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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-seventh session from 6 to 10 June 2011 at the Headquarters of the Organization, under the chairmanship of Mr. J.M. Sollosi (United States). The Vice-Chairman, Mr. Kostiantyn Billiar (Ukraine), was also present.

1.2 The session was attended by representatives of the following countries:

ALGERIA	KIRIBATI
ANGOLA	LATVIA
ANTIGUA AND BARBUDA	LIBERIA
ARGENTINA	LIBYAN ARAB JAMAHIRIYA
AUSTRALIA	MALAYSIA
BAHAMAS	MALTA
BANGLADESH	MARSHALL ISLANDS
BELGIUM	MEXICO
BRAZIL	MOROCCO
CANADA	NETHERLANDS
CHILE	NIGERIA
CHINA	NORWAY
COLOMBIA	PANAMA
COOK ISLANDS	PERU
CROATIA	PHILIPPINES
CYPRUS	POLAND
DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA	REPUBLIC OF KOREA
DENMARK	ROMANIA
ECUADOR	RUSSIAN FEDERATION
EGYPT	SAINT KITTS AND NEVIS
ESTONIA	SAUDI ARABIA
FINLAND	SINGAPORE
FRANCE	SOUTH AFRICA
GERMANY	SPAIN
GHANA	SWEDEN
GREECE	THAILAND
ICELAND	TURKEY
INDONESIA	UKRAINE
IRAN (ISLAMIC REPUBLIC OF)	UNITED KINGDOM
IRAQ	UNITED STATES
IRELAND	URUGUAY
ITALY	VANUATU
JAPAN	VENEZUELA (BOLIVARIAN REPUBLIC OF)
KENYA	

and of the following Associate Member of IMO:

HONG KONG, CHINA

1.3 The session was attended by representatives from the following United Nations and specialized agency:

WORLD METEOROLOGICAL ORGANIZATION (WMO)

1.4 The following intergovernmental and non-governmental organizations were also represented:

INTERNATIONAL HYDROGRAPHIC ORGANIZATION (IHO)
EUROPEAN COMMISSION (EC)
MARITIME ORGANISATION OF WEST AND CENTRAL AFRICA (MOWCA)
INTERNATIONAL MOBILE SATELLITE ORGANIZATION (IMSO)
MARINE ACCIDENT INVESTIGATORS' INTERNATIONAL FORUM (MAIIF)
INTERNATIONAL CHAMBER OF SHIPPING (ICS)
INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)
INTERNATIONAL UNION OF MARINE INSURANCE (IUMI)
INTERNATIONAL ASSOCIATION OF MARINE AIDS TO NAVIGATION AND
LIGHTHOUSE AUTHORITIES (IALA)
COMITÉ INTERNATIONAL RADIO-MARITIME (CIRM)
BIMCO
INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES (IACS)
OIL COMPANIES INTERNATIONAL MARINE FORUM (OCIMF)
INTERNATIONAL MARITIME PILOTS' ASSOCIATION (IMPA)
FRIENDS OF THE EARTH INTERNATIONAL (FOEI)
INTERNATIONAL ASSOCIATION OF INSTITUTES OF NAVIGATION (IAIN)
INTERNATIONAL COUNCIL OF MARINE INDUSTRY ASSOCIATIONS (ICOMIA)
INTERNATIONAL FEDERATION OF SHIPMASTERS' ASSOCIATIONS (IFSMA)
INTERNATIONAL ASSOCIATION OF INDEPENDENT TANKER OWNERS
(INTERTANKO)
SOCIETY OF INTERNATIONAL GAS TANKER AND TERMINAL OPERATORS
LIMITED (SIGTTO)
INTERNATIONAL MARITIME RESCUE FEDERATION (IMRF)
CRUISE LINES INTERNATIONAL ASSOCIATION (CLIA)
INTERNATIONAL SAILING FEDERATION (ISAF)
WORLD NUCLEAR TRANSPORT INSTITUTE (WNTI)
INTERNATIONAL HARBOUR MASTERS' ASSOCIATION (IHMA)
INTERNATIONAL TRANSPORT WORKERS' FEDERATION (ITF)
THE NAUTICAL INSTITUTE (NI)

Opening address of the Secretary-General

1.5 The Secretary-General welcomed the participants and delivered his opening address, the full text of which is reproduced in document NAV 57/INF.12.

1.6 The Chairman, in responding to the Secretary-General's opening remarks, thanked him for his words of welcome and assured him that his advice would be given every consideration in the deliberations of the Sub-Committee and its working groups. All members of this Sub-Committee shared the Secretary-General's concern for safeguarding human life at sea and were grateful for the way in which IMO under his leadership had responded to the challenges of piracy. The anti-piracy campaign the Organization had undertaken was timely and appropriate and the Sub-Committee stood ready to support delivery of the Action Plan that had been developed.

The Sub-Committee joined him in expressing its sadness and sympathy to all the people of Japan in light of the earthquake and tsunami and the ensuing damage and loss suffered. IMO's timely rendering of service in response to this tragedy was noteworthy and commendable.

As the Secretary-General had mentioned, it was imperative that the Sub-Committee continued to make progress on e-navigation in cooperation with the COMSAR and STW Sub-Committees. Likewise, the importance of finalizing the performance standard for VDRs and clarifications to the SOLAS regulation on Navigation Bridge visibility was noted. The Sub-Committee would support the work of MEPC with the relevant Associated Protective Measure when addressing routeing measures and it would begin its examination of AIS aids to navigation; address inclinometers; casualty analyses; unified interpretations; and a host of technical matters, all of course with the ultimate aim of enhancing maritime safety and marine environmental protection and carried out in the usual IMO spirit of cooperation.

2 DECISIONS OF OTHER IMO BODIES

2.1 The Sub-Committee noted, in general, decisions and comments pertaining to its work by FAL 36, MEPC 61, DE 54 and DE 55, STW 42, FSI 19, COMSAR 15 and MSC 88 and MSC 89, (NAV 57/2, NAV 57/2/1, NAV 57/2/2) and considered them under the appropriate agenda items.

Outcome of the one hundred and fourth session of the Council (C 104)

2.2 The Sub-Committee noted that C 104 had approved a number of cost-saving measures with a view to improving the conduct of meetings by increasing efficiency and effectiveness. The measures of immediate interest to the work of the Sub-Committee were highlighted as follows:

- .1 documents, other than information documents, which contained more than 20 pages, would no longer be translated into all working languages in their entirety, and, therefore, such documents should include, for translation purposes, a summary of the document not longer than four pages, with the technical content submitted as an annex in the language needed by Working Groups (e.g., English);
- .2 only two copies of working papers printed for circulation during a meeting should be printed per Member State, Associate Member and IGO and one copy per NGO;
- .3 working papers will be uploaded on to IMODOCS simultaneously with being printed and distributed in hard copy;
- .4 the Chairmen of IMO organs and the Secretariat should examine how best to reduce the size of meeting reports and standardize their style and structure; and
- .5 to save meeting time, information documents, and documents requiring no action other than for their contents to be noted, should not be introduced in the plenary meetings of any IMO organ.

3 ROUTEING OF SHIPS, SHIP REPORTING AND RELATED MATTERS

3.1 The Chairman recalled that NAV 51 had supported a proposal by the Chairman, recommending that for future sessions of the Sub-Committee, a preliminary assessment of proposals would be made by the Chairman in consultation with the Secretariat and the Chairman of the Ships' Routeing Working Group. Such a preliminary assessment would follow the general criteria in MSC/Circ.1060 and MSC.1/Circ.1060/Add.1 and would not address the technical aspects of the proposal. The results of the assessment would then be made available to the Sub-Committee by means of a Working Paper.

3.2 The Chairman informed the Sub-Committee that accordingly, he had, in cooperation with the Secretariat, prepared document NAV 57/WP.2 outlining a preliminary assessment of the ships' routeing and ship reporting proposals. 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)

New traffic separation schemes in Norra Kvarken in the Baltic Sea

3.3 The Sub-Committee briefly considered a proposal by Finland and Sweden (NAV 57/3/7) for three new traffic separation schemes in Norra Kvarken in the Baltic Sea.

New traffic separation schemes and two-way routes in the Gulf of Campeche and the ports of Cayo Arcas, Ta'kuntah and Yuum K'ak Naab

3.4 The Sub-Committee briefly considered a proposal by Mexico (NAV 57/3/6) for four new traffic separation schemes in the Gulf of Campeche and the ports of Cayo Arcas, Ta'kuntah and Yuum K'ak Naab.

3.5 Some delegations supported the proposal. Some delegations voiced concerns regarding the mandatory nature for the proposed routeing systems and were of the opinion that further consideration and clarification of the proposal should be done in the Ships' Routeing Working Group, giving delegations the opportunity to seek clarifications from Mexico.

3.6 The United States, supporting the proposal in principle, stated that Areas To Be Avoided were specified in the General Provisions on Ships' Routeing (GPSR) and therefore were presumed to be recommendatory and not mandatory, unless clearly specified otherwise, as established in sections 5.5, 6.17 and 8.1 of the GPSR. When the Sub-Committee had approved the existing ATBA and its Special provisions for the Gulf of Campeche, it clearly did not indicate that it was a mandatory ATBA. In fact, mandatory ATBAs were extremely rare; for good reason, there were only two existing mandatory ATBAs in the world because of their impact on freedom of navigation. Accordingly, the existing ATBA in the Bay of Campeche had to be considered recommendatory. Similarly, the Special provision noting that ship movement in the area was monitored and controlled by a maritime traffic controller on a 24-hour basis, and requesting that any ship planning to enter the area should contact the maritime traffic controller on VHF channel 16 and comply with the appropriate regulations while transiting the area, was also recommendatory. This, however, did not mean that they should not be observed. On the contrary, the United States encouraged ships entitled to fly its flag to voluntarily comply, and there had been no known indications of non-compliance. A solution should, therefore, be found in the Working Group that would meet Mexico's needs and comported with the GPSR, the SOLAS Convention and international law.

Amendments to existing Traffic Separation Schemes (TSSs)

Amendments to the existing Traffic Separation Scheme "At West Hinder" – Extending the existing precautionary area and establishment of an Area To Be Avoided (ATBA)

3.7 The Sub-Committee briefly considered two proposals by Belgium (NAV 57/3 and NAV 57/3/1) for amendments to the existing Traffic Separation Scheme "At West Hinder"; reducing the Traffic Separation Scheme and extending the existing precautionary area; and also establishing an Area To Be Avoided (ATBA) bordering to the north of the proposed precautionary area.

Amendments to the existing Traffic Separation Scheme "Sunk East"

3.8 The Sub-Committee briefly considered a proposal by the United Kingdom (NAV 57/3/9) for an extension to the existing Traffic Separation Scheme "Sunk East", located in the northern approaches of the Thames Estuary.

3.9 The United Kingdom delegation clarified that the proposed extension to the TSS would form part of the existing IMO adopted routing measure.

Routing measures other than Traffic Separation Schemes (TSSs)

Establishment of a new recommended deep-water route in the approaches to the River Scheldt

3.10 The Sub-Committee briefly considered a proposal by Belgium (NAV 57/3/2) to establish a new recommended deep-water route for ships with a minimum draught of 13.1 m in the approaches to the River Scheldt adjoining the precautionary area at the end of the existing Traffic Separation Scheme "At West Hinder".

Establishment of a new Area To Be Avoided

3.11 The Sub-Committee briefly considered a proposal by Belgium (NAV 57/3/3) for the establishment of a new Area To Be Avoided to allow the development of adjoining wind farms in the vicinity of the Thornton and Bligh Banks.

3.12 The Belgian delegation informed the Sub-Committee of its intention to revise the original proposal by changing the proposed establishment of an Area To Be Avoided to a proposed Precautionary Area. This would not hamper the flow of traffic during the construction phase of the wind farms. Belgium would consider submitting a revised proposal in 2013 (NAV 59) depending on how the construction of the wind farms progressed.

Establishment of three new two-way routes in Norra Kvarken in the Baltic Sea

3.13 The Sub-Committee briefly considered a proposal by Finland and Sweden (NAV 57/3/7) for three new two-way routes in Norra Kvarken in the Baltic Sea.

Amendment of the Area To Be Avoided (ATBA) "Off the Washington Coast"

3.14 The Sub-Committee briefly considered a proposal by the United States (NAV 57/3/4) to amend the description of the existing Area To Be Avoided (ATBA) "Off the Washington Coast" to extend its applicability to commercial ships of 400 gross tonnage and above.

Amendment to the existing deep-water route off the coast of Langeland

3.15 The Sub-Committee briefly considered a proposal by Denmark (NAV 57/3/10) to amend the text of the "Note" relating to the existing IMO adopted deep-water route off the coast of Langeland.

Establishment of new three two-way routes and one two-way route with precautionary area in the Gulf of Campeche and the ports of Cayo Arcas, Ta'kuntah and Yuum K'ak Naab

3.16 The Sub-Committee briefly considered a proposal by Mexico (NAV 57/3/6) for new three two-way routes and one two-way route with a precautionary area in Gulf of Campeche and the ports of Cayo Arcas, Ta'kuntah and Yuum K'ak Naab.

Establishment of five new Areas To Be Avoided and seven new anchorages including amendment to an existing anchorage in the Gulf of Campeche and the ports of Cayo Arcas, Ta'kuntah and Yuum K'ak Naab

3.17 The Sub-Committee briefly considered a proposal by Mexico (NAV 57/3/6) for five new Areas To Be Avoided and seven new anchorages including an amendment to an existing anchorage in Gulf of Campeche and the ports of Cayo Arcas, Ta'kuntah and Yuum K'ak Naab.

Recommendation on navigation through the Strait of Bonifacio (Associated Protective measure)

3.18 The Sub-Committee briefly considered a proposal by France and Italy (NAV 57/3/8) for a recommended associated protective measure on navigation through the Strait of Bonifacio which had been designated, in principle, by MEPC 61, as a Particularly Sensitive Sea Area (PSSA), and essentially consisted of recommended pilotage for ships transiting the Strait.

3.19 The delegation of Singapore requested a clarification from the Sub-Committee with regard to paragraph 3 of document NAV 57/3/8, as to whether MEPC 62 in fact could take a final decision on the classification of this area as a PSSA.

3.20 The Secretariat clarified that resolution A.982(24) on revised Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas was of relevance. Section 8 relating to Criteria for assessment of applications for designation of particularly sensitive sea areas and the Adoption of associated protective measures outlined the procedure for considering a PSSA application by the Organization. Sub-section 8.3.7 clarified that after approval by the appropriate Sub-Committee, Committee, or, where necessary, the Assembly; of the associated protective measures, the MEPC may designate the area as a PSSA. Accordingly, if the Sub-Committee approved the proposed APM, the MEPC could designate the area as a PSSA, subject to the adoption of the proposed APM by MSC 90 in May 2012. The Sub-Committee was also informed that Annex 4 – Uniform format of the MEPC resolution for the designation of Particularly Sensitive Sea Areas (MEPC 54/21, annex 11), in operative paragraph 3 specified that it should contain the APMs which have been adopted by the appropriate body and it should also contain a notation to the related documents pertinent to the APMs.

3.21 The delegation of Panama also requested clarification from the Sub-Committee with regard to paragraph 25 of document NAV 57/3/8 relating to further information on "legal organization".

3.22 The Chairman clarified that the "legal organization" mentioned in the proposal referred to the bilateral arrangements between Italy and France and had no impact on the recommendatory nature of the APM.

Mandatory ship reporting systems**Amendments to existing mandatory ship reporting systems****Amendments to the existing mandatory ship reporting system "In the Storebælt (Great Belt) traffic area (BELTREP)"**

3.23 The Sub-Committee briefly considered a proposal by Denmark (NAV 57/3/5) for amendments to the reporting details/requirements for the existing mandatory ship reporting system "In the Storebælt (Great Belt) traffic area (BELTREP)". The amendments were aimed at harmonizing the reporting requirements to other ship reporting systems in European waters and introduce an option for semi-automatic and pre-entry non-verbal reporting.

3.24 The delegation of the Marshall Islands and the ICS observer expressed their appreciation to Denmark for its initiative in revising the existing mandatory ship reporting requirements to lessen the burden on ships transiting the area by harmonizing the reporting requirements to other ship reporting systems in European waters and introducing an option for semi-automatic and pre-entry non-verbal reporting.

Review of adopted mandatory ship reporting systems

3.25 The Chairman recalled again that at previous sessions, his predecessor and subsequently himself took the initiative as Chairman 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.

3.26 The Chairman stated that he was pleased that Denmark, following their submission on experiences gained to NAV 56 (NAV 56/INF.8) had submitted the above-mentioned proposal to amend an existing mandatory ship reporting system in light of the experience gained.

New precautionary area and other routeing measures in the eastern part of the Gulf of Finland

3.27 The Sub-Committee noted with appreciation the useful information provided by the Russian Federation (NAV 57/INF.2) concerning the description of a precautionary area and a fairway in the eastern part of the Gulf of Finland. The Russian Federation also clarified that all routeing measures were national and were geographically located within the territorial sea of the Russian Federation.

New Traffic Separation Scheme in Izmit Bay

3.28 The Sub-Committee noted with appreciation the useful information provided by Turkey (NAV 57/INF.9) regarding details of the new Traffic Separation Scheme in Izmit Bay.

Guidance on amendments to existing IMO adopted ships' routeing systems

3.29 The Chairman, recognizing the views expressed by the various delegations, invited the Sub-Committee's attention to the requirement in 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 and agreement by IMO unless local conditions or the urgency of the case require that earlier action be taken." The intention of this requirement was to ensure consistency and predictability in routeing measures and the charting of such measures, particularly with regard to Traffic Separation Schemes.

3.30 The Chairman further urged all 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 are followed in line with the General Provisions on Ships' Routeing.

Establishing the Ships' Routeing Working Group

3.31 After a preliminary discussion, as reported in paragraphs 3.1 to 3.24 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, Plenary as well as relevant decisions of other IMO bodies (item 2), for consideration and approval by Plenary to:

- .1 consider all documents submitted under agenda item 3 regarding routeing of ships and related matters and prepare routeing and reporting measures, as appropriate and recommendations;
- .2 consider document NAV 57/10 (IACS) submitted under agenda item 10 regarding navigation light arrangements described in Annex 1/9(a)(i) and Annex 1/10(a)(i) of the Convention on the International Regulations for Preventing Collisions at Sea (COLREG) 1972, as amended and in coordination with the Technical Working Group prepare a relevant MSC circular on Unified Interpretations of COLREG;
- .3 consider document DE 55/12/9 (FOEI, IFAW, WWF and Pacific Environment) referred by DE 55 regarding the development of polar vessel traffic monitoring and information systems and proposing a solution; and
- .4 consider document DE 55/12/21 (FOEI, IFAW, WWF and Pacific Environment) referred by DE 55 including the information in documents NAV 57/INF.10 and NAV 57/INF.11 regarding vessel voyage planning and operations and proposing a solution.

Report of the Ships' Routeing Working Group

3.32 Having received and considered the Working Group's report (NAV 57/WP.4), the Sub-Committee approved it in general and, in particular (with reference to paragraphs 3.1 to 6.3 and annexes 1 to 12), took action as summarized in the ensuing paragraphs.

New Traffic Separation Schemes

Establishment of three new Traffic Separation Schemes in Norra Kvarken in the Baltic Sea

3.33 The Sub-Committee approved the proposed three new Traffic Separation Schemes in "Norra Kvarken" in the Baltic Sea, as set out in annex 1, which the Committee is invited to adopt.

Amendments to existing Traffic Separation Schemes

Amendments to the existing Traffic Separation Scheme "Sunk TSS East"

3.34 The Sub-Committee approved the amendments to the existing Traffic Separation Scheme "Sunk TSS East", as set out in annex 1, which the Committee is invited to adopt.

Amendments to the existing Traffic Separation Scheme "At West Hinder"

3.35 The Sub-Committee approved the amendments to the existing Traffic Separation Scheme "At West Hinder" including a new Precautionary Area, as set out in annex 1, which the Committee is invited to adopt.

Routeing measures other than Traffic Separation Schemes

Establishment of three two-way routes in Norra Kvarken in the Baltic Sea

3.36 The Sub-Committee approved the establishment of three two-way routes in Norra Kvarken in the Baltic Sea, as set out in annex 2, which the Committee is invited to adopt.

Establishment of a new Area To Be Avoided "At West Hinder" Traffic Separation Scheme

3.37 The Sub-Committee approved the establishment of a new Area To Be Avoided "At West Hinder" Traffic Separation Scheme bordering to the north of the new Precautionary Area, as set out in annex 2, which the Committee is invited to adopt (paragraph 3.35 refers).

Establishment of a new Deep-water route in the approaches to the River Scheldt

3.38 The Sub-Committee approved the establishment of a new Deep-water route in the approaches to the River Scheldt, as set out in annex 2, which the Committee is invited to adopt.

Establishment of a new Precautionary Area in the vicinity of the Thornton and Bligh Banks

3.39 The Sub-Committee approved the establishment of a new Precautionary Area in the vicinity of the Thornton and Bligh Banks, as set out in annex 2, which the Committee is invited to adopt.

Amendment to the description of the Area To Be Avoided "Off the Washington coast"

3.40 The Sub-Committee approved the amendment to the description of the Area To Be Avoided "Off the Washington coast", as set out in annex 2, which the Committee is invited to adopt.

Amendment to the existing Deep-water route off the coast of Langeland

3.41 The Sub-Committee approved the amendment to the text of the "Note" relating to the existing Deep-water route off the coast of Langeland, as set out in annex 2, which the Committee is invited to adopt.

Recommendation on navigation through the Strait of Bonifacio

3.42 The Sub-Committee noted the information provided to the Group that the proponents had clarified with the Group that the legal organization referred to practical arrangements that were to be coordinated between France and Italy in the implementation of the joint pilotage service and there was no intention to implement mandatory pilotage due to the fact that the Bonifacio Strait is a Strait used for international navigation. Secondly, the Committee would be advised on the effective implementation date.

3.43 The Sub-Committee approved the Recommendation on navigation through the Strait of Bonifacio as an associated protective measure for the application of the Strait of Bonifacio as a PSSA aiming at improving the safety of navigation and the protection of the marine environment, as set in annex 2, which the Committee is invited to adopt, before the formal adoption of the area as a PSSA by the Marine Environment Protection Committee.

Establishment of two-way routes in the Gulf of Campeche and the ports of Cayo Arcas, Ta'kuntah and Yuum K'ak Naab

3.44 The Sub-Committee noted the discussions of the Working Group on the proposal by Mexico (NAV 57/3/6) and concurred with its view on the importance of adherence to guidance for new routing measures adopted by the Organization.

3.45 The Sub-Committee approved the establishment of two-way routes in the Gulf of Campeche and the ports of Cayo Arcas, Ta'kuntah and Yuum K'ak Naab, as set out in annex 2, which the Committee is invited to adopt.

Establishment of five Areas To Be Avoided and six Precautionary Areas in the Gulf of Campeche and the ports of Cayo Arcas, Ta'kuntah and Yuum K'ak Naab

3.46 The Sub-Committee approved the establishment five Areas To Be Avoided and six Precautionary Areas in the Gulf of Campeche and the ports of Cayo Arcas, Ta'kuntah and Yuum K'ak Naab, as set out in annex 2, which the Committee is invited to adopt.

Revocation of the existing Routeing measures other than Traffic Separation Schemes in the Gulf of Campeche, at maritime oil terminal off Cayo Arcas and recommended tracks in the Gulf of Campeche

3.47 The Sub-Committee approved the cancellation of the existing routeing measures other than Traffic Separation Schemes as detailed in sections 2.5, 2.6 and 3.2 of Annex 1 to resolution A.527(13), namely in the Gulf of Campeche, at maritime oil terminal off Cayo Arcas and recommended tracks in the Gulf of Campeche, respectively, which the Committee is invited to revoke.

Implementation of new and amended Traffic Separation Schemes and other routeing measures

3.48 The new Traffic Separation Schemes and amendments to the existing Traffic Separation Schemes and other routeing measures mentioned in above paragraphs 3.40 to 3.47 (excluding paragraph 3.42) will be implemented at a date, not less than six months after adoption by the Committee.

Mandatory ship reporting systems

Amendments to the existing mandatory ship reporting system "In the Storebælt (Great Belt) traffic area (BELTREP)"

3.49 The Sub-Committee approved the amendments to the existing mandatory ship reporting system "In the Storebælt (Great Belt) traffic area (BELTREP)", as set out in annex 3, which the Committee is invited to adopt.

Implementation of amended Mandatory Ship Reporting System

3.50 The amendments to the existing Mandatory Ship Reporting System mentioned in above paragraph 3.49 will be implemented at a date, not less than six months after adoption by the Committee.

4 AMENDMENTS TO THE PERFORMANCE STANDARDS FOR VDR AND S-VDR

4.1 The Sub-Committee recalled that MSC 83 had agreed to include, in the work programme of the Sub-Committee, a high-priority item on "Amendments to the Performance standards for VDR and S-VDR", and referred the related documents to the Sub-Committee for detailed consideration. Furthermore, MSC 84 had also agreed to expand the existing work programme item to consider the proposal contained in document MSC 84/22/18 (Egypt) and increased the number of sessions needed to complete this work item to three sessions.

4.2 The Sub-Committee further recalled that NAV 55 had started to prepare the draft text of revised performance standards for voyage data recorders (VDRs) and agreed that only the existing performance standards for VDRs need to be amended as the proposed amendments were not intended to be retroactive. Secondly, since the performance Standard for S-VDRs (resolution MSC.163(78)) would not apply after 1 July 2010, no changes were proposed to the performance standards for S-VDRs.

4.3 The Sub-Committee also recalled that NAV 56 had further developed the draft text of revised performance standards for voyage data recorders (VDRs) (resolution A.861(20)) on the basis of the annex to document NAV 56/5, taking into account document NAV 55/WP.4, section 4 and annex 4. Since the drafting of revised performance standards could not be finalized, NAV 56 invited members to submit proposals on the revised performance standards for VDRs, as set out in annex 2 to document NAV 56/WP.4/Rev.1, to the current session with the view to finalizing them at that session.

4.4 The Sub-Committee considered document NAV 57/4 (Germany) providing comments and proposing amendments to the draft amended recommendation on performance standards for voyage data recorders (VDRs) and a draft amended Recommendation on performance standards for shipborne VDRs.

4.5 A number of delegations voiced concerns regarding the new requirements that had been included in the draft amended performance standards, namely sections 5.2.1, 5.2.4 and 5.2.5, which related to a protected float-free recording medium, permanent data connection ship-to-shore and a long-term recording medium, respectively. However, there was consensus that the document should be sent to the Technical Working Group for further consideration.

4.6 The Sub-Committee also considered document NAV 57/4/1 (CIRM), stating that a float-free recording medium, in addition to a fixed recording medium for a VDR, might be supplied for little additional cost when it simultaneously performed the functions of the EPIRB required by SOLAS chapter IV. Moreover, this arrangement resulted in superior operation of both the VDR and the EPIRB.

4.7 There was general support for the proposal by CIRM and the Sub-Committee agreed to forward the document to the Technical Working Group for further consideration.

4.8 The Sub-Committee further considered document NAV 57/4/2 (Canada) proposing a draft amendment to the performance standards for VDR to ensure that the bridge audio recording could be separated or removed from the other recorded data to allow the data portion of the recording to be returned to the shipowner.

4.9 A number of delegations and industry observers spoke on the issue regarding the separation or removal of bridge audio recording from the other recorded data, which would allow a copy of the data portion to be provided to the shipowner while respecting domestic legislative requirements with regard to voice recording during investigations. There was concern that this data could be misused and also that flag States and shipping companies could be denied access to data that was critical to their casualty investigations. Canada was of the opinion that their proposal was a technical issue rather than a policy one. Some delegations were of the view that the proposal should not be further pursued, whilst others were of the view that it should be referred to the Technical Working Group. As there was no consensus on the issue, it was subsequently agreed that the document be forwarded to the Technical Working Group for consideration, as to the technical feasibility of separating bridge audio from other recorded data only.

4.10 The Sub-Committee, in addition, considered documents NAV 57/4/3 and NAV 57/4/4 and Corr.1 (United Kingdom) providing comments on document NAV 57/4 with regard to definitions, clarifications and the proposed permanent data connection from ship-to-shore as well as the measurement of roll for motion analysis independent of an inclinometer sensor for operational use.

4.11 There was general agreement by the Sub-Committee that the annex to document NAV 57/4 should be used as the basic document to further develop and finalize the revised performance standards, and the Sub-Committee agreed to refer documents NAV 57/4, NAV 57/4/1 and NAV 57/4/2, NAV 57/4/3 and NAV 57/4/4, including Corr.1, to the Technical Working Group for further development/finalization with a view to approval by the Plenary.

