



**REPORT OF THE MARITIME SAFETY COMMITTEE ON ITS  
EIGHTY-THIRD SESSION**

<b>Section</b>	<b>Page</b>
1 INTRODUCTION	6
2 DECISIONS OF OTHER IMO BODIES	11
3 CONSIDERATION AND ADOPTION OF AMENDMENTS TO MANDATORY INSTRUMENTS	11
4 MEASURES TO ENHANCE MARITIME SECURITY	16
5 GOAL-BASED NEW SHIP CONSTRUCTION STANDARDS	26
6 LRIT-RELATED MATTERS	43
7 DANGEROUS GOODS, SOLID CARGOES AND CONTAINERS (report of the eleventh session of the Sub-Committee)	61
8 FIRE PROTECTION (report of the fifty-first session of the Sub-Committee)	62
9 SHIP DESIGN AND EQUIPMENT (report of the fiftieth session of the Sub-Committee)	66
10 BULK LIQUIDS AND GASES (report of the eleventh session of the Sub-Committee)	71
11 STABILITY, LOAD LINES AND FISHING VESSEL SAFETY (report of the fiftieth session of the Sub-Committee)	73
12 TRAINING AND WATCHKEEPING (report of the thirty-eighth session of the Sub-Committee)	76
13 RADIOCOMMUNICATIONS AND SEARCH AND RESCUE (report of the eleventh session of the Sub-Committee)	78

<b>Section</b>		<b>Page</b>
14	SAFETY OF NAVIGATION (urgent matters emanating from the fifty-third session of the Sub-Committee)	82
15	FLAG STATE IMPLEMENTATION (report of the fifteenth session of the Sub-Committee)	87
16	ROLE OF THE HUMAN ELEMENT	94
17	TECHNICAL ASSISTANCE SUB-PROGRAMME IN MARITIME SAFETY AND SECURITY	97
18	CAPACITY-BUILDING FOR THE IMPLEMENTATION OF NEW MEASURES	99
19	PIRACY AND ARMED ROBBERY AGAINST SHIPS	101
20	GENERAL CARGO SHIP SAFETY	106
21	FORMAL SAFETY ASSESSMENT	108
22	IMPLEMENTATION OF INSTRUMENTS AND RELATED MATTERS	109
23	RELATIONS WITH OTHER ORGANIZATIONS	111
24	APPLICATION OF THE COMMITTEE'S GUIDELINES	114
25	WORK PROGRAMME	117
26	ELECTION OF CHAIRMAN AND VICE-CHAIRMAN FOR 2008	128
27	ANY OTHER BUSINESS	129

### **LIST OF ANNEXES**

ANNEX 1	RESOLUTION MSC.239(83) – ADOPTION OF AMENDMENTS TO THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974, AS AMENDED
ANNEX 2	RESOLUTION MSC.240(83) – ADOPTION OF AMENDMENTS TO THE PROTOCOL OF 1988 RELATING TO THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974, AS AMENDED

- ANNEX 3 RESOLUTION MSC.241(83) – ADOPTION OF AMENDMENTS TO THE INTERNATIONAL CODE FOR THE SAFE CARRIAGE OF PACKAGED IRRADIATED NUCLEAR FUEL, PLUTONIUM AND HIGH-LEVEL RADIOACTIVE WASTES ON BOARD SHIPS (INF CODE)
- ANNEX 4 DRAFT AMENDMENTS TO SOLAS CHAPTERS II-1 AND II-2
- ANNEX 5 PROJECT PLAN FOR A SECOND TRIAL APPLICATION OF THE GUIDELINES FOR THE VERIFICATION OF COMPLIANCE WITH GBS USING THE IACS CSR FOR OIL TANKERS
- ANNEX 6 RESOLUTION MSC.242(83) – USE OF LONG-RANGE IDENTIFICATION AND TRACKING, INFORMATION FOR SAFETY AND ENVIRONMENTAL PURPOSES
- ANNEX 7 RESOLUTION MSC.243(83) – ESTABLISHMENT OF INTERNATIONAL LRIT DATA EXCHANGE ON AN INTERIM BASIS
- ANNEX 8 DRAFT AMENDMENTS TO SOLAS REGULATIONS II-2/10 AND II-2/19.4
- ANNEX 9 DRAFT AMENDMENTS TO THE GUIDELINES ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS AND OIL TANKERS (RESOLUTION A.744(18), AS AMENDED)
- ANNEX 10 RESOLUTION MSC.244(83) – PERFORMANCE STANDARD FOR PROTECTIVE COATINGS FOR VOID SPACES ON BULK CARRIERS AND OIL TANKERS
- ANNEX 11 DRAFT SOLAS REGULATION II-1/3-9 (MEANS OF EMBARKATION ON AND DISEMBARKATION FROM SHIPS)
- ANNEX 12 DRAFT AMENDMENTS TO SOLAS REGULATION II-1/3-4 (EMERGENCY TOWING ARRANGEMENTS ON TANKERS)
- ANNEX 13 DRAFT MSC RESOLUTION ON INTERNATIONAL CODE ON INTACT STABILITY, 2008 (2008 IS CODE)
- ANNEX 14 DRAFT AMENDMENTS TO THE 1974 SOLAS CONVENTION
- ANNEX 15 DRAFT AMENDMENTS TO THE 1988 LL PROTOCOL
- ANNEX 16 RESOLUTION MSC.245(83) – RECOMMENDATION ON A STANDARD METHOD FOR EVALUATING CROSS-FLOODING ARRANGEMENTS
- ANNEX 17 DRAFT ASSEMBLY RESOLUTION ON CRITERIA FOR THE PROVISION OF MOBILE SATELLITE COMMUNICATION SYSTEMS IN THE GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)

- ANNEX 18 RESOLUTION MSC.246(83) – PERFORMANCE STANDARDS FOR SURVIVAL CRAFT AIS SEARCH AND RESCUE TRANSMITTERS (AIS-SART) FOR USE IN SEARCH AND RESCUE OPERATIONS
- ANNEX 19 RESOLUTION MSC.247(83) – ADOPTION OF AMENDMENTS TO PERFORMANCE STANDARDS FOR SURVIVAL CRAFT RADAR TRANSPONDERS FOR USE IN SEARCH AND RESCUE OPERATIONS (RESOLUTION A.802(19))
- ANNEX 20 DRAFT AMENDMENTS TO REGULATIONS III/6.2.2, III/26.2.5 AND IV/7.1.3 OF, AND THE APPENDIX TO THE ANNEX, TO THE 1974 SOLAS CONVENTION
- ANNEX 21 DRAFT AMENDMENTS TO THE 1988 SOLAS PROTOCOL
- ANNEX 22 DRAFT AMENDMENTS TO THE INTERNATIONAL CODE OF SAFETY FOR HIGH-SPEED CRAFT, 1994 (1994 HSC CODE)
- ANNEX 23 DRAFT AMENDMENTS TO THE INTERNATIONAL CODE OF SAFETY FOR HIGH-SPEED CRAFT, 2000 (2000 HSC CODE)
- ANNEX 24 NEW AND AMENDED TRAFFIC SEPARATION SCHEMES AND ASSOCIATED ROUTEING MEASURES
- ANNEX 25 ROUTEING MEASURES OTHER THAN TRAFFIC SEPARATION SCHEMES
- ANNEX 26 RESOLUTION MSC.248(83) – ADOPTION OF A NEW SHIP REPORTING SYSTEM “THE PAPAĀNAUMOKUĀKEA MARINE NATIONAL MONUMENT” PARTICULARLY SENSITIVE SEA AREA (PSSA)
- ANNEX 27 RESOLUTION MSC.249(83) – ADOPTION OF A NEW MANDATORY SHIP REPORTING SYSTEM “ON THE APPROACHES TO THE POLISH PORTS IN THE GULF OF GDANSK”
- ANNEX 28 RESOLUTION MSC.250(83) – ADOPTION OF A NEW MANDATORY SHIP REPORTING SYSTEM “OFF THE SOUTH AND SOUTHWEST COAST OF ICELAND”
- ANNEX 29 RESOLUTION MSC.251(83) – ADOPTION OF AMENDMENTS TO THE EXISTING MANDATORY SHIP REPORTING SYSTEMS “OFF USHANT”, “OFF LES CASQUETS” AND DOVER STRAIT/PAS DE CALAIS”
- ANNEX 30 RESOLUTION MSC.252(83) – ADOPTION OF THE REVISED PERFORMANCE STANDARDS FOR INTEGRATED NAVIGATION SYSTEMS (INS)

- ANNEX 31 RESOLUTION MSC.253(83) – ADOPTION OF THE PERFORMANCE STANDARDS FOR NAVIGATION LIGHTS, NAVIGATION LIGHT CONTROLLERS AND ASSOCIATED EQUIPMENT
- ANNEX 32 DRAFT ASSEMBLY RESOLUTION ON THE REVISED CODE FOR THE IMPLEMENTATION OF MANDATORY IMO INSTRUMENTS
- ANNEX 33 DRAFT MSC RESOLUTION ON THE CODE OF THE INTERNATIONAL STANDARDS AND RECOMMENDED PRACTICES FOR A SAFETY INVESTIGATION INTO A MARINE CASUALTY OR MARINE INCIDENT (CASUALTY INVESTIGATION CODE)
- ANNEX 34 DRAFT AMENDMENTS TO SOLAS CHAPTER XI-1
- ANNEX 35 DRAFT ASSEMBLY RESOLUTION ON REVISED SURVEY GUIDELINES UNDER THE HARMONIZED SYSTEM OF SURVEY AND CERTIFICATION (HSSC)
- ANNEX 36 DRAFT ASSEMBLY RESOLUTION ON THE NEED FOR CAPACITY-BUILDING FOR THE DEVELOPMENT AND IMPLEMENTATION OF NEW, AND AMENDMENTS TO EXISTING, INSTRUMENTS
- ANNEX 37 RESOLUTION MSC. 254(83) – ADOPTION OF AMENDMENTS TO THE PERFORMANCE STANDARDS AND FUNCTIONAL REQUIREMENTS FOR THE LONG-RANGE IDENTIFICATION AND TRACKING OF SHIPS
- ANNEX 38 WORK PROGRAMMES OF THE SUB-COMMITTEES
- ANNEX 39 PROVISIONAL AGENDAS FOR THE SUB-COMMITTEES
- ANNEX 40 STATEMENT BY THE DELEGATION OF THE MARSHALL ISLANDS
- ANNEX 41 STATEMENT BY THE DELEGATION OF THE UNITED STATES
- ANNEX 42 STATEMENT BY THE DELEGATION OF FRANCE
- ANNEX 43 STATEMENT BY THE DELEGATION OF THE UNITED KINGDOM
- ANNEX 44 STATEMENT BY THE REPRESENTATIVE OF ICS

## 1 INTRODUCTION – ADOPTION OF THE AGENDA

1.1 At the invitation of the Government of Denmark, the eighty-third session of the Committee was held at the Bella Center of Copenhagen from 3 to 12 October 2007. The meeting was held under the chairmanship of Mr. Neil Ferrer (Philippines), who was elected as Chairman for 2007 at the opening of the session.

1.2 The session was attended by delegations from the following Member Governments:

ALGERIA	ITALY
ANGOLA	JAMAICA
ANTIGUA AND BARBUDA	JAPAN
ARGENTINA	KENYA
AUSTRALIA	KUWAIT
BAHAMAS	LATVIA
BAHRAIN	LIBERIA
BANGLADESH	LITHUANIA
BARBADOS	LUXEMBOURG
BELGIUM	MALAYSIA
BELIZE	MALTA
BOLIVIA	MARSHALL ISLANDS
BRAZIL	MAURITANIA
BULGARIA	MEXICO
CAMBODIA	MONACO
CANADA	MYANMAR
CHILE	NETHERLANDS
CHINA	NEW ZEALAND
CÔTE D'IVOIRE	NIGERIA
CROATIA	NORWAY
CUBA	PAKISTAN
CYPRUS	PANAMA
CZECH REPUBLIC	PAPUA NEW GUINEA
DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA	PHILIPPINES
DENMARK	POLAND
DOMINICA	PORTUGAL
ECUADOR	QATAR
EGYPT	REPUBLIC OF KOREA
ESTONIA	ROMANIA
FINLAND	RUSSIAN FEDERATION
FRANCE	SAINT KITTS AND NEVIS
GERMANY	SAINT VINCENT AND THE GRENADINES
GHANA	SAUDI ARABIA
GREECE	SINGAPORE
HUNGARY	SLOVENIA
ICELAND	SOUTH AFRICA
INDIA	SPAIN
INDONESIA	SWEDEN
IRAN (ISLAMIC REPUBLIC OF)	SWITZERLAND
IRELAND	SYRIAN ARAB REPUBLIC
ISRAEL	THAILAND

TUNISIA  
TURKEY  
TUVALU  
UKRAINE  
UNITED KINGDOM

UNITED REPUBLIC OF  
TANZANIA  
UNITED STATES  
VANUATU  
VENEZUELA

the following Associate Members of IMO:

HONG KONG, CHINA

FAROE ISLANDS

and the following State not Member of IMO:

COOK ISLANDS

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

WORLD METEOROLOGICAL ORGANIZATION (WMO)  
INTERNATIONAL LABOUR ORGANIZATION (ILO)

1.4 The session was also attended by observers from the following intergovernmental organizations:

INTERNATIONAL HYDROGRAPHIC ORGANIZATION (IHO)  
EUROPEAN COMMISSION (EC)  
MARITIME ORGANISATION FOR WEST AND CENTRAL AFRICA (MOWCA)  
LEAGUE OF ARAB STATES  
INTERNATIONAL MOBILE SATELLITE ORGANIZATION (IMSO)  
WEST AND CENTRAL AFRICA MEMORANDUM OF UNDERSTANDING  
ON PORT STATE CONTROL (ABUJA MoU)

and by observers from the following non-governmental organizations in consultative status:

INTERNATIONAL CHAMBER OF SHIPPING (ICS)  
INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)  
INTERNATIONAL SHIPPING FEDERATION (ISF)  
INTERNATIONAL UNION OF MARINE INSURANCE (IUMI)  
INTERNATIONAL TRANSPORT WORKERS' FEDERATION (ITF)  
INTERNATIONAL ASSOCIATION OF MARINE AIDS TO NAVIGATION AND  
LIGHTHOUSE AUTHORITIES (IALA)  
INTERNATIONAL RADIO MARITIME COMMITTEE (CIRM)  
INTERNATIONAL ASSOCIATION OF PORTS AND HARBORS (IAPH)  
BIMCO  
INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES (IACS)  
EUROPEAN CHEMICAL INDUSTRY COUNCIL (CEFIC)  
OIL COMPANIES INTERNATIONAL MARINE FORUM (OCIMF)  
INTERNATIONAL MARITIME PILOTS' ASSOCIATION (IMPA)  
INTERNATIONAL ASSOCIATION OF DRILLING CONTRACTORS (IADC)  
INTERNATIONAL ASSOCIATION OF INSTITUTES OF NAVIGATION (IAIN)  
INTERNATIONAL FEDERATION OF SHIPMASTERS' ASSOCIATIONS (IFSMA)

INTERNATIONAL LIFESAVING APPLIANCES MANUFACTURERS' ASSOCIATION (ILAMA)  
COMMUNITY OF EUROPEAN SHIPYARDS' ASSOCIATIONS (CESA)  
INTERNATIONAL ASSOCIATION OF INDEPENDENT TANKER OWNERS (INTERTANKO)  
SOCIETY OF INTERNATIONAL GAS TANKER AND TERMINAL OPERATORS LIMITED (SIGTTO)  
CRUISE LINES INTERNATIONAL ASSOCIATION (CLIA)  
INTERNATIONAL ASSOCIATION OF DRY CARGO SHIPOWNERS (INTERCARGO)  
THE INSTITUTE OF MARINE ENGINEERING, SCIENCE AND TECHNOLOGY (IMarEST)  
IBEROAMERICAN INSTITUTE OF MARITIME LAW (IIDM)  
INTERNATIONAL PARCEL TANKERS ASSOCIATION (IPTA)  
INTERNATIONAL SAILING FEDERATION (ISAF)  
THE INTERNATIONAL MARINE CONTRACTORS ASSOCIATION (IMCA)  
WORLD NUCLEAR TRANSPORT INSTITUTE (WNTI)  
INTERNATIONAL HARBOUR MASTERS' ASSOCIATION (IHMA)  
INTERNATIONAL BULK TERMINALS ASSOCIATION (IBTA)  
THE ROYAL INSTITUTION OF NAVAL ARCHITECTS (RINA)  
INTERFERRY  
INTERNATIONAL MARITIME HEALTH ASSOCIATION (IMHA)  
INTERNATIONAL BUNKER INDUSTRY ASSOCIATION (IBIA)  
INTERNATIONAL TOWING TANK CONFERENCE (ITTC)  
INTERNATIONAL ASSOCIATION OF MARITIME UNIVERSITIES (IAMU)

1.5 The session was also attended by Mr. A.I. Chrysostomou (Cyprus), Chairman of the Marine Environment Protection Committee (MEPC). The Chairmen of all sub-committees, except for the Chairman of the DSC Sub-Committee, were also present.

#### **Address of the Minister for Economic and Business Affairs of Denmark**

1.6 In his statement, the Minister for Economic and Business Affairs of Denmark, Mr. Bendt Bendtsen, extended a warm welcome to the participants to the eighty-third session of the Committee in Copenhagen, one of the world's most significant maritime business centres.

Having referred to Denmark's location, its trade pattern and shipping industry, he emphasized that the appreciation of IMO in Denmark clearly goes beyond the Government and the Danish maritime Administration, and that Denmark regards IMO as a cornerstone in international maritime legislation. He stressed that it is equally important for all IMO Member States to show real commitment when it comes to ratification, effective implementation and enforcement of IMO instruments, and urged them to make every effort to do so. Having emphasized the need to improve continuously and to meet the challenges from globalization and other challenges that lie ahead, the Minister underlined that health, safety and environmental measures on ships should be maintained and improved, indicating that IMO is a key factor in this development. He then highlighted the important work of the Committee in the field of maritime safety and security, stressing, in particular, the gravity of piracy and the need to ensure that acts of piracy and armed robbery against ships are eliminated.

In conclusion, the Minister wished the meeting every success and the participants a pleasant stay in his country. (The full statement of the Danish Minister for Economic and Business Affairs is reproduced in document MSC 83/INF.20.)



## **Opening address of the Secretary-General**

1.7 In welcoming the participants, the Secretary-General extended a special welcome to His Excellency Mr. Bendt Bendtsen, Minister for Economic and Business Affairs of Denmark, whose portfolio also covers the shipping sector of the country in the Government of Denmark and, on behalf of the Organization, expressed deep appreciation for Denmark's offer to host the meeting in Copenhagen and for bearing the substantial cost of moving the IMO staff over to assist in the preparation and running of the session.

Having referred to Denmark as a seafaring nation that has a long and proud history, the Secretary-General said that the Danish maritime sector is truly international and multi-faceted, offering a wide and comprehensive range of ship types, shipping services and ancillary activities, not least shipbuilding. Such diversity is due to the recognition of the sector's value to Denmark's economy and status, and to the importance attached to ensuring that shipping is safe and secure. He indicated that Denmark's commitment to these values is well known and was exemplified by its leadership role in the development of the Voluntary IMO Member State Audit Scheme and its associated Code for the implementation of mandatory IMO instruments.

Having touched upon the ongoing Headquarters refurbishment project and the efforts of the Secretariat to continue providing the membership with quality services and the usual effective support to all meetings, the Secretary-General outlined the most important topics on the Committee's agenda for the current session, such as the long-range identification and tracking of ships; safety of passenger ships; maritime security; the development of the goal-based ship construction standards; the consideration of the maritime aspects of the supply chain security in co-operation with the World Customs Organization; approval of the Code of international standards and recommended practices for a safety investigation into maritime casualty or marine incident; developments concerning piracy and armed robbery against ships and the protection of vital shipping lanes; the carriage of IMDG Code class 7 radioactive materials; development of an e-navigation strategy and ships' routing, ship reporting and related measures as well as issues of a general nature. He updated the Committee on recent developments concerning the implementation of the Voluntary IMO Member State Audit Scheme to which he attributed great importance.

The Secretary-General concluded his address by paying special tribute to all the Sub-Committees reporting to the current session, their Chairmen, Vice-Chairmen and other officers as well as the Secretariat that served them for their excellent work; and expressing confidence in the Committee's ability, in its usual spirit of co-operation and commitment, to provide the expected direction, guidance and assistance to all those concerned with enhancing safety, security and, indirectly, the protection of the marine environment. (The full text of the Secretary-General's opening address is reproduced in document MSC 83/INF.14.)

## **Chairman's remark**

1.8 In responding, the Chairman thanked the Secretary-General for his words and advice and stated that the Secretary-General's advice and requests would be given every consideration in the deliberation of the Committee and its working groups.

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

1.9 The Committee adopted the agenda (MSC 83/1/Rev.1) and a provisional timetable for guidance during the session (MSC 83/1/1, annex). The agenda, as adopted, with a list of documents considered under each agenda item, is set out in document MSC 83/INF.21.

1.10 The Committee's decisions on the establishment of working and drafting groups are reflected under sections of this report covering corresponding agenda items.

### **Credentials**

1.11 The Committee was informed that the credentials of delegations attending the session were in due and proper form.

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

### **Outcome of the thirty-fourth session of the Facilitation Committee**

2.1 The Committee noted the outcome of the thirty-fourth session of the FAL Committee (MSC 83/2) and considered the information provided under the relevant agenda items.

### **Outcome of the fifty-seventh session of the Technical Co-operation Committee**

2.2 The Committee noted the outcome of the fifty-seventh session of the Technical Co-operation Committee contained in document MSC 83/2/1 and considered the information provided under agenda item 17 (Technical assistance sub-programme in maritime safety and security).

### **Outcome of the ninety-eighth regular session of the Council**

2.3 The Committee noted the outcome of the ninety-eighth regular session of the Council (MSC 83/2/2) on matters pertaining to its work.

### **Outcome of the fifty-sixth session of the Marine Environment Protection Committee**

2.4 The Committee noted the outcome of the fifty-sixth session of the Marine Environment Protection Committee (MSC 83/2/3) and considered the relevant information under the agenda items 10 (Bulk liquids and gases) and 16 (Role of the human element).

### **Outcome of the International Conference on the Removal of Wrecks**

2.5 The Committee noted (MSC 83/2/4) the outcome of the International Conference on the Removal of Wrecks, held in Nairobi, Kenya, from 14 to 18 May 2007.

## **3 CONSIDERATION AND ADOPTION OF AMENDMENTS TO MANDATORY INSTRUMENTS**

### **GENERAL**

3.1 Contracting Governments to the 1974 SOLAS Convention were invited to participate in the consideration and adoption of proposed amendments to:

- .1 chapters IV and VI of the 1974 SOLAS Convention, as amended, in accordance with the provisions of article VIII of the Convention; and
- .2 the International Code for the Safe Carriage of Packaged Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes on Board Ships (INF Code), in

accordance with the provisions of article VIII and regulation VII/14.1 of the 1974 SOLAS Convention.

3.2 Contracting Governments constituting more than one third of the total of Contracting Governments to the 1974 SOLAS Convention were present during the consideration and adoption of the said amendments by the expanded Maritime Safety Committee, in accordance with the provisions of articles VIII(b)(iii) and VIII(b)(iv) of the Convention.

3.3 The proposed amendments to SOLAS chapters IV and VI of the 1974 SOLAS Convention and to the INF Code mandatory under the Convention were circulated, in accordance with SOLAS article VIII(b)(i), to all IMO Members and Contracting Governments to the 1974 SOLAS Convention by circular letter No.2771 of 18 January 2007.

3.4 Parties to the 1988 SOLAS Protocol were invited to participate in the consideration and adoption of proposed amendments to the appendix to the Annex to the Protocol. Parties constituting more than one third of the total of Parties to the Protocol were present during the consideration and adoption of the said amendments by the expanded Maritime Safety Committee, in accordance with the provisions of articles VIII(b)(iii) and VIII(b)(iv) of the 1974 SOLAS Convention and article VI of the 1988 SOLAS Protocol.

3.5 The proposed amendments to the 1988 SOLAS Protocol were circulated in accordance with SOLAS article VIII(b)(i) and article VI(c) of the 1988 SOLAS Protocol to all IMO Members and Parties to the 1988 SOLAS Protocol by circular letter No.2770 of 17 January 2007.

## ***CONSIDERATION OF THE PROPOSED AMENDMENTS TO MANDATORY INSTRUMENTS***

### **CONSIDERATION OF THE PROPOSED AMENDMENTS TO THE 1974 SOLAS CONVENTION**

#### ***PROPOSED AMENDMENTS TO SOLAS CHAPTER IV***

3.6 The Committee recalled that MSC 82 had decided that any corresponding amendments to SOLAS chapter IV should be considered and finalized by COMSAR 11 and, subsequently, authorized the Secretariat to circulate the finalized aforementioned amendments after COMSAR 11, in accordance with SOLAS article VIII(b)(i), with a view to adoption at MSC 83.

3.7 The Committee considered a new SOLAS regulation IV/4-1 (GMDSS satellite providers) prepared by COMSAR 11 (MSC 83/3, annex 1) and, noting that no further comments had been submitted on the proposed amendments to SOLAS chapter IV, confirmed its content, subject to editorial improvements, if any.

#### ***PROPOSED AMENDMENTS TO SOLAS CHAPTER VI***

3.8 The Committee recalled that the proposed amendments to SOLAS chapter VI related to the transport of MARPOL Annex I cargoes and marine fuel oils had been developed by BLG 10 and approved by MSC 82.

3.9 Noting that no further comments had been submitted on a new SOLAS regulation VI/5-1 (Material safety data sheets), the Committee confirmed its contents, subject to editorial improvements, if any.

***DATE OF ENTRY INTO FORCE OF THE PROPOSED AMENDMENTS***

3.10 The Committee recalled its decision at MSC 59 (MSC 59/33, paragraphs 26.2 to 26.7) where it had agreed on a four-year interval between bringing successive amendments to Conventions and mandatory Codes into force. However, it had, at that time, also decided that observance of this four-year interval was subject to the Organization being able, in exceptional circumstances, to adopt and bring into force new amendments at shorter intervals if, on the basis of experience, it was deemed necessary to do so in order to rectify a mistake or for any other compelling reasons.

3.11 The Committee thus agreed that the SOLAS amendments, proposed for adoption at the current session, should be deemed to have been accepted on 1 January 2009 and should enter into force on 1 July 2009. Consequently, the Committee instructed the drafting group to prepare the text of the draft requisite MSC resolution for adoption.

**PROPOSED AMENDMENTS TO THE 1988 SOLAS PROTOCOL**

3.12 The Committee recalled that the proposed amendments to the forms of Passenger Ship Safety Certificate and Cargo Ship Safety Certificate contained in the appendix to the Annex to the 1988 SOLAS Protocol (MSC 83/3/1, annex) had been prepared by the FSI Sub-Committee and approved by MSC 82 and, noting that no comments had been submitted on the proposed amendments, confirmed their contents, subject to editorial improvements, if any.

3.13 In the context of this item, the Committee, having discussed the pertinent comments by the delegations, agreed that:

- .1 the Cargo Ship Safety Construction Certificate and Cargo Ship Safety Equipment Certificate should also be amended to include paragraphs regarding alternative design arrangements prescribed by SOLAS regulation II-2/17;
- .2 the subdivision tables in the Passenger Ship Safety Certificate should be amended to bring it in line with the revised SOLAS chapter II-1 with regard to subdivision notations C.1, C.2 and C.3; and
- .3 existing certificates should be replaced by the amended certificates at the first renewal survey after the date of entry of the amendments,

and instructed the drafting group to prepare the relevant draft amendments.

**Date of entry into force of the proposed amendments**

3.14 The Committee agreed that the amendments to the appendix to the Annex to the 1988 SOLAS Protocol, proposed for adoption at the current session, should be deemed to have been accepted on 1 January 2009 and should enter into force on 1 July 2009.

**PROPOSED AMENDMENTS TO THE INF CODE**

3.15 The Committee recalled that the proposed amendments to chapter 2 (Damage stability) of the International Code for the Safe Carriage of Packaged Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes on Board Ships (INF Code) (MSC 83/3, annex 2) had been approved by MSC 82 and, having noted that no further comments had been submitted on the

proposed amendments to the INF Code, confirmed its contents, subject to editorial improvements, if any.

### **Date of entry into force of the proposed amendments**

3.16 The Committee agreed that the amendments to the INF Code, proposed for adoption at the current session, should be deemed to have been accepted on 1 January 2009 and should enter into force on 1 July 2009.

### **ESTABLISHMENT OF A DRAFTING GROUP**

3.17 Following discussion in plenary, the Committee established an *ad hoc* drafting group to prepare the final text of the draft amendments to the 1974 SOLAS Convention, the 1988 SOLAS Protocol and the INF Code, together with the associated draft MSC resolutions for consideration by the Committee for adoption.

### **CONSIDERATION OF NEW AMENDMENTS TO THE 1974 SOLAS CONVENTION**

#### **Drainage of enclosed ro-ro spaces or special category spaces situated on the bulkhead deck**

3.18 The Committee noted the submission by Denmark, Norway and Sweden (MSC 83/3/2), proposing amendments to SOLAS chapter II-1 to establish provisions concerning the drainage of fire-fighting water in enclosed ro-ro spaces, and after brief discussion, agreed to consider this document under agenda item 25 (Work programme) together with document MSC 83/25/2 (Egypt), taking into account that both documents addressed the same issue (see paragraphs 3.28 and 25.18 to 25.20).

### ***ADOPTION OF PROPOSED AMENDMENTS TO MANDATORY INSTRUMENTS***

#### **REPORT OF THE DRAFTING GROUP**

3.19 Having received the report of the drafting group (MSC 83/WP.3), the Committee approved the report in general and took action as indicated hereunder.

### **ADOPTION OF THE PROPOSED AMENDMENTS TO THE 1974 SOLAS CONVENTION AND THE 1988 SOLAS PROTOCOL**

#### **Adoption of amendments to the 1974 SOLAS Convention as amended**

3.20 The expanded Committee, including the delegations of 92 Contracting Governments to the 1974 SOLAS Convention considered the final text of the proposed amendments to chapters IV and VI of, and the appendix (certificates) to the Annex to, the Convention prepared by the drafting group (MSC 83/WP.3, annex 1) and adopted the amendments unanimously by resolution MSC.239(83), set out in annex 1.

3.21 In adopting resolution MSC.239(83), the expanded Committee determined, in accordance with article VIII(b)(vi)(2)(bb) of the 1974 SOLAS Convention, that the adopted amendments to SOLAS chapters IV and VI of the Convention should be deemed to have been accepted on 1 January 2009 (unless, prior to that date, objections are communicated to the Secretary-General, as provided for in article VIII(b)(vi)(2) of the Convention) and should enter into force on 1 July 2009.

### **Adoption of amendments to the 1988 SOLAS Protocol as amended**

3.22 The expanded Committee, including delegations of 62 Parties to the 1988 SOLAS Protocol, considered the final text of the proposed amendments to the appendix to the Annex to the Protocol prepared by the drafting group (MSC 83/WP.3, annex 2) and adopted the amendments unanimously by resolution MSC.240(83), set out in annex 2.

3.23 In adopting resolution MSC.240(83), the expanded Committee determined, in accordance with article VIII(b)(vi)(2)(bb) of the 1974 SOLAS Convention and article VI of the 1988 SOLAS Protocol, that the adopted amendments to the Protocol should be deemed to have been accepted on 1 January 2009 (unless, prior to that date, objections are communicated to the Secretary-General, as provided for in article VIII(b)(vi)(2) of the 1974 SOLAS Convention and article VI of the 1988 SOLAS Protocol) and should enter into force on 1 July 2009, in accordance with the provisions of SOLAS article VIII and article VI of the 1988 SOLAS Protocol.

3.24 In the context of this item, the Committee:

- .1 endorsed the group's view that it would be beneficial for the Organization to develop general guidance on the timing of replacement of existing certificates by the certificates issued after the entry into force of amendments to SOLAS certificates and instructed the FSI Sub-Committee to develop general guidance to address the matter, under the existing agenda item on "Review of the Survey Guidelines under the HSSC (resolution A.948(23))"; and
- .2 requested the Secretariat to prepare, in due course, the necessary consequential amendments to the 1988 SOLAS Protocol following the acceptance of the amendments, concerning passenger ship safety, adopted by resolution MSC.216(82), taking into account that similar alternative design and arrangements regulations have been adopted for SOLAS chapters II-1 (parts A, B and B-1) and III.

### **ADOPTION OF THE PROPOSED AMENDMENTS TO THE INF CODE**

3.25 The expanded Committee, including the delegations of 92 Contracting Governments to the 1974 SOLAS Convention, considered the final text of the proposed amendments to the INF Code prepared by the drafting group (MSC 83/WP.3, annex 3) and adopted the amendments unanimously by resolution MSC.241(83), set out in annex 3.

3.26 In adopting resolution MSC.241(83), the expanded Committee determined, in accordance with article VIII(b)(vi)(2)(bb) of the 1974 SOLAS Convention, that the adopted amendments to the INF Code should be deemed to have been accepted on 1 January 2009 (unless, prior to that date, objections are communicated to the Secretary-General, as provided for in article VIII(b)(vi)(2) of the Convention) and should enter into force on 1 July 2009, in accordance with the provisions of SOLAS article VIII.

### **INSTRUCTIONS TO THE SECRETARIAT**

3.27 In adopting the aforementioned amendments, the Committee authorized the Secretariat, when preparing the authentic texts of the amendments as appropriate, to effect any editorial corrections that may be identified, and to bring to the attention of the Committee any errors or

omissions which require action by the Contracting Governments to the 1974 SOLAS Convention and the Parties to the 1988 SOLAS Protocol.

### ***DRAINAGE IN CLOSED VEHICLE AND RO-RO SPACES AND SPECIAL CATEGORY SPACES***

3.28 The Committee, having recalled its decision regarding the above issue taken under agenda item 25 (Work programme), considered the part of the report of the drafting group (MSC 83/WP.3) relating to this issue and:

- .1 approved the draft amendments to SOLAS chapters II-1 and II-2, set out in annex 4, and requested the Secretary-General to circulate the draft amendments, in accordance with SOLAS article VIII, for consideration with a view to adoption at MSC 84; and
- .2 approved MSC.1/Circ.1234 on Drainage of fire-fighting water from closed vehicle and ro-ro spaces and special category spaces for passenger and cargo ships.

## **4 MEASURES TO ENHANCE MARITIME SECURITY**

### **General**

4.1 The Committee recalled that, at previous sessions, it had considered various matters which had arisen following the entry into force, on 1 July 2004, of the special measures to enhance maritime security and had instructed a number of sub-committees to consider and report on salient issues.

4.2 The Committee considered documents MSC 83/4, MSC 83/4/Add.1 and MSC 83/4/1 (Secretariat). In this respect, the Committee considered the relevant parts of the reports of STW 38 and FAL 34.

4.3 The Committee further considered documents MSC 83/4/2 and MSC 83/INF.7 (United Kingdom), MSC 83/4/3 (CLIA), MSC 83/4/4 (Australia), MSC 83/INF.11 (Singapore) and MSC 83/INF.16 (United States) before referring matters raised therein to the Working Group on Maritime Security (MSWG).

### **Outcome of STW 38**

4.4 In considering the report (MSC 82/4) on the outcome of the work of STW 38 on issues relating to measures to enhance maritime security, the Committee noted the information provided and:

- .1 with respect to the STCW Convention and the STCW Code:
  - .1 endorsed the proposed amendments to regulation VI/1 and sections A-VI/1 and B-VI/1 addressing the basic security-related training and security-related familiarization training for seafarers without designated security-related duties and for all shipboard personnel, respectively;
  - .2 endorsed a new regulation VI/6 and new sections A-VI/6 and B-VI/6, addressing the standards of competency and security-related

familiarization training for seafarers with designated security-related duties,

which are set out in annexes 2 to 4 to document STW 38/17, on the understanding that these would be reviewed by the STW Sub-Committee in conjunction with the comprehensive review of the STCW Convention and the STCW Code before being presented to the Committee with a view to approval and circulation for adoption;

- .2 decided that seafarers serving on ships which are not required to comply with SOLAS chapter XI-2 and the ISPS Code should be required to undertake basic security-related training or instruction, and agreed to make any necessary changes to the preliminary text of the draft amendments when these had been finalized as a part of the comprehensive review; and
- .3 approved MSC.1/Circ.1235 on Guidelines on security-related training and familiarization training for shipboard personnel.

### **Outcome of FAL 34**

#### ***Action taken in relation to the adoption of the Revised guidelines for the prevention and suppression of the smuggling of drugs, psychotropic substances and precursor chemicals on ships engaged in international maritime traffic***

4.5 The Committee recalled (MSC 82/4/Add.1 (Secretariat)) that MSC 82 had adopted resolution MSC.228(82) on Revised guidelines for the prevention and suppression of the smuggling of drugs, psychotropic substances and precursor chemicals on ships and had invited FAL 34 to note the action taken by MSC 82.

4.6 The Committee noted that following the action taken by MSC 82, FAL 34 had adopted the Revised guidelines for the prevention and suppression of the smuggling of drugs, psychotropic substances and precursor chemicals on ships engaged in international maritime traffic (resolution FAL.9(34)). The Committee further noted the action taken by FAL 34 in relation to the revision of the model course on the prevention and control of illicit drug trafficking on board ships.

4.7 As A 24 had decided (operative paragraph 3 of resolution A.985(24) on Revision of the Guidelines for the prevention and suppression of the smuggling of drugs, psychotropic substances and precursor chemicals on ships engaged in international maritime traffic (resolution A.872(20)) that, as from the date of the joint adoption by the Committee and the Facilitation Committee, the Guidelines adopted by resolution A.872(20) should be deemed as revoked, the Committee also noted, that in accordance with resolutions MSC.222(82) and FAL.9(34), the Revised Guidelines had taken effect from 1 April 2007.

4.8 The Committee requested the Secretariat to report to A 25, the action taken by the Committee in relation to the revision of the Guidelines annexed to resolution A.872(20) pursuant to resolution A.985(24).



***Report by the Joint MSC/FAL Working Group on security and facilitation of the movement of closed cargo transport units and of freight containers transported by ships***

4.9 Having noted that the Joint MSC/FAL Working Group on Security and facilitation of the movement of closed cargo transport units and of freight containers transported by ships, convened during MSC 82, had met again during FAL 34 to continue its work, the Committee noted (MSC 82/4/1) the report by the Chairman of the joint working group on the outcome of the work of the group during FAL 34.

4.10 The Committee noted that the Facilitation Committee had completed its work in this regard and, given that there had been no submissions on this issue, approved the report of the joint working group in general.

4.11 The Committee approved MSC-FAL.1/Circ.1 on Securing and facilitating global trade.

**Enhancement of the security of ships other than those already covered by SOLAS chapter XI-2 and the ISPS Code**

4.12 The Committee recalled that MSC 81 (MSC 81/25, paragraph 5.61) had:

- .1 acknowledged that the operation of ships which did not fall within the scope of SOLAS chapter XI-2 and the ISPS Code (non-SOLAS vessels) and their interactions with ships and port facilities which were required to comply with the aforesaid provisions was an area of varying concerns to a number of SOLAS Contracting Governments;
- .2 agreed that the development of recommendations aimed at enhancing the security of ships other than those already covered by SOLAS chapter XI-2 and the ISPS Code would be desirable and would contribute to the efforts of the Organization to enhance maritime security. However, such recommendations would need to be practical, sustainable and proportionate to the risks and threats involved; and
- .3 invited proposals on how to address the security aspects of the operation of ships which did not fall within the scope of SOLAS chapter XI-2 and the ISPS Code.

4.13 The Committee also recalled that MSC 82 had established a Correspondence Group on Security aspects of the operation of ships which did not fall within the scope of SOLAS chapter XI-2 and the ISPS Code under the co-ordination of the United Kingdom, supported by Japan and the United States.

4.14 In addition to noting the report of the Correspondence Group (MSC 83/4/2 and MSC 83/INF.7), the Committee considered the proposals of Australia (MSC 83/4/4) and information supplied by Singapore (MSC 83/INF.11) and the United States (MSC 83/INF.17).

4.15 The Committee noted that, in order to stimulate debate amongst the correspondence group members, the United Kingdom had produced a discussion document. The comments and examples of "best practice" received had been evaluated and the report of the Correspondence Group provided an indication as to these outcomes and proposals for the further progression of this work.

4.16 Australia (MSC 83/4/4) supported appropriate enhancements to security arrangements for non-SOLAS vessels and, recognizing that this was an issue for national Governments, proposed the development of voluntary guidance in two key areas:

- .1 preventive security for non-SOLAS vessels, through undertaking security risk assessments and developing and implementing security plans, with guidance addressing, *inter alia*:
  - .1 preventing theft or hijack of the vessel;
  - .2 preventing unauthorized access to the vessel;
  - .3 providing a means for the raising of security alerts;
  - .4 undertaking training and drills and exercises to ensure familiarity with security plans and procedures; and
  - .5 reporting suspicious activity; and
- .2 preventing non-SOLAS vessels from being used to attack ISPS Code compliant ships and port facilities, through the use of tools ranging from technology-based tools for maritime domain awareness (such as LRIT and AIS), through to simple mechanisms for reporting and investigating suspicious activity.

4.17 Singapore (MSC 83/INF.11) gave technical information on the Harbour Craft Transponder System (HARTS) operating in the port of Singapore.

4.18 The United States (MSC 83/INF.17) also supported enhancing the security of ships other than those already regulated by SOLAS chapter XI-2 and the ISPS Code. The United States had sponsored a National Small Vessel Security Summit (NSVSS) on 19 and 20 June 2007 to establish a dialogue between Government agencies and the small vessel owners and operators from the commercial and recreational community. The quick look findings of that event were provided for general information and were being expanded to an after action report to be released in autumn 2007. The findings of that report would be provided to the Committee and will be posted on the NSVSS website: [http://www.dhs.gov/xprevprot/programs/gc\\_1175627911698.shtm](http://www.dhs.gov/xprevprot/programs/gc_1175627911698.shtm).

4.19 Recognizing that the work of the correspondence group was at that time incomplete and having noted the information provided by Singapore and the United States, the Committee referred documents MSC 83/4/2 and MSC 83/4/4 to the MSWG for further consideration and, in particular, to advise the Committee on how to progress the issue of enhancing the security aspects of the operation of ships which do not fall within the scope of SOLAS chapter XI-2 and the ISPS Code.

4.20 The Committee further recommended that the MSWG may develop a set of draft guidelines for consideration by the Committee and, if appropriate, direction as to which categories of ships the correspondence group should concentrate on in its future work.

**Access of public authorities, emergency response services and pilots on board ships to which SOLAS chapter XI-2 and the ISPS Code apply**

4.21 In considering the proposals of Cruise Lines International Association (CLIA) (MSC 83/4/3), the Committee noted the reports of problems encountered by several CLIA

member lines with port State control officers and other public authorities refusing to show proper identification when boarding vessels, contrary to the guidance contained in MSC/Circ.1156 on Access of public authorities, emergency response services and pilots on board ships to which SOLAS chapter XI-2 and the ISPS Code apply, and the importance of proper identification to the security of ships and port facilities.

4.22 The Committee recalled that, in addition to the requirements of the ISPS Code, resolution MSC.159(78) and MSC circulars MSC/Circ.1111, MSC/Circ.1132, MSC/Circ.1156 and MSC.1/Circ.1194 had all drawn attention to this issue.

4.23 The Committee reiterated the need for port State control officers and other public authorities to show proper identification when boarding vessels; invited the observers from the port State control MoUs to take the necessary action; and invited CLIA and other interested parties to provide full and specific details of such bad practices in the future.

4.24 The Committee referred document MSC 83/4/3 to the MSWG for its advice on how the Committee should best reiterate to public authorities, emergency response services and pilots, the guidance contained in MSC/Circ.1156 and other related circulars and the importance of showing proper identification when boarding ships and entering port facilities.

#### **Development of an EDIFACT Message for security-related information**

4.25 The Committee recalled that MSC 79 and FAL 32 had agreed not to prescribe a form for transmitting the security-related information that a ship may be requested by a SOLAS Contracting Government to submit pursuant to SOLAS regulation XI-2/9.2.1 and, instead, agreed to develop a standard minimum data set that ships could expect to be required to transmit prior to entry into port. This standard data set had been promulgated as MSC/Circ.1130 on Guidance to masters, Companies and duly authorized officers on the requirements relating to the submission of security-related information prior to the entry of a ship into port.

4.26 The Committee further recalled that MSC 79 had advised FAL 32 that, even though the standard data set contained in MSC/Circ.1130 was subject to review and amendment by the Committee, the FAL Committee should consider commencing the development of an electronic data interchange message, for joint adoption by the Committee and the FAL Committee, and for inclusion in the IMO Compendium on Facilitation and Electronic Business, through which the standard data set could be transmitted electronically.

4.27 The Committee noted the information provided by the United States (MSC 83/INF.16), which described the Data Maintenance Requests recently submitted to the World Customs Organization Data Model Project Team.

#### **Establishment of the MSWG**

4.28 The Committee re-established the MSWG and instructed the MSWG, taking into account the related discussions of the various issues in plenary, to:

- .1 consider and make proposals, taking into account the report of and actions requested by the correspondence group (MSC 83/4/2) and the comments contained in the documents submitted by Australia (MSC 83/4/4), on how to progress the issue of enhancing the security aspects of the operation of ships which do not fall within the scope of SOLAS chapter XI-2 and the ISPS Code. This may include the development a set of draft guidelines for consideration by

the Committee and, if appropriate, direction as to which categories of ships the correspondence group should concentrate on in its future work;

- .2 consider and make proposals, taking into account the comments contained in the document submitted by CLIA (MSC 83/4/3) on how the Committee should best reiterate to public authorities, emergency response services and pilots, the guidance contained in MSC/Circ.1156 and other related circulars and the importance of showing proper identification when boarding ships and entering port facilities; and
- .3 submit a report to plenary by Thursday, 11 October 2007.

#### **REPORT OF THE MSWG**

4.29 Having received and approved in general the report of the MSWG (document MSC 83/WP.4), the Committee noted the actions taken on the various documents and proposals submitted and the outcome of the MSWG's considerations; and took action as indicated in the ensuing paragraphs.

#### **ACCESS OF PUBLIC AUTHORITIES, EMERGENCY RESPONSE SERVICES AND PILOTS ON BOARD SHIPS TO WHICH SOLAS CHAPTER XI-2 AND THE ISPS CODE APPLY**

4.30 The Committee noted that the ISPS Code, resolution MSC.159(78), MSC/Circ.1111, MSC/Circ.1132, MSC/Circ.1156 and MSC.1/Circ.1194 had all drawn attention to the importance of showing proper identification when boarding ships and agreed that it would not be appropriate to issue a further circular in this regard.

4.31 The Committee agreed to:

- .1 record in the report of the Committee, the need for port State control officers and other public authorities to show proper identification when boarding vessels;
- .2 invite the Memoranda of Understanding on port State control to reiterate to their member authorities the need for port State control officers and other public authorities to show proper identification when boarding vessels;
- .3 invite CLIA and other interested parties to provide full and specific details of such bad practices in the future; and
- .4 recommend that ships experiencing such bad practices should immediately notify the relevant authority of the flag State and, if appropriate, the port State.

#### **ENHANCEMENT OF THE SECURITY OF SHIPS OTHER THAN THOSE ALREADY COVERED BY SOLAS CHAPTER XI-2 AND THE ISPS CODE**

4.32 The Committee noted that the ISO 28000 series of standards on supply chain security were now published as full ISO standards and numerous ports, terminals and organizations were being certified by third party independent accredited auditors; the ISO PAS 20858 for uniform implementation of the ISPS Code was now being published as a full ISO standard; and ISO standards could be applied to all ships, irrespective of size, type, purpose and whether operated internationally, domestically or within internal waters.

4.33 The Committee noted the discussion in the MSWG on shipborne automatic identification systems (AIS) in the context of ships not covered by SOLAS chapter XI-2 and the ISPS Code, and that a number of recent reports of attempted piracy promulgated by the Organization (most recently in MSC.4/Circ.107 and MSC.4/Circ.108) had drawn attention to the fact that ships were not transmitting information by AIS. The Committee further noted that the Secretariat had received periodic notification of AIS anomalies, submitted by naval forces of Member Governments. The Committee agreed that such information may be of use to Administrations and port State control authorities to help them to better implement SOLAS requirements.

4.34 The Committee invited the Secretariat to:

- .1 request Member Governments and organizations with consultative status to submit details to the Organization of ships operating either without AIS or with AIS incorrectly configured, reported by ships entitled to fly their flag. Such details should include, where possible, ship name, IMO number, call-sign, date, position (latitude and longitude), and details of the anomaly; and
- .2 promulgate such information by means of an MSC Circular on a quarterly basis.

4.35 The Committee noted the report by Finland, that a significant number of vessels were operating in and around Finnish waters using the same maritime mobile service identity (MMSI) on AIS equipment, and agreed that ensuring the consistent implementation of SOLAS regulation V/19.2.4 and the Guidelines for the on-board operational use of shipborne Automatic Identification Systems (AIS) adopted by the Organization by resolution A.917(22), as amended by resolution A.956(23), were important.

4.36 The Committee noted that in developing guidelines for a correspondence group on how to progress work on addressing the security of ships other than those already covered by SOLAS chapter XI-2 and the ISPS Code (non-SOLAS vessels), the MSWG had taken account of the instructions of the Committee that any guidance developed to should be non-mandatory, and that its application should be the purview of the individual Contracting Governments concerned and proportionate to the assessed levels of threat and risk.

4.37 The Committee further noted that the MSWG had agreed that such guidance developed by a correspondence group should take account of the risk context, so as to ensure that any recommended measures would be appropriate to the prevailing risk environment; and that developing guidance based on vessel type would be beneficial in ensuring the guidelines could be properly targeted to different industry sectors. The MSWG had agreed that in order for a correspondence group to develop appropriately straightforward and user-friendly guidelines, the correspondence group should focus on four vessel types, namely commercial non-passenger vessels, passenger vessels, fishing vessels, and pleasure craft; and two risk contexts, namely normal operations, and operations in a time or place of heightened security risk.

4.38 The Committee debated at length on the merits of developing guidance for pleasure craft, with some delegations expressing concerns that guidance developed by the Organization tended to be treated by their States as mandatory and calling into question their State's abilities to regulate vast numbers of pleasure craft. Counter-arguments included the threat from pleasure craft to ISPS-compliant ships and port facilities; and the need for guidelines to be sufficiently flexible to address all non-SOLAS vessels, commensurate with the threat. A majority of delegations that spoke supported giving instructions to a correspondence group to consider pleasure craft when developing draft guidance on the security of non-SOLAS vessels.

4.39 Having noted the reservations of the delegations of Argentina, Denmark, Finland, Germany, Greece, Malta, Norway and Sweden on the inclusion of pleasure craft, the Committee established a correspondence group on security aspects of the operation of ships which do not fall within the scope of SOLAS chapter XI-2 and the ISPS Code, under the co-ordination of the United Kingdom\*, assisted by Japan and the United States, with the following terms of reference:

- 1 The correspondence group on security arrangements for vessels which do not fall within the scope of SOLAS chapter XI-2 and the ISPS Code (non-SOLAS vessels) is instructed, taking into account the relevant discussions of the Maritime Security Working Group and decisions of MSC 82 and MSC 83, to develop recommendatory guidelines to enhance maritime security to complement measures required by SOLAS chapter XI-2 and the ISPS Code, which could be utilized by Contracting Governments and/or Administrations at their own discretion. The correspondence group should take the following into account:
  - .1 the guidelines should address security measures for possible application by non-SOLAS vessels in order to:
    - .1.1 protect non-SOLAS vessels against security threats; and
    - .1.2 prevent non-SOLAS vessels from posing a security threat to other vessels and port facilities;
  - .2 the guidelines should reiterate the importance of undertaking a risk assessment to determine if and to what extent such guidelines are to be applicable;
  - .3 the guidelines should draw attention to existing IMO instruments and guidance material, for example guidance on suppression of piracy, drug smuggling, and stowaways;
  - .4 the guidelines should complement other security procedures, for example the need for port service craft to comply with port facility security plans, and the need for barges and other craft involved in the supply chain to comply with measures for supply chain security;
  - .5 the guidelines should be developed for four broad categories of non-SOLAS vessels:
    - .1 commercial non-passenger vessels;

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- .2 passenger vessels;
- .3 fishing vessels; and
- .4 pleasure craft;
- .6 the guidelines should set out a list of basic security measures, and additional security measures for operations in higher-risk environments, for non-SOLAS vessels in the following areas, where appropriate:
  - .1 security awareness and culture:
    - .1 maintaining security vigilance and reporting suspicious activity;
    - .2 understanding practices for interacting with ISPS compliant ships and port facilities, including dialogue with SSOs and PFSOs, and procedures for completing declarations of security; and
    - .3 awareness of security levels set by Contracting Governments in accordance with SOLAS chapter XI-2;
  - .2 security measures:
    - .1 preventing theft or hijack of the vessel;
    - .2 preventing unauthorized access to the vessel;
    - .3 conducting a search of a vessel;
    - .4 verifying identity of persons on board a vessel;
    - .5 communicating intended destination (international voyages); and
    - .6 using available means of vessel identification, where appropriate.
  - .3 planning for security events:
    - .1 undertaking training and drills to ensure familiarity with contingency plans and procedures;
    - .2 knowing how to respond to bomb threats or discovery of suspicious items; and
    - .3 maintaining a means for reporting security concerns;
  - .4 other security considerations for international voyages:
    - .1 avoidance of piracy;

- .2 prevention of trafficking in drugs and illicit cargoes; and
- .3 prevention of stowaways; and
- .7 the guidelines should be accompanied by practical examples of best practice for the implementation of each of these measures, in the context of suitable risk scenarios where appropriate.

2 The correspondence group should submit a written report to MSC 85.

4.40 The Committee noted that the guidance developed by the correspondence group would be promulgated by means of an MSC circular consisting of guidance to Administrations and Designated Authorities with practical guidance for operators of non-SOLAS vessels contained in the annex thereto. The MSWG agreed that the guidance to Administrations and Designated Authorities should include, but not be limited to, references to:

- .1 the existing measures contained in SOLAS chapter XI-2, the ISPS Code, the 1988 and 2005 SUA Conventions and Protocols, as appropriate, and relevant IMO guidance;
- .2 the need for liaison between stakeholders and Administrations and Designated Authorities;
- .3 the need to encourage operators of ships engaged in international voyages but not listed in SOLAS regulation XI-2/2.1 to adopt the provisions of the ISPS Code as industry best practice, and to issue appropriate ship security certificates in respect of such ships when they demonstrate full compliance;
- .4 the need to promote a security culture both within Administrations in respect of non-SOLAS vessels and among the operators of non-SOLAS vessels;
- .5 the value in developing frameworks to assist in preventing non-SOLAS vessels from posing a security threat, including frameworks for maritime situational awareness, frameworks for interdiction, such as the 2005 SUA Convention and Protocol, and frameworks for receiving, collating and investigating reports of suspicious activity;
- .6 that non-SOLAS vessels operating in ISPS compliant port facilities should already be regulated under port facility security programmes and that vessels such as barges and riverine traffic involved in the supply chain would probably be addressed under supply chain security regimes; and
- .7 the guidelines not being intended as the basis for a mandatory instrument.

4.41 The Committee agreed that maritime security should remain on the agenda at MSC 84 and MSC 85, with provision for a drafting group on maritime security at MSC 84 if required, and with provision for the MSWG to reconvene at MSC 85.



## 5 GOAL-BASED NEW SHIP CONSTRUCTION STANDARDS

### GENERAL

5.1 The Committee recalled that MSC 82 had established two correspondence groups as follows:

- .1 a Correspondence Group on GBS for oil tankers and bulk carriers, under the co-ordination of Sweden, which had been instructed to monitor the pilot project on trial application of the Tier III verification process using the IACS Common Structural Rules (CSR) (see paragraph 5.2) and disseminate information on its progress; and to develop draft amendments for the incorporation of GBS for oil tankers and bulk carriers in SOLAS chapter II-1, including the Ship Construction File; and
- .2 a Correspondence Group on the safety level approach (SLA), under the co-ordination of Germany, which had been instructed to progress work to determine the current safety level in a holistic high-level manner; to consider the linkage between FSA and GBS; to consider the tier structure so far agreed for GBS for oil tankers and bulk carriers for use in the safety level approach; and to progress the development of goal-based standard guidelines for the safety level approach.

5.2 The Committee also recalled that MSC 82 had established a pilot project on trial application of the Tier III verification process using the IACS Common Structural Rules (CSR) with the aim of validating the Tier III verification framework, identifying shortcomings and making proposals for improvements.

5.3 The Committee noted that MEPC 56 had referred the issue of the need for a code for safe environmental standards for seafarers (MEPC 56/17/5 by ICFTU) to this session, for consideration when discussing the safety level approach under GBS (see paragraph 16.8).

5.4 The Committee noted document MSC 83/5 (Secretariat), setting out the historical background, objectives and scope, structure, progress made and results achieved with regard to the Committee's work on goal-based new ship construction standards to date.

5.5 The delegation of the Bahamas, while thanking the Secretariat for the document, stated that, in their view, it contained a number of important inaccuracies. The delegation indicated that paragraph 5 of the document implied that the safety level approach had been considered from the beginning of the process of developing goal-based standards when, in fact, there had been a measure of agreement on the approach at the early stages of the discussions. Document MSC 78/6/2 by the Bahamas, Greece and IACS, referred to in paragraph 9, set out what was rather misleadingly called the 'prescriptive approach', but which was the original goal-based approach. It had been at a later stage that the safety level approach was put forward. The last two lines of paragraph 6 stated that the prescriptive approach for GBS was "for provisions for hull construction for bulk carriers and tankers and oil tankers and the safety level approach for all other ship types", which was not correct since the only reason that the original method was limited to bulk carriers and tankers in the first instance was to make the task of drawing up a practical programme and methodology for the introduction of GBS more manageable. It had been recognized that to try to deal with all ship types in a single exercise would introduce so many variables that the task would be extremely difficult and would take a very long time to accomplish. The intention was that after dealing with bulk carriers and tankers and

demonstrating that the process was practical, the exercise would be expanded to cover other ship types. Indeed, Tier I had been drawn up to apply to all ship types as can be seen in the chapeau of paragraph 10. It had never been the intention of the Committee, the working group or indeed of the original proponents of goal-based standards to limit the exercise to new ship construction standards for bulk carriers and tankers. The safety level approach proponents originally also limited their aim to dealing with bulk carriers and tankers; however they recognized the very long-term nature of their work and decided to try to encompass all ship types in one exercise.

5.6 While some delegations supported the statement of the delegation of the Bahamas, other delegations had a different recollection and stated that the developments in the Committee with regard to goal-based new ship construction standards had been reflected correctly in the document. In their view, the Committee had agreed to follow a prescriptive approach for bulk carriers and oil tankers and the safety level approach for other types of ships. They expressed the view that the two approaches were complementing each other and should be developed further.

5.7 After a clarification by the Secretariat that there had been no intention of misrepresenting in any way the decisions taken by the Committee on goal-based new ship construction standards over the last few sessions and that any perception that the document was misleading was regrettable, the Committee, taking into account that the document was not requesting it to take any executive action, agreed to note it.

## **GBS FOR BULK CARRIERS AND OIL TANKERS**

### **Report of the Correspondence Group on GBS for Bulk Carriers and Oil Tankers**

5.8 The Committee considered the report of the Correspondence Group on GBS for Bulk Carriers and Oil Tankers (MSC 83/5/2) and, having approved the report in general, took decisions as outlined in the following paragraphs.

#### ***Draft SOLAS amendments***

5.9 The Committee considered the proposed draft SOLAS amendments referring to the International goal-based new ship construction standards and the associated draft MSC resolution (paragraphs 8 to 17 of, and annex 1 to, the report) together with document MSC 83/5/17 (Republic of Korea), containing detailed comments on the draft amendments.

5.10 Following discussion, the Committee referred the draft SOLAS amendments and the associated draft MSC resolution, together with document MSC 83/5/17 and comments and proposals made in plenary, to the GBS Working Group (see paragraph 5.42) for further detailed consideration and development.

#### ***Draft International goal-based new ship construction standards***

5.11 The Committee considered the proposed draft International goal-based new ship construction standards and the associated draft MSC resolution (paragraph 18 of, and annex 2 to, the report), together with document MSC 83/5/17 (Republic of Korea), containing detailed comments on the draft standards.

5.12 In this connection, the Committee considered a proposal by Finland (MSC 83/5/8) to extend the application of the GBS for bulk carriers and oil tankers to ice class rules for ship structures applicable to ships designed for navigation in ice covered waters and to amend the standards accordingly.

5.13 Following a brief discussion, the Committee referred the standards and the associated draft MSC resolution, together with documents MSC 83/5/8 and MSC 83/5/17 and comments and proposals made in plenary, to the GBS Working Group for further detailed consideration and development.

***Draft MSC circular on Guidelines for the information to be included in a Ship Construction File (SCF)***

5.14 The Committee considered the draft MSC circular on Guidelines for the information to be included in a Ship Construction File (SCF) (paragraph 19 of, and annex 3 to, the report), together with document MSC 83/5/17 (Republic of Korea), commenting on the draft circular, in particular with regard to the target coating life, and referred the draft circular, together with document MSC 83/5/17, to the GBS Working Group for finalization, bearing in mind that the contents of the SCF had been principally agreed at MSC 82.

5.15 The observer from CESA raised concern that the SCF to be kept on board as drafted would place sensitive product and process data of shipbuilders in an insecure environment and proposed that the working group should consider specific measures in order to safeguard and protect the intellectual property of shipyards.

**Report of the Pilot Panel**

***General***

5.16 The Committee considered the report of the Pilot project on trial application of the GBS Tier III verification process using the IACS Common Structural Rules (CSR) (MSC 83/5/1) and, having approved the report in general, took decisions as outlined in the following paragraphs. In this respect, the Committee noted that, although the Pilot Panel had completed the development of draft Guidelines for the verification of compliance with GBS, there had not been enough time to conduct a proper trial application of the newly developed guidelines.

5.17 In this connection, the Committee noted document MSC 83/INF.5 (IACS), containing the information submitted by IACS to the Pilot Panel, including their documentation package, technical presentations and replies to questions and comments of the Panel.

***Guidelines for the verification of compliance with GBS***

5.18 The Committee considered part A (Tier III verification process) (paragraphs 6 to 10 of, and annex 1 to, the report) and part B (Tier III information/documentation requirements and evaluation criteria) (paragraphs 11 to 13 of, and annex 2 to, the report) of the proposed Guidelines for the verification of compliance with GBS, together with the following documents:

- .1 MSC 83/5/14 (Germany), containing specific comments regarding the process for Rule submissions, maintenance of verification, set-up of the Group of Experts, structural performance monitoring, intellectual property rights and Tier III evaluation criteria; and
- .2 MSC 83/5/15 (Republic of Korea), containing detailed comments concerning the set-up of the Group of Experts, phase-in time for implementation of GBS requirements and evaluation criteria.

5.19 In the ensuing discussions, the following views were, *inter alia*, expressed:

- .1 intellectual property rights needed to be taken into account and balanced with the need for design transparency, also taking into account liability issues;
- .2 the issues of net scantlings, continuous performance monitoring and set-up of the envisaged Group of Experts needed to be further considered; and
- .3 industry should be given sufficient phase-in time once the verification guidelines and the related SOLAS amendments had been finalized and adopted.

