manual describes the structure of the BDMSS SafetyLink service and its capabilities of promulgating maritime safety information (MSI) and SAR related information. This Manual should be used alongside with the *Joint IMO/WMO/IHO Manual on Maritime Safety Information*, in its most recent version, which provides detailed guidance on MSI and SAR related information promulgation.

1 General information

1.1 BDMSS SafetyLink Service is a satellite-based service for the promulgation of MSI and SAR related information.

1.2 This Manual describes the structure and operation of the BDMSS SafetyLink service. It is intended primarily for national Administrations and registered information providers but may also be useful to seafarers who require more operational information than is found in manufacturers’ equipment manuals.

2 BDMSS SafetyLink service

2.1 Introduction

2.1.1 The BDMSS SafetyLink service provides shipping with navigational warnings, meteorological warnings, meteorological forecasts, other urgent safety-related information and SAR related information in accordance with SOLAS requirements. It is suitable for use in all sizes and types of ships. It provides an automatic method of broadcasting messages to both fixed and variable geographic locations within its service region. Figures 1 and 2 illustrate the way the service is structured.

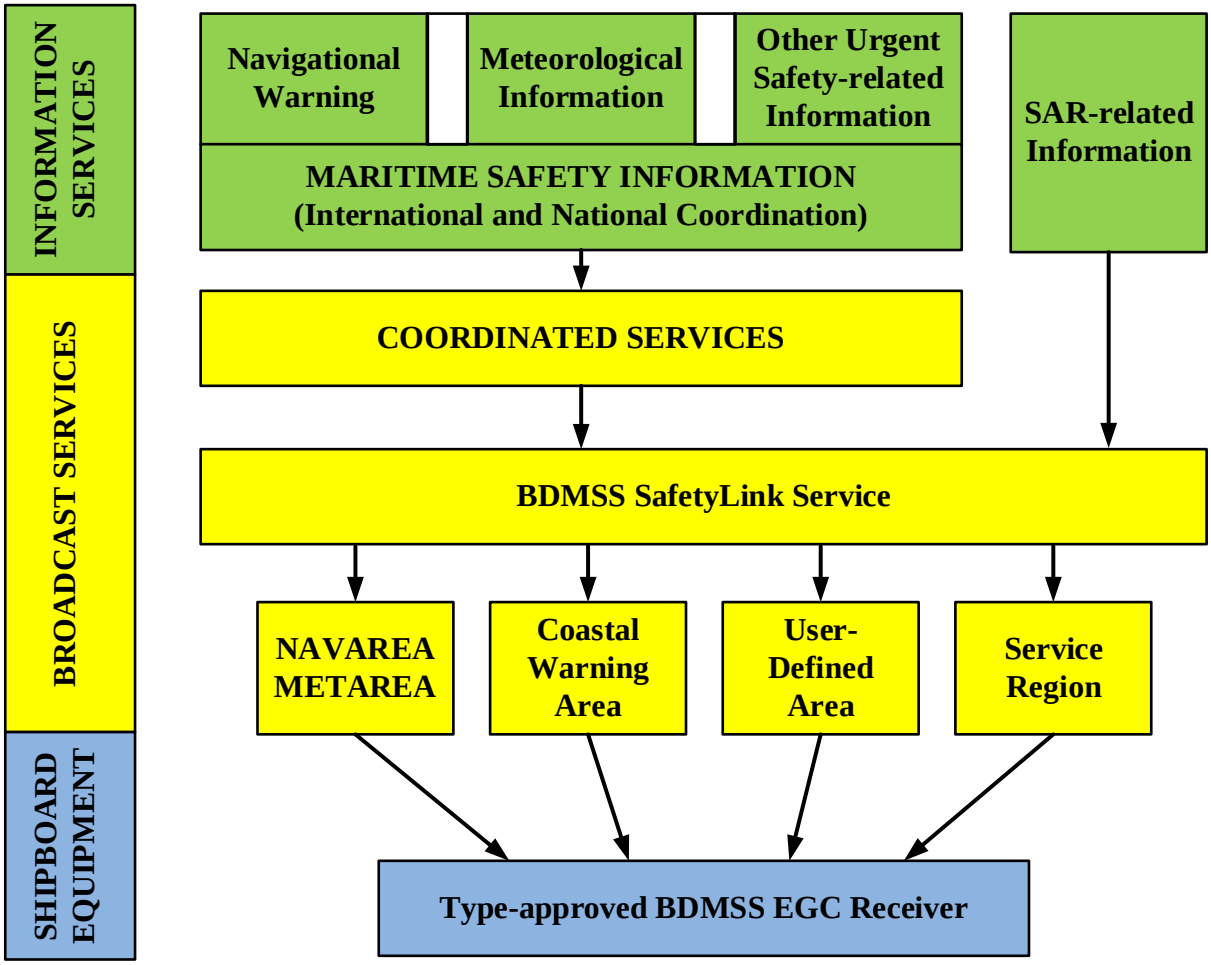

Figure 1 – BDMSS SafetyLink service system

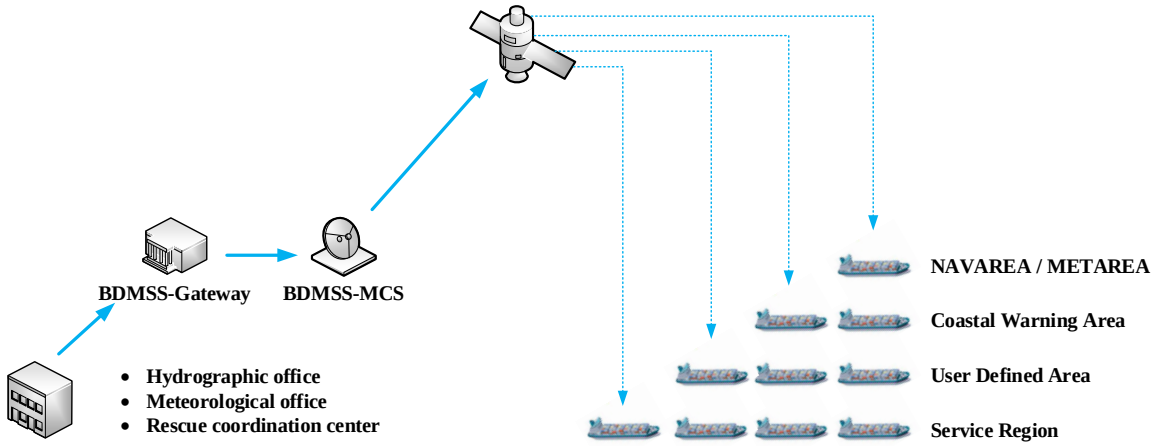

Figure 2 – Basic concept of BDMSS SafetyLink Service system

2.1.2 BDMSS SafetyLink service offers the ability to direct a message to a given geographic area in the service region within 75°E to 135°E longitude and 10°N to 55°N latitude, which covers partial areas of NAVAREA/METAREA VIII, XI and XIII. The area may be fixed, as in the case of the service region, partial NAVAREA/METAREA or coastal warning area; or it may be a user defined area (circular or rectangular). A user defined area is used for messages, such as a local storm warning or a shore-to-ship distress alert relay, for which it is inappropriate to alert ships in the entire service region or partial NAVAREA/METAREA. The basic concept of the service is shown in Figure 2 above.

2.1.3 SafetyLink messages are submitted by registered information providers via the BDMSS gateway. Messages are broadcast according to their priority, i.e. distress, urgency or safety. Aboard ship, messages are received by type-approved BDMSS EGC receivers.

2.2 Definitions

2.2.1 For the purposes of this manual, the following definitions apply:

.1 *BDMSS gateway* means the terrestrial part of BDMSS that is responsible for processing GMDSS communications and acts as an interface between BDMSS network and other communication networks.

.2 *BDMSS Master Control Station (MCS)* means the terrestrial part of BDMSS that is responsible for the operation and control of BDMSS network.

.3 *BDMSS SafetyLink service* means the coordinated broadcast and automatic reception of maritime safety information and SAR-related information via the Enhanced Group Call system, using the English Language.

.4 *Coastal warning* means a navigational warning or in-force bulletin promulgated as part of a numbered series by a national coordinator.

.5 *Coastal warning area* means, with respect to the International Enhanced Group Call Service, a defined geographical area within a NAVAREA/METAREA or Sub-Area established by a coastal State for the purpose of coordinating the broadcast of Maritime Safety Information.

.6 *Enhanced Group Call (EGC)* means the broadcast of coordinated Maritime Safety Information and Search and Rescue related information, to a defined geographical area using a recognized mobile satellite service.

.7 *Global Maritime Distress and Safety System (GMDSS)* means a system that performs the functions set out in SOLAS regulation IV/4.1.1.

.8 *In-force bulletin* means a list of serial numbers of those NAVAREA, Sub-Area or coastal warnings in force issued and broadcast by the NAVAREA Coordinator, Sub-Area Coordinator or national coordinator.

.9 *International Enhanced Group Call service* means the coordinated broadcast and automatic reception of Maritime Safety Information and Search and Rescue related information via Enhanced Group Call, using the English language.

.10 *International NAVTEX service* means the coordinated broadcast and automatic reception on 518 kHz of Maritime Safety Information by means of narrow-band direct-printing telegraphy using the English language.

.11 International SafetyLink service is a recognized mobile satellite service provided by China Transport Telecommunication Information Group Co., Ltd. in accordance with resolution MSC.529(106).

.12 *Issuing Service* means a National Meteorological and Hydrological Service (NMHS) or National Authority which has accepted responsibility for ensuring that meteorological warnings and forecasts for shipping are disseminated through the International Enhanced Group Call service to the designated METAREA for which they are responsible.

.13 *Local warning* means a navigational warning which covers inshore waters, often within the limits of jurisdiction of a harbour or port authority.

.14 *Maritime Safety Information (MSI)* means navigational and meteorological warnings, meteorological forecasts and other urgent safety-related messages broadcast to ships as defined in SOLAS IV/2.1.10.

.15 *Maritime Safety Information service* means the internationally and nationally coordinated network of broadcasts containing information which is necessary for safe navigation.

.16 *METAREA* means a geographical area established for the purpose of coordinating the broadcast of marine meteorological information. The term METAREA followed by a roman numeral may be used to identify a particular geographical area.

.17 *METAREA Coordinator* means the individual with the authority to coordinate marine meteorological information broadcasts by one or more National Meteorological and Hydrological Services acting as Preparation or Issuing Services within the METAREA.

.18 *Meteorological information* means both warnings and forecast for weather, sea-state, and sea-ice information.

.19 *National Coordinator* means the national authority charged with collating and issuing coastal warnings within a national area of responsibility.

