



SUB-COMMITTEE ON SAFETY OF
NAVIGATION
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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 forty-ninth session from 30 June to 4 July 2003 at the Headquarters of the Organization, under the chairmanship of Mr. K. Polderman (The Netherlands). The Vice Chairman, Dr. V.I. Peresyarkin (Russian Federation), was also present.

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

ALGERIA	JAPAN
ANGOLA	LATVIA
ANTIGUA AND BARBUDA	LEBANON
ARGENTINA	LIBERIA
AUSTRALIA	MALAYSIA
BAHAMAS	MARSHALL ISLANDS
BANGLADESH	MEXICO
BELGIUM	NETHERLANDS
BRAZIL	NEW ZEALAND
BULGARIA	NIGERIA
CANADA	NORWAY
CHILE	PANAMA
CHINA	PERU
CROATIA	PHILIPPINES
CUBA	POLAND
CYPRUS	PORTUGAL
DENMARK	REPUBLIC OF KOREA
ECUADOR	ROMANIA
EGYPT	RUSSIAN FEDERATION
ESTONIA	SAUDI ARABIA
FINLAND	SINGAPORE
FRANCE	SLOVENIA
GEORGIA	SPAIN
GERMANY	SWEDEN
GHANA	TRINIDAD AND TOBAGO
GREECE	TURKEY
INDONESIA	UKRAINE
IRAN (ISLAMIC REPUBLIC OF)	UNITED KINGDOM
IRELAND	UNITED STATES
ITALY	VENEZUELA

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 agencies:

UNITED NATIONS
WORLD METEOROLOGICAL ORGANIZATION (WMO)

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

INTERNATIONAL HYDROGRAPHIC ORGANIZATION (IHO)
COMMISSION OF THE EUROPEAN COMMUNITIES (EC)
FRIENDS OF THE EARTH INTERNATIONAL (FOEI)
INTERNATIONAL FEDERATION OF SHIPMASTERS' ASSOCIATION (IFSMA)
INTERNATIONAL LIFESAVING APPLIANCES MANUFACTURERS'
ASSOCIATION (ILAMA)
INTERNATIONAL SALVAGE UNION (ISU)
INTERNATIONAL ASSOCIATION OF OIL AND GAS PRODUCERS (OGP)
INTERNATIONAL MOBILE SATELLITE ORGANIZATION (IMSO)
INTERNATIONAL CHAMBER OF SHIPPING (ICS)
INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)
INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)
INTERNATIONAL UNION OF MARINE INSURANCE (IUMI)
INTERNATIONAL CONFEDERATION OF FREE TRADE UNIONS (ICFTU)
INTERNATIONAL ASSOCIATION OF MARINE AIDS TO NAVIGATION AND
LIGHTHOUSE AUTHORITIES (IALA)
INTERNATIONAL RADIO-MARITIME COMMITTEE (CIRM)
BIMCO
INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES (IACS)
OIL COMPANIES INTERNATIONAL MARINE FORUM (OCIMF)
INTERNATIONAL MARITIME PILOTS ASSOCIATION (IMPA)
INTERNATIONAL ASSOCIATION OF INSTITUTES OF NAVIGATION (IAIN)
INTERNATIONAL ASSOCIATION OF INDEPENDENT TANKERS OWNERS
(INTERTANKO)
SOCIETY OF INTERNATIONAL GAS TANKER AND TERMINAL OPERATORS
(SIGTTO)
INTERNATIONAL ASSOCIATION OF DRY CARGO SHIPOWNERS
(INTERCARGO)
INTERNATIONAL SAILING FEDERATION (ISAF)
INTERNATIONAL MARINE CONTRACTORS ASSOCIATION (IMCA)
WORLD NUCLEAR TRANSPORT INSTITUTE (WNTI)
INTERNATIONAL LIFEBOAT FEDERATION (ILF)

1.5 In welcoming the participants, the Secretary-General first referred to the proposals for numerous ships' routing, ship reporting and other measures aimed at enhancing the safety of navigation in areas of identified navigational hazards and environmentally sensitive sea areas.

Recalling the Sub-Committee's work, in 1993, on a set of traffic separation schemes and other routing measures together with associated Rules and Recommendations on Navigation through the Strait of Istanbul, the Strait of Çanakkale and the Marmara Sea, which were later on adopted by MSC 63 and were confirmed by A 19 in November 1995, the Secretary-General informed the Sub-Committee that MSC 77 had been informed by the delegation of Turkey that a VTS was being installed to cover the two Straits and the Marmara Sea to ensure a safer and more secure and efficient management of the traffic through the areas concerned and also to safeguard the marine environment. The operational testing of the system would start on 1 July 2003 and the system would be fully operational in October 2003. The MSC had expressed appreciation for this development and had noted Turkey's intention to undertake, in the light of experience gained with the system's implementation, a review of the system as a whole and to inform IMO as appropriate.

The Secretary-General, referring to the importance of the human element in the safety of navigation and, in particular, the man/machine interface, added that, at this session, the Sub-Committee was expected to review and refine draft performance standards for presentation of navigation-related information including the provision of guidance on harmonization of terms and symbols for its display on the ship's bridge in a consistent manner.

Turning to the issue of “**Places of refuge**”, he underlined the importance of the issue by stressing the decision of MSC to include a separate item on “Places of refuge” in MSC 77's agenda thus demonstrating its positive reaction to a major problem which had been around for some considerable time and which had come to prominence in the incidents involving the tankers **Castor, Erika and Prestige**. At MSC 76, the Committee had approved, in principle, the two draft Assembly resolutions on Guidelines for ships in need of places of refuge and on Maritime assistance services, which had been prepared by NAV 48. Taking into account comments by other sub-committees and submissions by Member Governments and international organizations, MSC 77 had undertaken a more critical consideration of the two draft resolutions and had provided specific guidance for the Sub-Committee so that the matter could be finalized at the present session when the Sub-Committee was expected to complete the draft texts of both for direct submission to A 23 for adoption.

With respect to navigational aids and related matters regarding existing cargo ships, the Secretary-General explained that the Sub-Committee was expected, as part of its work on performance standards for navigational equipment, to finalize the feasibility study on mandatory carriage of Voyage Data Recorders on existing cargo ships and to consider the draft Performance standard and a phased-in carriage requirement for simplified shipborne Voyage Data Recorders (S-VDRs). In addition, the draft performance standards for radar reflectors were expected to be finalized and draft performance standards for radar equipment would be further developed for finalization during 2004.

With regard to MSC's work on **large passenger ship safety**, he outlined that the Sub-Committee was expected to give initial consideration to assessing the current status of hydrographic surveying and nautical charting for the safety of navigation in remote areas. Progress on this issue had been slow, but it was hoped that the decision of MSC 77 to re-establish the *ad hoc* Working Group on Large Passenger Ship Safety at MSC 78 would provide the necessary impetus during 2004.

The Secretary-General further highlighted that the Sub-Committee was expected to consider measures to strengthen maritime security taking into account the results of the 2002 SOLAS Conference, which it had contributed to on issues such as security of AIS equipment against outside interference; ship security alert systems; and long-range identification and tracking. However, as he had emphasized at MSC 77, the creation of the new maritime security regulatory regime established by the Conference could not in itself provide any guarantee that acts of terrorism against shipping would be prevented and suppressed. Its effectiveness would be determined by how wide and uniformly the standards adopted by the Conference were put into practice and given the large number of ships and ports which would have to implement the decisions of the Conference, the Secretary-General considered it prudent that both Governments and the industry should put in place all the necessary infrastructure well in advance of the 1 July 2004 entry-into-force date of the SOLAS amendments and the ISPS Code. MSC/Circular 1067 on Early Implementation of the Special Measures to Enhance Maritime Security had been issued in February 2003 to stress this point. To assist in the implementation of the new regime, the Sub-Committee was expected to consider the revision of resolution A.917(22) on Guidelines for the onboard operational use of shipborne Automatic Identification

Systems (AIS) and modified functional requirements for long-range identification and tracking of ships, together with draft amendments to the SOLAS Convention for their carriage requirement.

On world-wide radionavigation system matters, the Sub-Committee was expected to consider proposals relating to evaluation of GALILEO performance against maritime GNSS requirements, while, with regard to bulk carrier safety, consideration would be given to a draft MSC circular on Guidelines on early assessment of hull damage and possible need for abandonment of bulk carriers, as it had been requested by DE 46 and authorized by MSC 77.

Other issues for consideration before the Sub-Committee included, according to the Secretary-General, a review of AIS Binary messages; advice on maintaining a continuous navigational watch at anchor; review of resolution A.532 (13) on Collecting and forwarding of hydrographic data; and a review of IMO Publication "Ships' Routeing" paragraph 3.13, Section H regarding the General Provisions on Ships' Routeing concerning the adoption, designation and substitution of Archipelagic Sea Lanes with respect to a partial system of archipelagic sea lanes.

1.6 The Chairman thanked the Secretary-General for his words of encouragement and stated that the Secretary-General's advice and requests would be given every consideration in the Sub-Committee's deliberations.

Adoption of the agenda

1.7 The Sub-Committee adopted the agenda, as approved by MSC 77 (NAV 49/2/2, annex 2). The agenda of the session, including a list of documents submitted under each agenda item is given in annex 1.

2 DECISIONS OF OTHER IMO BODIES

2.1 The Sub-Committee noted, in general decisions and comments (NAV 49/2, NAV 49/2/1 and NAV 49/2/2), pertaining to its work made by MEPC 48, LEG 85, MSC 76, 2002 SOLAS Conference, COMSAR 7, STW 34, DE 46, LEG 86 and MSC 77 and considered them under the relevant agenda items.

2.2 The Sub-Committee also noted the decision of the ninetieth session of the Council (NAV 49/2/3) concerning the sub-committees, their work and reporting procedures. The Sub-Committee noted, in particular, that the Council endorsed the Secretary-General's proposal, based on a recommendation of the June 2002 Meeting of Chairmen already considered by MSC 76 (namely that sub-committee draft reports presented to plenary on Friday for approval should only contain a summary of decisions, annexes (if any) and the action requested of the committees, thus enabling the sub-committees to devote additional time to their substantive work during a meeting week and, at the same time, reducing the load on the translation services and spreading the peak load over a longer period as the final draft of the sub-committees' report would be finalized, through consultations between the Chairman and the Secretariat, after the session for adoption at the next) and agreed that the proposed arrangement be put to trial by one or two sub-committees to properly evaluate its impact on their work before further decisions are made.

2.3 The Sub-Committee was informed that the proposed arrangement would be put to trial initially by SLF 46 and DSC 8 during September 2003.

3 ROUTEING OF SHIPS, SHIP REPORTING AND RELATED MATTERS

New Traffic Separation Schemes (TSSs)

New traffic separation scheme off Ra's al kuh

3.1 At the request of the Government of the Islamic Republic of Iran (NAV 49/3/1 and Corr.1), the Sub-Committee examined a proposal for the establishment of a new traffic separation scheme off Ra's al kuh in the Gulf of Oman located entirely within Iranian territorial waters, with a view to increasing safety at sea, navigational safety and the protection of the marine environment in an area of vessel traffic convergence with a very high traffic density.

New traffic separation scheme for the approaches to the Port of Ra's al Khafji

3.2 At the request of the Government of Saudi Arabia (NAV 49/3/4), the Sub-Committee examined a proposal for the establishment of a new traffic separation scheme for ships approaching and leaving crude oil loading facilities off the port of Ra's Al Khafji.

New recommended Traffic Separation Schemes in the Adriatic Sea

3.3 At the request of the Governments of Albania, Croatia, Italy, Slovenia and Serbia and Montenegro (NAV 49/3/7), the Sub-Committee examined a revised proposal for the establishment of new recommended Traffic Separation Schemes/Recommended Routes system and other Routeing Measures in the Adriatic Sea.

3.4 The Sub-Committee recalled that an initial proposal had been submitted to its forty-seventh session, which had not been agreed to and noted that the revised proposal had taken into account the concerns expressed by Member Governments at NAV 47.

3.5 The delegations of Croatia, Italy and Slovenia stated that the proposed routeing measures, along with the already implemented mandatory SRS (Ship Reporting System) and implementation of the AIS and VTS system should become a part of the safety network which would serve to safeguard the Adriatic, where alone there were 1,185 islands with three nature parks and more than 100 protected underwater archaeological sites. So far the proposing States had been lucky and had not faced a major accident. It was far better to be proactive as implementation of routeing measures worldwide had proved to be an efficient preventive measure, raising the standards of the safety of navigation and protection of the marine environment.

Amendments to the existing Traffic Separation Schemes (TSSs)

Establishment of new traffic lanes for ships carrying dangerous or pollutant cargoes in bulk in the traffic separation scheme "Off Finisterre"

3.6 At the request of the Government of Spain (NAV 49/3/2), the Sub-Committee examined a proposal for the establishment of two additional lanes for ships carrying dangerous or pollutant cargoes in bulk in the existing traffic separation scheme "Off Finisterre", in order to enhance maritime safety, safety of navigation and protection of the marine environment in an area of confluence and great traffic congestion. The new traffic separation lanes are entirely located in the Spanish exclusive economic zone.

3.7 The Sub-Committee noted that a similar proposal was submitted by Spain to MSC 77 (MSC 77/25/1), which had also been referred to the current session. MSC 77, recognizing the sensitivity surrounding recent casualties and the damage suffered by the Spanish coasts in the vicinity of the TSS as a result, requested the Sub-Committee to review the Spanish proposal and, if satisfied that all the pertinent criteria to adopt the proposed amendments had been met, to convey the outcome of its deliberations directly to the twenty-third session of the Assembly for final review and adoption, as appropriate.

Amendment to the existing traffic separation scheme “Between Korsoer and Sprogøe”

3.8 At the request of the Government of Denmark (NAV 49/3/8 and Corr.1), the Sub-Committee examined a proposal to update the notes to the description of the existing traffic separation scheme (TSS) “Between Korsoer and Sprogøe”, including the introduction of a recommended speed reduction to a maximum of 20 knots before entering the appropriate lane of the scheme.

Amendment to the existing traffic separation scheme in the Singapore Strait

3.9 At the request of the Governments of Indonesia, Malaysia and Singapore (NAV 49/3/9 and Corr.1), the Sub-Committee examined a proposal to amend the existing traffic separation scheme in the Singapore Strait for the establishment of an anchorage for emergency anchoring of vessels and anchoring of damaged vessels for repairs prior to entry into a shipyard or similar matters.

Routing measures other than TSSs

Proposed mandatory area to be avoided off the north-east coast of the North Island of New Zealand

3.10 At the request of the Government of New Zealand (NAV 49/3), the Sub-Committee examined a proposal for the establishment of a mandatory area to be avoided off the north east coast of the North Island of New Zealand to protect the unique ecology of the adjacent coastline and the marine waters of the area, including those surrounding the Poor Knights Islands, from the risk of ship-sourced oil spills and discharges of other harmful substances. The restrictions on navigation within the proposed area, applying to ships greater than 45 metres in length, would have minimal impact on ships’ steaming distances.

Amendment of the existing charting measure in the Great North-East Channel of the Torres Strait, off the north-east coast of Australia to a two-way route

3.11 At the request of the Government of Australia (NAV 49/3/3), the Sub-Committee examined a proposal to amend the existing charting measure in the Great North-East Channel (GNEC), which lies in the Torres Strait, off the north-east coast of Australia to a two-way route.

Recommended routes, a precautionary area and an area to be avoided in the Adriatic Sea

3.12 At the request of the Governments of Albania, Croatia, Italy, Slovenia and Serbia and Montenegro (NAV 49/3/7), the Sub-Committee examined a revised proposal on the establishment of new recommended routes, a precautionary area and an area to be avoided in the channel of Otranto, southern, central and north Adriatic Sea respectively.

Area to be avoided in the Paracas National Reserve

3.13 The Sub-Committee noted that MEPC 48, having considered the report of the Informal Working Group (MEPC 48/WP.14), decided to:

- .1 refer the proposal for an area to be avoided in the Paracas National Reserve to the NAV Sub-Committee for consideration; and
- .2 approved, in principle, the designation of Paracas National Reserve as a PSSA, pending consideration of the proposal for an area to be avoided by the NAV Sub-Committee.

3.14 The Sub-Committee considered the document by Peru (MEPC 48/7) for the establishment of an area to be avoided in the Paracas National Reserve, which is an integral part of a proposal to designate the sea areas of the Paracas National Reserve as a Particularly Sensitive Sea Area (PSSA).

Mandatory Ship Reporting Systems

Amendment of the existing mandatory Ship Reporting System in the Torres Strait and Inner Route of the Great Barrier Reef off the North East coast of Australia (REEFREP)

3.15 At the request of the Government of Australia (NAV 49/3/5), the Sub-Committee examined a proposal for amendments to the existing mandatory Ship Reporting System in the Torres Strait and Inner Route of the Great Barrier Reef off the North East coast of Australia (REEFREP), as adopted by resolution MSC.52(66).

Amendment of the existing mandatory ship reporting system Off Cape Finisterre

3.16 At the request of the Government of Spain (NAV 49/3/6), the Sub-Committee examined a proposal to amend the existing mandatory Ship Reporting System Off Cape Finisterre.

Terms of Reference for the Working Group

3.17 After preliminary discussion as reported in paragraphs 3.1 to 3.16 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):

- .1 to consider all documents submitted under item 3 regarding routeing of ships, mandatory ship reporting and related matters and prepare routeing and reporting measures, as appropriate and recommendations for consideration and approval by Plenary;
- .2 to consider the relevant documents referred by MSC 77 and MEPC 48 and advise the Sub-Committee, on:
 - .1 the proposed amendment to the existing traffic separation scheme Off Finisterre; and

- .2 the proposed associated routeing measure for an area to be avoided in the Paracas National Reserve;
- .3 to consider the request of STW 34 (STW 34/14, paragraph 4.38) and provide advice on the conditions and circumstances upon which a decision may be made to maintain a continuous navigational watch at anchor;
- .4 as instructed by MSC 77 (MSC 77/26, paragraph 25.43), to consider paragraph 3.13 of Section H (IMO publication “Ships’ Routeing) regarding the General Provisions on Ships’ Routeing concerning the adoption, designation and substitution of archipelagic sea lanes and provide clarification to the Committee regarding its interpretation;
- .5 to take into account the role of the human element guidance, as updated at MSC 75 (MSC 75/24, paragraph 15.7), including the Human Element Analysing Process (HEAP), given in MSC/Circ.878/MEPC/Circ.346, in all aspects of the items considered; and
- .6 to submit a report to Plenary on Thursday morning.

Report of the working group

3.18 Having received the working group’s report (NAV 49/WP.1), the Sub-Committee took action as summarized hereunder.

New Traffic Separation Schemes (TSSs)

Traffic separation scheme off Ra’s al kuh

3.19 The Sub-Committee agreed to the proposed new traffic separation scheme with some corrections to the description of the proposed inshore traffic zone, given at annex 2, which the Committee is invited to adopt.

Traffic Separation Scheme for the approaches to the Port of Ra’s al Khafji

3.20 The Sub-Committee agreed to the proposed new traffic separation scheme, given at annex 2, which the Committee is invited to adopt.

Traffic Separation Schemes in the Adriatic Sea

3.21 The Sub-Committee felt that the proposed roundabouts were not suitable at the proposed positions and was of the opinion that precautionary areas would be better suited to achieve the objectives of safe routeing. The Sub-Committee further felt that the proposed TSSs should be described separately instead as parts of large schemes. The proponents of the scheme prepared on the basis of these comments, a revised proposal, which was subsequently agreed by the Sub-Committee, given at annex 2, which the Committee is invited to adopt.

Amendments to the existing Traffic Separation Schemes (TSSs)

Establishment of new traffic lanes for ships carrying dangerous or pollutant cargoes in bulk in the traffic separation scheme “Off Finisterre”

3.22 The Sub-Committee agreed to the proposed amendments to the traffic separation scheme “Off Finisterre”, introducing new traffic lanes for ships carrying dangerous or pollutant cargoes in bulk, given at annex 2, which the Assembly is invited to adopt at its twenty-third session. This amended traffic separation scheme will enter into force at 0000 hours UTC six months after adoption by the Assembly. The Secretariat was instructed to prepare a draft Assembly resolution on Amended traffic separation scheme “Off Finisterre” for forwarding directly to A 23 for adoption, as authorized by MSC 77.

Amendment to the existing traffic separation scheme “Between Korsoer and Sprogøe”

3.23 The Sub-Committee agreed with the proposed amendments to the scheme given at annex 2, which the Committee is invited to adopt.

Amendment to the existing traffic separation scheme in the Singapore Strait

3.24 The Sub-Committee did not agree with the proposed amendment to the traffic separation scheme by which the anchorage area would be a part of the routeing system in the Singapore Strait. Instead the Sub-Committee agreed to an amendment to the separation zone of the TSS in the Singapore Strait, by which a space for an anchorage area would be released. The proposed amendment is given at annex 2, which the Committee is invited to adopt.

Implementation of new and amended traffic separation schemes

3.25 The new and amended TSSs mentioned in above paragraphs 3.19 to 3.21 and 3.23 to 3.24 and given in annex 2, which the Committee is invited to adopt, in accordance with resolution A.858(20), will be implemented at 0000 hours UTC six months after adoption by the Committee, whilst the amended TSS mentioned in paragraph 3.22 will be implemented at 0000 hours UTC six months after adoption by the Assembly.

Routeing measures other than TSSs

Proposed mandatory area to be avoided off the north east coast of the North Island of New Zealand

3.26 The Sub-Committee had some discussions on the proposed mandatory nature of the area to be avoided and came to the conclusion that this proposal was in keeping with the General Provisions on Ships’ Routeing and regulation 10 of chapter V of SOLAS 1974, as amended and agreed with the proposed mandatory area to be avoided off the north east coast of the North Island of New Zealand, given at annex 3, which the Committee is invited to adopt.

3.27 The delegation of the United States while complimenting New Zealand on their well researched proposal, which was approved by the Sub-Committee, noted that this was a significant step taken by the Organization as this was the first time that a mandatory ATBA had been approved. The United States delegation also stated that this would be a good model from which future proposals could be based on. In their view there were two major factors to be

considered while approving ATBA. The first being that the area being regulated should be fairly small in line with paragraph 6.17 of the General Provisions on Ships' Routeing along with paragraph 3.6.2 which should not limit the sea area available for navigation. The second being that the proposed area should not impose unnecessary constraints on shipping in line with the provisions of paragraph 3.7 of the General Provisions on Ships' Routeing. It was further stated that while United States did not have any objections to the approval of the New Zealand proposal, in future before a proposal for ATBA was approved a stringent review should be made to ensure that the proposal meet the criteria in the General Provisions on Ships Routeing, in particular to those noted above and the Guidelines for Proposals contained MSC/Circ.1060 and was consistent with international law of the sea.

3.28 The Sub-Committee took note of the views expressed by the United States which had been supported by other delegations and agreed to consider future proposals for mandatory areas to be avoided with caution.

Amendment of the existing charting measure in the Great North-East Channel of the Torres Strait, off the north-east coast of Australia to a two-way route

3.29 The Sub-Committee agreed with the proposed amendment of the existing charting measure in the Great North-East Channel of the Torres Strait, off the north-east coast of Australia to a two-way route, given at annex 3, which the Committee is invited to adopt.

Recommended routes, a precautionary area and an area to be avoided in the Adriatic Sea

3.30 The Sub-Committee agreed to the establishment of new recommended routes, a precautionary area and an area to be avoided in the channel of Otranto, southern, central and north Adriatic Sea respectively and forming a part of the new traffic separation schemes in the Adriatic Sea, given at annex 2, which the Committee is invited to adopt.

Area to be avoided in the Paracas National Reserve

3.31 The Sub-Committee noted that document MEPC 48/7 did not contain a proposal for the establishment of an Area to be Avoided (ATBA) in the Paracas National Reserve. The delegate from Peru informed the Working Group that a proposal in Spanish for the establishment of an ATBA had been forwarded to the Organization, which arrived late for dissemination to Members.

3.32 The delegate of Peru offered an English version of the original submission in Spanish, which was considered by the Sub-Committee. The Sub-Committee agreed to the establishment of an ATBA in the Paracas National Reserve with some corrections to the alignment of the co-ordinates given at annex 3, which the Committee is invited to adopt. It further requested the Secretariat to convey its decision to MEPC 49.

3.33 The delegations of Norway and Sweden pointed out that the outer limit of the proposed ATBA was about 3 miles from the nearest land in the north, whilst about 20 miles in the south. In their view, the outer limits of the ATBA should preferably follow the direction of the coastline at a reasonable and more uniform distance, to facilitate navigation through the area.

3.34 The Sub-Committee, while endorsing the proposal, agreed that there was a need for better co-ordination between MEPC and NAV when approving PSSAs and associated routing measures. Ideally they should come into force at the same date. The Sub-Committee further noted that there might be a need to amend the General Provisions on Ships' Routeing

(resolution A.572(14), as amended) with respect to the adoption of routeing measures associated with PSSAs and invited Member Governments to submit relevant comments and proposals to NAV 50.

Implementation of new routeing measures other than traffic separation schemes

3.35 The new routeing measures other than traffic separation schemes mentioned in above paragraphs 3.26 to 3.32 and given in annex 3, which the Committee is invited to adopt, in accordance with resolution A.858(20), will be implemented at 0000 hours UTC six months after the adoption by the Committee.

Mandatory Ship Reporting Systems

Amendments to the existing mandatory Ship Reporting System in the Torres Strait and Inner Route of the Great Barrier Reef off the North East coast of Australia (REEFREP)

3.36 The Sub-Committee agreed to the proposed amendments to the mandatory reporting system “In the Torres Strait and Inner Route of the Great Barrier Reef”, with some corrections to the description of the system, and prepared a draft MSC resolution, as given in annex 4, which the Committee is invited to adopt in accordance with resolution A.858(20). The amendments will be implemented at 0000 hours UTC on 1 December 2004, as indicated by Australia, after adoption by the Committee.

Amendments to the existing mandatory ship reporting system Off Cape Finisterre

3.37 The Sub-Committee agreed to the proposed amendments to the mandatory reporting system “Off Cape Finisterre”, with some corrections of description of the system, and prepared a draft MSC resolution, as given in annex 5, which the Committee is invited to adopt, in accordance with resolution A.858(20). The amendment will be implemented at 0000 hours UTC on 1 December 2004, as indicated by Spain, after adoption by the Committee.

Enhancement of the existing mandatory Ship Reporting System in the Torres Strait and Inner Route of the Great Barrier Reef (REEFREP), off the North-East coast of Australia to a Coastal Vessel Traffic Service (Information Service)

3.38 The Sub-Committee noted with appreciation the information provided by Australia (NAV 49/INF.4), information on the enhancement of the existing mandatory Ship Reporting System in the Torres Strait and Inner Route of the Great Barrier Reef (REEFREP), off the North-East coast of Australia to a Coastal Vessel Traffic Service (Information Service).

4 REQUIREMENTS FOR THE DISPLAY AND USE OF AIS INFORMATION ON SHIPBORNE NAVIGATIONAL DISPLAYS

4.1 The Sub-Committee recalled that at its forty-eighth session (NAV 48/19, paragraph 4.7), it had considered the submission by IEC (NAV 48/4/1), giving details on progress made within the IEC on standards for the presentation of navigational information and noted that IEC had set up new Working Group 13 (Displays for the presentation of navigation related information) in Technical Committee 80 (Maritime navigation and radiocommunication equipment and systems). NAV 48 noted with appreciation the progress made to date and once again requested IEC to finalize the task (display of AIS information) by the end of 2003, particularly in view of the possibility of accelerated timescales for the implementation of AIS, due to maritime security concerns.

Guidelines for the display and integration of AIS target information

4.2 The Sub-Committee also recalled that, as requested by MSC 75, NAV 48 considered documents by Denmark, Germany, the Netherlands and Sweden (MSC 75/6/2) and IHO and IALA (MSC 75/6/5), expressing concern over the unco-ordinated display of some essential navigational information in current bridge equipment, including lack of appropriate symbology, but was of the opinion that IEC had made a good start in developing standards for the presentation of navigational information, and also noted that at this moment in time there was no substantial support for re-activating the IMO/IHO harmonization group on ECDIS (HGE).

4.3 The Sub-Committee further recalled that, it had noted that IEC would welcome any guidance that it might provide on operational/technical requirements to assist maritime safety and ship operation through improved presentation of navigational information. The IEC observer informed NAV 48 that the IEC Technical Committee 80 Working Group 13 was becoming aware of the operational issues involved in the display of AIS information. The relevant new standard, IEC 62288, would include a database, which will provide consistency to:

- .1 symbols used on displays;
- .2 colours used on displays;
- .3 abbreviations; and
- .4 controls

for use on the ship's bridge.

The Working Group 13 was also aware of the potential overload of information to mariners and saw a future need for a composite navigation display that integrated information derived from two or more systems such as Radar and AIS or ECDIS and AIS. IEC would present their findings on this matter to NAV 49 for its consideration.

4.4 The Sub-Committee noted that NAV 48 had agreed that the afore-mentioned operational aspects were some of the relevant issues involved for the display and integration of AIS target information and that technical issues and, in particular, new technologies, should be considered and taken into account when developing operational standards and requirements. Therefore, NAV 48 had agreed to the prepared technical issues relating to the operation of IBS (NAV 48/19, annex 11), which were separated from the operational issues, in order to be dealt with by the appropriate international organizations and invited IEC to consider them in addition to the operational issues when developing the relevant standards. As the aforementioned issues were expressed only in a conceptual form, IEC was invited to extract the relevant technical requirements within the scope of the existing Performance Standards and SOLAS requirements, and inform the Sub-Committee accordingly.

4.5 The Sub-Committee also noted that MSC 77 adopted resolution MSC.148(77) on Adoption of the revised performance standards for narrow-band direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships (NAVTEX), and instructed it to consider under its agenda item on "Requirements for the display and use of AIS information on shipborne navigational displays", the requirement for integrated navigation systems being capable of displaying NAVTEX information and interfacing with NAVTEX receivers.

4.6 In this context the Sub-Committee considered the submissions by IEC (NAV 49/4 and NAV 49/4/1), giving details on a new performance standard for the Presentation of Navigation related information, including a progress report on the harmonization of terms and symbols used to present navigation related information.

4.7 The delegation of Norway expressed appreciation of the IEC initiative on presentation of navigational information. However, in the view of Norway, the performance standard proposed by IEC would not fully eliminate the conflicts and inconsistencies between various IMO performance standards. Furthermore, Norway did not agree that the issue of deciding the international requirements on presentation of navigational information should be left wholly to IEC with no future role for the NAV Sub-Committee, which seemed to be a consequence of the IEC proposal. Norway, supported by other delegations, recommended that these issues to be discussed in more depth in the Technical Working Group, which should advise the Sub-Committee on how to proceed.

4.8 The Sub-Committee was of the opinion that the input of NGOs and IGOs was essential and the Sub-Committee was thankful for it, but it should be recognized that the IMO was the place where this information should be presented discussed adopted and implemented, as IMO was the only forum to legislate for the international maritime sector.

4.9 The Sub-Committee referred documents NAV 49/4 and NAV 49/4/1, including the instructions of MSC 77 to NAV 49 to consider the requirement for integrated navigation systems being capable of displaying NAVTEX information and interfacing with NAVTEX receivers, to the Technical Working Group for consideration/comments and action, as appropriate.

Guidelines for the installation of a shipborne Automatic Identification System (AIS)

4.10 The Sub-Committee recalled that, at its forty-eighth session, it had considered a proposal by Sweden and the United States (NAV 48/18), outlining the need for guidelines for the installation of shipborne AIS, and suggesting that IMO was the appropriate body for specifying standards for shipborne navigational equipment. Guidelines were needed to assist installers and surveyors in the safe and effective installation of onboard AIS. These were voluntary guidelines for use by those installing AIS equipment on ships, and were not intended to be used, and should not be used, as a standard for certifying installations on ships.

4.11 The Sub-Committee also recalled that NAV 48 had agreed draft Guidelines for installation of a Shipborne Automatic Identification System (AIS) and, bearing in mind that these Guidelines should be implemented on a voluntary basis, which MSC 76 had approved as SN/Circ.227.

4.12 The Sub-Committee considered the submission by the United States (NAV 49/4/2) related to an omission in the above Guidelines regarding the incomplete description of the pilot plug configuration.

4.13 The Sub-Committee referred document NAV 49/4/2 to the Technical Working Group for consideration and action, as appropriate.

**Revision of Performance standards for an Integrated Navigation System (INS)
(resolution MSC.86(70), Annex 3)**

4.14 The delegation of Germany supported by the delegations of Norway and the Netherlands informed the Sub-Committee that during the work to introduce the performance standard for INS (resolution MSC.86(70), Annex3) for production and type approval, it had become apparent that the standard was not suitable and needed to be revised due to the following serious problems:

- .1 there was too much room left for misinterpretation;
- .2 the scope (functions, alarms, display) of INS were not sufficient specifically defined;
- .3 essential requirements were missing;
- .4 there was missing harmonization between the standards, even contradictions; and
- .5 the application of the standard was ambiguous.

Due to these problems, it had not been possible to produce a test standard for INS within the last five years although, until November 2002, 14 revisions had been drafted.