5.20 Following discussion, the Committee referred the draft Guidelines for the verification of compliance with GBS, together with documents MSC 83/5/14 and MSC 83/5/15 and comments and proposals made in plenary, to the GBS Working Group for further detailed consideration.

***Proposed new functional requirements***

5.21 The Committee considered the recommendation of the Pilot Panel to establish a new functional requirement (II.16) on structural performance monitoring (paragraphs 16 and 17 of, and annex 3 to, the report), together with relevant submissions by:

- .1 Japan (MSC 83/5/11), generally supporting the proposal but proposing amendments to the draft new functional requirement, taking into account that structural failure might also be due to causes other than inadequate construction, e.g., maintenance and repair issues;
- .2 IACS (MSC 83/5/12), requesting that the proposed new requirement be carefully considered since most of the items included in the proposed performance metrics are not solely controlled by and are greatly influenced by many factors beyond the new building structural requirements;
- .3 Germany (MSC 83/5/14), observing that the majority of evaluation criteria in the proposed new functional requirement depend on the maintenance carried out by the operator rather than the maintenance of a Rule developer; and
- .4 Republic of Korea (MSC 83/5/15), supporting the proposal in general but expressing the view that this requirement should be included in the draft SOLAS amendments rather than as a new Tier II functional requirement.

5.22 The Committee referred the proposed new functional requirement, together with documents MSC 83/5/11, MSC 83/5/12, MSC 83/5/14 and MSC 83/5/15, to the GBS Working Group for further detailed consideration and advice to the Committee with regard to its inclusion in the Tier II functional requirements.

5.23 The Committee also considered a submission by Argentina and Spain (MSC 83/5/13), pointing out that, for a ship's structure, risk of failure is determined by the probability of a load reaching or exceeding a certain limit value. Noting that the Pilot Panel had identified the need for construction standards to establish such minimum probability level and established a relevant evaluation criterion in Tier III (III.2.c.4, see annex 2 to document MSC 83/5/1), the submitters proposed that the Committee examines the need for introducing mandatory functional requirements that stipulate the acceptable probability of exceedance of the design load for ships' structures.

5.24 The Committee referred the proposed new functional requirement, together with document MSC 83/5/13, to the GBS Working Group for further detailed consideration and advice to the Committee with regard to its inclusion in the Tier II functional requirements.

#### ***Evaluation criteria for residual strength***

5.25 The Committee noted the view of the Pilot Panel that there is currently insufficient information available to develop specific evaluation criteria for Tier III.5 (Residual strength) and that, therefore, the Panel had decided to require any Rule submitter to demonstrate, through the analysis of representative designs, that their Rules require a reasonable level of residual strength after damage, considering existing IMO requirements.

#### ***Proposed modifications to functional requirements agreed at MSC 82***

5.26 The Committee considered modifications to functional requirements II.3 (Structural strength), II.7 (Structural redundancy) and II.13 (Survey and maintenance) proposed by the Pilot Panel (paragraph 19 of, and annex 4 to, the report) and referred them to the GBS Working Group for further detailed consideration and inclusion in the Tier II functional requirements.

#### ***Application of net scantlings***

5.27 The Committee recalled that MSC 82 had agreed on a definition for “net scantlings” and included it in functional requirement II.3 (Structural strength). However, views in the Committee on the issue had been divided, with some Members feeling that the definition was too simplistic and did not allow for an efficient optimization of the structure since it did not take into account the change in steel thickness over the service life, whereas others felt that the definition was just right because it was transparent, simple and easy to apply and monitor. MSC 82 had noted the recommendation of the GBS Working Group not to make any changes to the definition at that time, but to ask the Pilot Panel to consider the net scantling approach in the trial verification of how the IACS CSR meet the functional requirements.

5.28 The Committee noted the discussion of the Pilot Panel on the application of net scantlings (paragraphs 20 to 23 of the report) and, in particular, the Panel’s conclusion that the appropriate thickness to be applied in scantlings’ assessment must be considered in conjunction with other factors, such as extreme loads, safety factors and acceptance criteria, and that all methods should be appropriately justified and benchmarked with service history.

5.29 In this connection, the Committee considered the following documents:

- .1 MSC 83/5/12 (IACS), proposing to amend the definition of “net scantlings” in order to base it on a methodology that takes into account the permissible diminution of structural elements over the service life; and
- .2 MSC 83/5/15 (Republic of Korea), expressing the view that a single unified net scantling approach for the design of ships is too ambitious and does not allow any efficient optimization of structure. The scantlings should be determined based on a rational and technically justified net thickness concept and the fatigue strength should recognize the changes in steel thickness over the ship’s service life and, therefore, for fatigue calculation, a different net scantlings approach should be allowed,

and instructed the GBS Working Group to consider the issue in detail, taking into account documents MSC 83/5/12 and MSC 83/5/15, and to advise the Committee accordingly.

### ***Second trial application with CSR***

5.30 The Committee considered the recommendation of the Pilot Panel to conduct a second, more in-depth, trial application with CSR before the Guidelines for the verification of compliance with GBS are approved (paragraph 24 of the report), and, following discussion and noting the general support for the conduct of a second trial application, instructed the GBS Working Group to further consider the matter and to advise the Committee accordingly.

### **Funding of a group of experts**

5.31 The Committee considered document MSC 83/5/4 (Secretariat), presenting funding options for a group of experts to verify the rules of recognized organizations, based on the operation of already existing groups of experts or similar groups in IMO, and agreed that the matter should be considered further by the Committee after the draft SOLAS amendments (see paragraph 5.10) had been finalized.

## **SAFETY LEVEL APPROACH**

### **Report of the correspondence group**

5.32 The Committee considered the report of the Correspondence Group on Safety Level Approach (SLA) (MSC 83/5/3) and, having approved the report in general, took decisions as outlined in the following paragraphs. In this connection, the Committee noted document MSC 83/INF.4 (Netherlands) which presented the results of a research project on goal-based regulations for life-saving appliances, for the information of the Committee.

5.33 The Committee also considered the following documents commenting on the report:

- .1 MSC 83/5/9 (Japan), commenting on the categorization of ship types and on the evaluation of the current safety level inherent in IMO regulations; proposing to use Lloyds Register/Fairplay (LRFP) data and to prioritize the ongoing work by limiting the evaluation to certain ship types for the time being; and that an assessment method for the required minimum safety level on separate functions, e.g., life-saving appliances, fire protection, stability, etc., should be further considered;
- .2 MSC 83/5/10 (Germany), proposing to develop a more detailed description of the future shape of the safety levels and how they relate to the existing risk levels and also a definition of the system “ship” for an agreed understanding of the risk contributors of the shipping industry. The document also comments extensively on the application of the tier system to the safety level approach, the linkage to IMO’s method of work and available ship casualty data; and
- .3 MSC 83/5/16 (Republic of Korea), commenting on the categorization of ship types, the time windows to be used for historical data, the review of available statistical data, the extension of the Tier II functional requirements to other aspects and the development of common terminology for GBS/SLA.

5.34 The Committee noted the progress made by the SLA Correspondence Group and referred the report, together with documents MSC 83/5/9, MSC 83/5/10, MSC 83/5/16 and MSC 83/INF.4, to the GBS Working Group for further detailed consideration.

### **Occupational health and safety of seafarers**

5.35 The Committee noted document MSC 83/16 (Secretariat), concerning the outcome of MEPC 56 with regard to the human element and, in particular, that MEPC 56 had considered a proposal by ICFTU (MEPC 56/17/5) for the development of a code on safe working environmental standards and for consideration of its application to the Tier II functional requirements of GBS. MEPC 56 had agreed that this issue should be considered by the GBS Working Group when discussing the safety level approach at this session (MEPC 56/23, paragraphs 17.34 and 17.35). In this connection, the Committee recalled that MSC 82 had included a new functional requirement (II.9) on human element considerations in Tier II of the GBS.

5.36 The Committee considered document MSC 83/5/7 (Denmark), proposing the inclusion of occupational health and safety, with focus on work-related accidents, in the safety level approach through a GBS Tier I goal focussing on the design of systems and functions and leading to a substantial reduction of work-related accidents. Denmark had conducted a study showing a clear interrelation between inexpedient or bad design and work-related accidents and was of the view that improving the design by including cost effective measures must be considered already in the design phase to ensure the safety and health of the seafarer.

5.37 Following discussion, the Committee instructed the GBS Working Group to consider the matter of occupational health and safety further when discussing the safety level approach, with a view of including it in the safety level tier system.

### **FURTHER DEVELOPMENT OF GBS**

5.38 The Committee had for its consideration the following documents:

- .1 MSC 83/5/5 (Sweden), proposing that IMO develop a framework for a systematic and transparent goal-based rule-making process (guidelines for rule-making procedures), applicable to all IMO instruments, based on systematic and continuous hazard identification and risk analysis and including the introduction of a “rule commentary” for all new regulations to be developed;
- .2 MSC 83/5/6 (Netherlands), containing a proposal for recording background information when a (new) regulation is developed (similar to the “rule commentary” proposed by Sweden in document MSC 83/5/5). Such information may include the reasons for the development of the regulation (what concern does it address), the contribution to safety/security and/or environmental benefits and the costs to the maritime industry.

5.39 The Committee recalled in this connection that Germany, in document MSC 83/5/10, had made a similar proposal, i.e., that future requests for new regulations or amendments or new work items should generally only be accepted if an FSA is submitted, also describing the effect of the proposal on the safety level.

5.40 While there was general support for the proposals made in the above documents and that a work plan for the long-term strategy on goal-based standards should be developed, several delegations expressed concerns, in particular with regard to the suggestion that proposals for new work programme items should be accompanied by a full FSA study. Other delegations noted that the proposals made were very different from the original purpose of the introduction of goal-based standards, i.e. verifying the rules of recognized organizations, and that they should not endanger the work already carried out concerning GBS for bulk carriers and oil tankers. It was also pointed out that the proposals might have implications for the budget of the Organization.

5.41 Subsequently, the Committee instructed the GBS Working Group to consider further the proposals, in particular the proposed long-term work plan for goal-based standards, and to advise the Committee accordingly.

#### **ESTABLISHMENT OF THE GBS WORKING GROUP**

5.42 The Committee established the GBS Working Group and instructed it, taking into account decisions, comments and proposals made in plenary, to:

- .1 further develop the proposed draft SOLAS amendments referring to International goal-based new ship construction standards for bulk carriers and oil tankers and the associated draft MSC resolution, based on the report of the correspondence group (MSC 83/5/2) and taking into account document MSC 83/5/17;
- .2 consider the possible need for consequential amendments to other IMO instruments, based on the report of the correspondence group (MSC 83/5/2);
- .3 further develop the draft International goal-based new ship construction standards for bulk carriers and oil tankers and the associated draft MSC resolution, based on the report of the correspondence group (MSC 83/5/2) and taking into account document MSC 83/5/17, and, in particular:
  - .3.1 consider the application of the GBS for bulk carriers and oil tankers to ice class rules (MSC 83/5/8);
  - .3.2 consider the inclusion of a new Tier II functional requirement on continuous performance monitoring as proposed by the Pilot Panel (MSC 83/5/1, annex 3; MSC 83/5/11; MSC 83/5/12 and MSC 83/5/14);
  - .3.3 consider the inclusion of a new Tier II functional requirement concerning the acceptable probability of exceedance of the design load for ships' structures (MSC 83/5/13);
  - .3.4 consider the modifications to the Tier II functional requirements agreed at MSC 82 proposed by the Pilot Panel (MSC 83/5/1, annex 4); and
  - .3.5 consider the definition of "net scantlings" included in functional requirement II.3 on structural strength (MSC 83/5/1, MSC 83/5/12 and MSC 83/5/15);



- .4 finalize the draft MSC circular on Guidelines for the information to be included in a Ship Construction File (SCF), based on the report of the correspondence group (MSC 83/5/2) and taking into account document MSC 83/5/17;
- .5 further develop the draft Guidelines for the verification of compliance with GBS, parts A and B, based on the report of the Pilot Panel (MSC 83/5/1), taking into account documents MSC 83/5/14 and MSC 83/5/15;
- .6 prepare a plan and timetable for a second, more in-depth, trial application of the Guidelines for the verification of compliance with GBS using the IACS CSR (MSC 83/5/1);
- .7 consider in detail the report of the Correspondence Group on Safety Level Approach (SLA) (MSC 83/5/3) and, in particular:
  - .7.1 the categorization of ship types, the review of available statistical data, the evaluation of the current safety level, the SLA functional requirements, and common terminology (MSC 83/5/9, MSC 83/5/10, MSC 83/5/16 and MSC 83/INF.14); and
  - .7.2 inclusion of a high-level goal concerning the occupational health and safety of seafarers (MSC 83/16 and MSC 83/5/7);
- .8 consider the development of a work plan for goal-based standards, including any financial ramifications for the IMO budget, and advise the Committee accordingly (MSC 83/5/5, MSC 83/5/6 and MSC 83/5/10); and
- .9 prepare draft terms of reference for the Correspondence Group on GBS for Bulk Carriers and Oil Tankers and for the Correspondence Group on Safety Level Approach, as appropriate.

### **Report of the working group**

5.43 Upon receipt of the report of the working group (MSC 83/WP.5), the Committee approved it in general and took action as outlined in the following paragraphs.

### **GOAL-BASED NEW SHIP CONSTRUCTION STANDARDS FOR BULK CARRIERS AND OIL TANKERS**

#### **Draft SOLAS amendments**

5.44 The Committee noted that the group had considered proposed draft SOLAS amendments to make the GBS for bulk carriers and oil tankers mandatory, as prepared by the correspondence group (MSC 82/5/2, annex 1), and tentatively agreed on a revised draft text of the amendments, set out in annex 1 to the report of the group (MSC 83/WP.5). In discussing the draft amendments, the group had considered the applicability of the different tiers, the applicability threshold for bulk carriers, the timeframe for implementation and the issue of intellectual property rights.

5.45 The Committee noted that, although there was agreement that Tier I should apply to all ship types, the majority of the group had agreed that the current amendments should only apply to bulk carriers and oil tankers, as no requirements had been developed so far for other ship types; and that the title of the regulation should reflect this limited application which could be

expanded in the future as needed. Some delegations had noted that, since there was agreement on the applicability of Tier I to all ship types, a more general title should be used as it would appropriately extend the applicability of Tier I to all new ships.

5.46 The Committee noted that the group could not reach agreement on an applicability threshold for bulk carriers and had decided to leave the two length limits discussed by the correspondence group, i.e. 90 m and 150 m, in square brackets for the time being. Other thresholds were also proposed. Different views on the issue had been expressed, including the need to align the applicability threshold with the IACS CSR for bulk carriers or with other IMO instruments, in particular SOLAS chapter XII, and the current issue of the definition of “bulk carrier”. It was noted that the group had agreed to a 150 m applicability threshold for oil tankers.

5.47 The Committee noted that the group had preferred the format used in the MARPOL Convention for establishing a phase-in schedule and had subsequently discussed the fact that, since GBS apply to rules, a typical ship phase-in schedule may not be sufficient. The group had agreed that consideration also needed to be given to the time required for classification societies/recognized organizations to develop, modify and phase-in new rules if necessary and have them verified by the Group of Experts once the SOLAS amendments and related guidelines had been adopted and that this issue needed to be further considered after the Tier III verification guidelines had been finalized.

5.48 The Committee noted that the group had agreed that the draft SOLAS amendments should refer to a recognized organization authorized by the Administration instead of a classification society, to maintain consistency with the approach followed in SOLAS.

5.49 The Committee also noted that some delegations had expressed concerns that requiring an SCF to be kept on board and ashore by the Company would necessitate adequate measures to protect the intellectual property contained and had proposed additional text to be incorporated in the draft SOLAS amendments, but that, however, the majority of the group had been of the view that such measures should not be included in the draft SOLAS amendments.

### **Consequential amendments to other IMO instruments**

5.50 The Committee noted that, due to time constraints, the working group had not been able to consider the issue at this time and requested the Secretariat to provide a document on the possible need for amendments to other IMO instruments, following the adoption of the GBS for bulk carriers and oil tankers, for consideration at MSC 84.

### **International goal-based new ship construction standards for bulk carriers and oil tankers**

5.51 The Committee noted that the group had a limited discussion on the draft International goal-based new ship construction standards for bulk carriers and oil tankers (the standards) and the associated draft MSC resolution and had been of the general view that it would not be possible to complete the standards before Tier III had been completed. The Committee also noted that the group did agree that the text of Tier I should be included in the draft SOLAS amendments and only be referenced in the standards. The Committee further noted that the group had also considered the part of the standards containing the Tier II functional requirements and concurred with the modifications as described in the following paragraphs and set out in annex 2 to the report of the group (MSC 83/WP.5).

***Application of the GBS for bulk carriers and oil tankers to ice class rules***

5.52 With regard to the application of the GBS for bulk carriers and oil tankers to ice class rules (MSC 83/5/8), the Committee concurred with the group that, in the long term, the GBS should cover all conditions, including ice class, but that, as a matter of practicality, the current effort to develop GBS for bulk carriers and oil tankers should be limited to unrestricted service and not consider ice class at this time, and that consideration of the matter be deferred to a later point in time as part of the long-term work on GBS.

***Functional requirement on continuous performance monitoring***

5.53 Regarding the inclusion of a new Tier II functional requirement on continuous performance monitoring as proposed by the Pilot Panel (MSC 83/5/1, annex 3), the Committee concurred with the group that the implementation of such a requirement would be beneficial, but that performance monitoring would involve more than just classification society rules and included maintenance, operational considerations and numerous other factors, and would require substantial work to implement. Additionally, the Committee noted that the group could not determine the appropriate method to implement performance monitoring and, therefore, agreed that, in the short term, the concept could be considered by the Pilot Panel as part of the Tier III verification process and, in the long term, as part of the proposal by Sweden (MSC 83/5/5, paragraph 14.5) for systematic assessment of rule performance.

***Functional requirement concerning the acceptable probability of exceedance of the design load for ships' structures***

5.54 The Committee noted that the group had considered a proposal by Argentina and Spain (MSC 83/5/13) concerning the need for a functional requirement related to the probability of exceedance of the design loads and agreed that the Pilot Panel should consider the issue further as part of the second trial verification.

***Modifications to existing Tier II functional requirements***

5.55 The Committee concurred with the modifications to the Tier II functional requirements proposed by the Pilot Panel (MSC 83/5/1, annex 4) and agreed to their inclusion in the revised text of Tier II, as set out in annex 2 to document MSC 83/WP.5.

***Definition of "net scantlings"***

5.56 The Committee noted that the group had extensively considered the issue of application of "net scantlings" as raised by the Pilot Panel (MSC 83/5/1) and relevant amendments to the footnote of functional requirement II.3 (Structural strength) as proposed by IACS (MSC 83/5/12). The majority of the group had been of the view that the footnote proposed by IACS should be used, and had noted, in particular, that the application of a "single" or "pure" net scantling for all structural calculations was too simplistic, lacked flexibility and did not allow for the efficient optimization of structure. Others had felt that the definition of net scantlings as agreed by MSC 82 should be used because it was transparent, simple and easy to apply and monitor.

5.57 The delegation of Greece, having recalled that the existing definition of "net scantling" had been originally proposed by IACS and, following debate in the GBS Working Group, finally agreed in previous meetings of the Committee. Furthermore, in the Pilot Panel which was asked to propose modifications to Tier II, if identified, there had been a view that, in practical terms,

the existing definition was not flexible enough to be used in all structural calculations and should be only used in the local assessment, while others supported the existing definition as agreed at MSC 82 and stated that classification societies had adequate flexibility to adjust loads, safety factors and acceptance criteria and should keep material scantlings away from any adjustments. In the Greek delegation's opinion, the debate had not been extensive enough, as it should be for this important issue, and the pertinent arguments in the group (MSC 83/WP.5, paragraph 16) had not been made on a technical basis but just against the existing clear definition. There were no technical arguments why the definition proposed by the group should be adopted. The delegation stated that the existing definition did not need to be changed because it was simple, transparent, easy to apply and control and, more importantly, facilitated trouble-free operation by giving to the operator a greater margin of safe operation. They were concerned that the proposed new definition would facilitate the ship structure optimization in terms of lightweight of some ships which was definitely against the basic notion of GBS for robust ships. While the delegation understood the point for more flexibility in the rules, they believed that, even with the existing definition, adequate flexibility was provided to adjust loads and safety factors, if properly justified and benchmarked, as stated in the report of the Pilot Panel. They urged that no hasty decision should be made and that the matter, especially the new definition, should, because of its importance, be extensively debated since it merited careful technical consideration in order to also clarify the margins of flexibility and how this definition applied to the rules. They argued that both the new and existing definition, should be left in square brackets so that detailed technical aspects could be presented to clarify the issue. In their view, this important issue merited further consideration until MSC 84, where a final decision should be made on the modification of Tier II.

5.58 While the views of the Greek delegation were supported by several delegations, others, noting that the GBS Working Group had discussed the matter extensively, felt that the Committee should follow the recommendation by the group for an amended definition of the term "net scantlings".

5.59 Following the discussion, the Committee agreed to amend the footnote containing the definition of "net scantlings" in functional requirement II.3 to read as follows:

"The net scantlings should provide the structural strength required to sustain the design loads, assuming the structure is in intact condition and accounting for the steel diminution that could be reasonably expected to occur during the life of the ship due to corrosion and wastage."

5.60 The observer from INTERTANKO stated that, as a matter of principle, they had concerns that ship design practices and ship design criteria which are determinant for the ship's structure, such as "net scantlings", might be agreed for political reasons. The observer urged the Committee to apply engineering practices and experience as best tools for reaching conclusions on such matters.

### **Draft MSC circular on Guidelines for the information to be included in a Ship Construction File (SCF)**

5.61 The Committee noted that the group had an extensive discussion on the draft MSC circular on Guidelines for the information to be included in a Ship Construction File (MSC 83/5/2, annex 3) but could not agree on a final text. Issues discussed had included the absence of measures to safeguard intellectual property rights, the possible need to make the guidelines mandatory, the level of detail required and the correlation between the SCF and the Tier III verification guidelines, and the group had agreed that the draft circular should be further

considered at MSC 85, when the GBS Working Group should finalize the draft SOLAS amendments on GBS for bulk carriers and oil tankers.

5.62 The observer from CESA reiterated the concern of the European shipbuilders that the intellectual property of shipyards is threatened by the GBS process, in particular through the SCF. While the report rightly stated that the absence of measures to safeguard intellectual property rights had been discussed in depth by the group, the observer from CESA was astonished and disappointed that the majority of delegations speaking did not consider intellectual property rights (IPR) to be a subject of significance for IMO. Some delegations had argued that the aim of GBS was the improvement of ship safety and that, therefore, nothing could be kept secret, and as a result the group had decided not to task the Pilot Panel or an appropriate other body with the consideration of IPR aspects although this was evidently part of the functional requirement II.10. The observer was of the view that IPR was not a matter of secrecy or non-disclosure. In fact, high-tech shipyards required transparent instruments and procedures which ensured that the circulation of sensitive data could be controlled and verified and that only authorized institutions had access to it. The observer confirmed that shipyards would provide flag States and their recognized organizations with all necessary documentation to assess the safety-related features of the ship design, encouraging them to check and verify the material carefully to ensure that sub-standard newbuildings from inexperienced shipyards would not enter into service. He pointed out that the best the Committee could do for ship safety and marine environment protection was to promote innovation, but that design transparency without IPR protection was the foremost enemy of innovation and that, if the huge research and development investments of innovative shipyards could not be protected, advanced technology would become a victim of product piracy.

#### **Draft Guidelines for the verification of compliance with GBS**

5.63 The Committee noted that, during the general discussion of the text of the draft Guidelines for the verification of compliance with GBS, part A (Tier III verification process), as prepared by the Pilot Panel (MSC 83/5/2, annex 1), including the set-up of the Group of Experts to carry out the verification, the group:

- .1 concerning whether Tier III should be a detailed verification by the Group of Experts or a self-assessment by the classification society/recognized organization coupled with an audit by the Group of Experts and the associated efficiency and resource implications, had noted that it was premature to take a decision before the completion of the second trial application, and had agreed to include the issue in the terms of reference for the Pilot Panel (see paragraph 5.66);
- .2 concerning the number of members of the Group of Experts, had agreed to defer the decision, pending additional information on the workload involved, following the second trial application. With regard to the voting modus, although the majority of the group had preferred the Group of Experts to achieve a two-third majority when issuing a recommendation, other views were expressed, including the view that, as the Committee was to make the final decision, the Group of Experts should simply report the level of support among its members. It had been agreed to defer the decision until the number of members was decided. The group had also agreed that, in any case, the view of the minority should be fully documented in the report of the Group of Experts;
- .3 had agreed that, although an Administration should initiate the rule review process using a model letter of submission, all technical documentation should be

submitted to IMO directly by the recognized organization applying for verification. Additionally, organizations in the process of applying for recognized organization status should not be precluded from requesting rule verification from the Group of Experts;

- .4 had agreed that the Verification Guidelines should include provisions for a provisional rule approval by the Secretary-General following verification by the Group of Experts, pending ratification by the Maritime Safety Committee in order not to delay such approval due to the meeting schedule of the Committee. Additionally, the group had agreed on the need to establish a separate body, independent of the Group of Experts, to adjudicate appeal requests;
- .5 as a matter of principle, had agreed that the process of maintaining verification should not delay the ability of a recognized organization to develop and implement rule changes, which should be made available to IMO when made. Additionally, the group had agreed that the documentation to be included with annual summaries of rule changes (MSC 83/5/1, annex 1, paragraph 7) should include a rule commentary, giving consideration to the contents proposed in document MSC 83/5/6; and
- .6 had agreed to minor text changes to part A of the Guidelines, including maintenance of verification and independence of the Group of Experts. The group had also agreed on the need to include provisions requiring each member of the Group of Experts to sign a confidentiality agreement and to include an appropriate form as an annex to the Verification Guidelines; however, the contents of such an agreement had not been discussed.

5.64 The Committee noted that the group had discussed in general part B of the draft Guidelines for the verification of compliance with GBS, as prepared by the Pilot Panel (MSC 83/5/2, annex 2), including the appropriate level of detail, possible inclusion of functional requirements in Tier III, potential conflicts between information and documentation requirements and evaluation criteria and flexibility of the evaluation criteria and process, and had agreed that the Pilot Panel needed to refine the Guidelines prior to conducting the second trial application, based on relevant documents submitted to this session, as well as comments made in the working group, and included appropriate terms of reference in the project plan (see paragraph 5.66). The group had further agreed to include detailed comments on part B of the draft Guidelines made by the group in part 2 of this report, to be issued immediately after MSC 83 and taken into account by the Pilot Panel when finalizing the draft Guidelines.

5.65 The Committee noted that the group had brief discussions on the proper location of evaluation criteria for GBS, including the possibility to transfer the criteria to a separate document at a later stage. For easy reference in the further development, the group had agreed to keep the evaluation criteria as currently located.

#### **Project plan for a second trial application of the Guidelines for the verification of compliance with GBS using the IACS CSR for oil tankers**

5.66 The Committee agreed that the second trial application of the Guidelines for the verification of compliance with GBS using the IACS CSR for oil tankers would be necessary in

order to finalize the draft Guidelines and approved the project plan for the second trial application of the Guidelines for the verification of compliance with GBS using the IACS CSR for oil tankers, as set out in annex 4.

#### **SAFETY LEVEL APPROACH**

5.67 The Committee noted that the group had reviewed the report of the Correspondence Group on the Safety Level Approach (SLA) (MSC 83/5/3) and had discussed specific items as requested in the terms of reference. Concerning the categorization of ship types, there had been broad support for the proposal by the Republic of Korea (MSC 83/5/16) to limit the number of ship types to a small number with due consideration given to the definitions and structure contained in the Lloyds Register/Fairplay database, as well as general limitations when considering categorizations, such as length and size. Regarding time windows for assessing statistics, there had been a general discussion concerning the need for a common understanding concerning consistency, delayed effect of regulatory requirements, impact of changes to classification society rules and expertise of individuals typically conducting this type of work.

5.68 The Committee noted that the group had also generally concurred with the discussion by the correspondence group on the linkage between GBS and FSA (MSC 83/5/3, paragraphs 10 and 11) and had noted that the development of a way ahead to more formally link the two items needed further discussion. Regarding the tier structure, the group had noted that several proposals had been made over the last sessions of the Committee and that there was a general need to collate the information and proposals from previous sessions and reach agreement on a way forward. The group had also agreed that terminology used should be based on the Guidelines for formal safety assessment (FSA) for use in the IMO rule-making process (MSC/Circ.1023-MEPC/Circ.392 and MSC 83/INF.2), but might be expanded based on relevant proposals submitted to previous Committee sessions.

5.69 The Committee noted that the group had agreed on the importance of good statistical data to support analysis and assessment but was of the view that it would be premature to make a recommendation on the proposal by Germany (MSC 83/5/10) to develop a more reliable database under the auspices of IMO.

#### **OCCUPATIONAL HEALTH AND SAFETY OF SEAFARERS**

5.70 The Committee noted that the group had discussed a proposal by Denmark (MSC 83/5/7) and a relevant referral from MEPC 56 (MSC 83/16) to include a high-level goal on occupational health and safety of seafarers in GBS. The group had generally supported the proposal and had agreed that occupational health and safety of seafarers, as well as ergonomic design principles, should be included in the long-term plan for the development of GBS. Additionally, the group had agreed that occupational health and safety of seafarers and ergonomic design could be more fully incorporated into Tiers I and II of the GBS for bulk carriers and oil tankers. The Committee agreed to the revised text of functional requirement II.9 (Human element considerations) as shown in annex 2 to the report of the group (MSC 83/WP.5) and that the Pilot Panel should include evaluation criteria for ship structural design and arrangements as part of evaluation criterion III.9.c of the draft Verification Guidelines.

5.71 The Committee agreed to also amend .3 of the Tier I goals (see paragraph 3.3 of annex 1 to the report of the group (MSC 83/WP.5)), accordingly, as follows:

- “3 Safety also includes the ship’s structure, fittings and arrangements providing for safe access, escape, inspection and proper maintenance and facilitating safe operation.”

5.72 The observer from ITF stated that they appreciated the work of the group, however, they were of the view that the revised text of functional requirement II.9 (Human element considerations) as prepared by the group should be reconsidered in order to better reflect the need for improvements in the working and living conditions of seafarers.

#### **DEVELOPMENT OF A WORK PLAN FOR GOAL-BASED STANDARDS**

5.73 The Committee noted that the group had considered the development of a work plan for goal-based standards, including any financial ramifications for the IMO budget, based on the proposals in documents MSC 83/5/5, MSC 83/5/6 and MSC 83/5/10 and had had an extensive discussion on the need for a generic GBS work plan as proposed by Sweden (MSC 83/5/5), as well as the need to more efficiently co-ordinate the development of GBS for bulk carriers and oil tankers and the safety level approach in the short term. The group had generally agreed that it was necessary to establish a generic framework for GBS development; however, it had also agreed that such an effort should not be to the detriment of ongoing GBS development efforts.

5.74 Consequently, the Committee agreed to the following work plan for the development of GBS, bearing in mind that both the prescriptive and the safety level approach should move forward as integral elements of IMO GBS:

- .1 clarification of the work to be done to develop a generic GBS framework based on documents MSC 83/5/5, MSC 82/5/8 and other related documents;
- .2 identification and compilation of the elements of the framework that have already been agreed to or proposed in previous MSC submissions, working group reports or other IMO instruments (e.g., FSA Guidelines, HEAP process guidelines) and identification of existing gaps; and
- .3 development of a prioritized plan to close the gaps and provide a unified framework that ensures consistent development of GBS, i.e. both the prescriptive and safety level approaches.

5.75 Regarding short-term efforts, the Committee agreed that it would be more effective to focus efforts at MSC 84 on the unified GBS framework and SLA and at MSC 85 on finalization of the GBS for bulk carriers and oil tankers, including Tier III and the associated SOLAS amendments. This would also give the Pilot Panel sufficient time to conduct the second trial application. Subsequently, the Committee agreed to the following short-term plan for the continuation of the work on GBS:

- .1 ***Intersessional period between MSC 83 and MSC 84:***  
GBS Correspondence Group develops unified GBS framework.  
Pilot Panel refines Tier III of GBS for bulk carriers and oil tankers.
- .2 ***MSC 84:***  
Dedicated session to finalize unified GBS framework and continue development of SLA.



- .3 ***Intersessional period between MSC 84 and MSC 85:***  
GBS Correspondence Group continues development of GBS and other activities as per work plan.  
Pilot Panel conducts trial application.
- .4 ***MSC 85:***  
Dedicated session to finalize and approve Tiers I to III of GBS for bulk carriers and oil tankers and finalize and approve associated SOLAS amendments.
- .5 ***Intersessional period between MSC 85 and MSC 86:***  
GBS Correspondence Group continues development of GBS and other activities as per work plan.
- .6 ***MSC 86:***  
Adoption of SOLAS amendments and associated guidelines for GBS for bulk carriers and oil tankers.  
Implementation of work plan and continued development of GBS.

5.76 The Committee noted that the group had considered a proposal by the Netherlands (MSC 83/5/6) to record background information when a new regulation is adopted, noting that the information was already submitted to support new work programme item requests but was not necessarily retained for future use, and had recommended that relevant information, *e.g.*, information submitted to support new work programme item requests, be further considered for inclusion, at an appropriate place, as a commentary; and that the introduction of functional requirements throughout all chapters of SOLAS should be considered.

#### **TERMS OF REFERENCE FOR THE CORRESPONDENCE GROUP**

5.77 The Committee agreed to establish a GBS Correspondence Group, under the co-ordination of Germany\*, with the following terms of reference:

- .1 clarify the work to be done to develop a generic GBS framework based on documents MSC 83/5/5, MSC 82/5/8 and other related documents;
- .2 identify and compile the elements of the framework that have already been agreed to or proposed in previous MSC submissions, working group reports or other IMO instruments (*e.g.*, FSA Guidelines, HEAP process guidelines) and identify the existing gaps;
- .3 develop a prioritized plan to close the gaps and provide a unified framework that ensures consistent development of GBS, *i.e.* both the prescriptive and safety level approaches; and
- .4 submit a report to MSC 84.

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## **6 LRIT-RELATED MATTERS**

### **General**

6.1 The Committee recognized that, in order to bring the LRIT system into operation on 30 December 2008, it must take decisions with respect to all issues which have a bearing on the establishment and operation of the:

- .1 International LRIT Data Centre (IDC); and
- .2 International LRIT Data Exchange (IDE).

In addition, the Committee also recognized the need to approve the agreement to be concluded between all SOLAS Contracting Governments (Contracting Governments) and the LRIT Co-ordinator in relation to the tasks to be entrusted to the LRIT Co-ordinator.

6.2 The Committee noted that as the actual establishment and integration of almost all elements of the LRIT system would start after MSC 83, it would need to decide how matters relating to the technical aspects and the developmental testing of the various elements of the LRIT system would be handled during the period between MSC 83 and MSC 84.

6.3 The Committee further noted that, in order to have constructive discussions, there was a need to have a clear understanding as to the plans of Contracting Governments in relation to:

- .1 the establishment of National (NDCs), Regional (RDCs) and Co-operative LRIT Data Centres (CDCs); and
- .2 the volume of LRIT information they contemplated to request.

6.4 The Committee noted that, in order to have focused discussions, it must have a clear understanding of the financial aspects and implications of proposals which had been put forward in relation to the establishment and operation of IDC and IDE and those who had put forward such proposals would be asked, if need be, to provide additional information.

6.5 The Committee agreed that all issues of principle should be tabled in plenary to enable it to instruct the Working Group on LRIT matters to be established accordingly. The Committee agreed to consider only issues of principle in plenary and take the necessary decisions before referring matters to the working group.

6.6 The Committee also agreed to consider the various matters in the following order:

- .1 general comments;
- .2 intentions of Contracting Governments;
- .3 date of implementation of the LRIT system;
- .4 use of LRIT information for safety and environmental protection purposes;
- .5 transmission of LRIT information when a ship is laid-up or is undergoing repairs;
- .6 outcome of the intersessional working group, including:

- .1 financial aspects relating to the establishment and sustained and viable operation of the LRIT system, other than matters relating to the tasks of the LRIT Co-ordinator;
- .2 aspects related to the evaluation of proposals for the establishment of IDC and IDE;
- .3 determination of additional milestones relating to the establishment of the LRIT system;
- .4 arrangements to be made for the period between MSC 83 and MSC 84;
- .5 issues relating to the tasks of the LRIT Co-ordinator;
- .6 development of models of the various agreements needed; and
- .7 other actions requested by the intersessional working group;
- .7 outcome of the *Ad hoc* Working Group on Engineering Aspects of LRIT;
- .8 outcome of COMSAR 11; and
- .9 the establishment of IDC and IDE, including:
  - .1 matters of principle relating to the establishment and operation of IDC and IDE;
  - .2 proposal for the establishment and operation of IDC and IDE; and
  - .3 contingency offers in relation to the establishment and operation of IDC and IDE.

6.7 The Committee considered documents MSC 83/6/Add.1, MSC 83/6/14 and MSC 83/WP.9 (Secretariat), MSC 83/6/1 (*ad hoc* engineering group), MSC 83/6/2 (intersessional working group), MSC 83/6/3, MSC 83/6/4 and MSC 83/6/5 (United States), MSC 83/6/6 (Marshall Islands), MSC 83/6/7, MSC 83/6/11, MSC 83/6/13 (IMSO), MSC 83/6/8 and MSC 83/6/9 (Islamic Republic of Iran), MSC 83/6/10 (Austria *et al*), MSC 83/6/12 (Russian Federation), MSC 83/6/15 (Canada), MSC 83/6/16 (India) and MSC 83/6/17 (Greece).

### **General comments**

6.8 The delegation of Japan emphasized the importance for the timely establishment of the LRIT system but expressed its concern that there was a possibility that current uncertainties mainly on cost and billing options might cause a delay in the national preparations process of the Contracting Governments.

### **Intentions of Contracting Governments**

6.9 The Committee recalled that MSC 81, when adopting the 2006 SOLAS (chapter V) amendments on LRIT (resolution MSC.202(81)), also adopted resolution MSC.211(81) on Arrangements for the timely establishment of the LRIT system which, *inter alia*:

- .1 invited Contracting Governments to advise MSC 82 of their firm intentions in relation to the establishment of NDCs, RDCs and CDCs (operative paragraph 1 of the resolution); and
- .2 recommended that Contracting Governments take early appropriate actions to ensure that all necessary infrastructures are in place, timely, for the establishment of the LRIT system (operative paragraph 10 of the resolution).

6.10 The Committee noted that COMSAR 11 had, taking into account the fact that those contemplating to put forward proposals in relation to the establishment and operation of IDC and IDE needed to have a clear understanding of the volume of LRIT information IDC and IDE were expected to handle, in association with the demand for the provision of LRIT information to Contracting Governments pursuant to the provisions of SOLAS regulation V/19-1.8.1, requested, once more, Contracting Governments to provide for consideration by the intersessional working group, *inter alia*:

- .1 the approximate volume of LRIT information packages that they are likely to request in a particular period (COMSAR 11/18, paragraph 14.36); and
- .2 their firm intentions in relation to the establishment of NDCs, RDCs and CDCs (COMSAR 11/18, paragraph 14.37).

6.11 The Committee also noted that the intersessional working group, noting the very limited response to resolution MSC.211(81) and to the request of COMSAR 11, had agreed that it was imperative that each Contracting Government should provide to MSC 83 its firm and definite intentions with respect to:

- .1 requesting the provision of LRIT information, to indicate if they would be doing so as a flag, port or coastal State (the terms flag State, port State and coastal State being used for simplicity and refer to the cases when a Contracting Government is requesting LRIT information pursuant to the provisions of regulation V/19-1.8.1.1, regulation V/19-1.8.1.2 and regulation V/19-1.8.1.3, respectively) and in the latter case to specify the distance off its coast within which it would be requesting such information;
- .2 the estimated number of LRIT information packages to be requested in any 24-hour period or the estimated number of ships (as a flag, port and coastal State) to be tracked in any 24-hour period; and
- .3 establishing an NDC, RDC or CDC or using the services to be provided by IDC,

and concluded that, without such information, the Committee would be unable to take any decisions in connection with the financial aspects which have a bearing on the establishment of the LRIT system and, in particular, with respect to IDC and IDE.

6.12 The United States (MSC 83/6/4) advised that they would be requesting the provision of LRIT information in all cases foreseen in regulation V/19-1.8.1 (*i.e.*, as a flag, port and coastal State) and it had been estimated that approximately 3,000 ships would be tracked in any 24-hour period, 450 of which were ships entitled to fly the flag of the United States. They indicated that as a coastal State they would be seeking LRIT information transmitted by ships operating within 1,000 nautical miles off its coast. They also indicated that they were planning to establish an NDC to be located at the United States Coast Guard Operations Systems Centre in

Kearneysville, West Virginia. In addition, the United States stated that they had not yet been formally approached by any other Contracting Governments regarding participation in an RDC or CDC and advised that any decision on such a request would be considered on an individual basis.

6.13 Canada (MSC 83/6/15) advised that it would be requesting the provision of LRIT information in all cases foreseen in regulation V/19-1.8.1 and it had been estimated that approximately 1,000 ships would be tracked in any 24-hour period; indicated that each 24-hour period 60 ships entitled to fly its flag and 140 ships proceeding to its ports would be tracked at 6-hour intervals; also indicated that as a coastal State it would be seeking LRIT information transmitted by ships operating within 1,000 nautical miles off its coast and it has been estimated that 800 ships navigating off the coast of Canada would be tracked at 12-hour intervals; and stated that it was planning to establish an NDC.

6.14 The Committee noted that India (MSC 83/6/16) would be requesting the provision of LRIT information in all cases foreseen in regulation V/19-1.8.1 and it had been estimated that approximately 1,000 ships would be tracked in any 24-hour period; indicated that each 24-hour period 300 ships entitled to fly its flag and 700 ships proceeding to its ports or navigating within a distance of 1,000 nautical miles would be tracked at 6-hour intervals; and informed that it was planning to establish an NDC which may be expanded to an RDC depending on further discussions with States in its region.

6.15 The Russian Federation (MSC 83/6/12, paragraphs 1 to 4 and 9.1) advised that it planned to establish a NDC based on the existing national vessel monitoring system "Victoria". The Russian Federation stated that at this stage it had no information on the number of ships proceeding to ports or places under the jurisdiction of the Russian Federation or on the number of ships navigating in waters off the coast of the Russian Federation which would be tracked. The Russian NDC would process LRIT information transmitted by ships flying the flag of the Russian Federation and other flags, if they wished. In addition, the Russian NDC would also support LRIT data exchange procedures. The Russian Federation also advised that it was ready to provide facilities for a back-up IDE.

6.16 The Committee noted that Australia had already provided salient information during the intersessional working group which is found in document MSC/ISWG/LRIT 2/3/1.

6.17 The Committee considered documents MSC 83/6/14 and MSC 83/WP.9 by the Secretariat. The purpose of document MSC 83/6/14 was to provide a questionnaire which Contracting Governments were asked to complete and return to the Secretariat as soon as possible; whilst document MSC 83/WP.9 summarized in a tabular matrix format the responses received by the Secretariat until the close of business on 1 October 2007.

6.18 The Committee noted, in particular, that MSC 83/WP.9 provided a summary of responses to the questionnaire on LRIT-related matters received from 22 Contracting Governments representing approximately just over 13% of the total number of Contracting Governments. One Contracting Government had indicated that it wished to use IDC. A group of Contracting Governments appeared to be contemplating the establishment of one RDC. A number of Contracting Governments were planning to establish their own NDCs. Two of those planning to establish NDCs had indicated that they were prepared to provide their services to other Contracting Governments.

6.19 The delegation of Ukraine stated that it fully supported the establishment of an IDC and IDE and was in the process of completing the development of an NDC which might be available for use by other Contracting Governments in the Black Sea region.

6.20 The delegation of Portugal advised that the Council of the European Union, during its 2821st meeting in Luxembourg on 1 and 2 October 2007, has agreed to the setting-up of a European Union Long Range Identification and Tracking Data Centre (EU LRIT DC) and has underlined that the EU LRIT DC would also benefit from the participation of Norway and Iceland.

6.21 The Chairman, noting the very limited response to the questionnaire set out in the annex to document MSC 83/6/14, advised that, at this stage, there was no other alternative to asking each Contracting Government attending the current session to provide a clear indication on its plans and firm intentions by completing and handing in, if it had not already done so, the response to the questionnaire.

### **Date of implementation of the LRIT system**

6.22 The Committee considered the proposal by the Islamic Republic of Iran (MSC 83/6/8) to extend the implementation date of the LRIT system to 2010. In support of its proposal the Islamic Republic of Iran made reference to a number of problems which might be encountered with shipborne equipment. In addition, they pointed out that the provisions of the information were time-consuming and any related errors would have an impact on the correct and efficient functioning of the LRIT system.

6.23 The Chairman recalled that the 2006 SOLAS amendments had been unanimously adopted at MSC 81 by 97 Contracting Governments and advised that SOLAS regulation V/19-1 did not include any enabling provisions which the Committee might invoke for extending the date of implementation.

6.24 The delegation of China, whilst noting that good progress had been made in relation to the establishment of the LRIT system, pointed out that there were still a number of technical issues that needed to be resolved and, in view of other uncertainties, suggested that it favoured postponing the implementation of the LRIT system to 31 December 2010.

6.25 The other Contracting Governments who spoke on this particular issue stated that they did not support the postponement of the implementation of the LRIT system and indicated that the Committee should seek to resolve all pending matters in order to ensure the timely establishment of the LRIT system.

6.26 As a result, the Committee agreed not to consider further the proposal of the Islamic Republic of Iran.

### **Use of LRIT information for safety and environmental protection purposes**

6.27 The Committee considered the proposal by Austria *et al* (MSC 83/6/10) inviting it to agree that Contracting Governments should be able to request, receive and use LRIT information for maritime safety and marine environment protection purposes. Austria *et al* stated that they were not proposing any amendments to SOLAS regulation V/19-1; and that the LRIT information specified in regulation V/19-1.5 was adequate for use for maritime safety and marine environment protection purposes and would provide a significant added value for such objectives. In addition, they advised that, in their view, the demand for LRIT information would

increase significantly if Contracting Governments were able to receive and use such information for maritime safety and marine environment protection purposes and this, in its turn, would contribute to ensuring the financial viability and sustainability of the LRIT system. They also proposed that, in case the Committee was to take such a decision, it should invite the MEPC to note its decision and, if necessary take any related decisions within issues under its purview, as it may deem appropriate.

6.28 The Committee recalled, in this context, that MSC 79 had agreed that the purpose and scope of LRIT should be extended ultimately to include safety and environmental protection applications. However, before being able to embark on the detailed technical consideration of the extension of LRIT it would be necessary for the Committee to define the safety applications and for the MEPC to define the environmental protection applications for which LRIT would be used.

6.29 A considerable number of Contracting Governments supported allowing the use of LRIT information for safety and environmental purposes. However, one Contracting Government, whilst agreeing that ultimately the LRIT system should have safety and environmental applications, stated that it was premature, at this stage, to consider altering the current LRIT information package. In addition, one Contracting Government stated that it had a number of concerns and pointed out that the use of LRIT information for safety and environmental purposes should be consistent with the provisions of regulation V/19-1 and the provisions of international law and, in particular, the United Nations Convention on the Law of the Sea.

6.30 The Committee agreed that Contracting Governments might be able to request, receive and use LRIT information about ships, in accordance with regulation V/19-1, for safety and marine environment protection purposes and invited the MEPC to note this decision.

6.31 The Committee also instructed the working group to prepare a draft MSC resolution allowing the use of LRIT information for safety and marine environment protection purposes.

### **Transmission of LRIT information when a ship is laid up or is undergoing repairs**

6.32 The Committee considered document MSC 83/6/17 (Greece) proposing that, when a ship was undergoing repairs in port or dry-dock or when a ship was laid up, the master of the ship should be allowed to switch off the shipborne equipment transmitting LRIT information. Greece also proposed that, in such cases, the master should inform the flag State accordingly and should make a relevant entry in the ships log-book. In addition, the LRIT Data Centre to which the ship was transmitting LRIT information should keep the last information transmitted by the ship until the master had reactivated the shipborne equipment before the departure of the ship or its shifting to any other location. Greece pointed out that such an approach would reduce the number of unwanted LRIT information packages and also avoid an unnecessary burden on LRIT Data Centres with the attendant financial consequences.

6.33 A considerable number of Contracting Governments supported the principle that ships undergoing repairs in port or dry-dock and ships which are laid up should not be required to transmit LRIT information. However, a number of Contracting Governments suggested that before switching off the shipborne LRIT equipment the permission of both the flag and port State should be obtained and some stated that an appropriate entry should also be made in the record of navigation activities and incidents maintained, in accordance with SOLAS regulation V/28. One Contracting Government, whilst supporting the switching off of the shipborne LRIT equipment stated that it was not in favour of requiring the explicit permission of the Administration in each individual case.

6.34 Accordingly, the Committee, with a view to minimizing the transmission of unnecessary LRIT information, instructed the working group to recommend the approach to be taken in relation to the transmission of LRIT information by ships undergoing repairs in port or in dry-dock and by ships which are laid up; prepare and submit for consideration with a view to adoption any needed consequential amendments to the Performance standards and functional requirements for the long-range identification and tracking of ships, adopted by resolution MSC.210(81); and incorporate any needed changes to the draft technical specification and standards developed by the *ad hoc* engineering group.

## **Outcome of Intersessional MSC Working Group on Long-Range Identification and Tracking**

### ***Introduction***

6.35 The Committee recalled that MSC 82 had approved the convening of an intersessional MSC working group and instructed it, in essence, to consider all issues (other than those related to engineering) which had a bearing on the timely establishment of the LRIT system.

6.36 In considering the report of the intersessional working group (MSC 86/3/2), the Committee approved the report in general, noted that the report had set out thirty-four points on which it had been requested to take action and agreed only to address a selected number of key issues where it was necessary to have a debate in plenary before referring matters to the working group for further consideration. For the rest of the actions requested, it decided, once it had agreed matters in principle, to refer them to the working group for the necessary development, as appropriate.

### ***Financial aspects relating to the establishment and sustained and viable operation of the LRIT system, other than matters relating to the tasks of the LRIT Co-ordinator***

6.37 The Committee considered paragraph 142.1 of document MSC 83/6/2 relating to the approach to be taken with a view to ensuring the timely establishment of the LRIT system on a sustained and viable financial basis.

6.38 The United States (MSC 83/6/5) presented its view on the vital question of ensuring that the LRIT system survived the start-up and was available to all Contracting Governments, so that all enjoyed the benefits that the system was designed to serve and advised that if the system was not built on a sound economic footing, it would cease to be used and would sooner or later cease to exist. The United States recalled that the LRIT system was always envisioned as an international system to be available to all Contracting Governments on a non-discriminatory, fair and economically sustainable basis. All Contracting Governments had an obligation to ensure that the LRIT system was sustainable. None of the Contracting Governments should be called upon to bear a disproportionate share of the costs. The United States did not expect any other Contracting Government to pay a disproportionate and unfair amount of the costs of the LRIT system in order to subsidize its non-use.

6.39 The Committee noted that those establishing NDCs, RDCs and CDCs were responsible for the expenditure associated with the initial establishment and the operation and running of the DCs they would be establishing. The report of the intersessional working group also made it clear that the start-up of IDC and IDE needed to be funded. SOLAS regulation V/19-1.11.1 stated that "Contracting Governments shall bear all costs associated with any LRIT information they request and receive". However, Contracting Governments would be able to receive and pay for LRIT information provided the related data arrived at the DCs and the IDE was operational.



For LRIT information to arrive at IDCs, there was a cost involved and the private entities which would be providing services as communication and application service providers needed to be paid.

6.40 A number of Contracting Governments shared the views of the United States, in particular, that the LRIT system should be available to all Contracting Governments on a non-discriminatory, fair and economically sustainable basis and that the system should be established on a sound financial basis so as to ensure its long-term viability and sustainability. A Contracting Government stated that as a minimum, the Committee should make the required decisions in relation to the establishment and operation of IDE in view of the critical function and pivotal role of IDE in the establishment of the LRIT system. Another Contracting Government was of the opinion that the burden for the funding of the establishment of the LRIT system should not fall exclusively on flag States alone and that there should be a fair distribution of the costs involved amongst all Contracting Governments in their capacity as flag, port and coastal States. Furthermore, a Contracting Government also pointed out that regulation V/19-1 allowed, subject to the provisions of the national legislation of the Contracting Government concerned, to recover the cost of LRIT information from ships entitled to fly its flag.

6.41 The Committee referred the matter to the working group for further consideration and instructed it to recommend the approach to be taken for ensuring the timely establishment of the LRIT system on a sustainable and viable financial basis and to prepare and submit for consideration with a view to adoption any needed consequential amendments to the Performance standards.

#### ***Aspects related to the evaluation of proposals for the establishment of IDC and IDE***

6.42 The Committee noted the discussions in relation to the evaluation by IMSO of proposals for the establishment, operation and maintenance of IDC and/or IDE (paragraph 142.15 of document MSC 83/6/2) and concurred with the agreed approach.

#### ***Determination of additional milestones relating to the establishment of the LRIT system***

6.43 Having considered paragraph 142.25 of document MSC 83/6/2, the Committee accepted the need for the establishment of additional milestones to be observed in relation to the establishment of the LRIT system, taking into account the target dates stipulated in resolution MSC.211(81) and the recommendation set out in paragraphs 91 to 94 of the document.

6.44 The Committee referred the matter to the working group for further consideration and instructed it to review and, if need be, refine, taking into account the target dates stipulated in resolution MSC.211(81), the additional milestones to be observed in relation to the establishment of the LRIT system proposed by the intersessional working group and to recommend the date(s) to be associated with each of the milestones.

#### ***Arrangements to be made for the period between MSC 83 and MSC 84***

6.45 Having considered paragraph 142.30 of document MSC 83/6/2, the Committee accepted the need for the establishment of arrangements for the period between MSC 83 and MSC 84 with a view to ensuring the timely establishment of the LRIT system and the recommendations set out in paragraphs 109 to 116 of the document.

6.46 The Committee referred the matter to the working group for further consideration and instructed it to review and, if need be, refine the recommendations of intersessional working group in relation to arrangements to be made for the period between MSC 83 and MSC 84 with a view to ensuring the timely establishment of the LRIT system and prepare and submit for consideration with a view to adoption of draft(s) proposed decision(s).

***Issues relating to the tasks of the LRIT Co-ordinator with respect to the initial establishment and the performance review and audit of the LRIT system***

6.47 The Committee considered paragraph 142.31 of document MSC 83/6/2, in particular, the discussion in relation to issues relating to the LRIT Co-ordinator and on the approach to be taken as set out in paragraphs 118 to 128 of the document.

6.48 IMSO (MSC 83/6/7 and MSC 83/6/13) advised that the IMSO Assembly, at its nineteenth (Extraordinary) session which was held in London in March 2007, was informed of the decision of MSC 82 to appoint IMSO as the LRIT Co-ordinator, and decided that IMSO might assume the functions and duties of the LRIT Co-ordinator with effect from 7 March 2007, at no cost to IMSO Parties, in accordance with decisions of the Organization, where article 4 of the amended IMSO Convention would be applied on a provisional basis.

IMSO provided an overview of the budget estimates which it needed to undertake the various tasks of the LRIT Co-ordinator envisaged in section 14 of the Performance standards and provided information on the accounting procedures to be followed, the contemplated organizational structure, the resulting staff needs, the associated programme of recruitment and its needs and plans with respect to office accommodation.

IMSO stated that it would levy a range of charges for providing its services and would need to establish a formal basis for performance review, audit, charging, resolution of disputes, etc. This would be carried out through a legally binding public/civil contract called the IMSO LRIT Public Service Contract. IDE, all DCs, and those application service providers (ASPs) providing services to IDC would be required to sign an LRIT Public Service Contract with IMSO which was under development similar to the Public Services Agreement presently in use to establish the basis for oversight of GMDSS satellite operators.

IMSO advised that the current estimates indicated that for the period from 2007 to 2010, in order to perform the tasks of the LRIT Co-ordinator, it would incur expenditure of the order of GBP 2,505,000 against estimated revenue of the order of GBP 876,960. As a result, IMSO had calculated that it would require start-up funding of GBP 1,445,150, distributed over the period. For each year during the period from 2007 to 2010, the start-up capital had been assessed to be GBP 314,000, GBP 671,000, GBP 424,325 and GBP 35,825 respectively. However, as the actual involvement of IMSO as LRIT Co-ordinator was behind the schedule envisaged when preparing the two submissions and details of its involvement were subject to a number of decisions which the Committee was to take during its current session, the budget estimates would need to be adjusted and most probably would result in lesser final figures than those quoted in the submissions.

Since MSC 82, IMSO had actively solicited the provision of the start-up funding needed and had so far received promises of funding in cash or kind amounting to no more than GBP 10,000 in total. So far no significant source for start-up funding had been identified and the development could prejudice the ability of IMSO to fulfil its functions as LRIT Co-ordinator.

IMSO provided an overview of the charging policies it was contemplating to adopt when providing services as LRIT Co-ordinator and advised that, as an intergovernmental organization, it was not authorized by the IMSO Parties to incur any level of debt and, because of the way it was funded entirely from contributions paid by those it oversaw, did not have any money reserves. IMSO stated that it must therefore adopt terms of business that did not allow any credit on the part of those who were liable to pay IMSO for services within the LRIT system. IMSO would therefore insist that all fees and other payments for which LRIT system elements would become liable were paid in full before any service was provided.

IMSO also stated that it was in touch with various potential ASPs and data centre providers in the industry and Contracting Governments, and had begun to develop procedures for undertaking the various tasks of the LRIT Co-ordinator. However, it was too early to provide specific details as to the procedures to be employed, given the fact that no specifics yet existed for the design and implementation of the various elements of the LRIT system. IMSO advised that it was already working with potential providers to ensure that they were aware of the requirements and thus they were making preparations to fulfil them. IMSO planned, in due course, to develop guidance on what was expected and how such data should be made available for performance review and audit.

Once the LRIT system was in operation, IMSO anticipated reporting to the Committee on an annual basis, as was currently the practice for GMDSS services. However, during the start-up period until 2010, it was expected that reports would be made more frequently to each session of the Committee.

6.49 The Committee noted the information provided by IMSO and referred the matter to the working group for further consideration. In particular, it further instructed the working group to consider all issues relating to the performance by IMSO of the functions of the LRIT Co-ordinator and recommend the approach to be taken.

#### ***Development of models of the various agreements needed***

6.50 The Committee considered paragraph 142.32 of document MSC 83/6/2, in particular, and noted the discussion in relation to the development of the models of the various agreements needed for the establishment of the LRIT system.

6.51 The Committee referred the matter to the working group for further consideration and instructed it to consider all issues relating to the models of the various agreements needed for the establishment of the LRIT system and recommend the approach to be taken.

#### ***Other actions requested by the intersessional working group***

6.52 The Committee agreed, in principle, to the other actions requested by the intersessional working group and referred them to the working group for further consideration.

6.53 The Committee further agreed that the various decisions of the Committee relating to LRIT matters, other than those which would be adopted as amendments to the Performance standards or the technical specifications, should be consolidated and codified in an appropriate format as an MSC resolution or MSC circular, depending on their nature, so as to enable easy identification and reference.

6.54 The Committee instructed the working group to:

- .1 codify and consolidate the issues involved in an appropriate format so as to enable easy identification and reference and prepare and submit, for consideration with a view to adoption or approval, the relevant document;
- .2 prepare and submit for consideration with a view to adoption any needed consequential amendments to the Performance standards; and
- .3 incorporate any needed changes to the draft technical specification and standards developed by the *ad hoc* engineering group.

### **Outcome of the *Ad hoc* Working Group on Engineering Aspects of LRIT**

6.55 The Committee recalled that MSC 82 had re-established the *ad hoc* engineering group and instructed it to deal with a number of engineering issues and technical specifications following the work the group had submitted for consideration during MSC 82.

6.56 The Committee considered the report of the *ad hoc* engineering group (MSC 83/6/1) and, having approved the report in general, noted that a number of its recommendations had been overtaken by earlier decisions of the Committee when considering the report of the intersessional working group. In particular, the Committee noted that the Criteria for the location of IDC and IDE, set out in paragraphs 14 to 17 of the report, section 6 of annex 5 on draft Protocols for the development testing of the LRIT system and for testing the integration into the system of new LRIT Data Centres; and annex 7 on Key policy decisions required of the Committee, therefore, need not be considered.

6.57 The Committee also noted that annexes 1 to 5 to document MSC 83/6/1 required extensive editorial review and amendment before they could be considered as meeting standards, style and practices of the Organization in relation to performance standards and technical specifications.

6.58 The Committee referred:

- .1 the draft Technical specification for the International LRIT Data Exchange (MSC 83/6/1, annex 1);
- .2 draft Technical specification for the International LRIT Data Centre (MSC 83/6/1, annex 2);
- .3 draft Technical specification for communications within the LRIT system network (MSC 83/6/1, annex 3);
- .4 draft Technical costing and billing standard (MSC 83/6/1, annex 4); and
- .5 draft Protocols for the development testing of the LRIT system and for testing the integration into the system of new LRIT data centres (MSC 83/6/1, annex 5),

to the working group for further consideration and instructed it to finalize and submit them for consideration with a view to approval. In this respect, the Committee, noting that in view of the work done by the intersessional working group and, as a result of its related decisions, the draft Technical costing and billing standard prepared by the *ad hoc* engineering group had been overtaken by events, agreed that the working group should use, as the basis for its work, a draft prepared by Canada.

6.59 In addition, the Committee instructed the working group to consider and advise the Committee as to when and how the technical specifications and standards developed by the *ad hoc* engineering group should be integrated in the Performance standards.

6.60 The Committee, in view of the work done by the Secretariat on the LRIT Data Distribution Plan, agreed that the action requested in paragraph 23.1.6 of document MSC 83/6/1, in relation to the draft Guidance on setting up and maintaining the LRIT Data Distribution Plan, set out in annex 6 to MSC 83/6/1, need not be considered as it had been overtaken by developments.

6.61 As a result, the Committee did not take any action as requested in paragraphs 23.1.7, 23.2 and 23.3 of document MSC 83/6/1 as they had been overtaken by developments.

6.62 The Russian Federation (MSC 83/6/12, paragraphs 6 to 8 and 9.2), considering that the LRIT network may consist of a number of LRIT Data Centres developed by different manufacturers, suggested that it would be logical to use a “step-by-step” approach in the practical establishment of the LRIT network and use IDE as a base element for prescribing the network communication protocols. Such a “step-by-step” approach should have as its target the establishment of a network which was compliant with the technical standard adopted by the Committee and would allow to add practically demanded features and delete practically not used or not executable ones. The Russian Federation also recalled that it had offered, when introducing part of the document earlier on, to provide facilities for a back-up IDE.

6.63 The Committee referred the proposals of the Russian Federation (MSC 83/6/12, paragraphs 3 to 8 and 9.2) to the working group for further consideration and instructed it, bearing in mind that the IDE was an essential element of the LRIT system, to advise on the approach to be taken.

### **Outcome of COMSAR 11**

6.64 The Committee recalled that MSC 82 had instructed COMSAR 11 to consider a number LRIT related matters and noted that COMSAR 11 subsequently had invited the Committee to note the the outcome of its discussions with respect to the establishment of the LRIT system, especially in the context of matters pertaining to draft agreements and billing and costing issues, as set out in its report (COMSAR 11/18, paragraphs 14.25 to 14.42 and annexes 18 and 19).

6.65 The Committee further noted that, following the consideration of the actions requested by the *ad hoc* engineering group and the intersessional working group, the actions requested by COMSAR 11 had been overtaken by events and no specific action was therefore required beyond noting that COMSAR 11, within the constraint of the submissions it had before it, dealt with the tasks it had been asked to undertake.