.20 *NAVAREA* means a geographical area established for the purpose of coordinating the broadcast of navigational warnings. The term NAVAREA followed by a roman numeral may be used to identify a particular geographical area.

.21 *NAVAREA Coordinator* means the authority charged with coordinating, collating and issuing NAVAREA warnings for a designated NAVAREA.

.22 *NAVAREA warning* means a navigational warning or in-force bulletin promulgated as part of a numbered series by a NAVAREA Coordinator.

.23 *Navigational warning* means a message containing urgent information relevant to safe navigation broadcast to ships.

.24 *Other urgent safety-related information* means Maritime Safety Information broadcast to ships that is not defined as a navigational warning or meteorological information. This may include, but is not limited to, significant malfunctions or changes to maritime communications systems, and new or amended mandatory ship reporting systems or maritime regulations affecting ships at sea.

.25 *Recognized mobile satellite service (RMSS)* means any service which operates through a satellite system and is recognized by the Organization, for use in the GMDSS.

.26 *Search and Rescue (SAR) related information* means distress alert relays and other urgent search and rescue related information broadcast to ships.

.27 *Service Region* means the entire coverage of BDMSS recognized by the Organization for use in GMDSS as defined in resolution MSC.529(106).

.28 *Sub-area* means a geographical area established within a NAVAREA/METAREA for the purpose of coordinating the broadcast of maritime safety information.

.29 *Sub-area Coordinator* means the authority charged with coordinating, collating and issuing Sub-Area warnings for a designated Sub-area.

.30 *Sub-area warning* means a navigational warning or in-force bulletin promulgated as part of a numbered series by a Sub-Area Coordinator to a Sub-area.

.31 *User defined area* means a temporary geographic area, either circular or rectangular, to which Maritime Safety Information or Search and Rescue related information is addressed.

.32 *UTC* means Coordinated Universal Time which is equivalent to GMT (or ZULU) as the international time standard.

.42 *Worldwide Navigational Warning Service (WWNWS)* [1] means the internationally and nationally coordinated service for the promulgation of navigational warnings.

.43 In the operating procedures *coordination* means that the allocation of the time for data broadcast is centralized, the format and criteria of data transmissions are compliant as described in the Joint IMO/IHO/WMO Manual on Maritime Safety Information and that all services are managed as set out in IMO resolutions A.705(17), as amended, A.706(17), as amended, and A.1051(27), as amended.

[1] As set out in resolution A.705(17), as amended.

2.2.2 METAREA with BDMSS SafetyLink Service region:

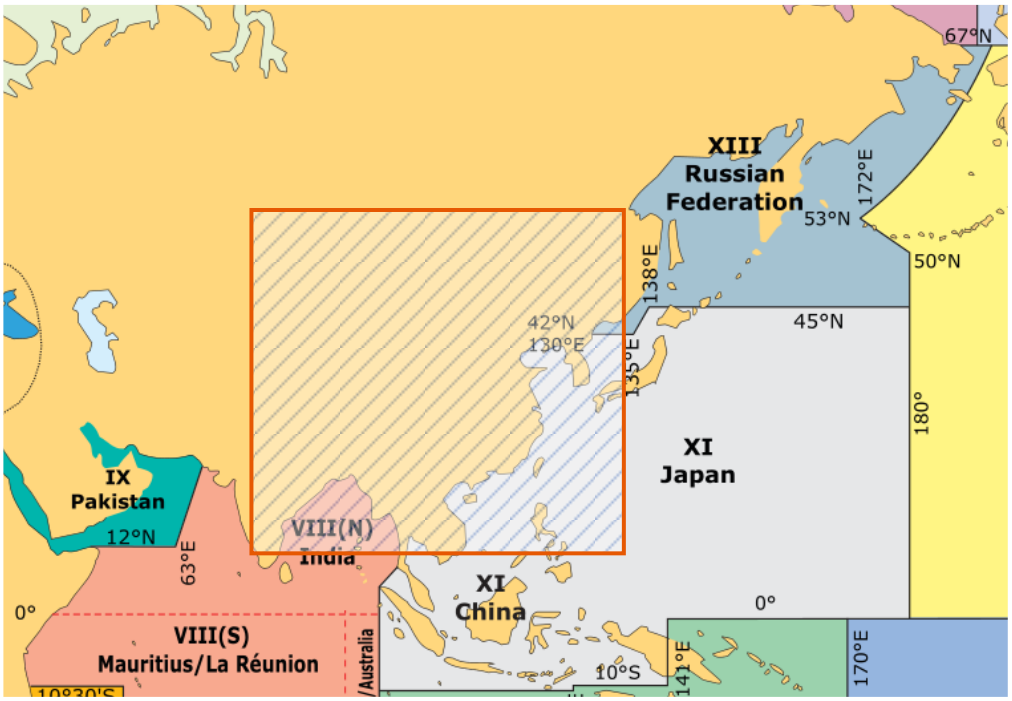

Figure 3 – METAREA with BDMSS SafetyLink Service region

Note: The delimitation of these METAREAs is not related to and should not prejudice the delimitations of any boundaries between states.

2.2.3 NAVAREA with BDMSS SafetyLink Service region:

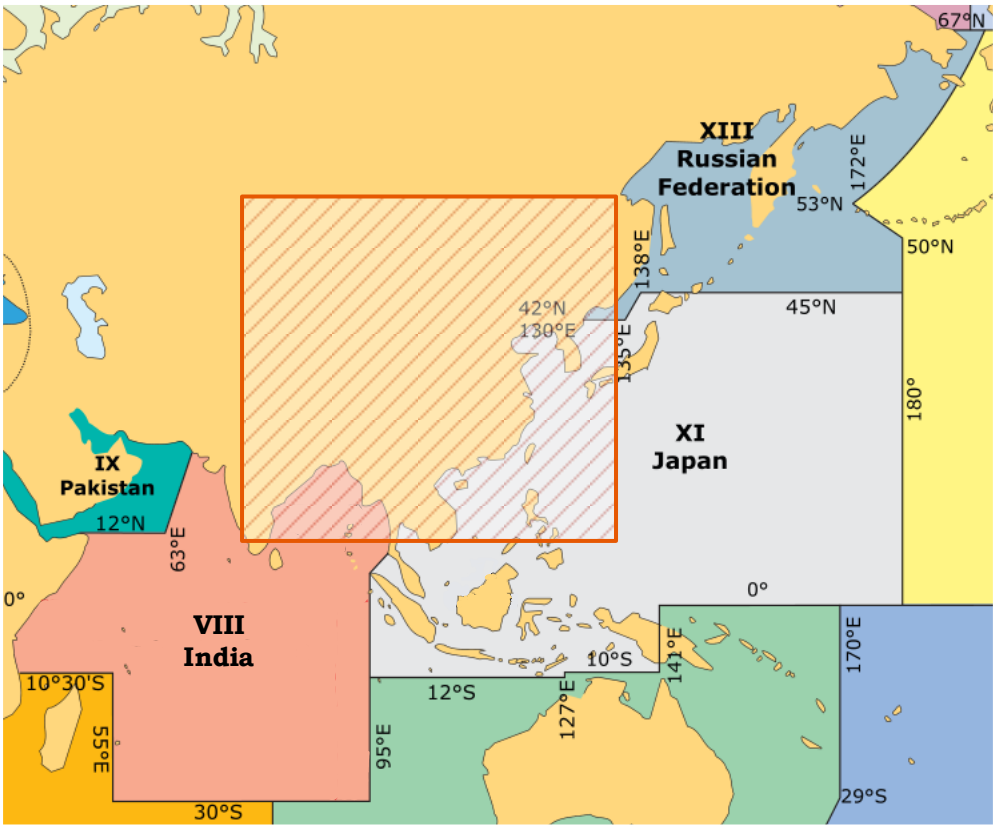

Figure 4 – NAVAREA with BDMSS SafetyLink Service region

Note: The delimitation of these NAVAREAS is not related to and should not prejudice the delimitations of any boundaries between states.

3 General features of the BDMSS SafetyLink service

3.1 All navigable waters within 75°E to 135°E longitude and 10°N to 55°N latitude are covered by BDMSS satellites. Reception of EGC messages is normally not affected by the position of the ship, atmospheric conditions or time of day.

3.2 BDMSS SafetyLink service broadcast can be addressed to a geographic area (area calls) or groups of ships (group calls):

.1 Area calls can be addressed to a fixed geographical area (the service region, partial NAVAREA/METAREA or coastal warning area) or to a user defined area (circular or rectangular) selected by an information provider. Area calls will be received automatically by any BDMSS SafetyLink receiver within the area. To receive coastal warnings, the BDMSS SafetyLink receiver must be set up with appropriate coastal warning codes (see section 12.4).

.2 Group calls will be received automatically by any ship whose BDMSS SafetyLink receiver acknowledges the unique group identity associated with a particular message. Ships can withdraw from a group at any time.

3.3 BDMSS SafetyLink service supports the promulgation of MSI and SAR related information. It offers a secure web portal (appendix 2) or application programming interface (API) for information providers.

3.4 Each broadcast message is processed by the BDMSS gateway based on the message parameters and then routed to the BDMSS MCS. The broadcast message is then queued for delivery based on the message parameters and distributed through one or more satellite beams depending on the specified geographical region. The satellite will then transmit the message to BDMSS EGC receivers. Diagrams for the shore-to-ship broadcasting is provided in Figures 1 and 2 above.

3.5 Each partial NAVAREA/METAREA and Coastal areas will be defined as a geographical area assigned with a unique identification number. The dissemination area for the broadcast messages is defined by address code.

4 Planning of new BDMSS SafetyLink service

4.1 Authorities wishing to become officially registered information providers of MSI and SAR related information to ships at sea via BDMSS SafetyLink service should contact IMO via the IMO EGC Coordinating Panel at an early stage for advice. The plans of any prospective registered information providers should be coordinated with IMO, IHO and WMO and with other national authorities, before authorization to broadcast via BDMSS SafetyLink service may be granted by the IMO EGC Coordinating Panel, in accordance with the procedures set out in annex 2 to the *IMO Enhanced Group Call Coordinating Panel*

(MSC.1/Circ.1635).

4.2 Once authorized and registered, information providers should contact CTTIC in order to determine specific details for addressing messages, accessing the BDMSS SafetyLink service, charges and payment for services and any other matters with respect to providing MSI and SAR related information to seafarers.

4.3 The IMO EGC Coordinating Panel, in cooperation with IHO and WMO, undertakes the coordination of times for scheduled transmissions.

4.4 Authorities should seek approval from the IMO EGC Coordinating Panel, at the address given below, for any changes to existing scheduled broadcast times. Within the submission, authorities should include details of the proposed broadcast times, service description and dissemination area.

