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COMMUNICATIONS AND SEARCH AND
RESCUE
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REPORT TO THE MARITIME SAFETY COMMITTEE

Table of contents

Section	Page No.
1 GENERAL	4
2 DECISIONS OF OTHER IMO BODIES	4
3 ROUTEING MEASURES AND MANDATORY SHIP REPORTING SYSTEMS	5
4 AMENDMENT TO THE GENERAL PROVISIONS ON SHIPS' ROUTEING (RESOLUTION A.572(14)) ON ESTABLISHING MULTIPLE STRUCTURES AT SEA	10
5 RECOGNITION OF GALILEO AS A COMPONENT OF THE WWRNS	11
6 ADDITIONAL MODULES TO THE REVISED PERFORMANCE STANDARDS FOR INTEGRATED NAVIGATION SYSTEMS (INS) (RESOLUTION MSC.252(83)) RELATING TO THE HARMONIZATION OF BRIDGE DESIGN AND DISPLAY OF INFORMATION	11
7 UPDATES TO THE LRIT SYSTEM	12
8 GUIDELINES ASSOCIATED WITH MULTI-SYSTEM SHIPBORNE RADIONAVIGATION RECEIVERS DEALING WITH THE HARMONIZED PROVISION OF PNT DATA AND INTEGRITY INFORMATION	16
9 GUIDELINES FOR THE HARMONIZED DISPLAY OF NAVIGATION INFORMATION RECEIVED VIA COMMUNICATIONS EQUIPMENT	17
10 REVISED GUIDELINES AND CRITERIA FOR SHIP REPORTING SYSTEMS (RESOLUTION MSC.43(64))	18
11 ANALYSIS OF DEVELOPMENTS IN MARITIME RADIOCOMMUNICATION SYSTEMS AND TECHNOLOGY	19

12	PERFORMANCE STANDARDS FOR SHIPBORNE GMDSS EQUIPMENT TO ACCOMMODATE ADDITIONAL PROVIDERS OF GMDSS SATELLITE SERVICES	22
13	INTERCONNECTION OF NAVTEX AND INMARSAT SAFETYNET RECEIVERS AND THEIR DISPLAY ON INTEGRATED NAVIGATION DISPLAY SYSTEMS	23
14	COMPLETION OF THE DETAILED REVIEW OF THE GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)	24
15	UPDATING OF THE GMDSS MASTER PLAN AND GUIDELINES ON MSI (MARITIME SAFETY INFORMATION) PROVISIONS	28
16	RESPONSE TO MATTERS RELATED TO THE RADIOCOMMUNICATION ITU-R STUDY GROUP	30
17	RESPONSE TO MATTERS RELATED TO ITU WORLD RADIOCOMMUNICATION CONFERENCE	31
18	MEASURES TO PROTECT THE SAFETY OF PERSONS RESCUED AT SEA	32
19	ANALYSIS OF INFORMATION ON DEVELOPMENTS IN INMARSAT AND COSPAS-SARSAT	33
20	REVISED PERFORMANCE STANDARDS FOR EPIRBs OPERATING ON 406 MHZ (RESOLUTION A.810(19)) TO INCLUDE COSPAS-SARSAT MEOSAR AND SECOND GENERATION BEACONS	34
21	GUIDELINES ON HARMONIZED AERONAUTICAL AND MARITIME SEARCH AND RESCUE PROCEDURES, INCLUDING SAR TRAINING MATTERS	35
22	FURTHER DEVELOPMENT OF THE GLOBAL SAR PLAN FOR THE PROVISION OF MARITIME SAR SERVICES	39
23	AMENDMENTS TO THE IAMSAR MANUAL	40
24	REVISED GUIDELINES FOR PREPARING PLANS FOR COOPERATION BETWEEN SEARCH AND RESCUE SERVICES AND PASSENGER SHIPS (MSC.1/CIRC.1079)	41
25	UNIFIED INTERPRETATION OF PROVISIONS OF IMO SAFETY, SECURITY, AND ENVIRONMENT RELATED CONVENTIONS	42
26	BIENNIAL STATUS REPORT AND PROVISIONAL AGENDA FOR NCSR 4	44
27	ELECTION OF CHAIRMAN AND VICE-CHAIRMAN FOR 2017	46
28	ANY OTHER BUSINESS	46
29	ACTION REQUESTED OF THE COMMITTEE	49

LIST OF ANNEXES

- ANNEX 1 DRAFT CORRECTIONS TO THE AMENDMENTS TO THE EXISTING TRAFFIC SEPARATION SCHEMES "OFF FRIESLAND" (COLREG.2/CIRC.66, ANNEX 3)
- ANNEX 2 DRAFT CORRECTIONS TO THE AMENDMENTS TO THE MANDATORY ROUTE FOR TANKERS FROM NORTH HINDER TO THE GERMAN BIGHT (SN.1/CIRC.327, ANNEX 5)
- ANNEX 3 DRAFT NEW AND AMENDED TRAFFIC SEPARATION SCHEMES
- ANNEX 4 DRAFT ROUTEING MEASURES OTHER THAN TRAFFIC SEPARATION SCHEMES
- ANNEX 5 DRAFT RESOLUTION MSC.....(...) – AMENDMENTS TO THE GENERAL PROVISIONS ON SHIPS' ROUTEING (RESOLUTION A.572(14), AS AMENDED)
- ANNEX 6 DRAFT AMENDMENTS TO THE LRIT TECHNICAL DOCUMENTATION, PART I (MSC.1/CIRC.1259, AS REVISED) (ENGLISH ONLY)
- ANNEX 7 REVIEW AND MODERNIZATION OF THE GMDSS – OUTCOME OF THE DETAILED REVIEW OF THE GMDSS
- ANNEX 8 DRAFT MSC CIRCULAR – AMENDMENTS TO THE INTERNATIONAL SAFETYNET MANUAL
- ANNEX 9 DRAFT MSC CIRCULAR – AMENDMENTS TO THE NAVTEX MANUAL
- ANNEX 10 LIAISON STATEMENT TO ITU-R WP 5B – AUTOMATIC IDENTIFICATION SYSTEM (AIS)
- ANNEX 11 DRAFT MSC CIRCULAR – REVISED UNIFIED INTERPRETATION OF SOLAS REGULATION V/23.3.3
- ANNEX 12 BIENNIAL STATUS REPORT 2016-2017
- ANNEX 13 PROPOSED PROVISIONAL AGENDA FOR NCSR 4
- ANNEX 14 STATEMENTS BY DELEGATIONS

1 GENERAL

1.1 The Sub-Committee on Navigation, Communications and Search and Rescue (NCSR) held its third session from 29 February to 4 March 2016 under the chairmanship of Mr. R. Lakeman (the Netherlands). The Vice-Chairman, Mr. N. Clifford (New Zealand), was also present.

1.2 The session was attended by delegations from Member Governments; Associate Members of IMO; representatives from United Nations and specialized agencies; observers from intergovernmental organizations; and by observers from non-governmental organizations in consultative status, as listed in document NCSR 3/INF.1.

Opening address

1.3 The Secretary-General welcomed participants and delivered his opening address, the full text of which could be downloaded from the IMO website at the following link:
<http://www.imo.org/en/MediaCentre/SecretaryGeneral/Secretary-GeneralsSpeechesToMeetings>

1.4 The Sub-Committee noted that the Secretary-General, as were many others, was saddened to learn of the passing of Captain Norman Cockcroft in December 2015, who was a true expert on the International Regulations for the Prevention of Collisions at Sea. His contributions to the Sub-Committee on Safety of Navigation were many and they were always delivered with patience and grace. With Captain Cockcroft's passing, the maritime community had lost not only an expert in the field, but also a friend who will be missed and long remembered.

Chairman's remarks

1.5 In responding, the Chairman thanked the Secretary-General for his words of guidance and encouragement and assured him that his advice and requests would be given every consideration in the deliberations of the Sub-Committee.

Statement

1.6 The delegation of Ukraine made a statement as set out in annex 14.

Adoption of the agenda and related matters

1.7 The Sub-Committee adopted the agenda (NCSR 3/1) and agreed to be guided in its work, in general, by the annotations contained in document NCSR 3/1/1 (Secretariat) and the arrangements in document NCSR 3/1/2 (Secretariat). The agenda, as adopted, together with the list of documents considered under each agenda item, is set out in document NCSR 3/INF.22.

2 DECISIONS OF OTHER IMO BODIES

2.1 The Sub-Committee noted the decisions and comments pertaining to its work made by LEG 102, MEPC 68 and MSC 95, as reported in document NCSR 3/2 (Secretariat), and took them into account in its deliberations when dealing with the relevant agenda items.

3 ROUTEING MEASURES AND MANDATORY SHIP REPORTING SYSTEMS

Corrections to existing routeing systems

3.1 The Sub-Committee considered a proposal by the Netherlands (NCSR 3/3) on corrections to the amendments to the existing traffic separation schemes (TSSs) "Off Friesland" and to the amendments to the mandatory route for tankers from North Hinder to the German Bight.

3.2 After some discussion, the Sub-Committee agreed to the proposed corrections, and instructed the Navigation Working Group to consider the entry-into-force date of these corrections and advise the Sub-Committee, as appropriate (paragraph 3.23 refers).

Preliminary assessment of ships' routeing proposals

3.3 The Sub-Committee recalled that NAV 51 had agreed that a preliminary assessment of ships' routeing proposals would be made by the Chairman in consultation with the Secretariat and the Chairman of the relevant working group and disseminated as a working paper. In this context, the Sub-Committee noted document NCSR 3/WP.3, outlining a preliminary assessment of the ships' routeing proposals.

Ships routeing measures Off the Netherlands-Belgian coast between West Hinder, North Hinder and Maas West TSSs

3.4 The Sub-Committee, noting that the general introduction outlining the overall intent of a joint Belgian and Dutch proposal provided by Belgium and the Netherlands (NCSR 3/3/1) and the Formal Safety Assessment (FSA) report provided by the Netherlands (NCSR 3/INF.3) did not require a particular decision in plenary, referred it to the Navigation Working Group for information in relation to the proposals set out in documents NCSR 3/3/2, NCSR 3/3/3, NCSR 3/3/4 and NCSR 3/3/5.

Amendments to the existing TSSs "In the Approaches to Hook of Holland and at North Hinder"

3.5 The Sub-Committee, noting that the proposal by Belgium and the Netherlands (NCSR 3/3/2) on amendments to the existing TSSs "Maas West Outer" and "North Hinder South" as well as the intermediary precautionary area "North Hinder Junction" and for the addition of a new TSS "Off North Hinder" as part of the revision of the routeing system "In the Approaches to Hook of Holland and at North Hinder" did not require a particular decision in plenary, referred it to the Navigation Working Group for detailed consideration and advice.

Amendments to the existing TSS "At West Hinder" and adjacent routeing measures

3.6 The Sub-Committee, noting that the proposal by Belgium and the Netherlands (NCSR 3/3/3) on amendments to the existing TSS "At West Hinder" and adjacent routeing measures as part of the revision of the routeing system "At West Hinder" did not require a particular decision in plenary, referred it to the Navigation Working Group for detailed consideration and advice.

Routeing measures other than TSS "Approaches to the Schelde estuary"

3.7 The Sub-Committee, noting that the proposals by Belgium and the Netherlands (NCSR 3/3/4) on amendments to existing routeing measures other than TSSs concerning the precautionary area "In the vicinity of Thornton and Bligh Banks" and the establishment of new routeing measures other than TSSs distinguished as "Approaches to the Schelde estuary" in

the sea area between the existing TSSs North Hinder, West Hinder and Maas West off the Dutch and Belgian coast did not require a particular decision in plenary, referred it, with some observations, to the Navigation Working Group for detailed consideration and advice.

"Windfarm Borssele"

3.8 The Sub-Committee, noting that the proposals by Belgium and the Netherlands (NCSR 3/3/5) on new routing measures other than TSS concerning the precautionary area "Windfarm Borssele" and an area to be avoided distinguished as "Windfarm Borssele corridor" in the sea area between the existing TSSs North Hinder, West Hinder and Maas West off the Dutch and Belgian coast did not require a particular decision in plenary, referred it, with some observations, to the Navigation Working Group for detailed consideration and advice.

Establishment of new TSSs and associated measures

Off Cape Leeuwin, Australia

3.9 The Sub-Committee, noting that the proposal by Australia (NCSR 3/3/7) on the establishment of a TSS Off Cape Leeuwin, Australia did not require a particular decision in plenary, referred it, with some observations, to the Navigation Working Group for detailed consideration and advice.

"In the Corsica Channel"

3.10 The Sub-Committee, noting that the proposal by France and Italy (NCSR 3/3/8) on the establishment of a new ships' routing system in the Corsica Channel waters between the Tuscan archipelago and the north-eastern coast of Corsica did not require a particular decision in plenary, referred it, with some observations, in particular, related to mandatory and non-mandatory TSS, to the Navigation Working Group for detailed consideration and advice, allowing some modifications to be made on the proposal.

Amendments to existing TSSs and associated measures

Inshore traffic zone for the existing TSS "In Bornholmsgat"

3.11 The Sub-Committee, noting that the proposal by Denmark and Sweden (NCSR 3/3/9) to amend an inshore traffic zone (ITZ) of the existing TSS "In Bornholmsgat" in the Baltic Sea with the aim of facilitating local coastal traffic did not require a particular decision in plenary, referred it to the Navigation Working Group for detailed consideration and advice.

Routing measures other than TSSs

Amendment to the existing area to be avoided Off the coast of Ghana in the Atlantic Ocean

3.12 The Sub-Committee, noting that the proposal by Ghana (NCSR 3/3/6) on amendments to the existing area to be avoided (ATBA) in the Jubilee Oil Fields off the coast of Ghana in the Atlantic Ocean did not require a particular decision in plenary, referred it, with some observations, to the Navigation Working Group for detailed consideration and advice.

3.13 The Sub-Committee noted the statement made by the delegation of Côte d'Ivoire, as set out in annex 14. The Sub-Committee further noted the response by the delegation of Ghana, as also set out in annex 14.

Model document templates for ships' routing and reporting system proposals

3.14 The Sub-Committee noted the information provided by the Secretariat on the Model document templates for ships' routing and reporting system proposals and, in particular, that these templates could be downloaded in Word format from the IMO website at the following link: www.imo.org/en/OurWork/Safety/Navigation/Pages/ShipsRouting.aspx

3.15 The Sub-Committee recalled that these templates were meant to be used by Member Governments intending to submit a proposal for ships' routing or a ships reporting system, along with the provisions in SOLAS regulations V/10 and V/11, the *General provisions on ships' routing* (resolution A.572(14), as amended), the *Guidelines and criteria for ship reporting systems* (resolution MSC.43(64), as amended by resolutions MSC.111(73) and MSC.189(79)), the General principles for ship reporting systems and ship reporting requirements (resolution A.851(20)), and the Guidance note on the preparation of proposals on ships' routing systems and ship reporting systems (MSC.1/Circ.1060, as amended). It was further recalled that Member Governments were recommended to use all guidance in complementarity and none of these alone.

Guidance on amendments to existing IMO adopted ships' routing systems

3.16 The Chairman drew the Sub-Committee's attention to paragraph 3.17 of the *General provisions on ships' routing* (resolution A.572(14)), as amended, which stated: "A routing system, when adopted by IMO, shall not be amended or suspended before consultation with, and agreement by, IMO unless local conditions or the urgency of the case require that earlier action be taken." The intention of this requirement was to ensure consistency and predictability in routing measures and the charting of such measures, particularly with regard to TSSs.

3.17 Accordingly, the Chairman urged Member Governments to abide by this requirement and inform the Organization of any planned changes to an IMO-adopted routing measure so that the formal procedures for amendments were followed in line with the *General provisions on ships' routing*.

Review of adopted mandatory ship reporting systems

3.18 The Chairman recalled the procedure followed for previous sessions of the NAV and NCSR Sub-Committees, when the Chairman had subsequently taken the initiative to bring to the attention of Member Governments the need, in accordance with SOLAS regulation V/11.11 and section 4.4 of resolution MSC.43(64), to carry out an evaluation of adopted mandatory ship reporting systems and appealed to Member Governments to undertake this exercise.

3.19 Accordingly, the Chairman suggested once again that Member Governments should review the various ship reporting systems adopted by the Organization, at an early date, to ensure that they were all up to date.

Establishment of the Navigation Working Group

3.20 The Sub-Committee established the Navigation Working Group under the chairmanship of Captain M. De Gracia (Panama) and instructed it, taking into account decisions, comments and proposals made in plenary, to consider:

- .1 the entry-into-force date of the endorsed corrections to traffic separation schemes in the existing routing system "Off Friesland" and in the mandatory route for tankers from North Hinder to the German Bight (NCSR 3/3), and advise the Sub-Committee, as appropriate; and

- .2 documents NCSR 3/3/1, NCSR 3/3/2, NCSR 3/3/3, NCSR 3/3/4, NCSR 3/3/5, NCSR 3/3/6, NCSR 3/3/7, NCSR 3/3/8 and NCSR 3/3/9, taking into account NCSR 3/INF.3, and prepare ships' routing measures, as appropriate, for consideration and approval by the Sub-Committee with a view to adoption by the Committee,

and submit its report on Thursday, 3 March 2016.

Report of the Navigation Working Group

3.21 Having received and considered the working group's report (NCSR 3/WP.4), the Sub-Committee approved it in general and, in particular, took action as summarized in the ensuing paragraphs.

3.22 The Sub-Committee noted that Brazil, Greece and the Philippines had also attended the Navigation Working Group.

Corrections to existing routing systems

3.23 The Sub-Committee agreed that the draft corrections to the amendments to the existing TSSs "Off Friesland" and to the amendments to the mandatory route for tankers from North Hinder to the German Bight, as set out in annexes 1 and 2, should take immediate effect after the approval by the Committee, and invited the Committee to approve them for dissemination by means of corrigenda to COLREG.2/Circ.66, annex 3 and SN.1/Circ.327, annex 5.

New and amended TSSs and associated measures

3.24 The Sub-Committee approved the following new, and amendments to existing, TSSs, as set out in annex 3, which the Committee was invited to adopt:

- .1 establishment of new TSSs "Off Southwest Australia";
- .2 establishment of a new TSS "In the Corsica Channel";
- .3 amendments to the existing TSS "In the Approaches to Hook of Holland and at North Hinder" and associated measures, superseding the existing precautionary areas "In the approaches to Hook of Holland and at North Hinder";
- .4 amendments to the existing TSS "At West Hinder"; and
- .5 amendments to the existing TSS "In Bornholmsgat",

for dissemination by means of a COLREG circular.

Routeing measures other than TSSs

3.25 The Sub-Committee approved the establishment of the following new, and amendments to existing, routeing measures other than TSSs, as set out in annex 4, which the Committee was invited to adopt:

- .1 establishment of new two-way routes and precautionary areas "Approaches to the Schelde estuary", superseding the existing precautionary area "In the vicinity of Thornton and Bligh Banks";
- .2 establishment of new routeing measures "In Windfarm Borssele"; and
- .3 amendments to the existing area to be avoided "Off the coast of Ghana in the Atlantic Ocean",

for dissemination by means of an SN circular.

Date of implementation

3.26 The Sub-Committee agreed to recommend to the Committee that the:

- .1 routeing measures set out in paragraphs 3.24.1, 3.24.2 and 3.25.3 be implemented six months after their adoption by the Committee;
- .2 routeing measures set out in paragraph 3.24.5, be implemented on 1 January 2017; and
- .3 routeing measures set out in paragraphs 3.24.3, 3.24.4, 3.25.1 and 3.25.2 be implemented on 1 June 2017.

Concern expressed by the Navigation Working Group

3.27 The Sub-Committee noted the concern expressed by the Group in relation to the challenges arising from time constraints, volume of work, and in particular, the relevance of the *Preliminary assessment of proposals on ships' routeing systems and ship reporting systems* (NCSR 3/WP.3), as presented by the Chairman of the Sub-Committee (paragraph 26.7 refers).

Statement

3.28 The delegation of Panama made a statement that "this delegation agrees with the routeing measure for the Corsica Channel and supports its approval. However, following the adoption of the proposal submitted in document NCSR 3/3/8, and given the Sub-Committee's decision to proceed with the proposal in the form in which it was submitted to the plenary, Panama takes it that the Sub-Committee Chairman's assessment presented in document NCSR WP.3, concerning adherence to the requirements for routeing proposals contained in documents MSC/Circ.1060 and MSC.1/Circ.1060/Add.1, is an exercise that ceases to have any validity and relevance for future sessions. Moreover, it understands that, whatever State may submit proposals in future, the Sub-Committee will be obliged to examine them with the aim of finalizing them and, in particular, to assist all Member States equally, regardless what information is deemed to be lacking in the original proposal, which may be brought directly to the working group set up to examine it".

4 AMENDMENT TO THE GENERAL PROVISIONS ON SHIPS' ROUTEING (RESOLUTION A.572(14)) ON ESTABLISHING MULTIPLE STRUCTURES AT SEA

4.1 The Sub-Committee recalled that MSC 95 had agreed to include, in the 2016-2017 biennial agenda of the NCSR Sub-Committee and the provisional agenda for NCSR 3, an output on "Amendment to the General provisions on ships' routeing (resolution A.572(14)) on establishing multiple structures at sea", with a target completion year of 2016 (MSC 95/22, paragraph 19.8).

4.2 The Sub-Committee considered the proposal by Denmark and the Netherlands (NCSR 3/4) providing a draft text for a new paragraph in the *General provisions on ships' routeing* (resolution A.572(14)), as amended) (GPSR), addressing the necessity to ensure safety of navigation when planning and establishing a concentration of multiple objects at sea in relation to (newly) established routeing measures.

4.3 The Sub-Committee noted with appreciation the supporting Assessment Framework for Defining Safe Distances between Shipping Lanes and Offshore Wind Farms, provided by the Netherlands (NCSR 3/INF.9).

4.4 General support was expressed with regard to the draft amendments to the GPSR. However, recognizing the need for some minor modifications and clarifications, the Sub-Committee agreed to refer document NCSR 3/4 to the Navigation Working Group for finalization.

Instructions for the Navigation Working Group

4.5 The Sub-Committee instructed the Navigation Working Group, established under agenda item 3, taking into account decisions of, and comments and proposals made in plenary, to finalize the amendments to the *General Provisions on Ships' Routeing*, as set out in the annex to document NCSR 3/4, and submit its report on Thursday, 3 March 2016.

Report of the Navigation Working Group

4.6 On receipt of the relevant part of the working group's report (NCSR 3/WP.4), the Sub-Committee took action as summarized in the ensuing paragraphs.

4.7 The Sub-Committee approved amendments to the *General provisions on ships' routeing* (resolution A.572(14), as amended) on establishing multiple structures at sea, as set out in annex 5, and invited the Committee to adopt them with a view to the Assembly's subsequent confirmation.

4.8 Noting that the work on this output was completed, the Sub-Committee agreed to invite the Committee to delete this agenda item (paragraph 26.5 refers).

5 RECOGNITION OF GALILEO AS A COMPONENT OF THE WWRNS

5.1 The Sub-Committee considered the information provided by Austria et al. (NCSR 3/5) on the status and performance of the Galileo GNSS and on the provision of its initial services in view of its recognition as a component of the World-Wide Radio Navigation System (WWRNS).

5.2 The Sub-Committee noted additional information provided by the proponents, that it was the intention to present a promulgation letter, as required in paragraph 2.1.3.1 of the annex to resolution A.1046(27), to the Secretary-General before MSC 96, specifying that the Galileo Open Service would be:

- .1 offered on a continuous, worldwide and non-discriminatory basis, and all necessary measures for the foreseeable future would be taken to maintain the integrity, reliability and availability of the Open Service and Search and Rescue (SAR) service;
- .2 free of direct user fees; and
- .3 offered, subject to availability of funds under the European Union's post-2020 multi-annual financial framework, for a minimum of 20 years, and that the European Union is expected to provide at least six years' notice prior to any termination of operations,

and that the proponents, on the basis of the above, considered that the service offered was compliant with the requirements set out in resolution A.1046(27).

5.3 The Sub-Committee further noted that there was no plan to make the use of Galileo for maritime navigation mandatory, or to discriminate the use of other global constellations, but rather to encourage a broader use of multi-constellation solutions for the benefits of all users and, as such, improving safety at sea.

5.4 The Sub-Committee also noted that, as a further feature, Galileo included a freely available global SAR service that would form a key element of the Cospas-Sarsat MEOSAR system. It was noted that satellites were equipped with a transponder able to relay identified distress signals from maritime users to Rescue Coordination Centres (RCCs), with enhanced accuracy of distress beacon localization and, in addition, offering a new service of acknowledgement of the distress call by the RCC.

5.5 After some discussion, the Sub-Committee agreed that the proponents had provided the necessary information and to advise the Committee to:

- .1 recognize Galileo as a future component of the WWRNS, subject to formal promulgation as required under paragraph 2.1.3.1 of the annex to resolution A.1046(27), and instruct the Secretariat to prepare and issue the associated SN circular; and
- .2 delete this agenda item (paragraph 26.5 refers).

6 ADDITIONAL MODULES TO THE REVISED PERFORMANCE STANDARDS FOR INTEGRATED NAVIGATION SYSTEMS (INS) (RESOLUTION MSC.252(83)) RELATING TO THE HARMONIZATION OF BRIDGE DESIGN AND DISPLAY OF INFORMATION

6.1 The Sub-Committee recalled that MSC 95 had agreed to include, in the 2016-2017 biennial agenda of the NCSR Sub-Committee and the provisional agenda for NCSR 3, an output on "Additional modules to the Revised Performance standards for Integrated Navigation Systems (INS) (resolution MSC.252(83)) relating to the harmonization of bridge design and display of information", with a target completion year of 2017 (MSC 95/22, paragraph 19.12.2).

6.2 The Sub-Committee noted the information provided by IEC (NCSR 3/6, paragraphs 2 and 3) on the preparation of relevant IEC standards supporting the harmonization of bridge design and display of information.

6.3 The Sub-Committee also noted relevant information provided by Australia et al. (NCSR 3/28/1) on work undertaken in 2015 by Australia, the Republic of Korea and some international organizations for the development of guidance on the Standardized (or S) Mode of operation of navigation equipment.

6.4 The Sub-Committee had for its consideration information submitted by China (NCSR 3/6/1) and Norway (NCSR 3/6/2), providing comments on the new modules to the Performance standards for Integrated Navigation Systems (INS) (resolution MSC.252(83)) and proposing to add new modules on harmonization of bridge design and display of information.

6.5 Both proposals received general support, but it was recognized that more information would be required before further consideration could be given to the issue. In this context, some views were expressed that:

- .1 attention should be paid to existing IEC standards when developing solutions;
- .2 there should be a functionality to distinguish navigation safety-related information from ordinary business information; and
- .3 issues related to gateways, two-way communication between navigation and communication equipment, store and forward capability and bridge alert management should also be taken into consideration.

6.6 After some consideration, the Sub-Committee agreed, following the Chairman's recommendation, to establish a Correspondence Group on the Development of additional modules to the INS Performance standards, under the coordination of China¹, to develop the new draft modules to the INS Performance standards, taking into account documents NCSR 3/6, NCSR 3/6/1 and NCSR 3/6/2, as well as any relevant comments provided during the discussions, and submit a report to NCSR 4 for consideration.

6.7 The delegation of Australia was of the view that those interested in developing S-Mode should also participate in the Correspondence Group given the interrelation between the INS modules to be developed and the future developments on S-Mode.

7 UPDATES TO THE LRIT SYSTEM

7.1 The Sub-Committee noted the outcome of MSC 95 (MSC 95/22, section 7 and paragraphs 11.4 to 11.7) on LRIT-related matters.

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Developments in relation to the operation of the LRIT system since NCSR 2

7.2 The Sub-Committee noted with appreciation the information provided by:

- .1 the Secretariat (NCSR 3/INF.2 and NCSR 3/7/1, paragraph 7) related to the functioning and operation of the LRIT Data Distribution Plan (DDP) server and the Information Distribution Facility (IDF) since NCSR 2, the renewal process of Public-Key Infrastructure (PKI) certificates and the implementation of improved cryptographic key strengths; and
- .2 the European Commission (NCSR 3/INF.8) on the status of the International LRIT Data Exchange (IDE), since NCSR 2.

Audits of LRIT Data Centres and of the International LRIT Data Exchange

7.3 The Sub-Committee noted with appreciation the information contained in the following documents submitted by IMSO:

- .1 NCSR 3/7, on audits of LRIT Data Centres (DCs) and of the IDE conducted by the LRIT coordinator between 2 January and 27 November 2015, along with the summary audit reports which were available in the DDP module of the Global Integrated Shipping Information System (GISIS);
- .2 NCSR 3/7/3, related to the performance of the LRIT system; and
- .3 NCSR 3/INF.12, on the scale of charges to be levied by the LRIT Coordinator during 2016.

7.4 In doing so, the Sub-Committee noted, in particular, the issues related to:

- .1 the outstanding audits of the Venezuela (Bolivarian Republic of) National LRIT Data Centre (NDC) and the incomplete audit of the Ecuador NDC; and
- .2 the audit findings of the Morocco NDC and the Pacific Cooperative LRIT Data Centre (CDC), along with the outcome of the related considerations by the LRIT Operational Governance Body (OGB) (NCSR 3/7/1, paragraphs 8 and 9).

7.5 The Sub-Committee further noted the information provided by the Secretariat (NCSR 3/7/1/Add.1) related to the disconnection of the Venezuela (Bolivarian Republic of) NDC by its data centre operator, as from 31 December 2015, due to ongoing financial problems.

7.6 Having considered the above information, the Sub-Committee:

- .1 reminded Governments responsible for the operation of DCs to cooperate with the LRIT Coordinator to enable successful completion of their audits and to settle their financial obligations vis-à-vis the LRIT Coordinator in a timely manner;
- .2 urged, once again, Governments responsible for the operation of DCs to ensure compliance with the provisions of the Revised performance standards (resolution MSC.263(84), as amended), in particular paragraphs 7.5, 7.5.1 and 7.5.2 related to audit requirements; and

- .3 requested the Secretariat to remove the Venezuela (Bolivarian Republic of) NDC from the DDP until it is fully retested and to inform the respective designated points of contact for LRIT-related matters accordingly.

7.7 The Sub-Committee expressed its appreciation to IMSO for the audit reports submitted and for its recommendations to improve the functioning of the LRIT system.

Annual audit requirements of the IDE

7.8 The Sub-Committee considered a proposal by Austria et al. (NCSR 3/7/4) related to the annual audit requirements of the IDE, and comments to that proposal by IMSO (NCSR 3/7/5).

7.9 During the ensuing discussions, the majority of the delegations who spoke were of the view that it was very important to continue with the annual audit of the IDE by the LRIT Coordinator due to the central role of the IDE in the LRIT system. It was indicated, inter alia, that the main aim of the audit was to act proactively, identifying deviations from the LRIT requirements, as well as opportunities to improve the functioning of the LRIT system. The view was also expressed that the issues highlighted in document NCSR 3/7/4 should have been presented at, and addressed by, the meetings of the IMSO Advisory Committee.

7.10 The Sub-Committee agreed that before embarking on any further discussions, a policy decision should be taken by the Committee and noted that the European Commission intended to progress discussions on this matter with IMSO.

7.11 Following the Sub-Committee's conclusion, the delegation of Vanuatu expressed the view that, before making a policy decision, the Sub-Committee should have been given the time to make a decision on whether the proposal of discontinuing the audit of the IDE was technically viable and safe for the LRIT system.

7.12 The Sub-Committee recognized and expressed its appreciation to EMSA and the European Commission for the efforts and contributions in maintaining and operating the IDE since 2011 in a successful manner, at no cost to either the shipping community nor to SOLAS Contracting Governments. The Sub-Committee also extended appreciation to IMSO for its role to conduct the audits successfully on behalf of the SOLAS Contracting Governments which helps maintaining the whole LRIT system, including the IDE, to remain compliant with the IMO standards.

Second modification testing phase of the LRIT system

7.13 The Sub-Committee noted the information provided by the European Commission (NCSR 3/INF.7) related to the implementation plan of the second modification of the LRIT system with regard to the IDE and the European Union CDC.

7.14 The Sub-Committee considered the information provided by the Secretariat (NCSR 3/7/1, paragraphs 3 to 6 and annex 1) related to the procedures for the second modification testing phase of the LRIT system prepared by the OGB, and:

- .1 noted, in particular, that the issuing of the final versions of MSC.1/Circ.1259/Rev.7 and MSC.1/Circ.1294/Rev.5, which incorporate the latest amendments approved by MSC 90 and MSC 95, had been postponed until completion of pre-modification testing;

- .2 endorsed the procedures for the second modification testing phase of the LRIT system, as set out in annex 1 to document NCSR 3/7/1; and
- .3 urged Governments responsible for the maintenance and operation of DCs to put in place the necessary arrangements well in advance so as to be timely prepared for the modification testing of their respective DCs.

7.15 The delegation of Brazil advised that the Brazil Regional LRIT Data Centre had already implemented the amendments approved by MSC 90 and MSC 95 and requested including the Data Centre in the pre-modification testing phase.

Proposals and recommendations related to the functioning and operation of the LRIT system

Implementation of new versions of security communication protocols

7.16 The Sub-Committee considered proposed amendments to the *Technical specifications for communications within the LRIT system* (MSC.1/Circ.1259/Rev.7, annex, annex 3), submitted by the Secretariat on behalf of the OGB (NCSR 3/7/1, paragraph 10 and annex 2), to facilitate and expedite the implementation of new versions of security communication protocols in line with industry standards.

7.17 After some discussion, the Sub-Committee endorsed the draft amendments to the LRIT Technical documentation, Part I (MSC.1/Circ.1259, as revised), as set out in annex 6, and invited the Committee to approve them.

7.18 The Sub-Committee expressed its appreciation to the OGB for its work in the preparation of procedures for the second modification testing phase of the LRIT system and for its recommendations to improve the security of the LRIT system.

Changes to the periodic rate of transmission of LRIT information

7.19 The Sub-Committee considered the information provided by Brazil (NCSR 3/7/2) related to the use of the periodic rate change message and proposing the development of amendments to the Technical specifications for communications within the LRIT system aiming at reducing the current financial burden on Contracting Governments.

7.20 Some delegations supported the proposal and were of the view that the options presented in paragraph 24 of document NCSR 3/7/2 should be further considered by the Communications Working Group. Other delegations indicated that more information was needed and that Brazil should be invited to implement option A and advise the Sub-Committee on potential significant savings, taking into account the impact of the proposed changes on the whole system.

7.21 After consideration and following the request made by the delegation of Brazil, supported by other delegations, the Sub-Committee referred the document to the Communications Working Group for detailed consideration. In this context, the Chairman advised that the Communications Working Group had already been tasked with a significant number of other issues and that it might not have sufficient time to consider the options presented.

Instructions for the Communications Working Group

7.22 The Sub-Committee instructed the Communications Working Group, established under agenda item 11, taking into account views expressed in plenary and time permitting, to consider document NCSR 3/7/2, and advise the Sub-Committee, as appropriate, and submit its report on Thursday, 3 March 2016.

Report of the Communications Working Group

7.23 On receipt of the relevant part of the working group's report (NCSR 3/WP.5), the Sub-Committee took action as summarized in the ensuing paragraph.

7.24 Having noted that the Communications Working Group did not have time to consider document NCSR 3/7/2, the Sub-Committee invited the LRIT Operational Governance Body to consider this document, but only from the technical point of view and the impact this might have on the system. The Sub-Committee further agreed to consider the issue at the next session and invited Contracting Governments responsible for the operation of data centres to consider the options presented by Brazil and to submit their views to NCSR 4. Contracting Governments were further invited to consider sending LRIT experts to NCSR 4 to discuss the proposal from the technical point of view.

8 GUIDELINES ASSOCIATED WITH MULTI-SYSTEM SHIPBORNE RADIONAVIGATION RECEIVERS DEALING WITH THE HARMONIZED PROVISION OF PNT DATA AND INTEGRITY INFORMATION

8.1 The Sub-Committee recalled that NCSR 2, having finalized the performance standards for multi-system shipborne radio navigation receivers, recognized the need to develop associated guidelines for the harmonized provision of both PNT data and integrity information. NCSR 2 had noted that the finalized performance standards already contained a reference to guidelines.

8.2 The Sub-Committee noted that MSC 95 adopted resolution MSC.401(95) on the Performance standards for multi-system shipborne radio navigation receivers and amended the planned output as to develop associated guidelines, with a target completion year of 2017.

8.3 The Sub-Committee considered document NCSR 3/8 (Finland and Germany) providing draft guidelines for the harmonized provision of position, navigation and timing (PNT) data and integrity information (I) for shipborne applications.

8.4 A number of delegations supported the proposal and recommended establishing a Correspondence Group to further progress the development of the draft guidelines intersessionally.

8.5 In view of the above, the Sub-Committee established a Correspondence Group, under the coordination of Germany², to develop guidelines associated with multi-system shipborne radio navigation receivers dealing with the harmonized provision of PNT data and integrity information, taking into account document NCSR 3/8, and submit a report to NCSR 4 for consideration.

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8.6 The observer from IACS drew the Sub-Committee's attention to resolution MSC.401(95) on Performance standards for multi-system shipborne radionavigation receivers and, in particular, to the current version of SOLAS form E, part 3, item 3.1, and forms C and P, part 5, item 3.1, which allowed for the selection of a "receiver for a global navigation satellite system" or a "receiver for a terrestrial radio navigation system", but not a multi-system receiver. In this context, given the understanding that the development of consequential amendments to these forms would be outside of the scope of the present output, IACS invited interested Member Governments to consider co-sponsoring an appropriate submission to the Committee.

9 GUIDELINES FOR THE HARMONIZED DISPLAY OF NAVIGATION INFORMATION RECEIVED VIA COMMUNICATIONS EQUIPMENT

9.1 The Sub-Committee recalled that MSC 95 had agreed to include, in the 2016-2017 biennial agenda of the NCSR Sub-Committee and the provisional agenda for NCSR 3, an output on "Guidelines for the harmonized display of navigation information received via communications equipment", with a target completion year of 2017 (MSC 95/22, paragraph 19.12.5).

9.2 The Sub-Committee noted the information provided by IEC (NCSR 3/6, paragraph 4) on the publishing of relevant IEC standards related to the presentation of navigation-related information on shipborne navigational displays.

9.3 The Sub-Committee also noted relevant information provided by Australia et al. (NCSR 3/28/1) on work undertaken by Australia, the Republic of Korea and some international organizations in 2015 for the development of guidance on the Standardized (or S) Mode of operation of navigation equipment.

9.4 The Sub-Committee had for its consideration information submitted by:

- .1 IHO (NCSR 3/9) on developments in IHO related to the contribution of the S-100 framework to the harmonized display of navigation information; and
- .2 Norway (NCSR 3/9/1) providing comments and proposals on the development of *Guidelines for the harmonized display of navigation information received via communications equipment*.

9.5 The information and proposals contained in both documents were supported in general, recognizing the importance of harmonizing the display of information on board ships to reduce human errors and to contribute to the safety of navigation. The need for coordination between related activities conducted by IHO and IMO was highlighted, including the opportunity of activating the IMO/IHO Harmonization group on Data Modelling, which had been previously authorized by MSC 90.

9.6 After some consideration, the Sub-Committee invited Norway to coordinate a joint proposal from interested Member Governments and international organizations to NCSR 4 containing draft *Guidelines for the harmonized display of navigation information received via communications equipment*.

10 REVISED GUIDELINES AND CRITERIA FOR SHIP REPORTING SYSTEMS (RESOLUTION MSC.43(64))

10.1 The Sub-Committee recalled that MSC 95 had agreed to include, in the 2016-2017 biennial agenda of the NCSR Sub-Committee and the provisional agenda for NCSR 3, an output on "Revised guidelines and criteria for ship reporting systems (resolution MSC.43(64))", with a target completion year of 2017 (MSC 95/22, paragraph 19.12.3).

10.2 The Sub-Committee noted the relevant information provided by IEC (NCSR 3/6, paragraphs 5 and 6) on the publishing of relevant IEC standards.

10.3 The Sub-Committee considered the information provided by Brazil et al. (NCSR 3/10 and Corr.1) on a test bed to be conducted during 2016 to support the revision of the *Guidelines and criteria for ship reporting systems* (resolution MSC.43(64), as amended).

10.4 The proposal to conduct a test bed to prove technology for ship reporting was welcomed in general. Views were expressed that the results of the test bed would provide a better understanding on how best to revise the guidelines and that some coordination with the FAL Committee might be required.

10.5 In this context, the Chairman recommended taking into account the following, during the conduct of the test bed:

- .1 MSC.1/Circ.1494 containing the *Guidelines on Harmonization of testbed reporting*;
- .2 the use of different communication means for the efficient, cost-effective and secure transfer of information;
- .3 the harmonization of data transfer and formats;
- .4 the automated or semi-automated collection and integration of information available on board from different systems and equipment for reporting, including the use of existing technologies (e.g. AIS);
- .5 the possible use of a single point of communication for ship reporting to avoid having the ship to communicate through different systems in different formats (e.g. different National Single Window implementations); and
- .6 the reduction of administrative burden on board the ship.

10.6 The Sub-Committee had also for its consideration information submitted by:

- .1 China (NCSR 3/10/1) commenting on, and proposing an amendment to, the *Guidelines and criteria for ship reporting systems* (resolution MSC.43(64), as amended) relating to standardized and harmonized electronic ship reporting and automated collection of board data for reporting; and
- .2 the Republic of Korea (NCSR 3/10/2) containing proposals for the revision of the *Guidelines on ship reporting systems* (resolution MSC.43(64), as amended), in accordance with the e-navigation Strategy Implementation Plan (SIP).

10.7 During the ensuing discussions, it was indicated that it was too premature to consider in detail the above proposals and that it would be more appropriate to wait for the outcomes of the test bed before any further consideration.

10.8 Some delegations expressed concerns moving toward totally automated reporting, and were of the view that to some extent the possibility of verbal reporting should be retained.

10.9 Consequently, the Sub-Committee agreed to forward documents NCSR 3/10/1 and NCSR 3/10/2 and the above comments to NCSR 4, so as to consider them together with any additional proposals that might be submitted as part of the outcomes of the test bed, as reported in document NCSR 3/10.

10.10 The Sub-Committee also invited interested Member Governments and organizations to submit proposals to NCSR 4 containing draft amendments to the *Guidelines and criteria for ship reporting systems* (resolution MSC.43(64), as amended) for consideration.

11 ANALYSIS OF DEVELOPMENTS IN MARITIME RADIOCOMMUNICATION SYSTEMS AND TECHNOLOGY

11.1 The Sub-Committee recalled that COMSAR 7 had agreed that no submissions concerning performance standards for any radiocommunication equipment should be accepted and/or considered under this agenda item (COMSAR 7/23, paragraphs 11.5 and 11.6).

Recognition of Iridium mobile satellite system as a GMDSS service provider

11.2 The Sub-Committee considered the report provided by IMSO (NCSR 3/11) on the technical and operational assessment of the application by the United States to recognize and use the Iridium mobile satellite system in the GMDSS, along with the proposal submitted by the United States (NCSR 3/11/1) on a way forward, through a two-step process, for completing the recognition of Iridium as a GMDSS satellite service provider.

11.3 During the ensuing discussions, the following views were expressed:

- .1 the majority of the delegations, expressing appreciation for the work of IMSO and, in particular, the Group of Experts, supported the outcomes of the technical and operational assessment conducted by IMSO in respect to the recognition and use of the Iridium mobile satellite system in the GMDSS, as well as the two-step approach proposed in document NCSR 3/11/1;
- .2 some delegations indicated that compliance with all the criteria set out in resolution A.1001(25), taking into account the guidance contained in MSC.1/Circ.1414, should be demonstrated before recognition and that Iridium should be encouraged to make further progress;
- .3 other delegations were of the opinion that not all the requirements defined in resolution A.1001(25) could be fulfilled without being a system part of the GMDSS;
- .4 resolution A.1001(25) was originally drafted based on a geostationary satellite system and, as such, it should be revised, preferably as part of the GMDSS review, to facilitate the assessment and evaluation of future potential satellite communication providers in the GMDSS;

- .5 interoperability of any additional mobile satellite system with existing shipborne and shore-based equipment should be taken into consideration, bearing in mind any possible consequential financial implications and implementation requirements;
- .6 issues related to frequency allocations and frequency interferences between Iridium and other systems should be addressed prior recognition to ensure long-term sustainability;
- .7 concerns to be resolved on the implementation of the dissemination of MSI messages which needed to be demonstrated before the system could become operational; and
- .8 there were increasing requests from shipowners for the provision of satellite GMDSS services in high latitudes.

11.4 In his summing up, the Chairman indicated that:

- .1 there was broad support for the incorporation of Iridium into the GMDSS as well as for the two-step-approach, whereby views were expressed that Iridium could be incorporated in the GMDSS, upon confirmation that the outstanding issues were resolved;
- .2 concerns were expressed on the amount of outstanding issues and completeness of the list contained in the annex to document NCSR 3/11/1 and on matters possibly not included in resolution A.1001(25), which should be brought to the attention of the Committee;
- .3 in accordance with the proposed two-step approach, Iridium would not be recognized at this stage and, therefore, there would not be a need for a resolution;
- .4 the aim was to agree at this session that Iridium could be incorporated in the GMDSS upon confirmation that the outstanding issues were resolved;
- .5 this agreement would be endorsed by the Committee, providing Iridium a basis to further resolve the outstanding issues; and
- .6 Iridium would, therefore, be required to test all elements of the system on a trial basis to prove operational capability and compliance with the outstanding issues.

11.5 The delegation of China made a statement as set out in annex 14.

11.6 After an in-depth discussion, the Sub-Committee agreed that Iridium could be incorporated into the GMDSS subject to compliance with outstanding issues. The Sub-Committee invited the Committee to endorse this view, with the understanding that it, based on the evaluation reports from IMSO, would advise the Committee on final recognition, when the issues identified have been complied with (paragraphs 11.12 to 11.14 refers).

11.7 In this context, the Sub-Committee further agreed to instruct the Communications Working Group, using the information contained in the annex to document NCSR 3/11/1, to prepare a comprehensive list of conditions identified in accordance with resolution A.1001(25)

and MSC.1/Circ.1414, which needed to be fulfilled before Iridium could be recommended for final recognition. It was agreed that if the working group could not agree on the inclusion of certain issues, it should include these issues in square brackets for a final decision by the Sub-Committee (paragraph 11.14 refers).

11.8 Furthermore, the Sub-Committee agreed that there might be a need to review and revise resolution A.1001(25). In this context, the Sub-Committee invited interested Member Governments to submit a relevant proposal for a new output to the Committee.

Establishment of the Communications Working Group

11.9 The Sub-Committee established the Communications Working Group under the chairmanship of Mr. A. Schwarz (Germany) and instructed it, taking into account decisions of, and comments and proposals made in plenary, to prepare a comprehensive list of conditions which need to be fulfilled before Iridium could be recommended for final recognition, using the annex to document NCSR 3/11/1 as the base document to work from and taking into account document NCSR 3/11, and submit its report on Thursday, 3 March 2016.

Report of the Communications Working Group

11.10 Having received and considered the working group's report (NCSR 3/WP.5), the Sub-Committee approved it in general and, in particular, took action as summarized in the ensuing paragraphs.

11.11 The Sub-Committee noted that Malta had also attended the Communications Working Group.

11.12 The Sub-Committee further noted the view of the observer of IHO, referring to document NCSR 3/WP.5, paragraphs 3.5.4 and 3.6.4.2, that it was not the ability, but the capability to monitor broadcast of MSI which should be part of the implementation of MSI broadcast services. This was to ensure the integrity of MSI being broadcast and especially important to a highly automated system.

11.13 The Sub-Committee noted:

- .1 the issues, as set out in document NCSR 3/WP.5, paragraphs 3.4, 3.5 and 3.6, where the group had not been able to reach a consensus;
- .2 the views of the group on the secondary status of the space-to-Earth link of Iridium, as set out in document NCSR 3/WP.5, paragraph 3.7, on which the group had not been able to reach a consensus; and
- .3 that paragraphs 4.1.4, 4.1.11, 4.1.12, 5.1.5, 5.5.7 and 8.3 of document NCSR 3/11 described findings which were not contained in annex 2 to document NCSR 3/WP.5, and which still might need further consideration in order to support a future revision of resolution A.1001(25), and that the Group did not have time to consider this list.

11.14 The Sub-Committee endorsed the comprehensive list of conditions, as set out in document NCSR 3/WP.5, annex 1, which need to be fulfilled before Iridium could be recommended for recognition (paragraph 11.6 refers).

11.15 In this context, the Sub-Committee noted the view of China, that the list was not comprehensive enough since a lot of concerns expressed by several Member Governments had not been included in the list.

11.16 The Sub-Committee further noted the view expressed by Brazil, supporting the observation by China in general and re-stating that compatibility of any additional satellite provider in the GMDSS with existing equipment had to be formally assured.

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

12.1 The Sub-Committee noted that MSC 95 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 ship-borne GMDSS equipment to accommodate additional providers of GMDSS satellite services", with a target completion year of 2016 (MSC 95/22, paragraph 19.14).

12.2 The Sub-Committee considered the proposal from the United States (NCSR 3/12), providing draft performance standards for shipborne GMDSS equipment to accommodate additional providers of GMDSS satellite services.

12.3 During the ensuing discussions, the following views were expressed indicating general support to the proposal, and that:

- .1 some of the requirements should be carefully considered from the technical point of view and with regard to applicability to existing equipment;
- .2 consideration should be given to the development of generic performance standards or system-based performance standards; and
- .3 the performance standards should be completed at this session to avoid consequent delays to further dependent developments.

12.4 After consideration, the Sub-Committee, noting the general support for the development of the related performance standards, referred the document to the Communications Working Group for detailed consideration.

Instructions for the Communications Working Group

12.5 The Sub-Committee instructed the Communications Working Group, established under agenda item 11, taking into account decisions of, and comments and proposals made in plenary, to consider document NCSR 3/12 containing draft performance standards for shipborne GMDSS equipment to accommodate additional providers of GMDSS satellite services and, taking into account the target completion year of 2016, advise, as appropriate, and submit its report on Thursday, 3 March 2016.

Report of the Communications Working Group

12.6 On receipt of the relevant part of the working group's report (NCSR 3/WP.5), the Sub-Committee took action as summarized in the ensuing paragraphs.

12.7 The Sub-Committee endorsed the view of the group to invite the Committee to clarify the scope of application of these performance standards. In this context, the Chairman invited interested Member Governments and international organizations to submit views on this matter to the Committee, to enable it to take a well-informed decision.

12.8 The Sub-Committee noted the progress of the consideration of these performance standards and invited interested Member Governments and international organizations to submit proposals for consideration at the next session. In this context, the information by the United States was noted that it coordinated a group which would work on these performance standards intersessionally, and that it welcomed members who wanted to participate in this work.

Extension of the target completion year for this item

12.9 The Sub-Committee agreed to invite the Committee to extend the target completion year for this output to 2017.

13 INTERCONNECTION OF NAVTEX AND INMARSAT SAFETYNET RECEIVERS AND THEIR DISPLAY ON INTEGRATED NAVIGATION DISPLAY SYSTEMS

13.1 The Sub-Committee recalled that MSC 92 had agreed to include, in the post-biennial agenda of the Committee, an output on "Interconnection of NAVTEX and Inmarsat SafetyNET receivers and their display on Integrated Navigation Display Systems" with one session needed to complete the item, assigning the NCSR Sub-Committee as the coordinating organ (MSC 92/26, paragraph 23.13). The Sub-Committee noted that the output had been included in the provisional agenda for NCSR 3, with a target completion year of 2016.

13.2 The Sub-Committee noted the relevant information provided by IEC (NCSR 3/6, paragraphs 7 and 9) on the publishing of relevant IEC standards.

13.3 The Sub-Committee considered the information provided by the United States (NCSR 3/13) proposing amendments to the *Revised performance standards for narrow-band direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships* (resolution MSC.148(77)), the *Revised performance standards for enhanced group call (EGC) equipment* (resolution MSC.306(87)) and the *Revised performance standards for integrated navigation systems (INS)* (resolution MSC.252(83)), related to interconnection, bridge alert management and display of NAVTEX and SafetyNET warnings on navigation display systems.

13.4 A view was expressed that the intention of the output approved by MSC 92 was to allow Inmarsat C SafetyNET Maritime Safety Information messages to be presented on an integrated navigation display system as an option (i.e. non-mandatory).

13.5 The Chairman indicated that it would be appropriate to wait for the outcome of items 6 and 9 before concluding or finalizing this item.

13.6 Consequently, the Sub-Committee invited the United States and interested Member Governments and/or organizations, if required, to submit revised proposals, as appropriate, to NCSR 4.

13.7 Following a request by the United States, the Sub-Committee instructed the Joint IMO/ITU Experts Group to consider document NCSR 3/13 and advise the Sub-Committee as appropriate (paragraph 14.20 refers).

Extension of the target completion year for this item

13.8 The Sub-Committee agreed to invite the Committee to extend the target completion year for this output to 2017.

14 COMPLETION OF THE DETAILED REVIEW OF THE GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)**Report of the twenty-second session of the ICAO/IMO Joint Working Group**

14.1 The Sub-Committee noted that the ICAO/IMO Joint Working Group on Search and Rescue had considered issues related to the Review and modernization of the GMDSS (NCSR 3/21, paragraphs 2.18 to 2.20, and section 7.4 of the annex) and that the relevant outcomes had been taken into consideration during the meeting of the Joint IMO/ITU Experts Group, held in October 2015 (see paragraph 14.2).

Report of the eleventh meeting of the Joint IMO/ITU Experts Group

14.2 The Sub-Committee considered document NCSR 3/17 (Secretariat) providing the report of the eleventh meeting of the Joint IMO/ITU Experts Group on Maritime radiocommunication matters, which took place from 5 to 9 October 2015, under the Chairmanship of Mr. K. Fisher (United Kingdom).

14.3 The Sub-Committee noted that the detailed review of the GMDSS was not proposing new carriage or retrofit requirements at this stage (NCSR 3/17, paragraph 3.2).

14.4 The Sub-Committee further noted the view of the Experts Group provided in paragraph 3.7 of its report, that the report of the Experts Group meeting would require consideration by the SAR Working Group, as well as by the Communications Working Group, and noted that for this reason the experts of the Communications and SAR Working Groups were present in plenary whilst considering this agenda item.