Establishing the Technical Working Group

4.12 Having also considered agenda items 5, 11 and the sub-item under agenda item 14 relating to clarification in relation to carriage requirements for speed log devices for ships of 50,000 gross tonnage and upwards (MSC 88/11/1), the Sub-Committee re-established the Technical Working Group and instructed it to consider all relevant documents submitted under agenda items 4, 5, 11 and 14 and, taking into account any decisions of, and comments and proposals made in Plenary, undertake the following tasks:

- .1 consider documents NAV 57/4, NAV 57/4/1, NAV 57/4/3 and NAV 57/4/4 and Corr.1 and finalize the revised performance standards for VDR (resolution A.861(20)) (agenda item 4);
- .2 consider document NAV 57/4/2 and provide guidance to the Sub-Committee as to the technical feasibility of separating bridge audio from other recorded data only (agenda item 4);
- .3 consider document NAV 57/5/2 and develop a liaison statement to ITU, concerning definitions of the Navigation Status parameter of AIS Messages 1, 2, and 3, as appropriate (agenda item 5);
- .4 consider documents NAV 57/11 and NAV 57/4/4 including Corr.1 and develop performance standards for inclinometers (agenda item 11); and
- .5 consider document MSC 88/11/1 and provide clarification in relation to the carriage requirements for speed log devices for ships of 50,000 gross tonnage and upwards and whether the Performance standard for speed and distance measuring equipment (resolution MSC.96(72)) might require amending and, if necessary, prepare the draft amendments to the performance standard (agenda item 14).

Report of the Technical Working Group

4.13 Having received and considered the Technical Working Group's report (NAV 57/WP.5), the Sub-Committee (with reference to paragraphs 3.1 to 3.11 and annex 1) took action as summarized in the ensuing paragraphs.

4.14 The Sub-Committee discussed the requirement for recording data from an inclinometer and did not agree with the proposed text of the Working Group (paragraph 5.5.18 of annex 1 to document NAV 57/WP.5), that there would be a requirement to equip with or connect to the VDR a motion sensor, if an inclinometer was not installed. This was considered to be a new carriage requirement for which the discussion on the

compelling need still had to take place. Noting the ongoing work on the development of performance standards for electronic inclinometers, the Sub-Committee agreed that the VDR should be connected to an electronic inclinometer, if installed.

4.15 The Sub-Committee endorsed the draft MSC resolution on the revised performance standards for VDRs, with a view to approval by MSC 90 (annex 4).

4.16 Consequentially, the Sub-Committee invited ISO to consider whether any modifications might be needed to standard ISO 22472 and IEC to consider whether any modifications might be needed to standard IEC 61996-1.

4.17 The Sub-Committee noted the Technical Working Group's view that it was technically feasible to separate bridge audio from other recorded data and that there were VDRs which stored data in different places. It was further noted that in most cases it was possible to separate the data once it was extracted and downloaded at the playback stage. However, in most cases it was not possible to differentiate at the recording stage. The Sub-Committee also noted that MSC/Circ.1024 on Guidelines on voyage data recorder (VDR) ownership and recovery and resolution MSC.255(84) on Code of the international standards and recommended practices for a safety investigation into a marine casualty or marine incident (Casualty Investigation Code) were also of relevance.

4.18 Considering that the work on this item was completed, the Sub-Committee decided to invite the Committee to delete the planned output "Amendments to the Performance standards for VDR and S-VDR" from its biennial agenda.

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

5.1 The Sub-Committee noted that MSC 87 had extended the target completion date of this agenda item to 2011.

Guidance on the use of AIS Application Specific Messages

5.2 The Sub-Committee considered document NAV 57/5 (Secretariat) containing a liaison statement from ITU-R Working Party 5B (8 to 18 November 2010) to IMO, with regard to the Guidance on the use of AIS Application Specific Messages. ITU-R Working Party 5B reported that the relevant Recommendation ITU-R M.1371-4 – "Technical characteristics for an automatic identification system using time-division multiple access in the VHF maritime mobile band", incorporated an annex 5, on the subject of Application Specific Messages and defined an international application identifier branch, which by previous agreement was maintained and published by IMO. ITU-R Working Party 5B noted that the messages in SN.1/Circ.289 use the International Functional Identifiers 11 to 32, complied with the recommendations of Recommendation ITU-R M.1371-4 and that no further technical clarification was required.

5.3 The Sub-Committee noted the information provided.

Report ITU-R M.2201 (11/2010) – Utilization of the 495-505 kHz band by the maritime mobile service for the digital broadcasting of safety and security related information from shore-to-ships

5.4 The Sub-Committee considered document NAV 57/5/1 (Secretariat) providing information on a new ITU-R report of relevance to the work of the Sub-Committee. ITU-R Study Group 5, at its November 2010 meeting, had approved report ITU-R M.2201 (11/2010) –

Utilization of the 495-505 kHz band by the maritime mobile service for the digital broadcasting of safety and security related information from shore-to-ships. It was decided that this report should be brought to the attention of the NAV and COMSAR Sub-Committees and the International NAVTEX Coordinating Panel, IEC, IALA, WMO, IHO and CIRM. This report describes a technical approach allowing the reuse of the 500 kHz band for digital broadcasting of maritime safety and security related information for the benefit of ships at sea. Systems based on this technical approach can coexist with the worldwide NAVTEX system that operates on 490 kHz, 518 kHz, and in some cases 424 kHz.

5.5 The Sub-Committee recalled that the Joint IMO/ITU Experts Group on Maritime Radiocommunications Matters, at its September 2010 meeting had considered the further use of the 500 KHz band to support e-navigation. The Group had a long debate on the need for providing a statement on the need for the existing maritime mobile primary allocation in the band 415 kHz – 526.5 kHz to be maintained. This was to fulfil the possible requirement in future for the promulgation of additional security-related information, the implementation of e-navigation and the implementation of the revised elements and procedures of the GMDSS. The Group had further updated the draft IMO position on WRC-12 Agenda items, supporting an exclusive primary allocation to the maritime mobile service in the band 495-505 kHz in all three regions and a co-primary allocation in the band 510-525 kHz in Region 2.

5.6 The Sub-Committee decided to refer document NAV 57/5/1 to the e-navigation Working Group with a view to identifying its relevance with respect to e-navigation (paragraphs 6.38 to 6.40 refer).

Clarifications on AIS Navigation Status

Draft revision of Recommendation ITU-R M.1371-4

5.7 The Sub-Committee recalled that NAV 55 had considered document NAV 55/8/5 (Secretariat) containing the liaison statement from WP5B to IALA, IMO, CIRM and IEC TC 80, concerning a revision of Recommendation ITU-R M.1371-3.

5.8 The Sub-Committee recalled also that NAV 55 had considered document NAV 55/10/1 (IALA) proposing amendments to the technical clarification of ITU Recommendation ITU-R M.1371-1 and had noted concerns expressed by several delegations with regard to the descriptions proposed. It was also noted that there were differences in the terminology and philosophy used in ITU-R Recommendation 1371-3 and the COLREGs. IALA was invited to take the comments made by the Sub-Committee into account when preparing their submission to ITU on this issue.

5.9 The Sub-Committee noted that IALA had sent a submission on this issue to ITU, Working Party 5B, and as a result of discussions in Working Party 5B, ITU had sent the liaison statement given in document NAV 56/7.

5.10 The Sub-Committee recalled that document NAV 56/7 had been referred to the Technical Working Group for detailed consideration and the development of a liaison statement on this matter to ITU, proposing revised definitions of the Navigation Status parameter of AIS Messages 1, 2 and 3 and comments on other matters, as appropriate.

5.11 The Sub-Committee recalled also that NAV 56 had considered the issue and prepared a relevant liaison statement to ITU-R Working party 5B with a copy to CIRM, IALA and IEC TC80. NAV 56 had noted, in particular, that "No change" was given to the navigational status 1 to 13. It had been further noted that the definitions for navigational status 14 and 15 had been changed, as agreed between IMO and ITU. NAV 56 had also

noted that a change in the definitions would require follow-up changes in display systems and that such changes could have a higher cost impact than was the case when the pollutant category had been changed, and they might cause confusion to the mariners. It was further noted that, in ITU-R's view, the required change had to be initiated by IMO to ensure a harmonized solution implemented on vessels using AIS. Noting that a future revision of Recommendation ITU-R.1371-4 would not be considered by WP 5B before 2012, NAV 56 had decided to study the matter in further detail at its future sessions and to inform WP 5B in the near future on the outcome of these studies and required amendments to the recommendation, as appropriate.

5.12 The Sub-Committee considered document NAV 57/5/2 (IALA) on a proposed change in the use of some values of the Navigational Status parameter in AIS messages. Some of these NavStatus descriptions vary slightly from what was found in the COLREG. To mitigate possible confusion or ambiguity amongst users, IALA had proposed the clarifications denoted by ~~strikeout~~ and underlined text. IALA had also proposed to define NavStatus 11-13, which was currently reserved for future use, to allow additional pertinent navigation safety information to be provided by a growing number of new users and devices, such as vessels engaged in towing operations and AIS man-overboard devices. Further, IALA had proposed to amend NavStatus 9 and 10 to be "reserved for future use" but not solely reserved for WIG or IMDG carrying vessels.

5.13 There was support, in general, for the proposal by IALA on a change in the use of some values of the Navigational Status parameter in AIS messages. However, concern was expressed regarding parameter 13, indicating that assistance was required. This was somewhat misleading and needed clarification. The observers from ICS and the Nautical Institute voiced concern regarding the unintended implication of the proposed changes.

5.14 The Sub-Committee decided to refer this issue to the Technical Working Group, to develop the relevant liaison statement to ITU.

Report of the Technical Working Group

5.15 Having received and considered the Technical Working Group's report (NAV 57/WP.5), the Sub-Committee (with reference to paragraphs 4.1 to 4.5) took action as summarized hereunder.

5.16 The Sub-Committee noted the debate which had taken place in the Technical Working Group on a possible future revision of the definitions of the Navigation Status parameter of AIS Messages 1, 2, and 3. Taking into account that ITU-R WP 5B would start considering a future revision of Recommendation ITU-R 1371-4 in 2012, it was agreed that it was too early to liaise with ITU on IMO's position on this matter and that further consideration was needed at the next session of the Sub-Committee. The Sub-Committee agreed with the Technical Working Group's view to inform IALA of the following with regard to their proposal laid down in document NAV 57/5/2:

- .1 although the proposed changes to the definitions of parameters 0, 3, 5 and 8 were of an editorial nature, these were changes to well established definitions which would be likely to cause confusion to the mariners;
- .2 the proposed changes to the definitions of parameters 11 and 12 to "power-driven vessel towing astern" and "power-driven vessel pushing ahead or towing alongside", were considered to be not an international requirement but a possible national or regional requirement. Consideration might be given to the use of these parameters for regional applications; and

- .3 the proposed changes to the definition of parameter 13 to "requiring assistance" were not supported because its use would probably not lead to the provision of the required assistance as there would be limited monitoring for the parameter. It should be noted that the GMDSS provided facilities to indicate the need for assistance.

5.17 The Sub-Committee invited the Committee to extend the target completion year for the planned output "Radiocommunication ITU-R-Study Group matters" to 2013.

6 DEVELOPMENT OF AN E-NAVIGATION STRATEGY IMPLEMENTATION PLAN

6.1 The Sub-Committee recalled that MSC 86 had instructed NAV 55 to:

- .1 consider future spectrum requirements with respect to e-navigation and advise COMSAR 14 accordingly; and
- .2 taking into account the user needs and current work on e-navigation, provide advice on the correct generic term to replace the terms "Decca" and "Loran" to STW 41.

6.2 The Sub-Committee recalled further that NAV 55 had noted the preliminary detailed shipboard user needs, and agreed to establish a correspondence group to further progress the work intersessionally.

6.3 The Sub-Committee recalled also that COMSAR 14 agreed that the conceptual e-navigation architecture (Figure 2 of document COMSAR 14/12) was a good basis for further development by the Correspondence Group and endorsed the proposed methodology for carrying out the initial gap analysis. It further noted the proposed methodologies for cost-benefit analysis and risk analysis.

6.4 The Sub-Committee also recalled that NAV 56 had finalized the user needs and the initial system architecture, and completed an initial gap analysis, initial cost benefit and risk analysis, taking into account the recommendations of COMSAR 14.

6.5 The Sub-Committee noted that MSC 88, noting the progress made in the development of an e-navigation strategy implementation plan, had endorsed the Sub-Committee's action in inviting the Joint IMO/ITU Expert Group on Maritime Radiocommunication Matters, at its September 2010 meeting, to consider the further use of the 500 kHz band to support e-navigation; and noted that the group had decided to follow the text in the draft (CPM) report in supporting an exclusive primary allocation to the maritime mobile service in the band 495-505 kHz in all three regions and a co-primary allocation in the band 510-525 kHz in Region 2. The expert group had a detailed debate on the need for making a statement that the existing maritime mobile primary allocation in the band 415 kHz-526.5 kHz should be maintained. This was to fulfil the possible requirement in future for the promulgation of additional security-related information, the implementation of e-navigation and the implementation of the revised elements and procedures of the GMDSS. MSC 88 had also instructed the Secretariat to convey this outcome to the Chairman of the e-navigation correspondence group re-established by NAV 56.

6.6 The Sub-Committee noted also that STW 42, considering an interim report of the e-navigation Correspondence Group, had underlined that the navigator's own skills would remain essential for the safe navigation of the ship, and the bridge team would be the main backup for the safe functioning of the ship. STW 42 noted that it would not be advisable to be totally reliant on systems where the navigator only monitored the system displays and the

indicators of the system's normal functionality or resilience. In this context, NAV 54 had recognized that the increasing use of electronic navigational equipment might play a greater role in improving the safety of navigation in the future.

6.7 The Sub-Committee noted further that COMSAR 15 had agreed that IHO's S-100 data model should be used as a baseline for creating a framework for data access and information services under the scope of SOLAS; and also that IMO, in consultation with other organizations, should consider the establishment of a Harmonization Group on creating a framework for data access and information services under the scope of SOLAS, based on the example of the IMO/IHO Harmonization Group on ECDIS as well as the draft Terms of Reference for the IMO/IHO Harmonization Group on Data Modelling (HGDM) (COMSAR 15/WP.6/Rev.1, annex 1). Like STW 42, COMSAR 15 had noted and agreed that the navigator's traditional skills would remain essential for the safe navigation of the ship. The view was also expressed that this should not be an either/or scenario, but consideration needed to be given to the development from a purely navigating navigator toward a somewhat more monitoring navigator and that it would not compromise the skills of the navigator. COMSAR 15 had noted that COMSAR 14 and NAV 56 had identified and adopted the user needs with regard to the e-navigation concept of the Maritime Service Portfolios (MSP). COMSAR 15 had considered the template modified by the Republic of Korea based on document NAV 56/INF.10, for identifying practical e-navigation solutions based on operational, technical, regulatory and training aspects on a developed example of a gap analysis. It had been agreed that the e-navigation Correspondence Group should develop practical e-navigation solutions for other identified gaps, taking into account the human element. COMSAR 15 had agreed that e-navigation could provide the necessary data/information for SAR purposes and keep SAR within the scope of the e-navigation concept. COMSAR 15 had also agreed that SOLAS regulation IV/15.8 relating to transmitting and receiving general radio communications to and from shore-based radio systems or networks subject to SOLAS regulation IV/15.8 was of direct relevance to the e-navigation concept. COMSAR 15 had further noted and endorsed that there was a need for resilience in the overall system. Navigation and communications equipment should be able to reliably indicate that they were functioning correctly. If redundancy was used to provide resilience, the system should be able to transfer automatically to an alternative source, with appropriate indication being given to the user. In addition, information concerning the authenticity of the data was needed including its source.

6.8 The Chairman recalled the Secretary-General's opening remarks underlining the importance of making progress in the development of an e-navigation strategy implementation plan, as well as his remarks at NAV 56, in which he had stressed the importance of remaining focused on the agreed work programme and to not become distracted by tangential matters such as individual technology or policy. These were matters that should perhaps be addressed in the context of e-navigation but not at this juncture. It was imperative that the Sub-Committee should now focus attention primarily on the system architecture and the gap analysis.

6.9 The Sub-Committee considered document NAV 57/6 (Norway) containing the report of the Correspondence Group on e-navigation and presenting the developed complete, overarching architecture on e-navigation, an enabling maritime data framework, the progress of the gap analysis, as well as a draft outline for the final Strategy Implementation Plan on e-navigation.

6.10 The observer from ITF, with reference to paragraph 61.9 of document NAV 57/6, inviting comments on the two scenarios of the navigating navigator and the monitoring navigator, was of the view that there was no need to differentiate between the two. The delegation of the Marshall Islands concurred with this view, whilst the delegation of Germany suggested that the terminology be amended to reflect these to be monitoring tasks/functions or navigating tasks/functions.

6.11 The Sub-Committee agreed that document NAV 57/6 should be used as the basic document for further work during this session and that it would be advisable to instruct the e-navigation Working Group, proposed to be established under this item, to undertake a thorough review of the document before the Sub-Committee could take the requested relevant actions.

6.12 The Sub-Committee noted with interest the information provided by IHO (NAV 57/6/1) in line with the Sub-Committee's request to IHO, at its fifty-fourth session, on the progress made in worldwide ENC coverage as of 28 March 2011. Of the 154 States with coastlines, there were now only six States, and Antarctica, where five or more ENCs remained to be produced in order to match corresponding paper chart coverage at medium scale. For the world's top 800 ports (by total gross tonnage), only eight coastal States had yet to produce ENCs that matched the coverage provided by paper charts of those same ports. IHO had submitted document MSC 87/25/3 indicating that of the 169 IMO Member States and 159 Contracting Governments to SOLAS, only 80 were members of the IHO. For the most part, many coastal States were relying on a relatively small number of IHO Member States to create and maintain their paper chart and ENC coverage – most often with little or no direct support from the State being charted. In IHO's view, this was an unsustainable situation. All Contracting Governments to SOLAS, rather than just the 80 IHO Member States, should acknowledge their obligations under SOLAS regulation V/9, to ensure that appropriate hydrographic services were in place and take appropriate steps to, at least, assist in the provision of these services. The IHO was ready to provide support and advice to any coastal State on how it could best fulfil its international obligations for the provision of appropriate hydrographic services.

6.13 The Sub-Committee considered documents NAV 57/6/2 and NAV 57/6/3 (Republic of Korea) outlining the need of back-up or redundancy for GNSS, which was considered as a primary source of position-fixing system in e-navigation. In addition, the Republic of Korea provided the survey result of the user preference to be implemented primarily among the shipboard user needs and functions of e-navigation. The Republic of Korea was of the view that in the iterative process of e-navigation development, careful consideration should be given to the user feedback which should be given priority in the implementation plan.

6.14 There was general support for the proposals by the Republic of Korea and the Sub-Committee agreed to refer documents NAV 57/6/2 and NAV 57/6/3 to the e-navigation Working Group for consideration and advice.

6.15 The Sub-Committee considered document NAV 57/6/4 (IALA) proposing the need for Resilient Position, Navigation and Timing (PNT) within e-navigation.

6.16 The Sub-Committee considered document NAV 57/6/6 (United Kingdom) commenting on the IALA document (NAV 57/6/4) and outlining the options and conclusions of a study into Resilient PNT, including an economic appraisal for alternative positioning. The United Kingdom study had concluded that the preferred option on purely economic grounds would be Maritime eLoran.

6.17 The Sub-Committee also considered document NAV 57/6/7 (Australia) commenting on the submission by IALA (NAV 57/6/4), discussing the need for Resilient PNT within e-navigation, and supporting the general thrust of the document, and in particular the combining of different PNT solutions and the setting of some standards to facilitate a standard multi-system PNT receiver.

6.18 Several delegations and industry observers spoke on the issue. The ICS observer was of the view that Resilient PNT within e-navigation should ensure redundancy and be terrestrial based and Administrations should bear the cost for providing this service. Several

other delegations supported the view of Australia that Resilient PNT services should be provided through existing shipboard systems. The delegation of Norway stated that the e-navigation strategy and user surveys had underlined the need for a terrestrial backup system. It was important that a backup system was evaluated thoroughly in relation to its purpose, which in accordance to the e-navigation strategy should undergo a risk and cost benefit analysis before a final conclusion was made. Loran C could also be vulnerable to solar weather and security-related threats. In addition, it had its limitations in accurately positioning and navigation in coastal waters. Construction and annual maintenance amounted to a substantial cost. The use of existing solutions as backup systems, such as, use of AtoNs, radar, pilot service, VTS should be taken into consideration. Inertial Navigation Systems which would operate regardless of solar weather and security-related threats should also be evaluated.

6.19 The Sub-Committee agreed to refer documents NAV 57/6/4, NAV 57/6/6 and NAV 57/6/7 to the e-navigation Working Group for consideration and advice.

6.20 The Sub-Committee considered document NAV 57/6/5 (Japan) proposing a way forward in the development of guidelines for a usability assessment methodology for navigational equipment.

6.21 The delegation of Japan was of the view that the Sub-Committee should focus its efforts on the development of the implementation plan. Japan, therefore, considered that it might be better at this stage not to consider the development of guidelines for usability evaluation of navigational equipment. Accordingly, Japan suggested that the development of the guidelines should be incorporated in the implementation plan so that the Sub-Committee could revisit the issue of the usability evaluation in the future.

6.22 The delegation of the Cook Islands was of the view that the human element was essential and offered the following guidance from Admiral Hopwood in the 19th century, which it suggested was also relevant today:

"In an age of swift invention it is frequently believed
That the pressure of a button is as good as work achieved;
But the optimist inventor should remember, if he can,
Though the instrument be perfect, there are limits to the man."

6.23 The Sub-Committee also agreed to refer document NAV 57/6/5 to the e-navigation Working Group for consideration and advice.

6.24 The observer from the European Commission (EC) stated that, as announced last year at NAV 56, they intended to lay out a framework for e-Maritime in 2011 and a roadmap for e-services to be in operation around Europe in 2018. The observer was of the view that if the main aim of e-navigation was to enhance the navigation capabilities of a ship without compromising its efficiency, e-Maritime aimed to increase its profitability without compromising its safety. Due to the cooperation of the European partners involved close coordination had been established between the two initiatives. The EU e-Maritime initiative supported the deployment of e-navigation services in Europe, while e-navigation provided a global perspective for the EU initiative. A public online consultation to assess the stakeholder support for the proposed measures and to hear opinions on the potential impacts, was carried out which had confirmed a general agreement that e-Maritime was important and valuable. Although e-navigation and e-Maritime were not the same, both were addressing the same strategic aims for safety and efficiency of maritime operations and progress in synergy. In essence, IMO's e-navigation focused primarily on shipborne navigation, so on the development of electronic technology, processes and services.

Europe's e-Maritime focused on shore-based facilitation and aims to develop European capabilities for seamless and effortless exchange of maritime transport information in order to facilitate the transport of goods and passengers over sea – and consequently the ships sailing to, from and around Europe. In its development of the e-Maritime concept the EC intended to make use of electronic technologies, processes and services that are being developed within IMO for navigation wherever possible. It was intended to lay out a framework for e-Maritime in 2011 and a roadmap for e-services to be in operation around Europe in 2018, which should provide the necessary infrastructure and organization for the application of e-navigation services in Europe as would have been developed by IMO.

6.25 The Sub-Committee noted with appreciation the information provided by Australia (NAV 57/INF.5) on a research project. Potential areas of investigation that would be covered by the research include the extension of the Human Element Analysing Process (HEAP), by assessing the measurement tools within the scope of e-navigation. Within the simulated environment, or from the observational studies on board ships, the data collection would need to consider the human element with regard to the usability of e-navigation applications and devices such as Electronic Chart Display and Information System (ECDIS) and Integrated Navigation Systems (INS). An important element of this research would be to explore successive iterations of e-navigation systems and to define the principles applicable to the extension of the HEAP.

6.26 The Sub-Committee noted with appreciation the information provided by Japan (NAV 57/INF.7) on preliminary draft guidelines for usability evaluation of navigational equipment, which could be used as a basic document for the consideration by the Sub-Committee in the future. These preliminary draft guidelines were developed on the basis of Japan's study on methodologies for assessing the usability of equipment in the other sectors which have already established such methodologies, taking into account the unique characteristics in the maritime sector. In the process of the development of the preliminary draft guidelines, they were applied to actual equipment of ARPA and Navigational Intension Exchange Support System (NIESS) and were improved based on experiences obtained.

6.27 The Sub-Committee noted with appreciation the information provided by Japan (NAV 57/INF.8) on a sample summary report to help understand the outcome of a usability test and what kind of information a report of a usability test contains. The Sub-Committee also recalled that, at NAV 56, Japan (NAV 56/INF.13) had provided background information for the consideration of the development of preliminary draft guidelines for the usability of navigational equipment and identified five points to be addressed in a usability evaluation.

6.28 The Sub-Committee noted with interest the information provided by the Republic of Korea (NAV 57/INF.4) about the results of a research project on effects of auditory warning types on response time and accuracy in the Integrated Ship Bridge Alarm System, which was expected to contribute to the discussion on the Bridge Alert Management, one of the major modules of Integrated Bridge System (IBS). The Republic of Korea was of the opinion that in future, the result of this research should be reflected upon when reviewing the guidelines on Integrated Bridge System (IBS), as appropriate.

6.29 The Sub-Committee also agreed to refer document NAV 57/INF.4 to the e-navigation Working Group.

Establishing the e-navigation Working Group

6.30 After a preliminary discussion, as reported in paragraphs 6.1 to 6.21, the Sub-Committee re-established the e-navigation working Group and instructed it to consider the relevant documents submitted under agenda item 6, in particular, NAV 57/6 (Norway),

NAV 57/6/2 and NAV 57/6/3 (Republic of Korea), NAV 57/6/4 (IALA), NAV 57/6/5 (Japan), NAV 57/6/6 (United Kingdom), NAV 57/6/7 (Australia) including the information provided in documents NAV 57/INF.5 (Australia), NAV 57/INF.7 and NAV 57/INF.8 (Japan) and NAV 57/INF.4 (Republic of Korea), plus the outcome of NAV 56, STW 42, COMSAR 15 and taking into account any decisions of, and comments and proposals made in Plenary, undertake the following tasks:

- .1 review the report of the Correspondence Group and provide comments and recommendations with respect to the actions requested in paragraphs 61.1 to 61.8 and 61.10 of document NAV 57/6;
- .2 review document NAV 57/5/1 concerning Report ITU-R M.2201 (11/2010) – Utilization of the 495-505 kHz band by the maritime mobile service for the digital broadcasting of safety and security related information from shore-to-ships and identify its relevance with respect to e-navigation;
- .3 review and update the table on the overall planning for the 2009–2012 strategy element plan (MSC 86/23/4, annex, page 7);
- .4 review and consolidate the process of completing the initial gap analysis and provide comments/recommendations; and
- .5 review and revise the terms of reference for a correspondence group to progress work intersessionally for reporting to COMSAR 16, STW 43 and NAV 58, based on the joint plan of work approved by MSC 86.

Report of the e-navigation Working Group

6.31 Having received and considered the e-navigation Working Group's report (NAV 57/WP.6), the Sub-Committee (with reference to paragraphs 8.1.1 to 8.1.13, and annexes 1 to 3) took action as summarized in the ensuing paragraphs.

6.32 The Sub-Committee agreed on:

- .1 the current overarching e-navigation architecture (NAV 57/WP.6, paragraphs 3.4 to 3.8 and figure 1);
- .2 the proposed way forward for developing a Common Maritime Data Structure (CMDs) (NAV 57/WP.6, paragraphs 3.12 and 3.13 and figure 2); and
- .3 the use of the IHO's S-100 standard as the baseline for creating a framework for data access and services under the scope of SOLAS (NAV 57/WP.6, paragraphs 3.15 and 3.16),

with a view to approval by MSC 90.

6.33 The Sub-Committee invited the Committee to authorize, in consultation with other organizations, the establishment of an IMO/IHO Harmonization Group on Data modelling and approve its terms of reference (annex 5).

6.34 Regarding the use of the IHO's S-100 Registry, operated by IHO, for the ongoing development on product specifications, as and when required, the Sub-Committee invited IHO and IALA to continue advising the correspondence group and the IMO/IHO Harmonization Group on Data modelling, if established, in this respect.

6.35 The Sub-Committee noted the comments of the Working Group regarding Maritime Service Portfolios (MSPs) and agreed with their further development.

6.36 The Sub-Committee also noted the progress made on the development of the gap analysis and encouraged the participation of Member States, international organizations and interested parties in its preparation.

6.37 The Sub-Committee further noted the preliminary comments provided by the Working Group regarding the draft outline of a Strategy Implementation Plan on e-navigation and encouraged Member States, international organizations and other interested parties to advise on and share the results of relevant regional developments, conferences, workshops and testbeds related to e-navigation.

6.38 Regarding the allocation of the frequency band of 495-505 kHz for e-navigation, the Sub-Committee noted that the Working Group, acknowledging the current difficulties for frequency allocation and taking into account the further expected needs of additional frequency spectrum, had recognized that the above-mentioned frequency band should be claimed for future uses of e-navigation.