### **The establishment of IDC and IDE**

#### ***Matters of principle relating to the establishment and operation of IDC and IDE***

6.66 The Islamic Republic of Iran (MSC 83/6/9), taking into account the importance and the special position of IDC and IDE in the LRIT system and the necessity to ensure the security of LRIT information, suggested that IDE and IDC should be operated and maintained by an international group or agency rather than a specific State.

6.67 One of the Contracting Governments expressed the view that whoever was to establish and operate IDC and IDE had to comply fully with all the requirements established by the Committee and needed to ensure adequate physical security arrangements, confidentiality and protection of the data from unauthorized access or disclosure and thus, under such circumstances, the matter as to who would establish or operate IDC and IDE was not of importance. Another Contracting Government pointed out that, at this stage of the development of the LRIT system, the Committee had to stay within the framework of what had been agreed thus far and should not seek to explore new avenues or options, as they could seriously frustrate the timely establishment of the LRIT system.

6.68 As a result, the Committee agreed not to consider further the proposal of the Islamic Republic of Iran.

***Proposal for the establishment and operation of IDC and IDE***

6.69 The Committee noted the information provided in document MSC 83/6/Add.1 (Secretariat), which the Secretariat, in the absence of specific decisions of the Committee and following consultations with the acting Chairman of the Committee, had to develop to advise on a procedure to be followed in relation to the submission and evaluation of proposals for the establishment, operation and maintenance of IDC and IDE.

6.70 The Marshall Islands (MSC 83/6/6), acting as a conduit, brought to the attention of the Committee a proposal of an LRIT Consortium (the Consortium) consisting of Pole Star Space Applications Limited (a legal entity incorporated in the United Kingdom), GateHouse A/S (a legal entity incorporated in Denmark) and Wallem Innovative Solutions Inc. (a legal entity incorporated in the Philippines) for the establishment and operation of IDC and IDE. The Marshall Islands stated that, as indicated in paragraph 4 of its document, it had submitted the proposal without obligation or intent to be involved in any way in the Consortium. The statement made by the Marshall Islands when introducing the proposal of the Consortium is set out at annex 40.

6.71 The Committee recalled that it had already discussed, when considering the report of the intersessional working group, the criteria to be used in evaluating proposals for the establishment of IDC and IDE and the format of the evaluation report which IMSO, acting as LRIT Co-ordinator, had been directed to provide.

6.72 IMSO (MSC 83/6/11) presented the results of the evaluation undertaken by it, acting as LRIT Co-ordinator, of the proposal submitted by the Consortium through the Marshall Islands. On the basis of the information provided in the annex to document MSC 83/6/6 and subsequent discussions with the point of contact for the Consortium, IMSO reported that the Consortium had demonstrated, to the extent possible within the constraints established by decisions still to be taken by the Organization, the state of development of the technical specifications and the key dates provided in resolution MSC.211(81), that its proposal complied with the established standards and requirements for the LRIT system. In particular, IMSO advised that it believed that the Consortium had demonstrated compliance, or the ability and willingness to comply, with the operational, technical and functional requirements of the Performance standards; and that the proposal offered a realistic financial model that could provide a sustainable evolving solution for the LRIT system. IMSO advised that it also believed that the proposal met the essential criteria established by SOLAS regulation V/19-1, the Performance standards, resolution MSC.211(81) and the criteria for the location of IDC and IDE set out in annex 2 to document MSC 83/6/2, to the extent possible before further technical, operational and financial decisions had been taken by the Committee. In addition, IMSO reported that the proposal also incorporated the need for

further development of certain aspects of the LRIT system during the test and implementation phases in 2008.

6.73 The Committee referred the proposal submitted by the Consortium through the Marshall Islands (MSC 83/6/6, annex) in relation to the establishment and operation of IDC and IDE to the working group for consideration and instructed it to recommend the approach to be taken. In this respect, the Committee agreed that the Consortium could present to the working group an alternative financial model in relation to its proposal for the establishment of IDC and IDE and a financial model for the establishment of IDE only.

#### ***Contingency offer in relation to the establishment and operation of IDC and IDE***

6.74 The United States (MSC 83/6/3) provided details of a contingency offer to host, build and operate IDE and IDC on a temporary, interim basis until the Committee was to make final and permanent arrangements in this respect. The United States stated that its contingent offer for IDC was conditional on Contracting Governments entering their ships into IDC paying communications (ASP and CSP) costs. The United States recalled that it had clearly advised during the intersessional working group that its contingency offer was not in response to the request for submission of proposals for the establishment and operation of IDC and IDE issued by IMSO, acting as LRIT Co-ordinator, and thus their offer was not subject to any form of evaluation by IMSO.

6.75 The Committee referred the contingency offer of the United States (MSC 83/6/3), in relation to the establishment and operation of IDC and IDE on an interim basis, to the working group and instructed it to recommend the approach to be taken.

#### **Establishment of the Working Group on LRIT matters**

6.76 Having considered the various issues relating to LRIT matters, the Committee established the Working Group on LRIT matters and instructed it, taking into account decisions taken and proposals and comments made in plenary, to:

- .1 prepare a draft MSC resolution allowing the use of LRIT information for safety and marine environment protection purposes;
- .2 recommend the approach to be taken in relation to the transmission of LRIT information by ships undergoing repairs in port or in dry-dock and by ships which are laid up; prepare and submit for consideration with a view to adoption any needed consequential amendments to the Performance standards; and incorporate any needed changes to the draft technical specification and standards developed by the *ad hoc* engineering group (see item .9 below), so as to minimize the transmission of unnecessary LRIT information;
- .3 recommend the approach to be taken for ensuring the timely establishment of the LRIT system on a sustained and viable financial basis and prepare and submit for consideration with a view to adoption any needed consequential amendments to the Performance standards;
- .4 review and, if need be, refine, taking into account the target dates stipulated in resolution MSC.211(81), the additional milestones to be observed in relation to the establishment of the LRIT system proposed by the intersessional working group and recommend the date(s) to be associated with each of the milestones;

- .5 review and, if need be, refine the recommendations of the intersessional working group in relation to arrangements to be made for the period between MSC 83 and MSC 84 with a view to ensuring the timely establishment of the LRIT system and prepare and submit for consideration with a view to adoption draft(s) proposed decision(s);
- .6 consider all issues relating to the performance by IMSO of the functions of the LRIT Co-ordinator and recommend the approach to be taken;
- .7 consider all issues relating to the models of the various agreements needed for the establishment of the LRIT system and recommend the approach to be taken;
- .8 note that the Committee has accepted, in principle, the recommendations of the intersessional working group set out in paragraphs 142.2 to 142.14, 142.16 to 142.24 and 142.26 to 142.29 of document MSC 83/6/2:
  - .1 codify and consolidate the issues involved in an appropriate format (which may be MSC resolution(s) and/or MSC circular(s) depending on the nature of the issues involved) so as to enable easy identification and reference and prepare and submit for consideration with a view to adoption or approval the relevant document;
  - .2 prepare and submit for consideration with a view to adoption any needed consequential amendments to the Performance standards; and
  - .3 incorporate any needed changes to the draft technical specification and standards developed by the *ad hoc* engineering group (see item .9 below);
- .9 finalize and submit for consideration with a view to approval:
  - .1 the draft Technical specification for the International LRIT Data Exchange (MSC 83/6/1, annex 1);
  - .2 draft Technical specification for the International LRIT Data Centre (MSC 83/6/1, annex 2);
  - .3 draft Technical specification for communications within the LRIT system network (MSC 83/6/1, annex 3);
  - .4 draft Technical costing and billing standard (MSC 83/6/1, annex 4); and
  - .5 draft Protocols for the development testing of the LRIT system and for testing the integration into the system of new LRIT data centres (MSC 83/6/1, annex 5);
- .10 recommend when and how the technical specifications and standards developed by the *ad hoc* engineering group (see item .9 above) should be integrated in the Performance standards;
- .11 consider the proposals of the Russian Federation (MSC 83/6/12, paragraphs 3 to 8 and 9.2) and, bearing in mind that IDE was an essential element of the LRIT system, recommend the approach to be taken;



- .12 consider the proposal submitted through the Marshall Islands (MSC 83/6/6, annex) in relation to the establishment and operation of IDC and IDE and recommend the approach to be taken; and
- .13 consider the contingency offer of the United States (MSC 83/6/3) in relation to the establishment and operation of IDC and IDE and recommend the approach to be taken.

## **Report of the working group**

### ***General***

6.77 The Chairman of the working group, in introducing the report of the group (MSC 83/WP.6) advised that document MSC 83/WP.6, which was put together overnight after the group stopped working, required a number of corrections which would be effected by the Secretariat after the end of the session. Furthermore, having consulted with the group, the chairman of the group suggested, and the Committee agreed, not to consider the action requested in paragraph 13.7 of document MSC 83/WP.6 as the related annex 4 to that document needed a number of corrections and doing such corrections in plenary would be difficult. In addition, on the suggestion of the chairman of the group, the Committee agreed to consider the aforesaid action at its next session. The Secretariat advised that the corrected report of the working group would be circulated as MSC 83/WP.6/Rev.1.

6.78 Upon receipt of the report of the working group (MSC 83/WP.6), the Committee approved it in general and took action as outlined in the following paragraphs.

6.79 The delegation of China expressed the opinion that LRIT had been a focussed issue at this session of the Committee, considering its importance and sensitiveness. MSC 81 had unanimously adopted the amendment through the co-operation and efforts of Contracting Governments. This showed the principle of this Organization, i.e. consensus through consultation and also set an example for dealing with those important issues in this Organization. For this reason, the Chinese delegation actively participated in the work of the working group. However, this delegation had concern on the method of work and procedure of this working group. The Chinese delegation recalled that the working group had used the method of polling many times to ask the delegations to express their position on IDE, i.e. to say "yes" or "no" to the questions posed by Chairman. This was rarely seen in IMO meetings. Moreover, after the delegations had expressed their opinions on the relevant proposal, the delegation of the Marshall Island withdrew its proposal although the proposal was supported by a number of delegations. The Chinese delegation felt confused with such a procedure and method, and sought clarification from the Committee whether the relevant procedure and guidelines specified as such. At least in the view of Chinese delegation, the discussion of the working group did not show the principle of consensus through consultation, which was enjoyed when the Committee adopted the LRIT amendments. The Chinese delegation believed that this had created a bad precedent. In addition, in view of the delegation, any action beyond or not in compliance with procedures should at least be unanimously agreed to by Member States.

6.80 The delegation of Singapore stated that it fully supported SOLAS regulation V/19-1 on LRIT and recognized the importance of LRIT and the need to implement the LRIT by the implementation date. In this regard, the delegation of Singapore would like to thank the United States delegation for their generous offer to host the contingency IDE in the interim, which forms the fabric of the whole system. The delegation of Singapore supported the concept of IDC but was however disappointed, like other delegations, that thus far, the proposals for IDC

were inconsistent with regulation V/19-1.11.1. A key point noted by the working group in this session, was that there were still many unknowns surrounding the LRIT system, including the level of demand for position reports and exact communication costs. As the LRIT system was kick-started with an IDE-only framework in the interim, the delegation of Singapore looked forward to the IMO developing possible solutions to establish a permanent IDC and IDE on a sustainable basis which, at the same, remained consistent with regulation V/19-1, as more experience was gained. The delegation of Singapore was thus supportive of the ideas such as lowering the number of automatic transmissions from ships for day to lower the overall operating costs of the system or to introduce a surcharge for each position report in the initial phase to set up a fund for the establishment of a permanent IDE/IDC. The delegation of Singapore would continue to work with other IMO Member States to ensure the success of the LRIT system.

***Use of LRIT information for safety and environmental protection purposes***

6.81 The Committee adopted resolution MSC.242(83) on the Use of long-range identification and tracking information for safety and marine environmental protection purposes, set out in annex 6.

6.82 The delegation of Panama expressed concern over the process of adopting an MSC resolution relating to the protection of the marine environment which only calls and asks for the MEPC, which is responsible for considering and discussing matters related to the marine environment, to take note of the resolution.

***Approach to be taken for ensuring the timely establishment of the LRIT system on a sustained and viable financial basis***

6.83 The Committee noted the discussions of the group relating to the timely establishment of the LRIT system on a sustained and viable financial basis.

6.84 The delegation of Liberia expressed its supports for a fully viable LRIT system and noted the comments at previous meetings that this would require participation of all Contracting Governments. While there was a current performance standard for ships to transmit 4 position reports per day for LRIT, there was no mandate that these reports be requested or used by port and coastal States. The delegation of Liberia was concerned that the limited level of commitment by Contracting Governments to use these reports would not sustain the financial viability and sustainability of the system. The current level of commitment to request and use only 10 million of the expected 58.4 million transmitted ship position reports meant that only 17% of the position reports would be needed and 83% will go unused. The delegation of Liberia understood that the performance standard for ships to transmit 4 position reports per day was based on a perceived level of demand for such reports. However, now that there was a better understanding of the demand for LRIT information through the level of commitments for its use, if that level did not increase substantially, it was clear to the delegation that the supply of the number of position reports needed adjusting downward or consideration of an alternative funding scheme. Reducing the number of transmissions from 4 position reports per day to 2 position reports per day would appear to more accurately align the supply of position reports with the demand for the information, as reflected in commitments made thus far. The delegation of Liberia also suggested that Contracting Governments be invited to provide the Organization with further details on their commitment to request and use LRIT information in order to better align the reporting standard with the level of demand.

6.85 The delegations of the Bahamas, the Marshall Islands and Panama expressed their support for the comments made by the delegation of Liberia. The delegation of Malta suggested that consideration should be given to reducing the rate of transmission of LRIT information so as to reduce the volume of unrequested LRIT information. The delegation of Greece suggested that a thorough study should be conducted in order to determine the best approach to the issue.

***Determination of additional milestones to be observed in relation to the establishment of the LRIT system***

6.86 The Committee approved the schedule for the implementation of the LRIT system, set out in annex 2 to document MSC 83/WP.6. In this respect, the Committee noted that the schedule was developed bearing in mind that IDE would be established and operated by the United States, which was fully aware of the various development tasks/steps to be taken in-house for development of the IDE and hence there was no need to develop these in detail as discussed during the intersessional working group.

***Arrangements to be made for the period between MSC 83 and MSC 84***

6.87 Having established an *ad hoc* LRIT Group with terms of reference set out in annex 3 to document MSC 83/WP.6, the Committee authorized it to deal with certain technical matters during the period between MSC 83 and MSC 84 with a view to ensuring the timely establishment of the LRIT system.

***Performance by IMSO of the functions of the LRIT Co-ordinator***

6.88 The Committee noted the discussions of the group relating to the performance by IMSO of the functions of the LRIT Co-ordinator.

***Development of models of the various agreements needed***

6.89 The Committee noted the discussions of the group relating to the models of various agreements needed for the establishment of the LRIT system and, in particular, that there was still an opportunity to develop and finalize any necessary agreements during MSC 84 and that the group had instructed the Secretariat to propose the approach to be taken.

***Consideration of the recommendations of the intersessional working group***

6.90 The Committee adopted resolution MSC.254(83) on Adoption of amendments to the Performance standards and functional requirements of long-range identification for tracking for ships, as set out in annex 37.

6.91 The Committee deferred the consideration of the action requested of it by the group in relation to a number of the actions requested by the intersessional working group (which the Committee had approved earlier, in principle) for consideration during its next session. In this respect, the Committee noted that the pending matters are those identified in paragraphs 2.2, 2.8.1, 2.10 and 13.7 of, and annex 4 to, document MSC 83/WP.6.

***Outcome of the ad hoc engineering group***

6.92 The Committee noted the action taken by the group in relation to the draft technical specifications and standards for IDE; IDC; the communications within the LRIT system; and the protocols for the development testing of the LRIT system and for testing the integration into the

system of new DCs, and authorized the Chairman to approve on behalf of the Committee, the Guidance on LRIT-related matters, to be prepared by the Secretariat on the basis of the work done by the group after the end of the session, for dissemination by means of MSC.1/Circ.1236.

***Proposal for a back-up IDE***

6.93 The Committee noted the discussions of the group in relation to the offer of the Russian Federation to provide back-up facilities for IDE.

***The establishment and operation of IDC and IDE***

6.94 The Committee noted the discussions of the group on the establishment and operation of IDC and IDE (MSC 83/WP.6, section 12).

6.95 The delegation of the Marshall Islands (without seeking to re-open any discussions in relation to IDC) stated that, during the deliberations of the group, the Marshall Islands had presented, on the basis of commercial terms, an overview of a possible mini-IDC, to be operated by the Administrator of the Marshall Islands National LRIT Data Centre and modelled after the Marshall Islands NDC which has been in operation for more than one year. Whilst there was a lack of interest within the group for this offer, and ultimately a failure of the group to agree to the arrangements for the establishment of IDC, the Marshall Islands, in conjunction with its NDC Administrator, wished to inform the Committee that the offer of a mini-IDC remained open and would be so up to and including MSC 84. In the event that MSC 84 should decide that there was a need for IDC and takes up this offer, the mini-IDC, having been in operation now for more than one year, was capable of being immediately configured and made operational within a few days, so allowing its integration into the LRIT system and availability to those Contracting Governments not contemplating having their own NDC or joining an RDC or CDC, by the 1 July 2008 deadline.

6.96 The Committee adopted resolution MSC.243(83) on Establishment of the International LRIT Data Exchange on an interim basis, set out in annex 7.

**7 DANGEROUS GOODS, SOLID CARGOES AND CONTAINERS**

**General**

7.1 The Committee, having recalled that MSC 82 had considered urgent matters emanating from the eleventh session of the Sub-Committee on Dangerous Goods, Solid Cargoes and Containers (DSC), approved, in general, the report of that session (DSC 11/19 and MSC 83/7) and took action on the remaining matters as indicated hereunder.

**Class 7 radioactive materials *ad hoc* mechanism**

7.2 The Committee noted that, as reported in document MSC 83/2, FAL 34 approved, in principle and subject to results of a trial, the proposed mechanism within the IMO Secretariat for the resolution of difficulties in the carriage of IMDG Code class 7 radioactive materials; requested the Secretariat to conduct a trial of the proposed mechanism; and to report on its experience to FAL 35 for evaluation of results of the trial. It further requested the Secretariat to continue to co-operate with IAEA, ILO and other UN bodies on issues surrounding the delays and denials of shipments of class 7 radioactive materials.

7.3 In this context, the Committee supported the view of the Sub-Committee that an *ad hoc* mechanism within the Organization to speedily resolve difficulties in the carriage of class 7 radioactive materials would contribute to the resolution of such difficulties.

7.4 The Committee appreciated that, pursuant to the above, the Secretary-General had established an IMO Focal Point on the Resolution of difficulties in the carriage of IMDG Code dangerous goods including class 7 radioactive materials, where Member States are invited to submit reports in accordance with the mechanism promulgated by means of FAL 34/19, annex 5. In that context, the Committee requested the Secretariat to keep it informed of the progress made on the issue.

7.5 The Committee further noted that with regard to the notification of denials of shipment of dangerous goods other than class 7, the Facilitation Committee had requested the Secretariat to keep a record only of any notification of such denials which are brought to the attention of the Secretariat.

### **Entry in Transport Document and/or Dangerous Goods Manifest (FAL Form 7)**

7.6 The Committee noted that, as requested by FAL 33, the Sub-Committee had considered the issue of an entry in the Transport Document and/or Dangerous Goods Manifest (FAL Form 7) (whereby Cobalt 60 shipments, specially produced for immediate use in medical, consumer, health or agriculture applications, would be declared as such as that would facilitate its identification by the public authorities concerned) which raised technical concerns, and that the Secretariat was requested to inform the Maritime Safety Committee and Facilitation Committee accordingly.

7.7 The Committee recalled that, in the context of the above, MSC 82 had considered matters relevant to difficulties encountered with the inclusion of an entry in the transport document and/or dangerous goods manifest (FAL Form 7) to confirm that shipment of radioactive materials is to be used in medical or public health applications and forwarded the matter to FAL 34 for consideration and action as appropriate.

### **Amendments to the IMO FAL Compendium**

7.8 The Committee also noted that, as requested by FAL 33, the Sub-Committee had considered section G of the IMO FAL Compendium and prepared the amended section for submission to FAL 34 for action as appropriate.

## **8 FIRE PROTECTION**

### **REPORT OF THE FIFTY-FIRST SESSION OF THE SUB-COMMITTEE**

#### **General**

8.1 The Committee approved, in general, the report of the fifty-first session of the Sub-Committee on Fire Protection (FP) (FP 51/19 and MSC 83/8) and took action as indicated hereunder.

### **Equivalent fire-extinguishing systems for machinery spaces and cargo pump-rooms**

8.2 The Committee approved MSC.1/Circ.1237 on Amendments to the Revised Guidelines for the approval of equivalent water-based fire-extinguishing systems for machinery spaces and cargo pump-rooms (MSC/Circ.1165).

### **Amendments to SOLAS regulation II-2/10**

8.3 The Committee approved the draft amendments to SOLAS regulation II-2/10, set out in annex 8, to require all carbon dioxide systems to have two separate releasing controls and requested the Secretary-General to circulate the draft amendments, in accordance with SOLAS article VIII, for consideration at MSC 84, with a view to adoption.

### **Safety matters relating to the installation of total flooding carbon dioxide systems**

8.4 Noting the proposal of the Sub-Committee and the relevant justification for a new item regarding safety matters relating to the installation of total flooding carbon dioxide systems, for inclusion in the Sub-Committee's work programme, the Committee agreed to deal with the matter in detail under agenda item 25 (Work programme).

### **Sprinkler systems equivalent to that referred to in SOLAS regulation II-2/12**

8.5 In considering the draft amendments to the Revised Guidelines for approval of sprinkler systems equivalent to that referred to in SOLAS regulation II-2/12 (resolution A.800(19)), proposed by FP 51, the Committee noted that draft amendments to the Revised Guidelines agreed, in principle, at FP 50 had not been included in the aforementioned set of amendments and decided to instruct FP 52 to prepare a composite set of draft amendments to the Revised Guidelines on the basis of the draft amendments prepared by FP 50 and FP 51, for submission to MSC 84 for adoption.

### **Evacuation analyses for new and existing passenger ships**

8.6 The Committee approved MSC.1/Circ.1238 on Guidelines for evacuation analysis for new and existing passenger ships.

8.7 In this context, the Committee considered document MSC 83/8/2 (Germany), proposing that the item related to the above Guidelines be retained in the Sub-Committee's work programme and the provisional agenda for FP 52 so that unresolved issues could still be further considered by the Sub-Committee and agreed to the proposal by Germany (see also paragraph 25.25).

### **Location of entrances, air inlets and openings in the superstructures of tankers**

8.8 Noting a proposal by the Sub-Committee and the relevant justification for a new item to harmonize the requirements for the location of entrances, air inlets and openings in the superstructures of tankers, the Committee agreed to deal with the matter in detail under agenda item 25 (Work programme) (see also paragraph 25.24.1).

### **Interpretation of SOLAS regulation II-2/4.5.1.1**

8.9 The Committee noted that, as instructed by MSC 82, the Sub-Committee had considered the draft MSC circular on Interpretation of SOLAS regulation II-2/4.5.1.1, concerning pump-rooms intended solely for ballast or fuel oil transfers and, subsequently, had decided to refer the matter to the correspondence group for detailed consideration.

### **Unified interpretations of SOLAS chapter II-2**

8.10 The Committee approved MSC.1/Circ.1239 on Unified interpretations of SOLAS chapter II-2.

### **Unified interpretations of the FSS Code**

8.11 The Committee approved MSC.1/Circ.1240 on Unified interpretations of the International Code for Fire Safety Systems (FSS Code).

### **Unified interpretations of the IBC Code**

8.12 The Committee, having agreed to minor modifications, approved MSC.1/Circ.1241 on Unified interpretations of the International Bulk Chemical (IBC) Code.

### **Safety of oil and chemical tankers**

8.13 The Committee noted that, following consideration of the report of the Inter-Industry Group which had recommended to consider amending SOLAS chapter II-2 to provide for application of inert gas system to new oil tankers of less than 20,000 dwt and new chemical tankers and pertinent proposals and recommendations made by Member Governments, the Sub-Committee had discussed at length how to proceed with the matter and, having recognized that it would require detailed consideration, taking into account the complexity of the matter, including the disadvantages (*i.e.*, asphyxiation) and potential benefits (*i.e.*, reducing the risk of explosion) of application of inert gas systems for the practical safety-related implications to the operation of chemical tankers and product tankers of less than 20,000 dwt, had agreed to recommend to the Committee the inclusion of a new item, in the Sub-Committee's work programme, to deal with the matter comprehensively.

8.14 In considering the recommendations of FP 51, in particular that a new item on "Measures to prevent explosions on oil and chemical tankers transporting low-flash point cargoes" be included in the Sub-Committee's work programme, in co-operation with the BLG and DE Sub-Committees, and that under the aforementioned item, the Sub-Committee would first consider measures for new ships and, depending on the outcome of their consideration, could consider appropriate measures for existing oil and chemical tankers, the Committee noted the views expressed by:

- .1 with reference to FP 51/19, paragraph 10.6, the delegation of the Netherlands, which pointed out that the preliminary FSA study carried out by Japan (FP 51/10/1) on this matter concluded that the installation of inert gas systems on tankers of less than 20,000 dwt was not justified and expressed the view that a cost benefit analysis is needed to support a justification for a new work programme item;

- .2 the delegation of Norway, which was of the view that the aforementioned new work item should be placed on the BLG Sub-Committee's work programme, taking into account that the cargo to be carried is the decisive factor on this issue and that such matters fall under the purview of the BLG Sub-Committee; and
- .3 the delegation of the Cook Islands, which expressed the opinion that the outcome of DE 50 should be considered in detail by the Committee before making a final decision on this issue and that matters related to increased risk of in-tank asphyxiation and tank overpressurization should be taken into account if it is decided that a new work programme item be established.

8.15 In light of the above views, the Committee agreed to finalize its consideration of the matter under agenda item 9 (Ship design and equipment), following the discussion of the relevant outcome of DE 51 which had also been instructed by MSC 82 to consider the matter (see paragraph 9.26).

### **Consequential amendments to SOLAS regulation II-2/19**

8.16 The Committee noted that, as instructed by MSC 82, the Sub-Committee had considered proposed amendments to SOLAS regulation II-2/19 and chapter 7 of the HSC Code and a draft circular on Application of requirements for dangerous goods in packaged form for SOLAS and 2000 HSC Code and, having requested the Committee to extend the target completion date for the item, invited Member Governments and international organizations to submit relevant comments and proposals to FP 52.

### **Fixed fire-extinguishing systems for cabin balconies**

8.17 The Committee, in considering the draft Guidelines for the approval of fixed pressure water spraying and water based fire-extinguishing systems for cabin balconies, noted that Finland had conducted testing according to the draft Guidelines and that the results had shown that the test standards need further improvements. In view of the above developments, the Committee decided to refer the draft Guidelines to FP 52 for further consideration and submission to MSC 84, as appropriate.

### **Fixed fire detection and fire alarm systems for cabin balconies**

8.18 The Committee approved MSC/Circ.1242 on Guidelines for the approval of fixed fire detection and fire alarm systems for cabin balconies and endorsed the Sub-Committee's recommendation that the approval of fire detection and alarm systems for cabin balconies installed on passenger ships before 1 July 2008 should be left to the satisfaction of the Administration.

## **OTHER MATTERS**

### **Proposed amendments to SOLAS regulation II-2/19.4**

8.19 The Committee considered document MSC 83/8/1 (Japan), containing proposed amendments to SOLAS regulation II-2/19.4 to harmonize the aforementioned regulation with SOLAS regulation II-2/3.20 in respect of the mandatory application of the IMDG Code and, having approved the proposed draft amendments to SOLAS regulation II-2/19.4, set out in annex 8, requested the Secretary-General to circulate the draft amendments, in accordance with SOLAS article VIII, for consideration at MSC 84, with a view to adoption.



## 9 SHIP DESIGN AND EQUIPMENT

### Report of the fiftieth session of the Sub-Committee

9.1 The Committee approved, in general, the report of the fiftieth session of the Sub-Committee on Ship Design and Equipment (DE) (DE 50/25 and MSC 83/9) and took action as indicated hereunder.

### Amendments to the Guidelines on the enhanced programme of inspections during surveys of bulk carriers and oil tankers (resolution A.744(18)) and related matters

9.2 The Committee approved the draft amendments to the Guidelines on the enhanced programme of inspections during surveys of bulk carriers and oil tankers (resolution A.744(18)) (ESP Guidelines), set out in annex 9, including a new part B on Survey guidelines for double-skin bulk carriers in Annex A (Guidelines on the enhanced programme of inspections during surveys of bulk carriers) of the ESP Guidelines, applicable to bulk carriers of 500 gross tonnage and over having double-side skin construction, and requested the Secretary-General to circulate the draft amendments, in accordance with SOLAS article VIII, for consideration at MSC 84 with a view to adoption.

9.3 In this connection, the Committee requested the Secretariat to prepare, after the current amendments have been adopted, a new consolidated publication of the ESP Guidelines, incorporating all amendments adopted since the last publication was issued.

9.4 With regard to the Sub-Committee's justification for an expansion of the scope of the existing work programme item on "Amendments to resolution A.744(18)" to include the harmonization of the ESP Guidelines with the relevant IACS Unified Requirements (UR Z.10 series), the Committee agreed to deal with the matter under agenda item 25 (Work programme) (see also paragraph 25.42).

### Performance standard for protective coatings for void spaces on bulk carriers and oil tankers

9.5 The Committee considered the draft MSC resolution on Performance standard for protective coatings for void spaces on bulk carriers and oil tankers, together with the following documents:

- .1 MSC 83/9/2 (United Kingdom), proposing to include a footnote at the end of paragraphs 4.2.1.1.4 and 4.2.1.1.5 in order to clarify the issue of totally enclosed spaces and to change the words "other small void spaces in cargo tanks" in paragraph 4.2.1.1.3 to read "... in cargo holds" or "... in cargo spaces";
- .2 MSC 83/9/3 (RINA), suggesting that in order to remove any ambiguities and conflicts with other statutory requirements regarding the term "totally enclosed spaces", the requirements of the Performance standard should apply to all void spaces, except where access is neither required nor possible and that guidance on the types of such excluded spaces should be given; and
- .3 MSC 83/9/4 (Greece), proposing a number of amendments to section 4.2 (Standard application), concentrating on the notion of totally enclosed spaces, and to the basic coating requirements in table 1 of the Performance standard concerning the number of spray coats, stripe coats, dust limit and testing exposure.

Greece also stated that the Performance standard should become mandatory not later than the Performance standard for protective coatings for dedicated seawater ballast tanks (i.e. 1 July 2008).

9.6 Following extensive discussions of the above proposals and other proposals made orally for changes to the draft Performance standard, the Committee, noting that the text of the Performance standard as agreed at DE 50 presented a carefully drafted compromise and that the Sub-Committee had agreed to revisit the Performance standard after experience had been gained with its application (see paragraph 9.7), agreed to:

- .1 introduce a footnote clarifying the term “totally enclosed spaces”, referenced from the ends of paragraphs 4.2.1.1.4 and 4.2.1.1.5 of the Performance standard, as follows:

“Noting, *inter alia*, the mandatory provisions of resolution A.744(18), as amended, regarding the requirement to undertake close-up surveys of the internal structure of upper and lower stools, where fitted.”;

- .2 change the words “other small void spaces in cargo tanks” in paragraph 4.2.1.1.3 to read “other small void spaces in cargo spaces”; and
- .3 set the number of spray coats in table 1, subparagraph .4 (Job specification) to one,

and adopted resolution MSC.244(83) on Performance standard for protective coatings for void spaces on bulk carriers and oil tankers, set out in annex 10.

9.7 In this context, the Committee concurred with the decision of DE 50 that it would consider making the Performance standard mandatory, through the development of relevant draft SOLAS amendments, in the longer perspective, after experience has been gained with its application.

### **Means of embarkation on and disembarkation from ships**

9.8 The Committee approved draft new SOLAS regulation II-1/3-9 (Means of embarkation on and disembarkation from ships), set out in annex 11, having agreed to delete the words “or pilotage” in paragraph 1 of the regulation, and requested the Secretary-General to circulate the draft new SOLAS regulation, in accordance with SOLAS article VIII, for consideration at MSC 84 with a view to adoption.

9.9 The Committee also approved, in principle, a draft MSC circular on Guidelines for construction, maintenance and inspection of accommodation ladders and gangways, set out in annex 5 to document DE 50/27, for final approval at MSC 84 in conjunction with the adoption of the above new SOLAS regulation and requested the Secretariat to submit the relevant document to MSC 84.

### **Emergency towing arrangements on tankers**

9.10 The Committee approved draft amendments to SOLAS regulation II-1/3-4 (Emergency towing arrangements on tankers), set out in annex 12, and requested the Secretary-General to circulate the draft amendments, in accordance with SOLAS article VIII, for consideration at MSC 84 with a view to adoption.

9.11 The Committee also approved, in principle, a draft MSC circular on Guidelines for owners/operators on preparing for emergency towing procedures, set out in annex 7 to document DE 50/27, for final approval at MSC 84 in conjunction with the adoption of the above SOLAS amendments and requested the Secretariat to submit the relevant document to MSC 84.

### **Unified interpretation of SOLAS chapter III**

9.12 The Committee approved MSC.1/Circ.1243 on Unified interpretation of SOLAS chapter III.

### **Measures to prevent accidents with lifeboats**

#### ***MSC.1/Circ.1206 on Measures to prevent accidents with lifeboats***

9.13 The Committee noted the outcome of DE 50 concerning the implementation and mandatory application of MSC.1/Circ.1206 on Measures to prevent accidents with lifeboats and concurred with the view of the Sub-Committee that:

- .1 only annex 1 to the circular, dealing with servicing and maintenance of lifeboats, launching appliances and on-load release, should be made mandatory; and
- .2 guidance for qualification and certification of personnel or organizations carrying out servicing and maintenance of lifeboats, launching appliances and on load release gear should be developed.

9.14 In the context of this issue, the Committee considered document MSC 83/9/5 (Bahamas, Dominica, Finland, BIMCO, CLIA, INTERCARGO, INTERMANAGER, INTERTANKO, IPTA, OCIMF and SIGTTO), stating that the submitters considered it premature and inappropriate to make MSC.1/Circ.1206 mandatory as currently written because of difficulties experienced in the implementation of the provisions contained in annex 1 to MSC.1/Circ.1206, mainly related to the lack of worldwide servicing networks and a tendency among manufacturers not to approve independent service providers, although their competency and track records were excellent. They therefore proposed that the circular be amended to allow Administrations to authorize independent service providers to carry out the necessary inspections and maintenance without prior authorization from the original manufacturer and that the DE Sub-Committee's Correspondence Group on LSA, which was currently developing qualification and certification requirements for personnel carrying out inspection and maintenance of lifeboats, rescue boats, launching and release systems, should take this into account.

9.15 The majority of delegations which spoke supported the proposal made in document MSC 83/9/5, namely that Administrations should be allowed to authorize independent service providers to carry out maintenance and repair of life-saving appliances. They mentioned, in particular, the difficulties experienced in implementing the provisions of MSC.1/Circ.1206 due to the lack of a global network of LSA manufacturers to provide a world-wide service, the lack of appropriate manufacturer training in order to have service personnel certified and the high costs for such training charged by manufacturers.

9.16 Other delegations were of the view that the matter had been discussed in detail at DE 50 and that the DE Sub-Committee's LSA Correspondence Group had been instructed to develop guidance for qualification and certification of personnel or organizations carrying out servicing and maintenance of lifeboats, launching appliances and on-load release gear which would cover the

issues raised and that it was premature to take any decisions on the matter before the outcome of the correspondence group was available.

9.17 Following the above discussion, the Committee agreed to request the aforementioned Correspondence Group on LSA to consider the inclusion of relevant provisions addressing the issue of independent service providers in the aforementioned qualification and certification requirements currently under development, as appropriate, and DE 51 to discuss the matter further.

9.18 In this connection, the Committee noted document MSC 83/INF.15 (ICS, BIMCO, CLIA, ICFTU, INTERCARGO, INTERTANKO, IPTA, OCIMF, SIGTTO and P and I Clubs), informing it of the formation of an industry group to address issues relating to lifeboat safety.

#### ***Unfavourable conditions of trim and list***

9.19 The Committee noted that DE 50, with regard to the draft amendments to SOLAS chapter III and the LSA Code, concerning the definition of “unfavourable conditions of trim and list” referred back to the Sub-Committee by MSC 82, had agreed, in principle, on a new draft definition and had instructed its LSA Correspondence Group to consider it further.

#### ***Interpretation of the term “reduced degree of hazard”***

9.20 The Committee noted that DE 50 had agreed to an interpretation of the term “reduced degree of hazard” in the revised SOLAS regulation II-1/6.2.4 for referral to the SLF Sub-Committee for inclusion in the Explanatory Notes to the SOLAS chapter II-1 subdivision and damage stability regulations. In this connection, the Committee noted that SLF 50 had agreed to include the interpretation in the draft Explanatory Notes.

#### ***Term “ $N = N1 + 2N2$ ” in the formula for the required subdivision index R***

9.21 The Committee concurred with DE 50’s decision to investigate the impact of recent developments in the design and capability of life-saving appliances, in particular liferafts and launching systems, on the term “ $N = N1 + 2N2$ ” in the formula for the required subdivision index R.

#### ***Application of the B/5 value to the subdivision standards***

9.22 The Committee noted the view of DE 50 that no change was needed to the application of the B/5 value to the subdivision standards in SOLAS chapter II-1.

#### ***Symbol of infant lifejacket***

9.23 The Committee approved MSC.1/Circ.1244 on Symbol of infant lifejacket.

#### **Safety of oil and chemical tankers**

9.24 The Committee noted that, with regard to the proposal by the IIWG concerning the application of inert gas to new oil tankers of less than 20,000 dwt and to new chemical tankers, DE 50 supported the relevant recommendations of FP 51 (see paragraphs 8.13 and 8.14).

9.25 In this connection, the Committee, while recalling the comments made under agenda item 8 (Fire protection) on this matter (see paragraph 8.14), noted the comments made by delegations during the discussion regarding:

- .1 the problems associated with fitting inert gas systems on new tankers and retrofitting inert gas systems on existing tankers;
- .2 the disadvantages (i.e., asphyxiation) and the potential benefits (i.e., reduced risk of explosion) for application of such systems;
- .3 the practical safety-related implications for the operation of chemical tankers and product tankers of less than 20,000 dwt as well as other human element issues; and
- .4 practical limitations of retrofitting smaller chemical tankers.

9.26 Having considered the outcome of FP 51 and DE 50 and the points made during the discussion on the matter, the Committee endorsed the recommendations of FP 51 and:

- .1 included, in the FP Sub-Committee's work programme and the provisional agenda for FP 52, a high-priority item on "Measures to prevent explosions on oil and chemical tankers transporting low-flash point cargoes", with a target completion date of 2009, in co-operation with the BLG and DE Sub-Committees as necessary and when requested by the FP Sub-Committee;
- .2 agreed that, under the aforementioned work programme item, the FP Sub-Committee should first consider measures for new ships, taking into account the different operational demands on chemical tankers and the need that essential data is submitted and considered first and, depending on the outcome of their consideration, the Committee could then consider the extension of the item towards appropriate measures for existing oil and chemical tankers transporting low-flash point cargoes, taking into account the comments made during the discussion (see paragraph 9.25 above); and
- .3 agreed to take into account the concerns raised by Sweden at FSI 15 in respect of dangerous atmospheres (FSI 15/18, paragraph 6.35) and encouraged Member Governments to use the contact details provided by Sweden for the provision of information about similar cases.

9.27 In addition to the above, the Committee agreed with DE 50's recommendation to consider developing international safety standards for the design and operation of in-tank pumps after IACS had submitted the result of their work on a relevant unified requirement.

#### **Definition of the term "bulk carrier"**

9.28 The Committee noted that DE 50 had not been able to agree on a definition of the term "bulk carrier" and, in this connection, considered document MSC 83/9/1/Rev.1 (Austria *et al*), proposing that the issue of the definition of the term "bulk carrier" should be referred back to the DE Sub-Committee for further discussion and clarification. Following a brief discussion, the Committee instructed the Sub-Committee to re-consider the issue, taking into account the documents that had already been submitted on the issue to previous sessions of the Committee

and the DE Sub-Committee (see DE 50/27, paragraph 25.4) and included an item on “Definition of the term ‘bulk carrier’” in the provisional agenda for DE 51.

## **10 BULK LIQUIDS AND GASES**

### **REPORT OF THE ELEVENTH SESSION OF THE BLG SUB-COMMITTEE**

#### **General**

10.1 The Committee approved, in general, the report of the eleventh session of the Sub-Committee on Bulk Liquids and Gases (BLG) (BLG 11/16 and MSC 83/10) and took action as indicated in the ensuing paragraphs.

#### **Development of provisions for gas-fuelled ships**

10.2 The Committee noted the progress made on the development of provisions for gas-fuelled ships, concurred with the revised long-term action plan and, having noted that the draft Interim guidelines on safety for gas-fuelled engines installations in ships had not been finalized at BLG 11, agreed to extend the target completion date for the item to 2009.

#### **IACS Unified interpretation GC 11**

10.3 The Committee endorsed the decision of BLG 11, regarding IACS Unified Interpretation GC 11 concerning loading of type ‘C’ cargo tanks, whereby, regardless of the date of construction of the ship, type C cargo tanks can be loaded in accordance with the provisions of paragraph 15.1.5 or, alternatively, to the provisions of paragraph 15.1.2 or, if allowed by the Administration, to the provisions of paragraph 15.1.15 of the IGC Code.

#### **Incidents of explosions on chemical and product tankers**

10.4 The Committee noted the outcome of the Sub-Committee’s deliberations on the study on incidents of explosions on chemical and product tankers, in particular the Sub-Committee’s decision that it would be appropriate to await the outcome of the relevant casualty report, the report of the IIWG Human Factors Task Group and that of the FP Sub-Committee.

#### **Intersessional meeting of the ESPH Working Group**

10.5 Having noted that MEPC 56 had agreed that the intersessional meeting of the ESPH Working Group should be held some time in the latter part of 2008, the Committee approved the holding of the meeting of the group in 2008.

#### **Review of the Recommendation for material safety data sheets for MARPOL Annex I cargoes and marine fuel**

10.6 Noting the proposal of the Sub-Committee and the relevant justification for a new work programme item regarding the review of the aforementioned Recommendation, the Committee agreed to consider the matter and related document MSC 83/10/3 (IBIA) under agenda item 25 (Work programme) (see paragraph 25.8).

**DEVICE TO PREVENT PASSAGE OF FLAME INTO CARGO TANKS**

10.7 The Committee recalled that at BLG 11 the observer from IACS had highlighted that the literal meaning of paragraph 1.2.3 of MSC/Circ.677 by IACS was different from how FP 51 had interpreted its application to the extent that regardless of whether the chemical carrier is dedicated, or not, to the carriage of substances with a Maximum Experimental Safe Gap (MESG) of less than 0.9 mm, the MESG of the device must correspond to the lowest MESG of the substances loaded. In that context, BLG 11 agreed that IACS may continue to apply its interpretation till such time the BLG Sub-Committee was instructed to revisit the issue.

10.8 Having considered the proposals by:

- .1 Denmark (MSC 83/10/1), which highlighted that to maintain compliance with existing equipment certification and consistency with other standards in order to prevent passage of flame into cargo tanks, the observations referred to in the document submitted by Denmark to FP 51 (FP 51/18) should be noted. Furthermore, the procedure concluded at BLG 11 is not in accordance with the provisions of the IBC Code and MSC/Circ.677 as amended, and there would be serious complications with regard to other mentioned standards; and
- .2 CESA (MSC 83/10/2), which emphasized that the conclusions of BLG 11 and FP 51 do not coincide, as far as the testing of devices to prevent the passage of flame into cargo tanks certified for cargoes with a MESG of less than 0.9 mm was concerned.

10.9 After extensive discussion on the best way forward on this matter, and noting that the proposal by Denmark (MSC 83/10/1) had support from many delegations, the Committee agreed that a clarification on the issue was needed and referred documents MSC 83/10/1 (Denmark) and MSC 83/10/2 (CESA) to BLG 12 for further consideration, with a view to amending circular MSC/Circ.677 accordingly, taking into account the conclusions of FP 51 on this issue, for approval by the Committee.

**INFORMATION ON PROPERTIES OF MARPOL ANNEX II AND IBC CODE CARGOES**

10.10 The Committee recalled that MEPC 56, as noted under agenda item 2, approved a draft MSC/MEPC circular on Provision of information in respect of products carried in accordance with the requirements of MARPOL Annex II and the IBC Code, as set out in the annex to document MSC 83/2/3.

10.11 Having noted that MEPC 56, taking into account that matters pertaining to the IBC Code fall also under the remit of the MSC, had invited the Committee to concur with this decision so that a joint MSC/MEPC circular could be disseminated immediately after MSC 83, the Committee approved MSC-MEPC.2/Circ.7 on Provision of information in respect of products carried in accordance with the requirements of MARPOL Annex II and the IBC Code.

**APPLICATION DATES OF FLAMMABLE VAPOURS MONITORING SYSTEMS UNDER THE BCH AND IBC CODES**

10.12 As invited by MEPC 56, the Committee considered document MEPC 56/5/3 wherein India, having referred to the date of application (1 January 2009) of the proposed amendments to the IBC Code relating to chapter 11 on fire protection, which was after the date of application of equivalent provisions in the BCH Code that entered into force on 1 August 2007, proposed to

modify and bring the application date of the amendments to the BCH Code in line with the application date of the amendments to the IBC Code. In this context, the Committee noted that the MEPC had felt that, if the Committee agrees with the proposal by India, a joint MSC/MEPC circular could be prepared, inviting parties to defer the application date of the amendments to the BCH Code to 1 January 2009.

10.13 Following the discussion, the Committee concluded that no action should be taken with regard to the proposal by India, because, whilst the amendments to the BCH Code, including safety-related provisions (adopted by resolution MSC.212(81) are recommendatory, the identical amendments to the BCH Code adopted by resolution MEPC.144(54) are mandatory, as the BCH Code is mandatory under MARPOL 73/78. In accordance with resolution MEPC.144(54), ships shall comply with the amendments to the BCH Code as from 1 August 2007 and, legally, the date of their application can not be modified or deferred by way of issuing a circular inviting parties to defer the application date of the amendments. The Secretariat was requested to inform the MEPC of the above outcome.

#### **APPLICATION OF REGULATION 4.1.3 OF MARPOL ANNEX II**

10.14 The Committee noted that MEPC 56 had had an extensive debate regarding application of regulation 4.1.3 of MARPOL Annex II, where a majority of the delegations which spoke agreed that allowing the carriage of any cargo, including vegetable oil, in excess of the 3,000 m<sup>3</sup> operational limit on a Ship Type 2 tanker (ST2) was in violation of the provisions of MARPOL 73/78 and that, therefore, MEPC 56 had not agreed with views expressed in documents submitted on the issue and had decided to urge all parties to take into account the outcome of the debate.

### **11 STABILITY, LOAD LINES AND FISHING VESSEL SAFETY**

#### **Report of the fiftieth session of the Sub-Committee**

11.1 The Committee approved, in general, the report of the fiftieth session of the Sub-Committee on Stability and Load Lines and on Fishing Vessels Safety (SLF) (SLF 50/19 and MSC 83/11) and took action as indicated hereunder.

#### **Development of explanatory notes for harmonized SOLAS chapter II-1**

##### ***Guidelines for damage control plans and information to the master***

11.2 Having agreed to replace the words "SOLAS Convention" by the word "Organization" in paragraph 2.2 of the draft guidelines, the Committee approved MSC.1/Circ.1245 on Guidelines for damage control plans and information to the master.

11.3 The Committee endorsed the Sub-Committee's recommendation that the two existing footnotes in the revised SOLAS regulation II-1/19 (in the publication), referring to the aforementioned guidelines (see paragraph 11.2), should be replaced by a single footnote with an asterisk to be inserted after the title of the regulation, and requested the Secretariat to act accordingly.



***Unfavourable conditions of trim and list***

11.4 The Committee noted that the Sub-Committee had considered the definition of the term “unfavourable conditions of trim and list” and forwarded its views to the DE Sub-Committee for consideration and appropriate action.

**Revision of the Intact Stability Code**

11.5 Having agreed to request the Secretariat to effect any editorial modifications as may be identified, the Committee approved the draft International Code on Intact Stability, 2008 (2008 IS Code) and the associated draft MSC resolution, set out in annex 13, with a view to adoption at MSC 85.

11.6 The Committee also approved the associated draft amendments to the 1974 SOLAS Convention and the 1988 LL Protocol to make the aforementioned Code mandatory, set out in annexes 14 and 15 respectively, and requested the Secretary-General to circulate the draft amendments, in accordance with SOLAS article VIII and article VI of the 1988 LL Protocol, respectively, for consideration at MSC 85 with a view to adoption.

11.7 The Committee noted the Sub-Committee’s decision to draft an MSC circular on early implementation of the 2008 IS Code at SLF 51, with a view to submission to MSC 85 for approval simultaneously with the adoption of the draft Code.

11.8 The Committee approved, in principle, the draft MSC circular on Explanatory Notes to the International Code on Intact Stability, 2008, set out in annex 5 to document SLF 50/19, with a view to its formal approval at MSC 85 simultaneously with the adoption of the draft Code, and requested the Secretariat to submit the draft MSC circular to MSC 85.

**Safety of small fishing vessels**

11.9 The Committee noted the progress made on the development of the draft Safety recommendations for decked fishing vessels of less than 12 metres in length and undecked fishing vessels, in particular the time frame for the finalization of the work on the Safety recommendations and the referral of relevant chapters of the draft Safety recommendations to the COMSAR, DE, FP, NAV and STW Sub-Committees and the Joint MSC/MEPC Working Group on Human Element, for consideration and comments as appropriate.

11.10 In this regard, the delegation of South Africa pointed out that, as the International Labour Conference had adopted the Work in Fishing Convention, 2007, and the Work in Fishing Recommendation, 2007, the correspondence group, established at SLF 50, would take the above Convention and Recommendation into account when examining the text of the draft Safety recommendations to ensure consistency.

11.11 The representative of ILO informed the Committee that the aforementioned Convention applied to all fishers and fishing vessels engaged in commercial fishing operations and contained general requirements, covering all fishers and vessels, and higher requirements for larger vessels or those remaining at sea for extended periods. He indicated that the Convention included provisions concerning compliance and enforcement by flag States and port States, and that it included flexibility devices to allow ratification by States which lack certain levels of infrastructure or institutions, and allow for the possibility to exclude certain categories of fishers and fishing vessels under certain conditions. He also informed that the Convention would enter into force 12 months after the date on which the ratifications of ten Members, eight of which are

coastal States, have been registered with the Director-General of ILO, and that further information on the Convention and Recommendation is available on a dedicated ILO website: <http://www.ilo.org/public/english/dialogue/sector/sectors/mariti/fishing-iloact.htm>.

11.12 With regard to the Sub-Committee's proposal to expand the scope of the existing work programme item on "Safety of small fishing vessels" to include the development of guidelines to assist Administrations in implementation of the Safety recommendations, the fishing vessel Safety Code (part B) and the Voluntary Guidelines, together with the relevant justification for the proposal, the Committee agreed to deal with the proposal under agenda item 25 (Work programme) (see paragraph 25.53).

### **Development of options to improve effect on ship design and safety of the 1969 TM Convention**

11.13 The Committee noted the Sub Committee's outcome on matters related to the development of options to improve effect, on ship design and safety, of the 1969 TM Convention, in particular that SLF 50 had established a correspondence group on the issue to identify pros and cons of such options and, having invited the ILO Secretariat to participate in the aforementioned group, had requested the IMO Secretariat to communicate with the ILO Secretariat, as appropriate.

### **Revision of resolution A.266(VIII)**

11.14 The Committee adopted resolution MSC.245(83) on Recommendation on a standard method for evaluating cross-flooding arrangements, set out in annex 16, and requested the Secretariat to insert a footnote referring to the Recommendation in regulation 7-2.2 of the revised SOLAS chapter II-1 publication.

### **Review of the SPS Code**

11.15 The Committee noted that the Sub-Committee had agreed to the draft amendments to the SPS Code for referral to the DE Sub-Committee, for inclusion in the draft revised SPS Code.

### **Revision of MSC/Circ.650**

11.16 The Committee approved MSC.1/Circ.1246 on Interpretation of alterations and modifications of a major character, which superseded MSC/Circ.650.

### **Interpretation of alterations and modifications of a major character under the revised SOLAS chapter II-1**

11.17 The Committee noted the Sub-Committee's conclusion regarding an interpretation of alterations and modifications of a major character under the revised SOLAS chapter II-1, in particular that there is no need for guidance on how ships built before 1 January 2009 should be handled, since the application of the revised SOLAS chapter II-1 was clearly defined in regulation 1 of the chapter and, should a passenger ship built before 1 January 2009 have undergone alterations or modifications of a major character, it would still remain under the damage stability regulations of the current SOLAS chapter II-1, except in the case of a cargo ship being converted to a passenger ship.

## **12 TRAINING AND WATCHKEEPING**

### **Report of the thirty-eighth session of the Sub-Committee**

12.1 The Committee approved, in general, the report of the thirty-eighth session of the Sub-Committee on Standards of Training and Watchkeeping (STW) (STW 38/17 and MSC 83/12) and took action as indicated hereunder.

#### **Unlawful practices associated with certificates of competency**

12.2 The Committee approved the revised format relating to reporting of fraudulent certificates detected, set out in annex 1 to document STW 38/17, and urged Member Governments and international organizations to use it when reporting the detection of fraudulent certificates to the Secretariat.

#### **Measures to enhance maritime security**

12.3 The Committee recalled that, under agenda item 4 (Measures to enhance maritime security), it had taken appropriate action relating to this item as reflected in paragraph 4.4.

#### **Development of competences for ratings**

12.4 The Committee considered the proposal by ISF and ITF (MSC 83/12/2) that, instead of endorsing the decision of STW 38 to postpone the amendments to the STCW Convention and the STCW Code relating to competences for ratings until after the comprehensive review of the Convention and Code had been completed, it should consider implementing the amendments at the earliest possible stage, taking into account the lead time involved in the training of ratings.

12.5 This proposal was not supported by the Committee and subsequently, the Committee endorsed the decision of the Sub-Committee that the preliminary text of amendments to the STCW Convention and the STCW Code related to standards of competence for ratings should be adopted after the comprehensive review was completed and in conjunction with the adoption of other amendments developed during the comprehensive review to facilitate implementation and to avoid any inconsistencies that may arise due to the proposed review.

#### **Identification of areas in chapter VI of the STCW Code where training cannot be conducted on board**

12.6 The Committee endorsed the decision of the Sub-Committee that those areas in chapter VI of the STCW Code where training could not be conducted on board should be identified in conjunction with the comprehensive review of the STCW Convention and the STCW Code.

#### **Comprehensive review of the STCW Convention and the STCW Code**

12.7 The Committee approved the list of areas in the STCW Convention and the STCW Code identified for the comprehensive review and instructed the Sub-Committee to undertake the proposed review accordingly in a systematic and organized manner.

#### **Review of the principles for establishing the safe manning levels of ships**

12.8 Noting the proposal by the Sub-Committee for a new item regarding mandatory requirements for determining safe manning and documents MSC 83/12/3 (ISF) and MSC 83/12/5

(United Kingdom), the Committee agreed to deal with the matter in detail under agenda item 25 (Work programme).

### **PSC guidelines on seafarers' working hours**

12.9 The Committee endorsed the Sub-Committee's decision to provide, to MSC 84, its advice on the draft PSC guidelines on seafarers' working hours, developed by FSI 14, since it had not been possible to consider the draft guidelines at STW 38, due to the close proximity between MSC 82 and STW 38.

### **PREPARATION OF REPORTS PURSUANT TO STCW REGULATION I/7, PARAGRAPH 2**

12.10 The Committee noted that no reports pursuant to STCW regulation I/7, paragraph 2 had been submitted by the Secretary-General at this session.

### **SECRETARY-GENERAL'S REPORT PURSUANT TO STCW REGULATION I/8**

12.11 In introducing the Secretary-General's report (MSC 83/WP.2), the Director, Maritime Safety Division, advised the Committee that, in preparing the reports required by STCW regulation I/8, paragraph 2, the Secretary-General had solicited and taken into account the views of the competent persons selected from the list established pursuant to paragraph 5 of the regulation and circulated as MSC/Circ.797. Each report, as required by MSC/Circ.997, was comprised of:

- .1 the Secretary-General's report to the Committee;
- .2 a description of the procedures followed; and
- .3 a summary of the conclusions reached in the form of a comparison table.

12.12 The Committee was subsequently invited to consider the reports attached to document MSC 83/WP.2 for the purpose of confirming that the information provided by the STCW Parties pursuant to STCW regulation I/8 confirmed that full and complete effect was given to the provisions of the STCW Convention.

12.13 As was the case with the Secretary-General's reports to previous sessions of the Committee, the Committee agreed to consider each Party report individually in order to:

- .1 identify, from the Secretary-General's report, the scope of information evaluated by the panels;
- .2 review the procedures report to identify any entries requiring clarification;
- .3 review the information presented in comparison table format; and
- .4 confirm that each report reflected that the procedures for the assessment of the information provided by the Parties concerned had been correctly followed.

12.14 The Committee confirmed that the procedures for the assessment of information provided had been correctly followed in respect of 10 STCW Parties and instructed the Secretariat to update MSC/Circ.1164/Rev.2 accordingly and issue it as MSC.1/Circ.1164/Rev.3.

## **Approval of competent persons**

12.15 The Committee approved additional competent persons nominated by Governments (MSC 83/12/1) and instructed the Secretariat to update MSC/Circ.797/Rev.14 accordingly and issue the updated circular as MSC.1/Circ.797/Rev.15.

## **OTHER MATTERS**

12.16 The Committee considered a proposal by India (MSC 83/12/4) for a long-term view to address the global shipping manpower shortage by the inclusion of a requirement for trainees and the provision of training berths onboard in the relevant IMO Conventions. In this context, they provided examples of similar provisions available in other professions such as for airline pilots and doctors.

12.17 The delegation of China, supported by other delegations, expressed the opinion that the provision of trainees would assist in addressing the manpower shortage, improve the quality of training for seafarers and therefore reduce accidents.

12.18 The delegation of Japan, supported by other delegations, expressed the view that, in line with the Sub-Committee's decision to retain the structure and goals of the STCW Convention and the STCW Code during the proposed comprehensive review, such a proposal could not be supported and that merely providing trainees on board ships would not solve the present manpower shortage. Furthermore, there were other issues such as adequate life-saving appliances and accommodation which also needed to be considered in the provision of adequate training berths on board ships.

12.19 The delegation of Singapore expressed the view that there was a real shortage of skilled seafarers and suggested that shipowners should be encouraged to provide training berths for fresh trainees. However, this should be recommendatory as it is impractical to enforce. As current IMO instruments do not address the requirements for a trainee, it may be appropriate for IMO to consider developing non-mandatory guidelines to ship designers, shipowners and masters on the facilities and treatment of a trainee seafarer.

12.20 The observer from INTERTANKO, while supporting the proposal by India in principle, expressed concern that it was premature that the provisions of trainees onboard should be a mandatory requirement. However, the STW Sub-Committee could be instructed to consider, in general, measures to improve training onboard ships. This approach was supported by other delegations.

12.21 After an in-depth discussion, the Committee agreed to forward document MSC 83/12/4 to the STW Sub-Committee to consider, under the agenda item on "Any other business", how to address measures to improve training on board and to advise the Committee accordingly.

## **13 RADIOCOMMUNICATIONS AND SEARCH AND RESCUE**

### **REPORT OF THE ELEVENTH SESSION OF THE SUB-COMMITTEE**

#### **General**

13.1 The Committee approved, in general, the report of the eleventh session of the Sub-Committee on Radiocommunications and Search and Rescue (COMSAR) (COMSAR 11/18 and MSC 83/13) and took action as indicated hereunder.

## **Radiocommunication matters**

### ***Establishment of new NAVAREAs in Arctic Waters***

13.2 The Committee approved the establishment of new NAVAREAs in Arctic Waters.

### ***NAVAREA Co-ordinators***

13.3 The Committee endorsed the action of the Secretariat in circulating COMSAR/Circ.40 on List of NAVAREA Co-ordinators.

### ***Incorrect use of 'C' Codes***

13.4 The Committee approved COMSAR.1/Circ.41 on Analysis of maritime safety information promulgated via the EGC (Enhanced Group Call) SafetyNET system and recommendations on improving its quality.

## **Satellite services**

### ***Revision of resolution A.888(21)***

13.5 The Committee considered document MSC 83/13/2 (Norway), containing a proposal to amend the Criteria for the provision of Mobile Satellite Communication Systems in the Global Maritime Distress and Safety System (GMDSS) (resolution A.888(21)), to ensure that the level of safety of life at sea was not diminished by the introduction of new satellite systems for future use in the GMDSS and that satellite system providers should have an obligation to grant MRCCs direct access to their systems.

13.6 Noting that there was general support for the Norwegian proposal, the Committee subsequently approved the draft Assembly resolution on Criteria for the provision of Mobile Satellite Communication Systems in the Global Maritime Distress and Safety System (GMDSS), set out in annex 17, revoking resolution A.888(21) and MSC/Circ.1077, for submission to the twenty-fifth session of the Assembly for adoption.

13.7 The Committee noted that the corresponding draft amendments to SOLAS chapter IV had been considered, with a view to adoption, under agenda item 3 (paragraphs 3.7 and 3.20).

## **SAR matters**

### ***Minimizing delays in Search and Rescue response***

13.8 The Committee approved MSC.1/Circ.1248 on Minimizing delays in search and rescue response to distress alerts.

### ***Fourteenth session of the ICAO/IMO Joint Working Group***

13.9 The Committee endorsed the decision of the Sub-Committee for the convening of the 14th meeting of the ICAO/IMO Joint Working Group on Harmonization of Aeronautical and Maritime SAR, which took place in Réunion (France) from 10 to 14 September 2007.

***Adoption of amendments to the IAMSAR Manual***

13.10 The Committee noted that the ICAO/IMO Joint Working Group on Harmonization of Aeronautical and Maritime SAR, at its thirteenth session held from 28 August to 1 September 2006, had prepared draft amendments to the IAMSAR Manual which were subsequently endorsed by COMSAR 11.

13.11 In accordance with the procedures prescribed in the Annex to resolution A.894(21), and being advised that ICAO had already approved the proposed draft amendments to the IAMSAR Manual, the Committee adopted them for dissemination by means of MSC.1/Circ.1249, and decided that the adopted amendments should enter into force on 1 June 2008.

**New amended Performance standards for radiocommunications/navigational equipment (survival craft AIS-SART and radar transponders)**

13.12 In accordance with resolution A.886(21), the Committee adopted:

- .1 resolution MSC.246(83) on Performance standards for survival craft AIS search and rescue transmitter (AIS-SART) for use in search and rescue operations, set out in annex 18; and
- .2 resolution MSC.247(83) on Adoption of amendments to Performance standards for survival craft radar transponders for use in search and rescue operations (resolution A.802(19)), set out in annex 19.

13.13 The Committee approved:

- .1 draft amendments to regulations III/6.2.2, III/26.2.5 and IV/7.1.3 of, and the appendix to the Annex to, the 1974 SOLAS Convention, set out in annex 20;
- .2 draft amendments to the 1988 SOLAS Protocol, set out in annex 21;
- .3 draft consequential amendments to the 1994 HSC Code, set out in annex 22;
- .4 draft consequential amendments to the 2000 HSC Code, set out in annex 23,

and requested the Secretary-General to circulate the draft amendments, in accordance with SOLAS article VIII, for consideration at MSC 84, with a view to adoption.

