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## REPORT TO THE MARITIME SAFETY COMMITTEE

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## **1 GENERAL**

1.1 The Sub-Committee on Safety of Navigation held its fifty-ninth session from 2 to 6 September 2013 under the Chairmanship of Mr. J.M. Sollosi (United States). The Vice-Chairman, Mr. K. Billiar (Ukraine), was also present.

1.2 The session was attended by delegations and observers from Member Governments, international organizations and non-governmental organizations in consultative status as listed in document NAV 59/INF.1.

### **Secretary-General's opening address**

1.3 The Secretary-General welcomed participants and delivered his opening address, which can be accessed from the IMO website at the following link: <http://docs.imo.org/Meetings/Media.aspx>.

1.4 The delegation of the Russian Federation noted with appreciation the remarks made by the Secretary-General relating to his recent voyage through the Northern Sea Route to observe the hazards of navigating in the Arctic Ocean.

1.5 The delegation of the Philippines thanked the Secretary-General for his condolences and message of sympathy for the lives lost in the recent Philippines ferry tragedy.

### **Chairman's remarks**

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

### **Expression of condolence**

1.7 The Sub-Committee noted with great sadness the passing away of Dr. C.P. Srivastava, Secretary-General Emeritus, KCMG, and, as a mark of respect, observed a minute of silence.

### **Adoption of the agenda and related matters**

1.8 The Sub-Committee adopted the agenda (NAV 59/1) and agreed, in general, that the work of the Sub-Committee should be guided by the annotations to the provisional agenda and timetable (NAV 59/1/1, as amended). The agenda, as adopted, with the list of documents considered under each agenda item, is set out in document NAV 59/INF.10.

## **2 DECISIONS OF OTHER IMO BODIES**

2.1 The Sub-Committee noted the decisions and comments pertaining to its work made by MEPC 64, C 109, MSC 91, COMSAR 17, FSI 21, DE 57, STW 44, MEPC 65 and MSC 92 (NAV 59/2, NAV 59/2/1 and NAV 59/2/2) including C 110 and took them into account in its deliberations under the relevant agenda items.

## **3 ROUTEING OF SHIPS, SHIP REPORTING AND RELATED MATTERS**

3.1 The Chairman 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 Ships' Routeing Working Group and disseminated as a working paper. Such a preliminary assessment would follow the general criteria in MSC.1/Circ.1060 and MSC.1/Circ.1060/Add.1 and would not address the technical aspects of the proposals. Accordingly, he had, in cooperation with the Secretariat and the Chairman of the working group, prepared document NAV 59/WP.2 outlining a preliminary assessment of the ships' routeing proposals. It was noted that no submissions on ship reporting systems had been received. In general, the proposals were in conformity with the criteria outlined in MSC/Circ.1060 and MSC.1/Circ.1060/Add.1.

### **New traffic separation schemes (TSSs)**

#### **Establishment of new traffic separation schemes "On the Pacific coast of Panama"**

3.2 The Sub-Committee briefly considered a proposal by Panama (NAV 59/3) for establishing three new traffic separation schemes on the Pacific coast of Panama together with related inshore traffic zones.

3.3 The delegation of Denmark, whilst supporting the proposal, in general, expressed concern regarding the proposed maximum speed limit of 10 knots during the four months (August – November) for the Gulf of Panama section of the proposed traffic separation scheme.

3.4 In this context, the Secretariat drew attention to Section "F" of the IMO Publication on Ships' Routeing, under the Rules for Vessels Navigating Through the Straits of Malacca and Singapore which provides rule 7 that VLCCs and deep-draught vessels navigating in the Straits of Malacca and Singapore shall, as far as it is safe and practicable, proceed at a speed of not more than 12 knots over the ground in certain stretches of the IMO-adopted traffic separation scheme and deep-water route.

#### **Establishment of new traffic separation schemes "At the approaches to Puerto Cristóbal"**

3.5 The Sub-Committee briefly considered a proposal by Panama (NAV 59/3/1) for establishing a new traffic separation scheme at the approaches to Puerto Cristóbal, on the Caribbean Sea, opposite the northern approach to the Panama Canal, together with a precautionary area and two inshore traffic zones.

### **Amendments to existing Traffic Separation Schemes (TSSs)**

#### **Amendment to the existing traffic separation scheme "Off Ushant"**

3.6 The Sub-Committee briefly considered a proposal by France (NAV 59/3/4) for amendments to the existing traffic separation scheme "Off Ushant".

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**Routeing measures other than traffic separation schemes (TSSs)****Establishment of a new recommendatory two-way route in the Great Barrier Reef and Torres Strait**

3.7 The Sub-Committee briefly considered a proposal by Australia (NAV 59/3/2) for establishing a new recommendatory two-way route in the Great Barrier Reef and Torres Strait.

3.8 The delegation of Singapore supported, in principle, the recommendatory two-way route as set out in the proposal by Australia (NAV 59/3/2), and noted that the proposal respected the authority of the Organization in approving routeing measures that have an impact on safety of navigation outside the territorial waters of Member States and straits used for international navigation.

**Revocation of an existing Area To Be Avoided and an existing mandatory No Anchoring Area at El Paso Deep-water port in the Gulf of Mexico**

3.9 The Sub-Committee briefly considered a proposal by the United States (NAV 59/3/3) for the revocation of an existing Area To Be Avoided and an existing mandatory No Anchoring Area at El Paso Energy Bridge Deep-water port in the Gulf of Mexico, which were implemented on 1 July 2005. The Deep-water port had been decommissioned and its associated apparatus had been removed. The existing Area To Be Avoided and the existing mandatory No Anchoring Area were therefore no longer needed to protect the Deep-water port.

**Growing traffic through the environmentally sensitive waters of Papua New Guinea**

3.10 The Sub-Committee noted with interest and appreciation the information provided by Australia and Papua New Guinea (NAV 59/INF.3) on growing ship traffic through the environmentally sensitive waters of Papua New Guinea and highlighting the increasing risks to maritime safety due to the increased traffic.

**Review of adopted mandatory ship reporting systems**

3.11 The Chairman recalled once again that at previous sessions his predecessor had subsequently taken the initiative to bring to the attention of Members the need for carrying out an evaluation of adopted mandatory ship reporting systems and had appealed to Members to undertake this exercise.

3.12 The Chairman suggested that Member Governments should review the various ship reporting systems adopted by the Organization, at an early date to ensure that they are all up to date.

**Guidance on amendments to existing IMO adopted ships' routeing systems**

3.13 The Chairman invited the Sub-Committee's attention to paragraph 3.17 of the *General Provisions on Ships' Routeing* (resolution A.572(14)), as amended, that states: "A routeing system, when adopted by IMO, shall not be amended or suspended before consultation with an 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 routeing measures and the charting of such measures, particularly with regard to TSSs.

3.14 The Chairman urged Member Governments to abide by this requirement and inform the Organization of any planned changes to an IMO-adopted routeing measure, so that the formal procedures for amendments were followed in line with the *General Provisions on Ships' Routeing*.

### **Establishing the Ships' Routeing Working Group**

3.15 After a preliminary discussion, as reported in paragraphs 3.1 to 3.9 above, the Sub-Committee re-established the Ships' Routeing Working Group and instructed it, taking into account any decisions of, and comments and proposals made in the Plenary, as well as relevant decisions of other IMO bodies (agenda item 2), for consideration and approval by Plenary to:

- .1 consider all documents submitted under agenda item 3 (except information document NAV 59/INF.3) regarding routeing of ships and related matters and prepare routeing measures, as appropriate, including recommendations for consideration and approval by the Plenary.

### **New traffic separation schemes**

#### **Report of the Ships' Routeing Working Group**

3.16 Having received and considered the Ships' Routeing Working Group's report (NAV 59/WP.6), the Sub-Committee approved it in general and, in particular (with reference to paragraphs 3.1 to 5.9 and annexes 1 to 7, took action as summarized in the following paragraphs.

#### **Establishment of a new traffic separation scheme "On the Pacific coast of Panama"**

3.17 The Sub-Committee approved the proposed new Traffic Separation Scheme "On the Pacific coast of Panama" together with related inshore traffic zones, comprising three parts:

- .1 Part 1 "Gulf of Panama";
- .2 Part 2 "Morro de Puercos"; and
- .3 Part 3 "Isla Jicarita",

as set out in annex 1.

3.18 The Sub-Committee noted that the Ships Routeing Working Group (SRWG) had a lengthy discussion on introducing a seasonal speed restriction in Part 1, "Gulf of Panama", of the new Traffic Separation Scheme. Having considered various aspects of the proposed measure, including the implications of UNCLOS, the advisability of reducing the speed of a vessel to reduce the risk of lethal strikes with cetaceans, the necessity to provide masters and crews with specific guidance to reduce the risk of ship strikes, as well as the recommendatory character of such a measure, leaving it to the master's discretion to establish safe speed in the given conditions, the SWRG agreed to develop recommendations on navigation in the Traffic Separation Scheme "On the Pacific Coast of Panama" (Part 1 "Gulf of Panama").

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**Establishment of a new traffic separation scheme "At the approaches to Puerto Cristobal"**

3.19 The Sub-Committee approved the proposed new Traffic Separation Scheme "At the approaches to Puerto Cristobal" as set out in annex 1, which the Committee is invited to adopt.

**Amendments to an existing traffic separation scheme****Amendment to the existing traffic separation scheme "Off Ushant"**

3.20 The Sub-Committee approved an editorial amendment to circular COLREG.2/Circ.64, to bring it in line with the amendments to the "Off Ushant" Traffic Separation Scheme adopted by MSC 92 which the Committee is invited to approve. In addition, the Sub-Committee requested the Secretariat to prepare the amendment to circular COLREG.2/Circ.64, after adoption by the Committee.

**Routeing measures other than traffic separation schemes****Establishment of new two-way routes in the Great Barrier Reef and Torres Strait**

3.21 The Sub-Committee approved the proposed two-way routes:

- .1 in the Prince of Wales Channel, Torres Strait;
- .2 in the Great Barrier Reef Inner Route (North); and
- .3 in the Great Barrier Reef Inner Route (South), as set out in annex 2,

which the Committee is invited to adopt.

**Revocation of an Area To Be Avoided and a Mandatory No Anchoring Area at El Paso Deep-water port in the Gulf of Mexico**

3.22 The Sub-Committee approved the revocation of the existing Area To Be Avoided and a Mandatory No Anchoring Area at El Paso Deep-water port in the Gulf of Mexico, which the Committee is invited to approve. Furthermore, the Sub-Committee agreed to their revocation six months after adoption by the Committee.

3.23 The Sub-Committee acknowledged the importance of updating the routeing systems adopted by the Organization and commended the efforts undertaken by the delegation of the United States.

**Recommendations on navigation in the Traffic Separation Scheme "On the Pacific coast of Panama" (Part 1 "Gulf of Panama")**

3.24 The Sub-Committee endorsed the establishment of a seasonal reduction in speed to reduce the potential risk of collisions between ships and cetaceans in the Traffic Separation Scheme "On the Pacific coast of Panama" (Part 1 "Gulf of Panama") and approved the recommendations on navigation in the Traffic Separation Scheme "On the Pacific coast of Panama" (Part 1 "Gulf of Panama"), as set out in annex 2, which the Committee is invited to adopt.

**Establishment of a new precautionary area "At the approaches to Puerto Cristobal"**

3.25 The Sub-Committee approved the establishment of a new Precautionary Area "At the approaches to Puerto Cristobal" as set out in annex 2, which the Committee is invited to adopt.

**4 APPLICATION OF THE SATELLITE NAVIGATION SYSTEM "BEIDOU" IN THE MARITIME FIELD**

4.1 The Sub-Committee recalled that MSC 91 had agreed to include, in the 2012-2013 biennial agenda of the NAV Sub-Committee and provisional agenda for NAV 59, an output on "Application of the satellite navigation system "BeiDou" in the maritime field", with a target completion year of 2014.

4.2 The Sub-Committee considered document NAV 59/4 (China) containing the text of draft performance standards for shipborne "BeiDou" Satellite Navigation System (BDS) receiver equipment, developed by taking into account the shipborne GPS, GLONASS and GALILEO receiver performance standards and the maritime requirements specified in resolutions A.1046(27) and A.915(22). BDS was independently developed and operated by China and was designed to provide all-weather and all-time positioning, velocity and timing services for global users with high accuracy and reliability. BDS came into official service with full operational capability covering most parts of the Asia-Pacific region at the end of 2012, and will be completely established and provide global service by 2020.

4.3 The Sub-Committee also considered document NAV 59/4/1(China) providing a brief introduction to BeiDou Satellite Navigation System for a preliminary assessment of BDS by the Sub-Committee and to enable it to provide comments with regard to the information and data needed for a full evaluation of BDS as a future component of the World-Wide Radionavigation System (WWRNS).

4.4 There was general agreement by the Sub-Committee that the annex to document NAV 59/4 should be used as the basic document to further develop the proposed draft performance standards for shipborne "BeiDou" BDS receiver equipment, and the Sub-Committee agreed to refer documents NAV 59/4 and NAV 59/4/1 to the Technical Working Group for further development/finalization with a view to approval by the Plenary.

**Establishing the Technical Working Group**

4.5 Having also considered agenda items 5 and 10, the Sub-Committee re-established the Technical Working Group and instructed it to consider all relevant documents submitted under agenda items 4, 5 and 10 and, taking into account any decisions of, and comments and proposals made in Plenary, to undertake the following tasks:

- .1 consider document NAV 59/4, annex 1, in particular, and finalize the draft performance standards for shipborne "BeiDou" BDS receiver equipment for adoption by MSC 93 in May 2014 (agenda item 4);
- .2 consider document NAV 59/4/1, for a preliminary assessment of BDS and provide comments with regard to the information and data needed for a full evaluation of BDS as a future component of the World-Wide Radionavigation System (WWRNS) (agenda item 4);



- .3 consider document NAV 59/5, paragraphs 2 to 7 and annex, and prepare a draft liaison statement back to ITU WP 5B on the proposed amendments to Recommendation ITU-R M.1371-4 (agenda item 5);
- .4 consider document NAV 59/5, paragraphs 12 to 18, with respect to regulatory provisions and spectrum allocations to enable possible new Automatic Identification System (AIS) technology applications and possible new applications to improve maritime radiocommunication in accordance with resolution 360 (WRC-12) and prepare guidance for the IMO/ITU Experts Group meeting in October 2013, as appropriate (agenda item 5);
- .5 consider document NAV 59/5, paragraphs 19 to 22, with respect to the preparation of WRC-15, agenda item 1.1 and review the outcome of the meeting of ITU-R JTG 4-5-6-7, held in July 2013, and consider the need to send a liaison statement to ITU-R responding to the latest development in the Task Group for consideration by the next meeting of JTG 4-5-6-7, planned to be held in October 2013 (agenda item 5); and
- .6 consider document NAV 58/10 and prepare the draft text of a revised Assembly resolution on *Guidelines for the onboard operational use of shipborne Automatic Identification Systems (AIS)* (resolution A.917(22), as amended)) (agenda item 10).

### **Report of the Technical Working Group**

4.6 Having received and considered the Technical Working Group's report (NAV 59/WP.7), the Sub-Committee (with reference to paragraphs 3.1 to 3.9 and annex 1 took action as summarized in the following paragraphs.

4.7 The Sub-Committee approved the draft performance standards for shipborne "BeiDou" BDS receiver equipment, as set out in annex 3 and invited the Committee to adopt them.

4.8 The Sub-Committee invited IEC to develop relevant technical standards for testing for type approval of shipborne BDS receiver equipment.

4.9 The Sub-Committee noted issues discussed in the Technical Working Group in relation to the preliminary assessment of BDS and comments provided with regard to the information and data needed for a full evaluation of BDS (NAV 59/WP.7, paragraphs 3.4 to 3.9).

## **5 ITU MATTERS, INCLUDING RADIOCOMMUNICATION ITU-R STUDY GROUP MATTERS**

5.1 The Sub-Committee noted that MSC 90 had extended the target completion date of this agenda item to 2013.

### **General**

5.2 The Sub-Committee noted the information provided by the Secretariat (NAV 59/5) on the outcome of the meeting of ITU-R Working Party 5B held from 20 to 31 May 2013.

### **Revision of Recommendation ITU-R M.1371-4**

5.3 The Sub-Committee noted that NAV 58 had sent a liaison statement to Working Party 5B (NAV 58/14, annex 5) commenting on the draft revision of Recommendation

ITU-R M.1371-4 and requesting the Working Party to send the updated version of the recommendation for consideration by the Sub-Committee at this session. Working Party 5B, having updated the draft revision of the recommendation at its May meeting this year, sent a liaison statement for the attention of the Sub-Committee (NAV 59/5, annex) inviting the Sub-Committee to consider proposed amendments and send a liaison statement back to Working Party 5B for consideration at its upcoming meeting in November this year with a view to approval by Study Group 5.

5.4 The delegation of Australia expressed the view that Recommendation ITU-R M.1371-4 had been fully developed, subject to some minor corrections of an editorial nature and was ready for implementation.

5.5 In light of the foregoing, the Sub-Committee referred the liaison statement on the proposed revision of Recommendation ITU-R M.1371-4 to the Technical Working Group for detailed consideration and the preparation of a liaison statement to Working Party 5B.

#### **Development of a working document towards a preliminary new draft recommendation on Characteristics of a digital system in the maritime HF band**

5.6 The Sub-Committee noted (NAV 59/5, paragraph 8) that Working Party 5B had developed a working document towards a preliminary draft new recommendation on characteristics of a digital system, entitled "Navigational Data for broadcasting maritime safety and security-related information from shore-to-ship in the maritime HF band."

#### **Development of draft new reports on Man Overboard Systems and on AIS for distress communications**

5.7 The Sub-Committee further noted (NAV 59/5, paragraphs 9 and 10) that Working Party 5B had developed the draft new report on maritime survivor locating systems and devices (Man Overboard Systems) including the first draft of a report on AIS for distress communications.

5.8 The delegation of China expressed the view that with respect to Man Overboard Systems it might be necessary to develop relevant performance standards.

5.9 With regard to the first draft of a new report on the use of AIS for distress communications, the delegations of Sweden and Denmark expressed the view that distress alerting was more appropriately addressed within the context of review of the GMDSS. In this context, the ICS observer cautioned against expanding the use of AIS within GMDSS as it could result in a new equipment carriage requirement.

#### **WRC-15, agenda item 1.16**

5.10 The Sub-Committee recalled that NAV 58 had reviewed the proposed initiatives on applications using AIS technology and had provided comments on the Draft CPM text in a liaison statement to Working 5B (NAV 58/14, paragraphs 5.16 to 5.18, annex 6). The Working Party (NAV 59/5, paragraphs 14 to 17) was considering several issues related to this agenda item.

5.11 Accordingly, the Sub-Committee had been invited to consider developments with respect to regulatory provisions and spectrum allocations to enable possible new AIS technology applications and possible new applications to improve maritime radiocommunication in accordance with resolution 360 (WRC-12).

5.12 In light of the foregoing, the Sub-Committee referred the matter to the Technical Working Group to prepare guidance for the IMO/ITU Experts Group meeting in October 2013, as appropriate.

#### **WRC-15, agenda item 1.1**

5.13 The Sub-Committee also recalled that in relation to World Radiocommunication Conference 2015, agenda item 1.1, Working Party 5B had noted the liaison statement sent by COMSAR 17 to ITU-R expressing IMO's concerns in relation to the wide range of frequency bands identified by ITU-R for future assessment of the suitability for International Mobile Telecommunications (IMT) (COMSAR 17/17, annex 5). In preparation for World Radiocommunication Conference 2015, a special Joint Task Group (JTG 4-5-6-7) had been established to coordinate studies on this matter and this Joint Task Group was currently studying all frequency bands for possible sharing with IMT. COMSAR 17 had noted that there was special interest in the frequency band in which maritime (S-band) radars operated and particular concerns had been expressed in the liaison statement at the possibility of harmful interference to the operation of these radars when the frequency band was shared with IMT applications in future.

5.14 The Sub-Committee was of the view that it was necessary to review the outcome of this meeting of the Joint Task Group and consider the need to send a new liaison statement to ITU-R responding to the latest development in the Joint Task Group, for consideration by the next meeting of this group planned for October 2013. Accordingly, the Sub-Committee referred the matter to the Technical Working Group to prepare a liaison statement to ITU-R for the JTG 4-5-6-7 meeting planned for October 2013.

#### **WRC-15, agenda item 1.12**

5.15 The Sub-Committee noted (NAV 59/5, paragraphs 23 and 24) that Working Party 5B had prepared a preliminary draft revision and further progressed the work on the revision of recommendation ITU-R M.1796-1 providing characteristics of and protection criteria for terrestrial radars operating in the radio determination service in the frequency band 8 500-10 680 MHz (the so called X-band radars) in order to update the characteristics and add further systems and details of antennas.

#### **Report of the Technical Working Group**

5.16 Having received and considered the Technical Working Group's report (NAV 59/WP.7) the Sub-Committee (with reference to paragraphs 4.1 to 4.14 and annexes 2 and 3) took action as summarized in the following paragraphs.

5.17 The Sub-Committee approved:

- .1 the draft liaison statement to ITU-R WP 5B on revision of Recommendation ITU-R M.1371-4, as set out in annex 4; and
- .2 the draft liaison statement to ITU-R JTG 4-5-6-7 and Working Parties 5A, 5B and 5D on "Additional comments in relation to frequency bands identified by ITU-R for future assessment of the suitability for IMT", as set out in annex 5,

and instructed the Secretariat to send these liaison statements to ITU, and invited the Committee to endorse this action.

5.18 The Sub-Committee endorsed the view of the Technical Working Group that further development of the VHF Data Exchange System (VDES) concept was to be supported by IMO, without committing the Organization regarding future requirements on the use of the VHF frequency band. The Sub-Committee instructed the Joint IMO/ITU Experts Group, at its meeting from 14 to 18 October 2013, to update the draft IMO position on WRC-15 agenda items concerning matters relating to maritime services, accordingly.

## **6 DEVELOPMENT OF AN E-NAVIGATION STRATEGY IMPLEMENTATION PLAN**

6.1 The Sub-Committee recalled that NAV 55, NAV 56, NAV 57 and NAV 58, respectively, had established a working group, including a correspondence group, to work intersessionally to progress the issue.

6.2 The Sub-Committee also recalled the outcome of MSC 90 (MSC 90/28, paragraphs 10.9 to 10.11).

6.3 The Sub-Committee further recalled the outcome of NAV 58 (NAV 58/14, paragraphs 6.40 to 6.42).

6.4 The Sub-Committee noted that MSC 91 had noted the progress in the development of an e-navigation strategy implementation plan and the re-establishment of a correspondence group to progress the work intersessionally.

6.5 The Sub-Committee also noted that COMSAR 17 had expressed general appreciation for the work carried out by the Correspondence Group on e-navigation, in particular with respect to the ongoing preparation of the final list of e-navigation solutions, the identification of risk control options and the feasibility evaluation process, including the cost-benefit analysis. COMSAR 17 had also noted the comments and observations of the working group related to e-navigation and had requested the Correspondence Group on e-navigation to take them into account in the preparation of the final list of potential e-navigation solutions to be submitted to NAV 59, as well as during the cost-benefit and risk-analysis process.

6.6 The Sub-Committee further noted that STW 44 had noted the ongoing processes of the risk and cost-benefit analyses for e-navigation and agreed that the Human Element Analysing Process (HEAP) would benefit from a general review to ensure that it was fit for wider use.

6.7 The Chairman recalled:

- .1 the Secretary-General's opening remarks underlining the finalization of the prioritized five potential main solutions; the risk and cost-benefit analyses with their five prioritized main solutions and the seven corresponding risk control options (RCOs) and the further development of the Strategy Implementation Plan (SIP). Other parallel developments should concentrate on the *Guidelines for usability evaluation of navigational equipment*; Integrated Position, Navigation and Timing System; Software quality assurance and the overarching Human Centred Design framework, without delaying the finalization of the SIP; and
- .2 that it was important to remain focused on the agreed work programme and not to become distracted by tangential matters such as new technology. It was imperative that the Sub-Committee should now focus its attention primarily on finalizing the prioritized five potential main solutions; the risk

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and cost-benefit analysis with the five prioritized main solutions and the seven corresponding RCOs, and should further develop the draft SIP and keep to the revised joint plan of work approved by MSC 90.

6.8 The Sub-Committee considered the report of the Correspondence Group (CG) on E-navigation (NAV 59/6) outlining the prioritized five potential main solutions based on the preliminary list of potential e-navigation solutions; the finalized risk and cost-benefit analysis with the five prioritized main solutions and the seven corresponding RCOs, the preliminary list of Maritime Service Portfolios (MSPs), the need for resilient integrated Position, Navigation and Timing (PNT) systems for the implementation of e-navigation, the inclusion of Software Quality Assurance (SQA), including a software updating regime within the overarching Human Centred Design (HCD) framework and the progress made in developing the draft SIP.

6.9 There was general support for the report of the CG. Delegations were of the view that the SIP needed to be flexible in order to accommodate future developments and also take into account the role of other international organizations. In addition, with respect to an identified user need for resilient PNT for the implementation of e-navigation, it would be necessary to develop generic requirements before a technical solution. Some delegations were of the view that the preliminary guidelines for test beds and Human Centred Design (HCD) should be merged.

6.10 The Sub-Committee agreed that the report of the CG should be used as the basic document for further work during this session and instructed the e-navigation Working Group to undertake a thorough review of the document before the Sub-Committee took the requested relevant actions.

6.11 The Sub-Committee noted that the Chairman, in cooperation with the Chairman of the e-navigation Correspondence Group and the Secretariat, had prepared a working paper (NAV 59/WP.3) to assist the e-navigation Working Group to further develop the draft SIP (NAV 59/6, annex 6).

6.12 Australia (NAV 59/6/1) provided information on the results of a study conducted during an e-navigation usability workshop, held in Australia during March 2013, the results of which indicate that designers should place the most emphasis on "*Suitability of task*" design usability principle. This particular principle (within the HCD context) required the task be fitted to the human, rather than the human having to adapt to the task.

6.13 Australia (NAV 59/6/5), while supporting the report of the correspondence group offered suggestions for the development of the IMO e-navigation SIP. Australia was of the view that the SIP should articulate the changes that would be needed to the relevant IMO rule-making processes.

6.14 The Sub-Committee referred documents NAV 59/6/1 and NAV 59/6/5 (Australia) to the e-navigation Working Group for consideration and advice.

6.15 The Sub-Committee considered documents NAV 59/6/2 and NAV 59/6/3 (Republic of Korea) proposing the development of draft software-quality assurance guidelines for e-navigation as part of the development of the SIP and outlining the need to extend the concept of "goals" in setting up test tasks for usability evaluations of navigational equipment for e-navigation.

6.16 While there was support for the Republic of Korea's proposals, some delegations, noting that situational awareness was a human role, expressed concern regarding technical solutions for enhancing situational awareness on the bridge.

6.17 After some discussion, the Sub-Committee referred documents NAV 59/6/2 and NAV 59/6/3 (Republic of Korea) to the e-navigation Working Group for consideration and advice.

6.18 IHO (NAV 59/6/4) provided comments on the section of the report of the e-navigation Correspondence Group (NAV 59/6) addressing the development of the concept of Maritime Service Portfolios and recommending to merge proposed MSP 12 and 13 and the hydrographic component of MSP 16 into a single MSP entitled "Hydrographic services" and to delete MSP 5 (MSI service) and assign the functionalities of MSP 5 as the "update" component of the basic services concerned (i.e. include the provision of navigational warnings and chart correction data in MSP "Hydrographic services").

6.19 The Sub-Committee referred document NAV 59/6/4 (IHO) to the e-navigation Working Group for consideration and advice.

6.20 ICS and BIMCO (NAV 59/6/6) provided comments on the report of the e-navigation Correspondence Group (NAV 59/6) and proposed a review of the Formal Safety Assessment (FSA) and the identified Risk Control Options. They also proposed that the e-navigation Strategy Implementation Plan should include alternative analysis in addition to the FSA, and that the Sub-Committee should reconsider and review the concept of MSPs.

6.21 In the ensuing discussions, the Sub-Committee did not agree with the proposal of ICS and BIMCO supported by several delegations that:

- .1 the FSA and RCO costs in annex 1 to NAV 59/6 should be peer-reviewed, considered further with additional organizations and companies consulted who had access to accurate figures; and
- .2 the FSA Expert Group should conduct a comprehensive review of the FSA with particular attention to the costs used, the calculated risks, the validity of data and the assumptions used.

6.22 In light of the foregoing, the Sub-Committee referred document NAV 59/6/6 (ICS and BIMCO), except paragraphs 22.2 and 22.3, to the e-navigation Working Group for consideration and advice.

6.23 The Republic of Korea (NAV 59/6/7) provided comments on the report of the e-navigation Correspondence Group (NAV 59/6) and proposed the addition of realistic examples of e-navigation solutions to the Strategy Implementation Plan including an example with respect to solution 2 and RCO 4 (NAV 59/6, annex 6).

6.24 The Sub-Committee referred document NAV 59/6/7 (Republic of Korea) to the e-navigation Working Group for consideration and advice.

6.25 The Sub-Committee noted with appreciation the information provided by Poland (NAV 59/INF.2) on a research project in the field of e-navigation about a decision support system in collision situations including the achieved research results.