6.39 The Sub-Committee recalled that MSC 89 had already approved an IMO position on WRC-12 Agenda items concerning matters relating to maritime services (COMSAR 15/16, annex 4 refers) for submission to the ITU World Radiocommunication Conference (23 January to 17 February 2012). In particular, one of the IMO positions regarding the examination of frequency allocation requirements with regard to operation of safety systems for ships and ports and associated regulatory provisions, in accordance with Resolution 357 (WRC-07) (Agenda item 1.10) was:

"4 Taking into account (1) the possible requirement in future for the promulgation of additional security-related information, (2) the developments in IMO with regard to e-navigation and (3) a review of the elements and procedures of the GMDSS, IMO supports an exclusive primary allocation to the maritime mobile service in the band 495-505 kHz in all three regions and a co-primary allocation in the band 510-525 kHz in Region 2, whilst maintaining the existing maritime mobile primary allocation in the band 415 kHz – 526.5 kHz."

6.40 Taking into account the above information, the Sub-Committee decided that, for the time being, no further action was required until future uses of the frequency band of 495-505 kHz were identified for e-navigation.

6.41 The Sub-Committee invited the Committee to approve the proposed joint plan of work for the COMSAR, NAV and STW Sub-Committees for the period 2012–2014 (annex 6) and extend the target completion date for the work programme item "Development of an e-navigation strategy implementation plan" to 2014.

6.42 The Sub-Committee re-established the correspondence group on e-navigation under the coordination of Norway* and instructed it to, taking into account the joint plan of work for the COMSAR, NAV and STW Sub-Committees for the period 2012–2014, the comments and general views expressed at NAV 57 and, decisions taken by NAV 52

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including the guidance in MSC/Circ.1091 on Issues to be considered when introducing new technology on board ship and MSC/Circ.878-MEPC/Circ.346 on Human Element Analysing Process (HEAP):

- .1 using the overarching e-navigation architecture as a framework, further develop the detailed architecture of both the ship and shore sides, as appropriate, taking into account the outcomes of the gap analysis;
- .2 consider the development of Maritime Service Portfolios to achieve harmonization, modernization, integration and simplification on board and ashore, taking into account the use of the IHO's S-100 standard, and recommend the approach to be taken;
- .3 further develop and complete the gap analysis with a view to finalization at NAV 58, taking into account the relevant documents submitted in this respect;
- .4 further develop the draft Strategy Implementation Plan;
- .5 consider the development of guidelines for usability evaluation of navigational equipment during the preparation of the Strategy Implementation Plan, taking into account the information provided in documents NAV 57/6/5, NAV 57/INF.7 and NAV 57/INF.8 (Japan) and NAV 57/WP.6, and recommend the approach to be taken;
- .6 further progress the preparation of cost benefit and risk analysis processes;
- .7 submit interim reports to COMSAR 16 and STW 43 raising specific questions, if required, that should be addressed by the STW and COMSAR Sub-Committees; and
- .8 submit a consolidated progress report to NAV 58.

6.43 The delegation of the Islamic Republic of Iran, whilst supporting any kind of innovations that could help enhancement of maritime safety and security, was of the view that e-navigation was an innovation which was expected to have valuable effect in this regard. It was known that the technologies for such innovation were important and crucial and were considered as a pre-requirement for fulfilling the obligations stipulated in the relevant instruments. The delegation of the Islamic Republic of Iran expressed its deep concern with regard to safety being affected by some unfair treatments and restrictions in providing safety equipments or facilities which was totally unacceptable and against the spirit of IMO goals as well as peaceful international maritime transportation. According to the above-mentioned issue, the delegation of the Islamic Republic of Iran strongly believed that the maritime safety, security and marine environment protection shall not be affected at any time and in any case by such unfair treatments.

7 REVIEW OF VAGUE EXPRESSIONS IN SOLAS REGULATION V/22

7.1 The Sub-Committee recalled that MSC 82 (MSC 82/24, paragraphs 21.39 and 21.40) had considered a proposal by Germany (MSC 82/21/11) to develop, in view of some cases of stowage of containers above the line of visibility, a clarification of SOLAS regulation V/22 (Navigation bridge visibility) or revision of the regulation, to ensure safe navigation and to avoid ship detentions and, agreed to include, in the NAV Sub-Committee's work programme, a high priority item on "Review of vague expressions in SOLAS regulation V/22". In this

respect, MSC 82 had noted a view that rather than developing amendments to the SOLAS Convention, guidance on the implementation of SOLAS regulation V/22 might be prepared, and agreed that it should be left to the Sub-Committee to decide on the course of action to be taken when addressing the issue.

7.2 The Sub-Committee also recalled that NAV 54 had considered the above document MSC 82/21/11 together with document NAV 54/17 (Denmark and Singapore), proposing an amendment of SOLAS regulation V/22, which enabled ships to verify compliance with SOLAS regulation V/22, when loading deck cargo. Concerns were raised as to the scope of application to different types of ships, applicability to existing ships, the potential need for new equipment, and the need for flexibility in the application of the proposed draft amendment. The Sub-Committee agreed that it was premature to take any decision at present and that more detailed consideration was necessary prior to finalization.

7.3 The Sub-Committee further recalled that NAV 55 had considered document NAV 55/13/1 (Norway) proposing a series of amendments to SOLAS regulation V/22, in order to clarify the intent of the regulation and ensure uniform understanding of the requirements. Some delegations voiced concerns with respect to the proposed amendments related to SOLAS regulation V/22.1.2 – Blind Sectors with respect to the "designated" conning position; SOLAS regulation V/22.1.7 – Height of lower edge of bridge front windows with respect to minimum lower height; the meaning of the term "clear view"; conflicts with the calculation of angles of visibility under the dynamic conditions of pitch and roll; and applicability to existing ships.

7.4 The Sub-Committee recalled further that NAV 55 had also considered document NAV 55/13/2 (Denmark) proposing an amendment to SOLAS regulation V/22.5 enabling ships to verify compliance with SOLAS regulation V/22 when loading deck cargo. NAV 55 was of the view that the Danish proposal would apply more to containership visibility and that it was premature to take any decision.

7.5 NAV 56 had considered the relevant report of a Drafting Group but agreed that several issues remained unresolved requiring further clarification before the proposed amendments could be finalized. NAV 56 had then agreed to the establishment of a Correspondence Group under the coordination of the United States. The Correspondence Group was instructed to consider the relevant documents and submit its report for consideration and review by NAV 57.

7.6 The Sub-Committee considered document NAV 57/7 (United States) containing a draft amended text of SOLAS regulation V/22, as prepared by the Correspondence Group, for review by the Sub-Committee. Norway did not agree, in principle, with the proposed draft regulation and their detailed statement was included in annex 3 to document NAV 57/7. The Group had also suggested that an MSC or SN circular could be used to further clarify SOLAS regulation V/22.

7.7 In order to address the various concerns of Members, the Sub-Committee agreed to review the draft text of SOLAS regulation V/22 as prepared by the Correspondence Group, paragraph by paragraph and the relevant discussion is outlined below. After a general discussion on the philosophy of the Organization's general move to more goal and performance based rather than prescriptive requirements, leaving the prescriptive provisions to be drawn up by the appropriate standardization bodies, it was agreed to use performance based terms wherever possible in lieu of prescriptive terms in the requirements.

Paragraphs 1.1 to 1.3

7.8 The observer from BIMCO suggested alternative text to replace paragraphs 1.1, 1.2 and 1.3 in their entirety with similar language presented in a different sequence and with considerable modifications to the parameters suggested in the text from the Correspondence Group. Several delegations expressed support for the proposal by BIMCO. Considerable discussion followed, with some delegations suggesting modifications to the text proposed by BIMCO, and others preferring to retain the text proposed by the Correspondence Group.

7.9 The Sub-Committee re-considered the revised text that had resulted from their earlier discussions. The delegation of the United States was of the view that changing the field of view from an arc of 20 degrees to an arc of 180 degrees was a significant change and should not be done without due consideration. The delegation of the Bahamas was of the view that a change to an arc of 180 degrees was impractical. The observer from CLIA was of the view that an arc of 60 degrees was possible to achieve. Noting that the above proposed changes would render the rest of the revised text impractical, the Sub-Committee agreed to revert to the text originally proposed by the Correspondence Group. There was considerable discussion and debate within the Sub-Committee on the requirement for an unobstructed view of the sea surface over a specified arc of visibility either side of the bow. After having decided that an arc of 90 degrees either side of the bow was impractical, the Sub-Committee considered whether an arc of 60 degrees could be achieved. Some delegations were of the opinion that an arc of 10 degrees, as contained in the original text, was sufficient for the safe operation of the ship. Without a consensus of opinion or clear, unambiguous resolution of this matter, the Sub-Committee agreed to retain the original value, i.e. 10 degree either side of the bow. Paragraphs 1.2 and 1.3 of the text proposed by the Correspondence Group remained unchanged apart from returning to the term "all conditions".

Paragraphs 1.4 to 1.6

7.10 There was general agreement to accept the text on the horizontal field of vision from the bridge wings and the steering station as well as the parallel body of the ship being visible from the bridge wings, respectively as proposed by the Correspondence Group.

Paragraph 1.7

7.11 Several delegations spoke on the issue of the height of the lower edge of the bridge front windows. Japan, supported by Panama and the Bahamas, expressed a preference for the requirement to be given in Goal based terms, and preferred the original text, stating that the lower edge of the bridge windows shall not present obstruction to the forward view as described in this regulation. The delegation of Sweden supported by the Marshall Islands and Norway preferred the lower edge of the bridge front windows to be less than 1,000 mm above the bridge deck. The delegation of the Netherlands expressed a preference for the requirements to be given in performance based terms, as opposed to prescriptive terms. The delegation of the United States, as coordinator of the Correspondence Group noted that the 1,000 mm distance was derived from an ISO specification. In light of the above decision (paragraph 7.7 refers), the Sub-Committee agreed to retain the performance based requirement "shall not obscure the forward view".

Paragraph 1.8

7.12 In light of the foregoing discussion, the Sub-Committee agreed to use the performance based option for describing the height of the upper edge of the bridge front windows.

Paragraph 1.9

7.13 Several delegations addressed the issue of navigation bridge front windows. The delegation of Poland felt that the requirement should apply to all windows, however the Sub-Committee was of the general opinion that the requirements should apply only to forward facing windows.

Paragraph 1.9.1

7.14 There was general agreement to accept the text on the angle of incline of bridge front windows as proposed by the Correspondence Group.

Paragraph 1.9.2

7.15 The delegation of Spain was of the view that SOLAS regulation V/22 should not address the size of the framing between windows as this was a structural matter and should be left to the judgment of naval architects and structural engineers. The delegation of the Bahamas, citing a specific incident in which a ship entitled to fly their flag had its wheelhouse stove in by heavy seas, supported the delegation of Spain. The delegation of China was of the view that the original text of the regulation should be retained. Bearing in mind its earlier decision, the Sub-Committee agreed to retain the performance-based requirement that the spacing between windows be kept to a minimum as noted in the original text. The Sub-Committee agreed with the view of the delegation of the Marshall Islands that the prescriptive requirement should be removed.

Paragraph 1.9.3

7.16 There was general agreement to accept the text on the prohibition of polarized and tinted windows as proposed by the Correspondence Group.

Paragraph 1.9.4

7.17 The delegation of Norway proposed alternative text suggesting that a clear view should be maintained through all front windows or a certain percentage of front windows, as opposed to only two front windows. The CLIA observer, supported by ICS, expressed concern over the requirement for a clear view through all front windows, noting the possibility that a ship could face detention as a result of a single malfunctioning windshield wiper. The delegation of the Republic of Korea proposed that the requirement should refer to windows immediately in front of the steering station. The delegation of the Marshall Islands, supported by ICS, suggested that the requirement for a clear view should be applied to a minimum of five windows in front of the steering station. The delegation of Australia, supported by Panama, suggested that a percentage of front windows be fitted with the means for providing a clear view. After discussion the Sub-Committee initially agreed that at least 50 per cent of front windows should be required to be fitted with the means to maintain a clear view. The Sub-Committee was of the opinion that the windows in front of the main steering station should be fitted with a means to maintain a clear view, and that the arc of visibility of this view should be the same as that described in paragraph 1.6 of the regulation, i.e. from the main steering position, the horizontal field of vision shall extend over an arc from right ahead to at least [60°] on each side of the ship. With regard to work stations, the Sub-Committee agreed that it was difficult to define a work station and accordingly decided to delete any references to a work station.

Paragraph 1.10

7.18 The delegation of the Republic of Korea supported the text describing the conning position as proposed by the Correspondence Group. The delegation of Norway proposed alternative text, and the delegation of Canada was of the view that a strategic approach should be taken and that the definition of the conning position should apply to the entire regulation. The OCIMF observer proposed that the conning position be described in terms of the field of view described in section 1.9.4 on a clear view. The delegation of Ireland expressed concern that the proposed definition of the conning position could prove to be too restrictive on the movement of the navigating officer. The delegation of Norway expressed concern over the 5,000 mm lateral repositioning of the conning position. The IFSMA observer was of the view that the conning position and the navigating position should be the same. The delegation of Denmark was of the view that the conning position and the navigating position should overlap or coincide. The delegations of Japan and the Netherlands supported the proposed definition of the conning position, as proposed by the Correspondence Group. After general discussion, the Sub-Committee agreed to the proposed definition of the conning position, as proposed by the Correspondence Group.

Paragraph 2

7.19 There was general agreement to accept the text on the entry into force dates as proposed by the Correspondence Group. The delegation of Japan expressed concern that there could be an applicability gap between the effective date for new ships and existing ships that would have to be reconciled.

Paragraphs 3 and 4

7.20 There was general agreement to accept the text on alternative compliance arrangements on the part of Administrations and on ballast water exchange respectively, as proposed by the Correspondence Group.

Paragraph 5

7.21 Several delegations expressed concern over the need to retain the text, as drafted, or amend or delete it in its entirety. The delegations from Denmark, Panama, the Netherlands, and the Marshall Islands, supported by observers from BIMCO, the Nautical Institute and ICS were in favour of retaining the section and deleting the text referring to the need to "demonstrate that no other stowage positions could be utilized ..." on the grounds that this would be too difficult to enforce or that compliance would be ambiguous. The delegation of Germany was of the view that the text should either be retained in its entirety or the entire paragraph should be completely deleted, since the text in square brackets was aiming at providing the master with a tool to verify compliance. The IACS observer was of the view that additional guidelines would be required should the requirement be retained in either form. After considerable discussion, the Sub-Committee agreed to retain the text however deleting the reference to need to "demonstrate that no other stowage positions could be utilized ...". There was general agreement on the entry into force dates as proposed by the Correspondence Group.

7.22 After a preliminary discussion, as reported in paragraphs 7.7 to 7.21 above, the Sub-Committee established a Drafting Group and instructed it, in accordance with its decisions of, and comments and proposals made in Plenary, to consider documents NAV 57/7 (United States) and prepare a draft revised text of SOLAS regulation V/22, as appropriate, for consideration and approval by Plenary.

Report of the Drafting Group

7.23 Having received and considered the Drafting Group's report (NAV 57/WP.7), the Sub-Committee (with reference to paragraphs 3.1 to 3.10 and annex), took action as summarized in the ensuing paragraphs.

7.24 The Sub-Committee:

- .1 agreed that the earliest date of implementation would be 1 July 2014;
- .2 with regard to the definition of conning position on the proposed new subparagraph 1.10 of draft SOLAS regulation V/22, acknowledged that for ships with a centreline obstructed by fixed structure(s), a combination of two conning positions may be necessary to comply with the regulation. For ships outside this category, the definition of one conning position is applicable, as stated in the first sentence of paragraph 1.10;
- .3 noted that IACS had asked the Drafting Group to consider carefully how the expression "shall be used in combination to comply with this regulation" is to be globally and uniformly interpreted, in particular as to how the blind sector calculations at two conning positions were to be considered against the criteria specified in this regulation, for example if the total of the blind sectors from the two conning positions was to be less than the specified parameters;
- .4 with reference to the comments from IACS, was of the view that the reference to "be used in combination" meant the summation of the visible sector used of the two conning positions to comply with the regulation;
- .5 further agreed to move the definition of the conning position to the first subparagraph of draft SOLAS regulation V/22.1 as this definition was applicable to the content of the entire regulation;
- .6 in relation to new paragraph 5, agreed to include the reference to the Master to clarify the application of verification of the navigation bridge visibility; and
- .7 endorsed the draft revised text of SOLAS regulation V/22 relating to vague expressions, as set out in annex 7, and agreed to forward it to the Committee for approval and adoption, as appropriate.

7.25 The Sub-Committee decided to invite the Committee to delete this item from its biennial agenda when discussing agenda item 12.

8 DEVELOPMENT OF POLICY AND NEW SYMBOLS FOR AIS AIDS TO NAVIGATION

8.1 The Sub-Committee recalled that 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.

8.2 The Sub-Committee also recalled that at NAV 56, a number of delegations had expressed their appreciation of the initiative undertaken by Japan in developing examples of draft new symbols for AIS AtoN. However, there had been concern that the broader issue of

AIS AtoN had not been discussed in detail. It was therefore necessary to have a wider discussion of the issue relating to policy matters, limitations on use, training of seafarers and limitations of displays – including information overload. It was felt that there was a need for a joint submission to the Committee for a new biennial agenda item for the Sub-Committee to address the various concerns related to this issue. Accordingly, NAV 56 had agreed that it was premature to establish a Correspondence Group on AIS AtoN symbology. It was imperative to have first a policy in place before any major work was undertaken on this issue.

8.3 The Sub-Committee noted that MSC 88 had considered document MSC 88/23/10 (Japan and United States), proposing to expand the scope of the planned output on "New symbols for AIS aids to navigation" to also include the development of policy, guidance and performance standards for AIS aids to navigation and rename the planned output accordingly, taking into account information provided in document MSC 88/23/12 (Chile), and had agreed to expand the planned output to include performance standards, guidance and policy on their use and, in view of the expansion, renamed the planned output "Development of policy and new symbols for AIS aids to navigation".

8.4 The Sub-Committee considered document NAV 57/8 (Japan) providing its views on how to progress the work and suggesting the establishment of a Correspondence Group. With three sessions of the Sub-Committee being allocated to the work starting at NAV 57, the target completion date was 2013, Japan therefore suggested that NAV 57 and NAV 58 be allocated to the development of policy and NAV 58 and NAV 59 to the discussion of the development of symbols. However, since the scope of work on the development of the policy was deemed to be rather wider than the development of the symbols, this plan might be adjusted, as necessary.

8.5 The Sub-Committee considered document NAV 57/8/1 (China) proposing new symbols for AIS AtoN that were being used on Chinese paper charts, for consideration and reference by IMO Member Governments and interested parties, and noted the information provided.

8.6 The Sub-Committee also considered document NAV 57/8/2 (IALA) commenting on the Japanese proposal (NAV 57/8), submitting information with respect to the work of IALA on providing guidance to AtoN authorities on the correct planning, installation, configuration, operation, and monitoring of AIS AtoNs. In addition, IALA provided a list of IALA documents to assist in the education of mariners in the benefits and use of AIS AtoN.

8.7 A number of delegations and observers spoke on the issue. There was, in general, strong support for the development of a policy and new symbols for AIS AtoN. Some delegations suggested that amongst the items suggested for developing the policy there should be an item on "permanent and temporary use". In addition, it was imperative that the issue of chart symbology should also be addressed in conjunction with IHO and that IALA's previous efforts in this field were not overlooked, in order to avoid duplication. In general, there was strong support for the establishment of a Correspondence Group to progress the issue intersessionally.

8.8 The delegation of Singapore also raised a concern that the use of AIS AtoN could have a bearing on navigational safety as non-SOLAS vessels and small craft may not be equipped with AIS.

8.9 The IHO observer stated that IHO was responsible for chart symbology and IMO for navigational symbology and it was necessary for both to co-ordinate their efforts. IHO was pleased to note that the Sub-Committee was of the view that policy issues would be addressed prior to chart symbology development.

8.10 After a preliminary discussion, as reported in paragraphs 8.4 to 8.9, the Sub-Committee agreed that at this stage there was not sufficient information available to make substantial progress and, as suggested by Japan, it would therefore be appropriate to establish a Correspondence Group under the coordination of Japan* to make progress on this issue interessionally.

8.11 The Correspondence Group was instructed to consider documents NAV 56/11, NAV 57/8 and NAV 57/8/2, including comments made in Plenary and any other relevant information, develop a first draft of a policy for AIS Aids to Navigation and submit a report for consideration and review by NAV 58.

9 CASUALTY ANALYSIS

9.1 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 programmes of all sub-committees on a continuous basis.

9.2 The Sub-Committee noted that FSI 19 had referred three casualty investigation reports and analyses of accidents and identification of trends regarding the integration of pilots into bridge teams (FSI 19/5, annex 4) to the Sub-Committee for review.

9.3 The Sub-Committee also noted that the Secretariat had provided the synopsis of three casualty reports and FSI 19/5, annex 4 to assist the Sub-Committee in its consideration of the issue.

9.4 The Sub-Committee considered document NAV 57/2/1 (Secretariat) relating to the three incidents, namely, the very serious casualty on board the container ship **Chicago Express** (GISIS Incident No.C0007636); the serious casualty on board the cruise ship **Black Watch** (GISIS Incident No.C0007377); and the serious casualty on board the container ship **Beluga Sensation** (GISIS Incident No.C0007575).

9.5 The Sub-Committee was of the view that issues of relevance to operational safety applied to the very serious casualty on board the container ship **Chicago Express** (GISIS Incident No. C0007636), and highlighted the fact that masters and watch-keepers need to better understand the vulnerability of vessels in high sea state, and have available guidance on measures to avoid undesired events.

9.6 With regard to document FSI 19/5, annex 4, the Sub-Committee noted that the data from the questionnaires and GISIS indicated that most of the incidents with a Pilot on board happen on a river or in a coastal area. The most frequent consequence was a collision or grounding with the ship being under manual control when the incident occurred. It appeared that it was the pilot who gave the course and engine orders and the master or the crew executed the orders. In the review of the reports in GISIS some causes and situations recur, some of which are listed below:

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- lack of communication between the Pilot and the bridge team;
- language barriers;
- technical deficiencies with regards to manoeuvrability or navigational equipment;
- external conditions, e.g., weather, current and hydrodynamic interactions;
- pilots with insufficient training and experience;
- the Master or OOW become passive and leave the responsibility and various tasks to the Pilot; and
- the Pilot commences the pilotage even though the ship's condition or the bridge manning is not in accordance with regulations.

9.7 The Sub-Committee considered document NAV 57/9 (Bahamas) outlining its increasing concerns following a spate of accidents and near misses involving vessels whilst under pilotage, contending that in the interests of greater navigational clarity and in order to address contributory factors to incidents, an appropriate Safety of Navigation circular should be developed, proposing a draft text for consideration.

9.8 The delegation of the Bahamas drew the Sub-Committee's attention to some recent accidents and incidents which had occurred on Bahamian vessels. In these incidents, there had been unsatisfactory communication between the pilot and the master and others on the bridge. The Bahamas had proposed three related recommendations.

The first recommendation was:

"Pilotage passage plans should be submitted to the vessel at the earliest point so that they may be integrated into the ship's navigational systems".

The Bahamas stated that the latest Guidelines for Voyage Planning in Assembly resolution A.893(21) required that voyage and passage planning included appraisal, i.e. gathering all information relevant to the contemplated voyage or passage; detailed planning of the whole voyage or passage from berth to berth, including those areas necessitating the presence of a pilot; execution of the plan and the monitoring of the progress of the vessel in the implementation of the plan. Assembly resolution A.960(23) – Recommendations on Operational Procedures outlined that the exchange of information between master and pilot should include "general agreement on plans and procedures, including contingency plans, for the anticipated passage". This procedure would be simplified if the pilot had forwarded his plan to the ship before arrival. This could be updated as necessary, when the pilot boarded. This was most important when those onboard were speaking a different language than the pilot. The Bahamas' recommendation was that the practice should become universal.

The second recommendation was:

"The pilot should not manually steer the vessel, especially through the use of the auto pilot."

The Bahamas' view was that the pilot's job was wider than just steering the ship, and to make a comprehensive assessment of the ship's situation including keeping a proper look out, monitoring the ship's position and making appropriate radiocommunications was, in many cases, asking too much of the pilot.

The third recommendation was:

"There had to be clear and open communication between the pilotage team and the bridge team so that all information related to the safe navigation of the vessel was clearly understood by all involved".

This was to reinforce that good communication between all involved in the pilotage passage was essential. Unfortunately, this was all too often ignored and the Bahamas would ask that a further reminder be issued to pilotage authorities emphasizing this issue. It was particularly important when the parties' native languages were not the same that the passage plan was available before the pilot boarded, so that there was time to read and understand it before the pilot embarked. If there were points needing clarification this could be done directly with the pilot.

9.9 The Sub-Committee also considered document NAV 57/9/1 (IMPA) voicing its concerns over the proposal by the Bahamas.

9.10 The IMPA observer stated that they could not agree with the conclusions by the Bahamas in their document nor with two of the three measures the Bahamas felt should be the subject of a new circular. The Bahamas had referred to two navigational accidents in which the major problems were inadequate manning – and failures of the ships' bridge crews to actively participate in the navigation of the vessel and to follow well-established Bridge Resource Management principles. In neither of the two accidents had there been any indication that a lack of communication between the pilot and the bridge team was a causal factor or that a more extensive or earlier submitted passage plan by a pilot would have prevented the accident. The safety benefits of pilots and bridge crews having a shared understanding of the intended voyage in pilotage waters was widely accepted and recognized as prudent seamanship practices by responsible professionals. The place and time for gaining that shared understanding, however, was on the bridge and during face-to-face master-pilot information exchanges, both when the pilot arrives and throughout the voyage. This subject was addressed in resolution A.960.

The proposal for the Organization to recommend that pilots should not manually steer vessels, especially through the use of auto-pilots, ignored the equipment fitted on modern vessels, best practices in some locations, and the paucity of crew available for steering duties. These situations varied, quite properly, from location to location and from vessel to vessel. For some vessels, particularly smaller vessels with cockpit configurations, the only way a pilot could effectively direct and control the vessel's navigation was by personally steering the vessel. In some places, manually steering a vessel by the pilot was not only the accepted and standard practice, it was legally required.

IMPA recalled that resolution A.960 and other existing instruments, such as the Manila STCW amendments, had much to say about how bridge crews and pilots could best work together to achieve the common goal of safe and efficient ship navigation. IMPA could therefore not support the proposed circular.

9.11 The delegation of the Marshall Islands welcomed the Bahamas' proposal and agreed that an appropriate MSC circular was required as a reminder to pilots, masters, navigators of the need to improve coordination between Masters and pilots. Based on the review of investigation cases involving Marshall Islands flagged ships, it had been noted that between 2005 and 2010 almost 50% of the reported collisions, allisions and groundings worldwide occurred when a pilot was onboard. Common factors noted in these cases included:

- .1 the pilot had not been integrated into the bridge team;
- .2 pilots communicating in their native language rather than in English or a language common to all involved (a contravention of SOLAS regulation V/14.4); and
- .3 pilots making decisions regarding the navigation of the ship without giving the Master any real opportunity to provide input.

The Marshall Islands had made recommendations to ship operators, and some operators had themselves identified the need for Masters to be more ready to step in when they were unsure/disagreed with the pilot's intentions as well as to ask them to use English or at least to repeat commands given in their native language in English. That delegation also proposed some changes to the draft MSC circular proposed by the Bahamas, which were based on the factors noted in the review of casualty cases and in line with Assembly resolution A.960(23).

9.12 The delegation of Norway recalled that it had been agreed at FSI 19 to bring safety issues related to the integration of pilots into bridge teams to the attention of Administrations for consideration when conducting future investigations (FSI 19/19, paragraph 5.18). Among these issues were:

- .1 lack of communication between pilot and bridge team;
- .2 language barriers; and
- .3 Master or Officer on watch becoming passive, leaving their duties and obligations to the pilot.

Norway supported the issuing of a circular with the content as agreed by FSI 19. These were important matters that needed to be focussed on when conducting future investigations and also needed the attention of pilot authorities and shipping companies.

Norway doubted however the justification for yet another circular as proposed by the Bahamas, highlighting only a few selected issues related to navigational accidents whilst under pilotage and leaving other important issues out. In the **Crete Cement** incident the investigation report had identified the officer on watch conducting other tasks at the time of the incident as the main cause for the accident. Norway considered the need for the ships' crew to be actively involved in the operation, also when under pilotage to be one of the most important issues.

Norway could therefore neither support the content of the proposed circular nor agree to the first two points raised for the same reasons stated in IMPA's document since open and clear communication between the pilotage team and the bridge team was an important issue, Norway supported further consideration of ways to improve safety for ships while under pilotage, taking into account all relevant factors.

Recalling the ongoing work in the IALA Pilotage Authority Forum on harmonizing pilotage authority guidelines internationally, Norway suggested to bring the above-mentioned FSI circular to the attention of both pilotage authorities and shipping companies, in addition to Administrations responsible for conducting investigations.

9.13 A number of delegations spoke on the issue. A majority were clearly of the view that existing recommendations/guidelines were sufficient and there was no justification for a new circular.

9.14 The delegation of the Bahamas supported by the ICS observer still felt that they had raised important issues and therefore intended to consult with other parties concerned to consider how to take the matter forward in the future.