13.14 The Committee further instructed the DE Sub-Committee to review the consequential amendments to the MODU Code and incorporate them when revising the MODU Code.

13.15 The Committee endorsed the action of the Sub-Committee in inviting the NAV Sub-Committee to consider the need for a presentation symbol for AIS-SART.

**Amendments to COLREG Annex IV relating to distress signals**

13.16 The Committee recalled that the proposed amendments, adopted by MSC 82, containing the term “Recognized Mobile-Satellite Service Providers (RMSSP)” had already been circulated under circular letter No.2760, in accordance with article VI/2 of the Convention on the

International Regulations for Preventing Collision at Sea, 1972, for consideration by the twenty-fifth session of the Assembly with a view to their adoption.

13.17 The Committee endorsed the recommendation of the Sub-Committee that, with respect to COLREG Annex IV relating to distress signals the term “Recognized Mobile Satellite Service Providers (RMSSP)” should be reverted back to “Inmarsat”, since there was currently no proposal to include that new term into SOLAS chapter IV and recommended that the Assembly replace this term by “Inmarsat” when adopting the proposed amendments to COLREGs.

13.18 The Secretariat was requested to inform the twenty-fifth session of the Assembly accordingly.

### **Guidelines on the control of ships in an emergency**

13.19 The Committee endorsed the action taken by the Sub-Committee in conveying the revised draft guidelines on the control of ships in an emergency to the NAV Sub-Committee (see also paragraph 14.21).

### **Development of an e-navigation strategy**

13.20 The Committee noted that, with respect to the development of an e-navigation strategy, issues connected with search and rescue, data communication links and operation of the GMDSS were within the Sub-Committee’s remit and noted that NAV 53 was reporting on this issue to MSC 84.

### **Long-range identification and tracking (LRIT) of ships**

13.21 The Committee noted the outcome of the discussions at COMSAR 11 with respect to the establishment of the LRIT system, especially in the context of matters pertaining to draft agreements and billing and costing issues and considered these issues further under agenda item 6 (LRIT-related matters) (see also paragraphs 6.64 and 6.65).

### **REPORT ON THE WMU SAR PROJECT**

13.22 The Committee noted that COMSAR 11 had considered the report on the WMU project on SAR research related to passenger ships. Various delegations had supported the idea of the development of an Internet-based information platform as proposed in the annex to document MSC 82/8/4. However, it was clear to the Sub-Committee that such a platform could only be beneficial if all users provided information proactively. Accordingly, the Sub-Committee had invited Member Governments to provide WMU with the information on a competent national point of contact to allow for proper consideration as to whether and how to carry out an intermediate phase to gather information on SAR research and relevant development programmes in order to establish this information platform.

13.23 The Committee considered document MSC 83/13/1 (Secretariat) providing the report on the Intermediate Phase of the WMU Project on Search and Rescue Research related to Passenger Ships. The Committee noted that following MSC 82 and COMSAR 11, the University had taken two initiatives, namely:

- .1 it had developed and implemented the framework for the SAR Information Platform on the WMU website and begun to populate the platform with relevant academic publications, project reports, relevant IMO documents and other information sources; and



- .2 following informal consultations with SAR practitioners and researchers, it had offered to host an expert group of those actively involved in or affected by research in SAR matters; this initiative had produced encouraging support from a number of institutions and individuals.

13.24 The Committee also noted that the Intermediate Phase was providing the groundwork for the tasks in Phase II and would be completed with a report on the information collected in the platform and initial ideas of the expert group. The Intermediate Phase was expected to be completed in time for submission of its report to COMSAR 12.

13.25 The Committee further noted document MSC 83/INF.18 (Secretariat), providing an overview on the current status of the SAR information platform hosted by WMU with regard to the project on Search and Rescue research related to passenger ships.

13.26 The Committee subsequently:

- .1 endorsed the holding of a workshop of the aforementioned expert group, to review the prevailing material information hosted on the platform and advise on further data sources which could be supported by the platform, using the available budget for the 2006-2007 biennium for the implementation of Phase II;
- .2 endorsed the WMU proposal to submit the report on the Intermediate Phase directly to COMSAR 12; and
- .3 instructed COMSAR 12 to consider and provide its views and recommendations to MSC 85.

13.27 The Committee encouraged Member Governments to submit further information to WMU for inclusion in the Information Platform, taking into account the information requested in circular letter No.2650 and the subject areas highlighted in paragraph 15 of the annex to document MSC 82/8/4.

## **14 SAFETY OF NAVIGATION**

### **URGENT MATTERS EMANATING FROM THE FIFTY-THIRD SESSION OF THE SUB-COMMITTEE**

#### **General**

14.1 The Committee considered urgent matters referred to it (MSC 83/14) emanating from the fifty-third session of the Sub-Committee on Safety of Navigation (NAV) (NAV 53/22) and took action as indicated hereunder.

#### **Adoption of new traffic separation schemes (TSSs)**

14.2 In accordance with resolution A.858(20), the Committee adopted the proposed new traffic separation schemes, including associated routeing measures, as follows:

- .1 “Maas North-West” forming part of routeing system “In the Approaches to Hook of Holland and at North Hinder”;
- .2 “On the approaches to the Polish ports in the Gulf of Gdańsk”; and

- .3 “Off the southwest coast of Iceland”,

set out in annex 24, for dissemination by means of COLREG.2/Circ.59.

### **Amendments to the existing traffic separation schemes (TSSs)**

14.3 In accordance with resolution A.858(20), the Committee also adopted the proposed amendments to the existing traffic separation schemes, including associated routeing measures, as follows:

- .1 “Mandatory route for tankers from North Hinder to the German Bight and vice versa” and to related traffic separation schemes “Off Texel”, “Off Vlieland, Vlieland North and Vlieland Junction”, “Terschelling-German Bight” and “German Bight western approaches”;
- .2 “In the Approaches to Hook of Holland and at North Hinder”;
- .3 “In the Sound”;
- .4 “In the Approaches to Chedabucto Bay”; and
- .5 “In the Strait of Dover and Adjacent Waters” in the vicinity of the Foxtrot 3 station,

set out in annex 24, for dissemination by means of COLREG.2/Circ.59.

### **Routeing measures other than TSSs**

14.4 In accordance with resolution A.858(20), the Committee adopted the following new routeing measures other than traffic separation schemes, including amendments to existing routeing measures other than traffic separation schemes:

- .1 new recommended tracks which would be mandatory as a condition of port entry through the Galapagos Area to be Avoided to enter the Particularly Sensitive Sea Area (PSSA);
- .2 new Area to be Avoided “Off the Brazilian south-east coast, in the Campos Basin region”;
- .3 amendments to the six existing recommended Areas to be Avoided “In the Region of the North-West Hawaiian Islands”: the new name of the extended Area to be Avoided is “The Papahānaumokuākea Marine National Monument”;
- .4 amendments to the existing deep-water route leading to Europoort;
- .5 amendments to the existing Area to be Avoided “At Maas centre” and “At North Hinder junction Point”;
- .6 new two-way route “Off the southwest coast of Iceland”;
- .7 new Areas to be Avoided “Off the south, southwest and west coast of Iceland”;

- .8 amendments to the Recommendations on navigation through the entrances to the Baltic Sea;
- .9 new mandatory No Anchoring Areas “on Sharks Bank and Long Shoal”;
- .10 new recommended seasonal Area to be Avoided “In Roseway Basin, south of Nova Scotia”;
- .11 amendments to the existing deep-water route, and to the Area to be Avoided and the position of the Foxtrot 3 station “In the Strait of Dover and Adjacent Waters” TSS;
- .12 amendments to the Recommendations on Navigation through the English Channel and the Dover Strait; and
- .13 amendments to the Deep-Water route “North-east of Gedser”,

set out in annex 25, for dissemination by means of SN.1/Circ.263.

14.5 With regard to the new Recommendations on navigation to the Polish ports through the Gulf of Gdańsk traffic area, the Committee noted that, at NAV 53, the delegation of Poland had requested to use the word “shall” with respect to the use of the words “should” and “shall” in paragraph 1.5 of the Recommendations, as it was the most appropriate language considering the whole contents of this paragraph which described the traffic requirements between the Polish ports only, and within the Poland’s internal waters only. Therefore, the usage of “shall” was in their opinion right and appropriate. The delegation of the Netherlands had clarified, at NAV 53, that the words “shall” and “should” occurred in previously IMO adopted Associated Rules and Recommendations on navigation and the basic intent and purpose of each of these routeing measures was of a recommendatory nature. The Sub-Committee had subsequently approved Recommendations on navigation to the Polish ports through the Gulf of Gdańsk traffic area, with some corrections to the description with the proviso that the issue of the use of the word “shall” in paragraph 1.5 of the Recommendations would be finalized after due advice from the Legal Office of the Organization would be provided to the Committee at this session.

14.6 The Secretariat provided the advice from the Legal Office of the Organization stating that, customarily, recommendations are expected to employ the word “should” except where the context is such that there is a clear link to a mandatory instrument (e.g., SOLAS regulation V/10 for mandatory routeing). In the present case, where ships are being called on to follow particular routes within the internal waters of Poland, clarity can be achieved by a formulation which links the requirement to the application of national law. The Secretariat therefore suggested that, in the case of paragraph 1.5 of the Recommendations on navigation to the Polish ports through the Gulf of Gdańsk traffic area (NAV 53/22, annex 2), the words “should” and “shall” should be replaced by the phrase “are required to”, with a footnoted reference to the national law of Poland.

14.7 The Committee subsequently accepted the revised text and approved Recommendations on navigation to the Polish ports through the Gulf of Gdańsk traffic area, set out in annex 25, for dissemination by means of SN.1/Circ.263.

### **Implementation of the adopted routeing measures**

14.8 The Committee decided that the adopted new traffic separation schemes and amendments to the existing traffic separation schemes referred to in paragraphs 14.2.2, 14.3.1, 14.3.3

and 14.3.4, respectively (annex 24), and the routeing measures other than traffic separation schemes referred to in paragraphs 14.4.1 to 14.4.5 and 14.4.8 to 14.4.13 and 14.7 (annex 25), should be implemented six months after their adoption, i.e., on 1 May 2008 at 0000 hours UTC.

14.9 With respect to the ships' routeing systems proposed by Iceland, referred to in paragraphs 14.2.3, 14.4.6 and 14.4.7, the Committee concurred with Iceland's request that the adopted ships' routeing systems for Iceland should be implemented on 1 July 2008 at 0000 hours UTC.

14.10 The delegation of the United Kingdom, referring to document MSC 83/14 (Secretariat) (see also paragraph 14.3), requested that the ships' routeing systems referred to in paragraph 2.1.1 ("In the approaches to Hook of Holland and at North Hinder") proposed by the Netherlands, paragraph 2.1.5 ("In the approaches to Hook of Holland and at North Hinder") also proposed by the Netherlands and paragraph 2.1.8 ("In the Strait of Dover and Adjacent Waters" in the vicinity of the Foxtrot 3 station) proposed by Belgium, France and the United Kingdom should be implemented on 1 July 2008 at 0000 hours UTC. These areas were all adjacent to one another making a harmonized entry-into-force date appropriate. The Committee approved the request.

#### **Modification to the breadth of the safety zones around oil rigs located off the Brazilian Southeast Coast – Campos Basin**

14.11 The delegation of Brazil expressed appreciation and thanked the Committee for the support and its decision to adopt the Area to be Avoided "Off the Brazilian south-east coast, in the Campos Basin region". The delegation also took the opportunity to remind the Committee that there was pending work on the subject of the extension of safety zones around FPSOs and dynamic positioned platforms with regard to establishing guidelines and criteria on how to evaluate such proposals, as per the NAV 53 recommendation. It was the Brazilian delegation's intention to pursue the matter at future sessions of the NAV Sub-Committee.

#### **Mandatory ship reporting systems**

##### ***New ship reporting system for "The Papahānaumokuākea Marine National Monument" Particularly Sensitive Sea Area (PSSA)***

14.12 In accordance with resolution A.858(20), the Committee adopted, by resolution MSC.248(83), the new ship reporting system "The Papahānaumokuākea Marine National Monument" Particularly Sensitive Sea Area (PSSA), set out in annex 26, for dissemination by means of SN.1/Circ.264. The Committee also decided that the new ship reporting system should be implemented six months after its adoption, i.e., on 1 May 2008 at 0000 hours UTC. In this context, the Committee noted that MEPC 57 would consider the final designation of the area as a Particularly Sensitive Sea Area (PSSA), and requested the Secretariat to update SN.1/Circ.264 thereafter, as necessary.

##### ***New mandatory ship reporting system "On the approaches to the Polish ports in the Gulf of Gdańsk"***

14.13 In accordance with resolution A.858(20), the Committee adopted, by resolution MSC.249(83), the new mandatory ship reporting system "On the approaches to the Polish ports in the Gulf of Gdańsk", set out in annex 27, for dissemination by means of SN.1/Circ.264. The Committee also decided that the new mandatory ship reporting system should be implemented six months after its adoption, i.e., on 1 May 2008 at 0000 hours UTC.

***New mandatory ship reporting system “Off the south and southwest coast of Iceland”***

14.14 In accordance with resolution A.858(20), the Committee adopted, by resolution MSC.250(83), the new mandatory ship reporting system “Off the south and southwest coast of Iceland”, set out in annex 28, for dissemination by means of SN.1/Circ.264. The Committee also decided that the new mandatory ship reporting system should be implemented on 1 July 2008 at 0000 hours UTC.

***Amendments to the existing mandatory ship reporting systems***

14.15 In accordance with resolution A.858(20), the Committee adopted, by resolution MSC.251(83), the proposed amendments to the existing mandatory ship reporting systems “Off Ushant”, “Off Les Casquets” and “Dover Strait/Pas de Calais”, set out in annex 29 for dissemination by means of SN.1/Circ.264. The Committee also decided that the amendments to the existing mandatory ship reporting systems should be implemented six months after adoption, i.e., on 1 May 2008 at 0000 hours UTC.

**Amended and new performance standards for navigational equipment (Integrated navigation systems (INS) and navigation lights, navigation light controllers and associated equipment)**

14.16 In accordance with resolution A.886(21), the Committee adopted:

- .1 resolution MSC.252(83) on Adoption of the Revised performance standards for Integrated Navigation Systems (INS), set out in annex 30; and
- .2 resolution MSC.253(83) on Adoption of the Performance standards for navigation lights, navigation light controllers and associated equipment, set out in annex 31.

**Guidelines on the application of SOLAS regulation V/15 to INS, IBS and bridge design**

14.17 The Committee approved SN.1/Circ.265 on Guidelines on the application of SOLAS regulation V/15 to INS, IBS and bridge design.

**Differences between RCDS and ECDIS**

14.18 The Committee approved revised SN.1/Circ.207/Rev.1 on Differences between RCDS and ECDIS.

**Maintenance of Electronic Chart Display and Information System (ECDIS) software**

14.19 The Committee approved SN.1/Circ.266 on the Maintenance of Electronic Chart Display and Information System (ECDIS) software.

**Safety margins to protect radar systems**

14.20 The Committee approved MSC.1/Circ.1250 on Safety margins to protect radar systems.

## **Guidelines on the control of ships in an emergency**

14.21 The Committee approved MSC.1/Circ.1251 on Guidelines on the control of ships in an emergency, taking into account the editorial amendments to paragraph 1.2.2 of the Guidelines to clarify the issues related to the fair treatment of seafarers.

## **Revised performance standards for Electronic Chart Display and Information Systems (ECDIS)**

14.22 With respect to the Revised performance standards for Electronic Chart Display and Information Systems (ECDIS) adopted at MSC 82, the Committee, having recalled that, at MSC 82, it had instructed NAV 53 to review the Revised performance standards and assess whether a common layout of controls, names or symbols for controls and output on the display for each control could be appropriately included therein and advise MSC 83 accordingly, noted the conclusion of NAV 53 that it was premature to revise the ECDIS performance standards at this stage.

## **15 FLAG STATE IMPLEMENTATION**

### **REPORT OF THE FIFTEENTH SESSION OF THE FSI SUB-COMMITTEE**

#### **General**

15.1 The Committee approved, in general, the report of the fifteenth session of the Sub-Committee on Flag State Implementation (FSI) (FSI 15/18 and Add.1 and MSC 83/15) and took action as indicated hereunder, noting that MEPC 56 had approved the report and had taken relevant decisions, as outlined in document MSC 83/2/3 (Secretariat).

#### **Long-range identification and tracking systems (LRIT)**

15.2 The Committee noted the outcome of the consideration by FSI 15 of the question of including provisions related to long-range identification and tracking systems (LRIT) in the draft Revised Code for implementation of mandatory IMO instruments. Although the Committee agreed to extend the usage of LRIT to include safety and environmental protection applications (see also paragraphs 6.27 to 6.31 and 6.78), it also agreed that from the point of view of the voluntary audit for the implementation of LRIT, it is premature now to include LRIT in the Revised Code since the LRIT system will not be fully implemented until 31 December 2008. Consequently, the Committee further agreed that the text in square brackets in annex 1 to the draft Revised Code should be deleted and that annex 6 to the draft Revised Code should refer to amendments to the 1974 SOLAS Convention up to, and including, the 2005 amendments adopted by resolution MSC.194(80).

#### **Draft Revised Code for the Implementation of Mandatory IMO Instruments**

15.3 Having noted MEPC 56's concurrent decision, the Committee approved the draft Revised Code for the Implementation of Mandatory IMO Instruments and the associated draft Assembly resolution, set out in annex 32, for submission to the twenty-fifth session of the Assembly for adoption. The Committee, having recalled the operative paragraph 3 of resolution A.973(24) stating that amendments to the Code should be proposed by the Committees, in co-ordination with the Council, invited the Council to note the approval of the draft Revised Code and take action as appropriate.

## **Revision of the Revised Guidelines on the implementation of the International Safety Management (ISM) Code by Administrations (resolution A.913(22))**

15.4 The Committee considered, in detail, the Sub-Committee's decision, as endorsed by MEPC 56, to commence at FSI 16 the revision of the Revised Guidelines on the implementation of the International Safety Management (ISM) Code by Administrations (resolution A.913(22)), taking into account the outcome of the work of the Independent Group of Experts on the impact and effectiveness of implementation of the ISM Code.

15.5 In this context, the Committee recalled that MSC 78 and MEPC 52 had instructed the Sub-Committee to commence the revision of the Revised Guidelines, while MSC 81 had referred the report of the aforementioned Independent Group of Experts to the Joint MSC/MEPC Working Group on Human Element for detailed consideration. Following the MSC 82's agreement that the guidelines for Administrations should be revised to make the guidelines more effective and user-friendly, and the guidelines and associated training material should be developed to assist companies and seafarers in improving the implementation of the Code, the joint working group prepared the draft MSC-MEPC.7 circulars on Guidelines for operational implementation of the ISM Code by Companies and on Guidelines on qualifications, training and experience necessary for undertaking the role of the designated person under the provisions of the International Safety Management (ISM) Code (see also paragraphs 16.6 and 16.7).

15.6 Having agreed that the Sub-Committee should no longer be tasked with the revision of the Revised Guidelines on the implementation of the International Safety Management (ISM) Code by Administrations (resolution A.913(22)) but that this work should be directed to the Joint MSC/MEPC Working Group on Human Element, which will meet during MSC 84, the Committee invited MEPC 57 to revert its decision on this issue and Members to submit proposals for discussion at the joint working group. The Committee noted that the FSI Sub-Committee had received a number of submissions to be considered in the context of such a revision of resolution A.913(22) and requested the Secretariat to make this material available to the joint working group.

### **Amendments to the ISM Code**

15.7 The Committee also considered the Sub-Committee's decision, which was endorsed by MEPC 56, to develop amendments to the ISM Code, including those relating to requirements for seafarer safety representation based on the decision which MSC 82 took after consideration of document MSC 82/21/2 (New Zealand, the Philippines, South Africa and ICFTU).

15.8 Having recalled that MSC 82 had previously agreed to include, in the work programme of the FSI Sub-Committee, a high priority item on "Amendments to the ISM Code relating to requirements for seafarer safety representation", with two sessions needed to complete the item and had instructed the Sub-Committee to include the item in the provisional agenda for FSI 16, the Committee agreed to instruct the Joint MSC/MEPC Working Group on Human Element to develop draft amendments to the ISM Code with the understanding that the intended scope of the amendments should be limited to those relating to requirements for seafarer safety representation.

15.9 Consequently, the Committee invited MEPC 57 to revert its decision on this issue, implying corresponding amendments to the work programme of the FSI Sub-Committee and the provisional agenda for FSI 16, and Members to submit proposals for discussion at the joint working group.

### **Model course for the training of safety management system auditors**

15.10 The Committee endorsed the Sub-Committee's decision to request the Secretariat to refer the draft IMO Model course for the training of safety management system auditors to the validation group, having also endorsed the Sub-Committee's views that the model course, being of a recommendatory nature, should be used in a flexible manner and not be considered as the only methodology. National maritime Administrations may decide to make use of other training material and that a similar initiative for the training of other categories of surveyors/auditors which is not currently covered by the existing IMO training material should be pursued.

### **COUGAR ACE casualty**

15.11 The Committee noted the Sub-Committee's recommendation that there might be a need to learn from the **Cougar Ace** casualty regarding ballast water exchange operations. The Sub-Committee recognized that sufficient guidance for ballast water exchange operations existed and, therefore, the issuance of an MSC-MEPC circular reminding interested parties to make use of them was unnecessary. Having also noted MEPC 56's concurrent decision, the Committee agreed to instruct the STW Sub-Committee to consider the **Cougar Ace** casualty in the context of training requirements for ballast water exchange.

### **Investigator skills of their marine casualty investigators**

15.12 The Committee noted that the Sub-Committee had considered the study carried out by the Inter-Industry Working Group (IIWG) and the reference by the FSI Correspondence Group on Casualty Analysis to existing guidance which can be found in the Guidelines for the investigation of human factors in marine casualty and incidents (resolution A.884(21)) and the IMO Model Course 3.11 on Marine Accident and Incident Investigation. In this context, the Committee agreed to encourage Member Governments to further develop the human element investigator skills of their marine casualty investigators.

### **Incidents of explosions on chemical and product tankers**

15.13 The Committee considered the Sub-Committee's recommendation that the reports of investigation into the **Chassiron, Panam Serena** and **Bow Mariner** casualties should be referred to the relevant IMO bodies for consideration in the context of their work on incidents of explosions on chemical and product tankers.

15.14 Recalling its earlier decision regarding the work of its subsidiary bodies on incidents of explosions on chemical and product tankers (see paragraphs 8.13 to 8.15, 9.24 to 9.26 and 10.4), the Committee agreed to refer the reports of investigation into the **Chassiron, Panam Serena** and **Bow Mariner** casualties to the FP Sub-Committee for consideration, bearing in mind that only the analysis of the report of investigation into the **Chassiron** casualty has been approved by the FSI Sub-Committee.

### **Code of the International Standards and Recommended Practices for a Safety Investigation into a Marine Casualty or Marine Incident**

15.15 The Committee considered the recommendations of the Sub-Committee on the course of action for the adoption of the Code of the International Standards and Recommended Practices for a Safety Investigation into a Marine Casualty or Marine Incident (Casualty Investigation



Code) and to make it mandatory under SOLAS, together with the related comments contained in documents MSC 83/15/2 (Brazil, China, Cyprus, Greece, India, the Philippines, South Africa, ICS, ISF, ITF, BIMCO, INTERTANKO and INTERCARGO) and MSC 83/12/4 (ILO).

15.16 The delegation of the United States indicated that, after careful review of the existing text of the draft Code, the Government of the United States had identified significant areas of substantive and procedural concern that would currently prevent it from allowing these amendments to enter into force for the United States. Accordingly, the delegation suggested that the draft Code be referred back to FSI 16 for further consideration to remove individual legal rights and legal process requirements, which the United States believe is contrary to the purpose of SOLAS, and to prevent inconsistencies with the Joint IMO/ILO Guidelines for the Fair Treatment of Seafarers in the Event of a Maritime Accident, and their ongoing review by other bodies. (The full statement of the delegation of the United States is set out in annex 41.)

15.17 The delegation of the United Kingdom stated that the United Kingdom would wish to point out that the joint IMO/ILO Guidelines for the Fair Treatment of Seafarers in the Event of a Maritime Accident are not intended for use in connection with a safety investigation but rather in the case where a criminal prosecution is likely. The delegation further stated that the United Kingdom is concerned that the mandated provision of legal advice is not necessary, will add significantly to the time of maritime safety investigations undertaken by independent investigating bodies and may well have a detrimental effect on their effectiveness.

15.18 After consideration of the views expressed regarding the wording of paragraph 12.2 of the draft Code and the need for consistency with the text of resolution A.987(24) on Guidelines on fair treatment of seafarers in the event of a maritime accident and resolution LEG.3(91) on adoption of Guidelines on fair treatment of seafarers in the event of a maritime accident, the Committee agreed to amend the text of paragraph 12.2 of the draft Code to replace the word “or” by “and” in accordance with the proposal contained in paragraph 5 of document MSC 83/15/2. The Committee also agreed to amend paragraph 24.2 of the draft Code to be consistent with the new text of paragraph 12.2.

15.19 Subsequently, the Committee approved the draft Code of the International Standards and Recommended Practices for a Safety Investigation into a Marine Casualty or Marine Incident (Casualty Investigation Code) and the associated draft MSC resolution, set out in annex 33, with a view to adoption at MSC 84.

15.20 The Committee also approved the draft amendments to SOLAS chapter XI-1, set out in annex 34, making the Code of the International Standards and Recommended Practices for a Safety Investigation into a Marine Casualty or Marine Incident mandatory, with a view to adoption at MSC 84 and requested the Secretary-General to circulate the draft amendments, in accordance with SOLAS article VIII, for consideration at MSC 84 with a view to adoption. The delegation of the United States reserved its position on the action taken by the Committee on approval of the Casualty Investigation Code and the draft amendments to SOLAS chapter XI-1.

15.21 In the same context, the Committee further approved, subject to concurrent decision by MEPC 57, the draft MSC-MEPC.3 circular on the Code of the International Standards and Recommended Practices for a Safety Investigation into a Marine Casualty or Marine Incident, set out in annex 5 to document FSI 15/18/Add.1, to allow for the Code to be implemented on a voluntary basis prior to the effective date of the Code. The Committee invited Member States to start implementing the Code of the International Standards and Recommended Practices for a Safety Investigation into a Marine Casualty or Marine Incident on a voluntary basis prior to the effective date of the Code.

15.22 The Committee requested the Secretariat to inform the Legal Committee and ILO on the outcome of the consideration of this issue.

15.23 Having noted MEPC 56's concurrent decision, the Committee endorsed, as reworded, the Sub-Committee's decision to consider, in the future, the revision of the Guidelines (resolution A.884(21)) to assist investigators in the implementation of the Code for the Investigation of Marine Casualties and Incidents, with a view to inclusion as an appendix to the Casualty Investigation Code.

### **Code of good practice to assist PSCOs in conducting their inspections**

15.24 Having noted MEPC 56's concurrent decision, the Committee approved MSC-MEPC.4/Circ.2 on the Code of good practice and invited PSC regimes to develop and adopt a similar Code to assist PSC officers in conducting their inspections.

### **Contact details**

15.25 Taking also into account the information provided by the Secretariat regarding the release of a module of the Global Integrated Shipping Information System (GISIS) on contact points (see paragraph 27.2), the Committee invited Member Governments to update their contact details for safety and pollution prevention and response as contained in MSC-MEPC.6/Circ.2.

### **Invitation to expert**

15.26 The Committee endorsed the Sub-Committee's decision to invite a representative of Equasis to attend as an expert, under Rule 45 of the Rules of Procedure, the next meeting of the Sub-Committee, in particular, to facilitate the consideration of issues on the potential role of Equasis in the context of the harmonization of PSC activities and on the possible interactions between GISIS and Equasis regarding the global exchange of PSC data.

### **Findings and recommendations of the 2005 Paris MoU Concentrated Inspection Campaign on the GMDSS**

15.27 The Committee endorsed the Sub-Committee's decision to refer the findings and recommendations of the 2005 Paris MoU Concentrated Inspection Campaign on the GMDSS to the STW Sub-Committee for information and requested the STW Sub-Committee to comment on the usefulness to its work of the information collected through the concentrated inspection campaign in its current form.

### **Draft Revised Survey Guidelines under HSSC**

15.28 The Committee considered the proposal contained in document MSC 83/15/5 (Bahamas and CLIA) regarding the inspection of the outside of the ship's bottom for passenger ships and proposing a possible extension of the period between dry-dock inspections for a passenger ship, after consideration of factors, including technological advances, operational issues, condition monitoring and the age of the ship.

15.29 Following the detailed presentation by the delegation of Malta of the technical merits of the proposal contained in document MSC 83/15/5, while introducing inherent problems associated with dry-docking, the Committee recognized the potential merit of the proposal, subject to the detailed review and clarification of the elements contained therein and the possible development of additional guidance by relevant IMO bodies.

15.30 Having noted that the Sub-Committee has a responsibility to conduct a continuous review of the Survey Guidelines and that FSI 15 had re-established the intersessional Correspondence Group on the Review of the Survey Guidelines under the HSSC, the Committee agreed to refer the above-mentioned proposal to the correspondence group under its existing terms of reference for consideration and recommendation to FSI 16 while inviting Member States to consider proposing new items to be added to the work programmes of relevant sub-committees.

15.31 Having noted MEPC 56's concurrent decision, the Committee approved the draft Revised Survey Guidelines under the Harmonized System of Survey and Certification (HSSC) and the associated draft Assembly resolution, set out in annex 35, for submission to the twenty-fifth session of the Assembly for adoption.

### **Annual testing of the automatic identification system**

15.32 The Committee considered the proposal contained in document MSC 83/15/3 (Republic of Korea) which raised the issue related to the incorporation of the annual testing of the automatic identification system (AIS) within the HSSC Guidelines as this test is not required by SOLAS regulation or any other instrument and proposing to add a new SOLAS regulation V/18.9 requiring annual testing of the equipment.

15.33 Having noted the views expressed that there is a substantial amount of electronic equipment on board ships (e.g., radar, VHF, etc.) which is not currently required to undergo a mandatory annual testing, the Committee referred the proposal to FSI 16 for further consideration.

15.34 The Committee approved MSC.1/Circ.1252 on Annual testing of the automatic identification system (AIS).

### **Loss of containers overboard**

15.35 The Committee noted the information provided by the delegations of the France and the United Kingdom, concerning the incidents onboard the container ships **Othello** and **Annabella**, respectively, involving the loss of containers overboard. Based on the investigation carried out into the two incidents, a series of findings and recommendations has been made public by the national investigating authorities. In the same context, the representative of ICS further indicated that the industry, based on the aforementioned recommendations, was developing best practice guidelines. The statements of France, the United Kingdom and ICS are reproduced in annexes 42, 43 and 44, respectively.

### **REPORT OF THE SECOND JOINT FAO/IMO AD HOC WORKING GROUP ON IUU FISHING AND RELATED MATTERS (JWG)**

15.36 The Committee, having recalled that, following the decision of MEPC 51 and MSC 78, the second meeting of the Joint IMO/FAO *Ad Hoc* Working Group on IUU Fishing and Related Matters (JWG) was held from 16 to 18 July 2007 at the Headquarters of the Food and Agriculture Organization of the United Nations (FAO) in Rome, considered documents MSC 83/15/1 and MSC 83/INF.12 on the outcome and the report of the meeting respectively, as introduced by the Chairman of JWG, Mr. J. Morishita (Japan), and the Secretariat.

15.37 The Committee noted that, as a prelude to the July meeting of the JWG, the Secretary-General had addressed the Committee on Fisheries (COFI) of FAO at its 27<sup>th</sup> session in Rome from 5 to 9 March 2007, and provided his statement to promote the entry into force of the 1993 Torremolinos Protocol for the Safety of Fishing Vessels and the 1995 International

Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel. The Committee also noted that the Secretariat had recruited a consultant (Dr. T. Mensah) to conduct a study to be presented to the JWG on the conditions for the entry into force of the Torremolinos Protocol as well as on proposals which could facilitate the decision-making process at the level of individual States to become Parties to this instrument.

15.38 During his introduction of the two documents under consideration, the Chairman of the JWG highlighted the areas of ongoing and possible future co-operation between the two Organizations in the wider context of IUU fishing and related matters which also relate to the safety of fishing vessels and the prevention of marine pollution. Such areas were indicated to include the monitoring of fishing vessels movements, the assessment of flag States' performances, the security of non-convention ships and the involvement of regional fishery management organizations in the work of IMO; and illustrated the usefulness of maintaining the mechanism of the JWG with a third meeting proposed to take place within the next three to five years, depending on the progress made on relevant issues. He further indicated that, as part of the ongoing collaboration between the two Organizations and its positive outcome, an expert consultation to draft a legally-binding instrument on port State measures had already taken place in Washington DC last September.

15.39 On the issue of the 1993 Torremolinos Protocol, the Chairman of the JWG emphasized that the group had recognized the potential of the proposals introduced by Dr. Mensah *vis-à-vis* the question of its entry into force, and stressed, in particular, that the method, based on the preparation of the draft Agreement relating to the implementation of the Protocol, had already been successfully used in the context of the United Nations Convention on the Law of the Sea (UNCLOS), 1982 regarding the Agreement for the Implementation of the Provisions of relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks and the Agreement relating to the Implementation of Part XI of the Convention. He also indicated that the proposed action aimed at undertaking appropriate consultations with the interested Governments with a view to identifying the revisions to the 1993 Protocol which may be needed to make the Protocol acceptable to the required number of Governments to ensure the early entry into force was intended to involve the visit by relevant experts and representatives of the Secretariat to the appropriate authorities in the countries which have the largest fleets of fishing vessels of 24 metres and above.

15.40 In the context of his intervention to clarify the technical content of the three options put forward by Dr. Mensah, the Director of the Maritime Safety Division explained the reported disadvantages of the option to adopt a new Protocol. He focused on the presentation made by Dr. Mensah of the third option based on the proposal to incorporate the agreed revisions of the Protocol in a new instrument referred to as an Agreement relating to the implementation of the Protocol. This Agreement would be read and interpreted with the 1993 Protocol as a single treaty instrument and be adopted by an appropriate IMO organ or by an intergovernmental conference convened by IMO in collaboration with FAO. Such an Agreement would provide that States which accept it would also have to accept the 1993 Protocol, and the States which have already ratified the 1993 Protocol would be able to accept the revisions in the Agreement through the tacit acceptance procedure, if they so wish.

15.41 The Director stated that the IMO consultant was of the opinion that the adoption of such an Agreement could make it possible to revise the 1993 Protocol in order to remove the impediments that currently prevent some States with large fishing fleets from ratifying the Protocol. It would also make it possible for the revisions to become applicable at the same time as the Protocol enters into force. In addition, it would avoid the complications of having two separate treaties. In particular, it would make it possible for the States which have already ratified

the 1993 Protocol to accept the revised Protocol without necessarily going through the constitutional or parliamentary processes normally required for formal ratification.

15.42 Among the delegations which spoke to support the importance of a close co-operation between the two Organizations and between their Secretariats, the delegation of Turkey also stressed the need for national administrations in charge of maritime matters and those dealing with fishing activities to ensure efficient collaboration in the context of the various issues addressed by the JWG.

15.43 Following the reporting by the delegation of Turkey on a discrepancy between the figures shown in the 2004 study carried out at the request of the Council (C 93/4/Add.2) concerning the national fleets of fishing vessels of 24 metres and above, and the actual size of the fleet flying the Turkish flag, the Committee invited Member States to co-operate with the Secretariat in order to keep those figures updated.

15.44 Having considered the list of actions requested by the JWG (MSC 83/15/1, paragraph 14), the Committee agreed that IMO, in consultation with FAO, should explore options suggested, including the possibility of preparation of the draft Agreement relating to the implementation of the Torremolinos Protocol with a view to adoption by an appropriate IMO organ. In this context, the Committee invited interested delegations to consider submitting to MSC 84, a proposal for a new work programme item which may require to progress the matter of the entry into force of the 1993 Torremolinos Protocol.

15.45 The Committee concurred with the JWG's recommendations that the two Organizations should undertake appropriate consultations with the interested Governments with a view to identifying the revisions to the 1993 Protocol which may be needed to make the Protocol acceptable to the required number of Governments to ensure the early entry into force; and assist Governments to adopt measures needed to accept and implement the 1993 Protocol; and that the IMO Secretariat, in co-operation with the FAO Secretariat, should further consider organizing international events for a focussed consideration, at a decision-making level, of the entry into force of the Torremolinos Protocol and the STCW-F Convention. Subsequently, the Committee requested the Secretariat to act accordingly within the context of the ITCP under the coordination of the Technical Co-operation Committee.

15.46 The Committee agreed to refer the full report of the JWG (MSC 83/INF.12) to FSI 16 for detailed consideration and requested the Secretariat to inform the FAO and the ILO on the outcome of the consideration of this matter.

## **16 ROLE OF THE HUMAN ELEMENT**

### **OUTCOME OF MEPC 56 (REPORT OF THE JOINT MSC/MEPC WORKING GROUP ON HUMAN ELEMENT)**

16.1 The Committee recalled that MSC 78 had agreed that the Joint MSC/MEPC Working Group on Human Element should be convened at least once a year, preferably at alternate sessions of the MSC and the MEPC, as appropriate, following consultations between the Chairmen of the two Committees.

16.2 The Committee noted that MEPC 56 had reconvened the Joint MSC/MEPC Working Group on Human Element.

16.3 The Committee approved, in general, the report of the Joint MSC/MEPC Working Group on Human Element (MEPC 56/WP.8, MSC 83/16) and took action as indicated hereunder.

#### **THE ORGANIZATION'S STRATEGY TO ADDRESS THE HUMAN ELEMENT**

##### **Updated Human Element Action Plan**

16.4 The Committee approved the updated action plan in the Organization's Strategy to Address the Human Element.

##### **Near-miss data in accident and incident investigations**

16.5 The Committee invited Member Governments, intergovernmental and non-governmental organizations to submit comments on the preliminary text on near-miss reporting proposals to the next session of the group.

##### **Guidelines for the operational implementation of the ISM Code by Companies**

16.6 The Committee approved MSC-MEPC.7/Circ.5 circular on Guidelines for the operational implementation of the International Safety Management (ISM) Code by Companies.

#### **EXPERIENCE, QUALIFICATIONS AND TRAINING FOR THE ROLE OF DESIGNATED PERSON UNDER THE INTERNATIONAL SAFETY MANAGEMENT CODE**

16.7 The Committee approved MSC-MEPC.7/Circ.6 circular on Guidance on the qualification, training and experience necessary for undertaking the role of designated person under the provisions of the International Safety Management (ISM) Code.

#### **DEVELOPMENT OF A SAFE WORKING ENVIRONMENTAL STANDARD AND ITS APPLICATION TO TIER II FUNCTIONAL REQUIREMENTS OF THE GOAL-BASED NEW SHIP CONSTRUCTION STANDARDS**

16.8 The Committee recalled that it had taken appropriate action relating to this item under agenda item 5 (Goal-based new ship construction standards), as reflected in paragraphs 5.35 to 5.37 and 5.70 to 5.72.

#### **ONGOING WORK OF THE HUMAN FACTORS TASK GROUP (HFTG) ESTABLISHED BY THE INDUSTRY**

16.9 The Committee noted the discussions of the group relating to the ongoing work of the human factor task group (HFTG) established by the industry.

#### **ILO PROPOSAL FOR THE ESTABLISHMENT OF IMO/ILO JOINT WORKING GROUP ON HUMAN ELEMENT**

16.10 The representative of ILO expressed the opinion that, in light of the formal communication from the Director-General of ILO to establish a Joint ILO/IMO Working Group to address matters within the competence of both Organizations relating to seafarers training, hours of work and rest, seafarer fatigue, career and skills development and opportunities for seafarers' employment pursuant to resolution X of the International Labour Conference 2006, the Committee should consider this issue taking the aforementioned into account. This was supported by the delegation of the Philippines and observers from IFSMA, ITF and ISF.

16.11 In this context, the MEPC Chairman clarified that the communication from ILO had been considered by the Joint MSC/MEPC Working Group on Human Element in detail. Based on the recommendations of that group, MEPC 56 had agreed that:

- .1 it was not appropriate to establish the proposed joint ILO/IMO working group with such wide and open-ended terms of reference; and
- .2 in future, when preparing or reviewing other technical texts or proposals on matters within the technical competence of both Organizations, if considered necessary, an *ad hoc* joint ILO/IMO working group with specific terms of reference on a case-by-case basis could be established to properly address the human element on a tripartite basis.

16.12 Having noted the clarifications by the MEPC Chairman, the Committee agreed that:

- .1 the Joint MSC/MEPC Working Group on Human Element should continue its work in accordance with the Organization's Strategy to Address the Human Element (MSC-MEPC.7/Circ.4);
- .2 there was no compelling need to establish a joint ILO/IMO working group at this stage to address issues relating to seafarers' training; hours of work and rest; manning levels; seafarers' fatigue; career and skill development, as these were already being addressed by the STW Sub-Committee on a regular basis; and
- .3 it was not appropriate to establish the proposed joint ILO/IMO working group with such wide and open ended terms of reference and that, in future, when preparing or reviewing other technical texts or proposals on matters within the technical competence of both Organizations, if considered necessary, to establish an *ad hoc* Joint ILO/IMO working group on a case-by-case basis with specific terms of reference to properly address the human element on a tripartite basis.

### **Other issues**

16.13 The Committee instructed the Secretariat to publish all related guidance issued by the Organization in the next edition of the ISM Code.

16.14 The Committee noted that the Joint MSC/MEPC Working Group on Human Element was scheduled to be reconvened at MSC 84 and invited Member Governments, intergovernmental and non-governmental organizations to submit proposals in accordance with the Organization's Strategy to Address the Human Element (MSC-MEPC.7/Circ.4).

16.15 The Committee noted, under agenda item 11 (Stability, load lines and fishing vessel safety) (see paragraph 11.9), that SLF 50 had referred relevant chapters of the draft Safety recommendations for decked fishing vessels of less than 12 metres in length and undecked fishing vessels to the respective sub-committees and to the Joint MSC/MEPC Working Group on Human Element for consideration. The Committee requested the Secretariat to prepare a relevant document for MSC 84 under this agenda item, so that the Joint MSC/MEPC Working Group on Human Element, when established, could consider the relevant chapters of the draft Safety recommendations and comment as appropriate.

## **17 TECHNICAL ASSISTANCE SUB-PROGRAMME IN MARITIME SAFETY AND SECURITY**

### **DEVELOPMENTS CONCERNING TECHNICAL CO-OPERATION ACTIVITIES**

#### **General**

17.1 The Committee noted the information provided in document MSC 83/2/1 on the outcome of TCC 57 and document MSC 83/17 on the safety-, security- and facilitation-related activities executed in 2007 under the Integrated Technical Co-operation Programme (ITCP) for the 2006-2007 biennium. It further noted the high rate of implementation delivery over 2006 which expended about US\$12 million on activities which included 36 consultancy missions, 93 training courses, seminars and workshops held at national, regional and global levels resulting in the training of some 2,433 participants worldwide.

#### **ITCP for 2008-2009**

17.2 The Committee noted that, for the first time, links between the ITCP and the Millennium Development Goals (MDGs) have been established and incorporated into the proposed ITCP for 2008-2009. The ITCP, which comprised 14 programmes, including a new global programme on "Support to Small Island Developing States (SIDS) and Least Developed Countries (LDCs) for their shipping needs" had a funding requirement of approximately US\$20.445 million. The Committee further noted that the ITCP for 2008-2009 was approved by TCC 57 with the addition of "Sustainable maritime sector development" as one of the priorities of the ITCP, focusing on safe navigation on coastal routes and the integration of SIDS and LDCs.

#### **Linkage between the ITCP and the Millennium Development Goals (MDGs)**

17.3 The Committee noted the importance of the maritime industry on the economic development of countries which were highlighted in the report of the Intersessional Working Group on the Linkage between the ITCP and the MDGs held from 26 February to 1 March 2007. The report also established the fact that improved maritime capacity, supported by the work of IMO and the ITCP, had a major and direct impact on at least five MDGs. The Committee also noted that TCC approved the draft Assembly resolution on the Linkage between the ITCP and the MDGs for submission to A 25 for adoption.

#### **Impact Assessment Exercise (IAE)**

17.4 The Committee noted that the third impact assessment exercise covering the period 2004-2007 was scheduled for 2008 and would focus on an analysis of the extent to which the delivery of technical assistance had achieved its programme objectives and any related demonstrable improvements in capacity, with respect to support for the establishment and strengthening of national maritime administrations, marine pollution prevention, preparedness and response and maritime security.

#### **Progress on Search and Rescue in Africa**

17.5 The Committee was informed by the Secretariat that, following the first meeting of the West African Group (Côte d'Ivoire, Ghana, Guinea, Liberia and Sierra Leone), a second meeting to finalize the Multilateral Agreement between the countries was held in Monrovia, Liberia from 25 to 27 September 2007. The final meeting, which will see the signing of the Agreement by the Ministers of the various countries, is scheduled to be held in Monrovia, Liberia



from 8 to 9 November 2007. The delegation of Nigeria informed the Committee of its follow-up action and assistance in visiting the countries in its group from 19 to 30 October prior to commissioning the RMRCC on 9 November 2007.

17.6 The Secretary-General provided an update on the progress of the implementation of the 2000 Florence Conference resolutions on the designated regional MRCCs centres in Mombasa, Cape Town, Liberia, Nigeria and Morocco. He informed the Committee that he had so far commissioned the Mombasa RMRCC in Kenya on 5 May 2006 and also commissioned the Cape Town RMRCC in South Africa on 16 January 2007. The Secretary-General further indicated that he was also in constant communication with Nigeria which intends to commission its Regional MRCC on 9 November 2007, as well as Liberia and Morocco. The Committee expressed its appreciation to the Secretary-General for his interest and assistance to the various countries.

### **ABUJA MoU STRATEGY FOR 2010**

17.7 The Committee noted the information provided in document MSC 83/17/3 on the Abuja MoU on port State control and its programme of capacity development for the period 2007-2010. The document indicates specific areas requiring technical capacity co-operation between the Abuja MoU and its partners and also highlights some of the problems being faced by the Abuja MoU, which was established in October 1999. Out of the 19 States that signed the MoU, only six have deposited a formal instrument of acceptance with the Abuja MoU Secretariat, where the level of participation in the affairs of the MoU is minimal due to lack of basic infrastructure necessary for meaningful participation in port State control activities. The document lists a number of projects which are aimed at enhancing the administrative and operational capacity of the Abuja MoU on port State control. The sponsors of the document considered the undertaking of these projects as critical in the improvement of the operational capacity of the participating Member States, and the MoU Secretariat in general, and requested the Committee's support.

17.8 There was overwhelming support by Member States for the planned activities by the Abuja MoU and other sponsors contained in document MSC 83/17/3 and the initiative taken in identifying projects and developing a schedule for its implementation. The Committee, agreeing on the need for supporting the Abuja MoU, requested the Secretariat (MSD and TCD) to discuss the projects listed in the document with the Abuja MoU Secretariat and take action as appropriate, including the provision of technical assistance.

### **DOMESTIC FERRY SAFETY PILOT PROJECT**

17.9 The Committee recalled that, at MSC 82, it was informed by the Secretariat that the continual loss of life resulting from domestic ferry accidents had prompted IMO to develop an eight-phase plan concerning non-Convention ferry safety and invited the International Ferry Industry Association (INTERFERRY) to join in this effort. The two Organizations signed a Memorandum of Understanding (MoU) in January 2006, formalizing their intent to work together towards enhancing the safety of domestic non-Convention ferries by collaborating, through IMO's Integrated Technical Co-operation Programme (ITCP).

17.10 The Committee noted the information provided in document MSC 83/17/2 (Secretariat) that, following the signing of the MoU and conducting the needs assessment mission, the two Organizations had carried out a detailed research-based analysis of the problems prior to the establishment of a Working Group in the pilot country. Under phase 4, the Working Group meeting was held in Dhaka, Bangladesh from 18 to 20 December 2006, where a variety of stakeholders as well as experts participated. A number of recommendations were made by the

Working Group on critical issues involving non-convention ferry safety for incorporation into the pilot project.

17.11 The Committee further noted that both Organizations were currently working on phase 5 of the plan on resource mobilization of funds for the project and it was expected that the lessons learned from this project would serve as a model project in other countries needing to address ferry safety. It also noted that, concurrently, the first pilot project was also under preparation and, on completion of the project document, the project would be launched once the funding from donors has been committed.

17.12 The delegation of Bangladesh expressed its appreciation to the IMO Secretariat for undertaking a number of safety-related projects in the region under the various technical assistance programmes. The delegation emphasized that many lives had been lost in Bangladesh due to ferry and other water-craft related accidents and hoped that the project on Domestic ferry safety would soon be implemented.

17.13 The Committee urged Governments and industry to contribute to the IMO's technical co-operation programmes and requested the Secretariat to continue providing the Committee with updated information.

#### **MODEL COURSE PROGRAMME**

17.14 The Committee noted the updated information on the Model course project provided in document MSC 83/17/1. The Committee requested the Secretariat to continue its follow-up and provide an updated report to MSC 84.

### **18 CAPACITY-BUILDING FOR THE IMPLEMENTATION OF NEW MEASURES**

#### **General**

18.1 The Committee recalled that, at MSC 82, it had considered document MSC 82/20/1 which proposed that the Committee and all its sub-committees should ensure that, when developing new instruments or amending existing ones, where necessary, guidance for implementation is prepared and that issues which the Technical Co-operation Committee (TCC) might need to consider for the purpose of developing related technical co-operation and assistance programmes are identified.

18.2 The Committee further recalled that, while supporting the proposal in principle, it had recognized that an appropriate mechanism for preparing such guidance should be established and had also noted an option that a consultation mechanism for the implementation of new measures should be established as well as a view that an appropriate policy should be established, taking into account relevant paragraphs of resolution A.500(XII), as an Assembly resolution to be adopted at the next Assembly meeting. The Committee, recognizing that the issue was not only relevant to it and its sub-committees but also to other Committees (MEPC, FAL and LEG) as well as the Assembly and Diplomatic Conferences, had agreed to consider the matter at this session and invited Members to submit proposals and invited other Committees to consider the same matter.

### **Outcome of FAL 34**

18.3 The Committee noted that FAL 34 (MSC 83/18, paragraph 4) had noted the outcome of MSC 82 on the issue, and recalled in this context that ongoing work on the preparation of an Explanatory Manual to the FAL Convention and its strategy to promote the use of electronic means to exchange information with the objective of harmonizing and simplifying procedures, adopted by FAL 28, were examples of items which could be utilized towards capacity-building.

### **Outcome of the International Conference on the Removal of Wrecks**

18.4 The Committee noted that the International Conference on the Removal of Wrecks, 2007 (14-18 May 2007), when adopting the Nairobi International Convention on the Removal of Wrecks, 2007, had also adopted resolution 3 on Promotion of Technical Co-operation and Assistance (LEG/CONF.16/20), recognizing the need for the development of appropriate legislation and the putting in place of appropriate infrastructure for the removal of wrecks where there may be limited infrastructure, facilities and training programmes to obtain the experience required in assessing the hazard which a wreck may pose, particularly in developing countries.

### **Outcome of MEPC 56**

18.5 The Committee noted that MEPC 56 (MSC 83/18, paragraph 8) had noted the outcome of MSC 82 on the issue. The MEPC noting that, in the discussion, many delegations supported the decision of MSC 82 that the option to develop guidance for implementation of new instruments and/or when amending existing ones could be equally applied to MEPC and other Committees, decided to consider this matter further at its next session and invited delegations to submit proposals to MEPC 57 taking into account the outcome of MSC 83.

### **Process towards the enhancement of capacity to implement new measures and proposals**

18.6 The Committee considered document MSC 83/18/1 (South Africa) which proposed that:

- .1 as a matter of policy, the Committee must insert a criteria in its method of work requiring that Member States and organizations with observer status, when proposing development of new instruments or proposing amendment of existing instruments, identify capacity implications with the assessment criteria:
  - .1 Does the proposed instrument require capacity-building before or during the implementation phase? and
  - .2 Does the proposal require technical assistance and co-operation including the development of a simplified guide for its implementation?
- .2 with regard to new instruments, the Committee should establish, at MSC 84, an *ad hoc* working group on capacity-building and technical co-operation for the implementation of new instruments, with the terms of reference as stated in paragraph 8 of document MSC 83/18/1; and
- .3 the Committee consider the proposed draft Assembly resolution, on the need for capacity-building when implementing new instruments and when developing, and/or amending, existing ones, annexed to document MSC 83/18/1.

18.7 Many delegations expressed their support for the proposal, contained in document MSC 83/18/1 (South Africa), acknowledging that there were difficulties with the implementation of IMO Conventions and other instruments due to lack of capacity, especially in developing countries.

18.8 The Committee agreed on the proposed criteria for assessment of capacity-building when proposing the development of new instruments or amendment to existing instruments (MSC 83/18/1, paragraph 7), and, recognizing the need to amend the Committee's Guidelines accordingly, requested the Secretariat to prepare draft amendments to the Committee's Guidelines and submit these to MEPC 57 and MSC 84 for consideration.

18.9 The Committee agreed, in principle, to establish an *ad hoc* working group on capacity-building and technical co-operation for the implementation of new instruments, as proposed by South Africa (MSC 83/18/1), subject to further consideration of the issue under agenda item 25 (Work programme) (see also paragraph 25.68) in the context of the number of groups to be established at the next session.

18.10 The Committee approved the draft Assembly resolution on The need for capacity-building for the development and implementation of new, and amendments to existing, instruments, set out in annex 36, and requested the Secretariat to submit the draft resolution to the twenty-fifth session of the Assembly for adoption.

### **First Seoul International Maritime Forum**

18.11 The delegation of the Republic of Korea informed the Committee of the First Seoul International Maritime Forum which was held from 6 to 8 September 2007 in Seoul, Republic of Korea. The main theme of the Forum was the Wreck Removal Convention (WRC) which was adopted in May 2007 in Nairobi, Kenya. The report will be provided to IMO and Member States in due course. The Korean delegation further informed the Committee that such a Forum would be held on a regular basis to promote and facilitate proper implementation of IMO instruments. In this regard, he invited the IMO Secretariat and Member States to propose appropriate and relevant topics which may be adopted for the next Seoul International Maritime Forum, the outcome of which will be provided to IMO accordingly.

## **19 PIRACY AND ARMED ROBBERY AGAINST SHIPS**

### **STATISTICAL INFORMATION**

19.1 The Committee recalled that, since MSC 77, the usual monthly and quarterly reports on piracy and armed robbery against ships had been circulated under the MSC.4/Circular series. The annual report for the calendar year 2006 was issued under the symbol MSC.4/Circ.98.

19.2 The Committee recalled that, since June 2001 and in accordance with the instruction of MSC 74, the MSC.4 circulars reporting on acts of piracy and armed robbery differentiated (in separate annexes) acts of piracy and armed robbery actually "committed" from "attempted" ones.

19.3 In considering document MSC 83/19 (Secretariat), the Committee noted that the number of acts of piracy and armed robbery against ships reported to the Organization and which had occurred between 1 October 2006 and 30 June 2007 was 201 against 187 over the same period for 2005/6, representing an increase of 7.5% from the figure for 1 October 2005 to 30 June 2006.

The total number of incidents of piracy and armed robbery against ships, reported to have occurred or to have been attempted from 1984 to the end of August 2007, was 4,432.

19.4 The Committee observed that this 7.5% increase in the reported acts of piracy and armed robbery against ships during the period under review was a cause for concern and was largely attributable to an increase in such criminal activities in the Gulf of Aden, Arabian Sea and off the coast of West Africa. As emphasized in previous sessions of the Committee, much more still needed to be done to reduce this menace.

19.5 The Committee further observed that during the period under review (i.e., 1 October 2006 and 30 June 2007), it had emerged that the areas most affected (i.e., five incidents reported or more) were the Far East, in particular, the South China Sea and the Malacca Strait, East Africa, the Indian Ocean, West Africa, the Arabian Sea, South America (Atlantic), South America (Pacific) and the Caribbean. Most of the attacks worldwide occurred or had been attempted in territorial waters while the ships were at anchor or berthed.

19.6 The Committee expressed deep concern that in many of the reports received, the crews had been violently attacked by groups of five to ten people carrying knives or guns. It was noted that during the period under review, 26 crew members were killed, 58 crew members were assaulted/injured and 133 crew members were taken hostage. Eleven ships were hijacked. One vessel and its crew were still missing.

19.7 The Committee concluded by urging, once again, all Governments and the industry to intensify and co-ordinate their efforts to eradicate these unlawful acts.

19.8 The Committee noted that despite numerous requests, at previous sessions of the Committee, the Secretariat still received very few, if any, reports from Member Governments on action they had taken with regard to incidents reported to have occurred in their territorial waters. The Committee reiterated the urgent need for all Governments to provide the Organization with the information requested.

## **INITIATIVES TO COUNTER PIRACY AND ARMED ROBBERY AT SEA**

### **Piracy and armed robbery against ships in waters off the coast of Somalia**

19.9 In considering document MSC 83/19/1 (Secretariat), the Committee recalled that in November 2005, at a time when the incidence of piracy attacks off Somalia was high, A 24 adopted resolution A.979(24) on Piracy and armed robbery against ships in waters off the coast of Somalia, by means of which the situation was brought to the attention of the United Nations Security Council (UNSC), resulting in a subsequent Statement by the President of UNSC of 15 March 2006.

19.10 The Committee recalled that operative paragraph 7.2 of resolution A.979(24) requested the Secretary-General “to continue monitoring the situation in relation to threats to ships sailing in waters off the coast of Somalia and to report to the Council, as and when appropriate, on developments and any further actions which may be required”.

19.11 The Committee noted that following the publication of the UNSC’s Presidential Statement, although there had been a much-welcomed reduction in acts of piracy and armed robbery against ships in waters off the coast of Somalia, since the beginning of the current year there had been a worrying increase in the number of reported incidents, including attacks on ships carrying humanitarian aid, such as those chartered or operated in the service of the World

Food Programme (WFP), reflecting a common pattern of organized and co-ordinated activities up to 200 miles off the coast, and several reportedly within Somalia's territorial sea.

19.12 The Committee noted that in response to this situation, co-ordination between IMO, WFP and navies operating in the region had intensified with a view to ensuring that the tracking of and, where necessary, the provision of assistance to merchant shipping, particularly ships carrying humanitarian aid, was maintained and further strengthened.

19.13 Additionally, on 15 June 2007, the Secretary-General, after consultation with the Acting Chairman of the Committee, had issued MSC.1/Circ.1233 on Piracy and armed robbery against ships in waters off the coast of Somalia, warning maritime interests of the continuing worrying situation off Somalia and inviting Governments and organizations concerned to implement effectively the guidance to Administrations, industry and crew issued previously by the Organization.

19.14 The Secretary-General had subsequently requested the Council, at its ninety-eighth session, to authorize him to communicate with the UN Secretary-General requesting him to bring the matter anew to the attention of the UNSC to seek their further engagement to promote and facilitate the international community's efforts, *inter alia*, to combat acts of piracy and armed robbery against ships sailing in waters off the coast of Somalia and, in particular, ships carrying humanitarian aid to the country; and, more particularly, that the UNSC request the Transitional Federal Government of Somalia to take action, as it may be deemed necessary and appropriate in the circumstances, to prevent and suppress acts of piracy and armed robbery against ships, including consenting to ships, as defined in article 107 of UNCLOS, operating in the Indian Ocean, entering its country's territorial waters when engaging in operations against pirates or suspected pirates and armed robbers endangering the safety of life at sea, in particular the safety of crews on board ships carrying, within WFP's programme, humanitarian aid to Somalia or leaving Somali ports after having discharged their cargo.

19.15 The Council had:

- .1 shared the Secretary-General's concern;
- .2 expressed appreciation for the initiatives recently undertaken by the Secretary-General to strengthen support and assistance to ships by navies operating in the West Indian Ocean region; and to promote the wide and effective implementation of relevant guidance issued by the Organization (MSC.1/Circ.1233);
- .3 welcomed and endorsed the Secretary-General's proposal; and
- .4 authorized the Secretary-General to communicate with the UN Secretary-General accordingly.

19.16 The Committee noted that the UN Secretary-General had responded to Secretary-General and advised him that the issue had been raised with the representative of the Transitional Federal Government of Somalia to the UN and that the UNSC had been briefed verbally.

19.17 Denmark, while expressing concern at the increased number of attacks, noted that there had been a positive trend in some areas of the world, particularly Asia. Denmark cited the Regional Co-operation Agreement on Combating Piracy and Armed Robbery against Ships in Asia Information Sharing Centre (ReCAAP ISC) as a good example of State involvement in

suppressing piracy and armed robbery and drew attention to the recent increase in attacks off West Africa and Somalia as indicative of the need for further co-operation in those areas and for States to strengthen counter-piracy initiatives. Denmark proposed that the forthcoming Assembly would provide a good opportunity to decide how best to enhance States' efforts. Denmark also thanked France and the United States for their assistance during a recent hijacking incident off Somalia.

19.18 A number of delegations expressed sincere appreciation for the efforts and initiatives of the Secretary-General to combat acts of piracy and armed robbery against ships sailing in waters off the coast of Somalia, for which there was unanimous support. Kenya noted that the actions of navies in the Western Indian Ocean appeared to be stabilizing the situation. Ghana supported similar initiatives in West Africa. Nigeria had established a joint police/navy task force and Angola as chair of MOWCA were actively promoting the efforts to establish a regional coastguard. South Africa also spoke in support of the regional coastguard initiative, adding that improving the aids to navigation in the region could also assist in suppressing piracy and armed robbery against ships. There was also considerable support for the other initiatives described below.

19.19 The Secretary-General in thanking delegations for their support, drew attention to the role of the littoral States, namely Indonesia, Malaysia and Singapore, in reducing piracy and armed robbery in the Strait of Malacca; and to the role of the Mombasa and Dar es Salaam maritime rescue co-ordination centres in co-ordinating actions against pirates and armed robbers.

19.20 In response to a specific concern expressed by Egypt, the Secretary-General assured the Committee that the issue of the sovereignty of Somalia would not be disregarded and the consent of the Transitional Federal Government of Somalia would be required prior to any action by warships within Somali territorial waters to deal with armed robbers.

19.21 The Committee noted that the Council had agreed to seek further action by the UNSC. In this regard, the Secretary-General requested delegations of Member States of the UNSC to give the Organization's proposals their full support. Further more all delegations to the UN General Assembly were requested to give their support to the paragraph on the suppression of piracy and armed robbery anywhere and in particular, off Somalia and where WFP ships were involved, in the forthcoming debate on the proposed UNGA resolution on Oceans and the law of the sea.

### **Straits of Malacca and Singapore**

19.22 The Committee recalled that MSC 81 and MSC 82 had received (documents MSC 81/25, paragraphs 19.24 and 19.25 and MSC 82/24, paragraphs 17.14 to 17.18, respectively) briefings on outcome of the Jakarta and Kuala Lumpur Meetings on the Straits of Malacca and Singapore: Enhancing Safety, Security and Environmental Protection.