The Chair
IMO Enhanced Group Call Coordinating Panel
International Maritime Organization
4 Albert Embankment
London SE1 7SR
United Kingdom

Telephone: +44(0)20 7587 3210
Email: ncsr@imo.org (in subject line add: “for Chair, IMO Enhanced Group Call Coordinating Panel”)

4.5 Seafarers should be informed of the establishment of a BDMSS SafetyLink service by the information provider through the inclusion of full details in Notices to Seafarers and other national nautical publications and the IMO Master Plan of Shore-Based Facilities for the GMDSS in the Global Integrated Shipping Information System (GISIS).

4.6 Questions concerning promulgation of MSI and SAR related information through the BDMSS SafetyLink service can be addressed to the IMO EGC Coordinating Panel at the address above.

4.7 Questions concerning the operation of the BDMSS SafetyLink service should be addressed to:

China Transport Telecommunication Information Group Co., Ltd. (CTTIC)
No.1 An Wai Wai Guan Hou Shen
Chao Yang District
Beijing, 100011
Email: bdmss@cttic.cn (in subject line add: “for BDMSS SafetyLink Service”)

5 Changes to existing BDMSS SafetyLink service

5.1 Registered information providers wishing to change their existing SafetyLink service should follow the same coordination procedures as for a new service, in accordance with the procedures set out in section 4.

5.2 The IMO EGC Coordinating Panel, in cooperation with IHO and WMO, undertakes the coordination of times for scheduled broadcasts.

5.3 Registered information providers should seek approval from the IMO EGC Coordinating Panel, at the address given in section 4, for any changes to existing scheduled broadcast times. Within the submission, registered information providers should include updated details of the service.

5.4 Seafarers should be informed of the changes to an existing SafetyLink service by the information provider through the inclusion of full details in Notices to Seafarers and other national nautical publications and the IMO Master Plan of Shore-Based Facilities for the GMDSS in GISIS.

6 Operation of the BDMSS SafetyLink service

6.1 All messages are transmitted with a unique sequence number and an information provider identity. Each subsequent transmission of the original message contains the same sequence number to filter messages that have already been received.

6.2 Given the size of a sea area, some form of selectivity in receiving the various messages is required. All ships within the geographically defined area of the broadcast will receive area calls, however, they will only be displayed by those receivers that recognize both:

.1 the fixed geographical area (the service region, partial NAVAREA/METAREA or coastal warning area), user defined area as appropriate; and

.2 for coastal warnings, the coastal warning area and the subject indicator for the message.

6.3 The message format includes a preamble which enables BDMSS EGC receivers to display only those messages which relate to its present position, to the intended route, or to the aforementioned areas as programmed by the operator.

6.4 For coastal warning areas messages, the registered information provider must ensure that the preamble includes the identifier allocated for the particular area, along with the appropriate subject indicator (see section 12.4). BDMSS EGC receivers can be set to reject messages concerning certain optional subjects which may not be required by the ship. BDMSS EGC receivers also use the subject indicator to identify coastal warnings which, because of their importance, may not be rejected.

6.5 Reception of certain types of messages, such as shore-to-ship distress alert relays, SAR related information, meteorological warnings and forecasts and navigational warnings, addressed to a geographical area within which the BDMSS EGC receivers is located, is mandatory and cannot be suppressed by ships in the affected area.

6.6 When a message has been received error-free, a record is made of the message identification (the unique sequence number, the information provider identity and the service code) associated with that message. The unique sequence number is used to suppress the reception of repeated transmissions of the same message.

6.7 The BDMSS SafetyLink service allows several input parameters to support MSI and SAR related information transmissions:

.1 Fixed geographical area (the service region, partial NAVAREA/METAREA or coastal area) or user defined area/areas;
.2 Message Priority (Distress, Urgency, Safety);
.3 Delivery Method (Immediate or Scheduled);
.4 Echo (Up to two times);
.5 Repeat (Number of Instances); and
.6 Scheduled transmissions may be cancelled by notifying the service.

6.8 There are two methods of identifying the destination delivery area for a BDMSS SafetyLink transmission, including pre-defined areas such as the service region, partial NAVAREA/METAREAs and coastal areas, or user defined areas (see Figures 5 and 6).

6.9 Messages can be addressed to user defined areas, which may be circular or rectangular in shape. A circular area is described by latitude and longitude of the centre in degrees and radius of the circle in nautical miles. A rectangular area is described by latitude and longitude of the south-west corner in degrees and extension in degrees to the north and east of the rectangle.

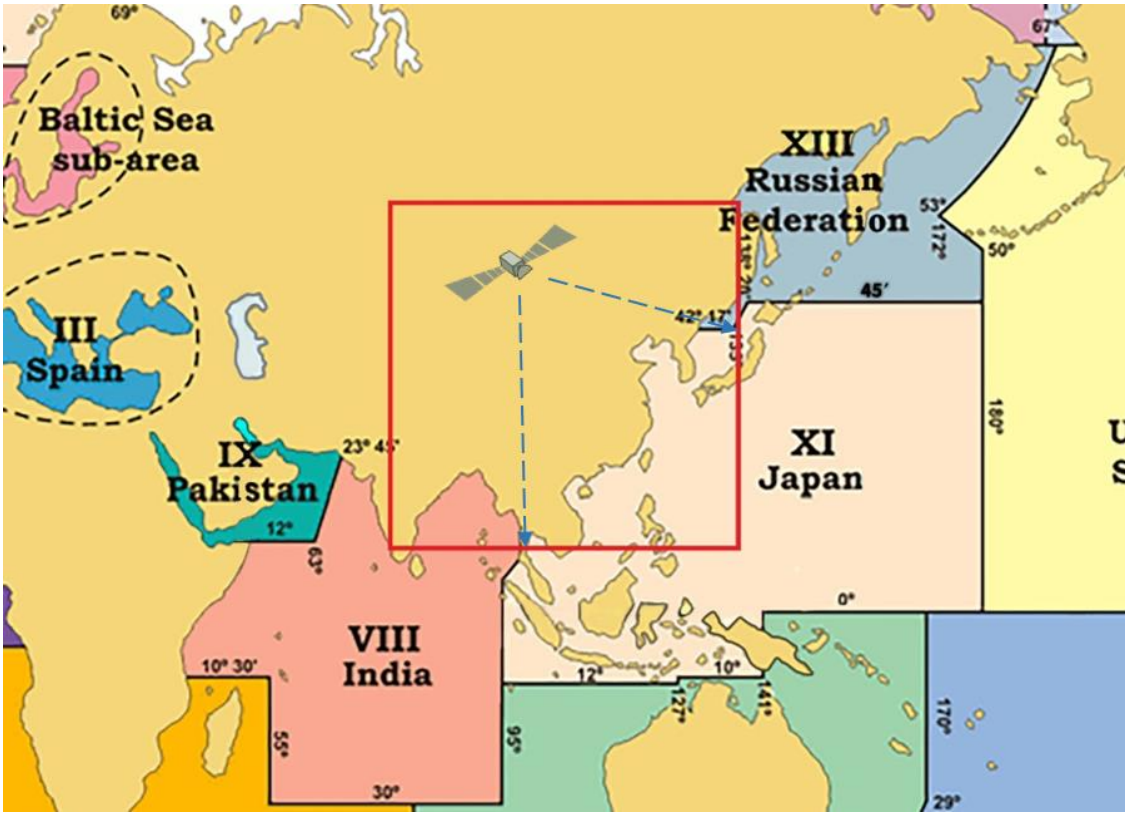

Figure 5 – Messages addressing to the overlapping area between a NAVAREA and the service region of BMDSS

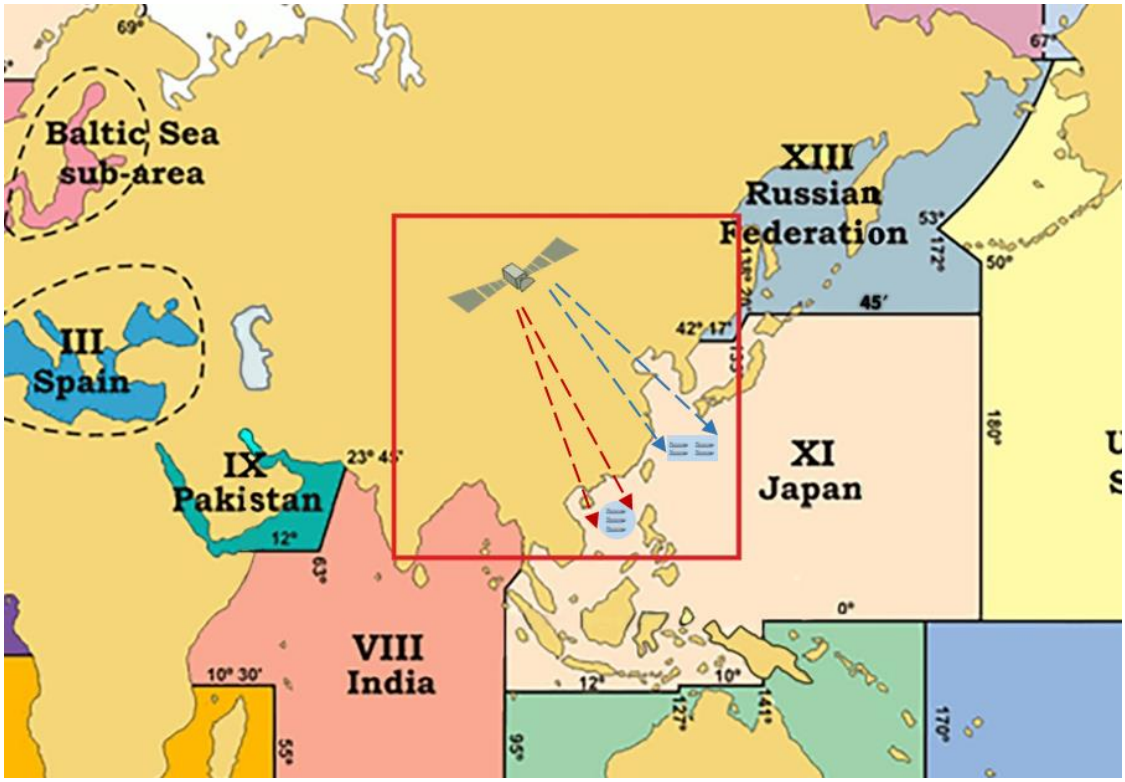

Figure 6 – Messages addressing to user defined areas (circular and rectangular)

6.10 In the case of a ship in distress, it is often appropriate to create a circular user defined area, defined by the position of the casualty and a radius around the casualty to alert

ships that may be able to render assistance. If no response is received from any ship at the first call, the area can be expanded in steps until an acknowledgement by one or more ships is received. In cases where the position of the distress is unknown, a shore-to-ship distress alert relay can be transmitted to all ships in the service region. SAR related information should only be addressed to circular or rectangular user defined areas.

