



MARITIME SAFETY COMMITTEE  
69th session  
Agenda item 22

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1 June 1998  
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**REPORT OF THE MARITIME SAFETY COMMITTEE  
ON ITS SIXTY-NINTH SESSION**

Attached are annexes 1 to 13 to the report of the Maritime Safety Committee on its sixty-ninth session (MSC 69/22).

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## ANNEX 1

**AGENDA FOR THE SIXTY-NINTH SESSION AND  
LIST OF DOCUMENTS**

**1 Adoption of the agenda, report on credentials**

MSC 69/1	Secretariat	Provisional agenda
MSC 69/1/1	Secretariat	Annotations to the provisional agenda

**2 Decisions of other IMO bodies, including the outcome of the 1997 SOLAS Conference**

MSC 69/2	Secretariat	Outcome of Assembly 20th session
MSC 69/2/1	Secretariat	Outcome of 1997 SOLAS CONF.4
MSC 69/2/1/Add.1	United Kingdom	Constructional arrangements for bulk carriers
MSC 69/2/1/Add.2	Japan	Uniform application of chapter XII
MSC 69/2/1/Add.3	Republic of Korea	Further work on safety of bulk carriers
MSC 69/2/1/Add.4	BIMCO	Inclusion of heavy break bulk cargoes in chapter XII
MSC 69/2/1/Add.5	United Kingdom	Constructional arrangements for bulk carriers
MSC 69/2/2	Secretariat	Outcome of Council 78th session
MSC 69/2/3	Secretariat	Outcome of MEPC 40th session
MSC 69/2/3/Add.1	Secretariat	Outcome of MEPC 41st session
MSC 69/2/4	Secretariat	Outcome of 1997 MP/CONF.3
MSC 69/2/5	Secretariat	Outcome of TCC 44th session
MSC 69/2/6	Secretariat	Outcome of FAL 25th session
MSC 69/2/7	Secretariat	Outcome of LEG 76th session

**3 Consideration and adoption of amendments to mandatory instruments**

MSC 69/3	Secretariat	Proposed amendments to SOLAS 74
MSC 69/3/1	Secretariat	Proposed amendments to SAR 79
MSC 69/3/2	Greece	Comments on SAR 79 proposed amendments
MSC 69/3/3	Japan	Comments on SAR 79 proposed amendments
MSC 69/WP.2	Secretariat	Draft texts of proposed amendments to SOLAS and SAR Conventions
MSC 69/WP.7 and Corr.1 (S only)	Drafting group	Draft texts of proposed amendments to SOLAS and SAR Conventions

#### 4 Bulk liquids and gases

MSC 69/4	Secretariat	Report of the 2nd session of the Sub-Committee
BLG 2/15 and Corr.1 (E only)	Sub-Committee	Report of the 2nd session of the Sub-Committee to the MSC
MSC 69/4/1	Secretariat	Outcome of MEPC 40th session
MSC 69/4/2	Norway	Comments on carriage requirements for monostyrene
MSC 69/INF.30 (E only)	Norway	Study on transport of styrene monomer

#### 5 Safety of navigation

MSC 69/5	Secretariat Committee	Report of the 43rd session of the Sub-
NAV 43/15	Sub-Committee	Report of the 43rd session of the Sub-Committee to the MSC
MSC 69/5/1	Indonesia, Malaysia and Singapore	Amendments to the mandatory ship reporting system in the Straits of Malacca and Singapore (STRAITREP)
MSC 69/5/2	Indonesia	Archipelagic sea lanes and air routes through Indonesian waters
MSC 69/5/3	Italy	Proposed amendments to regulations 2, 20 and 25 of revised SOLAS chapter V
MSC 69/5/4	CIRM	Comments on draft performance standards for marine electromagnetic compasses
MSC 69/5/5	Indonesia, Malaysia and Singapore	Information relating to routeing measures in the Straits of Malacca and Singapore
MSC 69/5/6	ICAO	Comments on international air routes over archipelagic waters
MSC 69/5/7	France and Italy	Information on proposals concerning the Strait of Bonifacio
MSC 69/5/8	ICS	Comments on operational requirements for AIS
MSC 69/5/9	SIGTTO and INTERTANKO	Comments on safety of navigation in the Straits of Malacca and Singapore
MSC 69/5/10	IHO	Proposed IHO symbology for depiction on charts
MSC 69/5/11	Japan	Comments on draft performance standards for AIS
MSC 69/5/12	ICS	Ships' routeing measures in the Strait of Istanbul, Strait of Çanakkale and the Marmara Sea
MSC 69/INF.25 (E only)	Turkey	Information on development of VTS in the Strait of Istanbul, Strait of Çannakale and the Marmara Sea

**5 Safety of navigation** (continued)

MSC 69/INF.26 (E only)	Turkey	Information on the review of national maritime regulations in the Strait of Istanbul, Strait of Çannakale and the Marmara Sea
MSC 69/INF.27 (E only)	Turkey	Information on the grounding of the tanker <b>Orange Star</b> in the Strait of Istanbul
MSC 69/INF.28 (E only)	Turkey	Information on the ship reporting system (TUBRAP) in the Strait of Istanbul, Strait of Çannakale and the Marmara Sea
MSC 69/INF.29 (E only)	Denmark	Report on the impact of high-speed ferries on the external environment
MSC 69/WP.6	Working group	Report of the Working Group on Ships' Routeing

**6 Fire protection**

MSC 69/6	Secretariat	Report of the 42nd session of the Sub-Committee
FP 42/16 and Add.1	Sub-Committee	Report of the 42nd session of the Sub-Committee to the MSC
MSC 69/6/1	United Kingdom	Proposal for amendments to SOLAS chapter II-2 on fuel oil systems
MSC 69/6/2	United Kingdom	Proposal for amendments to SOLAS chapter II-2 on fuel systems
MSC 69/6/3	Japan	Comments on the report of the 42nd session of the Sub-Committee

**7 Training and watchkeeping**

MSC 69/7	Secretariat	Report of the 29th session of the Sub-Committee
STW 29/14 and Add.1	Sub-Committee	Report of the 29th session of the Sub-Committee to the MSC
MSC 69/7/Add.1	Chairman of STW	Follow-up action to the 1995 STCW Conference: clarification of STCW regulations I/6, I/9 and I/10
MSC 69/7/1 and Adds.1 and 2	Secretariat	List of competent persons (section A-I/7 of the STCW Code)
MSC 69/7/2	Working Group	Report of the Joint FAO/ILO/IMO Working Group on Fishermen's Training
MSC 69/7/3	Working Group	Report of the Joint IMO/ILO Working Group on Seafarers' Hours of Work and Manning of Ships Convention 1996 (No.180) (IMO/ILO JWG/8)
MSC 69/7/4	Vanuatu	Application of the STCW Convention to MODUs
MSC 69/7/5	IADC	Application of the STCW Convention to MODUs

**7 Training and watchkeeping (continued)**

MSC 69/7/6	Fiji	Timing of consideration of the Secretary-General's report to the Committee (White list)
MSC 69/WP.3	Secretariat	Parties to STCW which communicated information in accordance with STCW regulation I/7
MSC 69/WP.4	Secretariat	List of Competent Persons to be nominated by the Secretary-General pursuant to STCW Code Section A-I/7
MSC 69/WP.9	Working group	Report of the Working group on STCW Matters

**8 Stability, load lines and fishing vessel safety**

MSC 69/8	Secretariat	Report of the 41st session of the Sub-Committee
SLF 41/18	Sub-Committee	Report of the 41st session of the Sub-Committee to the MSC
MSC 69/8/1	Japan	Comments on the Sub-Committee's report

**9 Dangerous goods, solid cargoes and containers**

MSC 69/9	Secretariat	Report of the 3rd session of the Sub-Committee
DSC 3/15 and Adds 1 and 2	Sub-Committee	Report of the 3rd session of the Sub-Committee to the MSC
MSC 69/9/1	Secretariat	Outcome of MEPC 40th session
MSC 69/9/2	Japan	Proposal for an inspection scheme to ensure implementation of the IMDG Code
MSC 69/9/3	Finland	Comments on Amendment 29 to the IMDG Code
MSC 69/9/4	Greece	Proposal for a general review of the transport of packaged dangerous goods by passenger ships
MSC 69/9/5	Japan	Comments on procedures for amendments to the mandatory IMDG Code
MSC 69/9/6	Secretariat	Outcome of MEPC 41st session

**10 Radiocommunications and search and rescue**

MSC 69/10	Secretariat	Urgent matters emanating from the 3rd session of the Sub-Committee
COMSAR 3/14 and Add.1	Sub-Committee	Report of the 3rd session of the Sub-Committee to the MSC
MSC 69/10/1	ICS	Comments on proposed amendment on signal for "man overboard" in draft IAMSAR Manual

**10 Radiocommunications and search and rescue (continued)**

MSC 69/10/2	Secretariat	Inmarsat restructuring: outcome of 71st Inmarsat Council
MSC 69/INF.22 (E only)	Greece	Information on incidents within the Greek SRR

**11 Ship design and equipment**

MSC 69/11	Secretariat	Urgent matters emanating from the 41st session of the Sub-Committee
DE 41/17 and Add.1	Sub-Committee	Report of the 41st session of the Sub-Committee to the MSC

**12 Technical assistance subprogramme in maritime safety**

MSC 69/12	Secretariat	Technical co-operation work plan in maritime safety
MSC 69/12/1/Rev.1	Secretariat	Periodical report on model courses
MSC 69/INF.11 (E only)	Secretariat	List of projects

**13 Role of the human element in maritime casualties**

MSC 69/13	Joint working group	Report of the Joint MSC/MEPC WorkingGroup on the joint session of the Working Groups on Human Element and on Formal Safety Assessment
MSC 69/13/1 (HFWG 2)	Joint working group	Report of the Joint ILO/IMO ad hoc Working Group on Investigation of Human Factors in Maritime Casualties
MSC 69/13/2	BIMCO, IAPH, ICFTU, ICS, IFSMA, IMPA, INTERCARGO INTERTANKO, P & I Association, ISMA, OCIMF and SIGTTO	Master/Pilot Information Exchange forms
MSC 69/13/3	United Kingdom	Documents of compliance for companies that operate multi-flagged fleets
MSC 68/13/4	Denmark	Comments on draft amendments to SOLAS chapter IX and the ISM Code
MSC 69/13/5	IACS	Views on action when major non-conformities or serious deficiencies presenting a serious threat to safety or harm of the marine environment are revealed
MSC 69/13/5/Add.1	IACS	Proposed amendment to the ISM Code and to ISM auditing and certification procedures
MSC 69/INF.10 (E only)	ICFTU	Report on a fatigue survey

**13 Role of the human element in maritime casualties (continued)**

MSC 69/INF.15 (E only)	Australia	Fatigue: groundings and collisions Analysis of casualties
MSC 69/INF.16 (E only)	Japan	Results of an investigation into near misses
MSC 69/WP.10	Joint working group	Interim report of the joint session of the Joint MSC/MEPC Working group on HE and FSA

**14 Formal safety assessment**

MSC 69/14	Correspondence group/ USA	Report of the Correspondence Group on the Human Element and Formal Safety Assessment
MSC 69/14/1 MSC 69/14/2	Germany IACS	Results of a study of EPD using FSA Applicability of the "Interim Guidelines for the Application of FSA to the IMO Rule-Making Process": Cargo tank venting, purging and gas-freeing
MSC 69/14/2/Add.1 MSC 69/14/3	IACS United Kingdom	Basic glossary of terms Practical application of FSA to the work of IMO Committees
MSC 69/14/4	United Kingdom	Results of a trial application of FSA to high-speed catamaran ferries
MSC 69/14/5	United Kingdom	Further measures in the practical application of FSA to the work of IMO Committees
MSC 69/14/6	ICCL	Helicopter landing areas on non ro-ro passenger vessels
MSC 69/14/7	Italy	Implications of applying SOLAS regulation III/28.2 to non ro-ro passenger ships
MSC 69/INF.14 (E only)	United Kingdom	Results of a trial application of the FSA process in accordance with the Interim Guidelines
MSC 69/INF.24 (E only)	Finland	Results of a trial application of FSA to the transportation of dangerous goods on passenger/ro-ro cargo vessels
MSC 69/INF.31 (E only) MSC 69/WP.10	Italy Joint working group	Results of an FSA study on effects of helicopter landing areas on cruise ships Interim report of the joint session of the Joint MSC/MEPC Working group on HE and FSA

**15 Matters related to the INF Code**

MSC 69/15	Secretariat	Outcome of Assembly 20th session
MSC 69/15/1	Secretariat	Outcome of MEPC 40th session
MSC 69/15/2	Secretariat	Outcome of MEPC 41st session



**16 Piracy and armed robbery against ships**

MSC 69/16 MSC/Circ.840	Secretariat	Annual and monthly reports on incidents
MSC 69/16/1	Secretariat	Coastal States reports
MSC 69/16/2	Secretariat	Interim report on action taken on piracy matters

**17 Implementation of instruments and related matters**

MSC 69/17	Secretariat	Information on status of implementation of IMO conventions
MSC 69/17/Add.1	Secretariat	Information on status of implementation of codes, recommendations and guidelines
MSC 69/17/1	Secretariat	Revised draft Guidelines on methods for uniform wording for referencing IMO instruments
MSC 69/17/2	Secretary-General	Information on status of progress regarding the implementation of the ISM Code
MSC 69/INF.8 (E only)	Secretariat	Lists on implementation of conventions (referred to in MSC 69/17)
MSC 69/INF.9 (E only)	Secretariat	Lists on implementation of codes, recommendations and guidelines
MSC 69/INF.23 (E only)	IACS	IACS Unified Interpretation SC 122 "Corrosion prevention in seawater ballast"
MSC 69/WP.14	Secretariat	Uniform wording for referencing IMO instruments

**18 Relations with other organizations**

MSC 69/18	Secretariat	Outcome of Council 78th session. Applications for consultative status
MSC 69/18/1	ISO	Report on the ISO/TC8 work programme
MSC 69/18/2	IACS	Comments on Report of ISO/TC8 work programme
MSC 69/INF.2 (E only)	Secretariat	Additional information on applications for consultative status
MSC 69/WP.8	Group	Application for consultative status and related matters

**19 Application of the Committee's Guidelines**

MSC 69/19	Argentina, Chile, Colombia, Mexico, Panama and Venezuela	Proposed review of deadlines for submission of documents
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## 20 Work programme

MSC 69/20 and Adds.1 and 2	Secretariat	Work programmes and agendas of sub-committees
MSC 69/20/1	IMPA	Proposed updating of resolution A.485(XII) - "Training of maritime pilots"
MSC 69/20/2	IMPA	Proposed updating of Annex 2 of resolution A.485(XII) - "Operational procedures for maritime pilots other than deep-sea pilots"
MSC 69/20/3	Germany	Proposal to develop performance standards for searchlights for high-speed craft
MSC 69/20/4	Japan	Proposed amendments to COLREG 72 concerning whistles, bells and lights
MSC 69/20/5	Japan	Proposed amendments to resolution A.787(19) to conform with Tokyo MOU
MSC 69/20/6	IEC	Information on revision of IEC Standard 92-502 - Electrical installations in tankers
MSC 69/20/7	Finland and Sweden	Proposed amendment to SOLAS concerning damage control computers in passenger ships
MSC 69/20/8	Denmark	Proposed amendments to paragraphs 10.2.2 and 10.2.3 of the IBC Code
MSC 69/20/9 and Add.1	Secretariat	Outcome of Assembly 20th session
MSC 69/20/10	IACS	Proposed redefining of definition of "new" bulk carriers - draft regulation XII/1.6
MSC 69/20/10/Add.1	IACS	Proposed paper for MSC 70 on items listed under 1997 SOLAS CONF on bulk carrier safety
MSC 69/20/11	Netherlands, IAIN and IFSMA	Proposed amendments to COLREG 72
MSC 69/20/12	IACS	Supporting paper for IEC proposal in document MSC 69/20/6
MSC 69/20/13	IFSMA	IFSMA resolution for further action to improve safety on new ro-ro passenger ships
MSC 69/20/14	Netherlands	Proposed amendments to SOLAS certificates
MSC 69/20/15	United Kingdom	Emergency towing arrangements: survey and inspection
MSC 69/INF.3 (E only)	Japan	Revised Tokyo MOU on port State control
MSC 69/INF.12 (E only)	IFSMA	Information on the "Glasgow concept" - ro-ro passenger ship design for the future
MSC 69/WP.5	Chairman	Preliminary assessment of proposals for new work programme items
MSC 69/WP.12	Secretariat	Substantive items for inclusion in the agendas for MSC 70 and MSC 71
MSC 69/WP.15	Secretariat	Work programme of the sub-committees and provisional agendas for their forthcoming sessions

**21 Any other business**

MSC 69/21	Secretariat	Updated information and consultant's report on IACS Quality System Certification Scheme
MSC 69/21/1	Secretariat	Draft MSC circular on Guidelines for the application of safety standards to pusher tug-barge combinations
MSC 69/21/2	Italy	Combatting unsafe practices associated with trafficking or transport of migrants by sea
MSC 69/21/3	Netherlands	Information on conduct of trials under STCW regulation I/13
MSC 69/21/4	Vanuatu	Results of trials with officer of the navigational watch acting as sole lookout in periods of darkness
MSC 69/21/5	United States	Proposed MSC circular on the Year 2000 problem (Y2K)
MSC 69/21/6	Denmark	Results of trials with special bridge watchkeeping system on advanced ships
MSC 69/21/7	Germany	Results of trials with officer of the navigational watch acting as sole lookout in periods of darkness
MSC 69/21/8	Sweden	Results of trials with officer of the navigational watch acting as sole lookout in periods of darkness
MSC 69/21/9	Netherlands	Results of a study on officer of the navigational watch acting as sole lookout in periods of darkness
MSC 69/21/10	United States	Comments on reported results of trials with officer of the navigational watch acting as sole lookout in periods of darkness
MSC 69/INF.4 and Add.1 (E only)	Netherlands	Information on conduct of trials under STCW regulation I/13
MSC 69/INF.5 (E only)	Estonia	Final report of Joint Accident Investigation Commission on the capsizing of mv <b>Estonia</b>
MSC 69/INF.6	Germany	Results of trials with the officer of the navigational watch acting as sole lookout in periods of darkness
MSC 69/INF.7 (E only)	Denmark	Detailed information of results of a risk analysis on solo watchkeeping
MSC 69/INF.13 (E only)	Sweden	Results of a study on "Analysis of safety levels with and without sole lookout in periods of darkness" (MariTerm AB)
MSC 69/INF.17 (E only)	ICS	Information on ICS Bridge Procedures Guide - 3rd edition
MSC 69/INF.18 (E only)	United Kingdom	Guidance for maritime industry on Year 2000 problem

**21 Any other business (continued)**

MSC 69/INF.19 (E only)	Republic of Korea	Information on preparations for ISTDG
MSC 69/INF.20 (E only)	Japan	Report on the investigation of the casualty "Nakhodka"
MSC 69/INF.21 (E only)	United States	Information regarding the endangered status of the Northern Right Whale
MSC 69/WP.1	Secretariat	Combatting unsafe practices associated with trafficking or transport of migrants by sea
MSC 69/WP.13 and Add.1	Informal group	Progress report of the informal group: illegal migration

**22 Report of the sixty-ninth session of the Committee**

MSC 69/WP.11 and Adds.1 and 2	Secretariat	Draft report
MSC 69/22 and Adds.1 and 2	Secretariat	Report

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MSC 69/INF.1 (E only)	List of participants
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**ANNEX 2**

**RESOLUTION MSC.69(69)  
(adopted on 18 May 1998)**

**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 chapter I,

HAVING CONSIDERED, at its sixty-ninth 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 2002, 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 2002 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

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

**CHAPTER II-1**

**CONSTRUCTION - SUBDIVISION AND STABILITY, MACHINERY AND  
ELECTRICAL INSTALLATIONS**

**PART B - SUBDIVISION AND STABILITY**

**Regulation 14 - Construction and initial testing of watertight bulkheads, etc., in passenger ships and cargo ships**

1 The existing text of paragraph 3 is replaced by the following:

"3 Testing main compartments by filling them with water is not compulsory. When testing by filling with water is not carried out, a hose test shall be carried out where practicable. This test shall be carried out in the most advanced stage of the fitting out of the ship. Where a hose test is not practicable because of possible damage to machinery, electrical equipment insulation or outfitting items, it may be replaced by a careful visual examination of welded connections, supported where deemed necessary by means such as a dye penetrant test or an ultrasonic leak test or an equivalent test. In any case a thorough inspection of the watertight bulkheads shall be carried out."

**CHAPTER IV**

**RADIOCOMMUNICATIONS**

**Regulation 1 - Application**

2 In paragraph 1, the words "Unless expressly provided otherwise," are inserted before the words "this chapter".

**Regulation 2 - Terms and definitions**

3 The following new subparagraph .16 of paragraph 1 is added after existing subparagraph .15:

".16 *Global Maritime Distress and Safety System (GMDSS) identities* means maritime mobile services identity, the ship's call sign, Inmarsat identities and serial number identity which may be transmitted by the ship's equipment and used to identify the ship."

4 The existing text of paragraph 2 is replaced by the following:

"2 All other terms and abbreviations which are used in this chapter and which are defined in the Radio Regulations and in the International Convention on Maritime Search and Rescue (SAR), 1979, as may be amended, shall have the meanings as defined in those Regulations and the SAR Convention."

5 The following new regulation 5-1 is added after existing regulation 5:

**"Regulation 5-1**

**Global Maritime Distress and Safety System identities**

1 This regulation applies to all ships on all voyages.

2 Each Contracting Government undertakes to ensure that suitable arrangements are made for registering Global Maritime Distress and Safety System (GMDSS) identities and for making information on these identities available to rescue co-ordination centres on a 24-hour basis. Where appropriate, international organizations maintaining a registry of these identities shall be notified by the Contracting Government of these assignments."

**Regulation 13 - Source of energy**

6 In paragraph 8, the words ", including the navigation receiver referred to in regulation 18," are inserted after the word "chapter".