In Germany's opinion, amongst others the following items had to be revised:

- .1 the functional description of route planning and route monitoring should be more detailed, because the task was needed, but not covered by other IMO standards;
- .2 clarification of relation between INS and external components, e.g. AIS was needed;
- .3 there should be a more sufficient clear division and harmonization of functions, data and definitions;
- .4 clear definition and description of the HMI (Human Machine Interface) was needed;
- .5 alarm handling should be more clearly defined. (e.g. acknowledgement, confirmation, suppression of audible signal);
- .6 an alarm management system should be described;
- .7 an integrated user guidance in particular concerning alarms and fall-back conditions should be provided; and
- .8 it should be clearly defined whether certain functions such as heading-/tracking control equipment should be part of INS or may be external, if installed and inter-wired.

In conclusion, the delegation of Germany requested the Sub-Committee to invite Members and associated organizations to consider the matter and take appropriate action, in particular, to submit suitable proposals to the Committee on this issue.

The delegation of the Netherlands suggested to extend these considerations to Integrated Bridge Systems (IBS) also.

Establishing Technical Working Group

4.15 Having also considered agenda items 7, 8, 9, 10 and the relevant subitem under agenda item 12, which was also deemed to be within the remit of the Technical Working Group, the Sub-Committee re-established the Technical Working Group and instructed it, taking into account any decisions of, and comments and proposals made in Plenary to consider all relevant documents submitted under agenda items 4, 7, 8, 9, 10 and the relevant subitem under item 12:

- .1 consider NAV 49/4 (IEC) and ensure that there are no conflicts and inconsistencies between the various existing IMO performance standards and draft Performance standards for the presentation of navigation related information (agenda item 4);
- .2 consider NAV 49/4/1 (IEC) and provide any comments and guidance on the harmonization of terms and symbols used to present navigation related information (agenda item 4);
- .3 consider the feasibility of requirement for integrated navigation systems being capable of displaying NAVTEX information and interfacing with NAVTEX receivers, as instructed by MSC 77 (MSC 77/26, paragraph 10.13) (agenda item 4);
- .4 consider document NAV 49/4/2 (United States) and SN/Circ.227, and provide guidance regarding the complete configuration of the pilot plug concerning Guidelines for the installation of a shipborne automatic identification system (AIS) (agenda item 4);
- .5 finalize the feasibility study on mandatory carriage of VDRs on existing cargo ships, taking into consideration documents NAV 49/8 (report of the Technical Working Group), NAV 49/7 (Germany), NAV 49/INF.8 (Japan) and NAV 49/INF.9 (United States) (agenda item 7);
- .6 consider documents NAV 49/7/1 (Japan) and NAV 49/7/2 (United Kingdom) and finalize performance standards for shipborne simplified Voyage Data Recorders (S-VDRs) for existing cargo ships based on the existing IMO Performance standards for VDR (resolution A.861(20) (agenda item 7));
- .7 consider NAV 49/7/3 (Germany and the Netherlands) and prepare a draft text for phased-in carriage requirements for S-VDR (agenda item 7);
- .8 finalize performance standards for radar reflectors, considering documents NAV 49/8 (report of the Technical Working Group) and NAV 49/8/1 (United Kingdom), as appropriate, and taking into account the Guidelines in MSC/Circ.930/MEPC/Circ.364 (agenda item 8);

- .9 prepare as appropriate, recommendations, opinions and liaison statements to appropriate ITU bodies (agenda item 10);
- .10 consider documents NAV 49/12 (WNTI) and NAV 49/12/1 (IALA) and all related decisions of Plenary and other IMO bodies (agenda item 2) and review the modified draft functional requirements for long range identification and tracking (MSC 77/WP.15, annex 1) (agenda item 12);
- .11 progress work on the review of performance standards for radar equipment, considering document NAV 49/9 (Germany, Norway and the United Kingdom), as appropriate (agenda item 9);
- .12 take into account the role of the human element guidance as updated at MSC 75 (MSC 75/24, paragraph 15.7) including the Human Element Analysing Process (HEAP) given in MSC/Circ.878/MEPC/Circ.346 in all aspects of the items considered; and
- .13 submit a report to Plenary on Thursday morning.

Report of the technical working group

4.16 Having received the technical working group's report (NAV 49/WP.4/Add.1), the Sub-Committee took action as summarized hereunder.

Display of navigation-related information

4.17 The Sub-Committee noted that the Working Group had considered document NAV 49/4 (IEC) providing an outline for proposed performance standards for the presentation of navigation-related information. Concern was expressed that these performance standards would lead to conflicts and inconsistencies with existing equipment performance standards. These problems could however be avoided if the new performance standards took precedence when conflicts occurred. The new performance standards would require the addition of more detail of existing display requirements and also should, possibly, apply to all the displays on the bridge of a ship and not just navigational displays.

4.18 The Sub-Committee also noted that the Group had also considered document NAV 49/4/1 (IEC) providing suggested harmonization of terms and symbols used to present navigation-related information. It was pointed out that the document was suggesting some differences from ISO standards and also from existing ARPA standards. However, the intent of the document was to provide a harmonized approach. It was concluded that the document, with some refinement, could form the basis of a SN/Circ in support of the above performance standards.

4.19 Taking into account that both the new performance standards for presentation of navigation-related information and the circular were urgently required due to the accelerated timescales for the implementation of AIS, the Sub-Committee established a correspondence group co-ordinated by Germany* to progress the work as outlined in paragraphs 4.17 and 4.18 above and report to NAV 50.

4.20 Members were invited to provide their comments and proposals on the matter for consideration at NAV 50.

Display of NAVTEX information

4.21 The Sub-Committee noted that the Group had considered the outcome of MSC 77 (MSC 77/26, paragraph 10.3), which had instructed the Sub-Committee to consider the requirement for integrated navigation systems to be capable of displaying NAVTEX information and interfacing with NAVTEX receivers. In discussion it was pointed out that NAVTEX information was not very structured and formatted and therefore probably would require a display dedicated to free text. However, the IEC observer reported that they were considering the issue and would report to the Sub-Committee at a later date.

Guidelines for the installation of a shipborne automatic identification system (AIS)

4.22 The Sub-Committee also noted that the Working Group had considered document NAV 49/4/2 (United States) concerning a possible omission in the Guidelines for the installation of a shipborne automatic identification system (AIS) disseminated by SN/Circ.227. The document highlighted that the configuration for the pilot plug in the Guidelines did not include the common or "c-lines" required in IEC Publication 61162-2.

4.23 In discussion it was pointed out that the pilot plug was intended to allow the connection of a device such as a portable computer to the AIS. The interface was specified as a balanced RS 422 (ITU V.11) type, which did not rely on a common connection. This allowed the portable computer to be isolated from the ship electrical systems. The Working Group concluded that it was beneficial not to connect the common lines and, therefore, no changes were needed to SN/Circ.227. The Sub-Committee concurred with the Group's opinion.

5 PLACES OF REFUGE

5.1 The Sub-Committee noted that, at its forty-eighth session, as instructed by MSC 74, it had developed draft Guidelines on places of refuge for ships in need of assistance along with an associated draft Assembly resolution as well as a draft Assembly resolution on the establishment of Maritime Assistance Services (MAS) (NAV 48/19, annexes 12 and 13).

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5.2 The Sub-Committee recalled that MSC 76 had noted that having considered the outcome of NAV 48:

- .1 MEPC 48 agreed on certain changes and some other points for consideration, as reflected in document MSC 76/11/3, paragraphs 7 and 8; and
- .2 LEG 85 (LEG 85/11) agreed to examine the legal liability and financial security aspects of the aforementioned draft Assembly resolutions should it be asked to do so by the MSC (MSC 76/11/3, paragraph 13).

5.3 The Sub-Committee also recalled that MSC 76 had:

- .1 noted the progress report on the draft Assembly resolutions on Guidelines on places of refuge for ships in need of assistance as well as on the establishment of Maritime Assistance Services (MAS), (NAV 48/19, paragraphs 5.10 and 5.12 and annexes 12 and 13);
- .2 decided to forward the draft Assembly resolutions and the draft Guidelines to COMSAR 7 with a view to establishing whether there was any conflict with existing SAR procedures;
- .3 authorized the Sub-Committee to submit the final text of the Guidelines, together with the associated draft Assembly resolutions, directly to A 23 taking into account any proposals and comments by the Committee, COMSAR 7, MEPC and the Legal Committee; and
- .4 invited the Legal Committee to consider the work in progress from the point of view of issues within its competence and, in particular, with respect to the provision of financial security to cover either expenses which the coastal State may have incurred or to provide adequate compensation to meet any liabilities of the shipowner which may arise.

5.4 The Sub-Committee noted that COMSAR 7, recalling the provisions of MSC/Circ.892 on Alerting of SAR authorities, relating to early informing MRCCs of any problems or incidents which might evolve into a distress situation, had agreed to invite the Committee to instruct the Sub-Committee, when finalizing the text of the two draft Assembly resolutions, to ensure that:

- .1 the term “distress”, whenever used, should be meant as defined in the SAR Convention;
- .2 provision is made that there is one single point of contact for ship-generated communications and this should be the MRCC; and
- .3 the MRCC could, if possible, be assigned the MAS functions.

5.5 The Sub-Committee also noted that COMSAR 7, recognizing that it would be up to SOLAS Contracting Governments to decide which organization should be tasked with the MAS functions, had agreed that the duties of the MAS, as set out in section 3 of the draft Guidelines on Maritime Assistance Services (MAS) (NAV 48/19, annex 12), being primarily communication duties, could well be undertaken by the MRCC; that the establishment of a new authority with functions similar to those of the MRCC could be confusing; and that the MRCCs were normally the only contact points as they are available 24 hours a day and they have already been assigned

the obligation to communicate with all parties/authorities concerned with respect to ships in distress or in difficulty which could evolve into a distress situation.

5.6 The Sub-Committee observed that MSC 77 had noted that, at LEG 86, there had been wide agreement that ships in distress situations were covered by the current liability and compensation regime, i.e. by conventions already in force (such as the 1992 CLC and the 1992 IOPC Fund Conventions) along with others which had not yet entered into force (i.e. HNS, Bunkers and the 1996 LLMC Protocol), as well as those under development (such as the one on Wreck removal and the CLC Supplementary Fund). LEG 86, however, had recognized that there might be gaps since not all ships were subject to compulsory insurance requirements and not all States were party to the relevant instruments. LEG 86 had also supported the need for the adoption of guidelines on places of refuge urgently and had agreed that the draft guidelines should contain a caveat stating that the guidelines did not address the issue of liability and compensation for damage resulting from a decision to grant or deny a ship a place of refuge. LEG 86 had further agreed to recommend to MSC 77 and NAV 49 the addition of an operative paragraph to the draft Assembly resolution on Guidelines on places of refuge for ships in need of assistance, requesting the Legal Committee to consider, as a matter of priority, the Guidelines from its own perspective, including the provision of financial security to cover coastal State expenses and for compensation issues; and to take action as it might deem appropriate; to refer to the 1992 CLC Convention and the 1973 Intervention Protocol in appendix 2 of the annex to the guidelines containing a list of “international conventions applicable”; and to urge States which had not already done so to implement the existing liability and compensation regimes.

5.7 The Sub-Committee noted that MSC 77 after due consideration of the various proposals made, had agreed, in principle, that:

- .1 paragraph 3.1.3.2 of the draft Guidelines on places of refuge (NAV 48/19, annex 12, annex) should be amended to include a recommendation to the effect that:
States should have due regard to the preservation of the hull, machinery and cargo of a ship in need of assistance when considering the analysis”;
- .2 there was, for the time being, no need to develop an IMO Convention on Places of Refuge, as proposed by IUMI (MSC 77/8/2);
- .3 as there was no support for the concept of a Supervisory Body identifying certain ports, anchorages and other areas which might be suitable for vessels in distress, such a decision could only be made on a case-by-case basis using appropriate developed methodology; and
- .4 the Guidelines on places of refuge should not designate pre-identified places of refuge.

5.8 The Sub-Committee also noted that MSC 77 had further considered documents MSC 77/8/5, MSC 77/8/6 and MSC 77/8/7 by Spain proposing amendments to the draft Guidelines on places of refuge for ships in need of assistance as prepared by NAV 48, in particular amendments to sections 1, 2 and 3 including appendix 1 of the draft Assembly resolution on Guidelines on places of refuge. There had been an extensive debate on the substantial amendments proposed by Spain. Some delegations had supported the Spanish proposals, whilst a majority had been of the opinion that such extensive amendments were not necessary. A significant majority of the delegations, which participated in the debate, had been also of the opinion that the Spanish proposals were a radical departure from the user-friendly

guidelines needed for determining places of refuge and that a balance was necessary in developing the criteria proposed by Spain. MSC 77 had agreed, in principle, not to accept the relevant Spanish proposals agreeing, however, to refer relevant parts of documents MSC 77/8/5 and MSC 77/8/6 to NAV 49 to take into account when reviewing and finalizing the draft Assembly resolution on Guidelines on places of refuge.

5.9 The Sub-Committee further noted that MSC 77 in fully endorsing the MSC Chairman's summing up, had instructed NAV 49 to:

- .1 review and amend, as appropriate, annexes 12 and 13 of NAV 48/19 taking into consideration documents MSC 77/8/1 (Secretariat), MSC 77/8/4 (France), MSC 77/8/5 and MSC 77/8/6 (Spain) and MSC 77/8/11 (United Kingdom), as well as document MSC 77/2/1 (Secretariat), and any other relevant documents submitted to NAV 49 as long as proposals contained therein were not inconsistent with decisions made by the Committee as specified below;
- .2 with respect to the proposals in document MSC 77/8/5 (Spain), only consider the proposed editorial amendments to NAV 48/19, annex 12, appendix 1, whilst the title, including the operative paragraph of appendix 1, should not be amended;
- .3 with respect to document MSC 77/8/6 (Spain), only consider the proposed amendments to sections 2.2.1, 2.3.1 and 2.6.1 of NAV 48/19, annex 12, annex;
- .4 insert the following caveat, at an appropriate place of the draft Guidelines on places of refuge for ships in need of assistance: "These guidelines do not address the issue of liability and compensation for damage resulting from a decision to grant or deny a ship a place of refuge.";
- .5 take into account the outcome of LEG 86 and insert the following operative paragraph in the draft resolution on Places of refuge for ships in need of assistance: "REQUESTS the Legal Committee to consider, as a matter of priority, the Guidelines from its own perspective, including the provision of financial security to cover coastal State expenses and/or compensation issues; and to take action as it may deem appropriate"; and
- .6 submit the revised text of both draft Assembly resolutions to LEG 87 for information and action as deemed appropriate; and directly to A 23 for adoption.

5.10 The Sub-Committee noted that this was a very important issue, emphasised earlier by the Secretary-General in his opening remarks, which needed to be finalized at this session.

5.11 The Sub-Committee considered in general the outcome of MEPC 48, LEG 85, MSC 76, COMSAR 7, LEG 86 and MSC 77 and the submissions by Australia (NAV 49/5) and Spain (NAV 49/5/1), recognizing that Spain (NAV 49/5/1) had proposed substantial amendments to the draft Guidelines on Places of refuge (NAV 48/19, annex 12), which were similar to those proposed by it to MSC 77. However, as instructed by MSC 77, the Sub-Committee was guided strictly by the decisions of MSC 77 on this (see paragraph 5.9 above).

5.12 The delegation of Australia (NAV 49/5) stated that the draft guidelines on Places of refuge as contained in NAV 48/19, annex 12 provided a good basis for further work, however, the present draft Guidelines did not give sufficient prominence to the rights of coastal States under various instruments of international law. Australia was of the opinion that the Guidelines

should clearly acknowledge the complexities of the issues and that in any incident involving a place of refuge there had to be a balance between the interests of the coastal State involved, the master, company, other interested parties and the salvor.

5.13 The delegation of Spain (NAV 49/5/1), pointed out that, since the incidents involving the vessels **Castor**, **Crystal** and **Prestige**, Spain had been actively taking part in the search for solutions to the issue of places of refuge, having thus presented ten documents to different IMO Committees and Sub-Committees (MSC, LEG and NAV). The Spanish delegation had given some thought about why a coastal State that complies with all its duties has to cope with the consequences of any vessel which is out of its jurisdiction just because it is navigating along its coast and in an extreme situation asks for a place of refuge. Spain also wondered why the coastal State should provide a solution to the problems caused by such vessels and bear the damages that would be caused, without any guarantee that the costs of these damages would be compensated. Spain agreed with the opening speech of the Secretary-General, when he pointed out that the problem of the places of refuge should be treated and solved in a global manner. For that reason, the Spanish delegation considered that the Guidelines that would be developed by IMO should handle the issue globally, without isolating the technical aspects from the legal ones. From this point of view, Spain considered that, although the technical aspects were not completely developed, they could be improved taking into consideration the proposals presented. However, the Spanish delegation expressed serious doubts concerning the legal aspects as the conventions that are in force did not completely safeguard the interests of the coastal States, either because they are not applicable worldwide or because they are not applicable to all types of cargo. In addition, public authorities that may take part in the decision-making process are subject to an important risk of being considered liable for their decisions.

Spain therefore believed that the legal aspects should not be separated from the technical ones. For that reason, the Spanish delegation reserved its position in relation to the deletion, from the draft guidelines, of the legal aspects concerning liability and compensation as already expressed at MSC 77. Spain also referred to the concrete proposals included in its document NAV 49/5/1, according to the instructions given by MSC 77.

5.14 There was an extensive debate on the matter with respect to the Australian and Spanish proposals. In considering the amendments proposed by Australia, a majority of delegations supported the Australian proposals with respect to section 1.1 on introduction, editorial amendment to sections 2.1.1 and 2.5.1 and the inclusion of specific references to the provisions of international legal instruments in appendix 1.

5.15 With respect to the proposals by Spain on the suggested amendments to paragraph 2.2.1, 2.3.1 and 2.6.1, the Sub-Committee only agreed an amendment to paragraph 2.2.1, whilst the proposed addition to paragraph 2.3.1 was not supported. In considering the proposed addition to paragraph 2.6.1 which was discussed at length, the Sub-Committee accepted that whereas it was factually correct in that coastal States do have jurisdiction in their territorial seas, it did not, as written, acknowledge the authority of the master, nor did it address the issue of responsibility for actions taken in response to instructions of the coastal State. A majority of the delegations were of the opinion that the text proposed by Spain needed to be modified to reflect the need for coastal States to follow the decision-making process detailed in the guidelines prior to giving instructions in response to ships requests for assistance.

5.16 The Sub-Committee agreed that annexes 12 and 13 of NAV 48/19 (NAV 48 report) be used as the basic documents for further work in finalizing the guidelines.

Establishment of a Drafting Group

5.17 After a detailed consideration of the issue, the Sub-Committee established a Drafting Group to consider documents NAV 49/5 (Australia), NAV 49/5/1 (Spain) (so long as proposals contained therein were not inconsistent with decisions taken by MSC 77) and the relevant documents referred by MSC 77 (for documents MSC 77/8/5 and MSC 77/8/6 only those sections specified in paragraphs 5.9.2 and .3 above) and all decisions of Plenary and other IMO bodies (agenda item 2), and:

- .1 review annexes 12 and 13 of NAV 48/19 and streamline the draft guidelines on places of refuge for ships in need of assistance including the draft guidelines on the establishment of Maritime Assistance Services (MASs);
- .2 to take into account the role of the human element guidance as updated at MSC 75 (MSC 75/24, paragraph 15.7), including the Human Element Analysing Process (HEAP), given in MSC/Circ.878/MEPC/Circ.346, in all aspects of the items considered; and
- .3 to submit a report to Plenary on Thursday morning.

Report of the drafting group

5.18 Having considered the report of the drafting group (NAV 49/WP.5), the Sub-Committee approved it in general and in particular took action as summarized hereunder.

Guidelines on places of refuge for ships in need of assistance (annex 1 to NAV 49/WP.5)

5.19 In reviewing the draft Assembly resolution, the Sub-Committee noted the reservations of Cyprus on operative paragraph 3 as to whether the Committee, rather than the Assembly, could be empowered to amend the Guidelines.

5.20 Following a discussion on the need to include balanced wording reflecting the rights of both the ship and the coastal State with regard to places of refuge, the Sub-Committee agreed to insert a new fourth preambular paragraph in the draft Assembly resolution, with the following wording: “*Recognizing the need to balance both the prerogative of a ship in need of assistance to seek a place of refuge, and the prerogative of a coastal State to protect its coastline,*”.

5.21 The Sub-Committee noted that paragraph 2.6.2 in the annex to the draft Assembly resolution was intended to convey the need to consider, in a balanced way, the jurisdiction of coastal States in their territorial seas, the authority of the master, and the issue of responsibility for actions taken in response to instructions of the coastal State. The new text was meant to reflect the need for coastal States to follow a logical decision-making process such as that detailed in the guidelines prior to giving instructions in response to ships requests for assistance. The Sub-Committee recognized that the guidelines would need to be incorporated into the national legislation of individual States.

Maritime Assistance Service (MAS) (annex 1 to NAV 49/WP.5)

5.22 The Sub-Committee agreed to delete the expression “*any other appropriate IMO instrument drawn up after the adoption of the present resolution*” in annex 1 to the draft Assembly resolution.

5.23 Following further discussion on the relationship between roles of MAS and MRCCs, the Sub-Committee agreed to reject the suggestions of the Drafting Group with respect to paragraphs 1.1 and the first half of paragraph 1.2 of annex 2 to the draft Assembly resolution; and to retain the original wording, but adding the proviso “*at the discretion of the administration*” in paragraph 1.1.

Further action by the Sub-Committee

5.24 The Sub-Committee:

- .1 instructed the Secretariat to review the guidelines and associated Assembly resolutions to ensure that correct drafting and appropriate wording were applied throughout; and to make the textual amendments that had been identified by the Sub-Committee.
- .2 invited the Legal Committee, at its eighty-seventh session to:
 - .1 endorse the location of paragraphs 1.2.4 and 1.3.6 in the annex to the draft Assembly resolution on Guidelines on places of refuge for ships in need of assistance within the document; and
 - .2 give guidance on which international instruments, including those addressing compensation and liability if appropriate, should be included in the preambular paragraphs and appendix 1 to the annex to the draft Assembly resolution on Guidelines on places of refuge for ships in need of assistance;
- .3 invited the Assembly, at its twenty-third session, to adopt the amended guidelines and associated draft Assembly resolutions, as authorized by MSC 77 and set out in annexes 6 and 7.

5.25 The Committee was invited to delete the agenda item “Places of refuge” from the Sub-Committee’s work programme, as the work had been completed.

6 ANCHORING, MOORING AND TOWING EQUIPMENT

6.1 The Sub-Committee recalled that, at its forty-eighth session, it had noted that no other specific proposals had been submitted under this agenda item, except the referral of document DE 45/16 (Australia and Canada), as decided by DE 45, wherein the Sub-Committee had been tasked to address the issue of appropriate communications between the master, pilot and tug operators to ensure that all towing and mooring equipment was used in accordance with any limitations arising from its design construction and condition. After some discussion, NAV 48 had agreed to once again invite IACS and IMPA to submit relevant information. The observers from IACS and IMPA had informed NAV 48 that matters were in hand, and IACS and IMPA would submit the required information on the issue.

6.2 The Sub-Committee further recalled that NAV 48 was of the opinion that in the absence of more detailed proposals it was not possible to make progress at that stage and invited Members to make relevant submissions for detailed consideration at the current session, bearing in mind the target completion date of 2003.

6.3 The Sub-Committee noted that DE 46, realizing that underpinning standards for anchoring, mooring and towing equipment were necessary and noting that the relevant IACS standard (DE 46/12/3) was so far only available in draft form, invited IACS to submit the finalized standard to DE 47.

6.4 The Sub-Committee also noted that at DE 46, IMPA, INTERTANKO and OCIMF had indicated that they would submit a joint study on the use of high-modulus synthetic fibre ropes as mooring lines to NAV 49 (as the co-operating Sub-Committee in the matter). Noting further that OCIMF was also preparing a separate study on the issue, DE 46 had invited OCIMF to submit the results of that study to DE 47. It was generally felt that more time was needed to consider the item, therefore it was agreed to postpone the final consideration to DE 47 and to invite the Committee to extend the target completion date of the item to 2004. Members and international organizations were invited to submit comments to DE 47 with a view to finalizing the item at that session.

6.5 The Sub-Committee considered the submission by IMPA and OCIMF (NAV 49/6) providing information on recent incidents of mooring equipment failure based on a survey of their members, as requested by NAV 48.

6.6 The Sub-Committee noted with appreciation the results of the survey on recent incidents of mooring equipment failure and agreed to forward document NAV 49/6 (IMPA and OCIMF) to DE 47 for consideration and action, as appropriate.

6.7 The Sub-Committee further noted that the personal safety of ships crew and port personnel was being put at risk in part because mooring ropes and certain aspects of ships equipment were currently not subject to any regulatory regime.

6.8 The Sub-Committee noted the information provided by IHMA and IAPH (NAV 49/INF.3) on accidents that had occurred as a result of apparent failure of mooring lines or associated ship equipment based on a joint survey of their members.

6.9 The Sub-Committee expressed appreciation to IMPA, OCIMF, IHMA and IAPH for their efforts in providing significant information as to the scale of the problem, which had to be borne in mind when continuing work on the issue. The four sponsoring observer organizations were invited to submit a substantial proposal to the next session to enable the Sub-Committee to make progress on this matter.

6.10 The Sub-Committee was of the opinion that, in the absence of substantive proposals and in the light of the progress at DE 46 and also due to the fact that the relevant IACS standard (DE 46/12/3) was expected to be finalized and submitted to DE 47, final consideration of the issue should be postponed to NAV 50.

6.11 Accordingly, the Sub-Committee agreed to invite the Committee to extend the target completion date of the item to 2004. Members and international organizations were invited to submit comments and proposals to NAV 50 with a view to finalizing the item at that session.

7 FEASIBILITY STUDY ON CARRIAGE OF VDR ON EXISTING CARGO SHIPS

7.1 The Sub-Committee recalled that, NAV 48 had recalled that MSC 73 had requested it, as a matter of urgency, to carry out a feasibility study on the mandatory carriage of Voyage Data Recorders (VDRs) on existing cargo ships and for the study to be finalised by 1 January 2004 (resolution MSC.109(73)). Although substantial progress towards the required feasibility study

had been made, it was recognized that there was now an urgent need to co-ordinate the various views and to seek wider opinion and clarification in a number of areas.

7.2 The Sub-Committee recalled also that, NAV 48 had some discussion on the issue and the majority had generally supported the proposal by Japan, Germany and Sweden, that in particular, an EPIRB type float-free capsule would be reasonable for the protection capsule. NAV 48 had agreed that real life case studies should be used in the preparation of the feasibility study, if applicable and available. The studies should concentrate on a cost/benefit analysis, whether the protective capsule should be fixed or float free including the demonstrated need for fitting VDR on existing cargo ships.

7.3 The Sub-Committee further recalled that NAV 48 had agreed to establish a Correspondence Group with the objective of providing a consolidated draft text of the required feasibility study which reflected the information received from members of the group. The text should be accompanied by a succinct report summarising the work and indicating which Members had provided input to the process. The provision of such a draft consolidated text should substantially reduce the volume of documents that need to be submitted to the current session.

7.4 The Sub-Committee also recalled that NAV 48 had further agreed that the Correspondence Group should advance the feasibility study as instructed by resolution MSC.109(23). This would be achieved by collating information discussed at previous meetings and the existing documentary submissions and co-ordinating the work of delegate members of the group. In certain areas this might involve further research including, but not limited to, the following key areas:

- .1 Review of Data Items to be Recorded;
- .2 Protective Capsule; and
- .3 Costs/Benefits.

7.5 The Sub-Committee considered the report of the Technical Working Group (NAV 49/8, paragraphs 2.1 to 2.3) and the report of the Correspondence Group on the Feasibility of the carriage of VDRs on existing cargo ships submitted by Germany (NAV 49/7).

7.6 The Chairman of the Correspondence Group stated that the Group had been able to jointly develop a proposal for a simplified VDR (S-VDR), maximizing the usages whilst minimizing the cost, taking into consideration the restrictions and difficulties of installing a VDR on existing cargo ships. The European Union had already decided (Directive 2002/59/EC), in addition to what had been decided at IMO, that the following ships before 1 July 2002 must, when calling a Community port (*i.e. the EU*), be fitted with a VDR meeting the relevant IMO standards:

- cargo ships of 20,000 gross tonnage and upwards, not later than the date fixed by IMO, or, in absence of a decision at IMO, not later than 1 January 2007; and
- cargo ships of 3,000 gross tonnage and upwards but less than 20,000 gross tonnage, not later than the date fixed by IMO, or, in absence of a decision at IMO, not later than 1 January 2008.

This VDR should meet the performance standard of resolution A.861(20) and the testing standards set by Standard No 61996 of the IEC. Absence or malfunctioning of this mandatory

full VDR on existing cargo ships would then be grounds for Port State Control detention. There were strong indications that a simplified VDR would be accepted by the EU. There was, therefore, an urgent need to develop a simplified VDR to avoid that existing cargo ships had to be equipped with an expensive full VDR, when calling an EU port after 2007/2008.

7.7 The Sub-Committee briefly considered proposals by Japan (NAV 49/7/1 and NAV 49/INF.8) and the United Kingdom (NAV 49/7/2) on a revised draft text of performance standards for a shipborne simplified Voyage Data Recorder (S-VDR) based on the previous proposal to NAV 48 (NAV48/8/1).

7.8 A majority of the delegations supported the need for a simplified VDR (S-VDR) for existing cargo ships i.e. those built before 1 July 2002 including the need for a revised draft performance standards for a shipborne S-VDR. In addition, a majority of the delegations supported the idea of a float free system whilst a substantial minority supported a float free and a fixed system.

7.9 The Sub-Committee also considered a proposal by Germany and the Netherlands (NAV 49/7/3) on a phased in carriage requirement for a shipborne simplified Voyage Data Recorder (S-VDR).

7.10 With respect to the proposal for a phased-in carriage requirement for a shipborne S-VDR, the Sub-Committee was of the opinion that it was for the Committee to decide thereon. The Sub-Committee also agreed to instruct the Technical Working Group to prepare a preliminary draft amendment to regulation V/20 - Voyage Data Recorders of the revised SOLAS chapter V.

7.11 The Sub-Committee noted the view of some delegations that the proposed phase-in implementation dates should take into account ships being phased out under MARPOL regulation 13G and also the type of ships which would be exempted.

7.12 The Sub-Committee further agreed to instruct the Technical Working Group to develop a new dedicated standard for S-VDRs using resolution A.861(20) - Performance standards for shipborne voyage data recorders (VDRs) as the basic document.

7.13 The Sub-Committee took into consideration the additional information provided by the United States (NAV 49/INF.9) regarding costs for the recovery of data recorders at sea, based on experience gained from the recovery of aviation flight data recorders and two industry scenario estimates.

7.14 The Sub-Committee referred this item to the Technical Working Group for consideration and finalization, as appropriate, of the Feasibility study on the carriage of VDRs on existing cargo ships including the finalization of a Performance Standard for shipborne simplified Voyage Data Recorders (S-VDRs) for existing cargo ships.

Report of the technical working group

7.15 Having received the technical working group's report (NAV 49/WP.4), the Sub-Committee took action as summarized hereunder.

7.16 The Sub-Committee noted that, having considered the report of the Correspondence Group on the feasibility of the carriage of VDR on existing cargo ships given in NAV 49/7 (Germany), the Technical Working Group had concurred with the conclusion of the report that retrofitting of existing cargo ships with VDR was feasible and desirable and that a simplified VDR (S-VDR) could be specified for existing cargo ships.

7.17 The Sub-Committee therefore finalized its report to respond to the instructions of resolution MSC.109(73) on Carriage of voyage data recorders (VDRs) on existing cargo ships, given in annex 8. As the report demonstrates the compelling need for mandatory carriage of VDRs on existing cargo ships, the Sub-Committee considered document NAV 49/7/3 (Germany and Netherlands) and prepared appropriate draft amendments to regulation V/20 of the SOLAS Convention, given in annex 9.

7.18 The Sub-Committee also noted that the Technical Working Group had further considered documents NAV 49/7/1 (Japan) and NAV 49/7/2 (United Kingdom) and, taking into account NAV 49/INF.8 (Japan) and NAV 49/INF.9 (United States), after considerable discussions had prepared a draft MSC resolution on Performance standards for shipborne simplified voyage data recorders (S-VDRs), which had been approved by the Sub-Committee as set out in annex 10.

7.19 In relation to the draft performance standards for S-VDRs, the delegation of Norway expressed the view that it should be permitted to employ one common float-free unit fulfilling both the present requirements of SOLAS chapter IV for a satellite EPIRB, and the relevant parts of the new requirement in chapter V for an S-VDR. This would be analogous to the requirements adopted by the Diplomatic Conference in 2002 on Ship Security Alert Systems, which clearly provides that this requirement may be complied with by using the radio installation fitted for compliance with the requirements of chapter IV, provided all relevant requirements are complied with.

7.20 The Sub-Committee agreed that this issue should be brought to the attention of COMSAR 8, with a request to provide further guidance on proposals on this issue to MSC 78.