Proposed revision of SOLAS chapter IV

14.5 The Sub-Committee considered the view of the Experts Group that it was preferable to work towards an entry-into-force date of 2020 of the revision of SOLAS chapter IV (NCSR 3/17, paragraphs 3.4 to 3.6). In this context, the Sub-Committee noted the relevant information provided by the Chairman that:

- .1 MSC 95 had considered a proposal by the United States to amend SOLAS chapter IV, to include the deployment of the Cospas-Sarsat MEOSAR system and the issuance of a second generation 406 MHz Distress Beacon and that the Committee had agreed to refer this matter to the discussions under this agenda item;
- .2 a liaison letter from Cospas-Sarsat in relation to the revision of SOLAS chapter IV had been received (NCSR 3/14/3) and the Sub-Committee agreed to take Cospas-Sarsat's information into account in the further consideration of the revision of SOLAS chapter IV;

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- .3 the current outputs, namely 5.2.5.2 on the Completion of the detailed review of the GMDSS and 5.2.5.3 on the Draft Modernization Plan of the GMDSS, did not include the development of amendments to SOLAS chapter IV and that a new output for this matter would be required;
 - .4 in relation to MSC.1/Circ.1481 on *Guidance on entry into force of amendments to the 1974 SOLAS Convention and related mandatory instruments*, in particular, amendments adopted after 1 July 2018 would enter into force not earlier than 1 January 2024, unless adopted under conditions of exceptional circumstance, as described in paragraph 4.1 of the annex to the circular;
 - .5 in accordance with MSC.1/Circ.1500 on *Guidance on drafting of amendments to the 1974 SOLAS Convention and related mandatory instruments*, when submitting draft amendments to the SOLAS Convention for the Committee's approval, all necessary related and consequential amendments to other existing instruments, including non-mandatory instruments, in particular to the forms of certificates and records of equipment required in the instrument being amended, should be examined and included as part of the proposed amendment(s);
 - .6 consequently, to work towards an entry-into-force date of 2020 would not only require completing the amendments to the SOLAS Convention, but also the consideration of any necessary consequential amendments to other instruments by NCSR 4 in 2017, so as to be approved by MSC 98 and circulated for adoption by MSC 99 in 2018; and
 - .7 a proposal for a new output on a revision of SOLAS chapter IV to accommodate the introduction of Iridium had been submitted to MSC 96 (MSC 96/23/10). In this context, it was noted that when this output would be approved by the Committee, NCSR 4 might be in a position to consider and finalize amendments to SOLAS chapter IV, at that stage only related to the introduction of Iridium, with an entry-into-force date of 2020.

14.6 After consideration, the Sub-Committee agreed that the amendments to the SOLAS Convention and related instruments be addressed after completion of the Modernization Plan of the GMDSS and aim for an entry-into-force date of 2024. In this context, it was noted that, if MSC 96 would approve a new output on a revision of SOLAS chapter IV to accommodate the introduction of Iridium, this would have priority as a separate agenda item at NCSR 4.

14.7 Finally, the Sub-Committee agreed that the work done by the Correspondence Group on the Review of the GMDSS and the IMO/ITU Experts Group, in relation to the development of the draft revision of SOLAS chapter IV, as set out in document NCSR 3/17, appendix 3 of the annex, was very valuable. The Sub-Committee expressed its appreciation for the hard work done, in particular, by the Coordinator of the Correspondence Group, Mr. B. Markle and the Chairman of the Experts Group, Mr. K. Fisher.

The next meeting of the Joint IMO/ITU Experts Group

14.8 Having noted that MSC 95 had approved the intersessional meeting of the Joint IMO/ITU Experts Group to be held in 2016 (MSC 95/22, paragraph 19.42), and the Council's endorsement (C 114/D, paragraph 9.2), the Sub-Committee endorsed the holding of the twelfth meeting of the Experts Group, at IMO Headquarters in London, from 11 to 15 July 2016 (NCSR 3/17, paragraph 3.11), and instructed the Communications Working Group to prepare the draft terms of reference for that meeting.

Report of the Correspondence Group on the Review of the GMDSS

14.9 The Sub-Committee noted that the comments and recommendations of the Experts Group had been forwarded to the Correspondence Group on the Review of the GMDSS (NCSR 3/17, paragraph 3.3).

Outcome of the Detailed Review of the GMDSS

14.10 The Sub-Committee considered the report of the Correspondence Group on the review of the GMDSS, provided by the United States (NCSR 3/14) containing the draft outcome of the Detailed Review of the GMDSS, together with documents NCSR 3/14/1 and NCSR 3/14/2 (United States).

14.11 During the ensuing considerations, the following views were, inter alia, expressed:

- .1 certain issues presented in the draft outcome of the Detailed Review of the GMDSS, in particular those related to integration and presentation of information received via communication equipment, should be discussed also under agenda items 6 and 9 in respect to e-navigation;
- .2 the financial implications of having additional satellite systems in the GMDSS should be taken into consideration, in particular, with respect to the broadcasting of Maritime Safety Information (with possible inclusion in resolution A.707(17)), the reliability and secure use of public switched telephone networks, together with recommendations set out in resolution A.856(20), and the requirement for NAVAREA and METAREA coordinators to monitor correct broadcasting of information;
- .3 automated frequency scanning in the HF frequency band could be a solution to address distress communications; however, it should be introduced on a non-mandatory basis and the development of technical standards should be considered to allow for effective implementation;
- .4 further consideration would be required with respect to the possible use of Cospas-Sarsat for the distribution of digital distress alerts under the modernized GMDSS, addressing, inter alia, the issues of one-way communication, priority of distress alerts, the burden of adding an additional service provider, potential carriage requirements and current arrangements for independent national implementation;
- .5 the GMDSS modernization plan could serve as a framework for the development of e-navigation, which could address issues that would not be considered within the GMDSS review, such as shore-to-shore communications;

- .6 the design of the GMDSS, as developed in the general review, needs to be simplified so that it remains straightforward, logical and clear to users;
- .7 GMDSS model courses should also be added to the list of IMO instruments to be revised, and this work should be referred to the HTW Sub-Committee;
- .8 in drafting related amendments to SOLAS, references should be made to the texts and terminology already developed by IMO or ITU; and
- .9 further consideration should be given to the need to define "Security-related communications" and "other communications".

14.12 Having noted the outline of the Modernization Plan, prepared by the Correspondence Group, the Sub-Committee agreed that issues highlighted in the Correspondence Group's report on the outcome of the Detailed Review of the GMDSS under the paragraph headings "Implications for the Modernization Plan" should be further considered during the development of the GMDSS Modernization Plan, taking into account the views expressed in paragraph 14.11 above and the issues presented in documents NCSR 3/14/1 and NCSR 3/14/2. It was further agreed that the Modernization Plan should contain a clear timeline and deliverables.

14.13 In relation to document NCSR 3/14/1, the Sub-Committee invited Cospas-Sarsat to conduct an analysis of the proposal for distribution of GMDSS digital distress alerts in addition to the current 406 MHz beacon alerts, and present appropriate findings and recommendations to the Sub-Committee.

14.14 Having noted annex 2 of document NCSR 3/14, containing the list of items not to be included in the GMDSS Modernization programme, the Sub-Committee noted the view of two observer organizations that certain items in that list, in their view, should be further discussed during the development of the Modernization Plan. The Sub-Committee further noted the information provided by the coordinator of the Correspondence Group on the Review of the GMDSS, that action had already been taken on some of the issues included in annex 2 and, therefore, did not have to be included in the GMDSS Modernization program.

14.15 Finally, the Sub-Committee endorsed the draft outcome of the Detailed Review of the GMDSS, as set out in annex 7, and invited the Committee, in accordance with the revised Plan of Work (NCSR 1/28, annex 11), to approve the outcome of the Detailed Review of the GMDSS and the continuation of the project in developing the Modernization Plan.

Establishment of a Correspondence Group on the Modernization of the GMDSS

14.16 In the anticipation that the Committee would approve the continuation of the project, the Sub-Committee established a Correspondence Group on the Modernization of the GMDSS, under the coordination of the United States³, and instructed the Communications Working Group to prepare draft terms of reference for it.

³

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Instructions for the Communications Working Group

14.17 The Sub-Committee instructed the Communications Working Group, established under agenda item 11, taking into account decisions of, and comments and proposals made in plenary, to:

- .1 prepare draft terms of reference for the twelfth meeting of the Joint IMO/ITU Experts Group, scheduled to take place from 11 to 15 July 2016; and
- .2 prepare draft terms of reference for the Correspondence Group on the Modernization of GMDSS for the intersessional work to be done between NCSR 3 and NCSR 4, as well as reporting to the twelfth meeting of the joint IMO/ITU Experts Group,

and submit its report on Thursday, 3 March 2016.

Report of the Communications Working Group

14.18 On receipt of the relevant part of the working group's report (NCSR 3/WP.5), the Sub-Committee took action as summarized in the ensuing paragraphs.

14.19 The Sub-Committee approved the terms of reference of the Correspondence Group on the modernization of the GMDSS, as set out in document NCSR 3/WP.5, annex 3.

14.20 The Sub-Committee further approved the terms of reference of the twelfth meeting of the Joint IMO/ITU Experts Group, as set out in document NCSR 3/WP.5, annex 4, with the understanding that the Experts Group was also instructed to consider document NCSR 3/13 and advise the Sub-Committee as appropriate (paragraph 13.7 refers).

15 UPDATING OF THE GMDSS MASTER PLAN AND GUIDELINES ON MSI (MARITIME SAFETY INFORMATION) PROVISIONS

15.1 The Sub-Committee noted that, following the request of NCSR 2, MSC 95 had merged the Sub-Committee's two outputs, "Further development of the GMDSS Master Plan on shore-based facilities" and "Guidelines on MSI provisions" and renamed it as "Updating of the GMDSS Master Plan and guidelines on MSI provisions" (NCSR 2/23, paragraph 11.3 and MSC 95 /22, paragraph 19.16).

Amendments to the GMDSS Master Plan

15.2 The Sub-Committee noted the oral information provided by the Secretariat on amendments to the GMDSS Master Plan, as disseminated through GMDSS.1/Circ.18 on 1 September 2015, and encouraged Administrations to check their national data, contained in GMDSS.1/Circ.18, for accuracy and to provide the Secretariat with any necessary amendments as soon as possible.

Proposed development of new GISIS modules on GMDSS

15.3 The Sub-Committee noted that the proposed development of a new GISIS module on the GMDSS Master Plan would be dealt with under agenda item 28 (paragraphs 28.7 and 28.8 refers).

Annual report of the IMO NAVTEX Coordinating Panel

15.4 The Sub-Committee noted with appreciation the information provided by the Chairman of the IMO NAVTEX Coordinating Panel, Mr. W. Van Den Bergh (United Kingdom) (NCSR 3/15/3), highlighting a summary of the current issues being addressed by the IMO NAVTEX Coordinating Panel and its actions/activities since NCSR 2. In introducing the document, the Chairman of the IMO NAVTEX Coordinating Panel provided also the following additional information:

- .1 Georgia had confirmed that, as of 3 January 2016, the NAVTEX station in Poti was fully operational on 490 kHz only;
- .2 the Panel had issued B1 characters to Colombia for trial use on 518 and 490 kHz from the Caribbean coast station, after service areas with neighbouring NAVTEX Member Governments were agreed;
- .3 Colombia was in discussions with Ecuador regarding service areas on the Pacific coast and, once agreed, the Panel would issue B1 Characters;
- .4 the Panel was also in discussion with Ecuador regarding a 518 and 490 kHz station in Ecuador;
- .5 India had informed the Panel that trial transmissions had commenced from their new NAVTEX stations;
- .6 Seychelles had advised the Panel that their NAVTEX antenna suffered a lightning strike and, as a result, the station was no longer operational; and
- .7 Chile had confirmed that they were now operational on 490 kHz using the Spanish language service, thus leaving 518 kHz for English language service only.

15.5 The delegation of the Russian Federation provided information on its intention to establish a NAVTEX station on 518 kHz in the area of Taganrog port to ensure safety of navigation in the Sea of Azov, but that it had been advised by the NAVAREA III and METAREA III Coordinators that transmission in that area and on that frequency would not be appropriate under the current arrangements for the area concerned. The Russian Federation would continue to monitor transmission of NAVTEX information in the Sea of Azov to validate the adequacy of the information transmitted with a view to defining its future approach on this issue.

Outcome of the seventh session of the IHO World-Wide Navigational Warning Service Sub-Committee (WWNWS-SC)

15.6 The Sub-Committee noted with appreciation the information provided by the Chairman of the IHO WWNWS Sub-Committee, Mr. P. Doherty (United States) (NCSR 3/15/2) on the matters discussed and decisions taken at the seventh session of the IHO WWNWS Sub-Committee which was held from 24 to 27 August 2015.

15.7 Following some discussion, the Sub-Committee:

- .1 encouraged the attendance of Member Governments and observers at WWNWS-SC meetings;
- .2 reminded delegations to take into account the impact of e-navigation on the provision of MSI;

- .3 highlighted the importance of the use of the Joint Manual on MSI to ensure correct terminology and formats were used in MSI messages; and
- .4 encouraged closer engagement of the National MSI Coordinators of Member Governments with the relevant NAVAREA Coordinator(s).

Proposed amendments to the International SafetyNET Manual and NAVTEX Manual

15.8 The Sub-Committee, noting that the proposals submitted by Chairman of the IHO WVNWS Sub-Committee (NCSR 3/15 and NCSR 3/15/1) on amendments to the International SafetyNET Manual and NAVTEX Manual did not require a particular decision in plenary, referred it to the Drafting Group for finalization.

Establishment of the Drafting Group on MSI guidance documentation

15.9 The Sub-Committee established the Drafting Group on MSI guidance documentation under the chairmanship of Mr. P. Doherty (United States) and instructed it, taking into account decisions, comments and proposals made in plenary, to finalize the draft revision of:

- .1 the International SafetyNET Manual, as given in NCSR 3/15, annex; and
- .2 the NAVTEX Manual, as given in NCSR 3/15/1, annex,

and submit its report on Thursday, 3 March 2016.

Report of the Drafting Group

15.10 Having received and considered the Drafting Group's report (NCSR 3/WP.7), the Sub-Committee approved it in general and, in particular, took action as summarized in the ensuing paragraphs.

15.11 The Sub-Committee endorsed the draft amendments to the International SafetyNet Manual as set out in annex 8, and instructed the Secretariat to prepare the associated draft MSC circular and to submit it, as an annex to the report of the Sub-Committee, for consideration and approval by the Committee.

15.12 The Sub-Committee endorsed the draft amendments to the NAVTEX Manual as set out in annex 9, and instructed the Secretariat to prepare the associated draft MSC circular and to submit it, as an annex to the report of the Sub-Committee, for consideration and approval by the Committee.

16 RESPONSE TO MATTERS RELATED TO THE RADIOCOMMUNICATION ITU-R STUDY GROUP

Revision of Recommendations ITU-R M.493-13 and ITU-R M.541-9

16.1 The Sub-Committee noted the information provided by the Secretariat (NCSR 3/16), containing a liaison statement from ITU-R Working Party 5B (WP 5B) informing IMO that it had completed the revision of Recommendation ITU-R M.493-13 and also the consequential revision of Recommendation ITU-R M.541-9. It was also noted that WP 5B had invited IMO to consider the revisions of these Digital Selective Calling (DSC) technical and operational Recommendations in the further development of the GMDSS.

16.2 The Sub-Committee considered comments provided by the United Kingdom (NCSR 3/16/1) on the recent revision of Recommendations ITU-R M.493-13, regarding the operational use of new DSC Class M devices. It was noted that these personal devices were to support the recovery of individuals in man overboard (MOB) situations. The United Kingdom expressed its concerns of the use of these devices, and other personal devices operating on maritime safety frequencies, in mass rescue operations. The United Kingdom was of the view that the development of personal radio devices and their possible application to mass evacuation situations, including the impacts on search and rescue, should be carefully considered.

16.3 After consideration, the Sub-Committee referred the matter to the Joint IMO/ITU Experts Group and the ICAO/IMO Joint Working Group, for detailed consideration at their next meeting and to provide advice to NCSR 4, as appropriate (paragraphs 14.20 and 21.21 refers).

Uncontrolled novel applications using AIS technology

16.4 The Sub-Committee recalled that NCSR 2 had instructed the Joint IMO/ITU Experts Group to consider the liaison statement on uncontrolled novel applications using AIS technology (NCSR 2/12), and to advise the Sub-Committee, as appropriate.

16.5 The Sub-Committee noted the discussion on this matter (NCSR 3/17, paragraph 3.1) which had taken place at the Experts Group meeting, as set out in paragraphs 7 to 15 of the annex to document NCSR 3/17, and considered the draft liaison statement provided in appendix 1 to the annex of this document.

16.6 The delegation of the United States was of the view that not all novel applications should be prohibited from operating on AIS 1 and AIS 2, in particular, where the use would not have a negative impact on current AIS operations and Administrations would have the right to monitor and manage their use. They were of the view that this should be captured in the liaison statement and offered to coordinate a drafting group to address this issue, if so decided. The delegation of Australia, sympathizing with the proposal, offered to participate in the drafting group, if established.

16.7 After consideration, the Sub-Committee, noting that there were no experts available for a drafting group, approved the liaison statement to WP 5B on AIS uncontrolled novel applications, as set out in annex 10, instructed the Secretariat to convey it to ITU and invited the Committee to endorse this action.

Interference caused by pulse compression radar

16.8 The Sub-Committee noted that the Experts Group had noted information on interference caused by pulse compression radar observed on standard marine radar using magnetron technology (NCSR 3/17, paragraph 3.10).

17 RESPONSE TO MATTERS RELATED TO ITU WORLD RADIOCOMMUNICATION CONFERENCE

World Radiocommunication Conference 2015

17.1 The Sub-Committee recalled that NCSR 2 had prepared the draft IMO position for submission to the World Radiocommunication Conference 2015 (WRC-15), and noted that MSC 95 had approved the final text of the IMO position, which was made available as WRC-15 Document 13.

17.2 The Sub-Committee further noted document NCSR 3/17, paragraphs 3.8 and 3.9 on the discussions which had taken place at the Joint IMO/ITU Experts Group meeting on WRC-15 related matters. In this context, it was also noted that MSC 95 had instructed the Experts Group to develop an addendum to the IMO Position, which was conveyed by the Secretariat to ITU and made available as WRC-15 Document 13/Add.1.

17.3 The Sub-Committee noted the information provided by the Secretariat (NCSR 3/17/1 and NCSR 3/INF.21) on the outcome of WRC-15, which took place from 2 to 27 November 2015. After some discussion, the Sub-Committee instructed the Experts Group (paragraph 14.20 refers) to:

- .1 analyse the outcome of WRC-15 in line with the IMO position submitted to the Conference;
- .2 analyse the Resolutions of WRC-15 in order to identify major areas of interest for IMO and provide relevant input, as appropriate; and
- .3 prepare initial advice on a draft IMO position on WRC-19 Agenda items concerning matters relating to maritime services (paragraph 14.20 refers).

World Radiocommunication Conference 2019

17.4 The Sub-Committee noted that the next World Radiocommunication Conference was preliminary scheduled to take place in 2019.

18 MEASURES TO PROTECT THE SAFETY OF PERSONS RESCUED AT SEA

18.1 The Sub-Committee noted the outcome of MSC 95 on a special session on unsafe mixed migration by sea (MSC 95/22, paragraphs 21.1 to 21.17) and that on the invitation by Italy an Informal Meeting to Review the Legal Framework for the Rescue of Mixed Migrants at Sea was held at IMO Headquarters on 21 September 2015.

18.2 The Sub-Committee considered the information provided by ICS (NCSR 3/18) on the second edition of *Large scale rescue operations at sea: Guidance on ensuring the safety and security of seafarers and rescued persons*.

18.3 After consideration, the Sub-Committee thanked ICS for the valuable and useful work in this regard, and decided to note the second edition of the industry Guidance and the comments made in paragraphs 7 to 10 of document NCSR 3/18, and, in particular, that this Guidance should remain a live document for as long as required, promulgated and updated by the industry co-sponsors.

18.4 The Sub-Committee invited the Committee to encourage Member Governments and observer organizations to promote the availability of the industry Guidance as widely as possible, and to agree that no further action had to be taken by the Sub-Committee with regard to the industry Guidance.

18.5 The Sub-Committee noted the information provided and views expressed by several delegations that:

- .1 unsafe mixed migration by sea remained a matter which should stay high on the Organization's agenda;

- .2 the rescue of migrants at sea, in particular, in the Mediterranean was still a major problem and many organizations, including IMRF and FRONTEX were assisting the local rescue services;
- .3 ships and crew, called to assist in these rescue operations, should be protected from danger and offered support; and
- .4 there was a need for greater effort by coastal States of departure to better manage and ultimately prevent the departure of unsafe craft in undertaking such dangerous voyages from their respective shores.

18.6 The delegations of Greece and Turkey made statements as set out in annex 14.

19 ANALYSIS OF INFORMATION ON DEVELOPMENTS IN INMARSAT AND COSPAS-SARSAT

Inmarsat

Annual report on Inmarsat's obligations

19.1 The Sub-Committee noted with appreciation the annual report provided by IMSO (NCSR 3/19) on Inmarsat's obligations for the provision of maritime distress and safety services in the GMDSS, as overseen by IMSO. This report covered the period from 1 November 2014 to 31 October 2015 and the Sub-Committee noted that, during this period, Inmarsat had continued to provide fully operational maritime mobile satellite distress and safety communication services for the GMDSS and fulfilled the company's public service obligation as stated in the Public Services Agreement (PSA).

Planned closure of the Inmarsat F77 service

19.2 The Sub-Committee noted the information provided by IMSO (NCSR 3/19/1) concerning Inmarsat's intention to close the Inmarsat F77 service by 1 December 2020. In this context, it was also noted that a submission to NCSR 4 would be made to seek approval to incorporate the Inmarsat Fleet Broadband service into the GMDSS.

19.3 The delegation of the United States, referring to the planned use of the Inmarsat Fleet Broadband service in place of F77, indicated that no information was provided related to the schedule for this change of service or the proposed plan for recognition of the Fleet Broadband service in the GMDSS. In their view, it was of interest to the Sub-Committee and delegations present to better understand the details of this intended change, and how the availability and performance of Fleet Broadband would be evaluated at IMO. This would allow existing and prospective GMDSS providers to fully understand the requirements and process that must be satisfied before any new services were recognized by the Organization. By doing so, IMO would ensure that users of existing systems would experience no lapse in service and would also be better prepared to plan for equipment updates associated with a modernized GMDSS (paragraphs 26.2 and 26.3 refers).

Enhancement to SafetyNET

19.4 The Sub-Committee noted the information provided by IMSO (NCSR 3/INF.11) on Inmarsat's enhancement to SafetyNET for use by Maritime Safety Information Providers and Rescue Coordination Centres.

Cospas-Sarsat*Report of the 22nd session of the ICAO/IMO Joint Working Group*

19.5 The Sub-Committee noted that the ICAO/IMO Joint Working Group on Search and Rescue had considered issues related to Cospas-Sarsat and noted, in particular, the discussion on matters related to SAR Points of Contact (SPOCs) (NCSR 3/21, paragraphs 2.14).

19.6 The Sub-Committee agreed with the recommendation of the Joint Working Group that 30 days storage of all Cospas-Sarsat data would be sufficient for accident investigation purposes (NCSR 3/21, paragraphs 2.15), and requested the Secretariat to inform Cospas-Sarsat accordingly.

Status of the Cospas-Sarsat Programme

19.7 The Sub-Committee noted with appreciation the information provided by Cospas-Sarsat (NCSR 3/INF.19) on the Status of the Cospas-Sarsat Programme.

20 REVISED PERFORMANCE STANDARDS FOR EPIRBs OPERATING ON 406 MHZ (RESOLUTION A.810(19)) TO INCLUDE COSPAS-SARSAT MEOSAR AND SECOND GENERATION BEACONS

20.1 The Sub-Committee noted that MSC 95 had agreed to include in the 2016-2017 biennial agenda of the NCSR Sub-Committee and the provisional agenda for NCSR 3, an output on "Revised Performance standards for EPIRBs operating on 406 MHz (resolution A.810(19)) to include Cospas-Sarsat MEOSAR and second generation beacons", with a target completion year of 2017 (MSC 95/22, paragraph 19.9).

20.2 The Sub-Committee had for its consideration information submitted by:

- .1 the United States (NCSR 3/20) proposing amendments to update resolution A.810(19) to reflect the MEOSAR deployment in approximately 2018, add second generation beacons, and update out-dated references; and
- .2 the United Kingdom (NCSR 3/20/1) commenting on the draft amendment to the existing performance standards for EPIRBs, in particular, about an indicator for the Return Link Message, and suggesting deferral of the decision on the 121.5 MHz beacon duty cycle until NCSR 4.

20.3 In this context, the Sub-Committee noted that the ICAO/IMO Joint Working Group, at its twenty-second session, had agreed that IMO should only change its Standard when there was evidence that the proposed modification of the current IMO requirement for a continuous 121.5 MHz homing signal had no detrimental effect on 121.5 MHz homing capability (NCSR 3/21, paragraph 2.16).

20.4 The Sub-Committee recalled that NCSR 2 had considered a liaison statement from Cospas-Sarsat (NCSR 2/14) with regard to homing on the frequency 121.5 MHz, proposing modification to resolution A.810(19), and had noted that the Joint Working Group had invited Cospas-Sarsat, interested Member Governments and international organizations to submit information to NCSR 2 for its review providing tested and documented evidence that this proposal had no detrimental effect on 121.5 MHz homing capability, as demonstrated through appropriate testing, and to document evidence and provide it for review by the Sub-Committee.

20.5 The Sub-Committee noted that Cospas-Sarsat had provided information on this matter in document NCSR 3/INF.19 and, in particular, that the fifty-fifth session of the Cospas-Sarsat Council had noted that most likely not enough test material would be available to consider the matter at NCSR 3.

20.6 Noting the concerns of some delegations, the Sub-Committee invited the United States to coordinate a joint proposal from interested Member Governments and international organizations to NCSR 4. The Sub-Committee also invited interested parties to submit test results to the ICAO/IMO Joint Working Group, in order to allow this Group to study the matter and provide advice to the Sub-Committee, as appropriate, and to forward the characteristics of candidate locating signals, other than 121.5 MHz, to the Joint Working Group to facilitate the evaluation of the test results, as requested by the United Kingdom in document NCSR 3/20/1.

20.7 The delegation of Argentina provided oral information on Cospas-Sarsat related developments in its country.

21 GUIDELINES ON HARMONIZED AERONAUTICAL AND MARITIME SEARCH AND RESCUE PROCEDURES, INCLUDING SAR TRAINING MATTERS

Report of the twenty-second session of the ICAO/IMO Joint Working Group on Harmonization of Aeronautical and Maritime Search and Rescue

21.1 The Sub-Committee noted that, as endorsed by MSC 94 and the ICAO Secretariat, the twenty-second session of the ICAO/IMO Joint Working Group was held at the Canadian Forces Base in Trenton, Ontario, Canada from 14 to 18 September 2015, under the chairmanship of Mr. D. Edwards (United States).

21.2 The Sub-Committee, having briefly considered the relevant part of document NCSR 3/21 (Secretariat), providing in the annex the report of the twenty-second session of the ICAO/IMO Joint Working Group (JWG), referred paragraphs 2.5 to 2.13 and 2.17 to the SAR Working Group for detailed consideration and advice.

The next session of the ICAO/IMO Joint Working Group

21.3 The Sub-Committee noted that MSC 95 had approved the intersessional meeting of the JWG to be held in 2016 (MSC 95/22, paragraph 19.42), and the Council's endorsement (C 114/D, paragraph 9.2). The Sub-Committee also noted the information provided by the observer of ICAO, that ICAO's Council had approved the holding of meetings of the JWG for the upcoming three years.

21.4 The Sub-Committee endorsed the holding of JWG 23 in Berlin, Germany, from 12 to 16 September 2016, and instructed the SAR Working Group to consider the provisional agenda for JWG 23, for approval by the Sub-Committee (NCSR 3/21, paragraphs 2.21 and 2.23). In this context, and referring to a recent decision at MEPC, the delegation of Panama was of the view that agendas of intersessional meetings should be concise and specific and, therefore, should not contain the item "Any other business". They were of the view that MSC should consider the same kind of approach.

Global Aeronautical Distress and Safety System (GADSS)

21.5 The Sub-Committee had for its consideration information submitted by:

- .1 the United States (NCSR 3/21/1) informing that ICAO had begun its process to amend international standards and recommended practices so as to align with the Global Aeronautical Distress and Safety System (GADSS) Concept of Operation (CONOP), and that aspects of this effort would affect maritime SAR. The United States recommended that maritime SAR authorities coordinate with their civil aviation authorities to ensure harmonized aeronautical and maritime global SAR systems; and
- .2 ICAO (NCSR 3/21/4) providing an overview on ICAO's development of standards, recommended practices and guidance material based on the GADSS CONOP over the preceding year and identifying areas of potential impacts on Global SAR provisions for the maritime SAR system.

21.6 After consideration, the Sub-Committee referred documents NCSR 3/21/1 and NCSR 3/21/4 to the SAR Working Group for detailed consideration and advice.

Vessel TRIAGE

21.7 The Sub-Committee considered a new categorization method "Vessel TRIAGE" presented by Finland (NCSR 3/21/2). The Sub-Committee noted that it was developed by a multinational project to provide a common platform to assess the seriousness of the vessel's safety situation and facilitate decision-making regarding search and rescue. The project, led by Finland, published the Vessel TRIAGE method in May 2015. It was further noted that Vessel TRIAGE was considered to be a simple method of assessing risk aboard a vessel in need of assistance and was not duplicating or changing existing GMDSS radiocommunication categories or emergency phases.

21.8 Some delegations were of the view that it would be too premature to consider the proposals, given that the method in question was still being tested and would continue to be tested until the end of 2018. Other delegations supported the concept in principle and recommended forwarding the information for consideration to the SAR Working Group.

21.9 After some discussion, the Sub-Committee referred document NCSR 3/21/2 to the SAR Working Group for detailed consideration and advice. In doing so, the Chairman clarified that there was no need to take any decision at this session and that the issue of inclusion in the IAMSAR Manual should not be discussed as it was still in a trial phase.

TMAS service questionnaire

21.10 The Sub-Committee considered a proposal by France and Italy (NCSR 3/21/3) presenting a questionnaire for assessing the status of implementation, problems encountered and collecting proposals for improvement of MSC/Circ.960 on Medical Assistance at Sea, providing guidance on Medical Assistance at Sea and Importance of the Role of Telemedical Assistance Services and Medical Assistance at Sea and Maritime Radiocommunications.

21.11 After some discussion, and noting some support for the circulation of the questionnaire, the Sub-Committee referred document NCSR 3/21/3 to the SAR Working Group for detailed consideration and advice.

21.12 The delegation of Norway, without disagreeing with the proposed questionnaire, expressed the view that any proposal for amendments to MSC/Circ.960 would require a new output.

Report on the seventeenth Combined Antarctic Naval Patrol 2014-2015

21.13 The Sub-Committee noted with appreciation the information provided by Argentina and Chile (NCSR 3/INF.5) on activities of the seventeenth combined Antarctic naval patrol carried out by the submitting States with the aim of enhancing maritime safety and environmental protection on the Antarctic continent.

Establishment of the SAR Working Group

21.14 The Sub-Committee established the SAR Working Group under the chairmanship of Mr. N. Clifford (New Zealand) and instructed it, taking into account decisions of, and comments and proposals made in plenary, to:

- .1 consider paragraphs 2.5 to 2.13 and 2.17 of document NCSR 3/21, containing the report of the twenty-second session of the ICAO/IMO Joint Working Group (JWG 22), and advise the Sub-Committee, as appropriate;
- .2 finalize the provisional agenda for JWG 23 (NCSR 3/21, annex, appendix E), for approval by the Sub-Committee;
- .3 consider documents NCSR 3/21/1 and NCSR 3/21/4, related to the development of the Global Aeronautical Distress and Safety System, and advise the Sub-Committee, as appropriate;
- .4 consider document NCSR 3/21/2, related to Vessel TRIAGE, and advise the Sub-Committee, as appropriate; and
- .5 consider document NCSR 3/21/3, related to a proposed TMAS service questionnaire, and advise the Sub-Committee, as appropriate,

and submit its report on Thursday, 3 March 2016.

Report of the SAR Working Group

21.15 Having received and considered the working group's report (NCSR 3/WP.6), the Sub-Committee approved it in general and, in particular, took action as summarized in the ensuing paragraphs.

21.16 The Sub-Committee noted:

- .1 the list of non-mandatory instruments related to SAR, prepared by the JWG, and invited the Secretariat to make these instruments available on the IMO public website (NCSR 3/WP.6, annex 1);
- .2 that the JWG supported the United States to continue the R&D work on alternatives to Pyrotechnic Distress Signals;
- .3 the IMRF's online MRO reference library at www.international-maritime-rescue.org/index.php/homemropublic and that the JWG encouraged further contributions to the library;

- .4 that the JWG concluded that the definition of "rescue" should not be changed; however, there might be scope for a new definition to describe support operations prior to rescue;
- .5 that the IMRF coordinated further work on identifying good practices in the dissemination of lessons learned and a consideration of how the global SAR community might improve its performance in this respect;
- .6 that the JWG would further review aeronautical documents for inclusion in the SAR.7 circular on the list of documents and publications which should be held by a Maritime or Joint Rescue Coordination Centre;
- .7 that the JWG agreed to the recommendation for continued awareness by SAR services and technical regulators on the increasing number of survivor locating systems, to ensure that the SAR system was protected and could function as required; and
- .8 the view of the group that collection, collation, analysis and availability of updated and complete information on the arrangements and procedures for medical assistance at sea that have been put in place in different countries since the approval of MSC/Circ.960, including details of Telemedical Maritime Advice Services (TMAS), would lead to improved provision of medical assistance at sea.

21.17 The Sub-Committee endorsed the questionnaire for assessing the status of implementation of MSC/Circ.960 on Medical Assistance at Sea and requested the Secretariat to circulate the questionnaire to Member Governments via circular letter requesting their RCCs to complete and submit it to the email address of the French Centre for Maritime Medical Consultation (cmm.secretariat@chu-toulouse.fr) (NCSR 3/WP.6, annex 3).

21.18 The Sub-Committee urged Member Governments to review and, if necessary, update all appropriate organizational and operational information related to TMAS in the GISIS module for Radiocommunications and Search and Rescue.

21.19 The Sub-Committee requested Member Governments to:

- .1 bring the information on the existence of the ICAO Asia/Pacific SAR Plan to the attention of responsible maritime authorities for SAR;
- .2 advise interested parties that an electronic copy of the ICAO Asia/Pacific SAR Plan could be requested by sending an email to NCSR@imo.org; and
- .3 review the ICAO Asia/Pacific SAR Plan and utilize it when implementing maritime SAR services, jointly with aeronautical SAR agencies, as appropriate.

21.20 The Sub-Committee encouraged Member Governments:

- .1 to support the ICAO civil/military cooperation and coordination seminar/workshops by including SAR experts, particularly when the region included Oceanic Search and Rescue Regions (SRRs);

- .2 to support the Antarctic SAR Workshop under the auspices of the Antarctic Treaty Consultative Meeting (ATCM), to take place in Valparaiso, Chile in 2016, by including representatives of the relevant RCCs and relevant SAR experts;
- .3 to have their maritime SAR authority establish and maintain close liaison with their civil aviation authority as ICAO continues implementation of its GADSS CONOP;
- .4 to participate in Aviation Regional SAR workshops as they occur and extend an invitation to aviation SAR authorities where Maritime SAR workshops have been arranged; and
- .5 together with SAR services and other parties, to test the Vessel TRIAGE method and to provide their feedback as appropriate to the email address vesseltriage@raja.fi, so that Finland can take account of their experience in preparing further Vessel TRIAGE documentation.

21.21 The Sub-Committee approved the provisional agenda for JWG 23 (NCSR 3/WP.6, annex 2).

22 FURTHER DEVELOPMENT OF THE GLOBAL SAR PLAN FOR THE PROVISION OF MARITIME SAR SERVICES

22.1 The Sub-Committee noted the information provided by the Secretariat on the status of the Global SAR Plan as available in GISIS.

22.2 The Sub-Committee also noted that the Global SAR Plan had been updated by several Member Governments during the time between NCSR 2 and this session of the Sub-Committee. It was further noted that the status of the availability of SAR services changed day by day and, therefore, providing updated information directly into GISIS was of utmost importance. Having available updated information would enable Rescue Coordination Centres to act promptly without losing precious time the moment they were dealing with a distress situation.

22.3 In this context, the Sub-Committee encouraged Member Governments to check the available information in GISIS on a regular basis and update the information immediately when changes had been notified to them.

Information on modifications to the COMSAR module in GISIS

22.4 The Sub-Committee considered the information provided by the Secretariat (NCSR 3/22) on modifications to the Radiocommunications and Search and Rescue (COMSAR) module of the Global Integrated Shipping Information System (GISIS). In this context, the Sub-Committee noted that, as requested by NCSR 2, MSC 95 had agreed to a number of modifications to the COMSAR module of GISIS to allow submission of geographical limits of Search and Rescue Regions (SRRs) using the standard format defined for the LRIT system, and instructed the Secretariat to implement the necessary modifications.

22.5 The Sub-Committee further noted that Member Governments were advised about the implementation of the modifications by means of Circular Letter No.3588, issued on 9 September 2015.

22.6 The observer from IMRF, noting that it is Member Governments' responsibility to keep their SAR information updated, offered its assistance with any initiative that would help in updating SAR information held on GISIS.

22.7 The delegation of Greece expressed concerns regarding the system's limitation to use only two decimal places for the definition of geographical coordinates of SRRs and proposed using four decimal places to improve the accuracy of the limits of SRRs.

22.8 The Secretariat clarified that the modifications to the COMSAR module had been implemented using the format agreed for the definition of geographical areas in the LRIT system. Any changes to this format would require further consideration in respect to the systems compatibility. The Secretariat also indicated that, if necessary, additional explanatory information could be provided in the COMSAR module under the section called "Remarks" when uploading SRRs.

22.9 After consideration, the Sub-Committee urged Member Governments to resubmit the information related to geographical limits of SRRs in the new format using the new functionality provided in the COMSAR module of GISIS and taking into account the guidance set out in the annex to document NCSR 3/22, which was an exact copy of the annex to Circular Letter No.3588.

23 AMENDMENTS TO THE IAMSAR MANUAL

23.1 The Sub-Committee considered the relevant part of the report of the ICAO/IMO Joint Working Group (JWG) and noted the information provided in document NCSR 3/21, paragraphs 2.1 to 2.3, listing items for possible inclusion in the IAMSAR Manual.

23.2 The Sub-Committee encouraged Member Governments to use the IAMSAR Manual forms and templates to ensure standardization of information exchange (NCSR 3/21, paragraphs 2.4).

23.3 The Sub-Committee instructed the SAR Working Group to consider the list of pending and new action items for the JWG and advise the Sub-Committee as appropriate (NCSR 3/21, paragraphs 2.22).

Instructions for the SAR Working Group

23.4 The Sub-Committee instructed the SAR Working Group, established under agenda item 21, taking into account decisions of, and comments and proposals made in plenary, to consider the list of pending and new action items for the JWG (NCSR 3/21, annex, appendix D), advise the Sub-Committee, as appropriate, and submit its report on Thursday, 3 March 2016.

Report of the SAR Working Group

23.5 On receipt of the relevant part of the working group's report (NCSR 3/WP.6), the Sub-Committee noted the list of pending and new action items for the JWG (NCSR 3/WP.6, annex 4).

24 REVISED GUIDELINES FOR PREPARING PLANS FOR COOPERATION BETWEEN SEARCH AND RESCUE SERVICES AND PASSENGER SHIPS (MSC.1/CIRC.1079)

24.1 The Sub-Committee noted that MSC 95 had agreed to include, in the 2016-2017 biennial agenda of the NCSR Sub-Committee and the provisional agenda for NCSR 3, an output on "Revised guidelines for preparing plans for cooperation between search and rescue services and passenger ships (MSC.1/Circ.1079)", with a target completion year of 2017 (MSC 95/22, paragraph 19.11).

24.2 The Sub-Committee had for its consideration documents submitted by:

- .1 Finland and IMRF (NCSR 3/24) providing considerations with regard to the revision of MSC.1/Circ.1079 on *Guidelines for preparing plans for cooperation between search and rescue services and passenger ships*, in particular related to passenger ships transiting many search and rescue (SAR) regions and to develop ways of improving and simplifying distribution of SAR plans for cooperation. The aim of the proposal was to ensure that important information contained within the plan would be readily available to SAR services in case of emergency and be easily kept up to date, and that the overall process would be as efficient and effective as possible; and
- .2 Argentina (NCSR 3/24/1) expressing support for the proposals contained in document NCSR 3/24, and suggesting to consider the use of GISIS for the proposed online database.

24.3 During the ensuing discussions, the following views were expressed:

- .1 some delegations expressed support for the development of an online database and to consider the use of GISIS, as well as alternative platforms, for this purpose;
- .2 if GISIS were to be considered for use as an online database for this purpose, the potential impact on the Organization should be taken into account;
- .3 any change of procedure should be carefully considered and if it was decided on such a change, a comprehensive implementation plan should be developed;
- .4 the establishment of an online database should not be considered under this agenda item, since the output was to revise the guidelines contained in MSC/Circ.1079 and consideration of such a database was outside the scope of the agenda item;
- .5 the revision of MSC/Circ.1079 should not result in new obligations; and
- .6 to include SAR cooperation plans in the ship's safety management system (SMS) required by the ISM Code, was outside the scope of the agenda item and would require a proposal for a new output to consider this matter further.

24.4 After consideration, the Sub-Committee, having agreed that the establishment of an online database and the inclusion of SAR cooperation plans in the ship's safety management system (SMS) required by the ISM Code were outside the scope of the agenda item, referred documents NCSR 3/24 and NCSR 3/24/1 to the SAR Working Group for detailed consideration and advice.

Instructions for the SAR Working Group

24.5 The Sub-Committee instructed the SAR Working Group, established under agenda item 21, taking into account decisions of, and comments and proposals made in plenary, to consider documents NCSR 3/24 and NCSR 3/24/1, related to the revision of MSC/Circ.1079, and provide advice on the follow-up of this item, including the timescale of the development of a revision of this circular, and submit its report on Thursday, 3 March 2016.

Report of the SAR Working Group

24.6 On receipt of the relevant part of the working group's report (NCSR 3/WP.6), the Sub-Committee took action as summarized in the ensuing paragraphs.

24.7 The Sub-Committee noted the discussions of the group regarding the *Guidelines for preparing plans for cooperation between search and rescue services and passenger ships* (MSC/Circ.1079) and the possible solutions for improving and simplifying the system of distributing SAR plans for cooperation.

24.8 The Sub-Committee requested JWG 23 to further consider the matter of SAR plans for cooperation under Agenda Item 4 (SAR operational principles, procedures and techniques), and develop draft amendments to MSC/Circ.1079 that include capturing potential ways of improving and simplifying the system of distributing SAR plans for cooperation, for consideration at NSCR 4 (paragraph 21.21 refers).

25 UNIFIED INTERPRETATION OF PROVISIONS OF IMO SAFETY, SECURITY, AND ENVIRONMENT RELATED CONVENTIONS

25.1 The Sub-Committee recalled that MSC 78 had included the consideration of IACS Unified Interpretations (UIs) as a continuous item on its biennial agenda, so that IACS could submit any newly developed or updated unified interpretations for consideration by the Sub-Committee with a view to developing appropriate IMO interpretations, if deemed necessary.

Application of the COLREGs with respect to the placement of side lights

25.2 The Sub-Committee recalled that NAV 57 had considered navigation light arrangements as described in annex I/9(a)(i) and annex I/10(a)(i) of the COLREGs 1972, as amended, and that, subsequently, MSC.1/Circ.1427 on the positioning and technical details of lights and shapes had been issued (NAV 57/15, section 10).

25.3 The Sub-Committee further recalled that after a long discussion, and having noted that the current unified interpretation or any possible unified interpretation on vertical sectors would not address the problem raised by IACS because there was no technical specification or regulation for visibility of sidelights that was susceptible of interpretation to address that issue, NAV 57 had invited IACS to submit any further relevant IACS Unified Interpretation proposals to NAV 58 (NAV 57/15, paragraphs 10.13 and 10.14).

25.4 The Sub-Committee considered the information provided by IACS (NCSR 3/25) providing an analytical discussion on still existing confusion in the text in the COLREGs on the issue of vertical sector of the sidelight which might need to be further considered.

25.5 In considering the proposal, general support was indicated for the development of a unified interpretation related to the placement of side lights as an interim solution. However, the view was expressed that, ideally, the COLREGs should be reviewed in respect to the identification of the aspects of large ships as seen from small ships in close proximity.

25.6 Consequently, the Sub-Committee invited IACS to develop a draft unified interpretation based on paragraph 8.2.2 of document NCSR 3/25 for consideration at a future session. The Sub-Committee also agreed that this matter should be clarified when reviewing the COLREGs in the future.

Pilot transfer arrangements (SOLAS regulation V/23.3.3)

25.7 The Sub-Committee recalled that MSC 94, after extensive discussions at NAV 59 and NCSR 1, had approved MSC.1/Circ.1495 on a unified interpretation of SOLAS regulation V/23.3.3 on Pilot transfer arrangements, prepared by NCSR 1 (MSC 94/21, paragraph 9.38).

25.8 The Sub-Committee considered document NCSR 3/25/2 (IACS and IMPA) proposing a change to the wording of MSC.1/Circ.1495 to clarify the intent of this circular, in particular, that SOLAS regulation V/23.3.3.1 prescribed an operational instruction that limits the climb to not more than 9 metres on a single ladder regardless of the trim or list of the ship.

25.9 Having noted the general support to the proposal, the Sub-Committee agreed with the proposed revision of MSC.1/Circ.1495, as set out in annex 11, and invited the Committee to approve it.

Interpretation of COLREG 1972 rule 18 related to the Protection of Cable Ships

25.10 The Sub-Committee recalled that at NCSR 2, when discussing the protection of cable ships, it was suggested that the preparation of a Unified Interpretation of the requirement to "keep out of the way" in rule 18, COLREG 1972, as amended, be prepared (NCSR 2/23, paragraph 22.3).

25.11 The Sub-Committee recalled further that MSC 95 noted that a document could be submitted to the Sub-Committee for consideration under the standing agenda item on Unified Interpretation of provisions of IMO safety, security and environment related conventions (MSC 95/22, paragraph 11.21).

25.12 The Sub-Committee considered the proposal by the Marshall Islands (NCSR 3/25/1) on a Unified Interpretation of COLREG 1972 rule 18 to protect cable ships engaged in the laying or repair of submarine cables and cable repair buoys.

25.13 During the ensuing discussions, the following views were expressed:

- .1 there was ambiguity with some of the terms used in the draft Unified Interpretation which should be revised or defined;
- .2 there was concern about the setting of minimum distances to protect cable ships, as this could set a precedent for setting distances for a variety of situations which were not explicitly indicated in the COLREGs;
- .3 if deemed necessary to set distances, there were already sufficient provisions in place to promulgate those, e.g. through navigational warnings;

- .4 the issue of how to distinguish at night cable ships from other vessels restricted to manoeuvre, should also be addressed; and
- .5 the demonstrated occasions where vessels had interfered with cable ship operations did not see to be based on a misunderstanding of the regulations, and did not warrant a Unified Interpretation.

25.14 After consideration, the Sub-Committee referred the issue to the Navigation Working Group for further detailed consideration and advice.

Instructions for the Navigation Working Group

25.15 The Sub-Committee instructed the Navigation Working Group, established under agenda item 3, taking into account decisions of, and comments and proposals made in plenary, to consider document NCSR 3/25/1 containing draft unified interpretation of COLREG 1972, as amended, and based on the text provided in the annex to this document prepare a draft MSC circular, as appropriate, and submit its report on Thursday, 3 March 2016.

Report of the Navigation Working Group

25.16 On receipt of the relevant part of the working group's report (NCSR 3/WP.4), the Sub-Committee took action as summarized in the ensuing paragraphs.

25.17 The Sub-Committee noted that the group had been unable to agree on the development of a unified interpretation of COLREG 1972, as amended, in this respect.

25.18 Following the recommendation of the group, the Sub-Committee invited interested parties to submit a proposal for a new output to the Committee on the development of a circular to address the protection of cable ships.

26 BIENNIAL STATUS REPORT AND PROVISIONAL AGENDA FOR NCSR 4

Biennial status report for the 2016-2017 biennium

26.1 Taking into account the progress made at this session, the Sub-Committee prepared the biennial status report for the 2016-2017 biennium (NCSR 3/WP.2, annex 1), as set out in annex 12, for consideration by MSC 96.

26.2 Referring to the discussion under agenda item 19 on the future technical and operational assessment of new services introduced within already recognized GMDSS satellite systems, such as the Inmarsat Fleet Broadband service (paragraph 19.3 refers), the Sub-Committee invited the Committee to agree on a change to the name of output 5.2.5.4 to "Developments in GMDSS satellite services".

26.3 In this context, it was noted that, under the proposed new name of this output, the Sub-Committee would be in a position to undertake such a technical and operational assessment in the light of developments, and could also undertake at future sessions the work related to the recognition of Iridium, currently undertaken under output 5.2.5.7, and of other potential GMDSS satellite service providers, as and when instructed by the Committee.

26.4 Noting that no other submissions than submissions related to the recognition of Iridium had been received under the agenda item related to output 5.2.5.7 on "analysis of developments in maritime radiocommunication systems and technology", the Sub-Committee agreed to decide at its next session whether an extension of this output would be required for the next biennium.

Draft provisional agenda for NCSR 4

26.5 Taking into account the progress made at this session and the relevant decisions of MSC 95, the Sub-Committee prepared the proposed provisional agenda for NCSR 4 (NCSR 3/WP.2, annex 2), as set out in annex 13, for consideration by MSC 96.

Arrangements for the next session

26.6 The Sub-Committee noted the long list of potential items to be considered by Working and Drafting Groups at its next session, and, in particular, the amount of items on navigation, including e-navigation related matters (NCSR 3/WP.2, annex 3).

26.7 Having considered ways to provide more time for the Navigation Working Group to consider other matters than ships' routeing, the Sub-Committee agreed with the proposal by the Chairman to request authorization of the Committee for the Sub-Committee to establish an Expert Group on ships' routeing at future sessions, as appropriate, taking into account the submissions received on navigation related subjects.

26.8 The Sub-Committee agreed to establish at its next session Working/Drafting/Expert Groups on subjects to be selected from the following:

- .1 ships' routeing measures and mandatory ship reporting systems;
- .2 updates to the LRIT system;
- .3 interconnection of NAVTEX and Inmarsat SafetyNET receivers and their display on Integrated Navigation Display Systems;
- .4 guidelines associated with multi-system shipborne radionavigation receivers dealing with the harmonized provision of PNT data and integrity information;
- .5 additional modules to the *Revised Performance Standards for Integrated Navigation Systems (INS)* (resolution MSC.252(83) relating to the harmonization of bridge design and display of information;
- .6 guidelines for the harmonized display of navigation information received via communications equipment;
- .7 revised *Guidelines and criteria for ship reporting systems* (resolution MSC.43(64));
- .8 GMDSS Modernization;
- .9 Performance Standards for shipborne GMDSS equipment to accommodate additional providers of GMDSS satellite services;
- .10 ITU related matters;
- .11 [developments in GMDSS satellite services];
- .12 revised *Performance Standards for EPIRBs operating on 406 MHz* (resolution A.810(19)) to include Cospas-Sarsat MEOSAR and second generation beacons;

- .13 SAR matters;
- .14 revised *Guidelines for preparing plans for cooperation between search and rescue services and passenger ships* (MSC/Circ.1079); and
- .15 unified interpretation of provisions of IMO safety, security, and environment related Conventions,

whereby the Chairman, in consultation with the Secretariat, taking into account the submissions received on the respective subjects, would advise the Sub-Committee well in time before NCSR 4 on the final selection of such Groups.

26.9 The Sub-Committee also established Correspondence Groups on the following subjects:

- .1 additional modules to the Revised Performance Standards for INS;
- .2 guidelines associated with multi-system shipborne radio navigation receivers; and
- .3 modernization of the GMDSS.

26.10 Having noted the Intersessional meetings to take place in 2016, the Sub-Committee invited the Committee to authorize the holding of:

- .1 the thirteenth meeting of the Joint IMO/ITU Experts Group; and
- .2 the twenty-fourth session of the ICAO/IMO Joint Working Group,

in 2017, and to instruct the Secretariat to take action, as appropriate.

Date of the next session

26.11 The Sub-Committee noted that the fourth session of the Sub-Committee had been tentatively scheduled to take place from 6 to 10 March 2017.

27 ELECTION OF CHAIRMAN AND VICE-CHAIRMAN FOR 2017

27.1 In accordance with the Rules of Procedure of the Maritime Safety Committee, the Sub-Committee unanimously re-elected Mr. R. Lakeman (the Netherlands) as Chairman and Mr. N. Clifford (New Zealand) as Vice-Chairman for 2017.

28 ANY OTHER BUSINESS

Report on monitoring of ECDIS issues by the IHO

28.1 The Sub-Committee recalled that IHO, at the last session, had reported the outcome of the continuing monitoring by IHO of ECDIS issues related to the implementation of the carriage requirements in SOLAS regulations V/19.2.10 and V/19.2.11. The Sub-Committee further recalled that resolving the known issues with ECDIS operating anomalies had been progressing normally with the active involvement of all key stakeholders, and that no major new issue had been identified since NAV 58.

28.2 The Sub-Committee noted with appreciation the information provided by IHO (NCSR 3/28/Rev.1), reporting the outcome of the continuing monitoring by the IHO of ECDIS issues related to the implementation of the carriage requirements in SOLAS regulations V/19.2.10 and V/19.2.11. The Sub-Committee noted, in particular, that:

- .1 the ENC/ECDIS Data Presentation and Performance Check results had indicated a continuing improvement in the updating of ECDIS software and no new issue had been identified; and
- .2 the ENC/ECDIS Data Presentation and Performance Check for Ships was designed to alert mariners to the possibility that their ECDIS equipment software might require upgrading, but that it was not suitable to be used for checking the implementation of ECDIS carriage requirements.

28.3 Having noted additional oral information provided by IHO regarding the twelve-month period to keep the previous editions of S-52 and S-64 valid until September 2016, in accordance with the schedule proposed at NCSR 1, IHO proposed to extend the period until 31 August 2017 to enable shipowners and operators to update existing systems in accordance with the guidance concerning the maintenance of ECDIS software contained in MSC.1/Circ.1503.

28.4 The Sub-Committee agreed with the proposal for the extension of the aforementioned period until 31 August 2017.

28.5 In considering the information provided by IHO, views were expressed that:

- .1 the introduction of an annual performance check for ECDIS could result on issues being unaddressed for periods of up to twelve months and, therefore, consideration should be given to possible automated processes within ECDIS in order to identify issues as they occurred; and
- .2 the apparent and inappropriate use of the ENC/ECDIS Data Presentation and Performance Check by port State control should be brought to the Committee and the III Sub-Committee.

28.6 Following consideration, the Sub-Committee invited the Committee to note the aforementioned information and views, and to forward it to the III Sub-Committee so as to be properly addressed to all Port State Control MoUs.

Proposed development of new GISIS modules on MAS and GMDSS

28.7 The Sub-Committee considered document NCSR 3/28/2 (Secretariat) on the proposed development of new Global Integrated Shipping Information System (GISIS) modules on Maritime Assistance Services (MAS) and Global Maritime Distress and Safety System (GMDSS).

28.8 The Sub-Committee welcomed the initiatives by the Secretariat and agreed on the renaming of the current GISIS COMSAR module into the "Global SAR Plan" module; the development of a new GISIS module on Maritime Assistance Services, replacing the existing MSC.5 circular; and the development of a new GISIS module on shore-based facilities for the GMDSS, replacing the existing GMDSS.1 circular, and invited the Committee to endorse this action.

A study on enhancing maritime radar antenna positioning on board vessels

28.9 The Sub-Committee noted with appreciation the information provided by Islamic Republic of Iran (NCSR 3/INF.4) on a study on enhancing maritime radar antenna positioning on board vessels.