19.23 The Committee noted that with the blessing of the Council, a follow-up Meeting to enhance safety, security and environmental protection in the Straits of Malacca and Singapore had taken place in Singapore from 4 to 6 September 2007. It had been jointly organized by IMO and the Government of the Republic of Singapore, in co-operation with the Governments of the other two littoral States, Indonesia and Malaysia, and had been well attended. The littoral States had presented a Co-operative Mechanism they had developed which provided a framework for co-operation among the littoral States, user States and other stakeholders to enhance the safety of navigation and environmental protection in the Straits. In addition, the progress made in securing sponsors for a number of projects, presented for the first time during the Kuala Lumpur Meeting, aiming at enhancing safety of navigation and environmental protection in the Straits had been

reviewed. All in all, the Meeting, which was the third and last in the series, had been, as the previous two, successful in providing a forum to promote and advance on issues relating to the safety, security and environmental protection in Straits. The outcome of the Singapore Meeting was reflected in a Statement, which had been unanimously adopted, and which would be considered by the Council at its next session.

### **Yemen Seminar and Oman Workshop**

19.24 The Committee recalled that MSC 81 and MSC 82 had received reports on the Sub-regional seminar on piracy and armed robbery against ships and maritime security, held in Sana'a, Republic of Yemen, from 9 to 13 April 2005; and the follow-up Sub-regional workshop on maritime security, piracy and armed robbery against ships for those countries from the Red Sea and Gulf of Aden area which had participated in the Sana'a seminar, held in Muscat, Sultanate of Oman, from 14 to 18 January 2006.

### **IMO/MOWCA integrated coast guard project**

19.25 The Committee recalled that MSC 82 had received a report on the regional IMO/MOWCA forum on the establishment of an integrated coast guard function network for West and Central African Countries, held in Dakar, Senegal, from 23 to 25 October 2006.

19.26 The observer from MOWCA advised the Committee that in February 2007 the African Union Conference of Maritime Transport Ministers had adopted the coastguard network as part of its strategic action plan to respond to maritime security threats in the African region. The coastguard network now featured in the medium to long-term strategic action plan of the New Partnership for African Development (NEPAD), under which an amount of US\$3.6 million had been budgeted for IMO, MOWCA and SADC maritime security projects.

19.27 The MOWCA Bureau of Ministers had met on 11 September 2007 in Luanda, Angola, and had unanimously adopted the resolution of the IMO/MOWCA Forum on the establishment of the sub-regional coastguard network. The MOWCA Bureau of Ministers had reaffirmed its earlier decision to establish coastguard co-ordinating centres in Abidjan, Dakar, Lagos and Pointe Noire with principal co-ordinating centres in Accra and Luanda.

19.28 The Committee further noted that the General Assembly of the MOWCA Bureau of Ministers was scheduled for March 2008 and was expected to consider the adoption of a Memorandum of Understanding on the implementation of the coastguard network.

19.29 MOWCA thanked the Organization, other participating UN agencies and development partners for their support and requested the Organization to continue to assist in implementing the coastguard network.

### **Regional Co-operation Agreement on Combating Piracy and Armed Robbery against Ships in Asia**

19.30 In considering document MSC 83/19/2 (Singapore), the Committee recalled that MSC 82 had been informed of the launch of the ReCAAP ISC on 29 November 2006 and of the inaugural meeting of its Governing Council in Singapore from 28 to 30 November 2006.

19.31 In this context, the Committee noted that the ReCAAP ISC's role was to:



- .1 facilitate the swift exchange of information, communications and operational co-operation between the Contracting Parties so as to improve incident response;
- .2 conduct critical analysis on the piracy and armed robbery situation in the Asian region; and
- .3 support capacity-building efforts to help improve the capability of ReCAAP Contracting Parties to combat piracy and armed robbery against ships in the region.

19.32 The Committee noted the information provided on the status of ReCAAP and the ISC; and the report on the outcome of the Special Meeting of the ReCAAP Governing Council, held in Singapore on 5 July 2007.

## **20 GENERAL CARGO SHIP SAFETY**

20.1 The Committee recalled that MSC 82, following consideration of document MSC 82/21/19 (Russian Federation), proposing to carry out necessary studies and analysis to assess the adequacy of current safety requirements for general cargo ships aiming at obtaining realistic updated information on general cargo ship safety that can highlight the best practices as well as areas to be improved, had agreed to include, in the provisional agenda for MSC 83, an item on “General cargo ship safety” to assess the adequacy of current safety requirements for general cargo ships and, when the necessary information has been submitted, to consider establishing an *ad hoc* Working Group on General Cargo Ship Safety at a future session. Consequently, Member Governments and international organizations were invited to submit, to this session, the appropriate information on the matter.

20.2 The Committee had for its consideration the following documents:

- .1 MSC 83/20/1 and Corr.1 (Argentina), proposing to examine the provisions of Annex A to resolution A.744(18) on the Enhanced Survey Programme Guidelines for application to general cargo ships and that new cargo ships be designed to provide an adequate means of access to cargo and other spaces to permit effective and thorough general inspection as well as the measurement of thicknesses necessary to guarantee hull structural integrity;
- .2 MSC 83/20/2 and MSC 83/INF.10 (New Zealand), proposing to develop practical guidelines and/or mandatory requirements for the maintenance, testing and inspection of shipboard lifting appliances and loose gear since there are currently no SOLAS requirements for such gear;
- .3 MSC 83/20/3 (RINA), proposing that further work be carried out to assess the adequacy of current safety requirements for general cargo ships, which should include consideration of the causes of general cargo ship losses, and that Member Governments and international organizations be invited to submit information on the investigation of such losses to enable a proper analysis to be carried out with priority being given to investigations of foundering and occupational accidents;
- .4 MSC 83/20/4 (Germany), providing information on the new high-level FSA study for general cargo ships under SURSHIP, which is an ERANET activity with several European Union Member States aiming to co-ordinate nationally funded research on ship survivability (see also document MSC 83/27/4);

- .5 MSC 83/20/5 (Republic of Korea), informing the Committee that it intends to carry out a further analysis of the casualties involving general cargo ships for a precise identification of the problem areas of such ships and proposing that the Code of Safe Practice for Cargo Stowage and Securing and the Code of Safe Practice for Ships Carrying Timber Deck Cargoes be reviewed as a first step, recognizing that there is room for improving the current safe operation of general cargo ships engaged in the transportation of heavy and lengthy cargoes; and
- .6 MSC 83/20/6 (India), supporting document MSC 83/20/1 and proposing that the issue of inspection of vulnerable areas of the hull, machinery and equipment should also be addressed under this agenda item.

20.3 Following an extensive discussion, the Committee generally agreed that:

- .1 there was an urgent need to consider the safety of general cargo ships, taking into account the current safety level of these types of ships;
- .2 more detailed information, analysis of the cause of accidents involving general cargo ships and related FSA study (in particular, the outcome of the SURSHIP project) were needed to facilitate the identification of the problem areas of such ships and consideration of the appropriate measures to be taken, bearing in mind a variety of ship types covered by the category of general cargo ships; and
- .3 a working group should be established to:
  - .1 examine all the related information submitted at this session, results of analysis and FSA studies;
  - .2 develop the definition of a general cargo ship;
  - .3 identify the type of ships covered by category of general cargo ships which should be dealt with under the item;
  - .4 develop the strategy for how best to proceed on the issue; and
  - .5 develop appropriate measures to enhance the safety of general cargo ships.

20.4 In respect of some specific proposals made in documents submitted to the session, the following observations were made:

- .1 concerning proposals (MSC 83/20/1 and MSC 83/20/6) to adapt the Enhanced Survey Programme Guidelines (resolution (A.744(18))) to general cargo ships, while some delegations supported the proposals, other delegations were of the opinion that it would be premature to take such an action prior to collecting sufficient information (see also paragraph 20.3.2); and
- .2 concerning the proposal (MSC 83/20/2 and MSC 83/INF.10) to take measures to address shipboard lifting appliances safety, while the safety problem of those appliances was generally recognized, some delegations expressed the view that the problem does not necessarily relate only to general cargo ships and, therefore, the matter needs a wider consideration.

20.5 With regard to the establishment of a working group on general cargo ships safety at a future session, the Committee agreed to decide thereon when discussing the establishment of other working groups under the agenda item 25 (Work programme). Subsequently, the Committee invited Member Governments and international organizations to submit further information and the relevant proposals on the issue to MSC 84.

## **21 FORMAL SAFETY ASSESSMENT**

### **General**

21.1 The Committee recalled that MSC 82, recognizing that there may be an outcome of MEPC 56 regarding environmental risk evaluation criteria and other submissions at MSC 83, had agreed to retain the item in the provisional agenda for this session.

### **Outcome of MEPC 56**

21.2 The Committee noted that MEPC 56 (MSC 83/21):

- .1 having considered document MEPC 56/18/1 (Greece), which drew attention to issues pertaining to the development of environmental risk evaluation criteria, had agreed that gaining practical experience with risk acceptance and developing cost benefit criteria is important for establishing criteria and threshold values for use in the decision-making process in the future; and
- .2 therefore, had established a correspondence group, with a view to reviewing the draft Environmental Risk Acceptance Criteria, and instructed it to submit a written report to MEPC 57.

### **Consolidated text of the FSA Guidelines**

21.3 The Committee also noted document MSC 83/INF.2, in which the Secretariat, in order to facilitate the application of the FSA Guidelines, had prepared the consolidated text of the FSA Guidelines, incorporating the amendments adopted by MSC 80 and MSC 82.

### **Review of the reports of the FSA study**

21.4 The Committee, having considered documents MSC 83/21/1, MSC 83/21/2, MSC 83/INF.3 and MSC 83/INF.8 submitted by Denmark, which reported on the FSA study on Liquefied Natural Gas (LNG) carriers and containerships carried out within the research project SAFEDOR, containing risk control options, discussed how best to further proceed with the item in general and, in particular, how to deal with the reports on the FSA study so far submitted to the Organization.

21.5 Recognizing the importance of the outcome of FSA studies and the need to review those studies, the Committee recalled the procedure for the review of the reports of FSA studies, specified in the Guidance on the use of the human element analysing process (HEAP) and formal safety assessment (FSA) in the rule-making process of IMO, as amended (MSC-MEPC.2/Circ.6), and, taking into account that other FSA studies may be submitted to the future sessions, agreed, in general, that a group of experts needed to be established, and to consider the matter further at a future session.

### **Proposals relating to work of the sub-committees concerned**

21.6 In the course of the discussion, the Committee also noted that concrete proposals included in documents MSC 83/21/1 and MSC 83/21/2 may be within the scope of responsibility of the sub-committees concerned and, therefore, noted that interested Member Governments may submit documents to relevant sub-committees or formal proposals to the Committee for new work programme items in accordance with the Guidelines on the organization and method of work, as appropriate.

### **Retention of the item in the agenda**

21.7 The Committee, recognizing that there would be an outcome of MEPC 57 regarding environmental risk acceptance criteria and other submissions to MSC 84, agreed to retain the item in the provisional agenda for MSC 84, and invited Member Governments and international organizations to submit, to MSC 84, proposals and comments on the further improvements of the FSA Guidelines and the Guidance on the use of HEAP and FSA.

## **22 IMPLEMENTATION OF INSTRUMENTS AND RELATED MATTERS**

22.1 The Committee recalled that MSC 82, owing to lack of time, did not consider the eight documents submitted under the agenda item on “Implementation of instruments and related matters”, in relation to the status of conventions; codes, recommendations, guidelines and other non-mandatory instruments; and damage stability verification of oil, chemical and gas tankers. MSC 82 decided to defer consideration of these documents to MSC 83 (MSC 83/22).

### **Status of Conventions**

22.2 The Committee noted the information on the conventions, protocols and amendments thereto in respect of which IMO performs depositary functions and which are related to the work of the Committee, as at 31 July 2007 (MSC 82/18, MSC 83/22/1, MSC 82/INF.11 and MSC 83/INF.3). The Committee noted the accessions by Mongolia and Panama to the 1988 SOLAS Protocol and the 1988 Load Lines Protocol, and by the Former Yugoslav Republic of Macedonia to the 1988 SUA Convention and the 1988 SUA Protocol. Furthermore, the Committee was informed by the delegation of France of its ratification of the 1993 Torremolinos Protocol.

### **Codes, recommendations, guidelines of non-mandatory instruments**

22.3 The Committee recalled that MSC 81 had noted the reported absence of updated information on the status of the implementation of the codes, recommendations, guidelines and other safety related non-mandatory instruments relating to the work of the Committee received since the issuance of document MSC 78/INF.17 and MSC/Circ.1150.

22.4 The Committee also recalled that MSC 81 had requested the Secretariat to prepare a new comprehensive list of codes, recommendations, guidelines and other safety- and security-related non-mandatory instruments and submit it to MSC 82, for consideration with a view to referring the list to the relevant sub-committees for them to suggest instruments on which information on the status of implementation should be submitted to the Committee.

22.5 The Committee considered the comprehensive list prepared by the Secretariat (MSC 82/18/1 and MSC 82/INF.12) of codes, recommendations, guidelines and other safety- and

security-related non-mandatory instruments, which had been adopted by resolutions or approved in the form of circulars.

22.6 The Committee noted that such a comprehensive list of non-mandatory instruments and collection of information on the implementation thereof could serve the following purposes:

- .1 enhanced awareness of available non-mandatory instruments and of their updates;
- .2 promotion of implementation of non-mandatory instruments by Member States;
- .3 provision of background material on domestic legislation; and
- .4 assistance in the identification of potential areas for technical co-operation.

22.7 The Committee further noted the information provided by the Secretariat on the development of a module of the IMO Global Integrated Shipping Information System (GISIS) on safety- and security-related requirements and recommendations applicable to all ships and certain types of ships, on the basis of the ACCESS database, which was created at the Committee's request with the information contained in MSC/Circ.815. When completed, the module could also contain information on the status of implementation of non-mandatory instruments to be kept updated by the Member States using direct recording facilities. The module could also record, for each instrument, the national legislation adopted for its implementation on a voluntary basis – including the ability to upload its full text – the application criteria and the status of the instrument with regard to its amendments.

22.8 The Committee referred the detailed consideration of the list annexed to document MSC 82/INF.12 to the relevant sub-committees for the identification of those instruments which might be relevant in the context of the collection of information on the implementation of non-mandatory instruments, also requesting them to provide an input on potential users and requirements of the data scheme to be established.

22.9 In the same context, the Committee requested the Secretariat to prepare relevant extracts of the list annexed to document MSC 82/INF.12, to be updated as appropriate, for submission to the relevant bodies, as identified in the list.

### **Damage stability verification for some oil, chemical and gas tankers**

22.10 The Committee, having recalled that this item had been deferred by MSC 82 to this session (MSC 82/18/2, MSC 82/18/3, MSC 82/18/4, MSC 82/18/5 and MSC 83/22/2), agreed that relevant documents submitted to MSC 82 should be considered under the new item on “Guidelines for verification of damage stability requirements for tankers and bulk carriers” included in the work programme of the SLF Sub-Committee and provisional agenda for SLF 51.

### **Implementation of the 1988 Load Lines Protocol**

#### ***Safety gap between the 1966 LL Convention and the 1988 LL Protocol***

22.11 The Committee considered document MSC 83/22/3 (IACS), stating that there is a safety gap that arises for ships built under the provisions of the 1988 LL Protocol (as modified by the 2003 Amendments (resolution MSC.143(77)) which entered into force on 1 January 2005), versus ships built to the 1966 LL Convention, and that such a safety gap can be removed, if States not Party to the Protocol take action as indicated in paragraphs 4.2 and 4.3 of their

document. The Committee referred this issue to SLF 51 for consideration and advice to MSC 85, as appropriate.

***Ambiguities in regulation 24(4) of the 1988 LL Protocol relating to minimum freeing port area calculations on vessels with open superstructures***

22.12 The Committee considered document MSC 83/22/5 (United Kingdom), stating that there were some ambiguities in regulation 24(4) of the 1988 LL Protocol, as amended by resolution MSC.143(77), relating to minimum freeing port area calculations on vessels with open superstructures, and requesting the Committee to invite interested delegations to look into ways of addressing this ambiguity with a view to providing appropriate advice to MSC 84. Following the discussion, the Committee invited Member Governments, as requested by the United Kingdom, in particular IACS, to further examine the relevant interpretations and referred the document to SLF 51 for consideration and advice to MSC 85, as appropriate.

**Operating and maintenance manuals**

22.13 The Committee considered document MSC 83/22/4 (United Kingdom) providing information on a report that has been published by the United Kingdom Confidential Hazardous Incident Reporting Programme, known by the acronym CHIRP, entitled “Marine operating and maintenance manuals – are they good enough?”, and proposing that the Committee should develop and disseminate, as a matter of priority, an MSC circular on this issue, using the text that they have provided in the document.

22.14 Following support for the proposal by the United Kingdom, the Committee instructed the drafting group to finalize the draft MSC.1 circular, using the text annexed to document MSC 83/22/4 and taking into account comments made by IACS, BIMCO and INTERTANKO.

22.15 Having considered the report of the drafting group (MSC 83/WP.12), the Committee approved MSC.1/Circ.1253 on Shipboard technical operating and maintenance manuals.

**23 RELATIONS WITH OTHER ORGANIZATIONS**

**RELATIONS WITH NON-GOVERNMENTAL ORGANIZATIONS**

23.1 The Committee noted that the Council had decided:

- .1 to convert the consultative status previously granted to INTERFERRY on a provisional basis to full consultative status;
- .2 to retain the provisional consultative status of the International Maritime Health Organization (IHMA) and to revisit the matter at its twenty-fourth extraordinary session;
- .3 to remind the International Bar Association (IBA) and the Iberoamerican Institute of Maritime Law (IIDM) of the necessity to fulfil their obligations in accordance with the Guidelines on the Grant of Consultative Status; and
- .4 to maintain the consultative status of the remaining organizations and, to this effect, to submit a recommendation to the Assembly.

23.2 The Committee further noted that the Council had decided, on an exceptional basis and in view of the active participation of the International Transport Workers' Federation (ITF) as the *de facto* representative of ICFTU over many years, to transfer the consultative status of ICFTU to ITF with immediate effect.

23.3 The Committee also noted that the Council had noted the information provided by the International Lifeboat Federation (ILF), regarding its restructuring and its change of name to the International Maritime Rescue Federation (IMRF); and agreed that ILF should continue its consultative status with IMO under the acronym IMRF.

#### **New applications for consultative status**

23.4 Having considered the applications from:

- .1 the International Paint and Printing Ink Council (IPPIC);
- .2 the International Fund for Animal Welfare (IFAW); and
- .3 the Global Maritime Education and Training Association (GlobalMET),

the Committee was satisfied with the additional information provided and decided to recommend to the Council that consultative status be granted to IPPIC, IFAW and GlobalMET since these organizations were found to meet the requisite criteria and, in particular, because they were assessed to be able to contribute directly to the Committee's work and did not seem to have access to IMO through other organizations.

#### **UNITED NATIONS OPEN-ENDED INFORMAL CONSULTATIVE PROCESS ON OCEANS AND LAW OF THE SEA**

23.5 The Committee recalled that MSC 75 had noted the information provided by the Secretariat on the second meeting (7 to 11 May 2001) of the United Nations Open-ended Informal Consultative Process and instructed the Secretariat to follow closely further developments of the United Nations Open-ended Informal Consultative Process and report thereon to the Committee, as appropriate.

23.6 The Committee noted the information provided by the Secretariat (MSC 83/23/2) that:

- .1 as requested by the Committee, the Secretariat had followed closely further developments at the UN level on the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea (the Consultative Process) and reported thereon, as appropriate, to previous sessions of the Committee;
- .2 the General Assembly, in its resolution 61/222 of 20 December 2006, had decided that the ninth meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea in 2008 would focus its discussion on the topic "Maritime security and safety";
- .3 the Secretariat had already been contacted by the UN Division for Ocean Affairs and the Law of the Sea (DOALOS) of the Office of Legal Affairs and requested to submit information relevant to the topic of focus for the ninth meeting of the Consultative Process, "Maritime security and safety", for inclusion in next year's report and, in particular to concentrate on:

- .1 comprehensive information regarding the activities currently undertaken related to maritime security and safety; and
- .2 matters which may require further action and any suggested recommendations, with an emphasis on areas where co-ordination and co-operation at the intergovernmental and inter-agency levels could be enhanced,

and to provide IMO's contribution to the DOALOS office no later than 9 November 2007.

23.7 The Committee also invited Member Governments to liaise with their relevant UN representatives at the national level, asking them to get involved in the preparation process on the UN side; and instructed the Secretariat to keep it informed of the further developments.

### **WMO – Voluntary Observing Ships (VOS)**

23.8 The observer from WMO recalled his statement to the Committee's eighty-second session about shipowners' and masters' concerns regarding "Voluntary Observing Ship" (VOS) data exchange. The WMO observer informed the Committee that the WMO Executive Council during its fifty-ninth session in May 2007 had noted with appreciation the report on the results of the High-Level Dialogue established by their Secretary-General with the IMO in Geneva during February 2007. The Council had acknowledged the proposals made by the Ship Observation Team (SOT) of the Joint WMO-IOC Technical Commission on Oceanography and Marine Meteorology, on ship call-sign masking and encoding, and stressed the importance of developing an universally acceptable solution that would address shipowners' and masters' concerns, as well as, the operational, data monitoring and quality information feedback, and climate requirements. It was recognized that it was difficult to establish a relationship between VOS data availability on external websites not under WMO control relating to piracy and ship security issues including concerns of commercial nature. Therefore, the Council recommended that Members who wished to protect the identity of VOS might implement a call-sign masking scheme in consultation with shipowners, which would facilitate open distribution of masked data on the WMO Global Telecommunication System. The Executive Council further requested the WMO Secretary-General, as a high-priority issue to continue the High-Level Dialogue, involving affected Members, IMO, ICS, shipping companies, and other relevant organizations and technical commissions.

He concluded by stating that the Committee would be kept informed on the progress and results of this masking scheme. In addition, a draft revised MSC/Circ.1017, which sought to address shipowners' and masters' concerns regarding VOS data exchange would be submitted to the Committee's next session for consideration. WMO was deeply committed to the provision of the Maritime Safety Information on MET-OCEAN matters as required by the provisions of SOLAS regulation V/5; and to enhancing and improving the quality of forecasts and warnings for mariners at sea.



## 24 APPLICATION OF THE COMMITTEE'S GUIDELINES

### General

24.1 The Committee recalled that MEPC 55 and MSC 82 had approved the draft amendments to the Guidelines on the organization and method of work of the MSC and the MEPC and their subsidiary bodies, which reflected relevant decisions taken by the MSC and MEPC, and requested the Secretariat to prepare and circulate the revised Committee's Guidelines. The revised Guidelines were subsequently circulated by means of MSC-MEPC.1/Circ.1, dated 15 December 2006.

24.2 The Committee was advised that a meeting of the Chairmen of the Committees and sub-committees had been held on Monday, 8 October 2007, and that the report thereof was contained in document MSC 83/WP.10. In this regard, the Committee noted that the issues set out in document MSC 83/24 (Secretariat), the matter referred to the Chairmen's meeting by the *ad hoc* Council Working Group on the Organization's Strategic Plan (see paragraph 24.11.1) and others, had been addressed by the Chairmen's meeting. The Committee considered the report of the Chairmen's meeting (MSC 83/WP.10) and took action as indicated in the following paragraphs.

### Number of meeting groups (e.g., intersessional working groups, technical groups and splinter groups)

24.3 The Committee noted the concerns raised by the delegation of the Bahamas at MEPC 56 that the Committees' Guidelines were not being strictly adhered to and that the increased number of working, drafting, technical and correspondence groups, including intersessional meetings, resulted in unrealistic timescales taxing the resources of Member Governments and, in particular, the developing and least developed countries, as well as the Secretariat.

24.4 The Committee further noted that ICS, in a letter to the Chairman of the Committee, had also expressed their concerns over the increasing number of group meetings in the last couple of years (intersessional working groups, so called 'technical' working groups, splinter groups within working group(s), etc.).

24.5 The Committee recognized that the concerns raised by the delegation of the Bahamas and ICS were not new problems, in particular, in the case of the MEPC in the past few years. The Committee agreed that the Committee's Guidelines should be strictly adhered to. At the same time it was recognized that in certain circumstances some flexibility was needed. Having considered the recommendation of the Chairmen's meeting, the Committee agreed that:

- .1 intersessional working groups and technical groups should not be held at the same time as Committee or sub-committee meetings; and
- .2 splinter groups of a working group if established, should meet outside normal working hours.

### Review of the deadline for submission of information documents

24.6 The Committee noted that the Chairmen's meeting had been informed by the Secretariat that through the years although most Member Governments and international organizations submit documents (including information documents) within the established deadlines, more often, some bulky (more than 6 pages) information documents were received after the deadline

of 13 weeks. The Committee also noted that the meeting had been further informed that most of these information documents contain up-to-date and valuable information which is relevant to issue(s) to be considered at the meeting. Typical examples were information documents submitted by the PSC regimes, which normally meet once a year and produce an annual report, and some PSC regimes meet close to the meeting of a relevant IMO body and they could not therefore submit such information documents within the deadline.

24.7 In view of the importance of providing up-to-date information to the meeting concerned and the fact that information documents need no translation, the Committee agreed, as recommended by the Chairmen's meeting, to extend the deadline for submission of bulky information documents from 13 weeks to 9 weeks, if they were submitted in electronic format, and to amend the Committees' Guidelines accordingly.

### **Work methods of the Committees of the Organization**

24.8 The Committee noted (MSC 83/24, paragraphs 5 and 6) that a meeting of the Chairmen of the MSC, the MEPC, the Legal Committee, the Technical Co-operation Committee and the Facilitation Committee on Work methods of the Committees of the Organization had been held on 22 June 2007, as agreed by the Council at its ninety-seventh session, to consider how best to harmonize their Committees' work methods to achieve well-run meetings and that the outcome of the meeting (C/ES.24/10/1) would be reported to the twenty-fourth extraordinary session of the Council (15-16 November 2007) for consideration.

24.9 The Committee further noted that the meeting of the Chairmen of the MSC, the MEPC, the LEG Committee, the TC Committee and the FAL Committee had recommended (C/ES.24/10/1, paragraph 3) that each Committee should review its guidelines on work methods based on the following principles:

- .1 guidelines on submission, processing and distribution of documents should be harmonized, as far as possible, to assist the Secretariat in fulfilling its responsibilities, bearing in mind that deadlines for submission of documents may not be the same for all Committees and taking into account that the Conference Division would need more time to process and translate documents submitted to those Committees that usually handle a very large volume of documentation;
- .2 subsidiary bodies, such as sub-committees, working groups and correspondence groups should function in a similar manner;
- .3 the same process should be followed in all Committees when assessing proposals for new work programme items in the context of the Organization's Strategic Plan; and
- .4 the best practices of any single Committee should be considered by the other Committees for possible implementation, adapted as may be appropriate.

24.10 The Committee noted that the difference between Committees based on the contrasted level of technical work which they are carrying out, as well as the absence of involvement of subsidiary bodies, would prevent other Committees from adopting identical Guidelines.

### **Assessment of new work programme items against the Strategic Plan and the High-level Action Plan**

24.11 The Committee noted that the Chairmen's meeting had been informed by the Secretariat that the *Ad Hoc* Council Working Group on the Organization's Strategic Plan (24-26 September 2007), having considered document CWGSP 7/7 (Australia, Netherlands, Singapore, Sweden and United Kingdom) on Assessment of new work programme items against the Strategic Plan and the High-level Action Plan, expressed overwhelming support for the proposals on the assessment and decided to:

- .1 invite the Chairmen's meeting to examine the proposals and, through the MSC, to submit its preliminary views thereon to the twenty-fourth extraordinary session of the Council;
- .2 recommend that the Council approve the establishment of a correspondence group to develop, taking into account the views of the Council and the Chairmen's meeting, the guidelines on the application of the Strategic Plan and the High-level Action Plan; and
- .3 subject to such approval, to review, at its eighth session, the outcome of the correspondence group's work so as to finalize the above-mentioned guidelines for consideration and approval by the Council at its one hundred and first session.

24.12 The Committee noted that the Chairmen's meeting had been further informed by the Secretariat that the Council Working Group had also approved the draft Assembly resolution on the High-level Action Plan of the Organization and priorities for the 2008-2009 biennium, in principle, having agreed to include the additional operative paragraphs to the effect that the Council, on a priority basis and through its *ad hoc* Working Group on the Organization's Strategic Plan, develop guidelines for all IMO organs on the application of the Strategic Plan and the High-level Action Plan, including guidance for the assessment of work programme items and for the format and content of report on work carried out by the respective organs of the Organization; and that the Committees review and revise the guidelines for the organization and method of their work in the light of the guidelines developed by the Council on the application of the Strategic Plan and the High-level Action Plan.

24.13 The Committee noted that the meeting was of the opinion that since the basic proposals for the assessment of new work programme items against the Strategic Plan and the High-level Action Plan called upon Chairmen to carry out preliminary assessment of proposed new work programmes, all the Chairmen of the MSC, the MEPC and sub-committees should participate in the deliberations of the correspondence group to be established at C/ES.24. In providing its preliminary comments to the decisions of the CWGSP, the Chairmen's meeting made the following points:

- .1 any criteria developed for the assessment of proposals for new work programme items against the Strategic Plan and the High-level Action Plan should not be subjective, vague or open to different interpretations. The criteria should promote objectivity, clarity and respect realistic time frames;
- .2 any new methodology to be established for the assessment of proposals for new work programme items, in order to be successful in its scope, would require the Organization simultaneously to cultivate a new culture and discipline in adherence to the new procedures and guidelines; and

- .3 the new procedure as proposed contains at least three levels of involvement: the Chairmen of the Committees and Sub-Committees; the Secretariat; and the Member Governments. Such a complex system requires a very disciplined assessment which, if not clearly defined from the beginning, would prove to be very difficult in its implementation. Further consideration of the criteria may be necessary in relation to important long-term work programme items.

In conclusion, the Chairmen's meeting was sympathetic to the proposals of the CWGSP.

24.14 The Committee requested the Secretariat to report the preliminary view of the Chairmen's meeting on the proposals on assessment of new work programme items against the Strategic Plan and High-level Action Plan (paragraph 24.13 above) to the twenty-fourth extraordinary session of the Council.

## **25 WORK PROGRAMME**

### **NEW WORK PROGRAMME ITEMS PROPOSED BY MEMBER GOVERNMENTS AND INTERNATIONAL ORGANIZATIONS AND BY THE SUB-COMMITTEES CONCERNED**

#### ***GENERAL***

25.1 Taking into account the recommendations made by the Sub-Committees which had met since MSC 82 (MSC 83/25 and Add.1 and MSC 83/25/1); various proposals for new work programme items submitted to the session by the Member Governments and the Sub-Committees concerned; a preliminary assessment of such proposals, undertaken by the Chairman with the assistance of the Secretariat, in accordance with the relevant provisions of the Guidelines on the organization and method of work (MSC 83/WP.1) and decisions taken during the session, the Committee reviewed the work programmes of the Sub-Committees and the provisional agendas for their forthcoming sessions and took action as indicated hereunder.

25.2 The Committee recalled that, with regard to the Committee's method of work relating to the consideration of proposals for new work programme items, it had agreed at MSC 78 that the objective of the Committee when discussing these proposals was to decide, based upon justification provided by Member Governments in accordance with the Guidelines on the organization and method of work, whether the new item should or should not be included in the sub-committee's work programme. A decision to include a new item in a sub-committee's work programme does not mean that the Committee agreed with the technical aspects of the proposal. If it is decided to include the item in a sub-committee's work programme, detailed consideration of the technical aspects of the proposal and the development of appropriate requirements and recommendations should be left to the sub-committee concerned.

25.3 The Committee noted that MEPC 56 had approved the work programmes of the BLG and FSI Sub-Committees as well as the provisional agendas for BLG 12 and FSI 16, and the environment-related items on the work programmes of other sub-committees.

25.4 The delegation of the Netherlands, referring to the *Ad Hoc* Council Working Group on the Organization's Strategic Plan and the discussions and decisions in the Council, observed that the Strategic plan and High-level action plan both had been developed amongst others to achieve a better agenda management and, in their view, it is essential that both plans are carefully considered when Member Governments or sub-committees propose a new work programme item. It was a strong view of the delegation that the Council decision should be adhered to and

that for the next meetings any proposal by a Member Government or through a sub-committee report, should include a full background for justification and that the proposal which does not provide clear information that it is within the scope of the Strategic plan and High-level action plan should not be approved by the Committee. In this context, the delegation further recalled that C 98 agreed to consider revised budget proposals for the 2008-2009 biennium at its twenty-fourth extraordinary session in November 2007 and that MSC 82 had agreed that if, for budgetary purposes, there is a need to make economies, the total of the 25.5 meeting weeks proposed by the two Committees may be reduced by one or two, i.e., one or two sub-committee(s) should meet once during the next biennium and thereafter as early as possible during the biennium after the next, and authorized the Secretary-General to take this into account in his relevant budget proposals. The observation of the delegation of the Netherlands was supported by several delegations.

### ***SUB-COMMITTEE ON BULK LIQUIDS AND GASES (BLG)***

#### **Outcome of MEPC 56**

25.5 The Committee noted that MEPC 56 had agreed to include, in the work programme of the BLG Sub-Committee, a high priority item on “Development of international measures for minimizing the translocation of invasive aquatic species through bio-fouling of ships”, with a target completion date of 2010.

#### **Safety requirements for ships carrying natural gas hydrate pellets**

25.6 The Committee considered document MSC 83/25/10 (Japan), proposing to develop draft guidelines for the construction and equipment of ships carrying natural gas hydrate pellets in bulk, and agreed to include, in the BLG Sub-Committee’s work programme, a high priority item on “Safety requirements for natural gas hydrate pellet carriers”, with three sessions needed to complete the item and instructed the Sub-Committee to include the item in the provisional agenda for BLG 13.

#### **Comprehensive review of the IGC Code**

25.7 The Committee considered document MSC 83/25/15 (United Kingdom), proposing to review all current areas of the IGC Code with a view to fully revising and updating the Code and, where necessary, to identify other instruments which may be affected and require consequential amendments, taking into account the latest technologies, operational practices and the increasing size of the newest ships, and agreed to include, in the BLG Sub-Committee’s work programme and the provisional agenda for BLG 12, a high priority item on “Revision of the IGC Code”, with a target completion date of 2010, in co-operation with the FP, DE, SLF and STW Sub-Committees, as necessary and when requested by the BLG Sub-Committee.

#### **New work programme item proposed by BLG 11**

25.8 Endorsing a proposal by BLG 11 to review material safety data sheets (MSDS) for MARPOL Annex I cargoes and marine fuels (resolution MSC.150(77) and noting pertinent comments by IBIA (MSC 83/10/3), the Committee decided to include, in the Sub-Committee’s work programme and the provisional agenda for BLG 12, a high priority item on “Review of the Recommendation for material safety data sheets for MARPOL Annex I cargoes and marine fuels”, with a target completion date of 2008; and, having referred document MSC 83/10/3 to BLG 12 to take the IBIA comments into account, invited Member Governments to submit their comments and proposals on how the Recommendation can be revised.

## **Work programme of the Sub-Committee and provisional agenda for BLG 12**

25.9 The Sub-Committee's work programme, as revised and approved by the Committee, is set out in annex 38. The Secretariat was requested to inform the MEPC accordingly.

25.10 The Committee approved the provisional agenda for BLG 12, as set out in annex 39 and requested the Secretariat to inform the MEPC accordingly.

### ***SUB-COMMITTEE ON DANGEROUS GOODS, SOLID CARGOES AND CONTAINERS (DSC)***

#### **Fire protection of cargoes carried on deck**

25.11 The Committee recalled that, following consideration of document MSC 83/25/5 (Germany) in the context of the FP Sub-Committee's programme, it had agreed that the Sub-Committee should co-operate on the above issue, as necessary and when requested by the FP Sub-Committee (see also paragraph 25.21).

#### **Stowage of water-reactive materials covered by the IMDG Code**

25.12 Following consideration of document MSC 83/25/6 (Germany), proposing to review the cargo stowage, segregation and packing requirements for certain substances covered by the IMDG Code with a view to developing specific requirements for the stowage of water-reactive materials, the Committee agreed to include in the DSC Sub-Committee's work programme and the provisional agenda for DSC 13, a high priority item on "Stowage of water-reactive materials", with a target completion date of 2009, in co-operation with the FP Sub-Committee, as necessary and when requested by the DSC Sub-Committee.

#### **New items proposed by DSC 12**

25.13 Endorsing the proposals by DSC 12, the Committee decided to include in the Sub-Committee's work programme and the provisional agenda for DSC 13 the following high priority items:

- .1 amendments to the International Convention for Safe Containers, 1972; and
- .2 review of the Guidelines for packing of cargo transport units,

with a target completion date of 2009 for the above items.

## **Work programme of the Sub-Committee and provisional agenda for DSC 13**

25.14 The Sub-Committee's work programme, as revised and approved by the Committee, is set out in annex 38.

25.15 The Committee approved the provisional agenda for DSC 13, as set out in annex 39.

### ***SUB-COMMITTEE ON FIRE PROTECTION (FP)***

#### **Comprehensive review of the IGC Code**

25.16 The Committee recalled that, following consideration of document MSC 83/25/15 (United Kingdom) in the context of the BLG Sub-Committee's work programme, it had agreed

that the Sub-Committee should co-operate on the above issue, as necessary and when requested by the BLG Sub-Committee (see also paragraph 25.7).

### **Stowage of water-reactive materials covered by the IMDG Code**

25.17 The Committee recalled that, following consideration of document MSC 83/25/6 (Germany) in the context of the DSC Sub-Committee's work programme, it had agreed that the Sub-Committee should co-operate on the above issue, as necessary and when requested by the DSC Sub-Committee (see also paragraph 25.12).

### **Drainage of fire-fighting water from the vehicle decks of ro-ro ships**

25.18 The Committee considered document MSC 83/25/2 (Egypt), proposing to improve fire-fighting water drainage capacity on the vehicle decks of ro-ro ships, especially in severe listing conditions, aiming at preventing fire-fighting water accumulation, based on the recommendations of the report issued by the technical committee established to investigate and analyse the capsizing of the passenger ferry **Al-Salam Boccaccio 98** in February 2006, together with document MSC 83/3/2 (Denmark, Norway and Sweden), which proposed amendments to SOLAS chapter II-1 to establish provisions for the drainage of fire-fighting water from enclosed ro-ro spaces on passenger and cargo ships.

25.19 Following the discussion, the Committee, acknowledging the need to take urgent action on the matter, agreed to instruct the drafting group, established under agenda item 3 (Consideration and adoption of amendments to mandatory instruments), to prepare appropriate draft amendments to SOLAS chapter II-2 regarding drainage of special category and ro-ro spaces to prevent accumulation of water on the vehicle deck of ro-ro ship ships, with a view to approval at this session and adoption at MSC 84 and an associated draft MSC circular informing the parties affected of the coming new requirements, for approval at this session of the Committee (see also paragraph 3.28).

25.20 In light of the above decision, the Committee agreed that the appropriate Guidelines should be developed to assist Administrations in the implementation of the amendments referred to in paragraph 25.19 above and decided to include, in the work programmes of the FP and SLF Sub-Committees and the provisional agenda for SLF 51, a high priority item on "Guidelines for drainage systems in closed vehicle and ro-ro spaces and special category spaces", with a target completion date of 2009, assigning the FP Sub-Committee as a co-ordinator and instructed FP 52 to give a preliminary consideration to the matter and include the item in the provisional agenda to FP 53.

### **Fire protection of cargoes carried on deck**

25.21 Following consideration of document MSC 83/25/5, wherein Germany proposed, in view of a number of on-deck cargo fires where both ship's crews and land-based assistance have not been able to cope with the individual casualty, to review the fire protection requirements of SOLAS chapter II-2 to address fire risks related to on-deck cargo areas, the Committee agreed to include, in the FP Sub-Committee's work programme, a high priority item on "Review of fire protection requirements for on-deck cargo areas", with three sessions needed to complete the item, in co-operation with the DSC Sub-Committee as necessary and when requested by the FP Sub-Committee.

### **Fire resistance of ventilation ducts**

25.22 The Committee considered document MSC 83/25/11 (Denmark), proposing to expand the scope of the item on “Fire resistance in ventilation ducts”, currently on the work programme of the FP Sub-Committee, to undertake a comprehensive review of all ventilation systems covered by SOLAS chapter II-2 and, agreed to expand the FP Sub-Committee’s existing work programme item on “Fire resistance in ventilation ducts”, to cover all SOLAS regulations for ventilation systems, with a target completion date of 2009.

### **Means of escape from machinery spaces**

25.23 Having considered document MSC 83/25/12 (Denmark and Norway), proposing to revise SOLAS regulation II-2/13 in order to further improve the SOLAS chapter II-2 requirements concerning means of escape from machinery spaces in passenger and cargo ships, the Committee agreed to include, in the work programme of the FP Sub-Committee, a high priority item on “Means of escape from machinery spaces”, with two sessions needed to complete the item.

### **New work programme items proposed by FP 51**

25.24 Endorsing the proposals by FP 51, the Committee decided to include, in the Sub-Committee’s work programme, the following high priority items:

- .1 amendments to SOLAS chapter II-2 related to the releasing controls and means of escape for spaces protected by fixed carbon dioxide systems; and
- .2 harmonization of the requirements for the location of entrances, air inlets and openings in the superstructures of tankers,

with two sessions needed to complete the above items.

### **Work programme of the Sub-Committee and provisional agenda for FP 52**

25.25 The Sub-Committee’s work programme, as revised and approved by the Committee, is set out in annex 38 (see also paragraph 8.7).

25.26 The Committee approved the provisional agenda for FP 52, as set out in annex 39 (see also paragraph 8.7).

### ***SUB-COMMITTEE ON FLAG STATE IMPLEMENTATION (FSI)***

#### **Code for the Implementation of Mandatory IMO Instruments**

25.27 The Committee considered document MSC 83/25/3 (Republic of Korea), proposing to establish a continuous item in the FSI Committee’s work programme with a view to keeping the Code under review and preparing amendments to the Code, taking into account that various IMO mandatory instruments covered by the Code are constantly being amended and that the Code serves as a basis for the Audit Scheme with regard to the identification of auditable areas. Following the discussion, the Committee agreed to include, in the work programme of the FSI Sub-Committee and the provisional agenda for FSI 16, a continuous item on “Review of the Code for the Implementation of Mandatory IMO Instruments”.



### **Work programme of the Sub-Committee and provisional agenda for FSI 16**

25.28 The Sub-Committee's work programme, as revised and approved by the Committee, is set out in annex 38. The Secretariat was requested to inform the MEPC accordingly.

25.29 The Committee approved the provisional agenda for FSI 16, as set out in annex 39 and requested the Secretariat to inform the MEPC accordingly.

### ***SUB-COMMITTEE ON RADIOCOMMUNICATIONS AND SEARCH AND RESCUE (COMSAR)***

#### **Procedures for updating shipborne navigation and communication equipment**

25.30 The Committee recalled that, following consideration of document MSC 83/25/7 (Australia and United Kingdom) in the context of the NAV Sub-Committee's work programme, it had agreed to include, in the work programme of the Sub-Committee, a high priority item on "Development of procedures for updating shipborne navigation and communication equipment", with two sessions needed to complete the item, and assigned the NAV Sub-Committee as a co-ordinator (see also paragraph 25.33).

### **Work programme of the Sub-Committee and provisional agenda for COMSAR 12**

25.31 The Sub-Committee's work programme, as revised and approved by the Committee, is set out in annex 38.

25.32 The Committee approved the provisional agenda for COMSAR 12, as set out in annex 39.

### ***SUB-COMMITTEE ON SAFETY OF NAVIGATION (NAV)***

#### **Procedures for updating shipborne navigation and communication equipment**

25.33 The Committee considered document MSC 83/25/7 (Australia and United Kingdom), proposing to develop, in view of the increasing complexity of processor-based electronic systems, formal procedures to address firmware, operating systems and software updates for shipborne navigation and communication systems and equipment, and agreed to include, in the work programmes of the NAV and COMSAR Sub-Committees, a high priority item on "Development of procedures for updating shipborne navigation and communication equipment", with two sessions needed to complete the item, and assigned the NAV Sub-Committee as a co-ordinator.

### **Performance standards for VDR and S-VDR**

25.34 The Committee considered:

- .1 document MSC 83/25/4, wherein Germany proposed an improvement of the VDR performance standard since the evaluation of data retrieved from existing VDR installations has shown that in many cases the audio recordings are of bad quality and sensor signals are not recorded because the sensor failure has not been recognized during operation, which has, in certain cases, made it impossible to use the stored data for the intended purpose;
- .2 documents MSC 83/25/8 and MSC 83/25/9, in which Egypt proposed that a second radar, a second VHF radio and the closed-circuit TV (CCTV) cameras be

connected to the voyage data recorder (VDR) and to develop new design requirements to facilitate VDR capsule retrieval during recovery operations, respectively; and

- .3 document MSC 83/25/18, in which India, commenting on document MSC 83/25/9, provided further information on ways to improve VDR capsule retrieval during recovery operations.

25.35 Following the discussion, the Committee agreed to include, in the work programme of the NAV Sub-Committee, a high priority item on “Amendments to the Performance standards for VDR and S-VDR”, with two sessions needed to complete the item, and referred to the NAV Sub-Committee the aforementioned documents for detailed consideration.

#### **Work programme of the Sub-Committee and provisional agenda for NAV 54**

25.36 The Sub-Committee’s work programme, as revised and approved by the Committee, is set out in annex 38.

25.37 The Committee approved the provisional agenda for NAV 54, as set out in annex 39.

#### ***SUB-COMMITTEE ON SHIP DESIGN AND EQUIPMENT (DE)***

##### **Outcome of MEPC 56**

25.38 The Committee noted that MEPC 56 had instructed DE 51 to consider, under the item on “Any other business”, matters related to the perceived problems with the pollution prevention equipment required under MARPOL Annex I, including how to improve the current standards for the equipment, and to advise MEPC 57, accordingly.

##### **Comprehensive review of the IGC Code**

25.39 The Committee recalled that, following consideration of document MSC 83/25/15 (United Kingdom) in the context of the BLG Sub-Committee’s work programme, it had agreed that the Sub-Committee should co-operate on the above issue, as necessary and when requested by the BLG Sub-Committee (see also paragraph 25.7).

##### **Damage stability verification of oil, chemical and gas tankers**

25.40 The Committee recalled that, following consideration of documents MSC 83/25/14 (Austria, *et al*) and MSC 83/25/16 (Norway) in the context of the SLF Sub-Committee’s work programme, it had agreed that the Sub-Committee should co-operate on the above issue, as necessary and when requested by the SLF Sub-Committee (see also paragraphs 25.50 to 25.52).

##### **Proposal for protection against noise on board ships**

25.41 The Committee considered document MSC 83/25/13 (Austria *et al*), proposing to develop mandatory noise level limits for machinery spaces, control rooms, workshops, accommodation and other spaces on board ships, based on a revised Code on Noise Levels on Board Ships and to introduce mandatory requirements to mandate noise level limits in other work and living spaces, and agreed to include, in the work programme of the DE Sub-Committee, a high priority item on “Protection against noise on board ships”, with two sessions needed to complete the item.

**Expansion of the existing item proposed by DE 50**

25.42 Endorsing a proposal by DE 50, the Committee agreed to expand the DE Sub-Committee's existing work programme item on "Revision of resolution A.744(18)", to enable it to develop amendments to the ESP Guidelines, with a view to harmonizing the requirements of the Guidelines with those of the relevant IACS Unified Requirements in order to ensure consistent implementation of the relevant IMO instruments.

**Work programme of the Sub-Committee and the provisional agenda for DE 51**

25.43 The Sub-Committee's work programme, as revised and approved by the Committee, is set out in annex 38.

25.44 The Committee, having agreed to include, in the provisional agenda for DE 51, an item on "Guidance to ensure consistent policy for determining the need for watertight doors to remain open during navigation", approved the provisional agenda for DE 51, as set out in annex 39.

**Urgent matters to be considered by MSC 84**

25.45 Noting that, due to the close proximity between DE 51 and MSC 84 and in accordance with the provisions of paragraph 4.9 of the Guidelines on the organization and method of work, it should consider, at its eighty-fourth session, only urgent matters emanating from DE 51, the Committee agreed that the following should be urgent matters for consideration by MSC 84:

- .1 amendments to resolution A.744(18);
- .2 review of the SPS Code;
- .3 revision of the Code on Alarms and Indicators;
- .4 amendments to the MODU Code;
- .5 LSA-related matters;
- .6 guidelines for maintenance and repair of protective coatings;
- .7 requirements and standard for corrosion protection of means of access arrangements; and
- .8 definition of the term "bulk carrier".

**Agenda management for DE 51**

25.46 The delegation of the Bahamas expressed serious concern about the extensive agenda for DE 51 and the large number of items which, in view of their target completion date, should be finalized during the session.

25.47 The Committee, while sharing the concern expressed by the Bahamas and recognizing the need for effective workload management under the Committees' Guidelines, agreed that the problem encountered for the workload and agenda for DE 51 should only be addressed by application of a certain level of flexibility allowed under the present work method provided in the Committees' Guidelines as an exceptional case, recognizing that a long-term solution should be

worked out in the process of workload management in the context of the Strategic Directions and the High-level Action Plan, as discussed at the Chairmen's meeting. The Committee agreed that the DE Sub-Committee should take the above into account with a view to managing the agenda for DE 51.

### ***SUB-COMMITTEE ON STABILITY AND LOAD LINES AND FISHING VESSELS SAFETY (SLF)***

#### **Comprehensive review of the IGC Code**

25.48 The Committee recalled that, following consideration of document MSC 83/25/15 (United Kingdom) in the context of the BLG Sub-Committee's work programme, it had agreed that the Sub-Committee should co-operate on the above issue, as necessary and when requested by the BLG Sub-Committee (see also paragraph 25.7).

#### **Drainage of fire-fighting water from the vehicle decks of ro-ro ships**

25.49 The Committee recalled that, following consideration of documents MSC 83/3/2 (Denmark, Norway and Sweden) and MSC 83/25/2 (Egypt) in the context of the FP Sub-Committee's work programme, it had agreed to include in the work programme of the SLF Sub-Committee and the provisional agenda for SLF 51, a high priority item on "Guidelines for drainage systems in closed vehicle and ro-ro spaces and special category spaces", with a target completion date of 2009, assigning the FP Sub-Committee as a co-ordinator (see also paragraphs 25.18 to 25.20).

#### **Damage stability verification of oil, chemical and gas tankers**

25.50 The Committee considered document MSC 83/25/14, wherein Denmark *et al* proposed to develop guidelines for the verification of damage stability requirements contained in existing instruments for oil, chemical and gas tankers and to consider their application to new and existing tankers to ensure consistent verification of damage stability on such ships prior to departure; and document MSC 83/25/16, in which Norway proposed to broaden the scope of the above proposed new work item to also cover bulk carriers.

25.51 While a slight majority of delegations who spoke supported the proposals, other delegations did not agree to the proposal, stating that the proposal does not demonstrate the compelling need as, in their view, no concrete evidence had been provided that provisions relating to compliance with damage stability requirements in IMO instruments are not being met and that there is an unacceptable increase in the risk of loss of life and/or marine pollution.

25.52 Following an extensive discussion, the Committee agreed to include, in the work programme of the SLF Sub-Committee and the provisional agenda for SLF 51, a high priority item on "Guidelines for verification of damage stability requirements for tankers and bulk carriers", with a target completion date of 2009, in co-operation with the DE and STW Sub-Committees as necessary and when requested by the SLF Sub-Committee, and referred the relevant documents MSC 83/22/2, MSC 82/18/3, MSC 82/18/4 and MSC 82/18/5 to the SLF Sub-Committee for consideration as appropriate.

#### **Expansion of the existing item proposed by SLF 50**

25.53 Endorsing a proposal by SLF 50, the Committee agreed to expand the SLF Sub-Committee's existing work programme item on "Safety of small fishing vessels" to enable it to develop practical guidelines to assist Competent Authorities which elect to introduce

provisions of Fishing Vessels Safety Code and Voluntary Guidelines and Safety recommendations for small fishing vessels into their domestic legislation and/or code of safe practice, or other measures in consultation with all stakeholders in the industry.

### **Work programme of the Sub-Committee and the provisional agenda for SLF 51**

25.54 The Sub-Committee's work programme, as revised and approved by the Committee, is set out in annex 38.

25.55 The Committee approved the provisional agenda for SLF 51, as set out in annex 39.

### ***SUB-COMMITTEE ON STANDARDS OF TRAINING AND WATCHKEEPING (STW)***

#### **Comprehensive review of the IGC Code**

25.56 The Committee recalled that, following consideration of document MSC 83/25/15 (United Kingdom) in the context of the BLG Sub-Committee's work programme, it had agreed that the Sub-Committee should co-operate on the above issue, as necessary and when requested by the BLG Sub-Committee (see also paragraph 25.7).

#### **Damage stability verification of oil, chemical and gas tankers**

25.57 The Committee recalled that, following consideration of documents MSC 83/25/14 (Denmark *et al*) and MSC 83/25/16 (Norway) in the context of the SLF Sub-Committee's work programme, it had agreed that the Sub-Committee should co-operate on the above issue, as necessary and when requested by the SLF Sub-Committee (see also paragraphs 25.50 to 25.52).

#### **New work programme item proposed by STW 38**

25.58 Having considered the proposal by STW 38 to include, in its work programme, a new item on mandatory instrument of safe manning, together with documents MSC 83/12/3 (ICF) and MSC 83/12/5 (United Kingdom), which expressed support for the proposal by STW 38, the Committee agreed to reconsider this proposal at MSC 84.

### **Work programme of the Sub-Committee and the provisional agenda for STW 39**

25.59 The Sub-Committee's work programme, as revised and approved by the Committee, is set out in annex 38.

25.60 The Committee approved the provisional agenda for STW 39, as set out in annex 39.

#### **Urgent matters to be considered by MSC 84**

25.61 Noting that, due to the close proximity between STW 39 and MSC 84 and in accordance with the provisions of paragraph 4.9 of the Guidelines on the organization and method of work, it should consider, at its eighty-fourth session, only urgent matters emanating from STW 39, the Committee agreed that the following should be urgent matters for consideration by MSC 84:

- .1 comprehensive review of the STCW Convention and the STCW Code; and
- .2 review of the principles for establishing the safe manning levels of ships.

**INFORMATION ON THE OUTCOME OF THE 6TH SESSION OF THE COUNCIL WORKING GROUP ON THE ORGANIZATION'S STRATEGIC PLAN AND PROPOSALS FOR THE HIGH-LEVEL ACTION PLAN FOR THE 2008-2009 BIENNIUM**

25.62 The Committee recalled that, in the context of the requests of the Assembly made in resolution A.970(24) on Strategic plan for the Organization and resolution A.971(24) on High-level Action Plan of the Organization and priorities for the 2006-2007 biennium, MSC 82 had:

- .1 instructed the Secretariat to submit the information concerning review of progress made in implementing the High-level action plan and priorities for the 2006-2007 biennium the proposals for the High-level action plan for the 2008-2009 biennium, as may be updated following the outcome of MSC 82, to the ninety-eighth session of the Council for referral to the Council Working Group on the Strategic Plan; and
- .2 noted that any further information on the progress made and proposals for the High-level Action Plan and priorities for the 2008-2009 biennium, as agreed at MSC 83, would be reported to the twenty-fourth extraordinary session of the Council.

25.63 In the context of the above-mentioned instructions to the Secretariat, the Committee noted the information on the progress made by the sixth session of the Council Working Group on the Organization's Strategic Plan with regard to the proposals developed by LEG 92, MEPC 55 and MSC 82 in respect of the planned outputs for the biennium 2008-2009, as set out in document MSC 83/25/17, and the information on the outcome of C 98 in regard to work done by the Council working group.

25.64 The Committee, having considered document MSC 83/25/19 (Secretariat), proposing modifications to the planned output of the Committees for the 2008-2009 biennium, which took into account the progress made by the Sub-Committees since MSC 82, approved the proposed modifications, as further modified by the Committee to take account of the relevant decisions made by the Committee during the session, and requested the Secretariat to submit the aforementioned proposed modifications to the twenty-fourth extraordinary session of the Council.

**INTERSESSIONAL MEETINGS**

25.65 Bearing in mind the view of the Council that the number of intersessional working groups should be restricted to the minimum necessary; paragraph 3.40 of the Guidelines on the organization and method of work, as well as the Committee's decision at MSC 66, that all sub-committees should scrutinize the need for intersessional meetings and, only when they consider it essential that such meetings should be held, to submit to the Committee, in good time, a fully justified request for consideration, the Committee, taking into account decisions made under various agenda items, approved the following intersessional meetings:

- .1 the ESPH Working Group (in the latter part of 2008);
- .2 the Joint ICAO/IMO Working Group (22 to 26 September 2008); and
- .3 the *ad hoc* LRIT Working Group (early 2008).

**SUBSTANTIVE ITEMS FOR INCLUSION IN THE COMMITTEE'S AGENDAS FOR THE NEXT TWO SESSIONS AND PROPOSED ARRANGEMENTS FOR MSC 84****Substantive items for inclusion in the agendas for MSC 84 and MSC 85**

25.66 The Committee agreed on the substantive items to be included in the agendas of its eighty-fourth and eighty-fifth sessions, as set out in document MSC 83/WP.7, as amended.

**Establishment of working groups during MSC 84**

25.67 Recalling the provisions of the Guidelines on the organization and method of work concerning the number of groups which may be established at any given session, the Committee, taking into account decisions made under various agenda items, agreed that working groups on the following items should be established at the Committee's eighty-fourth session:

- .1 goal-based new ship construction standards;
- .2 LRIT; and
- .3 human element,

and agreed to establish drafting groups on the following items:

- .4 amendments to mandatory instruments; and
- .5 maritime security.

25.68 Furthermore, the Committee noted that, although MSC 84 may consider the possibility of holding a working group at MSC 85 on the issue of capacity-building, working groups may be established for the following items at MSC 85:

- .1 goal-based new ship construction standards;
- .2 general cargo ship safety; and
- .3 maritime security,

leaving the possibility of holding an FSA Experts Group at MSC 86 as a working group.

**Duration and dates of the next two sessions**

25.69 The Committee noted that its eighty-fourth session had been scheduled to take place from 7 to 16 May 2008; and its eighty-fifth session tentatively in November 2008.

**26 ELECTION OF THE CHAIRMAN AND VICE-CHAIRMAN FOR 2008**

26.1 The Committee unanimously re-elected Mr. Neil Ferrer (Philippines) as Chairman for 2008 and unanimously elected Mr. Christian Breinholt (Denmark) as Vice-Chairman for 2007 and 2008.

## **27 ANY OTHER BUSINESS**

### **Global Integrated Shipping Information System (GISIS)**

27.1 The Committee recalled that the Global Integrated Shipping Information System (GISIS) was developed by the Secretariat in July 2005, which allows public access to sets of data collected by the Secretariat, and that the Manual for Member States' Administrations and associated disclaimer on the use of reporting facilities was disseminated by circular letter No.2639.

27.2 The Committee noted the updated information provided by the Secretariat on GISIS (MSC 83/27) containing a table on the status of developments of nineteen modules. In this context, it took note that the following modules were available to IMO Member States and the public at large: maritime security, casualties, recognized organizations and port reception facilities. The module on the Condition Assessment Scheme (CAS) was viewable by the public in respect of valid Statements of Compliance (SoC) only and the modules on piracy and armed robbery against ships and port State control had been developed but not yet fully released. Further modules were under development, such as the ones on contact points, IMO requirements, stowaway cases, illegal migrant cases, pollution prevention equipment mandatory under MARPOL and the self assessment of flag State performance.

27.3 The Committee expressed its appreciation to those Member Governments who had taken the direct reporting facilities seriously and acted as data providers on a regular basis. The delegations who spoke welcomed the facilities contained in GISIS, while pointing out the need to ensure that the access to, and speed of the systems, including other IMO servers, allows optimum use. The Secretariat indicated that it would look into the reported slow speed of connections and would make every effort to improve the system.

### **IMO/IACS Co-operation on the IACS Quality System Certification Scheme (QSCS)**

27.4 The Committee noted the information provided by the Secretariat (MSC 83/27/1) on the development of the IACS Quality System Certification Scheme (QSCS) as far as it concerns the participation agreements between IMO and IACS and the IMO consultant/observer's report annexed to that document, in accordance with which the IMO consultant/observer had continued participating in the implementation of the Scheme. Regular progress reports on activities undertaken by the consultant/observer within the Scheme had been submitted to the IMO Secretariat and IACS, and it had been reported that the Scheme was mature and being implemented in a thorough and consistent manner. It was further noted that since the last report to the Committee, the Scheme had been further developed in a number of ways as reported in the annex to document MSC 83/27/1, in particular paragraphs 4 to 11 therein.

27.5 The Committee decided to extend the Organization's participation in the Scheme on the same basis as in the past, that is with no financial implications to the Organization; and requested the Secretariat to report on developments to MSC 85.

### **OCIMF Recommendations for equipment employed in the bow mooring of conventional tankers at single point moorings**

27.6 The Committee noted the information by OCIMF (MSC 83/27/2) concerning the publication of a comprehensively revised 4th edition of the Recommendations for equipment employed in the bow mooring of conventional tankers at single point moorings. OCIMF pointed out that the guidance in this 4th edition had been revised in recognition of the increasing use of



recommended single point mooring equipment in mooring conventional tankers to floating production storage and offloading facilities/floating storage units (FPSO/FSU) and that it was important that tanker owners and operators and operators of single point mooring terminals, including tandem mooring facilities, were aware of changes in these recommendations.

### **Unified interpretation of “unforeseen delay in delivery of ships”**

27.7 The Committee considered a proposal by IACS (MSC 83/27/3) for a unified interpretation of “unforeseen delay in delivery of ships” in the context of SOLAS regulation II-1/3-2 (Corrosion prevention of seawater ballast tanks in oil tankers and bulk carriers) as adopted by resolution MSC.216(82), following MSC 82’s decision to consider the matter at this session. Noting that the regulation gives an application scheme similar to the one in regulation 1.28 of MARPOL Annex I, IACS proposed a unified interpretation very similar to the one for the MARPOL regulation.

27.8 The Committee was of the view that a relevant unified interpretation would be useful and agreed to issue the interpretation as circular MSC.1/Circ.1247 on Unified interpretation of “unforeseen delay in delivery of ships”.

### **SURSHIP – Survivability of Ships**

27.9 The Committee noted the information provided in document MSC 83/27/4 (France, Germany, the Netherlands and Sweden) on a strategic European research co-operation on maritime safety, which started in 2006 and will continue at least until the end of 2009, aiming at improving ship safety by designing ships with enhanced survivability.

### **Lifejackets not compliant with the requirements of the LSA Code**

27.10 The Committee considered document MSC 83/27/5 (Norway), reporting the finding that a significant number of different lifejackets, all tested and certified in accordance with the Revised Recommendation on testing of LSA (resolution MSC.81(70)), had not been fully meeting the requirements of the LSA Code. Norway pointed out that MSC 80, noting that the in-water test regime described in the Revised Recommendation was unfit for making reproducible tests or test results, had adopted resolution MSC.200(80), amending the Revised Recommendation by introducing a reference test device (RTD) and connecting the assessment of a lifejacket’s in-water performance to the test results achieved by the RTD. Norway was of the view that lifejackets tested and certified in accordance with resolution MSC.81(70) should either be replaced by lifejackets tested in accordance with resolution MSC.200(80) or retested in accordance with resolution MSC.200(80) for recertification within a date set by the Committee.

27.11 Following discussion, during which many delegations stated that there was no compelling need to replace tested and certified lifejackets on safety grounds, the Committee agreed not to proceed as proposed by Norway in document MSC 83/27/5.