7.21 The Committee was invited to:

- .1 note the outcome of the report on a feasibility study with regard to the carriage of VDRs on existing cargo ships (annex 8);
- .2 consider and approve proposed draft amendments to regulation V/20 with a view for submission to MSC 79 for adoption (annex 9); and
- .3 consider and adopt subject to comments by COMSAR 8, the draft MSC resolution on performance standards for shipborne simplified voyage data recorders (S-VDRs) (annex 10).

7.22 Being of the opinion that in the light of paragraph 7.21.2 above the appropriate amendments, such as inclusion of S-VDR version, should be made to the Record of Equipment for the Cargo Ship Safety Equipment Certificate (Form E) both in the 1974 SOLAS Convention and the 1988 SOLAS Protocol, the Sub-Committee instructed the Secretariat to prepare such draft amendments for submission to MSC 78 for approval, for circulation and adoption together with proposed amendments to SOLAS chapter V at MSC 79.

7.23 As instructed by the Sub-Committee, the Secretariat prepared draft amendments to the Record of Equipment for the Cargo Ship Safety Equipment Certificate (Form E) both in the 1974 SOLAS Convention and the 1988 SOLAS Protocol, as given in annexes 9 and 11 for approval by the Committee.

7.24 The Committee was further invited to delete the agenda item "Feasibility study on carriage of VDRs on existing cargo ships" from the Sub-Committee's work programme, as the work had been completed.

8 REVISION OF PERFORMANCE STANDARDS FOR RADAR REFLECTORS

8.1 The Sub-Committee recalled that, at its forty-eighth session, it had considered the report of the Technical Working Group (NAV 48/4, paragraphs 3.9 to 3.11 and annex 1) and the proposals by the United Kingdom (NAV 48/9) and ISAF (NAV 48/9/1) regarding the revision of performance standards for radar reflectors. NAV 48 had referred this item to the Technical Working Group for consideration and comments, as appropriate. Due to heavy workload and the lack of time, the Technical Working Group was unable to consider this item in detail. It was agreed that the outcome of the Working Group's discussion related to these documents concerning revision of performance standards for radar reflectors would be submitted to the current session. Members were invited to consider the report of the Technical Working Group, when circulated, and submit comments and proposals thereon for consideration at NAV 49.

8.2 The Sub-Committee considered the report of the Technical Working Group (NAV 49/8, paragraphs 3.1 to 3.5 and annex) and the proposal by Germany and the United Kingdom (NAV 49/8/1) regarding amendments to the performance standards for radar reflectors.

8.3 The Sub-Committee referred the item to the Technical Working Group for consideration and finalization, as appropriate.

Report of the technical working group

8.4 Having received the technical working group's report (NAV 49/WP.4), the Sub-Committee took action as summarized hereunder.

8.5 The Sub-Committee noted that the Technical Working Group had considered documents NAV 49/8 (TWG Chairman) and NAV 49/8/1 (Germany and United Kingdom) concerning performance standards for radar reflectors to replace those given in resolution A.384(X), and had prepared a draft MSC resolution on Adoption of revised performance standards for radar reflectors.

8.6 The Sub-Committee considered and approved the draft MSC resolution, set out in annex 12, with a view for submission to MSC 78 for adoption.

8.7 The observer from ISAF expressed concern regarding the suitability of radar reflectors conforming to the revised performance standards for very small vessels.

8.8 The Committee was invited to delete the agenda item "Revision of performance standards for radar reflectors" from the Sub-Committee's work programme, as the work had been completed.

9 REVIEW OF PERFORMANCE STANDARDS FOR RADAR EQUIPMENT

9.1 The Sub-Committee recalled that, at its forty-seventh session, it had considered annex 5 to COMSAR 5/14 concerning the threat to current maritime safety radionavigation services in the frequency bands 2.9 – 3.1 GHz and 9.2 - 9.5 GHz and document NAV 47/8/2 (United Kingdom) on the future use of maritime radar and noted the points raised by COMSAR 5 that manufacturers would need considerable time to develop solutions to the envisaged ITU requirements for unwanted emissions and that, in liaison with the ITU, there should be extreme caution over the impositions of unwanted emission limits on a safety service within an unrealistic timescale and that there should be extreme caution with regard to the sharing of exclusive radiodetermination frequency bands, in which safety services operate, with other services.

9.2 The Sub-Committee further recalled that NAV 47 had agreed that consideration should be given to the review of the requirements for radars in the light of their current performance requirements contained in the relevant IMO resolutions and concluded that, as a minimum, the aspects of the performance standards for radar needed to be studied, are as follows:

- .1 minimum range and range discrimination;
- .2 detection of SART's and RACON's;
- .3 target detection including performance under anomalous propagation and clutter conditions;
- .4 probability of detection and false alarm rate;
- .5 hazard and acceptable risk of interference to maritime radar;
- .6 the provision of hazard warning of fixed and floating objects; and
- .7 maximum range.

This work should be completed by 2003 to allow its conclusions to be used within the framework of current ITU-R studies, that are due to be completed by end 2006.

9.3 The Sub-Committee also recalled that NAV 48 had referred this item to the Technical Working Group for consideration and comments, as appropriate. Due to heavy workload and the lack of time, the Technical Working Group was unable to consider this item in detail. The outcome of the Working Group's discussion related to these documents concerning review of performance standards for radar equipment would be submitted to the current session. Members were invited to consider the report of the Technical Working Group, when circulated, and submit comments and proposals thereon for consideration at NAV 49. Taking into account the above, NAV 48 invited the Committee to extend the target completion date for the agenda item "Review of performance standards for radar equipment" to 2004; MSC 76 agreed to this.

9.4 The Sub-Committee considered the proposal by Germany, Norway and the United Kingdom (NAV 49/9) regarding a preliminary draft revision of the performance standards for radar equipment.

9.5 The Sub-Committee referred the item to the Technical Working Group for consideration and comments, as appropriate.

Report of the technical working group

9.6 Having received the technical working group's report (NAV 49/WP.4/Add.1), the Sub-Committee took action as summarized hereunder.

9.7 The Sub-Committee noted that the Technical Working Group had considered document NAV 49/9 (Germany, Norway and United Kingdom) which was the first submission to be placed before the Sub-Committee under this agenda item and was intended to stimulate discussion. The document highlighted a number of important areas where further work was required before a final draft revision of performance standards for radar equipment could be presented to NAV 50. It was considered that Mariners should take a very active part in these discussions to develop and confirm the functions and performance required by this vital piece of navigational equipment.

9.8 The Sub-Committee concurred with the Group's view and, in order to promote active discussion and finalization of the work in 2004, and to facilitate the incorporation of the mariners' views, the Sub-Committee established a correspondence group co-ordinated by Norway* and agreed that issues to be addressed by this group should include:

- .1 confirmation of the Radar Cross Section (RCS) of relevant targets;
- .2 consideration of the harmonization of design and certain important operational controls;
- .3 further studies of the relative virtues of sea and ground stabilization of the radar display and display modes;
- .4 the use made of RACONs operating at S-band; and
- .5 assessment of costs associated with enhanced performance.

The correspondence group should note that work is ongoing in IEC TC 80 WG 1 to develop revised testing standards for radars. Members were invited to provide initial inputs to the correspondence group to be received before the next meeting of WG 1 in September 2003.

10 ITU MATTERS, INCLUDING RADIOCOMMUNICATIONS ITU-R STUDY GROUP 8 MATTERS

Clarifications concerning a revision of Recommendation ITU-R M.1371 on Technical Characteristics for a Universal Shipborne Automatic Identification System (AIS) using Time Division Multiple Access in the VHF Maritime Mobile Band

10.1 The Sub-Committee recalled that, at its forty-eighth session, it had noted that in response to a liaison statement prepared by NAV 47, ITU-R Working Group 8B, at its October/November 2001 meeting, had agreed that it would co-ordinate any proposed changes to the latest edition of Recommendation ITU-R M.1371, which could affect the IMO operational performance

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standards, given in IMO resolution MSC.74(69), Annex 3. Working Party 8B would additionally keep IMO informed of any changes to the latest edition of Recommendation ITU-R M.1371, which did not appear to affect the IMO performance standards.

Additionally, the ITU Radiocommunications Bureau had distributed Circular Letter 8/LCCE/103 addressing the AIS radio-frequency switching issues raised by IMO, urging Administrations to undertake the following steps:

- .1 where possible, to ensure that the frequencies 161.975 and 162.025 MHz are available for AIS use;
- .2 in navigable areas where the frequencies 161.975 and 162.025 MHz are unavailable for AIS use, to provide means for automatic switching of radio frequencies in accordance with Recommendation ITU-R M.1371-1, if at all possible; and
- .3 in navigable areas where frequencies 161.975 and 162.025 MHz are unavailable for AIS use and where no base stations exist, to notify IMO of the particulars of those areas, as well as the frequencies available for AIS use, so that IMO can take the steps described above.

Recommendation for the protection of the AIS VHF data link

10.2 The Sub-Committee noted that NAV 48, having concurred with proposals that steps should be taken to ensure the integrity of AIS radio channels and, after some discussion, had agreed on the proposed draft MSC resolution on the issue. Some delegates expressed concern about operative sub-paragraph .2, recommending Administrations to approve Class B AIS devices, because Recommendation ITU-R M.1371 was a large complex document. However, it was pointed out that Recommendation ITU-R M.1371 was written with separate sections applicable to Class A and Class B devices reducing this complexity, and that the IEC was preparing a test standard for Class B devices which would assist Administrations in the future. NAV 48 also instructed the Secretariat to liaise with ITU on this draft resolution and advise MSC 76 accordingly.

10.3 The Sub-Committee further noted that MSC 76 adopted resolution MSC.140(76) on Recommendation for the protection of the AIS VHF data link, and that the aforementioned resolution had been conveyed to ITU-R Study Group 8 on 2 August 2002, since Working Party 8B was scheduled to meet from 18 to 24 September 2002; and was advised that the resolution had been considered in principle by ITU-R Study Group 8, pending further consideration at an appropriate future meeting of the ITU Working Party concerned, it was expected that ITU Working Party 8B would consider the issue in detail during its next meeting 25 November to 2 December 2003.

10.4 The Sub-Committee briefly considered document NAV 49/10 (Secretariat), containing a draft new question adopted by Study Group 8 concerning the technical and operational compatibility of radionavigation and radiolocation services operating in the bands 9000-9200MHz and 9300-9500MHz.

10.5 The Sub-Committee referred the document NAV 49/10 to the Technical Working Group for consideration and comments, as appropriate.

Report of the Technical Working Group

10.6 Having received the technical working group's report (NAV 49/WP.4/Add.1), the Sub-Committee took action as summarized hereunder.

Compatibility of radionavigation and radiolocation services operating in the bands 9000-9200 MHz and 9300-9500 MHz

10.7 The Sub-Committee considered document NAV 49/10 (Secretariat) containing a draft new ITU-R question concerning compatibility of radionavigation and radiolocation services operating in the bands 9000–9200 MHz and 9300–9500 MHz and pointed out that. The band 9300–9500 MHz was of great importance and interest as the 9 GHz (X-band) marine radars and SAR radar transponders operate in this band.

10.8 Being informed that the ITU Radiocommunication Assembly in May 2003 adopted this new question and assigned it to Study Group 8 for finalization by 2006, the Sub-Committee invited the Committee to extend the target completion date for this item to 2006 (refer to paragraph 16.5 (...) also).

10.9 Taking into account the importance of the matter for the safety of life at sea, Member Governments were invited to actively participate in the study to be carried out in the ITU and submit their comments and proposals to NAV 50 for consideration.

11 LARGE PASSENGER SHIP SAFETY: EFFECTIVE VOYAGE PLANNING FOR LARGE PASSENGER SHIPS

11.1 The Sub-Committee recalled that, at its forty-eighth session, it had considered submissions by the United States (NAV 48/12 and NAV 48/INF.4), reporting on the results of a gap analysis to identify areas in IMO instruments where gaps might exist, and noted that the United States had identified the following task as having gaps large enough to warrant further consideration for additional safety measures, recommending that the Sub-Committee consider additional measures for gaps related to the following task assigned to it:

- .1 Objective 9, Task 5 (existing and future ships), Quality and availability of hydrographic information for operation in remote areas: Develop guidelines or requirements to improve hydrographic information in remote areas, and invite IHO to investigate how the quality and availability of hydrographic data in remote areas can be improved.

11.2 The Sub-Committee also recalled that at NAV 48, the observer from IHO had informed the Sub-Committee that IHO was prepared to carry out a study on how the quality and availability of hydrographic data in remote areas could be improved, including a report on the current status of hydrographic surveys in remote areas, and to advise NAV 49 accordingly.

11.3 The Sub-Committee further recalled that NAV 48 was also of the opinion that in the absence of more detailed proposals or guidance, it was not possible to make progress at that session and accordingly decided to invite:

- .1 IHO to carry out the aforementioned study and advise NAV 49 accordingly; and

- .2 Members to submit relevant proposals on the issues set out in NAV 48/19, paragraph 12.4 for detailed consideration at NAV 49, bearing in mind the target completion date of 2003.

11.4 The Sub-Committee noted that MSC 77 had received reports on large passenger ship safety carried out by COMSAR 7, FP 47, STW 34 and DE 46. MSC 77 endorsed the view that:

- .1 identifying an absence of regulation was not necessarily the same as saying that a regulation needed to be developed; and
- .2 it should not be an automatic reaction to incorporate “industry best practice” into the international regulatory framework, unless a clear benefit, including taking proper account of the principle of ‘added value’, was demonstrated.

MSC 77 had considered the expansion of the work on this work programme item to include a review of the regulatory framework for all current and future passenger ships (regardless of size) and, having noted the large divergence of views on this issue and recognizing that a working group to consider large passenger ship safety matters would not be convened at that session, had agreed to further consider the matter at MSC 78, taking into account the views of the relevant sub-committees.

11.5 The Sub-Committee further noted that MSC 77 had also agreed that the item on “large passenger ship safety” should be included in the agenda for MSC 78 for it to:

- .1 consider any recommendations forwarded from sub-committees assigned work on large passenger ship safety, providing additional guidance, as necessary;
- .2 further consider the issues highlighted in paragraphs 15.3 to 15.7 of document MSC 77/4/3; and
- .3 consider any submissions made on the issue,

and had agreed to re-establish the *ad hoc* Working Group on Large Passenger Ship Safety at MSC 78.

11.6 The Sub-Committee considered the submission by IHO (NAV 49/11), assessing the current status of hydrographic surveying and nautical charting for the safety of navigation in remote areas and making proposals as to how the current situation could be improved.

11.7 The Sub-Committee thanked IHO for the report submitted on the current status of hydrographic surveying and nautical charting for the safety of navigation in remote areas.

11.8 With respect to the observation in that report on the status of chart coverage for the Arctic Russian coast, the delegation of the Russian Federation informed the Sub-Committee that a majority of the all paper charts are published in mercator projection and with reference to the Pulkovo datum. The majority of these charts had been digitized in S-57/3 format but not yet released as official ENC. The observer from IHO thanked the Russian Federation for providing this updated information on the status of nautical charting.

11.9 The Sub-Committee noted the information provided by Norway (NAV 49/INF.2) on step 1 of the Norwegian Formal Safety Assessment (FSA) study on navigation safety of large passenger ships.

11.10 The observer from IMPA invited Norway to also include the Association's participation in the finalization of its Formal Safety Assessment (FSA) study on navigation safety of large passenger ships.

11.11 The delegation of Norway welcomed any comments by IMPA in the finalization of the afore-mentioned study scheduled to be completed by December 2003.

11.12 The Sub-Committee was of the opinion that, in the absence of substantive and detailed proposals or guidance, it was not possible to make progress at this session and agreed to seek an extension of the target completion date to 2004.

11.13 The Sub-Committee further decided to invite IHO to advise NAV 50 on the progress made and any specific actions that needed to be undertaken for the improvement of the surveying, cartographic and navigational coverage of remote areas, to ensure the safety of navigation.

12 MEASURES TO ENHANCE MARITIME SECURITY

Resolution A.917(22)

12.1 The Sub-Committee noted that the second intersessional meeting of the MSC Working Group on Maritime Security (ISWG) (9 to 13 September 2002) had agreed that resolution A.917(22) – Guidelines for the onboard operational use of shipborne Automatic Identification Systems (AIS) should be revised. The ISWG had agreed that the words “or where [security incidents] threats are imminent” should be added to section 21 and requested MSC 76 to instruct NAV 49 to amend the Guidelines accordingly. The ISWG had also agreed that further revision of resolution A.917(22) with respect to requiring masters to report to coastal stations when they deemed it necessary based on their professional judgements to switch off the AIS would be beneficial. The ISWG had invited Member Governments to submit suitable proposals to MSC 76 on this matter which might then be referred to NAV 49 for consideration.

12.2 The Sub-Committee noted that MSC 76 endorsed the ISWG's decision that the Guidelines for the onboard operational use of AIS (resolution A.917(22)) should be amended; and instructed NAV 49 accordingly, authorizing the Sub-Committee to submit the draft amended Guidelines and associated draft Assembly resolution directly to the twenty-third session of the Assembly.

Long-range identification and tracking

12.3 The Sub-Committee recalled that, having noted the ISWG's discussion on the issue of long-range identification and tracking, MSC 76 agreed, in principle, to consider Immarsat-C polling as a system for long-range tracking and identification, subject to further study by the NAV and COMSAR Sub-Committees, which were instructed to proceed accordingly.

12.4 The Sub-Committee also recalled that at COMSAR 7, the relevant drafting group (COMSAR 7/WP.4 and Add.1) had discussed the need for a global tracking scheme including guidelines for interchanging data among Administrations, as appropriate, and that the group was of the opinion that:

- .1 whenever satellite systems were used, IMSO or another appropriate body could be required in order to co-ordinate identification and tracking among land earth stations, as appropriate; and
- .2 IMSO or another appropriate body would be required to report to the Committee on recommended guidelines on the implementation of the long-range ship identification and tracking service.

12.5 The Sub-Committee further recalled that MSC 77 had noted that COMSAR 7:

- .1 was of the opinion that, in order to achieve long-range identification and tracking of ships, the SOLAS Convention should contain relevant requirements and, to this effect, invited Member Governments to submit relevant proposals to COMSAR 8 for consideration; and
- .2 had invited the Committee to consider all policy issues relating to long-range ship identification and tracking, taking into account the draft recommendation on functional requirements given in annex 17 to document COMSAR 7/23; and to instruct NAV 49 to consider the issue further and advise COMSAR 8 accordingly.

12.6 The Sub-Committee noted that MSC 77 endorsed the guidance for long-range tracking and identification of ships, as set out in document MSC 77/WP.15, annex 1. With regard to the proposed new SOLAS regulation XI-2/14 on long-range identification and tracking of ships, MSC 77, recognising that both NAV 49 and COMSAR 8 had yet to finalise their work on the long-range identification and tracking system and to report to MSC 78, agreed that it was premature to approve the incorporation of such a regulation in chapter XI-2 and that it was also from the procedural point of view preferable to make any necessary amendments to the provisions after their entry into force.

12.7 The Sub-Committee also noted that MSC 77 therefore instructed the NAV Sub-Committee to review the modified functional requirements and draft amendment to the SOLAS Convention and submit its comments to COMSAR 8.

12.8 The Sub-Committee considered in general the outcome of MSC 76, COMSAR 7 and MSC 77 and the submissions by WNTI (NAV 49/12) and IALA (NAV 49/12/1).

12.9 The Sub-Committee, after some discussion, agreed to refer the issue of long-range identification and tracking of ships to the Technical Working Group for consideration and comments, as appropriate.

Report of the technical working group

12.10 Having considered the report of the technical working group (NAV 49/WP.4/Add.1), the Sub-Committee took action as summarized hereunder.

12.11 The Sub-Committee observed that, in considering document NAV 49/12 (WNTI), the Working Group was informed by the observer from WNTI that the document had been previously considered by MSC 77 (MSC 77/6/5) and no further action was necessary. MSC 77 had noted the requirement for a ship's master to be able to switch off a long-range identification and tracking device under appropriate circumstances.

12.12 As instructed by the Committee, the Sub-Committee reviewed the draft recommendation on functional requirements for long-range identification and tracking of ships, given in MSC 77/WP.15, annex 1, and was of the opinion that the requirement to enable the system to be switched off should be added to the top level requirements in paragraph 1. The Sub-Committee considered the distance of 100 nm suggested for coastal States to identify and track ships but was of the opinion that a distance of 200 nm was more logical. This distance would better align with coastal responsibilities in UNCLOS for an EEZ. The Sub-Committee further considered the capability for a flag State to be able to advise a ship to switch the system off in cases where the security of the flag State itself could be compromised and this should be reflected in the functional requirements.

12.13 The Sub-Committee considered document NAV 49/12/1 (IALA), describing how different information about a ship could be obtained using terrestrial and satellite communications and an AIS, and agreed that the ability to obtain more detail about a ship might be useful, particularly a port of destination. A long-range identification and tracking system that included an ability of interrogating for further information would therefore be advantageous.

12.14 Taking into account the deliberations made in paragraph 12.11 to 12.13 above, the Sub-Committee revised the draft recommendation on functional requirements for long-range identification and tracking of ships, as given in annex 13, and agreed to submit it to COMSAR 8 for consideration.

12.15 Noting operative paragraph 2 of resolution 3 of the SOLAS Conference, December 2002, by which the Organization was invited to carry out an impact assessment of the proposals to implement the long-range identification and tracking of ships and, if found necessary, develop and adopt appropriate performance standards and guidelines for long-range ship identification and tracking systems, the Sub-Committee was of the opinion that there was a need for this assessment, taking into account that the systems might have the capability for further reporting as highlighted in paragraph 12.13 above.

12.16 The Secretariat was instructed to refer this section of the report (paragraphs 12.11 to 12.15) and the revised recommendation on functional requirements for long-range identification and tracking of ships to a correspondence group established by MSC 77 and being co-ordinated by the United States and to COMSAR 8 for further consideration.

Connection of AIS to the radio station's reserve power source

12.17 The Sub-Committee noted that, recognizing the value of AIS required by new SOLAS chapter V for use in many applications, COMSAR 7 was of the opinion that a connection of additional equipment to the radio station's reserve power source(s) might require changes in SOLAS regulations IV/13.2 and 13.8.

12.18 The Sub-Committee also noted that COMSAR 7 considered a proposal to connect AIS to the radio station's reserve power source and, after considerable discussion, agreed that the matter should be considered further at COMSAR 8, if instructed by the Committee. Therefore, MSC 77 was invited to consider the above proposal and authorize NAV 49 and COMSAR 8 to consider the issue further.

12.19 The Sub-Committee further noted that having considered document MSC 77/10/5 (Germany and the United States), suggesting that AIS be connected to the radio station's reserve power source and taking into account comments made by several delegations, MSC 77 decided that it would be premature to agree to the proposed amendments and instructed COMSAR 8 to

consider document MSC 77/10/5 from the technical point of view and advise MSC 78 accordingly.

12.20 The Sub-Committee observed that no action was required of it by MSC 77 on this issue.

Establishing Maritime Security Drafting Group

12.21 Regarding the other issues, namely the revision of resolution A.917(22) and the draft amendment to the SOLAS Convention, the Sub-Committee, after a preliminary consideration of the issues, established a Drafting 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), to:

- .1 as instructed by MSC 76 (MSC 76/23, paragraph 4.44), revise section 21 of resolution A.917 (22)- Guidelines for the onboard operational use of shipborne Automatic Identification Systems (AIS) (as detailed in document MSC 76/4/1, paragraph 3.131), including the requirement for masters to report to coastal stations when they deemed it necessary, based on their professional judgement, to switch off the AIS, for consideration and approval by Plenary and forwarding directly to A 23;
- .2 consider document MSC 76/6/16 (United States) with respect to the draft amendment to the SOLAS Convention (MSC 77/6/16, annex) and prepare, as appropriate, guidance and recommendations for consideration and approval by Plenary for forwarding to COMSAR 8;
- .3 take into account the role of the human element guidance, as updated at MSC 75 (MSC 75/24, paragraph 15.7), including the Human Element Analysing Process (HEAP), given in MSC/Circ.878/MEPC/Circ.346 in all aspects of the items considered; and
- .4 submit a report to Plenary on Thursday morning.

Report of the Maritime Security drafting group

12.22 Having considered the report of the Maritime Security drafting group (NAV 49/WP.3 and Add.1), the Sub-Committee took action as summarized hereunder.

Review of resolution A.917(22)

12.23 In reviewing section 21 of resolution A.917(22), the Sub-Committee agreed that the master should report to the competent authority concerned, when switching off the AIS, if the ship is operating in a mandatory ship reporting system, unless it would further compromise the safety or security of the ship.

12.24 The amendments to section 21 of resolution A.917(22), as agreed by the Sub-Committee, together with the associated draft Assembly resolution, are set out in annex 14 for submission to the twenty-third session of the Assembly with a view to adoption, as authorized by MSC 77.

Review of proposed SOLAS regulation XI-2/14

12.25 In reviewing the proposed SOLAS regulation XI-2/14 on carriage requirements for long-range identification and tracking of ships, the Sub-Committee, after some discussion, concluded that, rather than attempting to produce a revised draft regulation it should identify issues that needed to be resolved in order for this regulation to be progressed. It was felt that these issues were most appropriately addressed within the Committee, the COMSAR Sub-Committee and its intersessional correspondence group on long-range identification and tracking.

12.26 The Sub-Committee therefore prepared and agreed on the following list of issues for consideration by COMSAR 8 and its relevant correspondence group in the context of the development of a new SOLAS chapter XI-2 carriage requirement for a long-range identification and tracking system:

- .1 Should the proposed regulation include a statement of purpose?
- .2 Should there be a phase-in implementation of the regulation for existing ships? In this respect it is assumed that the regulation will apply to all ships to which chapter XI-2 applies.
- .3 Should ships operating exclusively within AIS range be exempted?
- .4 Should the functional requirements be included in the regulation, and if so which ones?

In this respect it is assumed that the system will be required to comply with the performance standards adopted by the Organization.

- .5 Should a provision relating to the malfunctioning of the system be included?
- .6 Which of the rights and obligations of Contracting Governments with regard to receiving and disseminating long-range identification and tracking information should be included in the regulation?

12.27 The Sub-Committee instructed the Secretariat to submit the above list to COMSAR 8 and its relevant correspondence group for consideration.

12.28 Member Governments and organizations were invited to submit proposals to COMSAR 8 and the correspondence group and MSC 78 expressing their views on these issues, taking into account the desired purpose of the system.

13 WORLD-WIDE RADIONAVIGATION SYSTEM

13.1 The Sub-Committee recalled that, at its forty-eighth session, it considered a proposal by IEC (NAV 48/18/1), proposing that it should investigate the improvements being made to the GPS system to reduce its vulnerability to interference, in view of the September 11th terrorist attacks and an increased awareness of the potential for not only natural and man-made but also deliberate interference to the GPS service. The United States had already scheduled a service update into the GPS programme, in the coming years with, amongst others, the addition of commercial frequencies services on both L2 and L5 in addition to that established on L1; these

would go some way to reducing the foreseen vulnerability to interference of receivers. The IEC thus believed that there were advantages in providing the mariner with the option of having an enhanced performance standard for GPS receivers that employ these extra frequencies to enable improved interference protection and some anti-jamming and anti-spoofing capability. The IEC also saw this enhancement, particularly, as an essential extra aid in those waters and on those ships where an independent position fixing aid was absent or only infrequently available. The enhanced GPS system could also provide more robust supplementary services, such as timing (UTC), that could then be used to advantage in other navigational safety aids such as AIS, which would go some way to mitigate GPS dependency.

13.2 The Sub-Committee also recalled that at its forty-eighth session, it noted that this issue was not on its work programme, and the Committee's agreement was required before starting the amendment procedure. Accordingly, the Sub-Committee had requested IEC to submit a proposal co-sponsored by a Member Government (in accordance with paragraph 14 of MSC/Circ.931-MEPC/Circ.366 on Guidelines on the organization and method of work of the Maritime Safety Committee and the Marine Environment Protection Committee and their subsidiary bodies) to MSC 76.

13.3 The Sub-Committee, like MSC 76 and COMSAR 7 (MSC 76/23, paragraphs 11.39 and 22.3), noted with interest the information provided by the European Commission (MSC 76/INF.4) on the World-Wide Radionavigation System – Galileo services and architecture, including the current baseline of the GALILEO satellite navigation system which MSC 76 had decided to bring to the attention of the COMSAR and NAV Sub-Committees.

13.4 The Sub-Committee considered a submission by the European Commission (NAV 49/13), providing a preliminary assessment of the Galileo navigation service requirements and confirming that analyses performed so far in the GALILEO programme indicated that it met all the requirements for oceanic, coastal, port approach and restricted waters operations as given in the revised resolution A.915(22).

13.5 The Sub-Committee further noted that, in addition, the GALILEO Mission Requirement document was currently being revised and it had been recently decided to add performance requirements directly applicable to the system design. This would further ensure that GALILEO delivers a service fully in line with the expectations of the international maritime community.

13.6 The Sub-Committee, considering a proposal by the United States (NAV 49/13/1), proposing an amendment to the existing GPS performance standard to reduce vulnerability to interference and to provide some anti-jamming and anti-spoofing capability, recognized that an exactly identical proposal had been presented by IEC (NAV 48/18/1) to NAV 48.

13.7 The Sub-Committee noted that this issue was not on its work programme, and the Committee's agreement was required before starting the amendment procedure. Accordingly, the Sub-Committee requested the United States to submit a proposal for a new work programme item (in accordance with paragraph 14 of MSC/Circ.931-MEPC/Circ.366) to MSC 78.

13.8 The Sub-Committee noted with interest the information provided by the Russian Federation (NAV 49/INF.5) on the current status and development plans for the GLONASS system.

14 CASUALTY ANALYSIS

14.1 The Sub-Committee noted that FSI 10 had agreed to the graphical presentation of the interactive process to identify maritime safety and marine pollution problem issues (FSI 10/WP.1, annex 5) and forwarded it to other sub-committees for information purposes.

14.2 The Sub-Committee recalled that, at its forty-eighth session, recognizing that no specific action had been requested of it by FSI 10, it took note of the graphical presentation of the interactive process to identify maritime safety and marine pollution problem issues in NAV 48/2/1, annex.

14.3 The Sub-Committee also noted that FSI 11 (FSI 11/WP.2.) had tasked all Sub-Committee's to co-ordinate with their respective Sub-Committee Chairmen to identify lessons learned about the various casualties as given in annex 2 of FSI 11/WP.2, so that the summary of casualty analyses could be put on the IMO website. The Sub-Committee was informed that this information would be made available on the IMO web-site during July 2003.

14.4 The Sub-Committee observed that, the Secretariat in co-operation with the Chairman had provided the necessary input with respect to collisions and grounding incidents.

15 GUIDANCE ON EARLY ABANDONMENT FOR BULK CARRIERS

15.1 The Sub-Committee noted that MSC 76 (MSC 76/23, paragraph 5.66) considered a proposal to develop an MSC circular urging shipowners to issue guidance to ship's personnel on the possible need for early abandonment of bulk carriers with any single hold flooded, and agreed that a circular should be prepared addressing bulk carriers which may not withstand flooding of any one cargo hold and containing information on the action to be taken in case of flooding of such holds, making sure that the professional judgement of the master is not undermined, for possible display on the bridge. MSC 76 instructed the DE and NAV Sub-Committees to develop an MSC circular to that effect, and also to draw attention to the obligations of shipping companies under the ISM Code and of Administrations under SOLAS regulation II-1/23-1, with the NAV Sub-Committee as co-ordinator.

15.2 The Sub-Committee also noted that MSC 76 agreed to include, in the Sub-Committee's work programme and the provisional agenda for NAV 49, a high priority item on "Guidance on early abandonment of bulk carriers", with a target completion date of 2003, in co-operation with the DE Sub-Committee.

15.3 The Sub-Committee further noted that, having discussed whether the guidelines should address all bulk carriers or only those carrying heavy cargoes, DE 46, acknowledging that the problems associated with rapid sinking due to flooding of a cargo hold were not uncommon in bulk carriers carrying less dense cargoes, such as coal and woodchip, had agreed that the guidelines should apply to all bulk carriers which may not withstand flooding of any one cargo hold, regardless of the density of the cargo carried. DE 46 had also agreed that, the guidelines should be reviewed, not only by the NAV Sub-Committee, but also by the STW Sub-Committee with respect to any necessary training requirements for masters. After debating the issue at some length, DE 46 had agreed to the draft Guidelines on early assessment of hull damage and possible need for abandonment of bulk carriers, together with the associated draft MSC circular (DE 46/32, annex 19), and had referred them to NAV 49 and STW 35 for concurrence prior to approval by MSC 78.

15.4 The Sub-Committee reviewed paragraph 23 of the draft Guidelines on early assessment of hull damage and possible need for abandonment of bulk carriers (NAV 49/2/1, annex) relating to collision.

15.5 There was some discussion on the issue and a majority of the delegations were of the opinion that the Sub-Committee should undertake a general review of the guidelines with respect to seamanship and operational issues and not limit itself to any one specific issue, particularly taking into account that the Sub-Committee has been designated as the co-ordinating Sub-Committee.