**Regulation 15 - Maintenance requirements**

7 The following new paragraph 9 is added after existing paragraph 8:

"9 Satellite EPIRBs shall be tested at intervals not exceeding 12 months for all aspects of operational efficiency with particular emphasis on frequency stability, signal strength and coding. However, in cases where it appears proper and reasonable, the Administration may extend this period to 17 months. The test may be conducted on board the ship or at an approved testing or servicing station."

8 The following new regulation 18 is added after existing regulation 17:

**"Regulation 18**

**Position-updating**

All two-way communication equipment carried on board a ship to which this chapter applies which is capable of automatically including the ship's position in the distress alert shall be automatically provided with this information from an internal or external navigation receiver, if either is installed. If such a receiver is not installed, the ship's position and the time at which the position was determined shall be manually updated at intervals not exceeding four hours, while the ship is underway, so that it is always ready for transmission by the equipment."

## CHAPTER VI

### CARRIAGE OF CARGOES

#### **Regulation 5 - Stowage and securing**

9 The existing text of paragraph 6 is replaced by the following:

"6 All cargoes, other than solid and liquid bulk cargoes, shall be loaded, stowed and secured throughout the voyage in accordance with the Cargo Securing Manual approved by the Administration. In ships with ro-ro cargo spaces, as defined in regulation II-2/3.14, all securing of such cargoes, in accordance with the Cargo Securing Manual, shall be completed before the ship leaves berth. The Cargo Securing Manual shall be drawn up to a standard at least equivalent to relevant guidelines developed by the Organization\*".

## CHAPTER VII

### CARRIAGE OF DANGEROUS GOODS

#### **Regulation 5 - Documents**

10 The existing text of paragraph 6 is deleted.

#### **Regulation 6 - Stowage requirements**

11 The title of this regulation is replaced by "Stowage and securing".

12 The following new paragraph 6 is added after existing paragraph 5:

"6 All cargoes, other than solid and liquid bulk cargoes, shall be loaded, stowed and secured throughout the voyage in accordance with the Cargo Securing Manual approved by the Administration. In ships with ro-ro cargo spaces, as defined in regulation II-2/3.14, all securing of such cargoes, in accordance with the Cargo Securing Manual, shall be completed before the ship leaves berth. The Cargo Securing Manual shall be drawn up to a standard at least equivalent to relevant guidelines developed by the Organization\*".

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\* Refer to the Guidelines on the preparation of the Cargo Securing Manual, approved by the Maritime Safety Committee of the Organization and promulgated by circular MSC/Circ.745.



**ANNEX 3**

**RESOLUTION MSC.70(69)**  
**(adopted on 18 May 1998)**

**ADOPTION OF AMENDMENTS TO THE INTERNATIONAL CONVENTION  
ON MARITIME SEARCH AND RESCUE, 1979**

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 III(2)(e) of the International Convention on Maritime Search and Rescue (SAR), 1979, hereinafter referred to as "the Convention", concerning the procedures for amending the Annex to the Convention, other than the provisions of paragraphs 2.1.4, 2.1.5, 2.1.7, 2.1.10, 3.1.2 or 3.1.3 thereof,

HAVING CONSIDERED, at its sixty-ninth session, amendments to the Convention proposed and circulated in accordance with article III(2)(a) thereof,

1. ADOPTS, in accordance with article III(2)(c) 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 III(2)(f) of the Convention, that the amendments shall be deemed to have been accepted on 1 July 1999, unless, prior to that date, more than one third of the Parties, have notified their objections to the amendments;
3. INVITES Parties to the Convention to note that, in accordance with article III(2)(h) of the Convention, the amendments shall enter into force on 1 January 2000 upon their acceptance in accordance with paragraph 2 above;
4. REQUESTS the Secretary-General, in conformity with article III(2)(d) of the Convention, to transmit certified copies of the present resolution and the text of the amendments contained in the Annex to all Parties 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 Parties to the Convention.

ANNEX

**AMENDMENTS TO THE INTERNATIONAL CONVENTION  
ON MARITIME SEARCH AND RESCUE, 1979**

The existing text of the Annex to the Convention, except paragraphs 2.1.4, 2.1.5, 2.1.7, 2.1.10, 3.1.2 and 3.1.3\* is replaced by the following:

**"CHAPTER 1**

**TERMS AND DEFINITIONS**

1.1 "Shall" is used in the Annex to indicate a provision, the uniform application of which by all Parties is required in the interest of safety of life at sea.

1.2 "Should" is used in the Annex to indicate a provision, the uniform application of which by all Parties is recommended in the interest of safety of life at sea.

1.3 The terms listed below are used in the Annex with the following meanings:

- .1 "Search". An operation, normally co-ordinated by a rescue co-ordination centre or rescue sub-centre, using available personnel and facilities to locate persons in distress;
- .2 "Rescue". An operation to retrieve persons in distress, provide for their initial medical or other needs, and deliver them to a place of safety;
- .3 "Search and rescue service". The performance of distress monitoring, communication, co-ordination and search and rescue functions, including provision of medical advice, initial medical assistance, or medical evacuation, through the use of public and private resources including co-operating aircraft, vessels and other craft and installations;
- .4 "Search and rescue region". An area of defined dimensions associated with a rescue co-ordination centre within which search and rescue services are provided;
- .5 "Rescue co-ordination centre". A unit responsible for promoting efficient organization of search and rescue services and for co-ordinating the conduct of search and rescue operations within a search and rescue region;
- .6 "Rescue sub-centre". A unit subordinate to a rescue co-ordination centre established to complement the latter according to particular provisions of the responsible authorities;

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\* The existing text of these paragraphs is included in this document for reference purpose only and will not appear in the authentic text.

- .7 "Search and Rescue facility". Any mobile resource, including designated search and rescue units, used to conduct search and rescue operations;
- .8 "Search and rescue unit". A unit composed of trained personnel and provided with equipment suitable for the expeditious conduct of search and rescue operations;
- .9 "Alerting post". Any facility intended to serve as an intermediary between a person reporting an emergency and a rescue co-ordination centre or rescue sub-centre;
- .10 "Emergency phase". A generic term meaning, as the case may be, uncertainty phase, alert phase or distress phase;
- .11 "Uncertainty phase". A situation wherein uncertainty exists as to the safety of a person, a vessel or other craft;
- .12 "Alert phase". A situation wherein apprehension exists as to the safety of a person, a vessel or other craft;
- .13 "Distress phase". A situation wherein there is a reasonable certainty that a person, a vessel or other craft is threatened by grave and imminent danger and requires immediate assistance;
- .14 "On-scene co-ordinator". A person designated to co-ordinate search and rescue operations within a specified area;
- .15 "Secretary-General". The Secretary-General of the International Maritime Organization".

## **CHAPTER 2**

### **ORGANIZATION AND CO-ORDINATION**

#### **2.1 Arrangements for provision and co-ordination of search and rescue services**

2.1.1 Parties shall, as they are able to do so individually or in co-operation with other States and, as appropriate, with the Organization, participate in the development of search and rescue services to ensure that assistance is rendered to any person in distress at sea. On receiving information that any person is, or appears to be, in distress at sea, the responsible authorities of a Party shall take urgent steps to ensure that the necessary assistance is provided.

2.1.2 Parties shall, either individually or, if appropriate, in co-operation with other States, establish the following basic elements of a search and rescue service:

- .1 legal framework;
- .2 assignment of a responsible authority;
- .3 organisation of available resources;

- .4 communication facilities;
- .5 co-ordination and operational functions; and
- .6 processes to improve the service including planning, domestic and international co-operative relationships and training.

Parties shall, as far as practicable, follow relevant minimum standards and guidelines developed by the Organization.

2.1.3 To help ensure the provision of adequate shore-based communication infrastructure, efficient distress alert routing, and proper operational co-ordination to effectively support search and rescue services, Parties shall, individually or in co-operation with other States, ensure that sufficient search and rescue regions are established within each sea area in accordance with paragraphs 2.1.4 and 2.1.5. Such regions should be contiguous and, as far as practicable, not overlap.

2.1.4 Each search and rescue region shall be established by agreement among Parties concerned. The Secretary-General shall be notified of such agreements.

2.1.5 In case agreement on the exact dimensions of a search and rescue region is not reached by the Parties concerned, those Parties shall use their best endeavours to reach agreement upon appropriate arrangements under which the equivalent overall co-ordination of search and rescue services is provided in the area. The Secretary-General shall be notified of such arrangements.

2.1.6 Agreement on the regions or arrangements referred to in paragraphs 2.1.4 and 2.1.5 shall be recorded by the Parties concerned, or in written plans accepted by the Parties.

2.1.7 The delimitation of search and rescue regions is not related to and shall not prejudice the delimitation of any boundary between States.

2.1.8 Parties should seek to promote consistency, where applicable, between their maritime and aeronautical search and rescue services while considering the establishment of maritime search and rescue regions which shall be established by agreement in accordance with paragraph 2.1.4 or the reaching of agreement upon appropriate arrangements in accordance with paragraph 2.1.5.

2.1.9 Parties having accepted responsibility to provide search and rescue services for a specified area shall use search and rescue units and other available facilities for providing assistance to a person who is, or appears to be, in distress at sea.

2.1.10 Parties shall ensure that assistance be provided to any person in distress at sea. They shall do so regardless of the nationality or status of such a person or the circumstances in which that person is found.

2.1.11 Parties shall forward to the Secretary-General information on their search and rescue service, including the:

- .1 national authority responsible for the maritime search and rescue services;

- .2 location of the established rescue co-ordination centres or other centres providing search and rescue co-ordination, for the search and rescue region or regions and communications therein;
- .3 limits of their search and rescue region or regions and the coverage provided by their shore based distress and safety communication facilities; and
- .4 principal types of available search and rescue units.

Parties shall with priority, update the information provided with respect to any alterations of importance. The Secretary-General shall transmit to all Parties the information received.

2.1.12 The Secretary-General shall notify all Parties of the agreements or arrangements referred to in paragraphs 2.1.4 and 2.1.5.

## **2.2 Development of national search and rescue services**

2.2.1 Parties shall establish appropriate national procedures for overall development, co-ordination, and improvement of search and rescue services.

2.2.2 To support efficient search and rescue operations, Parties shall:

- .1 ensure the co-ordinated use of available facilities; and
- .2 establish close co-operation between services and organizations which may contribute to improve the search and rescue service in areas such as operations, planning, training, exercises and research and development.

## **2.3 Establishment of rescue co-ordination centres and rescue sub-centres**

2.3.1 To meet the requirements of paragraph 2.2, Parties shall individually or in co-operation with other States establish rescue co-ordination centres for their search and rescue services and such rescue sub-centres as they consider appropriate.

2.3.2 Each rescue co-ordination centre and rescue sub-centre, established in accordance with paragraph 2.3.1, shall arrange for the receipt of distress alerts originating from within its search and rescue region. Every such centre shall also arrange for communications with persons in distress, with search and rescue facilities, and with other rescue co-ordination centres or rescue sub-centres.

2.3.3 Each rescue co-ordination centre shall be operational on a 24-hour basis and be constantly staffed by trained personnel having a working knowledge of the English language\*\*.

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\*\* Refer to the Search and Rescue section of the IMO Standard Marine Communication Phrases (MSC/Circ.794).

## **2.4 Co-ordination with aeronautical services**

2.4.1 Parties shall ensure the closest practicable co-ordination between maritime and aeronautical services so as to provide for the most effective and efficient search and rescue services in and over their search and rescue regions.

2.4.2 Whenever practicable, each Party should establish joint rescue co-ordination centres and rescue sub-centres to serve both maritime and aeronautical purposes.

2.4.3 Whenever separate maritime and aeronautical rescue co-ordination centres or rescue sub-centres are established to serve the same area, the Party concerned shall ensure the closest practicable co-ordination between the centres or sub-centres.

2.4.4 Parties shall ensure as far as is possible the use of common procedures by search and rescue units established for maritime purposes and those established for aeronautical purposes.

## **2.5 Designation of search and rescue facilities**

Parties shall identify all facilities able to participate in search and rescue operations, and may designate suitable facilities as search and rescue units.

## **2.6 Equipment of search and rescue units**

2.6.1 Each search and rescue unit shall be provided with equipment appropriate to its task.

2.6.2 Containers and packages containing survival equipment for dropping to survivors should have the general nature of their contents indicated by markings in accordance with standards adopted by the Organization.

# **CHAPTER 3**

## **CO-OPERATION BETWEEN STATES**

### **3.1 Co-operation between States**

3.1.1 Parties shall co-ordinate their search and rescue organizations and should, whenever necessary, co-ordinate search and rescue operations with those of neighbouring States.

3.1.2 Unless otherwise agreed between the States concerned, a Party should authorize, subject to applicable national laws, rules and regulations, immediate entry into or over its territorial sea or territory of rescue units of other Parties solely for the purpose of searching for the position of maritime casualties and rescuing the survivors of such casualties. In such cases, search and rescue operations shall, as far as practicable, be co-ordinated by the appropriate rescue co-ordination centre of the Party which has authorized entry, or such other authority as has been designated by that Party.

3.1.3 Unless otherwise agreed between the States concerned, the authorities of a Party which wishes its rescue units to enter into or over the territorial sea or territory of another Party solely for the purpose of searching for the position of maritime casualties and rescuing the survivors of such casualties, shall transmit a request, giving full details of the projected mission and the need for it, to the rescue co-ordination centre of that other Party, or to such other authority as has been designated by that Party.

3.1.4 The responsible authorities of Parties shall:

- .1 immediately acknowledge the receipt of such a request; and
- .2 as soon as possible indicate the conditions, if any, under which the projected mission may be undertaken.

3.1.5 Parties should enter into agreements with neighbouring States setting forth the conditions for entry of each other's search and rescue units into or over their respective territorial sea or territory. These agreements should also provide for expediting entry of such units with the least possible formalities.

3.1.6 Each Party should authorize its rescue co-ordination centres:

- .1 to request from other rescue co-ordination centres such assistance, including vessels, aircraft, personnel or equipment, as may be needed;
- .2 to grant any necessary permission for the entry of such vessels, aircraft, personnel or equipment into or over its territorial sea or territory; and
- .3 to make the necessary arrangements with the appropriate customs, immigration, health or other authorities with a view to expediting such entry.

3.1.7 Each Party shall ensure that its rescue co-ordination centres provide, when requested, assistance to other rescue co-ordination centres, including assistance in the form of vessels, aircraft, personnel or equipment.

3.1.8 Parties should enter into agreements with other States, where appropriate, to strengthen search and rescue co-operation and co-ordination. Parties shall authorize their responsible authority to make operational plans and arrangements for search and rescue co-operation and co-ordination with responsible authorities of other States.

## **CHAPTER 4**

### **OPERATING PROCEDURES**

#### **4.1 Preparatory measures**

4.1.1 Each rescue co-ordination centre and rescue sub-centre shall have available up-to-date information especially concerning search and rescue facilities and available communications relevant to search and rescue operations in its area.

4.1.2 Each rescue co-ordination centre and rescue sub-centre should have ready access to information regarding the position, course, and speed of vessels within its area which may be able to provide assistance to persons, vessels or other craft in distress at sea, and regarding how to contact them. This information should either be kept in the rescue co-ordination centre, or be readily obtainable when necessary.

4.1.3 Each rescue co-ordination centre and rescue sub-centre shall have detailed plans of operation for the conduct of search and rescue operations. Where appropriate, these plans shall be developed jointly with the representatives of those who may assist in providing, or who may benefit from, the search and rescue services.

4.1.4 Rescue co-ordination centres or sub-centres shall be kept informed of the state of preparedness of search and rescue units.

#### **4.2 Information concerning emergencies**

4.2.1 Parties, either individually or in co-operation with other States shall ensure that they are capable on a 24-hour basis of promptly and reliably receiving distress alerts from equipment used for this purpose within their search and rescue regions. Any alerting post receiving a distress alert shall:

- .1 immediately relay the alert to the appropriate rescue co-ordination centre or sub-centre, and then assist with search and rescue communications as appropriate; and
- .2 if practicable acknowledge the alert.

4.2.2 Parties shall, where appropriate, ensure that effective arrangements are in place for the registration of communication equipment and for responding to emergencies, to enable any rescue co-ordination centre or sub-centre to access pertinent registration information quickly.

4.2.3 Any authority or element of the search and rescue service having reason to believe that a person, a vessel or other craft is in a state of emergency shall forward as soon as possible all available information to the rescue co-ordination centre or rescue sub-centre concerned.

4.2.4 Rescue co-ordination centres and rescue sub-centres shall, immediately upon receipt of information concerning a person, a vessel, or other craft in a state of emergency, evaluate such information and determine the phase of emergency in accordance with paragraph 4.4, and the extent of operations required.

#### **4.3 Initial action**

Any search and rescue unit receiving information of a distress incident shall initially take immediate action if in the position to assist and shall, in any case without delay, notify the rescue co-ordination centre or rescue sub-centre in whose area the incident has occurred.



#### 4.4 **Emergency phases**

To assist in determining the appropriate operating procedures, the following emergency phases shall be distinguished by the rescue co-ordination centre or sub-centre concerned:

- .1 **Uncertainty phase:**
  - .1.1 when a person has been reported as missing, or a vessel or other craft is overdue; or
  - .1.2 when a person, a vessel or other craft has failed to make an expected position or safety report.
- .2 **Alert phase:**
  - .2.1 when, following the uncertainty phase, attempts to establish contact with a person, a vessel or other craft have failed and inquiries addressed to other appropriate sources have been unsuccessful; or
  - .2.2 when information has been received indicating that the operating efficiency of a vessel or other craft is impaired, but not to the extent that a distress situation is likely.
- .3 **Distress phase:**
  - .3.1 when positive information is received that a person, a vessel or other craft is in danger and in need of immediate assistance; or
  - .3.2 when, following the alert phase, further unsuccessful attempts to establish contact with a person, a vessel or other craft and more widespread unsuccessful inquiries point to the probability that a distress situation exists; or
  - .3.3 when information is received which indicates that the operating efficiency of a vessel or other craft has been impaired to the extent that a distress situation is likely.

#### 4.5 **Procedures to be followed by rescue co-ordination centres and rescue sub-centres during emergency phases**

4.5.1 Upon the declaration of the uncertainty phase, the rescue co-ordination centre or rescue sub-centre, as appropriate, shall initiate inquiries to determine the safety of a person, a vessel or other craft, or shall declare the alert phase.

4.5.2 Upon the declaration of the alert phase, the rescue co-ordination centre or rescue sub-centre, as appropriate, shall extend the inquiries for the missing person, vessel or other craft, alert appropriate search and rescue services and initiate such action, as is necessary in the light of the circumstances of the particular case.

4.5.3 Upon the declaration of the distress phase, the rescue co-ordination centre or rescue sub-centre, as appropriate, shall proceed as prescribed in its plans of operation, as required by paragraph 4.1.

#### **4.5.4 Initiation of search and rescue operations when the position of the search object is unknown.**

In the event of an emergency phase being declared for a search object whose position is unknown, the following shall apply:

- .1 when an emergency phase exists, a rescue co-ordination centre or rescue sub-centre shall, unless it is aware that other centres are taking action, assume responsibility for initiating suitable action and confer with other centres with the objective of designating one centre to assume responsibility;
- .2 unless otherwise decided by agreement between the centres concerned, the centre to be designated shall be the centre responsible for the area in which the search object was according to its last reported position; and
- .3 after the declaration of the distress phase, the centre co-ordinating the search and rescue operations shall, as appropriate, inform other centres of all the circumstances of the emergency and of all subsequent developments.

#### **4.5.5 Passing information to persons, vessels, or other craft for which an emergency phase has been declared**

Whenever possible, the rescue co-ordination centre or rescue sub-centre responsible for search and rescue operations shall forward to the person, a vessel or other craft for which an emergency phase has been declared, information on the search and rescue operations it has initiated.

#### **4.6 Co-ordination when two or more Parties are involved**

For search and rescue operations involving more than one Party, each Party shall take appropriate action in accordance with the plans of operation referred to in paragraph 4.1 when so requested by the rescue co-ordination centre of the region.

#### **4.7 On-scene co-ordination of search and rescue activities**

4.7.1 The activities of search and rescue units and other facilities engaged in search and rescue operations shall be co-ordinated on-scene to ensure the most effective results.

4.7.2 When multiple facilities are about to engage in search and rescue operations, and the rescue co-ordination centre or rescue sub-centre considers it necessary, the most capable person should be designated as on-scene co-ordinator as early as practicable and preferably before the facilities arrive within the specified area of operation. Specific responsibilities shall be assigned to the on-scene co-ordinator taking into account the apparent capabilities of the on-scene co-ordinator and operational requirements.

4.7.3 If there is no responsible rescue co-ordination centre or, for any reason, the responsible rescue co-ordination centre is unable to co-ordinate the search and rescue mission, the facilities involved should designate an on-scene co-ordinator by mutual agreement.

#### 4.8 **Termination and suspension of search and rescue operations**

4.8.1 Search and rescue operations shall continue, when practicable, until all reasonable hope of rescuing survivors has passed.

4.8.2 The responsible rescue co-ordination center or rescue sub-center concerned shall normally decide when to discontinue search and rescue operations. If no such centre is involved in co-ordinating the operations, the on-scene co-ordinator may take this decision.

4.8.3 When a rescue co-ordination center or rescue sub-centre considers, on the basis of reliable information that a search and rescue operation has been successful, or that the emergency no longer exists, it shall terminate the search and rescue operation and promptly so inform any authority, facility or service which has been activated or notified.

4.8.4 If a search and rescue operation on-scene becomes impracticable and the rescue co-ordination centre or rescue sub-centre concludes that survivors might still be alive, the centre may temporarily suspend the on-scene activities pending further developments, and shall promptly so inform any authority, facility or service which has been activated or notified. Information subsequently received shall be evaluated and search and rescue operations resumed when justified on the basis of such information.

### **CHAPTER 5**

#### **SHIP REPORTING SYSTEMS**

##### **5.1 General**

5.1.1 Ship reporting systems may be established either individually by Parties or in co-operation with other States, where this is considered necessary, to facilitate search and rescue operations.