7 Promulgation of MSI or SAR related information

7.1 MSI or SAR related information is promulgated by registered information providers whose Certificates of Authorization to promulgate via BDMSS are issued by the IMO EGC Coordinating Panel in accordance with the procedures in section 4. Registered information providers include, for example:

.1 NAVAREA Coordinators: for navigational warnings and other urgent safety-related information;

.2 National Coordinators: for coastal warnings and other urgent safety-related information;

.3 METAREA Coordinators: for meteorological warnings and forecasts; and

.4 Rescue Coordination Centres: for shore-to-ship distress alert relay, SAR related information and other urgent safety-related information.

7.2 All NAVAREA and coastal warnings, METAREA warnings and forecasts should be promulgated only in English in BDMSS SafetyLink service in accordance with resolution A.706(17), as amended, and A.1051(27) as amended. In addition to the required broadcasts in English, METAREA/NAVAREA and coastal warnings may be broadcast in a national language using national SafetyLink service.

7.3 Registered information providers should consider the need for contingency planning.

7.4 Scheduled transmissions are made at specified times, as allocated by the IMO EGC Coordinating Panel. These schedules are published in nautical publications and the IMO Master Plan of Shore-Based Facilities for the GMDSS.

7.5 MSI providers should adhere to their published scheduled broadcast times to facilitate reception of messages.

8 Message formatting and C codes

8.1 The BDMSS SafetyLink service does not require registered information providers manually to enter transmission instructions using C codes, although some registered information providers may have an operational requirement to use these. For those users who have a continuing operational requirement to use C Codes, appendix 2 in part two of

this manual is provided.

8.2 Methods for registered information providers to gain access to the BDMSS SafetyLink service are described in section 10 and appendix 1. These include a secure user portal which enables authorized users to send and cancel messages. Detailed operational procedures are contained in the instructions given to registered information providers after authorization and registration in accordance with appendix 2.

8.3 The detailed message format and C codes are delineated in part two of appendix 2. The BDMSS SafetyLink service automatically formats the message and its transmission instructions.

C_0 Ocean Region Code (when required)	**C_1 Priority code**	**C_2 Service code**	**C_3 Address code**	**C_4 Repetition code**	**C_5 Presentation Code**
1 digit code	1 digit code	1 or 2 digit code	2, 4, 10 or 12 alphanumeric code	2 digit code	1 or 2 digit code
0 - AOR-W* 1 - AOR-E* 2 - POR 3 - IOR 9 - Service Region	1 - Safety 2 - Urgency 3 - Distress	0 - Service Region** (general call)	2 digit - 00 (Service Region**)	**Category (a) -** for EGC messages to be repeated a finite number of times. **Category (b) -** for EGC messages to be repeated at specified intervals until cancelled by the information provider.	0 (UTF-8) by default***
		04 - Navigational, meteorological or piracy warning or meteorological forecast to a rectangular area	12 alphanumeric rectangular area address $D_1D_2LaD_3D_4D_5LoD_6D_7D_8D_9D_{10}$		
		13 - Navigational, meteorological, coastal or piracy warning or meteorological forecast to a coastal warning area	4 alphanumeric coastal warning area address $X_1X_2B_1B_2$		
		14 - Shore-to-ship distress alert relay to a circular area	10 alphanumeric circular area address $D_1D_2LaD_3D_4D_5LoR_1R_2R_3$		
		24 - Navigational, meteorological	10 alphanumeric circular area address $D_1D_2LaD_3D_4D_5LoR_1R_2R_3$		

C_0 Ocean Region Code (when required)	C_1 Priority code	C_2 Service code	C_3 Address code	C_4 Repetition code	C_5 Presentation Code
		or piracy warning or meteorological forecast to a circular area			
		31 - NAVAREA/ METAREA, or piracy warning, or meteorological forecast to a NAVAREA/ METAREA	2 digit - NAVAREA/METAREA number		
		34 - SAR coordination to a rectangular area	12 alphanumeric rectangular area address $D_1D_2LaD_3D_4D_5LoD_6D_7D_8D_9D_{10}$		
		44 - SAR coordination to a circular area	10 alphanumeric circular area address $D_1D_2LaD_3D_4D_5LoR_1R_2R_3$		

* Reserved for future use.

** C2 = 0 and C3 = 00 are used for general call to the service region, including broadcast of a distress alert relay when the distress position is unknown, or any other cases when necessary.

*** Value of the presentation code is given by the BDMSS gateway or service provider after registration. 1-15 reserved for future use.

9 Monitoring of MSI and SAR related broadcasts[2]

9.1 In order to ensure the integrity of the MSI and SAR related messages being broadcast, information providers must monitor the broadcasts which they originate in accordance with resolutions A.706(17), as amended and A.1051(27), as amended and COMSAR/Circ.37. Monitoring is especially important in a highly automated system, which is dependent on careful adherence to procedure and format. This should be accomplished by the installation of a type approved BDMSS SafetyLink receiver to enable each MSI and SAR information provider to:

.1 confirm that the message is transmitted and received correctly;

.2 ensure that cancellation messages are properly executed; and

[2] Monitoring of MSI and SAR related broadcast in a multi provider environment is currently under discussion within the relevant IMO/IHO/WMO MSI and SAR bodies

.3 observe any unexplained delay in the message being broadcast.

9.2 BDMSS EGC receiver maintains a log, which contains information on all BDMSS SafetyLink service messages received by the receiver.

This information within the log includes:

Originator	ID of a registered information provider which transmits the message.
Service	The BDMSS EGC receiver displays a short title for the particular type message service.
Priority	The BDMSS EGC receiver displays the appropriate Priority. This could be: Distress, Urgency or Safety.
Received date and time	The date time group YY-MM-DD HH: mm of when the message was received.
Size	Usually in number of bytes or characters.
Sequence number	The unique reference number allocated to the message by the BDMSS gateway.

Sequence number	Originator	Service	Priority	Received date and time	Size
202304190200005	001	Navigational warning	Urgency	2023-04-19 17:22:19	0.27KB
202304170200001	001	Search and rescue	Distress	2023-04-17 17:30:37	0.1KB

10 Accessing the BDMSS SafetyLink service

10.1 MSI or SAR related information is promulgated by officially registered information providers whose Certificates of Authorization to promulgate via BDMSS SafetyLink are issued by IMO in accordance with the procedures in section 4.

10.2 Messages are initiated via a secure, web-based portal that BDMSS will offer to officially registered users (appendix 2), or by such other means of access as may be agreed. For each broadcast message, registered information providers will need to specify its parameters, including message priority, geographic area for delivery, frequency of broadcast and termination of broadcast. Messages can also be manually cancelled.

10.3 Message priority, geographic region for broadcast, frequency of broadcast and termination of broadcast are specified by the message originator when the message is sent to the BDMSS gateway for broadcast.

11 BDMSS gateway functions

11.1 Each broadcast message is processed by the BDMSS gateway based on the message parameters and then routed as a whole to the BDMSS MCS. The broadcast message is then queued for delivery based on the message parameters and distributed through one or more satellite beam(s) depending on the specified geographical region.

11.2 Messages are not reviewed for corruption or accuracy at BDMSS gateway; therefore, if C code is used manually to prepare the messages for broadcast, the information provider must adopt the format specified in Section 8.

12 Receiving transmission

12.1 The basic requirements of BDMSS EGC receivers are that it should be able to receive and process the messages being transmitted through the satellite. Information providers should repeat their most important unscheduled messages 6 minutes after the first broadcast so that the receiver would receive the information on the repeated broadcast.

12.2 When a message has been received, a record is made of the message identification associated with that message. The unique sequence number is used to suppress the printing of repeated transmissions of the same message.

12.3 It is not possible to reject mandatory "Service Region" messages such as shore-to-ship distress alert relays for the area within which the ship is located. When a distress or urgency message is received, an audio and visual alarm will be given.

12.4 The following subject indicators for coastal warnings are in use:

A = Navigational warnings
B = Meteorological warnings
C = Ice reports
D = Search and rescue related information and acts of piracy warnings
E = Meteorological forecasts
F = Pilot service messages
G = AIS
H = Not used
I = Not used
J = SATNAV messages
K = Other navaid messages
L = Other navigational warnings – additional to subject code A
V = Special services allocation by the IMO EGC Coordinating Panel
W = Special services allocation by the IMO EGC Coordinating Panel
X = Special services allocation by the IMO EGC Coordinating Panel
Y = Special services allocation by the IMO EGC Coordinating Panel
Z = No messages on hand

12.5 It is recommended that, in order to ensure that all necessary MSI is available before sailing, BDMSS EGC receivers should remain in operation while the ship is in port. When the receiver is switched on and logged onto the BDMSS SafetyLink system it will automatically receive in-force messages.

12.6 Although reception of MSI and SAR related information is automatic, the shipboard

operator must set up the BDMSS EGC receiver properly before the start of the voyage, in accordance with the manufacturer's instructions.

12.7 The position information in BDMSS EGC receivers is updated automatically from integrated BeiDou navigation satellite system receiver.

13 Charges for MSI services

13.1 Resolution A.707(17) on *Charges for distress, urgency and safety messages through the Inmarsat system* establishes the arrangements in place for the treatment of charges. Resolution A.1001(25) on *Criteria for the provision of mobile satellite communication systems in the Global Maritime Distress and Safety System (GMDSS)* requires that prospective satellite systems operating in the GMDSS undertake to apply the principles of resolution A.707(17), and CTTIC has given such an undertaking.

13.2 There are no charges to the seafarer for reception of these messages.

13.3 Message transmission charges apply to MSI providers and are set at a special tariff. Noting that IMO is considering technical solutions for the dissemination of MSI and SAR related information via EGC over multiple RMSSs, including interoperability and interconnectivity, with a view to addressing the increased operational and financial burden, the BDMSS SafetyLink service would be free of charge until an agreement on the dissemination of MSI and SAR-related information over multiple RMSSs is reached and implemented by the Organization.

APPENDIX 1

THE BEIDOU MESSAGE SERVICE SYSTEM (BDMSS)

1 Introduction

1.1 BeiDou Message Service System is a regional messaging service system operated and maintained by China Transport Telecommunication Information Group Co. Ltd (CTTIC). There are three major components of BDMSS: space segment, ground segment and user terminals.

.1 the space segment, consisting of satellites and communication links with the ground segment;

.2 the ground segment, consisting of ground stations and terrestrial network. The ground stations include BDMSS MCS and BDMSS gateway, while terrestrial network includes terrestrial communication links supporting BDMSS services;

.3 user terminals, consisting of BDMSS maritime mobile terminals capable of two-way communications as required by GMDSS, including transmission of distress alerts and messages, reception of MSI and SAR related information, SAR coordination communication.