6.26 The Sub-Committee noted with appreciation the information provided by IHO (NAV 59/INF.6) on the development of S-100 – the IHO Universal Hydrographic Data Model – and associated Product Specifications, in relation to the development of an e-navigation Strategy Implementation Plan.

6.27 The Sub-Committee noted with appreciation the information provided by Sweden (NAV 59/INF.8) on the MONALISA project, which was aimed at making a solid contribution to an efficient, safe and environmentally-friendly maritime transport. This was obtained through the development, demonstration and dissemination of innovative sea traffic management services to the shipping industry, which might serve as a foundation for possible future international use.

### **Establishing the E-navigation Working Group**

6.28 After a preliminary discussion, as reported in paragraphs 6.8 to 6.27, the Sub-Committee re-established the e-navigation Working Group and instructed it to consider the relevant documents submitted under agenda item 6, NAV 59/6 (Norway), NAV 59/6/1 (Australia), NAV 59/6/2, NAV 59/6/3 and NAV 59/6/7 (Republic of Korea), NAV 59/6/4 (IHO), NAV 59/6/5 (Australia), and NAV 59/6/6 (ICS and BIMCO) (except paragraphs 22.2 and 22.3), including the outcome of NAV 58, COMSAR 17, STW 44 and taking into account any decisions of, and comments and proposals made in the Plenary, and to undertake the following tasks:

- .1 review the report of the correspondence group, taking into account documents NAV 59/6/1, NAV 59/6/2, NAV 59/6/3, NAV 59/6/4, NAV 59/6/5, NAV 59/6/6 (except paragraphs 22.2 and 22.3) and NAV 59/6/7 including document NAV 59/WP.3 and provide comments and recommendations with respect to the actions requested in paragraphs 84.1 to 84.10 of document NAV 59/6;
- .2 consider documents NAV 59/6/1, NAV 59/6/3 and, specifically, ISO standard 9421-110 with respect to the draft *Guidelines on Human Centred Design (HCD) for navigational equipment and systems*, and provide comments and recommendations, as appropriate;
- .3 consider document NAV 59/6/2 with respect to the need to take into account the link between Human Centred Design (HCD) and Software Quality Assurance (SQA) as part of the ongoing work, and provide comments and recommendations, as appropriate; and
- .4 review and revise the terms of reference for a correspondence group to progress work intersessionally for reporting to HTW 1 and NCSR 1, based on the revised joint plan of work approved by MSC 90.

### **Report of the E-navigation Working Group**

6.29 Having received and considered the E-navigation Working Group's report (NAV 59/WP.8) the Sub-Committee (with reference to paragraphs 5.1.1 to 5.1.8 and annex) took action as summarized in the following paragraphs.

6.30 The Sub-Committee endorsed the following five prioritized potential e-navigation solutions:

- S1: improved, harmonized and user-friendly bridge design;
- S2: means for standardized and automated reporting;
- S3: improved reliability, resilience and integrity of bridge equipment and navigation information;
- S4: integration and presentation of available information in graphical displays received via communication equipment; and
- S9: improved Communication of VTS Service Portfolio<sup>1</sup>.

6.31 The Sub-Committee noted that the following criteria were used for the prioritization of the above-mentioned potential e-navigation solutions:

- .1 seamless transfer of data between various items of equipment on board; and
- .2 seamless transfer of electronic information/data between ship and shore and vice versa and from ship to ship and shore to shore.

6.32 The Sub-Committee also noted the results of the FSA, including the finalized risk and cost-benefit analyses and the identified RCOs. In doing so, the Sub-Committee took note of the concern expressed by ICS, supported by Antigua and Barbuda, the Bahamas, Germany, Greece, Liberia, the Marshall Islands, Panama, the United States, BIMCO and INTERTANKO, that the cost figures used for the FSA did not match the experience of shipowners who have fitted comparable equipment and that, for this reason, the outcome of the FSA could not be fully supported.

6.33 In this respect, the Chairman, recalling the Sub-Committee's previous decision (see paragraphs 6.21 and 6.22), reiterated the Sub-Committee's agreement that the FSA presented by the CG should not be peer-reviewed or revisited.

6.34 The Sub-Committee agreed with the views of the group with regard to MSPs.

6.35 The Sub-Committee endorsed the further development of:

- .1 the draft *Guidelines on Human Centred Design (HCD) for navigational equipment and systems*;
- .2 the draft *Guidelines on Usability evaluation of navigational equipment*;
- .3 the draft *Guidelines for Software Quality Assurance (SQA) in e-navigation*; and
- .4 the draft *Guidelines for the Harmonization of test-bed reporting*.

6.36 The Sub-Committee also endorsed the preliminary draft of the Strategy Implementation Plan, as set out in the annex of document NAV 59/WP.8, noting that it would require considerable further development.

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<sup>1</sup>

Not limited to VTS stations.



6.37 The Sub-Committee re-established the Correspondence Group on e-navigation under the coordination of Norway<sup>2</sup> and instructed it, taking into account the revised joint plan of work for the COMSAR, NAV and STW Sub-Committees for the period 2012–2014, as approved by MSC 90, as well as decisions made, and comments and recommendations provided, at NAV 59, to:

- .1 finalize the draft SIP, using as a basis the annex of document NAV 59/WP.8, taking into account comments provided in document NAV 59/6/5 (Australia);
- .2 include as part of the SIP at least the following elements according to the coordinated approach to the implementation of the e-navigation strategy approved by MSC 86:
  - .1 identification of responsibilities to appropriate organizations/parties;
  - .2 transition arrangements;
  - .3 a phased implementation schedule along with possible roadmaps to clarify common understanding necessary for the implementation;
  - .4 priorities for deliverables, resource management and a schedule for implementation and the continual assessment of user needs;
  - .5 proposals for a systematic assessment of how new technology can best meet defined and evolving user needs, taking into account existing technologies;
  - .6 a plan for the development of any technology and institutional arrangements necessary to fulfil the requirements of e-navigation in the longer term;
  - .7 proposals on public relations and promotion of the e-navigation concept to key stakeholder and user groups; and
  - .8 identification of potential sources of funding for development and implementation, particularly for developing regions and countries and of actions to secure that funding;
- .3 include also as part of the SIP the following additional elements:
  - .1 the relevant description of the ship and shore architecture;
  - .2 the set of operational and technical services which would be part of the Maritime Service Portfolios;
  - .3 the possible use of additional and/or alternative analysis tools to evaluate solutions and/or enhance the FSA process in the future;

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<sup>2</sup>

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- .4 the identification and description of future communication protocols and capacity for e-navigation; and
- .5 the required timeline and requirements for radio frequency/spectrum allocations;
- .4 consider whether the use of examples of technical e-navigation solutions should be included as part of the SIP, taking into account document NAV 59/6/7 (Republic of Korea);
- .5 in cooperation with Member States concerned and relevant international organizations, and in consultation with relevant stakeholders, as appropriate:
  - .1 finalize the draft *Guidelines for the harmonization of test beds reporting*, using as a reference document NAV 59/6, annex 5;
  - .2 further develop and include in the SIP the finalization of:
    - .1 the draft *Guidelines on Human Centred Design (HCD) for navigational equipment and systems*, using as a reference document NAV 59/6, annex 4;
    - .2 the draft *Guidelines on Usability evaluation of navigational equipment*, taking into account documents NAV 58/6/6, NAV 58/INF.12, NAV 58/INF.13 (Japan) and NAV 59/6/3 (Republic of Korea); and
    - .3 the draft *Guidelines for Software Quality Assurance (SQA) in e-navigation*, using as a reference document NAV 59/6/2 (Republic of Korea);
- .6 if necessary, submit a report to HTW 1 raising specific questions related to training aspects; and
- .7 submit a consolidated final report to NCSR 1.

6.38 The Sub-Committee agreed that the CG should give priority to finalization of the SIP, while allowing other efforts to take place, in parallel, by interested Member States and/or international organizations, in particular those related to the further progress or finalization of related guidelines.

6.39 During the consideration of the need for holding an intersessional meeting on e-navigation to assist with the timely completion of the necessary work according to the revised joint plan of work approved by MSC 90, some delegations, while recognizing the importance of e-navigation, did not support the convening of an intersessional meeting and indicated that:

- .1 there was not enough justification for holding an intersessional group and that it should only be convened if absolutely essential;
- .2 the review and reform process of the sub-committees had not considered the holding of such a meeting;

- .3 the cost to Member States of sending representatives to such an intersessional meeting should be taken into consideration; and
- .4 it would be premature to take a decision at this session and that it should be referred for consideration by NCSR 1, after receiving the progress report of the CG.

6.40 The delegation of the Cook Islands, while also disagreeing with the convening of an intersessional meeting, requested that its intervention made during the consideration of document NAV 59/WP.5 (Biennial agenda and provisional agenda for NAV 60) be taken from the audio files and annexed to the report as a statement. The full statement is set out in annex 6.

6.41 Notwithstanding the above, the majority of the delegations supported the convening of an intersessional meeting and indicated that:

- .1 an intersessional meeting would be extremely important to assist the CG with the timely finalization of the SIP;
- .2 MSC 90, when approving the revised joint plan of work for e-navigation (NAV 57/15, annex 6), had already foreseen the possibility of convening two intersessional meetings to assist in the development of e-navigation;
- .3 there was still a considerable amount of work required to be carried out as part of the development of the SIP, which would still require considerable discussions which could not easily take place in a CG; and that
- .4 without an intersessional meeting, it would be difficult to finalize the SIP in 2014, particularly considering that the Sub-Committee, when agreeing the provisional agenda for NCSR 1 (NAV 59/WP.5), had not included a dedicated working group in this respect.

6.42 Following consideration, the Sub-Committee recognized that the Committee's decision and subsequent Council approval would be required in this respect, and thus that an intersessional meeting could only be established after NCSR 1, if approved. It was also recognized that the restructuring of the sub-committees, the expected busy agenda of NCSR 1 and the absence of an intersessional meeting before NCSR 1 could have an impact on the timely finalization of the SIP.

6.43 Bearing in mind the support of the majority of the delegations for the convening of an intersessional meeting, the Sub-Committee agreed to convey these views to the Committee for consideration, recognizing that the development of e-navigation could be consequently delayed without an intersessional meeting.

## **7 DEVELOPMENT OF POLICY AND NEW SYMBOLS FOR AIS AIDS TO NAVIGATION**

7.1 The Sub-Committee recalled that:

- .1 MSC 86 had agreed to include, in the work programme of the NAV Sub-Committee, a high-priority item on "New symbols for AIS aids to navigation", with a target completion date of 2013;

- .2 NAV 56 had agreed that it was premature to establish a correspondence group on AIS AtoN symbology, as it was first imperative to have a policy in place before any major work was undertaken on this issue; and that
- .3 MSC 88 had agreed to expand the output to include performance standards, guidance and policy on their use and, in view of the expansion, had renamed the output "Development of policy and new symbols for AIS Aids to Navigation".

7.2 The Sub-Committee further recalled that NAV 57 had established a CG to develop a first draft of a policy for AIS Aids to Navigation and submit its report for review by NAV 58.

7.3 The Sub-Committee also recalled that NAV 58 had agreed with:

- .1 the revised draft text of the policy on the use of Aids to Navigation;
- .2 the opinion of the drafting group that further liaison was necessary to ensure that standards developed by other international organizations, i.e. IHO, IEC and IALA were aligned with this developing policy for AIS AtoN; and
- .3 the opinion of the drafting group that AIS Application Specific Message (ASM) should be further considered in conjunction with developments in AIS AtoN policy in the future.

7.4 The Sub-Committee finally recalled that NAV 58 had re-established the Correspondence Group (CG) on Development of Policy and New Symbols for AIS Aids to Navigation, under the coordination of Japan, and had instructed it to consider documents NAV 58/7 and NAV 58/WP.7, as well as comments made in plenary and any other relevant information, to carry out further editorial review and to finalize a revised draft of a policy for AIS Aids to Navigation, develop symbols for AIS AtoN, taking into account the symbols contained in SN/Circ.243 and other relevant guidelines, standards and publications, and submit a report for consideration and review by NAV 59.

7.5 The Sub-Committee considered the report of the CG (NAV 59/7), which contained the finalized draft IMO policy on use of AIS Aids to Navigation (annex 1) and new improved symbols for AIS AtoN (annex 2) for review and endorsement by the Sub-Committee, prior to submission to the Committee for approval, as appropriate.

7.6 While there was support, in general, for the report of the correspondence group, the delegation of Norway expressed concerns that AIS, which had originally been developed as an anti-collision measure, would become less effective if overloaded with AIS Aids to Navigation information. They believed the original intent of AIS as a collision avoidance tool should remain as its main function and that this should be highlighted in the policy document. In their opinion, if a virtual AtoN was to be "deployed" permanently, such a feature would have to be symbolized on both paper charts and electronic navigational charts. It could be a potential source for confusion among mariners if the chart contained symbols for objects that not all vessels would be able to detect, and that might differ from the chart symbol and position when transmitted ashore. They were also concerned about the proposal to use AIS AtoN as a way of promulgating Maritime Safety Information, as the link between AtoN and MSI could be misunderstood.

7.7 The IHO observer informed the meeting that the IHO had issued S-52 Chart Presentation Bulletin 10 on "Portrayal of Virtual AIS aids to Navigation", which provided guidance on the correct encoding and portrayal of Virtual AIS Aids to Navigation.

### **Establishing the Drafting Group on Development of Policy and New Symbols for AIS Aids to Navigation**

7.8 After a preliminary discussion, as reported in paragraphs 7.5 to 7.7 above, the Sub-Committee established a drafting group and instructed it, in accordance with the decisions of, and comments and proposals made in the plenary, to consider document NAV 59/7 (Japan) and review the finalized draft IMO Policy on Use of AIS Aids to Navigation (annex 1) and new improved symbols for AIS AtoN (annex 2) and to prepare final revised texts for endorsement by the Sub-Committee prior to submission to the Committee for approval.

### **Report of the Drafting Group**

7.9 Having received and considered the Drafting Group's report (NAV 59/WP.9), the Sub-Committee (with particular reference to paragraphs 3.1 to 3.2 and annexes 1 and 2) took action as summarized in the following paragraphs.

7.10 The Sub-Committee approved the report, in general, and endorsed:

- .1 the draft MSC circular on Policy on the Use of AIS Aids to Navigation as set out in annex 7;
- .2 the draft SN Circular on *Amended Guidelines for the presentation of navigational-related symbols, terms and abbreviations*, as set out in annex 8; and
- .3 invited the Committee to approve them.

7.11 Noting that as the work on this planned output had been completed, the Sub-Committee agreed to invite the Committee to delete this planned output when discussing its biennial agenda under agenda item 17.

## **8 REVIEW OF GENERAL CARGO SHIP SAFETY**

8.1 The Sub-Committee recalled that MSC 90 (MSC 90/28, paragraph 25.20) had included in the 2012-2013 biennial agenda of the NAV Sub-Committee and in the provisional agenda for NAV 59 an item on "Review of general cargo ship safety" with a target completion year of 2013, instructing the Sub-Committee to consider the relevant risk control options listed in annex 4 to document MSC 90/WP.7.

8.2 The Sub-Committee noted (NAV 59/8) that it had been instructed to consider the following Risk Control Options (RCOs):

- .1 RCO 27 (Anchoring watch alarm integrated in ECDIS; no additional costs if ECDIS is already integrated on bridge);
- .2 RCO 32 (Combine watch alarm with autopilot): and
- .3 RCO 2 (ECDIS with AIS and RADAR, only for newbuildings).

8.3 The Sub-Committee also noted that according to the FSA study carried out by IACS (MSC 88/INF.6), regarding steps 3 and 4 (Risk Control Options and Cost-Benefit Assessment, respectively), the following Risk Control Options (RCOs) were found to be cost-effective on the basis of GCAF (Gross Cost of Averting a Fatality), with a GCAF value below the threshold value of US\$3 million:

- .1 RCO 27 (Anchoring watch alarm integrated in ECDIS; no additional costs if ECDIS is already integrated on bridge) – Even if the risk reduction for crew is relatively small, this RCO is cost-effective because no or only minimal costs would be incurred if ECDIS is already installed on a ship.
- .2 RCO 32 (Combine watch alarm with autopilot) – This RCO leads to relatively small installation costs. The NCAF (Net Cost of Averting a Fatality) value is negative and hence this RCO is evaluated to be beneficial.
- .3 RCO 2 (ECDIS with AIS and RADAR, (only for newbuildings)) – This Risk Control Option (RCO) was found to be cost-effective on the basis of a positive NCAF (Net Cost of Averting a Fatality – consideration of benefit): from the perspective of NCAF, this RCO is cost-effective with a value below US\$3 million: the NCAF value is less than one tenth of the threshold.

8.4 Having considered the RCOs in question, the Sub-Committee was of the view that with respect to:

- .1 RCO 27 (Anchoring watch alarm integrated in ECDIS; no additional costs if ECDIS is already integrated on bridge), this was commonly integrated on ECDIS systems. For a mandatory requirement, the performance standards would have to be amended, which would entail a submission from a Member Government of a new unplanned output for consideration by the Committee;
- .2 RCO 32 (Combine watch alarm with autopilot), the BNWAS has already been introduced in recent amendments to SOLAS regulation V/19 and the BNWAS has a facility of control from the auto-pilot; and
- .3 RCO 2 (ECDIS with AIS and RADAR, only for newbuildings), this had been already addressed by the recent amendments to SOLAS regulation V/19.

8.5 In light of the foregoing, the Sub-Committee agreed that no further action was necessary and requested the Committee to delete this unplanned output from the biennial agenda.

## **9 REVISION OF THE INFORMATION CONTAINED IN THE EXISTING ANNEXES TO THE RECOMMENDATION ON THE USE OF ADEQUATELY QUALIFIED DEEP-SEA PILOTS IN THE NORTH SEA, ENGLISH CHANNEL AND SKAGERRAK (RESOLUTION A.486(XII))**

9.1 The Sub-Committee recalled that MSC 90, having considered documents MSC 90/25/2 (Austria et al.) and MSC 90/25/21 (Liberia, Marshall Islands, Singapore, ICS and CLIA) had agreed to exclude the proposal for a new annex from the scope of the work and include in the 2012-2013 biennial agenda of the NAV Sub-Committee, an unplanned output on "Revision of the information contained in the existing annexes to the *Recommendation on the use of adequately qualified deep sea pilots in the North Sea, English Channel and Skagerrak* (resolution A.486(XII))", with a target completion year of 2013. Furthermore,

noting that NAV 59 was scheduled to take place after MSC 92 but before A 28, MSC 90 had authorized the NAV Sub-Committee to submit the revised Assembly resolution directly to A 28.

9.2 The Sub-Committee agreed that the resolutions should not include a list of Competent Authorities as it would be practically impossible to keep the list updated.

9.3 The Sub-Committee noted that under agenda item 14 there was an identical draft Assembly resolution on Revision of the information contained in the existing annexes to the *Recommendation on the use of adequately qualified deep-sea pilots in the Baltic* (resolution A.480(XII)).

### **Establishing the Drafting Group on the Use of Adequately Qualified Deep-sea Pilots**

9.4 Having also considered agenda item 14, the Sub-Committee established the Drafting Group on the Use of Adequately Qualified Deep-sea Pilots and instructed it taking into account documents MSC 90/25/2 and NAV 59/14 and decisions of, and comments and proposals made in the Plenary, to prepare final revised texts of the following draft Assembly resolutions for endorsement by the Sub-Committee prior to submission to A 28 for adoption:

- .1 *Recommendation on the use of adequately qualified deep-sea pilots in the North Sea, English Channel and Skagerrak* (resolution A.486(XII)); and
- .2 *Recommendation on the use of adequately qualified deep-sea pilots in the Baltic* (resolution A.480(XII)).

9.5 The Sub-Committee approved the report, in general, and endorsed the draft Assembly resolution on *Recommendation on the use of adequately qualified deep-sea pilots in the North Sea, English Channel and Skagerrak*, as set out in annex 9; for forwarding to the 28th of the Assembly.

9.6 Noting that as the work on this unplanned output had been completed, the Sub-Committee agreed to invite the Committee to delete this unplanned output when discussing its biennial agenda under agenda item 17.

## **10 REVISION OF THE GUIDELINES FOR THE ONBOARD OPERATIONAL USE OF SHIPBORNE AUTOMATIC IDENTIFICATION SYSTEMS (AIS)**

10.1 The Sub-Committee recalled that MSC 90 had agreed to include in the 2012-2013 biennial agenda of the NAV Sub-Committee an unplanned output on "Revision of the Guidelines for the onboard operational use of shipborne automatic identification systems (AIS)", with a target completion year of 2014, in association with the COMSAR Sub-Committee as and when requested by the NAV Sub-Committee.

10.2 China (NAV 59/10) proposed an amendment to the *Guidelines for the onboard operational use of shipborne Automatic Identification Systems (AIS)* (resolution A.917(22), as amended), in order to update the Guidelines.

10.3 The Sub-Committee supported in principle updating the Guidelines to include AIS-SART. Some delegations recognized that although the Guidelines were nearly ten years old, it might be better to wait until Recommendation ITU-R M.1371-4 had been finalized. Some delegations were of the view that the updating of the Guidelines should be restricted to operational use. Others were of the view that the proposed changes to the technical table relating to ships' data content were not in conformity with the existing performance standards.

10.4 Furthermore, the Sub-Committee agreed that the annex to document NAV 59/10 should be used as the basic document by the Technical Working Group to review the proposed amendments to the *Guidelines for the onboard operational use of shipborne Automatic Identification Systems (AIS)* (resolution A.917(22), as amended) and referred document NAV 59/10 to the Technical Working Group for detailed consideration.

### **Report of the Technical Working Group**

10.5 Having received and considered the Technical Working Group's report (NAV 59/WP.7) the Sub-Committee (with reference to paragraphs 5.1 to 5.5 and annex 4 took action as summarized in the following paragraphs.

10.6 The Sub-Committee decided to forward the draft text of the revised Assembly resolution on *Guidelines for the onboard operational use of shipborne Automatic Identification Systems (AIS)* (resolution A.917(22), as amended), as set out in NAV 59/WP.7, annex 4, to NCSR 1 for review and finalization and invited Member Governments and international organizations to submit proposals to NCSR 1, as appropriate.

## **11 CONSOLIDATION OF ECDIS-RELATED IMO CIRCULARS**

11.1 The Sub-Committee recalled that MSC 90 had agreed to include in the 2012-2013 biennial agenda of the NAV Sub-Committee, an unplanned output on "Consolidation of ECDIS-related IMO circulars", with a target completion year of 2014.

11.2 Australia et al. (NAV 59/11) proposed the consolidation of all ECDIS-related information contained in several IMO circulars into a single MSC circular.

11.3 Several delegations spoke on the issue recalling the decision of MSC 90 to consolidate ECDIS-related information contained in several IMO circulars into a single document based on the need to provide clear and unambiguous guidance for the carriage and use of ECDIS.

11.4 A majority of the delegations that spoke on the issue were of the view that the draft MSC circular in its present form needed to be reviewed carefully to ensure that the aforementioned objectives were achieved.

11.5 After considerable discussion, the Sub-Committee recognized that, due to time constraints, it was not possible at this session to consolidate the existing circulars into one circular, which would also necessitate revocation of already existing circulars.

11.6 The Chairman, in his summing up, recognizing that the target completion date of this unplanned output was 2014, requested Member Governments to review the draft MSC circular (NAV 59/11, annex) in order to meet the objectives to have all guidance related to ECDIS as a single new circular, revoking existing circulars, so that the task could be completed at the first session of the newly merged Sub-Committee on Navigation, Communications Search and Rescue (NCSR 1).



## **12 CONSIDERATION OF ECDIS MATTERS RELATED TO THE IMPLEMENTATION OF THE CARRIAGE REQUIREMENTS IN SOLAS REGULATIONS V/19.2.10 AND V/19.2.11**

12.1 The Sub-Committee recalled that MSC 91 had agreed to include in the 2012-2013 biennial agenda of the NAV Sub-Committee and provisional agenda for NAV 59 an output on "Consideration of ECDIS matters related to the implementation of the carriage requirements in SOLAS regulations V/19.2.10 and V/19.2.11", with a target completion year of 2014.

12.2 BIMCO and Denmark (NAV 59/12) provided the outcome of a survey conducted to obtain information on the implementation of ECDIS, in particular on operating anomalies. In general, most ECDIS systems appeared to function without anomalies.

12.3 IHO (NAV 59/12/1) provided information reports on the action taken by IHO since NAV 58 to monitor and address ECDIS issues related to implementation of the carriage requirements in SOLAS regulations V/19.2.10 and V/19.2.11 and stated that no major new issue had been identified since NAV 58. Nonetheless, the IHO Secretariat would continue to monitor the evolution of ECDIS and the associated standards, actively pursuing ways to resolve any future issues whenever they arose, while continuing to report progress to Member States, the relevant IMO bodies and the wider maritime community. Furthermore, progress in resolving the outstanding issues with ECDIS operating anomalies was well underway with the active involvement of all key stakeholders. IHO would continue to welcome feedback from the stakeholders on ECDIS operation as well as on Electronic Navigational Chart coverage as reported in document NAV 59/12/1.

12.4 The delegation of China informed the Sub-Committee that, in response to the request of NAV 58 on proposals to address any ECDIS operating anomalies, China had conducted a survey on board Chinese ships to collect information and data on any operating anomalies of ECDIS, data updates and maintenance, software updates and ECDIS training. The survey sent out a total of 620 paper questionnaires; 36.6 per cent of participating ships had never encountered ECDIS software anomalies. With respect to the results of the survey on ECDIS training, most ECDIS users who experienced software anomalies recognized the importance of ECDIS training. Among ECDIS users, 88.2 per cent recognized the importance of training on ECDIS use and problem-solving. In addition, the survey showed that ECDIS users were very concerned about the user-friendliness of the operating interface of the ECDIS system.

12.5 The Sub-Committee noted the information contained in documents NAV 59/12 and NAV 59/12/1 along with the oral information provided orally by China.

### **Proposal for modernization of ECDIS for VHF radiocommunication**

12.6 Ukraine (NAV 59/12/2) proposed the modernization of ECDIS for operation with VHF DSC. Ukraine was of the view that the integration of VHF DSC and ECDIS would provide an essential simplification for an active address radiocommunication and reliable vessel identification in relation to current navigating conditions.

12.7 Several delegations and industry observers spoke on the issue. There was general support for the proposal; however, several delegations and observers voiced their concern at using VHF communications as a collision avoidance tool and felt that this was inherently risky. They were of the firm opinion that proper observance of COLREGs was the most appropriate option for collision avoidance. Views were also expressed that this proposal could form a part of the future review of GMDSS and the development of e-navigation.

12.8 The Sub-Committee was of the view that the proposal merited a thorough technical review prior to integration within existing navigational systems and invited Ukraine to submit a proposal to the Maritime Safety Committee for an unplanned output for consideration by the newly formed Sub-Committee on Navigation, Communications and Search and Rescue (NCSR).

### **13 DEVELOPMENT OF EXPLANATORY FOOTNOTES TO SOLAS REGULATIONS V/15, V/18, V/19 AND V/27**

13.1 The Sub-Committee recalled that at MSC 89, IHO (MSC 89/24/2) had reported on some operating anomalies identified with certain ECDIS units. Other IMO Member States supported by the ICS and IFSMA, had also commented on this issue and proposed measures that ought to be taken (MSC 89/24/3). At MSC 90, IHO (MSC 90/10/1) had reported on shortcomings with some ECDIS units being used at sea, particularly older systems, which had become apparent through analysis of the results of ships' testing of the IHO-produced ECDIS and Electronic Navigational Chart (ENC) Data Presentation and Performance Check dataset.

13.2 The Sub-Committee also recalled that MSC 90 had agreed to include in the 2012-2013 biennial agenda of the NAV Sub-Committee an unplanned output on "Development of explanatory footnotes to SOLAS regulations V/15, V/18, V/19 and V/27", with a target completion year of 2014, instructing the Sub-Committee to include the output in the provisional agenda for NAV 59.

13.3 Australia et al. (NAV 59/13) proposed a footnote be added to SOLAS regulation V/27 to clarify the requirements for nautical charts and nautical publications as they relate to Electronic Chart Display and Information Systems (ECDIS).

13.4 ICS and CLIA (NAV 59/13/1) provided comments on the footnote proposed in document NAV 59/13 to clarify SOLAS regulation V/27 and highlighted the practical difficulties to which it might give rise. Accordingly, they suggested that an annex be prepared for SN.1/Circ.266/Rev.1, to facilitate the formulation of a framework and process to formalize the development of new ECDIS display standards and to ensure that standards were only developed when necessary and that suitable time was allowed for the updating of ships' ECDIS after the release of a new standard. In addition, it was proposed that further detailed consideration of the "User Validation Data Set" proposed in paragraph 7.6 of document MSC 89/24/3 was undertaken to ensure that implementation of any new standard could be verified and understood by the mariner and port State control.

13.5 While a number of delegations supported, in principle, the inclusion of the proposed footnote, the delegation of Norway, supported by others, expressed the view that footnote was in conflict with the requirements of existing SOLAS regulation V/18.4, which states that "... ECDIS shall conform to the relevant performance standards not inferior to those adopted by the Organization in effect on the date of installation....". In addition, a number of delegations shared the concerns expressed by ICS and CLIA regarding the practical difficulties and unintended consequences that might arise from the footnote.