Vessel Traffic Services in a rapidly changing world

28.10 The Sub-Committee noted with appreciation the information provided by IALA (NCSR 3/INF.10) on Vessel Traffic Services in a rapidly changing world.

Report on the activities of the Amver Program

28.11 The Sub-Committee noted with appreciation the report provided by the United States (NCSR 3/INF.13) on the activities of the Amver Program.

Electromagnetic disturbance due to lighting using LED technology

28.12 The Sub-Committee noted with appreciation the information provided by France (NCSR 3/INF.14) on Electromagnetic disturbance due to lighting using LED technology.

ECDIS-AIS linking with VHF DSC for simplification of addressed VHF radiocommunication and increasing DSC efficiency

28.13 The Sub-Committee noted with appreciation the information provided by Ukraine (NCSR 3/INF.15) on ECDIS-AIS linking with VHF DSC for simplification of addressed VHF radiocommunication and increasing DSC efficiency.

An International Workshop to develop detailed plans for the Guideline on Software Quality Assurance and Human-Centred Design for e-navigation

28.14 The Sub-Committee noted with appreciation the information provided by Australia and the Republic of Korea (NCSR 3/INF.16) on an International Workshop to develop detailed plans for the *Guideline on Software Quality Assurance and Human-Centred Design for e-navigation*.

An International Workshop on the development of guidance on the S-Mode of operation of navigation equipment

28.15 The Sub-Committee noted with appreciation the information provided by the Republic of Korea (NCSR 3/INF.17) on an International Workshop on the development of guidance on the S-Mode of operation of navigation equipment.

The need to improve the performance of next generation AIS for e-navigation

28.16 The Sub-Committee noted with appreciation the information provided by the Republic of Korea (NCSR 3/INF.18) on the need to improve the performance of next generation AIS for e-navigation.

Investigation on improper occupation of marine VHF CH16 based on seafarers' feedback

28.17 The Sub-Committee noted with appreciation the information provided by IMLA (NCSR 3/INF.20) on an investigation on improper occupation of marine VHF Channel 16 based on seafarers' feedback.

Expressions of appreciation

28.18 The Sub-Committee expressed appreciation to the following delegates and observers, who had recently relinquished their duties, had retired or had been transferred to other duties or were about to, for their invaluable contribution to its work, and wished all of them a long and happy retirement or, as the case may be, every success in their new duties:

- Mr. Gabriel Carlos Adad of Argentina (on transfer);
- Mr. Hans-Heinrich Callsen-Bracker of Germany (on retirement);
- Mr. Marten Koopmans, Alternate Accredited Representative for the European Commission to IMO (on retirement); and
- Ms. Anna Wypych-Namiotko, Minister Counsellor (Maritime Affairs), Permanent Representative of the Republic of Poland to IMO (on return home).

29 ACTION REQUESTED OF THE COMMITTEE

29.1 The Maritime Safety Committee, at its ninety-sixth session, is invited to:

- .1 approve the corrections to the amendments to the existing traffic separation schemes "Off Friesland" and to the amendments to the mandatory route for tankers from North Hinder to the German Bight, and that these corrections take immediate effect for dissemination by means of corrigenda to COLREG.2/Circ.66, annex 3 and SN.1/Circ.327, annex 5 (paragraphs 3.2 and 3.23, and annexes 1 and 2);
- .2 adopt, in accordance with resolution A.858(20), the establishment of new, and amendments to existing, traffic separation schemes, for dissemination by means of a COLREG circular, as follows:
 - .1 establishment of new traffic separation schemes "Off Southwest Australia" (paragraph 3.24.1 and annex 3);
 - .2 establishment of a new traffic separation scheme "In the Corsica Channel" (paragraph 3.24.2 and annex 3);
 - .3 amendments to the existing traffic separation scheme "In the Approaches to Hook of Holland and at North Hinder" and associated measures, superseding the existing precautionary areas "In the approaches to Hook of Holland and at North Hinder" (paragraph 3.24.3 and annex 3);
 - .4 amendments to the existing traffic separation scheme "At West Hinder" (paragraph 3.24.4 and annex 3); and
 - .5 amendments to the existing traffic separation scheme "In Bornholmsgat" (paragraph 3.24.5 and annex 3);

- .3 adopt, in accordance with resolution A.858(20), the establishment of new, and amendments to existing, routing measures other than traffic separation schemes, for dissemination by means of an SN circular, as follows:
 - .1 establishment of new two-way routes and precautionary areas "Approaches to the Schelde estuary", superseding the existing precautionary area "In the vicinity of Thornton and Bligh Banks" (paragraph 3.25.1 and annex 4);
 - .2 establishment of new routing measures "In Windfarm Borssele" (paragraph 3.25.2 and annex 4); and
 - .3 amendments to the existing area to be avoided "Off the coast of Ghana in the Atlantic Ocean" (paragraph 3.25.3 and annex 4);
- .4 agree that the new routing measures be implemented, as follows:
 - .1 routing measures set out in paragraphs 3.24.1, 3.24.2 and 3.25.3 be implemented six months after their adoption by the Committee (paragraphs 3.26.2);
 - .2 routing measures set out in paragraph 3.24.5, be implemented on 1 January 2017 (paragraphs 3.26.3); and
 - .3 routing measures set out in paragraphs 3.24.3, 3.24.4, 3.25.1 and 3.25.2 be implemented on 1 June 2017 (paragraphs 3.26.4);
- .5 subject to formal promulgation as required under paragraph 2.1.3.1 of the annex to resolution A.1046(27), recognize the Galileo Global Navigation Satellite System as a component of the World-Wide Radio Navigation System, and instruct the Secretariat to prepare and issue the associated SN circular (paragraph 5.5.1);
- .6 endorse the view of the Sub-Committee that Iridium could be incorporated into the GMDSS subject to compliance with outstanding issues, as set out in annex 1 to document NCSR 3/WP.5, with the understanding that the Sub-Committee, based on the evaluation reports from IMSO, would advise the Committee on final recognition, when the issues identified have been complied with (paragraph 11.6);
- .7 clarify the scope of application of the performance standards for ship-borne GMDSS equipment to accommodate additional providers of GMDSS satellite services (output 5.2.5.6) (paragraph 12.7);
- .8 approve, in accordance with the revised Plan of Work (NCSR 1/28, annex 11), the outcome of the Detailed Review of the GMDSS and the continuation of the project in developing the Modernization Plan (paragraph 14.15 and annex 7);
- .9 encourage Member Governments and observer organizations to promote the availability of the industry Guidance as widely as possible, and agree that no further action has to be taken by the Sub-Committee with regard to the industry Guidance (paragraph 18.4);

- .10 approve the biennial status report of the Sub-Committee (paragraph 26.1 and annex 12);
- .11 agree on a change to the name of output 5.2.5.4 to "Developments in GMDSS satellite services" (paragraphs 26.2 and 26.3, and annex 12);
- .12 approve the proposed provisional agenda for NCSR 4 (paragraph 26.5 and annex 13);
- .13 authorize the holding of the thirteenth meeting of the Joint IMO/ITU Experts Group in 2017 and instruct the Secretariat to take action, as appropriate (paragraph 26.10.1); and
- .14 authorize the holding of the twenty-fourth session of the ICAO/IMO Joint Working Group in 2017 and instruct the Secretariat to take action, as appropriate (paragraph 26.10.2).

29.2 The Maritime Safety Committee, at its ninety-seventh session, is invited to:

- .1 adopt, with a view to the Assembly's subsequent confirmation, amendments to the General provisions on ships' routing (resolution A.572(14), as amended) on establishing multiple structures at sea (paragraph 4.7 and annex 5);
- .2 approve the draft amendments to the LRIT Technical documentation, Part I (MSC.1/Circ.1259, as revised) (paragraph 7.17 and annex 6);
- .3 approve the draft MSC circular on amendments to the International SafetyNet Manual (paragraph 15.11 and annex 8);
- .4 approve the draft MSC circular on amendments to the NAVTEX Manual (paragraph 15.12 and annex 9);
- .5 endorse the action taken by the Sub-Committee in instructing the Secretariat to convey the liaison statement on AIS uncontrolled novel applications to ITU-R Working Party 5B (paragraph 16.7 and annex 10);
- .6 approve the draft MSC circular on the revised unified interpretation of SOLAS regulation V/23.3.3 on Pilot transfer arrangements (paragraph 25.9 and annex 11);
- .7 authorize the Sub-Committee to establish an Expert Group on ships' routing at future sessions, as appropriate, taking into account the submissions received on navigation related subjects (paragraph 26.7);
- .8 endorse the renaming of the current GISIS COMSAR module into the "Global SAR Plan" module, the development of a new GISIS module on Maritime Assistance Services, replacing the existing MSC.5 circular, and the development of a new GISIS module on shore-based facilities for the GMDSS, replacing the existing GMDSS.1 circular; and
- .9 approve the report in general.

ANNEX 1

**DRAFT CORRECTIONS TO THE AMENDMENTS TO THE EXISTING TRAFFIC
SEPARATION SCHEMES "OFF FRIESLAND"
(COLREG.2/CIRC.66, ANNEX 3)**

Reference charts, Netherlands 1632 (INT 1420), 2011 edition, 1633 (INT 1417), 2010 edition and 1037 (INT 1045), 2011 edition.

Note: These charts are based on World Geodetic System 1984 datum (WGS 84)

(EXISTING GEOGRAPHICAL POSITIONS IN ED50 COINCIDING WITH THE PROPOSED NEW SYSTEM HAVE BEEN CONVERTED TO WGS 84.)

West Friesland scheme

(a) The eastern boundary of the separation zone is amended from existing position (19) north-eastward and newly bounded by the following geographical positions as follows:

(100) 53°55'.36 N 004°33'.85 E (21) 53°59'.18 N 004°35'.92 E

(b) A new separation zone is established bounded by a line connecting the following geographical positions:

(85) 53°59'.46 N 004° 39'.60 E (87) 53°57'.17 N 004°38'.40 E
(86) 53°59'.68 N 004° 42'.44 E

(c) A traffic lane for northbound traffic branching off from the main north-eastbound traffic lane is established between the separation zones in paragraphs (a) and (b).

(d) The western boundary of the existing north-eastbound traffic lane is amended from existing position (19) north-eastward and newly bounded by the following geographical positions:

(86) 53°59'.68 N 004°42'.44 E (100) 53°55'.36 N 004°33'.85 E
(87) 53°57'.17 N 004°38'.40 E

North Friesland scheme

~~(d)~~ (e) A separation zone is established bounded by a line connecting the following geographical positions:

(79) 54°04'.30 N 004°59'.98 E (81) 54°02'.76 N 005°04'.73 E
(80) 54°04'.78 N 005°05'.94 E (82) 54°02'.28 N 004°58'.76 E

~~(e)~~ (f) A separation zone is established bounded by a line connecting the following geographical positions:

(75) 54°02'.84 N 004°41'.41 E (77) 54°01'.98 N 004°54'.89 E
(76) 54°03'.99 N 004°56'.11 E (78) 54°00'.83 N 004°40'.34 E

~~(f)~~(g) A separation zone is established bounded by a line connecting the following geographical positions:

(71) 54°01'.52 N 004° 24'.62 E (73) 54°00'.54 N 004°36'.62 E
(72) 54°02'.55 N 004° 37'.69 E (74) 53°59'.21 N 004°19'.05 E

~~(g)~~(h) A separation zone is established bounded by a line connecting the following geographical positions:

(67) 54°00'.37N 004°09'.21 E (69) 53°58'.91 N 004°13'.93 E
(68) 54°01'.10 N 004°18'.89 E (70) 53°58'.66 N 004°09'.60 E

~~(h)~~(i) A traffic lane for eastbound traffic is established between the separation zone in paragraph ~~(g)~~ (h) and the following existing geographical positions:

(26) 53°57'.16 N 004°09'.94 E ~~(22) 53°57'.56 N 004°15'.09 E~~

~~(i)~~(j) A traffic lane for eastbound traffic is established between the separation zone in paragraph ~~(f)~~(g) and the amended separation zone of the traffic separation scheme "West Friesland".

~~(j) A traffic lane for eastbound traffic is established between the separation zones in paragraph (b) and (e).~~

(k) A traffic lane for eastbound traffic is established between the separation zone in paragraph ~~(e)~~(f) and the following geographical positions:

~~(85) 53°59'.46 N 004°39'.60 E (86) 53°59'.68 N 004°42'.44 E~~
(25) 53°59'.96 N 004°45'.92 E (96) 54°00'.60 N 004°54'.06 E

(l) A traffic lane for eastbound traffic is established between the separation zone in paragraph ~~(d)~~(e) and the following geographical positions:

(97) 54°00'.91 N 004°57'.94 E (98) 54°01'.38 N 005°03'.90 E

(m) A traffic lane for westbound traffic is established between the separation zone in paragraph ~~(d)~~(e) and the following geographical positions:

(94) 54°06'.14 N 005°06'.77 E (93) 54°05'.67 N 005°00'.81 E

(n) A traffic lane for westbound traffic is established between the separation zone in paragraph ~~(e)~~(f) and the following geographical positions:

(92) 54°05'.37 N 004°56'.94 E (91) 54°04'.20 N 004°42'.14 E

(o) A traffic lane for westbound traffic is established between the separation zone in paragraph ~~(f)~~(g) and the following geographical positions:

(90) 54°03'.91 N 004°38'.43 E (89) 54°03'.13 N 004°28'.46 E

(p) A traffic lane for westbound traffic is established between the separation zone in paragraph ~~(g)~~(h) and the following geographical positions:

(88) 54°02'.65 N 004°22'.44 E (31) 54°01'.87 N 004°08'.88 E

- (q) A traffic lane for south-westbound traffic is established between, on the west side, a line connecting the following geographical positions:

(68) 54°01'.10 N 004°18'.89 E (69) 53°58'.91 N 004°13'.93 E

and, on the east side, a line connecting the following geographical positions:

(71) 54°01'.52 N 004°24'.62 E (74) 53°59'.21 N 004°19'.05 E

- (r) A traffic lane for northbound traffic is established between, on the west side, a line connecting the following geographical positions:

(72) 54°02'.55 N 004°37'.69 E (73) 54°00'.54 N 004°36'.62 E

and, on the east side, a line connecting the following geographical positions:

(75) 54°02'.84 N 004°41'.41 E (78) 54°00'.83 N 004°40'.34 E

- (s) A traffic lane for southbound traffic is established between, on the west side, a line connecting the following geographical positions:

(76) 54°03'.99 N 004°56'.11 (77) 54°01'.98 N 004°54'.89 E

and, on the east side, a line connecting the following geographical positions:

(79) 54°04.30 N 004°59'.98 E (82) 54°02'.28 N 004°58'.76 E

- (t) A traffic lane for northbound traffic is established between, on the west side, a line connecting the following geographical positions:

(80) 54°04'.78 N 005°05'.94 E (81) 54°02.76 N 005°04'.73 E

and, on the east side, a line connecting the following geographical positions:

(83) 54°04'.84 N 005°09'.60 (84) 54°03'.26 N 005°08'.65 E

East Friesland scheme

- (u) The western boundary of the separation zone is amended as follows:

Existing position 32 is shifted east to new position (84) 54°03'.26 N 005°08'.65 E

Existing position 37 is shifted east to new position (83) 54°04'.84 N 005°09'.60 E

- (v) The traffic lane for eastbound traffic is amended as follows:

Existing position (28) I shifted east to new position (99) 54°01'.69 N 005°07'.70 E

- (w) The traffic lane for westbound traffic is amended as follows:

Existing position (29) I shifted east to new position (95) 54°06'.44 N 005°10'.57 E

Existing position (29) I shifted east to new position (95) 54°06'.44 N 005°10'.57 E

ANNEX 2

DRAFT CORRECTIONS TO THE AMENDMENTS TO THE MANDATORY ROUTE FOR TANKERS FROM NORTH HINDER TO THE GERMAN BIGHT (SN.1/CIRC.327, ANNEX 5)

Reference charts, Netherlands 1632 (INT 1420), edition 2011, 1633 (INT 1417), edition 2010 and 1307 (1045) editions 2011.

Note: These charts are based on World Geodetic System 1984 datum (WGS 84)

1 The "**Friesland junction**" precautionary area is replaced by:

Traffic separation scheme "**North Friesland**"

(a) A separation zone is established bounded by a line connecting the following geographical positions:

(79) 54°04'.30 N 004°59'.98 E	(81) 54°02'.76 N 005°04'.73 E
(80) 54°04'.78 N 005°05'.94 E	(82) 54°02'.28 N 004°58'.76 E

(b) A separation zone is established bounded by a line connecting the following geographical positions:

(75) 54°02'.84 N 004°41'.41 E	(77) 54°01'.98 N 004°54'.89 E
(76) 54°03'.99 N 004°56'.11 E	(78) 54°00'.83 N 004°40'.34 E

(c) A separation zone is established bounded by a line connecting the following geographical positions:

(71) 54°01'.52 N 004°24'.62 E	(73) 54°00'.54 N 004°36'.62 E
(72) 54°02'.55 N 004°37'.69 E	(74) 53°59'.21 N 004°19'.05 E

(d) A separation zone is established bounded by a line connecting the following geographical positions:

(67) 54°00'.37 N 004°09'.21 E	(69) 53°58'.91 N 004°13'.93 E
(68) 54°01'.10 N 004°18'.89 E	(70) 53°58'.66 N 004°09'.60 E

(e) A traffic lane for eastbound traffic is established between the separation zone in paragraph (d) and the following existing geographical positions:

(26) 53°57'.16 N 004°09'.94 E	(22) 53°57'.56 N 004°15'.09 E
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(f) A traffic lane for eastbound traffic is established between the separation zone in paragraph (c) and the amended separation zone of the traffic separation scheme "**West Friesland**".

~~(g) A traffic lane for eastbound traffic is established between the separation zones in paragraph (b) and the new separation zone of the amended traffic separation scheme "**West Friesland**".~~

~~(h)~~(g) A traffic lane for eastbound traffic is established between the separation zone in paragraph (b) and the following geographical positions:

(85) 53°59'.46 N 004°39'.60 E	(86) 53°59'.68 N 004°42'.44 E
(25) 54°59'.96 N 004°45'.92 E	(96) 54°00'.60 N 004°54'.06 E

~~(i)~~(h) A traffic lane for eastbound traffic is established between the separation zone in paragraph (a) and the following geographical positions:

(97) 54°00'.91 N 004°57'.94 E	(98) 54°01'.38 N 005°03'.90 E
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~~(j)~~(i) A traffic lane for westbound traffic is established between the separation zone in paragraph (a) and the following geographical positions:

(94) 54°06'.14 N 005°06'.77 E	(93) 54°05'.67 N 005°00'.81 E
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~~(k)~~(j) A traffic lane for westbound traffic is established between the separation zone in paragraph (b) and the following geographical positions:

(92) 54°05'.37 N 004°56'.94 E	(91) 54°04'.20 N 004°42'.14 E
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~~(l)~~(k) A traffic lane for westbound traffic is established between the separation zone in paragraph (c) and the following geographical positions:

(90) 54°03'.91 N 004°38'.43 E	(89) 54°03'.13 N 004°28'.46 E
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~~(m)~~(l) A traffic lane for westbound traffic is established between the separation zone in paragraph (d) and the following geographical positions:

(88) 54°02'.65 N 004°22'.44 E	(31) 54°01'.87 N 004°08'.88 E
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~~(n)~~(m) A traffic lane for south-westbound traffic is established between, on the west side, a line connecting the following geographical positions:

(68) 54°01'.10 N 004°18'.89 E	(64) (69) 53°58'.91 N 004°13'.93 E
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and, on the east side, a line connecting the following geographical positions:

(71) 54°01'.52 N 004°24'.62 E	(74) 53°59'.21 N 004°19'.05 E
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~~(o)~~(n) A traffic lane for northbound traffic is established between, on the west side, a line connecting the following geographical positions:

(72) 54°02'.55 N 004°37'.69 E	(73) 54°00'.54 N 004°36'.62 E
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and, on the east side, a line connecting the following geographical positions:

(75) 54°02'.84 N 004°41'.41 E	(78) 54°00'.83 N 004°40'.34 E
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2 The traffic separation scheme "East Friesland" is amended as follows:

~~(p)~~(o) The western boundary of the separation zone is amended as follows:

Existing position 32 is shifted east to new position (84) 54°03'.26 N, 005°08'.65 E
Existing position 37 is shifted east to new position (83) 54°04'.84 N, 005°09'.60 E

~~(q)~~(p) The traffic lane for eastbound traffic is amended as follows:

Existing position (28) is shifted east to new position (99) 54°01'.69 N, 005°07'.70 E

~~(r)~~(q) The traffic lane for westbound traffic is amended as follows:

Existing position (29) is shifted east to new position (95) 54°06'.44 N, 005°10'.57 E

3 The traffic separation scheme "West Friesland" is amended as follows

~~(s)~~(r) The eastern boundary of the separation zone is amended from existing position (19) north-eastward and newly bounded by the following geographical positions as follows:

(100) 53°55'.36 N 004°33'.85 E (21) 53°59'.18 N 004°35'.92 E

~~(t)~~(s) A new separation zone is established bounded by a line connecting the following geographical positions:

(85) 53°59'.46 N 004°39'.60 E (87) 53°57'.17 N 004°38'.40 E
(86) 53°59'.68 N 004°42'.44 E

(t) The western boundary of the existing north-eastbound traffic lane is amended from existing position (19) north-eastward and newly bounded by the following geographical positions:

(86) 53°59'.68 N 004°42'.44 E (100) 53°55'.36 N 004°33'.85 E
(87) 53°57'.17 N 004°38'.40 E

A traffic lane for northbound traffic branching off from the main north-eastbound traffic lane is established between the separation zones in paragraphs ~~(s)~~(r) and ~~(t)~~(s).

ANNEX 3

DRAFT NEW AND AMENDED TRAFFIC SEPARATION SCHEMES

NEW TRAFFIC SEPARATION SCHEMES "OFF SOUTHWEST AUSTRALIA"

(Reference charts:

Name	Number	Edition
Cape Naturaliste to Point D'Entrecasteaux	AUS335	Ed 2
Cape Leeuwin to King George Sound	AUS336	Ed 2
Cape Naturaliste to Cape Leeuwin	AUS756	Ed 3
Cape Leeuwin to Point D'Entrecasteaux	AUS757	Ed 3
Point D'Entrecasteaux to Point Hillier	AUS758	Ed 3

Electronic

ENC	AU240110	Ed 1 U/d 3
ENC	AU335114	Ed 1 U/d 2
ENC	AU335115	Ed 1 U/d 5
ENC	AU336115	Ed 1 U/d 0
ENC	AU336116	Ed 3 U/d 3

Note: These charts are based on the World Geodetic System 1984 datum (WGS 84))

Description of the Traffic Separation Schemes

I Off Cape Leeuwin

The traffic separation scheme Off Cape Leeuwin consists of the following:

(a) A two nautical mile wide traffic lane for north-west bound traffic between the separation zone and a line connecting the following geographical positions:

- (1) 34°00'.00 S 114°43'.00 E
- (2) 34°09'.30 S 114°42'.70 E
- (3) 34°28'.50 S 114°49'.30 E
- (4) 34°32'.96 S 114°56'.98 E

(b) A two nautical mile wide traffic lane for south-east bound traffic between the separation zone and a line connecting the following geographical positions:

- (5) 34°00'.00 S 114°33'.00 E
- (6) 34°10'.50 S 114°36'.90 E
- (7) 34°31'.50 S 114°44'.20 E
- (8) 34°37'.39 S 114°54'.32 E

- (c) A separation zone, one nautical mile wide, created by a polygon with the following geographical positions:

- (9) 34°00'.00 S 114°37'.09 E
- (10) 34°10'.00 S 114°39'.10 E
- (11) 34°30'.20 S 114°45'.90 E
- (12) 34°35'.68 S 114°55'.35 E
- (13) 34°34'.66 S 114°55'.96 E
- (14) 34°29'.49 S 114°47'.10 E
- (15) 34°09'.75 S 114°40'.30 E
- (16) 34°00'.00 S 114°38'.40 E

II Off Chatham Island

The traffic separation scheme Chatham Island consists of the following:

- (a) A two nautical mile wide traffic lane for north-west bound traffic between the separation **zone and a line connecting the following geographical positions:**

- (17) 35°23'.17 S 116°23'.52 E
- (18) 35°27'.95 S 116°31'.76 E
- (19) 35°27'.26 S 116°39'.78 E

- (b) A two nautical mile wide traffic lane for south-east bound traffic between the separation zone and a line connecting the following geographical positions:

- (20) 35°27'.78 S 116°20'.86 E
- (21) 35°33'.10 S 116°30'.00 E
- (22) 35°34'.50 S 116°39'.78 E

- (c) A separation zone, one nautical mile wide, created by a polygon with the following geographical positions:

- (23) 35°25'.93 S 116°21'.93 E
- (24) 35°30'.41 S 116°29'.64 E
- (25) 35°31'.38 S 116°39'.78 E
- (26) 35°30'.37 S 116°39'.78 E
- (27) 35°29'.59 S 116°30'.35 E
- (28) 35°25'.00 S 116°22'.47 E

NEW TRAFFIC SEPARATION SCHEME "IN THE CORSICA CHANNEL"

(Reference charts: France No.7013, 2015 edition, of the French Hydrographic Office (SHOM) and Italy No.40, 2015 edition, of the Italian Navy Hydrographical Institute.

Note: These charts are based on World Geodetic System 1984 Datum (WGS 84).)

Description of the traffic separation scheme

(a) A separation zone, 0.2 nautical mile wide, is centred upon a line connecting the following geographical positions:

- (1) 43°02'.00 N 009°37'.10 E
- (2) 42°54'.00 N 009°39'.60 E

(b) A traffic lane for southbound traffic is established between the separation zone in paragraph (a) above and a line connecting the following geographical positions:

- (3) 43°02'.00 N 009°33'.68 E
- (4) 42°54'.00 N 009°35'.30 E

(c) A traffic lane for northbound traffic is established between the separation zone in the paragraph (a) above and a line connecting the following geographical positions:

- (5) 43°02'.00 N 009°40'.00 E
- (6) 42°54'.00 N 009°43'.20 E

(d) A separation zone, 0.2 nautical mile wide, between the southbound traffic lane and an inshore traffic zone, is bounded by lines connecting the following geographical positions:

- (3) 43°02'.00 N 009°33'.68 E
- (4) 42°54'.00 N 009°35'.30 E
- (15) 42°54'.00 N 009°35'.02 E
- (14) 43°02'.00 N 009°33'.40 E

Description of the inshore traffic zone

An inshore traffic zone is established between the separation zone d) above and the Corsican coast, with the following geographical positions:

- (9) 42°39'.80 N 009°26'.90 E
- (8) 42°48'.00 N 009°36'.50 E
- (4) 42°54'.00 N 009°35'.30 E
- (15) 42°54'.00 N 009°34'.68 E
- (14) 43°02'.00 N 009°33'.20 E
- (3) 43°02'.00 N 009°33'.68 E
- (13) 43°07'.00 N 009°27'.20 E
- (10) 43°01'.60 N 009°24'.30 E
- (11) 43°00'.52 N 009°24'.02 E

Description of the precautionary areas

(a) A precautionary areas is established in the southern part of the traffic separation scheme bounded by the following geographical positions:

(4)	42°54'.00 N	009°35'.30 E	(7)	42°48'.00 N	009°36'.50 E
(6)	42°54'.00 N	009°43'.20 E	(8)	42°48'.00 N	009°45'.40 E

(b) A precautionary areas is established in the northern part of the traffic separation scheme bounded by the following geographical positions:

(3)	43°02'.00 N	009°33'.68 E	(12)	43°07'.00 N	009°27'.20 E
(5)	43°02'.00 N	009°40'.20 E	(13)	43°07'.00 N	009°41'.30 E

**AMENDED EXISTING TRAFFIC SEPARATION SCHEMES
AND ASSOCIATED ROUTEING MEASURES
"IN THE APPROACHES TO HOOK OF HOLLAND AND AT NORTH HINDER"**

(Ships' Routeing Publication, 2015 edition, B-II/10 and E-10)

Note: See "Deep-water route leading to Europoort" in part C, section II, area to be avoided "At Maas North traffic separation scheme" in part D, section I.

(Reference chart Netherlands 1630 (INT 1416), edition 2013)

Note: This chart is based on World Geodetic System 1984 datum (WGS 84))

Maas West Outer traffic separation scheme

(a) A separation zone to the north of the deep-water route leading to Europoort is outwardly bounded by a line connecting the following geographical positions:

(45)	52°01'.26 N	003°08'.37 E	(48)	51°58'.79 N	003°13'.86 E
(46)	52°01'.77 N	003°18'.81 E	(49)	51°59'.49 N	003°12'.47 E
(47)	51°59'.15 N	003°18'.13 E	(50)	51°59'.13 N	003°08'.26 E

Positions (48) and (49) are connected by a circular arc, centred on position (51). Radius of the arc 0.729 nautical miles:

(51) 51°58'.77 N 003°12'.66 E

and inwardly bounded by a line connecting the following geographical positions:

(52)	51°59'.88 N	003°13'.89 E	(54)	52°01'.05 N	003°08'.36 E
(53)	52°01'.26 N	003°12'.56 E	(55)	51°59'.40 N	003°08'.28 E

Note: The inside of the area in the separation zone bounded by a line connecting the geographical positions (52), (53), (54), (55), is designated as an anchorage area.

(b) A separation zone to the south of the deep-water route leading to Europoort is outwardly bounded by a line connecting the following geographical positions:

(56)	51°58'.49 N	003°17'.96 E	(58)	51°54'.77 N	003°07'.49 E
(57)	51°57'.64 N	003°08'.00 E	(59)	51°55'.99 N	003°17'.31 E

and inwardly bounded by a line connecting the following geographical positions:

(62)	51°55'.64 N	003°12'.25 E	(64)	51°56'.89 N	003°07'.87 E
(63)	51°57'.37 N	003°13'.55 E	(65)	51°55'.06 N	003°07'.54 E

Note: The inside of the area in the separation zone bounded by a line connecting the geographical positions (62), (63), (64), (65), is designated as an anchorage area.

- (c) A traffic lane for west bound traffic is established between the separation zone in paragraph (a) and a line connecting the following geographical positions:

(43) 52°04'.54 N 003°19'.53 E (44) 52°04'.37 N 003°08'.52 E

- (d) A traffic lane for east bound traffic is established between the separation zone in paragraph (b) and a line connecting the following geographical positions:

(60) 51°52'.59 N 003°16'.43 E (61) 51° 51'.22 N 003° 09'.29 E

North Hinder South traffic separation scheme

- (a) A separation zone is bounded by a line connecting the following geographical positions:

(79) 51°31'.07 N 002°07'.90 E (81) 51°45'.93 N 002°32'.60 E
(80) 51°29'.84 N 002°10'.62' E (82) 51°46'.67 N 002°31'.25 E

- (b) A traffic lane for north-east bound traffic is established between the separation zone in paragraph (a) and a line connecting the following geographical positions:

(83) 51°26'.97 N 002°16'.95 E (85) 51°43'.44 N 002°37'.21 E
(84) 51°36'.20 N 002°27'.25 E

- (c) A traffic lane for south-west bound traffic is established between the separation zone in paragraph (a) and a line connecting the following geographical positions:

(86) 51°33'.66 N 002°02'.17 E (87) 51°49'.53 N 002°25'.95 E

Off North Hinder traffic separation scheme (new)

- (a) A separation zone is bounded by a line connecting the following geographical positions:

(88) 51°37'.18 N 002°40'.85 E (91) 51°42'.07 N 002°39'.74 E
(89) 51°37'.18 N 002°42'.05 E (92) 51°43'.70 N 002°39'.18 E
(90) 51°38'.86 N 002°42'.70 E (93) 51°43'.63 N 002°38'.69 E

- (b) A traffic lane for north bound traffic is established between the separation zone in paragraph (a) above and a separation zone bounded by a line connecting the following geographical positions:

(94) 51°38'.02 N 002°47'.15 E (97) 51°44'.11 N 002°42'.45 E
(95) 51°39'.13 N 002°44'.78 E (98) 51°42'.25 N 002°41'.40 E
(96) 51°42'.31 N 002°41'.85 E (99) 51°39'.07 N 002°44'.34 E

(c) A traffic lane for south bound traffic is established between the separation zone in paragraph (a) and a line connecting the following geographical positions:

(100)	51°37'.20 N	002°38'.41 E	(85)	51°43'.44 N	002°37'.21 E
(101)	51°39'.01 N	002°38'.65 E			

Position coordinates for the following entries are unchanged:

Maas North traffic separation scheme
Maas North-West traffic separation scheme
Maas West Inner traffic separation scheme
Inshore traffic zone
North Hinder North traffic separation scheme

Maas Centre precautionary area

No change

Maas Junction precautionary area

No change

North Hinder Junction

A precautionary area is established off North Hinder and bounded by a line joining the following geographical positions, outside the existing "Deep-water route leading to Europoort" in part C, section II:

(85)	51°43'.44 N	002°37'.21 E	(54)	52°01'.05 N	003°08'.36 E
(93)	51°43'.63 N	002°38'.69 E	(45)	52°01'.26 N	003°08'.37 E
(92)	51°43'.70 N	002°39'.18 E	(44)	52°04'.37 N	003°08'.52 E
(97)	51°44'.11 N	002°42'.45 E	(77)	52°05'.55 N	003°06'.32 E
(103)	51°46'.15 N	002°43'.60 E	(71)	52°07'.29 N	003°03'.08 E
(102)	51°50'.10 N	003°03'.46 E	(74)	52°09'.03 N	002°59'.83 E
(61)	51°51'.22 N	003°09'.29 E	(76)	52°10'.99 N	002°56'.16 E
(58)	51°54'.77 N	003°07'.49 E	(104)	52°01'.23 N	002°42'.47 E
(65)	51°55'.06 N	003°07'.54 E	(105)	51°54'.88 N	002°33'.60 E
(64)	51°56'.89 N	003°07'.87 E	(87)	51°49'.53 N	002°25'.95 E
(57)	51°57'.64 N	003°08'.00 E	(82)	51°46'.67 N	002°31'.25 E
(50)	51°59'.13 N	003°08'.26 E	(81)	51°45'.93 N	002°32'.60 E
(55)	51°59'.40 N	003°08'.28 E			

Notes:

CAUTIONS

Cautions 1, 2, and 3 remain unchanged

NEW CAUTIONS

- 4 (Across the boundary between the "in the vicinity of Thornton and Bligh Banks" and "Windfarm Borssele" precautionary areas)

The "in the vicinity of Thornton and Bligh Banks" and "Windfarm Borssele" precautionary areas surround wind farm development zones. Ships, other than those that are engaged in supporting the construction of these sites, should avoid the areas as much as possible.

- 5 (Close by the area to be avoided in the Windfarm Borssele precautionary area).

In view of the limited width of the area to be avoided "Windfarm Borssele Pass", following ships are recommended to avoid the area:

- a ships exceeding 45 m in length; and
- b ships carrying dangerous goods.

Ships engaged in the construction and maintenance of wind turbines and their associated electrical infrastructure are permitted in this area

**AMENDED EXISTING TRAFFIC SEPARATION SCHEMES "AT WEST HINDER"
(Ships' Routing Publication, 2015 edition, B-II/7)**

(Reference charts:

- 1) British Admiralty chart 323 (INT 1564), 2013 edition
- 2) Flemish Hydrography charts 101 (INT 1474) and 102 (INT 1480)

Note: These charts are based on the World Geodetic System 1984 datum (WGS 84).)

Description of the traffic separation scheme

(a) A separation line connects the following geographical positions:

- | | | | |
|-----------------|--------------|-----------------|--------------|
| (1) 51°22'.45 N | 002°29'.92 E | (2) 51°19'.15 N | 002°16'.62 E |
|-----------------|--------------|-----------------|--------------|

(b) A separation zone is bounded by a line connecting the following geographical positions:

- | | | | |
|-----------------|--------------|-----------------|--------------|
| (2) 51°19'.15 N | 002°16'.62 E | (4) 51°19'.63 N | 002°10'.01 E |
| (3) 51°20'.83 N | 002°10'.91 E | | |

(c) A traffic lane for westbound traffic is established between the separation line/zone in paragraphs (a) and (b) above and a line connecting the following geographical positions:

- | | | | |
|-----------------|--------------|-----------------|--------------|
| (5) 51°23'.45 N | 002°29'.92 E | (7) 51°21'.25 N | 002°17'.62 E |
| (6) 51°22'.75 N | 002°26'.42 E | (8) 51°22'.83 N | 002°12'.29 E |

(d) A traffic lane for eastbound traffic is established between the separation line/zone in paragraphs (a) and (b) above and:

(i) a line connecting the following geographical positions:

- | | | | |
|-----------------|--------------|------------------|--------------|
| (9) 51°21'.45 N | 002°29'.92 E | (10) 51°19'.95 N | 002°24'.52 E |
|-----------------|--------------|------------------|--------------|

(ii) a separation zone bounded by lines connecting the following geographical positions:

- | | | | |
|------------------|--------------|------------------|--------------|
| (10) 51°19'.95 N | 002°24'.52 E | (13) 51°11'.23 N | 002°04'.09 E |
| (11) 51°12'.50 N | 002°11'.32 E | (14) 51°13'.15 N | 002°10'.22 E |
| (12) 51°09'.85 N | 002°03'.12 E | | |

Description of the precautionary area

A precautionary area with recommended direction of traffic flow is established by connecting the following geographical positions:

- | | | | |
|------------------|--------------|------------------|--------------|
| (5) 51°23'.45 N | 002°29'.92 E | (18) 51°23'.38 N | 002°46'.21 E |
| (15) 51°23'.45 N | 002°36'.92 E | (19) 51°20'.82 N | 002°46'.29 E |
| (16) 51°23'.81 N | 002°40'.30 E | (9) 51°21'.45 N | 002°29'.92 E |
| (17) 51°24'.25 N | 002°44'.52 E | (1) 51°22'.45 N | 002°29'.92 E |

Notes: An anchorage is established north of the scheme and is bounded by a line connecting the following geographical positions:

- | | | | | | |
|-------|-------------|--------------|------|-------------|--------------|
| (i) | 51°25'.95 N | 002°34.92' E | (iv) | 51°23'.95 N | 002°36'.90 E |
| (ii) | 51°25'.95 N | 002°40'.30 E | (v) | 51°23'.95 N | 002°33'.32 E |
| (iii) | 51°24'.40 N | 002°40'.30 E | | | |

Positions (iii) and (iv) of this anchorage are points [3] and [2] respectively of the boundary of the area to be avoided "At West Hinder".

**AMENDED EXISTING TRAFFIC SEPARATION SCHEMES
"IN BORNHOLMSGAT"
(Ships' Routeing Publication, 2015 edition, B-II/10)**

(Additional reference chart: N°189 (INT 1336) Baltic Sea – Bornholmsgat, 10th edition, April 2014 issued by the Danish Geodata Agency.

Note: This chart is based on World Geodetic System 1984 Datum (WGS 84).)

Description of amended Inshore Traffic Zone (ITZ).

Inshore traffic zone – Denmark (Bornholm)

(I) The limits of the inshore traffic zone along the Danish coastline lie between the following geographical positions:

(39) 55°17′.88 N	014°46′.42 E
(40) 55°22′.34 N	014°40′.28 E
(41) 55°13′.76 N	014°28′.42 E
(42) 55°05′.00 N	014°38′.47 E (revised position)
(43) 55°05′.00 N	014°42′.37 E (revised position)

ANNEX 4

DRAFT ROUTING MEASURES OTHER THAN TRAFFIC SEPARATION SCHEMES

**NEW TWO-WAY ROUTES AND PRECAUTIONARY AREAS
"APPROACHES TO THE SCHELDE ESTUARY"**

(Previously in *Ships' Routing* Publication, 2015 edition, E-9 and 10)

(Reference charts:

- 1) Netherlands 1630 (INT 1416) (published jointly by the Netherlands and United Kingdom).
- 2) Flemish Hydrography charts 101 (INT 1474) and 102 (INT 1480)

Note: All three charts are based on the World Geodetic System 1984 datum (WGS 84)

Note: The systems apply to all ships.

Revised description of the precautionary area "In the vicinity of Thornton and Bligh Banks"

The precautionary area is bounded by a line joining the following geographical positions:

(1)	51°30'.51 N	003°02'.68 E	(9)	51°38'.02 N	002°47'.15 E
(2)	51°32'.57 N	003°05'.80 E	(10)	51°36'.97 N	002°47'.75 E
(3)	51°33'.05 N	003°04'.81 E	(11)	51°35'.77 N	002°50'.36 E
(4)	51°33'.82 N	003°03'.53 E	(12)	51°35'.20 N	002°53'.01 E
(5)	51°44'.69 N	002°45'.36 E	(13)	51°34'.05 N	002°55'.01 E
(6)	51°44'.11 N	002°42'.45 E	(14)	51°32'.84 N	002°52'.37 E
(7)	51°42'.31 N	002°41'.85 E	(15)	51°29'.04 N	002°58'.32 E
(8)	51°39'.13 N	002°44'.78 E			

Description of the new precautionary area "At Gootebank"

A new precautionary area is established and bounded a line joining the following geographical positions:

(15)	51°29'.04 N	002°58'.32 E	(27)	51°25'.07 N	002°57'.92 E
(24)	51°26'.95 N	002°52'.72 E	(28)	51°25'.03 N	003°02'.85 E
(25)	51°25'.95 N	002°48'.12 E	(29)	51°25'.57 N	003°00'.78 E
(26)	51°25'.50 N	002°52'.92 E	(30)	51°27'.88 N	003°00'.32 E

Description of a new two-way route "Westpit" connecting the precautionary area "At Gootebank" with the precautionary area "Schouwenbank Junction"

(a) A boundary line connecting the following geographical positions:

(30)	51°27'.88 N	003°00'.32 E	(32)	51°33'.59 N	003°11'.03 E
(31)	51°29'.24 N	003°04'.32 E	(33)	51°39'.06 N	003°12'.56 E

- (b) A boundary line connecting the following geographical positions:
- | | | | | | | | | | |
|------|-----------|---|------------|---|------|-----------|---|------------|---|
| (15) | 51°29'.04 | N | 002°58'.32 | E | (34) | 51°34'.38 | N | 003°08'.68 | E |
| (1) | 51°30'.51 | N | 003°02'.68 | E | (35) | 51°38'.26 | N | 003°09'.99 | E |
| (2) | 51°32'.57 | N | 003°05'.80 | E | | | | | |

- (c) A two-way route is bounded by the boundary lines described in (a) and (b) above.

Description of a new SSE/NNW two-way route "Schouwenbank Southeast" adjoining the southern boundary of the precautionary area "Schouwenbank Junction"

- (a) A boundary line connecting the following geographical positions:
- | | | | | | | | | | |
|------|-----------|---|------------|---|------|-----------|---|------------|---|
| (36) | 51°36'.37 | N | 003°20'.73 | E | (37) | 51°39'.96 | N | 003°15'.40 | E |
|------|-----------|---|------------|---|------|-----------|---|------------|---|
- (b) A boundary line connecting the following geographical positions:
- | | | | | | | | | | |
|------|-----------|---|------------|---|------|-----------|---|------------|---|
| (38) | 51°37'.11 | N | 003°23'.49 | E | (39) | 51°41'.73 | N | 003°21'.05 | E |
|------|-----------|---|------------|---|------|-----------|---|------------|---|
- (c) A two-way route is bounded by the boundary lines described in (a) and (b) above.

Description of a new SSW/NNE two-way route "Schouwenbank Northeast" connecting the precautionary area "Schouwenbank Junction" with the precautionary area "Maas Junction"

- (a) A boundary line connecting the following geographical positions:
- | | | | | | | | | | |
|------|-----------|---|------------|---|------|-----------|---|------------|---|
| (40) | 51°54'.10 | N | 003°24'.29 | E | (41) | 51°47'.58 | N | 003°18'.25 | E |
|------|-----------|---|------------|---|------|-----------|---|------------|---|
- (b) A boundary line connecting the following geographical positions:
- | | | | | | | | | | |
|------|-----------|---|------------|---|------|-----------|---|------------|---|
| (42) | 51°52'.59 | N | 003°16'.43 | E | (43) | 51°48'.60 | N | 003°15'.38 | E |
|------|-----------|---|------------|---|------|-----------|---|------------|---|
- (c) A two-way route is bounded by the boundary lines described in (a) and (b) above.

Description of a new SSE/NNW two-way route "Schouwenbank Northwest" connecting the precautionary area "Schouwenbank Junction" with the precautionary area "North Hinder Junction"

- (a) A boundary line connecting the following geographical positions:
- | | | | | | | | | | |
|------|-----------|---|------------|---|------|-----------|---|------------|---|
| (44) | 51°51'.22 | N | 003°09'.29 | E | (45) | 51°47'.54 | N | 003°12'.78 | E |
|------|-----------|---|------------|---|------|-----------|---|------------|---|
- (b) A boundary line connecting the following geographical positions:
- | | | | | | | | | | |
|------|-----------|---|------------|---|------|-----------|---|------------|---|
| (46) | 51°50'.10 | N | 003°03'.46 | E | (48) | 51°46'.32 | N | 003°09'.80 | E |
| (47) | 51°49'.69 | N | 003°05'.66 | E | | | | | |
- (c) A two-way route is bounded by the boundary lines described in (a) and (b) above.

Description of the precautionary area "Schouwenbank Junction"

A new precautionary area is established and bounded a line joining the following geographical positions:

(35)	51°38'.26 N	003°09'.99 E	(43)	51°48'.60 N	003°15'.38 E
(33)	51°39'.06 N	003°12'.56 E	(45)	51°47'.54 N	003°12'.78 E
(37)	51°39'.96 N	003°15'.40 E	(48)	51°46'.32 N	003°09'.80 E
(39)	51°41'.73 N	003°21'.05 E	(49)	51°41'.66 N	003°11'.15 E
(41)	51°47'.58 N	003°18'.25 E			

Note:

CAUTIONS: (Across the boundary between the "in the vicinity of Thornton and Bligh Banks" and "Windfarm Borssele" precautionary areas)

The "in the vicinity of Thornton and Bligh Banks" and "Windfarm Borssele" precautionary areas surround wind farm development zones. Ships, other than those that are engaged in supporting the construction of these sites, should avoid the areas as much as possible.

NEW ROUTEING MEASURES "IN WINDFARM BORSSELE"

(Reference charts:

- 1) Netherlands 1630 (INT 1416) (the Netherlands and the United Kingdom)
- 2) Flemish Hydrography charts 101 (INT 1474) and 102 (INT 1480)

Note: All three charts are based on the World Geodetic System 1984 datum (WGS 84))

Description of the new precautionary area "Windfarm Borssele"

A new precautionary area is established and bounded by a line joining the following geographical positions:

(4)	51°33'.82 N	003°03'.53 E	(20)	51°45'.63 N	003°07'.06 E
(16)	51°36'.02 N	003°06'.54 E	(21)	51°48'.36 N	003°03'.98 E
(17)	51°40'.43 N	003°07'.83 E	(22)	51°45'.97 N	002°51'.93 E
(18)	51°41'.24 N	003°08'.07 E	(23)	51°45'.86 N	002°51'.39 E
(19)	51°41'.69 N	003°08'.20 E	(5)	51°44'.69 N	002°45'.36 E

Description of the new area to be avoided "Windfarm Borssele Pass"

A new area to be avoided is established within the precautionary area "Windfarm Borssele" and bounded by a line connecting the following geographical positions:

(17)	51°40'.43 N	003°07'.83 E	(viii)	51°45'.32 N	002°52'.80 E
(i)	51°40'.87 N	003°07'.06 E	(23)	51°45'.86 N	002°51'.39 E
* (ii)	51°41'.85 N	003°03'.78 E	(22)	51°45'.97 N	002°51'.93 E
*(iii)	51°42'.12 N	003°02'.99 E	(ix)	51°45'.56 N	002°52'.99 E
(iv)	51°42'.60 N	003°01'.55 E	(xi)	51°45'.08 N	002°55'.37 E
*(v)	51°43'.52 N	002°58'.38 E	(xii)	51°44'.74 N	002°56'.57 E
*(vi)	51°43'.87 N	002°57'.86 E	(xiii)	51°44'.16 N	002°58'.07 E
(vii)	51°44'.56 N	002°56'.14 E	(xiv)	51°43'.66 N	002°59'.79 E
(x)	51°44'.84 N	002°55'.20 E	(18)	51°41'.24 N	003°08'.07 E

* These positions are connected by circular arcs centred about the following points:

Arc centre	Arc radius	Connecting positions
(α) 51°42'.00 N 003°03'.40 E	0.283 NM	(ii) and (iii)
(β) 51°43'.59 N 002°57'.93 E	0.283 NM	(v) and (vi)

CAUTIONS

1 (Across the boundary between the "in the vicinity of Thornton and Bligh Banks" and "Windfarm Borssele" precautionary areas)

The "in the vicinity of Thornton and Bligh Banks" and "Windfarm Borssele" precautionary areas surround wind farm development zones. Ships, other than those that are engaged in supporting the construction of these sites, should avoid the areas as much as possible.

2 (Close by the area to be avoided in the Windfarm Borssele precautionary area)

In view of the limited width of the area to be avoided "Windfarm Borssele Pass", following ships are recommended to avoid the area:

- a ships exceeding 45 m in length; and
- b ships not carrying dangerous goods.

Ships engaged in the construction and maintenance of wind turbines and their associated electrical infrastructure are permitted in this area.

AMENDED AREAS TO BE AVOIDED
"OFF THE COAST OF GHANA IN THE ATLANTIC OCEAN"
(Originally adopted in December 2010 – ref. SN.1/Circ.293, annex)
(Ships' Routeing Publication, 2015 edition, D-III/27)

(Reference chart: British Admiralty 595, edition 3; 1383, edition 3; and 3100, edition 1.
Note: These charts are based on World Geodetic System 1984 Datum (WGS 84).)

Description of the areas to be avoided

Excepting ships authorized by the Ghana Maritime Authority, all ships should avoid following two areas within a radius of 5 nautical miles each centred on the following geographical positions:

04°32'.10 N, 002°54'.60 W; and

04°35'.34 N, 003°08'.40 W (new area).

ANNEX 5

**DRAFT RESOLUTION MSC.....(...)
(adopted on [....])**

**AMENDMENTS TO THE GENERAL PROVISIONS ON SHIPS' ROUTEING
(RESOLUTION A.572(14), AS AMENDED)**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECOGNIZING the importance of safeguarding manoeuvring space for ships in the vicinity of multiple structures at sea in ships' routeing systems,

TAKING INTO ACCOUNT the decision of the Sub-Committee on Navigation, Communications and Search and Rescue, at its third session, to include a guidance on the multiple structures at sea in annex 1 of the *General Provisions on Ships' Routeing*,

HAVING CONSIDERED, at its ninety sixth session, the text of proposed amendments to annex 1 of the *General Provisions on Ships' Routeing* (resolution A.572(14), as amended),

1. ADOPTS the amendments to the *General Provisions on Ships' Routeing* (resolution A.527(14), as amended), to include a guidance on the multiple structures at sea, the text of which is set out in the annex to the present resolution;
2. DETERMINES that amendments to the *General Provisions on Ships' Routeing* shall be adopted for implementation by the Committee in accordance with the provisions of resolution A.572(14), as amended, subject to confirmation by the Assembly;
3. INVITES Governments intending to submit proposals for the adoption of ships' routeing systems to take account of the annexed amendments to the General Provisions;
4. INVITES ALSO Governments concerned to bring the contents of this resolution to the attention of all parties concerned.

ANNEX

**AMENDMENTS TO THE GENERAL PROVISIONS ON SHIPS' ROUTEING
(RESOLUTION A.572(14), AS AMENDED)**

Amend annex 1 (resolution A.572(14), as amended), as follows:

Section 3 (Responsibilities of Contracting Governments and recommended and mandatory practices)

Insert after existing paragraph 3.13, a new paragraph 3.14, as follows:

"3.14 In planning to establish multiple structures at sea, including but not limited to wind turbines, Governments should take into account, as far as practicable, the impact these could have on the safety of navigation, including any radar interference. Traffic density and prognoses, the presence or establishment of routeing measures in the area, and the manoeuvrability of ships and their obligations under the 1972 Collision Regulations should be considered when planning to establish multiple structures at sea. Sufficient manoeuvring space extending beyond the side borders of traffic separation schemes should be provided to allow evasive manoeuvres and contingency planning by ships making use of routeing measures in the vicinity of multiple structure areas.",

and renumber the following paragraphs accordingly.

ANNEX 6

**DRAFT AMENDMENTS TO THE LRIT TECHNICAL DOCUMENTATION, PART I
(MSC.1/CIRC.1259, AS REVISED)
(English only)**

MSC.1/Circ.1259, as revised, annex, annex 3

1 Paragraph 3.2.6.1 is amended as follows:

"3.2.6.1 The application layer should use Transport Layer Security (TLS) ~~version 1.1 or later~~ subsequently referred to as TLS and should communicate via XML-based SOAP messages between the various LRIT components. The communications protocol and version should be periodically reviewed by the LRIT Operational Governance Body in line with industry standards. If a change to the communications protocol and/or version level to be used is required, this should be communicated in advance to all LRIT components for simultaneous implementation. The SOAP messages are exchanged between SOAP nodes by binding to the HTTPS protocol as defined by SOAP 1.2."

ANNEX 7

REVIEW AND MODERNIZATION OF THE GMDSS

OUTCOME OF THE DETAILED REVIEW OF THE GMDSS

1 Introduction

1.1 The Global Maritime Distress and Safety System (GMDSS) was adopted as part of the 1988 Amendments to the Safety of Life at Sea Convention (SOLAS). It was fully implemented in 1999. It has served the mariner and the maritime industry well since its inception, but some of the GMDSS technologies used have not reached their full potential, and some GMDSS functions could be performed by more modern technologies.

1.2 In addition to ships required to meet GMDSS requirements under regulation IV/1 of the SOLAS convention, other vessels (non-SOLAS vessels) also benefit from the GMDSS because search and rescue (SAR) communications are part of the GMDSS. Many national Administrations require non-SOLAS vessels to be equipped with GMDSS equipment, or equipment compatible with the GMDSS including some of the recommendations and standards of the ITU and IEC. The existing GMDSS architecture ensures that a ship in distress anywhere should always be heard and responded to. It encompasses a unique combination of international technical and operational standards and recommendations, and further a globally coordinated use of frequencies, for both on board ships and on shore.

1.3 In 2012, the Maritime Safety Committee approved a new unplanned output on the Review and modernization of the GMDSS (MSC 90/28, paragraph 25.18). The project includes a High-level Review (NCSR 1/28, annex 10), a Detailed Review (this report) and a Modernization Plan. The work was initially coordinated by the Sub-Committee on Radiocommunications, and Search and Rescue (COMSAR), with contributions from the Sub-Committee on the Safety of Navigation (NAV), and the Joint IMO/ITU Experts Group on Maritime Radiocommunication Matters (Experts Group). In 2013, the COMSAR and NAV Sub-Committees were merged into the Sub-Committee on Navigation, Communications and Search and Rescue (NCSR) which carries on the work along with the Sub-Committee on Human Element, Training and Watchkeeping (HTW), and supported by the Experts Group and the ICAO/IMO Joint Working Group on Harmonization of Aeronautical and Maritime Search and Rescue.