9.15 The Chairman in summing up the debate thanked the Bahamas and IMPA for their documents and the delegations and observers that spoke on the issue and noted that it was the obvious consensus of the Sub-Committee that there was no need for a circular or other document at this juncture. However, the issues raised were important ones and might need to be reviewed in light of relevant accident investigations and experience gained at an appropriate time in the future.

10 CONSIDERATION OF IACS UNIFIED INTERPRETATIONS

10.1 The Sub-Committee recalled that, in order to expedite consideration of IACS unified interpretations being submitted to the Committee on a continuous basis, MSC 78 had decided that IACS should submit them directly and, as appropriate, to the sub-committees concerned. To this effect, MSC 78 had agreed to retain, on a continuous basis, the item "Consideration of IACS unified interpretations" in the work programmes of the BLG, DE, FP, FSI, NAV and SLF Sub-Committees and include it in the agenda for their next respective sessions.

10.2 The Sub-Committee recalled that it had considered proposals for IACS Unified Interpretations at its fifty-second, fifty-third and fifty-fifth 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 and MSC.1/Circ.1350 on Unified Interpretations of SOLAS regulation V/22.1.6 relating to navigation bridge visibility during MSC 82, MSC 84 and MSC 87, respectively.

10.3 The Sub-Committee recalled further that NAV 50 had considered, on a preliminary basis, the proposal by IACS on Unified interpretation relating to the use of cameras in order to meet bridge visibility requirements and invited Members to submit comments and detailed proposals on the matter for consideration at NAV 51. However, IACS had not re-submitted SC 139 on bridge visibility to neither session of NAV 51 or to NAV 53 or NAV 54. At NAV 55, IACS had informed the Sub-Committee that they would submit any further relevant IACS Unified Interpretation proposals, including SC 139, to NAV 56.

10.4 At NAV 56, the IACS observer had updated the Sub-Committee on IACS Unified Interpretation SC 139, indicating that Revision 1 of this IACS UI was available on the IACS website. Due to close proximity between MSC 87 and NAV 56, there was insufficient time for IACS to make a submission to NAV 56 regarding UI SC 139 that took due account of the final MSC 87 approved version of MSC.1/Circ.1350. In particular, IACS would need to review the scope of application of UI SC 139 – and the use of remote camera applications – in light of the interpretation provided in MSC.1/Circ.1350 and consider what, if any, consequences this had on the current version of UI SC 139 and advise NAV 57 accordingly. Accordingly, NAV 56 had invited IACS to submit any further relevant IACS Unified Interpretation proposals to NAV 57.

10.5 The Sub-Committee also noted that no related document had been submitted to the Sub-Committee regarding UI SC 139 and invited IACS to update the Sub-Committee on this matter.

10.6 The observer from IACS informed the Sub-Committee that with respect to UI SC 139, IACS was still in the process of reviewing MSC.1/Circ.1350 and therefore had been unable to meet the deadline for submission of documents.

10.7 The Sub-Committee considered document NAV 57/10 (IACS) raising a difficulty encountered by IACS regarding navigation light arrangements described in Annex I/9(a)(i) and Annex I/10(a)(i) of the Convention on the International Regulations for Preventing Collisions at Sea (COLREG) 1972, as amended. IACS had also proposed a solution for the consideration of the Sub-Committee on the Application of the provisions of Annex I/9(a)(i) and Annex I/10(a)(i) of the COLREG.

10.8 Several delegations supported the IACS interpretation regarding navigation light arrangements, as outlined in paragraph 6 of document NAV 57/10, concerning horizontal sectors; however, they had doubts about paragraph 7 regarding the vertical sectors. It was

felt that further discussion was necessary in the Working Group and it would be appropriate to coordinate with the Technical Working Group on the issue. The Sub-Committee agreed to follow this course of action.

10.9 Accordingly, the Sub-Committee agreed that this issue needed careful consideration and decided to refer this issue also to the Ships' Routeing Working Group and the Technical Working Group for the preparation of a relevant MSC circular on Unified Interpretations of COLREG.

Terms of reference for the Ships' Routeing Working Group

10.10 The Sub-Committee instructed the Ships' Routeing Working Group to consider document NAV 57/10 (IACS) regarding navigation light arrangements described in Annex 1/9(a)(i) and Annex 1/10(a)(i) of the COLREGs and in coordination with the Technical Working Group prepare a relevant MSC circular on Unified Interpretations of COLREG for consideration and approval by Plenary.

Report of the Ships' Routeing Working Group

10.11 In considering the relevant part of the Ships' Routeing Working Group's report (NAV 57/WP.4, paragraphs 7.1 to 7.12), the Sub-Committee took action as indicated in the ensuing paragraphs.

10.12 The Sub-Committee endorsed the draft MSC circular on Unified Interpretations of COLREG 1972, as amended, incorporating the advice received from the Technical Working Group, as set out in annex 8, for approval by the Committee.

10.13 The Sub-Committee noted the views of the Working Group that the current unified interpretation or any possible unified interpretation on vertical sectors would not address the problem raised by IACS. This was because there was no technical specification or regulation for visibility of sidelights that was susceptible of interpretation to address that issue. This revealed potential need for amending the existing COLREG related to visibility rather than intensity of sidelights. Although COLREGs addressed visibility requirements in Rule 22 and intensity requirements in paragraph 8 of Annex I, no particular requirements could be identified that sufficiently covered the questions raised by IACS. Thus, particular emphasis in the review process of the COLREGs should be placed on the identification of the aspects of large ships as seen from small ships in close proximity.

10.14 The Sub-Committee invited IACS to submit any further relevant IACS Unified Interpretation proposals to NAV 58.

11 DEVELOPMENT OF PERFORMANCE STANDARDS FOR INCLINOMETERS

11.1 The Sub-Committee noted that MSC 88 had considered document MSC 88/23/6, proposing the development of performance standards for inclinometers to provide roll period and heel angle data to the crew and to a VDR for recording, and agreed to include, in the biennial agenda of the Sub-Committee and the provisional agenda for NAV 57, an unplanned output on "Development of performance standards for inclinometers", with a target completion year of 2012 (MSC 88/26, paragraph 23.24).

11.2 The Sub-Committee considered NAV 57/11 (Germany) containing a draft text for a proposed Performance Standards for Roll Measurement Equipment (RME).

11.3 The Sub-Committee also considered documents NAV 57/4/4 including Corr.1 (United Kingdom) providing comments related to document NAV 57/11, stating that the carriage of an inclinometer was not mandatory and therefore, under the draft standards, the capture of roll motion in the VDR record was not assured. The United Kingdom further proposed a separate sensor mounted in the VDR to measure roll for motion analysis independent of an inclinometer sensor for operational use. This solution could assure capture of roll motion for investigation and was likely to be cost-effective, since cabling between a VDR and an inclinometer for operational use was avoided, while even a 5 degrees-of-freedom measurement module now retailed for less than US\$50. If the solution was accepted, document NAV 57/11 would need to be revised to describe the two independent types of inclinometer.

11.4 The delegation of the Bahamas supported by the ICS observer were of the view that the subject matter was outside the remit of the Sub-Committee and should be sent to the DE or possibly the SLF Sub-Committee.

11.5 The IACS observer had three technical comments on the issue, namely:

- .1 with respect to paragraph 6 of document NAV 57/11, consideration should be given to retaining/including text referring to the alarming functionality, recognizing that the related criteria needed further consideration, and in this respect the SLF Sub-Committee might be in a position to provide assistance as part of its work on "Development of the second generation of intact stability criteria";
- .2 consideration should be given to the need for the provision of emergency power supply, especially in the context of interfacing with VDR; and
- .3 with respect to paragraph 2.1 (NAV 57/11, annex), in principle, any carriage requirement should not be prescribed in performance standards, but only in the provisions of the Convention.

11.6 The delegation of the United Kingdom was of the view that the document should be referred to the Technical Working Group.

11.7 Accordingly, the Sub-Committee agreed that the annex to document NAV 57/11 be used as the basic document to further develop the proposed performance standards for Inclinometers and referred documents NAV 57/11 and NAV 57/4/4 and Corr.1 to the Technical Working Group for consideration, as appropriate.

Report of the Technical Working Group

11.8 Having received and considered the Technical Working Group's report (NAV 57/WP.5), the Sub-Committee with reference to paragraphs 5.1 to 5.3 and annex 2), took action as summarized in the ensuing paragraphs.

11.9 The Sub-Committee noted that the Technical Working Group, in preparing the draft text of the performance standards, considered that further consideration was needed whether an Electronic inclinometer:

- .1 should provide an indication of the acceleration forces due to rolling that could be expected at the place of installation;

-
- .2 might optionally provide a warning for parametric and/or synchronous roll detection;
 - .3 might optionally provide a warning for indicating that a set heel angle had been exceeded; and
 - .4 should also be capable of operating from the ship's main and emergency source of electrical power.

11.10 The Sub-Committee invited members to submit proposals on the draft performance standards for Electronic inclinometers, as given in document NAV 57/WP.5, annex 2, to NAV 58 with the view to finalizing the performance standards at that session.

11.11 The Secretariat was asked to advise the SLF Sub-Committee of the work being undertaken by the Sub-Committee and request any advice on appropriate criteria for alarming functionality of inclinometers.

11.12 The Sub-Committee also recognized that it would have to address provisions in the draft performance standard relating to power supplies at NAV 58.

12 BIENNIAL AGENDA AND PROVISIONAL AGENDA FOR NAV 58

12.1 The Sub-Committee noted also that MSC 89 had considered document MSC 89/22/4 (Netherlands and United States), proposing to amend resolution A.572(14) to include additional guidance for the design and description of traffic separation schemes, in particular to those traffic separation schemes that form part of a composite routeing system, including associated routes or routeing measures other than traffic separation schemes, and agreed to include, in the post-biennial agenda of the Committee, an output on "Amendments to the General Provisions on Ships' Routeing (resolution A.572(14), as amended)", with a target completion year of 2013, assigning the Sub-Committee as the coordinating organ; and instructed the Sub-Committee to include the output in the provisional agenda for NAV 58.

Proposals for the biennial agenda for 2012–2013 and provisional agenda for NAV 58

12.2 Taking into account the progress made at the current session and the decisions of MSC 89, the Sub-Committee prepared its draft biennial agenda for the 2012–2013 biennium in SMART terms, including proposed outputs for the Committee's post-biennial agenda that fall under the purview of the Sub-Committee and the provisional agenda for NAV 58 (NAV 57/WP.3), based on the biennial agenda approved by MSC 89, as set out in annexes 9 and 10, respectively for approval by the Committee.

Arrangements for the next session

12.3 The Sub-Committee anticipated that Working and Drafting Groups on the following subjects might be established at NAV 58:

- .1 Ships' Routeing;
- .2 Technical matters; and
- .3 e-navigation,

including a Drafting Group on Development of policy and new symbols for AIS Aids to navigation.

Status of planned outputs for the 2010-2011 biennium

12.4 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 2010-2011 biennium relevant to the Sub-Committee, as set out in annex 11, and invited the Committees to note the status.

Application of the Committees' Guidelines

12.5 The Sub-Committee also noted that MSC 89 had approved, subject to MEPC 62's concurrent decision, the draft MSC-MEPC.1 circular on Guidelines on the organization and method of work of the Maritime Safety Committee and the Marine Environment Protection Committee and their Subsidiary Bodies (MSC 89/25, annex 31), in order to allow the timely issuance of the revised Guidelines for completion of the Migration Plan relating to the Guidelines on the application of the Strategic Plan and the High-level Action Plan of the Organization during the current biennium.

Matters related to High-level Action Plan of the Organization: Status of planned outputs for the 2010–2011 biennium and proposals for the High-level Action Plan of the Organization and priorities for the 2012–2013 biennium

12.6 The Sub-Committee noted that MSC 89 had invited the Council to note the Report on the status of planned outputs for the 2010–2011 biennium (MSC 89/25, annex 34), and requested the Secretariat to submit any changes to the aforementioned report emanating from NAV 57, FP 55 and DSC 16 to CWGSP 12 or C/ES.26, as appropriate.

12.7 The Sub-Committee also noted that MSC 89, having considered document MSC 89/22/2 (Secretariat), proposing modifications to the planned output assigned to the Committee for the 2010–2011 biennium, which took into account the progress made by the sub-committees during the current biennium, endorsed the proposals for the High-level Action Plan of the Organization and priorities for the 2012-2013 biennium for matters under the purview of the Maritime Safety Committee (MSC 89/25, annex 35), for submission to C 106; had requested the Secretariat to submit any changes to the annexed proposals emanating from NAV 57, FP 55 and DSC 16 to CWGSP 12 or C/ES.26, as appropriate.

Date of the next session

12.8 The Sub-Committee noted that the fifty-eighth session of the Sub-Committee has been tentatively scheduled to be held from 2 to 6 July 2012 at the IMO Headquarters.

13 ELECTION OF CHAIRMAN AND VICE-CHAIRMAN FOR 2012

13.1 In accordance with Rule 16 of the Rules of Procedure of the Maritime Safety Committee, the Sub-Committee unanimously re-elected Mr. J.M. Sollosi (United States) as Chairman and Mr. Kostiantyn Billiar (Ukraine) as Vice-Chairman for 2012, respectively.

14 ANY OTHER BUSINESS

14.1 The Sub-Committee recalled that NAV 55 had requested IMPA to provide detailed information to the DE and NAV Sub-Committees relative to specific ladders their members were asked to "climb" that were not up to the SOLAS standard. IMPA was encouraged to ask their member organizations to provide the above information to port State control officials in the ports where they provide pilotage services.

14.2 The Sub-Committee considered document NAV 57/14 (IMPA) and noted with appreciation the summary report of a Safety Campaign carried out by IMPA during one week at the end of September 2010, at the request of NAV 55.

Required Boarding Arrangements for Pilot – Revised Poster

14.3 The Sub-Committee considered document NAV 57/14/1 (IMPA) attaching a revised poster on Required Boarding Arrangements for Pilot. The poster is a graphic depiction of both SOLAS regulation V/23 and the complementary resolution A.889(21) requirements. It is to be seen almost universally on the world's tonnage and its purpose is to encapsulate the principal elements of safe ladder rigging for crew guidance. The current requirements for pilot boarding contained in SOLAS regulation V/23 and resolution A.889(21) have been under review since 2006. MSC 87 (MSC 87/26, paragraph 9.26 and annex 24) had approved the draft Assembly resolution on Pilot transfer arrangements for submission to A 27 for adoption. The revised SOLAS regulation V/23 on Pilot transfer arrangements (MSC 88/26/Add.1, annex 2) was expected to enter into force on 1 July 2012.

14.4 The Sub-Committee endorsed the draft MSC circular on Pilot transfer arrangements, as set out in annex 12, with a view to approval by the Committee.

Progress on standards development by the IEC

14.5 The Sub-Committee considered document NAV 57/14/2 (IEC) providing an update on the progress made in developing various standards. Regarding AIS, a revision has been prepared to IEC 61993-2; *Maritime navigation and radiocommunication equipment and systems – Automatic identification system (AIS) – Operational and performance requirements, methods of testing and required test results*. Further, a new work proposal had been drafted for a standard for LRIT following discussions of possible difficulties with type approval of LRIT shipborne equipment LRIT may employ satellite and other terminals provided on the ship for purposes other than the GMDSS or may indeed be dedicated to LRIT. The new standard would incorporate the provisions for LRIT as detailed in resolution MSC.263(84) on Revised performance standards and functional requirements for the long-range identification and tracking of ships.

14.6 The Sub-Committee requested IEC to keep the Sub-Committee updated on the progress made relating to various IEC standards.

Establishment of the Arctic Regional Hydrographic Commission

14.7 The Sub-Committee noted with interest the information provided by IHO (NAV 57/INF.3) on the establishment of the Arctic Regional Hydrographic Commission. At an inaugural meeting held in Ottawa, Canada, on 6 October 2010, the Arctic littoral States: Canada, Denmark, Norway, the Russian Federation and the United States formally established the Arctic Regional Hydrographic Commission (ARHC) by adopting and signing the Statutes of the Commission. RHCs are intended to facilitate regional coordination and cooperation with respect to hydrographic surveys, production of nautical charts and documents, training, technical cooperation and hydrographic capacity building projects.

Vessel Traffic Services in the Strait of Bonifacio

14.8 The Sub-Committee noted with interest the information provided by Italy (NAV 57/INF.6) on the La Maddalena coastal VTS operating in the area of Bonifacio Strait, which had been operational since the end of August 2008. Prior to that, vessel traffic had been managed by the mandatory ships reporting system known as BONIFREP, adopted by IMO in 1998, which was still operational.

14.9 The delegation of Italy further informed the Sub-Committee that the VTS-L site based on La Maddalena island had reached fully operational capability, rendering services to ships transiting the Bonifacio Strait, an area which always had been a point of attention by both Italy and France, and where both countries had proposed the adoption of the mandatory ship reporting system "Bonifacio Traffic". The "La Maddalena VTS-L", which was solely manned by the Italian Coast Guard personnel supplemented the above mentioned ship reporting system and provided information and navigational assistance services to ships, together with the support to other authorities involved in coordinating SAR operations or conducting counter pollution response.

Unified interpretations on the application of SOLAS, MARPOL and Load Line requirements to conversions of single-hull tankers to double-hull tankers or bulk carriers concerning navigation bridge visibility

14.10 The Sub-Committee noted that DE 54 had established a Drafting Group on Interpretations for Major Conversions of Oil Tankers and instructed it to finalize the draft MSC-MEPC circular on Unified interpretations on the application of SOLAS, MARPOL and Load Line requirements to conversions of single-hull tankers to double-hull tankers or bulk carriers/ore carriers.

14.11 The Sub-Committee noted further that DE 54 approved the report of the Drafting Group (DE 54/WP.4) in general and agreed to further modifications to the Unified interpretations, referring paragraph 9 of appendix 1 concerning navigation bridge visibility to NAV 57 for comments, so that any changes that may be proposed by the NAV Sub-Committee could be included before final approval by MEPC 62. DE 54 requested the Secretariat to act accordingly and consequently agreed to the draft MSC-MEPC circular on Unified interpretations on the application of SOLAS, MARPOL and Load Line requirements to conversions of single-hull tankers to double-hull tankers or bulk carriers, as amended, for submission to MSC 89 for approval, subject to the concurrent decision by MEPC 62.

14.12 The Sub-Committee reviewed the relevant part of document DE 54/23, annex 4, (paragraph 9 of appendix 1) and agreed to the following amended text:

"Regulation 22 – Navigation bridge visibility

- 9 For single-hull oil tanker conversion into double-hull oil tanker or bulk carrier, the level of visibility possessed by the ship prior to the conversion at the ballast loading condition should be maintained after the conversion. Where a conversion involves the modification of structural arrangements used to establish the minimum bridge visibility, under the provisions of SOLAS regulation V/22 it should ~~comply with this regulation~~ apply."

14.13 The Secretariat was instructed to inform MEPC 62 accordingly.

Clarification in relation to carriage requirements for speed log devices for ships of 50,000 gross tonnage and upwards

14.14 The Sub-Committee recalled that IACS had provided NAV 56 (NAV 56/19/2) with three alternative clarifications for the need for providing the two functions required by the two SOLAS regulations, namely regulation V/19.2.3.4 (measuring and indicating speed through the water) and regulation V/19.2.9.2 (measuring and indicating speed over the ground), by either independent devices or combined into a single device which might be less fault tolerant. However, as reported by NAV 56, the opinion of the Sub-Committee was divided as to which of the three alternatives was the preferred option. Delegations who spoke on the

issue had either a preference for alternative one or alternative three with no clear majority for either of the alternatives proposed by IACS.

14.15 The Sub-Committee noted that MSC 88 had considered document MSC 88/11/1 (IACS), based on the outcome of NAV 56, presenting alternatives 1 and 3 from document NAV 56/19/2 and seeking the Committee's advice for clarification in relation to carriage requirements for speed log devices for ships of 50,000 gross tonnage and upwards and also as to which alternative, as follows, was appropriate:

- .1 both regulations are fulfilled by one device capable of measuring and indicating both speed through water and speed over the ground in forward and athwartships direction. Any single failure in such device may render both functions inoperable; and
- .2 both regulations are fulfilled by two separate devices, i.e. one speed and distance measuring and indicating device capable of measuring speed through water and one separate speed and distance measuring and indicating device capable of measuring speed over the ground in forward and athwartships direction.

14.16 The Sub-Committee also noted that there had been a clear majority at MSC 88 in support of option 2 outlined in paragraph 4.2 of document MSC 88/11/1 (see paragraph 11.25.2), i.e. both SOLAS regulations V/19.2.3.4 and V/19.2.9.2 fulfilled by two separate speed and distance measuring devices.

14.17 The Sub-Committee further noted that MSC 88 had decided that this matter was best dealt with by the NAV Sub-Committee and, accordingly, forwarded document MSC 88/11/1 to the NAV 57 Technical Working Group for consideration, bearing in mind that the resulting decision might require amending the Performance standard for speed and distance measuring equipment (resolution MSC.96(72)).

14.18 The Sub-Committee briefly considered document MSC 88/11/1 (IACS) and agreed to refer it to the Technical Working Group for consideration and comments, as appropriate.

Report of the Technical Working Group

14.19 Having received and considered the Technical Working Group's report (NAV 57/WP.5), the Sub-Committee (with reference to paragraphs 6.1 to 6.4 and annexes 3 and 4) took action as summarized in the ensuing paragraphs.

14.20 The Sub-Committee noted that the Technical Working Group, in view of the decision made for the option that both regulations were fulfilled by two separate devices, had developed amendments to performance standards for speed and distance measuring equipment to this effect. It was noted that the existing performance standards already permitted, in paragraph 2.5, both devices to operate in either speed through water mode or speed over ground mode provided that the mode was displayed. Therefore, there was only a need to clarify in the section on "construction and installation" for ships which were required to carry speed logs measuring speed through the water and speed over the ground, that these speed logs should be provided by two separate devices.

14.21 The Sub-Committee decided that devices to measure and indicate speed and distance installed on ships constructed on or after [1 July 2014] should conform to the proposed amended performance standards.

14.22 The Sub-Committee endorsed the draft MSC resolution on amendments to performance standards for speed and distance measuring equipment, with a view to approval by MSC 90 (annex 13).

14.23 The Sub-Committee further decided to prepare a MSC circular, informing interested parties on the clarification of SOLAS regulation V/19.2.9.2 that both regulations were fulfilled by two separate devices, i.e. one speed and distance measuring and indicating device capable of measuring speed through water and one separate speed and distance measuring and indicating device capable of measuring speed over the ground in forward and athwartships direction. The circular clarified that amendments to performance standards were adopted and would apply to ships constructed on or after [1 July 2014].

14.24 The Sub-Committee endorsed the draft MSC circular on clarification of SOLAS regulations V/19.2.3.4 and V/19.2.9.2, for approval by the Committee (annex 14).

Polar vessel traffic monitoring and information system from the safety perspective

14.25 The Sub-Committee noted that DE 55 (DE 55/22, paragraph 12.13.1), during its consideration of the development of a mandatory Polar Code, agreed to further consider document DE 55/12/9 regarding polar vessel traffic monitoring and information systems from the safety perspective only, pending further input from the NAV Sub-Committee.

14.26 The Sub-Committee briefly reviewed document DE 55/12/9 (FOEI, IFAW, WWF and Pacific Environment) proposing that consideration be given to including provisions in the mandatory Polar Code for the establishment of polar vessel traffic monitoring and information systems.

14.27 The Sub-Committee agreed to refer document DE 55/12/9 to the Ships' Routeing Working Group for consideration and comments, as appropriate.

Report of the Ships' Routeing Working Group

14.28 Having received and considered the Ships' Routeing Working Group's report (NAV 57/WP.4), the Sub-Committee (with reference to paragraphs 8.1 to 8.5) took action as summarized in the ensuing paragraphs.

14.29 The Sub-Committee endorsed the views of the Working Group that in the absence of any compelling need the implementation of a vessel traffic monitoring and information system at present would be premature and agreed to advise the DE Sub-Committee accordingly.

14.30 The delegation of Argentina, with regard to the proposal presented in document DE 55/12/9, to include provisions in the mandatory polar navigation code which would require the development of polar vessel traffic monitoring and information systems, stated that it had been unable to participate in the working group, agreed with the doubts expressed in the report on the debate, and had some concerns regarding the implementation of a monitoring system in Antarctic waters. Argentina was of the view that the need to develop a monitoring and information system should be considered in relation to the provisions of the Antarctic Treaty and that such a system, if decided upon, should be established under the principles of coordination and co-operation of the International Convention on Maritime Search and Rescue, in the same way that the existing voluntary vessel position reporting system was implemented, which – with the excellent collaboration of the International Association of Antarctic Tour Operators (IAATO), the Council of Managers of National Antarctic Programs (COMNAP) and Member States – functioned effectively and efficiently through the five Maritime Rescue Coordination Centres (MRCCs) with responsibility for those waters.

Vessel voyage planning and operations

14.31 The Sub-Committee noted that DE 55 (DE 55/22, paragraph 12.13.5), during its consideration of discussions relating to the development of a mandatory Polar Code, decided not to further consider document DE 55/12/21 regarding vessel voyage planning and operations, since it should first be considered by the NAV Sub-Committee.

14.32 The Sub-Committee briefly reviewed document DE 55/12/21 (FOEI, IFAW, WWF and Pacific Environment) proposing that consideration be given to including provisions in the mandatory Polar Code concerning vessel voyage planning and operations in order to avoid interactions, especially collisions, with cetaceans and other marine mammals.

14.33 The Sub-Committee also noted with interest the supplementary information provided by FOEI, IFAW, WWF and Pacific Environment in documents NAV 57/INF.10 and NAV 57/INF.11, regarding cetacean activity in Arctic area vulnerable to marine vessel traffic.

14.34 The Sub-Committee agreed to refer documents DE 55/12/21, NAV 57/INF.10 and NAV 57/INF.11 to the Ships' Routeing Working Group for consideration and comments, as appropriate.

Report of the Ships' Routeing Working Group

14.35 Having received and considered the Technical Working Group's report (NAV 57/WP.4), the Sub-Committee (with reference to paragraphs 8.6 to 8.11) took action as summarized in the ensuing paragraphs.

14.36 The Sub-Committee noted the discussions of the Working Group related to voyage planning and operations in polar waters in order to avoid collisions with cetaceans and other mammals and endorsed their view that the current guidance, and in particular MEPC.1/Circ.674, was sufficient in this respect.

14.37 Taking into account the above, the Sub-Committee agreed that it was premature to develop guidance on voyage planning and operations in polar waters in order to avoid collisions with cetaceans and other mammals and agreed to advise the DE Sub-Committee accordingly.

Operating anomalies identified within ECDIS

14.38 The Sub-Committee noted that MSC 88 had considered document MSC 88/25/6 (Japan, Norway, the United Kingdom, ICS and IFSMA) highlighting issues that had been identified within ECDIS, which were affecting the operational performance of some ECDIS systems. The anomalies were discovered by "chance" inspections of ENCs within a small number of ECDIS systems and it was considered possible that other anomalies remained to be discovered. The IHO observer, in supporting the document, stated that this was an important matter concerning the safety of navigation and, in particular, the fact that some ECDIS equipment in service at sea might not be performing optimally. The IHO had been concerned for some time that there was no specific obligation on ship operators to keep up to date the software for sophisticated computer-based systems, such as ECDIS. SN.1/Circ.266/Rev.1 was of relevance, referring to the "Maintenance of ECDIS software".

14.39 The Sub-Committee also noted that MSC 88 further had subsequently approved MSC.1/Circ.1391 on Operating anomalies identified within ECDIS.

14.40 The Sub-Committee further noted that MSC 89 had considered document MSC 89/24/2 (IHO) reporting on the outcome of a workshop organized by IHO in February 2011 to discuss the issues raised during MSC 88 regarding "Operating anomalies in ECDIS" and requesting the Committee to note the outcome of the ECDIS stakeholders' workshop; continue to encourage flag States to collect and disseminate relevant information on ECDIS anomalies in accordance with MSC.1/Circ.1391; and further inviting Member Governments to consider proposing an unplanned output in the biennial agenda of the NAV Sub-Committee, which would clarify the policy on working-life validity of software driven electronic navigation equipment. MSC 89 had also considered document MSC 89/24/3 (Australia, Canada, Chile, Japan, Norway, the United Kingdom, ICS and IFSMA) supplementing the report on the outcome of a workshop organized by the IHO to discuss the issues raised during MSC 88 regarding "Operating anomalies in Electronic Chart Display and Information System (ECDIS)", as reported in document MSC 89/24/2 and proposing further steps which ought to be taken. Further, the Committee had been requested to consider as to how maximum advantage could be gained from feedback from seafarers; whether and, if so, how the Organization could adopt a role to coordinate the necessary programme of activities to address the issues of potential anomalies in type-approved ECDIS, using official ENCs, and establish processes, capabilities and modalities to achieve this. Delegations who spoke on the issue, fully supported the concerns outlined in documents MSC 89/24/2 and MSC 89/24/3 and were of the view that it was an important matter of relevance and concern for the COMSAR, NAV and STW Sub-Committees. It needed to be considered carefully on an urgent basis, and should therefore, as a first step, be referred to NAV 57 for initial detailed consideration. Accordingly, MSC 89 (MSC 89/25, paragraphs 24.6 to 24.9) decided to refer the matter to NAV 57 for further consideration under agenda item 14 "Any Other Business" and advise MSC 90 on the way forward.