15.6 It was agreed that, to consider the matter properly, more time was needed and, since only 6 months delay would result, the Sub-Committee invited the Committee to extend the target completion date for the agenda item "Guidance on early abandonment for bulk carriers" to 2004 (paragraph 16.5.1.2 also refers). Members were invited to consider the draft Guidelines on early assessment of hull damage and possible need for abandonment of bulk carriers, and submit comments and proposals thereon for consideration at NAV 50.

16 WORK PROGRAMME AND AGENDA FOR NAV 50

16.1 The Sub-Committee noted that endorsing a proposal by NAV 48, MSC 76 decided to include, in the Sub-Committee's work programme, the following new subitems under the item on "World-wide radionavigation system (WWRNS)":

- .1 subitem .1 - "New developments in the field of GNSS, especially Galileo", with a target completion date of 2005;
- .2 subitem .2 - "Review and amendment of IMO policy for GNSS (resolution A.915(22))", with a target completion date of 2005; and
- .3 subitem .3 - "Recognition of radionavigation systems as components of the WWRNS (resolution A.815(19))", with a target completion date of 2005.

16.2 The Sub-Committee further noted that MSC 76 considered a proposal by Chile (MSC 76/20/4) calling for the development of guidelines on minimum safety requirements for high-risk ocean voyages by non-conventional adventure craft, involving maritime search and rescue operations using various resources which are of high cost for the country and MRCCs involved, as well as for the ships and aircraft deployed. After consideration of the proposal, the Committee decided to include, in the work programmes of the NAV (co-ordinator) and COMSAR Sub-Committees, a low priority item on "Recommendations on high-risk oceanic crossings by adventure craft", with one session needed to complete the item.

16.3 The Sub-Committee recalled that MSC 76, agreed to include, in the Sub-Committee's work programme and the provisional agenda for NAV 49, a high priority item on "Guidance on early abandonment of bulk carriers", with a target completion date of 2003, in co-operation with the DE Sub-Committee, and assigned the NAV Sub-Committee as the co-ordinating Sub-Committee (see paragraph 15.2).

16.4 The Sub-Committee noted also that MSC 77, following consideration of the proposal by FAO (MSC 77/23/8), stating that the two draft texts of the revised chapter 10 of the fishing vessels Safety Code and revised chapter X of the Voluntary Guidelines contained provisions

which were more stringent than those of the 1993 Torremolinos Protocol and that the number of annexes proposed for inclusion in the revised Safety Code was greatly in excess of those annexes contained in the existing Code and might need further revision, agreed to include, in the Sub-Committee's work programme and in the provisional agenda for NAV 50, a high priority item on "Revision of the fishing vessel Safety Code and Voluntary Guidelines", with a target completion date of 2004, bearing in mind that the SLF Sub-Committee, as the co-ordinating Sub-Committee, should prepare a consolidated text of the draft revised Safety Code and Voluntary Guidelines at its forty-seventh session in September 2004, for submission to MSC 79 (December 2004) for approval.

16.5 Taking into account the progress made at this session, the decisions of MSC 77 and the provisions of the agenda management procedure, the Sub-Committee prepared a revised work programme and a provisional agenda for NAV 50 (NAV 49/WP.2) based on those approved by MSC 77 (NAV 49/2/2, annexes 1 and 2), as set out in annexes 15 and 16 respectively for consideration and approval by the Committee. While reviewing the work programme, the Sub-Committee agreed to invite the Committee to:

- .1 delete the following work programme items, as work on them has been completed.
 - .1.1 item H.2 Feasibility study on carriage of VDR on existing cargo ships; 2003
 - .1.2 item H.4 Places of refuge (in co-operation with COMSAR and MEPC); 2003
 - .1.3 item H.5 Revision of performance standards for radar reflectors; and 2003
- .2 extend the target completion date of the following work programme items:
 - .2.1 item H.3 Large passenger ship safety: effective voyage planning for large passenger ships; 2004
 - .2.2 item H.6 Anchoring, mooring and towing equipment (co-ordinated by DE); 2004
 - .2.3 item H.12 ITU matters, including Radio-communication ITU-R Study Group 8 matters; and 2006
 - .2.4 item H.13 Guidance on early abandonment of bulk carriers (in co-operation with DE). 2004

Draft updated Terms of Reference of the Sub-Committee

16.6 The Sub-Committee noted that MSC 76 (MSC 76/23, paragraph 19.6), having considered the Chairmen's Meeting recommendation that the sub-committees should be requested to review and update, as necessary, their own terms of reference, the Committee instructed the sub-committees to consider the matter under the agenda item on "Work programme" and to prepare updated terms of reference for consideration by MSC 78 and MEPC 50.

16.7 The Sub-Committee reviewed the draft updated terms of reference of the Sub-Committee, given in annex 17, as prepared by the Chairman, in co-operation with the Secretariat, as instructed by MSC 76 (MSC 76/23 paragraph 19.6) and forwarded it to the Committee for its consideration and approval.

Arrangements for the next session

16.8 The Sub-Committee anticipated that Working Groups on the following subjects might be established at NAV 50:

- .1 Ships' Routing;
- .2 Technical matters; and
- .3 Maritime Security.

Date of the next session

16.9 The Sub-Committee noted that the fiftieth session of the Sub-Committee has been tentatively scheduled to be held from 5 to 9 July 2004.

17 ELECTION OF CHAIRMAN AND VICE-CHAIRMAN FOR 2004

17.1 In accordance with rule 16 of the Rules of Procedure of the Maritime Safety Committee, the Sub-Committee unanimously re-elected Mr. K. Polderman (the Netherlands) as Chairman and Dr. V.I. Peresytkin (Russian Federation) as Vice-Chairman for 2004.

18 ANY OTHER BUSINESS

Review of AIS binary messages

18.1 The Sub-Committee noted that, at its forty-eighth session, the Technical Working Group had considered documents (MSC 75/6/3 and NAV 48/INF.7) by Germany concerning procedures for introducing and maintaining AIS binary messages and pointed out that "Binary Messages" were pre-defined information packages which enable ship-to-ship and shore-to-ship exchange of standard messages such as pilot request, current water level, etc. They were distinguished by a discrete number known as an "Application Identifier". The Working Group had noted that, in accordance with the provisions of Recommendation ITU-R M. 1371, IALA had responsibility for maintaining and publishing a record of the International Application Identifiers (IAIs).

18.2 The Sub-Committee recalled that Germany (MSC 75/6/3) had proposed that NAV 48 should assess and approve the introduction and deletion of IAIs and that IMO should maintain an up-to-date data base of the IAIs in use and make it available to all parties involved such as planners, developers, providers and consumers of AIS information. In the course of discussions certain problems were noted particularly that:

- .1 not all current AIS equipment was capable of displaying the binary messages;
- .2 there was currently a proposed list of 60-80 IAIs to assess in order to accept 20-30 and this work was needed to be done urgently, thereafter 3-5 IAIs a year were expected;

- .3 there might be significant practical problems in updating software in shipborne AIS installations as the list of IAIs changed;
- .4 the exercise might require a permanent agenda item for the Sub-Committee's work programme; and
- .5 there might be financial implications for the Organization which had not been assessed.

18.3 The Sub-Committee also recalled that NAV 48 had concurred with the Working Group's view that when selecting the IAIs, the focus should be on ship-to-ship and safety-related messages and it should be ensured that the VDL link would not be overloaded. NAV 48, referring to the Committee's decision on this issue (NAV 48/19, paragraph 18.62) and taking into account the Group's deliberations above, agreed on the development of an MSC Circular, confirming IMO's responsibility for the development, maintenance and administration of these messages and instructed the Secretariat to prepare an appropriate draft MSC Circular to this effect for consideration and approval by MSC 76 in accordance with document MSC 75/6/3. The draft MSC circular on Maintenance and administration of AIS binary messages was prepared by the Secretariat in consultation with the Chairman of the Sub-Committee (NAV 48/19, annex 22).

18.4 The Sub-Committee further recalled that NAV 48, noting that the responsibility for the maintenance of the binary messages was currently with IALA and needed to be officially transferred to IMO and the need to carefully consider and develop administrative and other procedures which should apply, invited Members, Governments and IALA in the interim to make an inventory of all binary messages and advise NAV 49 accordingly. Members were invited to also consider the administrative and financial implications and submit relevant comments/proposals to NAV 49 for its consideration and further advice to the Committee.

18.5 The Sub-Committee also recalled that at NAV 48, the observer from IALA had confirmed that the Association was ready to hand over the responsibility to IMO, and during the interim period it would continue to develop the AIS messages and would inform IMO accordingly.

18.6 The Sub-Committee observed that MSC 76 had approved MSC/Circ.1062 on Maintenance and Administration of AIS Binary Messages.

18.7 The Sub-Committee considered in general the outcome of MSC 75, NAV 48 and MSC 76 and the submissions by IALA (NAV 49/18), Germany (NAV 49/18/1 and NAV 49/18/3) and Finland and Sweden (NAV 49/18/2).

Establishment of a Drafting Group

18.8 After consideration of the issue, the Sub-Committee established a Drafting Group to consider the documents NAV 49/18 (IALA), NAV 49/18/1, NAV 49/18/3, MSC 75/6/3 and NAV 48/INF.7 (Germany) and NAV 49/18/2 (Finland and Sweden), taking into account all decisions of Plenary, and:

- .1 develop draft guidance on the concept and functional requirements for the use of AIS binary messages;
- .2 select and develop a list of most important applications of AIS "Binary Messages" including "function identifiers" and "Function Message" definitions;

- .3 take into account the role of the human element guidance as updated at MSC 75 (MSC 75/24, paragraph 15.7) including the Human Element Analysing Process (HEAP) given in MSC/Circ.878/MEPC/Circ.346 in all aspects of the items considered; and
- .4 submit a report to Plenary on Thursday morning.

Report of the Drafting Group

18.9 Having considered the report of the Drafting Group (NAV 49/WP.6), the Sub-Committee:

- .1 noted the information and guidance provided;
- .2 agreed to the draft SN circular on Guidance on application of the AIS Binary Messages as set out in annex 18 and submitted it to MSC 78 for approval; and
- .3 noted that some of the recommended AIS binary messages may directly impact shore-side interest (e.g. VTS and aids to navigation and display aspects) and agreed with the Drafting Group's recommendation that this information be made available to IALA and IEC.

18.10 The Committee was invited to note the information provided and approve the draft SN circular given at annex 18.

Safety measures for ships navigating in narrow waterways and/or areas of dense traffic

18.11 The Sub-Committee recalled that, at its forty-seventh session (NAV 47/13, paragraph 12.14), it had considered *measure 17* of the report on Oil-tanker safety – Post-**Erika** discussion, and after being informed by the observer from IALA on the current work undertaken by the Association on operational procedures, risk analysis, pilotage, VTS and AIS issues for confined waterways, expressed the opinion that the outcome of IALA's work could form the basis for some future work, and invited it to keep the Sub-Committee informed of the work.

18.12 The Sub-Committee noted with interest the information provided by IALA (NAV 49/INF.6) on Safety measures for ships navigating in narrow waterways and/or areas of dense traffic.

IMO/IALA Seminar on Automatic Identification Systems

18.13 The Sub-Committee noted the information provided by the Secretariat (NAV 49/INF.7) on the IMO/IALA Seminar on Automatic Identification Systems, held at IMO Headquarters, London, on the 15th and 16th July 2002 following NAV 48. The objective of the Seminar was to provide potential users of the AIS system with a wider understanding of its capabilities including its limitations. The Seminar was also intended to provide information on the system to encourage VTS Centres, Aids to Navigation Authorities and other appropriate shore authorities to fit AIS equipment.

18.14 The observer from IALA expressed appreciation to IMO for the co-operation in organizing the joint AIS seminar.

Developments of new instruments or amendments to existing ones and co-ordination within the United Nations System with regards to the updating of the study on the Implications of the United Nations Convention on the Law of the Sea for IMO

18.15 The Sub-Committee noted that MSC 76 noted that, in considering document C 89/12/3 (Cyprus, Philippines and ICFTU), C 89 had instructed the Committees and through them, their subsidiary bodies, when developing new instruments or amendments to existing ones, to ensure that these are compatible, and not in conflict, with other instruments or international law and that they should not be interpreted or used in a way that conflicts with such instruments, in particular, those addressing human rights. MSC 76 instructed the Secretariat to inform the sub-committees of the Council's decision and to remind the Committee and sub-committees of this decision as and when necessary.

18.16 The Sub-Committee further noted that MSC 76 was also advised that C 89 had noted the information provided in documents C 89/23(b)/Add.1 and C 88/21(b)/Add.1 and, with regard to the up-dating of the study on the Implications of the United Nations Convention on the Law of the Sea for IMO, recommended to the various organs and bodies of the Organization to keep it in mind as a reference document in the context of their work.

18.17 The Sub-Committee took note of the information detailed above for future guidance in its work, as appropriate.

Advice on the conditions and circumstances upon which a decision may be made to maintain a continuous navigational watch at anchor

18.18 The Sub-Committee noted that, STW 33 had agreed that the requirement in section A-VIII of the STCW Code might contain some inconsistencies with respect to watchkeeping requirements at anchor and, following initial consideration by a working group, had agreed that this issue needed further consideration and had invited Members to submit comments and proposals to STW 34. The consideration of factors to be taken into account when establishing watchkeeping arrangements was considered by STW 34 to be an operational issue.

18.19 The Sub-Committee also noted that STW 34 had agreed to invite the NAV Sub-Committee to provide advice on the conditions and circumstances upon which a decision may be made to maintain a continuous navigational watch at anchor to enable STW 35 to develop appropriate guidance to masters and invited the Committee to instruct NAV 49 accordingly, which MSC 77 did.

18.20 The Sub-Committee agreed, in general, to refer the issue to its Ships' Routeing Working Group for consideration and action, as appropriate.

Report of the Ships' Routeing Working Group

18.21 Having received the Ships' Routeing Working Group's report (NAV 49/WP.1), the Sub-Committee took action as summarized hereunder.

Navigational watch at anchor

18.22 The Sub-Committee considered the request of STW 34 to provide advice on the conditions and circumstances upon which a decision may be made to maintain a continuous watch at anchor and developed a note for STW 35 given at annex 19 and instructed the Secretariat to forward it to STW 35.

Revision of resolution A.532(13) on Collecting and forwarding of hydrographic data

18.23 The Sub-Committee noted that MSC 77 considered document MSC 77/23/5, wherein IHO had proposed the revision of resolution A.532(13) on Collecting and forwarding of hydrographic data, to reflect the new requirements of the revised SOLAS chapter V regarding hydrographic services providing also a draft Assembly resolution on Provision of hydrographic services (see annex to document MSC 77/23/5). Following consideration of the proposal, MSC 77 approved, in principle, the aforementioned draft Assembly resolution, instructed NAV 49 to prepare a final draft text thereof and authorized the Sub-Committee to submit it directly to the twenty-third session of Assembly for adoption.

18.24 The Sub-Committee established an *ad hoc* Drafting Group to prepare a final draft text of the proposed Assembly resolution on Collecting and forwarding of hydrographic data.

18.25 The Sub-Committee, having considered the report of the *ad hoc* Drafting Group (NAV 49/WP.8), agreed a final revised draft text of the proposed Assembly resolution on Collecting and forwarding of hydrographic data for submission directly to the twenty-third session of Assembly for adoption, as authorized by MSC 77 and given in annex 20.

Review of paragraph 3.13 of Section H (IMO Publication “Ships’ Routeing) regarding the General Provisions on Ships’ Routeing concerning the adoption, designation and substitution of Archipelagic Sea Lanes

18.26 The Sub-Committee noted that MSC 77 recalled that the delegation of Indonesia had informed MSC 76 that the partial system of archipelagic sea lanes in Indonesian archipelagic waters, disseminated by SN/Circ.200, would be implemented effective on 28 December 2002 at 0000 hours local time as a result of the promulgation, on 28 June 2002, by the Indonesian Government of Regulation No. 37 of 2002 concerning the “Rights and Obligations of Foreign Ships and Aircraft in Conducting the Rights of Archipelagic Sea Lanes Passage,” clarifying the designation of the archipelagic sea lanes in Indonesian archipelagic waters. The delegation of Indonesia had undertaken to provide the English version of Government Regulation No. 37, 2002, to the Secretariat at the earliest convenience for circulation to Member Governments (MSC 76/23, paragraph 11.41).

18.27 The Sub-Committee further noted that MSC 77 considered a proposal by the United States (MSC 77/25/7), stating that in their opinion Indonesia had not properly designated the aforementioned sea lanes, as required by the IMO Guidelines and international law (as reflected in the United Nations Law of the Sea Convention), advising that it would continue to exercise its right of archipelagic sea lanes passage through all routes normally used for international navigation.

18.28 The Sub-Committee also noted that the delegation of Indonesia informed MSC 77 that with reference to the United States proposal, it wished to confirm that the nature of designation of the Indonesian Archipelagic Sea Lanes Passage (ASLP) was a partial one. This fact had been confirmed on various occasions of the Committee’s meetings. Article 3, paragraph 2 of the Indonesian Government regulation of 37/2002 had clearly emphasised this understanding by keeping open the possibility of designating other sea lanes in Indonesian archipelagic waters for the purpose of such transit in the future.

The reason for this was due to the responsibility of the archipelagic State to ensure the safety of navigation transiting Indonesian waters. In this regard, Indonesia needed to complete preliminary technical studies, amongst other hydrographical surveys, simultaneously conducting consultation with the competent international organisation in the field; a similar process was undertaken during the first phase of designation of three archipelagic sea lanes. Noting this situation, Government Regulation 37/2002 further guaranteed that the designation of the Indonesian ASLP did not derogate the exercise of the right of innocent passage through Indonesian waters. Nor did it prohibit foreign ships transiting in innocent passage within the Indonesian ASLP.

With respect to the coming into effect of the adopted archipelagic sea lanes, the Indonesian delegation was fully aware of the requirement in paragraph 3.13, Section H (IMO publication "Ships Routeing") regarding General Provisions of Ships' Routeing concerning the adoption, designation and substitution of archipelagic sea lanes and indicated that the Government regulation would be submitted at the earliest convenience.

18.29 The Sub-Committee also recalled that the delegation of Australia informed MSC 77 that Australia was seeking reaffirmation of the continuing jurisdiction of IMO in this regard and also of the relevant provisions of the General Provisions on Ships' Routeing. Australia therefore sought an affirmation from the Committee in its report as to what exactly was meant by a "partial designation" and also confirmation that IMO retained jurisdiction of this issue, while it remained a partial designation and until all normal routes, including yet to be identified East/West routes were covered by ASL in accordance with the relevant parts of the General Provisions on Ships' Routeing (resolution A.572(14), as amended).

18.30 The Sub-Committee further recalled that after some discussion on the issue and recognizing that there were different interpretations of paragraph 3.13 of Section H (IMO publication "Ships Routeing") regarding the General Provisions on Ships' Routeing concerning the adoption, designation and substitution of archipelagic sea lanes, MSC 77 agreed to seek clarification, from the NAV Sub-Committee, of the said provision and instructed it to consider the matter further and report the outcome to MSC 78. MSC 77 invited the delegation of Indonesia to submit to NAV 49 the English version of Government Regulation No. 37, Year 2002, as stated in paragraph 11.41 of the MSC 76 report (MSC 76/23).

18.31 The Sub-Committee also noted that MSC 77 reconfirmed the provisions of Part H (adoption, designation and substitution of archipelagic sea lanes) of the General Provisions on Ships Routeing adopted by resolution MSC.71(69), particularly those related to partial archipelagic sea lanes.

18.32 The Sub-Committee further noted that Indonesia had submitted to the Organization on 27 June 2003, the English version of Government Regulation No. 37, dated 28 June 2002 (MSC 76/23, paragraph 11.41 and SN/Circ.200 refers) on the Rights and Obligations of Foreign Ships and Aircraft Exercising the Right of Archipelagic Sea Lanes Passage through designated archipelagic sea lanes with respect to the designation of a partial system of archipelagic sea lanes in Indonesian archipelagic waters. The Sub-Committee was informed that the Secretariat had accordingly issued SN/Circ.200/Add.1 to bring this information to the attention of Member Governments.

18.33 The Sub-Committee referred this subitem to the Ships' Routeing Working Group for consideration and comments, as appropriate.

Report of the Ships' Routeing Working Group

18.34 Having received the Ships' Routeing Working Group's report (NAV 49/WP.1), the Sub-Committee took action as summarized hereunder.

Interpretation of the General Provisions on Ships' Routeing concerning the adoption, designation and substitution of archipelagic sea lanes (paragraph 3.13 of Section H (IMO publication "Ships' Routeing))

18.35 As instructed by the Committee, the Sub-Committee considered paragraph 3.13 of the General Provisions on Ships' Routeing concerning the adoption, designation and substitution of archipelagic sea lanes. The Sub-Committee was of the opinion that the current text of paragraph 3.13 should be improved to achieve better clarity and to remove ambiguity and developed an amended text for paragraph 3.13 and the associated draft MSC resolution given at annex 21, which the Committee is invited to adopt.

IACS standard for bridge design, equipment and arrangements

18.36 The Sub-Committee was informed that MSC 77 noted that IACS (MSC 77/INF.16), having referred to SOLAS regulation V/15 on Principles relating to bridge design and arrangements of navigational systems and equipment and bridge procedures, which had established goal-setting objectives for effective and safe work to be considered when designing and arranging the ship control centre, expressed the opinion that, while the industry was not certain as to what procedures should be followed to demonstrate compliance with the said regulation, there were no mandatory requirements for recognized organizations to review arrangements to determine that the aforementioned goals had been addressed in designing and arranging the bridge and its equipment. Therefore, IACS informed the Committee that, being of the opinion that there was a need for mandatory provisions to standardize bridge arrangements, they were currently developing a standard for bridge design, equipment and arrangements for compliance with SOLAS regulation V/15 and intended to submit, in due course, the standard to the Committee for consideration. Subsequently, MSC 77 noted the information provided and referred document MSC 77/INF.16 to NAV 49 for information.

18.37 The Sub-Committee noted with interest the information provided by IACS (MSC 77/INF.16) on standards for bridge design, equipment and arrangements.

18.38 The Sub-Committee recognized the important role of IACS and its technical expertise and expressed its appreciation.

EXPRESSIONS OF APPRECIATION

18.39 The Sub-Committee expressed its deep appreciation to Captain J.N.F. Lameijer (the Netherlands) for his outstanding contribution to the safety of navigation in his capacity as the Chairman of the Ships' Routeing Working Group for many years and wished him well in his future activities and a long, happy and healthy retirement.

18.40 The Sub-Committee further expressed appreciation to the following delegates and observers and members of the Secretariat, 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:

- Ms. U. Moetzel (Germany) (on transfer);
- Captain J. Neubert (Germany) (on retirement);
- Mr. O. Allard (Panama) (on return home);
- Mr. Gilberto G.B. Asuque (Philippines) (on return home); and
- Captain S. Miguel (Venezuela) (on return home).

19 ACTION REQUESTED OF THE COMMITTEE

19.1 The Committee, at its seventy-eighth session, is invited to:

- .1 adopt, in accordance with resolution A.858(20):
 - .1 the proposed new traffic separation scheme, including associated routing measures "Off Ra's al kuh" (paragraph 3.19 and annex 2*);
 - .2 the proposed new traffic separation scheme for the "Approaches to the Port of Ra's al Khafji" (paragraph 3.20 and annex 2);
 - .3 the proposed new traffic separation schemes and associated routing measures "In the Adriatic Sea" (paragraphs 3.21 and 3.30 and annex 2);
 - .4 the proposed amendments to the existing traffic separation scheme "Between Korsoer and Sprogoe" (paragraph 3.23 and annex 2);
 - .5 the proposed amendment to the existing traffic separation scheme "In the Singapore Strait" (paragraph 3.24 and annex 2);
 - .6 the proposed new mandatory area to be avoided off the northeast coast of New Zealand (paragraph 3.26 and annex 3);
 - .7 the proposed new two-way route in the Great North east channel of the Torres Strait, off the north east coast of Australia (paragraph 3.29 and annex 3);
 - .8 the proposed area to be avoided in the Paracas national reserve (paragraph 3.32 and annex 3);
 - .9 the proposed amendments to the existing mandatory ship reporting system "In the Torres Strait and Inner Route of the Great Barrier Reef", off the north east coast of Australia (to be implemented as from 1 December 2004) (paragraph 3.36 and annex 4);
 - .10 the proposed amendments to the existing mandatory ship reporting system "Off Cape Finisterre" (to be implemented as from 1 December 2004) (paragraph 3.37 and annex 5);
- .2 note that, as instructed by MSC 77, the draft Assembly resolution on the amended traffic separation scheme "Off Finisterre" was forwarded directly to A 23 for adoption (paragraphs 3.22 and annex 2);

* All references are to paragraphs of, and annexes to, the report of NAV 49 (NAV 49/19)
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- .3 note that, as instructed by MSC 77, the draft Guidelines on places of refuge for ships in need of assistance together with the associated draft Assembly resolution, as well as the draft Assembly resolution on the establishment of Maritime Assistance Services (MAS), were forwarded directly to A 23 for adoption (paragraph 5.24.3 and annexes 6 and 7);
- .4 note the outcome of the report on a feasibility study on mandatory carriage of VDRs on existing cargo ships (paragraph 7.21.1, annex 8);
- .5 consider and approve the proposed draft amendments to regulation V/20 and to the Record of Equipment for the Cargo Ship Safety Equipment Certificate (Form E) of the 1974 SOLAS Convention with a view to consideration by MSC 79 for adoption (paragraphs 7.21.2 and 7.23, annex 9);
- .6 consider and adopt subject to comments by COMSAR 8 and in accordance with resolution A.886(21), the proposed draft MSC resolution on Performance Standards for shipborne simplified voyage data recorders (S-VDRs) (paragraph 7.21.3 and annex 10);
- .7 consider and approve proposed draft amendments to the Record of Equipment for the Cargo Ship Safety Equipment Certificate (Form E) for the 1988 SOLAS Protocol with a view for submission to MSC 79 for adoption (paragraphs 7.22 and 7.23, annex 11);
- .8 adopt, in accordance with resolution A.886(21), the proposed draft MSC resolution on Revised Performance Standards for radar reflectors (paragraph 8.6 and annex 12);
- .9 note that, as instructed by MSC 77, the draft amendments to resolution A.917(22) - Guidelines for the onboard operational use of shipborne Automatic Identification Systems (AIS) along with the associated draft Assembly resolution were forwarded directly to A 23 for adoption (paragraph 12.24 and annex 14)
- .10 approve the draft SN circular on Guidance on the application of AIS binary messages (paragraph 18.10 and annex 18);
- .11 note that, as instructed by MSC 77, the draft Assembly resolution on Provision of hydrographic services was forwarded directly to A 23 for adoption (paragraph 18.25 and annex 20)
- .12 adopt, in accordance with resolution A.572(14), as amended, the proposed draft MSC resolution on Adoption of amendments to the General Provisions on Ships' Routeing (paragraph 18.35 and annex 21); and
- .13 approve the report in general.

19.2 In reviewing the work programme of the Sub-Committee, the Committee is invited to consider the revised work programme suggested by the Sub-Committee (annex 15) in general and, in particular, to:

- .1 delete "Feasibility study on carriage of VDR on existing cargo ships" as the task has been completed (paragraph 7.24);
- .2 delete "Places of refuge" as the task has been completed (paragraph 5.25);
- .3 delete "Revision of performance standards for radar reflectors" as the task has been completed (paragraph 8.8);
- .4 extend the target completion date of the following work programme items, namely
 - .1 "Large passenger ship safety: effective voyage planning for large passenger ships" with a target completion date of 2004 (paragraph 11.12);
 - .2 "Anchoring, mooring and towing equipment" with a target completion date of 2004 (paragraph 6.11);
 - .3 "ITU matters, including Radio-communication ITU-R Study Group 8 matters" with a target completion date of 2006 (paragraph 10.8); and
 - .4 "Guidance on early abandonment of bulk carriers" with a target completion date of 2004 (paragraph 15.6).

19.3 The Committee is also invited to approve the proposed agenda for the Sub-Committee's fiftieth session (annex 16), which has been developed using the agenda management procedure.

19.4 The Committee is also invited to consider and approve the draft updated terms of reference of the Sub-Committee as prepared by the Chairman and the Secretariat (paragraph 16.7, annex 17).

ANNEX 1

**AGENDA FOR THE FORTY-NINTH SESSION INCLUDING
A LIST OF DOCUMENTS**

1 Adoption of the agenda

NAV 49/1	Secretariat
NAV 49/1/1	Secretariat

2 Decisions of other IMO bodies

NAV 49/2	Secretariat
NAV 49/2/1	Secretariat
NAV 49/2/2	Secretariat
NAV 49/2/3	Secretariat

3 Routeing of ships, ship reporting and related matters

NAV 49/3	New Zealand
NAV 49/3/1 and Corr.1	Iran, Islamic Republic of
NAV 49/3/2	Spain
NAV 49/3/3	Australia
NAV 49/3/4	Saudi Arabia
NAV 49/3/5	Australia
NAV 49/3/6	Spain
NAV 49/3/7	Albania, Croatia, Italy, Slovenia and Serbia and Montenegro
NAV 49/3/8 and Corr.1	Denmark
NAV 49/3/9 and Corr.1	Indonesia, Malaysia and Singapore
MSC 77/25/1	Spain
MEPC 48/7	Peru
NAV 49/INF.4	Australia
NAV 49/WP.1	Report of the Ships' Routeing Working Group

4 Requirements for the display and use of AIS information on shipborne navigational displays

NAV 49/4	IEC
NAV 49/4/1	IEC
NAV 49/4/2	United States
NAV 49/WP.4/Add.1	Report of the Technical Working Group

5 Places of Refuge

NAV 49/5	Australia
NAV 49/5/1	Spain
LEG 86/8/1, annex	Secretariat
MSC 77/8/1	Secretariat
MSC 77/8/4	France
MSC 77/8/5*	Spain
MSC 77/8/6*	Spain
MSC 77/8/11	United Kingdom
MSC 77/2/1	Secretariat
NAV 49/WP.5	Report of the Drafting Group on Places of Refuge

6 Anchoring, mowing and towing equipment

NAV 49/6	IMPA & OCIMF
NAV 49/INF.3	IHMA & IAPH

7 Feasibility study on carriage of VDR on existing cargo ships

NAV 49/7	Germany
NAV 49/7/1	Japan
NAV 49/7/2	United Kingdom
NAV 49/7/3	Germany and the Netherlands
NAV 49/INF.8	Japan
NAV 49/INF.9	United States
NAV 49/WP.4	Report of the Technical Working Group

8 Revision of performance standards for radar reflectors

NAV 49/8	Chairman, TWG
NAV 49/8/1	Germany and United Kingdom
NAV 49/WP.4 and Add.1	Report of the Technical Working Group

9 Review of performance standards for radar equipment

NAV 49/9	Germany, Norway and the United Kingdom
NAV 49/WP.4 and Add.1	Report of the Technical Working Group

10 ITU matters, including Radiocommunication ITU-R Study Group 8 matters

NAV 49/10	Secretariat
NAV 49/WP.4 and Add.1	Report of the Technical Working Group

11 Large passenger ship safety: Effective voyage planning for large passenger ships

NAV 49/11	IHO
NAV 49/INF.2	Norway

* To only consider sections specified in paragraphs 8.27.2 and 8.27.3 of the report of MSC 77 (MSC 77/26)
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12 Measures to enhance maritime security

NAV 49/12	WNTI
NAV 49/12/1	IALA
MSC 77/6/16	United States
NAV 49/WP.3 and Add.1	Report of the Drafting Group on Measures to Enhance Maritime Security
NAV 49/WP.4/Add.1	Report of the Technical Working Group

13 World-wide radionavigation system

NAV 49/13	European Commission
NAV 49/13/1	United States
NAV 49/INF.5	Russian Federation
MSC 76/INF.4	European Commission

14 Casualty analysis

(no documents submitted)

15 Guidance on early abandonment for bulk carriers

DE 46/32, annex 19	Report of DE 46
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16 Work Programme and Agenda for NAV 50

NAV 49/WP.2	Draft revised work programme and provisional draft agenda for NAV 50 including revised terms of reference of the Sub-Committee
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17 Election of Chairman and Vice Chairman for 2004

(no documents submitted)

18 Any other business

NAV 49/18	IALA
NAV 49/18/1	Germany
NAV 49/18/2	Finland and Sweden
NAV 49/18/3	Germany
MSC 75/6/3	Germany
MSC 77/23/5	IHO
NAV 49/INF.6	IALA
NAV 49/INF.7	Secretariat
NAV 48/INF.7	Germany
MSC 77/INF.16	IACS
NAV 49/WP.1	Report of the Ships' Routing Working Group
NAV 49/WP.6	Report of the Drafting Group on Review of AIS Binary Messages
NAV 49/WP.8	Report of the <i>ad hoc</i> Drafting Group on Revision of resolution A.532(13)

19 Report to the Maritime Safety Committee

NAV 49/WP.7 and Add.1

Draft report to the Maritime Safety Committee

ANNEX 2

NEW AND AMENDED TRAFFIC SEPARATION SCHEMES

NEW TRAFFIC SEPARATION SCHEME OFF RA'S AL KUH

(Reference chart: British Admiralty Chart No: 2851

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

The new traffic separation scheme (TSS) off Ra's al Kuh consists of:

- Two traffic lanes 2 miles wide;
- One intermediate traffic separation zone 2 miles wide;
- One associated inshore zone.