1.4 This Detailed Review took place from 2013 to 2016. It builds on the outcome of the High-level Review of the GMDSS (NCSR 1/28, annex 10) and sets the agenda for the Modernization Plan. As a result of the Detailed Review, no new carriage or retrofit requirements for ships are proposed, although consideration of a requirement for all lifeboats and at least some liferafts to be equipped with SARTs is recommended. Some equipment will evolve over time to use newer technologies, and updates of equipment may be necessary as a result of decisions of future competent ITU World Radiocommunication Conferences (WRCs), e.g. if spectrum allocation and/or regulatory provisions are amended. Where new technologies are introduced, it is generally intended that ships can use existing equipment as long as that equipment is serviceable.

2 Additional satellite systems in the GMDSS

2.1 Inmarsat has been the sole provider of GMDSS satellite communication services since the inception of the GMDSS. Resolution A.1001(25) sets out the criteria for the provision of mobile satellite communication systems in the GMDSS and reflects that the Assembly had

noted that future mobile satellite communication systems might have the potential to offer maritime distress and safety communications. Resolution A.1001(25) did not anticipate all of the issues that might arise with the introduction of additional satellite systems.

Interoperability

2.2 Concerns were expressed about interoperability, referring to "the ability to conduct ship-to-ship, ship-to-shore, and shore-to-ship communications without regard to differing satellite systems in use by the communicating stations". However, when resolution A.1001(25) was developed, the issue of interoperability was discussed in depth, and it was recognized that this would mean more complexity than when operating with a single provider. This is actually not a new situation raised by the introduction of additional GMDSS satellite service providers. For instance, it is not necessary for a Rescue Coordination Centre (RCC) to have an Inmarsat terminal to communicate with a ship using the Inmarsat satellite system. The connection can be completed through the Public Switched Telephone Network (PSTN), although dedicated land lines may also be used. Similarly, current SafetyNet Maritime Safety Information (MSI) providers do not need to have Inmarsat terminals to provide their broadcasts. This would also be the case for additional satellite systems. Ships with different satellite systems are also connected to each other through the PSTN as well as the terrestrial radio services required in SOLAS regulations IV/10.1.2 and 10.2.

2.3 However, NAVAREA coordinators, Sub-Area coordinators and national coordinators under resolution A.706(17), and METAREA coordinators and issuing services under resolution A.1051(27), are required to monitor their broadcasts to ensure that the messages have been correctly transmitted. These requirements are typically met by having the relevant satellite terminals.

2.4 RCCs, as well as NAVAREA and METAREA coordinators, make use of Enhanced Group Calls (EGC). These would have to be duplicated on each GMDSS satellite service. Furthermore, there is no standard EGC message format, so it is possible that EGC messages may have to be reformatted for different satellite systems. This could cause delays where time is of the essence, such as a distress alert relay on short notice.

2.5 Other concerns were raised on using the PSTN and Internet Protocol (IP) for prioritized distress communications. IP telephony and communication, has become more extensively used, but may be more vulnerable than existing PSTN networks. Satellite communications are dependent on shore-to-shore communication systems in use whether PSTN or any other landline links. The current system sometimes relies on the PSTN, but a standard PSTN line or similar may not be sufficient for any shore-based GMDSS communications. In the early Inmarsat-C implementation days there was a requirement that a dedicated (leased) line should be available between the land earth station (LES) and the Rescue Coordination Centre (RCC). Dedicated communication lines or other high availability and reliability connections may be necessary for the shore based network.

Cost implications

2.6 Inmarsat charging policies are covered in resolution A.707(17), which recommends that coast earth stations not be charged for:

- ship-to-shore and shore-to-ship distress traffic;
- urgent ship-to-shore navigational and meteorological danger reports using record communications; and
- medical assistance for persons in grave and imminent danger.

- 2.7 Furthermore, resolution A.707(17) recommends that ships not be charged for:
- meteorological reports;
 - ship position reports; and
 - medical advice and assistance messages other than those referred to in paragraph 2.6.

2.8 The same charging policies should apply to any new GMDSS satellite service provider.

2.9 Land stations and ships typically subscribe to Inmarsat services and pay additionally for the amount of voice and data services they receive or transmit, other than those listed in paragraphs 2.6 and 2.7. The addition of new satellite service providers should allow users to compare service plans and charges, which might result in reduced expenses for them, and might result in a wider range of available services.

2.10 Cost implications for SAR authorities should not change because they should not be charged for distress traffic. They should also not have to install additional mobile earth stations, because they will be able to communicate with ships served by new GMDSS satellite service providers, using existing hardware and systems because they should all be interoperable. However, they may find that it is more efficient to have their own mobile earth station for each GMDSS satellite service provider.

2.11 There could be cost implications for MSI providers. With the exception of urgent ship-to-shore navigational and meteorological danger reports, they pay Inmarsat for the SafetyNet broadcasts. It is to be expected that any new satellite service provider would impose comparable charges. Because the MSI providers would have to provide their broadcasts over all GMDSS satellite systems, the addition of one new satellite service provider could double their costs. A third could triple their costs. A solution would be to add MSI broadcasts to the resolution A.707(17) list that MSI providers are not charged for (see paragraph 2.6). This would mean that satellite service providers would have to recover their costs for this service from the basic subscription fees paid by coast earth stations and ship stations, and consequently those fees might increase.

2.12 Unless there is a reliable way for NAVAREA coordinators, Sub-Area coordinators, national coordinators, and METAREA coordinators and issuing services to monitor their broadcasts indirectly, they would need to obtain and operate terminals for any new GMDSS satellite service provider.

Frequency coordination

2.13 Concern was expressed regarding frequency coordination. Coordination should be carried out in accordance with the relevant procedures of the Radio Regulations. Any additional necessary frequency coordination should be able to be carried out at WRC-19 to avoid delays in the GMDSS modernization programme. An agenda item to support the introduction of an additional satellite provider into the GMDSS has been included in the agenda of WRC-19.

ITU List V and MARS Database

2.14 Resolution A.887(21) covers the establishment, updating and retrieval of information in GMDSS databases. This recommendation provides in paragraph 7 of the Annex that "all Inmarsat equipment should be registered with Inmarsat". The implication is that Inmarsat

identities do not need to be included in the databases, even though paragraph 8.11 says that they should include "radio installations (Inmarsat-A, B, C, M, VHF DSC, etc.) for ship and survival craft".

2.15 When records in the MARS database are examined, it is apparent that some ship listings include their Inmarsat identities, and others do not.

2.16 Resolution A.887(21) should be revised to apply to all GMDSS satellite service providers. It is preferred that satellite service provider identities be included in databases such as List V in MARS.

Implications for the Modernization Plan

2.17 SOLAS chapter IV should be revised to provide for other GMDSS satellite service providers in addition to Inmarsat.

2.18 Possible ways for MSI providers to provide and monitor MSI broadcasts over multiple GMDSS satellite service providers should be identified, with a view to minimizing the costs, or at least the cost increases for MSI providers. Resolution A.707(17) could be revised to provide for shore-to-ship MSI broadcasts without charge to the originator.

2.19 Formatting of EGC should be standardized if possible to minimize delays, and if possible, a way should be found to transmit EGC simultaneously on all GMDSS satellite service providers.

2.20 Resolution A.887(21) should be clarified so as to ensure that satellite service provider identities are included in national databases and List V in MARS.

2.21 IMO instruments applying to Inmarsat should be reviewed and should be revised, if appropriate, to apply to all GMDSS satellite service providers. See the annex for a listing of instruments that are affected.

3 Redefinition of Sea Area A3

3.1 The High-level Review developed several options for revising the definition of Sea Area A3, and left the final decision to the Detailed Review. The revised definition of Sea Area A3 will be:

"Sea area A3 means an area, excluding sea areas A1 and A2, within the coverage of a recognized mobile-satellite communication service supported by the ship earth station carried on board in which continuous alerting is available."

3.2 The Communications Working Group at NCSR 2 (NCSR 2/WP.5) identified consequential matters to be considered with regard to the new definition, and the effect on Sea Area A4. Sea Area A3 will be different for each different mobile-satellite communication service. Sea Area A4 is not redefined, but because it is the sea area not included in Sea Areas A1, A2, and A3, it will be different for ships using different mobile-satellite service providers, and would not exist in the case of a satellite service provider with global coverage.

HF carriage requirements

3.3 One important consequence of the new A3 definition is that it is now a purely satellite service area. The "HF alternative" is still available to a ship which operates beyond Sea Area A2 but does not use a recognized mobile-satellite communication service. Such ships will

now be operating in Sea Area A4 which is no longer just polar regions. HF can also be used in Sea Area A3 as a secondary means of alerting for a ship using a recognized mobile-satellite communication service.

Promulgation of MSI by HF

3.4 Because the new definition of Sea Area A3 has the consequence that Sea Area A4 is not restricted to the polar areas, careful consideration should go into how it is ensured that the required MSI will be available to all ships, regardless of their choice of equipment and area of operation.

3.5 Currently, with Inmarsat as the only satellite provider for GMDSS, it is assumed that MSI will be available through the Inmarsat EGC service in areas outside NAVTEX coverage (except for the polar areas). In the future, additional satellite providers may become part of GMDSS, and consequently the issue will become slightly more complex. However, this issue is not only related to the modernization process but also to the recognition of new satellite service providers in the existing GMDSS.

3.6 It is not known whether EGC-receive-only equipment will be available for the new satellite systems. If that would be the case, the modernized GMDSS would not require significant changes to the current use of HF MSI. Decisions and assumptions for the availability of "New EGC" and "New EGC-receive-only-equipment" should be made in order to decide on which carriage requirements should be included in the revised SOLAS chapter IV.

3.7 Nevertheless, it would be valuable if the modernized GMDSS would provide for better and more user-friendly means for ships to receive HF MSI and, thereby, giving additional flexibility to the shore-based infrastructure on how MSI is chosen to be distributed. It could, therefore, be considered whether it would be feasible to require "Future NAVTEX receivers" to be combined NAVTEX and NAVDAT receivers, and that they would be required to receive on 490, 500 and 518 kHz and additionally on all designated HF MSI frequencies (see paragraphs 6.1 and 6.3).

Transitional arrangements

3.8 There should be no difficult transitional problems with respect to the new Sea Area A3 definition. However, ship certificates will need to change. For Inmarsat users, nothing else changes. For future ship certificates for ships operating in A3, the ship's operational area will need to be compared with the provider's service area to determine if the ship will need to be equipped for Sea Area A4. A GMDSS satellite service provider declares its service area when it applies for recognition under resolution A.1001(25).

Obligations for shore authorities provision of services and implications for SAR

3.9 Shore authorities are obligated to provide MSI in their NAVAREAs for the dissemination of Navigational warnings (resolution A.706(17), as amended), and in the METAREAs for the dissemination of meteorological forecasts and warning to shipping (resolution A.1051(27)). Search and rescue services are provided in Search and Rescue Regions (SRRs) under the responsibility of the coastal States. The redefinition of Sea Area A3 does not affect either of these.

Implications for the GMDSS Master Plan

3.10 The GMDSS Master Plan (currently the GMDSS.1 circular) will need to be revised and possibly reorganized because it lists stations that operate in the various Sea Areas.

Implications for amendments to Model Courses

3.11 Mariner training will be affected and amendments to STCW including Model Courses may be required. Model Courses will, in general, need to be revised to reflect the new Sea Area A3 definition and its effect on Sea Area A4, together with other amendments to chapter IV. Mariner training will be affected and amendments to STCW may be required. Work on these matters should be referred to the HTW Sub-Committee.

Implications for non-SOLAS vessels

3.12 Non-SOLAS vessels are vessels that do not fall within the scope of SOLAS regulation IV/1. The redefinition of SOLAS Sea Area A3 should not affect vessels to which regulation IV/1 does not apply.

Effects on ship's certificates

3.13 Ship certificates will require definition of the geographical area in which the ship is permitted to operate with respect to Sea Areas A3 and A4. This can be accomplished by indicating the ship's GMDSS satellite service provider in brackets after the "A3", such as "A3 (Worldwidesat)".

3.14 Alternatively, a geographical presentation could be added to the "Record of Equipment" list in the certificates and considered under chapter I, regulations 12, 13 and 14, and matched with the satellite service provider's service area. This seems much more difficult than the option in paragraph 3.13 and is not recommended.

3.15 However, a ship with two different service providers, e.g. Inmarsat and a regional provider, would introduce some complexity. In that case, there would be a need to identify the intersection of the providers' operational areas.

3.16 Administrations, port State control authorities, and classification societies will need to be aware of the change to Sea Area A3/A4, and a suitable transition period needs to be identified for certificates.

Satellite equipment carriage options

3.17 As with Inmarsat, ships will need to carry satellite terminals approved to work with their selected service provider.

Implications for the Modernization Plan

3.18 SOLAS regulations, including as a minimum IV/2, IV/10 and IV/11, will need to be revised to reflect the revised Sea Areas A3 and A4.

3.19 Determine whether it is possible and feasible to retain the current requirement to be able to receive MSI using EGC (SOLAS regulation IV/7.1.5), taking into account the new definition of Sea Area A3 and the inclusion of new satellite providers in the GMDSS.

3.20 Depending on conclusions under paragraph 3.19, determine whether changes are required to the availability of HF-MSI in certain areas as a consequence of the new definition of Sea Area A3 and the inclusion of new satellite providers in the GMDSS

3.21 Determine the feasibility of combined NAVTEX and NAVDAT receivers, able to receive on 490, 500 and 518 kHz and additionally on all designated HF MSI frequencies.

3.22 The GMDSS Master Plan (currently the GMDSS.1 circular) will need to be revised and possibly reorganized and will need to include the service areas for the GMDSS satellite service providers.

3.23 Model Courses will in general need to be revised to reflect the new Sea Area A3 definition and its effect on Sea Area A4, together with other amendments to chapter IV. The HTW Sub-Committee should consider these issues.

3.24 Administrations, port State control authorities, and classification societies need to be informed of the change to Sea Area A3/A4, and a suitable transition period needs to be identified for certificates.

4 The role of MF/HF

4.1 HF communications would remain the required communication system for Sea Area A4, providing a communication option for those ships that operate outside their satellite/A3 (e.g. regional) areas, or that do not subscribe to a satellite service covering their area of operation. MF DSC and radiotelephony at present are required in Sea Area A3, even when the ship has Inmarsat GMDSS satellite service. This provides a medium-range open channel ship-to-ship communications option for SAR on-scene operations. It is also important to maintain MF/HF communication systems, taking into account the need to have a back-up system in case satellite communication systems fail due to solar events. However, MF/HF communication systems may be also temporarily affected by these events.

4.2 From the GMDSS Master plan, it appears there are 95 HF DSC coast stations and 15 HF NBDP MSI coast stations. From others sources (French hydrography service – SHOM), there are still 30 HF facsimile stations and 330 HF stations dedicated to general radio communication for radiotelephony, radiotelegraphy and data. These numbers are very difficult to verify either by IMO and ITU because the information is based on each Government's declaration. They include dormant or under-utilized stations. And when looking on a world map of the distribution of HF stations, there is clearly a lack of participating HF stations in certain areas. There is no incentive for these stations to provide GMDSS-related communications as well as general radiocommunications because there is no possibility of generating sufficient income. An option for a commercially viable HF service is to combine military, commercial, maritime, land mobile services, etc., and some governmental entities are showing interest in the concept.

4.3 The HF coastal stations of China are operating and playing an important role in maritime safety. The Shanghai HF coast station operating DSC service receives and deals with large quantities of on-air testing from ships operating in the region of the northwest Pacific. The Guangzhou HF coast station operating on general communication channels, provides general and safety services for both merchant ships and large quantities of fishing boats operating in South China Sea. According to the statistical information, the general communication traffic taken by Guangzhou station for fishing boats reached 211,829 minutes in 2013, and 200,593 minutes in 2014. The station completed five cases of real distress communication from fishing boats on HF channels in 2013, and four cases in 2014.

Distribution of HF stations

4.4 It appears, from information in the GMDSS Master plan, that HF DSC station distribution does not follow the basic principle for establishing HF DSC coast stations for sea area A3 and A4 as indicated in resolution A.801(19), annex 2, appendix 1. The majority of HF DSC coast stations are located in an area around the Equator. In some regions of the world there is a concentration of HF DSC coast stations and in some other regions, in particular in northern latitudes, there are few HF stations.

4.5 Then, if a majority of HF DSC coast stations are working on all HF bands (i.e. 4, 6, 8, 12 and 16 MHz), there are still some HF coast stations with no long-range HF communication capability in all HF bands. If we take into account the 330 HF coast stations dedicated to general radio communications, we may find some stations to be able to complete a global distribution of HF stations. Hence, the capability to have communication in all HF bands should be required. HF stations should also be fitted with adequate shore-based telecommunication infrastructure to relay a distress call to the appropriate SAR service.

4.6 It appears from this finding that the issue of the distribution of HF stations can only be dealt at an international level with the help of the general methodology that has already been established in resolution A.801(19).

Distress communications

4.7 To ensure a HF distress alert from a ship will be received ashore, some basic requirements are needed for the HF radio installation of the ship:

- .1 to transmit a distress alert on all HF bands, in order to be sure to reach a HF station at any time of the day and anywhere;
- .2 to have a proper aerial installation; and
- .3 to have a transmitting power at least equal to 250 Watt PEP¹.

If these conditions are met, different HF coast stations would be able to receive a distress alert from a ship, with the stations receiving the distress alert on a different HF band. The routing of the distress alerts will lead the distress alert to the RCC in charge of the search and rescue region (SRR) where the ship in distress is located. This solution may provide redundant information to the RCC, but this is a simple solution. It relies on the importance of shore-based telecommunication to route the distress alert.

4.8 Selecting a reliable frequency for HF communications is greatly influenced by atmospheric conditions and therefore reliant on the experience of the operator to know what frequency is the best choice for successful HF communications. A solution may be based on an automatic roaming logging of the ship to the appropriate/closest HF coast station. This system would automatically adapt the HF logging to the position, but whatever the time, all HF frequency bands would be used to send a distress alert to the appropriate HF DSC coast station. This solution would reduce the number of HF stations to receive a distress alert, so there is a danger that the appropriate logged HF station is not operative at the time of the distress alert. Without a solution to secure reception (duplication of receiver for instance) the solution in paragraph 4.7 seems to be the simpler.

4.9 Automated frequency scanning and Automatic Link Establishment (ALE) could be a solution to HF communication either on radiotelephony or radiotelegraphy or data transmission. ALE eliminates the need for operators to understand frequency selection based on varying propagation characteristics. Two stations would communicate on HF but without operators knowing on which frequency they are working. Consideration would have to be given to compatibility of DSC and ALE. Digital transmission would simplify the use of text messaging with the help of a dedicated computer.

¹ These radios are required to have a minimum power of 60 W PEP, but less than 400 W. 250 W seems to be the typical maximum power available for many existing radios.

SAR communications

4.10 Appendix 15 of the Radio Regulations lists frequencies that may be used for distress or safety purposes by mobile stations engaged in coordinated SAR operations (AERO SAR frequencies for instance: 3023 kHz, 4125 kHz, and 5680 kHz). Ship-to-aircraft communication is intended to be short-range, so lower frequencies in the spectrum using the ground wave are appropriate. Resolution 354 of the Radio Regulations, section 8 says, "Any aircraft required by national or international regulations to communicate for distress, urgency or safety purposes with stations of the maritime mobile service shall be capable of transmitting and receiving class J3E emissions when using the carrier frequency 2182 kHz or the carrier frequency 4125 kHz." These frequencies should be sufficient.

MSI

4.11 The HF NBDP MSI coast station and HF facsimile coast station infrastructure may be used for NAVDAT HF with the installation of suitable transmitter equipment. Further studies should be made to check the global coverage of this system based on present infrastructure taking into account the 330 HF stations used for general radio communications. NAVDAT is described in ITU-R Recommendation M.2058. The use of this technology would require coordination by IMO (see sections 0 - 0 for the discussion on the possible use of NAVDAT and implications for the Modernization Plan).

General communications

4.12 There are enough HF coast stations for general communications. But the technology may change the use of HF on board ship in simplifying the operation of HF radio equipment. Frequency scanning/ALE could be a solution as explained above for distress communication, hence tele-medical assistance, radiotelephony, text and data services could be performed on HF smoothly and as a complementary system to satellite communication (HF systems would not have enough capacity for real-time video exchanges).

Implications for the Modernization Plan

4.13 For ensuring reliable global coverage of HF GMDSS in the long term, the technical basis for determining the minimum number of HF GMDSS coast stations and their geographical distribution should be reviewed and, if necessary, consequential changes should be included in resolution A.801(19). The Radio Regulations have already been revised for HF data and 500 kHz is reserved for NAVDAT. Technological improvements can make HF easier to use.

4.14 Consider revising resolutions A.806(19) and MSC.68(68), annex 3, to include a requirement for frequency scanning and/or ALE.

5 HF DSC and NBDP in sea area A3

5.1 The use of NBDP in distress messages for sea areas A3 and A4 is negligible. Australia and Denmark have commented that NBDP for follow-up communications has fallen into disuse. Reception of NAVTEX is widely accomplished today with systems other than NBDP that are able to store and display NAVTEX messages.

5.2 The original purpose of NBDP as follow-up communication was to overcome language difficulties in voice communications. Delegations have reported that NBDP has never been used for this purpose. It is even more unlikely today that any crew in distress would initiate a follow-up communication via NBDP, compared to direct voice communication.

5.3 Users rarely or never use NBDP at all and therefore would most likely have difficulties in using it in an emergency situation.

5.4 At the technical level, HF NBDP is more robust compared to voice communication. However, the difference has not been quantified in previous considerations of the possibility to phase out the NBDP carriage requirement, and the "real-life" benefit of having the possibility to "fall back" to NBDP seems unclear.

5.5 HF MSI is still needed in the modernized GMDSS, but can be accomplished by means other than NBDP. It is concluded that NBDP is not required to receive MSI and is not necessary to fulfil any of the other functional requirements.

5.6 ITU-R Recommendation M.1798-1 describes characteristics of HF radio equipment for the exchange of digital data and electronic mail in the maritime mobile service. This resource has not yet been put to use operationally and might be useful for ship-to-ship and ship-to-shore communication.

Implications for the Modernization Plan

5.7 It can be concluded that NBDP can be removed as a carriage requirement for distress follow-up communications in Sea Areas A3 and A4. Existing devices can be permitted to remain in use to receive MSI, if a ship is not equipped with other equipment suitable for the purpose.

5.8 Consider the future role for HF data exchange under ITU-R Recommendation M.1798-1.

6 NAVDAT

6.1 WRC-12 established an exclusive primary allocation to the maritime mobile service in the band 495-505 kHz to fulfil possible requirements in the future, replacing the former Morse Code calling and distress allocation. NAVDAT is a digital broadcasting system designed to operate in the 495-505 kHz band using a multicarrier frequency modulation technique. It would coexist with the global system NAVTEX without mutual interference. The technology allows improved data rates with regard to the frequency band: rates up to 18 kbit/s are possible with NAVDAT, to compare to the 50 bit/s of NAVTEX².

6.2 Purchasing NAVDAT or combined NAVDAT/NAVTEX receivers would be a cost to shipowners, but the quantity and type of information available, including graphical data could prove beneficial. Shipowners would be able to continue to use existing NAVTEX-only receivers for many years. MSI providers would need to install or have access to the required shore infrastructure to provide NAVDAT service.

6.3 If widely adopted, NAVDAT could replace NAVTEX sometime in the future.

Implications for the Modernization Plan

6.4 SOLAS chapter IV should be revised to allow ships to use NAVDAT service in addition to or in place of NAVTEX in places where NAVDAT is available.

² See COMSAR 16/4/3 for a description of the digital system for broadcasting maritime safety and security-related information in the 500 kHz band (NAVDAT). Also: ITU-R Recommendation M.2010, characteristics of a digital system, named Navigational Data for broadcasting maritime safety and security related information from shore-to-ship in the 500 kHz band. ITU-R Recommendation M.2058-0, characteristics of a digital system named navigational data for broadcasting maritime safety and security related information from shore-to-ship in the maritime HF frequency band.

6.5 IMO and ITU should develop the necessary technical and operational recommendations and performance standards for international NAVDAT service. This work should be closely followed by the development of IEC standards for shipborne NAVDAT equipment.

6.6 The Modernization Plan should include development of NAVTEX/NAVDAT equipment standards for receiving all HF frequencies for MSI.

7 Shore-to-shore communications

7.1 Shore-to-shore communications are not part of the GMDSS functional requirements, but are essential for the planning and coordination of search and rescue operations. In chapter I, it is clear that SOLAS is intended to apply to ships, even though obligations for Contracting Governments and Administrations may be stated or implied in some parts of SOLAS, as in regulations IV/5.1 and V/4 to V/13. Furthermore, shore-to-shore communications are not solely related to ship safety; they may be used in the case of aeronautical distress on or over ocean areas. However, the establishment of guidance for coastal radio stations (CRS) and the development of IEC standards would be useful.

7.2 SOLAS regulation V/7 includes obligations for Contracting Governments with respect to search and rescue services. A requirement could be added to regulation V/7 for the establishment of reliable shore-to-shore communications and a Maritime Rescue Co-ordination Centre (MRCC) or a Central Alerting Point (CAP) that is responsible for receiving distress alert information and responding as part of a SAR system. Regulation IV/5 (Undertakings by Contracting Governments) could be revised to ensure that it includes adequate responsibilities for governments to ensure adequate global distribution of coastal radio stations, adequate shore-based telecommunication infrastructure for SAR, and adequate staffing for shore-based facilities.

7.3 The establishment of requirements for the shore network is not included in the proposed modernization programme, noting that:

- .1 shore-to-shore communications are not included in the GMDSS functional requirements for ships and therefore could be considered outside the scope of GMDSS modernization;
- .2 the present distribution of coastal radio stations participating in the GMDSS is inconsistent; and
- .3 the establishment of new responsibilities for Contracting Governments would probably be controversial and potentially expensive, resulting in delay in the GMDSS modernization effort.

Implications for the Modernization Plan

7.4 Guidance for CRS should be established through the development of IEC standards.

8 GMDSS equipment in SOLAS chapter III

8.1 SOLAS requirements for two-way VHF radiotelephone apparatus and search and rescue locating devices (originally Search and Rescue Transponders (SART)) were part of the 1983 SOLAS Amendments and placed in chapter III, which came into force in 1986 in advance of the GMDSS. However, these requirements form part of the GMDSS because they address some of the functional requirements and would be more naturally located in chapter IV.

Implications for the Modernization Plan

8.2 Except for communications equipment installed or always stowed in survival craft, the communications requirements for ships and life-saving appliances in chapter III, should be moved to chapter IV.

8.3 The "Record of Equipment" list in the certificates for these items will need to be appropriately amended.

9 Emergency devices for survival craft

9.1 The ICAO/IMO Joint Working Group on SAR (JWG) (IMO/ITU EG 10/4/5) expressed the view that PLBs should be considered to be carried as radio equipment for liferafts and/or carried on persons. These would be helpful by enabling RCCs to locate and track every survival craft because survival crafts may be drifting away from each other. However, the search and rescue locating devices required under current SOLAS regulation III/6.2.2 are intended for locating survival craft³. These devices can be either survival craft radar transponders (SART) operating with X-band radar, or AIS Search and Rescue Transmitters (AIS-SART).

9.2 PLBs are intended to be personal equipment and not for locating a survival craft. They are similar to Cospas-Sarsat EPIRBs, but are small and compact because they do not necessarily have to float, and have about half of the battery lifetime of an EPIRB. Like EPIRBs, they typically include a 121.5 MHz homing device. A PLB can be coded in several ways, e.g. like an EPIRB. But PLBs may not be connected to the ship via the MMSI or other coding, and the battery operational life is also a matter of concern.

9.3 The search and rescue experts subsequently agreed that radar SARTs and AIS-SARTs were appropriate locating devices for survival craft and that PLBs were not necessarily appropriate in this regard.

9.4 Requirements for alerting and locating equipment are based on the concept that radio and/or EPIRBs will provide the alert and location of a vessel in distress. SARTs, pyrotechnic distress signals, highly visible colours for survival craft and flotation equipment, and locating lights are all intended to assist rescuers on-scene or close to the scene to locate survivors. 406 MHz equipment cannot be used for locating a survival craft by ships in the vicinity after a distress alert has been transmitted from the ship of origin. At present, the only shipborne system that could locate an EPIRB is a radio direction finder (not required) to detect a 121.5 MHz homing signal. If a survival craft on the open sea at night in harsh weather condition would need assistance by the nearest ships in the area, their means of locating the survival craft could be limited to receiving position information from shore.

9.5 Radar SARTs have been provided on ships since 1986, but SAR cases do not record many instances where they were of use. There may be several reasons. One is that with the exception of one free-fall lifeboat (if the ship is so equipped), they are not carried on survival craft, but stowed in locations where they can be carried to survival craft. Only one or two are required to be carried on the ship, depending upon the size of the ship. As a result, it may be that they have not been put to use in many distress situations.

9.6 Radar SARTs should be able to be seen on X-band radars of ships responding to a distress, as well as maritime surveillance radars on SAR and military aircraft.

³ See also regulation IV/7.3

9.7 AIS-SART are relatively new devices, and are just beginning to be provided on ships, so their effectiveness has not yet been demonstrated in a SAR case, so far as is known. They are required in the same numbers as radar SARTs when they are used instead of radar SARTs. They should be visible on radar and other electronic chart screens such as ECDIS, equipped to display AIS targets. Likewise, they should be able to be seen on SAR and military aircraft equipped with AIS displays. In most cases, the range of detection of AIS-SARTs will be much greater than radar SARTs, especially from aircraft. However, older AIS receivers that have not been updated, will show AIS-SARTs as targets but will not display the "SART ACTIVE" text.

9.8 An advantage that an AIS-SART could have over the 121.5 MHz homer is that *with the appropriate display* on ships and aircraft, the position of the device will be shown. A direction finder for a 121.5 MHz signal will only indicate direction. Location will be indicated only when the indicated direction changes when an aircraft flies over the location. Furthermore, unless ships are equipped with 121.5 MHz direction finders (not required), they will not have any real-time information on the location of the survival craft. If the device is a PLB or something similar, the ship would have to rely on the position transmitted by or calculated from the 406 MHz signal relayed from Cospas-Sarsat. AIS-SARTs are more likely than 121.5 MHz homers to be detected by commercial as well as non-SOLAS ships. A new work item beginning in 2016 may result in a performance standard for EPIRBs that have both 121.5 MHz homing signals and AIS location.

9.9 A simple radio direction finder on certain ships would enable ships to locate distress or urgency radio transmissions in the VHF marine band and detect 121.5 MHz signals.

9.10 Location of survival craft might be improved by installing locating devices on survival craft, rather than just having a few stored on the ship to be carried to survival craft. This would not present a great problem for lifeboats, but might be more difficult for inflatable liferafts.

Implications for the Modernization Plan

9.11 Consider the development of a circular or other instrument to encourage Member Governments to adopt a requirement for certain categories of ships to carry VHF direction finders to detect 121.5 MHz signals and VHF marine band transmissions (for instance off shore industry vessels).

9.12 A decision needs to be made as to whether all lifeboats, and whether some or all inflatable liferafts should be equipped with installed locating devices. This would need to be coordinated with the SSE Sub-Committee and may be more appropriate as a requirement in chapter III of SOLAS, because this is where the lists of survival craft equipment are located.

10 Application of SOLAS chapter IV

10.1 In discussions on the detailed review, some delegations were of the opinion that SOLAS chapter IV should be applicable to a wider group of ships, others preferred to maintain the current status, and to leave the application to non-SOLAS ships to national authorities. With some exceptions for regional solutions, the GMDSS forms the core of the distress and safety system for ships worldwide, which will apply to almost all ships regardless of the scope of SOLAS chapter IV. Contracting Governments have the ability to specify which components of the GMDSS apply to their non-SOLAS ships.

10.2 Although appropriate emergency devices are defined for SOLAS ships, most SAR operations are reported to involve more numerous non-SOLAS vessels. A lack of command of the English language and also illiteracy may cause problems for these vessels. Nevertheless,

ITU has only one system as laid down in the Radio Regulations, which is applicable to all vessels. Furthermore, non-SOLAS vessels may serve as rescue resources. The radar SART/AIS-SART devices are more likely to be detected by these vessels than 121.5 MHz homers.

Implications for the Modernization Plan

10.3 It is not practical to extend the scope of application of SOLAS chapter IV to ships beneath 300 gross tonnage. However, it is recognized that the integration and participation of non-SOLAS vessels in the Modernized GMDSS remains important. Decisions on and changes in the Modernized GMDSS should therefore be made in a way that non-SOLAS vessels are not excluded from participating in the Modernized GMDSS. There are no direct implications for the Modernization Plan. However, it must be ensured that new and revised IMO and ITU instruments do not exclude non-SOLAS vessels from participating in the GMDSS for technical or economic reasons, and that such instruments as affect non-SOLAS vessels are compatible with the GMDSS. Since the application of GMDSS to fishing vessels has been stipulated in the Cape Town Agreement, consideration may be given in the future to revise the Cape Town Agreement for consistency with the Modernized GMDSS.

11 Standards for MOB devices to protect GMDSS integrity

11.1 Concern was expressed about Man Overboard (MOB) Devices, in particular that they may use GMDSS distress frequencies for situations which are not actually distresses, and that regulations may be necessary to protect the integrity of the GMDSS.

11.2 ITU-R Report M.2285-0 provides an overview of MOB devices and their mode of operation. However, as a report it only reviews current (presumably acceptable) practices. Recent revisions to ITU-R Recommendation M.493 and ITU-R Recommendation M.541 establish an equipment class and operational standards for DSC MOB devices. The revised recommendations establish a more well-defined set of requirements for the technical performance and operational procedures for these devices.

11.3 The existence and use of MOB devices may have significant implications for users of the GMDSS. For instance, a SOLAS vessel receiving a signal from such a device will be obliged to report and investigate the situation – with all the economical and other consequences that may have. In particular devices making use of GMDSS frequencies and technology are of concern in this respect.

11.4 In addition to MOB devices, "alternative" uses of GMDSS frequencies and technology are already seen in the operational environment – e.g. use of AIS for all sorts of tracking purposes. All possible measures should be taken to avoid such non-safety uses of the system.

Implications for the Modernization Plan

11.5 Because new revisions of ITU-R Recommendations M.493 and M.541 have been published by ITU, and because MOB devices are not a required part of the GMDSS under SOLAS, there appears to be no direct implication as part of the Modernization Plan.

11.6 Because MOB devices and other equipment – existing or to be developed – may have significant implications for all parties to the GMDSS, it is important that the Modernized GMDSS is protected from abusing use of its frequencies and technologies. Measures to protect the integrity of the Modernized GMDSS should be investigated and implemented. One measure for consideration will be the agenda item for WRC-19 which is to consider regulatory actions within the frequency band 156-162.05 MHz for autonomous maritime radio devices to

protect the GMDSS and AIS. Another consideration could be a liaison statement to ITU-R indicating that because non-SOLAS ships make use of GMDSS, and that in order to protect the integrity of GMDSS, it is necessary that ITU-R recommendations on GMDSS systems and frequency use are prescriptive.

12 Reducing false alerts

12.1 Unintentional false alerts have been a concern in the GMDSS. These false alerts waste time and money for responders, so anything that can be reasonably done to reduce them would be beneficial. One source of false alerts has been significantly reduced and those are DSC automatic distress alert relays on MF and HF frequencies.

12.2 EPIRBs can be a source of false alerts. They are also designed to activate automatically when launched, and several things can happen which can cause them to begin transmitting unintentionally. This can happen without the ship's crew being aware of the problem because 406 MHz and 121.5 MHz EPIRB transmissions are not normally received on the ship.

12.3 Japan provided some statistics on false alerts. This data is for all ships including foreign-flag ships in the Japanese Search and Rescue Regions (SRR) in 2014:

	Number of alerts	Number of false alerts	Percentage of false alerts
EPIRB	503	484	96.2%
ELT	132	129	97.7%
PLB	10	10	100%

A survey found that most false alerts were the result of human error, and that mariner education is important. Failure to remove the battery when disposing of the beacon was another cause of false alerts. False alerts as a result of beacon failure rarely occurred.

12.4 The United States Sarsat Office looked at the percentage of false alerts as a function of the beacon population by type:

False alerts as a percentage of beacon population		Percentage of total beacons registered
EPIRB	0.91 %	47%
ELT	4.33 %	18%
PLB	0.38 %	35%
SSAS	4.69 %	-
Overall	1.25 %	

Note: SSAS is not part of the GMDSS

By this analysis, EPIRBs and PLBs are much less of a problem than aircraft Emergency Locator Transmitters (ELT). The number of SSAS beacons is small, and that result may not be significant. One way to view the EPIRB result is that an individual EPIRB can be expected to transmit a false alert once every 110 years.

12.5 One proposal was to provide an audible signal when the EPIRB begins to transmit.

12.6 Another proposal was to require a system that would include a 406 MHz receiver on the bridge. This would require a significant expenditure throughout the SOLAS fleet and was not thought to be cost-effective. The Maritime Safety Committee has declined to include the consideration of a related proposal in the biennial agenda of the NCSR Sub-Committee (MSC 95/22, paragraph 19.10).

12.7 It was noted that, although not currently part of the GMDSS modernization proposal, the suggestion for a simple radio direction finder on certain SOLAS ships would enable ships to locate distress or urgency radio transmissions in the marine band and detect 121.5 MHz signals (see paragraph 9.9). This would also allow for monitoring of ship's EPIRBs to detect unintentional activations. In this regard, the suggestion was supported to invite IMO to encourage its Member Governments to consider such a requirement for certain categories of ships (for instance offshore industry vessels).

Implications for the Modernization Plan

12.8 No specific action has been identified to reduce false alerts. Manufacturers should be made aware of the problem, perhaps through a circular recommending that they seek to reduce the susceptibility of their equipment to generating false alerts (note resolution A.814(19) on *Guidelines for the avoidance of false distress alerts*). It should also encourage reduction of false alerts caused by human error. Proper disposal should be emphasized, including removal of the battery. Measures should be taken to guide/educate people on how to handle EPIRBs in order to avoid misactivation, including sea fearers, operators, shipyards (both for building and recycling), inspectors and surveyors.

13 Coordination with the work on the implementation of the e-navigation Strategy Implementation Plan

13.1 The GMDSS and other communication technologies are at the core of the e-navigation strategy, providing ship-to-shore and shore-to-ship exchange of data. AIS and ECDIS are the newest technologies included in SOLAS. AIS uses VHF maritime frequencies and ECDIS can indicate the position of the AIS signal on an electronic chart display. GMDSS satellite service providers will provide much of the communication capacity for e-navigation. VHF Data Exchange System (VDES) is another e-navigation technology in development that uses the VHF maritime frequencies. Furthermore, Digital Radio Mondial (DRM) has developed new capacity with digital transmission such as NAVDAT on MF.

13.2 Various e-navigation aspects considered included:

- .1 e-navigation gap analysis;
- .2 the need to integrate navigation systems and communication systems;
- .3 the need to read MSI in graphical display;
- .4 functionalities for shore-to-shore communications;
- .5 common shore-based system architecture (CSSA) for communications;
- .6 usability of equipment;
- .7 software quality assurance of equipment;
- .8 man-machine interface; and
- .9 the scalability to all types of vessels.

13.3 The GMDSS modernization project could be a framework to develop e-navigation communication by primarily securing in SOLAS the fundamental principles of communication for safeguarding human life at sea by the Contracting Governments.

13.4 The GMDSS modernization project could offer a possible common shore-based system architecture (CSSA) for communication by sharing for instance a Coastal Radio Station for different users: Rescue Co-ordination Centre (RCC), Maritime Assistance Service (MAS), Vessel Traffic Service (VTS), Maritime Safety Information (MSI) provider, Public Correspondence (PC).

Implications for the Modernization Plan

13.5 The GMDSS modernization project should support the e-navigation Strategy of IMO (MSC 85/26/Add 1, annex 20).

14 Role of VDES

14.1 The VHF Data Exchange System (VDES) was developed by IALA to address emerging indications of overload of the AIS VHF Data Link (VDL) and simultaneously enabling a wider seamless data exchange for the maritime community. VDES is capable of exchanging Application Specific Messages (ASM), facilitating numerous applications for safety and security of navigation, protection of marine environment, efficiency of shipping and others. VDES will prospectively have a significant beneficial impact on the maritime information services including Aids to Navigation and VTS in the future. It can potentially provide local MSI.

14.2 The VDES concept includes a satellite component. This system component might be suitable to be used for the transmission of MSI information in remote areas.

14.3 The VDES concept is being developed under of Agenda Item 1.9 for WRC-19.

Implications for the Modernization Plan

14.4 The use of VDES needs to be considered in future possible mechanisms for the distribution of MSI.

15 Role of text messages, digital data, and/or distress chat via satellite

15.1 Text messages and chat technologies are means of two-way communication, like voice and NBDP. Resolution A.1001(25) already addresses data communication systems. Under resolution A.1001(25), voice communication systems connect to the PSTN, and data communication systems connect to the public data communication network. Text messages and chat are data communication systems, so there may be no reason why they cannot be used for GMDSS communications. Safety-related messaging is also available through the AIS system.

Implications for the Modernization Plan

15.2 Consideration should be given to the possible SAR benefits of the inclusion of text messaging, digital data, and chat messaging capabilities.

15.3 Resolution A.1001(25) may need to be reviewed to investigate whether text messages, digital data, and chat can be included in GMDSS communications.

16 Other revisions to SOLAS chapter IV

16.1 SOLAS chapter IV includes several provisions that are obsolete or, otherwise, in need of revision:

- .1 As decided under the High-level Review, "Security communications" and "Other communications" should be added to the functional requirements in addition to the GMDSS functions.
- .2 There are obsolete references to the International Radio Consultative Committee (CCIR).
- .3 Some terms and definitions are not consistent with the Radio Regulations and other ITU-R documents.
- .4 Regulation IV/6.2.5 refers to unspecified "other codes" to be clearly marked on the radio installation.
- .5 VHF EPIRBs have never been introduced.
- .6 Certain regulations, such as IV/9.1.2, should be simplified because separate DSC watch receivers are not common and modern equipment practice integrates the radio functions into a single installation.
- .7 Regulation IV/12.3 needs to be revised to reflect the decision to retain the VHF Channel 16 watch. A continuous listening watch is also needed in some areas for VTS, Maritime Assistance Service, coastal surveillance, ship reporting, port approaches, etc.
- .8 Regulation IV/18 exempts communication equipment from automatically receiving the ship's position if the ship is not provided with a navigation receiver. Such receivers are now required on all ships under regulation V/19.2.1.6.

Implications for the Modernization Plan

16.2 Definitions are needed for "Security communications" and "Other communications", as well as requirements for radio installations to perform these functions.

16.3 In accordance with the decisions of the High-level Review, "Security communications" and "Other communications" need to be added to the functional requirements in chapter IV.

16.4 References to the International Radio Consultative Committee (CCIR) should be changed to the International Telecommunications Union (ITU-R).

16.5 Terms and definitions should be harmonized with the Radio Regulations and other ITU-R documents.

16.6 Regulation IV/6.2.5 should be revised to clarify the "other codes" required to be clearly marked on the radio installation.

16.7 The VHF EPIRB should be removed from SOLAS chapter IV.

16.8 Revise and simplify regulations, such as IV/9.1.2, to reflect that separate DSC watch receivers are no longer common and modern equipment practice integrates the radio functions into a single installation.

16.9 Revise regulation IV/12.3 to reflect the decision to retain the VHF Channel 16 watch, as well as continuous listening watches is also in some areas for general communications including VTS, Maritime Assistance Service, coastal surveillance, ship reporting, port approaches, etc.

16.10 Remove the regulation IV/18 exemption for communication equipment from automatically receiving the ship's position if the ship is not provided with a navigation receiver.

16.11 Review chapter IV for editorial improvements.

16.12 Review and revise IMO resolutions consequential to the decisions made for GMDSS modernization.

17 Outline of the Modernization Plan

Revisions to SOLAS chapter III

17.1 Except for communications equipment installed or always carried in survival craft, the communications requirements for ships and life-saving appliances in chapter III, should be moved to chapter IV (see paragraph 8.2).

17.2 A decision needs to be made as to whether all lifeboats, and whether some or all inflatable liferafts should be equipped with installed locating devices, and that requirement located in chapter III with other survival craft equipment (see paragraph 9.12).

17.3 The "Record of Equipment" list in the certificates for these items will need to be appropriately amended (see paragraph 8.3).

Revisions to SOLAS chapter IV

17.4 The GMDSS modernization process should ensure that non-SOLAS vessels are not excluded from participating in the GMDSS for technical or economic reasons, and such instruments as affect non-SOLAS vessels should be compatible with the GMDSS (see paragraph 10.3).

17.5 The GMDSS modernization project needs to continue to support the needs of the e-navigation strategy (see paragraph 13.5).

17.6 SOLAS chapter IV should be revised to provide for other GMDSS satellite service providers in addition to Inmarsat (see paragraph 3.18).

17.7 NBDP can be removed as a required system, although existing devices can be permitted to remain in use to receive MSI, if a ship is not equipped with other equipment suitable for the purpose (see paragraph 5.7).

17.8 SOLAS chapter IV should be revised to allow NAVDAT service to be used in place of NAVTEX in places where NAVDAT is available (see paragraph 6.4).

17.9 Ship certificates will require definition of the geographical area in which the ship is permitted to sail with respect to Sea Areas A3 and A4. This can be accomplished by indicating the ship's GMDSS satellite service provider in brackets after the "A3", such as "A3 (Worldwidesat)" (see paragraph 3.13).

17.10 SOLAS regulations, including as a minimum IV/2, IV/10 and IV/11, will need to be revised to reflect the revised Sea Areas A3 and A4 (see paragraph 3.18).

17.11 Definitions are also needed for "Security communications" and "Other communications", as well as requirements for radio installations to perform these functions (see paragraph 16.2).

17.12 References to the International Radio Consultative Committee (CCIR) should be changed to the International Telecommunications Union (ITU-R) (see paragraph 16.4).

17.13 Terms and definitions should be harmonized with the Radio Regulations and other ITU-R documents (see paragraph 16.5).

17.14 "Security communications" and "Other communications" should be added to the functional requirements in addition to the GMDSS functions (see paragraph 16.3).

17.15 Regulation IV/6.2.5 should be revised to clarify the "other codes" required to be clearly marked on the radio installation (see paragraph 16.6).

17.16 The VHF EPIRB should be removed from SOLAS chapter IV (see paragraph 16.7).

17.17 Revise and simplify regulations, such as IV/9.1.2, to reflect that separate DSC watch receivers are no longer common and modern equipment practice integrates the radio functions into a single installation (see paragraph 16.8).

17.18 Revise regulation IV/12.3 to reflect the decision to retain the VHF Channel 16 watch, as well as continuous listening watches is also in some areas for general communications including VTS, Maritime Assistance Service, coastal surveillance, ship reporting, port approaches, etc. (see paragraph 16.9).

17.19 Remove the regulation IV/18 exemption for communication equipment from automatically receiving the ship's position if the ship is not provided with a navigation receiver (see paragraph 16.10).

17.20 Review chapter IV for editorial improvements (see paragraph 16.11).

Other IMO Instruments

17.21 Refer to annex 1 of this report.

17.22 No specific action has been identified to reduce false alerts. Manufacturers should be made aware of the problem, perhaps through a circular recommending that they seek to reduce the susceptibility of their equipment to generating false alerts. Note resolution A.814(19) on *Guidelines for the avoidance of false distress alerts*. It should also encourage reduction of false alerts caused by human error. Proper disposal should be emphasized, including removal of the battery. Measures should be taken to guide/educate people on how to handle EPIRBs in order to avoid misactivation, including sea fearers, operators, shipyards (both for building and recycling), inspectors and surveyors (see paragraph 12.8).

17.23 IMO and ITU should develop the necessary technical recommendations and performance standards for international NAVDAT service. This work should be closely followed by the development of IMO and IEC standards for shipborne NAVDAT and/or combined NAVTEX/NAVDAT equipment (see paragraphs 5.7 and 6.4).

17.24 Consider the development of a circular or other instrument to encourage Member Governments to adopt a requirement for certain categories of ships to carry VHF direction finders to detect 121.5 MHz signals and VHF marine band transmissions (for instance off shore industry vessels) (see paragraph 9.11).

17.25 Consideration should be given to the possible SAR benefits of the inclusion of text messaging, digital data, and chat messaging capabilities (see paragraph 15.2).

17.26 Mariner training will be affected and amendments to STCW including Model Courses may be required. Model Courses will in general need to be revised to reflect the new Sea Area A3 definition and its effect on Sea Area A4, together with other amendments to chapter IV. Mariner training will be affected and amendments to STCW may be required (see paragraphs 3.11 and 3.23).

17.27 New and revised IMO instruments should not exclude non-SOLAS vessels from participating in the GMDSS for technical or economic reasons, and such instruments as affect non-SOLAS vessels should be compatible with the GMDSS (see paragraph 10.3).

17.28 The technical basis for determining the minimum number of HF GMDSS coast stations and their geographical distribution should be reviewed and, if necessary, consequential changes should be included in resolution A.801(19) (see paragraphs 4.13 and also 17.34 regarding guidance for CRS).

ITU Reports and Resolutions

17.29 IMO and ITU should develop the necessary technical and operational recommendations and performance standards for international NAVDAT service (see paragraph 6.5).

17.30 Consideration should be given to a liaison statement to ITU-R indicating that it is desirable that non-SOLAS ships make use of the GMDSS, and that in order to protect the integrity of the GMDSS, it is necessary that ITU-R recommendations on GMDSS systems and frequency use are prescriptive (see paragraph 11.6).

17.31 New and revised ITU instruments should not exclude non-SOLAS vessels from participating in the GMDSS for technical or economic reasons, and such instruments as affect non-SOLAS vessels should be compatible with the GMDSS (see paragraph 10.3).

17.32 Consider the future role for HF data exchange under ITU-R Recommendation 1798-1 (see paragraph 5.8).

IEC Standards

17.33 Completion of IMO and ITU technical and operational recommendations and performance standards for international NAVDAT service, should be followed by the development of IEC standards for shipborne NAVDAT equipment (see paragraph 6.5).

17.34 Guidance for coastal radio stations (CRS) should be established through the development of IEC standards (see paragraph 7.4).

Provision of GMDSS satellite services

17.35 Formatting of EGC should be standardized if possible to minimize delays, and if possible, a way should be found to transmit EGC simultaneously on all GMDSS satellite service providers (see paragraph 2.19).

MSI providers

17.36 Possible ways for MSI providers to provide and monitor MSI broadcasts over multiple GMDSS satellite service providers should be identified with a view to minimizing the costs, or at least the cost increases for MSI providers. Resolution A.707(17) could be revised to provide for shore-to-ship MSI broadcasts without charge to the originator (see paragraph 2.18).

17.37 Determine whether it is possible and feasible to retain the current requirement to be able to receive MSI using EGC (SOLAS regulation IV/7.1.5), taking into account the new definition of Sea Area A3 and the inclusion of new satellite providers in the GMDSS (see paragraph 3.19).

17.38 Depending on conclusions under paragraph 17.37, determine whether changes are required to the availability HF-MSI in certain areas as a consequence of the new definition of Sea Area A3 and the inclusion of new satellite providers in the GMDSS (see paragraph 3.20).

17.39 The use of VDES needs to be considered in future possible mechanisms for the distribution of MSI (see paragraph 14.4).

HF communications

17.40 Technological improvements can make HF easier to use. Consider revising resolutions A.806(19) and MSC.68(68), annex 3, to include a requirement for frequency scanning and/or ALE (see paragraphs 4.13 and 4.14).

Transitional provisions

17.41 Administrations, port State control authorities, and classification societies need to be informed of the change to Sea Area A3/A4, and a suitable transition period needs to be identified for certificates (see paragraph 3.24).

18 Elements considered during the Detailed Review and their disposition

18.1 During discussions on the Detailed Review of the GMDSS, a number of possible changes were considered. Annex 2 identifies the subjects that were considered and determined not to be included in GMDSS modernization.

ANNEX 1

Preliminary list of IMO instruments relevant to the GMDSS which may need to be reviewed for GMDSS modernization

2015		Notes
GMDSS.1/Circ.17 (or current edition)	GMDSS Master Plan	<ul style="list-style-type: none"> • Update lists of shore-based facilities and coast stations. • Revise or reorganize for new Sea Areas A3 and A4. • Make provision for any additional satellite service providers and revise any Inmarsat-specific terms. • Include NAVDAT service areas, if available. • Revise sections referring to NBDP, if NBDP service is discontinued. • Include maps of recognized satellite service provider coverage areas.
2013	Title	
MSC.1/Circ.1287/Rev.1	Promulgation of maritime safety information	<ul style="list-style-type: none"> • Make provision for any additional satellite service providers and revise any Inmarsat-specific terms such as SafetyNET. • Include NAVDAT service, if available. • Revise sections referring to NBDP, if NBDP service is discontinued.
2012		
Resolution MSC.347(91)	Recommendation for the protection of the AIS VHF data link	<ul style="list-style-type: none"> • Update AIS radio channels
MSC.1/Circ.1414	Guidance to prospective GMDSS satellite service providers	<ul style="list-style-type: none"> • Change "COMSAR" references to "NCSR" • Refers to "nine" GMDSS functions – now ten
MSC/Circ.1040/Rev.1	Guidelines on annual testing of 406 MHz satellite EPIRBs	<ul style="list-style-type: none"> • Ensure guidelines are relevant for Second Generation Beacons • Provide for EPIRBs with AIS locators

COMSAR.1/Circ.50/Rev.3	Distress priority communications for RCC from shore-to-ship via Inmarsat	<ul style="list-style-type: none"> • Consider whether similar circular is needed for additional satellite providers
2011		
Resolution A.1051(27)	IMO/WMO Worldwide Met-Ocean Information and Warning Service – Guidance Document	<ul style="list-style-type: none"> • Make provision for any additional satellite service providers and revise any Inmarsat-specific terms such as SafetyNET
MSC.1/Circ.1403	Revised NAVTEX manual	<ul style="list-style-type: none"> • Make provision for any additional satellite service providers and revise any Inmarsat-specific terms such as SafetyNET. • Include NAVDAT service, if available. • Revise sections referring to NBDP, if NBDP service is discontinued.
2010		
Resolution MSC.306(87)	Revised performance standards for Enhanced Group Call (EGC) equipment	<ul style="list-style-type: none"> • Make provision for any additional satellite service providers, if necessary.
MSC.1/Circ.1364	Revised International SafetyNet Manual	<ul style="list-style-type: none"> • Sea Area definition and consequential changes • Make provision for any additional satellite service providers and revise any Inmarsat-specific terms such as SafetyNET. - OR - • Develop parallel manual for any new satellite service providers.
2009		
Resolution A.1021(26)	Code on alerts and indicators	<ul style="list-style-type: none"> • Review to determine if alerts generated by communication systems should be included. • Any new or revised instruments should be consistent with this code.