### **Persons rescued at sea**

27.12 The Committee considered document MSC 83/27/6 (Spain) informing the Committee that it was experiencing a great flood of migrants from Africa towards Europe. The Spanish Maritime Rescue Service had rescued, in 2006 alone, 30,493 migrants from the sea. Spain regretted that entry into force of the 2004 amendments to the SOLAS and SAR Conventions, as adopted by resolutions MSC.153(78) and MSC.155(78), had, in their opinion, not brought the desired results. Spain had therefore made a set of proposals intended to ensure that the international community

had a secure and effective legal system in place. Among others it had suggested the need for making the guidelines, which had been adopted by resolution MSC.167(78), mandatory under the SOLAS and/or SAR Convention.

27.13 The Spanish delegation further stated that it was contemplating to propose a new work programme item on this issue to MSC 84, providing the compelling need for the work to be undertaken in this respect.

27.14 In the ensuing debate most delegations expressed sympathy for the Spanish document in principle, strongly encouraging all Contracting Governments to implement the relevant amendments to the SOLAS and SAR Conventions, and supporting the need for further work to be undertaken on this issue. However, they also cautioned that some of the Spanish proposals were outside the remit of IMO or needed to be considered as a multi-disciplinary matter possibly in an inter-agency approach.

27.15 Some delegations informed the Committee of similar experiences to Spain with the rescue of persons, including undocumented migrants, asylum seekers and refugees in their waters and therefore acknowledged that further work on this issue was required by IMO and other Organizations.

27.16 Some delegations recalled that following considerable complex, sometimes contentious and demanding and highly sensitive negotiations, MSC 78 had adopted the amendments to SOLAS chapter V and the SAR Convention concerning persons rescued at sea, which had only entered into force on 1 July 2006, and the associated Guidelines on the treatment of persons rescued at sea by resolution MSC.167(78), representing a delicate balance, which should not be disturbed so soon after their entry into force. The Guidelines in their present form were not suitable for a mandatory application.

27.17 The Secretary-General informed the Committee that the Secretariat was fully aware of the problem which, if left unattended, would endanger innocent lives at sea. He had communicated with the Spanish Government on the issues under consideration and had highlighted the problem in his speech to the first ever Conference of African Ministers of Transport in Abuja earlier this year.

He acknowledged that parts of the problem were outside the remit of IMO and recalled the inter-agency initiative on persons rescued at sea and the associated meetings in 2001 and 2003 between IMO, IOM, OHCHR, UNHCR, UN/DOALOS and UNODC which had resulted in closer co-operation between the Organizations concerned. Following the recent increase of incidents, particularly in the Mediterranean, another inter-agency meeting was planned to be held in January 2008 to consider any further action to be taken in a co-ordinated manner. The Secretary-General also indicated that technical co-operation in terms of capacity-building would be available in particular to the African States in respect of this issue.

27.18 The Committee expressed appreciation to Spain for bringing this problem to its attention, recognizing the need for caution in relation to associated issues outside IMO's remit, and agreed that there was a need for further discussion and work by IMO, without disturbing the delicate balance achieved with the 2004 Amendments to the SOLAS and SAR Conventions and the associated Guidelines.

27.19 The Committee acknowledged efforts undertaken on a bilateral or multilateral level and the supplementary action under way on the EU level, as well as the intention by Spain to propose a new work programme item to MSC 84 and expressed appreciation to the Secretary-General for

the continuation of the inter-agency initiative as well as the suggested technical co-operation possibilities.

### **Singapore–Barelang Electronic Navigational Charts**

27.20 The Committee noted with appreciation the information provided by Indonesia and Singapore (MSC 83/27/7) on a regional initiative between Indonesia and Singapore to enhance the safety of high-speed craft passenger ferry services. The joint initiative produced quality assured official Electronic Navigational Charts (ENCs), followed by ECDIS sea trials covering ferry routes and terminals in the Riau Islands in Indonesia and Singapore. A Memorandum of Understanding (MoU) was signed between the hydrographic offices of Indonesia and Singapore for the joint administration of these ENCs, which had been officially launched on 12 June 2007.

27.21 The Committee referred document MSC 83/27/7 to the NAV Sub-Committee for information during its consideration of the agenda item on “Development of carriage requirements for ECDIS” at NAV 54.

### **Applicability of IMO Conventions to FPSOs and FSUs**

27.22 The Committee considered the proposal by ITF (MSC 83/27/8) that, in light of the decision of MEPC 56 confirming that article 2 of the MARPOL Convention (definition of a ship) was applicable for the purposes of the MARPOL Convention, to floating production, storage and offloading facilities (FPSOs) and floating storage units (FSUs), the Committee should reconsider the decision of MSC 76 that it was not necessary to apply mandatory IMO instruments to address safety-related issues for FPSOs and FSUs, as the existing safety regime was adequate.

27.23 While there was wide support for developing adequate safety criteria for FPSOs and FSUs, it was recognized that these criteria should not prejudice the rights of the coastal State. Accordingly, the Committee agreed to forward document MSC 83/27/8 (ITF) to FSI 16 and STW 39 for consideration and requested their advice to MSC 85 on the applicability of IMO conventions to FPSOs and FSUs, before establishing any new work programme items for the sub-committees.

### **Bulk carrier casualty report**

27.24 The Committee noted that the information contained in document MSC 83/INF.6 (INTERCARGO) shows that during 2006 seven bulk carriers over 10,000 dwt were recorded as total losses accompanied by the tragic loss of thirty-seven (37) lives – twenty-six (26) in one casualty. According to the report, an analysis of the data to identify trends of the last ten-year period (1997-2006) indicates that the average number of ships, lives and dwt tonnage being lost continues to fall. The report suggested that the losses which occurred in 2006 were exceptional in that two of the incidents were due to groundings as a result of the effects of a typhoon. It also renewed the concern that when a bulk carrier sinks, it invariably does so very quickly and the crew has very little time to evacuate the ship.

### **Immediate measures introduced after the “Bourbon Dolphin” casualty**

27.25 The Committee noted the information provided in document MSC 83/INF.9 (Norway), on the immediate measures that the Norwegian Maritime Administration had introduced after the **Bourbon Dolphin** casualty, pending the outcome of a Special Investigation Committee’s work.

### **Improving the provision and quality of nautical port information**

27.26 The Committee noted the information provided by IHMA, IAPH, IFSMA, OCIMF and BIMCO (MSC 83/INF.19) regarding the fact that the various, sometimes inconsistent sources of nautical information required for port entry and berth/terminal usage could lead to confusion on the part of the user. Misunderstanding or misuse of such data had a direct bearing on ship and port safety and the protection of the environment. The Committee noted the initiative taken by IHMA, IAPH, IFSMA, OCIMF and BIMCO for a more efficient and standardized way of making this information available to mariners and publishers of nautical information.

27.27 The Committee invited the FAL Committee to note the information provided in document MSC 83/INF.19.

### **Translation in Spanish**

27.28 The Committee noted the observation of the delegation of Spain, supported by other Spanish speaking delegations regarding translation, in the Spanish language, of the words “shall” and “should” and requested the Secretariat to take necessary action.

### **Expression of appreciation**

27.29 The Committee unanimously expressed profound appreciation and wholehearted thanks to the Government of Denmark for its invitation to hold this session in Copenhagen and for bearing the substantial cost of moving over the IMO staff designated to assist in the preparation and running of the meeting. More particularly, the Committee expressed deep appreciation to:

- the Danish Ministry of Economic and Business Affairs and the Danish Maritime Authority;
- the Mayor of Copenhagen;
- the Danish Shipowner’s Association;
- A.P. Moller-Maersk; and
- the people of Copenhagen,

for their invaluable contribution to ensure the success of the meeting and make the delegates’ and observers’ stay in Copenhagen most enjoyable.

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

- Adm. Miguel Angelo Davena (Brazil) (on return home);
- Mr. Jeang-Jun Jang (Republic of Korea) (on return home); and
- Mr. John De Rose (IACS) (on impending retirement).

(The annexes will be issued as addenda to this document)



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MARITIME SAFETY COMMITTEE  
83rd session  
Agenda item 28

MSC 83/28/Add.1  
31 October 2007  
Original: ENGLISH

**REPORT OF THE MARITIME SAFETY COMMITTEE  
ON ITS EIGHTY-THIRD SESSION**

Attached are annexes 17, 32 and 35 to the report of the Maritime Safety Committee on its eighty-third session (MSC 83/28).

For reasons of economy, this document is printed in a limited number. Delegates are kindly asked to bring their copies to meetings and not to request additional copies.

**LIST OF ANNEXES**

- ANNEX 17      DRAFT ASSEMBLY RESOLUTION ON CRITERIA FOR THE PROVISION OF MOBILE SATELLITE COMMUNICATION SYSTEMS IN THE GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
- ANNEX 32      DRAFT ASSEMBLY RESOLUTION ON THE REVISED CODE FOR THE IMPLEMENTATION OF MANDATORY IMO INSTRUMENTS
- ANNEX 35      DRAFT ASSEMBLY RESOLUTION ON THE REVISED SURVEY GUIDELINES UNDER THE HARMONIZED SYSTEM OF SURVEY AND CERTIFICATION (HSSC)

**(See document MSC 83/28/Add.2 for annexes 1 to 16 and document MSC 83/28/Add.3 for annexes 18 to 31, 33, 34 and 36 to 44)**

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**ANNEX 17****DRAFT ASSEMBLY RESOLUTION****CRITERIA FOR THE PROVISION OF MOBILE SATELLITE  
COMMUNICATION SYSTEMS IN THE GLOBAL MARITIME  
DISTRESS AND SAFETY SYSTEM (GMDSS)**

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention of the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECALLING ALSO that regulation IV/5 of the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended in 1988, requires each Contracting Government to undertake to make available, either individually or in co-operation with other Contracting Governments, as they may deem practical and necessary, appropriate shore-based facilities for space and terrestrial radiocommunication services having due regard to the recommendations of the Organization,

TAKING INTO ACCOUNT resolution 322 (Rev.Mob-87) of the World Administrative Radio Conference, 1987, relating to coast stations and coast earth stations assuming watchkeeping responsibilities on certain frequencies in connection with the implementation of distress and safety communications for the GMDSS,

TAKING INTO ACCOUNT ALSO resolution 3, Recommendation on the Early Introduction of the Global Maritime Distress and Safety System (GMDSS) Elements, adopted by the 1988 SOLAS Conference introducing the GMDSS,

NOTING resolution A.801(19) on the Provision of radio services for the GMDSS, as amended,

NOTING ALSO that future mobile satellite communication systems might have the potential to offer maritime distress and safety communications,

NOTING FURTHER the decision of the Maritime Safety Committee, at its eighty-second session, that the oversight of future satellite providers in the GMDSS should be undertaken by IMSO,

RECOGNIZING that mobile satellite communication systems for use in the GMDSS should fulfil performance criteria adopted by the Organization,

RECOGNIZING ALSO the need for the Organization to have in place criteria against which the capabilities and performance of mobile satellite communication systems for use in the GMDSS may be verified and evaluated;

1. ADOPTS the Criteria for the Provision of Mobile Satellite Communication Systems in the GMDSS set out in the Annex to the present resolution;
2. INVITES Governments, when permitting ships flying their countries' flag to carry maritime mobile satellite equipment for use in the GMDSS to require those ships to carry equipment which can utilize only those satellite systems that have been recognized by IMO and conform to the Performance Standards adopted by the Organization for use in the GMDSS, in accordance with the criteria set out in sections 2 to 5 of the Annex;
3. REQUESTS the Maritime Safety Committee to:
  - (a) apply the criteria set out in the Annex to the present resolution, via the procedure set out in section 2 of the Annex, for the evaluation of satellite systems notified by Governments for possible recognition for use in the GMDSS, within the context of the relevant regulations of SOLAS chapter IV; and
  - (b) ensure that mobile satellite communication systems recognized by the Organization for use in the GMDSS are compatible with all appropriate SOLAS requirements, and also that such recognition takes into account existing operational procedures and equipment performance standards;
4. REQUESTS the Maritime Safety Committee to keep this resolution under review and take appropriate action as necessary to secure the long-term integrity of the GMDSS; and
5. REVOKES resolution A.888(21) and MSC/Circ.1077.



## ANNEX

### CRITERIA FOR THE PROVISION OF MOBILE SATELLITE COMMUNICATION SYSTEMS IN THE GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)

#### 1 DEFINITIONS

##### 1.1 Mobile Satellite Communication System

The mobile satellite communication system (satellite system) means the space segment, the arrangements for controlling the space segment, the network control facilities controlling the access to the space segment, the earth stations and maritime mobile terminals operating in the system. The satellite system will include, or interface with, the following elements:

- .1 **Earth station** means any fixed satellite communication station acting as a gateway between the space segment and the terrestrial networks.
- .2 **Maritime mobile terminal** means any radiocommunication equipment working through a satellite communication system recognized for use in the GMDSS on board a ship.
- .3 **Space segment** means the satellites and the radiocommunication facilities they carry both for control and to provide GMDSS services and includes the forward and return communication links with the earth.
- .4 **Terrestrial networks** means the communication networks providing land-based subscriber communication facilities such as telephone, facsimile or data communications.

**1.2 Mobile Satellite Communication Service** means any service which operates through a satellite system and is recognized by the Organization for use in the GMDSS.

##### 1.3 Coverage area

The Coverage Area of the satellite system is the geographical area within which the satellite system provides an availability in accordance with the criteria stated in section 3.5 in the ship-to-shore and shore-to-ship directions, and within which continuous alerting is available.

##### 1.4 Availability

The availability of any mobile satellite communication system or service is defined as the percentage of time in which the system or service as a whole is available for access to and communications through the system, calculated according to the following formula:

$$A = \frac{(\text{scheduled operating time}) - (\text{downtime})}{(\text{scheduled operating time})} \times 100\%$$

where:

Scheduled operating time = 100% of the time period being reported on; and  
Downtime = the total time during the period for which the recognized GMDSS system or service was not operationally available.

**Note:** Definitions and calculations of availabilities of communications circuits in the Maritime Mobile-Satellite Service are given in ITU-R M.828-1.

## **2 RECOGNITION OF MOBILE SATELLITE COMMUNICATION SYSTEMS FOR USE IN THE GMDSS**

2.1 The evaluation and recognition of satellite systems participating, or wishing to participate in the GMDSS is undertaken by the Organization.

### **2.2 Application for Recognition**

2.2.1 Satellite system providers wishing to participate in the GMDSS should apply to the Organization, through a Member State, for recognition as a radio system providing maritime distress and safety satellite communication capabilities for use in the GMDSS. Such applications should be notified to the Organization by Governments, either individually or in co-operation with other Governments. The application will be reviewed by the Maritime Safety Committee (MSC) in relation to its policy for the expansion of satellite services in the GMDSS. If the MSC decides that there are no objections in principle to the application, it will forward the application to the COMSAR Sub-Committee for evaluation. Recognition of the satellite provider to operate in the GMDSS will be undertaken by the Committee on the basis of the evaluation report.

2.2.2 The Governments concerned should make available to the Organization all necessary information to enable it to evaluate the satellite system in relation to the criteria indicated below.

In particular, Governments proposing such satellite systems for possible recognition and use in the GMDSS should provide evidence to show that:

- .1 the satellite system conforms with all the criteria specified in this Annex;
- .2 the charging policies and provisions of resolution A.707(17), as amended, on Charges for distress, urgency and safety messages through the Inmarsat system, are complied with;
- .3 there is a well-founded confidence that the Company concerned will remain viable for the foreseeable future and will remain in a position to deliver the required services over an extended period in keeping with the expectations of the Organization and the maritime industry on the continuity, durability and reliability of the service; and
- .4 the provider of the satellite system is ready to submit any recognized services to oversight by IMSO and sign the required Public Services Agreement (PSA) with that organization.

## **2.3 Verification and Evaluation**

2.3.1 The COMSAR Sub-Committee should verify and—evaluate the information, seeking clarification as required direct from the service provider concerned, and decide whether the satellite system meets the criteria established by in this resolution. In reaching its decision, The COMSAR Sub-Committee should take into account the provisions of the relevant regulations of chapter IV of the 1974 SOLAS Convention, as amended and the criteria established by this resolution.

2.3.2 Recognition by the Organization should be recorded in an MSC Resolution entitled: **Statement of Recognition of Maritime Mobile Satellite Services provided by [Company Name]**, detailing the specific services provided by the Company which have been recognized by the Organization. A copy of the Statement of Recognition should be provided to IMSO.

2.3.3 If, following evaluation, the Organization is unable to recognize the Company or the service(s) offered for the GMDSS, the Organization should communicate this decision to the Company and IMSO in writing, setting out the reasons for the decision and any actions the Company may take to achieve recognition in the future.

## **2.4 The Public Services Agreement**

2.4.1 Recognized services are subject to oversight by IMSO according to the rules and arrangements set out in the Public Services Agreement (PSA) concluded between the Service Provider and IMSO. No maritime satellite system should be used in the GMDSS unless it has first been recognized by the Organization in accordance with the above procedure and the Service Provider has signed a Public Services Agreement with IMSO.

2.4.2 IMSO should conduct its oversight of the recognized services on a continuing basis.

2.4.3 Responsibility for ensuring compliance with the standards established by this annex, other relevant mandatory international instruments and, to the extent necessary, those recommendations, resolutions and procedures of IMO and ITU which are of a recommendatory nature, insofar as they relate to the provision of GMDSS services, rests with IMSO under the terms of the Public Services Agreement.

## **2.5 Reports**

IMSO should, at least once a year, make available to the Organization a report on the availability, performance and other relevant information concerning each recognized service during the period since the preceding report in accordance with section 3.5.2 of the criteria indicated below.

### **3 CRITERIA AND REQUIREMENTS FOR THE RECOGNIZED MOBILE SATELLITE COMMUNICATION SYSTEM**

#### **3.1 Functional requirements\***

Satellite systems for maritime distress and safety communication services and forming part of the GMDSS radio systems specified in chapter IV, regulation 5 of the 1974 SOLAS Convention, as amended, should provide capabilities for at least the following maritime distress and safety communications:

- .1 ship-to-shore distress alerts/calls;
- .2 shore-to-ship distress relay alerts/calls;
- .3 ship-to-shore, shore-to-ship and ship-to-ship search and rescue co-ordinating communications;
- .4 ship-to-shore transmissions of Maritime Safety Information;
- .5 shore-to-ship broadcast of Maritime Safety Information; and
- .6 ship-to-shore, shore-to-ship, and ship-to-ship general communications.

#### **3.2 Capacity**

The satellite system should be designed for and should provide adequate channel and power capacity for processing effectively, and with an availability as stated in section 3.5, the maritime distress, urgency, safety and general communication traffic estimated to be required by the ships using the system.

#### **3.3 Priority access**

3.3.1 Satellite systems in the GMDSS should be capable of processing maritime distress, urgency, safety and routine communications in accordance with the message priority as defined by the ITU Radio Regulations. The order of processing these communications should be:

- .1 distress;
- .2 urgency;

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\* – Resolution A.801(19) “Provision of Radio Services for the Global Maritime Distress and Safety System (GMDSS)”, Annex 5 “Criteria for use when providing Inmarsat shore-based facilities for use in the GMDSS”;

– Resolution A.887(21) “Establishment, Updating and Retrieval of the Information Contained in the Registration Databases for the Global Maritime Distress and Safety System (GMDSS)”;

– Resolution A.694(17) “General requirements for shipborne radio equipment forming part of the Global Maritime Distress and Safety System (GMDSS) and for electronic navigational aids”;

– IMO International SafetyNET Manual;

– Resolution A.664(16) “Performance Standards for Enhanced Group Call Equipment”; and

– Appropriate IEC Standards and ITU Recommendations.

- .3 safety; and
- .4 routine (general communications).

3.3.2 In implementing these four levels of priority:

- .1 Distress alerts and distress calls (level 1) should be given priority treatment by providing immediate access to satellite channels. For store and forward systems, distress alerts and calls should be placed ahead of all other traffic.
- .2 Satellite systems used for providing other mobile satellite communications in addition to maritime communications should be capable of automatically recognizing requests for maritime communications from:
  - maritime mobile terminals; and
  - recognized entities of critical importance for safety at sea, such as MRCCs, hydrographic and meteorological offices, medical centres, etc., registered with the earth station.

The system should process such maritime communications in the ship-to-shore and shore-to-ship directions for levels 1 to 3 with priority over other communications.

- .3 In processing maritime distress, urgency, safety and routine communications, the satellite system and the earth station should be capable of:
  - .1 automatically recognizing the message or access priority for ship-to-shore communications;
  - .2 automatically recognizing the message or access priority for shore-to-ship communications, if any are provided, from, as a minimum, recognized entities of importance for safety at sea, registered by the earth station;
  - .3 preserving and transferring the priority;
  - .4 giving distress alerts and distress calls immediate access, if necessary by pre-emption of ongoing communications of routine priority;
  - .5 automatically recognizing maritime distress communications, and of routing automatically maritime distress alerts and distress calls directly to an associated MRCC, or responsible RCC, if this capability exists; and
  - .6 processing maritime urgency and safety communications in the ship-to-shore and shore-to-ship directions with the required priority, for example by allocating the first vacant channel, if no channel is immediately available.
- .4 Selection and use of message or access priority for urgency and safety transmissions by maritime mobile terminals should preferably be automatic and should be restricted to calls to special, recognized entities such as medical centres, maritime assistance, hydrographic and meteorological offices, etc., registered with

the earth station. The earth station should automatically route such calls directly to the relevant entity.

### **3.4 Coverage area**

3.4.1 The definition of the Coverage Area is given in section 1.3.

3.4.2 The Coverage Area is to be delineated on a map and also described in relation to the sea areas defined in Chapter IV regulation 2 of the SOLAS Convention. Documentation on the coverage area of the satellite system, as defined in section 1.3, should be forwarded to the Organization.

3.4.3 Information on coverage areas for satellite systems forming part of the GMDSS should be published by the Organization in the GMDSS Master Plan.

### **3.5 Availability**

3.5.1 The satellite system should provide continuous availability for maritime distress and safety communications in the ship-to-shore and shore-to-ship directions.

3.5.2 The availability of the space segment, provision of spare satellite capacity and the network control function (i.e. the network availability), as defined in section 1.4 above, should be monitored by IMSO, which should report on the recorded availability of the system to the Organization at least once every year.

3.5.3 Service providers should advise their associated RCCs and IMSO of planned outages of recognized services and advise ships of scheduled downtime and known interruptions in service and any other relevant network information. Service providers should also advise IMSO of unscheduled interruptions in any recognized services, as soon after the commencement of the interruption as possible, and when the recognized services have been restored.

3.5.4 Network availability. The complete mobile satellite communication network, including earth stations for the recognized services is expected to achieve at least 99.9% availability (equivalent to a total of 8.8 hours down time per year).

### **3.6 Restoration and spare satellites**

3.6.1 Spare satellite capacity and arrangements prepared in advance should be provided for ensuring that, in the event of a partial or total satellite failure, the recognized maritime distress and safety communication services can be restored in the area concerned to their normal availability, within no more than one hour after the event of a satellite failure.

3.6.2 Full information on the means and arrangements prepared for restoration of the maritime distress and safety communication services in the event of a satellite failure should be notified to IMSO. IMSO and the Service Provider should conduct exercises from time to time to prove the efficiency and effectiveness of these planned arrangements.

### **3.7 Identification**

The satellite system should be capable of automatically recognizing and preserving the identification of maritime mobile earth stations.

### **3.8 Information to be made available to SAR authorities**

For all distress urgency and safety communications, the maritime mobile terminal identification number or Maritime Mobile Service Identity (MMSI) should be an integral part of the distress alert and provided to the RCC with the alert. When available, all additional registration, commissioning or other data relevant to the search and rescue or prosecution of false alert should be referenced to this number and made available to the proper SAR authority or RCC upon request.

### **3.9 Reception of distress alerts**

The satellite system should allow for addressing a maritime distress alert to a specific MRCC chosen by the ship's operator and covering the area concerned, but should also provide for automatic routing of manually initiated maritime distress alerts. Means should be provided to allow the MRCC to easily identify the system and specific mobile station from which an alert or other priority message has been received, to enable the MRCC to establish shore-to-ship communications with the ship concerned.

### **3.10 Control of maritime mobile terminals**

Access control arrangements for controlling and giving, or temporarily rejecting, access for maritime mobile terminals to the system should at all times allow maritime mobile terminals access for transmission of maritime distress alerts/calls and distress messages.

### **3.11 Test facilities**

The system should provide facilities making it possible for maritime mobile terminals to test the distress capability of their stations without initiating a distress alert/call.

## **4 CRITERIA AND REQUIREMENTS FOR EARTH STATIONS**

### **4.1 Functional requirements**

4.1.1 Earth stations serving the GMDSS should:

- .1 be in continuous operation;
- .2 be connected to an associated RCC;
- .3 keep continuous watch on all appropriate satellite communication channels; and
- .4 be capable of transmission and reception of at least the maritime distress and safety communications services included in paragraph 3.1.

## **4.2 Priority**

4.2.1 The earth station should be capable of automatically recognizing the priority of ship-to-shore and shore-to-ship communications, and should preserve the priority and process maritime mobile communications with the four levels of priority specified in paragraph 3.3.1.

4.2.2 Priority access should be given for distress alerts and calls in real time. In any case, distress alerts and calls should be given priority treatment by providing immediate access to satellite channels, and distress alerts and calls for store and forward systems should be placed ahead of all routine traffic. Any satellite system designed for use in the GMDSS should be able to recognize the four levels of priority and give appropriate access for communications in the ship-to-shore direction and in the shore-to-ship direction for distress, urgency and safety traffic originated by RCCs or other Search and Rescue Authorities.

4.2.3 Limitations in existing public switched networks on facilities for indication and use of priority access codes might necessitate special arrangements such as use of leased lines between, for example, MSI providers and the earth station, until such facilities become available in the public switched network.

## **4.3 Pre-emption**

Satellite systems participating in the GMDSS should make arrangements to ensure that it will always be possible for an MRCC to obtain an immediate connection to a maritime mobile terminal and that the MRCC could use the systems for SAR alerting and communication without any delay. This may be achieved by a process of pre-emption or by other suitable means approved by IMSO.

## **4.4 Routeing of maritime distress alerts**

4.4.1 The satellite system should have reliable communication links to one or more associated MRCCs. These links may be implemented directly between the MRCC and an earth station, or some other suitable point in the system's network. The arrangements between the system and the MRCC are subject to approval by the national administration.

4.4.2 The system's network should be capable of automatically recognizing maritime distress and safety communications and of routeing, as far as possible automatically, the maritime distress alerts/calls directly to the associated MRCC, via a highly reliable communication link. In cases where capability exists, the system may route alerts directly to the responsible RCC as defined in the IAMSAR Manual.

4.4.3 The earth station or other relevant part of the system's network should be provided with an aural and visual alarm to alert a designated responsible person in the event that automatic connection to the MRCC cannot be achieved within 60 seconds. In this case, all necessary action should be taken to immediately inform the MRCC of the details of the distress alert or call. Personnel should always be available to react to such an alarm so as to ensure that the distress alert or call can be forwarded to an MRCC within 5 minutes of the alarm being triggered. All messages with distress or urgency priority should sound an alarm at the earth station or other relevant part of the system's network, which should require manual cancellation.



4.4.4 The MRCC should be provided with reliable communication links to the system's network for efficient handling of shore-to-ship distress alert relays and distress traffic, preferably via dedicated communication links.

#### **4.5 Identification**

The system should be capable of automatically identifying ship earth stations. If another identification than the Maritime Mobile Service Identity (MMSI) is used in the system, a means should be provided 24h a day to easily identify the ship and to provide all the appropriate additional information, including the MMSI number where available, to the MRCC necessary for effecting the rescue.

#### **4.6 Voice communication systems**

4.6.1 The communication links for mobile-satellite voice communication systems should be connectable to the public switched network in accordance with relevant ITU-T Recommendations.

4.6.2 Satellite systems using the public switched network for routing maritime distress calls and distress traffic to and from MRCCs should, upon receipt of ship-to-shore or shore-to-ship distress alerts/calls or distress traffic, immediately attempt to establish the connection necessary for transfer of the distress alert or distress message.

#### **4.7 Data communication systems**

4.7.1 The communication links for mobile-satellite data communication systems should be connectable to the public data communication network in accordance with relevant ITU-T Recommendations. The system should provide capability for transfer of the identity of the calling subscriber to the called subscriber. Maritime distress alerts/calls and distress messages should include the ship identity and the earth station identity or other means of identifying the point of access to the satellite network.

4.7.2 Satellite systems using the public switched network for routing distress alerts/calls and distress traffic to and from MRCCs should, on receipt of ship-to-shore or shore-to-ship distress alerts/calls or distress traffic, immediately attempt to establish the connection necessary for transfer of the distress alert or distress message.

#### **4.8 Store and forward systems**

Satellite systems using store and forward communication systems should:

- .1 make an initial attempt to deliver a ship-to-shore or shore-to-ship message within 60 seconds for any maritime distress alert or distress traffic, and 10 minutes for all other maritime messages, from the time the receiving station receives the message. The message should include the ship identity and the earth station or system identity; and
- .2 generate notification of non-delivery immediately once the message is considered non-deliverable, for maritime distress alerts and distress messages not later than 4 minutes after the reception of the alert or message.

#### **4.9 Facilities for broadcast of Maritime Safety Information**

4.9.1 Satellite systems forming part of the GMDSS should technically be capable of offering facilities for broadcast of Maritime Safety Information (MSI) from MRCCs and authorized providers of MSI, such as Hydrographic Offices and Meteorological Offices, to ships at sea.

4.9.2 Such facilities for broadcast of MSI should provide for automatic, continuous and reliable reception on board ships and should, as a minimum, fulfil the requirements specified in sections 4.9.3 to 4.9.8 below.

4.9.3 The facilities should provide for recognition of and processing the four levels of priority specified in paragraph 3.3.1.

4.9.4 It should be possible to address the broadcast of MSI to all properly equipped ships within a specified area for at least the following types of areas:

- .1 the entire region covered by the satellite or system over which the transmission is made;
- .2 the NAVAREAs/METAREAs as established by the International Maritime Organization (IMO), the International Hydrographic Organization (IHO) and the World Meteorological Organization (WMO) respectively; and
- .3 a temporary area chosen and specified by the originator of the MSI message, including circular or rectangular user-specified areas appropriate for broadcast of distress alerts relays and search and rescue co-ordinating communications.

4.9.5 The facilities should provide for transmission of at least the types of Maritime Safety Information required by SOLAS, as follows:

- .1 search and rescue co-ordination information, including distress alerts relays;
- .2 navigational warnings; and
- .3 meteorological warnings and forecasts.

4.9.6 The facilities for broadcast of navigational and meteorological warnings should include possibilities for:

- .1 scheduling the broadcast at fixed times or transmitting messages as unscheduled broadcast transmissions; and
- .2 automatic repetition of the broadcast with time intervals and number of broadcast transmissions as specified by the MSI provider, or until cancelled by the MSI provider.

4.9.7 The facilities should provide for marking MSI messages with a unique identity, making it possible for the shipborne equipment for reception of these broadcasts to automatically ignore messages already received.

4.9.8 The broadcast service should in addition provide facilities for broadcasts similar to NAVTEX to coastal areas not covered by the International NAVTEX Service, in accordance with the identification system (i.e., the identification characters B1, B2, B3, B4) used in the International NAVTEX Service.

## **5 ADDITIONAL RECOMMENDED CAPABILITIES**

5.1 Mobile satellite service providers are encouraged to:

- .1 route Automatic Location Identification (ALI) and Automatic Number Identification (ANI) in accordance with appropriate ITU-T Recommendations with distress calls originating from MSS terminals directly to responsible RCCs for voice and data calls;
- .2 automatically route information contained in registration databases in accordance with resolution A.887(21) in a recognizable format with the distress call to the responsible RCC, once means are established for doing so; and
- .3 be capable of retrieving maritime safety information in a timely manner from NAVAREA, METAREA, other relevant co-ordinators, and the International Ice Patrol Service, in a standard format and process established by those co-ordinators.

## **6 NOVEL TECHNIQUES**

Satellite systems may be permitted to use novel techniques to provide any of the capabilities required by this resolution. Approval to use such novel techniques for a period of up to 12 months may be given provisionally by IMO in order to allow early introduction and proper evaluation of the technique. Final recognition of a novel technique may be given by the Organization only after receiving a report allowing full technical and operational evaluation of the technique.

## **7 LEGACY SERVICES**

7.1 All satellite-based systems and services for the GMDSS which were already approved and in use\* before the entry into force of this resolution are exempt from the requirements of paragraphs 2.1, 2.2 and 2.3. These systems are:

- .1 Inmarsat-A (due to be withdrawn 31 December 2009)
- .2 Inmarsat-B
- .3 Inmarsat-C
- .4 The International SafetyNET Service

7.2 The services defined in paragraph 7.1 are subject to requirements of paragraph 2.4.

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\* IMO has decided that Inmarsat Fleet 77 already meets the requirements of Assembly resolution A.888(21) and recommended that Fleet 77 terminals should be used in GMDSS ship installations and by Rescue Co-ordination Centres.



**ANNEX 32****DRAFT ASSEMBLY RESOLUTION****REVISED CODE FOR THE IMPLEMENTATION OF MANDATORY  
IMO INSTRUMENTS**

THE ASSEMBLY,

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

RECALLING ALSO that, by resolution A.973(24), it adopted the Code for the Implementation of Mandatory IMO Instruments,

RECOGNIZING the need for the above Code to be revised to take account of the amendments to the IMO instruments referred to the above, which have entered into force or become effective since the adoption of resolution A.973(24),

BEING AWARE of the request of the seventh session of the UN Commission on Sustainable Development (CSD 7) to develop measures to ensure that flag States give full and complete effect to the IMO and other relevant conventions to which they are party, so that the ships of all flag States meet international rules and standards,

RECOGNIZING that Parties to the relevant international conventions have, as part of the ratification process, accepted to fully meet their responsibilities and to discharge their obligations under the conventions and other instruments to which they are party,

REAFFIRMING that States have the primary responsibility to have in place an adequate and effective system to exercise control over ships entitled to fly their flag, and to ensure that they comply with relevant international rules and regulations in respect of maritime safety, security and protection of the marine environment,

REAFFIRMING ALSO that States, in their capacity as port and coastal States, have other obligations and responsibilities under applicable international law in respect of maritime safety, security and protection of the marine environment,

NOTING that, while States may realize certain benefits by becoming Parties to instruments aiming at promoting maritime safety, security and the prevention of pollution from ships, these benefits can only be fully realized when all Parties carry out their obligations as required by the instruments concerned,

NOTING ALSO that the ultimate effectiveness of any instrument depends, *inter alia*, upon all States:

- (a) becoming Parties to all instruments related to maritime safety, security and pollution prevention and control;

- (b) implementing and enforcing such instruments fully and effectively;
- (c) reporting to the Organization, as required,

NOTING FURTHER that, in the context of the Voluntary IMO Member State Audit Scheme, the enactment of appropriate legislation, its implementation and enforcement are the three key issues on which a Member State's performance can be measured,

BEARING IN MIND that the Voluntary IMO Member State Audit Scheme contains references to the Code for the implementation of mandatory IMO instruments, as appropriate; and that the Code, in addition to providing guidance for the implementation and enforcement of IMO instruments, forms the basis of the Audit Scheme, in particular concerning the identification of the auditable areas,

HAVING CONSIDERED the recommendations made by the Maritime Safety Committee, at its eighty-third session and by the Marine Environment Protection Committee, at its fifty-sixth session,

1. ADOPTS the Revised Code for the Implementation of Mandatory IMO Instruments, set out in the Annex to the present resolution;
2. URGES Governments of flag States, port States and coastal States to implement the Revised Code on a national basis;
3. REQUESTS the Maritime Safety Committee and the Marine Environment Protection Committee to keep the Revised Code under review and, in co-ordination with the Council, to propose amendments thereto to the Assembly;
4. REVOKES resolution A.973(24).

ANNEX

CODE FOR THE IMPLEMENTATION OF MANDATORY IMO INSTRUMENTS

Table of Contents

	<b>Page</b>
<b>PART 1 – COMMON AREAS</b>	<b>4</b>
Objective	4
Strategy	4
General	4
Scope	4
Initial actions	5
Communication of information	6
Records	6
Improvement	6
<b>PART 2 – FLAG STATES</b>	<b>6</b>
Implementation	6
Delegation of authority	8
Enforcement	9
Flag State surveyors	11
Flag State investigations	12
Evaluation and review	13
<b>PART 3 – COASTAL STATES</b>	<b>14</b>
Implementation	14
Enforcement	15
Evaluation and review	15
<b>PART 4 – PORT STATES</b>	<b>14</b>
Implementation	14
Enforcement	15
Evaluation and review	15
<b>ANNEX 1 OBLIGATIONS OF CONTRACTING GOVERNMENTS/PARTIES</b>	<b>16</b>
<b>ANNEX 2 SPECIFIC FLAG STATE OBLIGATIONS</b>	<b>23</b>
<b>ANNEX 3 SPECIFIC COASTAL STATE OBLIGATIONS</b>	<b>56</b>
<b>ANNEX 4 SPECIFIC PORT STATE OBLIGATIONS</b>	<b>57</b>
<b>ANNEX 5 INSTRUMENTS MADE MANDATORY UNDER IMO CONVENTIONS</b>	<b>62</b>
<b>ANNEX 6 SUMMARY OF AMENDMENTS TO MANDATORY INSTRUMENTS REFLECTED IN THE CODE</b>	<b>63</b>

## **PART 1 – COMMON AREAS**

### **Objective**

1 The objective of this Code is to enhance global maritime safety and protection of the marine environment.

2 Different Administrations will view this Code according to their own circumstances and will be bound only for the implementation of those instruments referred to in paragraph 6 to which they are Contracting Governments or Parties. By virtue of geography and circumstance some Administrations may have a greater role as a flag State than as a port State or as a coastal State, whilst others may have a greater role as a coastal State or port State than as a flag State. Such imbalances do not diminish, in any way, their duties as a flag, port or coastal State.

### **Strategy**

3 In order for a State to meet the objective of this Code, a strategy should be developed, covering the following issues:

- .1 implementation and enforcement of relevant international mandatory instruments;
- .2 adherence to international recommendations, as appropriate;
- .3 continuous review and verification of the effectiveness of the State in respect of meeting its international obligations; and
- .4 the achievement, maintenance and improvement of overall organizational performance and capability.

In implementing the aforementioned strategy, the guidance given in this Code should be adhered to.

### **General**

4 Under the provisions of the United Nations Convention on the Law of the Sea, 1982 (UNCLOS) and of IMO conventions, Administrations are responsible for promulgating laws and regulations and for taking all other steps which may be necessary to give these instruments full and complete effect so as to ensure that, from the point of view of safety of life at sea and protection of the marine environment, a ship is fit for the service for which it is intended and is manned with competent maritime personnel.

5 In taking measures to prevent, reduce and control pollution of the marine environment, States shall act so as not to transfer, directly or indirectly, damage or hazards from one area to another or transform one type of pollution into another. (UNCLOS, article 195.)

### **Scope**

6 The mandatory IMO instruments addressed in this Code are:

- .1 the International Convention for the Safety of Life at Sea, 1974, as amended (SOLAS 1974);



- .2 the Protocol of 1978 relating to the International Convention for the Safety of Life at Sea, 1974, as amended (SOLAS PROT 1978);
- .3 the Protocol of 1988 relating to the International Convention for the Safety of Life at Sea, 1974, as amended (SOLAS PROT 1988);
- .4 the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, as amended (MARPOL 73/78);
- .5 the Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL PROT 1997);
- .6 the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended (STCW 1978);
- .7 the International Convention on Load Lines, 1966 (LL 66);
- .8 the Protocol of 1988 relating to the International Convention on Load Lines, 1966 (LL PROT 1988);
- .9 the International Convention on Tonnage Measurement of Ships, 1969 (TONNAGE 1969); and
- .10 the Convention on the International Regulations for Preventing Collisions at Sea, 1972, as amended (COLREG 1972),

as well as all instruments made mandatory through these conventions and protocols. Non-exhaustive lists of obligations under the above mandatory instruments are found in annexes 1 to 4. A list of the relevant instruments is given in annex 5 and a summary of amendments to mandatory instruments reflected in the Code is given in annex 6.

### **Initial actions**

7 When a new or amended IMO mandatory instrument enters into force for a State, the Government of that State must be in a position to implement and enforce its provisions through appropriate national legislation and to provide the necessary implementation and enforcement infrastructure. This means that the Government of the State must have:

- .1 the ability to promulgate laws which permit effective jurisdiction and control in administrative, technical and social matters over ships flying its flag and, in particular, provide the legal basis for general requirements for registries, the inspection of ships, safety and pollution-prevention laws applying to such ships and the making of associated regulations;
- .2 a legal basis for the enforcement of its national laws and regulations including the associated investigative and penal processes; and
- .3 the availability of sufficient personnel with maritime expertise to assist in the promulgation of the necessary national laws and to discharge all the responsibilities of the State, including reporting as required by the respective conventions.

8 A possible framework for national legislation to give effect to the provisions of relevant IMO instruments can be found in “Guidelines for Maritime Legislation”, a United Nations publication\*.

### **Communication of information**

9 The State should communicate its strategy, as referred to in paragraph 3, including information on its national legislation to all concerned.

### **Records**

10 Records, as appropriate, should be established and maintained to provide evidence of conformity to requirements and of the effective operation of the State. Records should remain legible, readily identifiable and retrievable. A documented procedure should be established to define the controls needed for the identification, storage, protection, retrieval, retention time and disposition of records.

### **Improvement**

11 States should continually improve the adequacy of the measures which are taken to give effect to those conventions and protocols which they have accepted. Improvement should be made through rigorous and effective application and enforcement of national legislation, as appropriate, and monitoring of compliance.

12 The State should stimulate a culture which provides opportunities to people for improvement of performance in maritime safety and environmental protection activities.

13 Further, the State should take action to identify and eliminate the cause of any non-conformities in order to prevent recurrence, including:

- .1 review and analysis of non-conformities;
- .2 implementation of necessary corrective action; and
- .3 review of the corrective action taken.

14 The State should determine action to eliminate the causes of potential non-conformities in order to prevent their occurrence.

## **PART 2 – FLAG STATES**

### **Implementation**

- 15 In order to effectively discharge their responsibilities and obligations, flag States should:
- .1 implement policies through the issuance of national legislation and guidance which will assist in the implementation and enforcement of the requirements of all

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\* ST/ESCAP/1076.

safety and pollution prevention conventions and protocols to which they are party;  
and

- .2 assign responsibilities within their Administration to update and revise any relevant policies adopted, as necessary.

16 Flag States should establish resources and processes capable of administering a safety and environmental protection programme which, as a minimum, should consist of the following:

- .1 administrative instructions to implement applicable international rules and regulations as well as develop and disseminate any interpretative national regulations that may be needed;
- .2 resources to ensure compliance with the requirements of the mandatory IMO instruments listed in paragraph 6 using an audit and inspection programme independent of any administrative bodies issuing the required certificates and relevant documentation and/or of any entity which has been delegated authority by the flag States to issue the required certificates and relevant documentation;
- .3 resources to ensure compliance with the requirements of the 1978 STCW Convention, as amended. This includes resources to ensure, *inter alia*, that:
  - .3.1 training, assessment of competence and certification of seafarers are in accordance with the provisions of the Convention;
  - .3.2 STCW certificates and endorsements accurately reflect the competencies of the seafarers, using the appropriate STCW terminology as well as terms which are identical to those used in any safe manning document issued to the ship;
  - .3.3 impartial investigation can be held of any reported failure, whether by act or omission, that may pose a direct threat to safety of life or property at sea or to the marine environment, by the holders of certificates or endorsements issued by that Party;
  - .3.4 certificates or endorsements issued by the flag State can be effectively withdrawn, suspended or cancelled when warranted, and when necessary to prevent fraud; and
  - .3.5 administrative arrangements, including those involving training, assessment and certification activities conducted under the purview of another State, are such that the flag State accepts its responsibility for ensuring the competence of masters, officers and other seafarers serving on ships entitled to fly its flag\*;
- .4 resources to ensure the conduct of investigations into casualties and adequate and timely handling of cases of ships with identified deficiencies; and

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\* Regulations I/2, I/9, I/10 and I/11 of the 1978 STCW Convention, as amended.

- .5 the development, documentation and provision of guidance concerning those requirements that are to the satisfaction of the Administration, found in relevant mandatory IMO instruments.

17 Flag States shall ensure that ships entitled to fly their flag are sufficiently and efficiently manned, taking into account the Principles of Safe Manning adopted by IMO.

### **Delegation of authority**

18 Flag States authorizing recognized organizations to act on their behalf in conducting the surveys, inspections, the issue of certificates and documents, the marking of ships and other statutory work required under the IMO conventions must regulate such authorization in accordance with SOLAS regulation XI-1/1 to:

- .1 determine that the recognized organization has adequate resources in terms of technical, managerial and research capabilities to accomplish the tasks being assigned, in accordance with the “Minimum Standards for Recognized Organizations Acting on Behalf of the Administration” set out in the relevant IMO resolution<sup>\*</sup>;
- .2 have as its basis a formal written agreement between the Administration and the recognized organization which, as a minimum, includes the elements set out in the relevant IMO resolution<sup>\*\*</sup>, or equivalent legal arrangements, and which may be based on the model agreement for the authorization of recognized organizations acting on behalf of the Administration<sup>\*\*\*</sup>;
- .3 issue specific instructions detailing actions to be followed in the event that a ship is found unfit to proceed to sea without danger to the ship or persons on board, or is found to present an unreasonable threat of harm to the marine environment;
- .4 provide the recognized organization with all appropriate instruments of national law and interpretations thereof giving effect to the provisions of the conventions or specify whether the Administration’s standards go beyond convention requirements in any respect; and
- .5 require that the recognized organization must maintain records which will provide the Administration with data to assist in interpretation of convention regulations.

19 Flag States nominating surveyors for the purpose of carrying out surveys and inspections on their behalf should regulate such nominations, as appropriate, in accordance with the guidance provided in paragraph 18, in particular subparagraphs .3 and .4.

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\* Appendix 1 of resolution A.739(18) “Guidelines for the authorization of organizations acting on behalf of the Administration”.

\*\* Appendix 2 of resolution A.739(18) “Guidelines for the authorization of organizations acting on behalf of the Administration”.

\*\*\* (MSC/Circ.710-MEPC/Circ.307).

20 The flag State should establish or participate in an oversight programme with adequate resources for monitoring of, and communication with, its recognized organizations in order to ensure that its international obligations are fully met, by:

- .1 exercising its authority to conduct supplementary surveys to ensure that ships entitled to fly its flag in fact comply with mandatory IMO instruments;
- .2 conducting supplementary surveys as it deems necessary to ensure that ships entitled to fly its flag comply with national requirements which supplement the IMO convention requirements; and
- .3 providing staff who have a good knowledge of the rules and regulations of the flag State and the recognized organizations and who are available to carry out effective field oversight of the recognized organizations.

### **Enforcement**

21 Flag States should take all necessary measures to secure observance of international rules and standards by ships entitled to fly their flag and by entities and persons under their jurisdiction so as to ensure compliance with their international obligations. Such measures should, *inter alia*, include:

- .1 prohibiting ships entitled to fly their flag from sailing until such ships can proceed to sea in compliance with the requirements of international rules and standards;
- .2 the periodic inspection of ships entitled to fly their flag to verify that the actual condition of the ship and its crew is in conformity with the certificates it carries;
- .3 the surveyor ensuring, during the periodic inspection referred to in subparagraph .2, that seafarers assigned to the ships are familiar with:
  - .3.1 their specific duties; and
  - .3.2 ship arrangements, installations, equipments and procedures;
- .4 ensuring that the ship's complement, as a whole, can effectively co-ordinate their activities in an emergency situation and in performing functions vital to safety or to the prevention or mitigation of pollution;
- .5 providing, in national laws and regulations, for penalties of adequate severity to discourage violation of international rules and standards by ships entitled to fly their flag;
- .6 instituting proceedings – after an investigation has been conducted – against ships entitled to fly their flag which have violated international rules and standards, irrespective of where the violation has occurred;
- .7 providing, in national laws and regulations, for penalties of adequate severity to discourage violations of international rules and standards by individuals issued with certificates or endorsements under their authority; and

- .8 instituting proceedings – after an investigation has been conducted – against individuals holding certificates or endorsements who have violated international rules and standards, irrespective of where the violation has occurred.

22 A flag State should consider developing and implementing a control and monitoring programme, as appropriate, in order to:

- .1 provide for prompt and thorough casualty investigations, with reporting to IMO as appropriate;
- .2 provide for the collection of statistical data, so that trend analyses can be conducted to identify problem areas; and
- .3 provide for a timely response to deficiencies and alleged pollution incidents reported by port or coastal States.

23 Furthermore, the flag State should:

- .1 ensure compliance with applicable IMO instruments through national legislation;
- .2 provide an appropriate number of qualified personnel to implement and enforce the national legislation referred to in subparagraph 15.1, including personnel for performing investigations and surveys;
- .3 provide a sufficient number of qualified flag State personnel to investigate incidents where ships entitled to fly its flag have been detained by port States;
- .4 provide a sufficient number of qualified flag State personnel to investigate incidents where the validity of a certificate or endorsement or competence of individuals holding certificates or endorsements issued under its authority are questioned by port States; and
- .5 ensure the training and oversight of the activities of flag State surveyors and investigators.

24 When a State is informed that a ship entitled to fly its flag has been detained by a port State, the flag State should oversee that appropriate corrective measures to bring the ship in question into immediate compliance with the applicable international conventions are taken.

25 A flag State, or a recognized organization acting on its behalf, should only issue or endorse an international certificate to a ship after it has determined that the ship meets all applicable requirements.

26 A flag State should only issue an international certificate of competency or endorsement to a person after it has determined that the person meets all applicable requirements.

## **Flag State surveyors**

- 27 The flag State should define and document the responsibilities, authority and interrelation of all personnel who manage, perform and verify work relating to and affecting safety and pollution prevention.
- 28 Personnel responsible for, or performing, surveys, inspections and audits on ships and companies covered by the relevant IMO mandatory instruments should have as a minimum the following:
- .1 appropriate qualifications from a marine or nautical institution and relevant seagoing experience as a certificated ship officer holding or having held a valid STCW II/2 or III/2 certificate of competency and have maintained their technical knowledge of ships and their operation since gaining their certificate of competency; or
  - .2 a degree or equivalent from a tertiary institution within a relevant field of engineering or science recognized by the State.
- 29 Personnel qualified under 28.1 should have served for a period of not less than three years at sea as an officer in the deck or engine department.
- 30 Personnel qualified under 28.2 should have worked in a relevant capacity for at least three years.
- 31 In addition such personnel should have appropriate practical and theoretical knowledge of ships, their operation and the provisions of the relevant national and international instruments necessary to perform their duties as flag State surveyors obtained through documented training programmes.
- 32 Other personnel assisting in the performance of such work should have education, training and supervision commensurate with the tasks they are authorized to perform.
- 33 Previous relevant experience in the field of expertise should be considered an advantage; in case of no previous experience the Administration should provide appropriate field training.
- 34 Flag States may accredit surveyors through a formalized, detailed training programme that leads to the same standard of knowledge and ability as that required in paragraphs 28 to 31.
- 35 The flag State should have implemented a documented system for qualification of personnel and continuous updating of their knowledge as appropriate to the tasks they are authorized to undertake.
- 36 Depending on the function(s) to be performed the qualifications should encompass:
- .1 knowledge of applicable international and national rules and regulations for ships, their companies, their crew, their cargo and their operation;

- .2 knowledge of the procedures to be applied in survey, certification, control, investigative and oversight functions;
- .3 understanding of the goals and objectives of the international and national instruments dealing with maritime safety and protection of the marine environment, and of related programmes;
- .4 understanding of the processes both on board and ashore, internal as well as external;
- .5 possession of professional competency necessary to perform the given tasks effectively and efficiently;
- .6 full safety awareness in all circumstances, also for one's own safety; and
- .7 training or experience in the various tasks to be performed and, preferably, also in the functions to be assessed.

37 The flag State should issue an identification document for the surveyor to carry when performing his/her tasks.

#### **Flag State investigations**

38 Investigations should be carried out following a marine casualty or pollution incident. Casualty investigations should be conducted by suitably qualified investigators, competent in matters relating to the casualty. The flag State should be prepared to provide qualified investigators for this purpose, irrespective of the location of the casualty or incident.

39 The flag State should ensure that individual investigators have working knowledge and practical experience in those subject areas pertaining to their normal duties. Additionally, to assist individual investigators in performing duties outside their normal assignments, the flag State should ensure ready access to expertise in the following areas, as necessary:

- .1 navigation and the Collision Regulations;
- .2 flag State regulations on certificates of competency;
- .3 causes of marine pollution;
- .4 interviewing techniques;
- .5 evidence gathering; and
- .6 evaluation of the effects of the human element.

40 Any accidents involving personal injury necessitating absence from duty of three days or more and any deaths resulting from occupational accidents and casualties to ships of the flag State should be investigated, and the results of such investigations made public.



41 Ship casualties should be investigated and reported in accordance with the relevant IMO conventions, and the guidelines developed by IMO\*. The report on the investigation should be forwarded to IMO together with the flag State's observations, in accordance with the guidelines referred to above.

### **Evaluation and review**

42 The flag States should, on a periodic basis, evaluate their performance with respect to the implementation of administrative processes, procedures and resources necessary to meet their obligations as required by the conventions to which they are party.

43 Measures to evaluate the performance of the flag States may include, *inter alia*, port State control detention rates, flag State inspection results, casualty statistics, communication and information processes, annual loss statistics (excluding constructive total losses (CTLs)), and other performance indicators as may be appropriate, to determine whether staffing, resources and administrative procedures are adequate to meet their flag State obligations.

44 Measures may include a regular review of:

- .1 fleet loss and accident ratios to identify trends over selected time periods;
- .2 the number of verified cases of detained ships in relation to the size of the fleet;
- .3 the number of verified cases of incompetence or wrongdoing by individuals holding certificates or endorsements issued under its authority;
- .4 responses to port State deficiency reports or interventions;
- .5 investigations into very serious and serious casualties and lessons learned from them;
- .6 financial, technical and other resources committed;
- .7 results of inspections, surveys and controls of the ships in the fleet;
- .8 investigation of occupational accidents;
- .9 the number of incidents and violations under MARPOL 73/78, as amended; and
- .10 the number of suspensions or withdrawals of certificates, endorsements, approvals, etc.

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\* Refer to the Code for the Investigation of Marine Casualties and Incidents, adopted by the Organization by resolution A.849(20), and the Code of the International Standards and Recommended Practices for a Safety Investigation into a Marine Casualty or Marine Incident (Casualty Investigation Code) as may be adopted by the Organization, as amended by resolution A.884(21).

## **PART 3 – COASTAL STATES**

### **Implementation**

45 Coastal States have certain rights and obligations under various mandatory IMO instruments. When exercising their rights under the instruments coastal States incur additional obligations.

46 In order to effectively meet their obligations, coastal States should:

- .1 implement policies and guidance which will assist in the implementation and enforcement of their obligations; and
- .2 assign responsibilities within their Administration to update and revise any relevant policies adopted, as necessary.

### **Enforcement**

47 Coastal States should take all necessary measures to ensure their observance of international rules when exercising their rights and fulfilling their obligations.

48 A coastal State should consider developing and implementing a control and monitoring programme, as appropriate, in order to:

- .1 provide for the allocation of statistical data so that trend analyses can be conducted to identify problem areas;
- .2 provide for timely response to pollution incidents in its waters; and
- .3 co-operate with flag States and/or port States, as appropriate, in investigations of maritime casualties.

### **Evaluation and review**

49 Coastal States should periodically evaluate their performance in respect of exercising their rights and meeting their obligations under mandatory IMO instruments.

## **PART 4 – PORT STATES**

### **Implementation**

50 Port States have certain rights and obligations under various mandatory IMO instruments. When exercising their rights under the instruments, port States incur additional obligations.

51 Port States can play an integral role in the achievement of maritime safety and environmental protection, including pollution prevention. The role and responsibilities of the port State with respect to maritime safety and environmental protection is derived from a combination of international treaties, conventions, national laws, as well as in some instances, bilateral and multilateral agreements.

## **Enforcement**

52 Port States should take all necessary measures to ensure their observance of international rules when exercising their rights and fulfilling their obligations.

53 Several IMO conventions contain specific provisions that permit port State control.

54 In this respect, SOLAS, as modified by its 1988 Protocol, MARPOL and STCW also contain provisions that obligate port States to treat non-Parties to those conventions no more favourably than those that are Parties. This means that port States are obliged to impose the conditions of the conventions on Parties as well as on non-Parties.

55 When exercising their right to carry out port State control, a port State should establish processes to administer a port State control programme consistent with the relevant resolution adopted by the Organization\*.

56 Port State control should be carried out only by authorized and qualified port State control officers in accordance with the relevant procedures adopted by the Organization\*.

57 Port State control officers and persons assisting them should have no commercial interest, either in the port of inspection or the ships inspected, nor should the port State control officers be employed by or undertake work on behalf of recognized organizations or classification societies.

## **Evaluation and review**

58 Port States should periodically evaluate their performance in respect of exercising their rights and meeting their obligations under mandatory IMO instruments.

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\* Refer to the Procedures for Port State Control (resolution A.787(19), as amended by resolution A.882(21)).

ANNEX 1

**OBLIGATIONS OF CONTRACTING GOVERNMENTS/PARTIES**

The following table contains a non-exhaustive list of obligations, including those obligations imposed when a right is exercised.

<b>Obligations of Contracting Governments/Parties</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
<b>TONNAGE 69</b>		
Art. 1	General obligation under the Convention	
Art. 5(2)	Force majeure	
Art. 8	Issue of a certificate by another Government	
Art. 10	Cancellation of certificate	
Art. 11	Acceptance of certificates	
Art. 15	Communication of information	
<b>LL 66 and LL PROT 88*</b>		
Art. 1	General obligation under the Convention	
	General obligations	LL PROT 88 only (Art. I)
Art. 7(2)	Force majeure	
Art. 17	Issue or endorsement of certificates by another Government	amended by LL PROT 88
Art. 20	Acceptance of certificates	
Art. 25	Special rules drawn up by agreement	
Art. 26	Communication of information	
	Communication of information	LL PROT 88 only (Art. III)

\* When the obligation does not derive from the International Convention on Load Lines, 1966, but solely from the Protocol of 1988 relating thereto, this is indicated in the "Comments" column.

<b>Obligations of Contracting Governments/Parties</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
<b>COLREG 72</b>		
Art. I	General obligations	
<b>STCW 78</b>		
Art. I	General obligations under the Convention	
Art. IV	Communication of information	
Art. XI(1)	Promotion of technical co-operation	
Reg. I/3	Principles governing near-coastal waters	
Reg. I/5	National provisions	
Reg. I/6	Training and assessment	
Reg. I/7	Communication of information	
Reg. I/8	Quality standards	
Reg. I/9	Medical standards – Issue and registration of certificates	
<b>SOLAS 74</b>		
Art. I	General obligations under the Convention	in SOLAS PROT 78 and SOLAS PROT 88
Art. III	Communication of information	in SOLAS PROT 78 and SOLAS PROT 88
Art. V(c)	Carriage of persons in emergencies – reporting	
Art. VII	Special rules drawn up by agreement	
Art. XI	Denunciation	in SOLAS PROT 88 (Art. VII)
Reg. I/13	Issue or endorsement of certificates by another Government	in SOLAS PROT 88
Reg. I/17	Acceptance of certificates	also reg. I/19(b)

<b>Obligations of Contracting Governments/Parties</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Reg. I/21(b)	Casualties – reporting	
Reg. IV/5	Provision of radiocommunication services and communication of information on such provision	
Reg. IV/5-1	Global maritime distress and safety system identities – ensuring suitable arrangements	
Reg. V/5	Meteorological services and warnings	
Reg. V/6	Ice Patrol Service	
Reg. V/10	Ships' routing	
Reg. V/11	Ship reporting systems	
Reg. V/12	Vessel traffic services	
Reg. V/13	Establishment and operation of aids to navigation	
Reg. V/31.2	Danger messages – bring to the knowledge of those concerned and communicate to other interested Governments	
Reg. V/33.1-1	Distress situations: obligations and procedures – co-ordination and co-operation	
Reg. VI/1.2	Appropriate information on safe carriage of cargoes	
Reg. VII/2.4	Issue of instructions on emergency response, etc.	
Reg. VII/7-1	Issue of instructions on emergency response, etc.	
<b>MARPOL</b>		
Art. 1	General obligations under the Convention	and Art. I of MARPOL PROT 78
Art. 4(2) and (4)	Violation	
Art. 5(1)	Certificates and special rules on inspection of ships – acceptance of certificates	
Art. 5(4)	Certificates and special rules on inspection of ships – no more favourable treatment	

<b>Obligations of Contracting Governments/Parties</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Art. 6(1)	Detection of violations and enforcement of the Convention – co-operation	
Art. 6(3)	Detection of violations and enforcement of the Convention – furnishing evidence	
Art. 7	Undue delay to ships	
Art. 8	Reports on incidents involving harmful substances	
Art. 11	Communication of information	
Art. 12(2)	Casualties to ships – information to IMO	
Art. 17	Promotion of technical co-operation	
<b>Annex I</b>		
Reg. 8	Issue or endorsement of a certificate by another Government	
Reg. 15.7	Control of discharge of oil – investigations (Machinery spaces)	
Reg. 34.7	Control of discharge of oil – investigations (Cargo area)	
<b>Annex II</b>		
Reg. 6.3	Categorization and listing of noxious liquid substances and other substances – establish and agree on provisional assessment and notify IMO	
Reg. 9.3.1, 9.3.2, 9.3.3 and 9.3.4	Issue or endorsement of a certificate by another Government	
Reg. 13.4	Control of discharges of residues – exemption for a pre-wash	
Reg. 18.3	Reception facilities and cargo unloading terminal arrangements – agree and establish a date, notify IMO	
<b>Annex III</b>		
Reg. 1.3	Application – issue detailed requirements	

<b>Obligations of Contracting Governments/Parties</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
<b>Annex IV</b>		
Reg. 6	Issue or endorsement of a certificate by another Government	
<b>Annex VI</b>		
Reg. 7	Issue or endorsement of a certificate by another Government	
Reg. 11(1)	Detection of violations and enforcement – co-operation	
Reg. 11(2)	Detection of violations and enforcement – inspections	
Reg. 11(3)	Detection of violations and enforcement – information to flag State on violations detected	
Reg. 18(7)	Fuel oil quality	
<b>ISM Code</b>		
Para 14.3	Extension of validity of Interim SMC by another Contracting Government	
<b>1994 HSC Code</b>		
Para 1.8.2	Issue of certificates by another Government	
Para 14.2.1.12	Definition of “sea area A1”	as may be defined
Para 14.2.1.13	Definition of “sea area A2”	as may be defined
<b>2000 HSC Code</b>		
Para 1.8.2	Issue of certificates by another Government	
Para 14.2.1.13	Definition of “sea area A1”	as may be defined
Para 14.2.1.14	Definition of “sea area A2”	as may be defined



<b>Obligations of Contracting Governments/Parties</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
<b>IMDG Code</b>		
Section 1.1.3	Transport of radioactive material – role of Competent Authority	
Section 5.1.5	General provisions for class 7 – role of Competent Authority	
Chapter 6.2	Approval of pressure receptacles, aerosol dispensers and small receptacles containing gas – role of Competent Authority	
Chapter 6.4	Approval of package design and materials for class 7 – role of Competent Authority	
Section 6.5.1.6	Testing, certification and inspection – role of Competent Authority	
Chapter 6.6	Provisions for the construction and testing of large packagings – role of Competent Authority	
Chapter 6.7	Provisions for the design, construction, inspection and testing of portable tanks and multiple-element gas containers – role of Competent Authority	
Chapter 6.8	Provisions for road tank vehicles – role of Competent Authority	
Section 7.1.14	Stowage of goods of class 7 – role of Competent Authority	
Chapter 7.9	Exemptions, approvals and certificates – notification to IMO and recognition of approvals and certificates	
<b>IBC Code</b>		
Para 1.5.3	Maintenance of conditions after survey	
Para 1.5.5.1	Issue or endorsement of International Certificate of Fitness by another Government	
<b>BCH Code</b>		
Para 1.6.4.1	Issue or endorsement of certificate by another Government	

<b>Obligations of Contracting Governments/Parties</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
<b>IGC Code</b>		
Para 1.5.5.1	Issue or endorsement of certificate by another Government	
<b>STCW Code, Part A</b>		
Section A-I/6.1	Training and assessment	
Section A-I/6.3	Qualifications of instructors, supervisors and assessors	
Section A-I/6.7	Training and assessment within an institution	
Section A-I/7	Communication of information	
Section A-I/8	Quality standards	
Section A-I/12	Standards governing the use of simulators	
Section A.VIII/2.8	Watchkeeping at sea – direct attention of companies, masters, chief engineer officers and watchkeeping personnel to observe principles in Parts 3-1 and 3-2	

ANNEX 2

**SPECIFIC FLAG STATE OBLIGATIONS**

The following tables contain a non-exhaustive list of obligations, including those obligations imposed when a right is exercised.