13.6 The delegation of the United Kingdom stated that the footnote could be worded in such a way that it would refer only to the display and not the ECDIS operating system. The intent was to ensure that the display reflected the latest charts. However, the Sub-Committee was of the opinion that this would not re-solve the issue under consideration.

13.7 After some discussion, the Sub-Committee could not agree as to whether the proposed footnote offered a solution or whether there was need to amend SOLAS regulation V/18.4 or to revise SN.1/Circ.266 in order to outline the circumstances when a software update would be required.

13.8 The Chairman in his summing up, recognizing that the target completion date of this unplanned output was 2014, requested Members to reconsider the issue and submit relevant proposals for consideration by the first session of the newly merged Sub-Committee on Navigation, Communications Search and Rescue (NCSR 1).

#### **14 REVISION OF THE INFORMATION CONTAINED IN THE EXISTING ANNEXES TO THE RECOMMENDATION ON THE USE OF ADEQUATELY QUALIFIED DEEP-SEA PILOTS IN THE BALTIC (RESOLUTION A.480(XII))**

14.1 The Sub-Committee recalled that MSC 90, having considered document MSC 90/25/15 (Denmark et al.), had agreed to exclude the proposal for a new annex from the scope of the work and had included, in the 2012-2013 biennial agenda of the NAV Sub-Committee, an unplanned output on "Revision of the information contained in the existing annexes to the *Recommendation on the use of adequately qualified deep-sea pilots in the Baltic* (resolution A.480(XII)), with a target completion year of 2013, instructing the Sub-Committee to include the output in the provisional agenda for NAV 59. Noting that NAV 59 was scheduled to take place after MSC 92 but before A 28, MSC 90 had authorized the NAV Sub-Committee to submit the revised Assembly resolution directly to A 28.

14.2 Denmark et al. (NAV 59/14) proposed a draft text of a revised Assembly resolution on *Recommendation on the use of adequately qualified deep-sea pilots in the Baltic* (resolution A.480(XII)).

14.3 The Sub-Committee noted that under agenda item 9 there was an identical draft Assembly resolution on *Revision of the information contained in the existing annexes to the Recommendation on the use of adequately qualified deep-sea pilots in the North Sea, English Channel and Skagerrak* (resolution A.486(XII)).

14.4 The Sub-Committee agreed to forward document NAV 59/14 to the Drafting Group on the Use of Adequately Qualified Deep-sea Pilots, for review and finalization.

#### **Report of the Drafting Group**

14.5 Having received and considered the drafting group's report (NAV 59/WP.10), the Sub-Committee (with particular reference to paragraph 3.2 and annex 2) took action as summarized in the following paragraphs.

14.6 The Sub-Committee approved the report in general and endorsed the draft Assembly resolution on *Recommendation on the use of adequately qualified deep-sea pilots in the Baltic sea*, as set out in annex 10 for forwarding to A 28 for adoption.

14.7 Noting that as the work on this unplanned output had been completed, the Sub-Committee agreed to invite the Committee to delete this unplanned output when discussing its biennial agenda under agenda item 17.

## **15 CASUALTY ANALYSIS**

15.1 The Sub-Committee recalled that MSC 78 (MSC 78/26, paragraph 24.8) had decided that the item on "Casualty analysis" should remain on the work programme of the sub-committees.

15.2 The Sub-Committee further noted that in the context of the working arrangements of the sub-committees in relation to their consideration of casualty reports, MSC 92 had considered the current casualty review process whereby the FSI Sub-Committee, following the advice of its Casualty Analysis Working Group, referred casualty reports to other IMO bodies for consideration under the continuous output on "Casualty analysis", and had noted that this practice no longer meets the SMART output structure introduced by the Council in recent years. Following discussion, MSC 92 had agreed to change the procedure for the review of casualty reports by sub-committees as follows:

- .1 The III Sub-Committee will only refer casualty reports directly to other sub-committees for consideration if an identifiable current output addressing the matter in question is on the agenda of such sub-committees;
- .2 In cases where sub-committees have no related outputs on their agendas, casualty reports will only be referred to them after consideration by the Committee and establishment of a relevant dedicated output; and
- .3 As a consequence, the output on "Casualty analysis" will be deleted from the biennial agendas of the HTW, NCSR, PPR, SDC and SSE Sub-Committees, but not the III Sub-Committee.

15.3 Accordingly, in view of the decisions of MSC 92, the Sub-Committee agreed to delete the output on "Casualty analysis" from the biennial agenda of the combined NCSR Sub-Committee.

## **16 CONSIDERATION OF IACS UNIFIED INTERPRETATIONS**

16.1 The Sub-Committee recalled that in order to expedite consideration of IACS unified interpretations, MSC 78 had agreed to retain, on a continuous basis, the item on "Consideration of IACS unified interpretations" in the work programmes of the BLG, DE, FP, FSI, NAV and SLF Sub-Committees and to include it in the agenda for their next respective sessions.

16.2 The Sub-Committee recalled that it had considered proposals for IACS unified interpretations at its fifty-second, fifty-third, fifty-fifth, fifty-seventh and fifty-eighth sessions. These were subsequently approved as MSC.1/Circ.1224 on Unified interpretations of SOLAS chapter V, MSC.1/Circ.1260 on Unified Interpretations of COLREG, MSC.1/Circ.1350 on Unified Interpretations of SOLAS regulation V/22.1.6 relating to navigation bridge visibility, MSC.1/Circ.1427 on Unified Interpretations of COLREG 1972 and MSC.1/Circ.1350/Rev.1 on Unified Interpretations of SOLAS regulation V/22.1.6 relating to navigation bridge visibility, during MSC 82, MSC 84, MSC 87, MSC 90 and MSC 91, respectively.

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**MSC.1/Circ.1260 – Unified Interpretation of COLREG 1972, as amended**

16.3 IACS (NAV 59/16 and Corr.1) submitted a copy of the latest version of IACS UI COLREG 1 providing a Unified Interpretation to COLREG 1972 annex I, section 9(b). IACS Members would uniformly implement this latest version of UI COLREG 1 from 1 July 2013, unless otherwise instructed by the Administration on whose behalf they are authorized to act as a Recognized Organization.

16.4 The Sub-Committee agreed to the IACS UI with a minor amendment to paragraph 2 with the deletion of the words "by Societies".

16.5 The Sub-Committee further agreed to revise MSC.1/Circ.1260 and instructed the Secretariat to prepare a draft revised MSC.1/Circ.1260 for consideration by the Sub-Committee with a view to approval by MSC 93.

**On receipt of the draft MSC circulars**

16.6 The Sub-Committee, having considered document NAV 59/WP.4, annex 1, endorsed the draft revised MSC.1/Circ.1260, as set out in annex 11, and invited the Committee to approve it.

**Draft MSC circular on Unified Interpretation of SOLAS regulation V/23 (Pilot Transfer Arrangements), as amended by resolution MSC.308(88)**

16.7 IACS submitted (NAV 59/16/1) a copy of IACS UI SC 257 on pilot transfer arrangements that provided a unified interpretation relevant to SOLAS regulation V/23, which would be uniformly implemented by IACS Members on ships contracted for construction on or after 1 July 2013, unless otherwise instructed by the Administration on whose behalf they are authorized to act as a Recognized Organization.

16.8 A significant number of delegations spoke on the issue. Some were of the opinion that the IACS UI SC 257 on pilot transfer arrangements was in direct conflict with existing SOLAS regulation V/23. Others were of the view that the prescribed adverse list of 15 degrees was an exceptional circumstance and should not be considered when determining whether an accommodation ladder was required in conjunction with the pilot ladder.

16.9 The Sub-Committee:

- .1 noted that the length of the pilot boarding ladder should be calculated inclusive of the consideration of an adverse list of 15 degrees; and
- .2 reiterated that when considering pilot transfer arrangements at any distance more than 9 metres above the surface of the water under any circumstances, a combination pilot boarding arrangement would be required, in accordance with existing SOLAS regulation V/23.3.3.2.

16.10 Accordingly, the Sub-Committee did not agree with the IACS UI on pilot transfer arrangements and requested IACS to re-consider its proposal.

**Matters related to ECDIS – Clarification on how to complete items 2.1 and 2.2 of part 3 of Form E, including part 5 of Forms P and C**

16.11 IACS (NAV 59/16/2) sought clarification from the Sub-Committee on how to complete items 2.1 and 2.2 of part 3 of Form E in order to document flexibility in using either paper charts or ECDIS as means of navigation. The same applied to items 2.1 and 2.2 of part 5 of Forms P and C. In its opinion, flexibility in using either paper charts or ECDIS as means of navigation, as mentioned in paragraph 3 above, did not appear to be afforded by Form E (and the same applied to Form P and Form C) in the event that a shipowner requested that Form E should document that both ECDIS and nautical charts were used as means to navigate. In this case, nautical charts were not limited to use as a back-up for the ECDIS.

16.12 Some delegations were of the view that the ship management is responsible for determining what type of charts would be used on the ship as the primary means of navigation.

16.13 The delegation of the Marshall Islands stated that SOLAS regulation V/27 requires nautical charts for the intended voyage without specifying the form of that chart, i.e. paper or ENC. The Marshall Islands felt that it was properly the decision of ship management to determine what form of chart will be used on board their ships. This should be clearly stated in their Safety Management System and it should be possible to record this on Form E as well as Forms P and C.

16.14 The Sub-Committee accepted the offer of IACS, and invited it to develop an IACS UI for consideration by the new amalgamated Sub-Committee (NCSR 1) in June/July 2014, taking into account the comments made with respect to ship management responsibilities.

**Draft MSC circular on Unified Interpretation of performance standards for Voyage Data Recorders (VDRs) (resolution MSC.333(90))**

16.15 IACS (NAV 59/16/3) submitted a copy of IACS UI SC261, providing an interpretation relevant to the *Performance Standards for Voyage Data Recorders (VDRs)* (resolution MSC.333(90)). IACS Members will uniformly implement UI SC 261 from 1 July 2014, unless otherwise instructed by the Administration on whose behalf they are authorized to act as a Recognized Organization.

16.16 Denmark, supported by other delegations, could not support the proposal by IACS, as it would be in opposition to their known procedures; instead they considered that the actual installation date when the equipment was placed on board should be used in all cases. That procedure would be the most simplified approach.

16.17 Accordingly, the Sub-Committee did not agree with the IACS UI on *Performance standards for Voyage Data Recorders (VDRs)* (resolution MSC.333(90)).

**17 BIENNIAL AGENDA AND PROVISIONAL AGENDA FOR NAV 60**

17.1 The Sub-Committee noted that MSC 92 had approved the names and terms of reference (MSC 92/26, annex 40) of the subsidiary bodies of the MSC and the MEPC, as appropriate, that would replace the existing subsidiary bodies, starting from the 2014-2015 biennium. NAV and COMSAR had been amalgamated as the Sub-Committee on Navigation, Communications and Search and Rescue (NCSR).

17.2 The Sub-Committee also noted that MSC 92 had approved the restructured sub-committees' biennial agendas for 2014-2015 and the provisional agendas for their respective first sessions (MSC 92/26, annexes 41 and 42), respectively. With regard to the work methods of the restructured sub-committees, MSC 92 had endorsed the views that:

- .1 matters already under consideration in the existing sub-committees should be considered with priority by the restructured sub-committees, in order that ongoing work could be completed before work on new outputs commenced; and that
- .2 new outputs should only be included in the provisional agendas of sub-committees if a corresponding number of existing outputs had been completed.

In this connection, MSC 92 had invited Member Governments to carefully consider the necessity of proposing new unplanned outputs and, in any case, to provide full justifications for any urgent matters during the transition period (considered to be the 2014-2015 biennium) from the old sub-committee structure to the new one.

17.3 The Sub-Committee further noted that MSC 92 had also endorsed the proposal for full five-day sessions, with interpretation, for the first session only of the NCSR Sub-Committee, to enable it to cope with its heavy agenda.

17.4 The Sub-Committee noted that the 110th session of the Council had taken the following decisions with a bearing on the work of the Sub-Committee. In particular, with regard to document C 110/3/1 reporting on the outcome of the consideration by the MSC and the MEPC of the implications and practicability of the Secretary-General's proposals for the restructuring of the sub-committees, the Council had noted:

- .1 the committees' agreement to a reduction of the total number of sub-committees from nine to seven, with potential savings of four meeting-weeks per biennium;
- .2 the names and terms of reference of the seven sub-committees and their biennial agendas for the 2014-2015 biennium; and
- .3 that there would be no changes to the number of working groups in any sub-committee meetings, as well as no additional intersessional working groups.

C 110 had also approved the committees' proposal for full five-day sessions, with interpretation, for the first session of the Sub-Committee on Navigation, Communications and Search and Rescue (NCSR).

17.5 The delegation of the Cook Islands, during the review of document NAV 59/WP.5, stated that the Secretary-General's proposals for restructuring the sub-committees were subject to review and ratification by the Assembly (paragraph 6.40 also refers).

#### **Biennial and post-biennial agendas including provisional agenda for NAV 60**

17.6 Taking into account the progress made during this session, the Sub-Committee prepared its draft revised biennial agenda for the 2014-2015 biennium in SMART terms, including items on the Committee's post-biennial agenda under the purview of the restructured

NCSR Sub-Committee (NAV 59/WP.5), based on the revised biennial agenda approved by MSC 92, as set out in annex 12, for approval by MSC 93.

17.7 The Sub-Committee noted that there would be no provisional agenda for NAV 60 and instead, given in annex 13 is the provisional agenda for the restructured NCSR Sub-Committee (NCSR 1).

### **Arrangements for NCSR 1**

17.8 It was anticipated that working and drafting groups on the following subjects might be established at NCSR 1:

- .1 Ships' Routeing;
- .2 Search and Rescue; and
- .3 Technical matters.

### **Status of planned outputs for the 2012-2013 biennium**

17.9 The Sub-Committee prepared the report on the status of planned outputs of the *High-level Action Plan of the Organization and priorities for the 2012-2013 biennium* relevant to the Sub-Committee, as set out in annex 14 and invited the Committee to note the status.

### **Date of the first session of NCSR**

17.10 The Sub-Committee noted that the first session of the amalgamated Sub-Committee on Navigation, Communications and Search and Rescue (NCSR) had been tentatively scheduled to be held from [30 June to 4 July 2014] at IMO Headquarters.

## **18 ELECTION OF CHAIRMAN AND VICE-CHAIRMAN FOR 2014**

18.1 The Chairman informed the Sub-Committee that in light of the NAV and COMSAR Sub-Committees being amalgamated as the Sub-Committee on Navigation, Communications, and Search and Rescue (NCSR), there would be no election at this session. The Chairman and Vice-Chairman for NCSR Sub-Committee will be elected at the opening of NCSR 1, which is tentatively scheduled to be held from 30 June to 4 July 2014.

18.2 The Chairman further took the opportunity to convey his appreciation to the Vice-Chairman and the Members for the cooperation and courtesy extended to him during his tenure.

## **19 ANY OTHER BUSINESS**

### **Progress on standards development by the IEC**

19.1 The Sub-Committee, having considered document NAV 59/19 (IEC), noted that a revision was being prepared to IEC 62288: *Maritime navigation and radiocommunication equipment and systems – Presentation of navigation-related information on shipborne navigational displays – General requirements, methods of testing and required test results*. IEC 62288 incorporates the recommendations on *Performance standards for the presentation of navigation-related information on shipborne navigational displays* given in resolution MSC.191(79). It also incorporates the guidelines for the presentation of navigation-related symbols given in SN.1/Circ.243. In the course of the revision, Technical



Committee 80 had developed some new and revised symbols for use with Search and Rescue and some further new symbols describing AIS Application-Specific Messages functions as given in SN.1/Circ.289.

19.2 The delegation of Denmark, with respect to item 2.11 (NAV 59/19, annex) where the AIS-SART symbol had been addressed, was of the view that an AIS-SART is considered a locating device, not a distress alerting device. The presentation of an AIS-SART should accordingly not use a functionality of flashing red, which is reserved for an ALARM requiring immediate action, unless otherwise decided by this Organization. Denmark was of the view that care should be taken to prevent additional undue alarms being raised to the mariner. Further, the symbols proposed for Maritime Safety Information or Area Notice seemed to pose the risk of cluttering display systems, with multiple textboxes overlaying an area. Finally, Denmark found it questionable whether all the proposed symbols were relevant. To prevent information overload on a navigation display, it should be carefully considered what it was relevant to present, for instance whether a symbol for an AIS Base station was relevant for the navigator in the context of a navigation display. Denmark also announced its intention to provide input on these concerns to the IEC work process and requested the IEC to clarify further its intentions regarding the use of the presented symbols.

19.3 The IEC observer stated that Denmark's concerns would be conveyed to IEC TC 80 and that the proposed symbols were not yet accepted. The IEC would seek the Sub-Committee's advice and not bypass the IMO procedures.

### **The IMO/IALA Award for Zero Accident Campaign**

19.4 The Sub-Committee noted that during the twelfth International Symposium on Vessel Traffic Services (10 to 14 September 2012), in Istanbul, Turkey, the Secretary-General of the IMO had taken the initiative of proposing a plan of action to promote a Zero Accident campaign. This initiative had been well received and supported by the VTS Symposium. As a follow up to the initiative, a Group of Experts (Group) from IALA, IHO, IMO, IAPH and IMPA had met at IMO Headquarters on 28 January 2013. In his opening remarks, the Secretary-General had given an overview of his vision for the Zero Accident campaign. He recognized that it was a very difficult task, but nonetheless, through collective efforts by all concerned, progress could be made over a longer time period of time. Based on the opening remarks of the Secretary-General, the January 2013 meeting agreed that:

- .1 the Zero Accident campaign was very broad-based and in order to have meaningful progress it would be better to take it in stages;
- .2 at this stage, it would be appropriate to consider the sea areas under VTS operations;
- .3 in order to launch the campaign, there would be an IMO/IALA award for each VTS in Europe, North America and the Caribbean; South and Central America; Oceania; Asia Pacific; South and West Asia; North and West Africa and East and South Africa region, based on the criteria developed and agreed by the Group;
- .4 the IMO Secretariat would develop the terms of reference and criteria (similar to those relating to the Bravery Awards) for consideration and review by the IALA VTS Committee, with a view to finalization by the Group;

- .5 after the finalization of the ToRs and criteria by the Group, IALA VTS experts would review the VTS included in the Worldwide VTS Guide and provide the Group with their findings; and
- .6 on receipt of the evaluation by the VTS experts, the Group would scrutinize the list and make its recommendation to IMO and IALA.

19.5 Accordingly, the Chairman of IMO's Sub-Committee on Safety of Navigation, in cooperation with the Secretary-General of IALA and with relevant input from the IMO Secretariat, had prepared an outline plan which detailed the composition of the Panel of Experts and its terms of reference, including the draft criteria for evaluation to assist the experts. This plan was presented to the IALA VTS Committee on 15 March 2013 with a request that it provide its comments, as appropriate, with regard to the following:

- .1 composition of the Panel of Experts;
- .2 terms of reference of the Panel of Experts; and
- .3 criteria for evaluation to assist the experts.

The views of IALA, as approved by the IALA Council, had been incorporated into this relevant document.

19.6 The delegation of IALA stated that the Secretary-Generals' initiative of the Zero Accident campaign had been extremely well received at the recent IALA VTS Symposium held in Istanbul, Turkey. The campaign had the very important objective of raising awareness to navigation safety worldwide and the significant contribution that it could make to reduce maritime incidents. The benefits of "international recognition" by IMO for such initiatives could not be overestimated. IALA was confident that the implementation of this campaign would improve the safety of navigation. Furthermore, the Panel of Experts operating under the competent chairmanship of the NAV Sub-Committee Chairman, was well placed to highlight the important role that the campaign could play in reducing incidents. Accordingly, IALA strongly supported this initiative and was willing to support it in any way that it could.

#### **Industry recommendations for ECDIS familiarization**

19.7 The Sub-Committee noted with appreciation the information provided by The Nautical Institute (NAV 59/INF.4) on industry recommendations for ECDIS familiarization training.

#### **Protection of Cable ships and repair operations for international submarine cables**

19.8 The Sub-Committee noted with appreciation the information provided by the United States (NAV 59/INF.5) on the provisions of the International Convention for Protection of Submarine Cables (Cable Convention) and the safety distances for vessels from cable ships and cable repair buoys during repair operations and, in particular, the responsibility to abide by the Cable Convention, especially articles 5 and 6, respectively.

#### **Status of Galileo and plans for adoption into the WWRNS**

19.9 The Sub-Committee noted with appreciation the information provided by the EC (NAV 59/INF.7) on details of the status of the Galileo Global Navigation Satellite System, outlining its technical capabilities and how they align with IMO's objectives, including an outline of the plan to submit Galileo to the next Maritime Safety Committee meeting (MSC 93) and to request a new output to consider its acceptance into the WWRNS.

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**The proactive use of Voyage Data Recorder (VDR) information**

19.10 The Sub-Committee noted with appreciation the information provided by OCIMF (NAV 59/INF.9) emphasizing the technical improvements made by Voyage Data Recorders (VDRs) and proposing to increase the data recording to 90 days in order to use it on a routine basis for different purposes. OCIMF was of the view that the installation of Voyage Data Recorders provided the facility for ship operators to take proactive measures to improve operational safety by analysing reported data to identify undesirable events or occurrences and best practices worthy of replication.

**Development of a mandatory Code for ships operating in polar waters**

19.11 The Sub-Committee noted that with respect to nautical charts for polar areas, DE 57 having noted that the NAV 58 had already considered chapter 9 (Navigation) of the draft Polar Code, had agreed to bring the matter to the attention of the Sub-Committee and the Committee for consideration and action, as appropriate.

19.12 The Sub-Committee also noted that MSC 92, having noted a statement by IHO (MSC 92/26, paragraphs 13.23 to 13.24), had stressed the utmost importance of adequate charting, not only for the polar regions, but also for all other areas and, recognizing that a collective effort was necessary to improve the situation, had encouraged Member States to collect relevant information, especially on remote areas, and had instructed the NAV Sub-Committee to take those comments into account at the current session.

19.13 The IHO observer stated that the polar regions impose additional navigational demands beyond those normally encountered. Furthermore, noting that some 95 per cent of the polar regions were unsurveyed and that appropriate-scale chart coverage was inadequate for coastal navigation, he said that mariners should navigate with extreme caution and keep, wherever possible, to recognised shipping corridors. Even in these shipping corridors extra vigilance should be exercised, as unsurveyed and uncharted shoals may exist in these areas or in close proximity. Reliance should not be placed on the charted depths.

The IHO did not view these shortcomings as charting issues, either paper or ENC/ECDIS, but as much more fundamental, given the lack of primary hydrographic data and information available to support safe navigation.

It was the IHO's position that the objective should be long-term preventive measures in the form of comprehensive high quality hydrographic surveys. The IHO urged the coastal and Antarctic Treaty States to fulfil their SOLAS obligations and prioritize the undertaking of primary systematic hydrographic surveys to provide safe navigable water for all ships operating in the polar regions.

Accordingly, as a short-term measure, the IMO recommended that the current status of surveys should be reflected in the Polar Code, as proposed in document DE 57/11/24, and urged the Sub-Committee to endorse its proposal and to invite the Intersessional Working Group on the Polar Code to incorporate that proposal when reviewing the draft at the upcoming meeting.

19.14 The delegation of the Russian Federation stated that it was paying great attention to the Northern Sea Route, particularly with respect to Aids to Navigation, hydrographic surveys and cartography. It was planned that the hydrographic survey area would be increased twofold, and currently eight survey vessels were engaged in survey work in the area of the Northern Sea Route.

19.15 The delegation of Norway agreed with the views expressed by the IHO and suggested that the proposals contained in document DE 57/11/24 could be included in the Polar Code.

19.16 The delegation of Denmark informed the Sub-Committee about the status of charting in Greenland and outlined that efforts were underway for the production of relevant ENCs and paper charts.

19.17 The observer from ICS welcomed the response of all concerned and stated that the matter was one with serious safety implications.

19.18 The Chairman, in his summing up, recognized the enormity of the situation and the scope of the solution. He further stated that there was a need to prioritize areas most in need of surveys.

19.19 The Sub-Committee agreed that the outcome of this consideration should be passed on to the DE Interessional Working Group scheduled for the first week of October 2013 and that the proposals in document DE 57/11/24 should be included in the Polar Code.

#### **Bridge Navigational Watch Alarm System (BNWAS) auto-function**

19.20 The Sub-Committee recalled that MSC 92 had considered document MSC 92/20/1 (Marshall Islands, et al.), which sought its view on the need for the automatic function as specified in resolution MSC.128(75) – *Performance Standards for a Bridge Navigational Watch Alarm System* (BNWAS). Having recalled the views of NAV 55 that the automatic mode of the performance standard was not usable on a ship compliant with the SOLAS Convention and, in particular, with the requirements of SOLAS regulation V/19.2.2.3, MSC 92 had instructed NAV 59 to further consider document MSC 92/20/1 under its agenda item "Any other business" and develop necessary guidance on the issue and, in addition, advise MSC 93 on the way forward.

19.21 The Sub-Committee was of the view that, in the first instance, it would be appropriate to consider developing guidance for Members and industry, and instructed the Secretariat to prepare a draft MSC circular for consideration by the Sub-Committee with a view to approval by MSC 93.

19.22 The delegation of Sweden stated that it was aware of the problem involving the compatibility of SOLAS regulation V/19.2.2.3 and the performance standard in resolution MSC.128(75) regarding the Automatic mode of the BNWAS. NAV 55 had concluded that the automatic mode of the performance standard was not usable on a ship compliant with the SOLAS Convention. However, looking at this issue from an operational perspective, Sweden could see merit in the Automatic mode, which would reduce the work load and burden of the seafarer due to the fact that the BNWAS would always be in operation when the ship's heading or track control system was activated as compared to the need for the BNWAS to be turned ON/OFF manually when the ship left or arrived in port. This manual action might intentionally or unintentionally be forgotten on some occasions. Sweden saw a higher risk of fatigue, lack of attention and other risk factors when the heading or track control system is activated, compared to when the ship is under hand steering or during manoeuvring. Hence, it was important to look at this issue from the seafarer's eyes, and a way forward might be to amend the performance standards to include that the automatic mode shall be considered and interpreted that the BNWAS was in operation to fulfil SOLAS regulation V/19.2.2.3.

### **On receipt of the draft MSC circular**

19.23 The Sub-Committee endorsed a draft MSC circular on Guidance on the Bridge Navigational Watch Alarm System (BNWAS) Auto Function (NAV 59/WP.4, annex 2) as set out in annex 15 and invited the Committee to approve it, so that it could then be developed as an IACS Unified Interpretation at a later stage.

### **Status of the GEF/IBRD/IMO Regional Marine Electronic Highway (MEH) Demonstration Project**

19.24 Following the formal handover of the MEH Data Centre by the IMO Secretary-General to the Director General of DGST held in Batam, Indonesia on 3 August 2012, the Project held its 6th and final Project Steering Committee Meeting in Singapore in November 2012. The PSC Meeting reaffirmed the commitments of the littoral States of Indonesia, Malaysia and Singapore to establish the MEH for the Straits of Malacca and Singapore (SOMS) under the auspices of the TTEG/CM. The Project was formally closed on 31 December 2012 and all project assets were turned over to DGST. The World Bank gave a four-month grace period for closure of administrative and financial matters from January to April 2013.

In the case of the Indonesian grant, DGST was able to establish the AIS base station and tidal stations in four sites (Iyu Kecil, Tanjong Medang and Nongsapuri). The DGPS and the ocean sensor were returned to dealers for recalibration and are expected to be installed in Dumain and Philip Channel, respectively, in early 2014. Cost for installation of the two equipments will be borne by Indonesia. The Indonesia grant was formally closed on 15 May 2013. To ensure the continuous operation of the MEH in the event of downtime at the Batam Data Centre, Malaysia and Singapore have established their respective back-up systems to capture online real-time transmission of data from remote stations (tides and currents); these can be accessed through the internet: [www.mehsoms.com](http://www.mehsoms.com) (Batam); [www.mehsoms.marine.gov.my](http://www.mehsoms.marine.gov.my) (Marine Department Malaysia) and [www.mehsom-sq.com](http://www.mehsom-sq.com) (MPA Singapore).

### **Expressions of appreciation**

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

- Mr. German Cibeira (Argentina) (on transfer);
- Mr. Michael Rambaut (CIRM) (on retirement);
- Mr. Andrzej Kossowski (Poland) on transfer; and
- Captain Gurpreet S. Singhota (Secretariat) (on retirement).