2 Operational procedures

2.1 The satellite constellation provides a communication link between user terminals and the BDMSS MCS. The BDMSS gateway is connected to the BDMSS MCS and acts as a switching center to route the communication to the terrestrial networks, or process the communication before forwarding to BDMSS MCS for transmission, which then delivers the communication to the destination user.

3 Network architecture

3.1 The network architecture is illustrated as below:

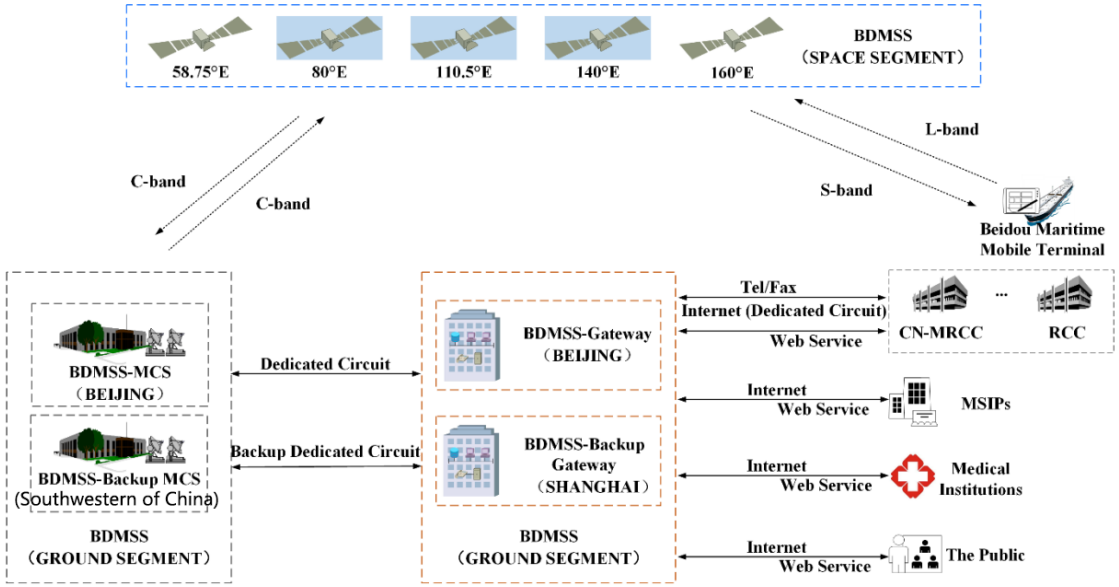

Figure 7 - BDMSS network

4 Space segment

4.1 At present, the BDMSS satellite constellation consists of three operational satellites and two in-orbit spares (all are geostationary earth orbit (GEO) satellites). The three operational satellites are positioned at longitudes 80°E, 110.5°E and 140°E, and the two in-orbit spares are positioned at 58.75°E and 160°E. In the event of a total failure of one operational satellite, one spare satellite will completely replace the operational satellite to restore services. The satellite constellation is illustrated in Figure 8.

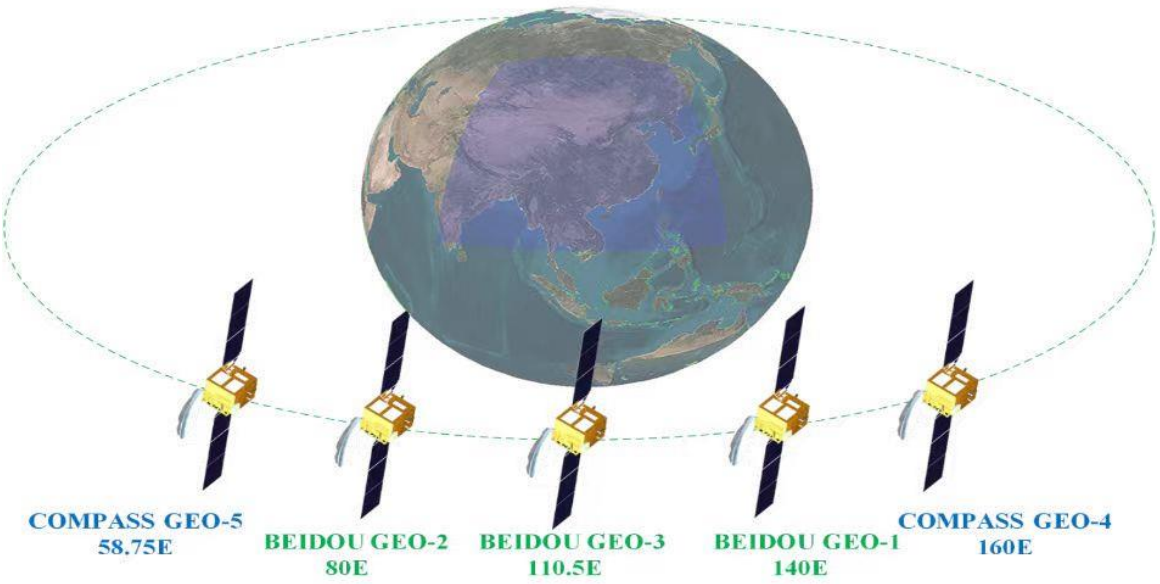

Figure 8 BDMSS satellite constellation

5 Ground segment

5.1 BDMSS ground segment is comprised of one operational and one backup BDMSS MCS, one operational and one backup BDMSS gateway and terrestrial communication links. Both the operational BDMSS MCS and BDMSS gateway are located in Beijing, while the backup BDMSS MCS is located in Southeastern of China and the backup BDMSS gateway is located in Shanghai.

5.2 The operational and backup BDMSS MCSs are connected to the operational and backup BDMSS gateways through dedicated circuits to meet the redundancy and contingency requirements.

6 Service region

6.1 BDMSS is capable of providing reliable satellite-based short messaging and continuous alerting services in areas of 75°E to 135°E longitude and 10°N to 55°N latitude (shown in Figure 9).

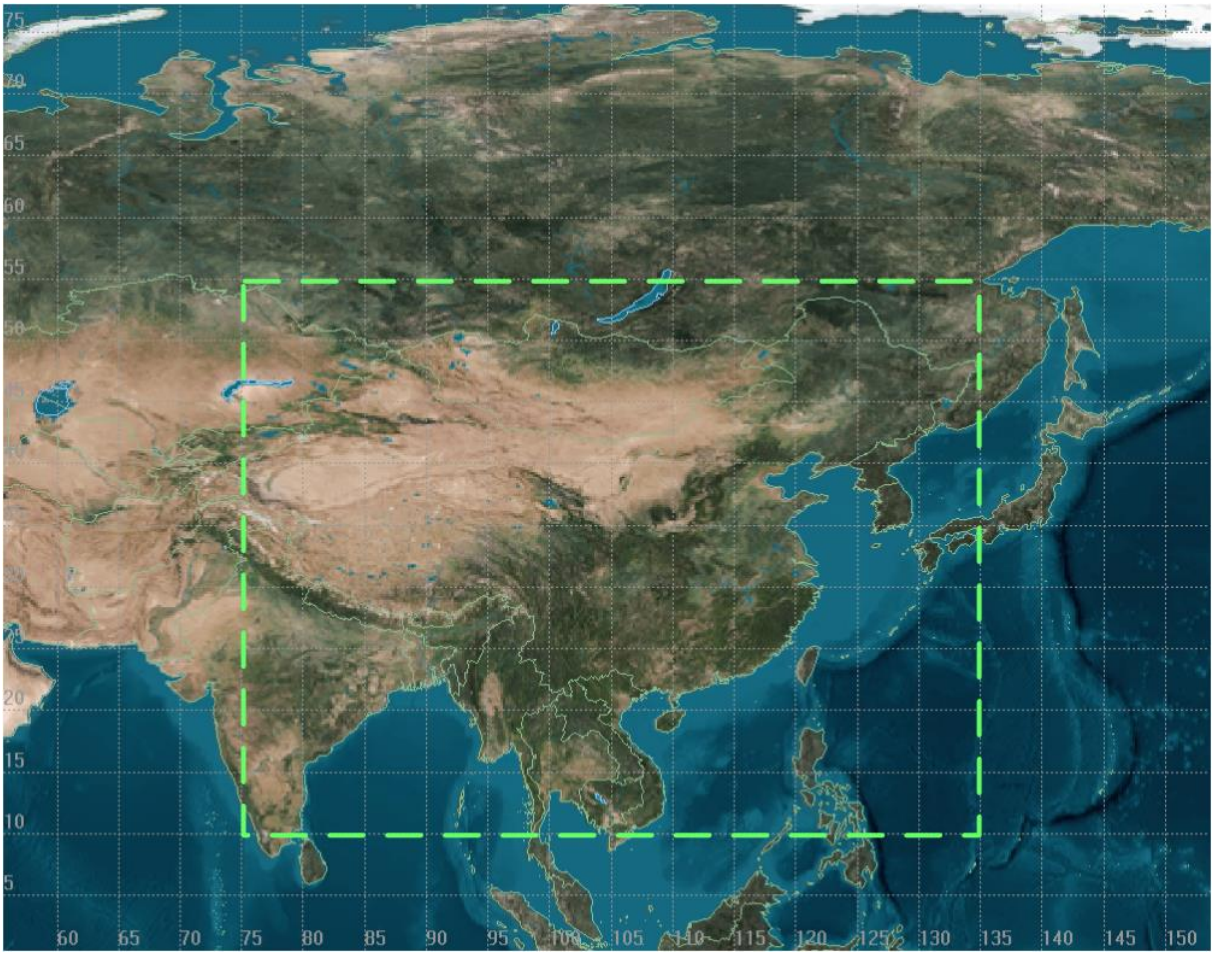

Figure 9 BDMSS service region

7 Network functions

7.1 BDMSS network supports ship-to-shore, shore-to-ship and ship-to-ship maritime communications with four level of priorities for all communications.

7.2 Only registered information providers are allowed to input messages for broadcast. The authorization and registration of information providers are performed by the IMO EGC Coordinating Panel in accordance with the procedure described in section 4 of this manual. During the authorization and registration process, the means of access and the credentials needed by the authorized entity will be provided by the IMO EGC Coordinating Panel and BDMSS. It is necessary to ensure that the prioritization of traffic is protected against inadvertent or malicious misuse. For example, access can be protected by requiring a password, and these could be combined into other functions where a registered information provider already have existing alternative operational security measures in place. A secure web portal is provided by BDMSS to registered information providers for access. Operational guidance for the use of the web portal is given in appendix 2 in part one of this manual.