14.41 The delegation of the United Kingdom was of the view that complex software based systems had teething problems and ECDIS was no exception. But, when these problems affected the safety of navigation, warning and informing needed to take place so that ship operators, mariners, manufacturers, custodians of standards, trainers, and port State control officers (PSCO) could be aware and take the appropriate remedial action. The delegation noted that there were three themes of anomaly in ECDIS, namely:

- .1 IMO, IHO and IEC standards were not fully coordinated and this had left chart producers, Original Equipment Manufacturers (OEMs) and testers with problems of interpretation;
- .2 genuine errors in charting and ECDIS manufacture; and
- .3 software updates for ECDIS, where the latest version of the application software did not conform to the latest issues of the IMO, IHO or IEC standards.

The United Kingdom had therefore proposed, to MSC 89, that more action was needed, which might include the following areas of activity:

- .1 systematically establishing a mariner-friendly list of ECDIS anomalies and publishing them worldwide;
- .2 distribution of the same list to all ECDIS training providers, OEMs, nautical colleges and third party training providers and incorporating appropriate information and warnings in the relevant STCW Model Course and type-specific courses;

- .3 distribution of the same list to OEMs and inviting corrective action and the publication of appropriate information to their system users;
- .4 design, manufacture and distribute a "test card" program to enable navigators and PSCOs to determine if ECDIS is performing correctly; and
- .5 taking a longer term look at how IMO, IHO and IEC standards could be coordinated.

The United Kingdom consequently expressed a preference for a small group of experts to correspond and act frequently, resulting in a report to MSC 90 of the actions completed, including any residual issues.

14.42 The IHO observer stated that software-based systems such as ECDIS were basically the same as any computer systems ashore, requiring periodic software upgrades and patches to continue to work effectively. Not surprisingly, ECDIS also required such periodic software upgrades. Since this was currently still not happening, IHO had convened a meeting of interested parties in February 2011 to discuss the matter further. One result of that meeting was the distribution of a test ENC to all ships using ENCs later this year. This simple test, which would be executed worldwide over the space of less than a month, would be provided to all mariners using ECDIS, enabling them to identify whether their equipment conformed to the latest standards, and highlight some of the known software deficiencies affecting certain manufacturers' ECDIS. This, once-only test could not, however, identify all potential problems. Seafarers would be invited to contact the manufacturer if their ECDIS appeared to fail the test. An anonymous, voluntary feedback mechanism would be supplied that would identify which specific ECDIS models were performing sub-optimally. However, there was no guarantee that mariners or shipowners would take the necessary action to bring any suspect equipment up to date, since there appeared to be no clear requirement for ECDIS software to remain up to date and deficiencies to be corrected in existing equipment. Features like Archipelagic Sea Lanes and PSSAs were unlikely to be displayed with the correct symbology in any ECDIS older than two and a half years without appropriate updates. There also were ECDIS being used at sea that would not detect and warn of a dangerous approach to land when using small scale ENCs, and no specific mechanism existed to ensure corrective action either by the manufacturer or ships at sea using those ECDIS.

IHO had therefore agreed on the need for regular dialogue and cooperation between all the relevant ECDIS stakeholders to consider and address problems with ECDIS software promptly and IHO might organize a similar meeting of key ECDIS stakeholders later in 2011 on conclusion of its global ECDIS testing campaign and report back to MSC 90.

The IHO observer recalled that Administrations and mariners had been alerted to the importance of keeping ECDIS software up to date by SN.1/Circ.266 in 2007 and its revision early this year, seeking feedback on any problems being encountered with ECDIS software at sea. So far little, if any, response had been received, which did not necessarily indicate the lack of important safety of navigation issues with ECDIS equipment, but more likely, lack of appreciation by mariners and ship operators of the impact of outdated software. The IHO test data might help in raising awareness in this regard.

The IHO observer underlined the need for action by the Organization in the interests of safety at sea, bearing in mind that the maintenance of ECDIS software had parallels with other existing computer-driven equipment on ships and would certainly have relevance to computer-based e-navigation compliant systems in future.

14.43 There was general support for the three themes and five activities as mentioned in the statement by the United Kingdom. The delegation of Australia offered to participate in the proposed expert body suggested by the United Kingdom. The delegations of Canada and the Netherlands indicated their support for the views of the United Kingdom.

14.44 The ICS observer, whilst supporting the views of the United Kingdom and IHO, had some reservations about training. ICS was of the view that training should focus on the use of generic systems rather than on type specific training. ICS further clarified that there was no reluctance on the part of shipowners to undertake updates of their systems as long as they were informed that updates were necessary.

14.45 The observer from IEC stated that the issues raised by the United Kingdom and IHO were fully recognized by IEC and that they would continue to cooperate with IMO and IHO in this respect.

14.46 The Chairman, in his summing up, thanked the United Kingdom and IHO for bringing these issues to the attention of the Sub-Committee. He also indicated that the establishment of an Expert body or *Ad Hoc* working group was not within the remit of the Sub-Committee. This decision would have to come from the Committee. In the meantime, the outcome of the discussions would be forwarded for consideration by MSC 90.

14.47 The delegation of the United Kingdom, whilst agreeing with the report of the Sub-Committee regarding the discussion about ECDIS, recalled that the Sub-Committee had been asked to advise MSC 90 on the way forward. The NAV 57 report does record some general support for views expressed by the IHO observer and one delegation, but it does not, in the United Kingdom's view, provide MSC 90 with guidance on "the way forward".

The United Kingdom further recalled that the sponsors of document MSC 89/24/3 had invited MSC 89 to gain maximum advantage of feedback from seafarers and whether, and if so, how the Organization could co-ordinate a programme of activities to address the ECDIS anomaly issues raised, and distributed through some NAVAREA messages. However, the United Kingdom did not see this, in the present report and, notwithstanding the helpful document MSC.1/Circ.1391, no clear NAV 57 views on the way ahead concerning ECDIS anomalies in general, and the two particular issues mentioned. Hence, the United Kingdom urged the Sub-Committee to be as clear, supportive and encouraging as it could when it provided its advice to MSC 90 on the way forward.

14.48 The Secretariat clarified that at MSC 89, delegations that spoke on the issue, had fully supported the concerns outlined in documents MSC 89/24/2 and MSC 89/24/3 and were of the view that it was an important matter of relevance and concern for the COMSAR, NAV and STW Sub Committees. It needed to be considered carefully on an urgent basis, and should therefore, as a first step, be referred to NAV 57 for initial detailed consideration. Accordingly, MSC 89 had decided to refer the matter to NAV 57 for further consideration under agenda item 14 "Any Other Business". COMSAR and STW still had to look at the issue and provide their comments; the consolidated comments of NAV, COMSAR and STW would enable MSC 90 to provide suitable guidance on the best way forward.

Accident report – Grounding of vessel while using Electronic Navigational Chart (ENC)

14.49 The Chinese delegation drew the attention of the Sub-Committee to the issue of the timely update of ENCs. At 0235 hours of 18 May 2011, MV **CMA CGM LIBRA** grounded in the vicinity of the main fairway of Xiamen port on her way to Hong Kong, China. The preliminary investigation had revealed that the master used an ENC updated on 28 February 2011 during navigation, while the latest updated paper Nautical Chart on board showed a shallow

water patch. The master did not take notice of the water-depth difference and did not follow the warning from the Local VTS operator. The faulty update of ENC's and paper charts was one of the main causes of this accident. In practice, ship Masters prefer using ENC's to navigate because the ship positions are displayed clearly and continuously. China invited the Sub-Committee to note the information provided, particularly the need for updating of ENC's, and to consider taking appropriate actions (e.g., issue a SN circular) in order to:

- .1 ensure the consistent update of ENC's and paper charts; and
- .2 encourage hydrographic survey authorities and ENC's publishers/producers to timely update their products in order to ensure accuracy.

14.50 The Sub-Committee noted the information provided.

Regional marine electronic highway in the East Asian seas

14.51 Recalling that, at previous sessions, the Secretariat had updated it on the key elements and expected outputs of the new project for the Development of a Regional Marine Electronic Highway (MEH) in the East Asian Seas including the progress made, the Sub-Committee noted that the MEH Demonstration Project was in its fifth year of implementation. Over the period of 1 July 2010 to 31 March 2011, the MEH Demonstration Project had focused on the hydrographic survey; establishment of the MEH Data Centre IT System and initiating the operational phase of the project. The Hydrographic Survey had covered the survey of a portion of the upper Traffic Separation Scheme (TSS) in the Straits of Malacca and Singapore covering 621.3 square kilometres and representing 14.38% of the total TSS area. Although the survey coverage area was relatively small, this could be categorized as a milestone achievement of the MEH Demonstration Project. The information derived could provide application in many fields of study such as the Sand Wave Study, seabed features and sedimentology as well as evidence of reversing flow of the main column of water coming from the Andaman Sea back into the Indian Ocean as the seabed shallows quickly to 10 or 20 metres from ocean depths of close to 1,000 metres. A second contract to establish the MEH Data Centre IT System that would eventually become the MEH system was signed on 1 December 2010 and the delivery and installation of the IT system had commenced in March 2011.

As part of its capacity-building activity, the MEH Demonstration Project held a hands-on-training course in Tanjung Kling, Melaka, Malaysia during November 2010, on the use of the Electronic Navigation Chart (ENC) Production Tools software for ten hydrographers from Indonesia to Malaysia. The training and distribution of the procured software to Indonesia and Malaysia should enable the two littoral States to produce ENC's in the same platform as Singapore. In addition, the same software would be used in the production of the Environment-Marine Information Overlays (E-MIO) and used in other related activities including the production of ENC's for the MEH Data Centre. In line with the development of E-MIOs and data feed for the MEH Data Centre arising from baseline survey activities, the Project is also conducting a series of workshops on E-MIOs, baseline survey and emergency response system, leading to the development of specific databases for maritime safety and marine environment protection. Twin workshops were already held in April 2011 in Batam, Indonesia. As part of this effort, the littoral States provided the Project with the ENC's of the Project area that had been produced by the Joint 4-Nations Survey. These ENC's would serve as the base-map of the MEH Data Centre and for E-MIOs.

Expressions of appreciation

14.52 The Sub-Committee expressed appreciation to the following delegates who had recently relinquished their duties, retired or were 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:

- Capt. Valentin Sanz Rodriguez (Argentina) (on transfer);
- Commander Roberto Annichini (Argentina) (on transfer);
- Mr. Alexander Frolov (Russian Federation) (on retirement);
- Mr. Graham Mapplebeck (Secretariat) (on retirement); and
- Mrs. Juana Navarro (Secretariat) (on impending retirement).

Expressions of condolences

14.53 The Sub-Committee noted with sympathy the sad news of the passing of two former colleagues of the Organization, firstly, Mr. Yoshio Sasamura – a tireless and indefatigable servant of IMO and shipping. Mr. Sasamura left behind a legacy of long and outstanding contribution to the attainment of the objectives of IMO both as Director of the Marine Environment and Maritime Safety Divisions and Secretary of both the MEPC and MSC. He was a professional of the highest standard, innovative, bright and brilliant, with a unique sense of humour. He will be sorely missed but, no doubt, his memory will live on – not least among seafarers whose lives at sea have become safer thanks to his work; and, secondly, the passing, in February of this year, of our loyal friend, Captain John Thompson. John worked tirelessly, until his retirement in 1997, as Secretary of several Sub-Committees of the MSC and as Head of the MSD's Navigation Section and shall be fondly remembered with the greatest respect for all he had done for the Organization.

15 ACTION REQUESTED OF THE COMMITTEE

15.1 The Committee, at its ninetieth session, is invited to:

- .1 in accordance with resolution A.858(20):
 - .1 adopt the proposed three new Traffic Separation Schemes in "Norra Kvarken" in the Baltic Sea (paragraph 3.33 and annex 1);
 - .2 adopt the proposed amendments to the existing Traffic Separation Scheme "Sunk TSS East" (paragraph 3.34 and annex 1);
 - .3 adopt the proposed amendments to the existing Traffic Separation Scheme "At West Hinder" including a new Precautionary Area (paragraph 3.35 and annex 1);
 - .4 adopt the proposed three new two-way routes in Norra Kvarken in the Baltic Sea (paragraph 3.36 and annex 2);
 - .5 adopt the proposed new Area To Be Avoided "At West Hinder" Traffic Separation Scheme bordering to the north of the new Precautionary Area (paragraphs 3.35 and 3.37 and annex 2);
 - .6 adopt the proposed new Deep-water route in the approaches to the River Scheldt (paragraph 3.38 and annex 2);

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- .7 adopt the proposed new Precautionary Area in the vicinity of the Thornton and Bligh Banks (paragraph 3.39 and annex 2);
 - .8 adopt the proposed amendment to the description of the Area To Be Avoided "Off the Washington coast" (paragraph 3.40 and annex 2);
 - .9 adopt the proposed amendment to the Note relating to the existing Deep-water route off the coast of Langeland (paragraph 3.41 and annex 2);
 - .10 adopt the proposed Recommendation on navigation through the Strait of Bonifacio, as an associated protective measure for the application of the Strait of Bonifacio as a PSSA (paragraph 3.43 and annex 2);
 - .11 adopt the proposed two-way routes in the Gulf of Campeche and the ports of Cayo Arcas, Ta'kuntah and Yuum K'ak Naab (paragraph 3.45 and annex 2);
 - .12 adopt the proposed five Areas To Be Avoided and six Precautionary Areas in the Gulf of Campeche and the ports of Cayo Arcas, Ta'kuntah and Yuum K'ak Naab, (paragraph 3.46 and annex 2);
 - .13 revoke the existing routeing measures other than Traffic Separation Schemes detailed in sections 2.5, 2.6 and 3.2 of Annex 1 to resolution A.527(13) relating to the Gulf of Campeche, the maritime oil terminal off Cayo Arcas and the recommended tracks in the Gulf of Campeche (paragraph 3.47), respectively; and
 - .14 adopt the proposed amendments to the existing mandatory ship reporting system "In the Storebælt (Great Belt) traffic area (BELTREP)" (paragraph 3.49 and annex 3);
- .2 adopt the draft MSC resolution on Revised performance standards for VDRs (paragraph 4.15 and annex 4);
 - .3 approve the current overarching e-navigation architecture (paragraph 6.32.1);
 - .4 approve the proposed way forward for developing a Common Maritime Data Structure (CMDS) (paragraph 6.32.2);
 - .5 approve the use of the IHO's S-100 standard as the baseline for creating a framework for data access and services under the scope of SOLAS (paragraph 6.32.3);
 - .6 authorize, in consultation with other organizations, the establishment of an IMO/IHO Harmonization Group on Data modelling and approve its terms of reference (paragraph 6.33 and annex 5);
 - .7 agree that for the time being, no further action is required until future uses of the frequency band of 495-505 kHz are identified for e-navigation, (paragraphs 6.38 to 6.40);

- .8 approve the proposed joint plan of work on e-navigation for the COMSAR, NAV and STW Sub-Committees for the period 2012–2014 (paragraph 6.41 and annex 6);
- .9 note 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 (paragraphs 6.37 to 6.42);
- .10 approve the draft revised text of SOLAS regulation V/22 for adoption at MSC 91 (paragraph 7.24.7 and annex 7);
- .11 note the establishment of a Correspondence Group to progress work intersessionally on the development a first draft of a policy for AIS Aids to Navigation (paragraphs 8.10 and 8.11);
- .12 approve the draft MSC circular on Unified Interpretations of COLREG 1972, as amended (paragraph 10.12 and annex 8);
- .13 approve the draft MSC circular on Pilot transfer arrangements (paragraph 14.4 and annex 12);
- .14 adopt the draft MSC resolution on Amendments to performance standards for speed and distance measuring equipment (paragraph 14.22 and annex 13);
- .15 approve the draft MSC circular on clarification of SOLAS regulations V/19.2.3.4 and V/19.2.9.2 (paragraph 14.24 and annex 14);
- .16 endorse the Sub-Committee's views that in the absence of any compelling need, the inclusion of provisions in the mandatory Polar Code for the implementation of a vessel traffic monitoring and information system at present would be premature and note that the DE Sub-Committee has been advised accordingly (paragraph 14.29);
- .17 endorse the Sub-Committee's views that it was premature to develop guidance on voyage planning and operations in polar waters in order to avoid collisions with cetaceans and other mammals and note that the DE Sub-Committee has been advised accordingly (paragraph 14.37);
- .18 note the outcome of the discussion by the Sub-Committee regarding operating anomalies identified within ECDIS and, taking into account the relevant views of COMSAR 16 and STW 43 on this issue, take appropriate action on the best way forward (paragraphs 14.38 to 14.48); and
- .19 approve the report in general.

15.2 In reviewing the biennial agenda of the Sub-Committee, the Committee is invited to consider the biennial agenda and post-biennial agenda items of the Sub-Committee in general and, in particular, to:

- .1 delete the item on "Amendments to the performance standards for VDR and S-VDR", as the task has been completed (paragraph 4.18);

- .2 delete the item on "Review of vague expressions in SOLAS regulation V/22", as the task has been completed (paragraph 7.25); and
- .3 extend the target completion date of the following items, namely:
 - .1 "ITU matters including radiocommunication ITU-R Study group matters" to 2013 (paragraph 5.17); and
 - .2 "Development of an e-navigation strategy implementation plan" to 2014 (paragraph 6.41).

15.3 The Committee is also invited to review and approve the proposed biennial agenda for the 2012-2013 biennium in SMART terms of the Sub-Committee and the draft provisional agenda for NAV 58 (paragraph 12.2, annexes 9 and 10) and to endorse the report on the status of the Sub-Committee's planned outputs for the 2010-2011 biennium in the High-level Action Plan of the Organization (paragraph 12.4 and annex 11).

ANNEX 1

NEW AND AMENDED TRAFFIC SEPARATION SCHEMES

IN NORRA KVARKEN

(Reference chart: Finnish chart number 47 edition 2005 V based on World Geodetic System (WGS 84))

Part I

(a) A traffic separation zone 0.1 mile wide is centred upon the following geographical positions:

(1) 63° 27'.22 N 020° 37'.58 E (2) 63° 27'.94 N 020° 38'.61 E

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

(3) 63° 27'.03 N 020° 38'.32 E (4) 63° 27'.77 N 020° 39'.28 E

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

(5) 63° 28'.12 N 020° 37'.93 E (6) 63° 27'.42 N 020° 36'.84 E

Part II

(d) A traffic separation zone 0.1 mile wide is centred upon the following geographical positions:

(7) 63° 31'.60 N 020° 42'.72 E (8) 63° 31'.84 N 020° 43'.00' E
(9) 63° 32'.50 N 020° 45'.82 E

(e) A traffic lane for the northbound traffic is established between the traffic separation line described in paragraph (d) and a line connecting the following geographical positions:

(10) 63° 31'.19 N 020° 43'.77 E (11) 63° 32'.29 N 020° 46'.24 E

(f) A traffic lane for the southbound traffic is established between the traffic separation line described in paragraph (d) and a line connecting the following geographical positions:

(12) 63° 32'.71 N 020° 45'.40 E (13) 63° 32'.23 N 020° 41'.09 E

Part III

(g) A traffic separation zone 0.1 mile wide is centred upon the following geographical positions:

(14) 63° 34'.73 N 021° 01'.51 E (15) 63° 35'.06 N 021° 03'.60 E

- (h) A traffic lane for the northbound traffic is established between the traffic separation line described in paragraph (g) and a line connecting the following geographical positions:

(16) 63° 34'.42 N 021° 01'.76 E (17) 63° 34'.72 N 021° 03'.88 E

- (i) A traffic lane for the southbound traffic is established between the traffic separation line described in paragraph (g) and a line connecting the following geographical positions:

(18) 63° 35'.40 N 021° 03'.33 E (19) 63° 35'.04' N 021° 01'.26' E

AMENDMENTS TO THE EXISTING TRAFFIC SEPARATION SCHEME "SUNK East"

(Reference Charts: British Admiralty 1610)

Note: *Chart is based on World Geodetic System 1984 Datum (WGS 84)*

1 Description

- 1.1 The proposed amendment to the SUNK routing measure comprises of amendments to the SUNK TSS East to be extended 5.5 nautical miles eastwards.

2 Details of proposed Amendments

SUNK East traffic separation scheme

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

(22) 51° 53'.07 N 002° 07'.46 E (24) 51° 48'.84 N 001° 51'.86 E
(23) 51° 53'.39 N 002° 07'.55 E (25) 51° 48'.54 N 001° 51'.85 E

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

(26) 51° 54'.59 N 002° 07'.93 E (31) 51° 55'.59 N 001° 51'.73 E
(27) 51° 49'.92 N 001° 51'.89 E (32) 51° 52'.31 N 001° 50'.68 E
(28) 51° 52'.06 N 001° 49'.37 E (33) 51° 50'.99 N 001° 52'.27 E
(29) 51° 53'.90 N 001° 49'.96 E (34) 51° 55'.63 N 002° 08'.24 E
(30) 51° 55'.72 N 001° 50'.54 E

- (i) A traffic lane for eastbound traffic between the separation zone described in (g) above and a line connecting the following geographical positions:

(35) 51° 47'.45 N 001° 51'.82 E (36) 51° 51'.89 N 002° 07'.08 E

- (j) A traffic lane for westbound traffic between the separation zone described in (g) above and that portion of the separation zone described in (h) above connecting the following geographical positions:

(26) 51° 54'.59 N 002° 07'.93 E (27) 51° 49'.92 N 001° 51'.89 E

AMENDMENTS TO THE EXISTING TRAFFIC SEPARATION SCHEME "AT WEST HINDER"

(Reference charts: D11 and 102INT1480 published by the Agency of Maritime and Coastal Services, Flemish Hydrography.

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

1 A new extended Precautionary Area with recommended direction of traffic flow is established connecting the following geographical positions:

1	51° 23'.45 N	002° 32'.95 E joining TSS
2	51° 23'.45 N	002° 36'.92 E AN Buoy
3	51° 24'.25 N	002° 44'.52 E GZ Buoy
4	51° 23'.38 N	002° 46'.21 E VG Buoy
5	51° 20'.82 N	002° 46'.29 E MBN Buoy
6	51° 21'.39 N	002° 31'.33 E near Oost Dyck Buoy joining the TSS.

2 Consequently, the revised coordinates of the geographical positions (East end) of the eastbound traffic lane, the westbound traffic lane and the separation line are as follows:

(7(revised))	51° 23'.45 N	002° 32'.95 E
(1(revised))	51° 22'.43 N	002° 32'.15 E
(13(revised))	51° 21'.39 N	002° 31'.33 E

ANNEX 2

ROUTING MEASURES OTHER THAN TRAFFIC SEPARATION SCHEMES

ESTABLISHMENT OF THREE NEW TWO-WAY ROUTES IN NORRA KVARKEN

(Reference chart: Finnish chart number 47 edition 2005 V based on World Geodetic System (WGS 84))

Part I

(a) A two-way route is established bounded by a line connecting the following geographical positions:

(20)	63° 25'.21 N	020° 35'.75 E	(21)	63° 25'.54 N	020° 33'.94 E
(6)	63° 27'.42 N	020° 36'.84 E	(3)	63° 27'.03 N	020° 38'.32 E

Part II

(b) A two-way route is established bounded by a line connecting the following geographical positions:

(4)	63° 27'.77 N	020° 39'.24 E	(5)	63° 28'.12 N	020° 37'.93 E
(13)	63° 32'.23 N	020° 41'.09 E	(10)	63° 31'.19 N	020° 43'.77 E

Part III

(c) A two-way route is established bounded by a line connecting the following geographical positions:

(11)	63° 32'.29 N	020° 46'.24 E	(12)	63° 32'.71 N	020° 45'.40 E
(23)	63° 33'.49 N	020° 52'.35 E	(19)	63° 35'.04 N	021° 01'.26 E
(16)	63° 34'.42 N	021° 01'.76 E	(22)	63° 32'.90 N	020° 51'.03 E

ESTABLISHMENT OF A NEW AREA TO BE AVOIDED "AT WEST HINDER" TRAFFIC SEPARATION SCHEME

(Reference charts: D11 and 102INT1480 published by the Agency of Maritime and Coastal Services, Flemish Hydrography.

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

An Area To Be Avoided is established bounded by a line connecting the following geographical positions:

1	51° 23'.45 N	002° 36'.92 E	AN Buoy
2	51° 23'.95 N	002° 36'.90 E	
3	51° 24'.40 N	002° 40'.30 E	
4	51° 23'.81 N	002° 40'.30 E	

ESTABLISHMENT OF A NEW DEEP-WATER ROUTE IN THE APPROACHES TO THE RIVER SCHELDT

(Reference charts: D11 and 102INT1480 published by the Agency of Maritime and Coastal Services, Flemish Hydrography.

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

Description of the Deep-water route

A Deep-water route for ships with a draught of more than 13.1 m is bounded by a line connecting the following geographical positions:

1	51° 24'.25 N	002° 44'.52 E GZ buoy
2	51° 25'.95 N	002° 48'.12 E VG2 buoy
3	51° 25'.50 N	002° 52'.92 E VG4 buoy
4	51° 25'.07 N	002° 57'.92 E VG6 buoy
5	51° 25'.03 N	003° 02'.85 E S4 buoy
6	51° 24'.53 N	002° 59'.92 E VG7 buoy
7	51° 24'.63 N	002° 57'.92 E VG5 buoy
8	51° 25'.05 N	002° 52'.92 E VG3 buoy
9	51° 25'.03 N	002° 49'.05 E VG1 buoy
10	51° 23'.38 N	002° 46'.21 E VG buoy

ESTABLISHMENT OF A NEW PRECAUTIONARY AREA IN THE VICINITY OF THORNTON AND Blich BANKS

(Reference chart: 1630INT1416 published jointly by the Hydrographer of the Royal Netherlands Navy at Den Haag and by the United Kingdom National Hydrographer at Taunton.

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

Description of the Precautionary Area

A new **Precautionary Area** is established bounded by a line joining the following geographical positions:

1	51° 32'.664 N	003° 05'.562 E
2	51° 33'.051 N	003° 04'.805 E
3	51° 44'.687 N	002° 45'.364 E
4	51° 44'.112 N	002° 42'.448 E
5	51° 42'.305 N	002° 41'.845 E
6	51° 39'.130 N	002° 44'.779 E
7	51° 38'.015 N	002° 47'.146 E
8	51° 36'.973 N	002° 47'.745 E
9	51° 35'.774 N	002° 50'.363 E
10	51° 35'.195 N	002° 53'.014 E
11	51° 34'.053 N	002° 55'.013 E
12	51° 32'.842 N	002° 52'.365 E
13	51° 28'.198 N	002° 59'.626 E

AMENDMENT TO THE DESCRIPTION OF THE AREA TO BE AVOIDED "OFF THE WASHINGTON COAST"

(Reference charts: United States 18003, 18500, 2008 edition, and 18480, 2006 edition.)

Note: These charts are based on North American 1983 datum which is equivalent to WGS 1984 datum)

Description of the Area To Be Avoided

"In order to reduce the risk of a marine casualty and resulting pollution and damage to the environment of the Olympic Coast National Marine Sanctuary, all ships and barges* that carry oil or hazardous materials in bulk as cargo or cargo residue and all ships 400 gross tonnage and above solely in transit should avoid the area bounded by a line connecting the following geographical positions:"

AMENDMENT TO THE TEXT OF THE NOTE RELATING TO THE DEEP-WATER ROUTE OFF THE EAST COAST OF LANGELAND

Note: The Deep-water route is intended for use by ships which, because of their draught, are unable to navigate safely in areas outside the Deep-water route.

Ships with a draught of 10 metres or less should use the nationally recommended Route H, which lies to the east. The recommended Route H has a minimum depth of water below mean sea level of 12 metres.

Ship masters should take into account the information given in the IMO publication, *Ships' Routeing on Recommendation on navigation through the entrances to the Baltic Sea*.

RECOMMENDATION ON NAVIGATION THROUGH THE STRAIT OF BONIFACIO

1 Use of ships' routeing

Vessels navigating in the Strait shall exercise full diligence and regard for the requirements of the existing recommended two-way route in the Strait of Bonifacio. Due to the narrowness of the Strait, masters of vessels shall ensure that an appropriate monitoring of the ship's route is done on board in order to avoid groundings and collisions.

2 Ship reporting and navigation information

Ships of 300 GT and over entering the Strait shall participate in the mandatory ship reporting system (BONIFREP) established by the competent authorities as described in IMO's publication on *Ships' Routeing* (Section G I/8).

3 Pilotage

Masters of vessels passing through the Strait are recommended to avail themselves of the services of a qualified pilot.

*

This ATBA does not apply to any warship, naval auxiliary, barge (whether towed by a Government or commercial tug), or other ship owned or operated by a Contracting Government and used, for the time being, only on Government non-commercial service.