2007		
Resolution A.1001(25)	Criteria for the provision of mobile satellite communication systems in the global maritime distress and safety system (GMDSS)	<ul style="list-style-type: none"> • Description of functional requirements will need revision • Investigate whether text messages, digital data, and chat can be included.
COMSAR.1/Circ.41	Analysis of MSI promulgated via the EGC SafetyNet system and recommendations on improving its quality	<ul style="list-style-type: none"> • Make provision for any additional satellite service providers and revise any Inmarsat-specific terms such as SafetyNET. - OR - • Develop parallel manual for any new satellite service providers.
2005		
COMSAR.1/Circ.36	Broadcast of warnings for tsunamis and other natural disasters	<ul style="list-style-type: none"> • Make provision for any additional satellite service providers and revise any Inmarsat-specific terms such as SafetyNET. - OR - • Develop parallel manual for any new satellite service providers.
COMSAR/Circ.37	Guidance on minimum communication needs of Maritime Rescue Co-ordination Centres (MRCCs)	<ul style="list-style-type: none"> • Make provision for any additional satellite service providers and revise any Inmarsat-specific terms such as SafetyNET. • Review section on Telex link – is it used?
2004		
COMSAR/Circ.32	Harmonization of GMDSS requirements for radio installations on board SOLAS ships	<ul style="list-style-type: none"> • Some terms need revision, <i>i.e.</i> "radar transponder"; "A3" and "A4" will have different meanings • Update channel 16 watch requirements • Is description of radio work station consistent with current bridge design? • Make provision for any additional satellite service providers

2003		
Resolution MSC.149(77)	Adoption of the revised performance standards for survival craft portable two-way VHF radiotelephone apparatus	<ul style="list-style-type: none"> • May need to be revised depending upon decision on aeronautical frequencies.
2002		
Resolution MSC.131(75)	Maintenance of a continuous listening watch on VHF channel 16 by SOLAS ships whilst at sea and installation of VHF DSC facilities on non-SOLAS ships	<ul style="list-style-type: none"> • Revoke or revise. (Note that the resolution encourages use of VHF DSC and does not reflect decision on continued channel 16 watch. A new resolution may be needed to contain the elements that are still relevant and of importance)
Resolution MSC.130(75)	Performance standards for Inmarsat ship earth stations capable of two-way communications	<ul style="list-style-type: none"> • Make provision for any additional satellite service providers. - OR - • Develop parallel resolution for any new satellite service providers.
MSC/Circ.1038	Guidelines for general radiocommunications	<ul style="list-style-type: none"> • Requires revision with respect to "general communications"
MSC/Circ.1039	Guidelines for shore-based maintenance of satellite EPIRBs	<ul style="list-style-type: none"> • Revise to include AIS locators • Delete L-band EPIRB • Review for needed changes in respect of Second Generation Beacons
1998		
COMSAR/Circ.17	Recommendation on use of GMDSS equipment for non-safety communications	<ul style="list-style-type: none"> • Consider including in a revision of MSC/Circ.1038
1997		
MSC/Circ.803	Participation of non-SOLAS ships in the GMDSS	<ul style="list-style-type: none"> • Should be reviewed and generally updated (reference to 2182 kHz alarm signal which has been removed in COLREG by Resolution A.1004(25)/Rev.1).

1995		
Resolution A.811(19)	Performance standards for a shipborne integrated radiocommunication system (IRCS) when used in the GMDSS	<ul style="list-style-type: none"> • (Note current IEC project on IRCS)
Resolution A.802(19) as amended by resolution MSC.247(83)	Performance standards for survival craft radar transponders for use in search and rescue operations	<ul style="list-style-type: none"> • Should be reviewed and updated at least with respect to ITU-R M.628-5
Resolution A.801(19), as amended by MSC.199(80)	Provision of radio services for the global maritime distress and safety system, (GMDSS)	<ul style="list-style-type: none"> • Will need to be revised in respect of new A3 and A4 Sea Areas
Resolution A.804(19), as amended by resolution MSC.68(68), annex 2	Performance standards for shipborne MF radio installations capable of voice communication and digital selective calling	<ul style="list-style-type: none"> • Will need to be revised to include additional satellite service providers • May need to be revised with respect to decisions on NBDP
Resolution A.803(19), as amended by resolution MSC.68(68), annex 1	Performance standards for shipborne VHF radio installations capable of voice communications and digital selective calling	<ul style="list-style-type: none"> • May need to be revised with respect to ITU-R M.493-14
Resolution A.805(19)	Performance standards for float-free VHF emergency position-indicating radio beacons	<ul style="list-style-type: none"> • To be suppressed
Resolution A.806(19), as amended by resolution MSC.68(68), annex 3	Performance standards for shipborne MF/HF radio installations capable of voice communications and digital selective calling	<ul style="list-style-type: none"> • May need to be revised with respect to decisions on NBDP • Consider requirement for ALE
Resolution A.807(19), as amended by resolution MSC.68(68), annex 4	Performance standards for Inmarsat-C ship earth station capable of transmitting and receiving direct-printing communications	
Resolution A.808(19)	Performance standards for ship earth stations capable of two-way communications	<ul style="list-style-type: none"> • Will need to be revised to include additional satellite service providers
Resolution A.810(19), as amended by resolutions MSC.56(66) and MSC.120(74)	Performance standards for float-free satellite emergency position-indicating beacons operating on 406 MHz	<ul style="list-style-type: none"> • On NCSR 3 agenda for revision

1994		
COM/Circ.117	Clarifications of the application of certain provisions of chapter IV of the SOLAS Convention	<ul style="list-style-type: none"> Should be able to be revoked after adoption of revised chapter IV
1993		
Resolution A.763(18), as amended by resolution A.810 (19), as amended by resolutions MSC.56(66) and 120(74)	Performance standards for float-free satellite emergency position-indicating radio beacons (EPIRBs) operating on 406 MHz	<ul style="list-style-type: none"> No change – Does not apply to EPIRBs installed on or after 23 November 1996
Resolution A.762(18), as amended by resolution A.809 (19), as revised by resolution MSC.149(77)	Performance standards for survival craft two-way VHF radiotelephone apparatus	<ul style="list-style-type: none"> No change – Does not apply to VHF radiotelephone apparatus installed on or after 23 November 1996
COM/Circ.110 + Corr.1	Clarifications of SOLAS regulations IV/6.1, IV/6.2.2 and IV/10.1.1.3	<ul style="list-style-type: none"> Should be able to be revoked after adoption of revised chapter IV
1991		
Resolution A.707(17)	Charges for Distress, Urgency and Safety Messages through the Inmarsat System	<ul style="list-style-type: none"> Revise for additional satellite service providers Consider provision of shore-to-ship MSI broadcasts without charge to the originator.
Resolution A.702(17)	Radio maintenance guidelines for the global maritime distress and safety system (GMDSS) related to sea areas A3 and A4	<ul style="list-style-type: none"> References to Sea Areas and Inmarsat need to be revised
Resolution A.700(17)	Performance standards for narrow-band direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships (MSI) by HF	<ul style="list-style-type: none"> May need to be revised with respect to decisions on NBDP
Resolution A.699(17)	System performance standard for the promulgation and coordination of maritime safety information using high-frequency narrow-band direct-printing	<ul style="list-style-type: none"> May need to be revised with respect to decisions on NBDP
Resolution A.698(17), as amended by resolutions A.808(19) and MSC.149(77)	Performance standards for ship earth stations capable of two-way communications	<ul style="list-style-type: none"> No change – Does not apply to stations installed on or after 23 November 1996

Resolution A.696(17)	Type approval of satellite emergency position-indicating radio beacons (EPIRBs) operating in the COSPAS-SARSAT system	<ul style="list-style-type: none"> Should be revised after adoption of revision of resolution A.810 (19)
Resolution A.694(17)	General requirements for shipborne radio equipment forming part of the global maritime distress and safety system (GMDSS) and for electronic navigational aids	(On the postbiennial agenda of the Committee for revision)
COM/Circ.105 + Corr.1	Clarification of certain provisions of the 1998 SOLAS amendments for the GMDSS	<ul style="list-style-type: none"> Should be able to be revoked after adoption of revised chapter IV
1989		
Resolution A.663(16), as amended by resolutions A.807(19) and MSC.68(68)	Performance standards for INMARSAT Standard-C ship earth stations capable of transmitting and receiving direct-printing communications	<ul style="list-style-type: none"> No change – Does not apply to stations installed on or after 23 November 1996
1987		
Resolution A.617(15)	Implementation of the NAVTEX system as a component of the worldwide navigational warning service	<ul style="list-style-type: none"> Consider for revocation – may have been overtaken by more recent instruments, e.g. NAVTEX Manual
Resolution A.616(15)	Search and rescue homing capability	<ul style="list-style-type: none"> Needs to be revised to provide for possibility of AIS location from ship and EPIRB transmitters
Resolution A.613(15), as amended by resolutions A.806(19) and MSC.68(68)	Performance standards for shipborne MF/HF radio installations capable of voice communication, narrow-band direct-printing and digital selective calling	<ul style="list-style-type: none"> No change – Does not apply to equipment installed on or after 23 November 1996
Resolution A.612(15), as amended by resolution A.805(19)	Performance standards for float-free VHF emergency position-indicating radio beacons	<ul style="list-style-type: none"> To be suppressed
Resolution A.610(15), as amended by resolutions A.804(19) and MSC.68(68)	Performance standards for shipborne MF radio installations capable of voice communication and digital selective calling	<ul style="list-style-type: none"> No change – Does not apply to equipment installed on or after 23 November 1996
Resolution A.609(15), as amended by resolutions A.803(19) and MSC.68(68)	Performance standards for shipborne VHF radio installations capable of voice communication and digital selective calling	<ul style="list-style-type: none"> No change – Does not apply to equipment installed on or after 23 November 1996

1985		
Resolution A.570(14)	Type approval of ship earth stations	<ul style="list-style-type: none">• Make provision for any additional satellite service providers.
1983		
Resolution A.525(13)	Performance standards for narrow-band direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships	<ul style="list-style-type: none">• No change – Does not apply to equipment installed on or after 1 July 2005

ANNEX 2

ELEMENTS CONSIDERED DURING THE DETAILED REVIEW AND THEIR DISPOSITION

1 During discussions on the Detailed Review of the GMDSS, a number of possible changes were considered. This annex identifies the subjects that were considered and determined not to be included in GMDSS modernization.

Watches

2 A proposal was made to include the same kind of regulation in SOLAS regulation IV/12 as was currently included in the Radio Regulations on the actions ships should take when learning that another ship was in distress. After some discussion, the group agreed to not duplicate the provision of the Radio Regulations into SOLAS (Ref: NCSR 2/13, paragraph 51).

On-air test features

3 There were no particular ideas set forth on which on-air test features could or should be introduced at shore stations. In this regard, it was noted that test calls on HF radio were in many cases not answered. It was agreed that this was an issue of concern, but that this was not something new to be introduced but was related to the current status of the HF network. The group concluded that no additional work on this matter was required (Ref: NCSR 2/13, paragraph 58).

Aviation frequencies to provide for two-way on-scene communications

4 The ICAO/IMO Joint Working Group on SAR (JWG) that it would be beneficial if all ships were to be required to be able to operate on aviation frequencies, noting that passenger ships in SOLAS are already required to provide for two-way on-scene communications on 121.5 MHz and 123.1 MHz (regulation IV/7.2). It was decided that the use of such communications would only be required in rare circumstances and there might be other ways, for instance MF/HF radio, to enable contact between ships and aircraft, and therefore would not be cost-effective. It was concluded that much more consideration was needed and some support was expressed to further study such a requirement for Sea Areas A3 and A4 (Ref: IMO/ITU EG 10/4/5 and NCSR 2/13, paragraphs 60 to 63).

Other proposals

5 Other proposals were made during the detailed review, which were noted or discussed briefly but not carried forward. These include:

- .1 Ability to play back voice messages (Ref: COMSAR 15/INF.3, table, row 7).
- .2 Use of AIS for SAR communications (Ref: COMSAR 16/7/1 and COMSAR 16/7/3).
- .3 Use of text to supplement voice for traffic management and SAR (Ref: COMSAR 15/INF.3, paragraph 6 and table, row 7).
- .4 Ship reporting functions to support SAR (COMSAR 15/11, annex paragraph 30.3).

- .5 Method to communicate digital data between SAR and ship (COMSAR 16/11, annex 1, 310-Gte01-Ste02).
- .6 Modernization of GMDSS into digital communication – IP technology (COMSAR 16/11, annex 1, 120-Gte04-Ste01, 220-Gte01-Ste01).
- .7 Improve NAVTEX bandwidth. Provide MSI as a ship-"pull" service (COMSAR 15/INF.4, paragraph 17).
- .8 New technology to provide automatic connection to the switched telephone network (NCSR 1/13, annex, paragraph 9.2.2).
- .9 FAL forms and Maritime Service Portfolios (COMSAR 16/11, paragraphs 36 to 45).
- .10 Automatic ship reporting (COMSAR 16/11, annex 1, 140-Gte01 to 05, 140-Gop01/02, 140-Gtr01).
- .11 Improve pilot-mariner communication (COMSAR 16/11, annex 1, 135-Gte03).
- .12 Automatically detect free/open working channels (COMSAR 15/INF.3, paragraph 7, table, row 2).
- .13 Easier identification of addressees – link with AIS? (COMSAR 15/INF.3, table, row 1).
- .14 Problems with simplex use of channels (COMSAR 14/4 (34)).
- .15 Improve human-machine interface:
 - (COMSAR 16/9/2)
 - (COMSAR 16/11, annex 1, 134-Gte01-Ste01/02)
 - (COMSAR 16/11, annex 1, 134-Gte01-Sre01/05)
 - (COMSAR 16/11, annex 1, 134-Gte01-Sre02/04)
 - (COMSAR 16/11, annex 1, 134-Gre03)
 - (COMSAR 16/11, annex 1, 134-Gre04)
 - (COMSAR 16/11, annex 1, 134-Gop01)
 - (COMSAR 15/3/10, paragraphs 4.1 and 6.3)
 - (COMSAR 15/INF.3, paragraphs 2 and 3, and table, rows 4 and 8)
 - (COMSAR 14/7)

ANNEX 8

DRAFT MSC CIRCULAR

AMENDMENTS TO THE INTERNATIONAL SAFETYNET MANUAL

1 The Maritime Safety Committee (MSC), at its [ninety-seventh session (21 to 25 November 2016)], approved the amendments to the International SafetyNET Manual, as prepared by IHO and WMO and agreed by the Sub-Committee on Navigation, Communications and Search and Rescue (NCSR) at its third session (29 February to 4 March 2016).

2 This circular replaces MSC.1/Circ.1364.

3 The Committee decided that the amendments will come into force on [1 January 2018].

ANNEX

INTERNATIONAL SAFETYNET MANUAL

2018 EDITION

Foreword

SOLAS regulation IV/12.2 states that "Every ship, while at sea, shall maintain a radio watch for broadcasts of maritime safety information on the appropriate frequency or frequencies on which such information is broadcast for the area in which the ship is navigating".

At the request of the IMO Sub-Committee on Radiocommunications, the International SafetyNET Manual was first produced in 1994. The second edition was published in 2003 containing amendments endorsed by the Maritime Safety Committee (MSC) at its seventy-sixth session in December 2002 by MSC/Circ.1064.

At its seventh meeting in September 2005, the IHO's Commission on the Promulgation of Radio Navigational Warnings (CPRNW¹) established a working group to review all World-Wide Navigational Warning Service (WWNWS) documentation. The working group included representation from the WMO and prepared at first, revisions to resolutions A.705(17), *Promulgation of Maritime Safety Information* and A.706(17), *World-Wide Navigational Warning Service*. The proposed revisions of the resolutions were circulated to IHO Member States under IHB CL 104/2007, endorsed by the COMSAR Sub-Committee at its twelfth session in April 2008 and subsequently approved by the Maritime Safety Committee at its eighty-fifth session in November/December 2008 by MSC.1/Circ.1287 and MSC.1/Circ.1288, respectively.

The IHO CPRNW Working Group then prepared the revised *Joint IMO/IHO/WMO Manual on Maritime Safety Information* incorporating the revised information from resolutions A.705(17), as amended and A.706(17), as amended. The revised text of the *Joint IMO/IHO/WMO Manual on Maritime Safety Information* was circulated to IHO Member States under cover of IHB CL 70/2008, endorsed by the COMSAR Sub-Committee at its thirteenth session in January 2009 and subsequently approved by the Maritime Safety Committee at its eighty-sixth session in May/June 2009 by MSC.1/Circ.1310.

Continuing with the holistic approach of reviewing all the MSI documents from the top-down, the IHO WWNWS-SC Working Group prepared the third revision of the International SafetyNET Manual. The revised text of the International SafetyNET Manual was circulated to IHO Member States under cover of IHB CL 68/2009, endorsed by the COMSAR Sub-Committee at its fourteenth session in March 2010 and subsequently approved by the Maritime Safety Committee at its eighty-seventh session in May 2010 by MSC.1/Circ.1364 and came into force on 1 January 2012.

As part of its editorial review of all Maritime Safety Information documentation, the IHO WWNWS-SC has been reviewing the text of the International SafetyNET Manual. Further to the last meeting of the Sub-Committee held in August 2015 at the IHB in Monaco, work on this review has now been completed. A representative from the WMO participated fully in the review. WWNWS-SC also received advice and guidance from the Secretariat of the Organization.

¹ CPRNW was renamed the IHO WWNWS Sub-Committee (WWNWS) with effect from 1 January 2009.

The review took into account the adoption by the IMO of changes to resolutions A.705(17), as amended *Promulgation of maritime safety information*, A.706(17), as amended – *IMO/IHO World-Wide Navigational Warning Service Guidance Document* and MSC.1/Circ.1310/Rev.1 – *Joint IMO/IHO/WMO Manual on Maritime Safety Information*. These changes have been published as MSC.1/Circ.1287/Rev.1, MSC.1/Circ.1288/Rev.1 and MSC.1/Circ.1310/Rev.1 and came into force on 1 January 2015 and 1 January 2016 respectively.

This fourth revision of the International SafetyNET Manual took place following the first session of the Sub-Committee on Navigation, Communications and Search and Rescue (NCSR) in June/July 2014 and WWNWS6 in August 2014. Subsequently it was submitted to the WMO for approval prior to submission to the NCSR at its third session for endorsement and final approval by the MSC at its ninety-seventh session and publication as MSC.1/Circ.1364/Rev.1 with an entry-into-force date of 1 January 2018.

1 General information

SafetyNET is an international automatic direct-printing satellite-based service for the promulgation of Maritime Safety Information (MSI), navigational and meteorological warnings, meteorological forecasts, Search and Rescue (SAR) information and other urgent safety-related messages to ships. It has been developed as a safety service of the Inmarsat C Enhanced Group Call (EGC) system to provide a simple and automated means of receiving MSI on board ships at sea. The message-selection features of SafetyNET receivers enable mariners to receive safety information broadcasts that are tailored to their particular needs.

SafetyNET fulfils an integral role in the Global Maritime Distress and Safety System (GMDSS) developed by the International Maritime Organization (IMO) and incorporated into the 1988 amendments to the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended, as a requirement for ships to which the Convention applies.

This Manual describes the structure and operation of the International SafetyNET Service. It is intended primarily for national Administrations and registered information providers, but may also be useful to the mariner who requires more operational information than is found in manufacturers' equipment manuals.

2 SafetyNET service

2.1 Introduction

2.1.1 SafetyNET provides shipping with navigational and meteorological warnings, meteorological forecasts, shore-to-ship distress alerts, SAR information and other urgent information in accordance with the requirements of the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended. It is suitable for use in all sizes and types of ships. Figure 1 illustrates the way the service is structured.

2.1.2 SafetyNET is a service of Inmarsat's EGC system and was specifically designed for promulgation of MSI as a part of the GMDSS. The EGC system (technically a part of the Inmarsat C system) provides an automatic method of broadcasting messages to both fixed and variable geographical areas. It is designed with the capability to provide services within the coverage areas of geostationary satellites, known as satellite ocean regions (approximately between 76°N and 76°S). In addition to providing services to ships operating in sea area A3, it also provides the means of disseminating MSI to coastal warning areas not covered by the International NAVTEX service.

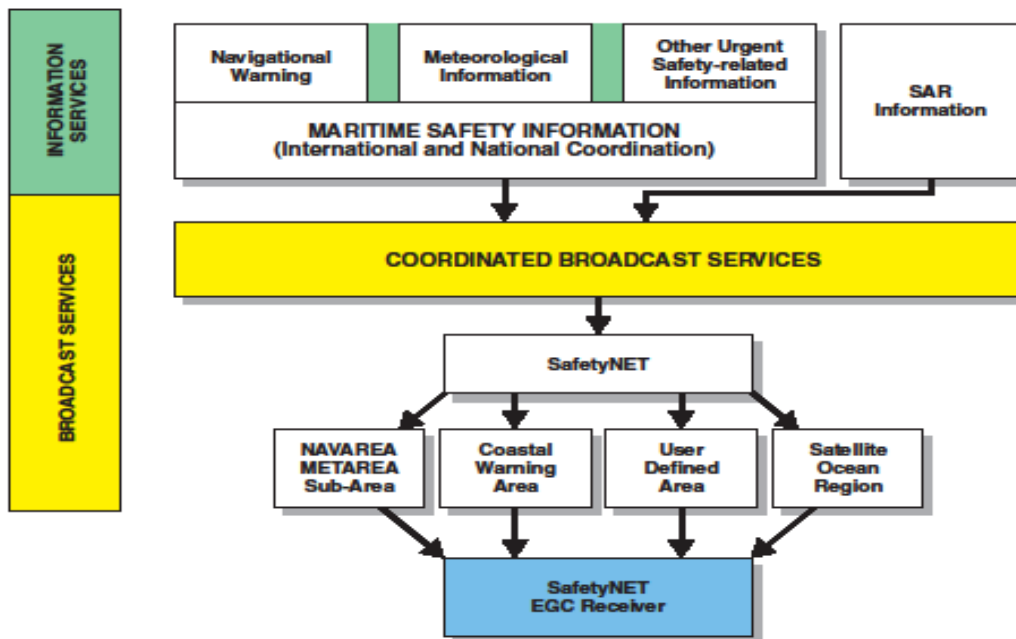


Figure 1 – The International SafetyNET Service system

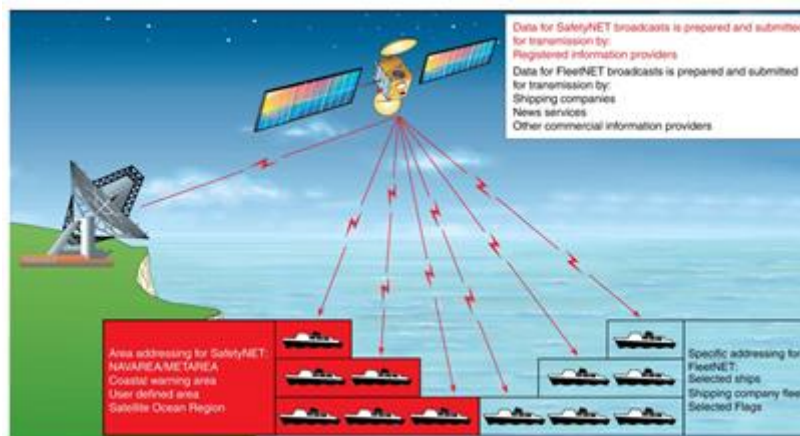


Figure 2 – Basic concept of the Inmarsat Enhanced Group Call system

2.1.3 SafetyNET offers the ability to direct a message to a given geographical area. The area may be fixed, as in the case of a 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, for which it is inappropriate to alert ships in an entire satellite ocean region or NAVAREA/METAREA. The general EGC system capabilities are shown in figure 2.

2.1.4 SafetyNET messages are submitted by registered information providers for broadcast to the appropriate satellite ocean region(s) via an Inmarsat C Land Earth Station (LES). Messages are broadcast according to their priority, i.e. distress, urgency or safety. Aboard ship, messages are received by type-approved Inmarsat C or mini-C mobile terminals with EGC SafetyNET capability.

2.2 Definitions

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

- .1 *Coastal warning* means a navigational warning or in-force bulletin promulgated as part of a numbered series by a National Coordinator. Broadcast should be made by the International NAVTEX service to defined NAVTEX service areas and/or by the International SafetyNET service to coastal warning areas. In addition, Administrations may issue coastal warnings by other means.
- .2 *Coastal warning area* means a unique and precisely defined sea area within a NAVAREA/METAREA or Sub-area established by a coastal state for the purpose of coordinating the broadcast of coastal maritime safety information through the SafetyNET service.
- .3 *Enhanced Group Call (EGC)* means the system for broadcasting messages via the mobile satellite communications system operated by Inmarsat Global Limited. EGC is a part of the Inmarsat C system and supports two services: SafetyNET and FleetNET.
- .4 *FleetNET* means the commercial service for the broadcasting and automatic reception of fleet management and general public information by means of direct printing through Inmarsat's EGC system. Some receivers for FleetNET may not be able to receive SafetyNET.
- .5 *Global Maritime Distress and Safety System (GMDSS)* means the global communications service based upon automated systems, both satellite and terrestrial, to provide distress alerting and promulgation of maritime safety information for mariners.
- .6 *HF NBDP* means High Frequency narrow-band direct-printing, using radio telegraphy as defined in Recommendation ITU-R M.688.
- .7 *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.
- .8 *Inmarsat C* means the digital satellite communications system for store-and-forward text or data messaging using mobile terminals with omni-directional antennas. Inmarsat C is the only system that allows ships to meet the majority of the satellite communication requirements of the GMDSS including distress alerting, reception of maritime safety information and general communications.
- .9 *Inmarsat mini-C* means smaller terminals, based on the same technical requirements as Inmarsat C terminals. Some models are approved as GMDSS compliant terminals.
- .10 *Inmarsat Fleet* means the digital satellite communication system that provides voice and flexible data communication services, e-mail and secure internet access for maritime users, comprising a family of Fleet F77, F55 and F33 mobile terminals. The Inmarsat Fleet F77 system provides voice distress and safety functionality and meets the requirements of resolution A.1001(25).

- .11 *Inmarsat FleetBroadband* means the communication service that provides voice and high-speed data services, simultaneously, through compact terminals for maritime users.
- .12 *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.²
- .13 *International SafetyNET service* means the coordinated broadcast and automatic reception of maritime safety information via the Inmarsat Enhanced Group Call (EGC) system, using the English language, in accordance with the provisions of the International Convention for the Safety of Life at Sea, 1974, as amended.
- .14 *Issuing Service* means a National Meteorological Service which has accepted responsibility for ensuring that meteorological warnings and forecasts for shipping are disseminated through the Inmarsat SafetyNET service to the METAREA for which the Service has accepted responsibility under the broadcast requirements of the GMDSS.
- .15 *Land Earth Station (LES)* means a fixed terrestrial station acting as a gateway between terrestrial communication networks and the Inmarsat satellites in the maritime mobile-satellite service. This may also be referred to as a Coast Earth Station (CES).
- .16 *Land Earth Station Operator (LESO)* means an Inmarsat service provider which owns and operates the LES.
- .17 *Local warning* means a navigational warning which covers inshore waters, often within the limits of jurisdiction of a harbour or port authority.
- .18 *Maritime safety information (MSI)*³ means navigational and meteorological warnings, meteorological forecasts and other urgent safety-related messages broadcast to ships.
- .19 *Maritime safety information service* means the internationally and nationally coordinated network of broadcasts containing information which is necessary for safe navigation.
- .20 *METAREA* means a geographical sea area⁴ 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 sea area. The delimitation of such areas is not related to and shall not prejudice the delimitation of any boundaries between States (see figure 3).
- .21 *METAREA Coordinator* means the authority charged with coordinating marine meteorological information broadcasts by one or more National Meteorological Services acting as Preparation or Issuing Services within the METAREA.

² As set out in the IMO NAVTEX Manual.

³ As defined in Regulation IV/2 of the 1974 SOLAS Convention, as amended.

⁴ Which may include inland seas, lakes and waterways navigable by seagoing ships.

- 22 *Meteorological information* means the marine meteorological warnings and forecast information in accordance with the provisions of the International Convention for the Safety of Life at Sea, 1974, as amended.
- .23 *Mobile Earth Station (MES)* means a mobile user terminal in the Inmarsat maritime mobile-satellite service. This may also be referred to as Ship Earth Station (SES).
- .24 *National Coordinator* means the national authority charged with collating and issuing coastal warnings within a national area of responsibility.
- .25 *National NAVTEX service* means the broadcast and automatic reception of maritime safety information by means of narrow-band direct-printing telegraphy using frequencies other than 518 kHz and languages as decided by the Administration concerned.
- .26 *National SafetyNET service* means the broadcast and automatic reception of maritime safety information via the Inmarsat EGC system, using languages as decided by the Administration concerned.
- .27 *NAVAREA* means a geographical sea area⁵ 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 sea area. The delimitation of such areas is not related to and shall not prejudice the delimitation of any boundaries between States (see figure 4).
- .28 *NAVAREA Coordinator* means the authority charged with coordinating, collating and issuing NAVAREA warnings for a designated NAVAREA.
- .29 *NAVAREA warning* means a navigational warning or in-force bulletin promulgated as part of a numbered series by a NAVAREA Coordinator.
- .30 *Navigational warning* means a message containing urgent information relevant to safe navigation broadcast to ships in accordance with the provisions of the International Convention for the Safety of Life at Sea, 1974, as amended.
- .31 *NAVTEX* means the system for the broadcast and automatic reception of maritime safety information by means of narrow-band direct-printing telegraphy.
- .32 *NAVTEX Coordinator* means the authority charged with operating and managing one or more NAVTEX stations broadcasting maritime safety information as part of the International NAVTEX service.
- .33 *NAVTEX service area* means a unique and precisely defined sea area for which maritime safety information is provided from a particular NAVTEX transmitter.

⁵ This may include inland seas, lakes and waterways navigable by seagoing ships.

- .34 *Network Coordination Station (NCS)* means a fixed land station in the Inmarsat satellite communications system which controls channel assignments and provides the network management functions for each of the four satellite ocean regions. NCSs also transmit EGC messages on the NCS common channel.
- .35 *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.
- .36 *Registered information provider* means a maritime safety information provider (MSI provider), authorized in accordance with Annex 2 of the International SafetyNET Manual, which has an agreement with one or more LES(s) for providing SafetyNET services.
- .37 *Rescue Coordination Centre (RCC)* means a unit responsible for promoting efficient organization of search and rescue services and for coordinating the conduct of search and rescue operations within a search and rescue region. Note: the term RCC will be used within this Manual to apply to either joint, aeronautical or maritime centres; JRCC, ARCC or MRCC will be used as the context warrants.
- .38 *SafetyNET* means the international service for the broadcast and automatic reception of maritime safety information via the Inmarsat EGC system. SafetyNET receiving capability is part of the mandatory equipment which is required to be carried by certain ships in accordance with the provisions of the International Convention for the Safety of Life at Sea, 1974, as amended.
- .39 *SAR information* means distress alert relays and other urgent search and rescue information broadcast to ships.
- .40 *Satellite Ocean Region* means the area on the earth's surface within which a mobile or fixed antenna can obtain line-of-sight communications with one of the four primary Inmarsat C geostationary satellites. This area may also be referred to as the "footprint":
- Atlantic Ocean Region – East (AOR-E)
 - Atlantic Ocean Region – West (AOR-W)
 - Indian Ocean Region (IOR)
 - Pacific Ocean Region (POR)
- .41 *Sea Area A1* means an area within the radiotelephone coverage of at least one VHF coast station in which continuous DSC⁶ alerting is available, as may be defined by a Contracting Government.

⁶ Digital selective calling (DSC) means a technique using digital codes which enables a radio station to establish contact with and transfer information to another station or group of stations and complying with the relevant recommendations of the International Radio Consultative Committee (CCIR) – "Radiocommunications Bureau of the International Telecommunication Union (ITU)" from 1 March 1993.

- .42 *Sea Area A2* means an area, excluding sea area A1, within the radiotelephone coverage of at least one MF coast station in which continuous DSC alerting is available, as may be defined by a Contracting Government.
- .43 *Sea Area A3* means an area, excluding sea areas A1 and A2, within the coverage of an Inmarsat geostationary satellite in which continuous alerting is available.
- .44 *Sea Area A4* means an area outside sea areas A1, A2 and A3.
- .45 *Sub-area* means a subdivision of a NAVAREA/METAREA in which a number of countries have established a coordinated system for the promulgation of maritime safety information. The delimitation of such areas is not related to and shall not prejudice the delimitation of any boundaries between States.
- .46 *Sub-area Coordinator* means the authority charged with coordinating, collating and issuing Sub-area warnings for a designated Sub-area.
- .47 *Sub-area warning* means a navigational warning or in-force bulletin promulgated as part of a numbered series by a Sub-area Coordinator. Broadcast should be made by the International NAVTEX service to defined NAVTEX service areas or by the International SafetyNET service (through the appropriate NAVAREA Coordinator).
- .48 *User defined area* means a temporary geographic area, either circular or rectangular, to which maritime safety information is addressed.
- .49 *UTC* means Coordinated Universal Time which is equivalent to GMT (or ZULU) as the international time standard.
- .50 *World-Wide Met-ocean Information and Warning Service (WWMIWS)*⁷ means the internationally coordinated service for the promulgation of meteorological warnings and forecasts.
- .51 *World-Wide Navigational Warning Service (WWNWS)*⁸ means the internationally and nationally coordinated service for the promulgation of navigational warnings.
- .52 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 resolutions A.705(17), as amended, A.706(17), as amended, and A.1051(27), as amended.

⁷ As set out in resolution A.1051(27), as amended.

⁸ See resolution A.706(17), as amended.

2.2.2 METAREA Limits

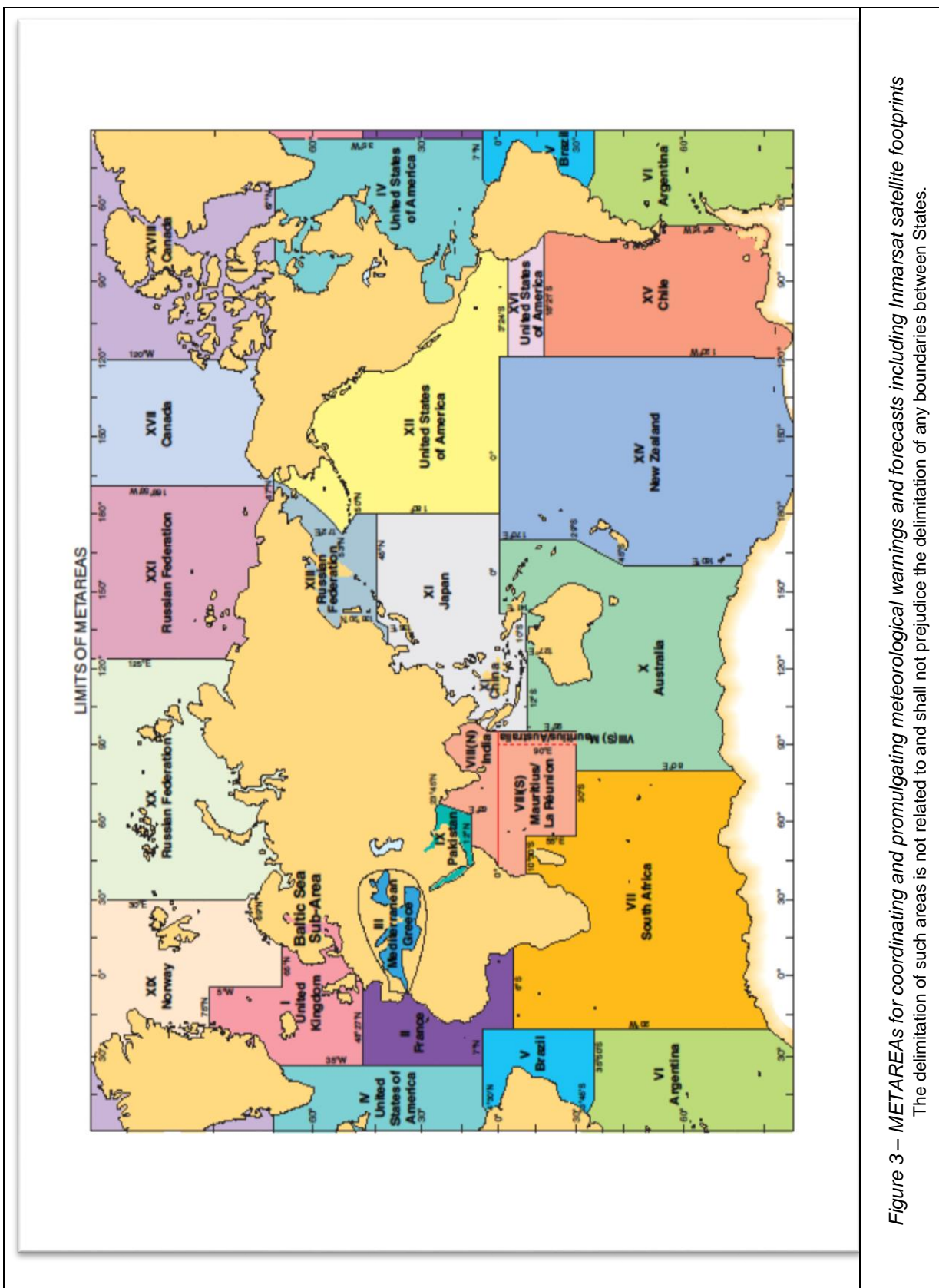


Figure 3 – METAREAS for coordinating and promulgating meteorological warnings and forecasts including Inmarsat satellite footprints
The delimitation of such areas is not related to and shall not prejudice the delimitation of any boundaries between States.

2.2.3 NAVAREAs with Inmarsat satellite ocean region coverage

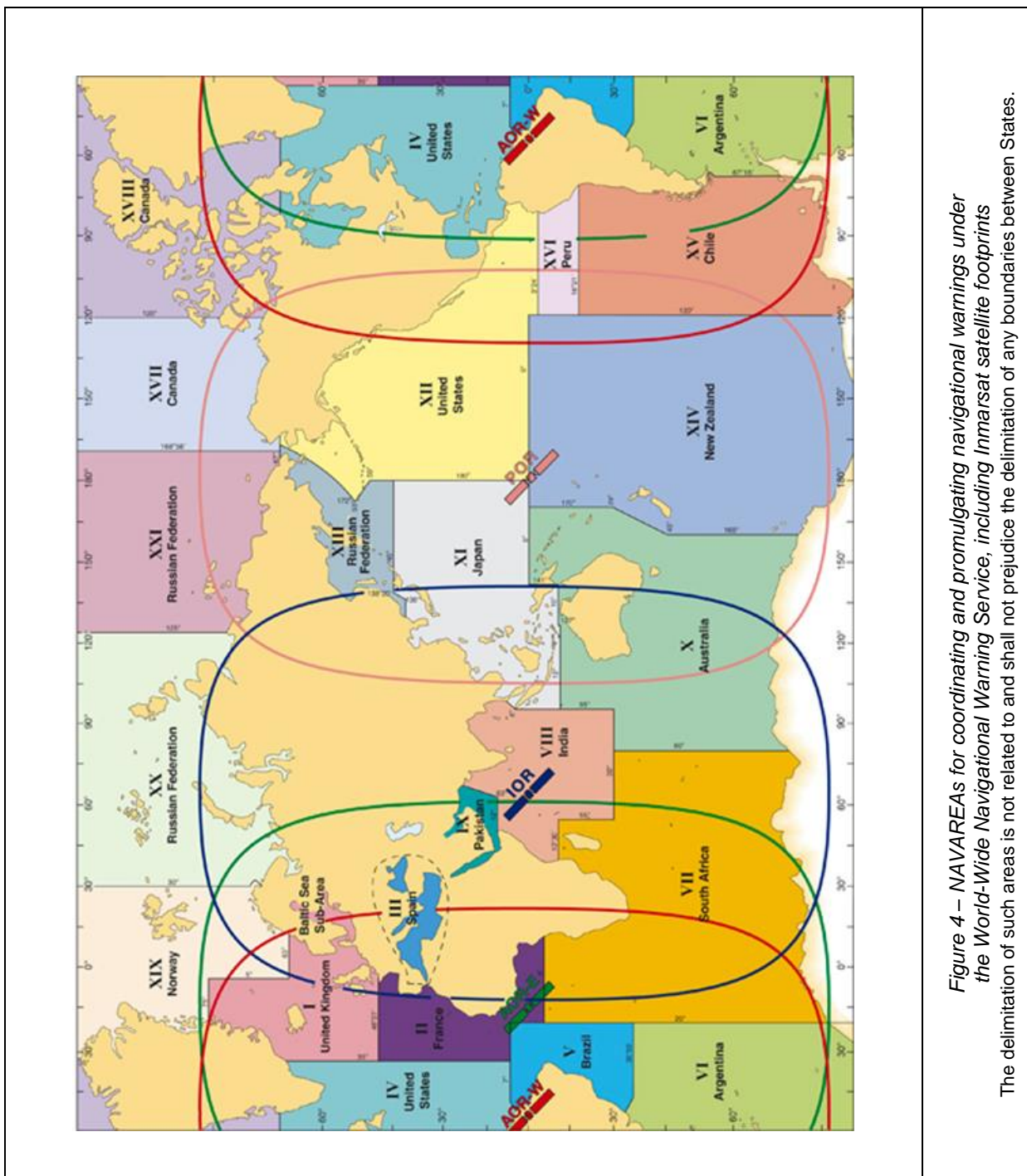


Figure 4 – NAVAREAs for coordinating and promulgating navigational warnings under the World-Wide Navigational Warning Service, including Inmarsat satellite footprints. The delimitation of such areas is not related to and shall not prejudice the delimitation of any boundaries between States.

3 General features of the EGC system

3.1 The Inmarsat C EGC system supports two different services:

- .1 SafetyNET – for promulgation of MSI; and
- .2 FleetNET – for transmission of fleet management, general public information and other information to fleets or groups of ships. The FleetNET service is not part of the GMDSS.

3.2 All navigable waters of the world between 76°N and 76°S are covered by satellites in the Inmarsat system. Each satellite transmits EGC messages on a designated channel; this channel is optimized to enable the signal to be received by Inmarsat C or mini-C terminals with EGC SafetyNET capability. Reception of EGC messages is normally not affected by the position of the ship within the satellite ocean region, atmospheric conditions or time of day.

3.3 SafetyNET messages are addressed to a geographical area (area calls), whereas FleetNET messages are addressed to groups of ships (group calls):

- .1 *Area calls* (SafetyNET) can be addressed to a fixed geographical area (NAVAREA/METAREA or coastal warning area) or to a user defined area selected by an MSI provider. Area calls will be received automatically by any SafetyNET receiver within the area. To receive SafetyNET coastal warnings, the EGC receiver must be set up with appropriate B₁ and B₂ codes – where the B₁ code is the designator of the defined area and the B₂ code is the subject indicator (see section 13.4).
- .2 *Group calls* (FleetNET) will be received automatically by any ship whose EGC receiver acknowledges the unique group identity associated with a particular message.

4 Planning of new SafetyNET services

4.1 Authorities wishing to become officially registered information providers of MSI to ships at sea via SafetyNET, should contact the IMO via the International SafetyNET Coordinating Panel at an early stage for advice. The plans of any prospective registered information providers should be coordinated with the IMO, IHO and WMO and with other national authorities, before authorization to broadcast via SafetyNET may be granted by the International SafetyNET Coordinating Panel, in accordance with the procedures set out in Annex 2.

4.2 Once authorized and registered, information providers should contact the LES operator(s) or service provider(s) they desire to use for promulgation of information to their areas of responsibility, in order to determine specific details for addressing messages, accessing the LES, charges and payment for services and any other matters with respect to providing MSI to mariners.

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

4.4 Mariners should be informed of the establishment of a SafetyNET service by the inclusion of full details in Notices to Mariners and other national nautical publications and the IMO Master Plan of Shore-Based Facilities for the GMDSS, as amended. In addition, full details of the service should be sent to the International SafetyNET Coordinating Panel at the address given in annex 1.

4.5 Questions concerning promulgation of MSI through the EGC SafetyNET service can be addressed to the International SafetyNET Coordinating Panel at the address given in annex 1.

4.6 Questions concerning the operation of the Inmarsat system should be addressed to

Maritime Safety Services
Inmarsat Global Ltd
99 City Road
London EC1Y 1AX
United Kingdom
Email address: maritime.safety@inmarsat.com

5 Changes to existing SafetyNET services

5.1 Registered information providers wishing to change their existing SafetyNET service should follow the same coordination procedures as for a new service, in accordance with the procedures set out in annex 2.

5.2 Mariners should be informed of the changes to an existing SafetyNET service by the inclusion of full details in Notices to Mariners and other national nautical publications and the IMO Master Plan of Shore-Based Facilities for the GMDSS, as amended. In addition, full details of the service should be sent to the International SafetyNET Coordinating Panel at the address given in annex 1.

6 Operation of the International SafetyNET Service

6.1 Given the size of a satellite ocean region, some form of selectivity in receiving and printing the various messages is required. All ships within the footprint of a selected satellite will receive area calls, however, they will only be displayed and printed by those receivers that recognize both:

- .1 the fixed geographical area (NAVAREA/METAREA), user defined area as appropriate; and
- .2 for coastal warnings, the coastal warning area and the subject indicator for the message.

6.2 The message format includes a preamble which enables the EGC receiver to display and print only those MSI messages which relate to its present position, to the intended route, or to the aforementioned areas as programmed by the operator.

6.3 For coastal warning areas messages, the MSI provider must ensure that the preamble includes the B₁ code identifier allocated for the particular area, along with the appropriate B₂ code subject indicator (see section 13.4). The EGC receiver can be set to reject messages concerning certain optional subjects which may not be required by the ship (e.g. LORAN messages may be rejected in a ship which is not fitted with a LORAN receiver). Receivers also use the B₂ code subject indicator to identify coastal warnings which, because of their importance, may NOT be rejected.

6.4 Reception of certain types of messages, such as shore-to-ship distress alerts, SAR information, meteorological warnings and forecasts and navigational warnings, addressed to a geographical area within which the EGC receiver is located, is mandatory and cannot be suppressed by ships in the affected area. These messages are identified by the C₂ service codes: 00, 04, 14, 24, 31, 34 and 44 (see annex 4).

6.5 When a message has been received error-free, a record is made of the message identification (the unique sequence number, the LES identifier and the service code) associated with that message. The unique sequence number is used to suppress the printing of repeated transmissions of the same message.

6.6 An EGC receiver is capable of storing at least 255 message identifications. These message identifications are stored with an indication of the number of hours that have elapsed since the last receipt of the message. Subsequent reception of the same message identification will reset this timer. After between 60 and 72 hours, message identifications may be automatically erased. If the number of received message identifications exceeds the capacity of memory allocated, the oldest message identification will be erased.

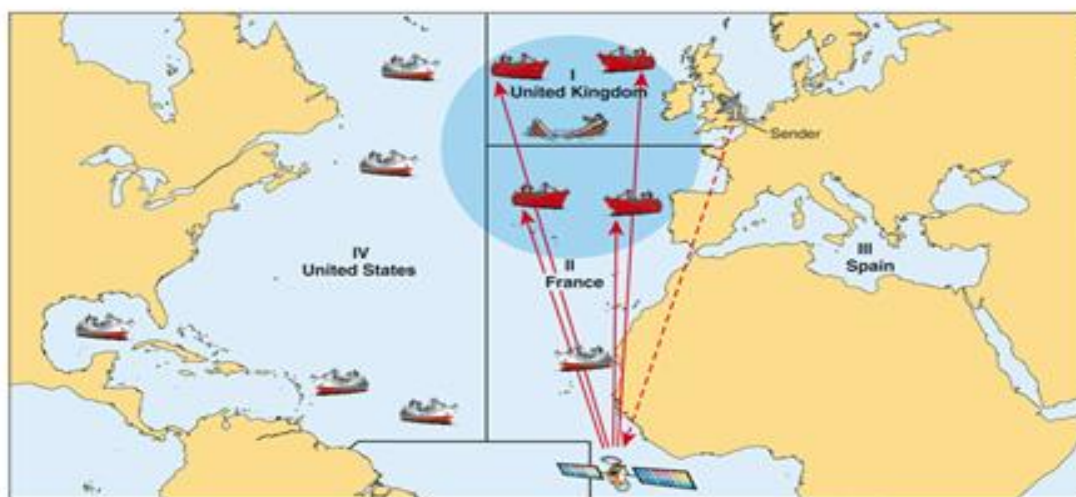


Figure 5 – SafetyNET message addressing to a circular area

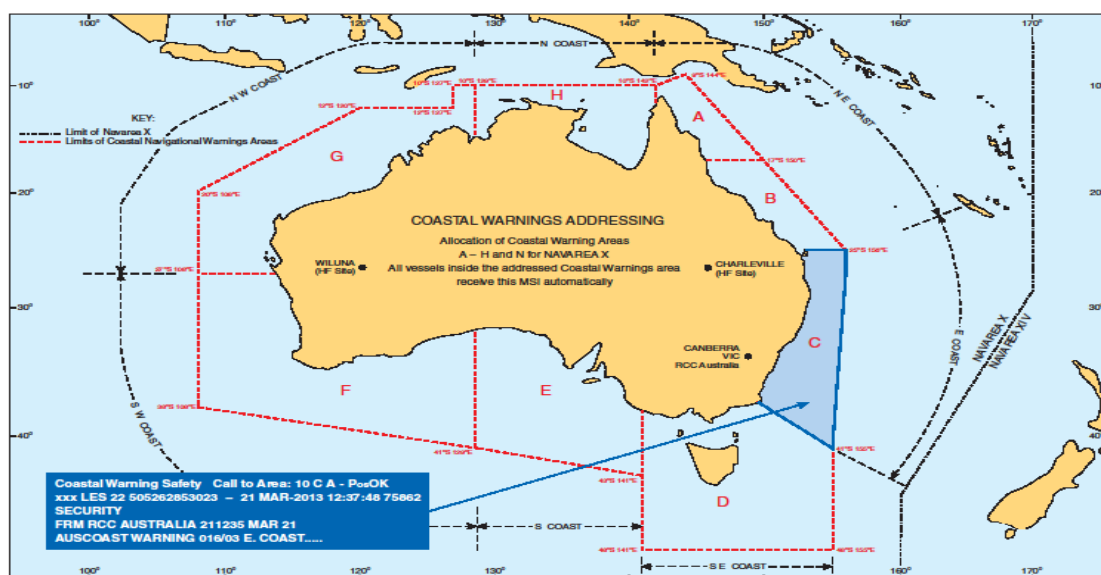


Figure 6 – SafetyNET message addressing to a coastal warning area

6.7 SafetyNET 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.

6.8 In the case of a ship in distress, it is normal to create a circular user defined area (C₂ service code 14), defined by the position of the casualty and a radius around the casualty to alert ships that may be able to render assistance (see figure 5). 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 can be transmitted to all ships (C₂ service code 00), in a given satellite ocean region. SAR coordination messages shall only be addressed to circular (C₂ service code 14) or to rectangular (C₂ service code 34) user defined areas (see figure 6).

7 Promulgation of Maritime Safety Information (MSI) or search and rescue (SAR) information

7.1 MSI or SAR information is promulgated by officially registered information providers whose Certificates of Authorization to broadcast via SafetyNET are issued by the IMO in accordance with the procedures in Annex 2. Registered information providers include for example:

- .1 NAVAREA Coordinators: for NAVAREA 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 alerts, SAR information and other urgent safety-related information.

7.2 All NAVAREA, Sub-area and coastal warnings and METAREA, Sub-area warnings and forecasts should be broadcast only in English in the International SafetyNET 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, Sub-area and coastal warnings may be broadcast in a national language using a National SafetyNET service.

7.3 Registered information providers shall take into account the need for contingency planning.

8 Message formatting and C codes

8.1 EGC messages include instructions to the LES for processing MSI in the form of a special address header that consists of five (or six) C codes as described below. In order for a message to be correctly processed, it shall always consist of data conforming to C codes "1" to "5". Additionally, C code "0" shall be used when required by the service provider.

- C₀ Ocean Region code – 1 digit (when required)
 - 0 – Atlantic Ocean Region – West
 - 1 – Atlantic Ocean Region – East
 - 2 – Pacific Ocean Region
 - 3 – Indian Ocean Region
 - 9 – all ocean regions served by the addressed LES (**Note:** availability of C₀ = 9 should be checked with the LES operator or service provider)
- C₁ priority code – 1 digit code
- C₂ service code – 2 digit code
- C₃ address code – 2, 4, 10 or 12 alphanumeric code
- C₄ repetition code – 2 digit code
- C₅ presentation code – 1 or 2 digit code

C Codes					
C ₀ Ocean Region code (when required)	C ₁ Priority code	C ₂ Service code	C ₃ Address code	C ₄ Repetition code (see Annex 4, part E)	C ₅ Presentation code
1 digit code	1 digit code	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 – All Ocean Regions*	1 – Safety 2 – Urgency 3 – Distress	00 – All ships (general call) 04 – Navigational, meteorological or piracy warning or meteorological forecast to a rectangular area 13 – Navigational, meteorological, coastal or piracy warning or meteorological forecast to a coastal warning area	2 digit – 00 (All ships) 12 alphanumeric rectangular area address D ₁ D ₂ N(S)D ₃ D ₄ D ₅ E(W)D ₆ D ₇ D ₈ D ₉ D ₁₀ 4 alphanumeric coastal warning area address X ₁ X ₂ B ₁ B ₂	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	Always 0** or 00

C Codes					
C ₀ Ocean Region code (when required)	C ₁ Priority code	C ₂ Service code	C ₃ Address code	C ₄ Repetition code (see Annex 4, part E)	C ₅ Presentation code
		14 – Shore-to-ship distress alert to a circular area	10 alphanumeric circular area address D ₁ D ₂ N(S)D ₃ D ₄ E(W)M ₁ M ₂ M	the MSI provider.	
		24 – Navigational, meteorological or piracy warning or meteorological forecast to a circular area	10 alphanumeric circular area address D ₁ D ₂ N(S)D ₃ D ₄ E(W)M ₁ M ₂ M ₃		
		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 ₁ D ₂ N(S)D ₃ D ₄ D ₅ E(W)D ₆ D ₇ D ₈ D ₉ D ₁₀		
		44 – SAR coordination to a circular area	10 alphanumeric circular area address D ₁ D ₂ N(S)D ₃ D ₄ E(W)M ₁ M ₂ M ₃		
<p>* Subject to availability through LES or service provider ** Value of the presentation code is given by the LES operator or service provider after registration.</p>					

8.2 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 LES or service provider used.

8.3 SafetyNET messages are stored at the addressed LES until transmitted the appropriate number of times, as specified by the C₄ code, although the MSI provider may also cancel a message at any time by sending an appropriate cancellation message to the LES.

8.4 Cancellation procedure may vary between different LESs or service providers. Detailed operational procedure is contained in the instructions on sending EGC broadcast given to the MSI providers after registration with the LES operator or service providers.

8.5 Messages destined for areas of satellite overlap that are required to be transmitted through more than one satellite, should be sent to more than one LES (i.e. one in each *satellite ocean region*) or multiple ocean regions via the same LES to ensure they are received by all intended ships. This may require coordination with adjacent NAVAREA/METAREA and other MSI providers. In an area of overlap coverage from two or three ocean region satellites, distress alert relays and urgency warnings will be broadcast over all satellites which cover the affected region.

8.6 Scheduled broadcasts are made over nominated satellites and at specified times, as allocated by the IMO International SafetyNET Coordinating Panel. These schedules are published in national nautical publications and the IMO Master Plan of Shore-Based Facilities for the GMDSS, as amended.