8 Network availability and service restoration

8.1 As the service provider of BDMSS, CTTIC has made arrangements for planned service outage and provide related information, including the scheduled downtime, affected services and areas, to associated RCCs, IMSO, MSI providers and ships at least 24 hours in advance. CTTIC will also notify the above-mentioned parties via telephone, facsimile email or any other way available, as soon as possible when an unplanned service outage is detected, and when the services are restored. All necessary actions will be taken to restore affected services. The notification to IMSO will be sent within one hour upon confirmation of service interruptions by email, followed up with a phone call to a designated IMSO contact.

8.2 BDMSS service region is under dual satellite beams to ensure high reliability and low latency of BDMSS communication service. The architecture and operating mechanism of the BDMSS constellation ensure that a single satellite failure would not cause service interruption. When a partial or total satellite failure results in service outage in corresponding area, user terminals in areas under dual satellite beams will automatically search for other available beams to restore the service after a short period of service outage (about 10 seconds).

APPENDIX 2

OPERATIONAL GUIDANCE – PART ONE

1 For those registered information providers, BDMSS provides a secure online portal for accessing the BDMSS SafetyLink service.

2 Part one of this appendix contains operational guidance for the benefit of registered information providers who are responsible for preparing messages for broadcast. It also contains operational guidance for SAR authorities authorized to use the BDMSS SafetyLink service.

3 For those registered information providers who require it, for example those who use tailor-made operational management systems, or whose messages are generated by highly automated (machine-to-machine) processes, BDMSS will make available an application programming interface (API) to enable access to the BDMSS SafetyLink service.

Credentials

4 Only registered information providers will have access to the BDMSS SafetyLink service. The procedure for authorization and certification of registered information providers is described in section 4 of this Manual. These registered information providers will be provided with credentials for access to the BDMSS SafetyLink service. These credentials will identify the registered information provider to the service, and will also determine which types of messages that the registered information provider can send.

Message type

5 METAREA Coordinators can select "Forecasts and warnings", "Tropical cyclone warning" or "Other safety-related information" and can also select whether to send the message to the METAREA, a coastal area (if applicable) or to a user defined area.

6 NAVAREA Coordinators can select "Navigational warning", "Piracy Attack Warning" or "Other safety-related information" and can also select whether to send the message to the NAVAREA, a coastal area (if applicable) or to a user defined area.

7 SAR Authorities can select "Distress alert relay", "SAR Coordination" and “Urgency and safety communication”. SAR Authorities default to user defined areas. A distress alert relay is normally sent to a circular area.

Message priority

8 METAREA and NAVAREA Coordinators can select either "Safety" or "Urgency". SAR Authorities can select either "Safety", "Urgency" or "Distress", whichever is appropriate to the emergency phase of the situation. A distress alert relay will be "Distress".

Message parameters

9 Registered information providers can select scheduled or immediate transmission and it is possible to an "Echo" retransmission (0, 1 or 2) at six-minute intervals. Or a registered information provider may opt to set a specific number of retransmissions and their intervals.

Message delivery address

10 Delivery addresses can be predefined or user defined.

11 Predefined addresses can include METAREA, NAVAREA or coastal warning areas. These areas are created during the integration of the registered information provider with the BDMSS SafetyLink service.

12 User - defined addresses are either a circular area or a rectangular area. These can be determined by the user for a particular message.

13 Where the message type is for delivery to a METAREA or NAVAREA, the user selects the address from the list of METAREs or NAVAREAs. Where the message type is for a coastal warning area, the user selects that area from their particular list of predefined areas. The user also selects the message subject.

14 Where the message type is for delivery to a circular area, the user defines that area with the latitude and longitude of its centre, and its radius in nautical miles.

15 Where the message type is for delivery to a rectangular area, the user defines that area with the latitude and longitude of its southwestern corner, and its extent north and east from that point, in degrees.

Message text

16 The message should be composed according to the detailed guidance given in the *Joint IMO/IHO/WMO Manual on Maritime Safety Information*.

Message status

17 Once a message has been sent via the satellite network, the status of the message can be viewed on "EGC record" page. Where a message is set to be promulgated repeatedly, the repetition can be cancelled manually by selecting “revoke” button.

Additional guidance

18 Additional guidance for METAREA Coordinators is contained in resolution A.1051(27), as amended, on *Worldwide Met-Ocean Information and Warning Service*.

19 Additional guidance for NAVAREA Coordinators is contained in resolution A.706(17), as amended, on *World-Wide Navigational Warning Service*. Additional guidance for SAR Authorities is contained in the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual, volumes I and II.

20 Additional guidance on piracy countermeasures is contained in the *Guidelines on operational procedures for the promulgation of maritime safety information concerning acts of piracy and piracy counter-measure operations* (resolution MSC.305(87)).

OPERATIONAL GUIDANCE – PART TWO

1 This Appendix provides operational guidance for the benefit of registered MSI and SAR related information providers who are responsible for preparing messages for broadcast.

Use of the codes given in this appendix is mandatory for all messages in the system.

2 Types of messages and message formats are detailed in the sub-parts of this Appendix.

Part A – Navigational warning service
Part B - Meteorological service
Part C - Search and Rescue (SAR) services and SAR coordination traffic
Part D - Piracy countermeasures broadcast messages
Part E - General call

Allocation of priority and service codes for EGC SafetyLink service		
Service	**Message priority**	**Service code (type)**
Navigational warning services	C_1 = 1 (Safety) – normally C_1 = 2 (Urgency) – exceptionally at discretion of information provider	C_2 = 04 – Navigational warning to a rectangular area C_2 = 13 – Coastal warning to a coastal warning area C_2 = 24 – Navigational warning to a circular area C_2 = 31 – NAVAREA warning to a NAVAREA
Meteorological services	C_1 = 1 (Safety) – always for forecasts and warnings C_1 = 2 (Urgency) – always for urgent tropical cyclone warnings only	C_2 = 04 – Meteorological warning or forecast to a rectangular area C_2 = 13 – Meteorological warning or forecast to a coastal warning area C_2 = 24 – Meteorological warning or forecast to a circular area C_2 = 31 – METAREA warning or meteorological forecast to a METAREA
SAR services: 1) shore-to-ship distress alert relay	C_1 = 3 (Distress) – always	C_2 = 0 – Shore-to-ship distress alert relay to the Service Region when the distress position is unknown C_2 = 14 – Shore-to-ship distress alert relay to a circular area
2) SAR coordination traffic	C_1 = 1 (Safety) – determined by the phase of emergency C_1 = 2 (Urgency) – determined by the phase of emergency C_1 = 3 (Distress) –determined by the phase of emergency	C_2 = 34 – SAR coordination to a rectangular area C_2 = 44 – SAR coordination to a circular area
3) shore-to-ship urgency and safety traffic	C_1 = 1 (Safety) C_1 = 2 (Urgency)	C_2 = 31 – Urgency and safety traffic
Piracy countermeasures broadcast messages	C_1 = 1 (Safety) C_1 = 2 (Urgency) – for piracy attack warnings	C_2 = 04 – Piracy warning to a rectangular area C_2 = 13 – Piracy warning to a coastal warning area C_2 = 24 – Piracy warning to a circular area C_2 = 31 – Piracy warning to a NAVAREA

general (all ships call within the service region)	C_1 = 1 (Safety) C_1 = 2 (Urgency) C_1 = 3 (Distress)	C_2 = 0 - when necessary

3 The broadcast parameters are controlled by the use of six C codes which are combined into a generalized message address header format as follows:

C_0:C_1:C_2:C_3:C_4:C_5

(*Spaces, colons or other delimiters between these codes will be required, depending on the communication protocol of the BDMSS gateway.*)

C_0 – Ocean region
C_1 – Message priority
C_2 – Service code
C_3 – Address code
C_4 – Repetition code
C_5 – Presentation code

4 Each C code controls a different broadcast parameter and is assigned a numerical value according to the options specified in the following parts.

5 The C_0 code is required to identify the ocean region covered by satellite Ocean Region as follows:

C_0 = 0 – AOR-W
C_0 = 1 – AOR-E
C_0 = 2 – POR
C_0 = 3 – IOR
C_0 = 9 – Service Region

6 (a) All EGC messages should comprise of three elements:
Address header instruction (EGC C codes)
TEXT OF MESSAGE
NNNN

Mandatory message element table	
Message element	**Remarks**
Address header instruction	The syntax of the special address header in relation to the exact number of digits and/or alphanumeric characters, and to the spaces between each C code is critical, and must conform to the format required by the BDMSS gateway or service provider as supplied in their specific instruction manual.
TEXT OF MESSAGE	The content of the message should be presented in UPPER case. For maritime safety information messages, the format of navigational warnings, and meteorological warnings and forecasts is defined in the *Joint IMO/IHO/WMO Maritime Safety Information Manual*, as amended.
NNNN	The letters NNNN should be inserted at the end of the text to indicate "end of message".

(b) EGC messages submitted for transmission (or broadcast) via a two-stage access system must also include an end of transmission instruction code for the BDMSS gateway. This should be inserted on the final line, after NNNN. This code may vary and must conform to the format required by the

BDMSS gateway or service provider as supplied in their specific instruction manual.

7 The International Maritime Organization (IMO) requires that, in order to allow the use of non-dedicated receive facilities, the majority of broadcasts on the International SafetyLink Service are made at scheduled times. Broadcast schedules must be coordinated through the IMO EGC Coordinating Panel, which can also offer advice on ways of scheduling information within the system.

8 Because errors in the header format of a message may prevent it being released, MSI providers must monitor broadcasts of messages which they originate.

9 For all the services described below, a cancellation or deleting facility is provided for messages transmitted to the BDMSS gateway with category (b) repetition codes (see part F). Cancellation (or deletion) procedures may vary between different service providers. Detailed operational procedure is contained in the instructions on sending EGC broadcasts given to the MSI and SAR related information providers after registration with the BDMSS MCS operator or service provider.

10 The term "echo" used in all of the services described below in parts A, B, C and D, is associated with using the respective C4 repetition codes which will initiate an automatic repeated broadcast six minutes after the initial scheduled or unscheduled broadcast. The six-minute repeat or echo is used to ensure that the warning is received by the maximum number of ships.

Part A – Navigational warning services

11 The following guidelines set out the arrangements to be used for promulgating navigational and coastal warnings for the GMDSS. **They are mandatory for broadcasts in the International EGC Service.**

12 These guidelines are to be read in conjunction with the *IMO/IHO World-Wide Navigational Warning Service (WWNWS) guidance document* (resolution A.706(17), as amended).

13 Navigational warnings that require an immediate broadcast should be transmitted as soon as possible after receipt. If still in force, they should be repeated in subsequent scheduled broadcasts until cancelled.

14 Navigational warnings shall remain in force until cancelled by the originating Coordinator. Navigational warnings should be broadcast for as long as the information is valid; however, if they are readily available to seafarers by other official means, for example in Notices to Seafarers, then after a period of six weeks they may no longer be broadcast. If the navigational warning is still valid and not available by other means after six weeks, it should be re-issued as a new navigational warning.