3.1 Categories of ships concerned

Ships for which the IMO Assembly recommends in its resolution A.766(18) of 17 November 1993 to Governments to prohibit or at least strongly discourage the transit in the Strait of Bonifacio: laden oil tankers and ships carrying dangerous chemicals or substances in bulk, as listed in the annex to resolution MEPC.49(31) adopted on 4 July 1991.

3.2 Description of the applicable procedure for requesting a pilot

Vessels wishing to order a Bonifacio Strait pilot should, as much as possible, send by e-mail or by fax the following information to the service named "Bonifacio Strait pilotage":

- ship's name and call sign;
- type of vessel and gross tonnage;
- draught;
- destination port/name and address of the local agent;
- boarding position and ETA.

24 hours prior to arrival, vessels should inform or confirm their ETA to the head office of the Bonifacio Strait pilotage service.

Once on Bonifacio Strait road, vessels should confirm their ETA 2 hours prior to arrival calling "Bonifacio Traffic" on VHF 10.

3.3 Description of the pilotage service

The pilotage area covers the Strait and its approaches. Usually the vessels entering the Strait board their pilots out of the "BONIFREP" zone.

The boarding positions are the following (WGS 84):

- Eastern boarding position: 41° 24'.80 N 009° 30'.00 E;
- Western boarding position: 41° 17'.28 N 008° 58'.50 E.

ESTABLISHMENT OF RECOMMENDED ROUTES TO THE NORTH-WEST OF THE PORT OF ISLA DEL CARMEN, CAMPECHE

(Reference chart: Chart of the Bay of Campeche S.M. 840, Ministry of the Navy (fourth edition October 2010))

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

Establishment of recommended routes and precautionary areas within the Gulf of Campeche oil exploration and production area. These recommended routes are primarily intended for oil exploration and production support vessels. Other vessels are strongly recommended to avoid the recommended system.

The ships' routing measures from the port of Isla del Carmen, Campeche, to the oil exploitation area of the Gulf of Campeche consist of the following:

- **One precautionary area labelled "A"**
- **Four two-way routes**

Precautionary area "A"

All the proposed recommended two-way routes to/away from the precautionary area labelled "A" located to the north-west of the port of Isla del Carmen, Campeche, with the direction of traffic flow indicated; it is bounded by a line connecting the following geographical positions:

- | | | |
|-----|--------------|---------------|
| (1) | 18° 45'.45 N | 091° 53'.41 W |
| (2) | 18° 49'.01 N | 091° 54'.07 W |
| (3) | 18° 49'.03 N | 091° 59'.04 W |
| (4) | 18° 44'.14 N | 091° 56'.15 W |

Recommended two-way route 1

The following routes are only to be used for ships involved in oil-related activities.

Established at the north-north-west of the port of Isla del Carmen, Campeche:

- | | | |
|-----|--------------|---------------|
| (2) | 18° 49'.01 N | 091° 54'.07 W |
| (6) | 19° 15'.45 N | 091° 59'.05 W |
| (7) | 19° 13'.88 N | 092° 01'.09 W |
| (8) | 18° 49'.02 N | 091° 56'.44 W |

Recommended two-way route 2

The following routes are only to be used for ships involved in oil-related activities.

Established at the north-west of the port of Isla del Carmen, Campeche:

- | | | |
|------|--------------|---------------|
| (8) | 18° 49'.02 N | 091° 56'.44 W |
| (9) | 19° 09'.74 N | 092° 08'.68 W |
| (10) | 19° 08'.83 N | 092° 10'.84 W |
| (3) | 18° 49'.03 N | 091° 59'.04 W |

Recommended two-way route 3

The following routes are only to be used for ships involved in oil-related activities.

Established at the west-north-west of the port of Isla del Carmen, Campeche:

- | | | |
|------|--------------|---------------|
| (3) | 18° 49'.03 N | 091° 59'.04 W |
| (11) | 18° 55'.69 N | 092° 35'.10 W |
| (12) | 18° 53'.09 N | 092° 33'.27 W |
| (13) | 18° 46'.50 N | 091° 57'.55 W |

Recommended two-way route 4 with precautionary area "B"

The following routes are recommended for use by ships of 50 gross tonnage and upwards.

Established at the west of the port of Isla del Carmen, Campeche:

A junction with a precautionary area labelled "B" bounded by a line connecting the following geographical positions:

- | | | |
|------|--------------|---------------|
| (14) | 18° 46'.50 N | 092° 47'.07 W |
| (15) | 18° 46'.50 N | 092° 50'.70 W |
| (16) | 18° 44'.70 N | 092° 53'.00 W |
| (17) | 18° 44'.70 N | 092° 49'.37 W |

A two-way route limited by the following geographical positions:

(13)	18° 46'.50 N	091° 57'.55 W
(14)	18° 46'.50 N	092° 47'.07 W
(17)	18° 44'.70 N	092° 49'.37 W
(18)	18° 44'.70 N	091° 56'.47 W

Note 1: An anchorage is established for vessels arriving at or manoeuvring north-east of the port of Isla del Carmen, Campeche, located north-west of the sea buoy.

Note 2: An anchorage is established for vessels arriving at or manoeuvring west to the port of Frontera, Tabasco.

ESTABLISHMENT OF RECOMMENDED ROUTES TO THE NORTH-EAST OF THE PORT OF DOS BOCAS, TABASCO

The ships' routing measures from the port of Dos Bocas, Tabasco, to the oil exploitation area of the Gulf of Campeche consist of the following:

The following routes are only to be used for ships involved in oil-related activities.

Established at the north-east of the port of Dos Bocas, Tabasco

Three two-way routes limited by the following geographical positions:

(19)	18° 27'.63 N	093° 10'.78 W
(17)	18° 44'.70 N	092° 49'.37 W
(16)	18° 44'.70 N	092° 53'.00 W
(20)	18° 29'.32 N	093° 12'.23 W
(14)	18° 46'.50 N	092° 47'.07 W
(21)	18° 53'.02 N	092° 38'.88 W
(22)	18° 54'.43 N	092° 40'.74 W
(15)	18° 46'.50 N	092° 50'.70 W
(11)	18° 55'.69 N	092° 35'.10 W
(23)	19° 05'.35 N	092° 23'.46 W
(24)	19° 07'.09 N	092° 25'.02 W
(25)	18° 57'.45 N	092° 36'.50 W

A junction with a precautionary area labelled "B" as defined above.

Note 1: An anchorage is established for vessels other than tankers involved in cargo exportation activities, arriving at or manoeuvring northwest to the port of Dos Bocas, Tabasco.

Note 2: An anchorage is established for vessels involved in oil-related activities to the west of the Taratunich oil exploitation field.

Note 3: An anchorage is established for vessels involved in oil-related activities to the west of the oil exploitation area of the Rebombeo oilfield.

ESTABLISHMENT OF RECOMMENDED ROUTES OFF THE PORTS OF CAYO ARCAS, TA'KUNTAH AND YÚUM K'AK NAAB

The ships' routing measures for tankers coming from abroad involved in loading crude for exportation and heading to the ports of Cayo Arcas, Ta'kuntah and Yúum K'ak Naab in the Gulf of Mexico consist of the following elements:

- **Four precautionary areas labelled C, D, E and F**
- **Five two-way routes**

The following routes are only to be used for oil tankers.

Routeing System I – Two two-way routes and a precautionary area

Established at the west and south-west of the port of Cayo Arcas for tankers arriving at the port or heading to the proposed anchorage east of the port of Ta'kuntah and vice versa.

Two-way route 1

(26)	20° 12'.00 N	092° 16'.45 W
(27)	20° 05'.50 N	092° 07'.20 W
(28)	20° 05'.50 N	092° 03'.36 W
(29)	20° 14'.80 N	092° 16'.45 W

A precautionary area labelled "C" bounded by a line connecting the following geographical positions:

(28)	20° 05'.50 N	092° 03'.36 W
(27)	20° 05'.50 N	092° 07'.20 W
(30)	20° 03'.30 N	092° 06'.50 W
(31)	20° 01'.30 N	092° 04'.30 W
(32)	20° 03'.30 N	092° 02'.90 W

Two-way route 2

(31)	20° 01'.30 N	092° 04'.30 W
(33)	19° 45'.00 N	091° 53'.98 W
(34)	19° 45'.00 N	091° 51'.20 W
(32)	20° 03'.30 N	092° 02'.90 W

Note: An anchorage for vessels involved in oil-related activities is established to the east of the Cantarell oilfield.

Routeing System II – Two two-way routes and a precautionary area

Established at the south-west and south of the port of Cayo Arcas with a two-way route for tankers arriving at the port or heading to the proposed anchorage for this port.

Two-way route 1

(35)	20° 03'.30 N	092° 16'.45 W
(30)	20° 03'.30 N	092° 06'.50 W
(27)	20° 05'.50 N	092° 07'.20 W
(36)	20° 05'.50 N	092° 16'.45 W

A precautionary area labelled "D" bounded by a line connecting the following geographical positions:

(36)	20° 05'.50 N	092° 16'.45 W
(37)	20° 05'.50 N	092° 18'.65 W
(38)	20° 03'.30 N	092° 18'.65 W
(35)	20° 03'.30 N	092° 16'.45 W

Two-way route 2

(32)	20° 03'.30 N	092° 02'.90 W
(39)	20° 03'.30 N	091° 55'.00 W
(40)	20° 05'.50 N	091° 55'.00 W
(28)	20° 05'.50 N	092° 03'.36 W

Note: An anchorage for tankers involved in loading operation in the port of Cayo Arcas is established to the south-east of the port of Cayo Arcas.

Routeing System III – Two two-way routes and a precautionary area

Established at the west and south-west of the port of Cayo Arcas with a two-way route for tankers arriving at the port of Yúum K'ak Naab.

Two-way route 1

(41)	20° 13'.55 N	092° 18'.65 W
(37)	20° 05'.50 N	092° 18'.65 W
(36)	20° 05'.50 N	092° 16'.45 W
(26)	20° 12'.00 N	092° 16'.45 W

A precautionary area labelled "D" as defined above.

Two-way route 2

(38)	20° 03'.30 N	092° 18'.65 W
(42)	19° 40'.71 N	092° 18'.65 W
(43)	19° 41'.45 N	092° 16'.45 W
(35)	20° 03'.30 N	092° 16'.45 W

A precautionary area labelled "E" bounded by a line connecting the following geographical positions:

(42)	19° 40'.90 N	092° 18'.65 W
(44)	19° 38'.70 N	092° 18'.65 W
(45)	19° 39'.45 N	092° 16'.45 W
(43)	19° 41'.65 N	092° 16'.45 W

Routeing System IV – One two-way route and a precautionary area

Established at the south of the port of Cayo Arcas with a two-way route for tankers heading from the precautionary area labelled "C" to precautionary area labelled "F" and vice versa.

Two-way route

(30)	20° 03'.30 N	092° 06'.50 W
(46)	19° 45'.00 N	092° 06'.50 W
(47)	19° 45'.00 N	092° 04'.30 W
(31)	20° 01'.30 N	092° 04'.30 W

A precautionary area labelled "F" bounded by a line connecting the following geographical positions:

(48)	19° 42'.80 N	092° 06'.50 W
(49)	19° 42'.80 N	092° 04'.30 W
(47)	19° 45'.00 N	092° 04'.30 W
(46)	19° 45'.00 N	092° 06'.50 W

Routeing System V – Two two-way routes

Established at the north of the port of Ta'kuntah with a two-way route for tankers sailing from the proposed anchorage to the east of this port and going on to handle cargo for the ports of Ta'kuntah, Yúum K'ak Naab and Dos Bocas, Tabasco.

Two-way route 1

(50)	19° 45'.00 N	091° 55'.00 W
(47)	19° 45'.00 N	092° 04'.30 W
(49)	19° 42'.80 N	092° 04'.30 W
(51)	19° 42'.80 N	091° 55'.00 W

Precautionary areas labelled "E" and "F" as defined above.

Two-way route 2

(46)	19° 45'.00 N	092° 06'.50 W
(43)	19° 41'.65 N	092° 16'.45 W
(45)	19° 39'.45 N	092° 16'.45 W
(48)	19° 42'.80 N	092° 06'.50 W

Note: An anchorage is established for exportation tankers involved in loading operations in the ports of Ta'kuntah and Yúum K'ak Naab.

AREAS TO BE AVOIDED

Five polygons are proposed delimiting areas to be avoided at tanker loading terminals for exporting crude and in the oil exploitation area of the Gulf of Mexico, specifically in the port of Cayo Arcas, in the Gulf of Campeche, in the Rebombeo oilfield, in the Enlace Litoral Tabasco oilfield and at the monobuoys in the port of Dos Bocas, Tabasco.

1 Amendment to the area to be avoided at the port of Cayo Arcas

The area to be avoided by ships not involved in oil-related activities in the port of Cayo Arcas is bounded by a line connecting the following geographical positions:

(52)	20° 08'.54 N	092° 00'.58 W
(53)	20° 08'.54 N	091° 56'.67 W
(54)	20° 10'.24 N	091° 56'.67 W
(55)	20° 12'.65 N	091° 59'.60 W
(56)	20° 12'.65 N	092° 00'.58 W

2 Amendment to the area to be avoided in the Gulf of Campeche

The area to be avoided by ships not involved in oil-related activities in the Gulf of Campeche is bounded by a line connecting the following geographical positions:

(23)	19° 05'.35 N	092° 23'.46 W
(57)	19° 08'.00 N	092° 12'.80 W
(58)	19° 12'.09 N	092° 03'.40 W
(59)	19° 17'.50 N	091° 56'.40 W
(60)	19° 30'.50 N	091° 56'.40 W
(61)	19° 36'.30 N	092° 04'.00 W
(62)	19° 42'.20 N	092° 04'.00 W
(63)	19° 42'.20 N	092° 06'.20 W
(64)	19° 37'.50 N	092° 06'.20 W
(65)	19° 37'.50 N	092° 18'.65 W
(66)	19° 16'.20 N	092° 23'.95 W
(24)	19° 07'.09 N	092° 25'.02 W

3 Establishment of an area to be avoided at the Rebombeo oilfield

The area to be avoided by ships not involved in oil-related activities in the Rebombeo oilfield is bounded by a line connecting the following geographical positions:

(67)	18° 56'.80 N	092° 43'.80 W
(68)	18° 51'.80 N	092° 37'.30 W
(69)	18° 53'.15 N	092° 33'.10 W
(70)	18° 58'.80 N	092° 37'.60 W

4 Establishment of an area to be avoided at the May oilfield

The area to be avoided by ships not involved in oil-related activities in the May oilfield is bounded by a line connecting the following geographical positions:

(71)	18° 42'.60 N	092° 37'.10 W
(72)	18° 41'.85 N	092° 34'.10 W
(73)	18° 42'.50 N	092° 33'.70 W
(74)	18° 44'.00 N	092° 36'.10 W

5 Establishment of an area to be avoided in the loading buoy area in the port of Dos Bocas, Tabasco

The area to be avoided by ships not involved in crude loading and loading operations for exportation in the loading buoy area in the port of Dos Bocas, Tabasco, is bounded by a line connecting the following geographical positions:

(75)	18° 36'.50 N	093° 12'.10 W
(76)	18° 36'.50 N	093° 08'.70 W
(77)	18° 38'.70 N	093° 08'.70 W
(78)	18° 38'.70 N	093° 12'.10 W

REVOCAION OF THE EXISTING ROUTEING MEASURES OTHER THAN TRAFFIC SEPARATION SCHEMES IN THE GULF OF CAMPECHE, AT MARITIME OIL TERMINAL OFF CAYO ARCAS AND RECOMMENDED TRACKS IN THE GULF OF CAMPECHE

Existing routeing measures other than traffic separation schemes as detailed in sections 2.5, 2.6 and 3.2 of Annex 1 to resolution A.527(13), namely in the Gulf of Campeche, at maritime oil terminal off Cayo Arcas and recommended tracks in the Gulf of Campeche respectively are revoked.

ANNEX 3

**DRAFT RESOLUTION MSC.[...](90)
(adopted on [... 2012])**

**ADOPTION OF AMENDMENTS TO THE EXISTING MANDATORY SHIP REPORTING
SYSTEM "IN THE STOREBÆLT (GREAT BELT) TRAFFIC AREA(BELTREP)"**

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO regulation V/11 of the International Convention for the Safety of Life at Sea, 1974 (SOLAS Convention), in relation to the adoption of mandatory ship reporting systems by the Organization,

RECALLING FURTHER resolution A.858(20) resolving that the function of adopting ship reporting systems shall be performed by the Committee on behalf of the Organization,

TAKING INTO ACCOUNT the guidelines and criteria for ship reporting systems adopted by resolution MSC.43(64), as amended by resolutions MSC.111(73) and MSC.189(79),

HAVING CONSIDERED the recommendations of the Sub-Committee on Safety of Navigation at its fifty-seventh regular session,

1. ADOPTS in accordance with SOLAS regulation V/11, the amendments to the existing mandatory ship reporting system "In the Storebælt (Great Belt) traffic area (BELTREP)";
2. DECIDES that the said amended mandatory ship reporting system "In the Storebælt (Great Belt) traffic area (BELTREP)" will enter into force at 0000 hours UTC on [1 July 2013];
3. REQUESTS the Secretary-General to bring this resolution and its annex to the attention of the Member Governments and SOLAS Contracting Governments to the 1974 SOLAS Convention.

ANNEX

**MANDATORY SHIP REPORTING SYSTEM
"IN THE STOREBÆLT (GREAT BELT) TRAFFIC AREA (BELTREP)"**

1 Categories of ships required to participate in the system

1.1 Ships passing through or proceeding to and from ports and anchorages in the BELTREP area are required to participate in the ship reporting system as follows:

- 1.1.1 ships with a gross tonnage of 50 and above;
- 1.1.2 all ships with an air draught of 15 m or more; and
- 1.1.3 pleasure craft with a length less than 15 m or with a gross tonnage less than 50 are exempted from participation.

2 Geographical coverage of the system and the number and edition of the reference chart used for delineation of the system

2.1 The mandatory ship reporting system BELTREP is operated by Great Belt VTS. The call sign is "Belt Traffic".

2.2 The operational area of BELTREP covers the central and northern part of the Storebælt (Great Belt) and the Hatter Barn area north of Storebælt (Great Belt) at the entrance to the Baltic Sea, as shown below and on the chartlet given in appendix 1-A. The area includes the routeing systems at Hatter Barn, in the Storebælt (Great Belt) area and Langelandsbælt, all adopted by the Organization. The BELTREP area also includes the central part of route Tango. Datum; World Geodetic System 1984 (WGS 84):

2.2.1 Report- and borderline West (RW)

- | | | |
|--------|----|---|
| Fyn: | 1) | 55° 36'.00 N, 010° 38'.00 E (Korshavn) |
| Samsø: | 2) | 55° 47'.00 N, 010° 38'.00 E (East coast of Samsø) |

2.2.2 Report- and borderline North (RN)

- | | | |
|-----------|----|---|
| Samsø: | 2) | 55° 47'.00 N, 010° 38'.00 E (East coast of Samsø) |
| | 3) | 56° 00'.00 N, 010° 56'.00 E (At sea near Marthe Flak) |
| Sjælland: | 4) | 56° 00'.00 N, 011° 17'.00 E (Sjællands Odde) |

2.2.3 Report- and borderline South (RS)

- | | | |
|--------------|----|--|
| Stignæs: | 5) | 55° 12'.00 N, 011° 15'.40 E (Gulfhavn) |
| Omø: | 6) | 55° 08'.40 N, 011° 09'.00 E (Ørespids, Omø) |
| | 7) | 55° 05'.00 N, 011° 09'.00 E (At sea south of Ørespids) |
| Langeland E: | 8) | 55° 05'.00 N, 010° 56'.10 E (Snøde Øre) |

2.2.4 Report- and borderline Southwest (RSW)

- | | | |
|--------------|-----|---|
| Langeland W: | 9) | 55° 00'.00 N, 010° 48'.70 E (South of Korsebølle Rev) |
| Thurø Rev: | 10) | 55° 01'.20 N, 010° 44'.00 E (Thurø Rev Light buoy) |

2.2.5 Sector division

The BELTREP area is divided into two sectors at latitude 11) 55°35'.00 N; sector 1 northerly and sector 2 southerly. Each sector has an assigned VHF channel as shown in appendix 2.

2.3 The reference charts (Datum: World Geodetic System 1984, WGS 84), which include the operational area of BELTREP, are Danish charts nos. 112 (15th edition 2010), 128 (10th edition 2009), 141 (21st edition 2010), 142 (18th edition 2010), 143 (19th edition 2009) and 160 (7th edition 2007).

3 Format, content of reports, times and geographical positions for submitting reports, authority by whom reports should be sent and available services

3.1 *Procedures of reporting*

3.1.1 All BELTREP reports must be made to Great Belt VTS using VHF voice transmissions. However, ships are encouraged to fulfil certain reporting requirements of the reporting system by the use of correct and updated AIS information (Automatic Identification System) class A as approved by the Organization and by non-verbal means as e-mail or similar, prior to entering the ship reporting area. Details are given in appendix 3.

3.1.2 The use of correct and updated AIS information can accomplish the reporting requirements for designators A, B, C, E, F, G and I, O and W. Details are given in appendix 3.

3.1.3 To minimize the time reporting on the VHF radio channels and to avoid interference with essential navigational duties, ships are encouraged to forward the reporting requirements for designators L, P, T and X by e-mail or similar prior to entering the ship reporting area. Such non-verbal partial reports must also state designators A and H. Reporting designators L, P, T and X prior to entry using mobile phone is also accepted as a means of communication. Details are given in subparagraph 3.5 and appendix 3.

3.1.4 A ship which fulfils the reporting requirements of the BELTREP mandatory ship reporting system by the use of correct and updated AIS information and prior non-verbal means must, as a minimum, carry out a VHF voice transmission to communicate the name of the ship (part of designator A), air draught and deadweight tonnage (designator U) and the report line of entry to the Great Belt VTS when actually entering the area. The same procedure must be followed before departing a port or leaving an anchorage in the BELTREP area. Details are given in appendix 3.

3.1.5 Designator Q or R, if applicable, shall at all times be given using VHF voice transmission to Great Belt VTS. Details are given in appendix 3.

3.2 Verbal reporting is not required when a ship passes the BELTREP sector line at latitude 55° 35'.00 N. However, sector change of VHF frequency is required according to appendix 2.

3.3 *Format*

3.3.1 The mandatory ship report shall be drafted in accordance with the format shown in appendix 3. The information requested from ships is derived from the Standard Reporting Format shown in paragraph 2 of the appendix to resolution A.851(20).

3.4 *Content*

3.4.1 A report from a ship to BELTREP by AIS, non-verbal means or by voice transmission or combinations thereof must contain the following information; details are given in appendix 3:

- A name of the ship, call sign, MMSI no. and, if available, IMO identification number;
- B date and time;
- C position expressed in latitude and longitude;
- E true course;
- F speed;
- G and I last port of call, destination and ETA;
- H date, time (UTC) and report line of entry into the BELTREP area;
- L route information on the intended route through the BELTREP area;
- O maximum present draught;
- P cargo and, if dangerous goods present on board, quantity and IMO class. Dangerous goods information must be summarized in total tonnes per IMO class;
- Q or R defects, deficiencies, limitations – pollution or dangerous goods lost overboard;
- T address for the communication of cargo information;
- U air draught, deadweight tonnage;
- W total number of persons on board; and
- X type and estimated quantity of bunker fuel, for ships of 1,000 GT and above. Must be summarized in total tonnes per type.

Note:

- a) The master of the ship must forthwith inform the Great Belt VTS concerned of any change in navigational status or in previous information notified, particularly in relation to designator Q or R.

3.5 *Geographical position for submitting reports*

3.5.1 Ships entering the BELTREP operational area shall submit a report when crossing the report line or on departure from a port or anchorage within the operational area.

3.5.2 Previously forwarded reports can be submitted at any time after entering the Danish Exclusive Economic Zone (EEZ) and until in reach of VHF range of Great Belt VTS at an approximate distance of 20 NM from the BELTREP area. As the Great Belt VTS must be able to timely handle incoming prior reporting, it will not be possible to undertake pre-entry reports within the 20 NM VHF range. The reporting option is then verbal reporting by VHF when crossing the report line of entry. Details of areas are shown on the chartlet in appendix 1-B. The Danish EEZ border lines are shown in nautical charts.

3.5.3 Ships departing a port or leaving an anchorage within the 20 NM range of the BELTREP area or in the BELTREP area, may submit a pre-entry report for designators H, L, P, T and X if transmitted one hour before departure for enabling the Great Belt VTS to timely handle incoming prior reports.

3.6 *Crossing traffic*

3.6.1 Ferries frequently cross route Tango in sector 1, including high-speed ferries. The ferries generally operate according to published schedules; special reporting arrangements can be authorized.

3.7 *Authority*

The Admiral Danish Fleet is the VTS Authority for Great Belt VTS which operates the BELTREP system with call sign "Belt Traffic". Details in appendix 2.

4 Information to be provided to ships and procedures to be followed

4.1 Ships are required to keep a continuous listening watch in the BELTREP area on the relevant VHF sector channels and VHF channel 16.

4.2 Great Belt VTS will provide information service to ships about specific and urgent situations which could cause conflicting traffic movements as well as other information concerning safety of navigation, for instance, information about weather, current, ice, water level, navigational problems or other hazards.

4.2.1 Information of general interest to ships in the area will be broadcast by the Great Belt VTS on VHF channel as specified by the VTS operator or will be given upon request. A broadcast will be preceded by an announcement on VHF channel 16 and sector channels. All ships navigating in the area should listen to the announced broadcast.

4.2.2 If necessary, Great Belt VTS can provide individual information to a ship particularly in relation to positioning or local conditions.

4.2.3 If deemed necessary by the Great Belt VTS or upon request of a ship, navigational assistance can be provided. Great Belt VTS will inform the identifiable ship when the navigational assistance starts and subsequently terminates.

4.2.4 The following IMO Standard Marine Communication Phrases (SMCP), section A1/6, for VTS message markers can be used: ADVICE, WARNING, INFORMATION, QUESTION, ANSWER, REQUEST and INTENTION.

4.3 If a ship needs to anchor due to breakdown, low visibility, adverse weather, changes in the indicated depth of water, etc., Great Belt VTS can recommend suitable anchorages or other places of refuge within the operational area. The anchorages in the vicinity of the Storebælt (Great Belt) bridges are marked on the nautical charts covering the area and are shown on the chartlet in appendix 1-A.

5 Communication required for the BELTREP system

5.1 The language used for communication shall be English, using IMO Standard Marine Communication Phrases, when deemed necessary by Great Belt VTS.

5.2 Ship-to-ship communication of navigational intentions should be carried out on the BELTREP working channels enabling the Great Belt VTS and other ships to be kept informed.

5.3 Details of communication and contact information are given in appendix 2.

6 Rules, regulations and recommendation in force in the area of the system

6.1 Regulation for preventing collisions at sea

The International Regulations for Preventing Collisions at Sea (COLREGs) are applicable throughout the operational area of BELTREP.

6.2 Traffic separation scheme "At Hatter Barn" (TSS-T5)

6.2.1 The separation scheme, "At Hatter Barn", is situated in Samsø Bælt north of the Storebælt (Great Belt) between the islands of Sjælland and Samsø. It has been adopted by IMO and rule 10 of the International Regulations for Preventing Collisions at Sea applies.

6.2.2 The minimum depth in the traffic separation scheme is 15 metres at mean sea level. Ships with a draught of more than 13 metres should use the deep-water route "Between Hatter Rev and Hatter Barn", which lies northwest of the traffic separation scheme.

6.3 Deep-water route "Between Hatter Rev and Hatter Barn" (DW-T3)

6.3.1 The IMO-adopted deep-water route "Between Hatter Rev and Hatter Barn" has a minimum depth of water below mean sea level of 19 metres. Ships which are not obliged by reason of their draught (13 metres or less) to use the deep-water route should use the traffic separation scheme which lies southeast of the deep-water route, where there is a minimum depth of water below mean sea level of 15 metres.

6.3.2 Ships should be aware that other ships sailing in the deep-water route can be constrained by draught and exhibit signals according to COLREGs.

6.4 Traffic separation scheme "Between Korsoer and Sprogø" (TSS-T6)

6.4.1 The traffic separation scheme "Between Korsoer and Sprogø", situated in the narrows of the Eastern Channel in Storebælt (Great Belt) between the islands of Fyn and Sjælland, have been adopted by the IMO, and rule 10 of the International Regulations for Preventing Collisions at Sea applies.

6.4.2 The minimum free water depth in the northbound traffic lane is 17 metres and in the southbound traffic lane, 19 metres, both below mean sea level.

6.4.3 There is a recommended speed limit of 20 knots in the traffic separation scheme.

6.5 *The Great Belt Bridges – Safety regulations*

6.5.1 Passage through the marked spans at the West Bridge (a combined road and rail bridge), is allowed only for ships below 1,000 tonnes deadweight and with an air draught of less than 18.00 metres. This passage has route designator BW.