5.1.2 Parties contemplating the institution of a ship reporting system should take account of the relevant recommendations of the Organization. Parties should also consider whether existing reporting systems or other sources of ship position data can provide adequate information for the region, and seek to minimize unnecessary additional reports by ships, or the need for rescue co-ordination centres to check with multiple reporting systems to determine availability of ships to assist with search and rescue operations.

5.1.3 The ship reporting system should provide up-to-date information on the movements of vessels in order, in the event of a distress incident, to:

- .1 reduce the interval between the loss of contact with a vessel and the initiation of search and rescue operations in cases where no distress signal has been received;
- .2 permit rapid identification of vessels which may be called upon to provide assistance;
- .3 permit delineation of a search area of limited size in case the position of a person, a vessel or other craft in distress is unknown or uncertain; and
- .4 facilitate the provision of urgent medical assistance or advice.

## 5.2 **Operational requirements**

5.2.1 Ship reporting systems should satisfy the following requirements:

- .1 provision of information, including sailing plans and position reports, which would make it possible to determine the current and future positions of participating vessels;
- .2 maintenance of a shipping plot;
- .3 receipt of reports at appropriate intervals from participating vessels;
- .4 simplicity in system design and operation; and
- .5 use of internationally agreed standard ship reporting format and procedures.

## 5.3 **Types of reports**

5.3.1 A ship reporting system should incorporate the following types of ship reports in accordance with the recommendations of the Organization:

- .1 Sailing plan;
- .2 Position report; and
- .3 Final report.

## 5.4 **Use of systems**

5.4.1 Parties should encourage all vessels to report their position when travelling in areas where arrangements have been made to collect information on positions for search and rescue purposes.

5.4.2 Parties recording information on the position of vessels should disseminate, so far as practicable, such information to other States when so requested for search and rescue purposes."

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## ANNEX 4

## PROPOSED AMENDMENTS TO SOLAS CHAPTERS II-1 AND II-2

## CHAPTER II-1

CONSTRUCTION - STRUCTURE, SUBDIVISION AND STABILITY,  
MACHINERY AND ELECTRICAL INSTALLATIONS**Regulation 43 - Emergency source of electrical power in cargo ships**

- 1 In paragraph 2.2.5, the word "and" is deleted.
- 2 In paragraph 2.2.6, the word "motors." is replaced by the words "motors; and".
- 3 The following new subparagraph .7 is added after existing subparagraph .6 of paragraph 2.2:  
 ".7 in all cargo pump-rooms of tankers constructed on or after [date of entry into force of the amendment]"

## CHAPTER II-2

## CONSTRUCTION - FIRE PROTECTION, FIRE DETECTION AND FIRE EXTINCTION

**Regulation 63 - Cargo pump-rooms**

- 4 The following new paragraph 3 is added after existing paragraph 2:  
 "3 In tankers constructed on or after [date of entry into force of the amendment]:
  - .1 cargo pumps, ballast pumps and stripping pumps, installed in cargo pump-rooms and driven by shafts passing through pump-room bulkheads shall be fitted with temperature sensing devices for bulkhead shaft glands, bearings and pump casings. Alarm shall be initiated in the cargo control room or the pump control station;
  - .2 lighting in cargo pump-rooms, except emergency lighting, shall be interlocked with ventilation such that ventilation shall be in operation when switching on the lighting. Failure of the ventilation system shall not cause the lighting to go out;
  - .3 a system for continuous monitoring of the concentration of hydrocarbon gases shall be fitted. Sampling points or detector heads shall be located in suitable positions in order that potentially dangerous leakages are readily detected. Suitable positions may be the exhaust ventilation duct and lower parts of the pump-room above floor plates. When the hydrocarbon gas concentration reaches a pre-set level which shall not be higher than 10% of the lower flammable limit, a continuous audible and visual alarm signal shall be automatically effected in the pump-room, engine control room, cargo control room and navigation bridge to alert personnel to the potential hazard; and
  - .4 all pump-rooms shall be provided with bilge level monitoring devices together with appropriately located alarms."

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**ANNEX 5****PROPOSED AMENDMENTS TO THE IGC CODE****CHAPTER 3 - SHIP ARRANGEMENT**

- 1 The existing text of paragraph 3.7.2 is replaced by the following:

"3.7.2. The hold or interbarrier spaces of Type A independent tank ships should be provided with a drainage system suitable for handling liquid cargo in the event of cargo tank leakage or rupture. Such arrangements should provide for the return of any cargo leakage to the liquid cargo piping. Such a system should be provided with removable spool pieces."

- 2 The existing text of paragraph 3.7.4 is replaced by the following:

"3.7.4 Ballast spaces, including wet duct keels used as ballast piping, fuel-oil tanks and gas-safe spaces may be connected to pumps in the machinery spaces. Dry duct keels with ballast piping passing through, may be connected to pumps in the machinery spaces, provided the connections are led directly to the pumps and the discharge from the pumps lead directly overboard with no valves or manifolds in either line which could connect the line from the duct keel to lines serving gas-safe spaces. Pump vents should not be open to machinery spaces."

**CHAPTER 4 - CARGO CONTAINMENT**

- 3 The second sentence of paragraph 4.8.3 is replaced by the following:

"For structural members connecting inner and outer hulls, the mean temperature may be taken for determining the steel grade."

- 4 The first sentence of paragraph 4.10.10.3.7 is replaced by the following:

"Pneumatic testing of pressure vessels other than cargo tanks should only be considered on an individual case basis by the Administration."

**CHAPTER 5 - PROCESS PRESSURE VESSELS AND LIQUID, VAPOUR, AND PRESSURE SYSTEMS**

- 5 The existing text of paragraph 5.6.4 is replaced by the following:

"5.6.4 The control system for all required emergency shutdown valves should be so arranged that all such valves may be operated by single controls situated in at least two remote locations on the ship. One of these locations should be the control position required by 13.1.3 or cargo control room. The control system should also be provided with fusible elements designed to melt at temperatures between 98°C and 104°C which will cause the emergency shutdown valves to close in the event of fire. Locations for such fusible elements should include the tank domes and loading stations. Emergency shutdown valves should be of the fail-closed (closed on loss of power) type and be capable of local manual closing operation. Emergency shutdown valves in liquid piping should fully close under all service conditions within 30 s of actuation as measured from the time of manual or automatic initiation to final closure. This is called the total shutdown time and is made up of a signal response time and a valve closure time. The valve closure time should be such as to avoid surge pressures in pipelines. Information about the closing time of the valves and their

operating characteristics should be available on board and the valve closure time should be verifiable and reproducible. Such valves should close in such a manner as to cut off the flow smoothly."

#### CHAPTER 8 - CARGO TANK VENT SYSTEM

- 6 The existing text of the first sentence of paragraph 8.2.7 is replaced by the following:

"The changing of the set pressure under the provisions of 8.2.6, and the corresponding resetting of the alarms referred to in 13.4.1, should be carried out under the supervision of the master in accordance with procedures approved by the Administration and specified in the ship's operating manual."

#### CHAPTER 9 - ENVIRONMENTAL CONTROL

- 7 The following sentence is added at the end of paragraph 9.5.3:

"When not in use, the inert gas system should be made separate from the cargo system in the cargo area except for connections to the hold spaces or interbarrier spaces."

#### CHAPTER 11 - FIRE PROTECTION AND FIRE EXTINCTION

- 8 The second sentence of paragraph 11.2.4 is replaced by the following:

"All pipes, valves, nozzles and other fittings in the fire-fighting systems should be resistant to the effects of fire and to corrosion by water."

#### CHAPTER 13 - INSTRUMENTATION (GAUGING, GAS DETECTION)

- 9 The last three sentences of paragraph 13.3.1 are replaced by the following:

"The emergency shutdown valve referred to in 5.6.1 and 5.6.3 may be used for this purpose. If another valve is used for this purpose, the same information as referred to in 5.6.4 should be available on board. During loading, whenever the use of these valves may possibly create a potential excess pressure surge in the loading system, the port State authority may agree to alternative arrangements such as limiting the loading rate, etc."

#### CHAPTER 18 - OPERATING REQUIREMENTS

- 10 A reference to paragraphs 9.5.3 and 17.4.3 to the list of references in paragraph 18.9 is added.

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## ANNEX 6

## NEW AND AMENDED EXISTING TRAFFIC SEPARATION SCHEMES

## STRAITS OF MALACCA AND SINGAPORE

## AT ONE FATHOM BANK (amended scheme)

(Reference chart: British Admiralty 3946, 1996 edition)

**Note: This chart is based on Revised Kertau Datum)**

## Description of the traffic separation scheme

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

(1)	03E 00'.70 N	100E 47'.40 E	(5)	02E 43'.40 N	101E 10'.00 E
(2)	02E 53'.70 N	100E 55'.80 E	(6)	02E 49'.00 N	100E 59'.50 E
(3)	02E 49'.50 N	100E 59'.50 E	(7)	02E 53'.40 N	100E 55'.40 E
(4)	02E 43'.90 N	101E 10'.30 E	(8)	03E 00'.30 N	100E 47'.10 E

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

(9)	03E 02'.70 N	100E 48'.80 E	(11)	02E 46'.30 N	101E 11'.50 E
(10)	02E 52'.50 N	101E 00'.00 E			

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

(12)	02E 54'.70 N	100E 43'.10 E	(13)	02E 41'.20 N	101E 08'.80 E
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## OFF PORT KLANG

## Description of the precautionary area.

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

(14)	02E 46'.30 N	101E 11'.50 E	(16)	02E 39'.40 N	101E 12'.40 E
(15)	02E 44'.30 N	101E 15'.00 E	(17)	02E 41'.20 N	101E 08'.80 E

## **PORT KLANG TO PORT DICKSON (new scheme)**

(Reference chart: British Admiralty 3946, 1996 edition)

**Note: This chart is based on Revised Kertau Datum)**

### **Description of the traffic separation scheme.**

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

(18)	02E 42'.00 N	101E 13'.80 E	(21)	02E 26'.50 N	101E 36'.80 E
(19)	02E 35'.00 N	101E 27'.10 E	(22)	02E 35'.20 N	101E 25'.80 E
(20)	02E 27'.10 N	101E 37'.30 E	(23)	02E 41'.60 N	101E 13'.60 E

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

(24)	02E 44'.30 N	101E 15'.00 E	(26)	02E 29'.00 N	101E 38'.80 E
(25)	02E 37'.40 N	101E 28'.00 E			

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

(27)	02E 39'.40 N	101E 12'.40 E	(29)	02E 24'.60 N	101E 35'.30 E
(28)	02E 34'.00 N	101E 23'.30 E			

### **Inshore Traffic Zone**

The area between the landward boundary of the traffic separation scheme and the Malaysian coast between a line drawn from position (24) 02E44'.30 N, 101E15'.00 E in a direction of 027E to meet the coast and a line drawn from position (26) 02E29'.00 N, 101E38'.80 E in a direction of 034E to meet the Malaysian coast.

## **OFF PORT DICKSON**

(Reference chart: British Admiralty 3946, 1996 edition, 3947, 1997 edition)

**Note: These charts are based on Revised Kertau Datum).**

### **Description of the precautionary area.**

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

(30)	02E 29'.00 N	101E 38'.80 E	(32)	02E 21'.40 N	101E 39'.40 E
(31)	02E 25'.80 N	101E 42'.90 E	(33)	02E 24'.60 N	101E 35'.30 E

## **PORT DICKSON TO TANJUNG KELING (new scheme)**

### **Description of the traffic separation scheme.**

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

(34) 02E 23'.90 N 101E 41'.40 E (36) 02E 09'.00 N 101E 59'.00 E  
(35) 02E 09'.70 N 101E 59'.60 E (37) 02E 23'.20 N 101E 40'.90 E

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

(38) 02E 25'.80 N 101E 42'.90 E (39) 02E 11'.60 N 102E 01'.00 E

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

(40) 02E 21'.40 N 101E 39'.40 E (41) 02E 07'.10 N 101E 57'.50 E

(d) A deep water route for south-east bound traffic is established by connecting the following geographical positions:

(42) 02E 21'.40 N 101E 39'.40 E (46) 02E 12'.30 N 101E 36'.80 E  
(43) 02E 13'.80 N 101E 39'.30 E (47) 02E 22'.20 N 101E 36'.80 E  
(44) 02E 05'.10 N 101E 55'.90 E (48) 02E 24'.00 N 101E 36'.10 E  
(45) 02E 03'.00 N 101E 54'.20 E

### **Inshore Traffic Zone**

The area between the landward boundary of the traffic separation scheme and the Malaysian coast between a line drawn from position (38) 02E25'.80 N, 101E42'.90 E in a direction of 059E to meet the Malaysian coast and a line drawn from position (39) 02E11'.60 N, Long. 102E01'.00 E in a direction of 034E to meet the Malaysian coast.

### **OFF MALACCA/DUMAI**

(Reference charts: British Admiralty 3947, 1997 edition, 3833, 1988 edition, 2403, 1983 edition

**Note: These charts are based on Revised Kertau Datum).**

### **Description of the precautionary area.**

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

(49) 02E 11'.60 N 102E 01'.00 E (51) 02E 00'.00 N 101E 59'.80 E  
(50) 02E 07'.20 N 102E 06'.20 E (52) 02E 03'.00 N 101E 54'.20 E

## MALACCA TO IYU KECIL (new scheme)

### Description of the traffic separation scheme.

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

(53)	02E 05'.40 N	102E 04'.60 E	(59)	01E 10'.50 N	103E 27'.50 E
(54)	01E 55'.70 N	102E 15'.40 E	(60)	01E 13'.20 N	103E 23'.40 E
(55)	01E 40'.00 N	102E 48'.30 E	(61)	01E 23'.20 N	103E 12'.40 E
(56)	01E 23'.20 N	103E 12'.40 E	(62)	01E 39'.10 N	102E 48'.00 E
(57)	01E 13'.80 N	103E 24'.00 E	(63)	01E 54'.80 N	102E 14'.80 E
(58)	01E 12'.20 N	103E 28'.50 E	(64)	02E 04'.60 N	102E 03'.80 E

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

(65)	02E 07'.20 N	102E 06'.20 E	(68)	01E 25'.50 N	103E 15'.00 E
(66)	01E 57'.90 N	102E 16'.60 E	(69)	01E 15'.20 N	103E 25'.30 E
(67)	01E 38'.40 N	103E 00'.00 E	(70)	01E 14'.30 N	103E 29'.70 E

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

(71)	02E 02'.80 N	102E 02'.20 E	(74)	01E 22'.00 N	103E 11'.10 E
(72)	01E 52'.60 N	102E 13'.30 E	(75)	01E 11'.60 N	103E 22'.80 E
(73)	01E 36'.80 N	102E 46'.90 E	(76)	01E 09'.20 N	103E 26'.80 E

(d) A deep-water route for south-east bound traffic is established by connecting the following geographical positions:

(77)	02E 01'.90 N	102E 01'.50 E	(79)	01E 52'.60 N	102E 13'.30 E
(78)	01E 59'.70 N	102E 05'.60 E	(80)	02E 00'.00 N	101E 59'.80 E

### Inshore Traffic Zone

The area between the landward boundary of the traffic separation scheme and the Malaysian coast between a line drawn from position (65) 02E07'.20 N, 102E06'.20 E, to Pulau Undan Lighthouse (Lat. 02E02'.90 N, Long. 102E20'.10 E) then in a direction of 040E to meet the Malaysian coast and a line drawn from position (70) 01E14'.30 N, 103E29'.70 E in a direction of 038E to meet the Malaysian coast.

## OFF SULTAN SHOAL LIGHTHOUSE

(Reference charts: British Admiralty 2598, 1990 edition, 2556, 1994 edition, 3833, 1988 edition, 2403, 1983 edition)

**Note: These charts are based on Revised Kertau Datum).**

### Description of the precautionary area.

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

(81) 01E 14'.28 N 103E 29'.73 E (83) 01E 05'.94 N 103E 32'.30 E  
(82) 01E 12'.62 N 103E 36'.24 E (84) 01E 09'.23 N 103E 26'.76 E

## IN THE SINGAPORE STRAIT (MAIN STRAIT) (amended scheme)

### Description of the traffic separation scheme.

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

(85) 01E 10'.35 N 103E 34'.90 E (89) 01E 05'.90 N 103E 43'.38 E  
(86) 01E 10'.35 N 103E 39'.85 E (90) 01E 03'.60 N 103E 38'.95 E  
(87) 01E 07'.50 N 103E 43'.72 E (91) 01E 07'.06 N 103E 32'.96 E  
(88) 01E 08'.60 N 103E 45'.43 E

- (b) A separation line connects the following geographical positions:

(92) 01E 08'.60 N 103E 45'.43 E (94) 01E 10'.81 N 103E 49'.30 E  
(93) 01E 10'.26 N 103E 47'.91 E

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

(95) 01E 12'.62 N 103E 36'.24 E (98) 01E 10'.45 N 103E 47'.50 E  
(96) 01E 11'.50 N 103E 40'.55 E (99) 01E 11'.13 N 103E 49'.18 E  
(97) 01E 08'.65 N 103E 44'.40 E

- (d) A traffic lane for eastbound traffic is established between the separation zone/line and a line connecting the following geographical positions:

(100) 01E 05'.94 N 103E 32'.30 E (103) 01E 07'.80 N 103E 46'.25 E  
(101) 01E 01'.60 N 103E 39'.65 E (104) 01E 09'.47 N 103E 48'.70 E  
(102) 01E 05'.00 N 103E 43'.67 E (105) 01E 09'.92 N 103E 49'.65 E

- (e) A deep-water route is established within the eastbound lane described in paragraph (d). The deep-water route is bounded by a line connecting the following geographical positions:

- |       |              |               |        |              |               |
|-------|--------------|---------------|--------|--------------|---------------|
| (i)   | 01E 03'.60 N | 103E 38'.95 E | (vi)   | 01E 10'.45 N | 103E 49'.45 E |
| (ii)  | 01E 05'.90 N | 103E 43'.38 E | (vii)  | 01E 09'.95 N | 103E 48'.28 E |
| (iii) | 01E 08'.61 N | 103E 45'.44 E | (viii) | 01E 08'.90 N | 103E 46'.82 E |
| (iv)  | 01E 10'.26 N | 103E 47'.91 E | (ix)   | 01E 04'.95 N | 103E 42'.87 E |
| (v)   | 01E 10'.81 N | 103E 49'.30 E | (x)    | 01E 02'.97 N | 103E 39'.10 E |

### **SINGAPORE STRAIT (OFF PULAU SEBAROK/PULAU BELAKANG PADANG)**

#### **Description of the precautionary area**

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

- |       |              |               |       |              |               |
|-------|--------------|---------------|-------|--------------|---------------|
| (106) | 01E 11'.13 N | 103E 49'.18 E | (108) | 01E 10'.45 N | 103E 50'.75 E |
| (107) | 01E 11'.59 N | 103E 50'.31 E | (109) | 01E 09'.92 N | 103E 49'.65 E |

### **SINGAPORE STRAIT (OFF ST.JOHN'S ISLAND) (new scheme)**

(Reference charts: British Admiralty 2556, 1994 edition, 3833, 1988 edition, 2403, 1983 edition

**Note: These charts are based on Revised Kertau Datum).**

#### **Description of the traffic separation scheme**

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

- |       |              |               |       |              |               |
|-------|--------------|---------------|-------|--------------|---------------|
| (110) | 01E 11'.27 N | 103E 50'.43 E | (111) | 01E 12'.21 N | 103E 52'.40 E |
|-------|--------------|---------------|-------|--------------|---------------|

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

- |       |              |               |       |              |               |
|-------|--------------|---------------|-------|--------------|---------------|
| (112) | 01E 11'.59 N | 103E 50'.31 E | (114) | 01E 12'.51 N | 103E 52'.25 E |
| (113) | 01E 11'.96 N | 103E 51'.21 E |       |              |               |

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

- |       |              |               |       |              |               |
|-------|--------------|---------------|-------|--------------|---------------|
| (115) | 01E 10'.45 N | 103E 50'.75 E | (116) | 01E 11'.41 N | 103E 52'.76 E |
|-------|--------------|---------------|-------|--------------|---------------|

- (d) A deep water route is established within the eastbound lane described in paragraph (c). The deep water route is bounded by a line connecting the following geographical positions:

- |       |              |               |        |              |               |
|-------|--------------|---------------|--------|--------------|---------------|
| (xi)  | 01E 11'.27 N | 103E 50'.43 E | (xiii) | 01E 11'.78 N | 103E 52'.58 E |
| (xii) | 01E 12'.21 N | 103E 52'.40 E | (xiv)  | 01E 10'.92 N | 103E 50'.57 E |

## **SINGAPORE STRAIT (OFF ST. JOHN'S ISLAND/PULAU SAMBU)**

### **Description of the precautionary area.**

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

(117) 01E 12'.51 N 103E 52'.25 E (119) 01E 12'.11 N 103E 54'.40 E  
(118) 01E 13'.38 N 103E 53'.85 E (120) 01E 11'.41 N 103E 52'.76 E

(b) The focal point of the precautionary area is located at the following geographical position:

(121) 01E 12'.60 N 103E 53'.20 E

### **Description of the area to be avoided**

A circular area to be avoided with a diameter of one cable is established around position (121).