## **20 ACTION REQUESTED OF THE COMMITTEE**

20.1 The Committee, at its ninety-third session, is invited,

.1 in accordance with resolution A.858(20), to adopt the proposed:

- .1 new traffic separation scheme "On the Pacific coast of Panama" (paragraph 3.17 and annex 1);

- .2 new traffic separation scheme "At the approaches to Puerto Cristobal" (paragraph 3.19 and annex 1);
- .3 amendments to the existing traffic separation scheme "Off Ushant" (paragraph 3.20 and annex 1);
- .4 new two-way routes in the Great Barrier Reef and Torres Strait (paragraph 3.21 and annex 2);
- .5 recommendations on navigation for the new traffic separation scheme "On the Pacific coast of Panama" (Part 1 "Gulf of Panama") (paragraph 3.24 and annex 2);
- .6 new precautionary area for the new traffic separation scheme "At the approaches to Puerto Cristobal" (paragraph 3.25 and annex 2);
- .2 revoke the existing Area To Be Avoided and a Mandatory No Anchoring Area at El Paso Deep-water port in the Gulf of Mexico (paragraph 3.22);
- .3 in accordance with resolution A.886(21), adopt the performance standards for shipborne "Beidou" satellite navigation system (BDS) receiver equipment (paragraph 4.7, annex 3);
- .4 endorse the action of the Sub-Committee in inviting IEC to develop relevant technical standards for type-approval of shipborne BDS receiver equipment (paragraph 4.8);
- .5 endorse the action by the Sub-Committee in instructing the Secretariat to forward the liaison statement to ITU-R WP 5B concerning the revision of Recommendation M.1371-4 (paragraph 5.17.1 and annex 4);
- .6 endorse the action by the Sub-Committee in instructing the Secretariat to forward the liaison statement to ITU-RJTG 4-5-6-7 and Working Parties 5A, 5B and 5D on "Additional comments in relation to frequency bands identified by ITU-R for future assessment of the suitability for International Mobile Communications (IMT)" (paragraph 5.17.2 and annex 5);
- .7 note the progress on e-navigation matters, the endorsement by the Sub-Committee of the preliminary draft of the e-navigation Strategy Implementation Plan and the re-establishment of a Correspondence Group to progress the work intersessionally (paragraphs 6.30 to 6.38);
- .8 note the relevant discussions regarding the convening of an intersessional meeting on e-navigation and decide as appropriate (paragraphs 6.39 to 6.43 and annex 6);
- .9 approve the draft MSC circular on the Policy on Use of AIS Aids to Navigation (paragraph 7.10.1 and annex 7);
- .10 approve the draft SN circular on "Amended Guidelines for the presentation of navigational-related symbols, terms and abbreviations" (paragraphs 7.10.2 and annex 8);

- 
- .11 endorse the action of the Sub-Committee in forwarding the draft revised Assembly resolution on *Recommendation on the use of adequately qualified deep-sea pilots in the North sea, English Channel and Skagerrak* to A 28, with a view to adoption (paragraph 9.5 and annex 9);
  - .12 endorse the action of the Sub-Committee in forwarding the draft revised Assembly resolution on *Recommendation on the use of adequately qualified deep-sea pilots in the Baltic Sea* to A 28, with a view to adoption (paragraph 14.6 and annex 10);
  - .13 approve the draft MSC circular on Unified Interpretations of COLREG 1972, as amended (paragraph 16.6 and annex 11);
  - .14 approve the draft MSC circular on Guidance on the Bridge Navigational Watch Alarm System (BNWAS) Auto-function (paragraph 19.23 and annex 15); and
  - .15 approve the report in general.

20.2 The Committee is also invited to review and approve the proposed biennial agenda for the 2014-2015 biennium of the Sub-Committee and the draft provisional agenda for NCSR 1 (paragraphs 17.6 and 17.7, annexes 12 and 13) and to endorse the report on the status of the Sub-Committee's planned outputs for the 2012-2013 biennium (paragraph 17.9 and annex 14).

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## ANNEX 1

### NEW AND AMENDED TRAFFIC SEPARATION SCHEMES

#### "ON THE PACIFIC COAST OF PANAMA"

##### Part 1 "Gulf of Panama"

Reference chart: British Admiralty 1929, 1998 edition

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

##### Description of the traffic separation scheme

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

|     |                           |     |                           |
|-----|---------------------------|-----|---------------------------|
| (4) | 08°44'.70 N, 079°27'.00 W | (5) | 08°35'.00 N, 079°26'.00 W |
| (6) | 07°45'.00 N, 079°26'.00 W | (7) | 07°45'.00 N, 079°23'.00 W |
| (8) | 08°35'.00 N, 079°23'.00 W | (9) | 08°45'.42 N, 079°25'.44 W |

The separation zone is approximately three miles wide in the south and narrowing in the north.

- (b) A southbound traffic lane between the separation zone and a separation line connecting the geographical positions 1, 2 and 3:

|     |                           |     |                           |
|-----|---------------------------|-----|---------------------------|
| (1) | 07°45'.00 N, 079°28'.20 W | (2) | 08°35'.00 N, 079°28'.20 W |
| (3) | 08°44'.00 N, 079°28'.00 W |     |                           |

The southbound traffic lane is approximately one mile wide at the northern limit and two miles wide in the south.

- (c) A northbound traffic lane between the separation zone and a separation line connecting the geographical positions 10, 11 and 12:

|      |                           |      |                           |
|------|---------------------------|------|---------------------------|
| (10) | 08°46'.00 N, 079°24'.62 W | (11) | 08°35'.00 N, 079°21'.00 W |
| (12) | 07°45'.00 N, 079°21'.00 W |      |                           |

The northbound traffic lane is approximately two miles wide in the south and one mile wide at the northern limit.

## Part 2 "Morro de Puercos"

Reference chart: British Admiralty 2496, 2013 edition

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

### Description of the traffic separation scheme

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

|      |                           |      |                           |
|------|---------------------------|------|---------------------------|
| (13) | 07°03'.40 N, 080°11'.53 W | (14) | 07°00'.00 N, 080°15'.00 W |
| (15) | 07°00'.00 N, 080°27'.00 W | (16) | 06°59'.00 N, 080°27'.00 W |
| (17) | 06°59'.00 N, 080°14'.55 W | (18) | 07°02'.65 N, 080°10'.76 W |

The separation zone is approximately one mile wide.

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

|      |                           |      |                           |
|------|---------------------------|------|---------------------------|
| (19) | 07°01'.26 N, 080°09'.30 W | (20) | 06°57'.00 N, 080°13'.67 W |
| (21) | 06°57'.00 N, 080°27'.00 W | (22) | 06°55'.00 N, 080°27'.00 W |
| (23) | 06°55'.00 N, 080°12'.70 W | (24) | 06°59'.87 N, 080°07'.84 W |

The separation zone is approximately two miles wide.

- (f) A traffic lane for south-westbound and westbound traffic, two miles wide, is established between the separation zones indicated in paragraphs (d) and (e).
- (g) A traffic lane for eastbound and north-eastbound traffic, two miles wide, is established between the separation zone referred in paragraph (e) and a line connecting the geographical positions 25, 26 and 27:

|      |                           |      |                           |
|------|---------------------------|------|---------------------------|
| (25) | 06°58'.46 N, 080°06'.34 W | (26) | 06°53'.00 N, 080°11'.77 W |
| (27) | 06°53'.00 N, 080°27'.00 W |      |                           |

## Part 3 "Isla Jicarita"

Reference chart: British Admiralty 2496, 2013 edition

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

### Description of the traffic separation scheme

- (h) A separation zone, one mile wide, is bounded by a line connecting the following geographical positions:

|      |                           |      |                           |
|------|---------------------------|------|---------------------------|
| (28) | 07°00'.00 N, 081°45'.00 W | (29) | 07°00'.00 N, 081°50'.00 W |
| (30) | 06°59'.00 N, 081°50'.00 W | (31) | 06°59'.00 N, 081°45'.00 W |

- (i) A separation zone, two miles wide, is bounded by a line connecting the following geographical positions:

|      |              |              |      |              |              |
|------|--------------|--------------|------|--------------|--------------|
| (32) | 06°57'.00 N, | 081°45'.00 W | (33) | 06°57'.00 N, | 081°50'.00 W |
| (34) | 06°55'.00 N, | 081°50'.00 W | (35) | 06°55'.00 N, | 081°45'.00 W |

- (j) A westbound traffic lane, two miles wide, is established between the two separation zones indicated in paragraphs (h) and (i).

- (k) An eastbound traffic lane, two miles wide, is established between the separation zone referred in paragraph (i) and a line connecting points 36 and 37:

|      |              |              |      |              |              |
|------|--------------|--------------|------|--------------|--------------|
| (36) | 06°53'.00 N, | 081°45'.00 W | (37) | 06°53'.00 N, | 081°50'.00 W |
|------|--------------|--------------|------|--------------|--------------|

## Part 4

### Inshore traffic zones

Reference charts: British Admiralty 1929, 1998 edition, British Admiralty 2496, 2013 edition

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

### Description of the inshore traffic zones

- (l) An Eastern inshore traffic zone is designated to the east of the Gulf of Panama scheme, in an area contained between the following geographical positions:

|      |              |              |      |              |              |
|------|--------------|--------------|------|--------------|--------------|
| (40) | 08°56'.48 N, | 078°58'.52 W | (10) | 08°46'.00 N, | 079°24'.62 W |
| (11) | 08°35'.00 N, | 079°21'.00 W | (12) | 07°45'.00 N, | 079°21'.00 W |
| (41) | 07°33'.60 N, | 078°12'.84 W |      |              |              |

- (m) A Western inshore traffic zone is designated to the west, in an area contained between the following geographical positions:

|      |              |              |      |              |              |
|------|--------------|--------------|------|--------------|--------------|
| (39) | 08°43'.81 N, | 079°44'.75 W | (3)  | 08°44'.00 N, | 079°28'.00 W |
| (2)  | 08°35'.00 N, | 079°28'.20 W | (1)  | 07°45'.00 N, | 079°28'.20 W |
| (13) | 07°03'.40 N, | 080°11'.53 W | (14) | 07°00'.00 N, | 080°15'.00 W |
| (15) | 07°00'.00 N, | 080°27'.00 W | (28) | 07°00'.00 N, | 081°45'.00 W |
| (29) | 07°00'.00 N, | 081°50'.00 W | (38) | 07°12'.39 N, | 081°47'.88 W |

## "AT THE APPROACHES TO PUERTO CRISTOBAL"

Reference chart: British Admiralty 1400, 2000 edition

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

### Description of the traffic separation scheme

- (a) A west-south-western separation line connecting the following geographical positions:

(1) 09°28'.00 N, 080°03'.00 W (2) 09°28'.90 N, 079°59'.20 W

- (b) A north-eastern separation line connecting the following geographical positions:

(3) 09°31'.95 N, 079°48'.10 W (4) 09°43'.00 N, 079°38'.90 W

- (c) Traffic separation zone bounded by a line connecting the following geographical positions:

(5) 09°31'.00 N, 079°57'.52 W (6) 09°33'.97 N, 080°02'.50 W  
(7) 09°35'.65 N, 080°01'.40 W (8) 09°32'.20 N, 079°56'.50 W

- (d) Traffic separation zone bounded by a line connecting the following geographical positions:

(9) 09°33'40 N, 079°54'.92 W (10) 09°40'.00 N, 079°57'.20 W  
(11) 09°41'08 N, 079°55'30 W (12) 09°33'.90 N, 079°53'.50 W

- (e) Traffic separation zone bounded by a line connecting the following geographical positions:

(13) 09°33'.85 N, 079°51'.20 W (14) 09°42'.38 N, 079°47'.61 W  
(15) 09°42'.58 N, 079°45'.00W (16) 09°33'.15 N, 079°49'.80 W

- (f) Traffic lanes for entry to ports, anchorages and transit through the Canal in the following geographical positions:

Direction East:

(17) 09°31'.09 N, 080°03'.19 W

Direction South

(18) 09°41'.60 N, 079°51'.89 W

- (g) Traffic lanes for exit from ports, anchorages and transit through the Canal in the following geographical positions:

Direction North-West:

(19) 09°32'.69 N, 079°55'.80 W

Direction North-East:

(20) 09°32'.50 N, 079°48'.98 W

**Inshore traffic zones**

- (h) An inshore traffic zone is designated along the western boundary of the eastbound entry traffic lane described in paragraph (f), and limited by the lines connecting the following geographical positions:

- |     |                           |      |                           |
|-----|---------------------------|------|---------------------------|
| (1) | 09°28'.00 N, 080°03'.00 W | (21) | 09°18'.68 N, 080°01'.20 W |
| (2) | 09°28'.90 N, 079°59'.20 W | (22) | 09°21'.40 N, 079°59'.10 W |

- (i) An inshore traffic zone is designated along the eastern boundary of the north-eastbound exit traffic lane described in paragraph (g), and limited by the lines connecting the following geographical positions:

- |     |                           |      |                           |
|-----|---------------------------|------|---------------------------|
| (3) | 09°31'.95 N, 079°48'.10 W | (23) | 09°29'.00 N, 079°43'.50 W |
| (4) | 09°43'.00 N, 079°38'.90 W | (24) | 09°38'.05 N, 079°32'.30 W |

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## ANNEX 2

### ROUTING MEASURES OTHER THAN TRAFFIC SEPARATION SCHEMES

#### PRECAUTIONARY AREA "AT THE APPROACHES TO PUERTO CRISTOBAL"

Reference chart: British Admiralty 1400, 2000 edition

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

##### Description of precautionary area

A precautionary area is established by a line connecting ten geographical positions:

|      |              |                        |      |              |              |
|------|--------------|------------------------|------|--------------|--------------|
| (22) | 09°21'.40 N, | 079°59'.10 W (onshore) |      |              |              |
| (2)  | 09°28'.90 N, | 079°59'.20 W           | (5)  | 09°31'.00 N, | 079°57'.52 W |
| (8)  | 09°32'.20 N, | 079°56'.50 W           | (9)  | 09°33'.40 N, | 079°54'.92 W |
| (12) | 09°33'.90 N, | 079°53'.50 W           | (13) | 09°33'.85 N, | 079°51'.20 W |
| (16) | 09°33'.15 N, | 079°49'.80 W           | (3)  | 09°31'.95 N, | 079°48'.10 W |
| (23) | 09°29'.00 N, | 079°43'.50 W (onshore) |      |              |              |

then following the coast line from the geographical position (23) to geographical position (22).

##### Note:

*In the precautionary area ships are required to proceed with caution owing to the arrival and departure of ships to and from the Panama Canal and the ports located in the bays of Limón, Manzanillo and Las Minas.*

#### TWO-WAY ROUTE IN THE PRINCE OF WALES CHANNEL, TORRES STRAIT

Reference Charts: AUS293, 2011-11-18 edition, AUS296, 2011-11-18 Edition, AU411141, 2012-12-14 Edition, AU411142, 2012-12-21 edition.

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

The Northern limit is bounded by lines joining the following geographical positions:

|      |              |               |      |              |               |
|------|--------------|---------------|------|--------------|---------------|
| (1)  | 10° 33'.33 S | 142° 00'.00 E | (16) | 10° 30'.28 S | 142° 13'.79 E |
| (2)  | 10° 31'.91 S | 141° 56'.09 E | (17) | 10° 30'.35 S | 142° 14'.67 E |
| (3)  | 10° 32'.00 S | 141° 54'.05 E | (18) | 10° 29'.41 S | 142° 17'.07 E |
| (4)  | 10° 32'.17 S | 141° 53'.14 E | (19) | 10° 28'.20 S | 142° 20'.50 E |
| (5)  | 10° 32'.40 S | 141° 52'.16 E | (20) | 10° 28'.05 S | 142° 22'.82 E |
| (6)  | 10° 32'.77 S | 141° 51'.62 E | (21) | 10° 28'.54 S | 142° 26'.93 E |
| (7)  | 10° 32'.39 S | 141° 51'.34 E | (22) | 10° 28'.81 S | 142° 25'.61 E |
| (8)  | 10° 32'.18 S | 141° 51'.95 E | (23) | 10° 28'.38 S | 142° 22'.61 E |
| (9)  | 10° 31'.65 S | 141° 53'.14 E | (24) | 10° 28'.37 S | 142° 22'.35 E |
| (10) | 10° 31'.38 S | 141° 56'.17 E | (25) | 10° 28'.78 S | 142° 19'.99 E |
| (11) | 10° 32'.66 S | 142° 01'.83 E | (26) | 10° 29'.46 S | 142° 18'.26 E |
| (12) | 10° 33'.12 S | 142° 05'.98 E | (27) | 10° 29'.53 S | 142° 20'.60 E |
| (13) | 10° 33'.24 S | 142° 08'.00 E | (28) | 10° 29'.62 S | 142° 21'.10 E |
| (14) | 10° 32'.29 S | 142° 09'.30 E | (29) | 10° 29'.65 S | 142° 21'.61 E |
| (15) | 10° 30'.29 S | 142° 12'.23 E | (30) | 10° 29'.51 S | 142° 22'.29 E |

The Southern limit is bounded by lines joining the following geographical positions:

|      |              |               |      |              |               |
|------|--------------|---------------|------|--------------|---------------|
| (31) | 10° 33'.62 S | 142° 00'.00 E | (43) | 10° 34'.30 S | 142° 07'.57 E |
| (32) | 10° 33'.97 S | 141° 55'.37 E | (44) | 10° 33'.17 S | 142° 09'.22 E |
| (33) | 10° 34'.34 S | 141° 53'.85 E | (45) | 10° 32'.49 S | 142° 09'.83 E |
| (34) | 10° 34'.84 S | 141° 52'.91 E | (46) | 10° 32'.21 S | 142° 10'.24 E |
| (35) | 10° 35'.49 S | 141° 52'.41 E | (47) | 10° 30'.83 S | 142° 12'.45 E |
| (36) | 10° 35'.66 S | 141° 52'.65 E | (48) | 10° 30'.70 S | 142° 15'.68 E |
| (37) | 10° 35'.16 S | 141° 53'.01 E | (49) | 10° 29'.99 S | 142° 18'.15 E |
| (38) | 10° 34'.98 S | 141° 53'.28 E | (50) | 10° 30'.00 S | 142° 18'.53 E |
| (39) | 10° 34'.83 S | 141° 53'.74 E | (51) | 10° 30'.03 S | 142° 19'.40 E |
| (40) | 10° 34'.72 S | 141° 54'.34 E | (52) | 10° 30'.10 S | 142° 21'.54 E |
| (41) | 10° 34'.60 S | 141° 59'.92 E | (53) | 10° 30'.45 S | 142° 24'.02 E |
| (42) | 10° 34'.50 S | 142° 02'.86 E |      |              |               |

## TWO-WAY ROUTE IN THE GREAT BARRIER REEF INNER ROUTE (NORTH)

Reference Charts: AUS828, 2012-09-07 edition, AUS829, 2012-10-05 edition, AUS830, 2006-03-03 edition, AUS831, 2006-03-31 edition, AUS832, 2006-04-14 edition, AUS833, 2006-06-23 edition, AUS834, 2006-03-17 edition, AUS835, 2006-03-03 edition, AUS839, 2012-01-27 edition, AU412142, 2012-09-03 edition, AU415144, 2011-10-21 edition, AU411142, 2012-12-21 edition, AU415145, 2011-09-09 edition, AU417146, 2011-07-01 edition, AU417145, 2012-11-20 edition, AU414144, 2011-07-28 edition, AU419146, 2012-12-19 edition, AU414143, 2012-02-24 edition, AU413143, 2011-07-01 edition, AU416145, 2012-11-27 edition, AU412143, 2012-12-12 edition, AU418146, 2012-12-21 edition.

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

The Western limit is bounded by lines joining the following geographical positions:

|      |              |               |      |              |               |
|------|--------------|---------------|------|--------------|---------------|
| (1)  | 10° 30'.00 S | 142° 18'.53 E | (23) | 13° 53'.71 S | 144° 14'.49 E |
| (2)  | 10° 34'.77 S | 142° 26'.87 E | (24) | 14° 06'.89 S | 144° 25'.69 E |
| (3)  | 10° 41'.41 S | 142° 34'.45 E | (25) | 14° 08'.19 S | 144° 29'.28 E |
| (4)  | 10° 42'.12 S | 142° 37'.66 E | (26) | 14° 09'.91 S | 144° 33'.19 E |
| (5)  | 10° 45'.50 S | 142° 40'.64 E | (27) | 14° 14'.42 S | 144° 36'.88 E |
| (6)  | 10° 48'.41 S | 142° 47'.23 E | (28) | 14° 20'.77 S | 144° 39'.81 E |
| (7)  | 11° 14'.87 S | 142° 53'.31 E | (29) | 14° 27'.42 S | 144° 47'.64 E |
| (8)  | 11° 25'.52 S | 142° 53'.76 E | (30) | 14° 32'.29 S | 144° 55'.80 E |
| (9)  | 11° 35'.40 S | 142° 57'.06 E | (31) | 14° 43'.58 S | 145° 06'.97 E |
| (10) | 11° 58'.21 S | 143° 17'.95 E | (32) | 14° 49'.91 S | 145° 15'.32 E |
| (11) | 12° 05'.31 S | 143° 13'.37 E | (33) | 14° 55'.11 S | 145° 22'.16 E |
| (12) | 12° 13'.01 S | 143° 14'.06 E | (34) | 14° 59'.91 S | 145° 22'.96 E |
| (13) | 12° 18'.91 S | 143° 17'.26 E | (35) | 15° 05'.25 S | 145° 23'.46 E |
| (14) | 12° 26'.47 S | 143° 22'.06 E | (36) | 15° 15'.10 S | 145° 22'.36 E |
| (15) | 12° 37'.50 S | 143° 28'.18 E | (37) | 15° 33'.06 S | 145° 21'.73 E |
| (16) | 12° 49'.53 S | 143° 34'.45 E | (38) | 15° 40'.35 S | 145° 21'.25 E |
| (17) | 12° 50'.97 S | 143° 35'.84 E | (39) | 15° 44'.91 S | 145° 23'.31 E |
| (18) | 12° 52'.25 S | 143° 38'.59 E | (40) | 16° 01'.79 S | 145° 28'.84 E |
| (19) | 12° 58'.48 S | 143° 43'.41 E | (41) | 16° 31'.47 S | 145° 37'.73 E |
| (20) | 13° 09'.56 S | 143° 47'.36 E | (42) | 16° 54'.66 S | 146° 01'.07 E |
| (21) | 13° 17'.03 S | 143° 49'.98 E | (43) | 18° 08'.46 S | 146° 22'.56 E |
| (22) | 13° 41'.48 S | 144° 03'.92 E | (44) | 18° 25'.46 S | 146° 29'.74 E |



The Eastern limit is bounded by lines joining the following geographical positions:

|      |              |               |      |              |               |
|------|--------------|---------------|------|--------------|---------------|
| (45) | 10° 30'.03 S | 142° 19'.40 E | (70) | 14° 22'.70 S | 144° 44'.10 E |
| (46) | 10° 30'.82 S | 142° 21'.02 E | (71) | 14° 26'.60 S | 144° 53'.80 E |
| (47) | 10° 31'.77 S | 142° 23'.45 E | (72) | 14° 28'.90 S | 144° 56'.92 E |
| (48) | 10° 30'.10 S | 142° 21'.54 E | (73) | 14° 29'.00 S | 144° 57'.44 E |
| (49) | 10° 30'.45 S | 142° 24'.02 E | (74) | 14° 29'.00 S | 144° 59'.70 E |
| (50) | 10° 32'.25 S | 142° 27'.17 E | (75) | 14° 32'.20 S | 145° 03'.80 E |
| (51) | 10° 35'.80 S | 142° 33'.46 E | (76) | 14° 33'.20 S | 145° 16'.00 E |
| (52) | 10° 44'.52 S | 142° 41'.07 E | (77) | 14° 35'.49 S | 145° 19'.00 E |
| (53) | 10° 48'.22 S | 142° 50'.06 E | (78) | 14° 39'.43 S | 145° 25'.73 E |
| (54) | 11° 22'.17 S | 143° 00'.60 E | (79) | 15° 29'.33 S | 145° 23'.79 E |
| (55) | 11° 34'.91 S | 142° 58'.73 E | (80) | 15° 35'.46 S | 145° 24'.00 E |
| (56) | 11° 57'.71 S | 143° 19'.65 E | (81) | 15° 39'.05 S | 145° 25'.21 E |
| (57) | 12° 05'.22 S | 143° 14'.65 E | (82) | 15° 44'.03 S | 145° 31'.25 E |
| (58) | 12° 14'.32 S | 143° 15'.46 E | (83) | 16° 01'.38 S | 145° 31'.27 E |
| (59) | 12° 26'.98 S | 143° 23'.47 E | (84) | 16° 20'.20 S | 145° 36'.94 E |
| (60) | 12° 49'.33 S | 143° 36'.15 E | (85) | 16° 27'.40 S | 145° 40'.54 E |
| (61) | 12° 51'.09 S | 143° 37'.86 E | (86) | 16° 49'.91 S | 146° 00'.00 E |
| (62) | 12° 51'.79 S | 143° 39'.35 E | (87) | 16° 50'.00 S | 146° 03'.23 E |
| (63) | 12° 56'.20 S | 143° 43'.27 E | (88) | 16° 38'.70 S | 146° 12'.07 E |
| (64) | 13° 17'.11 S | 143° 51'.02 E | (89) | 16° 40'.11 S | 146° 13'.94 E |
| (65) | 13° 41'.32 S | 144° 05'.63 E | (90) | 16° 51'.33 S | 146° 05'.16 E |
| (66) | 13° 45'.90 S | 144° 09'.23 E | (91) | 16° 55'.57 S | 146° 03'.78 E |
| (67) | 14° 07'.34 S | 144° 29'.25 E | (92) | 17° 14'.14 S | 146° 09'.95 E |
| (68) | 14° 10'.77 S | 144° 36'.92 E | (93) | 18° 07'.73 S | 146° 25'.06 E |
| (69) | 14° 19'.93 S | 144° 41'.13 E | (94) | 18° 22'.87 S | 146° 34'.96 E |

Polygon cut out is defined by lines joining the following geographical positions:

|      |              |               |      |              |               |
|------|--------------|---------------|------|--------------|---------------|
| (95) | 10° 33'.35 S | 142° 26'.58 E | (97) | 10° 41'.31 S | 142° 36'.97 E |
| (96) | 10° 41'.02 S | 142° 35'.27 E | (98) | 10° 38'.41 S | 142° 34'.57 E |

Polygon cut out is defined by lines joining the following geographical positions:

|       |              |               |       |              |               |
|-------|--------------|---------------|-------|--------------|---------------|
| (99)  | 11° 04'.09 S | 142° 52'.37 E | (102) | 11° 30'.84 S | 142° 57'.22 E |
| (100) | 11° 15'.14 S | 142° 54'.97 E | (103) | 11° 21'.47 S | 142° 58'.73 E |
| (101) | 11° 24'.92 S | 142° 55'.26 E |       |              |               |

Polygon cut out is defined by lines joining the following geographical positions:

|       |              |               |       |              |               |
|-------|--------------|---------------|-------|--------------|---------------|
| (104) | 14° 03'.86 S | 144° 24'.62 E | (107) | 14° 06'.18 S | 144° 26'.66 E |
| (105) | 14° 04'.98 S | 144° 25'.33 E | (108) | 14° 04'.82 S | 144° 25'.83 E |
| (106) | 14° 05'.95 S | 144° 26'.14 E |       |              |               |

Polygon cut out is defined by lines joining the following geographical positions:

|       |              |               |       |              |               |
|-------|--------------|---------------|-------|--------------|---------------|
| (109) | 14° 23'.85 S | 144° 45'.29 E | (115) | 14° 30'.61 S | 145° 00'.26 E |
| (110) | 14° 26'.85 S | 144° 48'.47 E | (116) | 14° 29'.30 S | 144° 58'.80 E |
| (111) | 14° 31'.11 S | 144° 55'.15 E | (117) | 14° 29'.30 S | 144° 57'.05 E |
| (112) | 14° 32'.91 S | 144° 59'.38 E | (118) | 14° 28'.90 S | 144° 55'.65 E |
| (113) | 14° 34'.26 S | 145° 04'.87 E | (119) | 14° 27'.20 S | 144° 53'.60 E |
| (114) | 14° 33'.18 S | 145° 03'.60 E |       |              |               |

Polygon cut out is defined by lines joining the following geographical positions:

|       |              |               |       |              |               |
|-------|--------------|---------------|-------|--------------|---------------|
| (120) | 14° 34'.14 S | 144° 59'.30 E | (122) | 14° 51'.77 S | 145° 19'.54 E |
| (121) | 14° 44'.48 S | 145° 09'.88 E | (123) | 14° 40'.42 S | 145° 12'.47 E |

Polygon cut out is defined by lines joining the following geographical positions:

|       |              |               |       |              |               |
|-------|--------------|---------------|-------|--------------|---------------|
| (124) | 14° 33'.41 S | 145° 06'.55 E | (128) | 14° 53'.54 S | 145° 22'.71 E |
| (125) | 14° 37'.66 S | 145° 12'.55 E | (129) | 14° 40'.81 S | 145° 24'.20 E |
| (126) | 14° 43'.29 S | 145° 15'.60 E | (130) | 14° 38'.35 S | 145° 21'.58 E |
| (127) | 14° 49'.65 S | 145° 19'.60 E | (131) | 14° 34'.15 S | 145° 16'.00 E |

Polygon cut out is defined by lines joining the following geographical positions:

|       |              |               |       |              |               |
|-------|--------------|---------------|-------|--------------|---------------|
| (132) | 15° 38'.87 S | 145° 23'.44 E | (134) | 15° 53'.83 S | 145° 29'.17 E |
| (133) | 15° 42'.68 S | 145° 23'.31 E | (135) | 15° 43'.96 S | 145° 29'.16 E |

## TWO-WAY ROUTE IN THE GREAT BARRIER REEF INNER ROUTE (SOUTH)

Reference Charts: AUS490, 2011-07-01 edition, AUS816, 2011-02-25 edition, AUS818, 2006-03-17 edition, AUS819, 2006-03-31 edition, AUS820, 2006-03-03 edition, AUS821, 2006-03-17 edition, AUS822, 2009-05-08 edition, AUS823, 2010-03-12 edition, AUS824, 2006-03-17 edition, AUS825, 2006-03-03 edition, AUS826, 2006-03-31 edition, AUS827, 2006-05-26 edition, AUS828, 2012-09-07 edition, AU424151, 2012-12-20 edition, AU319147, 2012-12-13 edition, AU320147, 2012-12-04 edition, AU420146, 2012-12-21 edition, AU422149, 2013-02-26 edition, AU323151, 2012-11-16 edition, AU323152, 2012-11-16 edition, AU324152, 2011-10-14 edition, AU324153, 2011-10-14 edition, AU421148, edition 2012-11-15, AU421150, edition 2013-02-14, AU425152, edition 2013-02-07, AU325153, edition 2012-03-09, AU419146, edition 2012-12-19, AU320148, edition 2012-11-20, AU421149, edition 2013-02-22, AU423150, edition 2013-02-14, AU323153, edition 2012-11-16, AU320149, edition 2011-09-08, AU322150, edition 2012-11-16.