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
<b>TONNAGE 69</b>		
Art. 6	Determination of tonnages	
Art. 7(2)	Issue of certificates	
Annex I, reg. 1(3)	Novel types of craft – determination of tonnage and communication to IMO on method used	
Annex I, reg. 5(3)(b)	Change of net tonnage – Alterations or modifications deemed by the Administration to be of a major character	
Annex I, reg. 7	Measurement and calculation	
<b>LL 66 and LL PROT 88*</b>		
	Existing certificates	LL PROT 88 only (Art.II-2)
Art. 6(3)	Exemptions – reporting	
Art. 8(2)	Equivalentents – reporting	
Art. 9(2)	Approvals for experimental purposes – reporting	
Art. 13	Surveys and marking	amended by LL PROT 88
Art. 14	Initial, renewal and annual survey	amended by LL PROT 88
Art. 16(3)	Issue of certificates	
Art. 19	Duration and validity of certificate	amended by LL PROT 88

\* When the obligation does not derive from the International Convention on Load Lines, 1966, but solely from the Protocol of 1988 relating thereto, this is indicated in the “Comments” column.

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Art. 23	Casualties	
Annex I, reg. 1	Strength of hull	
	Strength and intact stability of ships	LL PROT 88 only (Annex I, reg. 1)
Annex I, reg. 2	Application – Assignment of freeboard	amended by LL PROT 88
	Authorization of recognized organizations	LL PROT 88 only (Annex I, reg. 2-1)
Annex I, reg. 8	Details of marking	
Annex I, reg. 10	Stability information – approval	amended by LL PROT 88
Annex I, reg. 12	Doors	amended by LL PROT 88
Annex I, reg. 14	Cargo and other hatchways	amended by LL PROT 88
Annex I, reg. 15	Hatchways closed by portable covers and secured weathertight by tarpaulins and battering devices	amended by LL PROT 88
Annex I, reg. 16(1)	Hatchway coamings – reduced heights	amended by LL PROT 88 (Annex I, reg. 14-1(2))
Annex I, reg. 16(4)	Securing arrangements	amended by LL PROT 88 (Annex I, reg. 16(6))
	Machinery space openings	LL PROT 88 only (Annex I, reg. 17(4))
Annex I, reg. 19	Ventilators	amended by LL PROT 88
Annex I, reg. 20	Air pipes	amended by LL PROT 88
	Cargo ports and other similar openings – applicable national standards	LL PROT 88 only (Annex I, reg. 21(5))
Annex I, reg. 22	Scuppers, inlets and discharges	amended by LL PROT 88
Annex I, reg. 25	Protection of the crew	amended by LL PROT 88
Annex I, reg. 27	Freeboards – Types of ships	amended by LL PROT 88
Annex I, reg. 28	Freeboard tables	amended by LL PROT 88

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Annex I, reg. 39	Minimum bow height and reserve buoyancy  Lashing system	amended by LL PROT 88  LL PROT 88 only (Annex I, reg. 44(6))
<b>COLREG 72</b>		
Annex I, paragraph 14	Approval of construction of lights and shapes and the installation of lights on board	
Annex III, paragraph 3	Approval of construction, performance and installation of sound signal appliances on board	
<b>STCW 78</b>		
Art. VI	Certificates	
Art. VIII(3)	Dispensation – reporting	
Art. IX(2)	Equivalents – reporting	
Reg. I/2	Certificates and endorsements	
Reg. I/10	Recognition of certificates	
Reg. I/11(5)	Revalidation of certificates	
Reg. I/14	Responsibilities of companies	
Reg. IV/1.3	Application	
Reg. V/1.4	Mandatory minimum requirements for the training and qualification of masters, officers and ratings on tankers	
Reg. V/2.9	Mandatory minimum requirements for the training and qualification of masters, officers, ratings and other personnel on ro-ro passenger ships	
Reg. V/3.9	Mandatory minimum requirements for the training and qualification of masters, officers, ratings and other personnel on passenger ships other than ro-ro passenger ships	
Reg. VIII/1	Fitness for duty	

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Reg. VIII/2	Watchkeeping arrangements and principles to be observed	
<b>SOLAS 74</b>		
Reg. I/4(b)	Exemptions – reporting	
Reg. I/5(b)	Equivalents – reporting	
Reg. I/6	Inspection and survey	in SOLAS PROT 78 and SOLAS PROT 88
Reg. I/7	Survey of passenger ships	in SOLAS PROT 88
Reg. I/8	Survey of life-saving appliances and other equipment of cargo ships	in SOLAS PROT 88
Reg. I/9	Survey of radio installations of cargo ships	in SOLAS PROT 88
Reg. I/10	Survey of structure, machinery and equipment of cargo ships	in SOLAS PROT 88
Reg. I/12	Issue of certificates	in SOLAS PROT 88
	Issue and endorsement of certificates	in SOLAS PROT 88
Reg. I/14	Duration and validity of certificates	in SOLAS PROT 88
Reg. I/15	Forms of certificates and records of equipment	in SOLAS PROT 88
Reg. I/18	Qualification of certificates	
Reg. I/21	Casualties	
Reg. II-1/1.2	Compliance with earlier requirements	revised SOLAS chapter II-I adopted by MSC 80
Reg. II-1/3-2.2	Approval of corrosion prevention systems of seawater ballast tanks	
Reg. II-1/3-3.2	Approval of means of access to tanker bows	
Reg. II-1/3-4.22 and 3-4.3	Approval of emergency towing arrangements on tankers	

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Reg. II-1/3-6.2.3	Means of access to cargo and other spaces – satisfaction of the Administration as well as survey	
Reg. II-1/3-6.4.1	Approval of Ship Structure Access Manual	
Reg. II-1/9.1	Ballasting of passenger ships	
Reg. II-1/12.2 and 12-1.2	Approval of double bottoms	
Reg. II-1/14.1	Construction and initial testing of watertight bulkheads, etc., in passenger ships and cargo ships	
Reg. II-1/17.2 and .9.4	Openings in the shell plating of passenger ships below the margin line	
Reg. II-1/18.1.1	Construction and initial tests of watertight doors, sidescuttles, etc., in passenger ships and cargo ships	
Reg. II-1/19.1	Construction and initial tests of watertight decks, trunks, etc., in passenger ships and cargo ships	
Reg. II-1/25-1.3	Alternative arrangements – information to IMO	
Reg. II-1/26.2	Consideration of reliability of single essential propulsion components	
Reg. II-1/29.1, .2.1 and .6.3	Steering gear	
Reg. II-1/29.17.2	Adoption of regulations on rudder actuators for tankers, chemical tankers and gas carriers	
Reg. II-1/40.2	Electrical installations – ensuring uniformity	
Reg. II-1/42.1.3	Emergency source of electrical power in passenger ships	
Reg. II-1/43.1.3	Emergency source of electrical power in cargo ships	

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Reg. II-1/44.2	Approval of automatically starting emergency generating sets	
Reg. II-1/45.3.3, 45.5.3, 45.5.4, 45.9.3, 45.10, and 45.11	Precautions against shock, fire and other hazards of electrical origin	
Reg. II-1/46.2 and .3	Additional requirements for periodically unattended machinery space	
Reg. II-1/53.1	Special requirements for machinery, boiler and electrical installations	
Reg. II-2/1.2.1	Approval of fire protection arrangements in existing ships	
Reg. II-2/1.6.2.1.2 and 1.6.6	Application of requirements for tankers	
Reg. II-2/4.2.2.5.1	Approval of material for oil fuel pipes and their valves and fittings	
Reg. II-2/4.3	Approval of gaseous fuel systems used for domestic purposes	
Reg. II-2/4.5.1.4.4	Installation of cargo oil lines where cargo wing tanks are provided	
Reg. II-2/4.5.3.3	Requirements for safety devices in venting systems	
Reg. II-2/4.5.5.2.1	Requirements for inert gas system on chemical tankers	
Reg. II-2/4.5.6.3	Arrangements for inerting, purging or gas-freeing	see reg. II-2/4.5.5.3.1
Reg. II-2/5.2.2.5	Positioning of controls for any required fire-extinguishing system in passenger ships	see reg. II-2/8.3.3 and II-2/9.5.2.3
Reg. II-2/5.2.3.1	Special consideration to maintaining the fire integrity of periodically unattended machinery spaces	
Reg. II-2/7.3.2	Initial and periodical tests	
Reg. II-2/7.6	Protection of cargo spaces in passenger ships	



<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Reg. II-2/8.3.4	Release of smoke from machinery spaces – passenger ships	
Reg. II-2/9.2.2.1.5.1	Approval of equivalent means of controlling and limiting a fire on ships designed for special purposes	
Reg. II-2/9.2.2.3.1	Fire integrity of bulkheads and decks in ships carrying more than 36 passengers	
Reg. II-2/9.2.2.4.4, 9.2.3.3.4 and 9.2.4.2.4	Fire integrity of bulkheads and decks	see reg. II-2/11.2
Reg. II-2/9.3.4	Approval of structural fire protection details, taking into account the risk of heat transmission	
Reg. II-2/9.5.2.4	Protection of openings in machinery space boundaries	
Reg. II-2/10.2.1.2.1.3	Provisions for fixed water fire-extinguishing arrangements for periodically unattended machinery spaces	
Reg. II-2/10.2.1.2.2.1	Ready availability of water supply	
Reg. II-2/10.2.3.1.1	Approval of non-perishable material for fire hoses	
Reg. II-2/10.2.3.2.1	Number and diameter of fire hoses	
Reg. II-2/10.3.2.1	Arrangement of fire extinguishers	
Reg. II-2/10.6.1.1	Type approval of automatic sprinkler, fire detection and fire alarm system	
Reg. II-2/10.6.3.2	Approval of fire-extinguishing arrangement for flammable liquid lockers	
Reg. II-2/10.7.1.2	Fixed gas fire-extinguishing systems for general cargo	
Reg. II-2/10.7.1.4	Issue of an Exemption Certificate	
Reg. II-2/13.3.1.4	Provision of means of escape from, or access to, radiotelegraph stations	

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Reg. II-2/13.3.2.5.1	Lighting or photoluminescent equipment to be evaluated, tested and applied in accordance with the FSS Code	
Reg. II-2/13.3.2.6.2	Normally locked doors that form part of an escape route – Quick release mechanisms	
Reg. II-2/13.5.1	Means of escape on passenger ships from special category and open ro-ro spaces to which any passengers carried can have access	
Reg. II-2/17.4.1 and 17.6	Evaluation and approval of the engineering analysis for alternative design and arrangements for fire safety	
Reg. II-2/17.5	Alternative design and arrangements for fire safety – communication of information to IMO	
Reg. II-2/19.4	Provision of document of compliance	
Reg. II-2/20.4.1	Provision and approval of fixed fire detection and fire alarm systems	
Reg. III/4	Evaluation, testing and approval of life-saving appliances and arrangements	
Reg. III/5	Production tests for life-saving appliances	
Reg. III/20.8.1.2	Approval of servicing stations	
Reg. III/20.8.5	Extension of liferaft service intervals – notification to IMO	
Reg. III/20.11.1 and 20.11.2	Periodic servicing of launching appliances and on-load release gear – thorough examination at the annual surveys	
Reg. III/26.2.4	Approval of liferafts on ro-ro passenger ships	
Reg. III/26.3.1 and 26.3.2	Approval of fast rescue boats and their launching appliances on ro-ro passenger ships	
Reg. III/28	Approval of helicopter landing and pick-up areas on ro-ro passenger ships	
Reg. IV/3.3	Exemptions – reporting to IMO	

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Reg. IV/14.1	Type approval of radio equipment	
Reg. IV/15.5	Ensure radio equipment is maintained	
Reg. IV/16.1	Radio personnel	
Reg. IV/17	Radio records	
Reg. V/3.3	Exemptions and equivalents – reporting to IMO	
Reg. V/14	Ships' manning	
Reg. V/16	Maintenance of equipment	
Reg. V/17	Electromagnetic compatibility	
Reg. V/18.1	Type approval of navigational systems and equipment and voyage data recorder	
Reg. V/18.5	Requirement for quality control system at manufacturers	
Reg. V/23.3.3.1.3	Pilot transfer arrangements	
Reg. V/23.6.1	Type approval of mechanical pilot hoists	
Reg. VI/3.1 and 3.2	Provision of equipment for oxygen analysis and gas detection and training of crews in their use	
Reg. VI/5.6	Approval of Cargo Securing Manual	
Reg. VI/6	Acceptability for shipment	
Reg. VI/9.2	Grain loading information	
Reg. VII/5	Approval of Cargo Securing Manual	
Reg. VII/15.2	Warships – INF cargo	
Reg. VIII/4	Approval of design, construction and standards of inspection and assembly of reactor installations	
Reg. VIII/6	Ensure radiation safety	
Reg. VIII/7(a)	Approval of safety assessment	

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Reg. VIII/8	Approval of operating manual	
Reg. VIII/10(f)	Issue of certificates	
Reg. IX/4.1	Issue of Document of Compliance (DOC)	
Reg. IX/4.3	Issue of Safety Management Certificate (SMC)	
Reg. IX/6.1	Periodical verification of the safety management system	
Reg. XI-1/1	Authorization of recognized organizations	
Reg. XI-1/2	Enhanced surveys	
Reg. XI-1/3.5.4	Approval of method of marking the ship identification number	
Reg. XI-1/5.3	Issue of Continuous Synopsis Record (CSR)	
Reg. XI-1/5.4.2	Amendments to CSR	
Reg. XI-1/5.4.3	Authorize and require changes to be made to CSR	
Reg. XI-1/5.8	Former flag State to send CSR to new flag State	
Reg. XI-1/5.9	Append previous CSR to new CSR	
Reg. XII/8.1	Endorsement of booklet required by reg. VI/7.2	
Reg. XII/9.2	Approval of bilge well high water level alarms	
Reg. XII/11.3	Loading instrument – approval of software for stability calculations	
<b>MARPOL</b>		
Art. 4(1) and (3)	Violation	
Art. 6(4)	Detection of violations and enforcement of the Convention – investigations	
Art. 12(1)	Casualties to ships – investigations	

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
<b>Annex I</b>		
Reg. 2.6.2	Application – an oil tanker delivered on or before 1 June 1982 engaged in specific trades : agreement with Port States	
Reg. 3.3	Exemptions and waivers – reporting	
Reg. 4.3	Exceptions – discharge of substances containing oil for the purpose of combating pollution incidents	
Reg. 5.2	Equivalents – reporting	
Reg. 6	Surveys	
Reg. 7	Issue or endorsement of certificate	
Reg. 10.9.3	Transfer of flag	
Reg. 12A.12	Oil fuel tank protection – approval of the design and construction of ships	
Reg. 14.3	Oil filtering equipment – volume of oil bilge holding tank	
Reg. 14.4	Oil filtering equipment – ships of less than 400 gross tonnage	
Reg. 14.6 and 14.7	Oil filtering equipment – approval	
Reg. 15.6.2	Control of discharge of oil – ships of less than 400 gross tonnage: design approval	
Reg. 18.8.2, 18.8.3 and 18.8.4	Requirements for product carriers of 40,000 tonnes deadweight and above – arrangement and operation, approval of oil content meter, clean ballast tank operational manual	
Reg. 18.10.1.1	Segregated ballast tanks – oil tanker delivered on or before 1 June 1982 having special ballast arrangements: approval	
Reg. 18.10.1.2	Segregated ballast tanks – oil tanker delivered on or before 1 June 1982 having special ballast arrangements: agreement with Port States	

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Reg. 18.10.3	Segregated ballast tanks – oil tanker delivered on or before 1 June 1982 having special ballast arrangements: communication to IMO	
Reg. 20.8.1	Double hull and double bottom requirements for oil tankers delivered before 6 July 1996 – communication to IMO	
Reg. 21.8.1	Prevention of oil pollution from oil tankers carrying heavy grade oil as cargo – communication to IMO	
Reg. 23.3.1	Accidental oil outflow performance – Calculation of mean oil outflow parameter	
Reg. 25.5	Hypothetical outflow of oil – information to IMO on accepted arrangements	
Reg. 27.3	Intact stability – approval of written procedures for liquid transfer operation	
Reg. 28.3.4	Subdivision and damage stability – sufficient stability during flooding	
Reg. 29.2.1	Slop tanks – approval	
Reg. 30.6.5.2	Pumping, piping and discharge arrangement – establishment of requirements	
Reg. 30.7	Pumping, piping and discharge arrangement – positive means of loading, transporting or discharging cargo	
Reg. 31.2 and 31.4	Oil discharge monitoring and control system – approval	
Reg. 32	Oil/water interface detector – approval	
Reg. 33.1	Crude oil washing requirement – compliance with requirement	
Reg. 33.2	Crude oil washing requirements – establishment of requirements	
Reg. 35.1	Crude oil washing operations – Operations and Equipment Manual	

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Reg. 36.9	Oil Record Book, Part II – development of oil record book for ships of less than 150 gross tonnage	
Reg. 37.1	Shipboard oil pollution emergency plan – approval	
Reg. 38.7.2	Reception facilities within special areas: Antarctic area – sufficient capacity	
Reg. 38.8	Reception facilities – Notification on alleged inadequacies of port reception facilities	
Reg. 39.2.2	Special requirements for fixed or floating platforms – approval of record form	
<b>Annex II</b>		
Reg. 3.1.3	Exceptions – approval of discharge of NLS for the purpose of combating pollution incidents	
Reg. 4.1.2	Exemptions – communication to IMO on relaxations	
Reg. 4.3.4	Exemptions – communication to IMO	
Reg. 4.4.5	Exemptions – communication to IMO	
Reg. 5.1	Equivalents – substitution of operational method	
Reg. 5.2	Equivalents – communication to IMO on alternatives	
Reg. 5.3.4 and 5.3.5	Equivalents – pumping and piping arrangement, approval of manual	
Reg. 6.3	Establishment of Tripartite Agreements – Notification to IMO	
Reg. 8	Surveys	
Reg. 9	Issue or endorsement of certificates	
Reg. 10.7	Expiry date of existing certificate	
Reg. 10.9.3	Transfer of flag	

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Reg. 11.2	Design, construction, equipment and operations – establishment of appropriate measures	
Reg. 12.5	Pumping, piping, unloading arrangements and slop tanks – approval of pumping performance test	
Reg. 13.3	Control of discharges of residues of NLS – approval of ventilation procedure	
Reg. 13.5	Control of discharges of residues of NLS – approval of tank washing procedure	
Reg. 14.1	Procedures and arrangements manual – approval	
Reg. 17.1	Shipboard marine pollution emergency plan for NLS – approval	
Reg. 18.5	Notification on alleged inadequacies of port reception facilities	
<b>Annex IV</b>		
Reg. 4	Surveys	
Reg. 5	Issue or endorsement of certificates	
Reg. 8(8)(2)	Transfer of flag	
Reg. 9	Approval of sewage systems	
Reg. 12(2)	Notification on alleged inadequacies of port reception facilities	
<b>Annex V</b>		
Reg. 5(5)(b)	Disposal of garbage within special areas – Antarctic area	
Reg. 7(2)	Notification on alleged inadequacies of port reception facilities	



<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
<b>Annex VI</b>		
Reg. 4(2)	Equivalents – communication to IMO	
Reg. 5	Surveys	
Reg. 6	Issue or endorsement of Certificate	
Reg. 9(9)(c)	Transfer of flag	
Reg. 11	Detection of violations and enforcement – investigations	
Reg. 13(1)(b)(ii)	Nitrogen oxides – alternative control measures	
Reg. 13(2)(b)	Nitrogen oxides – approval of documentation	
Reg. 13(3)(b)	Nitrogen oxides – approvals of exhaust gas cleaning systems or equivalent methods	
Reg. 14(4)(b) and (c)	Sulphur oxides – approvals of exhaust gas cleaning systems or alternatives	
Reg. 14(6)	Sulphur oxides – prescription of log-book	
Reg. 15(5)	Volatile organic compounds – approval of vapour collection systems	
Reg. 16(2)(a)	Shipboard incineration – approvals	
Reg. 17(2)	Notification on alleged inadequacies of port reception facilities	
<b>Res. MSC.133(76), as amended</b>	Technical provisions for means of access for inspections	
Para 3.7	Vertical or spiral ladders – acceptance	
Para 3.9.7	Other means of access – approval and acceptance	
<b>Res. A.739(18)</b>	Guidelines for the authorization of RO	
Para 2	Assignment of authority	
Para 3	Verification and monitoring	

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
<b>ISM Code</b>		
Para 13.2	Issue of DOC	
Para 13.4	Annual verification (DOC)	
Para 13.5	Withdrawal of DOC	
Para 13.7	Issue of SMC	
Para 13.8	Intermediate verification (SMC)	
Para 13.9	Withdrawal of SMC	
Para 14.1	Issue of Interim DOC	
Para 14.2	Issue of Interim SMC	
Para 14.4	Verification required for issuance of an Interim SMC	
Para 15.1	Verification – acceptance of procedures	
Para 16	Forms of certificates	
<b>INF Code</b>		
Para 1.3.2	Issue of certificate	
Para 2.1	Damage stability (INF.1 ship)	
Para 3.1	Fire safety measures (INF.1 cargo)	
Para 4.1.3	Temperature control of cargo spaces (INF.1, 2 and 3 ship)	
Para 6.2	Safe stowage and securing – approval of principles	
Para 7.1	Electrical power supplies (INF.1 ship)	
Chapter 8	Radiological protection	
Chapter 9	Management and training	
Para 10.2	Shipboard emergency plan – approval	

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
<b>FSS Code</b>		
Para 1/4	Use of toxic extinguishing media	
Para 4/2	Type approval of fire extinguishers	
Para 4/3.1.1.2	Determine equivalents of fire extinguishers	
Para 5/2.1.1.4	Containers for the storage of fire-extinguishing medium, etc.	
Para 5/2.1.2.3	Spare parts	
Para 5/2.3	Steam systems	
Para 5/2.5	Equivalent systems – approval	
Para 6/2.2.1.1 and 6/2.3.1.1	Foam concentrates – approval	
Para 7/2.1.1.1	Type approval of spraying nozzles	
Para 7/2.1.1.2	Number and arrangement of nozzles	
Para 7/2.2	Equivalent systems – approval	
Para 8/2.1.2	Equivalent sprinkler systems – approval	
Para 9/2.3.1.3	Heat detectors temperature limits	
Para 9/2.4.1.3	Limiting the number of enclosed spaces included in each section	
Para 10/2.1.2	Sequential scanning – overall response time	
Para 10/2.2.2	Extractor fans – overall response time	
Para 10/2.3.1.1	Means to isolate smoke accumulators	
Para 11/2.1	Low-location lighting – approval	
Para 14/2.2.1.2	Medium expansion ratio foam – application rate, etc.	
Para 15/2.1.2	Inert gas systems – approval	
Para 15/2.2.4.6	Adequate reserve of water	

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
<b>FTP Code</b>		
Para 4.2.1	Recognition of testing laboratories	
Para 5.1.1	Approval procedures	
Para 5.2.2	Requirement of manufactures' quality control system audit	
Para 7.2	Use of equivalents and modern technology – information to IMO	
<b>LSA Code</b>		
Para 1.2.3	Determine the period of acceptability of LSAs subject to deterioration with age	
Para 4.4.1.2	Endorsement of lifeboat certificate of approval	
Para 4.5.4	Fixed two-way VHF radiotelephone apparatus – sheltered space	
Para 5.1.1.4	Rescue boats – combination of rigid and inflatable construction	
Para 5.1.3.8	Rubbing strips on inflated rescue boats	
Paras 6.1.2.9 and 6.1.2.10	Lowering speed of a fully equipped liferaft	
Para 6.2.1.2	MES – strength and construction of passage and platform	
Para 7.2.2.1	Broadcast of messages from other places on board	
<b>1994 HSC Code</b>		
Para 1.3.5	Verification	
Para 1.4.29	Determination of “maximum operational weight”	
Para 1.5.1.2	Specifying intervals for renewal surveys	
Para 1.5.4	Inspection and survey	

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Para 1.5.5	Recognized organizations and nominated surveyors	
Para 1.5.7	Completeness of survey and inspection	
Para 1.8.1	Issue / endorsement of certificate	
Para 1.9.2	Issue of permit to operate	
Para 1.11.2	Equivalents – reporting	
Para 1.12.1	Adequate information and guidance provided to the craft by the company	
Paras 1.13.2 and 1.13.3	Novel designs	
Para 1.14.1	Investigation reports to IMO	
Paras 2.7.4 and 2.14.2	Inclining and stability information – approval	
Para 3.4	Determination of service life	
Para 3.5	Design criteria	
Para 4.8.3	Documentation and verification of evacuation time	
Para 7.5.6.3	Safe outlets for exhaust fans in fuel tank spaces	
Para 7.7.2.3.2	Sensitivity limits of smoke detectors	
Para 7.7.6.1.5	Additional quantity of fire-extinguishing medium	
Para 7.7.6.1.12	Containers for the storage of fire-extinguishing medium, etc. – design	
Para 7.7.8.5	Maximum length of fire hoses	
Para 8.1	Approval and acceptance of LSA and arrangements	
Para 8.9.7.1.2	Approval of servicing stations	
Para 10.2.4.9	Flexible oil fuel pipes	
Para 10.3.7	Internal diameters of suction branches	

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Para 12.6.2	Specified voltages to earth	
Para 13.1.2	Navigational equipment and its installation	
Para 13.13	Approval of systems, equipment and performance standards	
Para 14.3.3	Exemptions – reporting	
Para 14.13.1	Type approval	
Para 14.14.5	Ensuring maintenance	
Para 14.15	Radio personnel	
Para 14.16	Radio records	
Para 15.3.1	Operating station – field of vision	
Para 15.7.2	Ensuring clear view through windows	
Para 17.8	Acceleration and deceleration	
Para 18.1.4	Determining maximum allowable distance from a base port or place of refuge	
Para 18.2	Craft documentation	
Paras 18.3.1 to 18.3.7	Training and qualifications	
Chapter 19	Inspection and maintenance requirements	
<b>2000 HSC Code</b>		
Para 1.3.7	Verification	
Para 1.4.36	Determination of “maximum operational weight”	
Para 1.5.1.2	Specifying intervals for renewal surveys	
Para 1.5.4	Inspection and survey	
Para 1.5.5	Recognized organizations and nominated surveyors	

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Para 1.5.7	Completeness of survey and inspection	
Para 1.7.3	Investigation to determine the need of survey	
Para 1.8.1	Issue/endorsement of certificate	
Para 1.9.2	Issue of permit to operate	
Para 1.11.2	Equivalents – reporting	
Para 1.12.1	Adequate information and guidance provided to the craft by the company	
Paras 1.13.2 and 1.13.3	Novel designs	
Para 1.14.1	Investigation reports to IMO	
Para 2.9.3	Verification of load line marks	
Paras 2.7.4 and 2.14.2	Inclining and stability information – approval	
Para 3.4	Determination of service life	
Para 3.5	Design criteria	
Para 4.2.2	Approval of public address system	
Para 4.8.3	Documentation and verification of evacuation time	
Para 7.3.2	Approval of structural fire protection details	
Para 7.5.6.3	Safe outlets for exhaust fans in fuel tank spaces	
Para 7.7.1.1.8	Limitation of number of enclosed spaces in each section	
Para 7.7.1.3.2	Sensitivity limits of smoke detectors	
Para 7.7.3.2.6	Additional quantity of fire-extinguishing medium	
Para 7.7.5.5	Maximum length of fire hoses	
Para 7.17.1	Reduced requirements for cargo craft of less than 500 GT	

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Para 7.17.3.3	Smoke detection systems – equivalent protection	
Para 7.17.4	Issue of Document of Compliance for craft carrying dangerous goods	
Para 8.1	Approval and acceptance of LSA and arrangements	
Para 8.9.7.1.2	Approval of servicing stations	
Para 8.9.8	Rotational deployment of marine evacuation systems	
Para 8.9.11	Extension of liferaft service intervals – notification	
Para 8.11	Helicopter pick-up areas – approval	
Para 10.2.4.9	Flexible oil fuel pipes	
Para 10.3.7	Internal diameters of suction branches	
Para 12.6.2	Specified voltages to earth	
Para 13.1.2	Ship borne navigational system and equipment and voyage data recorder and their installation	
Para 13.17	Type approval	
Para 14.3.3	Exemptions – reporting	
Para 14.4.2	GMDSS Identities – suitable arrangements	
Para 14.14.1	Type approval	
Para 14.15.5	Ensuring maintenance	
Para 14.16	Radio personnel	
Para 14.17	Radio records	
Para 15.3.1	Operating station – field of vision	
Para 15.7.2	Ensuring clear view through windows	
Para 17.8	Acceleration and deceleration	



<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Para 18.1.4	Determining maximum allowable distance from a base port or place of refuge	
Para 18.2	Craft documentation	
Paras 18.3.1 to 18.3.7	Training and qualifications	
Chapter 19	Inspection and maintenance requirements	
<b>Res. A.744(18), as amended</b>	Guidelines on the enhanced programme of inspections during surveys of bulk carriers and oil tankers	
<b>Annex A – Bulk carriers</b>		
Para 1.3.1	Repair of damage affecting the ship's structural, watertight or weathertight integrity	
Para 1.3.2	Corrosion or structural defects impairing the ship's fitness	
Para 3.3.4	Repairs of cargo hatch securing system	
Para 5.1.1	Survey programme	
Para 5.1.4	Maximum acceptable structural corrosion diminution levels	
Para 5.2.1.1	Provisions for proper and safe access	
Para 6.2.2	Survey report file	
Para 8.1.2	Evaluation of survey report	
Para 8.2.3	Condition evaluation report	
Annex 4B, para 1	Survey planning questionnaire	
Annex 5, para 3.1	Certification of thickness measurement	
Annex 9, para 2.3	Technical assessment in conjunction with the planning of enhanced surveys for bulk carriers	
Annex 13, para 3	Cargo hatch cover securing arrangements	

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
<b>Annex B – Oil tankers</b>		
<b>Part A – Double hull oil tankers</b>		
Para 1.3.1	Repair of damage affecting the ship's structural, watertight or weathertight integrity	
Para 1.3.2	Corrosion or structural defects impairing the ship's fitness	
Para 2.4.3.2	Approval of corrosion prevention system	
Para 5.1.1	Survey programme	
Para 5.1.4	Maximum acceptable structural corrosion diminution levels	
Para 5.2.1.1	Provisions for proper and safe access	
Para 6.2.2	Survey report file	
Para 8.1.3	Evaluation of survey report	
Para 8.2.3	Condition evaluation report	
Annex 6B	Survey planning questionnaire	
Annex 7, para 3.1	Certification of thickness measurement	
Annex 9	Diminution limits of structural members	
Annex 11, para 2.3	Technical assessment in conjunction with the planning of enhanced surveys for oil tankers	
Annex 12	Criteria for longitudinal strength of hull girder for oil tankers	
<b>Part B – Oil tankers other than double hull oil tankers</b>		
Para 1.3.1	Repair of damage affecting the ship's structural, watertight or weathertight integrity	
Para 1.3.2	Corrosion or structural defects impairing the ship's fitness	

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Para 2.4.3.2	Approval of corrosion prevention system	
Para 5.1.1	Survey programme	
Para 5.1.4	Maximum acceptable structural corrosion diminution levels	
Para 5.2.1.1	Provisions for proper and safe access	
Para 6.2.2	Survey report file	
Para 8.1.3	Evaluation of survey report	
Para 8.2.3	Condition evaluation report	
Annex 6B	Survey planning questionnaire	
Annex 7, para 3.1	Certification of thickness measurement	
Annex 9	Diminution limits of structural members	
Annex 11, para 2.3	Technical assessment in conjunction with the planning of enhanced surveys for oil tankers	
Annex 12	Criteria for longitudinal strength of hull girder for oil tankers	
<b>Res.4 of the 1997 SOLAS Conference</b>		
Section 5	Dimension and selection of weld connections and materials	
<b>Res. MSC.168(79)</b>	Standards and criteria for side structures of bulk carriers of single-side skin construction	
Para 2.1	Applicable national standards	
Para 4.4	Applicable national standards	
Para 4.5	Applicable national standards	

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
<b>NO<sub>x</sub> Technical Code</b>		
Para 1.2.2	Full responsibility	
Chapter 2	Survey and certification	
Para 4.3.5	Review selection of parent engine	
Para 4.3.7	Adequate arrangements to ensure effective control of conformity of production	
Para 4.3.9.1	Agree and approve method of selection of parent engine	
Para 4.3.10	Certification of an engine family	
Paras 4.4.3 and 4.4.4	Engine group concept – approval	
Para 5.1.7	Auxiliary loss exceeding 5% – approval	
Para 5.3.2	Test fuels	
Para 5.4.2	Other systems or analysers – approval	
Para 5.10.1	File a certified true copy of test report	
Para 5.12.3.3	Other corrective formulae – approval	
Para 6.2.2.2	Adjustments on settings	
Para 6.2.3.2	Approval of documentation on board	
Para 6.2.3.4.2	Engine technical file – approval	
Para 6.3.1.3	Measurement of torque	
Para 6.3.4.2	Test fuels – approval	
Para 6.3.9	Test cycles – approval	
<b>IBC Code</b>		
Para 1.1.6	Prescribe preliminary suitable conditions for carriage of products not listed in chapter 17 or 18	
Para 1.4.2	Equivalentents – communication to IMO	

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Section 1.5	Survey and certification	
Para 2.2.2	Intact stability in all seagoing conditions	
Para 2.2.3	Free surface effect in undamaged compartments	
Para 2.4	Conditions of loading	
Para 2.8.1.6	Standard of damage	
Para 2.8.2	Standard of damage – alternative measures	
Para 2.9.2.3	Residual stability during intermediate stages of flooding	
Para 3.4.4	Access to spaces in the cargo area	
Para 3.7.3.5	Alternative arrangements for draining the piping	
Para 3.7.4	Relaxation for small ships	
Para 5.1.6.4	Dimensions for flanges not complying with the standards	
Para 5.2.2	Piping fabrication and joining details	
Para 7.1.1	Cargo temperature control - general	
Para 8.3.6	Devices to prevent the passage of flames into cargo tanks – requirements for the design, testing and locating	
Para 10.1.3	Electrical installations – appropriate steps for uniform implementation	
Para 10.1.4	Electric equipment, cables and wiring which do not conform to the standard	
Para 10.1.5	Electrical equipment in hazardous locations	
Para 11.2.2	Approval of an appropriate fire-extinguishing systems	
Para 11.3.2	Cargo area – additional arrangements	

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Para 11.3.5.3	Cargo area – minimum capacity of monitor	
Para 11.3.7	Minimum capacity of foam monitor for ships less than 4,000 tonnes deadweight	
Para 11.3.13	Alternative provisions to deck foam system	
Para 13.2.3	Exemption of toxic vapour detection equipment	
Para 14.1.2	Protective equipment	
Chapter 15	Approval of special requirements for specific chemicals	
Para 16.2.2	Cargo information – independent expert	
Para 16.5.1	Stowage of cargo samples – approval	
<b>BCH Code</b>		
Para 1.5.2	Equivalents – communication to IMO	
Section 1.6	Survey requirements	
Section 1.8	New products – establishing suitable conditions – notification to IMO	amended by Res. MEPC.144(54) (in force 1.8.07)
Para 2.2.4	Determination of the ability to survive flooding of the machinery space in Type 3 below 125m in length	
Para 2.2.5	Nature of alternative measures prescribed for small ships – duly noted on certificate	
Para 2.9.5	Access to void spaces, cargo tanks, etc. – approval of smaller dimensions in special circumstances	
Section 2.10	Cargo piping systems – setting standards	
Section 2.12	Cargo hoses – setting standards	
Para 2.14.2	High-velocity vent valves – type approval	

<b>Specific flag State obligations</b>			
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>	
Para 2.15.1	Cargo heating and cooling systems	deleted after 1.8.07 by Res. MEPC.144(54)	
Section 2.17	Structural materials for tank construction, etc.		
Para 3.1.2(f)	Ventilation fans – approval		
Para 3.14.1	Alternative provisions for ships dedicated to the carriage of specific cargoes		
Para 3.14.2	Additional arrangements when foam is not effective or is incompatible		
Para 3.14.7	Foam monitors on ships of less than 4,000 tonnes deadweight – minimum capacity		
Para 3.15.2	Protection of cargo pump-rooms with fire-extinguishing systems – approval		
Para 3.15.5	Products evolving flammable vapours – fire-extinguishing systems – approval		
Chapter IV	Approval of special requirements for specific chemicals		amended by Res. MEPC.144(54) (in force 1.8.07)
Para 5A.3.1	Procedures and Arrangements Manual – approval		deleted after 1.8.07 by Res. MEPC.144(54)
<b>IGC Code</b>			
Para 1.1.6	Establishment of preliminary suitable conditions of carriage and notification		
Para 1.4.2	Equivalents – reporting		
Section 1.5	Surveys and certification		
Para 2.2.2	Stability standard – acceptance		
Para 2.2.3	Method to calculate free surface effect – acceptance		
Para 2.3.3	Automatic non-return valves – acceptance		
Para 2.4	Damage survival capability investigation		

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Para 2.8.2	Alternative measures – approval	
Para 2.9.1.3	Residual stability during intermediate stages of flooding	
Para 3.5.3.2	Decreased clear opening in the cargo area	
Section 3.8	Bow or stern loading and unloading arrangements – approval	
Para 4.2.7	Design temperature	
Paras 4.4.2.5 and 4.4.4.1	Structural analysis of the hull	
Paras 4.4.6.1.1, 4.4.6.2.1 and 4.4.6.3.2	Setting standards	
Para 4.4.7.2.1	Three-dimensional structural analysis	
Para 4.4.7.3	Analysis	
Para 4.5.1.11	Allowable stresses – approval	
Para 4.7.3	Secondary barriers for non-basic tank types	
Para 4.7.7	Checking method – approval	
Para 4.8.4.4	Design and construction of the heating system	
Para 4.9.8	Insulation materials	
Para 4.10.1.2.2	Bevel preparation, etc. – acceptance and approval	
Para 4.10.2	Workmanship	
Para 4.10.5.2	Quality control specifications	
Para 4.10.6	Integral tank-testing	
Para 4.10.8.3	Tightness test	
Para 4.10.9	Type C independent tanks – inspection and NDT	
Para 4.10.10.3.7	Consideration of pneumatic testing	



<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Para 4.11.1	Soaking temperature and holding times	
Para 4.11.2	Alternative to heat treatment – approval	
Paras 5.2.4.4 and 5.2.4.5	Flanges, valves and other fittings	
Para 5.4.2.2	Dimensions	
Para 5.4.2.3	Screwed couplings – acceptance	
Para 5.5.2	Cargo and process piping – alternative testing approval	
Para 6.1.5	Tensile strength, yield stress and elongation	
Para 6.3.7.4	Schedule for inspection and NDT	
Section 7.1	Cargo pressure/temperature control	
Paras 8.2.2, 8.2.5 and 8.2.7	Pressure relief devices	
Para 9.5.2	A means of preventing the backflow of cargo	
Para 10.1.5	Electrical equipment installation	
Para 11.4.1	Dry chemical powder fire-extinguishing system	
Para 11.5.2	Approval of appropriate fire-extinguishing system for cargo compressor and pump-rooms	
Para 13.5.4	Number and position of temperature indicating devices	
Para 13.6.1	Gas detector equipment	
Para 13.6.13	Portable gas detection equipment	
Para 14.4.5	Provision of space to protect personnel	
Section 15.2	Maximum allowable loading limits – approval of list	
Para 16.5.2	Forced draught system for boilers	

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Para 16.5.6	Purging of combustion chambers of boilers	
Para 17.14.2.1	Non-acceptance of cargo discharge compressors on board	
Para 17.20.3.1	Valves, flanges, fittings and accessory equipment material – acceptance	
Para 17.20.13.2	Cargo handling plans – approval	
Para 17.20.14	Maximum allowable tank filling limits – approval of list	
<b>STCW Code, Part A</b>		
Section A-I/10.2	Withdrawal of endorsement – information	
Section A-III/4.4	No tables of competence – determine requirements	
Section A-VIII/1.5	Watch schedules to be posted	
Section A-VIII/2.84	Principles to be observed in keeping radio watch – direct attention of companies masters, radio watchkeeping personnel to comply with provisions in Part 3-3 to ensure that and adequate safety radio watch is maintained when the ship is at sea	
<b>Res. MEPC.94(46), as amended</b>	Condition assessment scheme	
Para 4.1	Issue instructions to the recognized organization (RO) for Condition Assessment Scheme (CAS) survey	
Para 4.3	Require oil tankers to remain out of service until Statement of Compliance is issued	
Para 7.1.3	CAS surveyors' requirements	
Para 11	Verification of CAS	
Para 12	Reassessment of ships that have failed	

<b>Specific flag State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Para 13	Issue, suspension or withdrawal of Statement of Compliance	amended by Res. MEPC.155(55) (in force 1.3.08)
Para 14	Communication to IMO	

ANNEX 3

**SPECIFIC COASTAL STATE OBLIGATIONS**

The following tables contain a non-exhaustive list of obligations, including those obligations imposed when a right is exercised.

<b>Specific coastal State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
<b>SOLAS 74</b>		
Reg. V/4	Navigation warnings	
Reg. V/7.1	Search and rescue services – necessary arrangements	
Reg. V/7.2	Search and rescue services – information to IMO	
Reg. V/8	Life-saving signals	
Reg. V/9	Hydrographic services	
Reg. VII/6.1 and 7-4.1	Reporting of incidents involving dangerous goods	
<b>MARPOL</b>		
<b>Annex I</b>		
Reg. 4.3	Exceptions – discharge of substances containing oil for the purpose of combating pollution incidents	
<b>Annex II</b>		
Reg. 3.1.3	Exceptions – approval of discharge of NLS for the purpose of combating pollution incidents	
Reg. 13.2.3	Control of discharges of residues of NLS – agreement and communication to IMO	

ANNEX 4

**SPECIFIC PORT STATE OBLIGATIONS**

The following tables contain a non-exhaustive list of obligations, including those obligations imposed when a right is exercised.

<b>Specific port State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
<b>TONNAGE 69</b>		
Art. 12	Inspection	
<b>LL 66 and LL PROT 88</b>		
Art. 21	Control	amended by LL PROT 88
<b>STCW 78</b>		
Art. X	Control	
Reg. I/4	Control procedures	
<b>SOLAS 74</b>		
Reg. I/6(c)	Ships not allowed to sail	
Reg. I/19	Control	
Reg. VII/7-2.2	Documents relating to carriage of dangerous goods in solid form	
Reg. VIII/11	Special control for nuclear ships	
Reg. XI-1/4	Port State control on operational requirements	
<b>MARPOL</b>		
Art. 5(2)	Certificates and special rules on inspection of ships – port State control	
Art. 5(3)	Certificates and special rules on inspection of ships – denial of entry	

<b>Specific port State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Art. 6(2)	Detection of violations and enforcement of the Convention – inspection	
Art. 6(5)	Detection of violations and enforcement of the Convention – inspection upon request – reporting	
<b>Annex I</b>		
Reg. 2.6.2	Application – an oil tanker delivered on or before 1 June 1982 engaged in specific trades : agreement with Flag States	
Reg. 2.6.3	Application – an oil tanker delivered on or before 1 June 1982, engaged in specific trades : approval by Port States	
Reg. 11	Port state control on operational requirements	
Reg. 17.7	Oil Record Book, Part I – inspection without undue delay	
Reg. 18.10.1.2	Segregated ballast tanks - oil tanker delivered on or before 1 June 1982 having special ballast arrangements : agreement with Flag States	
Reg. 20.8.2	Denial of entry – communication to IMO	
Reg. 21.8.2	Denial of entry – communication to IMO	
Reg. 36.8	Oil Record Book, Part II – inspection without undue delay	
Reg. 38.1, 38.2 and 38.3	Reception facilities outside special area	
Reg. 38.4 and 38.5	Reception facilities within special area	
Reg. 38.6	Reception facilities within special area – notification to IMO	
Reg. 38.7.1	Reception facilities – B. Reception facilities within special areas: Antarctic area	
<b>Annex II</b>		
Reg. 4.3.3	Exemptions – approval of adequacy of reception facilities	

<b>Specific port State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Reg. 13.6.1	Control of discharges of residues – endorsement of cargo record book	
Reg. 15.6	Cargo record book – inspection without undue delay	
Reg. 16.1	Measures of control	
Reg. 16.6 and 16.7	Measures of control – exemption granted (endorsement of cargo record book)	
Reg. 16.9	Port state control on operational requirement	
Reg. 18.1 and 18.2	Reception facilities and cargo unloading terminal arrangements	
Reg. 18.4	Cargo unloading terminal arrangements	
<b>Annex III</b>		
Reg. 8	Port State control on operational requirements	
<b>Annex IV</b>		
Reg. 12(1)	Provision of reception facilities	
Reg. 13	Port states control on operational requirements	in force 1.8.07 by resolution MEPC.143(54)
<b>Annex V</b>		
Reg. 5(4)	Reception facilities within special areas	
Reg. 5(5)(a)	Provision of reception facilities – Antarctic area	
Reg. 7(1)	Reception facilities	
Reg. 8	Port State control on operational requirements	
Reg. 9(5)	Inspection of Garbage Record Book	
<b>Annex VI</b>		
Reg. 10	Port State control on operational requirements	
Reg. 14(4)(b)	Discharge criteria – Communication to IMO	

<b>Specific port State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
Reg. 15(2) and (3)	Volatile organic compounds – approvals and notification to IMO	
Reg. 17(1)	Reception facilities	
Reg. 18(5)	Fuel oil quality – inspection of bunker delivery notes	
Reg. 18(8)	Fuel oil quality – information and remedial action	
<b>IBC Code</b>		
Para 15.8.25.3	Certification verifying that the required piping separation	
<b>1994 HSC Code</b>		
Para 1.3.5	Acceptance of the Code	
Para 1.5.6	Provide assistance for surveyors	
Para 1.6	Design approval	
Para 1.9.3	Operational conditions – Permit to Operate	
Para 1.9.4	Port State control	
Para 18.3.8	Training and qualifications	
<b>2000 HSC Code</b>		
Para 1.3.7	Acceptance of the Code	
Para 1.5.6	Provide assistance for surveyors	
Para 1.6	Design approval	
Para 1.9.3	Operational conditions – Permit to Operate	
Para 1.9.4	Port State control	
Para 18.3.8	Training and qualifications	



<b>Specific port State obligations</b>		
<b>Source</b>	<b>Summary description</b>	<b>Comments</b>
<b>Grain Code</b>		
Para 3.4	Document of authorization	
Para 3.5	Document of authorization	
Para 5	Exemptions for certain voyages	
Para 7.2	Stability requirements	

ANNEX 5

**INSTRUMENTS MADE MANDATORY UNDER IMO CONVENTIONS**

<b>SOLAS 74</b>	Res. MSC.133(76), as amended	reg. II-1/3-6.2.1
	FSS Code	reg. II-2/3.22
	FTP Code	reg. II-2/3.23
	LSA Code	reg. III/3.10
	CSS Code, sub-chapter 1.9	reg. VI/2.1
	Grain Code	reg. VI/8.1
	IMDG Code	reg. VII/1.1
	IBC Code	reg. VII/8.1
	IGC Code	reg. VII/11.1
	INF Code	reg. VII/14.1
	ISM Code	reg. IX/1.1
	1994 HSC Code	reg. X/1.1
	2000 HSC Code	reg. X/1.2
	Res. A.739(18)	reg. XI-1/1
	Res. A.789(19)	reg. XI-1/1
	Res. A.744(18), as amended	reg. XI-1/2
Res. 4 of the 1997 SOLAS Conf.	reg. XII/1.5 (reg. XII/1.7 as of 1.7.06)	
Res. MSC.169(79)	reg. XII/7.2	
Res. MSC.168(79)	reg. XII/14	
<b>MARPOL 73/78</b>	Res. MEPC.94(46), as amended	Annex I, reg. 20.6
	IBC Code	Annex II, reg. 1.4
	BCH Code	Annex II, reg. 1.4
	NO <sub>x</sub> Technical Code	Annex VI, reg. 2(5)
<b>STCW 78</b>	STCW Code, Part A	reg. I/1.2.3

ANNEX 6

**SUMMARY OF AMENDMENTS TO MANDATORY INSTRUMENTS  
REFLECTED IN THE CODE**

The amendments of mandatory instruments reflected in the annexes 1 through 4 are summarized below to facilitate the amendment of corresponding tables in the future.

SOLAS 1974	up to and including the 2005 amendments (Res. MSC.194(80))
Res. MSC.133(76), as amended	up to and including the 2004 amendments (Res. MSC.158(78))
FSS Code	Res. MSC.98(73)
FTP Code	up to and including the 2004 amendments (Res. MSC.173(79))
LSA Code	Res. MSC.48(66)
CSS Code, sub-chapter 1.9	up to and including the 2002 amendments (MSC/Circ.1026)
GRAIN Code	up to and including the 1991 amendments (Res. MSC.23(59))
IMDG Code	up to and including the 2006 amendments (Res. MSC.205(81))
IBC Code	up to and including the 2004 amendments (Res. MSC.176(79) and MEPC.119(52))
IGC Code	up to and including the 2004 amendments (Res. MSC.177(79))
INF Code	up to and including the 2004 amendments (Res. MSC.178(79))
ISM Code	up to and including the 2004 amendments (Res. MSC.179(79))
1994 HSC Code	up to and including the 2004 amendments (Res. MSC.174(79))
2000 HSC Code	up to and including the 2004 amendments (Res. MSC.175(79))
Res. A.739(18)	
Res. A.789(19)	no amendments yet adopted
Res. A.744(18), amended	up to and including the 2005 amendments (Res. MSC.197(80))
Res. 4 of the 1997 SOLAS Conf.	no amendments yet adopted
Res. MSC.169(79)	no amendments yet adopted
Res. MSC.168(79)	no amendments yet adopted

SOLAS PROT 1978	up to and including the 1988 amendments (Resolution of the 1988 GMDSS-P Conference)
SOLAS PROT 1988	up to and including the 2004 amendments (Res. MSC.171(79))
MARPOL	up to and including the 2006 amendments (Res. MEPC.154(55))
Res. MEPC.94(46), as amended	up to and including the 2006 amendments (Res. MEPC.155(55))
IBC Code	up to and including the 2004 amendments (Res. MEPC.119(52) and MSC.176(79))
BCH Code	up to and including the 2006 amendments (Res. MEPC.144(54) and MSC.212(81))
NO <sub>x</sub> Code	up to and including the 2005 amendments (Res. MEPC.132(53))
STCW 1978	up to and including the 1997 amendments (Res. MSC.66(68))
STCW Code Part A	up to and including the 2004 amendments (Res. MSC.180(79))
LL 1966	no amendments yet in force
LL PROT 1988	up to and including the 2004 amendments (Res. MSC.172(79))
TONNAGE 1969	no amendments yet adopted
COLREG 1972	up to and including the 2001 amendments (Res. A.910(22))

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**ANNEX 35****DRAFT ASSEMBLY RESOLUTION****REVISED SURVEY GUIDELINES UNDER THE HARMONIZED  
SYSTEM OF SURVEY AND CERTIFICATION (HSSC)**

THE ASSEMBLY,

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

RECALLING ALSO:

- (a) the adoption by the International Conference on the Harmonized System of Survey and Certification, 1988, of the Protocol of 1988 relating to the International Convention for the Safety of Life at Sea, 1974, and the Protocol of 1988 relating to the International Convention on Load Lines, 1966, which, *inter alia*, introduced the harmonized system of survey and certification under the International Convention for the Safety of Life at Sea, 1974 and the International Convention on Load Lines, 1966, respectively,
- (b) the adoption by resolution MEPC.39(29) of amendments to introduce the harmonized system of survey and certification into the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the 1978 Protocol relating thereto (MARPOL 73/78),
- (c) the adoption by resolution MEPC.132(53) of amendments to introduce the harmonized system of survey and certification to the MARPOL Annex VI, and
- (d) the adoption, by the resolutions given below, of amendments to introduce the harmonized system of survey and certification into:
  - (i) the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code), (resolutions MEPC.40(29) and MSC.16(58)),
  - (ii) the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code), (resolution MSC.17(58)),
  - (iii) the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (BCH Code), (resolutions MEPC.41(29) and MSC.18(58)),

RECALLING FURTHER that, by resolution A.948(23), it adopted the Survey Guidelines under the Harmonized System of Survey and Certification, with a view to assisting Governments in the implementation of the requirements of the aforementioned instruments,

RECOGNIZING the need for the Revised Survey Guidelines to be further revised to take account of the amendments to the IMO instruments referred to above, which have entered into force or become effective since the adoption of resolution A.948(23),

HAVING CONSIDERED the recommendations made by the Maritime Safety Committee at its eighty-third session and the Marine Environment Protection Committee at its fifty-sixth session,

1. ADOPTS the Revised Survey Guidelines under the Harmonized System of Survey and Certification set out in the Annex to the present resolution;
2. INVITES Governments carrying out surveys required by the relevant IMO instruments to follow the provisions of the annexed Revised Survey Guidelines;
3. REQUESTS the Maritime Safety Committee and the Marine Environment Protection Committee to keep the Revised Survey Guidelines under review and amend them as necessary;
4. REVOKES resolution A.948(23).

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ANNEX

**REVISED SURVEY GUIDELINES UNDER THE HARMONIZED  
SYSTEM OF SURVEY AND CERTIFICATION**

**Table of Contents**

		<b>Page</b>
	<b>GENERAL</b>	7
1	INTRODUCTION	7
2	TYPES OF SURVEY	9
3	APPLICATION AND ARRANGEMENT OF THE GUIDELINES	11
4	DESCRIPTION OF THE VARIOUS TYPES OF SURVEY	13
(I)	4.1 Initial surveys	13
(A)	4.2 Annual surveys	14
(In)	4.3 Intermediate surveys	15
(P)	4.4 Periodical surveys	15
(R)	4.5 Renewal surveys	16
(B)	4.6 Inspections of the outside of the ship's bottom of cargo ships	16
(Ad)	4.7 Additional surveys	17
	4.8 Completion of surveys	17
5	AMPLIFICATION OF TERMS AND CONDITIONS	18
	5.1 Definition of related items	18
	5.2 Extending to five years a certificate issued for less than five years	18
	5.3 Extending the period between inspections of the outside of the ship's bottom	18
	5.4 Definition of short voyage	19
	5.5 Application of "special circumstances"	19
	5.6 Revalidation of certificates	19
	5.7 Meaning of "any five-year period"	20
	5.8 Surveys required after transfer of the ship to the flag of another State	20
	5.9 Recommended conditions for extending the period of validity of a certificate	20
	5.10 Inspection of the outside of the passenger ship's bottom	21
	5.11 Survey of radio installations	21
	5.12 Survey of the automatic identification system (AIS)	22

ANNEX 1

**SURVEY GUIDELINES UNDER THE 1974 SOLAS CONVENTION,  
AS MODIFIED BY THE 1988 PROTOCOL RELATING THERETO**

(E)	1	GUIDELINES FOR SURVEYS FOR THE CARGO SHIP SAFETY EQUIPMENT CERTIFICATE	23
(EI)	1.1	Initial surveys	23
(EA)	1.2	Annual surveys	33
(EP)	1.3	Periodical surveys	40
(ER)	1.4	Renewal surveys	42
(C)	2	GUIDELINES FOR SURVEYS FOR THE CARGO SHIP SAFETY CONSTRUCTION CERTIFICATE	42
(CI)	2.1	Initial surveys	42
(CA)	2.2	Annual surveys	53
(CIn)	2.3	Intermediate surveys	60
(CR)	2.4	Renewal surveys	61
(B)	3	GUIDELINES FOR THE INSPECTION OF THE OUTSIDE OF THE SHIP'S BOTTOM OF CARGO SHIPS	62
(R)	4	GUIDELINES FOR SURVEYS FOR THE CARGO SHIP SAFETY RADIO CERTIFICATE	62
(RI)	4.1	Initial surveys	62
(RP)	4.2	Periodical surveys	69
(RR)	4.3	Renewal surveys	70
(P)	5	GUIDELINES FOR SURVEYS FOR THE PASSENGER SHIP SAFETY CERTIFICATE	71
(PI)	5.1	Initial surveys	71
(PR)	5.2	Renewal surveys	92



ANNEX 2

**SURVEY GUIDELINES UNDER THE 1966 LOAD LINE CONVENTION,  
AS MODIFIED BY THE 1988 PROTOCOL RELATING THERETO**

(L)	1	GUIDELINES FOR SURVEYS FOR THE INTERNATIONAL LOAD LINE CERTIFICATE OR INTERNATIONAL LOAD LINE EXEMPTION CERTIFICATE	106
(LI)	1.1	Initial surveys	106
(LA)	1.2	Annual surveys	107
(LR)	1.3	Renewal surveys	109

ANNEX 3

**SURVEY GUIDELINES UNDER THE 1973/78 MARPOL CONVENTION**

(O)	1	GUIDELINES FOR SURVEYS FOR THE INTERNATIONAL OIL POLLUTION PREVENTION CERTIFICATE	111
(OI)	1.1	Initial surveys	111
(OA)	1.2	Annual surveys	117
(OIn)	1.3	Intermediate surveys	122
(OR)	1.4	Renewal surveys	124
(N)	2	GUIDELINES FOR SURVEYS FOR THE INTERNATIONAL POLLUTION PREVENTION CERTIFICATE FOR THE CARRIAGE OF NOXIOUS SUBSTANCES IN BULK	126
(NI)	2.1	Initial surveys	126
(NA)	2.2	Annual surveys	128
(NIn)	2.3	Intermediate surveys	130
(NR)	2.4	Renewal surveys	131
(S)	3	GUIDELINES FOR SURVEYS FOR THE INTERNATIONAL SEWAGE POLLUTION PREVENTION CERTIFICATE	132
(SI)	3.1	Initial surveys	132
(SR)	3.2	Renewal surveys	133
(A)	4	GUIDELINES FOR SURVEYS FOR THE INTERNATIONAL AIR POLLUTION PREVENTION CERTIFICATE AND THE NO <sub>x</sub> TECHNICAL CODE	134
(AI)	4.1	Initial surveys	134
(AA)	4.2	Annual surveys	137
(AIn)	4.3	Intermediate surveys	142
(AR)	4.4	Renewal surveys	142

ANNEX 4

**SURVEY GUIDELINES UNDER THE MANDATORY CODES**

(D)	1	GUIDELINES FOR SURVEYS FOR THE INTERNATIONAL CERTIFICATE OF FITNESS FOR THE CARRIAGE OF DANGEROUS CHEMICALS IN BULK AND THE CERTIFICATE OF FITNESS FOR THE CARRIAGE OF DANGEROUS CHEMICALS IN BULK	144
(DI)	1.1	Initial surveys	144
(DA)	1.2	Annual surveys	149
(DIn)	1.3	Intermediate surveys	153
(DR)	1.4	Renewal surveys	154
(G)	2	GUIDELINES FOR SURVEYS FOR THE INTERNATIONAL CERTIFICATE OF FITNESS FOR THE CARRIAGE OF LIQUEFIED GASES IN BULK	155
(GI)	2.1	Initial surveys	155
(GA)	2.2	Annual surveys	161
(GIn)	2.3	Intermediate surveys	165
(GR)	2.4	Renewal surveys	166

**Appendix 1 THE HARMONIZED SYSTEM OF SURVEY AND CERTIFICATION –  
DIAGRAMMATIC ARRANGEMENT**

**Appendix 2 SUMMARY OF AMENDMENTS TO MANDATORY INSTRUMENTS  
REFLECTED IN THE SURVEY GUIDELINES UNDER HSSC**

## GENERAL

### 1 INTRODUCTION

- 1.1 These Guidelines supersede the guidelines adopted by resolution A.948(23) and take account of the Harmonized System of Survey and Certification in the following instruments:
- .1 International Convention for the Safety of Life at Sea, 1974 (SOLAS 1974), as modified by its 1988 Protocol and as amended (SOLAS 74/88/00/04);
  - .2 International Convention on Load Lines, 1966 (LLC 1966) as amended and as modified by its 1988 Protocol (LL 66/88/04);
  - .3 International Convention for the Prevention of Pollution from Ships, 1973 and of the Protocol of 1978 relating thereto (MARPOL 73/78), as amended by resolution MEPC.132(53) (MARPOL 90/04);
  - .4 International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code), as amended (IBC Code 83/90/00/04);
  - .5 International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code), as amended, (IGC Code 83/90/00/04);
  - .6 Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (BCH Code), as amended (BCH Code 85/90/00);
- 1.2 These Guidelines contain amendments to statutory instruments which have entered into force up to and including 1st August 2007:
- .1 Survey Guidelines under the 1974 SOLAS Convention, as modified by the 1988 Protocol relating thereto (annex 1);
  - .2 Survey Guidelines under the 1966 Load Line Convention, as modified by the 1988 Protocol relating thereto (annex 2);
  - .3 Survey Guidelines under the 1973/78 MARPOL Convention (annex 3); and
  - .4 Survey Guidelines under the mandatory Codes (annex 4).
- 1.3 The harmonized system, a diagrammatic arrangement of which is given in the appendix, provides for:
- .1 a one-year standard interval between surveys, based on initial, annual, intermediate, periodical, renewal surveys as appropriate, except for MARPOL Annex IV which is based on initial and renewal surveys;

- .2 a scheme for providing the necessary flexibility for the execution of each survey with the provision that:
    - the renewal survey may be completed within 3 months before the expiry date of the existing certificate with no loss of its period of validity;
    - a “time window” of 6 months – from 3 months before to 3 months after the anniversary date of the certificate for annual, intermediate and periodical surveys;
  - .3 a maximum period of validity of five years for all certificates for cargo ships;
  - .4 a maximum period of validity of 12 months for the Passenger Ship Safety Certificate;
  - .5 a system for the extension of certificates limited to three months enables a ship to complete its voyage, or one month for ships engaged on short voyages;
  - .6 when an extension has been granted, the period of validity of the new certificate starts from the expiry date of the existing certificate before its extension;
  - .7 a flexible system for inspection of the outside of the ship's bottom on the following conditions:
    - a minimum of two inspections during any five-year period of validity of the Cargo Ship Safety Construction Certificate or the Cargo Ship Safety Certificate;
    - the interval between any two such inspections shall not exceed 36 months;
  - .8 a provision for a Cargo Ship Safety Certificate under SOLAS 74/88/00/04, as an alternative to separate Cargo Ship Safety Construction, Cargo Ship Safety Equipment and Cargo Ship Safety Radio Certificates;
  - .9 a flexible system concerning the frequency and the period of validity of certificates, provided that the minimum pattern of surveys is maintained.
- 1.4 In implementing the harmonized system, the following principal changes have been made to the survey and certification requirements of SOLAS 74/88/00/04:
- .1 unscheduled inspections are no longer included and annual surveys are mandatory for cargo ships;
  - .2 intervals between the periodical surveys of equipment covered by the Cargo Ship Safety Equipment Certificate are alternatively at intervals of two and three years instead of two years;
  - .3 intermediate surveys are required for all ships under the Cargo Ship Safety Construction Certificate;

- .4 inspection of the outside of the ship's bottom are required for all cargo ships;
  - .5 intermediate surveys for the Cargo Ship Safety Construction Certificate are held within three months of either the second or third anniversary date;
  - .6 all cargo ship certificates may be issued for any period of validity up to and including five years;
  - .7 there is provision for a Cargo Ship Safety Certificate;
  - .8 the extension provisions have been reduced from five months to three months to enable a ship to complete its voyage and the extension for one month for a period of grace is limited to ships engaged on short voyages.
- 1.5 With regard to LLC 66/88/04, the principal changes to the requirements for survey and certification are the introduction of similar extension provisions (see 1.4.8) and linking of the period of validity of the new certificate to the expiry date of the previous certificate (see 1.3.6).
- 1.6 With regard to MARPOL 90/04 and the IBC Code 83/90/00/04, the IGC Code 83/90/00/04 and the BCH Code 85/90/00, the main changes are the linking of the period of validity of the new certificate to the expiry date of the previous certificate (see 1.3.6), the holding of the intermediate survey within three months of the second or third anniversary date and the introduction of the same extension provisions (see 1.4.8).