15 The following C codes shall be used for warnings issued under the auspices of the WWNWS.

15.1 **C_1 – Message priority**

C_1 = 1 (safety)
C_1 = 2 (urgency) (at discretion of the registered MSI provider)

15.2 **C_2 – Service code**

C_2 = 04 Navigational warning to a rectangular area
C_2 = 13 Coastal warning to a coastal warning area
C_2 = 24 Navigational warning to a circular area
C_2 = 31 NAVAREA warning to a NAVAREA

15.3 C_3 – Address code

C_3 = two digits X_1X_2	When C_2 = 31, then: X_1X_2 are the two digits of the NAVAREA number (with a leading zero where necessary in the range 01 – 21).
C_3 = four alphanumeric characters $X_1X_2B_1B_2$	When C_2 = 13 for Coastal warnings, then: X_1X_2 are the two digits of the NAVAREA number (with a leading zero where necessary in the range 01 – 21) B_1 is the coastal warning area A to Z B_2 is the subject indicator and must always be A or L, where: A = Navigational warnings L = Other navigational warnings.
C_3 = twelve alphanumeric characters $D_1D_2LaD_3D_4D_5LoD_6D_7D_8D_9D_{10}$	When C_2 = 04 for NAVAREA warnings within a rectangular area: D_1D_2 is latitude of south-west corner of the rectangle in degrees La is latitude indicator N or S $D_3D_4D_5$ is longitude of south-west corner of rectangle in degrees, with leading zeros if required Lo is longitude indicator E or W D_6D_7 is extent of rectangle in latitude (degrees) $D_8D_9D_{10}$ is extent of rectangle in longitude (degrees).
Example: a rectangle whose south-west corner is 60°N and 010°W, extending 30° north and 25° east, is coded as: 60N010W30025. Note: Latitude and longitude are limited by values from 00° to 90° latitude and 000° to 180° longitude.	

15.4 C_4 – Repetition code

C_4 = 01	May be used for initial unscheduled broadcast of NAVAREA warnings, and coastal warnings with no echo (transmit once on receipt)
C_4 = 11	Recommended for use with initial unscheduled broadcast of NAVAREA warnings, and coastal warnings (transmit on receipt, echo six minutes later)
C_4 = 16	Use for NAVAREA or coastal warnings scheduled for broadcast twice per day at 12-hour intervals with safety priority

Note: For NAVAREA or coastal warnings scheduled for broadcast more than twice per day, the appropriate C_4 repetition code detailed in part F of this Manual must be used.

15.5 **C_5 – Presentation code**

C5 = 0 The code 0 for UTF-8 is used by default. Codes 1 to 15 are reserved for future use.

Part B – Meteorological services

16 The following guidelines set out the arrangements to be used for promulgating meteorological forecasts and warnings for the GMDSS. **They are mandatory for broadcasts in the International EGC Service**.

17 These guidelines are to be read in conjunction with the *WMO Manual on Marine Meteorological Services* (WMO No. 558), as revised for the GMDSS.

18 In order to ensure uniformity of meteorological forecasts and warnings globally, the following C codes should be used for meteorological services via BDMSS.

18.1 **C_1 – Message priority**

C_1 = 2 (urgency)	Only use for tropical cyclone warnings or urgent meteorological warnings with force 12 Beaufort or above
C_1 = 1 (safety)	For forecasts and other meteorological warnings

18.2 **C_2 – Service code**

C_2 = 04	Meteorological warning or forecast to a rectangular area
C_2 = 13	Meteorological warning or forecast to a coastal warning area
C_2 = 24	Meteorological warning or forecast to a circular area
C_2 = 31	METAREA warning or meteorological forecast to a METAREA

18.3 **C_3 – Address code**

C_3 = ten alphanumeric characters $D_1D_2LaD_3D_4D_5LoR_1R_2R_3$	When C_2 = 24 for meteorological warnings to user defined circular area, then: D_1D_2La (three characters) is latitude of centre in degrees, and La whether north (N) or south (S). A leading zero should be used for latitudes less than 10° $D_3D_4D_5Lo$ (four characters) is longitude of centre in degrees, and Lo whether east (E) or west (W) of the prime meridian. One or two leading zeros should be used for longitudes less than 100° $R_1R_2R_3$ (three characters) is radius of circle in nautical miles, up to 999. One or two leading zeros should be used for radius less than 100 nm
Example: A circle centred at latitude 56°N longitude 34°W with radius of 35 nautical miles is coded as: 56N034W035	
C_3 = two digits XX	When C_2 = 31, then: C_3 = the two digits of the METAREA number (with a leading zero where necessary in the range 01 – 21)

C_3 = four alphanumeric characters $X_1X_2B_1B_2$	When C_2 = 13 for coastal warnings, then: X_1X_2 are the two digits of the METAREA number (with a leading zero where necessary in the range 01 – 21). B_1 is the coastal warning area A to Z B_2 is the subject indicator and must always be B or E, where: B = Meteorological warnings E = Meteorological forecasts
C_3 = twelve alphanumeric characters $D_1D_2LaD_3D_4D_5LoD_6D_7D_8D_9D_{10}$	When C_2 = 04 for meteorological warnings or forecasts within a rectangular area Note: The definition of 12 characters for a rectangular address is given in part A, paragraph 15.3

18.4 **C_4 – Repetition code**

Category (a) repetition codes are used for meteorological services as follows:	
C_4 = 01	Use for meteorological forecast (transmit once on receipt)
C_4 = 11	Use for meteorological warning (transmit on receipt followed by repeat six minutes later)

18.5 **C_5 – Presentation code**

C5 = 0 The code 0 for UTF-8 is used by default. Codes 1 to 15 are reserved for future use.

Part C – Search and rescue services

19 The following guidelines set out the arrangements to be used by Rescue Coordination Centres (RCCs) for initiating transmission of shore-to-ship distress alert relays and shore-to-ship search and rescue information. Transmissions should be in accordance with the relevant procedures of the International Telecommunication Union (ITU) Radio Regulations (RR), the International Convention on Maritime Search and Rescue, 1979, as amended, and the IAMSAR Manual.

20 In order to ensure uniformity of the search and rescue broadcast product throughout the world, C codes should be used as described in this part.

Shore-to-ship distress alert relays

21 As a general principle, distress alert relays should be addressed to a circular area around the estimated or known position of the distressed vessel. The radius of the circle should be chosen to take account of the accuracy of the datum position, the expected density of shipping in the vicinity and the fact that the position can only be defined in the message address to the nearest whole degree of latitude and longitude. The distress alert relay message must be broadcast via all satellites which cover the area concerned. Shore-to-ship distress alert relays sent by the International EGC Service should contain the identification of the unit in distress, its approximate position and other information which might facilitate rescue. Codes should be as follows:

21.1 **C_1 – Message priority**

C_1 = 3 (distress)

21.2 **C_2 – Service code**

C_2 = 14 (shore-to-ship distress alert relay to circular areas)	Messages addressed to circular areas will only be received and printed out by EGC receivers that are located inside the circle

21.3 **C_3 – Address code**

C_3 = ten alphanumeric characters $D_1D_2LaD_3D_4D_5LoR_1R_2R_3$	When C_2 = 14 for distress alert relay to user defined circular area, then: D_1D_2La (three characters) is latitude of vessel in distress in degrees (two digits) and whether north (N) or south (S): e.g. 39N (three characters total). A leading zero should be included for latitudes less than 10° $D_3D_4D_5Lo$ (four characters) is longitude of vessel in distress in degrees (three digits) and whether east (E) or west (W) of the prime meridian: e.g. 059W. A leading zero or zeros should be included for longitudes less than 100° or 10° as appropriate: e.g. use 099 for 99° and 008 for 8° $R_1R_2R_3$ (three characters) is alert radius around distress vessel in nautical miles. To ensure that position inaccuracies of both the distress vessel and nearby vessels to which the message is intended do not affect receipt of messages, radius values of 200 nautical miles or larger should normally be used.

21.4 **C_4 – Repetition code**

C_4 = 11	Use for distress alerts relay (transmit on receipt followed by repeat six minutes later)

21.5 **C5 – Presentation code**

C5 = 0 The code 0 for UTF-8 is used by default. Codes 1 to 15 are reserved for future use.

Search and rescue coordination traffic

22 Search and rescue coordination messages should be addressed to user defined circular or rectangular areas for the intent of coordinating the search and rescue of a vessel in distress. Priority of the message will be determined by the phase of the emergency.

22.1 **C_1 – Message priority**

C_1 = 3 (distress), 2 (urgency) or 1 (safety)

22.2 **C_2 – Service code**

C_2 = 34	Search and rescue coordination to a rectangular area
C_2 = 44	Search and rescue coordination to a circular area

22.3 **C_3 – Address code**

C_3 = twelve alphanumeric characters $D_1D_2LaD_3D_4D_5LoD_6D_7D_8D_9D_{10}$	When C_2 = 34 Search and rescue coordination to a rectangular area Note: The definition of 12 characters for a

	rectangular address is given in part A, paragraph 15.3
C_3 = ten alphanumeric characters $D_1D_2LaD_3D_4D_5LoR_1R_2R_3$	When C_2 = 44 search and rescue coordination to a circular area Note: The definition of 10 characters for a circular address is given in part B, paragraph 18.3

22.4 **C_4 – Repetition code**

C_4 = 11 transmit on receipt followed by repeat six minutes later

22.5 **C_5 – Presentation code**

C5 = 0 The code 0 for UTF-8 is used by default. Codes 1 to 15 are reserved for future use.

Shore-to-ship urgency and safety traffic

23 As a general principle, only the minimum information consistent with the safety of navigation should be broadcast. However, where such information is deemed essential, shore-to-ship information other than distress alerts relay should be broadcast to a NAVAREA using C codes as follows:

23.1 **C_1 – Message priority**

C_1 = 2 (urgency) or 1 (safety)

23.2 **C_2 – Service code**

C_2 = 31

23.3 **C_3 – Address code**

C_3 = two digits X_1X_2	When C_2 = 31, then: X_1X_2 are the two digits of the NAVAREA number (with a leading zero where necessary in the range 01-21)

23.4 **C_4 – Repetition code**

C_4 = 11	Use for unscheduled broadcasts of urgency and safety traffic (transmit on receipt followed by repeat six minutes later)

23.5 **C_5 – Presentation code**

C5 = 0 The code 0 for UTF-8 is used by default. Codes 1 to 15 are reserved for future use.