The direction of the navigation is:

- TSS inner traffic lane: 320°(T) inbound course and 330°(T) outbound course towards the Strait of Hormuz; and
- TSS outer traffic lane: 150°(T) inbound and 140°(T) outbound course towards the Gulf of Oman.

Description of the new traffic separation scheme off Ra's al Kuh:

(a) Outer traffic separation line bounded by a line connecting the following geographical positions:

- (1) 25° 45'.50 N - 057° 03'.30 E
- (2) 25° 39'.60 N - 057° 07'.10 E
- (3) 25° 34'.05 N - 057° 12'.00 E

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

- (4) 25° 47'.50 N - 057° 07'.20 E
- (5) 25° 42'.25 N - 057° 10'.55 E
- (6) 25° 36'.65 N - 057° 15'.55 E
- (7) 25° 35'.30 N - 057° 13'.80 E
- (8) 25° 40'.90 N - 057° 08'.80 E
- (9) 25° 46'.50 N - 057° 05'.30 E

(c) The limits of the inshore traffic zone along the coastline lies between the following geographical positions:

- (10) 25° 48'.45 N - 057° 09'.15 E
- (11) 25° 43'.55 N - 057° 12'.25 E
- (12) 25° 39'.30 N - 057° 19'.10 E
- (13) 25° 52'.50 N - 057° 17'.30 E
- (14) 25° 45'.30 N - 057° 26'.70 E

- (d) An outer traffic lane for south-east-bound shipping established between the separation zones described in (a) and (b).
- (e) An inner traffic lane for north-west-bound shipping established between the traffic separation zone described in (b) and the associated inshore traffic zone described in (c).

NEW TRAFFIC SEPARATION SCHEME FOR THE APPROACHES TO THE PORT OF RA'S AL KHAFJI

(Reference chart: British Admiralty Chart No: 3774 published June 1999

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

The new traffic separation scheme for the Ra's Al Khafji approaches will consist of:

Two traffic lanes and one traffic separation zone between them.

The direction of navigation will be:

- inbound traffic lane, 270°(T) from the seaward limit of the scheme to the turning point 5 miles NNW of the Umm al Gharabi shoal, thence 210°(T) to the southern limit of the scheme immediately north of the tanker anchorage;
- outbound traffic lane, 030°(T) as far as the turning point 3.5 miles NNW of the Umm al Gharabi shoal, thence between 090°(T) and 093°(T) to the seaward limit of the scheme.

Description of the new traffic separation scheme for Ra's Al Khafji approaches:

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

(1)	28° 38' 24"N	49° 07' 00"E
(2)	28° 38' 24"N	48° 45' 50"E
(3)	28° 30' 18"N	48° 40' 40"E
(4)	28° 30' 04"N	48° 41' 07"E
(5)	28° 38' 12"N	48° 46' 18"E
(6)	28° 38' 12"N	49° 07' 00"E

- (b) A traffic lane for inbound traffic between the separation zone and the following geographical positions:

(7)	28° 39' 24"N	49° 07' 00"E
(8)	28° 39' 24"N	48° 45' 02"E
(9)	28° 30' 49"N	48° 39' 35"E

- (c) A traffic lane for outbound traffic between the separation zone and the following geographical positions:

(10)	28° 29' 36"N	48° 42' 03"E
(11)	28° 37' 10"N	48° 46' 54"E
(12)	28° 36' 06"N	49° 07' 00"E

NEW TRAFFIC SEPARATION SCHEMES IN THE ADRIATIC SEA

IN THE NORTH ADRIATIC SEA – EASTERN PART

Reference chart: No. 435 of the Italian Navy Hydrographical Institute, Edition 1993, Datum ED-50, and No. 101 of the Hydrographical Institute of the Republic of Croatia, Edition 1998, Datum Hermanskögel, Bessel Elipsoid.

The co-ordinates listed below are in WGS 84.

Description of the traffic separation scheme

4. A separation zone is bounded by a line connecting the following geographical positions:

(4a) 44° 05'.90 N 014° 03'.97 E (4c) 44° 55'.30 N 013° 21'.17 E
(4b) 44° 06'.70 N 014° 05'.77 E (4d) 44° 54'.80 N 013° 19'.57 E

5. A traffic lane for northbound traffic is established between the separation zone and a line connecting the following geographical positions:

(5a) 44° 08'.20N 014° 08'.77 E (5b) 44°56'.90 N 013° 24'.67 E

6. A traffic lane for southbound traffic is established between the separation zone and a line connecting the following geographical positions:

(6a) 44° 04'.40 N 014° 00'.97 E (6b) 44° 53'.20 N 013° 16'. 17 E

The established directions of traffic flow are: 327°-147°

IN THE NORTH ADRIATIC SEA – WESTERN PART

Reference chart: No. 435 of the Italian Navy Hydrographical Institute, Edition 1993, Datum ED-50, and No. 101 of the Hydrographical Institute of the Republic of Croatia, Edition 1998, Datum Hermanskögel, Bessel Elipsoid

The co-ordinates listed below are in WGS 84.

Description of the traffic separation scheme

8. A separation zone is bounded by a line connecting the following geographical positions:

(8a) 43° 58'.30 N 013° 52'.47 E (8d) 44° 44'.50 N 012° 55'.67 E
(8b) 44° 00'.80 N 013° 54'.97 E (8e) 44° 43'.80 N 012° 53'.50 E
(8c) 44° 28'.00 N 013° 06'.77 E (8f) 44° 26'.0 N 013° 03'.47 E

9. A traffic lane for northbound traffic is established between the separation zone and a line connecting the following geographical positions:

(9a) 44° 02'.80 N 013° 57'.37 E (9c) 44° 45'.40N 012° 59'.40 E
(9b) 44° 30'.50 N 013° 08'.47 E

10. A traffic lane for southbound traffic is established between the separation zone and a line connecting the following geographical positions:

(10a) 43° 55'.80 N 013° 49'.97 E (10c) 44° 43'.10 N 012° 50'.20 E
(10b) 44° 23'.50 N 013° 00'.97 E

The established directions of traffic flow are: 308° - 128°
336° - 159°

PRECAUTIONARY AREA AT THE SOUTHERN LIMITS OF THE TRAFFIC SEPARATION SCHEME

Description of the precautionary area

Precautionary area is established by a line connecting the following geographical position:

(3) 43° 49'.65 N 014° 01'.18 E (6a) 44° 04'.40 N 014° 00'.97 E
(4) 43° 59'.85 N 014° 16'.61 E (9a) 44° 02'.80 N 013° 57'.37 E
(5a) 44° 08'.20 N 014° 08'.77 E (8a) 43° 58'.30 N 013° 52'.47 E
(4b) 44° 06'.70 N 014° 05'.77 E (8b) 44° 00'.80 N 013° 54'.97 E
(4a) 44° 05'.90 N 014° 03'.97 E (10a) 43° 55'.80 N 013° 49'.97 E

APPROACHES TO GULF OF TRIESTE

Reference chart: No 435 of the Italian Hydrographical Institute, Edition 1993, Datum ED-50, and No. 101 of the Hydrographical Institute of the Republic of Croatia, Edition 1998, Datum Hermanskögel, Bessel Elipsoid

The co-ordinates listed below are in WGS 84.

Description of the traffic separation scheme

11. A separation zone is bounded by a line connecting the following geographical positions:

(11a) 45° 08'.60 N 013° 06'.47 E (11c) 45° 23'.20 N 013° 06'.47 E
(11b) 45° 09'.40 N 013° 10'.97 E (11d) 45° 21'.50 N 013° 02'.57 E

12. A traffic lane for northbound traffic is established between the separation zone and a line connecting the following geographical positions:

(12a) 45° 10'.50 N 013° 17'.17 E (12b) 45° 22'.50 N 013° 13'.27 E

13. A traffic lane for southbound traffic is established between the separation zone and a line connecting the following geographical positions:

(13a) 45° 07'.50 N 013° 00'.37 E (13b) 45° 19'.00 N 012° 56'.87 E

The established directions of traffic flow are: 347° - 167°

APPROACHES TO GULF OF VENICE

Reference chart: No 435 of the Italian Hydrographical Institute, Edition 1993, Datum ED-50, and No. 101 of the Hydrographical Institute of the Republic of Croatia, Edition 1998, Datum Hermanskögel, Bessel Elipsoid

The co-ordinates listed below are in WGS 84.

Description of the traffic separation scheme

14. A separation zone is bounded by a line connecting the following geographical positions:

(14a) 44° 55'.30 N 012° 43'.97 E (14c) 45° 12'.70 N 012° 35'.97 E

(14b) 44° 56'.80 N 012° 47'.97 E (14d) 45° 11'.30 N 012° 31'.97 E

15. A traffic lane for northbound traffic is established between the separation zone and a line connecting the following geographical positions:

(15a) 44° 57'.50 N 012° 50'.47 E (15b) 45° 13'.60 N 012° 38'.77 E

16. A traffic lane for southbound traffic is established between the separation zone and a line connecting the following geographical positions:

(16a) 44° 54'.20 N 012° 41'.47 E (16b) 45° 10'.40 N 012° 29'.47 E

The established directions of traffic flow are: 333° - 153°

IN THE GULF OF TRIESTE

Reference chart: No. 39 of the Italian Navy Hydrographical Institute, Edition 1991, Datum Roma 40, and No. 100-15 of the Hydrographical Institute of the Republic of Croatia, Edition 1998, Datum Hermanskögel, Bessel Elipsoid.

The co-ordinates listed below are in WGS 84.

Description of the traffic separation scheme

17. A separation zone is bounded by a line connecting the following geographical positions:

(17a) 45° 31'.34 N 013° 20'.90 E (17c) 45° 36'.97 N 013° 32'.83 E

(17b) 45° 35'.48 N 013° 32'.62 E (17d) 45° 32'.84 N 013° 20'.00 E

18. A traffic lane for north-east-bound traffic is established between the separation zone and a line connecting the following geographical positions:

(18a) 45° 29'.30 N 013° 22'.10 E (18b) 45° 34'.24 N 013° 32'.20 E

19. A traffic lane for south-west-bound traffic is established between the separation zone and a line connecting the following geographical positions:

(19a) 45° 34'.74 N 013° 18'.90 E (19b) 45° 38'.74 N 013° 32'.80 E

The established directions of traffic flow are: 058° - 248°

APPROACHES TO/FROM KOPER

Reference chart: No. 39 of the Italian Navy Hydrographical Institute, Edition 1991, Datum Roma 40, and No. 100-15 of the Hydrographical Institute of the Republic of Croatia, Edition 1998, Datum Hermanskögel, Bessel Elipsoid.

The co-ordinates listed below are in WGS 84.

Description of the traffic separation scheme

21. A separation zone is bounded by a line connecting the following geographical positions:

(21a) 45° 35'.24 N 013° 35'.00 E (21c) 45° 36'.44 N 013° 37'.50 E
(21b) 45° 35'.04 N 013° 39'.50 E

23. A traffic lane for eastbound traffic is established between the separation zone and a line connecting the following geographical positions:

(23a) 45° 34'.24 N 013° 35'.00 E (23b) 45° 33'.94 N 013° 39'.40 E

24. A traffic lane for northwestbound traffic is established between the separation zone as defined in Paragraph 21. and a separation zone connecting the following geographical positions:

(24a) 45° 36'.34 N 013° 39'.70 E (24c) 45° 36'.34 N 013° 41'.80 E
(24b) 45° 35'.44 N 013° 41'.00 E

The established directions of traffic flow are: 094° - 315°

APPROACHES TO/FROM MONFALCONE

25. A separation zone is bounded by a line connecting the following geographical positions:

(25a) 45° 40'.34 N 013° 38'.00 E (25c) 45° 42'.74 N 013° 37'.30 E
(25b) 45° 40'.34 N 013° 37'.30 E (25d) 45° 42'.74 N 013° 38'.00 E

26. A traffic lane for northbound traffic is established between the separation zone and a line connecting the following geographical positions:

(26a) 45° 40'.34 N 013° 38'.65 E (26b) 45° 42'.74 N 013° 38'.65 E

27. A traffic lane for southbound traffic is established between the separation zone and a line connecting the following geographical positions:

(27a) 45° 42'.74 N 013° 36'.50 E (27b) 45° 40'.34 N 013° 36'.50 E

The established directions of traffic flow are: 360° - 180°

PRECAUTIONARY AREA IN THE GULF OF TRIESTE

Description of the precautionary area

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

(18b) 45° 34'.24 N	013° 32'.20 E	(21c) 45° 36'.44 N	013° 37'.50 E
(17b) 45° 35'.48 N	013° 32'.62 E	(21a) 45° 35'.24 N	013° 35'.00 E
(17c) 45° 36'.97 N	013° 32'.83 E	(23a) 45° 34'.24 N	013° 35'.00 E
(19b) 45° 38'.74 N	013° 32'.80 E		

AREA TO BE AVOIDED

IN THE NORTH ADRIATIC SEA

Reference chart: No. 435 of the Italian Navy Hydrographical Institute, Edition 1993, Datum ED 50, and No. 101 of the Hydrographical Institute of the Republic of Croatia, Edition 1998, Datum Hermanskögel, Bessel Elipsoid.

The co-ordinates listed below are in WGS 84.

Description of the area to be avoided

7. In order to avoid the risk of pollution due to damage of oil rigs, oil and gas pipelines in this area the area described below should be avoided by ships of more than 200 gross tonnage. The area to be avoided is bounded by a line connecting the following geographical positions:

(7a) 44° 13'.50 N	013° 38'.67 E	(7e) 44° 41'.90 N	013° 24'.97 E
(7b) 44° 17'.00 N	013° 43'.77 E	(7f) 44° 52'.00 N	013° 17'.07 E
(7c) 44° 25'.30 N	013° 37'.47 E	(7g) 44° 52'.00 N	013° 05'.77 E
(7d) 44° 34'.50 N	013° 25'.47 E	(7h) 44° 30'.50 N	013° 08'.47 E

OTHER ROUTEING MEASURES

RECOMMENDED DIRECTIONS OF TRAFFIC FLOW IN THE CHANNEL OF OTRANTO, SOUTHERN AND CENTRAL ADRIATIC SEA

Reference chart: No. 435 of the Italian Navy Hydrographical Institute, Edition 1993, Datum ED-50, and No. 101 of the Hydrographical Institute of the Republic of Croatia, Edition 1998, Datum Hermanskögel, Bessel Elipsoid.

The co-ordinates listed below are in WGS 84.

Description of the recommended directions of traffic flow

1. Recommended directions of traffic flow, which should remain as in the present, are established between the parallels of latitudes:

(1a) 40° 25'.00 N	(1b) 43° 10'.01N
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2. Recommended directions of traffic flow, which should be in accordance with the description as per chart in appendix 1 of document NAV 49/3/7, are established between the parallel of latitude:

(2a) 43° 10'.01 N

and the precautionary area at the southern limits of the traffic separation scheme.

AMENDMENTS TO THE EXISTING TRAFFIC SEPARATION SCHEME “OFF FINISTERRE”

(For reasons of economy, the text of the draft Assembly resolution including the proposed amendments submitted in document A 23/17/Add.1, annex 5, is not reproduced here).

AMENDMENT TO TRAFFIC SEPARATION SCHEME BETWEEN KORSOER AND SPROGOE

(Reference chart: Danish chart 143 (INT 1369), 14th edition 1999

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

Description of the traffic separation scheme

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

(1) 55°21'.75 N, 011°02'.13 E (2) 55°19'.23 N, 011°02'.19 E

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

(3) 55°21'.70 N, 011°02'.77 E (4) 55°19'.49 N, 011°02'.80 E

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

(5) 55°21'.81 N, 011°01'.35 E (7) 55°20'.43 N, 011°01'.51 E
(6) 55°21'.02 N, 011°01'.59 E (8) 55°18'.91 N, 011°01'.42 E

Notes:

- 1 See mandatory ship reporting system “In the Great Belt Traffic area” in part G, section I.
- 2 The minimum free water depth in the northbound traffic lane is 17 m and in the southbound traffic lane 19 m.
- 3 Ships should reduce speed to maximum 20 knots before entering the appropriate lane of the scheme.

**AMENDMENT TO TRAFFIC SEPARATION SCHEME IN THE SINGAPORE STRAIT
(MAIN STRAIT)**

(Reference charts: Indonesian Chart 40, November 1977 edition)

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

1 Replace the existing Traffic Separation Zone by the following:

A separation zone bounded by the following:

(a) Outer Co-ordinates:

(85)	01°10'.35N	103°34'.90E	(89)	01°05'.90N	103°43'.38E
(86)	01°10'.35N	103°39'.85E	(90)	01°03'.60N	103°38'.98E
(87)	01°07'.50N	103°43'.72E	(91)	01°07'.06N	103°32'.96E
(88)	01°08'.60N	103°45'.43E			

(b) Inner Co-ordinates:

(85a)	01° 09'.40N	103° 36'.60E
(86a)	01° 09'.10N	103° 38'.60E
(89a)	01° 05'.50N	103° 40'.80E
(90a)	01° 04'.50N	103° 38'.90E
(91a)	01° 06'.80N	103° 35'.00E

ANNEX 3

ROUTEING MEASURES OTHER THAN TRAFFIC SEPARATION SCHEMES

MANDATORY AREA TO BE AVOIDED OFF THE NORTH-EAST COAST OF THE NORTH ISLAND OF NEW ZEALAND

(Reference Chart: New Zealand NZ 521. January 1995 Edition)

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

Description of the mandatory area to be avoided

In order to avoid risk of pollution and damage to the environment of this sensitive area, all vessels greater than 45 metres in length (except as specified below) should avoid the following area.

In the vicinity of the Poor Knights Islands

The area bounded by a line connecting the following geographical positions is designated as a mandatory area to be avoided, the westward boundary of which is delineated by mean high water springs.

(1)	35° 51'.30 S	174° 35'.50 E
(2)	35° 34'.55 S	174° 49'.20 E
(3)	35° 29'.60 S	174° 50'.80 E
(4)	35° 24'.70 S	174° 50'.20 E
(5)	35° 10'.20 S	174° 20'.10 E

Exceptions: The following exemptions are granted in respect of vessels entering the mandatory area to be avoided:

- All vessels of the Royal New Zealand Navy.
- All fishing vessels engaged in fishing operations.
- Barges under tow, provided the cargo is not oil or other harmful liquid substances as defined in Annexes I & II of MARPOL 73/78.

TWO-WAY ROUTE IN THE GREAT NORTH-EAST CHANNEL, TORRES STRAIT***Relevant chart numbers and datums:***

AUS 376:	On AGD 66	Jan 1984 edition
AUS 839:	On WGS 84	Aug 1997 edition
AUS 840:	On WGS 84	Aug 1997 edition

The following geographical positions (in WGS 84) define the proposed two-way route:

A) The northern limits are bound by the line joining the following geographical positions:

1.	10° 29'.70 S	142° 22'.63 E
2.	10° 29'.14 S	142° 25'.76 E
3.	10° 27'.80 S	142° 28'.45 E
4.	10° 26'.40 S	142° 31'.30 E
5.	10° 21'.90 S	142° 41'.50 E
6.	10° 19'.37 S	142° 47'.97 E
7.	10° 18'.14 S	142° 50'.82 E
8.	10° 13'.38 S	142° 54'.96 E
9.	10° 00'.50 S	143° 03'.42 E
10.	09° 47'.73 S	143° 10'.40 E
11.	09° 25'.80 S	143° 31'.07 E
12.	09° 12'.47 S	143° 51'.34 E

B) The southern limits are bound by the line joining the following geographical positions:

13.	10° 30'.45 S	142° 24'.02 E
14.	10° 28'.38 S	142° 28'.66 E
15.	10° 27'.38 S	142° 31'.85 E
16.	10° 22'.85 S	142° 41'.95 E
17.	10° 19'.80 S	142° 48'.23 E
18.	10° 17'.63 S	142° 53'.29 E
19.	10° 09'.78 S	143° 05'.55 E
20.	09° 53'.97 S	143° 15'.61 E
21.	09° 46'.02 S	143° 18'.48 E
22.	09° 37'.96 S	143° 21'.97 E
23.	09° 27'.60 S	143° 32'.15 E
24.	09° 13'.95 S	143° 52'.62 E

C) The centre polygon is defined by the following geographical positions:

25.	10° 16'.10 S	142° 53'.82 E
26.	10° 13'.79 S	142° 55'.85 E
27.	10° 01'.05 S	143° 04'.20 E
28.	09° 48'.10 S	143° 11'.30 E
29.	09° 41'.04 S	143° 18'.87 E
30.	09° 45'.72 S	143° 17'.51 E
31.	09° 53'.84 S	143° 14'.50 E
32.	10° 09'.15 S	143° 04'.70 E

AREA TO BE AVOIDED IN THE PARACAS NATIONAL RESERVE

Reference Charts: PERU-HIDRONAV-226, 2nd edition, September 2000
227, 1st edition, April 2002

Description of the area to be avoided

In order to avoid the risk of pollution and damage to the environment in the Peruvian Paracas National Reserve, ships of more than 200 Gross Tonnage carrying hydrocarbons and hazardous liquids in bulk, should avoid the area bounded by a line connecting the following geographical positions and the coastal borderline:

- (a) 13°47' 20" S 76°17' 40" W
- (b) 13°46' 52" S 76°17' 40" W
- (c) 13°46' 52" S 76°30' 00" W
- (d) 14°26' 42" S 76°30' 00" W
- (e) 14°26' 42" S 76°00' 00" W

ANNEX 4

**DRAFT RESOLUTION MSC...(78)
(adopted on [.. May 2004])****AMENDMENTS TO EXISTING MANDATORY SHIP REPORTING SYSTEM**

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 (SOLAS), 1974 concerning the adoption by the Organization of ship reporting systems,

RECALLING FURTHER resolution A.858(20) which authorizes the Committee to perform the function of adopting ship reporting systems on behalf of the Organization,

TAKING INTO ACCOUNT of the amendments to the existing Guidelines and criteria for ship reporting systems adopted by resolution MSC.43(64), as amended by resolution MSC.111(73),

HAVING CONSIDERED the recommendations of the Sub-Committee on Safety of Navigation at its forty-ninth session,

1. ADOPTS, in accordance with SOLAS regulation V/11, the amendments to the existing mandatory ship reporting system “the Torres strait and inner route of the Great Barrier Reef” (REEFREP), as described in the Annex to the present resolution;
2. DECIDES that the said amendments to the existing mandatory ship reporting system will enter into force at 0000 hours UTC on [1 December 2004];
3. REQUESTS the Secretary-General to bring this resolution and its Annex to the attention of Member Governments and Contracting Governments to the SOLAS Convention.

ANNEX

**AMENDMENTS TO EXISTING MANDATORY SHIP REPORTING SYSTEM “THE
TORRES STRAIT AND INNER ROUTE OF THE GREAT BARRIER REEF”
(REEFREP)**

(AMENDMENTS TO ANNEX 1 OF RESOLUTION MSC.52(66))

1 Replace sections 3, 4, 5 and 7 of resolution MSC.52(66) with and add a new section 9 as follows:

3 FORMAT AND CONTENT OF REPORT TIMES AND GEOGRAPHICAL POSITIONS FOR SUBMITTING REPORTS, AUTHORITY TO WHOM REPORTS SHOULD BE SENT AND AVAILABLE SERVICES

The ship report short title "REEFREP" will be made to the REEFREP VTS centre (REEFCENTRE) located at Hay Point in Queensland. Examples of the format and content of all required reports are shown at appendix 2. A ship may elect, for reasons of commercial confidentiality, to communicate that section of the REEFREP ENTRY report, which provides information on cargo (line P) by non-verbal means prior to entering the system. This can be achieved by including cargo information in the AUSREP Sailing Plan (SP) message.

3.1 Entry and exit reports

Ships will be required to provide a full REEFREP Position Report (PR) at least two hours prior to entering the REEFREP area from seaward or when sailing from a port within the area.

Ships will also be encouraged to provide a passage plan as described below when providing an Entry Report. However, it is recognized that at this stage in their passage, they are unlikely to have a pilot on board and are therefore unable to provide a detailed passage plan.

When finally departing the REEFREP area, or entering a port within the area, the REEFREP system will associate the required PR and the designated reporting point and automatically recognize this report as an exit message.

3.2 Passage plan reports

Ships will be required to provide a passage plan, including information such as vessel details, pilot information, route/waypoint information within one hour of entering the REEFREP area. The provision of accurate passage plans is critical to the dissemination of accurate ship traffic information and can be provided by one of the following means:

- i. Nominating the route using the chartlets which will be provided by pilots
- ii. Nominating the waypoints, or
- iii. Using the existing Mandatory Reporting Points as listed on the charts

3.3 Intermediate position reports

Automated Position Reporting via Inmarsat-C will be the primary mechanism for ships to provide position reports while transiting the REEFREP region. REEFCENTRE will generally carry out APR remotely without any intervention by ships' crews. However, a small proportion of vessels are fitted with first generation Inmarsat-C terminals which do not support remote programming. Masters of ships fitted with these terminals, who choose to participate, will be required to program them onboard to send position reports automatically. Instructions relating to programming of these terminals can be obtained from REEFCENTRE.

Vessels can participate in Automated Position Reporting at any time by authorizing REEFCENTRE to download a Data Network Identifier (DNID) to the ship's Inmarsat-C terminal. Once the DNID is downloaded, REEFCENTRE is able to program the ship's Inmarsat-C terminal to transmit position reports automatically at regular intervals. Vessels can communicate authorization for DNID download either by Inmarsat-C or REEFREP VHF Voice Communication Channels as described in appendix 2.

Vessels providing Intermediate Position Reports via APR must still comply with the other VHF reporting requirements prescribed in section 2.4 (Entering and Leaving the REEFREP SRS), section 2.5 (Pilotage Reports) and section 2.6 (Special Reports) of the *AUSREP and REEFREP* booklet.

Where a ship is unable to provide Intermediate Position Reports via APR as required by REEFCENTRE they will be required to provide brief position reports as advised by the operator. The VHF position reports are limited to the identity of the vessel, position, any variation to the last reported speed and course and any further information the Master considers might be of value to the system.

3.4 Defect reports

The following information is to be provided when a ship within the REEFREP area suffers damage, failure or breakdown affecting the safety of the ship, makes a marked deviation from a route, course or speed previously advised or requires to report safety related information and reports of incidents involving Dangerous Goods (DG) Harmful Substances (HS) or Marine Pollutants (MP).

- (a) Ship name and call sign.
- (b) Position (latitude and longitude) and time.
- (c) Name of next Mandatory Reporting Point or Course if not tracking between reporting points.
- (d) Estimated time of arrival (ETA) at next Mandatory Reporting Point or Speed (ship's anticipated average speed until next report. in knots & tenths of a knot).
- (e) Description and details of any damage, failure or breakdown suffered:
 - (i) collision, grounding, fire, explosion, structural failure, flooding, cargo shifting.

- (ii) failure or breakdown of steering gear, propulsion plant, electrical generating system, essential shipborne navigational aids.
- (f) Details of any Safety Messages (navigational safety, abnormal weather, unserviceable aids to navigation) or DG HS MP incident reports using the recognized IMO reporting formats.

4 INFORMATION TO BE PROVIDED TO PARTICIPATING SHIPS AND PROCEDURES TO BE FOLLOWED

REEFCENTRE will provide information to shipping on potentially conflicting traffic movements from the analysis of incoming position reports, passage plans and other data sources.

The key information to be provided to shipping includes:

1. Ship Traffic Information
2. Navigational Assistance
3. Maritime Safety Information

4.1 Ship Traffic Information: The REEFREP VTS centre will provide information to shipping on potentially conflicting traffic movements resulting from the analysis of incoming reports.

4.2 Certain sections of the route in the Torres Strait and the far northern sector of the inner route of the GBR present a particular navigational hazard in situations where large ships might be passing or overtaking, especially deeper draught ships. When the REEFREP VTS centre considers that ships are approaching such sections, any relevant traffic information held by the centre will be passed to them. Because of the extensive size of the REEFREP area it is not be intended to routinely broadcast traffic information across the whole area but to advise individual ships as necessary.

4.3 Traffic information, including other advice received from ships or local maritime authorities which impacts on navigational safety will be passed to ships in relevant areas. Examples include concentrations of fishing vessels, unusual weather conditions, etc.

4.4 Navigational Assistance: In circumstances where information available to REEFCENTRE may assist on-board decision making REEFREP may initiate interaction with an individual ship to provide this information. This may include circumstances where information available suggests a ship may be standing into shallow water (eg. in areas of restricted navigation where there is radar coverage) or deviating from a recommended route. The types of assistance that may be provided are described further in NAV 49/INF.4.

4.5 Maritime safety information (MSI) in the form of navigational warnings (AUSCOAST Warnings) will continue to be issued in the appropriate broadcasts from MRCC AUSTRALIA. The REEFREP VTS centre will maintain details of MSI for the REEFREP area for the information of participating ships.

5 COMMUNICATION REQUIRED FOR THE SYSTEM, FREQUENCIES ON WHICH REPORTS SHOULD BE TRANSMITTED AND INFORMATION TO BE REPORTED

5.1 The system will be based on both Inmarsat-C communications and VHF voice communications. While, the use of Inmarsat-C is expected to become the main mechanism for ships to meet their position reporting requirements and to provide other mandatory reports such as entry reports and passage plans VHF voice communications provides an interactive mechanism for the interchange of data between ships and the REEFREP VTS centre.

5.2 VHF channels 5, 18 and 19 in the international maritime mobile band have been allocated for the reporting points in the system.

5.3 Information of commercial confidentiality may be transmitted by non-verbal means.

5.4 The language used for reports in the system will be English, using the IMO *Standard Marine Communications Phrases* where necessary.

5.5 Communications associated with reporting in accordance with the requirements of this system will be free of charge

7 SHORE-BASED FACILITIES TO SUPPORT OPERATION OF THE SYSTEM

7.1 REEFCENTRE is located at Hay Point, on the central Queensland coast. The centre is manned 24 hours per day, 365 days per year, and is equipped with a sophisticated traffic information management tool that integrates and assists in analysing all VHF communications, radar, AIS and APR data that is relayed to REEFCENTRE. The radar coverage is provided at the key entry and exit points to Torres Strait and the Inner Route.

7.2 The VTS centre equipped to provide a high standard of service to meet the system requirements and will be operated by trained and experienced personnel. Operator standards will be in accordance with "*Guidelines on Recruitment, Qualification and Training of VTS Operators*" (resolution A.857(20), annex 2).

7.3 The system will be operated to quality standards with service levels being constantly monitored.

7.4 The entire area has full DGPS coverage redundancy, ensuring very high availability standards.

7.5 The REEFREP VTS centre is also interfaced with the AUSREP system operated by RCC AUSTRALIA.

9 MEASURES TO BE TAKEN IF A SHIP FAILS TO COMPLY WITH THE REQUIREMENTS OF THE SYSTEM

9.1 The primary objective of the system is to facilitate the exchange of information between the ship and the shore and so support safe navigation and the protection of the marine environment. 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 and the ship can be positively identified, then information will be passed to the relevant flag State for investigation and possible prosecution in accordance with that State's legislation. A failure to

report may also be investigated for breach of Australian laws relating to compulsory ship reporting.

2 Insert the following appendix 3 after appendix 2:

APPENDIX 3

Participating in APR via Inmarsat-C

APR information will only be used by the REEFREP system whilst the ship is in the REEFREP area. The DNID will remain downloaded until the Master or company advises REEFCENTRE that the ship is no longer a regular visitor. It is important that this information is passed during the final visit to Australia, as the DNID has to be deleted whilst the Inmarsat-C terminal is logged into the particular satellite region.

A ship is deemed to be a regular visitor if it operating on the Australian coastal trade or revisiting Australia from overseas within eighteen months. Infrequent visitors will have the DNID deleted from their terminals after sending a Final Report.

Vessels can communicate authorization for DNID download either by Inmarsat-C or REEFREP VHF Voice Communication Channels as described below:

i. Inmarsat**

By forwarding an APR message via Inmarsat to REEFCENTRE the Master authorizes download of a DNID into the Inmarsat-C terminal, and provides the following details for each Inmarsat-C installation:

- Vessel Name, Callsign, Inmarsat-C Mobile Number (IMN), Manufacturer, and Model. (Example at Table 1)

ID	Message type	REEFREP/APR//
A	Ship Name/Callsign	A/REEF CHAMPION/VJVJ//
B	Primary Inmarsat-C terminal details (Inmarsat-C Mobile Number (IMN), Manufacturer, and Model)	B/450309919/ THRANE & THRANE/3020B//
C	Secondary Inmarsat-C terminal details (Inmarsat-C Mobile Number (IMN), Manufacturer, and Model), where applicable.	C/450309920/ FURUNO/FELCOM12//

Table 1 – Inmarsat -C Data Network identifier (DNID)

**APR messages sent to ReefCentre using Special Access Code (SAC) 861 via Perth LES using Inmarsat-C access code ‘222’ will be reverse charged to the SRS.