8.7 MSI providers shall adhere to their published scheduled broadcast times to facilitate reception of messages.

9 Monitoring of MSI broadcasts

9.1 In order to ensure the integrity of the MSI being broadcast, MSI providers must monitor the broadcasts which they originate in accordance to resolution A.706(17), as amended. Monitoring is especially important in a highly automated system, which is dependent on careful adherence to procedure and format. This shall be accomplished by the installation of an Inmarsat C or mini-C terminal with EGC SafetyNET receiver to enable each MSI provider to:

- .1 confirm that the message is transmitted and received correctly;
- .2 ensure that cancellation messages are properly executed; and
- .3 observe any unexplained delay in the message being broadcast.

9.2 EGC receivers only display or print messages on the first occasion they are received. Therefore, in order for MSI providers to confirm that all messages in force are still being transmitted by the LES, and that cancelled messages are no longer being transmitted, the EGC receiver used by the MSI provider to monitor their SafetyNET broadcasts should be powered down (including the transceiver), and re-booted at regular intervals, wherever this is possible.

Alternatively, MSI providers should consult their equipment supplier for specialist EGC monitoring software which would not require the MES to be re-booted.

9.3 EGC SafetyNET Log

All Inmarsat C and mini-C MESs capable of receiving MSI, have an EGC SafetyNET Log, which contains information on all SafetyNET messages received by the terminal.

This information includes:

Message number:	Generated by the terminal
LES:	ID of the LES which transmits the message
Service:	The MES software translates the C ₂ service code used in the message address and displays a short title for the particular type message service.
Priority:	The MES software translates the C ₁ priority code used in the message address and displays the appropriate Priority. This could be either: Safety, Urgency or Distress.
Received date and time:	The date time group YY-MM-DD HH:mm of when the message was received. A format of the date is configurable by the MES operator.
Size:	Usually in number of bytes or characters.
Sequence number:	The unique message sequence or reference number allocated to the message by the addressed LES.
Routeing:	Message routeing (memory or memory and printer) – set up by the MES operator or a mandatory routeing for Urgency and Distress priority messages.

Message number	LES	Service	Priority	Received date and time	Size	Sequence number	Routeing
17022405.egc	321	MET/NAV warning/forecast	Safety	17-02-24 03:31	2263	1605	Mem
17022402.egc	321	SAR coordination	Urgency	17-02-24 03:02	1506	1604	Prn+Mem
17022401.egc	322	Coastal warning/forecast	Safety	17-02-23 02:56	269	9154	Mem
17022302.egc	304	Distress alert relay	Distress	17-02-23 20:44	769	691	Prn+Mem
17022305.egc	317	NAV warning	Safety	17-02-23 19:41	819	8318	Mem
17022302.egc	322	MET warning	Safety	17-02-23 19:35	2358	9150	Mem

Figure 7 – Example of an EGC SafetyNET Log

10 Quality control of MSI broadcasts

10.1 Misuse of C codes

Monitoring of MSI broadcasts is a vital tool to show instances of misuse of C₁ (priority), C₂ (service) and C₄ (repetition) codes and other technical or operational problems in connection with preparing and broadcasting EGC messages. Misuse of C codes results in incorrect understanding of MSI services and types of message, multiple reception of unwanted messages received on ships and delay in receiving vital information.

10.2 Improper use of C₁ priority codes

This refers mainly to the use of service code C₂ = 14 "Ship-to-Shore distress alerts" which require using C₁ = 3 Distress priority code only. Problems are caused when the service code C₁ = 2 is used by mistake, as in the following example. When C₁ = 2 is erroneously used in conjunction with C₂ = 14, the header of the message received on a ship is displayed and printed as:

LES xxx – MSG 1210 – Distress Urgent Call to Area:
14N 66W 300 – PosOK

where:

LES xxx – ID of the LES;

MSG 1210 – message number;

Distress Call to Area – decoding of service C₂ = 14;

Urgent – decoding of priority C₁ = 2;

14N 66W 300 – circular area the message was sent to, where 14N 66W is centre of the circle and 300 is radius of the circle in nautical miles; and

PosOK – indicator that the MES's position status is valid or the position was updated within the last 12 hours.

The message header contains reference to two different priorities at the same time – Distress and Urgent (the same problem may be evident in the EGC log or message list), which misleads mariners about the message importance and its content. This is an important issue, particularly for non-SOLAS users, where an EGC message received with conflicting Urgency and Distress priorities may NOT be printed out automatically, which could cause a delay in reacting to the vital information.

If an EGC message is submitted with Urgency priority, service code $C_1 = 2$ and another message is sent with Distress priority afterwards, priority code $C_1 = 3$, the message with Urgency priority will be aborted and the message with Distress priority will be handled first.

10.3 Improper use of C_2 service codes

There are cases when MSI providers submit an EGC SafetyNET message using improper C_2 service codes and a sample is given below:

```
LES xxx – MSG 5213 – Met/NavWarn Urgent Call to Area:  
35N 23E 300 – PosOK  
FROM: Maritime Rescue Coordination Centre xxx  
TO: ALL SHIPS IN xxx
```

```
SAR SITREP NO: 02  
FISHING BOAT 'xxx' WITH THREE PERSONS ON BOARD DEPARTED FROM xxx  
ISLAND ON xxx AT NOONTIME AND SINCE THEN NO INFORMATION ABOUT  
HER. PARTICULARS ... SHIPS SAILING IN VICINITY ARE KINDLY REQUESTED  
TO KEEP A SHARP LOOK OUT INFORMING MRCC  
REGARDS  
DUTY OFFICER
```

The message was sent using service code $C_2 = 24$ "Met/Nav warning to circular area", as shown in the message header, but the text of the message content is concerned with SAR coordination. The correct C_2 code for this type of message should have been $C_2 = 44$ "SAR Coordination to a circular area". Use of the incorrect C_2 codes may delay delivery of the vital SAR information.

Another example is the improper use of rectangular addressing, e.g. service code $C_2 = 04$, for coastal warnings whereby the addressed rectangular area covers areas far beyond coastal areas. In this case, ships receive unwanted information for areas other than those in which they are navigating.

Reception of EGC SafetyNET coastal warnings is an option and to receive these messages, MESSs should be programmed or set up accordingly; otherwise coastal warnings will not be received, regardless of the ship's position. If a coastal warning-type message is addressed to a rectangular area, **ALL** ships, whose position is inside the addressed rectangle, will receive the message. The main problem here is not only misusing service codes, which are specified by the International SafetyNET Manual, but reception (and printing) of multiple unwanted messages which ships may never require.

10.4 Improper use of C_4 repetition codes

Repetition codes detailed in Annex 4, part E, are used by MSI providers to "instruct" the Inmarsat C system to repeat a SafetyNET message a finite number of times or at specific intervals until cancelled by the information provider.

MSI is submitted for broadcast with repetitions, either six min after initial broadcast (with six min "echo") or every 1, 2, 3, 4,... 48,... or 120 hours until cancelled by the MSI provider. Each message, when submitted for broadcast, is given a unique reference number. When the message is received by the MES, the reference number is "recorded" by the mobile terminal and stored in the memory. When the same message is re-broadcast later, using any C₄ repetition codes, MESs receive it and "recognize" the reference number by cross-checking the list of numbers of messages already received. Messages received with the same unique reference number will not be displayed or printed out for a second time.

Note: An EGC message, which requires a multiple broadcast, should be addressed with the proper repetition code and requires only a single submission to the LES. The process of repeated broadcast will be controlled by the repetition code.

When the same SafetyNET message is submitted for broadcast for a second (or third or more) time, the addressed LES will give the message **another** reference or sequence number and mobile terminals will not be able to "recognize" it as the same message. In this case each subsequent message submitted to the LES for repetition will be received by MESs and may be automatically printed out.

SafetyNET monitoring shows that some MSI providers do not use the recommended repetition code and in this case MESs receive and print unwanted messages, which will fill up the MES's memory rather quickly and waste printing paper.

Notes:

1. Some MSI is broadcast only once on receipt using repetition code C₄ = 01.
2. Mariners are advised not to engage in routine communications during the periods designated for scheduled MSI SafetyNET broadcasts. The six min repeat or echo should be used for non-scheduled broadcasts.

Below is an example of the same weather forecast submitted for broadcast twice and having two different reference numbers:

```
LES xxx – MSG 1032 – MetWarn/Fore Safety Call to Area:  
xxx – PosOK  
xxx CSAT 23423440010402 xx-NOV-2016 09:55:41 103000  
SECURITE  
HIGH SEAS BULLETIN FOR METAREA xxx ISSUED AT 0800  
ON xx NOV 2017 BY THE MET OFFICE ...
```

```
LES xxx – MSG 1033 – MetWarn/Fore Safety Call to Area:  
xxx – PosOK  
xxx CSAT 23423440010402 xx-NOV-2017 10:10:13 103453  
SECURITE  
HIGH SEAS BULLETIN FOR METAREA xx ISSUED AT 0800  
ON xx NOV 2017 BY THE MET OFFICE
```

The message (size about 4,800 characters) was received and printed twice since it was submitted to the LES for broadcast twice and was given two separate reference numbers – 103000 and 103453.

If the message had been submitted once with, for example C₄ = 11 (transmit on receipt followed by repeat six minutes later), it would have been given one reference number and received and printed only once.

11 Accessing the SafetyNET service

11.1 MSI messages are transmitted to LESs providing Inmarsat C services in accordance with national and international routing arrangements. Access to different LESs may require use of different user interfaces that may have different access procedures and syntax commands and it should be checked with the Inmarsat C LES operator or service provider.

11.2 Some LESs may provide e-mail, or internet (direct) drop access to the SafetyNET service that allows registered MSI providers to send EGC messages using e-mail from any computer with access to the internet. Due to the nature of the internet, an e-mail service may not guarantee that EGC messages will be received by the addressed LES without delay and may not support cancellation procedures. For this reason monitoring of all EGC messages is especially important in accordance with section 9 above.

12 Land Earth Station functions

12.1 Messages for transmission via the SafetyNET service are received and processed automatically at the LES. Because the system is automatic, the quality of service and information depends on accurate preparation of messages.

12.2 Messages are not reviewed for corruption or accuracy at the LES; therefore, the originator must take special care to adhere to the format specified. This dependence on syntax is one of the reasons why MSI providers must monitor the broadcasts they originate.

12.3 Participating LESs transmit SafetyNET messages over an inter-station signalling link to the Ocean Region Network Coordination Station (NCS) in the relevant ocean region for transmission over the broadcast channel.

12.4 Messages will be queued at the LES and scheduled for transmission according to priority and instructions contained in the special address headers (C_1 – priority code and C_4 – repetition code); messages with the highest priority will be transmitted first (i.e. in the order "distress", "urgency", "safety"). The originator of each message will specify in the address field the desired number of repetitions and the interval between transmissions for that message.

13 Receiving SafetyNET broadcasts

13.1 The basic requirements of the EGC receiver are that it should continuously receive the broadcast channel (the Inmarsat C NCS common signalling channel) and process the messages being transmitted through the satellite. However, certain classes of receiving equipment may not provide wholly uninterrupted monitoring of the broadcast channel, for example, the receiver was tuned to an LES messaging channel to receive or transmit a message and initial broadcast was missed. For this reason, MSI providers shall repeat their most important **unscheduled messages** six minutes after the first broadcast so that the terminal would receive EGC messages on the repeated broadcast.

13.2 Although the MES receives all SafetyNET messages on the broadcast channel, it may suppress some messages from being displayed or printed automatically. For example:

- .1 all messages addressed to geographical areas (circular or rectangular) other than those including the ship's current position will be automatically suppressed;
- .2 for coastal warnings only (see figure 8) it may be programmed to suppress:

- a) messages containing B₁ codes for coastal warning areas which have not been set up in the terminal,
- b) messages containing B₂ codes for subject matter of no relevance to the ship.

13.3 The MES also suppresses the printing of messages previously received. It is not possible to reject mandatory "all ship" messages such as shore-to-ship distress alerts 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.

13.4 The following B₂ code subject indicators for coastal warnings are in use:⁹

A = Navigational warnings*	I = not used					
B = Meteorological warnings*	J = SATNAV messages					
C = Ice reports	K =					
D =	Other electronic navaid messages					
Search and rescue information, and acts of piracy warnings*	L =					
E = Meteorological forecasts	Other navigational warnings – additional to B ₂ code A					
F = Pilot service messages	<table border="1"> <tbody> <tr> <td>V =</td> <td rowspan="4">Special services allocation by the International SafetyNET Coordinating Panel</td> </tr> <tr> <td>W =</td> </tr> <tr> <td>X =</td> </tr> <tr> <td>Y =</td> </tr> </tbody> </table>	V =	Special services allocation by the International SafetyNET Coordinating Panel	W =	X =	Y =
V =		Special services allocation by the International SafetyNET Coordinating Panel				
W =						
X =						
Y =						
G = AIS						
H = LORAN messages						
	Z = No messages on hand					

13.5 It is recommended that, in order to ensure that all necessary MSI is available before sailing, the EGC receiver should remain in operation while the ship is in port.

13.6 Although reception of SafetyNET traffic is automatic, the shipboard operator must set up the receiver properly before the start of the voyage as follows:

- .1 Selecting the appropriate satellite ocean region if the ship is navigating in an overlap area of two or three satellites.
- .2 Selecting one or more of the following (as appropriate):
 - a) current NAVAREA/METAREA or Sub-area designator. On some MES models this function is automatic, on others manual, and it requires an initial setup of the current NAVAREA/METAREA. When this ship moves to another area, a new setup should again be performed manually. Please check with the manufacturer's handbook.
 - b) additional NAVAREA/METAREA designator(s);

⁹ Cannot be rejected by the receiver.

- c) relevant coastal warning area identification letter and subject indicator characters;
- d) fixed position(s).

The screenshot shows the 'EGC Setup' screen with the following sections:

- EGC-only receiver:** EGC-only receiver
- System Messages:** System Messages
- Additional Navarea(s)/Metarea(s) [0...99]:** 2 3 9 8
- Coastal Warning Settings:**
 - Coastal Warning Areas [A...Z]:** ABCEFKM
 - Type of Coastal Warnings:**
 - Navigational Warnings
 - Meteorological Forecasts
 - Satnav
 - Meteorological Warnings
 - Pilot Service messages
 - Other Nav aids
 - Ice Reports
 - Loran messages
 - Additional Nav Warnings
 - Search and Rescue
 - AIS messages
- Fixed Position Settings:**

	Deg. N/S	Deg. E/W
Fixed Pos. 1	50 N	009 W
Fixed Pos. 2	35 N	020 W
Fixed Pos. 3	11 N	057 E
Fixed Pos. 4	05 S	120 W
Fixed Pos. 5		

Figure 8 – EGC setup screen

Note: Figure 9 depicts the general information available on an EGC setup screen. The layout of this screen varies between different models of Inmarsat C and mini-C MESs.

13.7 The position information in MESs is up-dated automatically from integrated navigational receivers and they are fitted on all modern (latest) terminals, or may be up-dated from a separate electronic position-fixing system. If there is no automatic position up-date system installed, e.g. on older MES terminals, it is recommended that the position in the MES is up-dated at least every 4 hours. If the position has not been up-dated for more than 12 hours or is unknown, all SafetyNET messages within the entire satellite ocean region will be printed or stored in the MES.

13.8 The majority of Inmarsat C MES terminals with EGC reception capability are Class 2 Inmarsat C terminals (having a common receiver for Inmarsat C messages and MSI) and MSI broadcasts will only be received when the terminal is idle. Therefore, Class 2 terminals shall not be in use for other communications at the times of scheduled broadcasts. Similarly, in the case of Class 3 Inmarsat C MES (having two separate receivers for Inmarsat C messages and MSI), it is necessary to ensure that it is tuned to the broadcast channel of the appropriate satellite at the times of scheduled broadcasts.

Note: More information on different classes of Inmarsat C and mini-C MESs is in Annex 5.

14 Charges for SafetyNET services

14.1 Resolution A.707(17): *Charges for Distress, Urgency and Safety Messages Through the Inmarsat System*, establishes the arrangements in place for the treatment of charges.

14.2 There are no charges to the mariner for reception of SafetyNET messages.

14.3 Message transmission charges apply to MSI providers and are set at a special SafetyNET tariff by national telecommunication service providers and LESs offering EGC services.

Annex 1

International SafetyNET Coordinating Panel

1 Terms of reference

To coordinate the development and use of the International SafetyNET Service, and in particular to:

- .1 develop operating methods for the effective use of the SafetyNET service, including consideration of the need for scheduled broadcasts;
- .2 develop documentation in support of the SafetyNET service, in particular the International SafetyNET Manual;
- .3 advise Land Earth Station (LES) operators and potential registered information providers on all aspects of the Service, including system access and effective operation;
- .4 develop criteria and establish means for the approval and registration of potential information providers;
- .5 coordinate the registration of potential information providers; and
- .6 promote a proper understanding of the benefits and use of the International SafetyNET Service among the wider maritime community.

2 Contact address

The International SafetyNET Coordinating Panel can be contacted at the following address:

The Chairman
International SafetyNET Coordinating Panel
International Maritime Organization
4 Albert Embankment
London SE1 7SR
United Kingdom
Telephone: +44 (0)20 7735 7611, Fax: +44 (0)20 7587 3210
Email: ncsr@imo.org (In subject line add: for Chairman IMO International SafetyNET Coordinating Panel)

3 Panel membership

3.1 The International SafetyNET Coordinating Panel is open to membership by all Member Governments and also includes one member nominated by each of the following international organizations:

- .1 International Maritime Organization (IMO)
- .2 World Meteorological Organization (WMO)
- .3 International Hydrographic Organization (IHO)
- .4 International Mobile Satellite Organization (IMSO)

3.2 The following may be represented as observers on the panel:

- .1 IHO World-Wide Navigational Warning Service Sub-Committee
- .2 IMO NAVTEX Coordinating Panel
- .3 Expert Team on Maritime Safety Services (ETMSS) of the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM)
- .4 Inmarsat plc

Annex 2

Authorization, certification and registration of SafetyNET information providers

Two distinct and separate processes, Authorization and Certification, must be completed before an information provider will be granted Registration to access the SafetyNET broadcast service. They have been established to protect the integrity of the SafetyNET information service and clearly establish a qualification to the special SafetyNET tariff.

1 Authorization

1.1 Authorization is carried out by IMO in consultation with IHO and WMO as appropriate.

1.2 In order to obtain authorization to broadcast maritime safety information through the International SafetyNET Service, an information provider must apply to the relevant international organization for approval to participate in the internationally coordinated service:

Meteorological authorities – to WMO;
Hydrographic authorities – to IHO;
Search and rescue authorities – to IMO;
The International Ice Patrol – to IMO;
Others – to IMO.

1.3 In considering such applications, the relevant international organizations will take into account:

- .1 the established and expected availability of other information sources for the area concerned; and
- .2 the need to minimize duplication of information as much as possible.

1.4 The relevant international organization will inform IMO of endorsed applications.

2 Certification

2.1 On receipt of IMO authorization, the International SafetyNET Coordinating Panel will issue a Certificate of Authorization to Participate in the International SafetyNET Service directly to the information provider with a copy to IHO or WMO or IMO, as well as to Inmarsat C LES operators. A specimen Certificate of Authorization is shown at the end of this Annex.

2.2 International SafetyNET Coordinating Panel will maintain the master list of all registered information providers and circulate it to IMO, IHO, WMO and all Inmarsat C LES operators.

3 Registration

3.1 After receiving a Certificate of Authorization, an information provider may conclude an agreement with any Inmarsat C LES operator(s), serving the required ocean region(s), to obtain access to the system.

3.2 This will involve, in addition to the contractual aspects, registration of the information provider's identity which must be programmed into the LES control equipment.

3.3 LES operators will only register information providers who have received a Certificate of Authorization.

4 Contact addresses

International Maritime Organization

The Chairman
International SafetyNET Coordinating Panel
4 Albert Embankment
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United Kingdom
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5 Sample Certificate of Authorization

4 Albert Embankment, London SE1 7SR United Kingdom	99 City Road, London EC1Y 1AX United Kingdom

[Name of authority/country]

Date: 01 Jan 2017

Certificate of Authorization to Participate as an Information Provider in the International SafetyNET Service

This is to certify that the [Name of authority/country] is authorized by the International Maritime Organization to provide navigational warning services for broadcast in the International SafetyNET Service in accordance with Annex 2 of the International SafetyNET Manual.

PETER M. DOHERTY
Chairman
International SafetyNET Coordinating Panel

Certificate No.	"XX"
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International Maritime Organization (IMO)	International Mobile Satellite Organization (IMSO)
Telephone: National (207) 735-7611 International +44 (207) 735-7611 Facsimile +44 (207) 587-3210	Telephone: National (207) 728-1249 International +44 (207) 728-1249 Facsimile +44 (207) 728-1172

Annex 3

The Inmarsat System

1 Introduction

1.1 There are three essential components of the Inmarsat system:

- .1 the Inmarsat space segment – the satellites and their ground support facilities – planned and funded by Inmarsat;
- .2 the ground segment – comprises a network of Land Earth Stations (LESs), Network Coordination Stations (NCSs) and the Network Operations Centre (NOC). Each LES provides an interface between the space segment and the national and international fixed telecommunication networks; and
- .3 the Mobile Earth Stations (MESs) – comprises mobile satellite communication terminals.

2 Bandwidths

2.1 Shore-to-ship communications are in the 6 GHz band (C-band) from the LES to the satellite and in the 1.5 GHz band (L-band) from satellite to ship. Ship-to-shore communications are in the 1.6 GHz band (L-band) from the ship to the satellite and in the 4 GHz band (C-band) from satellite to LES.

3 The space segment

3.1 To provide the space segment for global coverage, Inmarsat employs its own dedicated satellites.

3.2 The space segment is segmented globally into four ocean regions: Atlantic Ocean Region East (AOR-E), Atlantic Ocean Region West (AOR-W), Indian Ocean Region (IOR) and Pacific Ocean Region (POR). Each ocean region is served by a dedicated satellite. Inmarsat has full contingency plans in place in the unlikely event of any prime satellite outage. These plans are exercised regularly and are witnessed by the International Mobile Satellite Organization (IMSO). The Polar Regions – above approximate latitudes 76°N and 76°S – cannot be seen by geostationary satellites (see figure 4).

4 The ground segment

4.1 The Inmarsat system is connected into the worldwide telecommunication networks via LESs. Many of these LESs provide Inmarsat C EGC services.

4.2 For Inmarsat C communication system there is a Network Coordination Station (NCS) in each ocean region, which monitors and controls communications traffic within its region. Each NCS communicates with the LESs in its ocean region, the other NCSs and the Network Operations Centre (NOC). Inmarsat C NCSs also transmit EGC SafetyNET and FleetNET messages on the NCS common channel.

4.3 The Inmarsat Network Operations Centre (NOC) is located in London at the Inmarsat headquarters and functions around the clock, coordinating the activities of the NCSs and the LESs in each ocean region.

5 Mobile Earth Stations (MESs)

5.1 Inmarsat C and mini-C MESs with the EGC function are small, lightweight terminals, with small omni-directional antennas, for providing data and message-type services. EGC receive capability is provided by Class 2 or 3 Inmarsat C MESs. Interfaces via RS232 ports are provided for a dedicated messaging unit, personal computer or any other data terminal equipment for message generation and display.

5.2 Class 0 standalone EGC receivers provide the capability to receive SafetyNET and FleetNET messages only; there is no transmit or receive capability for sending and receiving messages.

5.3 The technical requirements of all classes of equipment are detailed in annex 5.

Annex 4

Operational guidance

1 This annex contains operational guidance for the benefit of registered MSI providers who are responsible for preparing messages for broadcast via the International SafetyNET Service.

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

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

- 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

Allocation of priority and service codes for EGC SafetyNET services		
EGC SafetyNET service	Message priority	Service code (type)
Navigational warning services	C ₁ = 1 (Safety) – normally C ₁ = 2 (Urgency) – exceptionally at discretion of MSI 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	C ₁ = 3 (Distress) – always	C ₂ = 14 – Shore-to-ship distress alert 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
4) general (all ships call within the Inmarsat ocean region)	C ₁ = 2 (Urgency) C ₁ = 3 (Distress)	C ₂ = 00
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

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

C₀:C₁:C₂:C₃:C₄:C₅

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

- C₀ – Ocean region
- C₁ – Message priority
- C₂ – Service code
- C₃ – Address code
- C₄ – Repetition code
- C₅ – Presentation code

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

The additional C₀ code will only be required to identify the satellite ocean region when sending a broadcast message to a LES which operates to more than one satellite ocean region, as follows:

- C₀ = 0 – AOR-W
- C₀ = 1 – AOR-E
- C₀ = 2 – POR
- C₀ = 3 – IOR
- C₀ = 9 – All Ocean Regions¹⁰

- 4 (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 LES 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 is defined in the <i>Joint IMO/IHO/WMO Maritime Safety Information Manual</i> , as amended.
NNNN	The letters NNNN should be inserted at the end of the text to indicate "end of message".

¹⁰ Subject to availability through LES or service provider.

- (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 LES. This should be inserted on the final line, after NNNN. This code may vary, and must conform to the format required by the LES or service provider as supplied in their specific instruction manual.

5 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 SafetyNET Service are made at scheduled times. Broadcast schedules must be coordinated through the International SafetyNET Coordinating Panel, which can also offer advice on ways of scheduling information within the system.

6 Because errors in the header format of a message may prevent it being released, MSI providers must install an Inmarsat SafetyNET receiver and monitor broadcasts of messages which they originate.

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

8 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 min after the initial scheduled or unscheduled broadcast. The six min repeat or echo is used to ensure that the warning is received by the maximum number of ships.

Part A – Navigational warning services

1 The following guidelines set out the arrangements to be used for promulgating navigational and coastal warnings via SafetyNET for the GMDSS. **They are mandatory for broadcasts in the International SafetyNET Service. Broadcasts originated by the International Ice Patrol also follow the guidelines in this part.**

2 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.

3 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, twice a day for six weeks or until cancelled.

4 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 mariners by other official means, for example in Notices to Mariners, 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.

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

5.1 C₁ – Message priority

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

5.2 C₂ – Service code¹¹

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

5.3 C₃ – Address code

C ₃ = two digits X ₁ X ₂	When C ₂ = 31, then: X ₁ X 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 ₁ X ₂ B ₁ B ₂	When C ₂ = 13 for Coastal warnings, then: X ₁ X 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 ₁ D ₂ LaD ₃ D ₄ D ₅ LoD ₆ D ₇ D ₈ D ₉ D ₁₀	When C ₂ = 04 for NAVAREA warnings within a rectangular area: D ₁ D ₂ is latitude of south-west corner of the rectangle in degrees La is hemisphere which will always be N for Arctic NAVAREAs XVII to XXI

¹¹ Until Inmarsat-C or mini-C terminals operating in arctic waters have been updated or replaced, C₂ = 04 may be used for NAVAREA warnings to a rectangular area by NAVAREAs XVII, XVIII, XIX, XX and XXI.

	<p>D₃D₄D₅ is longitude of south-west corner of rectangle in degrees, with leading zeros if required</p> <p>Lo is longitude E or W</p> <p>D₆D₇ is extent of rectangle in latitude (degrees)</p> <p>D₈D₉D₁₀ is extent of rectangle in longitude (degrees)</p>
<p>Example: a rectangle whose south-west corner is 60°N and 010°W, extending 30° north and 25° east, is coded as: 60N010W30025</p> <p>Note: Latitude and longitude are limited by values from 00° to 90° latitude and 000° to 180° longitude.</p>	

5.4 C₄ – 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 min later)
C ₄ = 16	Use for NAVAREA or coastal warnings scheduled for broadcast twice per day at 12 hour intervals with safety priority
<p>Note: For NAVAREA or coastal warnings scheduled for broadcast more than twice per day, the appropriate C₄ repetition code detailed in part E of this Manual must be used.</p>	

5.5 C₅ – Presentation code

C ₅ = 00	The code 00 for International Alphabet Number 5 is normally used
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Part B – Meteorological services

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

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

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

3.1 C₁ – 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

3.2 C₂ – Service code¹²

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

3.3 C₃ – Address code

C ₃ = ten alphanumeric characters D ₁ D ₂ LaD ₃ D ₄ D ₅ LoR ₁ R ₂ R ₃	When C ₂ = 24 for meteorological warnings to user defined circular area, then: D ₁ D ₂ La (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 ₃ D ₄ D ₅ Lo (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 ₁ R ₂ R 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	

¹² Until Inmarsat-C or mini-C terminals operating in arctic waters have been updated or replaced, C₂ = 04 may be used for METAREA warnings or meteorological forecasts to a rectangular area by METAREAs XVII, XVIII, XIX, XX and XXI.

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 ₁ X ₂ B ₁ B ₂	When C ₂ = 13 for coastal warnings, then: X ₁ X 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 ₁ D ₂ LaD ₃ D ₄ D ₅ LoD ₆ D ₇ D ₈ D ₉ D 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 5.3

3.4 C₄ – 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 min later)

3.5 C₅ – Presentation code

C ₅ = 00	The code 00 for International Alphabet Number 5 is normally used.
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Part C – Search and rescue services

1 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.

2 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.

3 Shore-to-ship distress alert relays

3.1 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 SafetyNET 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:

3.2 C₁ – Message priority

C ₁ = 3 (distress)

3.3 C₂ – Service code

C ₂ = 14 (shore-to-ship distress alert to circular areas)	Messages addressed to circular areas will only be received and printed out by EGC receivers that are located inside the circle or have not had their position kept up to date
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3.4 C₃ – Address code

C ₃ = ten alphanumeric characters D ₁ D ₂ LaD ₃ D ₄ D ₅ LoR ₁ R ₂ R ₃	When C ₂ = 14 for distress alert to user defined circular area, then: D ₁ D ₂ La (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 ₃ D ₄ D ₅ Lo (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 ₁ R ₂ R ₃ (three characters) is alert radius around distressed vessel in nautical miles. To ensure that position inaccuracies of both the distressed 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. Note that if a
--	--

	vessel's own position information is not entered into its SafetyNET receiver, every shore-to-ship distress alert relay message transmitted to the Inmarsat ocean region will be received and printed
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3.5 C₄ – Repetition code

C ₄ = 11	Use for distress alerts (transmit on receipt followed by repeat six min later)
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3.6 C₅ – Presentation code

C ₅ = 00	The code 00 for International Alphabet Number 5 is normally used
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4 General (all ships) call

4.1 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. This will be printed in every vessel within the Inmarsat ocean region, provided the receiver is tuned to the proper ocean region satellite.

Note: This method of alert should rarely be used.

The C₀:C₁:C₂:C₃:C₄:C₅ codes for general calls are always as follows:

- C₀ = 0 (1, 2 or 3) (if required)
- C₁ = 3 (distress) or 2 (urgency)
- C₂ = 00
- C₃ = 00
- C₄ = 11
- C₅ = 00

5 Search and rescue coordination traffic

5.1 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.

5.2 C₁ – Message priority

C₁ = 3 (distress), 2 (urgency) or 1 (safety)

5.3 C₂ – Service code

C ₂ = 34	Search and rescue coordination to a rectangular area
C ₂ = 44	Search and rescue coordination to a circular area

5.4 C₃ – Address code

C ₃ = twelve alphanumeric characters D ₁ D ₂ LaD ₃ D ₄ D ₅ LoD ₆ D ₇ D ₈ D ₉ D 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 5.3
C ₃ = ten alphanumeric characters D ₁ D ₂ LaD ₃ D ₄ D ₅ LoR ₁ R ₂ R 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 3.3

5.5 C₄ – Repetition code

C ₄ = 11	Use for distress alerts (transmit on receipt followed by repeat six min later)
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5.6 C₅ – Presentation code

C ₅ = 00	The code 00 for International Alphabet Number 5 is normally used
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6 Shore-to-ship urgency and safety traffic

6.1 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 should be broadcast to a NAVAREA using C codes as follows:

6.2 C₁ – Message priority

C ₁ = 2 (urgency) or 1 (safety)
--

6.3 C₂ – Service code

C ₂ = 31

6.4 C₃ – Address code

C ₃ = two digits X ₁ X ₂	When C ₂ = 31, then: X ₁ X ₂ are the two digits of the NAVAREA number (with a leading zero where necessary in the range 01–21)
---	--

6.5 C₄ – Repetition code

C ₄ = 11	Use for unscheduled broadcasts of urgency and safety traffic (transmit on receipt followed by repeat six min later)
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6.6 C₅ – Presentation code

C ₅ = 00	The code 00 for International Alphabet Number 5 is normally used
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7 SAR broadcast for overlapping satellite ocean regions

7.1 Search and rescue distress and urgency broadcasts should be promulgated through all Inmarsat satellites serving the area surrounding the vessel in distress. This is to ensure that vessels with receivers tuned to any ocean region satellite serving the area will receive the message.

Part D – Piracy countermeasures broadcast messages

1 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 SafetyNET) and other broadcasting networks for warnings to shipping, if these exist.

2 There are two kinds of MSI broadcast 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.

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

4 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.

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

5.1 C₁ – Message priority

C ₁ = 1 (safety)

5.2 C₂ – Service code

C ₂ = 04	SITREP to a rectangular area
C ₂ = 24	SITREP to a circular area

5.3 C₃ – Address code

C ₃ = twelve alphanumeric characters D ₁ D ₂ LaD ₃ D ₄ D ₅ LoD ₆ D ₇ D ₈ D ₉ D ₁₀	When C ₂ = 04 SITREP to a rectangular area Note: The definition of 12 characters for a rectangular address is given in part A, paragraph 5.3
C ₃ = ten alphanumeric characters D ₁ D ₂ LaD ₃ D ₄ D ₅ LoR ₁ R ₂ R ₃	When C ₂ = 24 SITREP to a circular area Note: The definition of 10 characters for a circular address is given in part B, paragraph 3.3

5.4 C₄ – Repetition code

C ₄ = 18	Broadcast every 24 hours (no echo) until cancelled
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5.5 C₅ – Presentation code

C ₅ = 00	The code 00 for International Alphabet Number 5 is normally used
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6 A piracy attack warning shall be broadcast as an "URGENT" 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. In the area of overlap coverage from two or three ocean region satellites, urgent warnings will be broadcast over all satellites which cover the affected region. Subject indicator character B₂ = L 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.

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

7.1 C₁ – Message priority

C ₁ = 2 (urgency)

7.2 C₂ – Service code

C ₂ = 13	Coastal warning
C ₂ = 31	NAVAREA warning

7.3 C₃ – Address code

C ₃ = two digits X ₁ X ₂	When C ₂ = 31 then: X ₁ X 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 ₁ X ₂ B ₁ B ₂	When C ₂ = 13 for coastal warnings then: X ₁ X 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 A or L, where: A = Navigational warnings L = Other navigational warnings

7.4 C₄ – Repetition code

C ₄ = 16	Broadcast every 12hours with no echo until cancelled
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7.5 C₅ – Presentation code

C ₅ = 00	The code 00 for International Alphabet Number 5 is normally used
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8 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).

9 Geographical positions should be quoted in the standard format:

D₁D₂M₁M₂LaD₃D₄D₅M₃M₄Lo

where:

D₁D₂ = degrees latitude (with leading zero if required)

M₁M₂ = minutes latitude

La = hemisphere (N or S)

D₃D₄D₅ = degrees longitude (with leading zeros if required)

M₃M₄ = minutes longitude

Lo = longitude (E or W)

as in the example: 5419N10327E

Notes:

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 – Repetition codes (C₄)

1 The C₄ repetition codes are divided into two categories:

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

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

1.1 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)

1.2 Category (b) repetition codes:

A category (b) repetition code allows a message to be repeated indefinitely or until 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

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

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

Code	Instruction
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.

Annex 5

EGC receiver specifications

These technical requirements were defined by Inmarsat for equipment manufacturers and have been extracted from the System Definition Manual (SDM) for the Inmarsat C communications system.

Enhanced Group Call (EGC) receive facilities are used by SOLAS Convention ships as well as ships not required to comply with the requirements of the SOLAS Convention, as amended. It should be noted that EGC receive facilities intended to meet SOLAS Convention requirements must comply with the IMO Recommendation on Performance Standards for Enhanced Group Call Equipment contained in resolution A.664(16), as amended.

The specific guidance given in this Annex has been carefully coordinated to ensure that the automatic functions of the SafetyNET receiver work properly. Land Earth Stations providing Inmarsat C services for the GMDSS must comply with all relevant aspects of the Inmarsat C SDM, including provision of the EGC SafetyNET services.

Technical requirements for Enhanced Group Call receivers for SOLAS-compliant MESS

1 EGC SafetyNET receivers for SOLAS installations

1.1 Background

The Global Maritime Distress and Safety System (GMDSS) is a radiocommunication system based on satellite and terrestrial technology, designed to improve communications relating to distress and safety of life at sea. It was adopted by the International Maritime Organization (IMO) in 1988, in the form of Amendments to the International Convention for the Safety of Life at Sea (SOLAS), 1974 and came into effect on 1 February 1992. Implementation was completed on 1 February 1999.

It is the responsibility of national Administrations to determine whether a radio installation on board a ship meets the SOLAS requirements. This is done by national Type Acceptance or Approval testing of the sub-systems included in the installation and by inspection of the complete installation by a radio surveyor.

National Type Acceptance testing for SOLAS equipment is usually based on GMDSS specifications and procedures prepared by IMO and the International Electrotechnical Commission (IEC) on their behalf, although other national or regional specifications may be invoked as well.

IMO and IEC documents, which are identified in section 1.2, do not only summarize the general requirements for GMDSS equipment, but also the special requirements for EGC SafetyNET receivers for use in SOLAS installations, as specified by IMO/IEC.

A number of the Inmarsat specifications have been completely revised to reflect the latest IMO/IEC requirements, for example, electromagnetic compatibility and environmental requirements.

1.2 Principal relevant documents

For Inmarsat C and mini-C GMDSS compliant MESs with EGC SafetyNET function, the principal relevant documents in addition to the Inmarsat C SDM are:

- .1 Performance Standards for Enhanced Group Call Equipment – Annex: Recommendation on Performance Standards for Enhanced Group Call Equipment, published by IMO as resolution A.664(16), as amended.
- .2 General Requirements for Shipborne Radio Equipment Forming Part of the Global Maritime Distress and Safety System (GMDSS) and for Electronic Navigational Aids, published by IMO as resolution A.694(17).
- .3 Performance Standards for Inmarsat Standard-C Ship Earth Stations Capable of Transmitting and Receiving Direct-printing Communications – Annex: Recommendation on Performance Standards for Inmarsat Standard-C Ship Earth Stations Capable of Transmitting and Receiving Direct-printing Communications, published by IMO as resolution A.807(19), as amended by resolution MSC.68(68), Annex 4.
- .4 Shipborne Radio Equipment Forming Part of the Global Maritime Distress and Safety System and Marine Navigational Equipment, published by the IEC as IEC 60945.
- .5 Global Maritime Distress and Safety System (GMDSS) – Part 4: Inmarsat C Ship Earth Station and Inmarsat Enhanced Group Call (EGC) Equipment – Operational and Performance Requirements, Methods of Testing and Required Test Results, published by the IEC as IEC 61097-4.
- .6 Maritime Design and Installation Guidelines (DIGs), Annex B, issue 6 of April 2008 published by Inmarsat at:
<http://www.inmarsat.com/Maritimesafety/DIGs.pdf>

2 Introduction

2.1 Enhanced Group Calls

Enhanced Group Calls are a message broadcast service transmitted over the Inmarsat C communications system. The service allows terrestrial information providers to pass messages or data to Class 2 or Class 3 MESs with EGC receivers or Class 0 stand-alone EGC receivers through the Inmarsat C LESs. The messages are processed at the addressed LES and forwarded to the NCS which transmits them on the common channel.

2.2 EGC receiver

An EGC receiver is defined as a single-channel receiver with a dedicated message processor. Mobile Earth Stations of Class 2 and 3 provide an EGC capability in addition to To-Ship and From-Ship messaging capabilities; class 0 MESs are self-contained EGC receivers as shown in figure 9.

Note: Most of the existing models of Inmarsat C and mini-C Maritime terminals on the market are Class 2 MESs.

2.3 Type approval

The Inmarsat C SDM presents the technical requirements and recommendations for an EGC receiver. These requirements must be satisfied before the equipment can be utilized in the Inmarsat system. Procedures for type approval by Inmarsat of a manufacturer's design are provided in a complementary document entitled Type Approval Procedures for Inmarsat C and mini-C Ship Earth Stations published by Inmarsat.

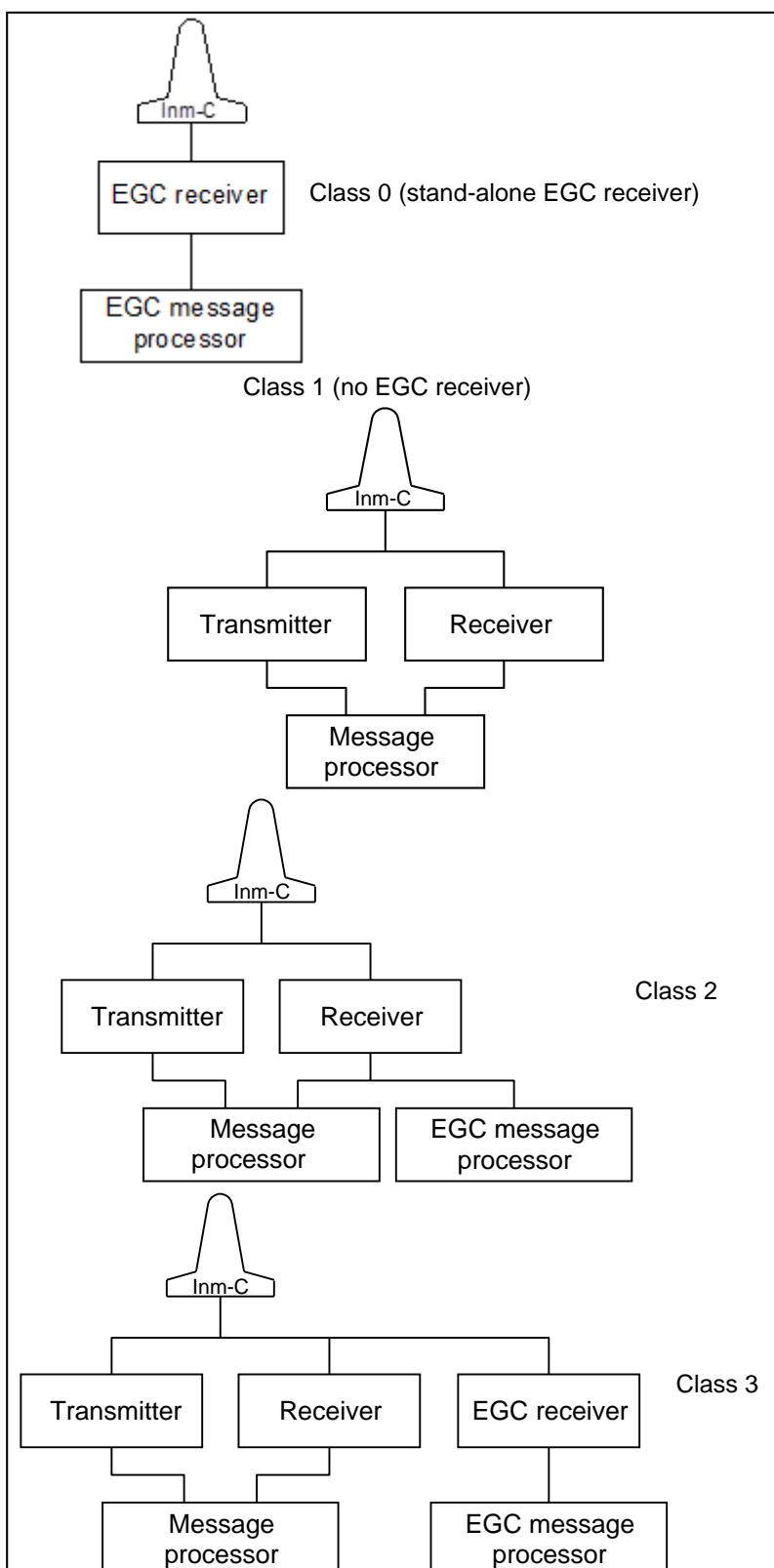


Figure 9 – Classes of Inmarsat C Mobile Earth Stations

3 General requirements

3.1 Mandatory capabilities

The mandatory capabilities of SafetyNET receivers for SOLAS applications are:

- .1 continuous reception of an NCS common channel and processing of the information according to the EGC message protocol; a Class 2 Inmarsat C MES continuously receives the NCS common channel when not engaged in general communications;
- .2 automatic recognition of messages directed to fixed and absolute geographical areas and service codes as selected by the receiver operator or based upon input(s) from navigational equipment;
- .3 SafetyNET receivers meet the requirements of IEC 61097-4 and IEC 60945; and
- .4 where automatic updates are not available, provision is made for a visual indication if the ship's position has not been updated during the last 12 hours. It is only possible to reset this indication by revalidating the ship's position.

4 NCS common channel selection

4.1 General

EGC receivers are equipped with facilities for storing up to 20 NCS channel numbers. Four of these are permanently assigned global beam channel numbers and frequencies as follows:

NCS	NCS common channel	
	Channel No.	Frequency
AOR-West	11080	1537.70 MHz
AOR-East	12580	1541.45 MHz
POR	12580	1541.45 MHz
IOR	10840	1537.10 MHz

These four channel numbers are stored in ROM and are not alterable.

4.2 NCS scanning

Automatic NCS scanning on a regular basis is prohibited in SOLAS SafetyNET receivers. In the event of low signal strength from the satellite, an alarm is raised and the operator is advised to initiate NCS scanning manually.

5 Message-processing requirements

5.1 General

Acceptance or rejection of the EGC service code types is under operator control except that receivers always receive navigational warnings, meteorological warnings, SAR information and To-Ships distress alerts which are directed to a fixed or absolute geographical area within which the receiver is situated.

5.2 Display devices

5.2.1 Message display

The display is capable of presenting at least 40 characters per line of text. The EGC receiver ensures that if a word cannot be accommodated in full on one line it is transferred to the next line.

5.2.2 Status display

An indication of EGC carrier frame synchronization (or loss of synchronization) is provided.

5.3 Printer requirements

A printer is required for a SOLAS SafetyNET receiver. Received EGC messages may be stored for later printing with an indication to the operator that the message has been received. However, distress or urgency priority calls are directly printed as well as stored. Means are also provided not to print or store the same EGC message after it has been received error-free and printed.

Messages are not printed until completely received.

A local audible alarm is sounded to give advance warning of a printer "paper-low" condition.

All SafetyNET messages are annotated with the date and time (UTC) of reception. This information is displayed or printed with the message.

5.4 Character codes

For the EGC service, the International Reference Version of the International Alphabet 5 (IA5), also known as ASCII (a standard alphanumerical character set based on 7-bit codes) is used.

5.5 Operator control

The following control functions and displays are provided as a minimum:

- .1 selection of EGC carrier frequency;

For SOLAS SafetyNET receivers:

- .2 means of inputting the following information:
 - .1 MES's position coordinates;
 - .2 current and planned (additional) NAVAREA(s)/METAREA(s);
 - .3 current and planned coastal warning area (B₁ Code); and
 - .4 coastal warning subject indicator character (B₂ Code).

Receivers are fitted with operator controls to allow the operator to select desired geographical areas and message categories. Details of the geographical areas and message categories which have been selected for reception by the operator are readily available.

5.6 EGC receiver memory capacity requirements

Both temporary and non-volatile memory is required in an EGC receiver for the following purposes:

- .1 message buffering;
- .2 maintaining message identification records;
- .3 storing position coordinates and NAVAREA(s)/METAREA(s) data; and
- .4 storing expansion of NCS common channel numbers.

5.7 EGC receiver addressing

The five basic methods of addressing EGC receivers are:

- .1 all-mobiles call;
- .2 Inmarsat system message addressing;
- .3 group addressing;
- .4 unique addressing; and
- .5 geographical area addressing including coastal addressing.

The type of address used in the header of an EGC packet is uniquely determined by the "C₂" service code field.

5.8 Message identification

All messages are transmitted with a unique sequence number, originating LES ID and service code. Each subsequent transmission of the message contains the original sequence number. This facility allows multiple printing of repeated messages to be inhibited.

5.9 Geographical area addressing

Geographical area addressing refers to messages transmitted to MESs in a particular area. The area may be expressed in terms of a fixed, pre-defined area such as the NAVAREA/METAREA, or satellite coastal warning area, or in terms of an absolute geographical address expressed as latitude and longitude coordinates on the surface of the earth. An absolute geographical area address is a representation of a closed boundary on the surface of the earth given in the address field of the message header. The receiver recognizes two forms of absolute geographical addressing: rectangular and circular. Each form is specified in terms of an absolute position in latitude and longitude and further parameters that completely specify the boundary.

In order to process a geographical area address, the receiver shall be programmed with the MES's current position. The position may be entered automatically from an integrated or external navigation aid or entered manually. The receiver provides notification to the operator when the position has not been updated for four hours. If the MES's position has not been updated for more than 12 hours, or is unknown, **ALL** SafetyNET messages will be printed or stored in memory.

A geographical area address is considered valid for a particular MES if its current position falls inside or on the boundary specified by the address. It is a mandatory requirement that the operator be able to select more than one area, so that messages directed to other area(s) of interest can be provided. It is recommended that the operator be able to select at least four areas.

6 Link performance monitoring

The SafetyNET EGC receiver continuously monitors the received bulletin board error rate (BBER) as a measure of link performance whenever it is tuned and synchronized to a NCS (or LES) time division multiplex (TDM). The receiver stores a count of the number of bulletin boards received in error out of the last 100 received. This count is continuously updated frame by frame.

7 Alarms and indications

The following alarms and indications are provided at a SOLAS SafetyNET receiver and meet the operational requirements for alarms stated in IEC 61097-4.

7.1 Distress/Urgency priority call alarm

For SOLAS SafetyNET receivers:

Provision is made for a specific audible alarm and visual indication at the position from which the ship is normally navigated to indicate receipt of SafetyNET messages with distress or urgency priority. It is not possible to disable this alarm and it is only possible to re-set it manually, and then only from the position where the message is displayed or printed.

7.2 Other alarms and indications

- .1 high BBER;
- .2 printer paper low;
- .3 receiver fault indication;
- .4 loss of receiver synchronization; and
- .5 position update.

Additional alarms and indications may be provided at the manufacturer's discretion.

8 Electromagnetic compatibility

The interference and electromagnetic compatibility requirements of IEC 60945 applies.

9 Environmental conditions

SOLAS SafetyNET receivers shall operate satisfactorily under the environmental conditions specified in the SDM. The latest issues of IEC 61097-4 and IEC 60945 apply.

10 Navigational interface

In order that a receiver's position may be automatically updated, receivers may be equipped with an interface to navigational instruments. A suggested standard interface is in IEC 61162, Part 1 (NMEA 0183) Standard for Interfacing Electronic Marine Navigational Devices.

Note: The majority of modern maritime MESs have an integrated navigational receiver.

Annex 6

Procedure for amending the International SafetyNET Manual

1 Proposals for amendment or enhancement of the International SafetyNET Manual should be submitted to the IMO Maritime Safety Committee through the Sub-Committee on Navigation, Communications and Search and Rescue (NCSR).

2 Amendments to this Manual should normally be approved at intervals of approximately two years or at such longer periods as determined by the Maritime Safety Committee at the time of adoption. Amendments approved by the Maritime Safety Committee will be notified to all concerned, will provide at least 12 months' notification and will come into force on 1 January of the following year.

3 The agreement of the International Hydrographic Organization, 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.

ANNEX 9
DRAFT MSC CIRCULAR
AMENDMENTS TO THE NAVTEX MANUAL

1 The Maritime Safety Committee (MSC), at its [ninety-seventh session (21 to 25 November 2016)], approved the amendments to the NAVTEX Manual, as prepared by IHO and WMO and endorsed by the Sub-Committee on Navigation, Communications and Search and Rescue (NCSR) at its third session (29 February to 4 March 2016).

2 This circular replaces MSC.1/Circ.1403.

3 The Committee decided that the amendments will come into force on [1 January 2018].

ANNEX
NAVTEX MANUAL
2018 EDITION

Foreword

SOLAS regulation IV/12.2 states that "Every ship, while at sea, shall maintain a radio watch for broadcasts of maritime safety information on the appropriate frequency or frequencies on which such information is broadcast for the area in which the ship is navigating".

At the request of the IMO Sub-Committee on Radiocommunications (COM), the NAVTEX Manual was first produced in 1988. Three subsequent editions have been produced, with the fourth edition published in 2005 containing amendments endorsed by the Maritime Safety Committee (MSC) at its seventy-eighth session in May 2004 by MSC/Circ.1122.

At its seventh meeting in September 2005, the IHO Commission on the Promulgation of Radio Navigational Warnings (CPRNW)¹ established a working group to review all World-Wide Navigational Warning Service (WWNWS) documentation. The working group included representation from the WMO and firstly prepared revisions to resolutions A.705(17), Promulgation of Maritime Safety Information and A.706(17), World-Wide Navigational Warning Service. The proposed revisions of these resolutions were circulated to IHO Member States under IHB CL 104/2007, endorsed by the Sub-Committee on Radiocommunications and Search and Rescue (COMSAR) at its twelfth session in April 2008 and subsequently approved by the MSC at its eighty-fifth session in November/December 2008 by means of MSC.1/Circ.1287 and MSC.1/Circ.1288, respectively.

The IHO CPRNW Working Group then prepared the revised Joint IMO/IHO/WMO Manual on Maritime Safety Information incorporating the revised information from resolutions A.705(17), as amended, and A.706(17), as amended. The revised text was circulated to IHO Member States under cover of IHB CL 70/2008, endorsed by the COMSAR Sub-Committee at its thirteenth session in January 2009 and subsequently approved by the MSC at its eighty-sixth session in May/June 2009 by means of MSC.1/Circ.1310. The working group subsequently prepared the third revision of the International SafetyNET Manual. The revised text of the International SafetyNET Manual was circulated to IHO Member States under cover of IHB CL 68/2009, endorsed by the COMSAR Sub-Committee at its fourteenth session in March 2010 and approved by the MSC at its eighty-seventh session in May 2010 by MSC.1/Circ.1364.

Continuing with the holistic approach of reviewing all maritime safety information documents from the top-down, the working group prepared the fifth revision of the NAVTEX Manual. The revised text of the NAVTEX Manual was circulated to IHO Member States under cover of IHB CL 74/2010, endorsed by the COMSAR Sub-Committee at its fifteenth session in March 2011 and subsequently approved by the MSC at its eighty-ninth session in May 2011 by MSC.1/Circ.1403.

Following the review of all WWNWS documentation, an editorial review has been conducted. As part of this editorial review, MSC.1/Circ.1287/Rev.1 and MSC.1/Circ.1288/Rev.1 were approved by the MSC at its ninety-second session in June 2013, and MSC.1/Circ.1310/Rev.1 was approved by the MSC at its ninety-fourth session in November 2014. Following the

¹ CPRNW was renamed the IHO WWNWS Sub Committee (WWNWS) with effect from 1 January 2009.

approval of these circulars, the IHO WWNWS Sub-Committee Working Group reviewed the text of the NAVTEX Manual. This sixth revision of the NAVTEX Manual was endorsed by the IHO and the WMO through the WWNWS Sub-Committee, endorsed by the Sub-Committee on Navigation, Communications and Search and Rescue (NCSR) at its third session in February/March 2016 and subsequently approved by the MSC at its ninety-seventh session in November 2016 by means of MSC.1/Circ.1403/Rev.1, with an entry into force date of 1 January 2018.