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

The Western limit is bounded by lines joining the following geographical positions:

|      |              |               |      |              |               |
|------|--------------|---------------|------|--------------|---------------|
| (1)  | 18° 25'.46 S | 146° 29'.74 E | (28) | 20° 50'.32 S | 149° 46'.69 E |
| (2)  | 18° 45'.10 S | 146° 44'.96 E | (29) | 20° 54'.83 S | 149° 40'.32 E |
| (3)  | 19° 00'.00 S | 146° 51'.00 E | (30) | 21° 01'.15 S | 149° 35'.95 E |
| (4)  | 19° 00'.00 S | 146° 54'.01 E | (31) | 21° 02'.85 S | 149° 38'.42 E |
| (5)  | 18° 43'.74 S | 146° 47'.65 E | (32) | 20° 56'.97 S | 149° 42'.48 E |
| (6)  | 18° 30'.96 S | 146° 39'.10 E | (33) | 20° 52'.58 S | 149° 48'.70 E |
| (7)  | 18° 43'.20 S | 146° 54'.40 E | (34) | 21° 00'.20 S | 149° 55'.48 E |
| (8)  | 19° 00'.00 S | 146° 54'.40 E | (35) | 21° 46'.01 S | 150° 36'.49 E |
| (9)  | 19° 00'.00 S | 146° 57'.50 E | (36) | 21° 54'.31 S | 150° 44'.01 E |
| (10) | 18° 45'.60 S | 146° 57'.50 E | (37) | 23° 45'.57 S | 151° 30'.11 E |
| (11) | 19° 17'.75 S | 147° 37'.63 E | (38) | 23° 45'.00 S | 151° 31'.50 E |
| (12) | 19° 22'.35 S | 147° 42'.84 E | (39) | 23° 45'.00 S | 151° 33'.00 E |
| (13) | 19° 13'.81 S | 147° 29'.16 E | (40) | 23° 30'.24 S | 151° 33'.00 E |
| (14) | 19° 07'.12 S | 147° 02'.94 E | (41) | 23° 14'.13 S | 151° 38'.31 E |
| (15) | 19° 09'.38 S | 147° 02'.26 E | (42) | 23° 07'.59 S | 151° 54'.56 E |
| (16) | 19° 16'.59 S | 147° 27'.83 E | (43) | 23° 05'.38 S | 152° 00'.83 E |
| (17) | 19° 31'.72 S | 147° 52'.06 E | (44) | 23° 03'.64 S | 152° 06'.64 E |
| (18) | 19° 47'.59 S | 148° 01'.82 E | (45) | 23° 33'.65 S | 152° 35'.97 E |
| (19) | 19° 46'.01 S | 148° 04'.38 E | (46) | 23° 44'.53 S | 152° 32'.58 E |

|      |              |               |      |              |               |
|------|--------------|---------------|------|--------------|---------------|
| (20) | 19° 31'.17 S | 147° 55'.25 E | (47) | 23° 51'.11 S | 152° 32'.26 E |
| (21) | 19° 42'.16 S | 148° 22'.76 E | (48) | 23° 57'.96 S | 152° 25'.96 E |
| (22) | 19° 50'.22 S | 148° 37'.57 E | (49) | 23° 53'.01 S | 151° 47'.23 E |
| (23) | 19° 47'.60 S | 148° 15'.00 E | (50) | 23° 55'.99 S | 151° 46'.77 E |
| (24) | 19° 50'.50 S | 148° 15'.00 E | (51) | 24° 01'.48 S | 152° 29'.70 E |
| (25) | 19° 53'.91 S | 148° 44'.34 E | (52) | 24° 05'.22 S | 152° 46'.79 E |
| (26) | 20° 06'.69 S | 149° 07'.86 E | (53) | 24° 27'.14 S | 153° 28'.51 E |
| (27) | 20° 17'.20 S | 149° 17'.28 E | (54) | 24° 29'.98 S | 153° 31'.29 E |

The Eastern limit is bounded by lines joining the following geographical positions:

|      |              |               |      |              |               |
|------|--------------|---------------|------|--------------|---------------|
| (55) | 18° 22'.87 S | 146° 34'.96 E | (75) | 20° 01'.33 S | 150° 16'.38 E |
| (56) | 18° 27'.70 S | 146° 39'.82 E | (76) | 20° 01'.48 S | 150° 17'.43 E |
| (57) | 18° 28'.07 S | 146° 45'.00 E | (77) | 20° 06'.38 S | 150° 16'.64 E |
| (58) | 18° 22'.37 S | 146° 55'.41 E | (78) | 20° 27'.05 S | 150° 21'.96 E |
| (59) | 18° 11'.83 S | 147° 06'.04 E | (79) | 20° 34'.86 S | 150° 18'.11 E |
| (60) | 18° 13'.97 S | 147° 08'.16 E | (80) | 20° 41'.63 S | 150° 07'.10 E |
| (61) | 18° 24'.86 S | 146° 56'.75 E | (81) | 20° 47'.78 S | 149° 55'.58 E |
| (62) | 18° 39'.66 S | 146° 57'.97 E | (82) | 20° 50'.85 S | 149° 51'.17 E |
| (63) | 18° 48'.00 S | 147° 05'.30 E | (83) | 20° 58'.20 S | 149° 57'.72 E |
| (64) | 19° 15'.43 S | 147° 39'.54 E | (84) | 21° 44'.00 S | 150° 38'.72 E |
| (65) | 19° 26'.80 S | 147° 52'.40 E | (85) | 21° 47'.81 S | 150° 42'.17 E |
| (66) | 19° 39'.44 S | 148° 24'.04 E | (86) | 21° 51'.58 S | 150° 47'.03 E |
| (67) | 20° 04'.30 S | 149° 09'.74 E | (87) | 22° 09'.81 S | 151° 10'.50 E |
| (68) | 20° 15'.20 S | 149° 19'.52 E | (88) | 22° 52'.34 S | 152° 26'.68 E |
| (69) | 20° 48'.59 S | 149° 49'.17 E | (89) | 22° 44'.99 S | 152° 51'.06 E |
| (70) | 20° 45'.22 S | 149° 54'.02 E | (90) | 22° 11'.41 S | 153° 01'.42 E |
| (71) | 20° 38'.98 S | 150° 05'.69 E | (91) | 22° 12'.69 S | 153° 06'.21 E |
| (72) | 20° 34'.14 S | 150° 17'.29 E | (92) | 23° 32'.00 S | 152° 41'.67 E |
| (73) | 20° 26'.95 S | 150° 20'.84 E | (93) | 24° 26'.27 S | 153° 35'.06 E |
| (74) | 20° 06'.42 S | 150° 15'.56 E |      |              |               |

Polygon cut out is defined by lines joining the following geographical positions:

|      |              |               |      |              |               |
|------|--------------|---------------|------|--------------|---------------|
| (94) | 18° 31'.47 S | 146° 44'.57 E | (96) | 18° 26'.13 S | 146° 54'.29 E |
| (95) | 18° 39'.20 S | 146° 54'.40 E |      |              |               |

Polygon cut out is defined by lines joining the following geographical positions:

|       |              |               |       |              |               |
|-------|--------------|---------------|-------|--------------|---------------|
| (97)  | 22° 00'.15 S | 150° 49'.67 E | (101) | 23° 04'.81 S | 151° 53'.44 E |
| (98)  | 23° 37'.51 S | 151° 30'.00 E | (102) | 23° 00'.61 S | 151° 59'.17 E |
| (99)  | 23° 29'.76 S | 151° 30'.00 E | (103) | 22° 59'.57 S | 152° 02'.64 E |
| (100) | 23° 11'.87 S | 151° 35'.90 E | (104) | 22° 47'.82 S | 151° 51'.12 E |

Polygon cut out is defined by lines joining the following geographical positions:

|       |              |               |       |              |               |
|-------|--------------|---------------|-------|--------------|---------------|
| (105) | 22° 30'.74 S | 151° 37'.50 E | (107) | 22° 57'.87 S | 152° 08'.30 E |
| (106) | 22° 44'.19 S | 151° 54'.88 E | (108) | 22° 54'.38 S | 152° 19'.90 E |

Polygon cut out is defined by lines joining the following geographical positions:

|       |              |               |       |              |               |
|-------|--------------|---------------|-------|--------------|---------------|
| (109) | 23° 01'.94 S | 152° 12'.29 E | (111) | 22° 50'.82 S | 152° 49'.26 E |
| (110) | 23° 27'.98 S | 152° 37'.73 E |       |              |               |

Polygon cut out is defined by lines joining the following geographical positions:

|       |              |               |       |              |               |
|-------|--------------|---------------|-------|--------------|---------------|
| (112) | 23° 37'.67 S | 152° 39'.91 E | (116) | 23° 58'.52 S | 152° 30'.31 E |
| (113) | 23° 45'.67 S | 152° 37'.42 E | (117) | 24° 02'.39 S | 152° 48'.01 E |
| (114) | 23° 52'.89 S | 152° 34'.54 E | (118) | 24° 19'.98 S | 153° 21'.49 E |
| (115) | 23° 58'.41 S | 152° 29'.47 E |       |              |               |

**RECOMMENDATIONS ON NAVIGATION IN THE TRAFFIC SEPARATION SCHEME  
"ON THE PACIFIC COAST OF PANAMA" (PART 1 "GULF OF PANAMA")**

In order to help reduce the risk of lethal strikes with cetaceans, it is recommended that, as far as it is safe and practical to do so, ships should proceed at a speed of not more than 10 knots from 1 August to 30 November every year.

This recommendation applies to both traffic lanes of the Traffic Separation Scheme in the Gulf of Panama, north of latitude 08°00'.00 N.

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**ANNEX 3**

**DRAFT RESOLUTION MSC.[...(93)]**

**(adopted on ... [May 2014])**

**ADOPTION OF THE PERFORMANCE STANDARDS FOR SHIPBORNE  
BEIDOU SATELLITE NAVIGATION SYSTEM (BDS)  
RECEIVER EQUIPMENT**

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 function of adopting performance standards and technical specifications, as well as amendments thereto shall be performed by the Maritime Safety Committee and/or the Marine Environment Protection Committee, as appropriate, on behalf of the Organization,

RECALLING FURTHER that, in accordance with resolution A.1046(27), containing the IMO policy for the recognition and acceptance of suitable radionavigation systems intended for international use, the "Revised Report on the Study of a Worldwide Radionavigation System", the BDS satellite navigation system may be recognized as a possible component of the world-wide radionavigation system,

NOTING that shipborne receiving equipment for the world-wide radionavigation system should be designed to satisfy the detailed requirements of the particular system concerned,

RECOGNIZING the need to develop performance standards for shipborne Beidou Satellite Navigation System (BDS) receiver equipment in order to ensure the operational reliability of such equipment and taking into account the technological progress and experience gained,

HAVING CONSIDERED the recommendation made by the Sub-Committee on Safety of Navigation, at its fifty-ninth session,

1. ADOPTS the Performance standards for Shipborne Beidou Satellite Navigation System (BDS) receiver equipment, set out in the annex to the present resolution;
2. RECOMMENDS Governments to ensure that Beidou Satellite Navigation System (BDS) receiver equipment installed on or after [1 July 2016] conform to performance standards not inferior to those specified in the annex to the present resolution.

## ANNEX

### **DRAFT PERFORMANCE STANDARDS FOR SHIPBORNE BEIDOU SATELLITE NAVIGATION SYSTEM (BDS) RECEIVER EQUIPMENT**

#### **1 Introduction**

1.1 As a global navigation satellite system compatible with other navigation satellite systems worldwide, the BDS is a system independently developed and operated by China and is comprised of three major components: space constellation, ground control segment and user terminals. The space constellation consists of five geosynchronous earth orbit (GEO) satellites and 27 medium-earth orbit (MEO) satellites and three inclined geosynchronous satellite orbit (IGSO) satellites. The GEO satellites are positioned at longitudes of 058.75° E, 080° E, 110.5° E, 140° E and 160° E, respectively. The MEO satellites are operating in an orbit with an altitude of 21,500 km and an inclination of 55°, which are evenly distributed in three orbital planes. The IGSO satellites are operating in an orbit with an altitude of 36,000 km and an inclination of 55°, which are evenly distributed in three inclined geosynchronous orbital planes. The subsatellite track for the three IGSO satellites are coincided while the longitude of the intersection point is at 118° E. This geometry ensures that a minimum of four satellites are visible to users worldwide with a position dilution of precision (PDOP)  $\leq 6$ . Each satellite transmits open service signal B1I on "L" bands with carrier frequency as 1561.098 MHz. B1I signal includes ranging code which could provide the open service. A navigation data message is superimposed on this code. BDS satellites are identified by Code Division Multiple Access (CDMA).

1.2 The BDS Open Service (OS) provides positioning, navigation and timing services, free of direct user charges. The BDS receiver equipment should be capable of receiving and processing the open service signal.

1.3 BDS receiver equipment intended for navigational purposes on ships with a speed not exceeding 70 knots, in addition to the general requirements specified in resolution A.694(17)<sup>2</sup>, should comply with the following minimum performance requirements.

1.4 The standards cover the basic requirements of position fixing, determination of course over ground (COG), speed over ground (SOG) and timing, either for navigation purposes or as input to other functions. The standards do not cover other computational facilities which may be in the equipment nor cover the requirements for other systems that may take input from the BDS receiver.

#### **2 BDS receiver equipment**

2.1 The term "BDS receiver equipment" as used in the performance standards includes all the components and units necessary for the system to properly perform its intended functions. The BDS receiver equipment should include the following minimum facilities:

- .1 antenna capable of receiving BDS signals;
- .2 BDS receiver and processor;
- .3 means of accessing the computed latitude/longitude position;

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<sup>2</sup> Refer to publication IEC 60945.

- .4 data control and interface; and
- .5 position display and, if required, other forms of output.

If BDS forms part of an approved Integrated Navigation System (INS), requirements of 2.1.3, 2.1.4, 2.1.5 may be provided within the INS.

2.2 The antenna design should be suitable for fitting at a position on the ship which ensures a clear view of the satellite constellation, taking into consideration any obstructions that might exist on the ship.

### **3 Performance standards for BDS receiver equipment**

The BDS receiver equipment should:

- .1 be capable of receiving and processing the BDS positioning and velocity, and timing signals, and should use the ionospheric model broadcast to the receiver by the constellation to generate ionospheric corrections;
- .2 provide position information in latitude and longitude in degrees, minutes and thousandths of minutes<sup>3</sup>;
- .3 provide time referenced to universal time coordinated UTC (NTSC)<sup>4</sup>;
- .4 be provided with at least two outputs from which position information, UTC, course over ground (COG), speed over ground (SOG) and alarms can be supplied to other equipment. The output of position information should be based on the WGS 84 datum and should be in accordance with international standards<sup>5</sup>. The output of UTC, course over ground (COG), speed over ground (SOG) and alarms should be consistent with the requirements of 3.15 and 3.17;
- .5 have static accuracy such that the position of the antenna is determined to be within 25 m horizontally (95%) and 30 m vertically (95%);
- .6 have dynamic accuracy equivalent to the static accuracy specified in .5 above under the normal sea states and motion experienced in ships<sup>6</sup>;
- .7 have position information in latitude and longitude in degrees, minutes and thousandths of minutes with a position resolution equal to or better than 0.001 min of latitude and longitude;
- .8 be capable of selecting automatically the appropriate satellite-transmitted signals to determine the ship's position and velocity, and time with the required accuracy and update rate;

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<sup>3</sup> BeiDou uses China Geodetic Coordinate System (CGCS) 2000 which is a realization of the International Terrestrial Reference Frame (ITRF) system and differs from WGS 84 by less than 5 cm world-wide. Conversion to WGS 84 is not needed for maritime navigation.

<sup>4</sup> China National Time Service Centre.

<sup>5</sup> Publication IEC 61162.

<sup>6</sup> Refer to resolution A.694(17), publications IEC 6721-3-6 and IEC 60945.

- .9 be capable of acquiring satellite signals with input signals having carrier levels in the range of -130dBm to -120dBm. Once the satellite signals have been acquired, the equipment should continue to operate satisfactorily with satellite signals having carrier levels down to -133dBm;
- .10 be capable of operating satisfactorily under normal interference conditions consistent with the requirements of resolution A.694(17);
- .11 be capable of acquiring position, velocity and time to the required accuracy within 12 min where there is no valid almanac data;
- .12 be capable of acquiring position, velocity and time to the required accuracy within 1 min where there is valid almanac data;
- .13 be capable of reacquiring position, velocity and time to the required accuracy within 1 min when there has been a service interruption of 60 s or less;
- .14 generate and output to a display and digital interface<sup>7</sup> a new position solution at least once every 1 s for conventional craft and at least once every 0.5 s for high-speed craft;
- .15 provide the COG, SOG and UTC outputs, with a validity mark aligned with that on the position output. The accuracy requirements for COG and SOG should not be inferior to the relevant performance standards for heading<sup>8</sup> and speed and distance measuring equipment (SDME)<sup>9</sup> and the accuracy should be obtained under the various dynamic conditions that could be experienced on board ships;
- .16 provide at least one normally closed contact, which should indicate failure of the BDS receiver equipment;
- .17 have a bidirectional interface to facilitate communication so that alarms can be transferred to external systems and so that audible alarms from the BDS receiver can be acknowledged from external systems; the interface should comply with the relevant international standards<sup>6</sup>; and
- .18 have the facilities to process differential BDS (DBDS) data fed to it in accordance with the standards of ITU-R<sup>10</sup> and the appropriate RTCM standard and provide indication of the reception of DBDS signals and whether they are being applied to the ship's position. When a BDS receiver is equipped with a differential receiver, performance standards for static and dynamic accuracies (paragraphs 3.5 and 3.6 above) should be 10 m (95%).

#### **4 Integrity checking, failure warnings and status indications**

4.1 The BDS receiver equipment should also indicate whether the performance of BDS is outside the bounds of requirements for general navigation in the ocean, coastal, port approach and restricted waters, and inland waterway phases of the voyage as specified in either resolution A.1046(27) or appendix 2 to resolution A.915(22) and any subsequent amendments, as appropriate.

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<sup>7</sup> Publication IEC 61162 .

<sup>8</sup> Resolution A.424(XI) for conventional craft and resolution A.821(19) for high-speed craft.

<sup>9</sup> Resolution A.824(19), as amended by resolution MSC.96(72).

<sup>10</sup> ITU-R Recommendation M.823.



4.2 The BDS receiver equipment should, as a minimum:

- .1 provide a warning within 5 s of loss of position or if a new position based on the information provided by the BDS constellation has not been calculated for more than 1 s for conventional craft and 0.5 s for high-speed craft. Under such conditions the last known position and the time of last valid fix, with the explicit indication of the state allowing for no ambiguity, should be output until normal operation is resumed;
- .2 use Receiver Autonomous Integrity Monitoring (RAIM) to provide integrity performance appropriate to the operation being undertaken; and
- .3 provide a self-test function.

## **5 Protection**

Precautions should be taken to ensure that no permanent damage can result from an accidental short circuit or grounding of the antenna or any of its input or output connections or any of the BDS receiver equipment inputs or outputs for a duration of five minutes.

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## **ANNEX 4**

### **LIAISON STATEMENT TO ITU-R WORKING PARTY 5B**

#### **REVISION OF RECOMMENDATION ITU-R M.1371-4**

##### **Technical characteristics for an automatic identification system using time-division multiple access in the VHF maritime mobile band**

- 1       IMO would like to thank ITU-R WP 5B for the liaison statement as contained in annex 11 to document 5B/304, sent in May 2013, requesting IMO's Sub-Committee on Safety of Navigation (NAV) to consider the proposed amendments to Recommendation ITU-R M.1371-4.
- 2       The NAV Sub-Committee, at its fifty-ninth session from 2 to 6 September 2013, considered the liaison statement and agreed to inform ITU-R WP 5B as follows.
- 3       IMO is content with the proposed amendments to Recommendation ITU-R M.1371-4 as reflected in Annex 11 to Document 5B/304.
- 4       IMO would further like to emphasize the need for stability of this recommendation for the foreseeable future. Therefore, IMO request ITU-R not to reopen discussions on this recommendation until a future WRC after WRC-15 reconsiders maritime matters related to e-navigation and the Modernization of the GMDSS.

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## **ANNEX 5**

### **LIAISON STATEMENT TO ITU-R WORKING PARTIES 5A, 5B, 5D AND JOINT TASK GROUP 4-5-6-7 ON WORLD RADIOCOMMUNICATION CONFERENCE 2015**

#### **(WRC-15), AGENDA ITEM 1.1**

#### **Additional comments in relation to frequency bands identified by ITU-R for future assessment of the suitability for IMT**

#### **Introduction**

1 IMO's Sub-Committee on Safety of Navigation (NAV), at its fifty-ninth session from 2 to 6 September 2013, reviewed the outcome of the meeting of ITU-R JTG 4-5-6-7, held from 22 to 31 July 2013.

2 The Sub-Committee noted with appreciation that JTG 4-5-6-7 had noted IMO's liaison statement (Document JTG 4-5-6-7/119) and inserted IMO's concerns in the document containing the "Summary of comments received in Joint Task Group 4-5-6-7 input contributions relating to certain frequency bands which may be considered under WRC-15 Agenda Item 1.1" (Document JTG 4-5-6-7/243/Rev.1).

3 The Sub-Committee, in reviewing the outcome of the meeting of ITU-R JTG 4-5-6-7, agreed to provide additional comments in relation to frequency bands identified by ITU-R for future assessment of the suitability for IMT and, in particular, with regard to the information provided in the "Summary document" (Document JTG 4-5-6-7/243/Rev.1).

#### **Comments on Document JTG 4-5-6-7/243/Rev.1**

4 The comments on Document JTG 4-5-6-7/243/Rev.1 are provided per frequency band below.

##### **1 518-1 559 MHz**

5 IMO requests ITU-R to replace its current comment with regard to the frequency band 1 518-1 559 MHz (column 6) by the following text:

"The frequency band 1 518-1 559 MHz is in use for satellite terminals on board SOLAS ships. IMO requests ITU-R to exclude the frequency band 1 518-1 559 MHz as a candidate band under WRC-15 agenda item 1.1, due to the potential adverse impact on maritime safety and the efficient movement of international commerce."

##### **1 559-1 610 MHz**

6 IMO requests ITU-R to replace its current comment with regard to the frequency band 1 559-1 610 MHz (column 6) by the following text:

"The frequency band 1 559-1 610 MHz is in use for RNSS. IMO requests ITU-R to exclude the frequency band 1 559-1 610 MHz as a candidate band under WRC-15 agenda item 1.1, due to the potential adverse impact on maritime safety and the efficient movement of international commerce."

#### 1668-1675 MHz

7 IMO requests ITU-R to insert a new comment with regard to the frequency band 1668-1675 MHz in column 6 of Document JTG 4-5-6-7/243/Rev.1, as follows:

"The frequency band 1668-1675 MHz is the uplink band paired with the downlink band 1518-1525 MHz. IMO requests ITU-R to exclude the frequency band 1668-1675 MHz as a candidate band under WRC-15 agenda item 1.1, due to the potential adverse impact on maritime safety and the efficient movement of international commerce."

#### 1 626.5-1 660.5 MHz

8 IMO requests ITU-R to replace its current comment with regard to the frequency band 1 626.5-1 660.5 MHz (column 6) by the following text:

"The frequency band 1 626.5-1 660.5 MHz is in use for satellite terminals on board SOLAS ships. IMO requests ITU-R to exclude the frequency band 1 626.5-1 660.5 MHz as a candidate band under WRC-15 agenda item 1.1, due to the potential adverse impact on maritime safety and the efficient movement of international commerce."

#### 2 900-3 100 MHz

9 IMO requests ITU-R to replace its current comment with regard to the frequency band 2 900-3 100 MHz (column 6) by the following text:

"The frequency band 2 900-3 100 MHz, in use for Maritime radionavigation (S-band radar), is of particular importance for safety of navigation (safety of life service) and directly impacts upon maritime safety and protection of the marine environment, in particular, in adverse weather conditions. IMO requests ITU-R to exclude the frequency band 2 900-3 100 MHz as a candidate band under WRC-15 agenda item 1.1, due to the potential adverse impact on maritime safety and the efficient movement of international commerce.

If the band 2 700-2 900 MHz was decided to be a candidate band under WRC-15 agenda item 1.1., IMO requests ITU to carry out feasibility studies which would address the impact on the band 2 900- 3 100 MHz. These feasibility studies should include, among others, co-existence between different types of radars."

#### 3 400-4 200 MHz

10 IMO requests ITU-R to replace its current comment with regard to the frequency band 3 400-4 200 MHz (column 6) by the following text:

"The frequency band 3 400-4 200 MHz is partly in use for feeder links of Inmarsat. IMO requests ITU-R to exclude the frequency band 3 400-4 200 MHz as a candidate band under WRC-15 agenda item 1.1, due to the potential adverse impact on maritime safety and the efficient movement of international commerce."

#### **IMO's further request to ITU-R**

11 IMO further requests to be consulted on any proposed solution to satisfy WRC-15, Agenda item 1.1 involving a frequency band allocated for use by maritime services.

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**ANNEX 6**

**STATEMENT BY THE DELEGATION OF THE COOK ISLANDS**

**NAV 59/WP.5 (Biennial agenda and provisional agenda for NCSR 1)**

I am very grateful to the Assistant Secretary-General for mentioning the Assembly.

We are proceeding on the basis that everything has been agreed. Would we be right in thinking that we should be qualifying this with the caveat that it is subject to endorsement and ratification by the Assembly for the whole review and reform structure. You had pointed out that part of the process is that the Assembly has to endorse and to ratify what is intended to reduce cost to Member States which is fundamental to the acceptance of this review and reform process.

The point here also being is that agreements at the MSC and MEPC were conditional on the absolute clear understanding that there would be no increase in working groups, drafting groups, intersessional groups and expert groups that in themselves could lead to an increase in cost to Member States and the Organization.

We would like to put this on record that these points have being raised. The understanding reached for the support for the review and reform process is directly linked to those understandings.

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**ANNEX 7**

**DRAFT MSC CIRCULAR**

**POLICY ON USE OF AIS AIDS TO NAVIGATION**

1 The Maritime Safety Committee, at its [ninety-third session (... to ... May 2014)], approved the annexed Policy on use of AIS Aids to Navigation (AIS AtoN), prepared by the Sub-Committee on Safety of Navigation at its [fifty-ninth session (2 to 6 September 2013)].

2 The purpose of this circular is to provide mariners and shore authorities, especially Aids to Navigation service providers, a clear policy direction on the use of AIS AtoN, which were introduced as additional and possible future applications of AIS by resolution A.917(22), as amended, and are currently starting to be used as a new practical Aids to Navigation tool for ensuring the safety of navigation.

3 Member Governments are invited to bring this Policy to the attention of all parties concerned.

## ANNEX

### DRAFT POLICY ON USE OF AIS AIDS TO NAVIGATION

#### 1 Purpose

1.1. The purpose of this Policy is to provide mariners and shore authorities, especially Aids to Navigation service providers a clear policy direction on the use of AIS Aids to Navigation (AtoN) for ensuring the safety of navigation.

#### 2 Scope

2.1 This document specifies the policy on the application or usage of AIS AtoN, including definition, performance standards, operational matters and other related topics.

#### 3 Definition

##### 3.1 AIS Aids to Navigation

An AIS AtoN is a digital aid to navigation (AtoN) promulgated by an authorized service provider using AIS Message 21 "Aids to navigation report" that is portrayed on devices or systems (e.g. Electronic Chart Display and Information System (ECDIS), radar or Integrated Navigation System (INS)). An AIS AtoN can be implemented in two ways.