While reporting to REEFREP, masters must ensure that their INMARSAT equipment remains active in the “LOGIN” mode (Pacific Ocean Region (POR)) at all times.

ii. REEFREP VHF Voice Communication Channels

For example, at the first Reporting Point, the Master (or his representative) verbally authorizes the DNID download and provides the following details for each Inmarsat-C installation:

- Inmarsat-C Mobile Number (IMN), Manufacturer, and Model. e.g.: 450306909, JRC, JUE75C

ANNEX 5

**DRAFT RESOLUTION MSC...(78)
(adopted on [.. May 2004])****AMENDMENTS TO EXISTING MANDATORY SHIP REPORTING SYSTEM**

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 (SOLAS), 1974 concerning the adoption by the Organization of ship reporting systems,

RECALLING FURTHER resolution A.858(20) which authorizes the Committee to perform the function of adopting ship reporting systems on behalf of the Organization,

TAKING INTO ACCOUNT of the amendments to the existing Guidelines and criteria for ship reporting systems adopted by resolution MSC.43(64), as amended by resolution MSC.111(73),

HAVING CONSIDERED the recommendations of the Sub-Committee on Safety of Navigation at its forty-ninth session,

1. ADOPTS, in accordance with SOLAS regulation V/11, the amendments to the existing mandatory ship reporting system “Off Cape Finisterre”, as described in the Annex to the present resolution;
2. DECIDES that the said amendments to the existing mandatory ship reporting system will enter into force at 0000 hours UTC on [1 December 2004];
3. REQUESTS the Secretary-General to bring this resolution and its Annex to the attention of Member Governments and Contracting Governments to the SOLAS Convention.

ANNEX

**AMENDMENTS TO EXISTING MANDATORY SHIP REPORTING SYSTEM
“OFF CAPE FINISTERRE”**

AMENDMENTS TO ANNEX 3 OF RESOLUTION MSC.63(67)

1 In Annex 3

- .1 Replace paragraph 2 with the following text:

**GEOGRAPHICAL COVERAGE OF THE SYSTEM AND THE NUMBER AND
EDITION OF THE REFERENCE CHART USED FOR THE DELINEATION OF
THE SYSTEM**

- .1 The reporting system will cover the area (Appendix 1) between the coast and the following lines:
- .1 a bearing of 130°(T) to Cape Villano lighthouse;
 - .2 a bearing of 075°(T) to Cape Finisterre lighthouse; and
 - .3 the meridian of longitude 10°15' W.

This area includes the traffic separation scheme “Off Finisterre” and the associated inshore traffic zones adopted by resolution A.767(18), as amended by resolution A....(23).

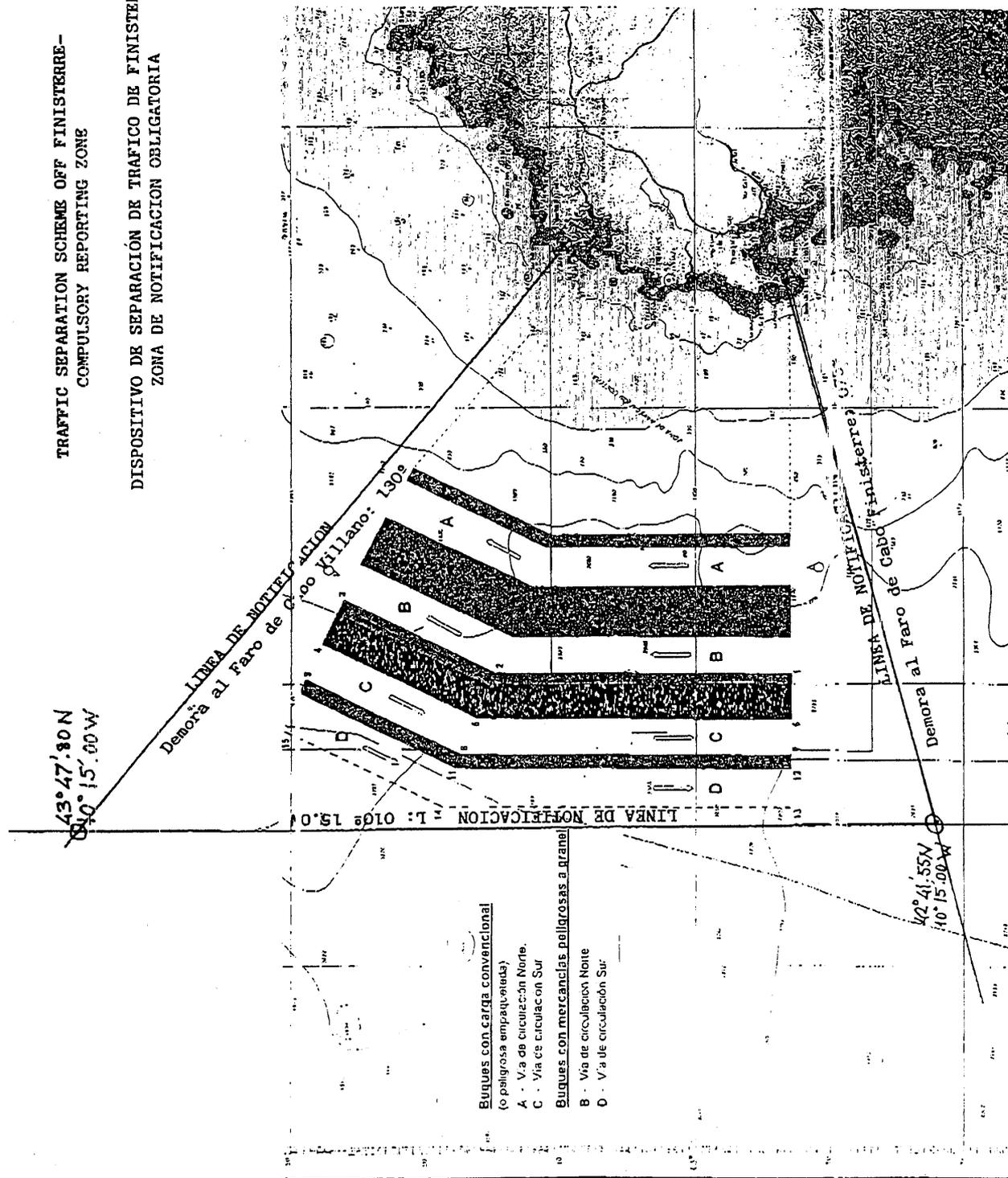
- .2 The reference chart which includes all the area of coverage for the system is number 41 of the Catalogue of Nautical Charts of the Spanish Hydrographic Office, European Edition (Potsdam) published in April 1978, 6th impression June 2002 and corrected by notices to mariners of November 2002, including Cape Estaca de Bares to Rio Lima.

2 Replace existing Appendix 1 with the following:

(New chartlet as attached)

TRAFFIC SEPARATION SCHEME OFF FINISTERRE—
COMPULSORY REPORTING ZONE

DISPOSITIVO DE SEPARACIÓN DE TRAFICO DE FINISTERRE
ZONA DE NOTIFICACION OBLIGATORIA



ANNEX 6

**DRAFT ASSEMBLY RESOLUTION ON GUIDELINES ON
PLACES OF REFUGE FOR SHIPS IN NEED OF ASSISTANCE**

The text of this draft Assembly resolution was submitted directly to A 23 as authorized by MSC.

For reasons of economy, the text of the draft Assembly resolution submitted in document A 23/17/Add.1, annex 1, is not reproduced here.

ANNEX 7

**DRAFT ASSEMBLY RESOLUTION ON
GUIDELINES ON MARITIME ASSISTANCE SERVICES (MAS)**

The text of this draft Assembly resolution was submitted directly to A 23 as authorized by MSC.

For reasons of economy, the text of the draft Assembly resolution submitted in document A 23/17/Add.1, annex 2, is not reproduced here.

ANNEX 8

REPORT ON FEASIBILITY STUDY ON MANDATORY CARRIAGE OF VDRs ON EXISTING CARGO SHIPS

A. Introduction

1 The Maritime Safety Committee (MSC) at its seventy-third session instructed the NAV Sub-Committee to carry out a feasibility study in resolution MSC.109(73). The terms of reference were:

- to carry out the feasibility study, taking into account such factors as:
 - practicability;
 - technical problems relating to retrofitting VDRs;
 - adequacy of existing performance standards, including possible development of simplified standards;
 - experience in the use of VDRs on ships already fitted out with them, including data that could not have been obtained without VDR; and
 - relevant financial implications, including a cost benefit analysis,
- if the study clearly demonstrated the compelling need for mandatory carriage of VDRs on existing cargo ships, to prepare appropriate draft amendments to chapter V of the Convention and associated performance standards, for consideration by the Committee and action as appropriate; and
- finalize the study not later than 1 January 2004.

2 The Sub-Committee commenced work at its forty-seventh session.

3 The Sub-Committee noted that when assessing the practicability of the simplified VDR it has to be realised that this simplified VDR with different capabilities than a full VDR only has to be used for a limited time. In approximately 25 years almost all cargo ships over 3,000 gross tonnage will have been built after 1 July 2002 and will therefore be equipped with a full VDR.

4 The Sub-Committee further noted that the European Union has already decided (Directive 2002/59/EC) - in addition to what was decided in IMO – that:

Ships in the following classes and built before 1 July 2002 must, inasmuch as they call at a port of a Member State of the Community (*i.e. the EU*), be fitted with a VDR meeting the relevant IMO standards:

- cargo ships of 20,000 gross tonnage and upwards, not later than the date fixed by the IMO, or, in absence of a decision in IMO, not later than 1 January 2007;
- cargo ships of 3,000 gross tonnage and upwards but less than 20,000 gross tonnage, not later than the date fixed by the IMO, or, in absence of a decision in IMO, not later than 1 January 2008.

5 The Sub-Committee completed the work at its forty-ninth session which is the subject of this report.

I PRACTICABILITY

General

6 Investigations performed into the problems of retrofitting VDR have shown that it is practicable to fit such systems to existing cargo vessels. Manufacturers already have extensive experience in fitting “pre-SOLAS” VDRs to existing ships of varying types. These experiences, and the various technical problems which have been encountered, are addressed in the next section.

7 Ongoing studies and experience of the United Kingdom and others continue to show that it is practicable to fit VDRs on existing vessels with several hundreds of successful installations completed. Manufacturers already have extensive experience in fitting “pre-SOLAS” VDRs on existing vessels of varying types. Experience is also gained from installations onboard existing (Ro-Ro) passenger vessels of VDRs meeting current performance standard.

8 Some practical problems have been encountered but mostly overcome. In general the experience gained and the problems encountered did not vary much per ship type (little difference between e.g. a container ship and a Ro-Ro ship), but there were more differences found between equipment types (more difference between the output of e.g. various radars brands/ages with which the VDR should be connected).

9 In the context of investigating practicability a determination of what a (simplified) VDR can be used for has to be made. The following purposes were identified and used in the investigation:

- Casualty analysis (not only of the few serious accidents, involving e.g. sinking, but also of the many minor and potential incidents that occur).
- Liability analysis (which has shown to reduce litigation, thus often saving substantial costs and time).
- Compliance monitoring by the ships’ management (e.g. as a possible way to ensure/show the ISM requirements are met on board).
- Training (by gathering real life situations with the VDR to be use in e.g. simulations).
- Operations (e.g. voyage planning on the basis of recorded previous voyages).
- Research (e.g. improving routeing and collision regulations on the basis of recorded traffic behaviour).

II INTERFACING AND TECHNICAL PROBLEMS RELATING TO THE RETROFITTING OF VOYAGE DATA RECORDERS ON EXISTING VESSELS

10 Several hundred VDR installations have now been successfully completed, many of them refits on existing vessels. The principal VDR system manufacturers have encountered few serious technical problems during the majority of refits.

11 The following observations are based on experience already gained in the field. They define where, and to what degree difficulties have been encountered.

General

12 Problems may be experienced obtaining information on existing equipment where the original manufacturer no longer exists, or information is not available for some other reason. Experience has also shown the importance of accurately documenting installations so that ship's staffs are aware exactly what is being recorded.

Interfacing to Radars

13 Some radars, particularly more modern types, may be connected directly to a VDR with little difficulty. They provide a buffered video output as standard.

14 Some radars, particularly older types, require a manufacturer's optional interface to provide a buffered video output.

15 A few radars, use a non-raster type display or have unusual digital video systems. These are likely to be over 15 years old. In cases where it is possible to provide an interface, costs are very high or even prohibitive. For some of these radars, particularly the non-raster types, it may be impossible to provide an interface.

Interfacing and connection of data sources

16 Most current navigation equipment provide an output in the 61162 format required by the standard. These outputs may be connected directly to the VDR at no extra cost.

17 Some older equipment provides an output, but not in IEC 61162-1 format. The signal provided may be analogue, digital or serial with a well-known and published format.

18 Interfacing to these systems presents no problems to major VDR system manufacturers who have gained considerable experience in interfacing to such equipments. However, additional costs will be involved in the provision of interface units.

19 Ships falling into this category are generally older than 15 years, still fitted with original equipment.

20 Some navigation and communication equipment and alarm systems provide no suitable output and no manufacturers' interface is available. Included are autonomous alarm systems, some Echo Sounders and Wind Speed/Direction systems, equipment using manufacturer's 'unique' serial formats and purely mechanical/pneumatic systems. For these systems connection of a VDR can be an extremely costly or impossible exercise.

Conclusion

21 To conclude, it is considered totally technically practical to retrofit VDRs into existing vessels and to record at reasonable cost:

- i) BRIDGE AUDIO
- ii) MOST RADARS
- iii) GYRO/GPS
- iv) ANY ADDITIONAL DATA ITEMS LISTED BY IMO WHICH ARE AVAILABLE IN IEC 61162-1 FORMAT

22 Some relaxation in the current IMO Performance Standard should be considered where no existing signals exist. The Sub-Committee suggests that each interface that may be necessary for connecting VDR to the peripherals should be provided at the manufacturer's responsibility.

III EXPERIENCE IN THE USE OF VDRs ON SHIPS ALREADY FITTED WITH THEM, INCLUDING DATA THAT COULD NOT HAVE BEEN OBTAINED WITHOUT VDR

General

23 For the purpose of this section of the feasibility study information has been sought from the accident investigators of 15 flag states, from shipowners through the ICS and from the main VDR manufacturers through CIRM.

24 The results indicate that experience with SOLAS chapter V VDRs is growing but limited at present. Most of the experience available at this time comes from pre-SOLAS chapter V VDRs which have been carried on a number of vessels for several years. Pre-SOLAS chapter V VDRs have similar characteristics and data inputs to IMO approved instruments and, therefore, no differentiation with respect of the VDR models used has been made in the following table and analysis.

25 Some research is been done into the quality of data available, where no VDR was fitted. The figures in the following tables come from an examination of 42 accident reports on board passenger ships between 1979 and 1999.

Table 1: Missing data in the accident reports of the accident category "Fire/Explosion"

Data category	Data sub-category	Percentage of missing data
Fire detection and development	Fire source	0
	Fire detection	0
	Development	12%
	Initial fire fighting measures	0
Fire fighting	Involved crew	100%
	Accessibility to the fire	18%
	Measures to fight the fire	12%
	Further measures to fight the fire	70%
	Times until commencing with actions	33%
	Results	6%
Fire fighting equipment	Fire fighting equipment involved	27%
	Fire fighting equipment condition	45%

Table 2: Missing data in the accident reports of the accident category “Collision”

Data category	Data sub-category	Percentage of missing data
Identification of the collision risk	Identification of the collision risk	75%
	Measures to avoid the collision	33%
	Times and distances	60%
Collision	Cause	0%
	Damage	0%
	Details of the vessel/object involved in the collision	0%
	Measures after the collision	42%

Table 3: Missing data with regard to Human Element (HE) aspects in the accident reports of 42 passenger vessel accidents

Data category	Data sub-category	Percentage of missing data
HE – Beginning of the emergency situation and initial measures	Manning of the bridge	81%
	Coordination of the initial measures	40%
	Initial measures	43%
	Organization of emergency response teams	77%
	Involvement of pilots or VTS centers	93%
HE – Emergency management	Manning of the bridge	96%
	Coordination of emergency response actions	59%
	Decision making	93%
	Information gathering during the emergency	74%
	Problems occurring during the emergency response actions	90%
HE – Evacuation	Manning of the bridge	96%
	Coordination of the evacuation	14%
	Decision making	89%
	Problems during evacuation	81%

26 It is clearly to be seen that there is a great lack of data, especially HE data which is necessary to effectively reconstruct the course of an accident.

Experience with the data items recorded

27 In the submissions to and the deliberations within IMO, the following data items were most often considered to be essential in a simplified VDR:

- Date and time
- Position
- Course and Speed
- Heading
- Communication audio
- Bridge audio

- Radar information
- AIS information

28 In the following paragraphs, the practical needs for each data item are critically reviewed. The technical problems relating to obtaining these data items through retrofitting VDRs on existing cargo ships are addressed later.

29 Objective determination of **date and time** and **position** of the ship is always useful in all cases for an analysis, as this describes the physical development of an incident (e.g. ships movement).

30 Objective determination of **course** and **speed** of the ship is always useful for an analysis, as this is relevant for the description of the physical development of most incidents. However, in absence of an independent registration of course and speed over ground these can be derived from successive registrations of date & time and position.

31 Objective determination of **heading** is sometimes useful for an analysis, as this is relevant for the description of the physical development of some incidents, e.g. with some collisions.

32 Objective determination of **communication audio** is sometimes useful for an analysis, as it gives insight in the information exchanging and decision making process between ships and with the shore before and during the incident, which could help to determine the causes of the incident.

33 Objective determination of **bridge audio** is essential for the detailed analysis of bridge resource management issues and is often the only way the Human Factors issues that lie behind the accident can be positively identified. It can also be essential in an analysis, as – in absence of other information - this can be the only information source to derive the physical development of some incidents, e.g. with some sudden disappearances of ships (e.g. Derbyshire). Registration of bridge audio also registers most of the communication audio. So if registration of communication audio is not practicable, e.g. due to interfacing problems, registration of bridge audio may be accepted as ‘second best’ substitute for registration of communication audio.

34 Objective determination of **radar information** is often essential for an analysis, as this is relevant for the description of the physical development of some incidents, in particular of other traffic involved, e.g. with all collisions and some groundings. In absence of an independent registration of radar information this can only partly be derived from registration of only AIS information in the VDR, as often not all other ships involved will be equipped with AIS.

35 Objective determination of **AIS information** would be a useful addition to the data items recorded where other ships involved in the accident are AIS fitted. As indicated in the previous paragraph registration of AIS information can also be a ‘poor’ substitute for registration of radar information.

Experience with protective Capsule

36 No-one has yet had experience of retrieving data from a VDR protective capsule after a catastrophic accident.

37 Most available and existing VDRs have a central data management system, often on the bridge, where all data is brought together and stored on a hard disk, often containing more data

and for a longer time than required. In future the separate central system of the VDR could become part of the central processing and data storage units of integrated bridge systems. Out of this central VDR data management system the mandatory required data are relayed to and stored on a robustly protected fixed or float-free final recording medium, often situated outside the bridge.

38 In the submissions presented to the Sub-Committee and the deliberations within the Sub-Committee, the following types of protective capsules were suggested for the (final) recording medium of the data in a simplified VDR:

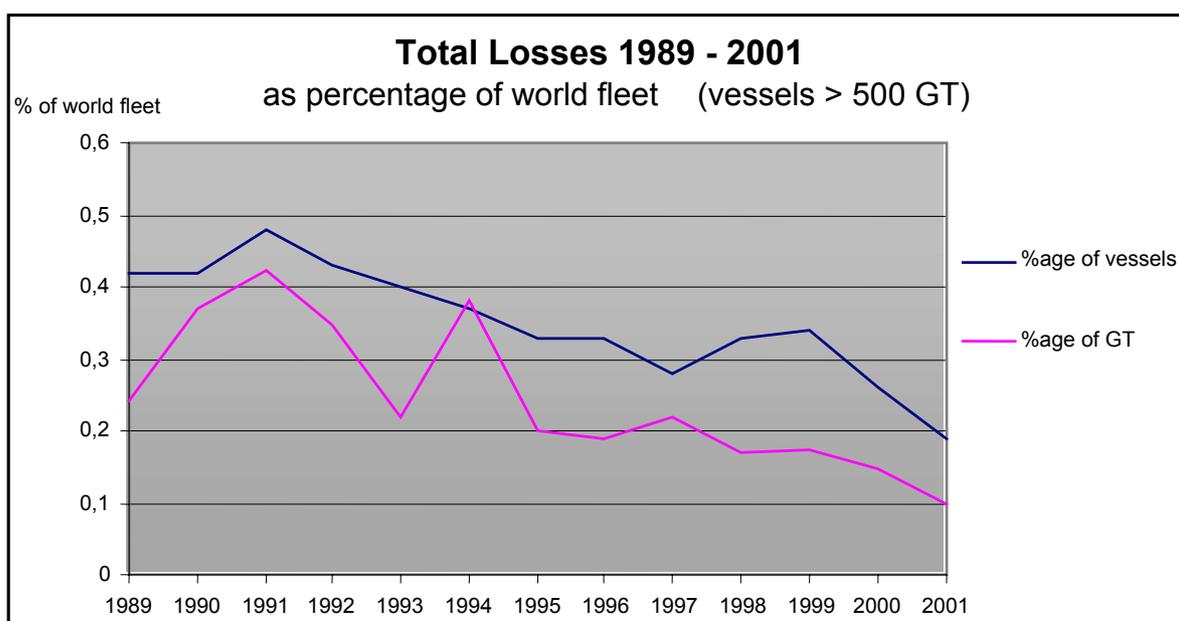
- Robustly protected/fixed e.g. as in the full VDR
- Robustly protected/float free e.g. as in the full VDR
- Lightly protected/fixed e.g. retrievable hard disk
- Lightly protected/float free e.g. incorporated in EPIRB

39 Again, an optimal balance needs to be found, in this case between the necessities of retrieval of the VDR data in as many circumstances as possible/conceivable against the ease of retrieval in those circumstances. This should also encompass the retrieval costs.

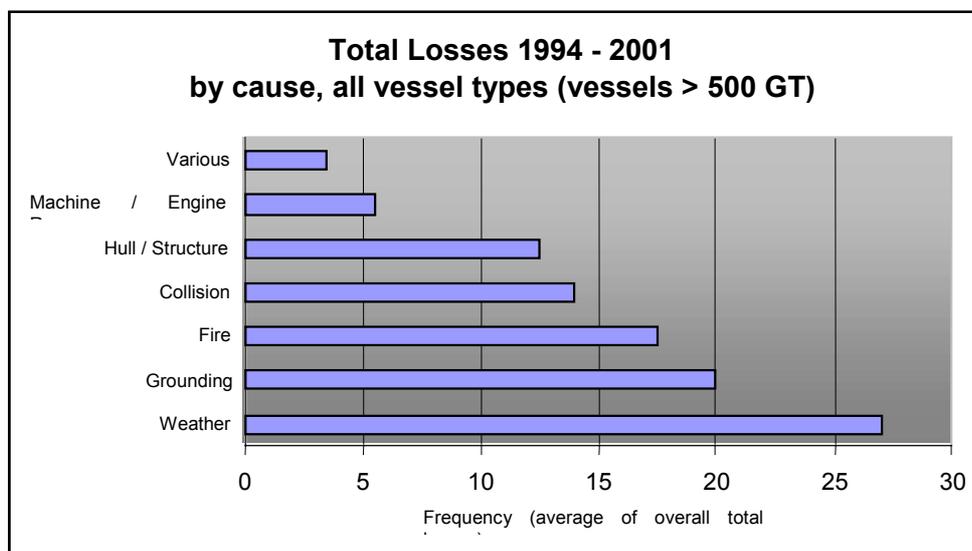
40 In the following paragraphs the practical needs for the mentioned types of protection and fixing are critically reviewed. The technical problems relating to obtaining these data items through retrofitting VDRs on existing cargo ships will be addressed in the following section.

41 When determining the practical level of **protection** it has to be realised that in most incidents the ship is not damaged by fire and/or stays afloat.

42 As can be seen from the following graph the number (and gross tonnage as well) of total losses related to the total world fleet is very few (less than 1%) in the recent past (source: LMIU for Joint Hull Committee).



43 Taking into account the causes of total losses (see next diagram) it can be stated that incidents of category "fire" and sinking is more seldom than grounding and total losses caused by weather.



44 However the total number of cases that are of interest for marine accident investigation agencies are significant, but without a VDR carriage requirement on existing cargo vessels only possible in the traditional manner.

45 According to the database of LMIS, the percentage of sunk against the number of casualties is 4.7% and of fire/explosion is 14.1%.

Table Number of casualties of vessels of 3,000 GT and above (1978 – 2000)

Category code	Number of casualties		
		with fire	with explosion
Collision	1,496 (13.1%)	9	28
Contact	870 (7.6%)	0	6
Foundered	534 (4.7%)	3	1
Fire/Explosion	1,608 (14.1%)	426	1,181
Hull/Machinery Damage	3,810 (33.3%)	17	21
War Loss/Damage during Hostilities	454 (4.0%)	37	165
Missing	35 (0.3%)	0	1
Wrecked/Stranded	2,562 (22.4%)	3	19
Miscellaneous	63 (0.6%)	1	0
Total	11,432	(496)	(1,422)

Source: LMIS Casualty Database

46 Even if the ship is on fire and/or sinks the crew might often still be able to take the final recording medium of the VDR with them when evacuating the ship (if the final recording medium is easily retractable and portable).

47 In the rare cases where a ship burns out and/or sinks without the crew being able to evacuate and then take the final recording medium of the VDR with them the protection will have to be extensive (and therefore costly) to withstand the severe conditions it will then be faced with and still be able to deliver the recorded data after salvage.

48 It should be noted that in very rare cases of a sinking in deep water with a fixed final recording medium the necessary level of protection to be able to retrieve the data after salvage of this final recording medium increases faster than linearly with the water depth involved. The deeper the ship sinks the harsher the conditions are which the final recording medium of the VDR has to withstand, but also the longer this medium has to withstand these conditions, as it will take longer to salvage it.

49 When determining the practicalities of **fixed/float free**, it also has to be realised that in most incidents the ship is not damaged by fire and/or stays afloat and that the crew is often capable to take the final recording medium with them when evacuating (if the final recording medium is easily retractable and portable) or thrown into the water (if it is also float free).

Experience in accident investigations (See table)

50 Data provided by VDRs have been used in a number of investigations following serious accidents. In nearly all such cases the availability of VDR information allowed investigators to obtain a clear insight into the underlying causes of the accidents which could not have been gained otherwise. Particularly bridge audio, radar and exact position, speed and heading data were of major use in the investigations.

Experience following hazardous incidents and minor accidents (See table)

51 Ship owners have reported significant benefits from the use VDR information following hazardous incidents and minor accidents. The information has been used in these cases to prove beyond doubt what occurred and where the responsibility for the incident lay. This has allowed significant savings to be made in legal and consequential costs. Improvements in bridge team management have resulted from analysis of the data.

Experience in day-to-day ship operations

52 VDR information has been used to optimise ship operations and for safety management purposes. For instance:

- voyage planning - preparing an approach to a harbour for example;
- crew training - berthing manoeuvres for example;
- analysis and improvement of bridge procedures;
- monitoring the compliance with the International Safety Management Code (ISM);
- general ship management.

53 The VDR audio channel is also used by bridge staff as an audio log of events and intentions in hazardous or unusual situations.

Table - Accidents and incidents where VDR information has been utilised

Nature of Incident	Description of Incident	Summary of Benefits	Principal Data Items Utilised	Data that could not be obtained by other means	Protective Capsule Used?
Collision	Ro-Ro ferry in collision with fishing vessel.	<p>Information gained from the ferry's VDR proved incontrovertibly that the fishing vessel had made a large alteration of course across the ferry's bow moments before the collision, contrary to the Collision Regulations.</p> <p><i>Reduced legal and consequential costs and just settlement.</i></p>	<p>Radar, Heading and Speed</p> <p>NOTE: Bridge audio data, which might have given insight to the human factors that lay behind the accident, was lost to the investigators due to background noise from a radio, which had been playing in the wheelhouse for entertainment.</p>	Radar, Heading and Speed	No
Collision	Vessel leaving port hit coaster glancing blow, with limited damage.	<p>When bridge team's actions were reviewed, bridge procedures were found to require modification.</p> <p><i>Improved bridge team management.</i></p>	Audio, Radar, Heading	Audio, Radar, Heading	No
Collision	Vessel entering port was in collision with yacht.	<p>Evidence from the VDR absolved the master of all blame.</p> <p><i>Reduced legal and consequential costs and just settlement.</i></p>	Audio, Radar, Position, Heading and Speed	Audio, Radar, Position, heading and Speed	No
Collision	Vessel dragged anchor and contacted another ship.	<p>Evidence from the VDR allowed the management to review action by the watch keeper and provided the P&I club with the evidence they required to settle the claim.</p> <p><i>Reduced legal costs and improved bridge management.</i></p>	Audio, Radar, Position	Audio, Radar, Position,	No
Collision	Loaded vessel outward bound was in collision with inbound vessel in port access, resulting in considerable delay.	<p>The VDR provided irrefutable evidence of the action of both ships, avoiding the cost of taking witness statements.</p> <p><i>Reduced legal and consequential costs.</i></p>	Audio, Radar	Audio, Radar	No

Nature of Incident	Description of Incident	Summary of Benefits	Principal Data Items Utilised	Data that could not be obtained by other means	Protective Capsule Used?
Collision	Ro-Ro passenger vessel in collision with fishing vessel.	Radar, course and speed information proved essential to resolve different witness accounts. The unpredictable actions of the fishing vessel were exposed. <i>Reduced legal and consequential costs.</i>	Radar, Heading and Speed	Radar, Heading and Speed	No
Collision	Ferry collides with moored vessel during port passage in very high winds.	VDR data has been essential in understanding the true underlying causes of the navigational failure. <i>Reduced legal costs, a better understanding of the underlying causal factors and a fairer outcome for the bridge team.</i>	Audio, Heading, Position, Speed	Audio, Heading, Position, Speed	No
Contact	Vessel berthing at builder's yard hit jetty when under yard pilotage, sustaining steel damage.	When the yard was made aware that pilot's actions had been recorded, they paid for repairs without question. <i>Reduced legal and consequential costs.</i>	Audio, Radar	Audio, Radar	No
Contact	Vessel berthing in high wind.	A review of the evidence from the VDR confirmed that in general terms, the personnel concerned had taken the correct action, but some areas for improvement and training needs were also identified. <i>Improved Bridge Team Management.</i>	Audio, Radar	Audio, Radar	No
Grounding	Vessel hit charted rock at speed, sustaining considerable bottom damage.	Evidence from VDR allowed management to review pilot's and watch keeper's actions, allowing remedial action to be taken well in advance of flag state report. <i>Reduced legal and consequential costs and improved Bridge Team Management.</i>	Audio and Radar	Audio and Radar	No

Nature of Incident	Description of Incident	Summary of Benefits	Principal Data Items Utilised	Data that could not be obtained by other means	Protective Capsule Used?
Grounding	Vessel entering port in narrow channel struck an underwater object.	<p>The VDR showed the ship to be right on track in the dredged channel, thus absolving the master from blame or criticism.</p> <p><i>Reduced legal and consequential costs.</i></p>	Radar		No
Grounding	Vessel entering port briefly touched sand bank causing steering gear failure.	<p>Careful analysis of VDR showed exactly when, where and how the incident occurred and resolved conflicting possibilities.</p> <p><i>Improved understanding of the incident and reduced consequential costs.</i></p>	Audio, Heading and Speed	Audio, Heading and Speed	No
Grounding	Ro-Ro ferry grounded in port approach channel.	<p>VDR data confirmed that the vessel had remained in the charted approach channel and Bridge procedures had been adequate.</p> <p><i>Improved understanding of the incident, reduced legal costs and fair determination of the causes.</i></p>	Position, Heading, Speed, Radar, Audio	Position, Heading, Speed, Radar, Audio	No
Heavy Weather Damage	Heavy weather damage on passenger vessel.	<p>Rudder, heading and engine speed movements and bridge audio data proved valuable in determining the effect of the weather on the vessel's motion.</p> <p><i>Improved understanding of the causes of the incident.</i></p>	Audio, Rudder, Heading and Speed	Audio, Rudder, Heading and Speed	No
Near Collision	Ro-Ro passenger vessel in near miss with coaster.	<p>Despite a record of the incident on VTS radar, it was only with the VDR data, particularly bridge audio, that the true underlying causes of the incident (e.g. weaknesses in bridge team management) could be resolved.</p> <p><i>Improved Bridge Team Management.</i></p>	Audio, Radar	Audio	No

Nature of Incident	Description of Incident	Summary of Benefits	Principal Data Items Utilised	Data that could not be obtained by other means	Protective Capsule Used?
Near Collision	High speed craft close quarters incident with warship.	<p>The VDR provided evidence that clearly confirmed that the HSC watch keeper had taken the correct action when the warship failed to give way as required by COLREGs.</p> <p><i>Improved understanding of the incident.</i></p>	Radar	Radar	No
Near Collision	Vessel was in close quarters situation whilst overtaking another vessel.	<p>Evidence from the VDR enabled management to review the watch keeper's actions and take necessary remedial action.</p> <p><i>Improved understanding of the incident and improved Bridge Team Management.</i></p>	Audio, Radar	Audio, Radar	No
Fire	Engine room fire.	<p>Evidence from the VDR resolved conflicting evidence concerning the sequence of events and confirmed that the master and ship's company had contained the fire in an effective and professional manner.</p> <p><i>Improved understanding of the incident.</i></p>	Audio, Alarms	Audio	No
Fire	Fire in funnel.	<p>The VDR assisted management in identifying a possible design fault in the vessel's fire detection system, which explained the slow response from the bridge watch keepers to initial reports of the fire. A review of the wording of messages from the vessel also helped to explain an apparent over-reaction to the incident by the Coastguard.</p> <p><i>Improved understanding of the incident and correction of design fault.</i></p>	Audio, Communications Audio, Alarms	Audio	No

Nature of Incident	Description of Incident	Summary of Benefits	Principal Data Items Utilised	Data that could not be obtained by other means	Protective Capsule Used?
Fire	Major fire in engine room of Ro-Ro ferry.	<p>The VDR provided very important evidence concerning the emergency response which enabled the investigators to recommend improvements to shipboard procedures and to highlight many positive aspects.</p> <p><i>Improved understanding of the incident and improved emergency response procedures.</i></p>	Audio, Communications Audio	Audio, Communications Audio	No
Other	Large vessel lost power on a lee shore in gale force winds.	<p>VDR information enabled a detailed analysis of the bridge team's actions in an emergency situation to be carried out. Many shortfalls in performance were uncovered to the benefit of the bridge team, the owners and training establishments.</p> <p><i>Improved understanding of the incident and improved Bridge Team Management.</i></p>	Audio, Radar	Audio, Radar	No
Other	Engine officer suffered major injury in engine room.	<p>VDR data proved useful in resolving conflicts in witness evidence with respect to sequence and timing of events.</p> <p><i>Improved understanding of the incident.</i></p>	Audio	Audio	No
Other	Engine Failure.	<p>Evidence from the VDR clarified the actions of the Master showing that he had been unduly criticised during initial investigations.</p> <p><i>Improved understanding of the incident and fair settlement.</i></p>	Audio, Radar	Audio, Radar	No
Other	High Speed Craft wash caused damage and injury.	<p>VDR data was used to establish the vessel's precise track and speed and for analysis of the bridge commands. This has led to a greater understanding of wash propagation on these craft.</p> <p><i>Improved understanding of the causes of the incident and of the problems of wash propagation on HSC.</i></p>	Position, Heading, Speed, Audio	Audio	No

Conclusions

54 From the information contained in the table and the above analysis, the following conclusions can be reached:

- .1 VDR information is of considerable value in analysis of minor, major and potentially catastrophic accidents/incidents;
- .2 VDR information is also of value in the day-to-day safe and efficient operation of the vessel;
- .3 in the vast majority of accidents/incidents the use of a protective capsule is not essential to ensure that information can be recovered; and
- .4 audio, radar, position, heading and speed data are the most important in post accident or incident analysis. Almost invariably this data could not have been gained by any other means.