1 General information

1.1 NAVTEX is an international automated direct-printing service for promulgation of Maritime Safety Information (MSI), navigational and meteorological warnings, meteorological forecasts and other urgent safety-related messages to ships. It was developed to provide a low-cost, simple and automated means of receiving MSI on board ships at sea in coastal waters. The information transmitted may be relevant to all sizes and types of vessel and the selective message-rejection feature ensures that mariners can receive MSI broadcasts which are tailored to their particular needs.

1.2 NAVTEX fulfils an integral role in the Global Maritime Distress and Safety System (GMDSS) developed by the International Maritime Organization (IMO) and incorporated into the 1988 amendments to the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended, as a requirement for ships to which the Convention applies.

1.3 This Manual describes the structure and operation of the NAVTEX service. It is intended primarily for use by national Administrations and others concerned with the preparation and broadcasting of MSI. It will also be of interest to seafarers, shipowners and others who need to receive such information in order to safely go about their business at sea. It should be used in conjunction with the Joint IMO/IHO/WMO Manual on Maritime Safety Information (also published as the IHO/IMO World-Wide Navigational Warning Service Guidance Document, IHO Publication S-53).

2 NAVTEX service

2.1 Introduction

2.1.1 NAVTEX provides shipping with navigational and meteorological warnings, meteorological forecasts and other urgent safety-related messages (as listed in table 1, section 5) by automatic display or printout from a dedicated receiver. It is suitable for use in all sizes and types of ships. Figure 1 illustrates the way the service is typically structured.

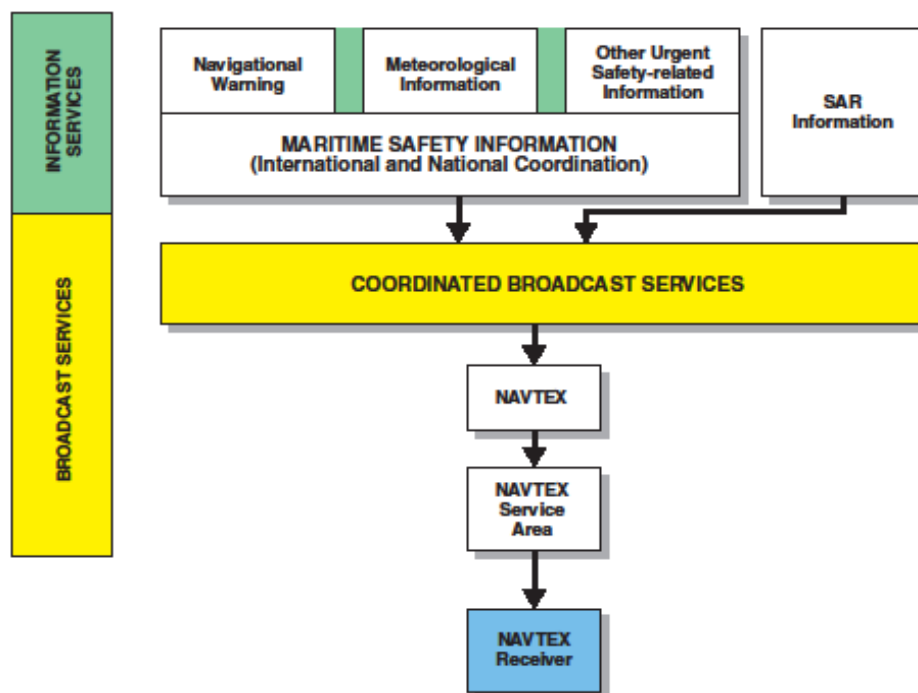


Figure 1 – Basic concept of the NAVTEX system

2.1.2 NAVTEX is a component of the IMO/IHO World-Wide Navigational Warning Service (WWNWS) defined by resolutions A.706(17), as amended, and A.1051(27), as amended. It has also been included as an element of the Global Maritime Distress and Safety System (GMDSS).

2.1.3 In the GMDSS, a NAVTEX receiving capability is part of the mandatory equipment which is required to be carried in certain vessels under the provisions of the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended.

2.1.4 Authority for coordinating the use of the frequencies 518 kHz, 490 kHz and 4209.5 kHz for NAVTEX services worldwide was delegated by ITU to IMO at WRC-95 through resolution 339. This was reaffirmed at WRC-97. IMO has vested responsibility for the overall management and coordination of the global NAVTEX service to the NAVTEX Coordinating Panel. With respect to National NAVTEX broadcasts on 490 kHz and 4209.5 kHz, the function of the NAVTEX Coordinating Panel is limited to the allocation of transmission identification characters.² It should be noted that the provisions of the NAVTEX Manual do not apply when planning a National NAVTEX service on other nationally assigned frequencies. The Terms of Reference for this Panel are attached in Annex 1.

2.1.5 Details of operational and planned NAVTEX services are published periodically in the various national lists of radio signals, in an annex to the International Telecommunication Union's (ITU) List IV – List of coast stations and special service stations, and in the GMDSS Master Plan published by IMO in its series of GMDSS Circulars.

² The transmitter identification character is a single letter allocated to each transmitter to identify the NAVTEX station and broadcast times.

2.2 Definitions

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

- .1 *Coastal warning* means a navigational warning or in-force bulletin promulgated as part of a numbered series by a National Coordinator. Broadcast should be made by the International NAVTEX service to defined NAVTEX service areas and/or by the International SafetyNET service to coastal warning areas. (In addition, Administrations may issue coastal warnings by other means).
- .2 *Coastal warning area* means a unique and precisely defined sea area within a NAVAREA/METAREA or Sub-area established by a coastal State for the purpose of coordinating the broadcast of coastal maritime safety information through the SafetyNET service.
- .3 *Global Maritime Distress and Safety System (GMDSS)* means the global communications service based upon automated systems, both satellite and terrestrial, to provide distress alerting and promulgation of maritime safety information for mariners.
- .4 *HF NBDP* means High Frequency narrow-band direct-printing, using radio telegraphy as defined in Recommendation ITU-R M.688.
- .5 *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.
- .6 *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.³
- .7 *International SafetyNET service* means the coordinated broadcast and automatic reception of maritime safety information via the Inmarsat Enhanced Group Call (EGC) system, using the English language, in accordance with the provisions of the International Convention for the Safety of Life at Sea, 1974, as amended.
- .8 *Issuing Service* means a National Meteorological Service which has accepted responsibility for ensuring that meteorological warnings and forecasts for shipping are disseminated through the International SafetyNET service to the METAREA for which the Service has accepted responsibility under the broadcast requirements of the GMDSS.⁴
- .9 *Local warning* means a navigational warning which covers inshore waters, often within the limits of jurisdiction of a harbour or port authority.
- .10 *Maritime safety information (MSI)*⁵ means navigational and meteorological warnings, meteorological forecasts and other urgent safety-related messages broadcast to ships.

³ As set out in this Manual.

⁴ In the context of this Manual, "designated area" means the NAVTEX service area.

⁵ As defined in regulation IV/2 of the 1974 SOLAS Convention, as amended.

- .11 *Maritime safety information service* means the internationally and nationally coordinated network of broadcasts containing information which is necessary for safe navigation.
- .12 *METAREA* means a geographical sea 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 sea area. The delimitation of such areas is not related to and shall not prejudice the delimitation of any boundaries between States. (See figure 2).
- *Which may include inland seas, lakes and waterways navigable by seagoing ships.
- .13 *METAREA Coordinator* means the authority charged with coordinating marine meteorological information broadcasts by one or more National Meteorological Services acting as Preparation or Issuing Services within the *METAREA*.
- .14 *Meteorological information* means the marine meteorological warning and forecast information in accordance with the provisions of the International Convention for the Safety of Life at Sea, 1974, as amended.
- .15 *National Coordinator* means the national authority charged with collating and issuing coastal warnings within a national area of responsibility.
- .16 *National NAVTEX service* means the broadcast and automatic reception of maritime safety information by means of narrow-band direct-printing telegraphy using frequencies other than 518 kHz and languages as decided by the Administration concerned.
- .17 *National SafetyNET service* means the broadcast and automatic reception of maritime safety information via the Inmarsat EGC system, using languages as decided by the Administration concerned.
- .18 *NAVAREA* means a geographical sea 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 sea area. The delimitation of such areas is not related to and shall not prejudice the delimitation of any boundaries between States. (See figure 3).
- *Which may include inland seas, lakes and waterways navigable by seagoing ships.
- .19 *NAVAREA Coordinator* means the authority charged with coordinating, collating and issuing *NAVAREA* warnings for a designated *NAVAREA*.
- .20 *NAVAREA warning* means a navigational warning or in-force bulletin promulgated as part of a numbered series by a *NAVAREA* Coordinator.
- .21 *Navigational warning* means a message containing urgent information relevant to safe navigation broadcast to ships in accordance with the provisions of the International Convention for the Safety of Life at Sea, 1974, as amended.

- .22 *NAVTEX* means the system for the broadcast and automatic reception of maritime safety information by means of narrow-band direct-printing telegraphy.⁶
- .23 *NAVTEX Coordinator* means the authority charged with operating and managing one or more NAVTEX stations broadcasting maritime safety information as part of the International NAVTEX service.
- .24 *NAVTEX coverage area* means an area defined by an arc of a circle having a radius from the transmitter calculated according to the method and criteria given in resolution A.801(19), as amended, see annex 4.
- .25 *NAVTEX service area* means a unique and precisely defined sea area, wholly contained within the NAVTEX coverage area, for which maritime safety information is provided from a particular NAVTEX transmitter. It is normally defined by a line that takes full account of local propagation conditions and the character and volume of information and maritime traffic patterns in the region, as given in resolution A.801(19), as amended, see annex 4.
- .26 *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.
- .27 *Rescue Coordination Centre (RCC) ()* means a unit responsible for promoting efficient organization of search and rescue services and for coordinating the conduct of search and rescue operations within a search and rescue region. Note: The term RCC will be used within this Manual to apply to either joint, aeronautical or maritime centres; JRCC, ARCC or MRCC will be used as the context warrants.
- .28 *SafetyNET* means the international service for the broadcast and automatic reception of maritime safety information via the Inmarsat EGC system. SafetyNET receiving capability is part of the mandatory equipment which is required to be carried by certain ships in accordance with the provisions of the International Convention for the Safety of Life at Sea, 1974, as amended.
- .29 *SAR information* means distress alert relays and other urgent search and rescue information broadcast to ships.
- .30 *Sub-area* means a subdivision of a NAVAREA/METAREA in which a number of countries have established a coordinated system for the promulgation of maritime safety information. The delimitation of such areas is not related to and shall not prejudice the delimitation of any boundaries between States.
- .31 *Sub-area Coordinator* means the authority charged with coordinating, collating and issuing Sub-area warnings for a designated Sub-area.

⁶ See annex 2.

- .32 *Sub-area warning* means a navigational warning or in-force bulletin promulgated as part of a numbered series by a Sub-area Coordinator. Broadcast should be made by the International NAVTEX service to defined NAVTEX service areas or by the International SafetyNET service (through the appropriate NAVAREA Coordinator).
- .33 *UTC* means Coordinated Universal Time which is equivalent to GMT (or ZULU) as the international time standard.
- .34 *World-Wide Met-ocean Information and Warning Service (WWMIWS)*⁷ means the internationally coordinated service for the promulgation of meteorological warnings and forecasts.
- .35 *World-Wide Navigational Warning Service (WWNWS)*⁸ means the internationally and nationally coordinated service for the promulgation of navigational warnings.
- .36 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 resolutions A.705(17), as amended, A.706(17), as amended, and A.1051(27), as amended.

⁷ As set out in resolution A.1051(27), as amended.

⁸ As set out in resolution A.706(17), as amended.

2.2.2 Delimitation of METAREAS

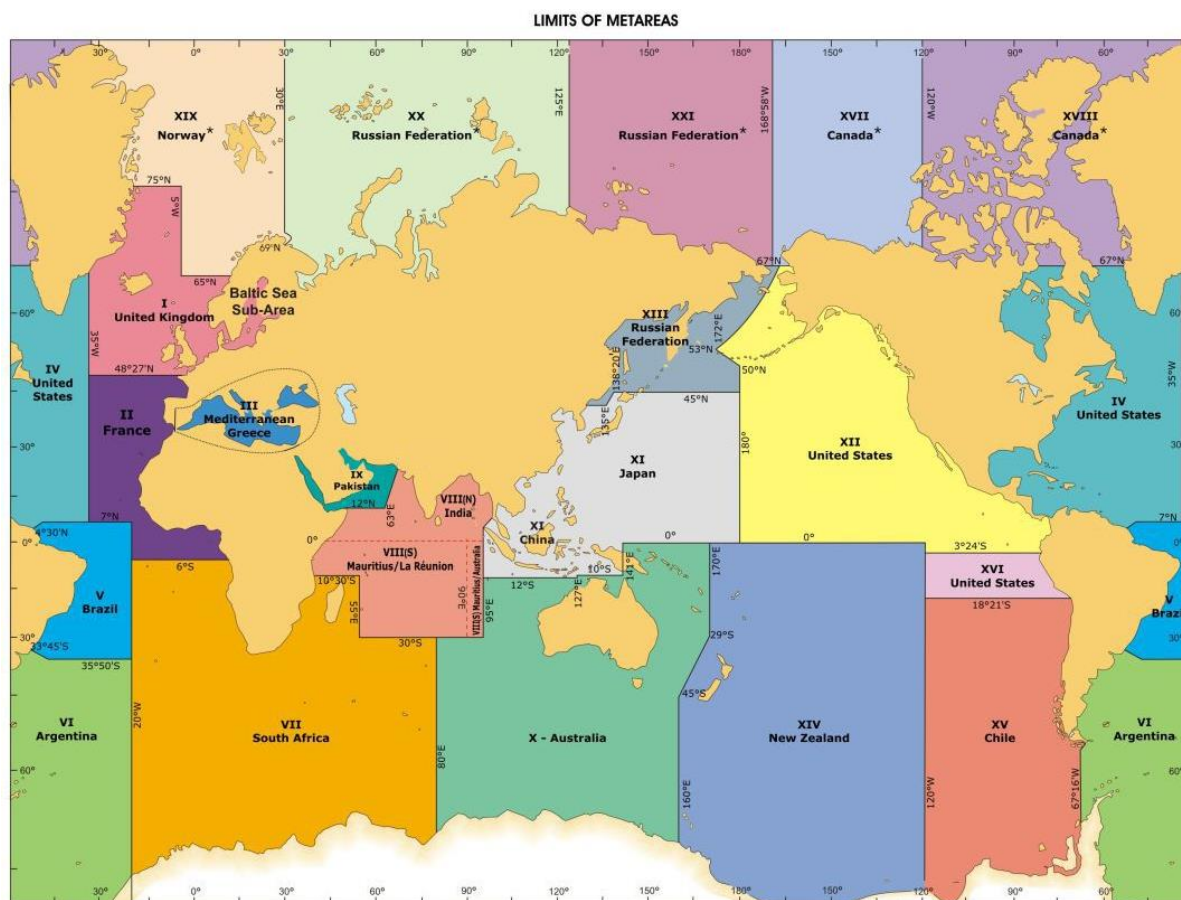


Figure 2 – METAREAS for coordinating and promulgating navigational warnings under the World-Wide Navigational Warning Service

The delimitation of such areas is not related to and shall not prejudice the delimitation of any boundaries between States.

2.2.3 Delimitation of NAVAREAs

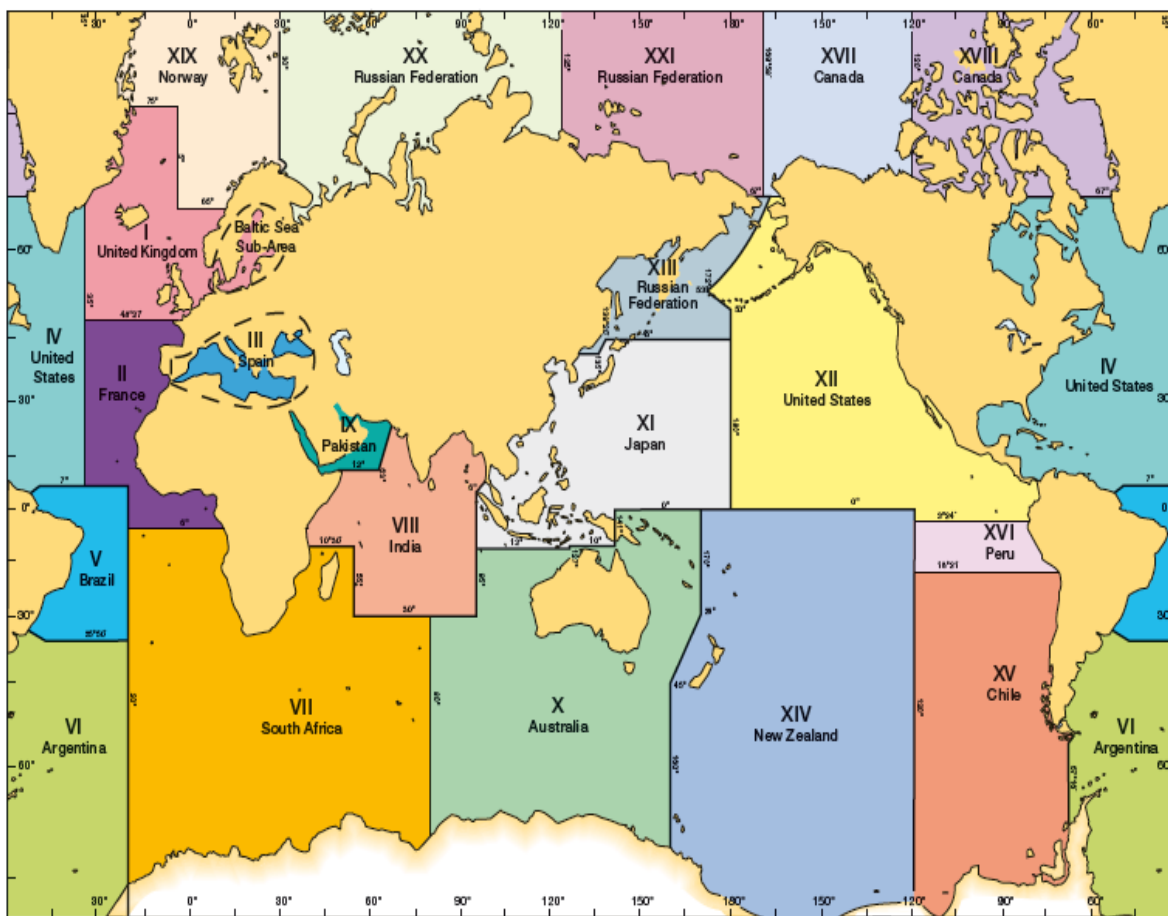


Figure 3 – NAVAREAs for coordinating and promulgating meteorological warnings and forecasts within the GMDSS

The delimitation of such areas is not related to and shall not prejudice the delimitation of any boundaries between States.

3 General features of the NAVTEX system

3.1 The principal features are:

- .1 use of a single frequency, with transmissions from stations within and between NAVAREAs and METAREAs coordinated on a time-sharing basis to reduce the risk of mutual interference. The following frequencies may be used for NAVTEX broadcasts:

518 kHz	
Type of service:	International
Content:	Maritime safety information
Language:	English
Coordination:	By IMO NAVTEX Coordinating Panel
490 kHz and 4209.5 kHz	
Type of service:	National
Content:	Maritime safety information
Language:	As selected by the national Administration
Coordination:	Transmitter identification character allocated by IMO NAVTEX Coordinating Panel
Other national frequencies allocated by the ITU	
Type of service:	National
Content:	As selected by the national Administration
Language:	As selected by the national Administration
Coordination:	By appropriate national Administration

- .2 a dedicated NAVTEX receiver, comprising radio receivers, a signal processor and either:
- .2.1 an integrated printing device; or
 - .2.2 a dedicated display device with a printer output port and a non-volatile message memory; or
 - .2.3 a connection to an integrated navigation system and a non-volatile message memory;

which has the ability to select messages to be printed, or viewed and stored in a memory according to:

a technical code (B₁B₂B₃B₄), which appears in the preamble of each message; and

whether or not the particular message has already been printed/received.

3.2 The operational and technical characteristics of the NAVTEX system are contained in Recommendation ITU-R M.540-2⁹. Performance standards for shipborne equipment, if installed before 1 July 2005, are laid down in resolution A.525(13). If installed on or after 1 July 2005, they shall conform to resolution MSC.148(77).¹⁰

4 Planning NAVTEX services

4.1 When planning NAVTEX services, Administrations should obtain guidance at an early stage from IMO, through its NAVTEX Coordinating Panel. This may be particularly important when installation of new stations and/or purchase of new equipment is under consideration. Details of how to contact the Panel may be found in annex 1.

4.2 International NAVTEX services on 518 kHz

When planning an International NAVTEX service it is essential to appreciate the high level of national and international coordination required. The central principles which should be borne in mind are as follows:

- .1 All NAVTEX stations are part of the strategic infrastructure of both the GMDSS and WWNWS.
- .2 It is essential for the efficiency and effectiveness of the service that a minimum number of stations are used. This may require national Administrations to either share facilities or promulgate information provided by Administrations of other nations.
- .3 Each station contributes to the overall service in a coordinated way, bearing in mind the geographical area covered by each station and the effective coordination and control of information to be transmitted.
- .4 The two basic areas which must be defined when establishing a NAVTEX station are the NAVTEX coverage area and the NAVTEX service area. Each station will provide all the information for a particular NAVTEX service area. The boundaries of the NAVTEX service area must be wholly contained within the coverage area, and must not overlap with adjacent NAVTEX service areas (see figure 4).
- .5 National Administrations seeking to establish NAVTEX services shall undertake preliminary discussions with the NAVAREA Coordinator, METAREA Coordinator and neighbouring Administrations prior to formal application to IMO through the IMO NAVTEX Coordinating Panel. These

⁹ See annex 2.

¹⁰ See annex 3.

discussions shall consider the most appropriate NAVTEX service area boundaries, possible geographical locations for transmitter sites to ensure optimal coverage and links with Information Providers.

- .6 The range of a NAVTEX transmitter depends on the transmitted power and local radio propagation conditions. The actual range achieved shall be adjusted to the minimum required for adequate reception in the specified NAVTEX service area, taking into account the needs of ships approaching from other areas. Experience indicates that the required range of 250 to 400 nautical miles will normally be attained by transmitted power of no more than 1 kW during daylight **with a 60% reduction during night conditions.**
- .7 After the choice of transmitter sites, the main need for coordination lies in the assignment of B₁ transmitter identification characters (time schedules) and the agreement of proposed NAVTEX service areas (if appropriate). Preliminary discussions between national Administrations seeking to establish or amend NAVTEX services and neighbouring Administrations shall be coordinated by the NAVAREA Coordinator prior to formal application for a B₁ transmitter identification character. Throughout the process the IMO NAVTEX Coordinating Panel is available to advise and liaise on the final limits of NAVTEX service areas if these cannot be agreed locally.
- .8 The IMO NAVTEX Coordinating Panel will only allocate B₁ transmitter identification characters after the NAVTEX service areas have been agreed.
- .9 Once a NAVTEX transmitter has been declared operational, if a national Administration wishes to:
 - .9.1 move the transmitter site; and/or
 - .9.2 amend the limits of its NAVTEX service area,then the whole coordination process outlined above must be repeated, keeping the NAVTEX Coordinating Panel informed at all times.
- .10 A National NAVTEX Coordinator shall be established to oversee the operation of the NAVTEX services established by each national Administration. The responsibilities of the NAVTEX Coordinator are defined in section 12 of this Manual.

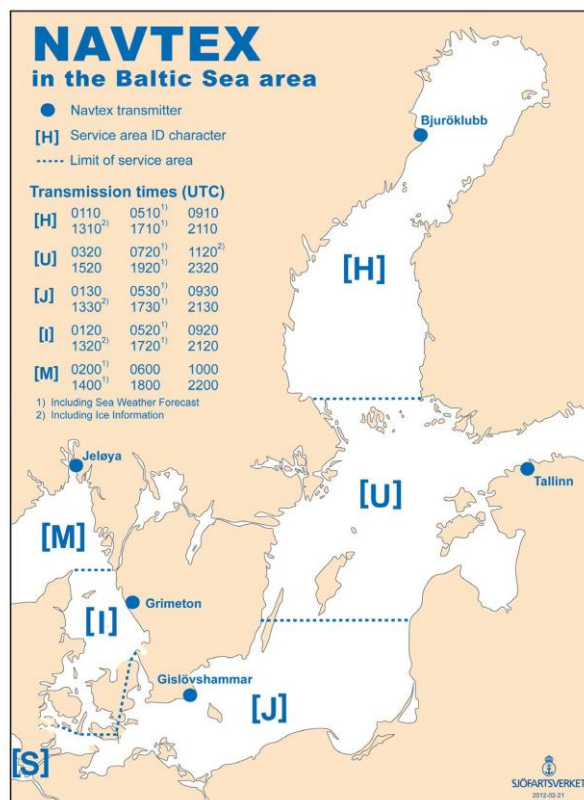


Figure 4 – Example of NAVTEX service areas

The Baltic Sea and its approaches have been divided into five individual NAVTEX service areas. Within each service area, maritime safety information is provided from a separate NAVTEX station which has been allocated a dedicated B₁ transmitter identification character. It is a fundamental requirement that the range of each NAVTEX transmitter is sufficient to include the whole of the NAVTEX service area assigned to its B₁ transmitter identification character.

4.3 National NAVTEX services on 490 kHz or 4209.5 kHz

The provisions of the NAVTEX Manual apply to National NAVTEX services on 490 kHz or 4209.5 kHz. When planning a National NAVTEX service, the IMO NAVTEX Coordinating Panel is responsible for the allocation of B₁ transmitter identification characters; however, the establishment of NAVTEX service areas and the compulsory use of the English language are not required.

4.4 National NAVTEX services on other frequencies

The provisions of the NAVTEX Manual do not apply when planning a National NAVTEX service on nationally assigned frequencies.

5 NAVTEX message technical characters

5.1 Overview of technical characters, B₁, B₂, B₃, B₄

5.1.1 NAVTEX messages include instructions to the NAVTEX receiver for processing maritime safety information in the form of the NAVTEX message identity, which consists of four technical "B" characters which make up an alphanumeric code. In order for messages to be correctly processed, they must consist of data conforming to these "B" characters:

- B₁ Transmitter identification character
- B₂ Subject indicator character
- B₃B₄ Message numbering characters

5.2 B₁ – Transmitter identification character

5.2.1 The transmitter identification character (B₁) is a single letter which is allocated to each transmitter. It is used to identify the broadcasts which are to be accepted by the receiver and those to be rejected, and also the time slot for the transmission.

5.2.2 In order to avoid erroneous reception and interference of transmissions from two stations having the same transmitter identification character, it is necessary to ensure that such stations have a large geographical separation. Allocation of transmitter identification characters by alphabetical sequence to adjacent sites can also cause problems; hence, consecutive transmitter identification characters are not normally allocated to adjacent stations. Experience has shown that this removes the risk of a station which over-runs its time slot masking the phasing signal of an adjacent station which is about to begin its transmission.

Table 1 – Technical "B" characters which make up the full NAVTEX message identity^{11, 12}

B ₁ Transmitter identification character	B ₂ Subject indicator character	B ₃ B ₄ Message numbering characters
1 letter	1 letter	2 digits
A to X	A = Navigational warnings	01 to 99 (message numbering characters "00" are not to be used for routine messages)
	B = Meteorological warnings	
	C = Ice reports	
	D = Search and rescue information, acts of piracy warnings, tsunamis and other natural phenomena	
	E = Meteorological forecasts	
	F = Pilot and VTS service messages	
	G = AIS service messages (non-navigational aid)	
	H = LORAN messages	
	I = Currently not used	
	J = GNSS messages regarding PRN status	
	K = Other electronic navigational aid system	

¹¹ Use of B2 character D will automatically set off the alarm at the NAVTEX receiver.

¹² On some older NAVTEX receivers it may be possible to deselect B2 character L (continuation of B2 subject group A), however, it is strongly recommended that this character is not deselected.

B ₁ Transmitter identification character	B ₂ Subject indicator character	B ₃ B ₄ Message numbering characters													
	messages														
	L = Other navigational warnings – additional to B ₂ character A ¹⁶														
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">M =</td> <td rowspan="8" style="width: 15%; text-align: center; vertical-align: middle;">}</td> <td rowspan="8" style="width: 55%; vertical-align: middle;">Currently not used</td> </tr> <tr><td>N =</td></tr> <tr><td>O =</td></tr> <tr><td>P =</td></tr> <tr><td>Q =</td></tr> <tr><td>R =</td></tr> <tr><td>S =</td></tr> <tr><td>T =</td></tr> <tr> <td>U =</td> <td></td> <td></td> </tr> </table>	M =	}	Currently not used	N =	O =	P =	Q =	R =	S =	T =	U =			
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V =	}	Special services allocation by the IMO NAVTEX Coordinating Panel													
W =															
X =															
Y =															
	Z = No message on hand														



Figure 5 – Example of NAVTEX receiver with LCD screen

5.2.3 NAVTEX transmissions have a designed maximum range of about 400 nautical miles. The minimum distance between two transmitters with the same transmitter identification identifier must, therefore, be sufficient to ensure that a receiver cannot be within range of both at the same time.

5.2.4 Close coordination between transmitting stations in adjacent NAVAREAs/METAREAs is necessary to achieve this separation. For this reason, national Administrations shall request the advice of the IMO NAVTEX Coordinating Panel at an early stage in the planning of a new NAVTEX service. The Panel will allocate B₁ transmitter identification characters in such a way as to minimize the risk of interference occurring.

5.2.5 Table 2 shows the transmitter identification characters and their associated transmission start times used by the IMO NAVTEX Coordinating Panel to evaluate and allocate transmitter identification characters A to X, regardless of the geographical position of the station anywhere in the world. Each transmitter identification character is allocated a maximum transmission time of 10 minutes every 4 hours. **Because the NAVTEX system always utilizes a single frequency, it is fundamental to its successful operation that the following time slots are strictly adhered to, and that broadcasts do not overrun their allotted 10 minutes.**

Table 2 – NAVTEX transmission start times

Transmitter identification character (B ₁)	Transmission start times (UTC)					
	0000	0400	0800	1200	1600	2000
A	0000	0400	0800	1200	1600	2000
B	0010	0410	0810	1210	1610	2010
C	0020	0420	0820	1220	1620	2020
D	0030	0430	0830	1230	1630	2030
E	0040	0440	0840	1240	1640	2040
F	0050	0450	0850	1250	1650	2050
G	0100	0500	0900	1300	1700	2100
H	0110	0510	0910	1310	1710	2110
I	0120	0520	0920	1320	1720	2120
J	0130	0530	0930	1330	1730	2130
K	0140	0540	0940	1340	1740	2140
L	0150	0550	0950	1350	1750	2150
M	0200	0600	1000	1400	1800	2200
N	0210	0610	1010	1410	1810	2210
O	0220	0620	1020	1420	1820	2220
P	0230	0630	1030	1430	1830	2230
Q	0240	0640	1040	1440	1840	2240
R	0250	0650	1050	1450	1850	2250
S	0300	0700	1100	1500	1900	2300
T	0310	0710	1110	1510	1910	2310
U	0320	0720	1120	1520	1920	2320
V	0330	0730	1130	1530	1930	2330
W	0340	0740	1140	1540	1940	2340
X	0350	0750	1150	1550	1950	2350

5.2.6 In some regions, it has become necessary to accommodate a large number of stations. In extreme cases, it has even been necessary to reuse some transmitter identification characters for a second time within a region. Where this occurs every effort is made to ensure stations with the same character are as far apart as possible to reduce the risk of mutual interference.

5.3 B₂ – Subject indicator character

5.3.1 Information is grouped by subject in the NAVTEX broadcast and each subject group is allocated a B₂ subject indicator character.

5.3.2 The subject indicator character is used by the receiver to identify the different classes of messages as listed in table 1.

5.3.3 Some subject indicator characters can be used to reject messages concerning certain subjects which may not be required by the ship (e.g. Ice report messages may be rejected by deselecting the B₂ subject indicator character C on the NAVTEX receiver on board a ship.).

5.3.4 Reception of messages, transmitted using subject indicator characters A, B, D and L, which have been allocated for navigational warnings, meteorological warnings, search and rescue information, acts of piracy warnings, tsunamis and other natural phenomena, is mandatory and cannot be deselected on the NAVTEX receiver. This has been designed to ensure that ships using NAVTEX always receive the most essential information.

5.3.5 It is not possible to transmit or receive two NAVTEX messages with the same NAVTEX message identity (made up of the four technical characters). Therefore the B₂ subject indicator character L has been designated for use in the unlikely event that a NAVTEX Coordinator has more than 99 navigational warning messages in force and requiring transmission at the same time, all using B₂ subject indicator character A, with the same B₁ transmitter identification character.

5.3.6 Messages received which have been transmitted using subject indicator character D will set off an alarm built into the NAVTEX receiver.

5.3.7 In the International NAVTEX service, Administrations shall obtain the agreement of the IMO NAVTEX Coordinating Panel for all proposals for the use of special service subject indicator characters. Such proposals shall meet the following criteria:

- .1 The full international service must remain unaffected.
- .2 The special service broadcasts shall be transmitted only when time allows, and with due regard to the necessity for the frequency to remain unused for a high percentage of the time.
- .3 The special service broadcast shall only be used for its approved purpose.

5.4 B₃B₄ – Message numbering characters (NAVTEX number)

5.4.1 Each message within each subject group is allocated a two digit sequential serial number beginning at 01 and ending at 99. The B₃B₄ message numbering characters together, are often referred to as the "NAVTEX number".

5.4.2 The NAVTEX number is solely allocated as a component of the NAVTEX message identity and should not be confused with (and bears no correlation to), the series identity and consecutive number of the NAVAREA or Coastal warning contained in the message.

5.4.3 Messages broadcast using NAVTEX number $B_3B_4 = 00$ cannot be rejected and will automatically override any selection of B_1 transmitter identification characters as well as any B_2 subject indicator characters selected on the NAVTEX receiver.

5.4.4 Use of NAVTEX number $B_3B_4 = 00$ must therefore be **strictly controlled**, since messages carrying it will always be printed or displayed every time they are received. Routine messages and service messages must never be allocated $B_3B_4 = 00$. The correct use of B_2 characters A, B, D and L, will ensure that messages containing safety information will always be printed or displayed on first receipt.

6 Message identity

6.1 The individual NAVTEX message identity is the amalgamation of all four technical characters $B_1B_2B_3B_4$ (transmitter identification character/subject indicator character/message numbering characters).

6.2 When a message is received for the first time by a NAVTEX receiver, the message identity is recorded and stored in the memory for 72 hours. This ensures that subsequent transmissions of the same message are not re-printed or repeated in the display, unless they are re-received over 72 hours later. In the unlikely event that all 99 NAVTEX numbers for a particular subject group, from a particular transmitter, are in use at the same time, or have been allocated within the past 72 hours, an alternative B_2 character must be utilized; for example, $B_2 = L$ has been set aside to be used for additional navigational warnings if all 99 NAVTEX numbers for subject group $B_2 = A$ are in use.

6.3 Each NAVTEX message identity shall be allocated by the relevant NAVTEX Coordinator, who is the authority responsible for the selection of information to be broadcast by each transmitter within each subject group. A single NAVTEX Coordinator may have more than one transmitter under their control. Specific advice on the use of alternative B_2 subject indicator characters as mentioned in 6.2 above, can be provided by the IMO NAVTEX Coordinating Panel.

7 Message format

7.1 NAVTEX messages must be composed in accordance with the guidelines contained in the *Joint IMO/IHO/WMO Manual on Maritime Safety Information* and IHO Publication S-53. The format of all messages must be in strict accordance with figure 6. This defines the essential elements of the messages which influence the operation of the receiver. Great care is required to avoid errors of syntax in the groups ZCZC $B_1B_2B_3B_4$ and NNNN as they will cause receivers to operate incorrectly, and may well result in messages not being received.

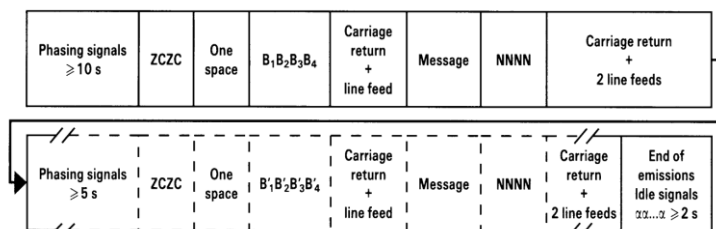


Figure 6 – Standard format for NAVTEX messages

7.2 The phasing signal is automatically transmitted by the NAVTEX transmitter at the beginning of each message and is critical to the effective operation of the system. It is this signal which enables a receiver to lock-on to a particular station's transmission, providing the frequency is not already in use.

7.3 If another station within transmitting range and with a time slot prior to the station selected overruns its time slot (regardless of the B₁ transmitter identification character in use), its transmission will blank the phasing signal of the subsequent transmitter. It will then seem to the receiver as if the second station is off the air and its broadcast will not be received, possibly denying the user significant safety information. This is the primary reason behind the importance of each station adhering to its allocated time slots. Similarly if the phasing signal for a particular station is too short, some receivers will be unable to lock on to the transmission.

7.4 Basic message elements

Table 3 – Basic message elements

Element	Example
Phasing signal	
Start of message group	ZCZC
One space	
NAVTEX message identity	FA01
Carriage return + line feed	
Message content	(Date Time Group – Optional e.g. 040735 UTC OCT 17) NAV I 114/17 ENGLISH CHANNEL. START POINT SOUTHWARD. CHART BA 442 (INT 1701). UNEXPLODED ORDNANCE LOCATED 49-51.97N 003-39.54W AND 49-55.24N 003-40.79W.
End of message instruction	NNNN
Carriage return + two line feeds	
Phasing signal	

7.5 When a message has been received error-free, a record is made by the receiver of the NAVTEX message identity. This unique identifier is used to suppress the printing or display of repeated transmissions of the same message.

7.6 On National NAVTEX services it is important to keep to the same basic message format as that required for the International NAVTEX service. It is also important to ensure that the full broadcast does not overrun the allocated time slot. However, in order to meet national requirements, message content may deviate from the guidelines provided for the International NAVTEX Service if required.

7.7 Examples of navigational warning messages

Note: Further examples are available for consultation in the *Joint IMO/IHO/WMO Manual on Maritime Safety Information*.

```
ZCZC LA18
140356 UTC AUG 17
NORWEGIAN NAV.WARNING 280
CHART 4
AREA OSLOFJORDEN
TORPENE LIGHTBUOY 59-46.1N 010-33.2E UNLIT.
NNNN

ZCZC LA26
250911 UTC JUN 17
DANISH NAVIGATIONAL WARNING NO. 154/17
KATTEGAT, AALBORG BIGHT
LIGHTHOUSE SVITRINGEN RENDE NO.13 56-54.4N 010-30.6E
DESTROYED AND MAKES AN OBSTRUCTION.
DEPTH ABOVE FOUNDATION 1 METRE. THE POS. IS MARKED AS
FOLLOWS:
GREEN LIGHT BUOY Q.G. APPROX 50M SW
YELLOW BUOY APPROX. 50M N
YELLOW BUOY APPROX. 50M ESE
MARINERS ARE ADVISED TO KEEP WELL CLEAR
NNNN

ZCZC SA38
NAVTEX-HAMBURG (NCC)
131120 UTC SEP 17
NAV WARN NO. 428
TSS TERSCHELLING-GERMAN BIGHT
'TG 2/GW' LIGHTBUOY 53-52N 006-22E
OFF STATION AND DAMAGED.
NNNN
```

ZCZC KA79
AVURNAV CHERBOURG 098
DOVER STRAIT TSS
AIS AID TO NAVIGATION
MMSI NUMBER: 992271107
ESTABLISHED ON ZC2 BOUY
50-53.6N 001-30.9E (WGS 84)

NNNN

ZCZC MA99
301435 UTC AUG 17
WZ 972
ENGLAND, EAST COAST.
THAMES ESTUARY.
1. EXPOSED CABLE EXISTS ON SEABED IN VICINITY OF LINE
JOINING:
51-28.7N 000-46.8E
51-29.2N 001-01.7E
51-28.5N 001-09.5E
51-28.8N 001-14.0E
51-28.3N 001-18.6E AND
51-28.7N 001-25.2E.
WIDE BERTH REQUESTED.
2. CANCEL WZ957

NNNN

ZCZC JA93
101200 UTC SEP
GERMAN NAV WARN 424
WESTERN BALTIC. FEHMARN. PUTTGARDEN.
UNDERWATER OPERATIONS BY 'DEEP DIVER 1/J8HC7', IN VICINITY
OF:
54-32.8N 011-16.9E. GUARD VESSELS
STANDING BY VHF CHANNEL 16. 0.5 NM
BERTH REQUESTED.

NNNN

ZCZC TA93
151530 UTC JAN
OOSTENDERADIO - INFO 17/17
1. OSTEND HARBOUR - WORKING AREA EASTERN BREAKWATER. ALL
SHIPPING (EXCEPT GOVERNMENT VESSELS AND WORKBOATS INVOLVED IN
THIS PROJECT) FORBIDDEN IN THE WORKING AREA BOUNDED BY THE
FOLLOWING POS:
51-14.278N 002-55.719E
51-14.424N 002-55.696E
51-14.840N 002-55.370E
51-14.579N 002-55.058E
51-14.462N 002-55.186E
51-14.381N 002-55.293E
51-14.253N 002-55.360E
SHIPPING REQUESTED TO PASS WITH REDUCED SPEED
2. CANCEL INFO 121/16

NNNN

ZCZC MA97
291351 UTC AUG
NAVAREA I 238/17
ENGLAND EAST COAST.
THAMES ESTUARY APPROACHES.
CHART BA 1138 (INT 1561).
WAVERIDER LIGHT-BUOY AND FOUR GUARD
LIGHT-BUOYS, ALL FL (5) Y.20S,
ESTABLISHED 51-42.5N 001-51.0E.

WIDE BERTH REQUESTED.
NNNN

ZCZC JA38
051444 UTC AUG
KALININGRAD NAV WARN 097
SOUTHEASTERN BALTIC, KUSHKAYA KOSA
LIGHT LESNOJ 55-01.0N 020-36.8E UNLIT
NNNN

7.8 Examples of meteorological messages

Note: Further examples are available for consultation in the *Joint IMO/IHO/WMO Manual on Maritime Safety Information*.

```
OE44
ISSUED BY THE MET OFFICE AT 0620 ON FRIDAY 27 MARCH

GALE WARNINGS: ROCKALL MALIN HEBRIDES SE ICELAND

THE GENERAL SITUATION AT MIDNIGHT
LOW GERMAN BIGHT 1001 MOV SEAWARDS AND LOSING ITS
IDENTITY. NEW LOW EXP JUST W OF ROCKALL 989 BY MIDNIGHT
TONIGHT

24-HR FCSTS

LUNDY FASTNET
SE VEER SW 5 OR 6, INCR 7, PERHAPS GALE 8 LATER. MOD OR
ROUGH, BECMG ROUGH OR VERY ROUGH LATER. OCCASIONAL RAIN,
FOG PATCHES DEVELOPING. GOOD BECMG POOR OR VERY POOR

IRISH SEA
W 3 OR 4, BACK S 5 OR 6, INCR 7, PERHAPS GALE 8 LATER.
SLT OR MOD, BECMG MOD OR ROUGH LATER. RAIN LATER. GOOD,
OCNL POOR LATER

...

NNNN

FQCN36 CWNT 251030
NAVTEX FOR IQALUIT VFF AT 5:30 AM EST THU 25 DEC 2016.

VLD 25/11Z-27/05Z,
WND(KT), VIS(NM) ABV 1 UNL IND, FOG IMPL VIS LESS THAN 1.

SYNOPSIS:
25/12Z INTSF LOW 976 MB OVR SRN QUE. 27/00Z WKN LOW 965 MB OVR
UNGAVA
  BAY.

RESOLUTION - E:
WNG: STORM / FREEZING SPRAY.
WND: E30. 25/18Z E35. 26/06Z E50. 26/21Z E30.
SPRAY: 25/11Z-26/11Z MOD-SEV OUT-EDGE.
VIS: 26/03Z-27/05Z 0-1 SN.

...

WAVES(M) VLD 25/10Z-27/05Z.

RESOLUTION - E:
2 OUT-EDGE. 26/06Z 4-6. 26/20Z 2

...

NNNN

FICN36 CWIS 310700
ICE NAVTEX FOR IQALUIT VFF AT 0700 UTC MON 31 AUG 2017.

CUMBERLAND.
WNG: SPECIAL.
1 OI XCPT 8 FYI INCL 3 OI IN THE WRN SECTION.
UNUSUAL PRESENCE OF SEA ICE.

...

NORTHWEST LABRADOR SEA.
WNG: NIL.
```



```
WARNING (NEAR GALE) WESTERN SEA OFF SANRIKU, NORTHERN SEA OFF  
KANTO  
WARNING (DENSE FOG) EASTERN SEA OFF SANRIKU, WESTERN SEA OFF  
SANRIKU  
POOR VISIBILITY 0.3 MILES OR LESS IN PLACES  
  
NEXT WARNING WILL BE ISSUED BEFORE 271500UTC  
NNNN
```

8 Language and national broadcast options

8.1 International NAVTEX Service messages on 518 kHz shall be broadcast only in English in accordance with resolutions A.706(17), as amended, and A.1051(27), as amended

8.2 There is often a requirement for NAVTEX broadcasts to be made in national languages in addition to English. This shall **only** be achieved by the provision of a National NAVTEX service. National NAVTEX services use frequencies other than 518 kHz, and languages as decided by the Administrations concerned. These National NAVTEX services may be broadcast on 490 kHz or 4209.5 kHz, or on an alternative nationally assigned frequency.

9 Information control

9.1 The time-shared nature of NAVTEX services imposes the need for strict discipline in controlling the information flow of the broadcast. To achieve this, it is necessary to coordinate the messages in each B₂ category at each transmitter. In general, all messages shall be brief and clear and avoid duplication. Strict adherence to relevant guidelines in resolutions A.706(17), as amended, A.1051(27), as amended, and the *Joint IMO/IHO/WMO Manual on Maritime Safety Information* is recommended.

9.2 In addition, certain operating procedures have also been found necessary:

- .1 messages in each category should be broadcast in reverse order of receipt by the NAVTEX Coordinator, with the latest being broadcast first; and
- .2 cancellation messages should be broadcast once only. The cancelled message should not be transmitted on the broadcast in which its cancellation message appears.

10 Message content

10.1 It is important that national Administrations operating or planning NAVTEX services are clear about what sort of information should be included in the messages.

10.2 The International NAVTEX service should be used for transmitting maritime safety information only and should **not** be used as a medium for providing Notices to Mariners or for broadcasting Local Warnings. NAVTEX is essentially a medium for broadcasting information that is **needed** by ships to safely navigate through the NAVTEX service area of the appropriate NAVTEX station, particularly those ships on coastal passages. More detailed guidance in respect to different classes of messages is given below. Examples of the content and layout of NAVTEX messages are shown in the *Joint IMO/IHO/WMO Manual on Maritime Safety Information*. This publication should be available to all personnel responsible for the drafting of messages to be broadcast by NAVTEX stations.

10.2.1 Navigational warnings

- .1 coastal warnings and NAVAREA warnings ($B_2 = A$ or L) issued under the guidance of resolution A.706(17), as amended, which would be of concern to ships in the NAVTEX service area allocated to the transmitter should be included in the broadcast. Relevant coastal warnings should normally be repeated at every scheduled transmission for as long as they remain in force; however, if they are readily available to mariners by other official means, for example in Notices to Mariners, then after a period of six weeks they may no longer be broadcast. NAVTEX Coordinators should arrange to receive NAVAREA warnings appropriate to their area for inclusion in their broadcasts. These should be broadcast at least twice each day – to avoid overloading the broadcast time slot, they should normally be scheduled for transmission during slots that do not include weather forecasts (see 12.4);
- .2 in-force bulletins (a summary of navigational warnings in force) should normally be broadcast each week; and
- .3 local warnings should not be broadcast on International NAVTEX, i.e. information relating to inshore waters, often within the limits of jurisdiction of a harbour or port authority.

10.2.2 Meteorological warnings and forecasts

- .1 meteorological warnings ($B_2 = B$), e.g. gale warnings, should be allocated a priority of IMPORTANT (see section 11) and be repeated at subsequent scheduled transmissions for as long as the warning is in force. These messages should contain only the appropriate warnings and should be separate from the weather forecasts;
- .2 weather forecasts ($B_2 = E$) should be broadcast at least twice each day. This service should be carefully coordinated where transmitters are geographically close together;
- .3 routine ice reports are normally broadcast on NAVTEX once a day; and
- .4 ice accretion warnings (icing warnings) are normally included in gale warnings. If no gale warning is issued, they are to be treated as a meteorological warning (see 10.2.2.1).

10.2.3 Search and rescue information

- .1 the NAVTEX broadcast is not suitable for distress traffic. Therefore, **only** the initial distress message should be retransmitted on NAVTEX, using $B_2 = D$, in order to alert mariners to a distress situation, by setting off an audio alarm.
- .2 a single authority, which will normally be a Rescue Coordination Centre (RCC), should be designated SAR Coordinator to input information via the NAVTEX Coordinator, for a NAVTEX message. The initial shore-to-ship distress-related message should have previously been broadcast on the appropriate distress frequency prior to any related NAVTEX message being broadcast.

10.2.4 Piracy warnings

Piracy warnings should be transmitted using $B_2 = D$, in order to alert mariners by setting off an audio alarm. They should be broadcast immediately on receipt and at subsequent scheduled transmissions.

10.2.5 Tsunamis and other natural phenomena warnings

Tsunami, negative tidal surge warnings should be transmitted using $B_2 = D$, in order to alert mariners by setting off an audio alarm. They should be broadcast immediately on receipt and at subsequent scheduled transmissions.

10.2.6 Pilot and VTS service messages

Technical subject indicator character, $B_2 = F$, is only to be used for broadcasting temporary alterations, movement or suspension to pilot or VTS services. This category is for the information of all ships and is not to be used for specific instructions to individual ships or pilots.

10.2.7 No messages on hand

When there are no NAVTEX messages to be disseminated at a scheduled broadcast time, a brief message should be transmitted to advise the mariner that there is no message traffic on hand. Technical subject indicator character, $B_2 = Z$, is to be used to announce "NO MESSAGES ON HAND".

10.2.8 Use of abbreviations

Common examples of abbreviations used in the International NAVTEX service are contained in the *Joint IMO/IHO/WMO Manual on Maritime Safety Information*.

10.2.9 National NAVTEX services

Transmissions on 490 kHz or 4209.5 kHz may simply repeat the messages broadcast over the International NAVTEX service but in a national language, or they may be tailored to meet particular national requirements, for example by providing different or additional information to that broadcast on the International NAVTEX service, targeted at recreational vessels or fishing fleets.

11 Message priorities and broadcast procedures in the International NAVTEX service

11.1 Message priorities

11.1.1 The message originator is responsible for assessing the urgency of the information and inserting the appropriate priority marking. One of three message priorities is used to dictate the timing of the first broadcast of a new warning in the NAVTEX service. In descending order of urgency, they are:

VITAL

for immediate broadcast, subject to avoiding interference to ongoing transmissions. Such messages should also be passed to the appropriate NAVAREA Coordinator for possible transmission as a NAVAREA warning via SafetyNET;

IMPORTANT

for broadcast at the next available period when the frequency is unused; and

ROUTINE

for broadcast at the next scheduled transmission.

11.1.2 Both VITAL and IMPORTANT messages should be repeated at each scheduled transmission time slot, if the situation is still valid.

11.1.3 The message priority is a procedural instruction for the NAVTEX Coordinator or the transmitting station and should **not** be included in the message. By selecting the appropriate priority of VITAL, IMPORTANT or ROUTINE at the transmission terminal, the message will be broadcast with the correct priority.

11.1.4 In order to avoid unnecessary disruption to the service, the priority marking VITAL is to be used only in cases of **extreme urgency**, i.e. to relay an initial shore-to-ship distress-related message or acts of piracy warnings, tsunamis and other natural phenomena warnings. In addition, VITAL messages are to be kept as brief as possible and in accordance with the *Joint IMO/IHO/WMO Manual on Maritime Safety Information*. The information provider is responsible for ensuring that the NAVTEX Coordinator is fully and immediately aware when a message should be broadcast with the priority of VITAL.

11.1.5 VITAL messages will normally be broadcast using NAVTEX number B₃B₄ = 00.

11.2 Broadcast procedures

.1 VITAL priority messages

Messages assessed as VITAL are to be broadcast immediately, subject to avoiding interference to ongoing transmissions. On receipt of a message with a VITAL priority, the NAVTEX Coordinator will commence monitoring the NAVTEX frequency. If the frequency is clear, the VITAL message is to be transmitted immediately. If the frequency is in use, the Coordinator should contact the station which, according to the schedule, will be transmitting during the following time slot and ask it to postpone their transmission start by one minute, to allow a space for the VITAL message. Once the VITAL message has been transmitted, the scheduled station is free to start its routine transmissions;

.2 IMPORTANT priority messages

Messages assessed as IMPORTANT are to be broadcast during the next available period when the NAVTEX frequency is unused. This is to be identified by monitoring the frequency. It is expected that this level of priority will be sufficient for the majority of urgent information; and

.3 ROUTINE priority messages

Messages assessed as ROUTINE, are to be broadcast at the next scheduled transmission time. This level of priority will be appropriate for almost all messages broadcast on NAVTEX and is always to be used unless special circumstances dictate the use of the procedures for an IMPORTANT or VITAL priority message.

11.3 Meteorological NAVTEX messages

The following priorities are to be assigned to meteorological NAVTEX messages:

- .1 Tsunami warnings = VITAL
- .2 Meteorological warnings = IMPORTANT
- .3 Meteorological forecasts = ROUTINE
- .4 For other natural phenomena warnings, either VITAL or IMPORTANT may be used.

11.4 National NAVTEX services

The broadcast procedures concerning differing message priorities are the same for both the International and National NAVTEX services.

12 Responsibilities of a NAVTEX Coordinator

12.1 The NAVTEX Coordinator is responsible for the messages transmitted by each station under their control. This responsibility includes checking that the content of each message is in accordance with the *Joint IMO/IHO/WMO Manual on Maritime Safety Information* and also, that it is relevant to the NAVTEX service area of the transmitting station. Thus a user may choose to accept messages, as appropriate, either from the single transmitter which serves the sea area around their position or from a number of transmitters. Ideally, the user should select the station within whose coverage area their vessel is currently operating and the station into whose coverage area their vessel will transit next.