- .1 Physical AIS AtoN:  
a Physical AIS AtoN is an AIS Message 21 representing an AtoN that physically exists.
- .2 Virtual AIS AtoN:  
a Virtual AIS AtoN is transmitted as a Message 21 representing an AtoN that does not physically exist

#### 4 Application

##### 4.1 General principles

- .1 establishment or operation of an AIS AtoN should be in accordance with SOLAS regulation V/13 on establishment and operation of Aids to Navigation, and, done in such a way so as to not impact the primary purpose of AIS<sup>11</sup>. Based on the SOLAS Convention, each competent AtoN service authority or provider has the possibility to establish or operate AIS AtoN, as they would do for a Physical AtoN, as the volume of traffic justifies and the degree of risk requires;
- .2 when considering the establishment or deployment of AIS AtoN, the competent AtoN service authority or provider should take special precaution to the primary purpose of AIS for collision avoidance, and that not all ships may carry equipment capable of transmitting or receiving AIS messages, such as leisure craft, fishing boats and warships, and some coastal stations including Vessel Traffic Services (VTS) centres, might not be fitted with AIS capability;

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<sup>11</sup> MSC.74(69) – Recommendations on performance standards for an universal shipborne automatic identification system (AIS).

- .3 further, even if a ship carries an AIS unit, the capability to portray or to display AIS AtoN information may be limited. Some types of Class A AIS equipment, which is required by the SOLAS Convention, can for example only display alphanumeric information, such as the name of the AtoN, on a Minimum Keyboard Display (MKD)<sup>12</sup>. Likewise, the portrayal of information for Class B AIS equipment is optional and various legacy types of displays such as radar and ECDIS may display an AIS symbol but not necessarily an AIS AtoN symbol;
- .4 there is also a potential for conflict between charted AtoN and the portrayal of the same AtoN dynamically via AIS. Close coordination between the AtoN authority and the relevant charting authorities is essential;
- .5 consequently, not all users will benefit from the provision of AIS AtoN. Therefore, the competent AtoN authority should take careful consideration to promulgate the information as necessary to mariners and other relevant parties before the establishment or deployment of AIS AtoN is completed. **It is highly important that mariners know how to interpret, understand and use AIS AtoNs before any decision of establishment or deployment is made;** and,
- .6 AIS AtoN could enhance the mariner's awareness on Maritime Safety Information (MSI) since AIS AtoN have the possibility to bring information almost immediately to the attention of the mariner in a relevant geographical context.

#### 4.2 Application of Physical AIS AtoN

- .1 a Physical AIS AtoN which is associated with a physically existing AtoN, can be implemented to provide mariners with the following service information:
  - the type and the name of the AtoN;
  - the position of the AtoN (must always be actual position of Physical AtoN, i.e. real-time Electronic Position Fixing System (EPFS) position for floating AtoN, especially if it is off position);
  - AtoN's status, e.g. light error, RACON error, off-position indication in the case of a drifting buoy, etc. with Message 14 "Safety-related broadcast message (optional)" (if monitored); and
  - other types of information through AIS Application Specific Message<sup>13</sup> (optional).

#### 4.3 Application of Virtual AIS AtoN

- .1 a Virtual AIS AtoN transmits information about an AtoN that does not physically exist. In this context, the competent AtoN authority should take every precaution to avoid confusion to the mariners. The AIS message should clearly identify this as Virtual AIS AtoN;

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<sup>12</sup> Where the AIS is part of an Integrated Bridge System, presentation of the AIS data would in general not be limited to the MKD.

<sup>13</sup> Refer to SN.1/Circ.289 – Guidance on the use of AIS Application Specific Messages.

- .2 the application or usage of a Virtual AIS AtoN may be divided into two categories, temporary and permanent;

Permanent application

- .3 Virtual AIS AtoN **should not be used for permanently marking an object for which Physical AtoN would be possible**, but, may be considered for marking an object or feature where it is difficult or economically unreasonable to establish a Physical AtoN due to environmental constraints e.g. deep water, harsh sea conditions. Another case of the permanent application of Virtual AIS AtoN is for example marking a shoal that changes with time due to current or weather effects; and, where the object or feature is impossible to maintain as charted because of changes that occur over time;
- .4 **the permanent usage of Virtual AIS AtoN** should be included in ENC's, paper nautical charts and nautical publications, and should, in general, not be duplicated as a multiple layer by AIS AtoN;

Temporary application

- .5 It may also further supplement Notices to Mariners (NtMs) for some temporary and preliminary warnings and information from various sources, particularly where the warnings and information have yet to be included in the relevant ENC's due to the time it takes for the distribution of ENC updates; and,
- .6 attention should also be drawn to the fact that, most Hydrographic Officers (IHOs) are now including temporary and preliminary NtM information in ENC's. Where temporary and preliminary information is included in ENC's, there must be coordination between AIS AtoN and ENC updates in order to avoid multiplied/duplicated layers of information on a display concerning the same issue.

## 5 Performance standards

### 5.1 Range

An AIS AtoN should have a transmission range that provides timely detection, depending on traffic and topology of the area and degree of risk, in accordance with international recommendations.

### 5.2 Reporting interval

The reporting interval for Message 21 of AIS AtoN is nominally three minutes but can be changed to improve timely detection or data link efficiency in accordance with international recommendations. An AIS AtoN should be considered lost after 15 minutes, unless updated.

### 5.3 Other characteristics

Other characteristics of AIS AtoN should take into consideration the risks and limitations described herein, as well as appropriate international standards, recommendations and guidelines<sup>14</sup>.

## 6 Operation/management

6.1 In order to avoid an unauthorized transmission of AIS AtoN, every AIS AtoN should be authorized by the competent authority.

6.2 An AtoN authority should make all necessary information relating to AIS AtoN available to all concerned.

6.3 The number of AIS AtoNs deployed in one area should be limited in order to avoid clutter on a display both onboard and ashore.

## 7 Monitoring

7.1 Each AIS AtoN should be monitored by appropriate means to ensure its reliability and integrity, the AtoN service provider or other relevant authority should notify all concerned immediately if this has been compromised. Although VHF Data Link (VDL) loading by an AIS AtoN is very low, the AIS VDL should be monitored by slot utilization or other appropriate means in order to ensure that the transmission of AIS AtoN does not impair ship to ship transmissions of AIS, and to detect any unauthorized transmission of AIS AtoN.

7.2 Contracting Governments should appoint a competent authority with the responsibility for protecting the integrity of the AIS VDL<sup>15</sup>, and ensure the legal means to prevent unauthorized AIS AtoN transmissions.

## 8 Risks and limitations

8.1 Both AIS AtoN service providers and users should be aware of the following risks of AIS AtoN:

- .1 not all ships carry AIS and not all AIS displays can display AIS AtoN;
- .2 not all mariners or shore based operators may be aware of the AIS AtoN;
- .3 information overload may cause confusion;
- .4 since Physical AIS AtoN may show the real-time position of the AtoN, there can be a position difference between the AIS AtoN position and the charted AtoN position; and
- 5 because of the technological newness of the AIS AtoN, there may be a lack of user awareness or understanding.

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<sup>14</sup> Refer to ITU-R M.1371 and IALA Recommendation A-126 (latest revisions).

<sup>15</sup> Refer to resolution MSC.347(91) Recommendation for the protection of the AIS VHF Data Link.

8.2 AIS AtoN service providers and users should also be aware of the following limitation of AIS AtoN:

- .1 like an AIS shipborne station, the position of floating AIS AtoN depends on the Global Navigation Satellite System (GNSS) and may thus be subject to GNSS vulnerability.

## **9 Portrayal**

9.1 The purpose of portrayal of AIS AtoN information is to convey the meaning of the AIS AtoN information intuitively and unambiguously to all concerned through navigational or other displays. Graphic portrayal of AIS AtoN information should:

- clearly distinguish Virtual AIS AtoN from Physical AIS AtoN;
- graphically indicate the type of the AIS AtoN in accordance with the IALA Maritime Buoyage System; and
- be sufficiently different from IHO chart symbols and other navigation related symbols to differentiate ENC AtoN objects from AIS AtoN.

9.2 Graphic portrayal systems should have the ability to filter AIS AtoN.

## **10 Training**

10.1 It is recommended that mariners and shore-based VTS operators, as an extension of their training on the IALA Maritime Buoyage System, are introduced to AIS AtoN as defined by this policy, and portrayal on navigation related displays as defined by relevant documents, including the concept of a Virtual AIS AtoN, should be visible only on electronic displays.

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## ANNEX 8

### DRAFT SN CIRCULAR

#### AMENDED GUIDELINES FOR THE PRESENTATION OF NAVIGATIONAL-RELATED SYMBOLS, TERMS AND ABBREVIATIONS

1 The Maritime Safety Committee, at its seventy-ninth session (December 2004), approved *Guidelines for the presentation of navigational-related symbols, terms and abbreviations* (SN/Circ.243) prepared by the Sub-Committee on Safety of Navigation (NAV), at its fiftieth session (July 2004) and encouraged their use for all shipborne navigational systems and equipment.

2 The Maritime Safety Committee, at its eighty-fifth session (26 November to 5 December 2008), approved the amendment to the *Guidelines for the presentation of navigation-related symbols, terms and abbreviations* (SN.1/Circ.243/Add.1) regarding an addition to table 3 of the appendix to annex 1 of the *Guidelines for the presentation of navigation-related symbols, terms and abbreviations* (SN/Circ.243), introducing a new symbol for AIS Search and Rescue Transmitter (AIS-SART) prepared by the Sub-Committee on Safety of Navigation (NAV), at its fifty-fourth session (July 2008).

3 The Sub-Committee on Safety of Navigation (NAV), at its [fifty-ninth session (2 to 6 September 2013)], agreed on improved symbols for portrayal of AIS Aids to Navigation (AIS AtoN) in annexed new tables 4.1, 4.2 and 4.3 for the replacement of existing symbols for AIS-based AtoN in existing table 4 of annex 1 of the *Guidelines for the presentation of navigation-related symbols, terms and abbreviations* (SN/Circ.243).

4 The Maritime Safety Committee, at its [ninety-third session (... to ... May 2014)], concurred with the Sub-Committee's views, and approved the *amended Guidelines for the presentation of navigation-related symbols, terms and abbreviations*, as set out in the annex.

5 Member Governments are invited to bring the amended *Guidelines for the presentation of navigation-related symbols, terms and abbreviations* to the attention of all parties concerned.

[6 This circular revokes SN/Circ.243 and SN.1/Circ.243/Add.1].

## ANNEX 1

### GUIDELINES FOR THE PRESENTATION OF NAVIGATION-RELATED SYMBOLS

#### **1 Purpose**

The purpose of these annexed Guidelines is to provide guidance on the appropriate use of navigation-related symbols to achieve a harmonized and consistent presentation.

#### **2 Scope**

The use of these Guidelines will insure that the symbols used for the display of navigation-related information on all shipborne navigational systems and equipment are presented in a consistent and uniform manner.

#### **3 Application**

These Guidelines apply to all shipborne navigational systems and equipment. The symbols listed in the appendix should be used for the display of navigation-related information to promote consistency in the symbol presentation on navigational equipment.

The symbols listed in the appendix should replace symbols which are currently contained in existing performance standards. Where a standard symbol is not available, another symbol may be used, but this symbol should not conflict with the symbols listed in the appendix.



## Appendix

### Navigation-related Symbols

Table 1: Own Ship Symbols


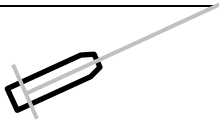
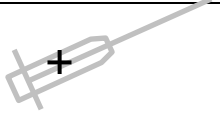
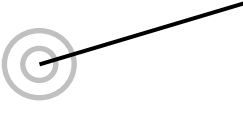

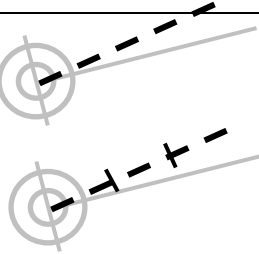
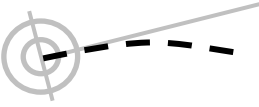
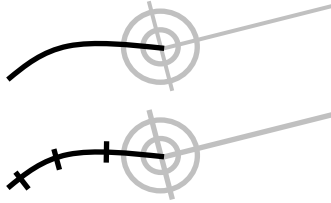
| Topic                           | Symbol  | Description   |
|---------------------------------|---|---|
| Own ship                        |    | Double circle, located at own ship's reference position.<br>Use of this symbol is optional, if own ship position is shown by the combination of Heading Line and Beam Line.   |
| Own Ship True scale outline     |    | True scale outline located relative to own ship's reference position, oriented along own ship's heading.<br>Used on small ranges/large scales.  |
| Own Ship Radar Antenna Position |    | Cross, located on a true scale outline of the ship at the Physical location of the radar antenna that is the current source of displayed radar video.   |
| Own Ship Heading line           |   | Solid line thinner than the speed vector line style, drawn to the bearing ring or of fixed length, if the bearing ring is not displayed. Origin is at own ship's reference point.   |
| Own Ship Beam line              |  | Solid line of fixed length; optionally length variable by operator. Midpoint at own ship's reference point.   |
| Own Ship Speed vector           |  | Dashed line – short dashes with spaces approximately twice the line width of heading line. Time increments between the origin and endpoint may optionally be marked along the vector using short intersecting lines.<br>To indicate Water/Ground stabilization optionally one arrowhead for water stabilization and two arrowheads for ground stabilization may be added. |
| Own Ship Path prediction        |  | A curved vector may be provided as a path predictor.  |
| Own Ship Past Track             |  | Thick line for primary source. Thin line for secondary source.<br>Optional time marks are allowed.  |

Table 2: Tracked Radar Target Symbols

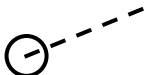


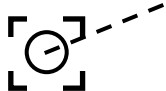
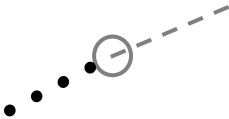

| Topic                                     | Symbol  | Description   |
|---|---|---|
| Tracked Target including Dangerous Target |    | <p>Solid filled or unfilled circle located at target position.</p> <p>The course and speed vector should be displayed as dashed line, with short dashes with spaces approximately twice the line width.</p> <p>Optionally, time increments, may be marked along the vector.</p> <p>For a "<b>Dangerous Target</b>", bold, red (on colour display) solid circle with course and speed vector, flashing until acknowledged.</p> |
| Target in Acquisition State               |    | <p>Circle segments in the acquired target state.</p> <p>For automatic acquisition, bold circle segments, flashing and red (on colour display) until acknowledged.</p>   |
| Lost Target                               |    | <p>Bold lines across the circle, flashing until acknowledged.</p>   |
| Selected Target                           |  | <p>A square indicated by its corners centred around the target symbol.</p>  |
| Target Past Positions                     |  | <p>Dots, equally spaced by time.</p>  |
| Tracked Reference Target                  |  | <p>Large R adjacent to designated tracked target.</p> <p>Multiple reference targets should be marked as R1, R2, R3, etc.</p>  |

Table 3: AIS Target Symbols


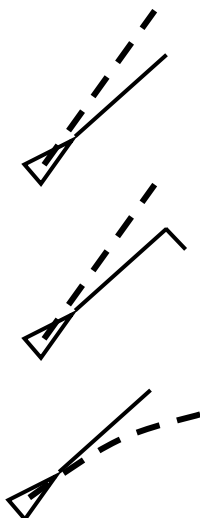
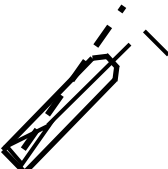
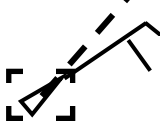

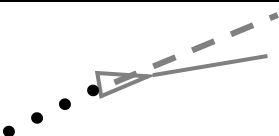

| Topic   | Symbol  | Description   |
|---|---|---|
| AIS Target (sleeping)                           |    | An isosceles, acute-angled triangle should be used. The triangle should be oriented by heading, or COG if heading missing. The reported position should be located at centre and half the height of the triangle. The symbol of the sleeping target should be smaller than that of the activated target.  |
| Activated AIS Target Including Dangerous Target |   | An isosceles, acute-angled triangle should be used. The triangle should be oriented by heading, or COG if heading missing. The reported position should be located at centre and half the height of the triangle.<br><br>The COG/SOG vector should be displayed as a dashed line with short dashes with spaces approximately twice the line width. Optionally, time increments may be marked along the vector.<br><br>The heading should be displayed as a solid line thinner than speed vector line style, length twice of the length of the triangle symbol. Origin of the heading line is the apex of the triangle.<br><br>The turn should be indicated by a flag of fixed length added to the heading line.<br><br>A path predictor may be provided as curved vector.<br><br>For a " <b>Dangerous AIS Target</b> ", bold, red (on colour display) solid triangle with course and speed vector, flashing until acknowledged. |
| AIS Target – True Scale Outline                 |  | A true scale outline may be added to the triangle symbol. It should be:<br><br>Located relative to reported position and according to reported position offsets, beam and length.<br><br>Oriented along target's heading.<br><br>Used on low ranges/large scales.   |
| Selected target                                 |  | A square indicated by its corners should be drawn around the activated target symbol.   |
| Lost target                                     |  | Triangle with bold solid cross. The triangle should be oriented per last known value. The cross should have a fixed orientation. The symbol should flash until acknowledged.<br><br>The target should be displayed without vector, heading and rate of turn indication.   |
| Target Past Positions                           |  | Dots, equally spaced by time.   |
| AIS Search and Rescue Transmitter (AIS-SART)    |  | A circle containing a cross drawn with solid lines.   |

Table 4: Other Symbols

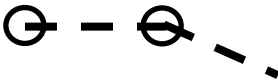



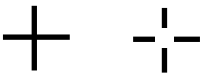
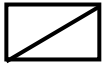
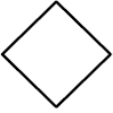
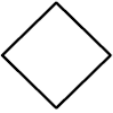


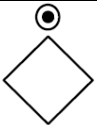
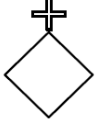
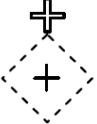
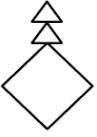

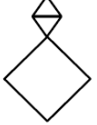

| Topic                          | Symbol  | Description   |
|--------------------------------|---|---|
| Monitored Route                |    | Dashed bold line, waypoints (WPT) as circles.   |
| Planned or Alternate Route     |    | Dotted line, WPT as circles.  |
| Trial Manoeuvre                |    | Large T on screen.  |
| Simulation Mode                |    | Large S on screen.  |
| Cursor                         |  | Crosshair (two alternatives, one with open centre).   |
| Range Rings                    |   | Solid circles.  |
| Variable Range Markers (VRM)   |   | Circle.<br>Additional VRM should be distinguishable from the primary VRM.                   |
| Electronic Bearing Lines (EBL) |   | Dashed line.<br>Additional EBL should be distinguishable from the primary EBL.              |
| Acquisition/ Activation Area   |   | Solid line boundary for an area.  |
| Event Mark                     |  | Rectangle with diagonal line, clarified by added text (e.g. "MOB" for man overboard cases). |

Table 4.1: Improved symbols for portrayal of AIS Aids to Navigation (AIS AtoN)

| Type of AIS AtoN<br>(Type of code in AIS<br>msg. 21)  | Symbol<br>(Physical)  | Symbol<br>(Virtual)   | Description   |
|---|---|---|---|
| Portrayal when indication<br>of type is not selected  |    |   | Solid diamond<br>(Shown with chart symbol. Chart symbol<br>not required for radar.)<br><b>Note:</b> Applicable only for Physical AIS<br>AtoN  |
| Default, type not specified<br>(0)<br>Reference point (1)<br>Light, without sectors (5)<br>Light, with sectors (6)<br>Leading Light Front (7)<br>Leading Light Rear (8) |    |    | Physical: Solid diamond<br>(Shown with chart symbol. Chart symbol<br>not required for radar.)<br>Virtual: Dotted diamond with cross hair<br>centred at reported position  |
| Fixed structure<br>offshore/obstruction (3)<br>Light Vessel/LANBY/Rigs<br>(31)  |    |   | Solid diamond<br>(Shown with chart symbol. Chart symbol<br>not required for radar.)<br><b>Note:</b> Fixed structure offshore/obstruction<br>and Light Vessel/LANBY/Rigs versions are<br>not applicable for Virtual AIS AtoN   |
| Racon (2)   |   |   | Solid diamond with double circle of black<br>inner circle on the top of diamond<br><b>Note:</b> Racon version is not applicable for<br>Virtual AIS AtoN   |
| Emergency Wreck Mark<br>(4)   |  |  | Physical: Solid diamond with cross on the<br>top of diamond<br>(Shown with chart symbol. Chart symbol<br>not required for radar.)<br>Virtual: Dotted diamond with cross hair<br>centred at reported position and cross on<br>the top of diamond   |
| Beacon, Cardinal N (9)<br>Floating, Cardinal Mark N<br>(20)   |  |  | Physical: Solid diamond with 2 triangles,<br>one above the other, point upward, on top<br>of diamond<br>(Shown with chart symbol. Chart symbol<br>not required for radar.)<br>Virtual: Dotted diamond with cross hair<br>centred at reported position and 2<br>triangles, one above the other, points<br>upward, on the top of diamond    |
| Beacon, Cardinal E (10)<br>Floating, Cardinal Mark E<br>(21)  |  |  | Physical: Solid diamond with 2 triangles,<br>one above the other, base to base, on the<br>top of diamond<br>(Shown with chart symbol. Chart symbol<br>not required for radar.)<br>Virtual: Dotted diamond with cross hair<br>centred at reported position and 2<br>triangles, one above the other, base to<br>base, on the top of diamond |



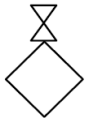

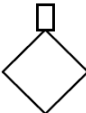
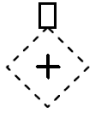


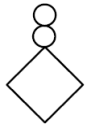
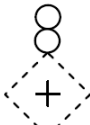
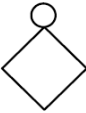

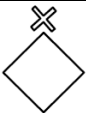

| Type of AIS AtoN<br>(Type of code in AIS<br>msg. 21)  | Symbol<br>(Physical)  | Symbol<br>(Virtual)   | Description  |
|---|---|---|--|
| Beacon, Cardinal S (11)<br>Floating, Cardinal Mark S<br>(22)  |    |    | Physical: Solid diamond with 2 triangles, one above the other, point downward, on the top of diamond<br>(Shown with chart symbol. Chart symbol not required for radar.)<br>Virtual: Dotted diamond with cross hair centred at reported position and 2 triangles, one above the other, points downward, on the top of diamond |
| Beacon, Cardinal W (12)<br>Floating, Cardinal Mark W<br>(23)  |    |    | Physical: Solid diamond with 2 triangles, one above the other, point to point, on the top of diamond<br>(Shown with chart symbol. Chart symbol not required for radar.)<br>Virtual: Dotted diamond with cross hair centred at reported position and 2 triangles, one above the other, point to point, on the top of diamond  |
| Beacon, Port hand (13)<br>Beacon, Preferred<br>Channel Port hand (15)<br>Port hand Mark (24)<br>Preferred Channel Port<br>hand (26)                           |    |    | Physical: Solid diamond with rectangle, short side up, on the top of diamond<br>(Shown with chart symbol. Chart symbol not required for radar.)<br>Virtual: Dotted diamond with cross hair centred at reported position and rectangle, short side up, on the top of diamond  |
| Beacon, Starboard hand<br>(14)<br>Beacon, Preferred<br>Channel Starboard hand<br>(16)<br>Starboard hand Mark (25)<br>Preferred Channel<br>Starboard hand (27) |  |  | Physical: Solid diamond with triangle, points upward, on the top of diamond<br>(Shown with chart symbol. Chart symbol not required for radar.)<br>Virtual: Dotted diamond with cross hair centred at reported position and triangle, points upward, on the top of diamond  |
| Beacon, Isolated danger<br>(17)<br>Isolated danger (28)<br>Beacon, Safe   |  |  | Physical: Solid diamond with 2 circles, one above the other, on the top of diamond<br>(Shown with chart symbol. Chart symbol not required for radar.)<br>Virtual: Dotted diamond with cross hair centred at reported position and 2 circles, one above the other, on the top of diamond                                      |
| Beacon, Safe water (18)<br>Safe Water (29)  |  |  | Physical: Solid diamond with circle on the top of diamond<br>(Shown with chart symbol. Chart symbol not required for radar.)<br>Virtual: Dotted diamond with cross hair centred at reported position and circle on the top of diamond  |
| Beacon, Special mark (19)<br>Special Mark (30)  |  |  | Physical: Solid diamond with bold outlined "X" on the top of diamond<br>(Shown with chart symbol. Chart symbol not required for radar.)<br>Virtual: Dotted diamond with cross hair centred at reported position and bold outlined "X" on the top of diamond  |

Table 4.2 – Portrayal of AIS AtoN indicating off position or failure


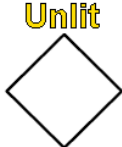


| Type of failure condition                 | Symbol (Physical)   | Description   |
|---|---|---|
| AIS AtoN indicating to be in Off Position |  | Failure is indicated using yellow caution colour for the basic diamond part of the symbol with cross hair centred at reported position and for text "Off Posn" in top of the Physical AIS AtoN.<br><br><b>Note:</b> Physical AIS AtoN indicates realtime EPFS position of drifting AtoN (obstacle). |
| AIS AtoN indicating Lights failure        |  | Failure is indicated using yellow caution colour with text "Unlit" in top of the Physical AIS AtoN.   |
| AIS AtoN indicating Racon failure         |  | Failure is indicated using yellow caution colour with text "Racon err" in top of the Physical AIS AtoN  |

Table 4.3 – Portrayal of AIS AtoN indicating the absence of a charted Physical AtoN

| Type of failure condition                                  | Symbol (Virtual)  | Description  |
|--|---|--|
| AIS AtoN indicating the absence of a charted Physical AtoN |  | The absence of a charted AtoN is indicated using yellow caution colour for both the basic diamond part of the symbol and for text "Missing". The basic diamond part is always empty without symbol of the type of the AtoN.<br><br><b>Note:</b> This case is communicated as a combined state of "Virtual" and "off position". Type of absent AtoN can be determined be the underlying charted object, or selecting the Virtual AIS AtoN Object. |

## ANNEX 2

### **GUIDELINES FOR THE PRESENTATION OF NAVIGATION-RELATED TERMS AND ABBREVIATIONS**

#### **1 Purpose**

The purpose of these Guidelines is to provide guidance on the use of appropriate navigation-related terminology and abbreviations intended for presentation on shipborne navigational displays. These are based on terms and abbreviations used in existing navigation references.

#### **2 Scope**

These Guidelines are issued to ensure that the terms and abbreviations used for the display of navigation-related information on all shipborne navigation equipment and systems are consistent and uniform.

#### **3 Application**

These Guidelines apply to all shipborne navigational systems and equipment including, radar, ECDIS, AIS, INS and IBS. When navigation-related information is displayed as text, the standard terms or abbreviations listed in the appendix should be used, instead of using terms and abbreviations which are currently contained in existing performance standards.

Where a standard term and abbreviation is not available, another term or abbreviation may be used. This term or abbreviation should not conflict with the standard terms or abbreviations listed in the appendix and provide a clear meaning. Standard marine terminology should be used for this purpose. When the meaning is not clear from its context, the term should not be abbreviated.

Unless otherwise specified, standard terms should be shown in lower case while abbreviations should be presented using upper case.