## **SINGAPORE STRAIT (OFF CHANGI/PULAU BATAM) (new scheme)**

(Reference charts: British Admiralty 2569, 1990 edition, 3833, 1988 edition, 3831, 1988 edition,  
2403, 1983 edition

**Note: These charts are based on Revised Kertau Datum)**

### **Description of the traffic separation scheme**

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

(122) 01E 12'.97 N 103E 54'.03 E (124) 01E 14'.89 N 103E 59'.01 E  
(123) 01E 13'.57 N 103E 55'.40 E

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

(125) 01E 14'.89 N 103E 59'.01 E (127) 01E 15'.42 N 104E 03'.45 E  
(126) 01E 15'.67 N 104E 03'.40 E

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

(128) 01E 13'.38 N 103E 53'.85 E (130) 01E 16'.02 N 104E 00'.00 E  
(129) 01E 14'.07 N 103E 55'.18 E (131) 01E 16'.60 N 104E 03'.32 E

(d) A traffic lane for eastbound traffic is established between the separation zone/line and a line connecting the following geographical positions:

(132) 01E 12'.11 N 103E 54'.40 E (134) 01E 14'.05 N 104E 03'.58 E  
(133) 01E 13'.50 N 103E 57'.67 E





- (b) A traffic lane for eastbound traffic is established between the separation zone and the separation line connecting the following geographical positions:

(6) 35°07'.16 S; 022°00'.00 E (7) 35°06'.35 S; 022°11'.18 E  
(8) 35°04'.81 S; 022°20'.00 E

- (c) A traffic lane for westbound traffic is established between the traffic separation zone and the separation line connecting the following geographical positions:

(9) 34°47'.07 S; 022°00'.00 E (10) 34°44'.75 S; 022°20'.00 E

**OFF ALPHARD BANKS 34 MILES SOUTH OF CAPE INFANTA (new scheme)**

(Reference Charts: South African Navy SAN 57, SAN 121  
British Admiralty 2083, 2084)

**Note: The SAN charts are based on Cape Datum (Clarke 1880 Mod)**

**Description of traffic separation scheme**

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

(1) 34°58'.79 S; 020°45'.00 E (2) 34°56'.48 S; 021°05'.00 E  
(3) 35°09'.54 S; 020°45'.00 E (4) 35°08'.10 S; 021°05'.00 E

- (b) A traffic lane for westbound traffic is established between the separation zone and the separation line connecting the following geographical positions:

(5) 34°55'.76 S; 020°45'.00 E (6) 34°53'.45 S; 021°05'.00 E

- (c) A traffic lane for eastbound traffic is established between the traffic separation zone and the separation line connecting the following geographical positions:

(7) 35°12'.55 S; 020°45'.00 E (8) 35°11'.11 S; 021°05'.00 E

**OFF CABO DE GATA, SPAIN (new scheme)**

- 1 The traffic separation scheme "Off Cabo de Gata" consists of:

- two 2-mile wide traffic lanes;
- one 1-mile wide intermediate separation zone;
- one 0.5 mile wide outer separation zone; and
- one associated inshore zone

2 The direction of traffic is as follows:

- Inner traffic lane of the TSS: entry course 232.5°(T) and exit course to the Strait of Gibraltar 257°(T)
- Outer traffic lane of the TSS: entry course 077°(T), allowing exit on the same course or at 052.5°(T).

3 The external boundary of the TSS is 12 miles out, the entire TSS being contained within the territorial sea of Spain.

4 The chart reference is No. 46A "Cabo de Palos to Cabo de Gata", issued by the Hydrographic Institute of the Spanish Navy.

5 The navigational aids at present available in the area are considered sufficient to make it possible for vessels to determine their position with the degree of precision required by the International Regulations for Preventing Collisions at Sea, 1972.

6 When passing through the TSS, ships will observe the rules of the International Regulations for Preventing Collisions at Sea, 1972, and in particular rule 10 governing navigation through traffic separation schemes.

7 Breaches of these Regulations will be punished in accordance with Act No. 27/92 on State Ports and the Merchant Marine or reported to the flag State of the vessel in accordance with IMO resolution A.432(XI) on Compliance with the Convention on the International Regulations for Preventing Collisions at Sea, 1972.

8 Description of the traffic separation scheme "off Cabo de Gata":

(a) Outer separation zone bounded by a line between the following geographical positions:

- |     |              |   |               |
|-----|--------------|---|---------------|
| (1) | 36° 34'.78 N | - | 001° 57'.72 W |
| (2) | 36° 33'.09 N | - | 002° 06'.83 W |
| (3) | 36° 33'.61 N | - | 002° 06'.83 W |
| (4) | 36° 35'.22 N | - | 001° 58'.14 W |

(b) Intermediate separation zone bounded by a line between the following geographical positions:

- |      |              |   |               |
|------|--------------|---|---------------|
| (5)  | 36° 35'.66 N | - | 002° 06'.83 W |
| (6)  | 36° 36'.51 N | - | 002° 02'.25 W |
| (7)  | 36° 37'.62 N | - | 002° 00'.44 W |
| (8)  | 36° 38'.41 N | - | 002° 01'.19 W |
| (9)  | 36° 37'.43 N | - | 002° 02'.79 W |
| (10) | 36° 36'.69 N | - | 002° 06'.83 W |

- (c) Associated inshore traffic zone defined by a line through the following geographical positions:

Punta Loma Pelada

- |      |              |   |               |
|------|--------------|---|---------------|
| (11) | 36° 40'.00 N | - | 002° 02'.72 W |
| (12) | 36° 39'.28 N | - | 002° 03'.88 W |
| (13) | 36° 39'.28 N | - | 002° 06'.83 W |

Cabo de Gata lighthouse

- (d) An outer traffic lane eastbound between the separation zones described in (a) and (b) above.
- (e) An inner traffic lane westbound between the separation zone described in (b) and the associated inshore traffic zone described in (d).

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## ANNEX 7

## ROUTEING MEASURES OTHER THAN TRAFFIC SEPARATION SCHEMES

## AMENDED RULES FOR VESSELS NAVIGATING THROUGH THE STRAITS OF MALACCA AND SINGAPORE

**I Definitions**

For the purpose of these Rules the following definitions shall apply:

- 1 A vessel having a draught of 15 metres or more shall be deemed to be a deep draught vessel.
- 2 A tanker of 150,000 dwt and above shall be deemed to be a very large crude carrier (VLCC).

*Note: The above definitions do not prejudice the definition of "vessel constrained by her draught" described in Rule 3(h) of the International Regulations for Preventing Collisions at Sea, 1972.*

**II General Provisions**

- 1 Deep draught vessels and VLCCs shall allow for an under keel clearance of at least 3.5 metres at all times during the entire passage through the Straits of Malacca and Singapore and shall also take all necessary safety precautions, when navigating through the traffic separation schemes.
- 2 Masters of deep draught vessels and VLCCs shall have particular regard to navigational constraints when planning their passage through the Straits.
- 3 All deep draught vessels and VLCCs navigating within the traffic separation schemes are recommended to use the pilotage service of the respective countries when they become available.
- 4 Vessels shall take into account the precautionary areas where crossing traffic may be encountered and be in a maximum state of manoeuvring readiness in these areas.

**III Rules**

- Rule 1 Eastbound deep draught vessels shall use the designated deep water routes.
- Rule 2 Eastbound deep draught vessels navigating in the deep-water routes in Phillip Channel and Singapore Strait shall as far as practicable, avoid overtaking.
- Rule 3 All vessels navigating within the traffic separation scheme shall proceed in the appropriate traffic lane in the general direction of traffic flow for that lane and maintain as steady a course as possible, consistent with safe navigation.
- Rule 4 All vessels having defects affecting operational safety shall take appropriate measures to overcome these defects before entering the Straits of Malacca and Singapore.
- Rule 5 In the event of an emergency or breakdown of a vessel in the traffic lane, the vessel shall, as far as practicable and safe, leave the lane by pulling out to the starboard side.

- Rule 6
- (a) Vessels proceeding in the westbound lane of the traffic separation scheme "In the Singapore Strait" when approaching Raffles Lighthouse shall proceed with caution, taking note of the local warning system, and, compliance with Rule 18(d) of the International Regulations for Preventing Collisions at Sea, 1972, avoid impeding the safe passage of a vessel constrained by her draught which is exhibiting the signals required by Rule 28 and which is obliged to cross the westbound lane of the scheme in order to approach the single point mooring facility (in approximate position 01E11'.42N, 103E47'.50E, from Phillip Channel).
  - (b) Vessels proceeding in the traffic separation schemes when approaching any of the precautionary areas shall proceed with caution, taking note of the local warning system, and, in compliance with Rule 18(d) of the International Regulations for Preventing Collisions at Sea, 1972, avoid impeding the safe passage of a vessel constrained by her draught which is exhibiting the signals required by Rule 28 and which is obliged to cross that precautionary area.
  - (c) Information relating to the movement of ships constrained by their draught as referred to in paragraphs (a) and (b) above will be given by radio broadcasts. The particulars of such broadcasts are promulgated by Notices to Mariners. All vessels navigating in the area of the traffic separation scheme should monitor these radio broadcasts and take account of the information received.
- Rule 7
- VLCCs and deep draught vessels navigating in the Straits of Malacca and Singapore shall, as far as it is safe and practicable, proceed at a speed of not more than 12 knots over the ground in the following areas:
- (a) At One Fathom Bank traffic separation scheme;
  - (b) deep-water routes in the Phillip Channel and in Singapore Strait; and
  - (c) Westbound lanes between positions 01E12'.51 N 103E52'.25 E and 01E11'.59 N 103E50'.31 E and between position 01E11'.13 N 103E49'.18 E and 01E08'.65 N 103E44'.40 E .
- Rule 8
- All vessels navigating in the routeing system of the Straits of Malacca and Singapore shall maintain at all times a safe speed consistent with safe navigation, shall proceed with caution, and shall be in a maximum state of manoeuvring readiness.
- Rule 9
- (a) Vessels which are fitted with VHF radio communication are to participate in the ship reporting system adopted by the Organization.
  - (b) VLCCs and deep draught vessels navigating in the Straits of Malacca and Singapore are advised to broadcast, eight hours before entering the traffic separation schemes, navigational information giving name, deadweight tonnage, draught, speed and times of passing One Fathom Bank Lighthouse, Raffles Lighthouse and Horsburgh Lighthouse. Difficult and unwieldy tows are also advised to broadcast similar information.

- Rule 10 All vessels navigating in the Straits of Malacca and Singapore are requested to report by radio to the nearest shore authority any damage to or malfunction of the aids to navigation in the Straits, or any aids out of position in the Straits.
- Rule 11 Flag States, owners and operators should ensure that their vessels are adequately equipped in accordance with the appropriate international conventions/recommendations.

#### **IV Warning**

Mariners are warned that local traffic could be unaware of the internationally agreed regulations and practices of seafarers and may be encountered in or near the traffic separation schemes, and should take any precautions which may be required by the ordinary practice of seamen or by the special circumstances of the case.

### **AMENDED RULES FOR NAVIGATION OF LADEN TANKERS AROUND THE SOUTHERN COAST OF SOUTH AFRICA**

#### **Rules for navigation of laden tanker off the South African coast**

- 1 Laden tankers\* when westbound, off the South African coast, should adhere to the following:
  - .1 Laden tankers should maintain a minimum distance of 20 nautical miles off the following landmarks:
    - .1 South Sand Bluff (International No.D4664)
    - .2 Bashee River (Mbashe Point) (D6438)
    - .3 Hood Point (D6420)
    - .4 Cape Receife (6390)
  - .2 These tankers should then steer to pass through the westbound or northern lanes of the traffic separation schemes off the FA Platform and the Alphard Banks and then maintain a minimum distance of 20 nautical miles from the following landmarks:
    - .1 Cape Agulhas (D6370)
    - .2 Quoin Point (D6322)
    - .3 Cape Point (D6120)
    - .4 Slangkop Point (D6110)
    - .5 Cape Columbine (D5810)
- 2 Laden tankers when eastbound off the South African coast, should similarly maintain a minimum distance of 25 (twenty-five) nautical miles when passing the points listed in 1.1 and 1.2 and when between Cape Agulhas and Cape Receife, steer a course to pass through the eastbound or southern lanes of the traffic separation schemes off the Alphard Banks and FA Platform.

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\*Definition: "Laden tanker" means any tanker other than a tanker in ballast having in its cargo tanks residual cargo only.

## Exemptions

- 3 The following exemptions to the laden tanker rules apply:
- .1 Vessels calling at Cape Town (Table Bay) to rendezvous with service craft or helicopters should follow the recommended routes until, in the case of laden tankers when proceeding westbound, Cape Point light bears 000°(T)x20 nautical miles, thence altering course to position, Slangkop Point light 250°(T)x20 nautical miles. From this position course may be altered to the rendezvous area 5 nautical miles to the west of Green Point Light (D5900) (replenishment area shown on chart SAN 1013).
  - .2 Laden tankers engaged on voyages solely between ports in the Republic of South Africa are exempted from the provisions in paragraphs 1 and 2 of these regulations and are to maintain a minimum distance of 10 nautical miles off salient points of the coast subject to weather, sea and current conditions, when setting courses to their ports of loading and discharging.
  - .3 During the winter season (16 April to 15 October) westbound laden tankers should maintain the minimum distance of 20 miles off the appropriate landmarks in paragraph 1.1. However, on approaching the winter zone, they may remain within the summer zone as close to the separation line as possible, and for the minimum period necessary, to ensure that they can remain on their summer loadline throughout. In the vicinity of the Alphard Banks and the FA Platform, they are to adjust their course to pass through the westbound traffic lanes.

## AMENDMENT TO THE DEEP-WATER ROUTE WEST OF THE HEBRIDES

The deep-water route lies between the Outer Hebrides Isles on its south east side and the Flannan Islands and St. Kilda to the north-west and is bounded by lines connecting the following geographical positions:

1	56E 46'.75 N	08E 00'.00 W	5	58E 40'.50 N	06E 30'.75 W
2	57E 34'.50 N	08E 00'.00 W	6	58E 24'.10 N	07E 13'.50 W
3	58E 20'.70 N	07E 03'.50 W	7	57E 38'.10 N	08E 10'.00 W
4	58E 35'.80 N	06E 23'.70 W	8	56E 46'.75 N	08E 10'.00 W

## ROUTEING MEASURES IN THE STRAIT OF BONIFACIO

### References:

- SOLAS regulation V/8.1;
- IMO Resolution A.572(14);
- French Chart No. 7024 of the SHOM (Hydrographic and Oceanographic Service of the French Navy) ; and International chart No. 3350



## **1 TWO-WAY ROUTE IN THE STRAIT OF BONIFACIO**

### **1.1 Categories of ships concerned:**

All ships of more than 20 metres of overall length transiting through the Strait.

### **1.2 Description**

#### **Northern limit:**

a line joining the geographical positions:

A	41° 22'.55 N	009° 22'.38 E
F	41° 18'.00 N	009° 15'.25 E
E	41° 19'.18 N	009° 06'.51 E

#### **Southern limits:**

a line joining the geographical positions:

B	41° 21'.58 N	009° 23'.30 E
C	41° 16'.75 N	009° 15'.75 E
D	41° 16'.75 N	009° 06'.18 E

## **2 PRECAUTIONARY AREAS AT THE EXTREMITIES OF THE TWO-WAY ROUTE**

### **2.1 Categories of ships concerned:**

All ships

### **2.2 Eastern precautionary area**

A circular sector pointed on point M: 41° 22'.05 N 009° 22'.85 E with a radius of 5 (five) nautical miles limited by lines joining geographical positions A (see above) and G 41° 26'.90 N 009° 24'.50 E and joining geographical positions B (see above) and H 41° 19'.31 N 009° 28'.40 E.

### **2.3 Western precautionary area**

A circular sector pointed on point N: 41° 17'.96 N 009° 06'.33 E with a radius of 5 (five) nautical miles limited by lines joining geographical positions E (see above) and L 41° 21'.37 N 009° 01'.47 E and joining geographical positions D (see above) and I 41° 13'.57 N 009° 03'.15 E.

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**ANNEX 8**

**RESOLUTION MSC.71(69)**  
**(adopted on 19 May 1998)**

**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 the 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 sixty-ninth session, the text of proposed amendments to the General Provisions on Ships' Routeing (resolution A.572(14), as amended), to incorporate provisions relating to the 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.572(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 THE GENERAL PROVISIONS ON SHIP'S ROUTEING  
(RESOLUTION A.572(14), AS AMENDED)**

- 1 The existing annex is renumbered as annex 1.
- 2 The following new annex 2 is added:

"ANNEX 2

**GENERAL PROVISIONS FOR THE ADOPTION, DESIGNATION AND  
SUBSTITUTION OF ARCHIPELAGIC SEA LANES**

**INTRODUCTION**

This Part takes into account the unique character of archipelagic sea lanes as a routeing system.

The legal regime for archipelagic sea lanes is contained in Part IV of the United Nations Convention on the Law of the Sea (UNCLOS). UNCLOS provides that designation and substitution of an archipelagic sea lane by an archipelagic State automatically includes a corresponding air route above the sea lane. Use of an air route above a designated archipelagic sea lane by civil aircraft engaged in international air navigation shall be in accordance with any relevant requirements of the International Civil Aviation Organization (ICAO). International air traffic services (ATS) routes above the archipelagic waters to be used by civil aircraft engaged in international air navigation are subject to the approval process of ICAO.

**1 OBJECTIVES**

- 1.1 The purpose of these provisions is to provide guidance for the preparation, consideration and adoption of proposals for the adoption, designation and substitution of archipelagic sea lanes.

**2 DEFINITIONS AND CLARIFICATIONS**

- 2.1 The terms used in connection with matters relating to archipelagic sea lanes have the same meaning as in UNCLOS. These terms include:

- .1 *Archipelagic State*
- .2 *Archipelagic sea lane*
- .3 *Archipelagic sea lanes passage*
- .4 *Innocent passage*

2.2 The following terms are also used in connection with matters relating to archipelagic sea lanes:

.1 *All normal passage routes and navigational channels as required by UNCLOS*

All normal passage routes used as routes for international navigation or overflight through or over archipelagic waters and, within such routes, so far as ships are concerned, all normal navigational channels, provided that duplication of routes of similar convenience between the same entry and exit points shall not be necessary.

.2 *Partial archipelagic sea lanes proposal*

An archipelagic sea lanes proposal by an archipelagic State which does not meet the requirement to include all normal passage routes and navigational channels as required by UNCLOS.

### **3 PROCEDURES AND RESPONSIBILITIES**

#### ***Procedures and functions of IMO***

3.1 IMO is recognized as the competent international organization responsible for adopting archipelagic sea lanes in accordance with the relevant provisions of UNCLOS and these provisions.

3.2 When adopting a proposed archipelagic sea lane, IMO will ensure that the proposed sea lane is in accordance with the relevant provisions of UNCLOS and determine if the proposal is a partial archipelagic sea lanes proposal. IMO may adopt only such archipelagic sea lanes as may be agreed by the Government of the proposing archipelagic State.

3.3 Upon receipt of a proposal for designating archipelagic sea lanes and before consideration for adoption, the IMO shall ensure that the proposal is disseminated to all Governments and ICAO so as to provide them with sufficient opportunity to comment on the proposal.

3.4 Following a proposal to the IMO by an archipelagic State, other States may request that the archipelagic State propose additional sea lanes to include all other normal passage routes used as routes for international navigation or overflight through or over archipelagic waters as required by UNCLOS.

3.5 In order for IMO to ensure that sea lanes proposed for adoption include all normal passage routes, IMO shall retain continuing jurisdiction (i.e., competence) over the process of adopting archipelagic sea lanes until such time that sea lanes including all normal passage routes have been adopted as required by UNCLOS.

#### ***Responsibilities of Governments and recommended practices***

3.6 The Government of an archipelagic State considering proposing archipelagic sea lanes should consult at an early stage with other user Governments and the IMO.

3.7 Subject to paragraph 3.9, the Government of an archipelagic State which wishes to designate archipelagic sea lanes shall propose to IMO for adoption archipelagic sea lanes including all normal passage routes and navigational channels as required by UNCLOS.

3.8 An archipelagic sea lanes proposal shall provide sea lanes suitable for the continuous and expeditious passage of foreign ships and aircraft in the normal mode through or over the archipelagic waters and the adjacent territorial sea. In proposing archipelagic sea lanes, the Government shall explain in its proposal the suitability of such sea lanes for such continuous and expeditious passage.

3.9 The proposal shall also indicate if it is a partial archipelagic sea lane proposal.

3.10 In proposing archipelagic sea lanes, Governments shall also include the number, edition and, where possible, the geodetic datum of the reference charts used for the proposed sea lanes, together with copies of the reference charts listed in the proposed sea lanes showing the axis of the proposed sea lanes.

3.11 It is recommended that in areas where the 10 per cent rule applies (see paragraph 6.3) the outer limits of the sea lane should, so far as practicable, be clearly indicated on the charts.

3.12 If IMO adopts a partial archipelagic sea lane proposal as a partial system of archipelagic sea lanes, the archipelagic State shall periodically inform IMO on its plans for conducting further surveys and studies that will result in the submission to IMO of proposals for adoption of all normal passage routes and navigational channels as required by UNCLOS, along with the general location of these lanes and time frame for this effort. In such a case, the archipelagic State is ultimately required to propose for adoption archipelagic sea lanes including all normal passage routes and navigational channels as required by UNCLOS.

3.13 Archipelagic sea lanes adopted by IMO shall come into effect on a date promulgated by the Government of the archipelagic State that proposed the sea lanes, which shall be communicated to IMO by that Government. That date shall not be earlier than six months after the date of designation of the sea lanes by that Government. Either Notices to amend charts, or revised charts to depict the sea lanes, shall be made available at least six months before the sea lanes come into effect.

#### **4 CRITERIA FOR CONSIDERATION AND ADOPTION OF PROPOSALS**

4.1 Archipelagic sea lane proposals shall conform with the relevant provisions of UNCLOS, including Article 53, and the requirements of this Part.

4.2 The adequacy of aids to navigation, hydrographic surveys and nautical charts of the area, as well as the configuration of the archipelagic State, shall be considered.

4.3 Routeing measures in the vicinity shall also be considered.

#### **5 SUBSTITUTION OF ARCHIPELAGIC SEA LANES AND TRAFFIC SEPARATION SCHEMES**

5.1 An archipelagic State may, when circumstances require, after giving due publicity thereto, substitute other sea lanes or traffic separation schemes for any sea lanes or traffic separation schemes previously designated or prescribed by it.

5.2 The provisions of this Part concerning the designation of archipelagic sea lanes apply equally to the substitution of archipelagic sea lanes.

5.3 The provisions of this Part and Part A of the IMO publication on Ships' Routeing concerning the prescription of traffic separation schemes apply equally to the substitution of traffic separation schemes.