12.2 The NAVTEX Coordinator must:

- .1 act as the central point of contact on matters relating to NAVTEX transmissions for a given transmitter or number of transmitters;
- .2 be responsible for continuously ensuring quality control for the operation of the NAVTEX transmitting stations under its jurisdiction. This should be achieved with the cooperation of the information providers to ensure that:
 - .2.1 messages are always concise and can be transmitted within the designated 10-minute time slots assigned by the IMO NAVTEX Coordinating Panel;
 - .2.2 MINIMUM power is used to achieve satisfactory range performance; and
 - .2.3 the coordinated service is operating satisfactorily;
- .3 assess all requests for NAVTEX messages immediately upon receipt;
- .4 schedule each message for broadcast in accordance with the priority of VITAL, IMPORTANT or ROUTINE;

- .5 monitor the International NAVTEX frequency along with any other National frequency used by the transmitters under their jurisdiction in order to ensure that the messages have been correctly broadcast;
- .6 monitor the International NAVTEX frequency along with any other National frequency used in order to identify vacant transmission periods required for VITAL or IMPORTANT messages;
- .7 pass all information which warrants promulgation outside of their NAVTEX service area directly to the appropriate authority, using the quickest possible means;
- .8 allocate a message identity to each message, including the sequential NAVTEX number;
- .9 ensure that NAVTEX messages which have been cancelled are removed from the broadcast schedule at the same time as the cancellation message is promulgated;
- .10 broadcast in-force bulletins not less than once per week at a regular scheduled time;
- .11 promote and oversee the use of established international standards and practices with respect to the format and protocols associated with NAVTEX messages;
- .12 maintain records of source data relating to NAVTEX messages in accordance with the requirement of the national Administration;
- .13 be aware of the responsibilities of a NAVAREA, Sub-area and National Coordinator contained in resolution A.706(17), as amended, paying particular attention to the specific guidance for the promulgation of internationally coordinated maritime safety information provided therein;
- .14 be aware of the responsibilities of a METAREA Coordinator contained in resolution A.1051(27), paying particular attention to the specific guidance for the promulgation of internationally coordinated maritime safety information provided therein; and
- .15 take into account the need for contingency planning.

12.3 Management of the service

Data priority:

Most information broadcast on NAVTEX services relates to either navigational warnings or meteorological information. These types of information often originate from different organizations within a country and it is not until they arrive with the NAVTEX Coordinator that an assessment can be made as to whether there is too much information for the relevant broadcast time slot. Each data provider may consider their data to be more important and therefore, require transmission in full. However, the NAVTEX Coordinator needs to control the overall volume of data broadcast and may need to refer back to data providers to prioritize their information and reduce the amount of data to be broadcast. Some NAVTEX Coordinators utilize

digital systems which include software that provides a readout of predicted transmission times for data held ready for broadcast. This enables the Coordinator to anticipate any problems and take action before the scheduled broadcast.

Data to meet purely national requirements should not be broadcast on the International NAVTEX service, but should be migrated to a National NAVTEX service (see section 14).

12.4 Balancing the volume of data to be broadcast throughout the daily transmission cycle

12.4.1 For many categories of messages there is no option with regard to when they should be transmitted. However, in order to minimize the risk of over-running the allocated 10-minute time slot, it is possible to balance the overall length of transmissions by broadcasting NAVAREA warnings at different times from weather forecasts and the in-force bulletin. An example of how this may be managed is given below for a station with a B₁ transmitter identification character C:

Time slot	Content
0020–0030	coastal warnings NAVAREA warnings
0420–0430	coastal warnings in-force bulletin
0820–0830	coastal warnings weather forecasts
1220–1230	coastal warnings NAVAREA warnings
1620–1630	coastal warnings ice reports
2020–2030	coastal warnings weather forecasts

13 Best practice for those using the service

13.1 In order to ensure that all necessary maritime safety information has been received, it is recommended that the NAVTEX receiver is switched on at least 12 hours before sailing, or preferably left on at all times.

13.2 Logging

13.2.1 The reception of navigational warnings or meteorological information on NAVTEX does not need to be noted in the radio log; the NAVTEX printout (or the non-volatile message memory) satisfies the requirements of regulation 17 of chapter IV of the 1974 SOLAS Convention, as amended.

14 Mutual interference between NAVTEX stations

14.1 The two principal causes of interference are:

- .1 transmission overruns; and
- .2 excessive power output.

14.2 Although NAVTEX continues to be generally reliable and an effective medium for the promulgation of maritime safety information, the worldwide infrastructure continues to expand and the volume of information that each Administration disseminates through the International NAVTEX service continues to increase. There is a danger that in some geographical areas, without firm management, both the system and system users may become overloaded with information on the single frequency used. This is of particular importance when handling messages of VITAL priority.

14.3 Many stations are filling their allotted 10-minute time slots and an increasing number are over-running. Instances of interference with neighbouring stations, as a result of over-running the time allocation, are also increasing. Where adjacent stations have transmitter identification characters which follow alphabetically (i.e. adjacent time slots), if the first station over-runs, it may mask the phasing signal of the second station such that, to the user, it seems as if the second station is off the air. Maritime safety information from the second station, although broadcast, may not be received by the system users. Over-run is usually caused by one or more of the following which must be avoided preferably by controlling the volume of data broadcast:

- .1 a significant increase in safety-critical activity such as cable laying. Navigational warnings promulgating such activity often include numerous waypoints which are listed by Latitude and Longitude;
- .2 meteorological information provided in a manner which is not concise and easily assimilated by the system user or for a much wider area than is covered by the NAVTEX station; and
- .3 additional information provided for non-SOLAS system users, e.g. longer-range weather forecasts for fishing and recreational vessels.

See also section 7.3.

14.4 As the GMDSS spreads to non-SOLAS mariners, their requirements for information are often different from the SOLAS ships and may be determined at a national level. SOLAS ships trading internationally usually pass through the area of coverage of a NAVTEX transmitter in a day; for them a 24-hour weather forecast usually suffices. However, fishing vessels and recreational vessels often remain in the same vicinity for several days and may require much longer-range forecasts which take up more transmission time.

14.5 In order to keep the quantity of information that is broadcast on 518 kHz to manageable levels and to reduce avoidable interference on this frequency, Administrations must:

- .1 monitor the volume of data broadcast and, together with adjacent Administrations, actively manage the system to ensure that interference caused by over-running allocated time slots is eliminated; and
- .2 transmit non-English language broadcasts for SOLAS vessels and broadcasts of information provided specifically for non-SOLAS vessels on 490 kHz or 4209.5 kHz as required. B₁ characters for these frequencies will be allocated by the IMO NAVTEX Coordinating Panel, on request.

14.6 Excessive power output also causes interference between stations with the same B₁ transmitter identification character/time slot, but located in different regions. This has particularly been identified at night, as the number of operational NAVTEX stations increases. Occasionally, this can be caused by atmospheric conditions, but is generally caused by excessive power output from one of the stations. It is recommended that Administrations restrict the power output from their transmitters to that required to cover the designated NAVTEX service area, particularly at night, in order to avoid interference. Experience indicates that the required range of 250 to 400 nautical miles will normally be attained by transmitted power of no more than 1 kW during daylight **with a 60% reduction during night conditions.**

14.7 When interference is detected, particularly when it affects the service to system users, the matter should be addressed immediately. When the interference is with adjacent stations, attempts should be made to resolve the problem locally. Advice may also be sought from the NAVAREA Coordinator. In addition, the IMO NAVTEX Coordinating Panel should be alerted to the problem. When the interference is from a station with the same B₁ character in a different area, the NAVTEX Coordinating Panel must be contacted and they will initiate any necessary investigation/action.

15 Notification of NAVTEX services

15.1 National Administrations should ensure that mariners are informed of the establishment of, and/or changes to, NAVTEX services by inclusion of full details in Notices to Mariners and lists of radio signals. In addition, full details should be forwarded to the appropriate NAVAREA Coordinator, METAREA Coordinator and:

<p>International Maritime Organization 4 Albert Embankment London SE1 7SR United Kingdom Telephone: +44 (0)20 7735 7611 Telefax: +44 (0)20 7587 3210 Email: ncsr@imo.org (In subject line add: for Chairman IMO NAVTEX Coordinating Panel)</p>	<p>International Telecommunication Union Radiocommunication Bureau Place des Nations 1211 Genève 20 Switzerland Telephone: +41 22 7305560 Telefax: +41 22 7305785 E-mail: brmail@itu.int</p>
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Annex 1

IMO NAVTEX Coordinating Panel

Terms of reference

1 Terms of reference

- .1 advise Administrations planning to implement a NAVTEX service on the frequencies 518 kHz, 490 kHz or 4209.5 kHz, on the operational aspects of the system. In particular, advise on the optimum number of stations, the allocation of transmission identifying characters (B₁) and broadcast message criteria;
- .2 coordinate with Administrations over the operational aspects of NAVTEX in the planning stages in order to prevent mutual interference owing to the number of stations, transmitter power, or transmission identifying character assignment;
- .3 remain aware of system problems which arise, through reports from sea and correspondence with operational NAVTEX Coordinators;
- .4 when problems are identified, liaise with appropriate Administrations involved, NAVAREA Coordinators, METAREA Coordinators, the Sub-Committee on Navigation, Communications and Search and Rescue (NCSR), and the IHO or WMO, as appropriate, to recommend solutions or mitigating measures and, when agreed, coordinate their implementation; and
- .5 prepare documentation supporting the system for the NCSR Sub-Committee including those that are needed by Administrations to guide their operations, and those needed to inform the user of the service (mariner, shipowner and operator).

2 Contact addresses

The NAVTEX Coordinating Panel can be contacted at the following addresses:

The Chairman
IMO NAVTEX Coordinating Panel
International Maritime Organization
4 Albert Embankment
London SE1 7SR
United Kingdom

Telephone: +44 (0)20 7735 7611
Telefax: +44 (0)20 7587 3210
Email: ncsr@imo.org (In subject line add: for Chairman IMO NAVTEX Coordinating Panel)

3 Panel membership and participation

3.1 The IMO NAVTEX Coordinating Panel is open to membership by all Member Governments and also includes one member nominated by each of the following international organizations:

- .1 International Maritime Organization (IMO)
- .2 World Meteorological Organization (WMO)
- .3 International Hydrographic Organization (IHO)
- .4 International Mobile Satellite Organization (IMSO)

3.2 The following may be represented as observers on the Panel:

- .1 IHO World-Wide Navigational Warning Service Sub-Committee
- .2 International SafetyNET Coordinating Panel
- .3 Expert Team on Maritime Safety Services (ETMSS) of the WMO/IOC Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM)

3.3 The work of the Panel is conducted mainly by correspondence. Meetings, when appropriate, are announced in advance and normally scheduled to be held in the margins of other IMO or IHO meetings.

Annex 2

Recommendation ITU-R M.540-2¹³

Operational and technical characteristics for an automated direct-printing telegraph system for promulgation of navigational and meteorological warnings and urgent information to ships

The CCIR,¹⁴ (1978–1982–1990)

CONSIDERING

(a) that the availability of navigational and meteorological warnings and urgent information on board ships is of great importance for safety;

(b) that the existing radiocommunication system for promulgation of navigational and meteorological warnings and urgent information to ships can be improved by use of modern techniques;

(c) that the IMO has established the following definitions on the promulgation of maritime safety information:

"NAVTEX" means the system for the broadcast and automatic reception of maritime safety information by means of narrow-band direct-printing telegraphy;

"international NAVTEX service" means the co-ordinated broadcast and automatic reception on 518 kHz of maritime safety information by means of narrow-band direct-printing telegraphy using the English language, as set out in the NAVTEX Manual, published by the IMO; and

"national NAVTEX service" means the broadcast and automatic reception of maritime safety information by means of narrowband direct-printing telegraphy using frequencies and languages as decided by the Administrations concerned;

(d) that the 1988 Amendments to the International Convention for the Safety of Life at Sea, 1974, require that every ship to which the Convention applies shall be provided with a receiver capable of receiving international NAVTEX service broadcasts;

(e) that several countries are operating a coordinated international NAVTEX service, based on narrow-band direct-printing in accordance with article 14A of the Radio Regulations;

(f) that the system should be applicable to the maritime mobile service (both international and national);

(g) that it is desirable that the service fulfils the requirements of all types of ships desiring to use it;

(h) that although each area may need specific guidance, the use of standard technical and operational characteristics would facilitate the extension of the service.

¹³ The Director, CCIR, is requested to bring this Recommendation to the attention of the International Maritime Organization (IMO), the International Hydrographic Organization (IHO), the World Meteorological Organization (WMO) and to the International Association of Lighthouse Authorities (IALA).

¹⁴ The name "CCIR" was changed to "Radiocommunication Bureau" by the reorganization of the International Telecommunication Union on 1 March 1993.

UNANIMOUSLY RECOMMENDS

1 that the operational characteristics for the promulgation of navigational and meteorological warnings and urgent information using NBDP should be in accordance with annex I; and

2 that the technical characteristics for the promulgation of navigational and meteorological warnings and urgent information using NBDP should be in accordance with annex II.

Annex I

Operational characteristics

1 Narrow-band direct-printing techniques should be used for an automated telegraph system for promulgation of navigational and meteorological warnings and urgent information to ships. Common frequencies for such transmissions should be internationally agreed upon and the frequency 518 kHz has been designated for worldwide use in the international NAVTEX service (see Radio Regulations Nos.474, 2971B and N2971B).

1.1 For national NAVTEX services Administrations should also utilize the format of this Recommendation on the appropriate frequencies as defined in the Radio Regulations.

2 The radiated power from the coast station transmitter should only be that sufficient to cover the intended service area of that coast station. The range extension occurring during night hours should also be considered.

3 The information transmitted should primarily be of the type used for coastal waters preferably using a single frequency (Resolution No.324 (Mob-87)).

4 The transmission time allocated to each station should be restricted to that which is adequate for the anticipated messages to be broadcast to the area concerned.

5 Scheduled broadcasts should take place at intervals not exceeding eight hours and be coordinated, to avoid interference with broadcasts from other stations.

6 Message priorities

6.1 Three message priorities are used to dictate the timing of the first broadcast of a new warning in the NAVTEX service. In descending order of urgency they are:

VITAL

for immediate broadcast, subject to avoiding interference to ongoing transmissions;

IMPORTANT

for broadcast at the next available period when the frequency is unused; and

ROUTINE

for broadcast at the next scheduled transmission period.

Note: Both VITAL and IMPORTANT warnings will normally need to be repeated, if still valid, at the next scheduled transmission period.

6.2 In order to avoid unnecessary disruption to the service, the priority marking VITAL is to be used only in cases of extreme urgency, such as some distress alerts. In addition, VITAL messages are to be kept as brief as possible.

6.3 Periods should be scheduled between the regular transmission periods permitting immediate/early transmission of VITAL messages.

6.4 By use of the message serial number 00 in the preamble of a message (see also annex II, paragraph 6) it is possible to override any exclusion of coast stations or of message types which might have been made in the receiving equipment.

7 Initial shore-to-ship distress-related messages should first be broadcast on the appropriate distress frequency by coast stations in whose SAR area distress cases are handled.

8 Participating transmitting stations should be provided with monitoring facilities to enable them to:

- monitor their own transmissions as to signal quality and transmission format; and
- confirm that the channel is not occupied.

9 In case a message is repeated by more than one transmitting station within the same NAVTEX region (e.g. for better coverage) the original preamble B₁–B₄ (see annex II) should be used.

10 In order to avoid overloading of the channel it is desirable to use a single language and where a single language is used it shall be English.

11 Dedicated onboard equipment is recommended.

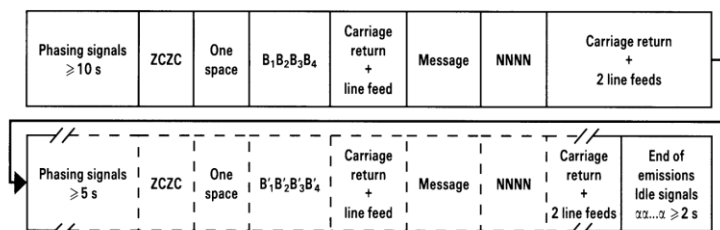
12 Other operational characteristics and detailed guidance are given in the NAVTEX Manual developed by the International Maritime Organization.

Annex II

Technical characteristics

1 The signals transmitted should be in conformity with the collective B-mode of the direct-printing system specified in Recommendations 476 and 625.

2 The technical format of the transmission should be as follows:



in which

ZCZC defines the end of the phasing period,

the B₁ character is a letter (A–Z)¹⁵ identifying the transmitter coverage area,

the B₂ character is a letter (A–Z) for each type of message.

2.1 Both the B₁ characters identifying the different transmitter coverage areas and the B₂ characters identifying the different types of messages are defined by IMO and chosen from table 1 of Recommendations 476 and 625, combination numbers 1–26.

2.1.1 Ship equipment should be capable of automatically rejecting unwanted information using character B₁.

2.1.2 Ship equipment should be capable of disabling print-out of selected types of messages using character B₂ with the exception of messages with B₂ characters A, B and D¹⁶ (see also paragraph 2.1).

2.1.3 If any facility is rejected or disabled in paragraphs 2.1.1 and 2.1.2 above, the extent of any such limitation must be clearly indicated to the user.

2.2 B₃B₄ is a two-character serial number for each B₂, starting with 01 except in special cases where the serial number 00 is used (see paragraph 6 below).

2.3 The characters ZCZC B₁B₂B₃B₄ need not be printed.

3 The printer should only be activated if the preamble B₁–B₄ is received without errors.

4 Facilities should be provided to avoid printing of the same message several times on the same ship, when such a message has already been satisfactorily received.

5 The necessary information for the measures under paragraph 4 above should be deduced from the sequence B₁B₂B₃B₄ and from the message.

6 A message should always be printed if B₃B₄ = 00.

7 Extra (redundant) letter and figure shifts should be used in the message to reduce garbling.

8 In case a message is repeated by another transmitting station (e.g. for better coverage) the original preamble B₁–B₄ should be used.

9 The equipment on board ships should be neither unduly complex nor expensive.

10 The transmitter frequency tolerance for the mark and the space signals should be better than ± 10 Hz.

¹⁵ Only letters A–X are used on 518 kHz, 490 kHz and 4209.5 kHz, see table 2 of the NAVTEX Manual.

¹⁶ B₂ character L (continuation of B₂ subject group A), shall also not be capable of being suppressed (see IEC 61097-6).

Annex 3

**Resolution MSC.148(77)
adopted on 3 June 2003**

Adoption of the revised performance standards for narrow-band direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships (NAVTEX)

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING also resolution A.886(21), by which the Assembly resolved that the functions of adopting performance standards for radio and navigational equipment, as well as amendments thereto, shall be performed by the Maritime Safety Committee on behalf of the Organization,

NOTING the carriage requirement in SOLAS chapter IV/7.1.4 for a receiver capable of receiving International NAVTEX narrow-band direct-printing (NBDP) broadcasts for the promulgation of navigational and meteorological warnings to shipping,

NOTING FURTHER the success of the International NAVTEX service in the promulgation of Maritime Safety Information (MSI),

NOTING ALSO with regard to the enhanced storage, processing and display possibilities offered by recent technical advances,

CONSIDERING that further growth in information promulgated to ships will be constrained by the capacity of the International NAVTEX service and the increasing importance of National NAVTEX services,

HAVING CONSIDERED the recommendations on the revision of resolution A.525(13) made by the Sub-Committee on Radiocommunications and Search and Rescue at its seventh session,

1 ADOPTS the revised Recommendation on performance standards for narrow-band direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships (NAVTEX), set out in the annex to the present resolution;

2 RECOMMENDS Governments to ensure that NAVTEX receiver equipment:

- (a) if installed on or after 1 July 2005, conforms to performance standards not inferior to those specified in the annex to the present resolution;
- (b) if installed before 1 July 2005, conforms to performance standards not inferior to those specified in the annex to resolution A.525(13).

Annex

Revised recommendation on performance standards for narrow-band direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships (NAVTEX)

1 Introduction

1.1 The equipment, in addition to meeting the requirements of the Radio Regulations, the provisions of Recommendation ITU-R M.540, applicable to shipborne equipment and the general requirements set out in resolution A.694(17), should comply with the following performance standards.

2 General

2.1 The equipment should comprise radio receivers, a signal processor and either:

- .1 an integrated printing device; or
- .2 a dedicated display device,¹⁷ printer output port and a non-volatile message memory; or
- .3 a connection to an integrated navigation system and a non-volatile message memory.

3 Controls and indicators

3.1 Details of the coverage areas and message categories which have been excluded by the operator from reception and/or display should be readily available.

4 Receivers

4.1 The equipment should contain one receiver operating on the frequency prescribed by the Radio Regulations for the International NAVTEX System. The equipment should contain a second receiver capable of working at the same time as the first one on at least two other frequencies recognized for the transmission of NAVTEX information. The first receiver should have priority in the display or printing of received information. Printing or displaying of messages from one receiver should not prevent reception by the other receiver.

4.2 The receiver sensitivity should be such that for a source with an e.m.f. of 2 μ V in series with a non-reactive impedance of 50 Ω , the character error rate is below 4%.

5 Display device and printer

5.1 The display device and/or printer should be able to display a minimum of 32 characters per line.

¹⁷ Where there is no printer, the dedicated display device should be located in the position from which the ship is normally navigated.

- 5.2 If a dedicated display device is used, the following requirements should be met:
- .1 an indication of newly received unsuppressed messages should be immediately displayed until acknowledged or until 24 hours after receipt; and
 - .2 newly received unsuppressed messages should also be displayed.
- 5.3 The display device should be able to display at least 16 lines of message text.
- 5.4 The design and size of the display device should be such that displayed information is easily read under all conditions by observers at normal working distances and viewing angles.
- 5.5 If automatic line feed entails division of a word, this should be indicated in the displayed/printed text.
- 5.6 When displaying received messages on a display device, a clear indication of the end of a message should be given by automatically adding line feeds after the message or including some other form of delineation. The printer or printer output should automatically insert line feeds after completing print of the received message.
- 5.7 The equipment should display/print an asterisk if the character is received corrupted.
- 5.8 Where the printer is not integrated, it should be possible to select the following data to be output to a printer:
- .1 all messages as they are received;
 - .2 all messages stored in the message memory;
 - .3 all messages received on specified frequencies, from specified locations or having specified message designators;
 - .4 all messages currently displayed; and
 - .5 individual messages selected from those appearing on the display.

6 Storage

6.1 Non-volatile message memory

6.1.1 For each receiver fitted it should be possible to record at least 200 messages of average length 500 characters (printable and non-printable) in non-volatile message memory. It should not be possible for the user to erase messages from memory. When the memory is full, the oldest messages should be overwritten by new messages.

6.1.2 The user should be able to tag individual messages for permanent retention. These messages may occupy up to 25% of the available memory and should not be overwritten by new messages. When no longer required, the user should be able to remove the tag on these messages, which may then be overwritten in normal course.

6.2 Message identifications

6.2.1 The equipment should be capable of internally storing at least 200 message identifications for each receiver provided.

6.2.2 After between 60 h and 72 h, a message identification should automatically be erased from the store. If the number of received message identifications exceeds the capacity of the store, the oldest message identification should be erased.

6.2.3 Only message identifications which have been satisfactorily received should be stored; a message is satisfactorily received if the error rate is below 4%.

6.3 Programmable control memories

6.3.1 Information for location (B₁)¹⁸ and message (B₂)* designators in programmable memories should not be erased by interruptions in the power supply of less than 6 h.

7 Alarms

7.1 The receipt of search and rescue information (B₂ = D) should give an alarm at the position from which the ship is normally navigated. It should only be possible to reset this alarm manually.

8 Test facilities

8.1 The equipment should be provided with a facility to test that the radio receiver, the display device/printer and non-volatile message memory are functioning correctly.

9 Interfaces

9.1 The equipment should include at least one interface for the transfer of received data to other navigation or communication equipment.

9.2 All interfaces provided for communication with other navigation or communication equipment should comply with the relevant international standards.¹⁹

9.3 If there is no integrated printer, the equipment should include a standard printer interface.

¹⁸ Refer to Recommendation ITU-R M.540-2.

¹⁹ Refer to publication IEC 61162.

Annex 4

Resolution A.801(19), as amended, annex 4

Criteria for use when providing a NAVTEX service

1 There are two basic areas which must be defined when establishing a NAVTEX service. They are:

Coverage area: An area defined by an arc of a circle having a radius from the transmitter calculated according to the method and criteria given in this annex.

Service area: A unique and precisely defined sea area, wholly contained within the coverage area, for which MSI is provided from a particular NAVTEX transmitter. It is normally defined by a line which takes full account of local propagation conditions and the character and volume of information and maritime traffic patterns in the region.

2 Governments desiring to provide a NAVTEX service should use the following criteria for calculating the coverage area of the NAVTEX transmitter they intend to install, in order to:

determine the most appropriate location for NAVTEX stations having regard to existing or planned stations;

avoid interference with existing or planned NAVTEX stations; and

establish a service area for promulgation to seafarers.

3 The ground-wave coverage may be determined for each coast station by reference to Recommendation ITU-R PN.368-7 and ITU-R Report P.32220 for the performance of a system under the following conditions:

Frequency	–	518 kHz
Bandwidth	–	300 Hz
Propagation	–	ground wave
Time of day	–	²¹
Season	–	*
Transmitter power	–	†
Antenna efficiency	–	²²
RF S/N in 500 Hz bandwidth	–	8 dB ²³
Percentage of time	–	90

4 Full coverage of the NAVTEX service area should be verified by field strength measurements.

²⁰ Recommendations ITU-R PN.368-7 and ITU-R Report P.322 are superseded by Recommendation ITU-R P.368-9 and Recommendation ITU-R P.372-10, respectively.

²¹ Administrations should determine time periods in accordance with the NAVTEX time transmission table (NAVTEX Manual, table 2) and seasons appropriate to their geographic area based on prevailing noise level.

²² The range of a NAVTEX transmitter depends on the transmitter power and local propagation conditions. The actual range achieved should be adjusted to the minimum required for adequate reception in the NAVTEX area served, taking into account the needs of ships approaching from other areas. Experience has indicated that the required range of 250 to 400 nautical miles can generally be attained by transmitter power in the range between 100 and 1000 W during daylight with a 60% reduction at night. The receiver characteristics, particularly as regards the bandwidth response, must be compatible with that of the NAVTEX transmitter.

²³ Bit error rate 1×10^{-2} . bollywodd.

Annex 5

Procedure for amending the NAVTEX Manual

1 Proposals for amendment or enhancement of the NAVTEX Manual should be submitted to the IMO Maritime Safety Committee through the *Sub-Committee on Navigation, Communications and Search and Rescue* (NCSR).

2 Amendments to this 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, will provide at least 12 months' notification and will come into force on 1 January of the following year.

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

ANNEX 10

LIAISON STATEMENT TO ITU-R WP 5B

AUTOMATIC IDENTIFICATION SYSTEM (AIS)

Uncontrolled novel applications

1 IMO's Sub-Committee on Navigation, Communications and Search and Rescue (NCSR), at its third session from 29 February to 4 March 2016, considered the liaison statement sent by ITU-R Working Party 5B (WP 5B) in November 2014 regarding the Automatic Identification System (AIS) and, in particular, the issue of uncontrolled novel applications (Annex 27 to Document 5B/761-E), and comments as follows.

2 In accordance with the issues raised in the liaison statement, the Sub-Committee considered the following topics:

- .1 the expanded usage of AIS devices;
- .2 safety of navigation implications for ships; and
- .3 identification of uncontrolled AIS devices.

The expanded usage of AIS devices

3 The Sub-Committee noted that some Administrations have questioned the appropriateness of using channels AIS 1 and AIS 2 of Appendix 18 to the Radio Regulations, for various novel applications for devices freely floating in the water, but not associated with a person or ship.

4 In this context, the following views were expressed:

- .1 the use of AIS for safety of navigation (AIS 1 and AIS 2) should be secured and other devices should be used on alternative frequencies;
- .2 the increased use of AIS 1 and AIS 2 channels is causing overloading of the VHF data link (VDL) and this should also be taken into account when considering the provision of alternative frequencies for AIS and, in particular, other devices using AIS technology;
- .3 it might be preferable to create a closed list of "agreed devices" which were allowed to operate on AIS 1 and AIS 2, and all other devices should operate on alternative frequencies; and
- .4 manufacturers should be offered alternative frequencies to allow for the implementation of the aforementioned views.

5 The Sub-Committee further noted that it might be difficult or even impossible to display devices which only need to be displayed on ships displays for particular industry sectors, or only for a short time.

Safety of navigation implications for ships

6 The Sub-Committee considered safety of navigation implications for ships, in particular, to unregulated AIS targets displayed on navigational displays on ships. The Sub-Committee was of the view that unregulated targets should be displayed differently than normal AIS targets, to clearly indicate the type of response required from the crew on the ship. In this context, it was noted that in practice it might be difficult to arrange for ships to be able to display new symbols as this would require changes to the equipment on the ship.

Identification of uncontrolled AIS devices

7 The Sub-Committee noted that some Administrations had expressed concerns about the multitude of new devices available which use Automatic Identification System (AIS) technology, without adequate provision within Recommendation ITU-R M.585, *Assignment and use of identities in the maritime mobile service*.

8 In considering the matter, the Sub-Committee noted the following views:

- .1 the identities given to AIS-SART devices are not unique and the same kind of regime could be applied to other devices using AIS technology;
- .2 devices might be required to be able to be interrogated for an unique identification and, accordingly, more detail of its ownership; and
- .3 new types of devices would not necessarily need to use numerical identities similar to MMSI, noting that these devices would then not be compatible with existing AIS devices.

IMO's request to ITU-R WP 5B

9 IMO requests ITU-R WP 5B to take the above noted comments into consideration, as appropriate, and requests to be informed of the further developments in this regard.

ANNEX 11

DRAFT MSC CIRCULAR

REVISED UNIFIED INTERPRETATION OF SOLAS REGULATION V/23.3.3

1 The Maritime Safety Committee, at its [ninety-seventh session (21 to 25 November 2016)], approved a revised unified interpretation of SOLAS regulation V/23.3.3 on Pilot transfer arrangements, prepared by the Sub-Committee on Navigation, Communications and Search and Rescue (NCSR), at its third session, as set out in the annex.

2 Member Governments are invited to use the unified interpretation as guidance when applying the relevant provisions of SOLAS regulation V/23.3.3 for pilot transfer equipment and arrangements, and to bring this unified interpretation to the attention of all parties concerned.

3 This circular supersedes MSC.1/Circ.1495.

ANNEX

UNIFIED INTERPRETATION OF SOLAS REGULATION V/23.3.3

SOLAS regulation V/23.3.3 states:

Safe and convenient access to, and egress from, the ship shall be provided by either:

- .1 a pilot ladder requiring a climb of not less than 1.5 m and not more than 9 m above the surface of the water so positioned and secured that:
 - .1.4 the single length of pilot ladder is capable of reaching the water from the point of access to, or egress from, the ship and due allowance is made for all conditions of loading and trim of the ship, and for an adverse list of 15°; the securing strong point, shackles and securing ropes shall be at least as strong as the side ropes; or**
- .2 an accommodation ladder in conjunction with the pilot ladder (i.e. a combination arrangement), or other equally safe and convenient means, whenever the distance from the surface of the water to the point of access to the ship is more than 9 m.*

Interpretation

Subparagraphs 1 and 2 of SOLAS regulation V/23.3.3. address two different and distinct arrangements – the former when only a pilot ladder is provided; the latter when a combined arrangement of "an accommodation ladder used in conjunction with the pilot ladder" is provided.

1 SOLAS regulation V/23.3.3.1 prescribes an operational instruction that limits the climb to not more than 9 m on a single ladder regardless of the trim or list of the ship.

2 SOLAS regulation V/23.3.3.2 and section 3 of resolution A.1045(27) applies to a combined arrangement of "an accommodation ladder used in conjunction with the pilot ladder" for "Safe and convenient access to, and egress from, the ship" for which a 15° list requirement does not apply.

3 Member Governments are invited to use the unified interpretation provided in paragraphs 1 and 2 above as guidance when applying the relevant provisions of SOLAS regulation V/23.3.3 for pilot transfer equipment and arrangements and to bring them to the attention of all parties concerned.

ANNEX 12

BIENNIAL STATUS REPORT 2016-2017

Sub-Committee on Navigation, Communications and Search and Rescue (NCSR)								
Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ(s)	Status of output for Year 1	Status of output for Year 2	References
1.1.2.2	Response to matters related to the Radiocommunication ITU R Study Group and ITU World Radiocommunication Conference	Annual	MSC	NCSR		Completed		NCSR 3/29, sections 16 and 17 and annex 10
1.1.2.3	Unified interpretation of provisions of IMO safety, security, and environment-related Conventions	Continuous	MSC/MEPC	III/PPR/CCC/SDC /SSE/NCSR		Ongoing		MSC 78/26, paragraph 22.12; NCSR 3/29, section 25 and annex 11
1.3.4.1	Amendments to the IAMSAR Manual	Continuous	MSC	NCSR		Ongoing		NCSR 3/29, section 23
2.0.3.1	Further development of the provision of global maritime SAR services	2017	MSC	NCSR		In progress		NCSR 3/29, section 22
2.0.3.2	Guidelines on harmonized aeronautical and maritime search and rescue procedures, including SAR training matters	2017	MSC	NCSR		In progress		NCSR 3/29, section 21
2.0.3.3	Revised guidelines for preparing plans for cooperation between search and rescue services and passenger ships (MSC.1/Circ.1079)	2017	MSC	NCSR		In progress		MSC 95/22, paragraph 19.11; NCSR 3/29, section 24

Sub-Committee on Navigation, Communications and Search and Rescue (NCSR)								
Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ(s)	Status of output for Year 1	Status of output for Year 2	References
5.1.2.2	Measures to protect the safety of persons rescued at sea	2017	MSC/FAL	III	NCSR	In progress		MSC 95/22, paragraph 21.17.3; NCSR 3/29, section 18
5.2.4.1	Routeing measures and mandatory ship reporting systems	Continuous	MSC	NCSR		Ongoing		NCSR 3/29, section 3 and annexes 1 to 4
5.2.4.2	Updates to the LRIT system	Continuous	MSC	NCSR		Ongoing		NCSR 3/29, section 7 and annex 6
5.2.4.3	Amendment to the General Provisions on Ships' Routeing (resolution A.572(14)) on establishing multiple structures at sea	2016	MSC	NCSR		Completed		MSC 95/22, paragraph 19.8; NCSR 3/29, section 4 and annex 5
5.2.4.4	Interconnection of NAVTEX and Inmarsat SafetyNET receivers and their display on Integrated Navigation Display Systems	2016	MSC	NCSR		Extended		MSC 92/26, paragraph 23.13; NCSR 3/29, section 13
Note: To be extended to 2017, to wait for the outcome of outputs 5.2.6.1 and 5.2.6.2 before concluding or finalizing this output.								
5.2.4.5	Guidelines associated with multi-system shipborne radio navigation receivers dealing with the harmonized provision of PNT data and integrity information	2017	MSC	NCSR		In progress		NCSR 2/23, paragraph 7.13; MSC 95/22, paragraph 19.16; NCSR 3/29, section 8
5.2.4.6	Recognition of Galileo as a component of the WWRNS	2016	MSC	NCSR		Completed		MSC 93/22, paragraph 20.22.1; NCSR 2/23, section 4; NCSR 3/29, section 5

Sub-Committee on Navigation, Communications and Search and Rescue (NCSR)								
Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ(s)	Status of output for Year 1	Status of output for Year 2	References
5.2.5.1	Updating of the GMDSS Master Plan and guidelines on MSI (maritime safety information)	Continuous	MSC	NCSR		Ongoing		NCSR 3/29, section 15 and annexes 8 and 9
5.2.5.2	Completion of the detailed review of the Global Maritime Distress and Safety System (GMDSS)	2016	MSC	HTW	NCSR	Completed		NCSR 1/28, annex 11; NCSR 3/29, section 14 and annex 7
5.2.5.3	Draft Modernization Plan of the Global Maritime Distress and Safety System (GMDSS) (2018)	2017	MSC	HTW	NCSR	N/A		NCSR 1/28, annex 11
5.2.5.4	Analysis of information on developments in Inmarsat and Cospas-Sarsat	Continuous	MSC	NCSR		Ongoing		NCSR 3/29, section 19
<p>Note: The proposed new name for this output is "<u>Developments in GMDSS satellite services</u>". A change of the name of this output is desirable, to make it more generic, since it is currently only related to Inmarsat and Cospas-Sarsat. Under the proposed new name of this output, the Sub-Committee could also undertake at future sessions the work related to the recognition of Iridium, currently undertaken under output 5.2.5.7, and of other potential GMDSS satellite service providers, as and when instructed by the Committee.</p>								
5.2.5.5	Revised Performance Standards for EPIRBs operating on 406 MHz (resolution A.810(19)) to include Cospas-Sarsat MEOSAR and second-generation beacons	2017	MSC	NCSR		In progress		MSC 95/22, paragraph 19.9; NCSR 3/29, section 20

Sub-Committee on Navigation, Communications and Search and Rescue (NCSR)								
Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ(s)	Status of output for Year 1	Status of output for Year 2	References
5.2.5.6	Performance Standards for shipborne GMDSS equipment to accommodate additional providers of GMDSS satellite services	2016	MSC	NCSR		Extended		MSC 95/22, paragraph 19.14; NCSR 3/29, section 12
Note: To be extended to 2017, since the performance standards could not be finalized in one session.								
5.2.5.7	Analysis of developments in maritime radiocommunication systems and technology	2017	MSC	NCSR		In progress		MSC 92/26, paragraphs 9.24; NCSR 3/29, section 11
5.2.6.1	Additional modules to the Revised Performance Standards for Integrated Navigation Systems (INS) (resolution MSC.252(83) relating to the harmonization of bridge design and display of information	2017	MSC	NCSR		In progress		MSC 95/22, paragraph 19.12.2; NCSR 3/29, section 6
5.2.6.2	Guidelines for the harmonized display of navigation information received via communications equipment	2017	MSC	NCSR		In progress		MSC 95/22, paragraph 19.12.5; NCSR 3/29, section 9
5.2.6.3	Revised guidelines and criteria for ship reporting systems (resolution MSC.43(64))	2017	MSC	NCSR		In progress		MSC 95/22, paragraph 19.12.3; NCSR 3/29, section 10

Sub-Committee on Navigation, Communications and Search and Rescue (NCSR)								
Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ(s)	Status of output for Year 1	Status of output for Year 2	References
7.1.2.2	Designated Special Areas and PSSAs and their associated protective measures	Continuous	MEPC	NCSR		N/A		No work requested of organ by parent
14.0.1.1	Analysis and consideration of recommendations to reduce administrative burdens in IMO instruments including those identified by the SG-RAR	2017	Council	III/HTW/PPR/CCC/SDC/SSE/NCSR	MSC/MEPC/FAL/LEG	N/A		No work requested of organ by parent

ANNEX 13

PROPOSED PROVISIONAL AGENDA FOR NCSR 4

- Opening of the session
- 1 Adoption of the agenda
 - 2 Decisions of other IMO bodies
 - 3 Routing measures and mandatory ship reporting systems (5.2.4.1)
 - 4 Updates to the LRIT system (5.2.4.2)
 - 5 Interconnection of NAVTEX and Inmarsat SafetyNET receivers and their display on Integrated Navigation Display Systems (5.2.4.4)
 - 6 Guidelines associated with multi-system shipborne radionavigation receivers dealing with the harmonized provision of PNT data and integrity information (5.2.4.5)
 - 7 Additional modules to the Revised Performance Standards for Integrated Navigation Systems (INS) (resolution MSC.252(83) relating to the harmonization of bridge design and display of information (5.2.6.1)
 - 8 Guidelines for the harmonized display of navigation information received via communications equipment (5.2.6.2)
 - 9 Revised guidelines and criteria for ship reporting systems (resolution MSC.43(64)) (5.2.6.3)
 - 10 Performance Standards for shipborne GMDSS equipment to accommodate additional providers of GMDSS satellite services (5.2.5.6)
 - 11 Updating of the GMDSS master plan and guidelines on MSI (maritime safety information) provisions (5.2.5.1)
 - 12 Draft Modernization Plan of the Global Maritime Distress and Safety System (GMDSS) (5.2.5.3)
 - 13 Analysis of developments in maritime radiocommunication systems and technology (5.2.5.7)
 - 14 Response to matters related to the Radiocommunication ITU R Study Group (1.1.2.2)
 - 15 Response to matters related to ITU World Radiocommunication Conference (1.1.2.2)
 - 16 Measures to protect the safety of persons rescued at sea (5.1.2.2)
 - 17 Developments in GMDSS satellite services ~~Analysis of information on developments in Inmarsat and Cospas-Sarsat~~ (5.2.5.4)

- 18 Revised Performance Standards for EPIRBs operating on 406 MHz (resolution A.810(19)) to include Cospas-Sarsat MEOSAR and second generation beacons (5.2.5.5)
- 19 Further development of the provision of global maritime SAR services (2.0.3.1)
- 20 Guidelines on harmonized aeronautical and maritime search and rescue procedures, including SAR training matters (2.0.3.2)
- 21 Amendments to the IAMSAR Manual (1.3.4.1)
- 22 Revised guidelines for preparing plans for cooperation between search and rescue services and passenger ships (MSC.1/Circ.1079) (2.0.3.3)
- 23 Unified interpretation of provisions of IMO safety, security, and environment related Conventions (1.1.2.3)
- 24 Biennial status report and provisional agenda for NCSR 5
- 25 Election of Chairman and Vice-Chairman for 2018
- 26 Any other business
- 27 Report to the Maritime Safety Committee

ANNEX 14

STATEMENTS BY DELEGATIONS*

ITEM 1

Statement by the delegation of the Ukraine

Mr. Chairman,
Secretary-General,
Distinguished delegates,

In view of considerable implications for conduct of search and rescue operations my delegation feels obliged to draw the attention of other Member States to the Russia's internationally wrongful acts aimed at violating the sovereign rights of Ukraine in the areas of international law of the sea.

The Russian Federation as an occupying power continues to impede the fulfilment of a number of Ukraine's international obligations under the respective treaties and conventional instruments on part of the sovereign territory of Ukraine – the Autonomous Republic of Crimea and the city of Sevastopol, including to provide for the safety and security of navigation, regulation of maritime traffic, safety of life at sea, search and rescue.

Apart from that, I would also like to refer to the Note of the Mission of the Russian Federation to IMO, which was circulated in document A 29/22/1, annex 8.

In section "Performance of the Emergency Rescue Preparedness and Ensuring of the Environment Protection" the Russian Side communicates about 8 Maritime Rescue Coordination Sub-Centres which allegedly operate in the country. The COMSAR module of GISIS, on the contrary, indicates that the Russian Federation has declared only 6 Sub-Centres.

Attempts of Russia to claim its control over maritime rescue coordination sub-centres of another country, namely in Kerch (LRIT ID 2791) and Sevastopol (LRIT ID 2793), as well as to mislead the Member States are not just worrying. This is an outright swindle.

Moreover, manipulation with such data within the IMO could have far-reaching consequences for conduct of search and rescue operations, protection of the marine environment as well as for safety and security of navigation putting life at sea in grave danger.

Therefore, my delegation would like to call on IMO Member States to draw your attention to the above-mentioned use of distorted statistical data, attempts of the Russian Federation to challenge UNCLOS principles and to hold our values in contempt.

Mr. Chairman, we would appreciate if this statement is included in the report of this sub-committee.

I thank you.

* Statements have been included in this annex in the order in which they were given, sorted by agenda items, and in the language of submission (including translation into any other language if such translation was provided). Statements are available in all the official languages on audio file:
<http://docs.imo.org/Meetings/Media.aspx>

ITEM 3

Statement by the delegation of Côte d'Ivoire

Déclaration de la délégation ivoirienne lors de la 3^e session du Sous-comité de la Navigation, des Communications et de la Recherche et du Sauvetage suite à la demande du Ghana de modifier l'actuelle zone à éviter dans l'océan Atlantique.

Monsieur le président,

Je vous remercie de donner la parole à la délégation ivoirienne, ici présente.

Le Ghana a fait une soumission dans le document NCSR 3/3/6 portant sur une proposition de modification de la zone actuelle à éviter dans le champ pétrolier de Jubilee adoptée par l'OMI dans l'océan Atlantique.

La modification proposée vise selon le Ghana d'une part à englober "dans le prolongement de ce champ pétrolier une nouvelle zone d'exploitation désignée sous le nom de port en eau profonde du champ pétrolier de Tweneboa, Enyenra et Ntomme (ZoneTEN) et, d'autre part à assurer la sécurité de la navigation aux abords de cette zone."

La délégation ivoirienne s'oppose à cette proposition pour les raisons que vous me permettrez d'exposer monsieur le Président devant cette assemblée afin de lui permettre de tirer les conséquences qui découleraient des décisions éventuelles qui seraient prises à cet égard.

En effet, la nouvelle ZoneTEN fait partie d'une zone litigieuse aujourd'hui entre la Côte d'Ivoire et le Ghana. Et tout acte d'exploitation unilatéral perpétré par le Ghana, va à l'encontre des dispositions de l'ordonnance en date du 25 Avril 2015 de la Chambre Spéciale du Tribunal International du Droit de la Mer (TIDM) prescrivant des mesures conservatoires sur lesquelles, nous reviendrons plus loin dans notre déclaration.

Monsieur le Président,

La Côte d'Ivoire et le Ghana ont hérité de frontières coloniales terrestre et maritime tracées sur la base de l'arrangement franco-anglais de Paris du 12 juillet 1893 et l'Accord franco-anglais de 1905 relatif à la frontière de la Côte des Ivoires (actuelle Côte d'Ivoire) et la Gold Coast (actuelle Ghana) entre la Mer et le 11^e degré de latitude Nord.

Aux lendemains de leurs indépendances, des divergences de vue sont apparues sur la reconnaissance des tracés définitifs de leurs frontières.

A cet égard, si les deux pays sont parvenus à un consensus pour le bornage de la frontière terrestre, aucun accord n'a été trouvé sur la délimitation de leur frontière maritime. Devant cette impasse, le Ghana a entamé l'exploitation en eau profonde des ressources notamment pétrolières et gazières dans une zone considérée comme litigieuse par la Côte d'Ivoire.

D'un commun accord, les deux pays ont cependant convenu de s'abstenir de toutes activités d'exploitation et d'exploration nouvelle jusqu'au règlement de leur différend frontalier maritime.

D'un commun accord les deux Etats, ont soumis le 3 décembre 2014, leur différend frontalier en arbitrage devant une chambre spéciale du Tribunal International du Droit de la Mer (TIDM).

Pour sa part, la Côte d'Ivoire a soumis le 27 février 2015, une demande en prescription de mesures conservatoires auprès de la même chambre spéciale qui a rendu une ordonnance, le 25 avril 2015.

Après avoir déterminé qu'elle a, *prima facie*, compétence pour connaître du différend, la Chambre Spéciale dans son ordonnance susmentionnée, note que le pouvoir de prescription des mesures conservatoires qu'elle tient de l'article 290, paragraphe 1, de la convention des nations unies sur le droit de la Mer de 1982, a pour objet de préserver les droits respectifs des parties en litige ou d'empêcher que le milieu marin ne subisse de dommages graves en attendant la décision définitive conformément au paragraphe 39 du statut du tribunal.

En conséquence la Chambre a, l'unanimité, prescrit en attendant la décision finale, les mesures conservatoires suivantes :

- a) Le Ghana doit prendre toutes les mesures nécessaires pour qu'aucun nouveau forage ne soit effectué par lui ou sous son contrôle dans la zone litigieuse telle que définie au paragraphe 60 du statut du tribunal;
- b) Le Ghana doit prendre toutes les mesures nécessaires pour empêcher que les informations qui résultent des activités d'exploration passées, en cours et à venir menées par le Ghana ou avec son autorisation, et qui ne relèvent pas déjà du domaine public, soient utilisées de quelque manière que ce soit au détriment de la Côte d'Ivoire;
- c) Le Ghana exercera un contrôle rigoureux et continu sur les activités menées par lui, ou avec son autorisation, dans la zone litigieuse pour empêcher tout dommage grave au milieu marin ;
- d) Les Parties prendront toutes les mesures nécessaires pour prévenir tout dommage grave au milieu marin, y compris le plateau continental et ses eaux surjacentes, dans la zone litigieuse, et coopéreront à cette fin ;
- e) Les Parties poursuivront leur coopération et s'abstiendront de toute action unilatérale pouvant conduire à l'aggravation du différend.

Ces mesures conservatoires sur lesquelles s'appuie la Côte d'Ivoire, notamment son droit de voir le Ghana de s'abstenir de toute activité unilatérale pouvant porter sur un risque de préjudice à son endroit, fonde également son opposition à la proposition Ghanéenne de modification de la zone actuelle à éviter soumise pour examen à cette session.

C'est la raison pour laquelle, *Monsieur le Président*, j'en appelle à cette assemblée pour qu'elle **rejette la proposition du Ghana**, en attendant le règlement définitif du litige frontalier marin entre les deux pays.

Statement by the delegation of Ghana

Statement of Ghana in reaction to the Statement of La Cote D'Ivoire

Mr. Chairman, the subject of our application is purely a technical matter within the competence of the IMO whose objective is to ensure safety and the protection of the marine environment.

Ghana's application is not a unilateral act, it was submitted in public/ in the open to the international community in particular this technical sub-committee of IMO to be decided upon.

The application for an Area to Be Avoided submitted by Ghana in paper NCSR 3/3/6 is motivated by a desire to ensure safety and to protect and preserve the marine environment in keeping with Ghana's obligations under international law.

Our brothers and neighbours from La Cote D'Ivoire have maintained a concern for the marine environment (among others) from activities offshore that led the Special Chamber to make an order directing Ghana in that regard.

Ghana in the submission of this application and in its activities offshore has kept within the directions of the provisional measures ordered by the Special Chamber of ITLOS.

The Special Chamber ordered that ongoing activities by and with the authorisation of Ghana were to continue until a final determination of the substantive matter between the parties, however no new drilling is to be undertaken in the area concerned. The Chamber further directed Ghana to carry out strict and continuous monitoring of all activities undertaken by Ghana or with its authorization in the area in question with a view to ensuring the prevention of serious harm to the marine environment.

Mr. Chairman our application is in respect of ongoing activities offshore aforementioned and is intended purely as a routing measure in the interest of safety and the protection of the marine environment. Mr Chairman, we are conscious of the fact, that the competent body for the determination or delineation of the boundary between Ghana and her neighbour is ITLOS and this application relates to a purely technical matter within the competence of IMO.

Thank you Mr. Chairman.

ITEM 11

Statement by the delegation of China

Thank you, Mr. Chairman.

China thanks IMSO and its Group of Experts for their work done and welcomes the preparations for the recognition as a service provider of GMDSS made by Iridium. China would like to associate ourselves with the interventions from Russian Federation, Sweden and Brazil. This delegation in general supports the compliance assessment made by IMSO's Group of Experts in accordance with the requirements set out in resolution A.1001(25) and MSC.1/Circ.1414. We agree with the GoE's conclusion that prior to receiving approval to participate in the GMDSS, Iridium should complete relevant preparations work in relation to maritime mobile terminal developments, the broadcast of MSI, system availability, communication link between the Iridium system and MRCCs, and system backup, etc.

With respect to the two-step process proposed by the United States, this delegation feels that the Sub-Committee's task as instructed by the Maritime Safety Committee is to carry out technical assessment relating to the recognition of Iridium as a GMDSS service provider. As for the "incorporate" step suggested by the United States, the Maritime Safety Committee hasn't given any clear definition or instructions in this regard. So this delegation would like to suggest that Iridium should follow the Committee's instructions and the Sub-Committee's technical assessment requirements and continue to prepare its services for recognition, this delegation doesn't support the "two-step" approach.

At the same time, this delegation takes note that there exists frequency interference between the Iridium system and other systems. If the frequency interference was not effectively resolved, this will severely impact the operation of relevant systems. Therefore, this delegation is of the view that the Sub-Committee should first address the issue of frequency coordination to eliminate any interference between relevant systems before further consideration on Iridium's participation in the GMDSS.

Thank you, Mr. Chairman.

ITEM 18

Statement by the delegation of Greece

The Hellenic Coast Guard, having the highest regard to the protection of human life and the fundamental rights of refugees/migrants attempting to cross the eastern Aegean sea borders and further considering that the migration flows will remain constant, has strengthened the available Search and Rescue capacity of human resources and operational assets at the above mentioned area of interest.

The Hellenic Coast Guard is in close cooperation domestically with all responsible Authorities, to achieve early detection and maritime domain awareness capabilities. In this regard the contribution of the Hellenic Armed Forces has proven to be crucial, taking into account that the Hellenic Navy is providing surface and aerial assets, to increase our Search and Rescue capacity.

Furthermore, the EU Joint Operation Poseidon Sea, up-scaled by the EU Operation Poseidon Rapid Intervention, has provided additional assistance in the form of human resources, operational assets, as well as technical equipment from the participating EU Member States, under the coordination of FRONTEX.

Moreover, Greece has set up an intergovernmental agreement with U.K., regarding the availability of an additional unit for Search and Rescue purposes.

Taking into account the ongoing humanitarian crisis caused by the population movements from the Anatolian peninsula to the eastern Aegean Sea Greek islands and the operational need for extra SAR and evacuation capabilities, the HCG cooperates with the International Maritime Rescue Federation (IMRF) to coordinate the assistance offered by its Members. Other Volunteer groups and Non-Governmental Organizations (NGOs) are also active in specific locations of the area, to share the heavy burden of the increasing sea crossings in the eastern Aegean.

As a result, during 2015, the Hellenic Coast Guard, under the coordination of JRCC Piraeus, has rescued 103372 refugees/migrants in 2931 incidents, out of the total amount of 810.663 refugees/migrants who arrived in Greece during that time, in the eastern sea borders alone.

To conclude, we would like to express our sincere appreciation to all of the above mentioned stakeholders for their invaluable contribution and solidarity to our efforts to preserve the highest of the fundamental human rights, namely the protection of human life at sea.

We are convinced that the best way to eliminate losses of human life at sea, is to prevent people from taking out to the sea.

Statement by the delegation of Turkey

Thank you Mr. Chairman,

We would like to inform the Subcommittee about the situation in Turkey regarding the mixed migration.

As you are all kindly aware, Turkey is now hosting more than 2.5 million Syrians and we have spent around 10 billion Dollars for Syrians in Turkey.

Turkey, while hosting the biggest number of Syrians in the region, is at the same time exerting every effort possible to minimize irregular migration. The number of irregular migrants, apprehended while attempting to cross our territory in 2015, has been approximately 150.000.

In 2015, Turkish Coast Guard has rescued almost 92.000 migrants from sea and apprehended 500 migrant smugglers. The number of rescued migrants in this period is three times higher than the same period of 2014. Only operations at sea cost 5 million Euros per month that has to be met from national resources.

Furthermore, Turkey, in order to fight more efficiently against migrant smuggling by sea:

- has increased the Coast Guard Units in risky areas;
- is monitoring closely all commercial ships;
- has increased control of commercial ships while entering and leaving the ports;
- has intensified fight against organized crime groups in order to identify those who are involved in migrant smuggling.

In our cooperation with the EU on migration, the spirit of burden and responsibility sharing is essential. This issue is also indicated in the Joint Action Plan, which was one of the major outcomes of Turkey-EU Summit on 29 November.

Turkey is ready to cooperate with all relevant parties and contribute to joint efforts in order to prevent irregular migration, while believing in the necessity of finding a sustainable solution for migration management that requires a shared responsibility.

Finally, Mr. Chairman, let me also emphasize that we have already taken millions of people in. There are still thousands of Syrians waiting in the relatively safe area between Azaz and our borders at Kilis. Their needs are being tended to by our authorities. Our authorities are working on setting up new camps for them. There are already about 50-55 thousand Syrians residing in ten different camps in the Azaz area. The pressure on the Syrian side will push thousands of people in these camps into Turkey. These numbers show that a new influx into Turkey can be imminent. The international community should not and cannot remain silent in the face of this ongoing crisis.

Thank you.