**Appendix****List of Standard Terms and Abbreviations**

| <b>Term</b>                            | <b>Abbreviation</b>          | <b>Abbreviation</b>          | <b>Term</b>                        |
|--|------------------------------|------------------------------|------------------------------------|
| Acknowledge                            | ACK                          | ACK                          | Acknowledge                        |
| Acquire, Acquisition                   | ACQ                          | ACQ                          | Acquire, Acquisition               |
| Acquisition Zone                       | AZ                           | ADJ                          | Adjust, Adjustment                 |
| Adjust, Adjustment                     | ADJ                          | AFC                          | Automatic Frequency Control        |
| Aft                                    | AFT                          | AFT                          | Aft                                |
| Alarm                                  | ALARM                        | AGC                          | Automatic Gain Control             |
| Altitude                               | ALT                          | AIS                          | Automatic Identification System    |
| Amplitude Modulation                   | AM                           | ALARM                        | Alarm                              |
| Anchor Watch                           | ANCH                         | ALT                          | Altitude                           |
| Antenna                                | ANT                          | AM                           | Amplitude Modulation               |
| Anti Clutter Rain                      | RAIN                         | ANCH                         | Anchor Watch                       |
| Anti Clutter Sea                       | SEA                          | ANCH                         | Vessel at Anchor (applies to AIS)  |
| April                                  | APR                          | ANT                          | Antenna                            |
| Audible                                | AUD                          | APR                          | April                              |
| August                                 | AUG                          | AUD                          | Audible                            |
| Automatic                              | AUTO                         | AUG                          | August                             |
| Automatic Frequency Control            | AFC                          | AUTO                         | Automatic                          |
| Automatic Gain Control                 | AGC                          | AUX                          | Auxiliary System/Function          |
| Automatic Identification System        | AIS                          | AVAIL                        | Available                          |
| Auxiliary System/Function              | AUX                          | AZ                           | Acquisition Zone                   |
| Available                              | AVAIL                        | BITE                         | Built in Test Equipment            |
| Background                             | BKGND                        | BKGND                        | Background                         |
| Bearing                                | BRG                          | BRG                          | Bearing                            |
| Bearing Waypoint To Waypoint           | BWW                          | BRILL                        | Brilliance                         |
| Brilliance                             | BRILL                        | BWW                          | Bearing Waypoint To Waypoint       |
| Built in Test Equipment                | BITE                         | C                            | Carried (e.g. carried EBL origin)  |
| Calibrate                              | CAL                          | C UP <sup>(See note 2)</sup> | Course Up                          |
| Cancel                                 | CNCL                         | CAL                          | Calibrate                          |
| Carried (e.g. carried EBL origin)      | C                            | CCRP                         | Consistent Common Reference Point  |
| Centre                                 | CENT                         | CCRS                         | Consistent Common Reference System |
| Change                                 | CHG                          | CENT                         | Centre                             |
| Circular Polarised                     | CP                           | CHG                          | Change                             |
| Clear                                  | CLR                          | CLR                          | Clear                              |
| Closest Point of Approach              | CPA                          | CNCL                         | Cancel                             |
| Consistent Common Reference Point      | CCRP                         | COG                          | Course Over the Ground             |
| Consistent Common Reference System     | CCRS                         | CONT                         | Contrast                           |
| Contrast                               | CONT                         | CORR                         | Correction                         |
| Correction                             | CORR                         | CP                           | Circular Polarised                 |
| Course                                 | CRS                          | CPA                          | Closest Point of Approach          |
| Course Over the Ground                 | COG                          | CRS                          | Course                             |
| Course Through the Water               | CTW                          | CTS                          | Course To Steer                    |
| Course To Steer                        | CTS                          | CTW                          | Course Through the Water           |
| Course Up                              | C UP <sup>(See note 2)</sup> | CURS                         | Cursor                             |
| Cross Track Distance                   | XTD                          | D                            | Dropped (e.g. dropped EBL origin)  |
| Cursor                                 | CURS                         | DATE                         | Date                               |
| Dangerous Goods                        | DG                           | DAY/NT                       | Day/Night                          |
| Date                                   | DATE                         | DEC                          | December                           |
| Day/Night                              | DAY/NT                       | DECR                         | Decrease                           |
| Dead Reckoning, Dead Reckoned Position | DR                           | DEL                          | Delete                             |

| Term  | Abbreviation                     | Abbreviation                     | Term   |
|---|----------------------------------|----------------------------------|--|
| December  | DEC                              | DELAY                            | Delay  |
| Decrease  | DECR                             | DEP                              | Departure  |
| Delay   | DELAY                            | DEST                             | Destination  |
| Delete  | DEL                              | DEV                              | Deviation  |
| Departure                                       | DEP                              | DG                               | Dangerous Goods  |
| Depth   | DPTH                             | DGAL <sup>(See note 2)</sup>     | Differential Galileo   |
| Destination                                     | DEST                             | DGLONASS <sup>(See note 2)</sup> | Differential GLONASS   |
| Deviation                                       | DEV                              | DGNSS <sup>(See note 2)</sup>    | Differential GNSS  |
| Differential Galileo                            | DGAL <sup>(See note 2)</sup>     | DGPS <sup>(See note 2)</sup>     | Differential GPS   |
| Differential GLONASS                            | DGLONASS <sup>(See note 2)</sup> | DISP                             | Display  |
| Differential GNSS                               | DGNSS <sup>(See note 2)</sup>    | DIST                             | Distance   |
| Differential GPS                                | DGPS <sup>(See note 2)</sup>     | DIVE                             | Vessel Engaged in Diving Operations (applies to AIS)                 |
| Digital Selective Calling                       | DSC                              | DPTH                             | Depth  |
| Display   | DISP                             | DR                               | Dead Reckoning, Dead Reckoned Position                               |
| Distance  | DIST                             | DRG                              | Vessel Engaged in Dredging or Underwater Operations (applies to AIS) |
| Distance Root Mean Square                       | DRMS <sup>(See note 2)</sup>     | DRIFT                            | Drift  |
| Distance To Go                                  | DTG                              | DRMS <sup>(See note 2)</sup>     | Distance Root Mean Square  |
| Drift   | DRIFT                            | DSC                              | Digital Selective Calling  |
| Dropped (e.g. dropped EBL origin)               | D                                | DTG                              | Distance To Go   |
| East  | E                                | E                                | East   |
| Electronic Bearing Line                         | EBL                              | EBL                              | Electronic Bearing Line  |
| Electronic Chart Display and Information System | ECDIS                            | ECDIS                            | Electronic Chart Display and Information System                      |
| Electronic Navigational Chart                   | ENC                              | ENC                              | Electronic Navigational Chart  |
| Electronic Position Fixing System               | EPFS                             | ENH                              | Enhance  |
| Electronic Range and Bearing Line               | ERBL                             | ENT                              | Enter  |
| Enhance   | ENH                              | EP                               | Estimated Position   |
| Enter   | ENT                              | EPFS                             | Electronic Position Fixing System                                    |
| Equipment                                       | EQUIP                            | EQUIP                            | Equipment  |
| Error   | ERR                              | ERBL                             | Electronic Range and Bearing Line                                    |
| Estimated Position                              | EP                               | ERR                              | Error  |
| Estimated Time of Arrival                       | ETA                              | ETA                              | Estimated Time of Arrival  |
| Estimated Time of Departure                     | ETD                              | ETD                              | Estimated Time of Departure  |
| Event   | EVENT                            | EVENT                            | Event  |
| Exclusion Zone                                  | EZ                               | EXT                              | External   |
| External  | EXT                              | EZ                               | Exclusion Zone   |
| February  | FEB                              | FEB                              | February   |
| Fishing Vessel                                  | FISH                             | FISH                             | Fishing Vessel   |
| Fix   | FIX                              | FIX                              | Fix  |
| Forward   | FWD                              | FM                               | Frequency Modulation   |
| Frequency                                       | FREQ                             | FREQ                             | Frequency  |
| Frequency Modulation                            | FM                               | FULL                             | Full   |
| Full  | FULL                             | FWD                              | Forward  |
| Gain  | GAIN                             | GAIN                             | Gain   |
| Galileo   | GAL                              | GAL                              | Galileo  |
| Geometric Dilution Of Precision                 | GDOP                             | GC                               | Great Circle   |
| Global Maritime Distress and Safety System      | GMDSS                            | GDOP                             | Geometric Dilution Of Precision                                      |

| Term  | Abbreviation      | Abbreviation      | Term  |
|---|-------------------|-------------------|---|
| Global Navigation Satellite System          | GNSS              | GLONASS           | Global Orbiting Navigation Satellite System |
| Global Orbiting Navigation Satellite System | GLONASS           | GMDSS             | Global Maritime Distress and Safety System  |
| Global Positioning System                   | GPS               | GND               | Ground                                      |
| Great Circle                                | GC                | GNSS              | Global Navigation Satellite System          |
| Grid  | GRID              | GPS               | Global Positioning System                   |
| Ground                                      | GND               | GRI               | Group Repetition Interval                   |
| Group Repetition Interval                   | GRI               | GRID              | Grid  |
| Guard Zone                                  | GZ                | GRND              | Vessel Aground (applies to AIS)             |
| Gyro  | GYRO              | GYRO              | Gyro  |
| Harmful Substances (applies to AIS)         | HS                | GZ                | Guard Zone                                  |
| Head Up                                     | H UP (See note 2) | H UP (See note 2) | Head Up                                     |
| Heading                                     | HDG               | HCS               | Heading Control System                      |
| Heading Control System                      | HCS               | HDG               | Heading                                     |
| Heading Line                                | HL                | HDOP              | Horizontal Dilution Of Precision            |
| High Frequency                              | HF                | HF                | High Frequency                              |
| High Speed Craft (applies to AIS)           | HSC               | HL                | Heading Line                                |
| Horizontal Dilution Of Precision            | HDOP              | HS                | Harmful Substances (applies to AIS)         |
| Identification                              | ID                | HSC               | High Speed Craft (applies to AIS)           |
| In  | IN                | I/O               | Input/Output                                |
| Increase                                    | INCR              | ID                | Identification                              |
| Indication                                  | IND               | IN                | In  |
| Information                                 | INFO              | INCR              | Increase                                    |
| Infrared                                    | INF RED           | IND               | Indication                                  |
| Initialisation                              | INIT              | INF RED           | Infrared                                    |
| Input                                       | INP               | INFO              | Information                                 |
| Input/Output                                | I/O               | INIT              | Initialisation                              |
| Integrated Radio Communication System       | IRCS              | INP               | Input                                       |
| Interference Rejection                      | IR                | INT               | Interval                                    |
| Interswitch                                 | ISW               | IR                | Interference Rejection                      |
| Interval                                    | INT               | IRCS              | Integrated Radio Communication System       |
| January                                     | JAN               | ISW               | Interswitch                                 |
| July  | JUL               | JAN               | January                                     |
| June  | JUN               | JUL               | July  |
| Latitude                                    | LAT               | JUN               | June  |
| Limit                                       | LIM               | LAT               | Latitude                                    |
| Line Of Position                            | LOP               | LF                | Low Frequency                               |
| Log   | LOG               | LIM               | Limit                                       |
| Long Pulse                                  | LP                | LOG               | Log   |
| Long Range                                  | LR                | LON               | Longitude                                   |
| Longitude                                   | LON               | LOP               | Line Of Position                            |
| Loran                                       | LORAN             | LORAN             | Loran                                       |
| Lost Target                                 | LOST TGT          | LOST TGT          | Lost Target                                 |
| Low Frequency                               | LF                | LP                | Long Pulse                                  |
| Magnetic                                    | MAG               | LR                | Long Range                                  |
| Manoeuvre                                   | MVR               | MAG               | Magnetic                                    |
| Manual                                      | MAN               | MAN               | Manual                                      |
| Map(s)                                      | MAP               | MAP               | Map(s)                                      |
| March                                       | MAR               | MAR               | March                                       |
| Maritime Mobile Services Identity number    | MMSI              | MAX               | Maximum                                     |
| Maritime Pollutant (applies to AIS)         | MP                | MAY               | May   |

| Term                              | Abbreviation                 |
|-----------------------------------|------------------------------|
| Maritime Safety Information       | MSI                          |
| Marker                            | MKR                          |
| Master                            | MSTR                         |
| Maximum                           | MAX                          |
| May                               | MAY                          |
| Medium Frequency                  | MF                           |
| Medium Pulse                      | MP                           |
| Menu                              | MENU                         |
| Minimum                           | MIN                          |
| Missing                           | MISSING                      |
| Mute                              | MUTE                         |
| Navigation                        | NAV                          |
| Normal                            | NORM                         |
| North                             | N                            |
| North Up                          | N UP <sup>(See note 2)</sup> |
| November                          | NOV                          |
| October                           | OCT                          |
| Off                               | OFF                          |
| Officer of the Watch              | OOW                          |
| Offset                            | OFFSET                       |
| On                                | ON                           |
| Out/Output                        | OUT                          |
| Own Ship                          | OS                           |
| Panel Illumination                | PANEL                        |
| Parallel Index Line               | PI                           |
| Passenger Vessel (applies to AIS) | PASSV                        |
| Performance Monitor               | MON                          |
| Permanent                         | PERM                         |
| Person Overboard                  | POB                          |
| Personal Identification Number    | PIN                          |
| Pilot Vessel (applies to AIS)     | PILOT                        |
| Port/Portside                     | PORT                         |
| Position                          | POSN                         |
| Positional Dilution Of Precision  | PDOP                         |
| Power                             | PWR                          |
| Predicted                         | PRED                         |
| Predicted Area of Danger          | PAD                          |
| Predicted Point of Collision      | PPC                          |
| Pulse Length                      | PL                           |
| Pulse Modulation                  | PM                           |
| Pulse Repetition Frequency        | PRF                          |
| Pulse Repetition Rate             | PRR                          |
| Pulses Per Revolution             | PPR                          |
| Racon                             | RACON                        |
| Radar                             | RADAR                        |
| Radius                            | RAD                          |
| Rain                              | RAIN                         |
| Range                             | RNG                          |
| Range Rings                       | RR                           |
| Raster Chart Display System       | RCDS                         |
| Raster Navigational Chart         | RNC                          |
| Rate Of Turn                      | ROT                          |
| Real-time Kinematic               | RTK                          |
| Receiver                          | RX <sup>(See note 2)</sup>   |

| Abbreviation                 | Term                                      |
|------------------------------|---|
| MENU                         | Menu                                      |
| MF                           | Medium Frequency                          |
| MIN                          | Minimum                                   |
| MISSING                      | Missing                                   |
| MKR                          | Marker                                    |
| MMSI                         | Maritime Mobile Services Identity number  |
| MON                          | Performance Monitor                       |
| MP                           | Maritime Pollutant (applies to AIS)       |
| MP                           | Medium Pulse                              |
| MSI                          | Maritime Safety Information               |
| MSTR                         | Master                                    |
| MUTE                         | Mute                                      |
| MVR                          | Manoeuvre                                 |
| N                            | North                                     |
| N UP <sup>(See note 2)</sup> | North Up                                  |
| NAV                          | Navigation                                |
| NORM                         | Normal                                    |
| NOV                          | November                                  |
| NUC                          | Vessel Not Under Command (applies to AIS) |
| OCT                          | October                                   |
| OFF                          | Off                                       |
| OFFSET                       | Offset                                    |
| ON                           | On  |
| OOW                          | Officer of the Watch                      |
| OS                           | Own Ship                                  |
| OUT                          | Out/Output                                |
| PAD                          | Predicted Area of Danger                  |
| PANEL                        | Panel Illumination                        |
| PASSV                        | Passenger Vessel (applies to AIS)         |
| PDOP                         | Positional Dilution Of Precision          |
| PERM                         | Permanent                                 |
| PI                           | Parallel Index Line                       |
| PILOT                        | Pilot Vessel (applies to AIS)             |
| PIN                          | Personal Identification Number            |
| PL                           | Pulse Length                              |
| PM                           | Pulse Modulation                          |
| POB                          | Person Overboard                          |
| PORT                         | Port/Portside                             |
| POSN                         | Position                                  |
| PPC                          | Predicted Point of Collision              |
| PPR                          | Pulses Per Revolution                     |
| PRED                         | Predicted                                 |
| PRF                          | Pulse Repetition Frequency                |
| PRR                          | Pulse Repetition Rate                     |
| PWR                          | Power                                     |
| RACON                        | Racon                                     |
| RAD                          | Radius                                    |
| RADAR                        | Radar                                     |
| RAIM                         | Receiver Autonomous Integrity Monitoring  |
| RAIN                         | Anti Clutter Rain                         |
| RAIN                         | Rain                                      |
| RCDS                         | Raster Chart Display System               |
| REF                          | Reference                                 |
| REL <sup>(See note 3)</sup>  | Relative                                  |

| Term  | Abbreviation                 | Abbreviation                | Term   |
|---|------------------------------|-----------------------------|--|
| Receiver Autonomous Integrity Monitoring      | RAIM                         | RIM                         | Vessel Restricted in Manoeuvrability) (applies to AIS) |
| Reference                                     | REF                          | RM                          | Relative Motion  |
| Relative                                      | REL <sup>(See note 3)</sup>  | RMS                         | Root Mean Square                                       |
| Relative Motion                               | RM                           | RNC                         | Raster Navigational Chart                              |
| Revolutions per Minute                        | RPM                          | RNG                         | Range  |
| Roll On/Roll Off Vessel (applies to AIS)      | RoRo                         | RoRo                        | Roll On/Roll Off Vessel (applies to AIS)               |
| Root Mean Square                              | RMS                          | ROT                         | Rate Of Turn   |
| Route   | ROUTE                        | ROUTE                       | Route  |
| Safety Contour                                | SF CNT                       | RPM                         | Revolutions per Minute                                 |
| Sailing Vessel (applies to AIS)               | SAIL                         | RR                          | Range Rings  |
| Satellite                                     | SAT                          | RTK                         | Real-time Kinematic                                    |
| S-Band (applies to Radar)                     | S-BAND                       | RX <sup>(See note 2)</sup>  | Receiver   |
| Scan to Scan                                  | SC/SC                        | S                           | South  |
| Search And Rescue Transponder                 | SART                         | SAIL                        | Sailing Vessel (applies to AIS)                        |
| Search And Rescue Vessel (applies to AIS)     | SARV                         | SART                        | Search And Rescue Transponder                          |
| Select  | SEL                          | SARV                        | Search And Rescue Vessel (applies to AIS)              |
| September                                     | SEP                          | SAT                         | Satellite  |
| Sequence                                      | SEQ                          | S-BAND                      | S-Band (applies to Radar)                              |
| Set (i.e., set and drift, or setting a value) | SET                          | SC/SC                       | Scan to Scan   |
| Ship's Time                                   | TIME                         | SDME                        | Speed and Distance Measuring Equipment                 |
| Short Pulse                                   | SP                           | SEA                         | Anti Clutter Sea                                       |
| Signal to Noise Ratio                         | SNR                          | SEL                         | Select   |
| Simulation                                    | SIM <sup>(See note 4)</sup>  | SEP                         | September  |
| Slave   | SLAVE                        | SEQ                         | Sequence   |
| South   | S                            | SET                         | Set (i.e., set and drift, or setting a value)          |
| Speed   | SPD                          | SF CNT                      | Safety Contour   |
| Speed and Distance Measuring Equipment        | SDME                         | SIM <sup>(See note 4)</sup> | Simulation   |
| Speed Over the Ground                         | SOG                          | SLAVE                       | Slave  |
| Speed Through the Water                       | STW                          | SNR                         | Signal to Noise Ratio                                  |
| Stabilized                                    | STAB                         | SOG                         | Speed Over the Ground                                  |
| Standby                                       | STBY                         | SP                          | Short Pulse  |
| Starboard/Starboard Side                      | STBD                         | SPD                         | Speed  |
| Station                                       | STN                          | STAB                        | Stabilized   |
| Symbol(s)                                     | SYM                          | STBD                        | Starboard/Starboard Side                               |
| Synchronisation                               | SYNC                         | STBY                        | Standby  |
| Target  | TGT                          | STN                         | Station  |
| Target Tracking                               | TT                           | STW                         | Speed Through the Water                                |
| Test  | TEST                         | SYM                         | Symbol(s)  |
| Time  | TIME                         | SYNC                        | Synchronisation  |
| Time Difference                               | TD                           | T                           | True   |
| Time Dilution Of Precision                    | TDOP                         | TCPA                        | Time to CPA  |
| Time Of Arrival                               | TOA                          | TCS                         | Track Control System                                   |
| Time Of Departure                             | TOD                          | TD                          | Time Difference  |
| Time to CPA                                   | TCPA                         | TDOP                        | Time Dilution Of Precision                             |
| Time To Go                                    | TTG                          | TEST                        | Test   |
| Time to Wheel Over Line                       | TWOL                         | TGT                         | Target   |
| Track   | TRK                          | THD                         | Transmitting Heading Device                            |
| Track Control System                          | TCS                          | TIME                        | Ship's Time  |
| Track Made Good                               | TMG <sup>(See note 5)</sup>  | TIME                        | Time   |
| Trail(s)                                      | TRAIL                        | TM                          | True Motion  |
| Transceiver                                   | TXRX <sup>(See note 2)</sup> | TMG <sup>(See note 5)</sup> | Track Made Good  |

| Term   | Abbreviation                  | Abbreviation                  | Term   |
|--|-------------------------------|-------------------------------|--|
| Transferred Line Of Position   | TPL                           | TOA                           | Time Of Arrival                                      |
| Transmitter  | TX <sup>(See note 2)</sup>    | TOD                           | Time Of Departure                                    |
| Transmitting Heading Device  | THD                           | TOW                           | Vessel Engaged in Towing Operations (applies to AIS) |
| Trial  | TRIAL <sup>(See note 4)</sup> | TPL                           | Transferred Line Of Position                         |
| Trigger Pulse  | TRIG                          | TRAIL                         | Trail(s)   |
| True   | T                             | TRIAL <sup>(See note 4)</sup> | Trial  |
| True Motion  | TM                            | TRIG                          | Trigger Pulse  |
| Tune   | TUNE                          | TRK                           | Track  |
| Ultrahigh Frequency  | UHF                           | TT                            | Target Tracking                                      |
| Universal Time, Co-ordinated   | UTC                           | TTG                           | Time To Go   |
| Unstabilised   | UNSTAB                        | TUNE                          | Tune   |
| Variable Range Marker  | VRM                           | TWOL                          | Time to Wheel Over Line                              |
| Variation  | VAR                           | TX <sup>(See note 2)</sup>    | Transmitter  |
| Vector   | VECT                          | TXRX <sup>(See note 2)</sup>  | Transceiver  |
| Very High Frequency  | VHF                           | UHF                           | Ultrahigh Frequency                                  |
| Very Low Frequency   | VLf                           | UNSTAB                        | Unstabilised   |
| Vessel Aground (applies to AIS)                                      | GRND                          | UTC                           | Universal Time, Co-ordinated                         |
| Vessel at Anchor (applies to AIS)                                    | ANCH                          | UWE                           | Vessel Underway Using Engine (applies to AIS)        |
| Vessel Constrained by Draught (applies to AIS)                       | VCD                           | VAR                           | Variation  |
| Vessel Engaged in Diving Operations (applies to AIS)                 | DIVE                          | VCD                           | Vessel Constrained by Draught (applies to AIS)       |
| Vessel Engaged in Dredging or Underwater Operations (applies to AIS) | DRG                           | VDR                           | Voyage Data Recorder                                 |
| Vessel Engaged in Towing Operations (applies to AIS)                 | TOW                           | VECT                          | Vector   |
| Vessel Not Under Command (applies to AIS)                            | NUC                           | VHF                           | Very High Frequency                                  |
| Vessel Restricted in Manoeuvrability) (applies to AIS)               | RIM                           | VID                           | Video  |
| Vessel Traffic Service   | VTs                           | VLf                           | Very Low Frequency                                   |
| Vessel Underway Using Engine (applies to AIS)                        | UWE                           | VOY                           | Voyage   |
| Video  | VID                           | VRM                           | Variable Range Marker                                |
| Voyage   | VOY                           | VTs                           | Vessel Traffic Service                               |
| Voyage Data Recorder   | VDR                           | W                             | West   |
| Warning  | WARNING                       | WARNING                       | Warning  |
| Water  | WAT                           | WAT                           | Water  |
| Waypoint   | WPT                           | WOL                           | Wheel Over Line                                      |
| West   | W                             | WOT                           | Wheel Over Time                                      |
| Wheel Over Line  | WOL                           | WPT                           | Waypoint   |
| Wheel Over Time  | WOT                           | X-BAND                        | X-Band (applies to Radar)                            |
| X-Band (applies to Radar)  | X-BAND                        | XTD                           | Cross Track Distance                                 |

### List of Units of Measurement and Abbreviations

| Unit              | Abbreviation | Abbreviation | Unit              |
|-------------------|--------------|--------------|-------------------|
| cable length      | cbl          | cbl          | cable length      |
| cycles per second | cps          | cps          | cycles per second |
| degree(s)         | deg          | deg          | degree(s)         |
| fathom(s)         | fm           | fm           | fathom(s)         |
| feet/foot         | ft           | ft           | feet/foot         |
| gigaHertz         | GHz          | GHz          | gigaHertz         |
| hectoPascal       | hPa          | hPa          | hectoPascal       |
| Hertz             | Hz           | Hz           | Hertz             |
| hour(s)           | hr(s)        | hr(s)        | hour(s)           |
| kiloHertz         | kHz          | kHz          | kiloHertz         |
| kilometre         | km           | km           | kilometre         |
| kiloPascal        | kPa          | kPa          | kiloPascal        |
| knot(s)           | kn           | kn           | knot(s)           |
| megaHertz         | MHz          | MHz          | megaHertz         |
| minute(s)         | min          | min          | minute(s)         |
| Nautical Mile(s)  | NM           | NM           | Nautical Mile(s)  |

#### Notes:

1. Terms and abbreviations used in nautical charts are published in relevant IHO publications and are not listed here.
2. In general, terms should be presented using lower case text and abbreviations should be presented using upper case text. Those abbreviations that may be presented using lower case text are identified in the list, e.g. "dGNSS" or "Rx".
3. Abbreviations may be combined, e.g. "CPA LIM" or "T CRS". When the abbreviation for the standard term "Relative" is combined with another abbreviation, the abbreviation "R" should be used instead of "REL", e.g. "R CRS".
4. The use of the abbreviations "SIM" and "TRIAL" are not intended to replace the appropriate symbols listed in annex 1.
5. The term "Course Made Good" has been used in the past to describe "Track Made Good". This is a misnomer in that "courses" are directions steered or intended to be steered with respect to a reference meridian. "Track Made Good" is preferred over the use of "Course Made Good".
6. Where information is presented using SI units, the respective abbreviations should be used.

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## **ANNEX 9**

### **DRAFT REVISED ASSEMBLY RESOLUTION**

#### **RECOMMENDATION ON THE USE OF ADEQUATELY QUALIFIED DEEP-SEA PILOTS IN THE NORTH SEA, ENGLISH CHANNEL AND SKAGERRAK**

THE ASSEMBLY,

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

RECOGNIZING that navigational safety plays an important part in reducing the risk of incidents at sea likely to cause loss of life, personal injury, marine pollution or damage to property,

RECOGNIZING FURTHER that, in appropriate circumstances, competent deep-sea pilots can make an effective contribution to the safety of navigation in confined and busy waters such as the North Sea, the English Channel and Skagerrak,

NOTING the Rules and Regulations for the Good Government of Deep-Sea Pilotage in the North Sea, English Channel and Skagerrak drawn up by the North Sea Pilotage Commission in 1976,

CONSIDERING that the contents of resolution A.486(XII) adopted on 19 November 1981 on this subject is now in need of revision to reflect the changes and developments that have taken place since its adoption,

HAVING REGARD to the Directive EC/79/115 adopted by the Council of the European Communities on 21 December 1978 concerning pilotage of vessels by deep-sea pilots in the North Sea and English Channel,

HAVING CONSIDERED the recommendations made by [the Sub-Committee on Safety of Navigation at its fifty-ninth session], based on the authorization by the Maritime Safety Committee at its ninetieth session,

1. RECOMMENDS Member Governments to take all necessary and appropriate measures to encourage the Masters and Owners of vessels entitled to fly the flag of their State transiting the North Sea, English Channel and Skagerrak, when choosing to avail themselves of a deep-sea pilot, to make use of only the services of adequately qualified and licensed deep-sea pilots,

2. INVITES the Governments of the coastal States of the North Sea, English Channel and Skagerrak:

- .1 to provide information on how to obtain the services of adequately qualified and licensed deep-sea pilots;
- .2 to take all necessary and appropriate measures to ensure that only adequately qualified and licensed pilots are available through the Pilotage Services; and

- .3 to take all necessary and appropriate measures to ensure that all adequately qualified deep-sea pilots are in possession of a deep-sea pilot's identity card, in the form shown in the annex to the present recommendation and issued by a competent pilotage authority.
- 3. REVOKES resolution A.486(XII).

ANNEX

**EXAMPLE OF THE DEEP-SEA PILOT'S IDENTITY CARD FOR THE NORTH SEA,  
ENGLISH CHANNEL AND SKAGERRAK**

*(Front of the card)*

|   |  |
|---|--|
| <div style="border: 1px solid black; width: 50%; margin: 0 auto; padding: 5px;">(Flag picture of issuing country)</div>               |  |
| <p>Deep-Sea Pilot Identity card</p> <p>Licence No.....</p>  |  |
| <p>Place and date of issue:</p> <p>Expiry date:</p> <p>Issuing Authority:</p> <p>.....</p> <p>(Signature of the issuing official)</p> | <div style="border: 1px solid black; width: 150px; height: 100px; margin: 0 auto; padding: 10px;">Seal/Stamp</div> |

*(Back of the card)*

|   |  |
|---|--|
| <p>Mr/Mrs.....</p> <p>(Forename and surname)</p> <p>Date of birth:</p>  | <div style="border: 1px solid black; width: 200px; height: 100px; margin: 0 auto; padding: 10px;">PHOTOGRAPH</div> |
| <p>Is licensed to act as a Deep-Sea Pilot in the following areas:</p> <p>Limitations (if any):</p> <p>All Authorities involved are requested to render the holder aid in the pursuance of pilot duties.</p> |  |
| <p>.....</p> <p>Signature of the Pilot</p>  |  |

The North Sea, English Channel and Skagerrak deep-sea pilot's identity card should include:

- .1 the holder's name and date of birth;
- .2 the holder's signature;
- .3 a photo of the holder;
- .4 area and limitations;
- .5 the licence number;
- .6 issue and expiry dates;
- .7 name, signature, seal/stamp of the issuing authority;
- .8 the flag picture of issuing State; and

The identity card should be in the following format:

- .1 The text of the identity card should be in English plus a national language.
- .2 The colour should be white with black printing.
- .3 The size of the card should be 10 cm by 7 cm.