## **6 USE OF ARCHIPELAGIC SEA LANES AND NORMAL PASSAGE ROUTES**

6.1 Ships and aircraft shall exercise in accordance with UNCLOS their right of archipelagic sea lanes passage in the normal mode solely for the purpose of continuous, expeditious and unobstructed transit between one part of the high seas or an exclusive economic zone and another part of the high seas or an exclusive economic zone.

6.2 Ships and aircraft in archipelagic sea lanes passage shall respect applicable sea lanes and the relevant provisions of UNCLOS, including Article 39. Ships shall also respect any traffic separation schemes in archipelagic sea lanes established in accordance with Part A of the IMO publication on Ships' Routeing.

6.3 Ships and aircraft in archipelagic sea lanes passage shall not deviate more than 25 nautical miles to either side of the axis lines defining archipelagic sea lanes, provided that such ships and aircraft shall not navigate closer to the coasts than 10 per cent of the distance between the nearest points on islands bordering the sea lane.

6.4 Within archipelagic sea lanes, traffic is not separated, except in traffic separation schemes.

6.5 Except for internal waters within archipelagic waters, ships of all States enjoy the right of innocent passage through archipelagic waters and the territorial sea.

6.6 If an archipelagic State does not designate sea lanes and air routes thereabove, the right of archipelagic sea lanes passage may be exercised through the routes normally used for international navigation.

6.7 Where a partial archipelagic sea lanes proposal has come into effect, the right of archipelagic sea lanes passage may continue to be exercised through all normal passage routes used as routes for international navigation or overflight in other parts of archipelagic waters in accordance with UNCLOS.

6.8 The right of archipelagic sea lanes passage shall not be suspended, hampered or obstructed.

6.9 The archipelagic State shall give appropriate publicity to any danger to navigation within archipelagic sea lanes of which it has knowledge.

## **7 REPRESENTATION ON CHARTS**

7.1 Axis lines of archipelagic sea lanes are shown on charts for the purpose of defining the sea lanes. Axis lines do not indicate any routes or recommended tracks as defined in Part A of the IMO Publication on Ships' Routeing.

7.2 The axis of designated archipelagic sea lanes, including a listing of geographical co-ordinates with geodetic datum that define axis turning points, so far as practicable the outer limits of the sea lanes where the 10 per cent rule applies (see paragraph 3.11 and 6.3), and any prescribed traffic separation schemes, shall be clearly shown on all appropriate scale charts, to which due publicity shall be given, and referred to in complementary hydrographic publications.

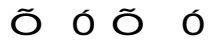
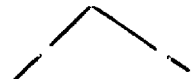
7.3 The legends, symbols and notes appearing in paragraphs 7.4, 7.5, 7.6 and 7.7 are recommended by the International Hydrographic Organization as guidance for the representation of details of archipelagic sea lanes and associated measures on nautical charts. They are included to illustrate the information likely to be found on charts and as an aid to those designing archipelagic sea lanes proposed for adoption by IMO.

7.4 **Use of legends on charts and in notes**

Legend	Use of legend
Archipelagic Sea Lane	Not usually shown on charts but referred to in notes
ASL	Shown on charts in conjunction with symbol for axis line (paragraph 7.5)

7.5 **Symbol for axis line of archipelagic sea lanes**

Unless otherwise specified, symbols are printed on charts in colour, usually magenta.

	Description	Symbol	Note
1	Axis line of archipelagic sea lane		1
2	Legend	ASL (see Note)	2
3	Turning point of axis line of archipelagic sea lane		3


**NOTES:**

- 1 The axis line will be shown through other routeing measures without interruption, since it may not necessarily form the centre line of a routeing measure established in Archipelagic Sea Lanes, in accordance with Part A of the IMO Publication on Ships' Routeing.
- 2 The legend *ASL (see Note)* should normally be used. The full legend *Archipelagic Sea Lane (see Note)* may however be used in cases where it is considered appropriate.
- 3 Turning points are indicated by joined pecked lines.



## 7.6 Symbol for outer limits of archipelagic sea lanes

Unless otherwise specified, symbols are printed on charts in colour, usually magenta.

	Description	Symbol	Note
1	Limit of area in which 10% rule applies		1
2	Outer limit	Not usually shown on charts but referred to in notes	


### NOTE:

- The solid half circle indicator is on the side of the limit of the area which lies within 10% of the distance between the nearest points on islands bordering the sea lane.

## 7.7 Cautionary and explanatory notes on charts

The following note provides an example of the type of information which should be included in the note:

### ASL - ARCHIPELAGIC SEA LANES

Archipelagic Sea Lanes as defined in UNCLOS have been designated in the area of this chart. Vessels exercising archipelagic sea lanes passage shall not deviate more than 25 miles from the charted axis line and shall not navigate, while in archipelagic sea lanes passage, within the areas indicated thus:  .

Where a traffic separation scheme exists in a narrow channel in such a sea lane, rules for the use of traffic separation schemes apply. It should be noted that the axis line of the ASL does not indicate the deepest water, any route or recommended track."

\*\*\*



**ANNEX 9**

**RESOLUTION MSC.72(69)  
(adopted on 19 May 1998)**

**ADOPTION, DESIGNATION AND SUBSTITUTION OF  
ARCHIPELAGIC SEA LANES**

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/8 of the International Convention for the Safety of Life at Sea (SOLAS), 1974, concerning the adoption by the Organization of ships' routing systems, and article 53 of the United Nations Convention on the Law of the Sea (UNCLOS), concerning the adoption, designation and substitution of archipelagic sea lanes,

RECALLING FURTHER resolution A.858(20), which authorizes the Committee to perform, on behalf of the Organization, the function of adoption and amendment of traffic separation schemes, routing measures other than traffic separation schemes, including designation and substitution of archipelagic sea lanes, and ship reporting systems,

TAKING INTO ACCOUNT the General Provisions for the adoption, designation and substitution of archipelagic sea lanes, adopted by resolution MSC.71(69),

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

1. ADOPTS, in accordance with SOLAS regulation V/8, resolution MSC.71(69) and UNCLOS article 53, the Partial System of Archipelagic Sea Lanes in Indonesian Archipelagic Waters, as set out in the Annex to the present resolution;
2. RECOMMENDS that any associated rules and regulations adopted governing the use of archipelagic sea lanes by the Government of Indonesia shall be consistent with UNCLOS, including article 42;
3. REQUESTS the Secretary-General to bring this resolution and its Annex to the attention of Members of the Organization and Contracting Governments to the 1974 SOLAS Convention.

ANNEX

**PARTIAL SYSTEM OF ARCHIPELAGIC SEA LANES  
IN INDONESIAN ARCHIPELAGIC WATERS**

**Part I**

SEA LANE I: SOUTH CHINA SEA - NATUNA SEA - KARIMATA STRAIT - WESTERN JAVA SEA  
- SUNDA STRAIT - INDIAN (HINDIA) OCEAN

(Reference Charts: Publisher, Chart number and scale, points reflected on chart)

Indonesian Navy Hydrographic Office Chart No. 2, September 1988, corrected to 17 February 1997,  
1:4,000,000, (I-1) - (I-15), Bessel 1841

Indonesian Navy Hydrographic Office Chart No. 38, February 1989, corrected to 11 May 1996,  
1:1,000,000, (I-1) - (I-7), Bessel 1841

Indonesian Navy Hydrographic Office Chart No. 66, June 1990, corrected to 15 September 1997,  
1:1,000,000, (I-8) - (I-15), Bessel 1841

Indonesian Navy Hydrographic Office Chart No. 147, March 1993, corrected to 6 March 1993,  
1:500,000, (I-1) - (I-2), Bessel 1841

Indonesian Navy Hydrographic Office Chart No. 148, December 1995, corrected to 9 December 1995,  
1:500,000, (I-3) - (I-4), WGS 84

Indonesian Navy Hydrographic Office Chart No. 149, September 1981, corrected to 15 February 1992,  
1:500,000, (I-5) - (I-8), Bessel 1841

Indonesian Navy Hydrographic Office Chart No. 78, March 1995, corrected to 15 September  
1997, 1:200,000, (I-9) - (I-12), Bessel 1841

Indonesian Navy Hydrographic Office Chart No. 71, March 1995, corrected to 11 March 1995 1:200,000,  
(I-13) - (I-15), WGS 72

**Description of the archipelagic sea lane**

The axis line connects the following geographical positions:

(I-1) 03° 35'.00 N; 108° 51'.00 E

(I-2) 03° 00'.00 N; 108° 10'.00 E

(I-3) 00° 50'.00 N; 106° 16'.33 E

(I-4) 00° 12'.33 S; 106° 44'.00 E

(I-5) 02° 01'.00 S; 108° 27'.00 E

(I-6) 02° 16'.00 S; 109° 19'.50 E

(I-7) 02° 45'.00 S; 109° 33'.00 E

(I-8) 03° 46'.75 S; 109° 33'.00 E

(I-9) 05° 12'.50 S; 106° 54'.50 E

(I-10) 05° 17'.25 S; 106° 44'.50 E

(I-11) 05° 17'.25 S; 106° 27'.50 E

(I-12) 05° 15'.00 S; 106° 12'.50 E

(I-13) 05° 57'.25 S; 105° 46'.33 E

(I-14) 06° 18'.50 S; 105° 33'.25 E

(I-15) 06° 24'.75 S; 104° 41'.42 E

Notes for the use of this archipelagic sea lane:

- (a) Geographical positions (I-1) to (I-3) define the axis line from the South China Sea through the Natuna Sea.
- (b) Geographical positions (I-3) to (I-5) define the axis line from the Natuna Sea to the Karimata Strait.
- (c) Geographical positions (I-5) to (I-7) define the axis line through the Karimata Strait.
- (d) Geographical positions (I-7) to (I-12) define the axis line through the western Java Sea.
- (e) Geographical positions (I-12) to (I-15) define the axis line through the Sunda Strait into Indian (Hindia) Ocean.

**SEA LANE IA: SPUR FROM NORTH OF P. MERAPAS TO POINT (I-3)**

(Reference Charts: Publisher, Chart number and scale, points reflected on chart)

Indonesian Navy Hydrographic Office Chart No. 38, February 1989, corrected to 11 May 1996, 1:1,000,000, (IA-1) - (I-3), Bessel 1841

Indonesian Navy Hydrographic Office Chart No. 2, September 1988, corrected to 17 February 1997, 1:4,000,000, (IA-1) - (I-3), Bessel 1841

**Description of the archipelagic sea lane**

The axis line connects the following geographical positions:

(IA-1) 01° 52'.00 N; 104° 55'.00 E

(I-3) 00° 50'.00 N; 106° 16'.33 E

Notes for the use of this archipelagic sea lane:

- (a) Geographical positions (IA-1) to (I-3) define the axis line from the Singapore Strait through the Natuna Sea.

## PART II

### SEA LANE II: CELEBES (SULAWESI) SEA - MAKASAR STRAIT - LOMBOK STRAIT - INDIAN (HINDIA) OCEAN

(Reference Charts: Publisher, Chart number and scale, points reflected on chart)

Indonesian Navy Hydrographic Office Chart No. 2, September 1988, corrected to 17 February 1997, 1:4,000,000, (II-1) - (II-8), Bessel 1841

Indonesian Navy Hydrographic Office Chart No. 121, October 1993, corrected to 7 July 1997, 1:1,000,000, (II-1) - (II-4), Bessel 1841

Indonesian Navy Hydrographic Office Chart No.111, August 1997, corrected to 4 August 1997, 1:1,000,000 (II-4) - (II-8), Bessel 1841

Indonesian Navy Hydrographic Office Chart No. 128, October 1997, corrected to 20 October 1997, 1:500,000, (II-4) - (II-5), WGS 72

Indonesian Navy Hydrographic Office Chart No. 113, July 1988, corrected to 2 July 1988, 1:500,000, (II-6) - (II-8), WGS 72

Indonesian Navy Hydrographic Office Chart No. 291, June 1996, corrected to 20 July 1996, 1: 200,000, (II-7)-(II-8) ,WGS 72

#### Description of the archipelagic sea lane

The axis line connects the following geographical positions:

(II-1) 00° 57'.00 N; 119° 33'.00 E

(II-2) 00° 00'.00; 119° 00' 00.E

(II-3) 02° 40'.00 S; 118° 17'.00 E

(II-4) 03° 45'.00 S; 118° 17'.00 E

(II-5) 05° 28'.00 S; 117° 05'.00 E

(II-6) 07° 00'.00 S; 116° 50'.00 E

(II-7) 08° 00'.00 S; 116° 00'.00 E

(II-8) 09° 01'.00 S; 115° 36'.00 E

Notes for the use of this archipelagic sea lane:

- (a) Geographical positions (II-1) to (II-2) define the axis line from the Celebes (Sulawesi) Sea to the Makasar Strait.
- (b) Geographical positions (II-3) to (II-6) define the axis line between Borneo (Kalimantan) and Celebes (Sulawesi) islands.
- (c) Geographical positions (II-6) to (II-7) define the axis line through the Bali Sea.
- (d) Geographical positions (II-7) to (II-8) define the axis line through Lombok Strait to the Indian (Hindia) Ocean

### **PART III**

SEA LANE IIIA: PACIFIC OCEAN - MALUKU SEA - SERAM SEA - BANDA SEA - OMBAI STRAIT  
- SAWU SEA - INDIAN (HINDIA) OCEAN

(Reference Charts: Publisher, Chart number and point numbers and scale, points reflected on chart)

Indonesian Navy Hydrographic Office Chart No. 3, March 1985, corrected to 13 October 1997,  
1:4,000,000, (IIIA-1) - (IIIA-11), Bessel 1841

Indonesian Navy Hydrographic Office Chart No. 403, September 1996, corrected to 14 September 1996,  
1: 500,000, (IIIA-1) - (IIIA-3), Bessel 1841

Indonesian Navy Hydrographic Office Chart No. 357, December 1985, corrected to 17 February 1997,  
1:1,000,000, (IIIA-1) - (IIIA-3), Bessel 1841

Indonesian Navy Hydrographic Office Chart No. 142, May 1991, corrected to 24 August 1996,  
1:1,000,000, (IIIA-4) - (IIIA-8), Bessel 1841

Indonesian Navy Hydrographic Office Chart No. 366, July 1993, corrected to 15 September 1997,  
1:1,000,000, (IIIA-10) - (IIIA-13), Bessel 1841

Indonesian Navy Hydrographic Office Chart No. 367, August 1993, corrected to 7 July 1997, 1:1,000,000,  
(IIIA-9) - (IIIA-10), Bessel 1841

Indonesian Navy Hydrographic Office Chart No. 112, June 1991, corrected to 10 June 1995, 1:1,000,000,  
(IIIA-9) - (IIIA-13), Bessel 1841

Indonesian Navy Hydrographic Office Chart No 363, January 1990, corrected to 15 June 1996,  
1:1,000,000, (IIIA-3) - (IIIA-6), Bessel 1841

Indonesian Navy Hydrographic Office Chart No 404, October 1993, corrected to 13 November 1993, 1:  
500,000, (IIIA-4)-(IIIA-5), Bessel 1841

#### **Description of the archipelagic sea lane**

The axis line connects the following geographical positions:

(IIIA-1) 03° 27'.00 N; 127° 40'.50 E

(IIIA-2) 01° 40'.00 N; 126° 57'.50 E

(IIIA-3) 01° 12'.00 N; 126° 54'.00 E

(IIIA-4) 00° 09'.00 N; 126° 20'.00E

(IIIA-5) 01° 53'.00 S; 127° 02'.00 E

(IIIA-6) 02° 37'.00 S; 126° 30'.00 E

(IIIA-7) 02° 53'.00 S; 125° 30'.00 E

(IIIA-8) 03° 20'.00 S; 125° 30'.00 E

(IIIA-9) 08° 25'.00 S; 125° 20'.00 E

(IIIA-10) 09° 03'.00 S; 123° 34'.00 E

(IIIA-11) 09° 23'.00 S; 122° 55'.00 E

(IIIA-12) 10° 12'.00 S; 121° 18'.00 E

(IIIA-13) 10° 44'.50 S; 120° 45'.75 E

Notes for the use of this archipelagic sea lane:

- (a) Geographical positions (IIIA-1) to (IIIA-5) define the axis line from the Pacific Ocean through the Maluku Sea.
- (b) Geographical positions (IIIA-5) to (IIIA-7) define the axis line through the Seram Sea.
- (c) Geographical positions (IIIA-7) to (IIIA-9) define the axis line through the western Banda Sea to the Ombai Strait.
- (d) Geographical positions (IIIA-9) to (IIIA-13) define the axis line through the Ombai Strait and Sawu Sea between Sumba and Sawu Islands to Indian (Hindia) Ocean.

**SEA LANE III E : SPUR FROM POINT IIIA-2 - IIIE-2**

(Reference Charts: Publisher, Chart number and scale, points reflected on chart)

Indonesian Navy Hydrographic Office Chart No. 3, March 1985, corrected to 13 October 1997, 1:4,000,000, (IIIA-2) - (IIIE-2), Bessel 1841

Indonesian Navy Hydrographic Office Chart No. 403, September 1996, corrected to 14 September 1996, 1:500,000, (IIIA-2) - (IIIE-2), Bessel 1841

Indonesian Navy Hydrographic Office Chart No. 357, December 1985, corrected to 17 February 1997, 1:1,000,000, (IIIA-2) - (IIIE-1), Bessel 1841

### **Description of the archipelagic sea lane**

The axis line connects the following geographical positions:

(IIIA-2) 01° 40'.00 N; 126° 57'.50 E

(IIIE-1) 04° 12'.10 N; 126° 01'.00 E

(IIIE-2) 04° 32'.20 N; 125° 10'.40 E

Notes for the use of this archipelagic sea lane:

- (a) Geographical positions (IIIA-2) to (IIIE-2) define the axis line from the Maluku Sea to the Celebes (Sulawesi) Sea.

**SEA LANE IIIB: SPUR FROM POINT IIIA-8 - IIIB-2; BANDA SEA - LETI STRAIT - TIMOR SEA**  
(Reference Charts: Publisher, Chart number and scale, points reflected on chart)

Indonesian Navy Hydrographic Office Chart No. 3, March 1985, corrected to 13 October 1997, 1:4,000,000, (IIIA-8) - (IIIB-2), Bessel 1841

Indonesian Navy Hydrographic Office Chart No. 142, May 1991, corrected to 24 August 1996, 1:1,000,000, (IIIA-8) - (IIIB-1), Bessel 1841



Indonesian Navy Hydrographic Office Chart No. 367, August 1993, corrected to 7 July 1997, 1:1,000,000, (IIIB-2), Bessel 1841

Indonesian Navy Hydrographic Office Chart No146, October 1993, corrected to 1 April 1995, 1:1,000,000, (IIIB-2), Bessel 1841

### **Description of the archipelagic sea lane**

The axis line connects the following geographical positions:

(IIIA-8) 03° 20'.00 S; 125° 30'.00 E

(IIIB-1) 04° 00'.00 S; 125° 40'.00 E

(IIIB-2) 08° 31'.00 S; 127° 33'.00 E

Notes for the use of this archipelagic sea lane:

- (a) Geographical positions (IIIA-8) to (IIIB-2) define the axis line through the Banda Sea and Leti Strait to the Timor Sea.

SEA LANE IIIC: SPUR FROM POINT IIIA-8 - IIIC-2; BANDA SEA - ARAFURU SEA  
(Reference Charts: Publisher, Chart number and scale, points reflected on chart)

Indonesian Navy Hydrographic Office Chart No. 3, March 1985, corrected to 13 October 1997, 1:4,000,000, (IIIA-8) - (IIIC-2), Bessel 1841

Indonesian Navy Hydrographic Office Chart No. 142, May 1991, corrected to 24 August 1996, 1:1,000,000, (IIIA-8) - (IIIB-1), Bessel 1841

Indonesian Navy Hydrographic Office Chart No. 367, August 1993, corrected to 7 July 1997 1:1,000,000, (IIIC-1) - (IIIC-2), Bessel 1841

Indonesian Navy Hydrographic Office Chart No146, October 1993, corrected to 1 April 1995, 1:1,000,000, (IIIC-1)-(IIIC-2), Bessel 1841

### **Description of the archipelagic sea lane**

The axis line connects the following geographical positions:

(IIIA-8) 03° 20'.00 S; 125° 30'.00 E

(IIIB-1) 04° 00'.00 S; 125° 40'.00 E

(IIIC-1) 06° 10'.00 S; 131° 45'.00 E

(IIIC-2) 06° 44'.00 S; 132° 35'.00 E

Notes for the use of this archipelagic sea lane:

- (a) Geographical positions (IIIA-8) to (IIIC-2) define the axis line through the Banda Sea to the Arafuru Sea.