IV RELEVANT FINANCIAL IMPLICATIONS INCLUDING COST-BENEFIT ANALYSIS

Introduction - Terms of Reference

55 INTERTANKO performed a cost-benefit study, which was undertaken in conjunction with one of their members - Stolt Nielsen Inc, and a major VDR manufacturer.

56 The Sub-Committee discussed the results of the study and came to the conclusion that due to similar bridge installations, navigation, audio and other equipment the results of the study are valid generally. Consequently, although the study focuses on tankers the results gained are representative of all kinds of existing cargo ships.

57 The study chose six vessels of different ages between 5-25 years of age in order to acquire a broad spread of prices and to determine if there was any differing price structure dependent upon the age of the vessel and the equipment it was outfitted with and subsequent interfacing. Therefore, the following vessels supplied a full technical specification to a VDR manufacturer for a price assessment and interface requirements based upon retro-fitting with a fully type approved Voyage Data Recorder:

STOLT SINCERITY
STOLT PROTECTOR
STOLT JADE
STOLT INNOVATION
STOLT HELLULAND
STOLT SEA

System Configuration

58 In addition to the main type approved VDR equipment the following items were found to be necessary for installation on these existing cargo ships:

- a. The Remote Alarm Display Unit is only required if the MEE is not installed on the bridge.
- b. The Signal Converter is required when analogue input signals are not available in 61162 format.
- c. The Signal Converter is required when digital input signals are not available in 61162 format, e.g. from a relay closure.
- d. The ARPA Video Buffer is required where there is no suitable dedicated output available from the ARPA Radar.
- e. The VHF Interface is required where the audio output from the ship's VHF is not 0.775 volts RMS.
- f. The Radar Interfaces are required to obtain an output from the Radars.
- g. The Gyro, Echo Sounder and Log to 61162 Interfaces are required to obtain a 61162 output from systems without a 61162 output.
- h. The VHF Interface is required to obtain a suitable output signal from the VHF specified according to the manufacturer's standard.

Retro-Fit Pricing: Equipment

59 Each vessel will require a standard VDR system which comprises of the following elements:

(i)	1 x Main Electronic Enclosure	Total Price packed F.O.B UK port
(ii)	1 x Protective Capsule	
(iii)	8 x Microphones,	
(iv)	1 x Protective Capsule Deck Base Plate	
(v)	CD-ROM system playback software for use on recommended computer. Suitable for operation from 24v DC	
TOTAL		US \$ 67,950

60 The costs of the individual equipment are as follows:

(i)	Signal Converter (Analogue to 61162)	US \$	5,530.00
(ii)	Signal Converter (Digital to 61162)	US \$	3,050.00
(iii)	ARPA Video Buffer	US \$	1,300.00
(iv)	VHF I/face	US \$	475.00
(v)	Kelvin Hughes Nucleus 2 6000 Radar Interface	US \$	1,690.00
(vi)	Litton Bridgemaster E Radar Interface	US \$	620.00
(vii)	Decca Bridgemaster Interface	US \$	320.00
(viii)	Gyro to 61162 Interface	US \$	1,075.00
(ix)	Echo Sounder to 61162 Interface	US \$	1,075.00
(x)	Log to 61162 Interface	US \$	1,075.00
(xi)	Furuno VHF Interface	US \$	650.00

Ship's Name	Date Built	Radar Interface A	Radar Interface B	Radar Interface C	Gyro to 61162 Interface	Echo Sounder to 61162 Interface	Log to 61162 Interface	Furuno VHF Interface	Arpa Video Buffer	VHF Interface	Analogue Signal Converter 8 ch	Digital Signal Converter 96 ch	Additional Equipment Cost
Sincerity	1976	X							X	X	X		US \$ 8,990
Protector	1982	X			X	X	X		X	X	X		US \$ 12,228
Jade	1986		X		X	X	X		X	X	X		US \$ 11,162
Helluland	1991			X	X	X	X	X	X		X	X	US \$ 14,077
Innovation	1996		X						X	X	X	X	US \$ 10,962
Sea	1999								X	X	X	X	US \$ 10,338
Average Interface Costs													US \$ 11,293

Notes:

Radar Interface A = Kelvin Hughes Nucleus 2 6000
Radar Interface B = Litton Bridgemaster E
Radar Interface C = Decca Bridgemaster

61 Installation and Commissioning (The following costs do not include travel, accommodation and expenses)

Cables and Installation Materials	US \$ 4,000
Cables Installation, Equipment Mounting	US \$ 8,000
Connection and Commissioning	US \$ 8,000
Total	US \$ 20,000

62 These figures can be lower in case of large fleet orders. The figures quoted in the quotations of a manufacturer are equipment list prices only based on a single sale. Actual prices, particularly for fleet fits, are likely to be lower than these prices. However, for an owner with a fleet of 74 vessels the cost to retrofit an existing VDR to that fleet would be in the region of US \$6.75 million.

Reduction of Costs for a simplified VDR

Protective Capsule

63 The terms of reference of the study asked the Sub-Committee to look at ways of reducing the costs of retro-fitting VDR to existing vessels. However, it is the view of INTERTANKO and the Sub-Committee that this question is not easy to answer. The costs analysis that has been supplied by the manufacturer in conjunction with Stolt Nielsen looks specifically at retro-fitting VDR based upon the current requirements for new buildings. The only effective methods of reducing outfitting costs to existing vessels are either a reduction of the equipment that is required to be fitted, and/or changing the methods whereby the VDR data is supplied.

64 A large part of the initial outfitting cost relates to the protective capsule for the VDR. Most of the cost of the protective capsules originates from requirements in IEC 61996, which are resistance to water pressure of 6,000 m depth and one hour resistance to fire of 1,100 degree centigrade and particularly resistance to impact. It seems to be adequate to review these requirements for simplified VDRs following those scenarios to use.

65 INTERTANKO believes that with regard to existing tankers there is a need to re-look at the requirements for these vessels to be fitted with a protective capsule due to the small number of tankers that actually sink. From investigations into the statistics it can be seen that over the last 25 years less than 1% of the total number of tankers involved in accidents have actually sunk, moreover it also shown a downward trend in the number of tankers that are involved serious incidents.

Method of Information Supply

66 A further method of cost reduction surrounds essentially the area of interfacing with the existing equipment onboard and how this information is supplied. For example:

- .1 utilising the inputs to the AIS as a main information source to supply, position, course, speed;
- .2 utilising GPS to supply date, time, position, speed;
- .3 utilising radar to supply navigational information; and
- .4 utilising bridge audio to supply part of communication audio and main alarm.

Whilst changing method of information supply as indicated above would result in cost reductions it substantially reduces the amount of redundancy in the system.

Summary

67 Equipment costs average US \$68,000.

68 Interfacing costs based on six vessels aged between 5–25 years old US \$11,000, plus cabling etc costing about a further US \$12,500 (However this may cost considerably more for cables if cables have to be run to the equipment source i.e. steering gear for rudder order etc). Total in the region of US \$23,500. This price does not include technicians travel accommodation and expenses as these will be variable depending upon the place of outfitting, accordingly these costs are not included in this study. Therefore, the minimum cost for fitting to an existing vessel would start at US \$91,500.

69 The conclusions in the paragraphs above are based on figures provided by one manufacturer which are already becoming historical in a fast moving situation. Market forces have now driven down the price of a VDR by some 30–50%. Further cost reductions may be achievable particularly by creating a "simplified VDR" with restricted data inputs together with a lightly protected recording medium.

V ADEQUACY OF EXISTING PERFORMANCE STANDARDS

70 From both the previous sections on the experience and practicability it is clearly illustrated that, the existing performance standards are adequate for investigations into the main navigational accident categories.

71 From the experience section some data inputs are of more commonly use than others. In particular:

- Bridge audio
- Radar
- Position, Heading, Speed
- Date and time.

72 From the technical problems section some equipment can be more difficult and costly to interface. In particular:

- Some radars
- systems which do not provide data format according to IEC 61162-1.

73 Since the existing performance standards were developed there are new technical developments, which should be considered in any new performance standard. In particular:

- the float-free capsule and
- AIS.

74 These points are illustrated in the following table, which is based on inputs given to the Sub-Committee regarding the retrofitting of existing cargo ships.

No.	Title of Section (A.861(20))	United Kingdom (NAV 48/8)	Japan (NAV 48/8/1)	Germany/Sweden (NAV 48/8/2)	Brazil (NAV 48/8/3 and 5)	ICS (NAV 48/8/4)	Parameters deemed to be basic at NAV 48
1	Purpose						
2	Application						
3	Reference						
4	Definition						
5	Operational requirement						
5.1	General						
5.1.3	Protective	Lightly protected removable media, fixed	EPIRB type, Float-free*	EPIRB type, Float-free	EPIRB type, Float-free	Lightly protected removable media, fixed	EPIRB type, Float-free*
5.2	Data selection and security						
5.3	Continuity of operation						
5.4	Data items to be recorded		AIS*	AIS*	AIS*	AIS*	AIS*
.1	Date and time	○	○	○	○		○
.2	Ship's position	○	○	○	○		○
.3	Speed	○	○	○	○		○
.4	Heading	○	○	○	○		○
.5	Bridge audio	○	○	○	○		○
.6	Communication audio	○*	□*	○	○		
.7	Radar data, post-display selection	○	○ (or AIS)	○ (reduced sample rate)	○		○
.8	Echo sounder	○*	△*	△*			
.9	Main alarms	○*	△*	△*			
.10	Rudder order and response	○*	○*	△*			
.11	Engine order and response	○*	○*	△*			
.12	Hull opening status	○*	△*	△*			
.13	Water-tight and fire-door status	○*	△*	△*			
.14	Accelerations and hull stresses	○*	△*	△*			
.15	Wind speed and direction	○*	△*	△*			
6	Operation		○				
7	Interfacing		○				

Note: ○ : Applicable,
 ○* : Applicable, if available or practicable
 △* : Option, if available or practicable
 AIS* : AIS data may be used, if available
 Float free* : Manual release be provided, and a luminous signal(LED) and a radar transponder be provided to increase the possibility of recovery

Final Conclusion

75 This leads the Sub-Committee to the following conclusion regarding a performance standard for an optimised VDR to be retrofitted on existing cargo vessels. Data to be recorded should be the following:

- Bridge audio.
- Communication audio (except older types referred to in paragraph 25 to be specified in the standard for retrofitting).
- Radar (except older types referred to in paragraph 20 to be specified in the standard for retrofitting).
- Position, speed, heading.
- Date and time.
- AIS (as additional data source for target data).
- Any additional data (listed in the original standard) available in the IEC 61162-1 format.

76 A refinement of the protection requirements for the protective capsule on existing cargo vessels should be considered, in order to keep costs to the maritime industry as low as possible. The options available include a lightly protected EPIRB-like float-free capsule, a lightly protected fixed memory and the presently specified robustly protected fixed capsule.

77 However, when determining the practicability (i.e. balancing the necessity of retrieval of the VDR data in as many circumstances as possible against the ease of retrieval in those circumstances), the Sub-Committee recommends the lightly protected capsule, which can float-free (e.g. incorporated in an EPIRB) or a protected fixed capsule but not necessarily protected against impacts.

78 This feasibility study for the carriage of VDR on existing cargo ships therefore concludes that performance standards for a simplified VDR should be developed and carriage requirements should be developed.

ANNEX 9

**DRAFT RESOLUTION MSC...[...](79)
(adopted on ... December 2004)****ADOPTION OF AMENDMENTS TO THE INTERNATIONAL CONVENTION
FOR THE SAFETY OF LIFE AT SEA, 1974, AS AMENDED**

THE MARITIME SAFETY COMMITTEE,

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

RECALLING FURTHER article VIII(b) of the International Convention for the Safety of Life at Sea (SOLAS), 1974, hereinafter referred to as "the Convention", concerning the procedures for amending the Annex to the Convention, other than the provisions of chapter I thereof,

HAVING CONSIDERED, at its [seventy-eighth] session, amendments to the Convention proposed and circulated in accordance with article VIII(b)(i) thereof,

1. ADOPTS, in accordance with article VIII(b)(iv) of the Convention, amendments to the Convention, the text of which is set out in the Annex to the present resolution;
2. DETERMINES, in accordance with article VIII(b)(vi)(2)(bb) of the Convention, that the amendments shall be deemed to have been accepted on [1 January 2006], unless, prior to that date, more than one third of the Contracting Governments to the Convention or Contracting Governments the combined merchant fleets of which constitute not less than 50% of the gross tonnage of the world's merchant fleet, have notified their objections to the amendments;
3. INVITES Contracting Governments to note that, in accordance with article VIII(b)(vii)(2) of the Convention, the amendments shall enter into force on [1 July 2006] upon their acceptance in accordance with paragraph 2 above;
4. REQUESTS the Secretary-General, in conformity with article VIII(b)(v) of the Convention, to transmit certified copies of the present resolution and the text of the amendments contained in the Annex to all Contracting Governments to the Convention;
5. FURTHER REQUESTS the Secretary-General to transmit copies of this resolution and its Annex to Members of the Organization, which are not Contracting Governments to the Convention.

ANNEX

**PROPOSED DRAFT AMENDMENTS TO THE INTERNATIONAL CONVENTION FOR
THE SAFETY OF LIFE AT SEA, 1974, AS AMENDED**

CHAPTER V

SAFETY OF NAVIGATION

Regulation 20 – Voyage data recorders

1 Add a new paragraph 2 as follows:

“2 To assist in casualty investigations, the existing cargo ships, when engaged on international voyages, subject to the provisions of regulation 1.4, shall be fitted with a VDR which may be a simplified voyage data recorder (S-VDR) * as follows:

- .1 cargo ships of 20,000 gross tonnage and upwards constructed before 1 July 2002, not later than [1 January 2007];
- .2 cargo ships of 3,000 gross tonnage and upwards but less than 20,000 gross tonnage constructed before 1 July 2002, not later than [1 January 2008]; and
- .3 Administrations may exempt cargo ships from the application of the requirements of paragraph 20.2 when such ships will be taken permanently out of service within two years after the implementation date specified in subparagraphs .1 and .2 above.”

2 Renumber the existing paragraph 2 as paragraph 3.

* Refer to resolution MSC.[...](78) – Performance standards for shipborne simplified voyage data recorders (S-VDRs).
I:\NAV\49\19.DOC

APPENDIX

Record of Equipment for the Cargo Ship Safety Equipment Certificate (Form E)

3 Existing section 3 is amended as follows:

“3 Details of navigational systems and equipment

Item	Actual provision
1.1 Standard magnetic compass*
1.2 Spare magnetic compass*
1.3 Gyro compass*
1.4 Gyro compass heading repeater*
1.5 Gyro compass bearing repeater*
1.6 Heading or track control system*
1.7 Pelorus or compass bearing device*
1.8 Means of correcting heading and bearings
1.9 Transmitting heading device (THD)*
2.1 Nautical charts/Electronic chart display and information system (ECDIS)**
2.2 Back up arrangements for ECDIS
2.3 Nautical publications
2.4 Back up arrangements for electronic nautical publications
3.1 Receiver for a global navigation satellite system/ terrestrial radionavigation system* **
3.2 9 GHz radar*
3.3 Second radar (3 GHz/ 9 GHz**)*
3.4 Automatic radar plotting aid (ARPA)*
3.5 Automatic tracking aid*
3.6 Second automatic tracking aid*
3.7 Electronic plotting aid*
4 Automatic identification system (AIS)
5.1 Voyage data recorder (VDR)**
5.2 Simplified voyage data recorder (S-VDR)**

Item	Actual provision
6.1 Speed and distance measuring device (through the water)*
6.2 Speed and distance measuring device (over the ground in the forward and athwartship direction)*
6.3 Echo sounding device*
7.1 Rudder, propeller, thrust, pitch and operational mode indicator*
7.2 Rate of turn indicator*
8 Sound reception system*
9 Telephone to emergency steering position*
10 Daylight signalling lamp*
11 Radar reflector*
12 International Code of Signals

* Alternative means of meeting this requirement are permitted under regulation V/19. In case of other means they shall be specified.

** Delete as appropriate."

ANNEX 10**DRAFT RESOLUTION MSC.[...](78)
(adopted on .. May 2004)****PERFORMANCE STANDARDS FOR SHIPBORNE SIMPLIFIED
VOYAGE DATA RECORDERS (S-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 functions of adopting performance standards for radio and navigational equipment, as well as amendments thereto, shall be performed by the Maritime Safety Committee on behalf of the Organization,

NOTING that the provisions of regulation V/20 of the International Convention for the Safety of Life at Sea, 1974, as amended, do not apply to the existing cargo ships with respect to the carriage requirements of voyage data recorders (VDRs),

RECALLING FURTHER resolution MSC.109(73), by which the Committee decided that a study should be carried out, as a matter of urgency, to assess the feasibility for existing cargo ships to carry VDRs and instructed the Sub-Committee on Safety of Navigation accordingly,

NOTING ALSO that the report on the feasibility study clearly demonstrates the compelling need for mandatory carriage of a simplified version of VDRs on existing cargo ships,

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

1. ADOPTS the Recommendation on Performance Standards for Shipborne Simplified Voyage Data Recorders (S-VDRs);
2. INVITES Governments to encourage shipowners and operators of the existing cargo ships entitled to fly their flag to install S-VDRs on such ships, as soon as possible, especially considering that the carriage of S-VDRs may soon be mandatory under the SOLAS Convention;
3. RECOMMENDS Governments to ensure that S-VDRs installed on board the existing cargo ships flying their flag conform to performance standards not inferior to those specified in the Annex to this resolution.

ANNEX

DRAFT RECOMMENDATION ON PERFORMANCE STANDARDS FOR SHIPBORNE SIMPLIFIED VOYAGE DATA RECORDERS (S-VDRs)

1 PURPOSE

1.1 The purpose of a simplified voyage data recorder (S-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 S-VDR should be made available to both the Administration and the shipowner. This information is for use during any subsequent investigation to identify the cause(s) of the incident.

2 APPLICATION

2.1 A S-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 SOLAS:

- 1995 SOLAS Conference, resolution 12.

3.2 IMO resolutions:

- A.662(16) Performance Standards for Float-free Release and Activation Arrangements for Emergency Radio Equipment
- A.694(17) General Requirements for Shipborne Radio Equipment Forming Part of the GMDSS and for Electronic Navigational Aids
- A.802(19) Performance Standards for Survival Craft Radar Transponders for use in Search and Rescue Operations
- A.810(19) Performance Standards for Float-free Satellite Emergency Position-Indicating Radio Beacons Operating on 406 MHz
- A.812(19) Performance standards for a shipborne Integrated Radiocommunications System (IRCS) when used in the GMDSS
- A.824(19) Performance Standards for Devices to Indicate Speed and Distance
- A.830(19) Code on Alarms and Indicators, 1995
- A.861(20) Performance Standards for Shipborne Voyage Data Recorders (VDRs)

- MSC.64(67), Performance Standard for Heading Control Systems
annex 3
- MSC.64(67), Performance Standards for Navigational Radar Equipment,
annex 4 as amended.

4 DEFINITIONS

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

4.2 *Sensor* means any unit external to the S-VDR, to which the S-VDR is connected and from which it obtains data to be recorded.

4.3 *Final recording medium* means the item of hardware on which the data is recorded such that access to it would enable the data to be recovered and played back by use of suitable equipment.

4.4 *Playback equipment* means the equipment, compatible with the recording medium and the format used during recording, employed for recovering the data. It includes also the display or presentation hardware and software that is appropriate to the original data source equipment.¹

4.5 *Dedicated reserve power source* means a secondary battery, with suitable automatic charging arrangements, dedicated solely to the S-VDR, of sufficient capacity to operate it as required by 5.3.2.

5 OPERATIONAL REQUIREMENTS

5.1 General

5.1.1 The S-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 5.4.

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 Final recording medium

5.1.3.1 The final recording medium should be installed in a protective capsule of either a fixed or float-free type, which should meet all of the following requirements:

- .1 be capable of being accessed following an incident but secure against tampering;

¹ Playback equipment is not normally installed on a ship and is not regarded as part of a S-VDR for the purposes of these performance standards.

- .2 maintain the recorded data for a period of at least 2 years following termination of recording;
- .3 be of a highly visible colour and marked with retro-reflective materials; and
- .4 be fitted with an appropriate device to aid location.

5.1.3.2 The fixed type protective capsule should comply with the requirements set out in resolution A.861(20) with the exception of the resulting requirements for withstanding penetration.

5.1.3.3 The float-free type protective capsule should:

- .1 be fitted with means to facilitate grappling and recovery; and
- .2 be so constructed as to comply with the requirements specified in resolutions A.810(19) or A.812(19) and to minimise risk of damage during recovery operations.

5.1.4 The design and construction, which should be in accordance with the requirements of resolution A.694(17) and international standards acceptable to the Organization², should take special account of the requirements for data security and continuity of operation as detailed in 5.2 and 5.3.

5.2 Data selection and security

5.2.1 The minimum selections of data items to be recorded by the S-VDR are specified in 5.4. Optionally, additional items may be recorded provided that the requirements for the recording and storage of the specified selections are not compromised.

5.2.2 The equipment should be so designed that, as far as is practical, it is not possible to tamper with the selection of data being input to the equipment, the data itself nor that which has already been recorded. Any attempt to interfere with the integrity of the data or the recording should be recorded.

5.2.3 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.

5.3 Continuity of operation

5.3.1 To ensure that the S-VDR continues to record events during an incident, it should be capable of operating from the ship's emergency source of electrical power.

5.3.2 If the ship's emergency source of electrical power supply fails, the S-VDR should continue to record Bridge Audio (see 5.4.5) from a dedicated reserve source of power for a period of 2 h. At the end of this 2 h period all recording should cease automatically.

² Refer to publication IEC 60945 - Maritime navigation and radiocommunication equipment and systems - General requirements, methods of testing and required test results.

5.3.3 Recording should be continuous unless interrupted briefly in accordance with 6 or terminated in accordance with 5.3.2. The time for which all stored data items are retained should be at least 12 h. Data items which are older than this may be overwritten with new data.

5.4 Data items to be recorded

Date and time

5.4.1 Date and time, referenced to UTC, should be obtained from a source external to the ship or from an internal clock. 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 sufficient to reconstruct the history of the incident in detail.

Ship's position

5.4.2 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.

Speed

5.4.3 Speed through the water or speed over the ground, including an indication of which it is, derived from the ship's speed and distance measuring equipment.

Heading

5.4.4 As indicated by the ship's compass.

Bridge Audio

5.4.5 One or more microphones positioned on the bridge should be placed so that conversation at or near the conning stations, radar displays, chart tables, etc., are adequately recorded. As far as practicable, the positioning of microphones should also capture intercom, public address systems and audible alarms on the bridge.

Communications Audio

5.4.6 VHF communications relating to ship operations should be recorded.

Radar data, post-display selection

5.4.7 This should include electronic signal information from within one of the ship's radar installations which records all the information which was actually being presented on the master display of that radar at the time of recording. This should include any range rings or markers, bearing markers, electronic plotting symbols, radar maps, whatever parts of the SENC or other electronic chart or map that were selected, the voyage plan, navigational data, navigational alarms and the radar status data that were visible on the display. 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 S-VDR.

AIS Data

5.4.8 If it is impossible to obtain radar data³ then AIS target data should be recorded as a source of information regarding other ships. If radar data is recorded, AIS information may be recorded additionally as a beneficial secondary source of information on both other and own ship.

Other items

5.4.9 Any additional data items listed by IMO with the requirements set out in resolution A.861(20) should be recorded when the data is available in accordance with the international digital interface standards⁴ using approved sentence formatters.

6 OPERATION

6.1 The unit should be entirely automatic in normal operation. Means should be provided whereby recorded data may be saved by an appropriate method following an incident, with minimal interruption to the recording process.

7 INTERFACING

7.1 Interfacing to the various sensors required should be in accordance with the relevant international interface standards, where possible. 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 S-VDR system develops faults.

³ Where commercial off the shelf (COTS) interfaces are not available.

⁴ Refer to publication IEC 61162

ANNEX 11**DRAFT RESOLUTION MSC....(79)
(adopted on ... December 2004)****ADOPTION OF AMENDMENTS TO THE PROTOCOL OF 1988 RELATING TO
THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974**

THE MARITIME SAFETY COMMITTEE,

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

RECALLING FURTHER article VIII(b) of the International Convention for the Safety of Life at Sea (SOLAS), 1974, hereinafter referred to as “the Convention”, and article VI(c) of the Protocol of 1988 relating to the Convention hereinafter referred to as “the 1988 SOLAS Protocol” concerning the procedure for amending the appendix to the annex to the 1988 SOLAS Protocol,

HAVING CONSIDERED, at its seventy-eighth session, amendments to the appendix to the annex to the 1988 SOLAS Protocol proposed and circulated in accordance with article VIII(b)(i) of the Convention and article VI(c) of the 1988 SOLAS Protocol,

1. ADOPTS, in accordance with article VIII(b)(iv) of the Convention and article VI of the 1988 SOLAS Protocol, amendments to the appendix to the Annex to the 1988 SOLAS Protocol, the text of which is set out in the Annex to the present resolution;
2. DETERMINES, in accordance with article VIII(b)(vi)(2)(bb) of the Convention and article VI(c) of the 1988 SOLAS Protocol, that the amendments shall be deemed to have been accepted on [1 January 2006], unless, prior to that date, more than one third of the Parties to the 1988 SOLAS Protocol or Parties the combined merchant fleets of which constitute not less than 50% of the gross tonnage of the world’s merchant fleet, have notified their objections to the amendments;
3. INVITES Parties to note that, in accordance with article VIII(b)(vii)(2) of the Convention and article VI(c) of the 1988 SOLAS Protocol, the amendments shall enter into force on [1 July 2006], upon their acceptance in accordance with paragraph 2 above;
4. REQUESTS the Secretary-General, in conformity with article VIII(b)(v) of the Convention and article VI(c) of the 1988 SOLAS Protocol, to transmit certified copies of the present resolution and the text of the amendments contained in the Annex to all Parties to the 1988 SOLAS Protocol;
5. FURTHER REQUESTS the Secretary-General to transmit copies of this resolution and its Annex to Members of the Organization, which are not Parties to the 1988 SOLAS Protocol.

ANNEX

**AMENDMENTS TO THE PROTOCOL OF 1988 RELATING TO THE
INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974**

APPENDIX

**MODIFICATIONS AND ADDITIONS TO THE APPENDIX TO THE ANNEX TO
THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974**

Record of Equipment for the Cargo Ship Safety Equipment Certificate (Form E)

1 Existing section 3 is amended as follows:

“3 Details of navigational systems and equipment

Item	Actual provision
1.1 Standard magnetic compass*
1.2 Spare magnetic compass*
1.3 Gyro compass*
1.4 Gyro compass heading repeater*
1.5 Gyro compass bearing repeater*
1.6 Heading or track control system*
1.7 Pelorus or compass bearing device*
1.8 Means of correcting heading and bearings
1.9 Transmitting heading device (THD)*
2.1 Nautical charts/Electronic chart display and information system (ECDIS)**
2.2 Back up arrangements for ECDIS
2.3 Nautical publications
2.4 Back up arrangements for electronic nautical publications
3.1 Receiver for a global navigation satellite system/ terrestrial radionavigation system* **
3.2 9 GHz radar*
3.3 Second radar (3 GHz/ 9 GHz**)*
3.4 Automatic radar plotting aid (ARPA)*
3.5 Automatic tracking aid*
3.6 Second automatic tracking aid*
3.7 Electronic plotting aid*

Item	Actual provision
4 Automatic identification system (AIS)
5.1 Voyage data recorder (VDR)**
5.2 Simplified voyage data recorder (S-VDR)**
6.1 Speed and distance measuring device (through the water)*
6.2 Speed and distance measuring device (over the ground in the forward and athwartship direction)*
6.3 Echo sounding device*
7.1 Rudder, propeller, thrust, pitch and operational mode indicator*
7.2 Rate of turn indicator*
8 Sound reception system*
9 Telephone to emergency steering position*
10 Daylight signalling lamp*
11 Radar reflector*
12 International Code of Signals

* Alternative means of meeting this requirement are permitted under regulation V/19. In case of other means they shall be specified.

** Delete as appropriate."

ANNEX 12**DRAFT RESOLUTION MSC.[...](78)
(adopted on .. May 2004)****THE REVISED PERFORMANCE STANDARDS
FOR RADAR REFLECTORS**

THE MARITIME SAFETY COMMITTEE,

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

RECALLING FURTHER that the provisions of chapter V of the International Convention for the Safety of Life at Sea, 1974 (SOLAS), as amended, and chapter 13 of the International Code of Safety for High-Speed Craft (HSC Code), in force, require, if practicable, fitting of a radar reflector to all ships and craft under 150 gross tonnage to enable detection by radar,

RECOGNIZING that, for safety reasons, radar reflectors should produce reliable detection in practical conditions and perform in both 3 GHz (S-band) and 9 GHz (X-band),

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

1. ADOPTS the Recommendation on Performance Standards for Radar Reflectors, set out in the Annex to the present resolution;
2. RECOMMENDS Governments to ensure that radar reflectors:
 - (a) if fitted on or after [1 July 2005], conform to performance standards not inferior to those specified in the Annex to the present resolutions; and
 - (b) if fitted before [1 July 2005], conform to performance standards not inferior to those specified in the Annex to resolution A.384(X).

ANNEX

DRAFT RECOMMENDATION ON PERFORMANCE STANDARDS FOR RADAR REFLECTORS

1 INTRODUCTION

1.1 Radar reflectors carried under SOLAS chapters V and X should comply with the minimum performance requirements as specified in this Recommendation.

1.2 In the following paragraphs, radar cross sections¹ are specified for the frequencies of 3 GHz (S-band) and 9 GHz (X-band) whose wavelengths are 10 cm and 3 cm respectively.

1.3 The performance requirements stated should apply to either active or passive radar reflectors in both 9 GHz and 3 GHz bands. (Active radar reflectors are also known as radar target enhancers).

2 APPLICATION

2.1 All ships required to be fitted with a radar reflector, if practicable, to enable detection by ships navigating by radar at both 9 GHz and 3 GHz bands.

3 PERFORMANCE

3.1 The radar reflector should have a "Stated Performance Level" measured in square metres radar cross section (m^2 RCS) of at least $7.5 m^2$ in X-band and $0.5 m^2$ in S-band mounted at a minimum height of 4 m above water level.

3.2 Required minimum level for reflector performance - the Stated Performance Level should:

.2.1 be maintained over a total of at least 280° azimuth;

.2.2 not remain below this level over any single angle of more than 10° - a null; and

.2.3 not have distances between nulls of less than 20° .