Part D – Piracy countermeasures broadcast messages

24 On receiving a message of alert or any other information concerning a threat of attack (from the Security Forces Authority responsible for the operational application of the urgency plans (countermeasures) in the region or another MRCC, for example), the MRCC should ask the NAVAREA coordinator (or any other competent authority in accordance with local arrangements), to send out a warning through the appropriate MSI network (NAVTEX or satellite) and other broadcasting networks for warnings to shipping, if these exist.

25 There are two kinds of MSI messages associated with piracy countermeasures: the daily SITuation REPort (SITREP) and a piracy attack warning. Specific guidance on drafting and broadcasting these messages is given below.

26 The daily situation report should be broadcast at a regular time around 0800 local time daily. The following paragraphs provide specific guidance on broadcast procedures.

27 The daily situation report should be broadcast to a rectangular area enclosing the region of probable piracy attacks (based on historical data) plus a margin of 700 nautical miles (24 hours steaming by a fast ship) in every direction.

28 The following C codes illustrate those to be used for broadcasts of the daily SITREP:

28.1 **C_1 – Message priority**

C_1 = 1 (safety)

28.2 **C_2 – Service code**

C_2 = 04	SITREP to a rectangular area
C_2 = 24	SITREP to a circular area

28.3 **C_3 – Address code**

C_3 = twelve alphanumeric characters $D_1D_2LaD_3D_4D_5LoD_6D_7D_8D_9D_{10}$	When C_2 = 04 for SITREP to a rectangular area Note: The definition of 12 characters for a rectangular address is given in part A, paragraph 15.3
C_3 = ten alphanumeric characters $D_1D_2LaD_3D_4D_5LoR_1R_2R_3$	When C_2 = 24 for SITREP to a circular area Note: The definition of 10 characters for a circular address is given in part B, paragraph 18.3

28.4 **C_4 – Repetition code**

C_4 = 18	Broadcast every 24 hours (no echo) until cancelled

28.5 **C_5 – Presentation code**

C5 = 0 The code 0 for UTF-8 is used by default. Codes 1 to 15 are reserved for future use.

29 A piracy attack warning shall be broadcast as an "URGENCY" NAVAREA or coastal warning immediately on receipt of the source information and at least at the next scheduled broadcast or for as long as the information remains valid. Urgency warnings will be broadcast over all satellites which cover the affected region. Subject indicator character B_2 = D should be used in coastal warning areas. The specific area in which the attack has taken place is to be quoted in the first line of the text, using no more detail than is necessary to indicate the probable location of further attacks, e.g. WESTERN PHILIP CHANNEL or VICINITY HORSBURGH LIGHT. The description of the pirate vessel and its last observed movements are to be kept as brief as possible and should give only those details which are of significance in avoiding other attacks.

30 The following C codes illustrate those to be used for broadcast of piracy attack warnings:

30.1 **C_1 – Message priority**

C_1 = 2 (urgency)

30.2 **C_2 – Service code**

C_2 = 13	Coastal warning
C_2 = 31	NAVAREA warning

30.3 **C_3 – Address code**

C_3 = two digits X1X2	When C_2 = 31 then: X_1X_2 are the two digits of the NAVAREA number (with a leading zero where necessary in the range 01 to 21)
C_3 = four alphanumeric characters $X_1X_2B_1B_2$	When C_2 = 13 for coastal warnings then: X_1X_2 are the two digits of the NAVAREA number (with a leading zero where necessary in the range 01 to 21) B_1 is the coastal warning area A to Z B_2 is the subject indicator and must always be, where: D= Search and rescue related information and acts of piracy warnings

30.4 **C_4 – Repetition code**

C_4 = 16	Broadcast every 12 hours with no echo until cancelled

30.5 **C_5 – Presentation code**

C5 = 0 The code 0 for UTF-8 is used by default. Codes 1 to 15 are reserved for future use.

31 Date/time should always be quoted in the form:

DDHHMM UTC MoMoMo YY
as in the example: 251256 UTC JUN 17

Note*:* UTC (Coordinated Universal Time) is the same time-zone as GMT (Z).

32 Geographical positions should be quoted in the standard format:

$D_1D_2M_1M_2LaD_3D_4D_5M_3M_4Lo$
where:
D_1D_2 = degrees of latitude (with leading zero if required)
M_1M_2 = minutes of latitude
La = latitude (N or S)
$D_3D_4D_5$ = degrees of longitude (with leading zeros if required)
M_3M_4 = minutes of longitude
Lo = longitude (E or W)
as in the example: 5419N10327E

Note:

1 Examples of format and drafting guidance for piracy warnings is contained in the *Joint IMO/IHO/WMO Manual on Maritime Safety Information* (MSC.1/Circ.1310, as amended, and IHO Publication No. S-53).

2 Decimals of minutes will seldom be necessary or appropriate for reports of this kind.

3 Where the name of a geographical feature is used instead of a geographical position, a name should be chosen that appears on all commonly used charts of the area. Local knowledge should not be required for understanding the message.

Part E - General (all ships) call

33 When the RCC has no indication of the position of the vessel in distress, shore-to-ship distress alert relays may be sent as general call.

Note: This method of alert should rarely be used.

34 In any other cases necessary, the dissemination of information may also be sent at general call.

35 The C_0: C_1: C_2: C_3: C_4: C_5 codes for general calls are as follows:

C_0 = 9
C_1 = 3 (distress), 2 (urgency) or 1 (safety)
C_2 = 0
C_3 = 00
C_4 = 11 or other appropriate repetition codes
C_5 = 0

Part F - Repetition codes (C_4)

36 The C_4 repetition codes are divided into two categories:

.1 Category (a) for messages that are required to be repeated a finite number of times; and

.2 Category (b) for messages that are required to be repeated at specified intervals until expired or cancelled by the MSI provider.

37 **Category (a) repetition codes:**

Code	Instruction
01	transmit once on receipt
11	transmit on receipt followed by repeat six min later
61	transmit on receipt and 1 hour after initial broadcast (twice)
62	transmit on receipt and 2 hours after initial broadcast (twice)
63	transmit on receipt and 3 hours after initial broadcast (twice)
64	transmit on receipt and 4 hours after initial broadcast (twice)
66	transmit on receipt and 12 hours after initial broadcast (twice)
67	transmit on receipt and 24 hours after initial broadcast (twice)
70	transmit on receipt, 12 hours after initial broadcast and then 12 hours after the second broadcast (three times)

71	transmit on receipt, 24 hours after initial broadcast and then 24 hours after the second broadcast (three times)

38 **Category (b) repetition codes:**

A category (b) repetition code allows a message to be repeated indefinitely until expired or cancelled by the message provider. The repetition period can be set at between 1 and 120 hours. In addition, each transmission can be echoed after a fixed period of six minutes. Repetition codes are made up by stating the multiplier first, followed by the delay period:

Multiplier x Delay

where the multiplier specifies the amount of delay periods between each broadcast, and the delay is a fixed number of hours. The multiplier digit may be any digit from 1 to 5 as follows:

1 = 1 specified delay period between broadcasts
2 = 2 specified delay periods between broadcasts
3 = 3 specified delay periods between broadcasts
4 = 4 specified delay periods between broadcasts
5 = 5 specified delay periods between broadcasts

39 The delay digit coding is as follows:

2 = 1 hour delay; no echo
3 = 1 hour delay; with echo
4 = 6 hours delay; no echo
5 = 6 hours delay; with echo
6 = 12 hours delay; no echo
7 = 12 hours delay; with echo
8 = 24 hours delay; no echo
9 = 24 hours delay; with echo

40 The various combinations (Multiplier x Delay) available, are shown in the table below:

Code	Instruction
12	repeat broadcast every 1 hour with no echo
13	repeat broadcast every 1 hour with an echo six minutes after each broadcast
22	repeat broadcast every 2 hours with no echo
23	repeat broadcast every 2 hours with an echo six minutes after each broadcast
32	repeat broadcast every 3 hours with no echo
33	repeat broadcast every 3 hours with an echo six minutes after each broadcast
42	repeat broadcast every 4 hours with no echo
43	repeat broadcast every 4 hours with an echo six minutes after each broadcast
52	repeat broadcast every 5 hours with no echo
53	repeat broadcast every 5 hours with an echo six minutes after each broadcast
14	repeat broadcast every 6 hours with no echo
15	repeat broadcast every 6 hours with an echo six minutes after each broadcast
16 (or 24)	repeat broadcast every 12 hours with no echo
17 (or 25)	repeat broadcast every 12 hours with an echo six minutes after each broadcast
34	repeat broadcast every 18 hours with no echo
35	repeat broadcast every 18 hours with an echo six minutes after each broadcast

18 (or 26; or 44)	repeat broadcast every 24 hours with no echo
19 (or 27; or 45)	repeat broadcast every 24 hours with an echo six minutes after each broadcast
54	repeat broadcast every 30 hours with no echo
55	repeat broadcast every 30 hours with an echo six minutes after each broadcast
36	repeat broadcast every 36 hours with no echo
37	repeat broadcast every 36 hours with an echo six minutes after each broadcast
28 (or 46)	repeat broadcast every 48 hours with no echo
29 (or 47)	repeat broadcast every 48 hours with an echo six minutes after each broadcast
56	repeat broadcast every 60 hours with no echo
57	repeat broadcast every 60 hours with an echo six minutes after each broadcast
38	repeat broadcast every 72 hours with no echo
39	repeat broadcast every 72 hours with an echo six minutes after each broadcast
48	repeat broadcast every 96 hours with no echo
49	repeat broadcast every 96 hours with an echo six minutes after each broadcast
58	repeat broadcast every 120 hours with no echo
59	repeat broadcast every 120 hours with an echo six minutes after each broadcast

Note: Not all codes may be provided by all service providers.

APPENDIX 3

Performance standards for BDMSS Ship Earth Stations

BDMSS Ship Earth Stations shall meet the requirements as set out in the **Performance Standards for a Ship Earth Station for Use in the GMDSS** (resolution MSC.434(98)) and be tested and type approved in accordance with IEC 61097-16.

APPENDIX 4

PROCEDURE FOR AMENDING THE INTERNATIONAL SAFETYLINK SERVICE MANUAL

1 Proposals for amendment or enhancement of the International SafetyLink Service Manual should be submitted for evaluation by the Sub-Committee on Navigation, Communications and Search and Rescue (NCSR). Amendments should only be implemented after consideration and approval by the Maritime Safety Committee.

2 Amendments to the Manual should normally be approved at intervals of approximately two years or at such longer periods as may be determined by the Maritime Safety Committee. Amendments approved by the Maritime Safety Committee will be notified to all concerned and will become effective on 1 January of the following year, or at another date as decided by the Committee.

3 The agreement of the International Hydrographic Organization, the International Mobile Satellite Organization, the World Meteorological Organization and the active participation of other bodies should be sought, according to the nature of the proposed amendments.

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