6.5.2 Passage through the traffic separation scheme under the East Bridge (a suspension bridge for road traffic), is allowed only for ships with an air draught of less than 65.00 metres. This passage has route designator BE and includes route T.

6.6 *Deep-water route "Off the east coast of Langeland" (DW-T4)*

6.6.1 The deep-water route "Off the east coast of Langeland" has a minimum depth of water below mean sea level of 19 metres. Ships with draughts in excess of 10 metres are recommended to use the deep-water route because of navigational difficulties for such ships in following the national recommended route Hotel which lies to the east of the deep-water route.

6.6.2 Ships should be aware that other ships sailing in the deep-water route can be constrained by draught and exhibit signals according to COLREGs.

6.7 *Route Hotel*

6.7.1 East of the deep-water route "Off the east coast of Langeland", the national route H is established, which has a minimum depth of 12 metres below mean sea level. Ships with a draught of 10 metres or less should follow route H.

6.8 *IMO Recommendation on Navigation through the entrances to the Baltic Sea*

6.8.1 The recent amendment of the IMO Recommendation on Navigation through the entrances to the Baltic Sea was adopted by MSC in October 2007 and promulgated in SN.1/Circ.263, section 1.9 and is given in the IMO publication Ships' Routeing, Part C. It recommends, among other things, that ships with a draught of 11 metres or more navigating route T or ships, irrespective of size or draught carrying a shipment of irradiated nuclear fuel, plutonium or high-level radioactive wastes (INF-cargoes), should use the pilotage services established locally by the coastal States for passing ships.

6.8.2 Ship masters should, in due time, when planning the passage, carefully note the content as regards route Tango in the IMO Recommendation on Navigation through the entrances to the Baltic Sea.

6.9 *Mandatory pilotage*

6.9.1 Harbours within the BELTREP area are covered by provisions on the subject of mandatory pilotage for certain ships bound for or coming from Danish harbours.

7 Shore-based facilities to support the operation of the system

7.1 System capability

7.1.1 The VTS centre is situated at the Naval Logistic Support Regional Centre at Korsør. The VTS system comprises several remote sensor sites. The sites provide surveillance of the VTS area using a combination of radar, radio direction finding, Automatic Identification System (AIS) and electro-optic sensors. An integrated network system of eight radar sensors integrated with AIS provides surveillance of the VTS area.

7.1.2 All the sensors mentioned will be controlled or monitored by the VTS operators.

7.1.3 There are a number of operator consoles in the control centre, one of which is intended for system maintenance and diagnostic purposes, which allows these activities to be carried out without disruption of normal operations. The operator can from each of the consoles control and display the status of the sensors. The VTS centre will, at all times, be manned with a duty officer and three operators.

7.1.4 Recording equipment automatically stores information from all tracks which can be replayed. In case of incidents, the VTS authority can use records as evidence. VTS operators have access to different ship registers, pilot information and hazardous cargo data.

7.2 Radar, electro-optic facilities and other sensors

7.2.1 Information necessary to evaluate the traffic activities within the operational area of BELTREP is compiled via VTS area remote controlled sensors comprising:

- high-resolution radar systems;
- infra-red sensor systems;
- daylight TV systems;
- VHF communications systems; and
- DF systems.

7.3 Radio communication facilities

7.3.1 Radio communication equipment in the VTS centre consists of six VHF radios, including DSC facilities. The VHF channels used are given in appendix 2.

7.4 AIS facilities

7.4.1 BELTREP is linked to the national shore-based AIS network and can continually monitor AIS information on ships such as identity and position. The information is displayed as part of the VTS system and covers the VTS area.

7.5 Personnel qualifications and training

7.5.1 The VTS centre is staffed with civilian personnel, all experienced, as officers at a competency level required in the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, chapter II, section A-II/1 or A-II/2.

7.5.2 Training of personnel will meet the standards recommended by the IMO. Furthermore, it will comprise an overall study of the navigation safety measures established in Danish waters and, in particular, the operational area of BELTREP, including a study of relevant international and national provisions with respect to safety of navigation. The training also includes real-time training in simulators.

7.5.3 Refresher training is carried out at least every third year.

8 Information concerning the applicable procedures if the communication facilities of the shore-based Authority fail

8.1 The system is designed with sufficient system redundancy to cope with normal equipment failure.

8.2 In the event that the radio communication system or the radar system at the VTS centre breaks down, communication will be maintained via a standby VHF system. To continue the VTS operation in order to avoid collisions in the bridge area, Great Belt VTS has an emergency back-up VTS centre at Sprogø covering sector 2. The VTS emergency centre is equipped with radar, VHF radio sets and CCTV cameras.

8.3 If the radar system or other essential equipment suffers a breakdown, information of reduced operational capability will be given by Great Belt VTS or broadcast as national navigational warnings.

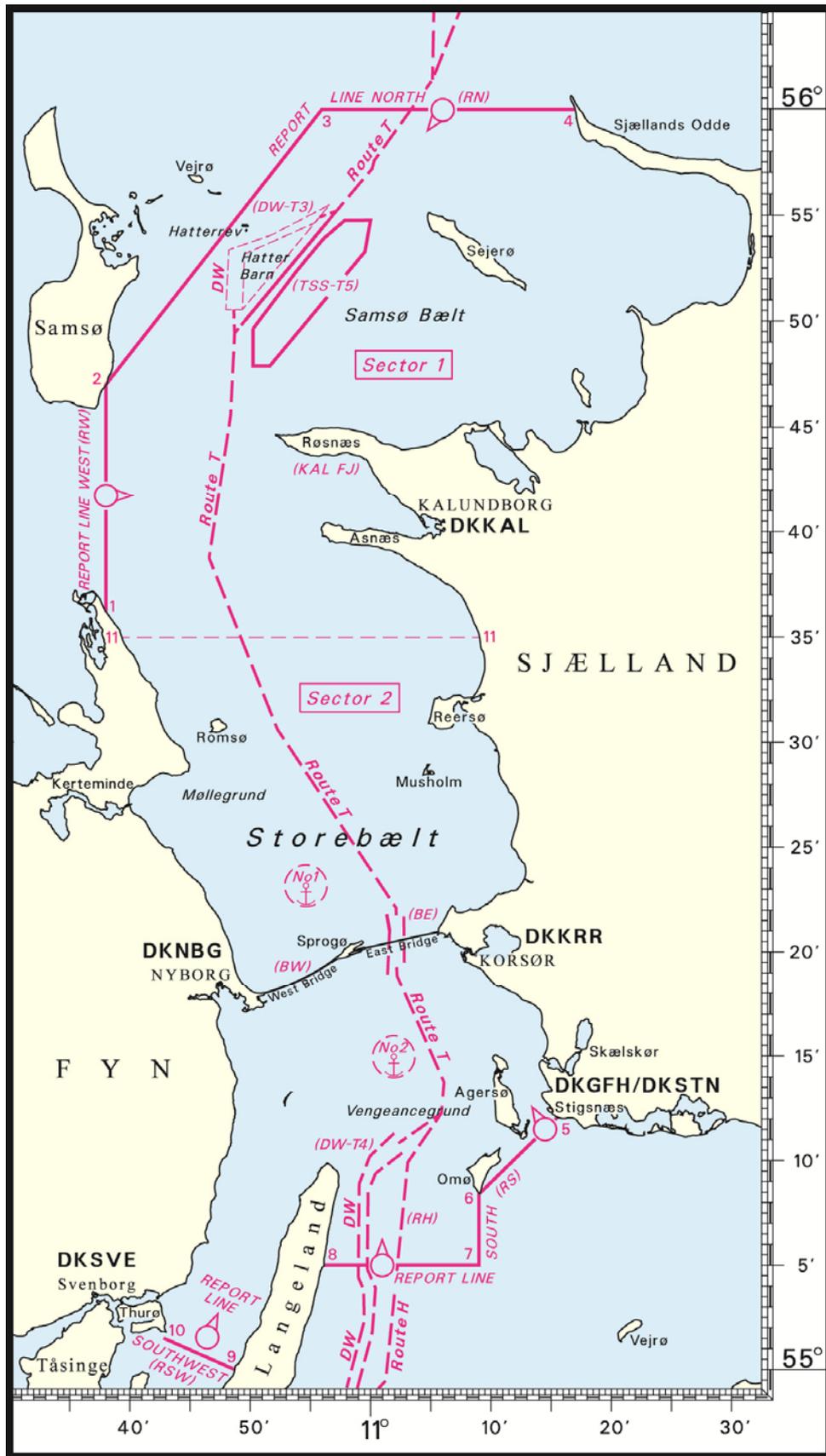
9 Measures to be taken if a ship fails to comply with the requirements of the system

9.1 The objective of Great Belt VTS is to facilitate the exchange of information between the ship and the shore in order to ensure safe passages of the bridges, support safety of navigation and protect the marine environment.

9.2 Great Belt VTS seeks to prevent ship collisions with the bridges crossing Storebælt (Great Belt). If a ship appears to be on a collision course with one of the bridges, Great Belt VTS will arrange for an emergency stop for road and rail traffic on the bridges.

9.3 All means will be used to encourage and promote the full participation of ships required to submit reports under SOLAS regulation V/11. If reports are not submitted or contraventions are made of the safety regulations in sections 6.5.1 and 6.5.2 for passing the bridges and the offending ship can be positively identified, then information will be passed to the relevant flag State Authority for investigation and possible prosecution in accordance with national legislation. Information will also be made available to port State Control inspectors.

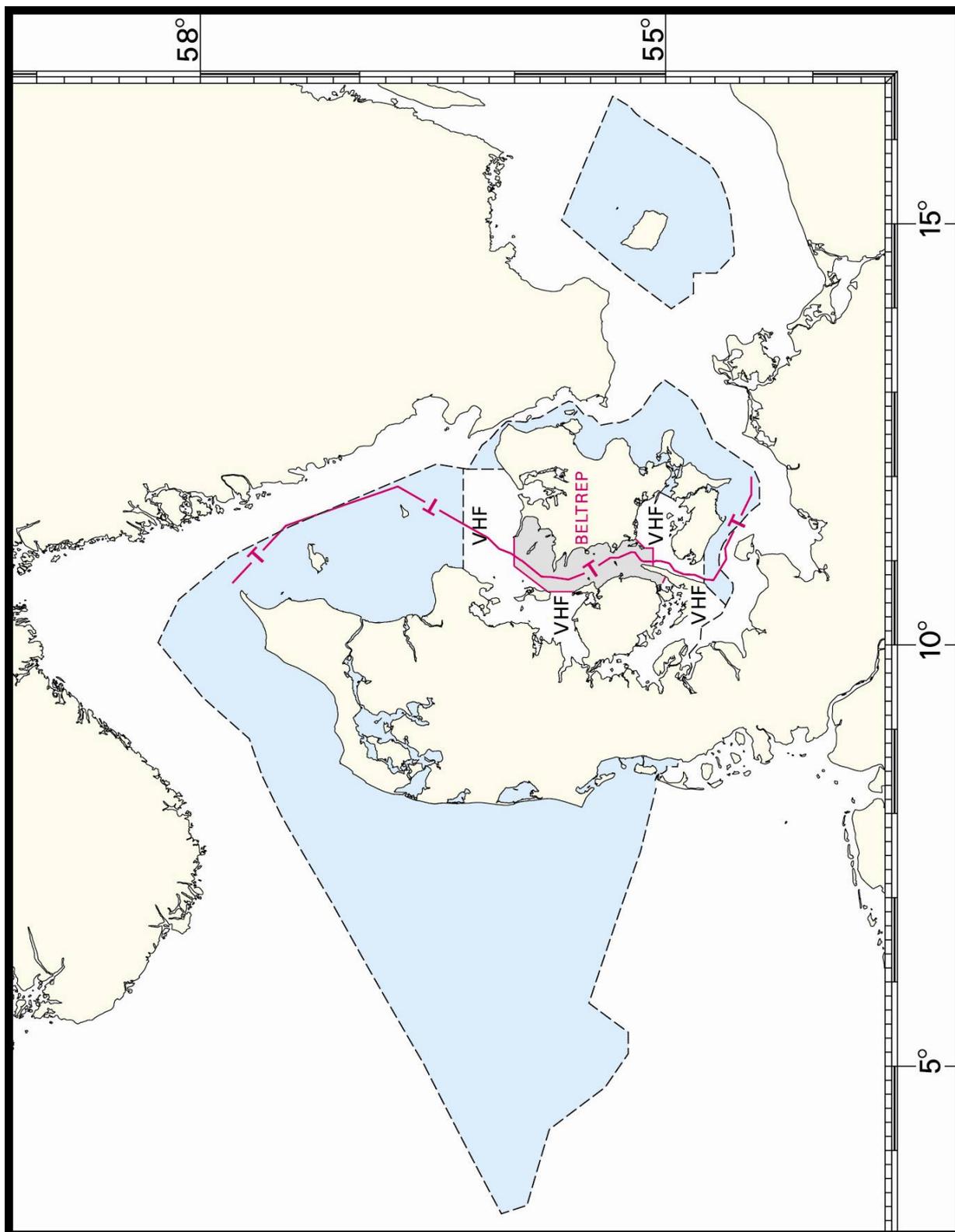
Appendix 1-A



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Appendix 1–B

Pre-entry reporting areas – Danish EEZ



Appendix 2

**Contact information and assigned VHF channels for sectors
in the mandatory ship reporting system "BELTREP"**

BELTREP radio call sign:	"Belt Traffic"
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VHF Channels	Operational use
VHF Channel 74	Great Belt VTS – Sector 1 North
VHF Channel 11	Great Belt VTS – Sector 2 South
VHF Channel 10	Great Belt VTS – Broadcast, individual assistance, reserve channel
VHF Channel 16	Great Belt VTS – Continuous monitoring

The Great Belt VTS operating BELTREP is located in Korsør at the bridge area:

H24 contact information:

- 1) Great Belt VTS is monitoring VHF channels 74, 11 and 16 continuously.
- 2) Duty officer phone: +45 58 37 68 68
- 3) Fax: +45 58 37 28 19
- 4) MMSI: 002190001
- 5) E-mail: beltrep@sok.dk
Web page: www.beltrep.org

Address:

Great Belt VTS
Sylowsvej 8
DK – 4220 Korsør
Denmark

Appendix 3

Drafting of reports to the mandatory ship reporting system "BELTREP"

Summary:

Reporting is to be done by VHF, but can also be accomplished partly by the use of AIS and pre-entry non-verbal means as, e.g., e-mail.

- Correct and updated AIS information can accomplish reporting of designators A, B, C, E, F, G and I, O and W.
- Non-verbal means can accomplish reporting of designators (A, H), L, P, T and X.
- VHF must as a minimum be used for accomplishing designators A (part of) and U.

The scheme below gives the optimal use of reporting combined by AIS, non-verbal and VHF.

1	2	3	4	5	6
Designator	AIS	Non-verbal (e.g., e-mail)	VHF	Function	Information required
A	Yes	Yes	Yes	Ship	1) Name of ship: AIS, non-verb, VHF 2) MMSI number: AIS 3) Call sign: AIS – and when available – 4) IMO number: AIS, non-verbal
B	Yes	-	-	Date and time	A 6-digit group event giving day of month and hours and minutes in Universal Co-ordinated Time (UTC).
C	Yes	-	-	Position	A 5-digit group giving latitude in degrees and minutes, decimal, suffixed with N and a 6-digit group giving longitude in degrees and minutes, decimal, suffixed with E.
E	Yes	-	-	True course	A 3-digit group
F	Yes	-	-	Speed in knots and tenths of knots	A 3-digit group
G and I	Yes	-	-	Last port of call Destination and ETA	The name of last port of call and next port of call; both given in UN LOCODE by AIS. For details and procedures see IMO SN/Circ.244 and www.unece.org/cefact/locode/service/main.htm . ETA date and time group expressed as in (B)
H	-	Yes	-	Date, time (UTC) and report line of entry into the BELTREP area	This information is <u>only</u> required if reporting designators L, P, T and X are transmitted non-verbally (e.g., e-mail) prior to entry of the BELTREP area

1 Designator	2 AIS	3 Non-verbal (e.g., e-mail)	4 VHF	5 Function	6 Information required
L	-	Yes	-	Route information in the BELTREP area	<p>A brief description of the intended route in the BELTREP area as planned by the master and stated by coded designators as given below (see also chartlet in Appendix 1-A for references):</p> <p><u>Report lines:</u> RN – report line North RW – report line West RS – report line South RSW – report line Southwest</p> <p><u>Routeing systems:</u> DW-T3 – Deep-water Hatter TSS-T5 – Separation At Hatter Barn</p> <p><u>Bridges:</u> BE – East bridge/Route T BW – West bridge</p> <p><u>Routeing system:</u> DW-T4 – Deep-water Langeland</p> <p><u>Route:</u> RH – Route Hotel</p> <p><u>Anchorage – Kalundborg Fjord</u> KAL FJ See examples below.</p>
O	Yes	-	-	Maximum present draught in metres	A 2-digit or 3-digit group giving the present maximum draught in metres (e.g., 6.1 or 10.4).
P	-	Yes	-	Cargo on board	Cargo and, if dangerous goods present on board, quantity and IMO class. Dangerous goods information must be summarized in total tonnes per IMO class when transmitted.
Q or R	-	-	Yes	Defects and deficiencies Pollution or dangerous goods overboard	<p>Q: Details of defects and deficiencies affecting the equipment of the ship or any other circumstances affecting normal navigation and manoeuvrability.</p> <p>R: Pollution or dangerous goods lost overboard.</p>

1	2	3	4	5	6
Designator	AIS	Non-verbal (e.g., e-mail)	VHF	Function	Information required
T	-	Yes	-	Ship's representative and/or owner	Address and particulars from which detailed information on the cargo may be obtained.
U	-	-	Yes	Ship's size	Information of maximum air draught and deadweight tonnage, required for all ships, including ship's tow or other floating equipment. This information shall be given by voice transmissions when entering the BELTREP area, irrespective of whether the information has also been given by, e.g., non-verbal means.
W	Yes	-	-	Total number of persons on board	State number
X	-	Yes	-	Miscellaneous	Type and estimated quantity of bunker fuel, for ships of 1,000 gross tonnage and above. Must be summarized in total tonnes per type when transmitted.

Examples of reporting route, coded in the format as given under designator L

1) *A northbound ship leaving the port of Gulfhavn planning to sail north route T via deep-water route "Between Hatter Rev and Hatter Barn" leaving at report line North (UN LOCODE format for Gulfhavn is DK GFH):*

L: DK GFH, BE, DW-T3, RN

2) *A southbound ship in passage and planning to enter at report line North, sailing through TSS "At Hatter Barn", then route T, route H and leaving at report line South:*

L: RN, TSS-T5, BE, RH, RS

3) *A northbound ship entering via deep-water route "Off the east coast of Langeland", route Tango, East Bridge and leaving through report line West, bound for the port of Fredericia:*

L: RS, DW-T4, BE, RW

4) *A ship entering at report line North sailing via TSS "At Hatter Barn", route T and then anchoring in Kalundborg fjord:*

L: RN, TSS-T5, KAL FJ

ANNEX 4

**DRAFT RESOLUTION MSC.[...](90)
(adopted on [... 2012])**

**ADOPTION OF REVISED PERFORMANCE STANDARDS FOR
SHIPBORNE VOYAGE DATA RECORDERS (VDRs)**

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,

RECOGNIZING the need to revise the performance standards for voyage data recorders (VDRs) to assist in investigations into casualties,

HAVING CONSIDERED the recommendation made by the Sub-Committee on Safety of Navigation at its fifty-seventh session, and by the Maritime Safety Committee at its [ninetieth] session,

1. ADOPTS the Revised Recommendation on performance standards for voyage data recorders (VDRs), set out in the Annex to the present resolution;
2. RECOMMENDS Governments to ensure that VDRs:
 - .1 if installed on or after [1 July 2014], conforms to performance standards not inferior to those specified in the annex to the present resolution; and
 - .2 if installed before [1 July 2014], conforms to performance standards not inferior to those specified in the Annex to resolution A.861(20), as amended by resolution MSC.214(81).

ANNEX

RECOMMENDATION ON PERFORMANCE STANDARDS FOR SHIPBORNE VOYAGE DATA RECORDERS (VDRs)

1 PURPOSE

The purpose of a voyage data recorder (VDR) is to maintain a store, in a secure and retrievable form, of information concerning the position, movement, physical status, command and control of a vessel over the period leading up to and following an incident having an impact thereon. Information contained in a VDR should be made available to both the Administration and the shipowner. This information is for use during any subsequent safety investigation to identify the cause(s) of the incident.

2 APPLICATION

A VDR with capabilities not inferior to those defined in these performance standards is required to be fitted to ships of classes defined in SOLAS chapter V, as amended.

3 REFERENCES

3.1 IMO resolutions:

- A.694(17) General Requirements for Shipborne Radio Equipment Forming Part of the GMDSS and for Electronic Navigational Aids;
- A.810(19) Performance standards for float-free satellite emergency position-indicating radio beacons (EPIRBs) operating on 406 MHz; and
- A.1021(26) Code on Alerts and Indicators, 2009.

3.2 IMO circular:

- MSC/Circ.982 Guidelines on ergonomic criteria for bridge equipment and layout.

4 DEFINITIONS

4.1 *Voyage data recorder (VDR)* means a complete system, including any items required to interface with the sources of input signals, their processing and encoding, the final recording medium, the playback equipment, the power supply and dedicated reserve power source.

4.2 *Signal source* means any sensor or device external to the VDR, to which the VDR is connected and from which it obtains signals and data to be recorded.

4.3 *Final recording medium* means the items of hardware on which the data is recorded such that access to any one of them would enable the data to be recovered and played back by use of suitable equipment. The combination of a fixed recording medium and float-free recording medium and long-term recording medium, together, is recognized as the final recording medium.

4.4 *Fixed recording medium* means a part of the Final Recording Medium which is protected against fire, shock, penetration and a prolonged period on the ocean floor. It is expected to be recovered from the deck of the vessel that has sunk. It has a means of indicating location.

4.5 *Float-free recording medium* means a part of the Final Recording Medium which should float-free after a sinking. It has a means of indicating location.

4.6 *Long-term recording medium* means a permanently installed part of the Final Recording Medium. It provides the longest record duration and has a readily accessible interface for downloading the stored data.

4.7 *Playback equipment* means any data medium with the playback software, the operational instructions and any special parts required for connecting a commercial-off-the-shelf laptop computer to the VDR.

4.8 *Playback software* means a copy of the software program to provide the capability to download the stored data and play back the information. The software should be compatible with an operating system available with commercial-off-the-shelf laptop computers and where non-standard or proprietary formats are used for storing the data in the VDR, the software should convert the stored data into open industry standard formats.

4.9 *Dedicated reserve power source* means a battery, with suitable automatic charging arrangements, dedicated solely to the VDR, of sufficient capacity to operate it as required by 5.4.2.

4.10 *Configuration data* describes the vessel's equipment, its installation on the vessel and its relation to the VDR. The storage and playback software uses this data to store the data record and to convert the data record into information that assists casualty investigation during playback.

5 OPERATIONAL REQUIREMENTS

5.1 General

5.1.1 The VDR should continuously maintain sequential records of preselected data items relating to the status and output of the ship's equipment, and command and control of the ship, referred to in 5.5.

5.1.2 To permit subsequent analysis of factors surrounding an incident, the method of recording should ensure that the various data items can be co-related in date and time during playback on suitable equipment.

5.1.3 The system should include functions to perform a performance test at any time, e.g., annually or following repair or maintenance work to the VDR or any signal source providing data to the VDR. This test may be conducted using the playback equipment and should ensure that all the required data items are being correctly recorded. The design and construction, which should be in accordance with the requirements of resolution A.694(17) and international standards acceptable to the Organization¹, should take special account of the requirements for data security and continuity of operation as detailed in 5.3 and 5.4.

¹ Refer to publication IEC 60945-Maritime navigation and radiocommunication equipment and systems – General requirements, methods of testing and required test results.

5.2 Final recording medium

The final recording medium should consist of the following items:

- .1 Fixed recording medium;
- .2 Float-free recording medium; and
- .3 Long-term recording medium.

5.2.1 Fixed recording medium

The fixed recording medium should be installed in a fixed protective capsule which should meet all of the following requirements:

- .1 be capable of being accessed following an incident but secure against a physical or electronically manipulated change or deletion of recorded data;
- .2 maintain the recorded data for a period of at least 2 years following termination of recording;
- .3 maximize the probability of survival against fire, shock, penetration and deep-sea-pressure and recovery of the final recorded data after any incident;
- .4 be of a highly visible colour and marked with retro-reflective materials; and
- .5 be fitted with an appropriate device to aid location under water.

5.2.2 Float-free recording medium

The float-free recording medium should be installed in a float-free capsule which should meet all of the following requirements:

- .1 be fitted with means to facilitate grappling and recovery;
- .2 maintain the recorded data for a period of at least 6 months following termination of recording;
- .3 be so constructed as to comply with the requirements specified in resolution A.810(19) and to minimize risk of damage during recovery operations;
- .4 be capable of transmitting an initial locating signal and further locating homing signal for at least 48 hours over a period of not less than 7 days/168 hours; and
- .5 be capable of being accessed following an incident but secure against a physical or electronically manipulated change or deletion of recorded data.

5.2.3 Long-term recording medium

The long-term recording medium should:

- .1 be capable of being accessed from an internal, easily accessible area of the vessel; and
- .2 provide access to the data held on it but be secured against a physical or electronically manipulated change or deletion of recorded data.

5.3 Data selection and security

5.3.1 The minimum amount of data items to be recorded by the VDR is specified in 5.5. Optionally, additional items may be recorded provided that the requirements for the recording and storage of the specified selections are not compromised.

5.3.2 The equipment should be so designed that, as far as is practical, it is not possible to manipulate the amount of data being recorded by the VDR, the data itself nor the data which has already been recorded. Any attempt to interfere with the integrity of the data or the recording should be recorded.

5.3.3 The recording method should be such that each item of the recorded data is checked for integrity and an alarm given if a non-correctable error is detected.

5.4 Continuity of operation

5.4.1 The VDR should be capable of operating from the ship's main and emergency source of electrical power.

5.4.2 If the ship's source of electrical power supply fails, the VDR should continue to record Bridge Audio (see 5.5.5) from the dedicated reserve power source for a period of 2 hours. At the end of this 2 hour period all recording should cease automatically.

5.4.3 Recording should be continuous unless terminated in accordance with 5.4.2. The time for which all stored data items are retained should be at least 30 days/720 hours on the long-term recording medium and at least 48 hours on the fixed and float-free recording media. Data items which are older than this may be overwritten with new data.

5.5 Data items to be recorded

5.5.1 Date and time

Date and time, referenced to UTC, should be obtained from a source external to the ship and an internal clock should be synchronized with valid date and time data. During times of a loss of the external source, the internal clock should be used. The recording should indicate which source is in use. The recording method should be such that the timing of all other recorded data items can be derived on playback with a resolution and continuity sufficient to reconstruct the history of the incident in detail.

5.5.2 Ship's position

Latitude and longitude, and the datum used, should be derived from an electronic position-fixing system (EPFS). The recording should ensure that the identity and status of the EPFS can always be determined on playback.

5.5.3 Speed

Speed through the water and speed over the ground, including an indication of which it is, derived from the ship's speed and distance measuring equipment, as required by SOLAS regulations.

5.5.4 Heading

Heading as indicated by the ship's heading source.

5.5.5 Bridge audio

Microphones should be positioned on the bridge covering all work stations as described in MSC/Circ.982 so that conversation is recorded. The recording should be such that, on playback, a normal speaking voice should provide adequate intelligibility while the ship is performing its normal operations. This performance should be maintained at all work stations while there is a single audio alarm anywhere on the bridge or any noise, including noise from faulty equipment or mounting, or wind. This should be achieved through the use of at least two channels of audio recording. Microphones positioned outside on bridge wings, should be recorded on at least one additional separate channel.

5.5.6 Communications audio

VHF communications relating to ship operations should be recorded on an additional separate channel to those referred to in 5.5.5.

5.5.7 Radar

The electronic signals of the main displays of both ship's radar installations as required by SOLAS regulations. The recording method should be such that, on playback, it is possible to present a faithful replica of the entire radar display that was on view at the time of recording, albeit within the limitations of any bandwidth compression techniques that are essential to the working of the VDR.

5.5.8 ECDIS

Where a vessel is fitted with an ECDIS installation, the VDR should record the electronic signals of the ECDIS display in use at the time as the primary means of navigation. The recording method should be such that, on playback, it is possible to present a faithful replica of the entire ECDIS display that was on view at the time of recording, albeit within the limitations of any bandwidth compression techniques that are essential to the working of the VDR and in addition the source of the chart data and the version used.

5.5.9 Echo sounder

The depth information. This should include, where available, depth under keel, the depth scale currently being displayed and other status information.

5.5.10 Main alarms

This should include the status of all mandatory alarms on the bridge² or as received from the Bridge Alert Management System, if installed, recorded as individually identified alarms.

² Resolution A.1021(26), Code on Alerts and Indicators, Table 11.1.1.