3.3 For power driven vessels and sailing vessels designed to operate with little heel (catamaran/trimaran), this performance should be maintained through angles of (athwartships) heel 10° either side of vertical. For other sailing vessels, the reflector should maintain this performance over 20° either side of vertical.

3.4 Active reflectors should conform to Recommendation ITU-R M.1176.

¹ The Radar Cross Section is a measure of the ability of an object to return microwave energy to the interrogating radar when compared to the actual reflectivity of a metal sphere.

4 CONSTRUCTION

4.1 The reflector should be capable of maintaining its reflection performance under the conditions of sea states, vibration, humidity and change of temperature likely to be experienced in the marine environment as defined by resolution A.694(17)².

5 INSTALLATION

5.1 Fixing arrangements should be provided so that the reflector can be fitted either on a rigid mount or suspended in the rigging.

5.2 The recommended mounting height of 4 m and any preferred orientation should be permanently and clearly marked on the reflector.

5.3 The reflector should be clearly and permanently marked if it will meet the performance requirement to $\pm 20^\circ$ inclination (heel).

5.4 For small-craft, the maximum weight for mounting at 4 m should be 5 kg. Reflectors designed for mounting at a greater height should be of weight calculated as equivalent to, or less than 4 m/5 kg. Physical sizes should be minimised and should not exceed 0.05 m³.

² IEC Publication 60945.

ANNEX 13

**DRAFT RECOMMENDATION ON FUNCTIONAL REQUIREMENTS FOR
LONG-RANGE IDENTIFICATION AND TRACKING OF SHIPS**

Functional requirements

1 The system is intended to enhance security by providing information about vessel traffic in a timely manner to enable a State to take any appropriate action.

The system should:

- .1 enable the identification and tracking of ships at sea;
- .2 provide the competent authority of a State with the identity, position, date/time of position, course and speed of the ship;
- .3 ensure that the information is available to the competent authority in a secure and confidential manner, with due regard to commercial sensitivity;
- .4 not provide information to other ships; ~~and~~
- .5 be capable of working with different densities of shipping; **and**
- .6 be capable of being switched off on board.**

Detailed functional requirements

2 Any system used for long-range identification, tracking and reporting of ships, as required by SOLAS, should meet the following functional requirements:

- .1 enable the ship to be capable of being identified and tracked;
- .2 enable data to be collected only under the authority of:
 - .1** a flag state with world wide range of its ships;
 - .2** a port state to which a ship has indicated its intention to enter its port in accordance with the requirements of that port State; **and**
 - .3** a coastal state for a ship within [~~±~~ **200**] nautical miles of its coastline;

Note: Shaded: new text
Strikethrough: text to be deleted

- .3 ensure that data is protected from unauthorized access or disclosure;
- .4 be capable of permitting the frequency of updates to be changed, dynamically and automatically by the flag state, port state or coastal state entitled to request the data;
- .5 permit communication costs to be borne by the flag state, port state or coastal state requesting the data, and be free of charge to the ship;
- .6 use any technology once it has been notified to IMO and which meets the performance and interface requirements of the Organization;
- .7 permit Contracting Governments to use long-range ship reports to supplement ship reporting systems used for search and rescue purposes, as recognized by IMO, and other potential safety uses of information when practicable; and
- .8 be capable of being switched off on board:
 - .1 where international agreements, rules or standards provide for the protection of navigational information;
 - .2 in cases where operation is considered by the master to compromise the safety or security of the ship. The system should have the capability of providing a secure communication to indicate this action; and
 - .3 on advice from the flag State in cases where receipt of data by a coastal State is considered to compromise the safety or security of the ship or the flag State itself. The system should have the capability of providing a secure communication to indicate this action.

ANNEX 14

**DRAFT ASSEMBLY RESOLUTION ON AMENDMENTS TO THE
GUIDELINES FOR THE ON BOARD OPERATIONAL USE OF SHIPBORNE
AUTOMATIC IDENTIFICATION SYSTEM (AIS)
(RESOLUTION A.917(22))**

The text of this draft Assembly resolution was submitted directly to A 23 as authorized by MSC.

For reasons of economy, the text of the draft Assembly resolution submitted in document A 23/17/Add.1, annex 3, is not reproduced here.

ANNEX 15

REVISED WORK PROGRAMME OF THE SUB-COMMITTEE

		Target completion date/number of sessions needed for completion	Reference
1	Routeing of ships, ship reporting and related matters	Continuous	MSC 72/23, paragraphs 10.69 to 10.71, 20.41 and 20.42; NAV 49/19, section 3
2	Casualty analysis (co-ordinated by FSI)	Continuous	MSC 70/23, paragraphs 9.17 and 20.4; NAV 49/19, section 14
H.1	World-wide radionavigation system (WWRNS)	2005	MSC 75/24, paragraph 22.37
.1	new developments in the field of GNSS, especially Galileo	2005	NAV 48/19, paragraph 16.3.1
.2	review and amendment of IMO policy for GNSS (resolution A.915(22))	2005	NAV 48/19, paragraph 16.3.2
.3	recognition of radionavigation systems as components of the WWRNS (resolution A.815(19))	2005	NAV 48/19, paragraph 16.3.3
H.2	Feasibility study on carriage of VDR on existing cargo ships	2003	MSC 73/21, paragraphs 11.31 and 18.22; NAV 48/19, section 8

Notes: 1 "H" means a high priority item and "L" means a low priority item. However, within the high and low priority groups, items have not been listed in any order of priority.

2 Items printed in bold letters have been selected for the provisional agenda for NAV 50, shown in annex 16.

		Target completion date/number of sessions needed for completion	Reference
H-3	2 Large passenger ship safety: effective voyage planning for large passenger ships	2003 2004	MSC 73/21, paragraph 18.23; MSC 74/24, paragraph 21.4; NAV 49/19, section 11
H-4	Places of refuge (in co-operation with COMSAR and MEPC)	2003	MSC 74/24, paragraph 21.31; NAV 48/19, section 5
H-5	Revision of performance standards for radar reflectors	2003	MSC 74/24, paragraph 21.29; NAV 48/19, section 9
H-6	3 Anchoring, mooring and towing equipment (co-ordinated by DE)	2003 2004	MSC 74/24, paragraph 21.30; NAV 49/19, section 6
H-7	4 Review of performance standards for radar equipment	2004	MSC 74/24, paragraphs 9.16 to 9.17; MSC 75/24, paragraph 22.34; NAV 49/19, section 9
H-8	5 Review of the OSV Guidelines (co-ordinated by DE)	3 sessions	MSC 75/24, paragraph 22.4
H-9	6 Requirements for the display and use of AIS information on shipborne navigational displays	2004	MSC 75/24, paragraph 22.35; NAV 49/19, section 4

		Target completion date/number of sessions needed for completion	Reference	
H.40	7	Review of the 2000 HSC Code and amendments to the DSC Code and the 1994 HSC Code (co-ordinated by DE)	2 sessions* 2005	MSC 75/24, paragraphs 12.22 and 22.8; NAV 48/19, paragraphs 18.25 and 18.26; MSC 76/23, paragraphs 8.19 and 20.4
H.41	8	Measures to enhance maritime security	2004	MSC 75/24, paragraph 22.9; NAV 49/19, section 12
H.42	9	ITU matters, including Radio-communication ITU-R Study Group 8 matters	2003 2006	MSC 69/22, paragraphs 5.69 and 5.70; NAV 49/19, section 10
H.13	10	Guidance on early abandonment of bulk carriers (in co-operation with DE)	2003 2004	MSC 76/23, paragraph 20.31; NAV 49/19, section 15
H.44	11	Revision of the fishing vessel Safety Code and Voluntary Guidelines (co-ordinated by SLF)	2004**	MSC 77/26, paragraph 23.27
L.1		Revision of the forms of nuclear ship safety certificates (co-ordinated by DE)	2 sessions	MSC 75/24, paragraph 22.6
L.2		Recommendations on high-risk oceanic crossings by adventure craft (in co-operation with COMSAR)	1 session	MSC 76/23, paragraph 20.30

* The work on the item should commence in 2004 as part of the next scheduled review of the 2000 HSC Code.

** The item will be included in the provisional agenda for NAV 50.

ANNEX 16**PROVISIONAL AGENDA FOR THE FIFTIETH 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 Requirements for the display and use of AIS information on shipborne navigational displays
 - 5 Review of the 2000 HSC Code and amendments to the DSC Code and the 1994 HSC Code
 - 6 Anchoring, mooring and towing equipment
 - 7 Revision of the fishing vessel Safety Code and Voluntary Guidelines
 - 8 Recommendations on high-risk oceanic crossing by adventure craft
 - 9 Review of performance standards for radar equipment
 - 10 ITU matters, including Radiocommunication ITU-R Study Group 8 matters
 - 11 Large passenger ship safety: effective voyage planning for large passenger ships
 - 12 Measures to enhance maritime security
 - 13 World-wide radionavigation system (WWRNS)
 - 14 Casualty analysis*
 - 15 Guidance on early abandonment of bulk carriers
 - 16 Work programme and agenda for NAV 51
 - 17 Election of Chairman and Vice-Chairman for 2005
 - 18 Any other business
 - 19 Report to the Maritime Safety Committee

* Items under continuous review

ANNEX 17**PROPOSED UPDATED TERMS OF REFERENCE FOR THE SUB-COMMITTEE**

In order to maintain and enhance the safety of navigation, the Sub-Committee, under the direction of the Maritime Safety Committee and, as necessary, the Marine Environment Protection Committee should:

- [.1 consider and agree the following:
 - .1 amendments to the International Regulations for Preventing Collisions at Sea, 1972
 - .2 ships' routing, ship reporting systems and related matters;
 - .3 amendments to the General Provisions on Ships' Routing, as amended (resolution A.572(14), as amended);
- .2 consider and agree proposed measures related to the revised chapter V of the International Convention for the Safety of Life at Sea, 1974, in particular:
 - .1 operational safety measures related to safety of navigation, including hydrography, aids to navigation, radionavigation systems, ship reporting systems, vessel traffic services and pilotage issues;
 - .2 revision/development of relevant navigational equipment performance standards, the International Code of Signals and other navigational requirements;
 - .3 technical measures with respect to the implementation of the revised SOLAS chapter V, including ITU matters; and
 - .4 provision of guidance on new carriage requirements, such as Electronic Chart Display and Information Systems (ECDIS), Automatic Identification Systems (AIS) and Voyage Data Recorder (VDR);
- .3 consider the revision/development of relevant operational guidelines relating to navigational safety and associated issues, such as maritime security, places of refuge, effective voyage planning for large passenger ships and bulk carrier safety;
- .4 act on any other relevant issues referred to it by the Maritime Safety Committee, the Marine Environment Protection Committee or other technical bodies of the Organization.]

ANNEX 18**DRAFT SN CIRCULAR ON
GUIDANCE ON THE APPLICATION OF AIS BINARY MESSAGES**

1 Automatic Identification System (AIS) is a working system for ship identification and tracking that has the capability of the service of binary messages. The concept, functional requirements and technical constraints are described in appendix 1.

2 The Sub-Committee on Safety of Navigation, at its forty-ninth session (30 June to 4 July 2003) selected seven (7) binary messages as shown in appendix 2 to this annex to be used as a trial set of messages. The idea is to use this set of 7 messages for a trial period of 4 years with no change. It should be noted that 4 additional system-related messages identified in Recommendation ITU-R M.1371 are needed for the operation of the system.

3 The criteria for selecting the 7 trial messages were:

- .1 demonstrated operational need;
- .2 a cross-section of users, including ships, VTS, pilots, and port authorities; and
- .3 messages already developed for format and content.

4 In addition, messages were limited to a maximum number of 3 slots to reduce the potential for overloading the AIS frequencies designated for IMO.

5 In addition to these 7 messages and 4 system-related messages, the Sub-Committee agreed to allow 2 additional messages in the 4-year trial period to test the process of introducing new binary messages to users, manufacturers and the Organization.

6 By the end of the trial period, all SOLAS ships and a large number of non-SOLAS vessels, are expected to be equipped with AIS, allowing IMO to evaluate the benefit and practicability of AIS binary messages, as well as the loading of AIS frequencies.

7 If the evaluation is positive, the use of binary messages could be extended. Should a Member Government see the need to propose a new binary message, it should address to the Sub-Committee a demonstrated operational need and provide the proposed format and content of the message. Then, the Organization may accept, assign an identifier and publish it in an updated SN circular for the benefit of the maritime industry.

8 Member Governments are invited to bring the annexed information to the attention of all concerned.

APPENDIX 1

DRAFT GUIDANCE ON AIS BINARY MESSAGES

1 This document provides an overview of the purpose and scope of AIS Binary Messages and their applications.

System Requirements

2 Binary Messages may be transmitted and received by shipborne mobile AIS devices and AIS base stations that are equipped to process these messages. Shore-based stations may receive ships' Binary Messages and distribute them to other ships and/or users.

3 The display capability of AIS binary messages is not part of the mandatory functions of the MKD (Minimum Keyboard and Display). The display of the information content of binary messages may require hardware additional to the AIS and dedicated software.

Purpose and scope of AIS Binary Messages

4 Automatic Identification System (AIS) was originally and is primarily a means for positive identification and tracking of vessels, e.g. by transmitting and receiving static, dynamic and voyage-related data of ships, as well as short safety related messages. In addition, AIS will be beneficial to the safety of navigation and protection of the environment by monitoring the maritime traffic and by providing various basic services. In particular, AIS may use Binary Messages as a means for certain types of limited communication. These messages will be dedicated to specific applications, which must be approved by IMO.

5 Binary Messages may be either Addressed Binary Messages or Broadcast Binary Messages. Recommendation ITU-R M.1371 specifies the technical characteristic and the structure of the binary messages. The content is tailored to different applications. IMO defines this content. To avoid system overload, the number of binary messages should be limited. Therefore, Binary messages should be approved only if there is a high operational need for them. These messages have to be distinguished from Addressed Safety Related Messages and Broadcast Safety Related Messages both of which allow the exchange of format-free ASCII-text.

6 Binary Messages may provide a variety of capabilities for pre-defined information packages. For example, they may permit:

- ships to report information to other ships and shore stations,
- shore stations to report navigation information, conditions and warnings,
- ship reporting to be simplified.

7 Moreover, binary messages may reduce verbal communications and enhance reliable information exchange and reduce operator's workload. Binary Messages are not intended to replace standard services such as GMDSS and SAR.

Use of AIS Binary Messages

8 The use of Binary Messages is optional. Binary Messages may be generated manually or automatically. Pre-defined forms for each binary message type may be used to easily generate the message.

9 Since the use of binary messages places an additional load on the VHF data link, care must be taken not to impair the main functions of AIS for ship identification and tracking. In this regard, longer binary messages may adversely impact the VHF data link and should be avoided.

APPENDIX 2

APPLICATION 1 Message “METEOROLOGICAL AND HYDROLOGICAL DATA”

Parameter	No. of bits	Description
Message ID	6	Identifier for Message 8; always 8
Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated.
Source ID	30	MMSI number of source station
Spare	2	Not used. Should be set to zero.
IAI	16	DAC = 001; FI = 11
Latitude	24	Measuring position, 0 to +/- 90 degrees, 1/1000th minute
Longitude	25	Measuring position, 0 to +/- 180 degrees, 1/1000th minute
Date and time	16	Time of transmission, Day, hour, minute, (ddhhmm in UTC)
Average wind speed	7	Average of wind speed values for the last 10 minutes. 0-120 kts, 1 kt
Wind gust	7	Wind gust is the maximum wind speed value reading during the last 10 minutes, 0 - 120 kts, 1 kt
Wind direction	9	0 - 359 degrees ,1 degree
Wind gust direction	9	0 - 359 degrees, 1 degree
Air temperature	11	Dry bulb temperature - 60.0 to + 60.0 degrees Celsius 0.1 of a degree
Relative humidity	7	0 - 100%, 1%
Dew point	10	- 20.0 - + 50.0 degrees, 0.1 degree
Air pressure	9	800 - 1200 hPa, 1 hPa
Air pressure tendency	2	0 = steady, 1 = decreasing, 2 = increasing
Horizontal visibility	8	0.0 - 25.0 NM, 0.1 NM
Water level (incl. tide)	9	Deviation from local chart datum, . -10.0 to + 30.0 m 0.1 m
Water level trend	2	0 = steady, 1 = decreasing, 2 = increasing
Surface current speed (incl. tide)	8	0.0 - 25.0 kts 0.1 kt
Surface current direction	9	0 - 359 degrees, 1 degree
Current speed, #2	8	Current measured at a chosen level below the sea surface, 0.0 - 25.0 kts, 0.1 kt
Current direction, #2	9	0 - 359 degrees, 1 degree
Current measuring level, #2	5	Measuring level in m below sea surface , . 0 -30 m 1 m
Current speed, #3	8	0.0 - 25.0 knots, 0.1 knot
Current direction, #3	9	0 - 359 degrees, 1 degree
Current measuring level, #3	5	Measuring level in m below sea surface, 0 - 30 m 1 m
Significant wave height	8	0.0 - 25.0 m, 0.1 m
Wave period	6	Period in seconds, 0 - 60 s, 1 s
Wave direction	9	0 - 359 degrees, 1 degree
Swell height	8	0.0 - 25.0 m, 0.1 m
Swell period	6	Period in seconds, 0 - 60 s, 1 s
Swell direction	9	0 - 359 degrees, 1 degree
Sea state	4	According to Beaufort scale (manual input?), 0 to 12, 1
Water temperature	10	-10.0 - + 50.0 degrees, 0.1 degree
Precipitation (type)	3	According to WMO
Salinity	9	0.0 - 50.0 ‰, 0.1‰
Ice	2	Yes/No
Spare	6	
Total Number of bits	352	Occupies 2 slots

Purpose

This message allows the distribution of meteorological and hydrological information. Should there be no positional information or time of measurement, this message should not be transmitted. If there is no data available, default value to be transmitted is the highest available binary value for that particular data field. It is to be displayed as 'not available' (not 9999 or zero or similar). This message takes 2 slots. Not all the information specified in the tables will be available at all stations. The interval between the broadcasting of this message should not exceed 12 minutes. Attribute of message: broadcast, shore station transmitting, no acknowledgement required.

APPLICATION 2
Message “DANGEROUS CARGO INDICATION”

Parameter	No. bits	Description
Message ID	6	Identifier for Message 6, always 6
Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated. Refer to § 4.6.1; 0 - 3; default = 0; 3 = do not repeat any more
Source ID	30	MMSI number of source station
Sequence Number	2	0 - 3; refer to § 5.3.1
Destination ID	30	MMSI number of destination station
Retransmit Flag	1	Retransmit Flag should be set upon retransmission: 0 = no retransmission = default; 1 = retransmitted.
Spare	1	Not used. Should be zero
IAI	16	DAC = 001; FI =12
Last Port of call	30	UN Locode 5 characters 6 bit ASCII "@@@@@" = not available = default
ATD from Last Port of Call	20	Actual Time of Departure; MMDDHHMM UTC Bits 19 – 16: month; 1 - 12; 0 = not available = default; Bits 15 – 11: day; 1 - 31; 0 = not available = default; Bits 10 - 6: hour; 0 - 23; 24 = not available = default; Bits 5 - 0: minute; 0 - 59; 60 = not available = default
Next Port of call	30	UN Locode 5 characters 6 bit ASCII "@@@@@" = not available = default
ETA at Next Port of Call	20	Estimated Time of Arrival; MMDDHHMM UTC Bits 19 – 16: month; 1 - 12; 0 = not available = default; Bits 15 – 11: day; 1 - 31; 0 = not available = default; Bits 10 - 6: hour; 0 - 23; 24 = not available = default; Bits 5 - 0: minute; 0 - 59; 60 = not available = default
Main Dangerous Good	120	Maximum 20 characters 6 bit ASCII "@@@@@@@@@@@@@@@@@@@@@@@@@@@" = not available = default
IMD category of Main Dangerous Good	24	Maximum 4 characters 6 bit ASCII "@@@@@" = not available = default
UN Number of Main Dangerous Good	13	1 - 3363 UN Number 3364- 8191 should not be used 0 = not available = default
Value of Quantity of Main Dangerous Good	10	0 = not available = default; 1 - 1023 = value of quantity
Unit of Quantity of Main Dangerous Good	2	0 = not available = default 1 = in kg 2 = in tons (10E3 kg) 3 = in 1.000 tons (10 E 6 kg)
Spare	3	Not used. Should be set to zero
Total Number of bits	360	Occupies 2 slots

Purpose:

This message should be used as a respond on a request for Dangerous Cargo Indication from a competent authority. The message content is essential to identify that harbour where the necessary documents for the dangerous goods cargo can be found, e. g. last and next port of call. The indication of main dangerous goods and its quantity gives at least an estimation of a potential danger. Intended Application: The data are for use of a competent authority only. Attributes of message: addressed, ship transmitting, no acknowledgement.

APPLICATION 3
Message “FAIRWAY CLOSED”

Parameter	No. of Bits	Description
Message ID	6	Identifier for Message 8; always 8
Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated.
Source ID	30	Name of source station
Spare	2	Not used. Should be set to zero.
IAI	16	DAC = 001; FI = 13
Reason for closing	120	Maximum 20 characters 6-bit ASCII; „@@@@@@@@@@@@@@@@@@@@@@@@@@@@@“ = not available = default
Location of closing from	120	Maximum 20 characters 6-bit ASCII; „@@@@@@@@@@@@@@@@@@@@@@@@@@@@@“ = not available = default
Location of closing To	120	Maximum 20 characters 6-bit ASCII; „@@@@@@@@@@@@@@@@@@@@@@@@@@@@@“ = not available = default
Extension of closed area (radius)	10	extension; (valid range 0-1000, 1001 = not available = default)
Unit of extension value	2	0=[m], 1=[km], 2=[nm], 3=[cbl]
Closing from day	5	1-31; 0 = day not available = default
Closing from month	4	1-12; 0 = month unavailable = default; 13-15 unused
From LT hour (appr)	5	0-23; 24 = LT hour not available = default; 25-31 not used
From LT minute (appr)	6	0-59; 60 = LT minute not available = default; 61-63 not used
To day	5	1-31; 0 = day not available = default
To month	4	1-12; 0 = month unavailable = default; 13-15 unused
To LT hour (appr)	5	0-23; 24 = LT hour not available = default; 25-31 not used
To LT minute (appr)	6	0-59; 60 = LT minute not available = default; 61-63 not used
Spare	4	
Total number of bits	472	occupies 3 slots

Purpose

This message should be used to inform ships, in particular to give guidance to large vessels about temporary closed fairways or sections in ports. Attributes: broadcast, shore station transmitting, no acknowledgement.

APPLICATION 4
Message “TIDAL WINDOW”

Parameter	No. of bits	Description
Message ID	6	Identifier for Message 6; always 6
Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated. 0-3; 0 = default; 3 = do not repeat anymore
Source ID	30	MMSI number of source station
Sequence Number	2	0-3.
Destination ID	30	MMSI number of destination station
Retransmit Flag	1	Retransmit Flag should be set upon retransmission: 0 = no retransmission = default; 1 = retransmitted.
Spare	1	Not used. Should be zero.
IAI	16	DAC = 001; FI = 14
UTC month	4	1-12; 0 = UTC month not available = default; 13-15 not used
UTC day	5	1-31; 0 = UTC day not available = default
Position #1 Lat	27	1/10 000 min (± 90 degrees, North = positive, South = negative; 91 degrees = not available = default).
Position #1 Lon	28	1/10 000 min (± 180 degrees, East = positive, West = negative; 181 degrees = not available = default).
From UTC hour	5	0-23; 24 = UTC hour not available = default; 25-31 not used
From UTC minute	6	0-59; 60 = UTC minute not available = default; 61-63 unused
To UTC hour	5	0-23; 24 = UTC hour not available = default; 25-31 not used
To UTC minute	6	0-59; 60 = UTC minute not available = default; 61-63 unused
Current direction predicted #1	9	Current direction in degrees. (valid range 0-359, 360 = not available = default).
Current speed predicted #1	7	Current speed in 0,1 knots. (valid range 0-126; 127 = not available = default).
Position #2 Lat	27	1/10 000 min (± 90 degrees, North = positive, South = negative; 91 degrees = not available = default).
Position #2 Lon	28	1/10 000 min (± 180 degrees, East = positive, West = negative; 181 degrees = not available = default).
From UTC hour	5	0-23; 24 = UTC hour not available = default; 25-31 not used
From UTC minute	6	0-59; 60 = UTC minute not available = default; 61-63 unused
To UTC hour	5	0-23; 24 = UTC hour not available = default; 25-31 not used
To UTC minute	6	0-59; 60 = UTC minute not available = default; 61-63 unused
Current direction predicted #2	9	Current direction in degrees. (valid range 0-359, 360 = not available = default).
Current speed predicted #2	7	Current speed in 0,1 knots. (valid range 0-126; 127 = not available = default).
Position #3 Lat	27	1/10 000 min (± 90 degrees, North = positive, South = negative; 91 degrees = not available = default).
Position #3 Lon	28	1/10 000 min (± 180 degrees, East = positive, West = negative; 181 degrees = not available = default).
From UTC hour	5	0-23; 24 = UTC hour not available = default; 25-31 not used
From UTC minute	6	0-59; 60 = UTC minute not available = default; 61-63 unused
To UTC hour	5	0-23; 24 = UTC hour not available = default; 25-31 not used
To UTC minute	6	0-59; 60 = UTC minute not available = default; 61-63 unused
Current direction predicted #3	9	Current direction in degrees. (valid range 0-359, 360 = not available = default).
Current speed predicted #3	7	Current speed in 0,1 knots. (valid range 0-126; 127 = not available = default).
Total number of bits	376	occupies 3 slots

Purpose

This message should be used to inform vessels about tidal windows which allow a vessel the safe passage of a fairway. The message includes predictions of current speed and current direction. In this example, three points of tidal information are given. Attributes of message: addressed, shore station transmitting, acknowledgement required.

APPLICATION 5
Message “EXTENDED SHIP STATIC AND VOYAGE RELATED DATA”

Parameter	No. of bits	Description
Message ID	6	Identifier for Message 8; always 8
Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated.
Source ID	30	Name of source station
Spare	2	Not used. Should be set to zero.
IAI	16	DAC =001; FI =15
Air Draught	11	in 1/10 m, 2047 = height over keel 204,7 m or greater, 0 = not available = default
Spare	5	Not used. Should be set to zero.
Total Number of Bits	72	This message uses one slot

Purpose

This message should be used by a ship to report the height over keel.
Attributes: broadcast, ship transmitting, no acknowledgement.

APPLICATION 6
Message “NUMBER OF PERSONS ON BOARD”

Parameter	No. of bits	Description
Message ID	6	Identifier for Message 86 , always 86
Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated.
Source ID	30	Name of source station
Spare	2	Not used. Should be set to zero.
IAI	16	DAC = 001; FI =16
Number of Persons	13	Current number of persons on-board, including crew members: 0 – 8191; default = 0 = not available; 8191 = 8191 or more
Spare	3	Not used. Should be set to zero.
Total Number of Bits	72	This message uses one slot

Purpose

This message should be used by a ship to report the number of persons on board, e.g. on request by a competent authority. Attributes: addressed, acknowledgement required.

APPLICATION 7
Message “PSEUDO-AIS TARGETS”

Parameter	No. of bits	Description
Message ID	6	Identifier for Message 8; always 8
Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated.
Source ID	30	Name of source station
Spare	2	Not used. Should be set to zero.
IAI	16	DAC = 001; FI =17
VTS Target 1	120	Refer to table below; occupies 2 slots
VTS Target 2	120	Optional; refer to table below; occupies 2 slots
VTS Target 3	120	Optional; refer to table below; occupies 3 slots
VTS Target 4	120	Optional; refer to table below; occupies 3 slots
Total Number of bits	Max 536	3 slots

Each VTS Target should be structured as follows:

Parameter	No. Of Bits	Description
Type of Target Identifier	2	Identifier Type: 0 = The target identifier should be the MMSI number. 1 = The target identifier should be the IMO number. 2 = The target identifier should be the call sign. 3 = Other (default).
Target ID	42	Target Identifier. The Target ID should depend on Type of Target Identifier above. When call sign is used, it should be inserted using 6-bit ASCII. If Target Identifier is unknown, this field should be set to zero. When MMSI or IMO number is used, the least significant bit should equal bit zero of the Target ID.
Spare	4	Spare. Should be set to zero.
Latitude	24	Latitude in 1/1000 of a minute.
Longitude	25	Longitude in 1/1000 of a minute.
COG	9	Course over ground in degrees (0-359); 360 = not available = default.
Time Stamp	6	UTC second when the report was generated (0-59, or 60 if time stamp is not available, which should also be the default value)
SOG	8	Speed over ground in knots; 0-254; 255 = not available = default.
Total Number of bits	120	

A VTS target should only be used, when the position of the target is known. However, the target identity and/or course and/or time stamp and/or speed over ground may be unknown.

Purpose

This message should be used to transmit VTS targets. This message should be variable in length, based on the amount of VTS targets. The maximum of VTS Targets transmitted in one International FM 16 should be seven (7). Because of the resulting effects of VDL channel loading, the transmission of International FM 16 should be no more than necessary to provide the necessary level of safety.

Attributes: broadcast, VTS transmitting, no acknowledgement.

ANNEX 19**NOTE FOR THE SUB-COMMITTEE ON STANDARDS OF
TRAINING AND WATCHKEEPING****Keeping of a safe anchor watch**

1 The master of every ship is bound to ensure that watchkeeping arrangements are adequate for maintaining a safe watch at anchor at any time.

2 An officer in charge of the navigational watch should keep a safe navigational watch at an unsheltered anchorage, at an open roadstead or any other virtually "at sea" conditions and unsafe situations in accordance with Chapter VIII Section A-VIII/2 Part 3-1 paragraph 51, of the STCW Code.

3 Other than in unsafe conditions, the master commensurate with maintaining the ship's safety and security and the protection of the marine environment may, at his own discretion, entrust to an experienced crew member the watchkeeping at anchor taking into account the circumstances, conditions and obligations, situations and procedures, such as:

- .1 a continuous state of vigilance by sight and hearing as well as by all other available means;
- .2 ship-to-ship and ship-to-shore communication;
- .3 prevailing weather, sea, ice and current conditions;
- .4 the need to continuously monitor the ship's position;
- .5 nature, size and characteristics of anchorage;
- .6 traffic conditions;
- .7 situations which might affect the security of the ship;
- .8 loading and discharging operations;
- .9 designation of stand-by crew members; and
- .10 procedure to alert the master and maintain engine readiness.

ANNEX 20

**DRAFT ASSEMBLY RESOLUTION ON
PROVISION OF HYDROGRAPHIC SERVICES**

The text of this draft Assembly resolution was submitted directly to A 23 as authorized by MSC.

For reasons of economy, the text of the draft Assembly resolution submitted in document A 23/17/Add.1, annex 4, is not reproduced here.

ANNEX 21**DRAFT RESOLUTION MSC...(78)
[(adopted on 2004)]****ADOPTION OF AMENDMENTS TO THE GENERAL PROVISIONS ON SHIPS'
ROUTEING
(RESOLUTION A.572(14), AS AMENDED)**

THE MARITIME SAFETY COMMITTEE

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

RECOGNIZING the need to provide general provisions for adoption, designation and substitution of archipelagic sea lanes,

TAKING INTO ACCOUNT the decision of the Sub-Committee on Safety of Navigation at its forty-third session that an archipelagic sea lane should be considered to be a routeing system,

HAVING CONSIDERED, at its [seventy-eighth] session, the text of proposed amendments to the General Provisions on Ships' Routeing (resolution A.572(14), as amended), to incorporate provisions relating to adoption, designation and substitution of archipelagic sea lanes to form a new Annex thereof:

1. ADOPTS the Amendments to the General Provisions on Ships' Routeing (resolution A.527(14), as amended), concerning the adoption, designation and substitution of archipelagic sea lanes the text of which is set out in the Annex to the present resolution;
2. DETERMINES that amendments to the General Provisions on Ships' Routeing including amendments to the General Provisions for the adoption, designation and substitution of archipelagic sea lanes shall be adopted, brought into force and shall take effect in accordance with the provisions of A.572(14), as amended;
3. INVITES Governments intending to submit proposals for the adoption, designation and substitution of archipelagic sea lanes to take account of the annexed General Provisions;
4. REQUESTS the Secretary-General to bring this resolution and its Annex to the attention of all Contracting Governments to the SOLAS Convention and to Members of the Organization which are not Contracting Governments to the Convention.

ANNEX

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

**General Provisions for the Adoption, Designation and Substitution of
Archipelagic Sea Lanes**

In Annex 2:

- .1 replace existing paragraph 3.13 with the following text:-

3.13 After the adoption of the Archipelagic sea lanes by IMO, the Government of the Archipelagic State shall promulgate the designation of the sea lanes. The designation of the sea lanes shall be formally communicated to IMO.
- .2 insert new paragraph 3.14 after the end of paragraph 3.13 as follows:-

3.14 Archipelagic sea lanes shall not come into effect until at least six months after the later of:
 - .1 designation of sea lanes as described in paragraph 3.13 and;
 - .2 publication of either notices to mariners to amend charts or revised charts to depict the sea lanes.