SEA LANE IIID: SPUR FROM POINT IIIA-11 - IIID-1 ; SAWU SEA - SEA BETWEEN SAWU AND ROTI ISLANDS - INDIAN (HINDIA) OCEAN  
(Reference Charts: Publisher, Chart number and scale, points reflected on chart)

Indonesian Navy Hydrographic Office Chart No. 3, March 1985, corrected to 13 October 1997, 1:4,000,000, (IIIA-11) - (IIID-1), Bessel 1841

Indonesian Navy Hydrographic Office Chart No. 112, June 1991, corrected to 10 June 1995, 1:1,000,000, (IIIA-11) - (IIID-1), Bessel 1841

Indonesian Navy Hydrographic Office Chart No. 366, July 1993, corrected to 15 September 1997, 1:1,000,000, (IIIA-11) - (IIID-1), Bessel 1841

### **Description of the archipelagic sea lane**

The axis line connects the following geographical positions:

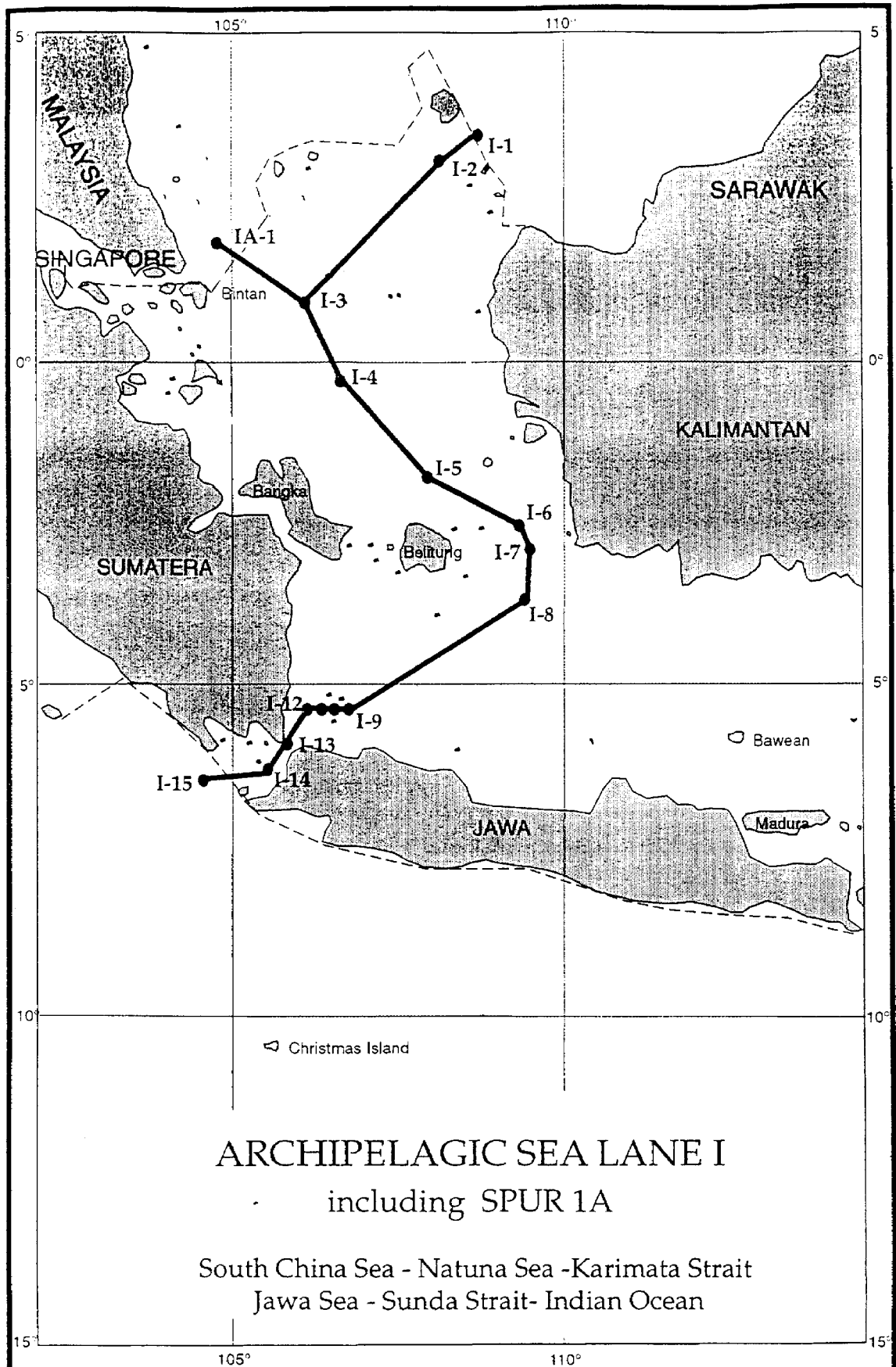
(IIIA-11) 09° 23'.00 S; 122° 55'.00 E

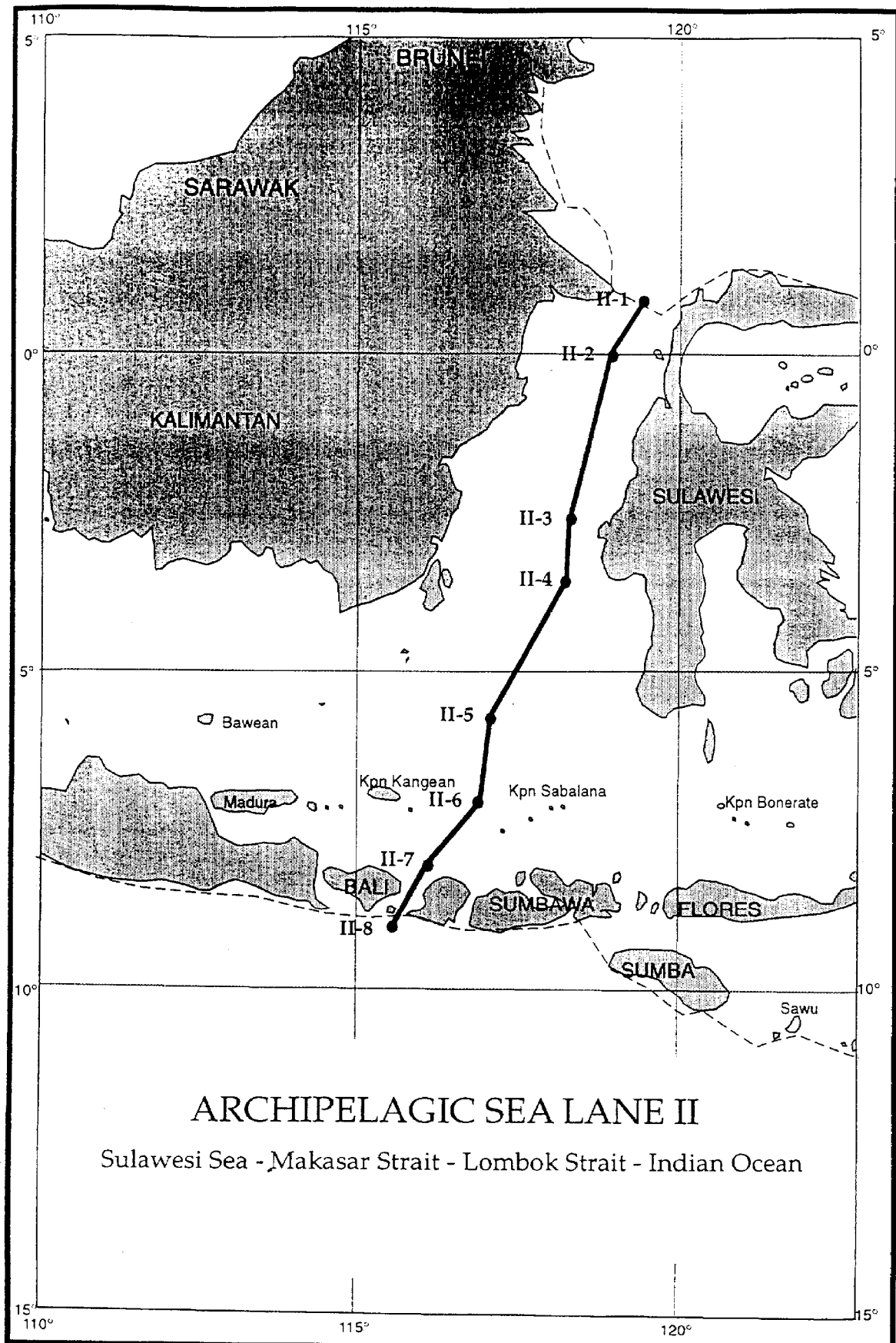
(IIID-1) 10° 58'.00 S; 122° 11'.00 E

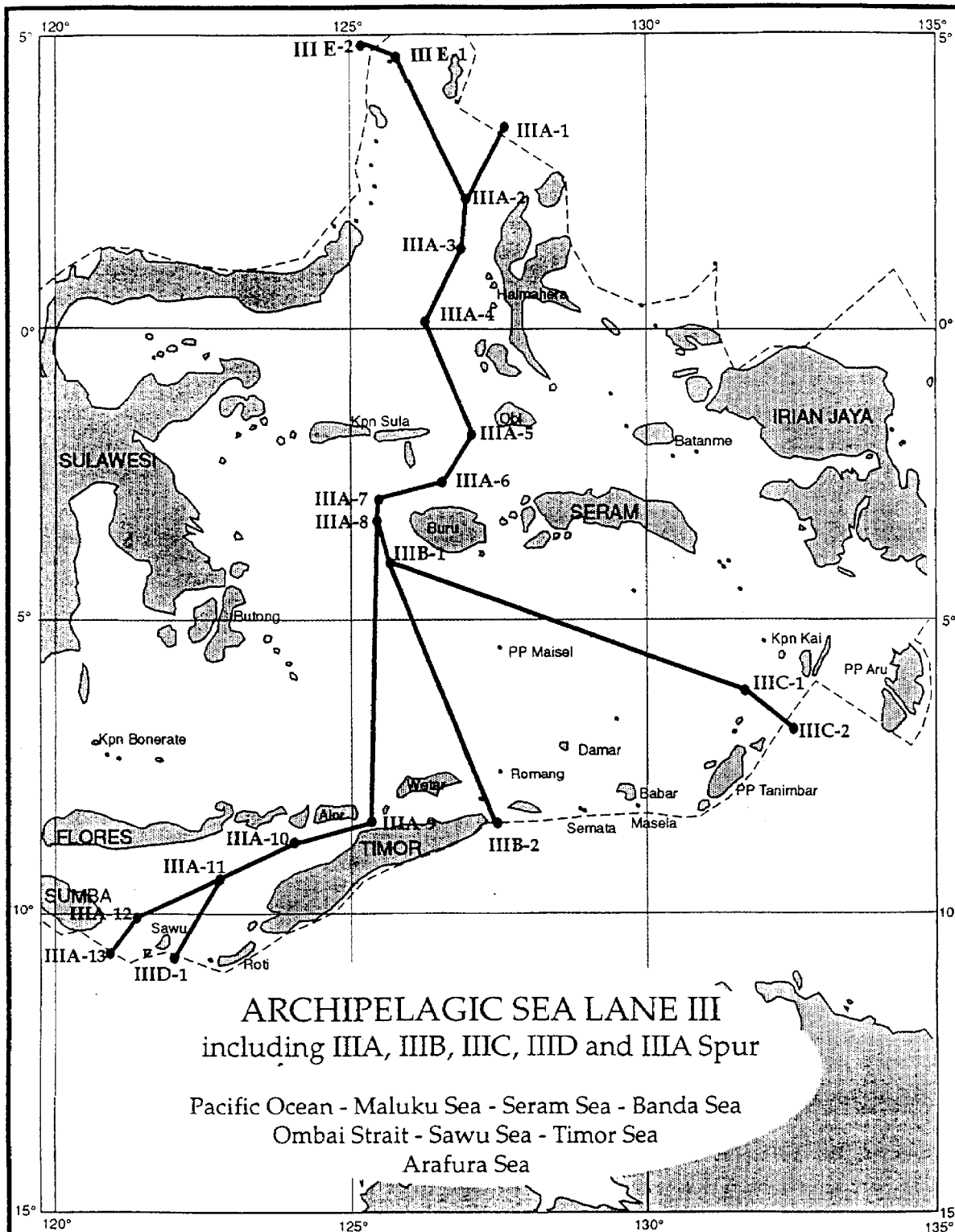
Notes for the use of this archipelagic sea lane:

- (a) Geographical positions (IIIA-11) to (IIID-1) define the axis line from the Sawu Sea to the Sea between Sawu and Roti Islands to the Indian (Hindia) Ocean.









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**ANNEX 10**

**RESOLUTION MSC.73(69)  
(adopted on 19 May 1998)**

**MANDATORY SHIP REPORTING SYSTEMS**

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/8-1 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 the Guidelines and criteria for ship reporting systems, adopted by resolution MSC.43(64),

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

1. ADOPTS, in accordance with SOLAS regulation V/8-1, mandatory ship reporting systems:
  - "In the Straits of Malacca and Singapore" area described in Annex 1 to the present resolution; and
  - "In the Strait of Bonifacio" area described in Annex 2.
2. DECIDES that the aforementioned mandatory ship reporting systems will enter into force at 0000 hours UTC on 1 December 1998.
3. REQUESTS the Secretary-General to bring this resolution and its Annexes to the attention of Members of the Organization and Contracting Governments to the 1974 SOLAS Convention.

## ANNEX 1

### **DESCRIPTION OF THE MANDATORY SHIP REPORTING SYSTEM IN THE STRAITS OF MALACCA AND SINGAPORE**

#### **1 Categories of ships required to participate in the system**

1.1 Ships of the following categories are required to participate in the ship reporting system:

- .1 vessels of 300 GT and above;
- .2 vessels of 50 metres or more in length;
- .3 vessels engaged in towing or pushing with a combined GT of 300 and above, or with a combined length of 50 metres or more;
- .4 vessels of any tonnage carrying hazardous cargo, as defined in paragraph 1.4 of resolution MSC.43(64);
- .5 all passenger vessels that are fitted with VHF, regardless of length or GT; and
- .6 any category of vessels less than 50 metres in length or less than 300 GT which are fitted with VHF and in an emergency, uses the appropriate traffic lane or separation zone, in order to avoid immediate danger.

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

2.1 The operational area of STRAITREP covers the Straits of Malacca and Singapore between longitudes 100°E 40'E and 104°E 23'E as shown in the chartlets attached as appendix 1 and appendix 2. The area includes the routing system in the Straits of Malacca and Singapore. The area is divided into nine sectors, each has an assigned VHF channel as shown in appendix 3.

2.2 The reference charts which include the operational area of STRAITREP are the Malaysian Chart Series MAL 515, 521 and 523 of the Hydrographer, Royal Malaysian Navy or the equivalent charts published by the competent hydrographic authority.

#### **3 Format, content of report, times and geographical positions for submitting reports, authority to whom reports should be sent, available services**

The ship report short title STRAITREP, shall be made to the VTS authorities as follows:

##### **3.1 Format**

The ship report shall be drafted in accordance with the format shown in appendix 4. The information requested from ships is derived from the Standard Reporting Format given in paragraph 2 of the IMO resolution A.851(20).



### 3.2 Content

The report required from a ship contains only information which is essential to meet the objectives of the STRAITREP:

#### .1 Information considered essential;

- A - Name of ship, call sign, IMO identification number (if available);
- C or D - Position;
- P - Hazardous cargo, class if applicable; and
- Q or R - Breakdown, damage and/or deficiencies affecting the structure, cargo or equipment of the ship or any other circumstances affecting normal navigation in accordance with the provisions of the SOLAS and MARPOL Conventions.

#### .2 Information considered necessary when requested by VTS authority;

- E and F - Course and speed of ship.

**Note:**

On receipt of a position message, operators of the VTS will establish the relation between the ship's position and the information supplied by the facilities available to them. The information on heading and speed will facilitate the VTS operator's task of identifying a ship within a group.

#### .3 Geographical position for submitting reports

- .1 Ships entering the operational area shall report when crossing the limits mentioned in paragraph 3 or when crossing a line joining Tg. Piai (01E15'.50N 103E30'.75E) and Pulau Karimun Kecil (01E09'.20N 103E24'.35E) or when leaving port or anchorages in the area or before joining the traffic lane of the TSS.
- .2 Ships entering the operational area shall also report when approaching from the south via Selat Riau, abeam of Karang Galang Lt. (01E09'.58N 104E11'.47E) or via Selat Durian, report when Pulau Jangkat Beacon (00E57'.89N 103E42'72E) is abeam and when approaching from the East Johor Strait, abeam of Eastern Buoy (01E17'.87N, 104E05'.99E).
- .3 A ship approaching from any direction other than those specified above shall on reaching sector 7, sector 8 or sector 9 as appropriate report by giving the vessel's position in term of bearing and distance from one of the following reference points:

(i)	Pu Iyu Kechil Lt	(01E11'.48N 103E21'.23E)
(ii)	Sultan Shoal Lt	(01E14'.38N 103E38'.98E)
(iii)	Raffles Lt	(01E09'.60N 103E44'.55E)
(iv)	Sakijang Lt Bn	(01E13'.30N 103E51'.37E)
(v)	Bedok Lt	(01E18'.54N 103E56'.06E)
(vi)	Tg. Stapa Lt	(01E20'.57N 104E08'.24E)
(vii)	Horsburgh Lt	(01E19'.81N 104E24'.44E)

As an alternative the position can also be given in latitude and longitude.

#### .4 Authority

The VTS authorities for the STRAITREP are as follows:

- (i) Sector 1 to Sector 5 - Klang VTS;
- (ii) Sector 6 - Johor VTS; and
- (iii) Sector 7 to Sector 9 - Singapore VTS.

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

4.1 STRAITREP also provides information to ships about specific and critical situation which could cause conflicting traffic movements and other information concerning safety of navigation.

4.2 Depending on the sector which a ship is in, every ship shall also maintain a VHF radio telephone listening watch on the appropriate VHF Channel. Information of general interest to ships will be broadcast on VHF channel 16 and any other channel as may be specified by the appropriate VTS authority. This broadcast will be preceded by an announcement on the appropriate VHF channel assigned to the sector.

#### 5 Radiocommunications required for the system, frequencies on which reports should be transmitted and information to be reported

The radiocommunications required for the STRAITREP is as follows:

- 5.1 STRAITREP will be based on VHF voice radiocommunication and will be interactive. The call to the appropriate VTS authority shall be made on the VHF channel assigned to the particular sector in which the ship is located as indicated in appendix 3, and the report shall be transmitted on that channel or any other available channel as assigned by the appropriate VTS authorities.
- 5.2 The language used for communication shall be English, using the IMO *Standard Marine Communications Phrases* where necessary.
- 5.3 Information of commercial confidentiality may be transmitted by non-verbal means.

## **6 Rules and regulations in force in the area of the system**

6.1 The International Regulations for Preventing Collisions at Sea, 1972 are applicable throughout the operational area of STRAITREP.

6.2 The Rules For Vessels Navigating Through The Straits of Malacca and Singapore as approved by IMO are applicable throughout the area.

## **7 SHORE-BASED FACILITIES TO SUPPORT OPERATION OF THE SYSTEM**

The facilities of the STRAITREP are as follows:

### **.1 Klang VTS**

- Telephone, facsimile and telex communication
- 6 sets of VHF radio communication equipment
- 6 real-time display consoles for 'X' and 'S' bands radar signals from remote radar stations.

### **.2 Johor VTS**

- Telephone, facsimile and telex communication
- 4 sets of VHF radio communication equipment
- 4 real-time display consoles for 'X' and 'S' bands radar signals from remote radar stations.

### **.3 Singapore VTS**

- Telephone, facsimile and telex communication
- 11 sets of VHF radio communication equipment
- 4 real-time display consoles for "X" band radar signals from remote radar stations.
- 4 sets of VHF radio directions finder in marine bands.

### **.4 Remote Stations:**

#### **.1 Pulau Angsa**

- 1 "X" band radar facility
- 1 "S" band radar facility
- VHF transmitters and receivers

#### **.2 Bukit Jugra**

- 1 "X" band radar facility
- 1 "S" band radar facility
- VHF transmitters and receivers

- .3 **Cape Rachado**
  - 1 "X" band radar facility
  - 1 "S" band radar facility
  - VHF transmitters and receivers
  
- .4 **Pulau Undan**
  - 1 "X" band radar facility
  - 1 "S" band radar facility
  - VHF transmitters and receivers
  
- .5 **Bukit Segenting**
  - 1 "X" band radar facility
  - 1 "S" band radar facility
  - VHF transmitters and receivers
  
- .6 **Tanjung Piai**
  - 1 "X" band radar facility
  - 1 "S" band radar facility
  - VHF transmitters and receivers
  
- .7 **Bukit Pengerang**
  - 1 "X" band radar facility
  - 1 "S" band radar facility
  - VHF transmitters and receivers
  
- .8 **Sultan Shoal Lighthouse**
  - VHF transmitters and receivers
  - 1 "X" band radar facility
  
- .9 **Raffles Lighthouse**
  - 1 "X" band radar facility
  
- .10 **St. John's Island**
  - 1 "X" band radar facility
  
- .11 **Bedok Lighthouse**
  - 2 sets of VHF/DF radio direction finder

.12 **Bedok**

- 1 "X" band radar facility

.13 **Horsburgh Lighthouse**

- VHF transmitters and receivers
- 1 "X" band radar facility

.14 **Jurong Control**

- 2 sets of VHF/DF radio direction finder.