5.5.11 Rudder order and response

This should include status and settings of heading or track controller, if fitted and indicate the control station, mode, and power unit(s) in use.

5.5.12 Engine and thruster order and response

This should include the positions of any engine telegraphs or direct engine/propeller controls and feedback indications on the bridge, if fitted, including ahead/astern indicators and indicate the control station in use. This should also include any thrusters if fitted and indicate the control station in use.

5.5.13 Hull openings status

This should include all mandatory status information required to be displayed on the bridge.

5.5.14 Watertight and fire door status

This should include all mandatory status information required to be displayed on the bridge.

5.5.15 Accelerations and hull stresses

Where a ship is fitted with hull stress and response monitoring equipment, all the data items that have been pre-selected within that equipment should be recorded.

5.5.16 Wind speed and direction

Where a ship is fitted with a suitable sensor, wind speed and direction should be recorded, including its true or relative status.

5.5.17 AIS

All AIS data should be recorded.

5.5.18 Rolling motion

The VDR should be connected to an electronic inclinometer if installed. The recording method should be such that the rolling motion can be reconstructed during playback.

5.5.19 Configuration data

In addition to the data items specified in 5.5.1 - 5.5.18, a data block defining the configuration of the VDR and the sensors to which it is connected should be written into the final recording medium during commissioning of the VDR. The data block should be maintained up to date with respect to the vessel installation. It should include details on the manufacturer, type and version number of a sensor, the identification and location of the sensor and the interpretation of the sensor data. This configuration data should be permanently retained in the final recording media and protected from modification other than by a duly authorized person following any change to the configuration.

5.5.20 Electronic logbook

Where a ship is fitted with an electronic logbook in accordance with the standards of the Organization the information from this should be recorded.

6 OPERATION

The unit should be entirely automatic in normal operation.

7 DOCUMENTATION

Information describing the location of the long-term recording medium interface and instructions describing the means of interfacing with it as referred to in 9 should be provided in at least the English language. The equipment documentation should include guidance for the placement of the information and instructions at a prominent position as close to the long-term recording medium interface as practicable.

8 INTERFACING

Interfacing to the various signal sources required should be in accordance with the relevant international interface standard, where possible³. Any connection to any item of the ship's equipment should be such that the operation of that equipment suffers no deterioration, even if the VDR system develops faults.

9 DOWNLOAD AND PLAYBACK EQUIPMENT FOR INVESTIGATION AUTHORITIES

9.1 Data output interface

The VDR should provide an interface for downloading the stored data and play back the information to an external computer. The interface should be compatible with an internationally recognized format, such as Ethernet, USB, FireWire, or equivalent. It should be possible to perform a download of the recorded data for a user-defined period of time.

9.2 Software for data downloading and play back

9.2.1 A copy of the software program providing the capability to download the stored data and play back the information onto a connected external laptop computer and for the playback of the data should be provided for each VDR installation.

9.2.2 The software should be compatible with an operating system available with commercial-off-the-shelf laptop computers and provided on a portable storage device such as a CD-ROM, DVD, USB-memory stick, etc.

9.2.3 Instructions for executing the software and for connecting the external laptop computer to the VDR should be provided.

9.2.4 The portable storage device containing the software, the instructions and any special (not commercial-off-the-shelf) parts necessary for the physical connection of the external laptop computer, should be stored within the main unit of the VDR.

9.2.5 Where non-standard or proprietary formats are used for storing the data in the VDR, the software for converting the stored data into open industry standard formats should be provided on the portable storage device or resident in the VDR.

³ Refer to publication IEC 61162 – Maritime navigation and radiocommunication equipment and systems – Digital interfaces.

ANNEX 5

DRAFT TERMS OF REFERENCE FOR THE IMO/IHO HARMONIZATION GROUP ON DATA MODELLING (HGDM)

1 In creating an e-navigation architecture, it is important to identify information and data flows, and the interactions between applications and user interfaces. Consequently, there needs to be a data structure to optimize the use, interoperability, flow and accessibility of relevant information and data within the maritime domain (including both ship and shore aspects). It is therefore important to harmonize efforts in data modelling, with the aim of creating and maintaining a robust and extendable maritime data structure. This maritime information and data structure will require some form of overarching coordination to ensure the ongoing management and maintenance of the structure.

2 There may be several management roles to be performed by such a coordinating body, (for example, the maintenance of registries and the development and adoption of product specifications). This management role may be shared between relevant organizations. The structure is a highly important element by which e-navigation can modernize the operational environment of the maritime industry and also fulfil the requirement of document MSC 85/26, annex 20.

3 The HGDM should be constituted of representatives of IMO and IHO Member States and Secretariats, and organizations with an official IMO/IHO observer status.

4 The HGDM should be chaired by an IMO Member State and supported by the Secretariat of the IMO.

5 The HGDM reports to the IMO Sub-Committee on Safety of Navigation (NAV), and to the IHO through the IHB Directing Committee, as appropriate.

6 The HGDM should:

- .1 as requested by the IMO or the IHO, consider matters related to the framework for data access and information services under the scope of SOLAS, using as a baseline IHO's S-100 standard, with a view to harmonize and standardize:
 - .1 formats for the collection, exchange and distribution of data;
 - .2 processes and procedures for the collection; and
 - .3 development of open standard interfaces; and
- .2 review the results of studies by the IMO, the IHO and other related organizations which address aspects of access to information services under the scope of SOLAS, and advise the IMO and the IHO as to whether they are compatible with the e-navigation concept taking into account the identified user needs as they exist at the time.

ANNEX 6

**PROPOSED JOINT PLAN OF WORK FOR THE COMSAR, NAV AND STW SUB-COMMITTEES
FOR THE PERIOD 2012-2014**

A COORDINATED APPROACH TO THE IMPLEMENTATION OF IMO'S E-NAVIGATION STRATEGY OVERALL PLANNING 2012-2014 BY STRATEGY ELEMENT														
	2012					2013				2014				
Meetings	COMSAR 16	STW 43	MSC 90	NAV 58	MSC 91	COMSAR 17	STW 44	MSC 92	NAV 59	COMSAR 18	STW 45	MSC 93	NAV 60	MSC 94
USER NEEDS														
Overarching Architecture														
Gap analysis	Correspondence Group			final										
C-B and risk analysis						Correspondence Group		final						
Strategy Implementation Plan	2012: Intersessional WG (to be decided)			updated outline		2013 Intersessional WG (to be decided)			updated outline	Correspondence Group			final	adoption

ANNEX 7

DRAFT REVISED TEXT OF SOLAS REGULATION V/22

Regulation 22

Navigation bridge visibility

1 Ships of not less than 55 m in length, as defined in regulation 2.4, constructed on or after 1 July 2014, shall meet the following requirements:

- .1 in the context of this regulation, the conning position is a design position on the centreline aft of the navigation bridge front window measured at a height of 1,800 mm above the bridge deck. Where the centreline is obstructed by fixed structure(s) or the design of the bridge does not suit a single conning position, not more than two conning positions shall be determined at not more than 3,000 mm either side of the centreline position and shall be used in combination to comply with this regulation. A plan showing the field of vision and design conning position shall be kept on board;
- .2 the view of the sea surface from the conning position shall not be obscured by more than two ship lengths or 500 m, whichever is less, forward of the bow to [10°] on either side under all conditions of draught, trim and deck cargo;
- .3 the horizontal field of vision from the conning position shall extend over an arc of not less than 225° from right ahead to not less than 22.5° abaft the beam on either side of the ship;
- .4 a blind sector is an area outside of the wheelhouse which obstructs the horizontal view as seen from the conning position. No individual blind sector shall exceed 10°. The total arc of blind sectors in the forward 225° arc shall not exceed 20°. The clear sectors between blind sectors shall be at least 5°. However, no individual blind sector from forward of the bow to [10°] on either side shall exceed 5°;
- .5 from each bridge wing, the horizontal field of vision shall extend over an arc of at least 225° from at least 45° on the opposite bow through right ahead and from right ahead to right astern through 180° on the same side of the ship;
- .6 from the main steering position, the horizontal field of vision shall extend over an arc from right ahead to at least 60° on each side of the ship;
- .7 the parallel body length of the ship shall be visible from the bridge wing;
- .8 the height of the lower edge of the navigation bridge front windows above the bridge deck shall be kept as low as possible;
- .9 the height of the upper edge of the navigation bridge front windows shall not obscure the forward view of the horizon as described in this regulation;

- .10 navigation bridge windows shall meet the following requirements:
 - .10.1 to help avoid reflections, the bridge front windows shall be inclined from the vertical plane top out, at an angle of not less than 10° and not more than 25°;
 - .10.2 framing between navigation bridge front windows shall be kept to a minimum;
 - .10.3 polarized and tinted windows shall not be fitted;
 - .10.4 means shall be provided to ensure at all times a clear horizontal field of vision as described in paragraph 1.6 of this regulation through the navigation bridge front windows.

2 Ships constructed before [1 July 2014], shall meet the requirements of regulation V/22 in force prior to that date, and paragraphs 1 and 2 of regulation 22 of resolution MSC.99(73) as amended by resolution MSC.142(77).

3 On ships of unconventional design which cannot comply with this regulation, arrangements shall be provided to achieve a level of visibility to the satisfaction of the Administration.

4 Notwithstanding the requirements of paragraphs 1.2, 1.3, 1.5 and 1.6, ballast water exchange may be undertaken provided that:

- .1 the master has determined that it is safe to do so and takes into consideration any increased blind sectors or reduced horizontal fields of vision resulting from the operation to ensure that a proper lookout is maintained at all times;
- .2 the operation is conducted in accordance with the ship's ballast water management plan, taking into account the recommendations on ballast water exchange adopted by the Organization; and
- .3 the commencement and termination of the operation are recorded in the ship's record of navigational activities pursuant to regulation 28.

5 On ships which carry cargo forward of the wheelhouse that limits the visibility from the conning position, the master shall be able to verify that the visibility due to the loading condition prior to departure is in compliance with this regulation based on loading plans, loading conditions, calculations with a computerized dynamic loading program or other methods, as follows:

- .1 new ships constructed on or after [1 July 2014]; and
- .2 existing ships constructed before [1 July 2014] not later than [1 January 2016].

ANNEX 8

DRAFT MSC CIRCULAR

UNIFIED INTERPRETATIONS OF COLREG 1972, AS AMENDED

1 The Maritime Safety Committee, at its [ninetieth session (16 to 25 May 2012)], 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 relating to Annex I – Positioning and technical details of lights and shapes, prepared by the Sub-Committee on Safety of Navigation, as set out in the annex.

2 Member Governments are invited to use the annexed unified interpretations as guidance when applying the relevant provisions of COLREGs to vessels constructed on or after [1 January 2013] and to bring the attached unified interpretations to the attention of all parties concerned.

ANNEX

UNIFIED INTERPRETATIONS OF COLREG 1972, AS AMENDED

Annex I, section 9(a)(i) – Horizontal sectors

COLREG Annex I, section 9(a)(i) would require the full intensity of the side lights to be maintained in the forward direction of 1° outside the prescribed sector with the practical cut-off between 1° and 3°. This is needed to enable other vessels to determine a "head-on-situation" as per COLREG rule 14.

Annex I, section 10(a)(i) – Vertical sectors

The vertical sectors of electric lights, as fitted, with the exception of lights on sailing vessels, should ensure that at least the required intensity is maintained at all angles from 5° above to 5° below the horizontal when measured at even keel.

ANNEX 9

PROPOSED BIENNIAL AGENDA FOR THE 2012-2013 BIENNIUM IN SMART TERMS

SUB-COMMITTEE ON SAFETY OF NAVIGATION (NAV)*					
PLANNED OUTPUTS 2012-2013 (resolution A.[...](27))		Parent organ(s)	Coordinating organ(s)	Involved organ(s)	Target completion year
Number**	Description				
1.1.2.2	Consideration of IACS unified interpretations	MSC	NAV		Ongoing
1.1.2.10	Radiocommunication ITU-R Study Group matters	MSC	NAV		2011 2013
1.1.2.17	ITU matters	MSC	NAV		Ongoing
5.2.4.1	Routeing of ships, ship reporting and related matters	MSC	NAV		Ongoing
5.2.4	Amendments to the General Provisions on Ships' Routeing (resolution A.572(14), as amended)	MSC	NAV		2013
5.2.4.9	Review of vague expressions in SOLAS regulation V/22	MSC	NAV		2011
5.2.4.11	Amendments to the Performance standards for VDR and S-VDR	MSC	NAV		2011
5.2.4.13	Development of policy and new symbols for AIS aids to navigation	MSC	NAV		2013
5.2.4**	Development of performance standards for inclinometers	MSC	NAV		2012
5.2.6.1	Development of an e-navigation strategy implementation plan	MSC	NAV	COMSAR, STW	2012 2014
12.1.2.2	Casualty analysis	MSC	FSI	NAV	Ongoing

* Items printed in bold letters have been selected for the provisional agenda for NAV 58.

** Numbers refer to the planned outputs for the 2010-2011 biennium.

ANNEX 10

PROVISIONAL AGENDA FOR NAV 58

SUB-COMMITTEE ON SAFETY OF NAVIGATION (NAV) – 58TH SESSION*

- Opening of the session
- 1 Adoption of the agenda
 - 2 Decisions of other IMO bodies
 - 3 Routeing of ships, ship reporting and related matters
 - 4 Amendments to the General Provisions on Ships' Routeing (resolution A.572(14), as amended)
 - 5 ITU matters, including Radiocommunication ITU-R Study Group matters
 - 6 Development of an e-navigation strategy implementation plan
 - 7 Development of policy and new symbols for AIS aids to navigation
 - 8 Casualty analysis
 - 9 Consideration of IACS unified interpretations
 - 10 Development of performance standards for inclinometers
 - 11 Biennial agenda and provisional agenda for NAV 59
 - 12 Election of Chairman and Vice-Chairman for 2013
 - 13 Any other business
 - 14 Report to the Maritime Safety Committee

* Agenda item numbers do not necessarily indicate priority.

ANNEX 11

REPORT ON THE STATUS OF PLANNED OUTPUTS FOR THE 2010-2011 BIENNIUM

Planned output number in the HLA Plan for 2010-2011	Description^a	Target completion year^b	Parent organ(s)	Coordinating organ(s)	Associated organ(s)	Status of output for Year 1^c	Status of output for Year 2^c	References^d
1.1.2.2	Consideration of IACS unified interpretations	Ongoing	MSC	NAV		Ongoing		MSC 78/26, paragraph 22.12; NAV 57/15, section 10
1.1.2.10	Radiocommunication ITU-R Study Group matters	2011	MSC	NAV		In progress	Completed	MSC 69/22, paragraphs 5.69 and 5.70; NAV 57/15, section 5
1.1.2.17	ITU matters	Ongoing	MSC	NAV		In progress	In progress	MSC 69/22, paragraphs 5.69 and 5.70; NAV 57/15, section 5
5.1.1.7	Safety provisions applicable to tenders operating from passenger ships	2011	MSC	DE	FP, COMSAR, NAV, SLF, STW	Completed		MSC 84/24, paragraph 22.40; NAV 56/20, section 19
5.2.2.3	Review of the principles for establishing the safe manning level of ships including mandatory requirements for determining safe manning	2010	MSC	STW	NAV	Completed		MSC 81/25, paragraphs 23.58 to 23.60; STW 40/14, section 8; MSC 86/26, paragraphs 9.10 and 23.24; STW 41/16, section 8; NAV 56/20, section 13

Planned output number in the HLA Plan for 2010-2011	Description ^a	Target completion year ^b	Parent organ(s)	Coordinating organ(s)	Associated organ(s)	Status of output for Year 1 ^c	Status of output for Year 2 ^c	References ^d
5.2.4.1	Routing of ships, ship reporting and related matters	Ongoing	MSC	NAV		In progress	In progress	MSC 72/23, paragraphs 10.69 to 10.71, 20.41 and 20.42; NAV 57/15, section 3
5.2.4.2	Amendments to the 1966 LL Convention and the 1988 LL Protocol related to seasonal zone (coordinated by SLF)	2011	MSC	SLF		Completed		MSC 86/26, paragraphs 23.25 and 23.44; SLF 52/19, section 18; NAV 56/20, section 14
5.2.4.3	Amendments to the World-wide Radionavigation System	2011	MSC	NAV		Completed		MSC 86/26, paragraph 23.28; NAV 56/20, section 12
5.2.4.6	Guidelines on the layout and ergonomic design of safety centres on passenger ships	2010	MSC	NAV		Completed		MSC 81/25, paragraph 23.42; NAV 56/20, section 9
5.2.4.9	Review of vague expressions in SOLAS regulation V/22	2010	MSC	NAV		In progress	Completed	MSC 82/24, paragraphs 21.39 and 21.40; NAV 57/15, section 7
5.2.4.11	Amendments to the Performance standards for VDR and S-VDR	2011	MSC	NAV		In progress	Completed	MSC 83/28, paragraph 25.34; MSC 84/24, paragraph 22.43; NAV 57/15, section 4

Planned output number in the HLA Plan for 2010-2011	Description ^a	Target completion year ^b	Parent organ(s)	Coordinating organ(s)	Associated organ(s)	Status of output for Year 1 ^c	Status of output for Year 2 ^c	References ^d
5.2.4.12	Guidelines for consideration of requests for safety zones larger than 500 metres around artificial islands, installations and structures in the EEZ	2010	MSC	NAV		Completed		MSC 84/24, paragraph 22.41; NAV 56/20, section 4
5.2.4.13	Development of policy and new symbols for AIS aids to navigation	2013	MSC	NAV		In progress	In progress	MSC 86/26, paragraph 23.27; NAV 57/15, section 8
5.2.5.8	Development of procedures for updating shipborne navigation and communication equipment	2010	MSC	NAV	COMSAR	Completed		MSC 83/28, paragraph 25.33; NAV 56/20, section 6
5.2.6.1	Development of an e-navigation strategy implementation plan	2012	MSC	NAV	COMSAR, STW	In progress	In progress	MSC 81/25, paragraphs 23.34 to 23.37; NAV 57/15, section 6
12.1.2.2	Casualty analysis	Ongoing	MSC	FSI		In progress	In progress	MSC 70/23, paragraphs 9.17 and 20.4; NAV 57/15, section 9

Notes:

- a When individual outputs contain multiple deliverables, the format should report on each individual deliverable.
- b The target completion date should be specified as a year, or indicate that the item is continuous. This should not indicate a number of sessions.
- c The entries under the "Status of output" columns are to be classified as follows:
 - "completed" signifies that the outputs in question have been duly finalized;
 - "in progress" signifies that work on the related outputs has been progressed;
 - "ongoing" signifies that the outputs relate to work of the respective IMO organs that is a permanent or continuous task; and
 - "postponed" signifies the respective IMO organ has decided to defer the production of relevant outputs to another time.
- d If the output consists of the adoption/approval of an instrument (e.g., resolution, circular, etc.), that instrument should be clearly referenced in this column.

ANNEX 12

DRAFT MSC CIRCULAR

PILOT TRANSFER ARRANGEMENTS

Required boarding arrangements for pilots

1 The Maritime Safety Committee, at its eighty-eighth session (24 November to 3 December 2010), approved amendments to SOLAS regulation V/23 which, *inter alia*, include amendments to the Required Boarding Arrangements for Pilots (resolution MSC.308(88)). [A 27 in December 2011 adopted resolution A....(27) on Pilot transfer arrangements].

2 These changes required amendments to the poster previously circulated under cover of MSC/Circ.568/Rev.1, agreed at the sixty-fourth session. The attached revised poster incorporates the most significant changes approved at NAV 55 and adopted by MSC 88.

3 [The Maritime Safety Committee, at its ninetieth session (... to ... May 2012), concurred with the recommendation of the fifty-seventh session of the NAV Sub-Committee (6 to 10 June 2011) and approved a revision of the poster.]

4 Member Governments are requested to bring the revised poster to the attention of their pilots, seafarers, shipowners, ship operators and others concerned with pilot boarding arrangements.

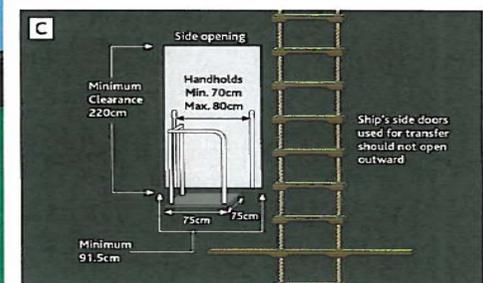
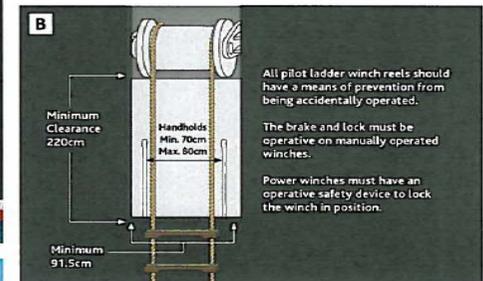
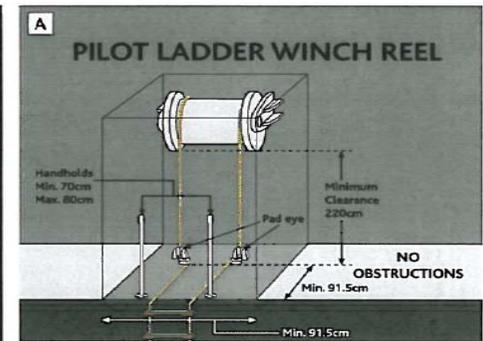
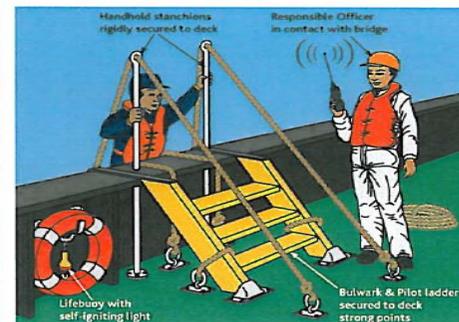
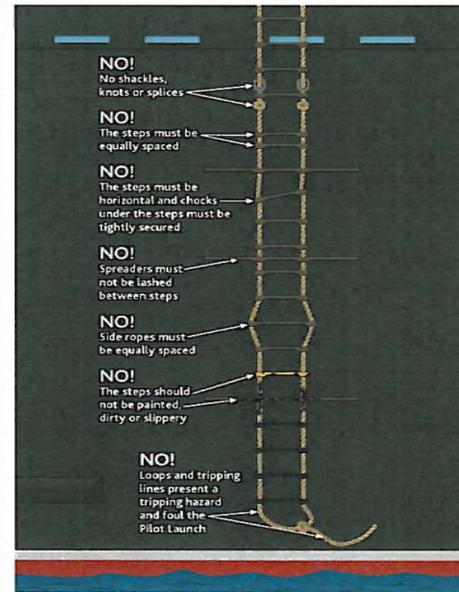
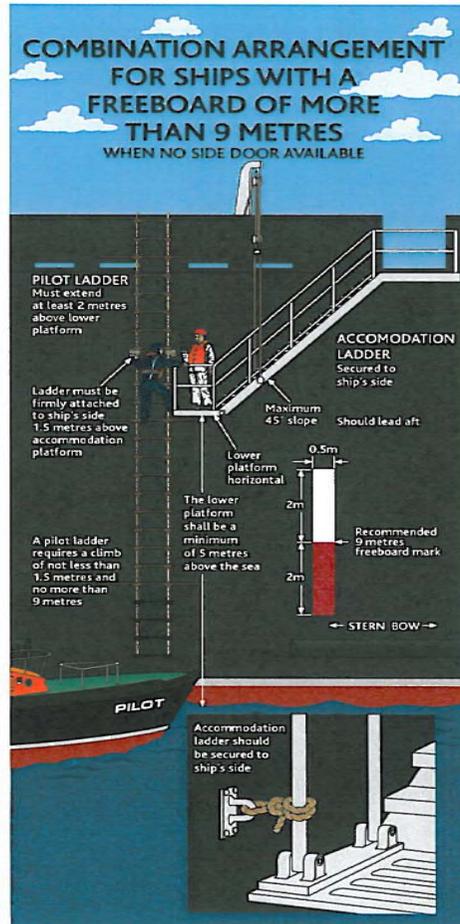
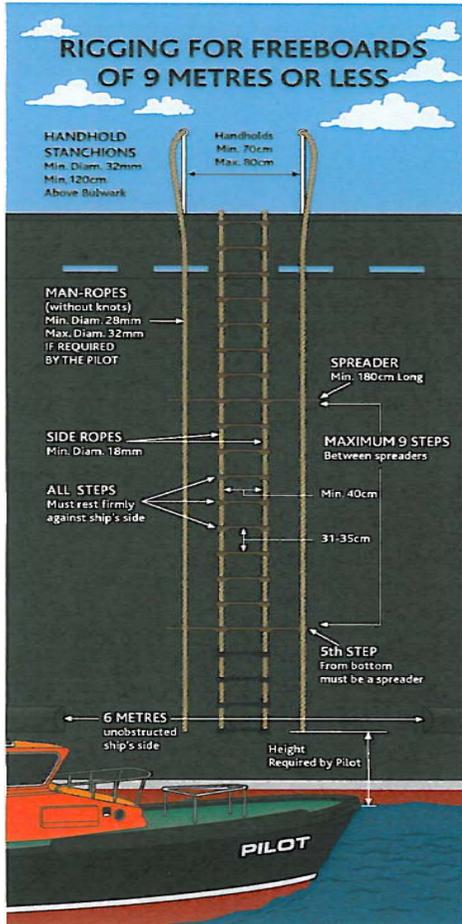
REQUIRED BOARDING ARRANGEMENTS FOR PILOT



In accordance with SOLAS V/23 & IMO Resolution A???

INTERNATIONAL MARITIME PILOTS' ASSOCIATION

H.Q.S. "Wellington" Temple Stairs, Victoria Embankment, London WC2R 2PN Tel: +44 (0)20 7240 3973 Fax: +44 (0)20 7210 3518 Email: office@impahq.org
This document and all IMO Pilot-related documents are available for download at: <http://www.impahq.org>



ANNEX 13

**DRAFT RESOLUTION MSC.[...](90)
(adopted on [... 2012])**

**ADOPTION OF AMENDMENTS TO PERFORMANCE STANDARDS FOR DEVICES
TO MEASURE AND INDICATE SPEED AND DISTANCE (RESOLUTION MSC.96(72))**

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO resolution A.886(21), by which the Assembly resolved that the functions of adopting performance standards for radio and navigational equipment, as well as amendments thereto, shall be performed by the Maritime Safety Committee on behalf of the Organization,

HAVING CONSIDERED the recommendation made by the Sub-Committee on Safety of Navigation at its fifty-seventh session, and the Maritime Safety Committee at its [ninetieth] session,

1. ADOPTS the amendments to resolution MSC.96(72) on Recommendation on Performance Standards for Devices to Measure and Indicate Speed and Distance, set out in the Annex to the present resolution;
2. RECOMMENDS Member Governments to ensure that devices to measure and indicate speed and distance installed on ships constructed on or after [1 July 2014] conform to performance standards not inferior to those set out in the Annex to the present resolution.

ANNEX

**AMENDMENTS TO PERFORMANCE STANDARDS FOR DEVICES TO MEASURE AND
INDICATE SPEED AND DISTANCE
(RESOLUTION MSC.96(72))**

Add to the existing section 5 the following:

"5.3 If ships are required to carry speed logs measuring speed through the water and speed over the ground, these speed logs should be provided by two separate devices."

ANNEX 14

DRAFT MSC CIRCULAR

CLARIFICATION OF SOLAS REGULATIONS V/19.2.3.4 AND V/19.2.9.2

1 SOLAS regulation V/19 requires that speed and distance measuring devices are installed as follows:

- .1 ships of 300 gross tonnage and upwards and passenger ships irrespective of size shall be fitted with a speed log for measuring speed through water (SOLAS regulation V/19.2.3.4); and
- .2 ships of 50,000 gross tonnage and upwards shall be fitted with a speed log for measuring speed over the ground in forward and athwartships direction (SOLAS regulation V/19.2.9.2).

2 As described in paragraph 1 above, SOLAS requires all ships of 50,000 gross tonnage and upwards to be fitted with a speed and distance measuring device fulfilling SOLAS regulation V/19.2.3.4 and, in addition, a speed and distance measuring device fulfilling regulation V/19.2.9.2.

3 The Maritime Safety Committee, at its [ninetieth session (16 to 25 May 2012)], taking into account the advice provided by the Sub-Committee on Safety of Navigation, at its fifty-seventh session (6 to 10 June 2011), agreed that both regulations should be fulfilled by two separate devices, i.e. one speed and distance measuring and indicating device capable of measuring speed through water and one separate speed and distance measuring and indicating device capable of measuring speed over the ground in forward and athwartships direction.

4 In line with the above-mentioned decision, the Performance Standards for devices to measure and indicate speed and distance, given in resolution MSC.96(72), have been amended accordingly. These amendments are published in resolution MSC.[...(90)] and apply to devices installed on ships constructed on or after [1 July 2014].

5 Member Governments are invited to bring this clarification to the attention of all parties concerned.