\*\*\*

## **ANNEX 10**

### **DRAFT REVISED ASSEMBLY RESOLUTION**

#### **RECOMMENDATION ON THE USE OF ADEQUATELY QUALIFIED DEEP-SEA PILOTS IN THE BALTIC SEA**

THE ASSEMBLY,

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

RECOGNIZING that navigational safety plays an important part in reducing the risk of incidents at sea likely to cause loss of life, personal injury, marine pollution or damage to property,

RECOGNIZING that the Baltic Sea, with the exception of the Russian Federation waters and the Russian Federation economic zone, was designated a Particularly Sensitive Sea Area (PSSA) by the Organization in 2005 (resolution MEPC.136(53)),

RECOGNIZING that the Baltic Sea is defined as a "special area" according to several Annexes to the International Convention for the Prevention of Pollution from Ships (MARPOL, as amended), which means stricter requirements for maritime transport in this area,

RECOGNIZING FURTHER that, in appropriate circumstances, competent Deep-Sea Pilots can make an effective contribution to the safety of navigation in confined and busy waters such as the Baltic Sea,

CONSIDERING that the contents of resolution A.480 (XII) adopted on 19 November 1981 on this subject is now in need of revision to reflect the changes and developments that have taken place since its adoption,

HAVING CONSIDERED the recommendations made by [the Sub-Committee on Safety of Navigation at its fifty-ninth session], based on the authorization by the Maritime Safety Committee at its ninetieth session,

1. RECOMMENDS Member Governments to take all necessary and appropriate measures to encourage the Masters and Owners of vessels entitled to fly the flag of their State transiting the Baltic Sea, when choosing to avail themselves of a Deep-Sea Pilot, to make use of only the services of adequately qualified and licensed deep-sea pilots,

2. INVITES the Governments of the coastal States of the Baltic Sea:

- .1 to provide information on how to obtain the services of adequately qualified and licensed deep-sea pilots;
- .2 to take all necessary and appropriate measures to ensure that only adequately qualified and licensed pilots are available through the Pilotage Services; and

- .3 to take all necessary and appropriate measures to ensure that all adequately qualified deep-sea pilots are in possession of a Deep-Sea Pilot's identity card, in the form shown in the annex to the present recommendation and issued by a competent pilotage authority.
- 3. REVOKES resolution A.480 (XII).

ANNEX

EXAMPLE OF THE DEEP-SEA PILOT'S IDENTITY CARD FOR THE BALTIC SEA

*Front of the card:*

|   |  |                           |
|---|--|---------------------------|
| [Flag]  | <b>BALTIC DEEP-SEA PILOT<br/>IDENTITY CARD</b> | YY-XXX                    |
| <b>Name:</b> _____<br><b>Date of birth:</b> [Date Month Year]<br><b>Signature:</b> _____<br><b>Area:</b> [BALTIC SEA]<br><b>Limitations:</b> [None] |  | Photo<br>of the<br>holder |
| Issued: YYYY-MM-DD      Expiry date: YYYY-MM-DD   |  |                           |

*Back of the card:*

|   |                              |
|---|------------------------------|
| This deep-sea pilot identity card has been issued by [insert issuing CPA] in accordance with agreement of the Baltic Pilotage Authorities Commission (BPAC) to act as an adequately qualified deep-sea pilot in the Baltic Sea. Authorities involved are requested to render the holder aid in the pursuance of pilot duties. |                              |
| Logo of<br>issuing<br>CPA   | Signature of the issuing CPA |
| Name, address and contact information of the issuing Competent Pilotage Authority (CPA)   |                              |

The Baltic deep-sea pilot's identity card should include:

- .1 the holder's name and date of birth;
- .2 the holder's signature;
- .3 a photo of the holder;
- .4 area and limitations;
- .5 the licence number (national code and specific numbers);
- .6 issue and expiry dates;
- .7 name, signature, address and contact information of the issuing Competent Pilotage Authority (CPA);
- .8 the flag picture of issuing State; and
- .9 the logo of BPAC.

The identity card should be in the following format:

- .1 the text should be in English and may also be in the national language or languages;
- .2 the background colour of the card should be white with black printing and, if possible, with a red marking; and
- .3 the size of the card should be form of an identity card.

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**ANNEX 11**

**DRAFT MSC CIRCULAR**

**UNIFIED INTERPRETATIONS OF COLREG 1972, AS AMENDED**

1 The Maritime Safety Committee, at its eighty-fourth session (7 to 16 May 2008), with a view to providing more specific guidance for certain rules, which are open to different interpretations contained in IMO instruments, approved the unified interpretations of COLREG 1972, as amended, prepared by the Sub-Committee on Safety of Navigation, as set out in the annex.

2 The Maritime Safety Committee, [at its ninety-third session (14 to 23 May 2014)], reviewed and approved a revised unified interpretation of annex I, section 9(b) – Horizontal sectors of COLREG 1972, as amended, prepared by the Sub-Committee on Safety of Navigation [at its fifty-ninth session (2 to 6 September 2013)], as set out in the annex.

3 Member Governments are invited to use the annexed unified interpretations with respect to Rule 27(b)(i) and annex I, section 3(b) as guidance when applying relevant provisions of COLREGs to vessels constructed on or after 1 January 2009, whilst the revised unified interpretation with respect to annex I, section 9(b) be used as guidance to vessels constructed on or after [1 July 2015] and to bring the unified interpretations to the attention of all parties concerned.

4 This circular revokes MSC.1/Circ.1260 and MSC.1/Circ.1260/Corr.1.

ANNEX

**UNIFIED INTERPRETATIONS OF COLREG 1972, AS AMENDED**

**Rule 27(b)(i) – Vessels not under command or restricted in their ability to manoeuvre**

"Not under command" (NUC) all-round red lights (Rule 27(a)(i)) may be used as part of the "Restricted Ability to Manoeuvre" (RAM) lights provided the vertical and horizontal distances required by COLREG 1972 are complied with and the electrical system is arranged so that the all-round white light (RAM) may be switched on independently from the two all-round red lights (NUC).

**Annex I, section 3(b) – Horizontal positioning and spacing of lights**

The term "near the side" is interpreted as being a distance of not more than 10 per cent of the breadth of the vessel inboard from the side, up to a maximum of 1 metre. Where the application of above requirement is impractical (e.g. small ships with superstructure of reduced width), exemption may be given on the basis of the Flag Authority acceptance.

**Annex I, section 9(b) – Horizontal sectors**

1. In order to comply with the one (1) mile requirement in 9(b)(ii), the screening of each all-round lights shall be as follows:

$$\theta 2 \leq 360 - \theta 1$$

where

$\theta 1$ : Screened angle of one all-round light

$\theta 2$ : Screened angle of the other all-round light

2. Screenings details and the arrangement of obstacles are to be considered when carrying out the drawing approval process.

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## ANNEX 12

### PROPOSED BIENNIAL AGENDA FOR THE 2014-2015 BIENNIUM

| NAVIGATION, COMMUNICATIONS AND SEARCH AND RESCUE (NCSR) |   |                 |                       |                          |                        |
|---|---|-----------------|-----------------------|--------------------------|------------------------|
| PLANNED OUTPUTS 2014-2015                               |   |                 |                       |                          |                        |
| Number  | Description   | Parent organ(s) | Coordinating organ(s) | Associated organ(s)      | Target completion year |
| 1.1.2.2   | Consideration of IACS unified interpretations   | MSC/MEPC        |                       | III/NCSR/PPR/SDC/SSE/CCC | Continuous             |
| 1.1.2.7   | Cooperation with IHO: hydrographic issues   | MSC             | NCSR                  |                          | Continuous             |
| 1.1.2.10  | Cooperation with ICAO: annual meeting of the Joint ICAO/IMO Working Group on the Harmonization of Aeronautical and Maritime Search and Rescue (monitoring of SAR developments, continuous review of the IAMSAR Manual and developing recommendations) | MSC             | NCSR                  | SDC                      | Continuous             |
| 1.1.2.12  | Cooperation with ITU: consideration of matters related to the Radiocommunication ITU R Study Group and ITU World Radiocommunication Conference  | MSC             | NCSR                  |                          | Continuous             |
| 1.1.2.15  | Liaison statements to/from IALA: VTS, aids to navigation, e-navigation and AIS matters  | MSC             | NCSR                  |                          | Continuous             |
| 1.1.2.16  | Liaison statements to/from IEC: radiocommunications and safety of navigation  | MSC             | NCSR                  |                          | Continuous             |
| 1.1.2.17  | Liaison statements to/from IHO: hydrographic matters and promotion of ENC's covering various parts of the globe   | MSC             | NCSR                  |                          | Continuous             |
| 1.1.2.19  | Liaison statements to/from ITU: radiocommunications   | MSC             | NCSR                  |                          | Continuous             |
| 1.1.2.20  | Liaison statements to/from UNHCR: persons rescued at sea  | MSC/FAL         | NCSR                  |                          | Continuous             |
| 1.1.2.21  | Liaison statements to/from WMO: meteorological issues   | MSC             | NCSR                  |                          | Continuous             |
| 1.3.1.3   | Identification of PSSAs, taking into account article 211 and other related articles of UNCLOS   | MEPC            | NCSR                  |                          | Continuous             |
| 1.3.5.2   | Development of amendments to the IAMSAR Manual  | MSC             | NCSR                  |                          | Continuous             |

| NAVIGATION, COMMUNICATIONS AND SEARCH AND RESCUE (NCSR) |  |                 |                       |                      |                        |
|---|--|-----------------|-----------------------|----------------------|------------------------|
| PLANNED OUTPUTS 2014-2015                               |  |                 |                       |                      |                        |
| Number  | Description  | Parent organ(s) | Coordinating organ(s) | Associated organ(s)  | Target completion year |
| 2.0.3.1   | Technical guidance for the establishment of regional MRCCs and MRSCs in Africa, supported by the ISAR Fund   | MSC             | Secretariat           |                      | Continuous             |
| 2.0.3.2   | Further development of the Global SAR Plan for the provision of maritime SAR services, including procedures for routeing distress information in the GMDSS | MSC             | NCSR                  |                      | Continuous             |
| 2.0.3.4   | Reports on the Cospas-Sarsat System monitored and the list of IMO documents and publications which should be held by MRCCs updated                         | MSC             | Secretariat           | NCSR                 | Continuous             |
| 2.0.3.5   | Development of guidelines on harmonized aeronautical and maritime search and rescue procedures, including SAR training matters                             | MSC             | NCSR                  |                      | 2014                   |
| 5.1.2.2   | Development of measures to protect the safety of persons rescued at sea  | MSC/FAL         | NCSR                  | III                  | 2014                   |
| 5.2.1.17  | Development of a mandatory Code of ships operating in polar waters   | MSC/MEPC        | SDC                   | III/NCSR/PPR SSE/CCC | 2014                   |
| 5.2.4.1   | New routeing measures and mandatory ship reporting systems, including associated protective measures for PSSAs   | MSC             | NCSR                  |                      | Continuous             |
| 5.2.4.4   | Implementation of LRIT system  | MSC             | NCSR                  |                      | Continuous             |
| 5.2.4.6   | Consideration of LRIT matters  | MSC             | NCSR                  |                      | Continuous             |
| 5.2.4.13  | Revision of the Guidelines for the on board operational use of shipborne automatic identification systems (AIS)  | MSC             | NCSR                  |                      | 2014                   |
| 5.2.4.14  | Consolidation of ECDIS-related IMO circulars   | MSC             | NCSR                  |                      | 2014                   |
| 5.2.4.15  | Development of explanatory footnotes to SOLAS regulations V/15, V/18, V/19 and V/27  | MSC             | NCSR                  |                      | 2014                   |

| NAVIGATION, COMMUNICATIONS AND SEARCH AND RESCUE (NCSR) |   |                 |                       |                     |                        |
|---|---|-----------------|-----------------------|---------------------|------------------------|
| PLANNED OUTPUTS 2014-2015                               |   |                 |                       |                     |                        |
| Number  | Description   | Parent organ(s) | Coordinating organ(s) | Associated organ(s) | Target completion year |
| 5.2.4.16  | Application of the satellite navigation system "BeiDou" in the maritime field   | MSC             | NCSR                  |                     | 2014                   |
| 5.2.4.17  | Consideration of ECDIS matters related to the implementation of the carriage requirements in SOLAS regulations V/19.2.10 and V/19.2.11                                  | MSC             | NCSR                  |                     | 2014                   |
| 5.2.5.1   | Consideration of operational and technical coordination provisions of maritime safety information (MSI) services, including development and review of related documents | MSC             | NCSR                  |                     | Continuous             |
| 5.2.5.3   | Further development of the GMDSS master plan on shore-based facilities  | MSC             | NCSR                  |                     | Continuous             |
| 5.2.5.4   | Consideration of developments in Inmarsat and Cospas-Sarsat   | MSC             | NCSR                  |                     | Continuous             |
| 5.2.5.5   | Developments in maritime radiocommunication systems and technology  | MSC             | NCSR                  |                     | 2014                   |
| 5.2.5.7   | High-level review approved and Draft detailed review completed of the Global Maritime Distress and Safety System (GMDSS)  | MSC             | NCSR                  | HTW                 | 2014                   |
| 5.2.6.1   | Development of an e navigation strategy implementation plan   | MSC             | NCSR                  | HTW                 | 2014                   |
| 7.1.2.2   | Designation of Special Areas and PSSAs and adoption of their associated protective measures   | MEPC            | NCSR                  |                     | Continuous             |
| 7.2.1.1   | Biannual MSC circulars on designation of maritime assistance services (MAS)   | MSC             | NCSR                  |                     | Annual                 |

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## **ANNEX 13**

### **PROVISIONAL AGENDA FOR NCSR 1**

- Opening of the session and election of Chairman and Vice-Chairman for 2014
- 1 Adoption of the agenda
  - 2 Decisions of other IMO bodies
  - 3 Routeing of ships, ship reporting and related matters
  - 4 Consideration of ECDIS matters related to the implementation of the carriage requirements in SOLAS regulations V/19.2.10 and V/19.2.11
  - 5 Consolidation of ECDIS-related IMO circulars
  - 6 Consideration of the application of the satellite navigation system "BeiDou" in the maritime field
  - 7 Development of explanatory footnotes to SOLAS regulations V/15, V/18, V/19 and V/27
  - 8 Consideration of LRIT-related matters
  - 9 Development of an e-navigation strategy implementation plan
  - 10 Development of performance standards for multi-system shipborne navigation receivers
  - 11 Revision of the Guidelines for the onboard operational use of shipborne automatic identification systems (AIS)
  - 12 Developments in maritime radiocommunication systems and technology
  - 13 Review and modernization of the Global Maritime Distress and Safety System (GMDSS)
  - 14 Further development of the GMDSS master plan on shore-based facilities
  - 15 Consideration of operational and technical coordination provisions of maritime safety information (MSI) services, including the development and review of related documents
  - 16 Consideration of radiocommunication ITU-R Study Group matters
  - 17 Consideration of ITU World Radiocommunication Conference matters
  - 18 Consideration of developments in Inmarsat and Cospas-Sarsat
  - 19 Development of guidelines on harmonized aeronautical and maritime search and rescue procedures, including SAR training matters

- 20 Further development of the Global SAR Plan for the provision of maritime SAR services, including procedures for routeing distress information in the GMDSS
- 21 Development of amendments to the IAMSAR Manual
- 22 Development of measures to protect the safety of persons rescued at sea
- 23 Development of a mandatory Code for ships operating in polar waters
- 24 Consideration of IACS unified interpretations
- 25 Biennial agenda and provisional agenda for NCSR 2
- 26 Election of Chairman and Vice-Chairman for 2015
- 27 Any other business
- 28 Report to the Maritime Safety Committee

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## ANNEX 14

### REPORT ON THE STATUS OF PLANNED OUTPUTS FOR THE 2012-2013 BIENNIUM

#### STATUS OF PLANNED OUTPUTS

| SAFETY OF NAVIGATION (NAV)  |  |                        |                 |                       |                       |                             |                             |   |
|---|--|------------------------|-----------------|-----------------------|-----------------------|-----------------------------|-----------------------------|---|
| Planned output number in the High-level Action Plan for 2012-2013 | Description  | Target completion year | Parent organ(s) | Coordinating organ(s) | Associated organ(s)   | Status of output for Year 1 | Status of output for Year 2 | References  |
| 1.1.2.2   | Cooperation with IACS: consideration of unified interpretations  | Continuous             | MSC/MEPC        |                       | BLG/DE/FP/FSI/NAV/SLF | Ongoing                     | Ongoing                     | MSC 78/26, paragraph 22.12; NAV 58/14, section 9          |
| 1.1.2.7   | Cooperation with IHO: hydrographic issues  | Continuous             | MSC             | NAV                   |                       | Ongoing                     | Ongoing                     |   |
| 1.1.2.12  | Cooperation with ITU: consideration of matters related to the Radiocommunication ITU R Study Group and ITU World Radiocommunication Conference | Continuous             | MSC             | COMSAR                | NAV                   | Ongoing                     | Ongoing                     | MSC 69/22, paragraphs 5.69 and 5.70; NAV 58/14, section 5 |
| 1.1.2.15  | Liaison statements to/from IALA: VTS, aids to navigation, e-navigation and AIS matters   | Continuous             | MSC             | NAV                   |                       | Ongoing                     | Ongoing                     |   |
| 1.1.2.16  | Liaison statements to/from IEC: radiocommunications and safety of navigation   | Continuous             | MSC             | COMSAR                | NAV                   | Ongoing                     | Ongoing                     |   |
| 1.1.2.17  | Liaison statements to/from IHO: hydrographic matters and promotion of ENC's covering various parts of the globe                                | Continuous             | MSC             | NAV                   |                       | Ongoing                     | Ongoing                     |   |

| SAFETY OF NAVIGATION (NAV)  |   |                        |                 |                                      |                              |                             |                             |   |
|---|---|------------------------|-----------------|--------------------------------------|------------------------------|-----------------------------|-----------------------------|---|
| Planned output number in the High-level Action Plan for 2012-2013 | Description   | Target completion year | Parent organ(s) | Coordinating organ(s)                | Associated organ(s)          | Status of output for Year 1 | Status of output for Year 2 | References  |
| 1.1.2.19  | Liaison statements to/from ITU: radiocommunications   | Continuous             | MSC             | COMSAR                               | NAV                          | Ongoing                     | Ongoing                     | MSC 69/22, paragraphs 5.69 and 5.70; NAV 58/14, section 5 |
| 1.1.2.20  | Liaison statements to/from UNHCR: persons rescued at sea                                      | Continuous             | MSC/FAL         | COMSAR                               | NAV                          | Ongoing                     | Ongoing                     |   |
| 1.1.2.21  | Liaison statements to/from WMO: meteorological issues   | Continuous             | MSC             | NAV                                  |                              | Ongoing                     | Ongoing                     |   |
| 1.3.1.3   | Identification of PSSAs, taking into account article 211 and other related articles of UNCLOS | Continuous             | MEPC            | NAV                                  |                              | Ongoing                     | Ongoing                     |   |
| 2.0.1.18  | Unified interpretations of the MARPOL regulations   | Continuous             | MEPC            | BLG/COMSAR/DE/DSC/FP/FSI/NAV/SLF/STW |                              | Ongoing                     | Ongoing                     |   |
| 5.1.2.1   | Making the provisions of MSC.1/Circ.1206/Rev.1 mandatory                                      | 2013                   | MSC             | DE                                   | FSI/NAV/STW                  | In progress                 | Completed                   |   |
| 5.2.1.7   | Review of general cargo ship safety   | 2013                   | MSC             |                                      | DE/FSI/NAV/SLF/STW           | Completed                   | Completed                   | MSC 90/28, paragraph 25.20; NAV 59/20, section 8          |
| 5.2.1.17  | Development of a mandatory Code of ships operating in polar waters                            | 2014                   | MSC/MEPC        | DE                                   | COMSAR/FP/NAV/SLF / STW      | In progress                 | In progress                 | MSC 86/26, paragraph 23.32                                |
| 5.2.1.18  | Development of a non-mandatory instrument on regulations for non-convention ships             | 2013                   | MSC             | FSI                                  | BLG/COMSAR/DE/FP/NAV/SLF/STW | In progress                 | Postponed                   |   |

| SAFETY OF NAVIGATION (NAV)  |  |                        |                 |                       |                       |                             |                             |   |
|---|--|------------------------|-----------------|-----------------------|-----------------------|-----------------------------|-----------------------------|---|
| Planned output number in the High-level Action Plan for 2012-2013 | Description  | Target completion year | Parent organ(s) | Coordinating organ(s) | Associated organ(s)   | Status of output for Year 1 | Status of output for Year 2 | References  |
| 5.2.1.25  | Development of guidelines for wing-in-ground craft   | 2013                   | MSC             | DE                    | COMSAR/FP/NAV/SLF/STW | In progress                 | Postponed                   | MSC 88/26, paragraph 23.30  |
| 5.2.4   | Development of performance standards for multi-system shipborne navigation receivers                           | 2015                   | MSC             | NAV                   |                       | Ongoing                     | Ongoing                     | MSC 90/28, paragraph 25.25  |
| 5.2.4.1   | New routeing measures and mandatory ship reporting systems, including associated protective measures for PSSAs | Continuous             | MSC             | NAV                   |                       | Ongoing                     | Ongoing                     | MSC 72/23, paragraphs 10.69 to 10.71, 20.41 and 20.42; NAV 58/14, section 3 |
| 5.2.4.3   | Amendments to the <i>General Provisions on Ships' Routeing</i> (resolution A.572(14)), as amended),            | 2013                   | MSC             | NAV                   |                       | Completed                   | Completed                   |   |
| 5.2.4.7   | Amendments to the Performance standards for VDR and S-VDR  | 2012                   | MSC             | NAV                   |                       | Postponed                   | Completed                   |   |
| 5.2.4.8   | Development of policy and new symbols for AIS Aids to Navigation   | 2013                   | MSC             | NAV                   |                       | Completed                   | Completed                   | MSC 86/26, paragraphs 23.27; NAV 59/20, section 7                           |

| SAFETY OF NAVIGATION (NAV)  |   |                        |                 |                       |                     |                             |                             |   |
|---|---|------------------------|-----------------|-----------------------|---------------------|-----------------------------|-----------------------------|---|
| Planned output number in the High-level Action Plan for 2012-2013 | Description   | Target completion year | Parent organ(s) | Coordinating organ(s) | Associated organ(s) | Status of output for Year 1 | Status of output for Year 2 | References  |
| 5.2.4.9   | Development of Performance Standards for Electronic Inclinometers   | 2012                   | MSC             | NAV                   | SLF                 | Completed                   | Completed                   | MSC 86/26, paragraph 23.28; NAV 57/15, section 11   |
| 5.2.4.11 (UO)   | Revision of the information contained in the existing annexes to the <i>Recommendation on the use of adequately qualified deep sea pilots in the North Sea, English Channel and Skagerrak</i> (resolution A.486(XII)) | 2013                   | MSC             | NAV                   |                     | Completed                   | Completed                   | MSC 90/28, paragraph 25.22; NAV 59/20, section 9  |
| 5.2.4.12 (UO)   | Revision of the information contained in the existing annexes to the <i>Recommendation on the use of adequately qualified deep-sea pilots in the Baltic</i> (resolution A.480(XII))                                   | 2013                   | MSC             | NAV                   |                     | Completed                   | Completed                   | MSC 90/28, paragraph 25.23; NAV 59/20, section 14   |
| 5.2.4.13 (UO)   | <i>Revision of the Guidelines for the on board operational use of shipborne automatic identification systems (AIS)</i>  | 2013                   | MSC             | NAV                   | COMSAR              | In progress                 | Completed                   | MSC 90/28, paragraph 25.24; NAV 59/20, section 10.<br><b>Note: The target completion date for this item for NAV is 2014</b> |

| SAFETY OF NAVIGATION (NAV)  |  |                        |                 |                       |                     |                             |                             |   |
|---|--|------------------------|-----------------|-----------------------|---------------------|-----------------------------|-----------------------------|---|
| Planned output number in the High-level Action Plan for 2012-2013 | Description  | Target completion year | Parent organ(s) | Coordinating organ(s) | Associated organ(s) | Status of output for Year 1 | Status of output for Year 2 | References  |
| 5.2.4.14 (UO)   | Consolidation of ECDIS-related IMO circulars   | 2014                   | MSC             | NAV                   |                     | In progress                 | In progress                 | MSC 90/28, paragraph 25.26; NAV 59/20, section 11 |
| 5.2.4.15 (UO)   | Development of explanatory footnotes to SOLAS regulations V/15, V/18, V/19 and V/27  | 2014                   | MSC             | NAV                   |                     | In progress                 | In progress                 | MSC 90/28, paragraph 25.27; NAV 59/20, section 13 |
| 5.2.4.16 (UO)   | Application of the satellite navigation system "BeiDou" in the maritime field  | 2014                   | MSC             | NAV                   |                     | In progress                 | In progress                 | MSC 91/22 paragraph 19.20; NAV 59/20, section 4   |
| 5.2.4.17 (UO)   | Consideration of ECDIS matters related to the implementation of the carriage requirements in SOLAS regulations V/19.2.10 and V/19.2.11 | 2014                   | MSC             | NAV                   |                     | In progress                 | Completed                   | MSC 91/22, paragraph 19.21; NAV 59/20, section 12 |
| 5.2.5.7 (UO)  | Draft High-level review completed and First outline of the detailed review of the Global Maritime Distress and Safety System (GMDSS)   | 2013                   | MSC             | COMSAR                | NAV/STW             | In progress                 | Completed                   | MSC 90/28, paragraph 25.21                        |

| SAFETY OF NAVIGATION (NAV)  |  |                        |                 |                       |                            |                             |                             |  |
|---|--|------------------------|-----------------|-----------------------|----------------------------|-----------------------------|-----------------------------|--|
| Planned output number in the High-level Action Plan for 2012-2013 | Description  | Target completion year | Parent organ(s) | Coordinating organ(s) | Associated organ(s)        | Status of output for Year 1 | Status of output for Year 2 | References                                       |
| 5.2.6.1   | Development of an e-navigation strategy implementation plan  | 2013                   | MSC             | NAV                   | COMSAR/STW                 | In progress                 | Completed                   | MSC 81/25, paragraph 23.34; NAV 59/20, section 6 |
| 7.1.2.2   | Mandatory instruments: designation of Special Areas and PSSAs and adoption of their associated protective measures       | Continuous             | MEPC            | NAV                   |                            | Ongoing                     | Ongoing                     |  |
| 7.2.1.1   | Biannual MSC circulars on designation of maritime assistance services (MAS)  | Annual                 | MSC             | NAV                   |                            | Completed                   | Completed                   |  |
| 12.1.2.1  | Collection and analysis of casualty and PSC data to identify trends and develop knowledge and risk-based recommendations | Continuous             | MSC / MEPC      | FSI                   | BLG/COMSAR/ DE/FP/NAV/ STW | Ongoing                     | Ongoing                     | MSC 70/23, paragraphs 9.17 and 20.4              |

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**ANNEX 15**

**DRAFT MSC CIRCULAR**

**GUIDANCE ON THE BRIDGE NAVIGATIONAL WATCH  
ALARM SYSTEM (BNWAS) AUTO FUNCTION**

1 The Maritime Safety Committee, at its [ninety-third session (14 to 23 May 2014)], with a view to providing more specific guidance for the automatic function specified in resolution MSC.128(75) – *Performance Standards for a Bridge Navigational Watch Alarm system (BNWAS)*, approved the guidance, prepared by the Sub-Committee on Safety of Navigation at its fifty-ninth session (2 to 6 September 2013), as set out in the annex.

2 Member Governments are invited to use the guidance as an *interim* measure until such time as the performance standards can be reviewed and revised and, furthermore, bring this guidance to the attention of all parties concerned.

ANNEX

**GUIDANCE ON THE BRIDGE NAVIGATIONAL WATCH  
ALARM SYSTEM (BNWAS) AUTO FUNCTION**

1 SOLAS regulation V/19.2.2.3 requires the provision of a Bridge Navigational Watch Alarm System (BNWAS), which shall be in operation whenever the ship is under way at sea, whilst SOLAS regulation V/18 requires BNWAS to conform to appropriate performance standards not inferior to those adopted by the Organization (i.e. resolution MSC.128(75)).

2 Resolution MSC.128(75) – *Performance Standards for a Bridge Navigational Watch Alarm System (BNWAS)*, section 4.1.1.1 states that "the BNWAS should incorporate the following operational modes:

- Automatic (Automatically brought into operation whenever the ships heading or track control system is activated and inhibited when this system is not activated)
- Manual ON (In operation constantly)
- Manual OFF (Does not operate under any circumstances)".

3 At the fifty-fifth session of the NAV Sub-Committee, concerns were raised with respect to the use of the Automatic mode and NAV 55 concluded that the Automatic mode of the performance standard was therefore not usable on a ship compliant with the SOLAS Convention. It was considered that it would not be possible to change the performance standards before the date at which the carriage requirements came into force (1 July 2011). In order to conform with the performance standards, therefore, equipment would include the Automatic mode, despite that this operational mode should not be used on ships which are subject to the SOLAS Convention.

4 From the operational point of view, automatic interface with activation of the ship's heading or track control system (HCS/TCS) is a superfluous function because SOLAS regulation V/19.2.2.3 requires the BNWAS to be in operation whenever the ship is under way at sea. This creates an inconsistency between SOLAS regulation V/19.2.2.3 and the "Automatic mode" provisions in the performance standard. In addition, from the technical point of view, it is noted that this issue is also addressed in the "note" to section 3.1.1 of IEC 62616:2010 – Maritime navigation and radiocommunication equipment and systems – Bridge navigational watch alarm system (BNWAS), which states:

*"NOTE: The Automatic mode is not suitable for use on a ship conforming with regulation SOLAS V/19.2.2.3 which requires the BNWAS to be in operation whenever the ship is underway at sea".*

5 Accordingly, as an *interim* measure and pending a revision of the *Performance Standards for a Bridge Navigational Watch Alarm System (BNWAS)* – (resolution MSC.128(75)), the automatic operational mode, if it is available, should not be [used/activated].