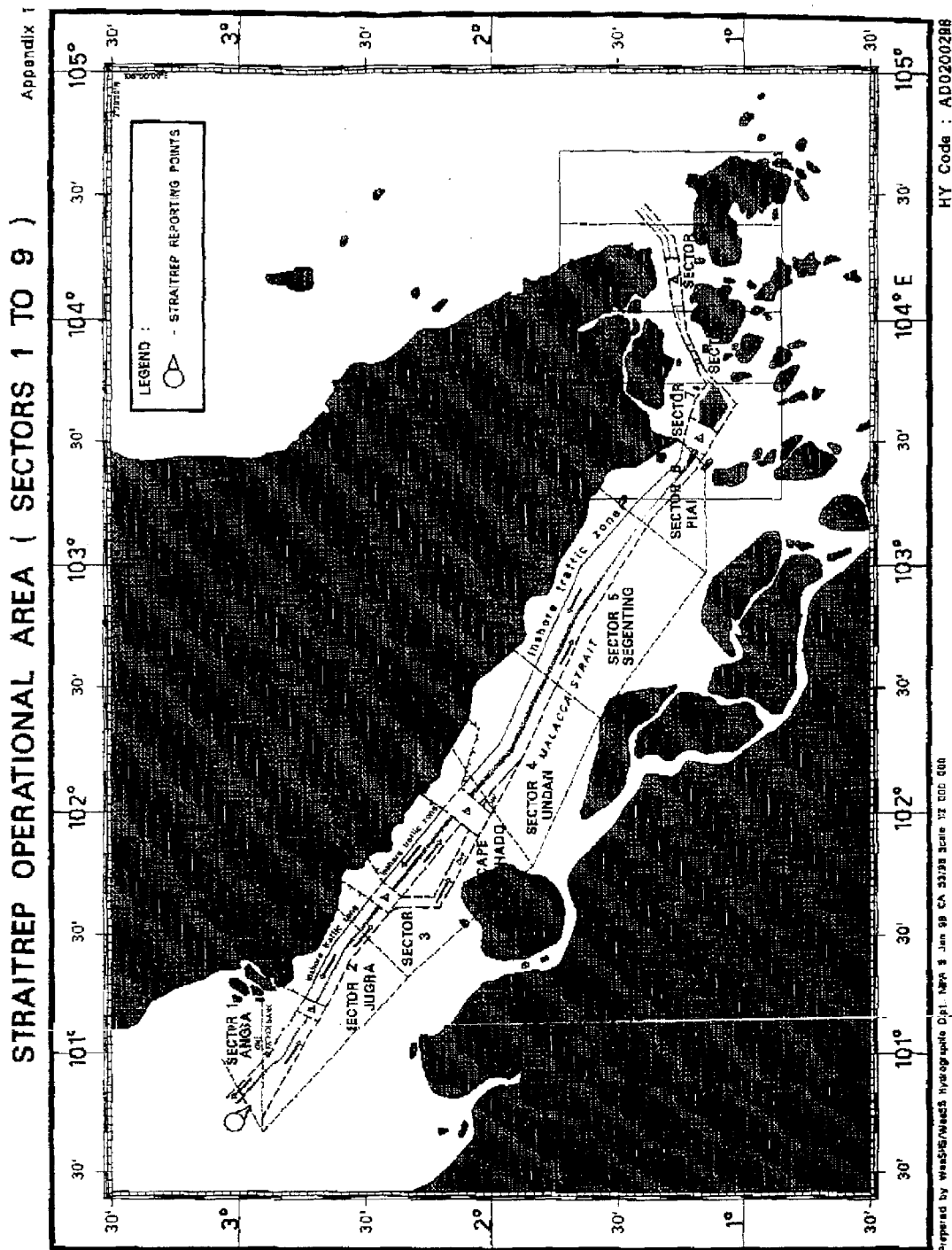
**8 Alternative communication if the communication facilities of the shore-based authority fail**

8.1 STRAITREP is designed to avoid, as far as possible, any irretrievable breakdown of equipment which would hinder the functioning of the services normally provided by the respective VTS authorities.

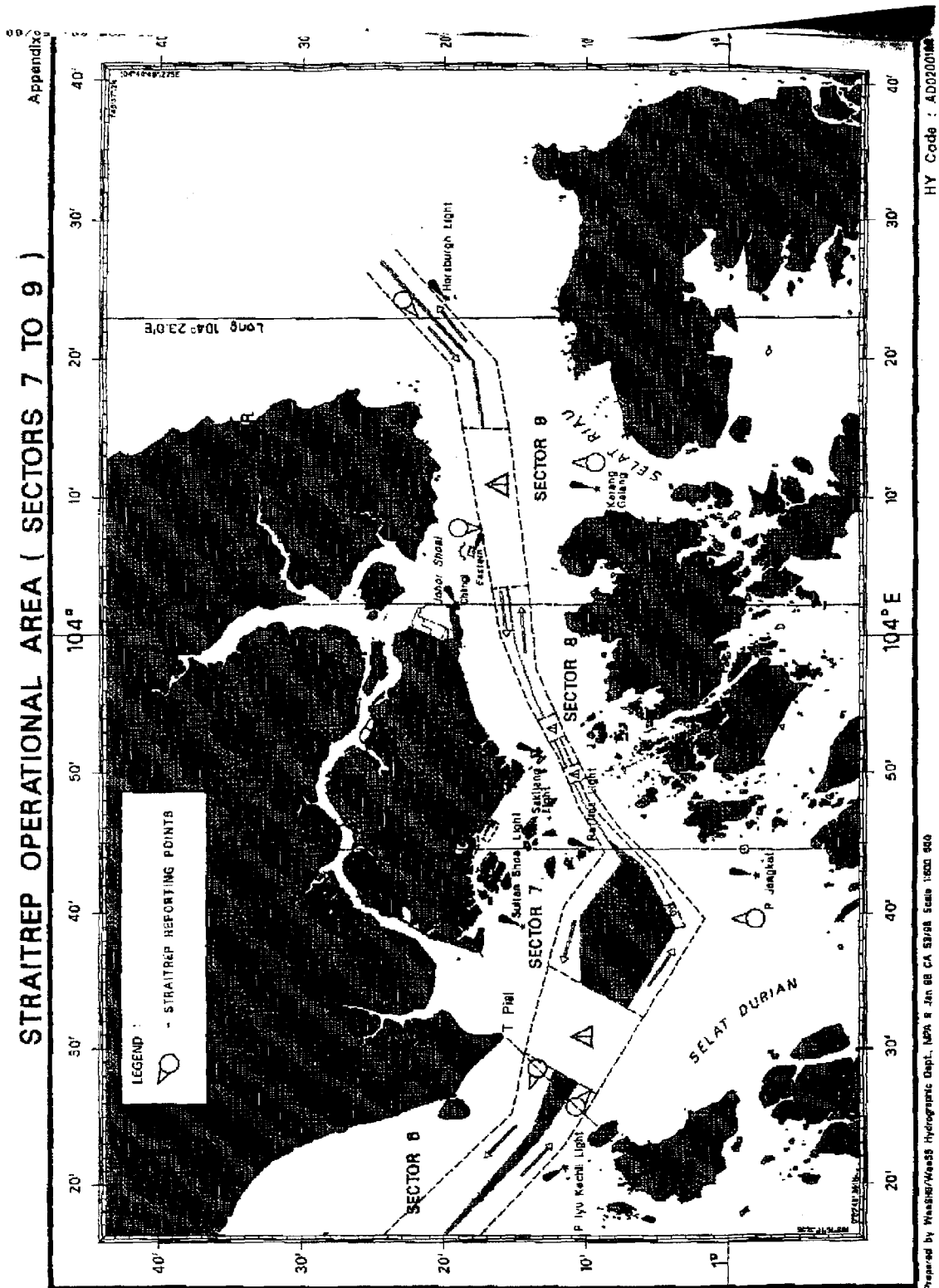
8.2 The most important items of equipment and power sources are duplicated and the facilities are provided with emergency generating sets as well as with Uninterruptable Power Supply (UPS) units. A maintenance team is available 24 hours a day to attend to any breakdown.

8.3 STRAITREP is also designed in such a manner that if one station fail, the adjacent station can provide the necessary coverage.

APPENDIX 1



APPENDIX 2



APPENDIX 3

**ASSIGNED VHF CHANNELS FOR SECTORS IN THE MANDATORY REPORTING  
SYSTEM IN THE STRAITS OF MALACCA AND SINGAPORE  
(STRAITREP)**

<b>SECTOR</b>	<b>VHF CHANNELS</b>	<b>VTS AUTHORITIES</b>
Sector 1	VHF channel 66	KLANG VTS
Sector 2	VHF channel 88	KLANG VTS
Sector 3	VHF channel 84	KLANG VTS
Sector 4	VHF Channel 61	KLANG VTS
Sector 5	VHF Channel 88	KLANG VTS
Sector 6	VHF Channel 88	JOHOR VTS
Sector 7	VHF Channel 73	SINGAPORE VTS
Sector 8	VHF Channel 14	SINGAPORE VTS
Sector 9	VHF Channel 10	SINGAPORE VTS



APPENDIX 4

**DRAFTING OF RADIO REPORTS TO THE MANDATORY SHIP REPORTING SYSTEM IN  
THE STRAITS OF MALACCA AND SINGAPORE  
(STRAITREP)**

Designator	Function	Information required
A	Ship	Name and call sign
C	Position	A 4-digit group giving latitudes in degrees and minutes suffixed with N (north) or S (south) and a 5-digit group giving longitudes in degrees and minutes suffixed with E (east) or W (west); or
D	Position	True bearing (first 3 digits) and distance given in nautical miles from an clearly identifiable point (state landmark)
E	True course	A 3-digit group
F	Speed in knots and tenths of knots	A 3-digit group
P	Hazardous cargo on board	Indicate "Yes" or "No" to whether vessel is carrying hazardous cargo. If "Yes" the class if applicable.
Q	Defects/damage/deficiencies/other limitations	Brief detail of defects, deficiencies or other limitations
R	Description of pollution or dangerous goods lost overboard	Brief detail of type of pollution (oil, chemicals, (etc.) or dangerous goods lost overboard; position expressed as in (C) or (D)

## ANNEX 2

### DESCRIPTION OF THE MANDATORY SHIP REPORTING SYSTEM IN THE STRAIT OF BONIFACIO

#### **1 CATEGORIES OF SHIPS REQUIRED TO PARTICIPATE IN THE SYSTEM**

Ships of 300 gross tonnage and over are required to participate in the system.

#### **2 GEOGRAPHICAL COVERAGE OF THE SYSTEM - REFERENCE CHART**

The reporting system covers a circular area with a radius of 20 (twenty) nautical miles centred on Bonifacio. The reference chart is the French Chart No.7024 of the SHOM (Hydrographic and Oceanographic Service of the French Navy) International chart No.3350.

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

##### **3.1 Content**

The report required shall include:

- information considered essential:
  - the name of the ship, her callsign or IMO identification number (letter A)
  - time and position (letters C or D)
  - course and speed (letters E and F)
  - draught (letter O)
- additional information, if appropriate
- cargo (in case of transport of petroleum products, dangerous or polluting substances) (letter P)
- defects or damage (letter Q)

In addition, in accordance with provisions of SOLAS and MARPOL Conventions, ships must report information on any defect, damage, deficiency or limitations as well as, if necessary, information relating to pollution incidents or loss of cargo. Possession of this information enables the operators to broadcast safety messages to other ship traffic and to ensure more effective tracking of the trajectories of ships concerned.

Ships shall transmit their reports on entering the precautionary areas defined in the documents about routing measures in the Strait of Bonifacio, or when passing the following lines:

- East Bound:
  - A line linking the beacon of Cap De Fano in Corsica to Point  
41° 19'.18 N 009° 06'.51 E  
(West end of the North limit of the two way route)
  - A line linking the beacon of Capo Testa in Sardinia to Point  
41° 16'.75 N 009° 06'.18 E  
(West end of the South limit of the two way route).
- West Bound
  - A line linking Pointe De Rondinara in Corsica to Point  
41° 22'.55 N 009° 22'.38 E  
(East end of the North limit of the two way route)
  - A line linking Punta Galera in Sardinia to Point  
41° 21'.58 N 009° 23'.30 E  
(East end of the South limit of the two way route)

### 3.2 Recipient of report

The shore-based authorities are La Maddalena Coast Guard Station (Sardinia, Italy) and Pertusato Naval Signal Station, (Corsica, France), common call sign: **Bonifacio Traffic**.

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

Detected and identified ships are monitored by radar which in no way releases their masters from their responsibility for safe navigation.

Following receiving report **Bonifacio Traffic** will provide:

- information on navigational conditions (status of aids to navigation, presence of other ships and their position at the moment of contact); and
- information on weather conditions.

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

5.1 The radiocommunication equipment required for the system is VHF. Ship reports shall be transmitted by voice on VHF channel 10, back up VHF channel 16, both permanently watched by the station. An IMO circular will provide for another back up VHF channel, if necessary, after 1 February 1999. Use of automatic identification system will be implemented in accordance with IMO decisions.

5.2 The report required from a ship is mentioned in paragraph 3.1 above in the appendix "Summary". The language used shall be English or languages indicated in nautical publications.

5.3 Information of commercial confidentiality may be transmitted by non-verbal means. Detail of fax call number to be published in nautical information documents.

## **6 RULES AND REGULATIONS IN FORCE IN THE AREA OF THE SYSTEM**

6.1 The international regulations for preventing collisions at sea (COLREGs) are applicable throughout the area of coverage of the system.

6.2 The IMO resolution A.766(18) about navigation in the Strait of Bonifacio, adopted on 4 November 1993 remains in force as far as it recommends each flag State to prohibit or at least strongly discourage the transit by certain categories of ships (operative paragraph 1). Its ship reporting provisions are replaced by those of the present instrument.

6.3 The regulation (arrêté) of the Préfet maritime for Mediterranean region n° 23/83 dated 6 May 1983 rules navigation in the approaches of the French coast in order to prevent accidental marine pollution, for ships carrying hazardous or polluting cargoes. This instrument has the following provisions:

- .1 for ships intending to enter French territorial waters, mandatory ship reporting with a six-hour advance warning. In addition to information concerning the identity of the ship, the report must specify the place and time of entry into French waters, the port arrived from and the destination, the cargo and the status of manoeuvrability and navigational capacities;
- .2 mandatory watch on VHF channel 16 while travelling through territorial waters; and
- .3 mandatory reporting of any damage occurring at less than 50 miles from the French coast.

6.4 French regulations (arrêté) of the Préfet maritime n° 1/83 dated 15 February 1983 and 7/93 dated 5 March 1993 and Italian decree of the Minister of Merchant Marine dated 26 February 1993 prohibit transit through the Strait of Bonifacio for French and Italian ships carrying oil products or hazardous goods. They will remain in force.

## **7 SHORE-BASED FACILITIES TO SUPPORT OPERATION OF THE SYSTEM**

7.1 Stations will be equipped with radar installations assisted by computer covering the whole area.

7.2 Stations will be equipped with a duplicated VHF equipment.

7.3 Personnel operating the system: Stations will be manned by Naval personnel on a 24-hour basis. Duty officers are qualified Senior Chief Petty-officers.

## **8 ALTERNATIVE COMMUNICATION IF THE COMMUNICATION FACILITIES OF THE SHORE-BASED AUTHORITY FAIL**

Each station will assure relief of the other one in case of failure.

## APPENDIX

### SUMMARY (Ship Reporting System)

#### 1 General

##### 1.1 Vessels concerned:

All ships of 300 GT and over

##### 1.2 Area on entering which vessels shall report:

Ships shall transmit their reports on entering the precautionary areas defined in the documents about routeing measures in Strait of Bonifacio, or when passing the following lines:

- East Bound:

- A line linking the beacon of Cap De Fano in Corsica to geographical position  
41° 19'.18 N 009° 06'.51 E  
(West end of the North limit of the two way route)
- A line linking the beacon of Capo Testa in Sardinia to geographical position  
41° 16'.75 N 009° 06'.18 E  
(West end of the South limit of the two way route).

- West Bound

- A line linking Pointe De Rondinara in Corsica to geographical position  
41° 22'.55 N 009° 22'.38 E  
(East end of the North limit of the two way route)
- A line linking Punta Galera in Sardinia to geographical position  
41° 21'.58 N 009° 23'.30 E  
(East end of the South limit of the two way route)

##### 1.2 Reference chart

French (SHOM) chart No.7024 International chart No.3350

- 2 Reporting format** (in accordance with resolution A.851(20) - General principles for ship reporting systems and ship reporting requirements, including guidelines for reporting incidents involving dangerous goods, harmful substances and/or marine pollutants).

Name of system: BONIFREP

Data to be transmitted:

Heading	Information
A	Name + call sign + IMO number
C or D	Time and Position
E and F	Course and speed
O	Draught
P	Cargo (in case of transport of oil products, hazardous or pollution substances)
Q	Defect or damage (if relevant)
P	Polluting/dangerous goods lost overboard (if relevant)

In the event of defect, pollution or goods lost overboard, additional information may be requested.

- 3 Authority to whom the report shall be sent**

Pertusato Naval Signal Station (France) - La Maddalena Coast Guard Station (Italy); common call sign: BONIFACIO TRAFFIC

- 4 Communications facilities**

The reports are to be transmitted on VHF channel 10 (or on channel 16 if not possible)

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## ANNEX 11

### **TERMS OF REFERENCE FOR THE IMO/IHO HARMONIZATION GROUP ON ECDIS (HGE)**

The IMO Sub-Committee on Safety of Navigation agreed to establish a small group to work mainly by correspondence and in conjunction with IHO.

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

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

The HGE should:

- .1 consider matters related to electronic chart systems, as requested by IMO or IHO, and prepare appropriate documentation; and
- .2 review the results of studies by IMO, IHO and other related organizations which address aspects of the electronic chart display systems, and advise IMO and IHO as to whether they are compatible with total system concept.

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**ANNEX 12****RESOLUTION MSC.74(69)  
(adopted on 12 May 1998)****ADOPTION OF NEW AND AMENDED PERFORMANCE STANDARDS**

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.825(19), by which the Assembly resolved that the functions of adopting performance standards for radio and navigational equipment, as well as amendments thereto, shall be performed by the Maritime Safety Committee on behalf of the Organization,

HAVING CONSIDERED new performance standards and amendments to existing performance standards adopted by the Assembly and prepared by the forty-third session of the Sub-Committee on Safety of Navigation,

1. ADOPTS the following new and recommended performance standards, set out in Annexes 1 to 3 to the present resolution:
  - (a) Recommendation on Performance Standards for Shipborne Combined GPS/GLONASS Receiver Equipment (Annex 1);
  - (b) Recommendation on Performance Standards for Track Control Systems (Annex 2); and
  - (c) Recommendation on Performance Standards for Universal Automatic Identification System (AIS) (Annex 3);
2. ADOPTS ALSO the amendments to the following performance standards adopted by the Assembly, set out in Annex 4 to the present resolution:
  - (a) Resolution A.224(VII) - Recommendation on Performance Standards for Echo-Sounding Equipment (Annex 4);
3. RECOMMENDS Member Governments to ensure that:
  - (a) shipborne combined GPS/GLONASS receiver equipment, track control systems and AIS installed on or after 1 January 2000 conform to performance standards not inferior to those set out in the Annexes 1 to 3 to the present resolution;
  - (b) echo-sounding equipment installed on or after 1 January 2001 conform respectively to performance standards not inferior to those set out in Annex 4 to the present resolution;
  - (c) echo-sounding equipment installed before 1 January 2001 conform at least to the performance standards set out in resolution A.224(VII).

## ANNEX 1

### **RECOMMENDATION ON PERFORMANCE STANDARDS FOR SHIPBORNE COMBINED GPS/GLONASS RECEIVER EQUIPMENT**

#### **1 INTRODUCTION**

1.1 The Global Positioning System (GPS) and Global Navigation Satellite System (GLONASS) are space-based positioning, velocity and time systems. The GPS space segment will normally be composed of 24 satellites in six orbits. The spacing of satellites in orbit will be arranged so that a minimum of four satellites will be in view to users world-wide, with a position dilution of precision (PDOP)  $\leq 6$ . The GLONASS space segment will normally be composed of 24 satellites placed in 3 orbital planes with 8 satellites in each plane. The spacing of satellites in orbit will be arranged so that a minimum of four satellites will be in view to users world-wide, with a PDOP  $\leq 6$ .

1.2 A combined receiver, when compared to either the GPS or GLONASS receiver, offers improved availability, integrity, accuracy and resistance to interference; increased ease of installation, and the ability to operate in the differential GPS mode (DGPS), differential GLONASS mode (DGLONASS) and combined DGPS and DGLONASS mode, when available.

1.3 Receiver equipment capable of combining individual satellite measurements from GPS and GLONASS constellations to form a single solution is intended for navigational purposes on ships with maximum speeds not exceeding 50 knots. Such equipment should, in addition to the general requirements contained in resolution A.694(17), comply with the following minimum performance requirements.

1.4 These standards cover the basic requirements of position-fixing for navigation purposes only and do not cover other computational facilities which may be in the equipment.

#### **2 COMBINED GPS/GLONASS RECEIVER EQUIPMENT**

2.1 The words "combined GPS/GLONASS receiver equipment" as used in these performance standards include all the components and units necessary for the system to properly perform its intended functions. The equipment should include the following minimum facilities:

- .1 antenna capable of receiving both GPS and GLONASS signals;
- .2 combined GPS/GLONASS receiver and processor;
- .3 means of accessing the computed latitude/longitude position;
- .4 data control and interface; and
- .5 position display.

2.2 The antenna design should be suitable for fitting at a position on the ship which ensures a clear view of the satellite constellations.

### **3 PERFORMANCE STANDARDS FOR COMBINED GPS/GLONASS RECEIVER EQUIPMENT**

3.1 The combined GPS/GLONASS receiver equipment should:

- .1.1 be capable of receiving and processing the Standard Positioning Service (SPS) signals of the GPS as modified by Selective Availability (SA) and range code signals in GLONASS and provide position information in latitude and longitude World Geodetic System (WGS) 84 co-ordinates in degrees, minutes and thousandths of minutes. Means may be provided to transform the computed position into data compatible with the datum of the navigational chart in use. Where this facility exists, the display and any data output should indicate that the co-ordinate conversion is being performed and should identify the co-ordinate system in which the position is expressed;
- .1.2 operate on the L1 frequency signal and C/A code in GPS and L1 frequency signal and range code in GLONASS;
- .1.3 be provided with at least one output from which position information can be supplied to other equipment. The output of position information should be in accordance with the relevant international standard;\*
- .1.4 have static accuracy such that the position of the antenna is determined to within 35 m (95%) in non-differential mode and 10 m (95%) in differential mode with horizontal dilution of precision (HDOP)  $\leq 4$  or position dilution of precision (PDOP)  $\leq 6$ ;
- .1.5 have dynamic accuracy such that the position of the ship is determined to within 35 m (95%) in non-differential mode and 10 m (95%) in differential mode with HDOP  $\leq 4$  or PDOP  $\leq 6$  under the conditions of sea states and ship's motion likely to be experienced in ships\*\*;
- .1.6 be capable of selecting automatically the appropriate satellite transmitted signals for determination of the ship's position with the required accuracy and update rate;
- .1.7 be capable of acquiring satellite signals with input signals having carrier levels in the range of -130 dBm to -120 dBm. Once the satellite signals have been acquired the equipment should continue to operate satisfactorily with satellite signals having carrier levels down to -133 dBm;
- .1.8 be capable of acquiring position to the required accuracy, within 30 min, when there is no valid almanac data;
- .1.9 be capable of acquiring position to the required accuracy, within 5 min, when there is valid almanac data;

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\*IEC 1162 Publication

\*\*Resolution A.694(17); IEC 721-3-6, IEC 945 and IEC 1108-3 Publications

- .1.10 be capable of re-acquiring position to the required accuracy, within 5 min, when all GPS and GLONASS signals are interrupted for a period of at least 24 h, but there is no loss of power;
- .1.11 be capable of re-acquiring position to the required accuracy, within 2 min, when subjected to a power interruption of 60 s;
- .1.12 be capable of re-acquiring an individual satellite signal and utilizing it in the position solution within 10 s after being blocked for 30 s;
- .1.13 generate and output a new position solution at least once every 1 s;
- .1.14 have a minimum resolution of position, i.e. latitude and longitude of 0.001 min; and
- .1.15 have the facilities to process DGPS and DGLONASS data fed to it, in accordance with Recommendation ITU-R M.823 and the appropriate RTCM standard.

#### **4 PROTECTION**

Precautions should be taken to ensure that no permanent damage can result from an accidental short circuit or grounding of the antenna or any of its input or output connections or any of the combined GPS/GLONASS receiver equipment inputs or outputs for a duration of 5 min.

#### **5 FAILURE WARNINGS AND STATUS INDICATIONS**

5.1 The equipment should provide an indication if the position calculated is likely to be outside of the requirements of these performance standards.

5.2 The combined GPS/GLONASS receiver equipment should provide as a minimum:

- .1 an indication within 5 s if either:
  - a) the specified HDOP has been exceeded; or
  - b) a new position has not been calculated for more than 1 s.

Under such conditions the last known position and the time of the last valid fix, with explicit indication of this state, so that no ambiguity can exist, should be output until normal operation is resumed;

- .2 a warning of loss of position; and
- .3 DGPS and DGLONASS status indication of:
  - a) the receipt of DGPS and DGLONASS signals; and
  - b) whether DGPS and DGLONASS corrections are being applied to the indicated ship's position.

## ANNEX 2

### RECOMMENDATION ON PERFORMANCE STANDARDS FOR TRACK CONTROL SYSTEMS

#### 1 Scope

Track control systems in conjunction with their sources of position, heading and speed information are intended to keep a ship automatically on a pre-planned track over ground under various conditions and within the limits related to the ship's manoeuvrability. A track control system may additionally include heading control.

#### 2 Application

2.1 These Performance Standards are applicable for track control systems working

- at ship's speed from minimum manoeuvring speed up to 30 knots; and
- at ship's maximum rate of turn not greater than 10°/s.

2.2 Track control systems fitted on ships should meet all requirements of these Performance Standards relating to straight tracks. Systems fitted on ships requiring curved track control should additionally meet all the requirements relating to curved tracks.

#### 3 References

IMO resolutions

- |                             |   |
|-----------------------------|---|
| - MSC.64(67), Annex 3       | Recommendation on performance standards for heading control systems   |
| - A.830(19)                 | Code on alarms and indicators   |
| - A.694(17)                 | General requirements for shipborne radio equipment forming part of the GMDSS and for electronic navigational aids |
| - IMO SOLAS regulation V/12 | Shipborne navigational equipment carriage requirements  |

#### 4 Definitions

Heading	In accordance with international definition standards
Course	In accordance with international definition standards
Speed	In accordance with international definition standards
Track	Path to be followed over ground
Active track	The track activated for track control

Heading control	Control of the ship's heading
Track control	Control of the ship's movement along a track
Heading monitor	Monitoring the actual heading sensor by an independent second source
Position monitor	Monitoring the actual position sensor by an independent second source
Main conning position	Place on the bridge with a commanding view providing the necessary information and equipment for the conning officer to carry out his functions
Override function	An intentional fast change-over from automatic to temporary manual control
Override facility	A control to perform the override function
Curved track	Non-straight track between two straight legs
Rate of turn	Change of heading per time unit
Radius of turn	Radius of a curved track
Leg	A line between two way points
Track course	The direction from one way point to the next
Cross track distance	Perpendicular distance of the ship from the track
Cross track limit	Maximum cross track distance before an alarm is activated
Back up navigator	Any individual, generally an officer, who has been designated by the ships master to be on call if assistance is needed on the bridge
TO-waypoint	The waypoint which the ship is approaching
FROM-waypoint	The last passed waypoint
NEXT-waypoint	The waypoint following the TO-waypoint
Wheel-over-line	The line where the ship has to initiate a curved track

## **5 Operational requirements**

### **5.1 Functionality**

#### **5.1.1 Steering modes**

A track control system should be able to steer the ship from her position:

- .1 to a single waypoint; or
- .2 along a sequence of waypoints.

#### **5.1.2 Starting requirements**

The system should allow the officer of the watch to start track control only if

- the ship's position,
- the difference between track course and actual heading,
- the ship's manoeuvrability,

will result in a safe approach manoeuvre to the track.

#### **5.1.3 Primary position-fixing system**

The primary position-fixing system used for track control should be an electronic position-fixing system (EPFS) approved by the Organization.

#### **5.1.4 Position monitoring**

The ship's position should be continuously monitored by a second independent position source. This monitoring need not be an integral part of the track control system.

#### **5.1.5 Early course change indication**

In the case of track control by a sequence of waypoints, an early course change indication should be given no later than 1 min before the wheel-over line.

#### **5.1.6 Actual course change and confirmation**

- (1) In the case of track control by a sequence of waypoints, an alarm should be given at the wheel-over line.
- (2) The system should provide means for the officer of the watch to confirm the course change at wheel-over.
- (3) With or without the confirmation, the ship should follow automatically the track.

- (4) If the actual course change alarm is not confirmed by the officer of the watch within 30 s of wheel-over, a back-up navigator alarm should be given.

#### 5.1.7 Change of waypoints

In the case of track control by a pre-planned sequence of waypoints, it should not be possible to modify the TO-waypoint, the FROM-waypoint and the NEXT-waypoint while in the track control mode without creating a new track and until:

- .1 the pre-planning of the new track is completed; and
- .2 the starting requirements (Section 5.1.2) are fulfilled.

#### 5.1.8 Turn performance

The track control should enable the ship to sail from one leg to another by turns based:

- .1 on a preset turn radius; or
- .2 on a radius calculated on the base of a preset rate of turn within the turning capability of the ship.

#### 5.1.9 Adaptation to steering characteristics

The track control should be capable of manual or automatic adjustment to different steering characteristics of the ship under various weather, speed and loading conditions.

#### 5.1.10 Permitted tolerance

Means should be incorporated to prevent unnecessary activation of the rudder due to normal yaw or sway motion and statistically scattered position errors.

#### 5.1.11 Override function

A track control system should be able to accept a signal from the override facilities to terminate track control mode and switch to the override facilities.

#### 5.1.12 Heading control mode

A track control system may be operated in heading control mode. In this case, the performance standards of heading control systems are to be applied.

#### 5.1.13 Manual change over from track control to manual steering

- (1) Change over from track control to manual steering should be possible at any rudder angle.
- (2) Change over from track control to manual steering should be possible under any conditions, including any failure in the track control system.



- (3) After change over to manual control, return to automatic control should require operator intervention.

#### 5.1.14 Manual change over from track control to heading control

- (1) Any change over from track control to heading control should be possible under all conditions.
- (2) The heading control system should take over the actual heading as the preset heading.
- (3) Any switching back to track control should require operator intervention.

#### 5.1.15 Steering mode indication

Adequate indication should be provided to show which method of steering is in operation.

#### 5.1.16 Heading monitoring

Heading monitoring should be provided to monitor the actual heading information by independent heading sources. The heading monitor is not required to be an integral part of the track control system.

## 5.2 Accuracy

### 5.2.1 A short qualitative description of the effect of:

- .1 the accuracy of the sensors for position, heading and speed;
- .2 changes of course and speed;
- .3 actual speed through the water; and
- .4 environmental conditions

to the track control system should be provided to the user in appropriate documentation.

## 5.3 Alarms and indicators

### 5.3.1 Failure or reduction in power supply

In case of failure or reduction of power supply to the track control system which effects its safe operation an alarms should be given.

### 5.3.2 Position monitoring alarm

An alarm should be given when the position monitor detects a deviation beyond a preset limit.

### 5.3.3 Heading monitoring alarm

An alarm should be given when the heading monitor detects a deviation beyond a preset limit.

#### 5.3.4 Failure and alarm status of sensor

In the case of any failure or alarm status received from the position-fixing sensor or the heading sensor in use:

- .1 an alarm should be generated at the track control system;
- .2 the system should provide guidance of the user to a safe steering mode; and
- .3 a back-up navigator alarm should be given if a failure or alarm status is not acknowledged by the officer of the watch within 30 seconds.

Fall-back procedures consequential to the failure and alarm conditions are states in section 9.

#### 5.3.5 Use of faulty signals

It should not be possible to select any sensor signal tagged with a fault or alarm status.

#### 5.3.6 Cross track alarm

A cross track alarm, should be provided when the actual position deviates from the track beyond a preset cross track limit.

#### 5.3.7 Course difference signal

An alarm should be given if the actual heading of the ship deviates from the track course beyond a preset value.

#### 5.3.8 Low speed alarm

If speed through the water is lower than a predefined limit necessary for steering the ship an alarm should be given.

## **6 Ergonomic criteria**

### **6.1 Operational controls**

#### 6.1.1 Controls for track control

Means should be provided to:

- .1 accept or calculate the course between subsequent waypoints; and
- .2 adjust radius or rate of turn, all track control related limits, alarm functions and other control parameters.

### 6.1.2 Change over controls

(1) Track control to manual control

Changing over from track control to manual steering should be possible by a single operator action.

(2) Track control to heading control

If the track control system can be operated with a heading control system, changing over from track to heading control should be possible by a single operator action.

(3) Location of change over controls

The steering mode selector switch should be located at or in the immediate vicinity of the main conning position.

## 6.2 Presentation of information

### 6.2.1 Continuously displayed information

The following information should be displayed clearly and continuously:

- .1 mode of steering;
- .2 sources of actual position, heading and speed;
- .3 status and failure of sensors (if any);
- .4 track course and actual heading;
- .5 actual position, cross track distance and speed;
- .6 TO-waypoint and NEXT-waypoint;
- .7 time and distance to TO-waypoint;
- .8 next track course; and
- .9 selected track identification.

Items .4, .5, .7 and .8 should be displayed numerically.

### 6.2.2 Information to be provided on demand

The following information should be provided on demand:

- .1 a list of pre-planned waypoints including waypoint numbers, co-ordinates, courses and distances between waypoints, turn radius or rates of turn; and

.2 all track control related limits and other preset control parameters.

### 6.2.3 Presentation

Logically related values such as preset and actual values should be displayed as a pair of data.

## 7 Interfacing

### 7.1 Sensors

The track controller should be connected to position, heading and speed sensors which meet the standards of the Organization. The heading measurement system should be a gyro-compass.

### 7.2 Status information

All connected sensors should be able to provide status, including failure information.

### 7.3 Standards

The track control system should be capable of digital, serial communication with the ship's navigation system and comply with the relevant international standards.\*

## 8 Fall-back arrangements

### 8.1 Failure of the track control or position sensor

(1) If the heading control is still available then the system should automatically switch over to heading control and take the actual heading as the preset heading for the heading control.

(2) If the heading control is not available the rudder angle should be maintained.

### 8.2 Failure of the heading measuring system

(1) The actual rudder angle should be maintained.

The associated alarms are stated in section 5.3.

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\*IEC 1162

## ANNEX 3

### **RECOMMENDATION ON PERFORMANCE STANDARDS FOR AN UNIVERSAL SHIPBORNE AUTOMATIC IDENTIFICATION SYSTEM(AIS)**

#### **1 Scope**

1.1 These performance standards specify the requirements for the universal AIS.

1.2 The AIS should improve the safety of navigation by assisting in the efficient navigation of ships, protection of the environment, and operation of Vessel Traffic Services (VTS), by satisfying the following functional requirements:

- .1 in a ship-to-ship mode for collision avoidance;
- .2 as a means for littoral States to obtain information about a ship and its cargo; and
- .3 as a VTS tool, i.e. ship-to-shore (traffic management).

1.3 The AIS should be capable of providing to ships and to competent authorities, information from the ship, automatically and with the required accuracy and frequency, to facilitate accurate tracking. Transmission of the data should be with the minimum involvement of ship's personnel and with a high level of availability.

1.4 The installation, in addition to meeting the requirements of the Radio Regulations, applicable ITU-R Recommendations and the general requirements as set out in resolution A.694 (17), should comply with the following performance standards.

#### **2 Functionality**

2.1 The system should be capable of operating in a number of modes:

- .1 an "autonomous and continuous" mode for operation in all areas. This mode should be capable of being switched to/from one of the following alternate modes by a competent authority;
- .2 an "assigned" mode for operation in an area subject to a competent authority responsible for traffic monitoring such that the data transmission interval and/or time slots may be set remotely by that authority; and
- .3 a "polling" or controlled mode where the data transfer occurs in response to interrogation from a ship or competent authority.

### **3 Capability**

#### **3.1 The AIS should comprise:**

- .1 a communication processor, capable of operating over a range of maritime frequencies, with an appropriate channel selecting and switching method, in support of both short and long range applications;
- .2 a means of processing data from an electronic position-fixing system which provides a resolution of one ten thousandth of a minute of arc and uses the WGS-84 datum.;
- .3 a means to automatically input data from other sensors meeting the provisions as specified in paragraph 6.2;
- .4 a means to input and retrieve data manually;
- .5 a means of error checking the transmitted and received data; and
- .6 built in test equipment (BITE).

#### **3.2 The AIS should be capable of:**

- .1 providing information automatically and continuously to a competent authority and other ships, without involvement of ship's personnel;
- .2 receiving and processing information from other sources, including that from a competent authority and from other ships;
- .3 responding to high priority and safety related calls with a minimum of delay; and
- .4 providing positional and manoeuvring information at a data rate adequate to facilitate accurate tracking by a competent authority and other ships.

### **4 User interface**

To enable a user to access, select and display the information on a separate system, the AIS should be provided with an interface conforming to an appropriate international marine interface standard.

### **5 Identification**

For the purpose of ship and message identification, the appropriate Maritime Mobile Service Identity (MMSI) number should be used.

## 6 Information

### 6.1 The information provided by the AIS should include

#### .1 Static:

- IMO number (where available)
- Call sign & name
- Length and beam
- Type of ship
- Location of position-fixing antenna on the ship (aft of bow and port or starboard of centerline)

#### .2 Dynamic:

- Ship's position with accuracy indication and integrity status
- Time in UTC\*
- Course over ground
- Speed over ground
- Heading
- Navigational status (e.g. NUC, at anchor, etc. - manual input)
- Rate of turn (where available)
- Optional - Angle of heel (where available)\*\*
- Optional - Pitch and roll (where available)\*\*

#### .3 Voyage related:

- Ship's draught
- Hazardous cargo (type)\*\*\*
- Destination and ETA (at masters discretion)
- Optional - Route plan (waypoints)\*\*

#### .4 Short safety-related messages

### 6.2 Information update rates for autonomous mode

The different information types are valid for a different time period and thus need a different update rate:

- |   |                             |   |
|---|-----------------------------|---|
| - | Static information:         | Every 6 min and on request                                    |
| - | Dynamic information:        | Dependant on speed and course alteration according to Table 1 |
| - | Voyage related information: | Every 6 min, when data has been amended and on request        |
| - | Safety-related message:     | As required   |

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\* Date to be established by receiving equipment.

\*\* Field not provided in basic message.

\*\*\* As required by competent authority.

**TABLE 1**

<b>Type of ship</b>	<b>Reporting interval</b>
Ship at anchor	3 min
Ship 0-14 knots	12 sec
Ship 0-14 knots and changing course	4 sec
Ship 14-23 knots	6 sec
Ship 14-23 knots and changing course	2 sec
Ship > 23 knots	3 sec
Ship > 23 knots and changing course	2 sec

Ship Reporting Capacity - the system should be able to handle a minimum of 2000 reports per min to adequately provide for all operational scenarios envisioned.

### 6.3 Security

A security mechanism should be provided to detect disabling and to prevent unauthorised alteration of input or transmitted data. To protect the unauthorized dissemination of data, the IMO guidelines (Guidelines and Criteria for Ship Reporting Systems<sup>\*</sup>) should be followed.

### 7 Permissible initialization period

The installation should be operational within 2 min of switching on.

### 8 Power supply

The AIS and associated sensors should be powered from the ship's main source of electrical energy. In addition, it should be possible to operate the AIS and associated sensors from an alternative source of electrical energy.

### 9 Technical characteristics

The technical characteristics of the AIS such as variable transmitter output power, operating frequencies (dedicated internationally and selected regionally), modulation, and antenna system should comply with the appropriate ITU-R Recommendations.

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<sup>\*</sup>Resolution MSC.43(64)



## ANNEX 4

### AMENDMENTS TO RESOLUTION A.224(VII) - PERFORMANCE STANDARDS FOR ECHO SOUNDING EQUIPMENT

Replace the Annex by:

"ANNEX

### RECOMMENDATION ON PERFORMANCE STANDARDS FOR ECHO-SOUNDING EQUIPMENT

#### 1 SCOPE

The purpose of echo sounding equipment is to provide reliable information on the depth of water under a ship to aid navigation in particular in shallow water.

#### 2 APPLICATION

Echo sounding equipment should comply with the following performance requirements. These Performance Standards are applicable for ship speeds from 0 up to 30 knots.

#### 3 REFERENCES

- IMO resolution A.694(17)      *General requirements for shipborne radio equipment forming part of the GMDSS and for electronic navigational aids*
- IMO resolution A.830(19)      *Code on alarms and indicators*
- SOLAS chapter V, regulation 12      *Carriage requirements (being revised)*

#### 4 DEFINITIONS

Sound speed in water for the purpose of this standard is set at 1500 m/s

#### 5 OPERATIONAL REQUIREMENTS

##### 5.1 Functionality

##### 5.1.1 Range of depth

Under normal propagation and sea bed reflectibility conditions the equipment should be capable of measuring any clearance under the transducer between 2 m and 200 m.

##### 5.1.2 Range scales

The equipment should provide a minimum of two range scales one of which, the shallow range, should cover a range of 20 m, and the other, the deep range, should cover a range of 200 m.

### 5.1.3 Main display

The primary presentation should be a suitable graphical display which provides the immediate depth and a visible record of soundings. The displayed record should, show at least 15 min of soundings.

### 5.1.4 Other displays

Other forms of display may be added but these should not affect the normal operation of the main display.

### 5.1.5 Pulse repetition rate

The pulse repetition rate should not be slower than 12 pulses per minute on the deep range and 36 pulses per minute on the shallow range.

### 5.1.6 Roll and pitch

The performance of the equipment should be such that it will meet the requirements of these performance standards when the ship is rolling  $\pm 10^\circ$  and/or pitching  $\pm 5^\circ$ .

### 5.1.7 Multiple installations

5.1.7.1 More than one transducer and associated transmitter-receiver may be fitted.

5.1.7.2 If more than one transducer is used:

- means should be available to display the depths from the different transducers separately; and
- a clear indication of the transducer(s) in use should be provided.

### 5.1.8 Data storage

It should be possible to record on paper recording or other means the information about:

- the depth(s), and
- the associated time for 12 h.

There should be means to retrieve the recorded information.

## 5.2 Accuracy

### 5.2.1 Accuracy of measurement

Based on a sound speed in water of 1,500 m/s, the tolerance of the indicated depth should be either:

- $\pm 0.5$  m on the 20 m range scale, respectively  $\pm 5$  m on the 200 m range scale; or
- $\pm 2.5\%$  of the indicated depth,

whichever is greater.

### 5.2.2 Discrimination

The scale of display should not be smaller than 5.0 mm per metre depth on the shallow range scale and 0.5 mm per metre depth on the deep range scale.

## 5.3 Malfunctions, alarms and indications

### 5.3.1 Depth alarm

An alarm signal - both visual and audible with mute function - should be provided when the water depth is below a preset value.

### 5.3.2 Failure or reduction in power supply

Alarm signals, both visual and audible (with mute function) to the navigator on the watch should be provided to indicate failure or a reduction in the power supply to the echo sounder which would affect the safe operation of the equipment.

## 6 ERGONOMIC CRITERIA

### 6.1 Operational controls

The function of range scale selection should be directly accessible.

The settings for the following functions should be recognizable in all light conditions:

- range scale; and
- preset depth alarm.

### 6.2 Presentation of information

#### 6.2.1 Marks

The graphical display should be capable of showing:

- depth marks at intervals not larger than one-tenth of the range/scale in use; and
- time marks at intervals not exceeding 5 min.

#### 6.2.2 Paper recording

If paper is used for recording either by marks on the recording paper, or by other means, there should be a clear indication when the paper remaining is less than 1 m.

## **7 DESIGN AND INSTALLATION**

The equipment should comply with IMO resolution A.694(17).\*

## **8 INTERFACING**

Output(s) should be available from which depth information may be supplied to other equipment such as remote digital displays, voyage data recorder and a track control system.

These outputs should be digital, serial communication, facilities which should comply with the relevant international standards.\*\*

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\*IEC 945

\*\*IEC 1162

**ANNEX 13**

**PROPOSED AMENDMENTS TO SOLAS REGULATIONS II-2/17 AND 18**

**CHAPTER II-2**

**CONSTRUCTION - FIRE PROTECTION, FIRE DETECTION AND FIRE EXTINCTION**

**Regulation 17 - Fireman's outfit**

1 In paragraph 3, the words "and at least two emergency escape breathing devices of approved type\*" are added after the expression "paragraph 1".

\_\_\_\_\_

\* Refer to the guidelines developed by the Organization.

2 In third sentence of paragraph 4, the words "and two emergency escape breathing devices of approved type\*" are added after the word "zone".

\_\_\_\_\_

\* Refer to the guidelines developed by the Organization.

**Regulation 18 - Miscellaneous items**

3 The following new paragraph 9 is added after existing paragraph 8:

"9 On all ships, within the machinery spaces, emergency escape breathing devices shall be easily accessible and ready for use.

The required number and location of these devices shall be indicated in the fire control plan."

\_\_\_\_\_