## **2 TYPES OF SURVEY**

The types of surveys used in the harmonized system are as follows:

- (I) 2.1 *An initial survey* is a complete inspection before a ship is put into service of all the items relating to a particular certificate to ensure that the relevant requirements are complied with and that these items are satisfactory for the service for which the ship is intended.
- (P) 2.2 *A periodical survey* is an inspection of the items relating to the particular certificate to ensure that they are in a satisfactory condition and fit for the service for which the ship is intended.
- (R) 2.3 *A renewal survey* is the same as a periodical survey but also leads to the issue of a new certificate.
- (In) 2.4 *An intermediate survey* is an inspection of specified items relevant to the particular certificate to ensure that they are in a satisfactory condition and fit for the service for which the ship is intended.
- (A) 2.5 *An annual survey* is a general inspection of the items relating to the particular certificate to ensure that they have been maintained and remain satisfactory for the service for which the ship is intended.

- (B) 2.6 *An inspection of the outside of the ship's bottom* is an inspection of the underwater part of the ship and related items to ensure that they are in a satisfactory condition and fit for the service for which the ship is intended.
- (Ad) 2.7 *An additional survey* is an inspection, either general or partial according to the circumstances, to be made after a repair resulting from investigations or whenever any important repairs or renewals are made.

## **2.8 List of types of surveys in conventions and codes**

(I) 2.8.1 *Initial surveys*

SOLAS 74/88/04, chapter I, regulation 7(a)(i)  
chapter I, regulation 8(a)(i)  
chapter I, regulation 9(a)(i)  
chapter I, regulation 10(a)(i)

LLC 66/88/04, article 14(1)(a)

MARPOL 90/04, Annex I, regulation 6.1.1  
MARPOL 90/04, Annex II, regulation 8.1.1  
MARPOL Annex IV, regulation 4.1.1  
MARPOL Annex VI, regulation 5(1)(a)  
IBC Code 83/90/04, regulation 1.5.2.1.1  
IGC Code 83/90/04, regulation 1.5.2.1.1  
BCH Code 85/90/00, regulation 1.6.2.1.1

(P) 2.8.2 *Periodical surveys*

SOLAS 74/88/04, chapter I, regulation 8(a)(iii)  
chapter I, regulation 9(a)(iii)

(R) 2.8.3 *Renewal surveys*

SOLAS 74/88/04, chapter I, regulation 7(a)(ii)  
chapter I, regulation 8(a)(ii)  
chapter I, regulation 9(a)(ii)  
chapter I, regulation 10(a)(ii)

LLC 66/88/04 article 14(1)(b)

MARPOL 90/04, Annex I, regulation 6.1.2  
MARPOL 90/04, Annex II, regulation 8.1.2  
MARPOL Annex IV, regulation 4.1.2  
MARPOL Annex VI, regulation 5(1)(b)  
IBC Code 83/90/04, regulation 1.5.2.1.2  
IGC Code 83/90/04, regulation 1.5.2.1.2  
BCH Code 85/90/00, regulation 1.6.2.1.2

(In) 2.8.4 *Intermediate surveys*

SOLAS 74/88/04, chapter I, regulation 10(a)(iii)  
MARPOL 90/04, Annex I, regulation 6.1.3  
MARPOL 90/04, Annex II, regulation 8.1.3

MARPOL Annex VI, regulation 5(1)(c)  
IBC Code 83/90/04, regulation 1.5.2.1.3  
IGC Code 83/90/04, regulation 1.5.2.1.3  
BCH Code 85/90/00, regulation 1.6.2.1.3

(A) 2.8.5 *Annual surveys*

SOLAS 74/88, chapter I, regulation 8(a)(iv), regulation 10(a)(iv)  
LLC 66/88, article 14(1)(c)  
MARPOL 90/04, Annex I, regulation 6.1.4  
MARPOL 90/04, Annex II, regulation 8.1.4  
MARPOL Annex VI, regulation 5(1)(d)  
IBC Code 83/90, regulation 1.5.2.1.4  
IGC Code 83/90, regulation 1.5.2.1.4  
BCH Code 85/90, regulation 1.6.2.1.4

(B) 2.8.6 *Inspection of the outside of the ship's bottom*

SOLAS 74/88, chapter I, regulation 10(a)(v)

(Ad) 2.8.7 *Additional surveys*

SOLAS 74/88/04, chapter I, regulation 8(a)(iv)  
chapter I, regulation 10(a)(iv)  
LLC 66/88/04, article 14(1)(c)  
MARPOL 90/04, Annex I, Regulation 6.1.5  
MARPOL 90/04, Annex II, regulation 8.1.5  
MARPOL Annex IV, regulation 4.1.3  
MARPOL Annex VI, regulation 5(1)(d)  
IBC Code 83/90/04, regulation 1.5.2.1.4  
IGC Code 83/90/04, regulation 1.5.2.1.4  
BCH Code 85/90/00, regulation 1.6.2.1.4

### **3 APPLICATION AND ARRANGEMENT OF THE GUIDELINES**

- 3.1 The Guidelines provide a general framework upon which Administrations will be able to base their arrangements for carrying out surveys. It is recognized that survey provisions contained in the Guidelines are not necessarily applicable to all types and sizes of ship.
- 3.2 Whilst the Guidelines are intended to cover instruments listed in 1.1, they should be applied, as appropriate, to drilling rigs and other platforms covered by MARPOL 90/04, Annex I, regulation 39 and Annex VI, regulation 19.
- 3.3 A description of the various types of survey is given in section 4 and, as shown on the contents page, this is followed by the detailed requirements for the various surveys for each of the certificates.
- 3.4 When appropriate, the detailed requirements for the various surveys contain a section that is applicable to all cargo ships followed by a section that only applies to oil tankers.

- 3.5 Whilst the Convention or Code references are included, when possible, it should be noted that, in general, it has not been possible to indicate where there are differing requirements dependent upon the ship's year of build. Consequently, care should be taken in applying specific requirements, particularly where there have been amendments that are only applicable to ships built after a certain date.
- 3.6 Although part of the requirements for the Cargo Ship Safety Construction Certificate, a separate section is provided for inspection of the outside of the ship's bottom.
- 3.7 SOLAS 74/88/04, regulation I/12(v) provides for a Cargo Ship Safety Certificate to be issued as an alternative to the Cargo Ship Safety Equipment Certificate, the Cargo Ship Safety Construction Certificate and the Cargo Ship Safety Radio Certificate. Consequently, the surveys for the issue and renewal of the Cargo Ship Safety Certificate should be in accordance with the certificates it replaces and, similarly, the surveys for the annual and intermediate should be the same as those required for the replaced certificates and the appropriate sections of the Cargo Ship Safety Certificate endorsed accordingly.
- 3.8 On the left hand side of each item to be surveyed may be found two letters in brackets, the first indicating the certificate to which the survey relates, as follows:
- (E) for the Cargo Ship Safety *Equipment* Certificate;
  - (C) for the Cargo Ship Safety *Construction* Certificate;
  - (R) for the Cargo Ship Safety *Radio* Certificate;
  - (L) for the International *Load Line* Certificate;
  - (O) for the International *Oil Pollution* Prevention Certificate;
  - (N) for the International Pollution Prevention Certificate for Carriage of *Noxious Liquid Substances* in Bulk;
  - (S) for the International Sewage Pollution Prevention Certificate;
  - (A) for the International Air Pollution Prevention Certificate;
  - (D) for the International Certificate of Fitness for the Carriage of *Dangerous Chemicals* in Bulk or the Certificate of Fitness for the Carriage of *Dangerous Chemicals* in Bulk;
  - (G) for the International Certificate of Fitness for the Carriage of Liquefied *Gases* in Bulk;
  - (P) for the *Passenger Ship* Safety Certificate;
- and the second for the type of survey, as follows:
- (I) for the *initial* survey;



- (A) for the *annual* survey;
- (In) for the *intermediate* survey;
- (P) for the *periodical* survey;
- (R) for the *renewal* survey;
- (B) for inspection of the outside of the *ship's bottom*;
- (Ad) for *additional* survey.

Consequently, for example, “(EI)”, “(OIn)” and “(PR)” indicate the initial survey for the Cargo Ship Safety Equipment Certificate, the intermediate survey for the International Oil Pollution Prevention Certificate and the renewal survey for the Passenger Ship Safety Certificate respectively.

3.9 The amplification of various terms and conditions are given in section 5.

#### **4 DESCRIPTION OF THE VARIOUS TYPES OF SURVEYS**

##### **(I) 4.1 Initial surveys**

###### *4.1.1 Frequency*

4.1.1.1 The initial survey, as required by the relevant regulations (see 2.8.1), should be held before the ship is put in service and the appropriate certificate is issued for the first time.

###### *4.1.2 General*

4.1.2.1 The initial survey before the ship is put into service should include a complete inspection, with tests when necessary, of the structure, machinery and equipment to ensure that the requirements relevant to the particular certificate are complied with and that the structure, machinery and equipment are fit for the service for which the ship is intended.

4.1.2.2 The initial survey should consist of:

- .1 an examination of the plans, diagrams, specifications, calculations and other technical documentation to verify that the structure, machinery and equipment comply with the requirements relevant to the particular certificate;
- .2 an inspection of the structure, machinery and equipment to ensure that the materials, scantlings, construction and arrangements, as appropriate, are in accordance with the approved plans, diagrams, specifications, calculations and other technical documentation and that the workmanship and installation are in all respects satisfactory;

- .3 a check that all the certificates, record books, operating manuals and other instructions and documentation specified in the requirements relevant to the particular certificate have been placed on board the ship.

#### 4.1.3 *Examination of plans and designs*

4.1.3.1 An application for an initial survey should be accompanied by plans and designs referred to in sections 1, 2, 4 and 5 of Annex 1 and in Annexes 2, 3 and 4, as appropriate, together with:

- .1 the particulars of the ship;
- .2 any exemptions sought;
- .3 any special conditions.

### (A) **4.2 Annual surveys**

#### 4.2.1 *Frequency*

4.2.1.1 The annual survey, as required by the relevant regulations (see 2.8.5) and as shown diagrammatically in the appendix, should be held within three months before or after each anniversary date of the certificate.

#### 4.2.2 *General*

4.2.2.1 An annual survey should enable the Administration to verify that the condition of the ship, its machinery and equipment is being maintained in accordance with the relevant requirements.

4.2.2.2 In general, the scope of the annual survey should be as follows:

- .1 it should consist of certificate examination, of a visual examination of a sufficient extent of the ship and its equipment and of certain tests to confirm that their condition is being properly maintained;
- .2 it should also include a visual examination to confirm that no unapproved modifications have been made to the ship and its equipment;
- .3 the content of each annual survey is given in the respective guidelines. The thoroughness and stringency of the survey should depend upon the condition of the ship and its equipment;
- .4 should any doubt arise as to the maintenance of the condition of the ship or its equipment, further examination and testing should be conducted as considered necessary.

4.2.3 Where an annual survey has not been carried out within the due dates, reference should be made to 5.6.

(In) **4.3 Intermediate surveys**

4.3.1 *Frequency*

4.3.1.1 The intermediate survey, as required by the relevant regulations (see 2.8.4) and as shown diagrammatically in the appendix, should be held within three months before or after the second anniversary date or within three months before or after the third anniversary date of the appropriate certificate and should take the place of one of the annual surveys.

4.3.2 *General*

4.3.2.1 The intermediate survey should be an inspection of items relevant to the particular certificate to ensure that they are in a satisfactory condition and are fit for the service for which the ship is intended.

4.3.2.2 When specifying items of hull and machinery for detailed examination, due account should be taken of any continuous survey schemes that may be applied by classification societies.

4.3.2.3 Where an intermediate survey has not been carried out within the due dates, reference should be made to 5.6.

(P) **4.4 Periodical surveys**

4.4.1 *Frequency*

4.4.1.1 The periodical survey, as required by the relevant regulations (see 2.8.2) and as shown diagrammatically in the appendix, should be held within three months before or after the second anniversary date or within three months before or after the third anniversary date in the case of the cargo ship safety equipment certificate and should take the place of one of the annual surveys and within three months before or after each anniversary date in the case of the cargo ship safety radio certificate.

4.4.2 *General*

4.4.2.1 The periodical survey should consist of an inspection, with tests when necessary, of the equipment to ensure that requirements relevant to the particular certificate are complied with and that they are in a satisfactory condition and are fit for the service for which the ship is intended.

4.4.2.2 The periodical survey should also consist of a check that all the certificates, record books, operating manuals and other instructions and documentation specified in the requirements relevant to the particular certificate are on board the ship.

4.4.2.3 Where a periodical survey has not been carried out within the due dates, reference should be made to 5.6.

(R) **4.5 Renewal surveys**

4.5.1 *Frequency*

4.5.1.1 The renewal survey, as required by the relevant regulations (see 2.8.3) and as shown diagrammatically in the appendix, should be held before the appropriate certificate is renewed.

4.5.2 *General*

4.5.2.1 The renewal survey should consist of an inspection, with tests when necessary, of the structure, machinery and equipment to ensure that the requirements relevant to the particular certificate are complied with and that they are in a satisfactory condition and are fit for the service for which the ship is intended.

4.5.2.2 The renewal survey should also consist of a check that all the certificates, record books, operating manuals and other instructions and documentation specified in the requirements relevant to the particular certificate are on board the ship.

(B) **4.6 Inspections of the outside of the ship's bottom of cargo ships**

4.6.1 *Frequency*

4.6.1.1 There should be a minimum of two inspections of the outside of the ship's bottom during any five year period (see 5.7), except where SOLAS 74/88/04, regulation I/14(e) or (f) is applicable. One such inspection should be carried out on or after the fourth annual survey in conjunction with the renewal of the Cargo Ship Safety Construction Certificate or the Cargo Ship Safety Certificate. Where the Cargo Ship Safety Construction Certificate or the Cargo Ship Safety Certificate has been extended under SOLAS 74/88/04, regulation I/14(e) or (f), this five-year period may be extended to coincide with the validity of the certificate. In all cases the interval between any two such inspections should not exceed 36 months.

4.6.2 *General*

4.6.2.1 The inspection of the outside of the ship's bottom and the survey of related items (see 5.1) should include an inspection to ensure that they are in a satisfactory condition and fit for the service for which the ship is intended.

4.6.2.2 Inspections of the outside of the ship's bottom should normally be carried out with the ship in a dry dock. However, consideration may be given to alternate inspections being carried out with the ship afloat. Special consideration should be given before ships of 15 years of age and over other than bulk carriers and oil tankers are permitted to have such surveys afloat. Inspection of the outside of the ship's bottom of bulk carriers and oil tankers of 15 years of age and over should be carried out with the ship in dry dock. Inspections with the ship afloat should only be carried out when the conditions are satisfactory and the proper equipment and suitably trained staff are available. For ships subject to enhanced survey, the

provisions of paragraphs 2.2.2\* of Annexes A or B, as applicable, of resolution A.744(18), as amended, should apply.

- 4.6.3 Where an inspection of the ships bottom has not been carried out before the due dates reference should be made to 5.6.

**(Ad) 4.7 Additional surveys**

- 4.7.1 Whenever an accident occurs to a ship or a defect is discovered which affects the safety or integrity of the ship or the efficiency or completeness of its equipment, the master or owner should make a report at the earliest opportunity to the Administration, the nominated surveyor or recognized organization responsible for issuing the relevant certificate. The Administration, the nominated surveyor or recognized organization responsible for issuing the relevant certificate should then initiate an investigation to determine whether a survey, as required by the regulations applicable to the particular certificate, is necessary. This additional survey, which may be general or partial according to the circumstances, should be such to ensure that the repairs and any renewals have been effectively made and that the ship and its equipment continue to be fit for the service for which the ship is intended.

**4.8 Completion of surveys**

- 4.8.1 If a survey shows that the condition of the ship or its equipment is unsatisfactory, the officer of the Administration, nominated surveyor or recognized organization should be guided by the requirements of SOLAS 74/88/04, regulation I/6(c), MARPOL 90/04, Annex I, regulation 3.4, MARPOL 90/04 Annex II, regulation 8.2.5, MARPOL Annex IV regulation 4.5, MARPOL Annex VI, regulation 6(1), the IBC Code 83/90/04, regulation 1.5.1.3, the IGC Code 83/90/04 regulation 1.5.1.3 and the BCH Code 85/90/00, regulation 1.6.1.3. These instruments require that corrective action be taken immediately and the Administration notified in due course. In cases where the corrective action has not been undertaken the relevant certificate should be withdrawn and the Administration notified immediately. If the ship is in the port of another Party, the appropriate authorities of the port State also notified immediately.
- 4.8.2 Although LLC 66/88/04 does not contain specific requirements, if a load line survey shows the condition of the ship or its equipment is unsatisfactory, the officer of the Administration, nominated surveyor or recognized organization should, nevertheless, be guided by 4.8.1.

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\* 2.2.2 For ships of 15 years of age and over, inspection of the outside of the ship's bottom should be carried out with the ship in dry dock. For ships of less than 15 years of age, alternate inspections of the ship's bottom not conducted in conjunction with the renewal survey may be carried out with the ship afloat. Inspections with the ship afloat should only be carried out when the conditions are satisfactory and the proper equipment and suitably trained staff are available.

## **5 AMPLIFICATION OF TERMS AND CONDITIONS**

### **5.1 Definition of related items**

Reference: SOLAS 74/88/04, regulation I/10(b)(v).

Related items mean those items which may only be inspected when the ship is in dry dock or undergoing an in-water examination of the outside of its bottom. For oil tankers, chemical tankers and gas carriers, this may mean that the ship has to be specially prepared by, for example, being cleaned and gas-freed. Then the survey of items such as the internal examination of cargo tanks, as referred to in (CIn) 2.3.2 and (CIn) 2.3.3 in Annex 1 may be undertaken at the same time.

### **5.2 Extending to five years a certificate issued for less than five years**

References: SOLAS regulation I/14(c), LLC 66/88/04, A.19(3), MARPOL 90/04, Annex I, regulation 10.3, MARPOL 90/04 Annex II, regulation 10.3, MARPOL Annex IV, regulation 8.1, MARPOL Annex VI, regulation 9(3), the IBC Code 83/90/04, regulation 1.5.6.3, the IGC Code 83/90/04, regulation 1.5.6.3, BCH Code 85/90/00, regulation 1.6.6.3.

Where a certificate has been issued for a period of less than five years, it is permissible under these regulations or article to extend the certificate so that its maximum period of validity is five years provided that the pattern of surveys for a certificate with a five-year period of validity is maintained (see appendix). This means that, for example, if a request is made to extend a two-year Cargo Ship Safety Equipment Certificate to five years, then a periodical and two further annual surveys, as detailed in SOLAS 74/88/04, regulation I/8, would be required. Also, for example, if it was intended to extend a four-year Cargo Ship Safety Construction Certificate to five years, then an additional annual survey would be required, as detailed in SOLAS 74/88/04, regulation I/10. Where a certificate has been so extended, it is still permissible to also extend the certificate under SOLAS 74/88/04 regulations I/14(e) and (f), LLC 66/88/04 articles 19(5) and (6), MARPOL 90/04, Annex I, regulation 10.5 and .6, MARPOL 90/04 Annex II regulations 10.5 and 6, MARPOL Annex IV regulation 8.5 and 8.6, MARPOL Annex VI regulation 9(4) and (5), the IBC Code 83/90/04 regulations 1.5.6.5 and 1.5.6.6, the IGC Code 83/90/04, regulations 1.5.6.5 and 1.5.6.6, the BCH Code 85/90/00 regulations 1.6.6.5 and 1.6.6.6, when no additional surveys would be required but, of course, the new certificate issued after the renewal survey would date from the five-year expiry of the existing certificate, in accordance with SOLAS 74/88/04 regulation I/14(b)(ii), LLC 66/88/04 article 19(2)(b), MARPOL 90/04, Annex I, regulation 10.2.2, MARPOL 90/04 Annex II regulation 10.2.2, MARPOL Annex VI, regulation 8.2.2, , MARPOL Annex VI regulation 9(2)(b), the IBC Code 83/90/04, regulation 1.5.6.6.2, the IGC Code 83/90/04, regulation 1.5.6.2.2 and the BCH Code 85/90/00, regulation 1.6.6.2.2.

### **5.3 Extending the period between inspections of the outside of the ship's bottom**

Reference: SOLAS 74/88/04, regulation I/10(a)(v).

This permits the period of five years in which two inspections of the ship's bottom are to be carried out to be extended when the cargo ship safety construction Certificate is extended under regulation I/14(e) and (f). However, no extension should be permitted on the period of 36 months between any two such inspections. If the first ship's bottom inspection is carried

out between 24 and 27 months then the thirty-sixth-month limitation may prevent the certificate being extended by the periods permitted in regulation I/14(e) and (f).

#### **5.4 Definition of short voyage**

SOLAS 74/88/04, regulation I/14(f), LLC 66/88 /04, article 19(6), MARPOL 90/04, Annex I, regulation 10.6, MARPOL 90/04, Annex II regulation 10.6, MARPOL Annex IV regulation 8.6, MARPOL Annex VI regulation 9(6), the IBC Code 83/90/04, regulation 1.5.6.6, the IGC Code 83/90/04, regulation 1.5.6.6, the BCH Code 85/90/00, regulation 1.6.6.6.

For the purpose of these regulations or article, a “short voyage” means a voyage where neither the distance from the port in which the voyage begins and the final port of destination nor the return voyage exceeds 1,000 miles.

#### **5.5 Application of “special circumstances”**

References: SOLAS 74/88/04 regulation I/14(g), LLC 66/88, article 19(7), MARPOL 90/04, Annex I, Regulation 10.7, MARPOL 90/04 Annex II regulation 10.7, MARPOL Annex IV, regulation 8.7, MARPOL Annex VI, regulation 9(7), the IBC Code 83/90/04, regulation 1.5.6.7, the IGC Code 83/90/04, regulation 1.5.6.7 and the BCH Code 85/90/00, regulation 1.6.6.7.

The purpose of these regulations or article is to permit Administrations to waive the requirement that a certificate issued following a renewal survey that is completed after the expiry of the existing certificate should be dated from the expiry date of the existing certificate. The special circumstances when this could be permitted are where the ship has been laid-up or has been out of service for a considerable period because of a major repair or modification. Whilst the renewal survey would be as extensive as if the ship had continued in service, the Administration should consider whether additional surveys or examinations are required depending on how long the ship was out of service and the measures taken to protect the hull and machinery during this period. Where this regulation is invoked, it is reasonable to expect an examination of the outside of the ship's bottom to be held at the same time as the renewal survey when it would not be necessary to include any special requirements for cargo ships for the continued application of SOLAS 74/88, regulation I/10(a)(v).

#### **5.6 Revalidation of certificates**

References: SOLAS 74/88/04 regulation I/14(i)(i), LLC 66/88/04, article 19(9)(a), MARPOL 90/04, Annex I, Regulation 10.9.1, MARPOL 90/04 Annex II regulation 10.9.1, MARPOL Annex IV regulation 8.8, MARPOL Annex VI regulation 9(8)(a), the IBC Code 83/90/04 regulation 1.5.6.9.1, the IGC Code 83/90/04 regulation 1.5.6.9.1 and the BCH Code 85/90/00, regulation 1.6.6.9.1.

A certificate ceases to be valid if the periodical, intermediate or annual survey, as appropriate, or the inspection of the outside of the ship's bottom is not completed within the periods specified in the relevant regulation or article. The validity of the certificate should be restored by carrying out the appropriate survey which, in such circumstances, should consist of the requirements of the survey that was not carried out, but its thoroughness and stringency should have regard to the time this survey was allowed to lapse. The Administration concerned should then ascertain why the survey was allowed to lapse and to consider further action.

## 5.7 Meaning of “any five-year period”

Reference: SOLAS 74/88/04, regulation I/10(a)(v).

*Any five-year period* is the five-year period of validity of the Cargo Ship Safety Construction Certificate or the Cargo Ship Safety Certificate.

## 5.8 Surveys required after transfer of the ship to the flag of another State

The certificates cease to be valid when a ship transfers to the flag of another State and it is required that the Government of the State to which the ship transfers shall not issue new certificates until it is fully satisfied that the ship is being properly maintained and that there have been no unauthorized changes made to the structure, machinery and equipment. When so requested, the Government of the State whose flag the ship was formally entitled to fly is obliged to forward, as soon as possible, to the new Administration copies of certificates carried by the ship before the transfer and, if available, copies of the relevant survey reports and records, such as record of safety equipment and conditions of assignment for load line. When fully satisfied by an inspection that the ship is being properly maintained and that there have been no unauthorized changes, in order to maintain the harmonization of the surveys the new Administration may give due recognition to initial and subsequent surveys carried out by, or on behalf of, the former Administration and issue new certificates having the same expiry date as the certificates that ceased to be valid because of the change of flag.

## 5.9 Recommended conditions for extending the period of validity of a certificate

In SOLAS and other mandatory IMO instruments the following provision applies: “If a ship at the time when a certificate expires is not in a port in which it is to be surveyed, the Administration may extend the period of validity of a certificate but this extension shall be granted only for the purpose of allowing the ship to complete its voyage to the port in which it is to be surveyed, and then only in cases *where it appears proper and reasonable to do so*. No certificate shall be extended for a period longer than three months, and a ship to which an extension is granted shall not, on its arrival in the port in which is to be surveyed, be entitled by virtue of such extension to leave that port without having a new certificate.”

If a ship is in a port where the required survey cannot be completed, and where the Convention allows the Administration to extend the certificate when it is proper and reasonable to do so, the Administration should be guided by the following:

- .1 an additional survey, equivalent to at least the same scope of an annual survey required by the relevant certificate(s) should be carried out;
- .2 the renewal survey should be progressed to the maximum extent possible;
- .3 in cases where a dry docking is required, but cannot be carried out, an underwater inspection of the ship’s bottom should be carried out;
- .4 in cases where an underwater inspection is not possible (e.g. poor water visibility, draft restrictions, excessive current, refusal by the port Authority), an internal inspection of the ship’s bottom structure, to the maximum extent practicable, should be carried out;



- .5 the ship should be allowed to sail directly to a named final agreed cargo discharge port and then directly to a named agreed port to complete the survey and/or dry docking;
- .6 the extension period should be for the minimum amount of time needed to complete the survey and/or dry docking under the relevant certificate(s);
- .7 the condition of the ship found by the surveys indicated above should be considered in determining the duration, distance and operational restrictions, if any, of the voyage needed to complete the survey and/or dry docking; and
- .8 the extension period of the relevant statutory certificate(s) should not exceed the period of validity of the certificate which may be issued to document compliance with the structural, mechanical and electrical requirements of the recognized classification society.

#### **5.10 Inspection of the outside of the passenger ships' bottom**

As a minimum two of the inspections of the outside of the ship's bottom during any five-year period should be conducted in dry-dock. In all cases, the maximum interval between any two dry-dock bottom inspections should not exceed 36 months.

Note: The definition of "any five-year period" is the five-year period of validity of the International Load Line Certificate.

Inspections of the ship's bottom required for the renewal survey that are not conducted in dry-dock may be carried out with the ship afloat. The bottom inspection, regardless of method, should be carried out within the allowable time window for the Passenger Ship Safety Certificate renewal survey (i.e. within the 3 months time window before the expiry date of the certificate). Additionally, inspections of the outside of the ship's bottom conducted afloat should only be carried out when the conditions are satisfactory and the proper equipment and suitably qualified staff is available. Rudder bearing clearances specified in (PR) 5.2.2.1 need not be taken at the afloat inspections.

Special consideration should be given to ships of 15 years of age or over before being permitted to credit inspections afloat.

If a survey in dry-dock is not completed within the maximum intervals referred to above, the Passenger Ship Safety Certificate should cease to be valid until the survey in dry-dock is completed.

#### **5.11 Survey of radio installations**

The survey of the radio installation, including those used in life-saving appliances, should always be carried out by a qualified radio surveyor who has necessary knowledge of the requirements of the 1974 SOLAS Convention, the International Telecommunication Union's Radio Regulations and the associate performance standards for radio equipment. The radio survey should be carried out using suitable test equipment capable of performing all the relevant measurements required by these guidelines. On the satisfactory completion of the survey, the radio surveyor should forward a report of the survey, which should also state the organization he presents, to the

authorities responsible for the issue of the ship's Cargo Ship Safety Radio Certificate or Passenger Ship Safety Certificate.

#### **5.12 Survey of the automatic identification system (AIS)**

The survey of the automatic identification system should always be carried out by a qualified radio surveyor who has necessary knowledge of the requirements of the 1974 SOLAS Convention, the International Telecommunication Union's Radio Regulations and the associated performance standards for radio equipment. The survey of the automatic identification system should be carried out using suitable test equipment capable of performing all the relevant measurements required by these guidelines.

ANNEX 1

**SURVEY GUIDELINES UNDER THE 1974 SOLAS CONVENTION,  
AS MODIFIED BY THE 1988 PROTOCOL RELATING THERETO**

- (E) 1 **GUIDELINES FOR SURVEYS FOR THE CARGO SHIP SAFETY EQUIPMENT CERTIFICATE**
- (EI) 1.1 **Initial surveys** – see part “General” section 4.1.
- (EI) 1.1.1 For the life-saving appliances and the other equipment of cargo ships the examination of plans and designs should consist of:
- (EI) 1.1.1.1 examining the plans for the fire pumps, fire mains, hydrants, hoses and nozzles and the international shore connection (SOLAS 74/00, regs.II-2/10.2 and 10.4.4 and FSSC, chs. 2 and 12);
- (EI) 1.1.1.2 checking the provision, specification and arrangements of the fire extinguishers (SOLAS 74/00 reg.II-2/10.3) (SOLAS 74/88 reg.II-2/6);
- (EI) 1.1.1.3 checking the provision, specification and arrangements of the fire fighters’ outfits and emergency escape breathing devices – EEBDs – (SOLAS 74/00, regs.II-2/10.10, 13.3.4 and 13.4.3; FSSC ch.3) (SOLAS 74/88, reg. II-2/17);
- (EI) 1.1.1.4 examining the plans for the fire-extinguishing arrangements in the machinery spaces -(SOLAS 74/00, regs.II-2/10.4 and 10.5 (except 10.5.5); FSSC chs.5, 6 and 7) (SOLAS 74/88, reg.II-2/7);
- (EI) 1.1.1.5 examining the plans for the special arrangements in the machinery spaces (SOLAS 74/00, regs.II-2/5.2, 8.3 and 9.5) (SOLAS 74/88, reg.II-2/11);
- (EI) 1.1.1.6 checking the provision of a fixed fire detection and fire alarm system for machinery spaces including periodically unattended machinery spaces (SOLAS 74/00 regs.II-2/7.2, 7.3 and 7.4) (SOLAS 74/88 regs.II-2/13 and 14);
- (EI) 1.1.1.7 checking the provision of a fixed fire detection and fire alarm system and/or an sprinkler, fire detection and fire alarm system in accommodation and service spaces and control stations (SOLAS 74/00 regs.II-2/7.2, 7.3, 7.5.5, 7.7 and 10.6.2; FSSC chs.8 and 9) (SOLAS 74/88 reg.II-2/52);
- (EI) 1.1.1.8 checking the provision of a fire-extinguishing system for spaces containing paint and/or flammable liquids and deep-fat cooking equipment in accommodation and service spaces (SOLAS 74/00 regs.II-2/10.6.3 and 10.6.4; FSSC chs.5 and 7) (SOLAS 74/88, regs.II-2/18.7);
- (EI) 1.1.1.9 examining the arrangements for remote closing of valves for oil fuel, lubricating oil and other flammable oils (SOLAS 74/00 reg.II-2/4.2.2.3.4) (SOLAS 74/88 reg.II-2/15.2.5);

- (EI) 1.1.1.10 examining the plans for the fire protection arrangements in cargo spaces for general cargo and dangerous goods (SOLAS 74/00 regs.II-2/10.7 and 19) (SOLAS 74/88 regs.II-2/53 and 54);
- (EI) 1.1.1.11 examining the plans for the fire protection arrangements in vehicle, special category and ro-ro spaces (SOLAS 74/00 reg.II-2/20(except 20.2.2 and 20.5); FSSC chs.5, 6, 7, 9 and 10) (SOLAS 74/88, regs.II-2/37, 38 and 53);
- (EI) 1.1.1.12 examining the plans for the helicopter facilities (SOLAS 74/00 reg.II-2/18) (SOLAS 74/88, regs.II-2/18.8);
- (EI) 1.1.1.13 examining the plans for the special arrangements for the carriage of dangerous goods, when appropriate, including water supplies, electrical equipment and wiring, fire detection, ventilation, bilge pumping, personnel protection and any water spray system (SOLAS 74/00 reg.II-2/19 (except 19.3.8, 19.3.10 and 19.4); FSSC chs.9 and 10) (SOLAS 74/88, reg.II-2/54);
- (EI) 1.1.1.14 examining the provision and disposition of the survival craft and rescue boats and, where applicable, marine evacuation systems (SOLAS 74/88, regs.III/11 to 16, 31 and 33);
- (EI) 1.1.1.15 examining the design of the survival craft, including their equipment, launching and recovery appliances and embarkation and launching arrangements (SOLAS 74/96 regs.III/16, 31, 32 to 33; LSAC sections. 3.2, 4.1 to 4.9, 6.1 and 6.2);
- (EI) 1.1.1.16 examining the design of the rescue boats, including their equipment and launching and recovery appliances and arrangements (SOLAS 74/00, regs.III/17 and 31; LSAC sections 5.1 and 6.1);
- (EI) 1.1.1.17 examining the provision, specification and stowage of two-way VHF radiotelephone apparatus and radar transponders. (SOLAS 74/88, reg.III/6);
- (EI) 1.1.1.18 examining the provision, specification and stowage of the distress flares and the line-throwing appliance and the provision of on board communications equipment and the general alarm system (SOLAS 74/00, reg. II-2/12.1 and 12.2, and regs.III/6 and 18; and LSAC sections 3.1, 7.1 and 7.2);
- (EI) 1.1.1.19 examining the provision, specification and stowage of the lifebuoys, including those fitted with self-igniting lights, self-activating smoke signals and buoyant lines, lifejackets, immersion suits, anti-exposure suits and thermal protective aids (SOLAS 74/00 regs.III/7 and 32; LSAC sections 2.1 to 2.5 and 3.1 to 3.3);

- (EI) 1.1.1.20 examining the plans for the lighting of the muster and embarkation stations and the alleyways, stairways and exits giving access to the muster and embarkation stations, including the supply from the emergency source of power (SOLAS 74/88 regs.II-1/43 and III/11);
- (EI) 1.1.1.21 examining the plans for the positioning of, and the specification for, the navigation lights, shapes and sound signalling equipment (International Regulations for Preventing Collisions at Sea (COLREG) in force, regs.20 to 24, 27 to 30 and 33);
- (EI) 1.1.1.22 examining the plans relating to the bridge design and arrangement of navigational systems and equipment and bridge procedures (SOLAS 74/00, regs.V/15 and 12);
- (EI) 1.1.1.23 checking the provision and specification of the following navigation equipment as appropriate: daylight signalling lamp, magnetic compass, transmitting heading device, gyro compass, gyro compass repeaters, radar installation(s), automatic identification system, electronic plotting aid, automatic tracking aid(s) or automatic radar plotting aid(s), echo-sounding device, speed and distance measuring device(s), rudder angle indicator, propeller rate of revolution indicator, variable-pitch propeller pitch and operational mode indicator, rate-of-turn indicator, heading or track control system, GNSS receiver, terrestrial radio navigation system and sound reception system, means of communication with emergency steering position, ECDIS including back-up arrangements, a pelorus or compass bearing device and means for correcting heading and bearings (SOLAS 74/00, reg.V/19);
- (EI) 1.1.1.24 checking the provision and specification of voyage data recorder (SOLAS 74/00, reg.V/20);
- (EI) 1.1.1.25 checking the provision and specification of the pilot ladders and hoists/pilot transfer arrangements (SOLAS 74/88, reg.V/23).
- (EI) 1.1.2 For the examination of plans and designs of the life-saving appliances and the other equipment of cargo ships the additional requirements for oil tankers should consist of:
  - (EI) 1.1.2.1 examining the plans for the cargo tank protection (SOLAS 74/00 regs.II-2/4.5.3, 4.5.5, 4.5.6, 4.5.7 and 10.8; FSSC chs.14 and 15) (SOLAS 74/88, regs.II-2/60 and 62); and
  - (EI) 1.1.2.2 examining the plans for protection of the cargo pump rooms (SOLAS 78/00, regs. II-2/4.5.10 and 10.9) (SOLAS 74/88, reg.II-2/63).
- (EI) 1.1.3 For the life-saving appliances and the other equipment of cargo ships the survey during construction and after installation should consist of:
  - (EI) 1.1.3.1 examining the fire pumps and fire main and the disposition of the hydrants, hoses and nozzles and the international shore connection and

checking that each fire pump, including the emergency fire pump, can be operated separately so that two jets of water are produced simultaneously from different hydrants at any part of the ship whilst the required pressure is maintained in the fire main (SOLAS 74/00 reg.II-2/10.2; FSSC chs.2 and 12) (SOLAS 74/88, regs.II-2/4 and 19);

- (EI) 1.1.3.2 examining the provision and disposition of the fire extinguishers (SOLAS 74/00, reg.II-2/10.3; FSSC ch.4) (SOLAS 74/88, reg.II-2/17);
- (EI) 1.1.3.3 examining the fire fighters' outfits and emergency escape breathing devices – EEBDs – (SOLAS 74/00 regs.II-2/10.10, 13.3.4 and 13.4.3; FSSC ch.3) (SOLAS 74/88, reg.II-2/17);
- (EI) 1.1.3.4 checking the operational readiness and maintenance of fire-fighting systems (SOLAS 74/00, reg.II-2/14 1) (SOLAS 74/88, reg.II-2/21);
- (EI) 1.1.3.5 examining the fixed fire-fighting system for the machinery, cargo, vehicle, special category and ro-ro spaces, as appropriate, and confirming that the installation tests have been satisfactorily completed and that its means of operation are clearly marked (SOLAS 74/00 regs.II-2/10.4, 10.5, 10.7 and 20.6.1; FSSC chs.5 to 7) (SOLAS 74/88, regs.II-2/7 and 53);
- (EI) 1.1.3.6 examining the fire-extinguishing and special arrangements in the machinery spaces and confirming, as far as practicable and as appropriate, the operation of the remote means of control provided for the opening and closing of the skylights, the release of smoke, the closure of the funnel and ventilation openings, the closure of power operated and other doors, the stopping of ventilation and boiler forced and induced draft fans and the stopping of oil fuel and other pumps that discharge flammable liquids (SOLAS 74/00 regs.II-2/5.2, 8.3, 9.5 and 10.5) (SOLAS 74/88 regs.II-2/7 and 11);
- (EI) 1.1.3.7 examining any fire detection and alarm system and any automatic sprinkler, fire detection and fire alarm system and confirming that installation tests have been satisfactorily completed (SOLAS 74/00, regs.II-2/7.2, 7.3, 7.4, 7.5.1, 7.5.5, 19.3.3 and 20.4; FSSC ch.9) (SOLAS 74/88, regs. II-2/11, 13, 14, 53 and 54);
- (EI) 1.1.3.8 examining the fire-extinguishing system for spaces containing paint and/or flammable liquids and deep-fat cooking equipment in accommodation and service spaces and confirming that installation tests have been satisfactorily completed and that its means of operation are clearly marked (SOLAS 74/00, regs.II-2/10.6.3 and 10.6.4; FSSC chs.4 to 7) (SOLAS 74/88 reg.II-2/18.7);
- (EI) 1.1.3.9 examining the arrangements for remote closing of valves for oil fuel, lubricating oil and other flammable oils and confirming, as far as practicable and as appropriate, the operation of the remote means of closing the valves on the tanks that contain oil fuel, lubricating oil and

other flammable oils (SOLAS 74/00 reg.II-2/4.2.2.3.4) (SOLAS 74/88, reg.II-2/15.2.5);

- (EI) 1.1.3.10 examining the fire protection arrangements in cargo vehicle and ro-ro spaces and confirming, as far as practicable and as appropriate, the operation of the means for closing the various openings (SOLAS 74/00, regs.II-2/10.7, 20.2.1, 20.3 and 20.6.2) (SOLAS 74/88, reg.II-2/53);
- (EI) 1.1.3.11 examining, when appropriate, the special arrangements for carrying dangerous goods, including checking the electrical equipment and wiring, the ventilation, the provision of protective clothing and portable appliances and the testing of the water supply, bilge pumping and any water spray system (SOLAS 74/00 reg.II-2/19 (except 19.3.8, 19.3.10 and 19.4); FSSC chs.9 and 10) (SOLAS 74/88, reg.II-2/54);
- (EI) 1.1.3.12 checking the provision and disposition of the survival craft, where applicable, marine evacuation systems and rescue boats (SOLAS 74/88 regs.III/11 to 16 and 31; LSAC section 6.2);
- (EI) 1.1.3.13 deployment of 50% of the MES after installation (LSAC paragraph 6.2.2.2);
- (EI) 1.1.3.14 examining each survival craft, including its equipment (SOLAS 74/88, reg.III/31; LSAC sections 2.5, 3.1 to 3.3 and 4.1 to 4.9);
- (EI) 1.1.3.15 examining the embarkation arrangements for each survival craft and the testing of each launching appliance, including overload tests, tests to establish the lowering speed and the lowering of each survival craft to the water with the ship at its lightest sea-going draught, and, where applicable, launching underway at 5 knots, checking the recovery of each lifeboat (SOLAS 74/00, regs.III/11, 12, 13, 16, 31 and 33; LSAC section 6.1);
- (EI) 1.1.3.16 examining the embarkation arrangements for each marine evacuation device, where applicable, and the launching arrangements, including inspection for lack of side shell opening between the embarkation station and waterline, review of distance to the propeller and other life-saving appliances and ensuring that the stowed position is protected from heavy weather damage, as much as practicable (SOLAS 74/00, reg.III/15; LSAC section 6.2);
- (EI) 1.1.3.17 examining each rescue boat, including its equipment (SOLAS 74/88 reg.III/31; LSAC sections 2.5, 5.1 and 6.1);
- (EI) 1.1.3.18 examining the embarkation and recovery arrangements for each rescue boat and testing each launching and recovery appliance, including overload tests, tests to establish the lowering and recovery speeds and ensuring that each rescue boat can be lowered to the water and recovered with the ship at its lightest sea-going draught, launching underway at 5 knots (SOLAS 74/88, regs.III/14, 17 and 31; LSAC section 6.1);

- (EI) 1.1.3.19 testing that the engine of the rescue boat(s) and of each lifeboat, when so fitted, start satisfactorily and operate both ahead and astern (SOLAS 74/00, reg.III/19);
- (EI) 1.1.3.20 confirming that there are posters or signs in the vicinity of survival craft and their launching stations and containers, brackets, racks and other similar stowage locations for life-saving equipment (SOLAS 74/88, regs.III/9 and 20);
- (EI) 1.1.3.21 examining the provision and stowage and checking the operation of portable on board communications equipment, if provided, and two-way VHF radiotelephone apparatus and radar transponders (SOLAS 74/88, regs. II-2/12.2 and III/6);
- (EI) 1.1.3.22 examining the provision and stowage of the distress flares and the line-throwing appliance, checking the provision and operation of fixed on board communications equipment, if provided, and testing the means of operation of the general alarm system (SOLAS 74/00 regs.III/6 and 18; LSAC sections 3.1, 7.1 and 7.2);
- (EI) 1.1.3.23 examining the provision, disposition and stowage of the lifebuoys, including those fitted with self-igniting lights, self-activating smoke signals and buoyant lines, lifejackets, immersion suits and thermal protective aids (SOLAS 74/00, regs.III/7 and 32 to 37; LSAC sections 2.1, 2.5 and 3.3);
- (EI) 1.1.3.24 checking the lighting of the muster and embarkation stations and the alleyways, stairways and exits giving access to the muster and embarkation stations, including when supplied from the emergency source of power (SOLAS 74/88, regs. II-1/43 and III/11);
- (EI) 1.1.3.25 examining the provision and positioning and checking the operation of, as appropriate, the navigation lights, shapes and sound signalling equipment (International Regulations for Preventing Collisions at Sea (COLREG) in force, regs. 20 to 24, 27 to 30 and 33);
- (EI) 1.1.3.26 checking that the minimum safe distances from the steering and standard magnetic compasses for all electrical equipment are complied with (SOLAS 74/00, regs.V/17 and 19);
- (EI) 1.1.3.27 checking the electromagnetic compatibility of electrical and electronic equipment on or in the vicinity of the bridge (SOLAS 74/00, reg.V/17);
- (EI) 1.1.3.28 checking, as appropriate, the provision and operation of the following shipborne navigational systems equipment (SOLAS 74/00, reg.V/19):
  - (EI) 1.1.3.28.1 the magnetic compass, including examining the siting, movement, illumination and a pelorus or compass bearing device (SOLAS 74/00, reg.V/19);



- (EI) 1.1.3.28.2 nautical charts and nautical publications necessary for the intended voyage are available and have been updated, and, where electronic systems are used, the electronic charts have been updated and the required back-up system is provided and updated (SOLAS 74/00, reg.V/19);
- (EI) 1.1.3.28.3 global navigation satellite system receiver or terrestrial radionavigation system;
- (EI) 1.1.3.28.4 sound reception system, when bridge is totally enclosed;
- (EI) 1.1.3.28.5 means of communication to emergency steering position, where provided;
- (EI) 1.1.3.28.6 spare magnetic compass;
- (EI) 1.1.3.28.7 daylight signalling lamp;
- (EI) 1.1.3.28.8 echo sounding device;
- (EI) 1.1.3.28.9 spare magnetic compass;
- (EI) 1.1.3.28.10 radar(s), including examining the waveguide and cable runs for routing and protection and the display unit confirming lighting, correct operation of all controls, and functions;
- (EI) 1.1.3.28.11 electronic plotting aid, automatic tracking aid or automatic radar plotting aid as appropriate, using the appropriate test facilities;
- (EI) 1.1.3.28.12 speed and distance measuring devices “through the water” and “over the ground”;
- (EI) 1.1.3.28.13 transmitting heading device providing heading information to radar, plotting aids and automatic identification system equipment and voyage data recorder;
- (EI) 1.1.3.28.14 automatic identification system;
- (EI) 1.1.3.28.15 gyrocompass, including examining the alignment of the master and all repeaters;
- (EI) 1.1.3.28.16 rudder angle indicator;
- (EI) 1.1.3.28.17 propeller rate of revolution indicator;
- (EI) 1.1.3.28.18 propeller, operational mode, thrust, and pitch indicator;
- (EI) 1.1.3.28.19 rate-of-turn indicator;
- (EI) 1.1.3.28.20 heading or track control system;
- (EI) 1.1.3.29 checking for the provision and operation of the voyage data recorder (SOLAS 74/00, reg.V/20);

- (EI) 1.1.3.30 checking record of the voyage data recorder annual performance test (SOLAS 74/00, reg.V/18);
- (EI) 1.1.3.31 checking navigation bridge visibility (SOLAS 74/00, reg.V/22);
- (EI) 1.1.3.32 checking the provision and, as appropriate, the deployment or operation of the pilot ladders and hoists/pilot transfer arrangements (SOLAS 74/00, reg.V/23).
- (EI) 1.1.4 For the life-saving appliances and the other equipment of cargo ships for the additional requirements for oil tankers the survey during construction and after installation should consist of:
  - (EI) 1.1.4.1 checking the deck foam system, including the supplies of foam concentrate, and testing that the minimum number of jets of water at the required pressure in the fire main is obtained (see (EI) 1.1.3.1) when the system is in operation (SOLAS 74/00, reg.II-2/10.88; FSSC ch.15) (SOLAS 74/88, reg. II-2/61);
  - (EI) 1.1.4.2 examining the inert gas system (SOLAS 74/00, reg. II-2/4.5.5; FSSC ch.15) (SOLAS 74/88, reg.II-2/62) and in particular:
    - (EI) 1.1.4.2.1 examining externally for any sign of gas or effluent leakage;
    - (EI) 1.1.4.2.2 confirming the proper operation of both inert gas blowers;
    - (EI) 1.1.4.2.3 observing the operation of the scrubber-room ventilation system;
    - (EI) 1.1.4.2.4 checking the deck water seal for automatic filling and draining;
    - (EI) 1.1.4.2.5 examining the operation of all remotely operated or automatically controlled valves and, in particular, the flue gas isolating valves;
    - (EI) 1.1.4.2.6 observing a test of the interlocking feature of soot blowers;
    - (EI) 1.1.4.2.7 observing that the gas pressure-regulating valve automatically closes when the inert gas blowers are secured;
    - (EI) 1.1.4.2.8 checking, as far as practicable, the following alarms and safety devices of the inert gas system using simulated conditions where necessary:
      - (EI) 1.1.4.2.8.1 high oxygen content of gas in the inert gas main;
      - (EI) 1.1.4.2.8.2 low gas pressure in the inert gas main;
      - (EI) 1.1.4.2.8.3 low pressure in the supply to the deck water seal;
      - (EI) 1.1.4.2.8.4 high temperature of gas in the inert gas main;
      - (EI) 1.1.4.2.8.5 low water pressure or low water-flow rate;

- (EI) 1.1.4.2.8.6 accuracy of portable and fixed oxygen-measuring equipment by means of calibration gas;
- (EI) 1.1.4.2.8.7 high water level in the scrubber;
- (EI) 1.1.4.2.8.8 failure of the inert gas blowers;
- (EI) 1.1.4.2.8.9 failure of the power supply to the automatic control system for the gas regulating valve and to the instrumentation for continuous indication and permanent recording of pressure and oxygen content in the inert gas main;
- (EI) 1.1.4.2.8.10 high pressure of gas in the inert gas main;
- (EI) 1.1.4.2.9 checking the proper operation of the inert gas system on completion of the checks listed above;
- (EI) 1.1.4.3 examining the fixed fire-fighting system for the cargo pump room, confirming that the installation tests have been satisfactorily completed and that its means of operation are clearly marked (SOLAS 74/00 reg. II-2/10.9; FSSC chs. 5, 6, 7 and 8, as applicable) and, when appropriate, checking the operation of the remote means for closing the various openings;
- (EI) 1.1.4.4 examining the protection of the cargo pump-rooms and confirming that the installation tests have been satisfactorily completed (SOLAS 74/00, reg. II-2/4.5.10) (SOLAS 74/88, regs. II-2/55 to 58).
- (EI) 1.1.5 For the life-saving appliances and the other equipment of cargo ships the check that the required documentation has been placed on board should consist of:
  - (EI) 1.1.5.1 confirming that the fire control plans are permanently exhibited or, alternatively, emergency booklets have been provided and that a duplicate of the plans or the emergency booklet are available in a prominently marked enclosure external to the ship's deckhouse (SOLAS 74/00, reg. II-2/15.2.4) (SOLAS 74/88, reg. II-2/20);
  - (EI) 1.1.5.2 confirming that maintenance plans have been provided (SOLAS 74/00, regs. II-2/14.2.2 and 14.4);
  - (EI) 1.1.5.3 confirming that the training manuals and the fire safety operational booklets have been provided (SOLAS 74/00 regs. II-2/15.2.3, 16.2 and 16.3);
  - (EI) 1.1.5.4 confirming, where appropriate, that the ship is provided with a document indicating compliance with the special requirement for carrying dangerous goods (SOLAS 74/00, reg. II-2/19.4) (SOLAS 74/88, reg. II-2/54(3));

- (EI) 1.1.5.5 confirming that emergency instructions are available for each person on board, that the muster list is posted in conspicuous places and they are in a language understood by the persons on board (SOLAS 74/00, regs. III/8 and 37);
- (EI) 1.1.5.6 confirming that the training manual and training aids for the life-saving appliances have been provided (SOLAS 74/00, reg. III/35);
- (EI) 1.1.5.7 confirming that the instructions for on board maintenance of the life-saving appliances have been provided (SOLAS 74/88, reg. III/36);
- (EI) 1.1.5.8 confirming that a table or curve of residual deviations for the magnetic compass has been provided, and that a diagram of the radar installations shadow sectors is displayed (SOLAS 74/00, reg. V/19);
- (EI) 1.1.5.9 checking that operational and, where appropriate, maintenance manuals for all navigational equipment are provided (SOLAS 74/00 reg. V/16);
- (EI) 1.1.5.10 checking that the charts and nautical publications necessary for the intended voyage are available and have been updated (SOLAS 74/88, reg. V/27);
- (EI) 1.1.5.11 checking that the International Code of Signals and a copy of Volume III of the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual have been provided. (SOLAS 74/00/02, reg. V/21);
- (EI) 1.1.5.12 checking that arrangements are provided to maintain records of navigational activities and daily reporting (SOLAS 74/00/03, reg. V/28);
- (EI) 1.1.5.13 checking that the life-saving signals to be used by ships, aircraft or persons in distress are available (SOLAS 74/00, reg. V/29);
- (EI) 1.1.5.14 confirming that continuous synopsis record is provided. (SOLAS 74/02, reg. XI-1/5);
- (EI) 1.1.6 For the life-saving appliances and the other equipment of cargo ships for the additional requirements for oil tankers the check that the required documentation has been placed on board should consist of:
  - (EI) 1.1.6.1 confirming, when appropriate, that the instruction manuals for the inert gas system have been provided (FSSC ch.15 paragraph 2.4.4) (SOLAS 74/88, reg. II-2/62.21).
- (EI) 1.1.7 For the life-saving appliances and the other equipment of cargo ships the completion of the initial survey should consist of:
  - (EI) 1.1.7.1 after a satisfactory survey, the Cargo Ship Safety Equipment Certificate and its associated Record of Equipment (Form E) should be issued.

- (EA) **1.2**            **Annual surveys** – see part “General” section 4.2.
- (EA) 1.2.1            For the life-saving appliances and the other equipment of cargo ships the examination of current certificates and other records should consist of:
- (EA) 1.2.1.1        checking the validity, as appropriate, of the Cargo Ship Safety Equipment Certificate, the Cargo Ship Safety Radio Certificate and the Cargo Ship Safety Construction Certificate or the Cargo Ship Safety Certificate;
- (EA) 1.2.1.2        checking the validity of the Safety Management Certificate (SMC) and that a copy of the Document of Compliance (DOC) is on board;
- (EA) 1.2.1.3        checking the validity of the International Load Line Certificate or International Load Line Exemption Certificate;
- (EA) 1.2.1.4        checking the validity of the International Oil Pollution Prevention Certificate;
- (EA) 1.2.1.5        checking the certificates of class, if the ship is classed with a classification society;
- (EA) 1.2.1.6        checking, when appropriate, the validity of the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk or the Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk;
- (EA) 1.2.1.7        checking, when appropriate, the validity of the International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk;
- (EA) 1.2.1.8        checking, when appropriate, the validity of the International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk;
- (EA) 1.2.1.9        checking, when appropriate, the validity of the International Sewage Pollution Prevention Certificate;
- (EA) 1.2.1.10        checking, when appropriate, the validity of the International Air Pollution Prevention Certificate;
- (EA) 1.2.1.11        checking that the ship’s complement complies with the Minimum Safe Manning Document (SOLAS 74/00, reg.V/14);
- (EA) 1.2.1.12        checking that the master, officers and ratings are certificated as required by the STCW Convention;
- (EA) 1.2.1.13        checking the manning and supervision of survival craft (SOLAS 74/00, reg. III/10);
- (EA) 1.2.1.14        checking whether any new equipment has been fitted and, if so, confirm that it has been approved before installation and that any changes are reflected in the appropriate certificate;

- (EA) 1.2.1.15 confirming that the fire control plans are permanently exhibited or, alternatively, emergency booklets have been provided and that a duplicate of the plans or the emergency booklet are available in a prominently marked enclosure external to the ship's deckhouse (SOLAS 74/00, reg. II-2/15.2.4) (SOLAS 74/88, reg.II-2/20);
- (EA) 1.2.1.16 confirming that the maintenance plans have been provided (SOLAS 74/00, regs. II-2/14.2.2 and 14.4);
- (EA) 1.2.1.17 confirming that the training manuals and the fire safety operational booklets have been provided (SOLAS 74/00, regs. II-2/15.2.3, 16.2 and 16.3);
- (EA) 1.2.1.18 checking whether any fire has occurred on board necessitating the operation of the fixed fire-extinguishing systems or the portable fire extinguishers since the last survey;
- (EA) 1.2.1.19 checking, when appropriate, that the ship is provided with a document indicating compliance with the special requirements for carrying dangerous goods (SOLAS 74/00, reg. II-2/19.4) (SOLAS 74/88, reg. II-2/54(3));
- (EA) 1.2.1.20 confirming, when appropriate, that there is a special list, manifest or stowage plan for the carriage of dangerous goods (SOLAS 74/88, reg. VII/5(3));
- (EA) 1.2.1.21 confirming, when appropriate, that the instruction manuals for the inert gas system have been provided and checking from the records of the pressure and oxygen content that the inert gas system is being operated correctly (FSSC ch.15) (SOLAS 74/88, reg. II-2/62);
- (EA) 1.2.1.22 checking that log-book entries are being made (SOLAS 74/00, regs.III/19 and 20) and in particular:
- (EA) 1.2.1.22.1 the date when the last full muster of the crew for boat and fire drill took place;
- (EA) 1.2.1.22.2 the records indicating that the lifeboat equipment was examined at that time and found to be complete;
- (EA) 1.2.1.22.3 the last occasion when the lifeboats were swung out and when each one was lowered into the water;
- (EA) 1.2.1.22.4 the records indicating that crew members have received the appropriate on board training;
- (EA) 1.2.1.23 confirming that the training manual and training aids for the life-saving appliances are on board (SOLAS 74/00, reg. III/35);
- (EA) 1.2.1.24 confirming that the checklist and instructions for on board maintenance of the life-saving appliances are on board (SOLAS 74/00, reg. III/36);

- (EA) 1.2.1.25 confirming that a table or curve of residual deviations for the magnetic compass has been provided, the compass deviation book has been properly maintained and a diagram of the radar installations shadow sectors is displayed (SOLAS 74/00, reg. V/19);
- (EA) 1.2.1.26 checking that operational and, where appropriate, maintenance manuals for all navigational equipment are provided (SOLAS 74/00, reg. V/16);
- (EA) 1.2.1.27 checking that nautical charts and nautical publications necessary for the intended voyage are available and have been updated, and, where electronic systems are used, the required back up system is provided (SOLAS 74/00, regs. V/19 and 27);
- (EA) 1.2.1.28 checking that the International Code of Signals and a copy of Volume III of the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual have been provided. (SOLAS 74/00/02, reg. V/21);
- (EA) 1.2.1.29 checking that the life-saving signals to be used by ships, aircraft or persons in distress are available (SOLAS 74/00, reg. V/29).
- (EA) 1.2.1.30 checking that records of navigational activities and daily reporting have been maintained (SOLAS 74/00/04, reg. V/28);
- (EA) 1.2.1.31 confirming that continuous synopsis record is provided (SOLAS 74/02, reg. XI-1/5);
- (EA) 1.2.2 For the life-saving appliances and the other equipment of cargo ships the annual survey should consist of:
  - (EA) 1.2.2.1 examining the fire pumps, fire main, hydrants, hoses and nozzles and the international shore connection and checking that each fire pump, including the emergency fire pump, can be operated separately so that two jets of water are produced simultaneously from different hydrants at any part of the ship whilst the required pressure is maintained in the fire main (SOLAS 74/00, reg. II-2/10.2; FSSC chs.2 and 12) (SOLAS 74/88, regs. II-2/4 and 19);
  - (EA) 1.2.2.2 checking the provision and randomly examining the condition of the portable and non-portable fire extinguishers (SOLAS 74/00 reg. II-2/10.3; FSSC ch.4) (SOLAS 74/88, reg. II-2/6);
  - (EA) 1.2.2.3 confirming that the fire fighters' outfits and emergency escape breathing devices – EEBDs – are complete and in good condition and that the cylinders, including the spare cylinders, of any required self-contained breathing apparatus are suitably charged (SOLAS 74/00, regs. II-2/10.10, 13.3.4 and 13.4.3; FSSC ch.3) (SOLAS 74/88, reg. II-2/17);
  - (EA) 1.2.2.4 checking the operational readiness and maintenance of fire-fighting systems (SOLAS 74/00, reg. II-2/14) (SOLAS 74/88/91 reg. II-2/21);

- (EA) 1.2.2.5 examining the fixed fire-fighting system for the machinery, cargo, vehicle, special category and ro-ro spaces, as appropriate, and confirming that its means of operation is clearly marked (SOLAS 74/00 regs. II-2/10.4, 10.5, 10.7 and 20.6.1; FSSC chs.5 to 7) (SOLAS 74/88, regs. II-2/7 and 53);
- (EA) 1.2.2.6 examining the fire-extinguishing and special arrangements in the machinery spaces and confirming, as far as practicable and as appropriate, the operation of the remote means of control provided for the opening and closing of the skylights, the release of smoke, the closure of the funnel and ventilation openings, the closure of power operated and other doors, the stopping of ventilation and boiler forced and induced draft fans and the stopping of oil fuel and other pumps that discharge flammable liquids (SOLAS 74/00, regs. II-2/5.2, 8.3, 9.5 and 10.5) (SOLAS 74/88, regs. II-2/7 and 11);
- (EA) 1.2.2.7 examining, as far as possible, and testing, as feasible, any fire detection and alarm system (SOLAS 74/00, regs.II-2/7.2, 7.3, 7.4, 7.5.1, 7.5.5, 19.3.3 and 20.4; FSSC ch.9) (SOLAS 74/88, regs. II-2/11, 13, 14, 53 and 54);
- (EA) 1.2.2.8 examining the fire-extinguishing systems for spaces containing paint and/or flammable liquids and deep-fat cooking equipment in accommodation and service spaces (SOLAS 74/00 regs.II-2/10.6.3 and 10.6.4; FSSC chs.5 to 7) (SOLAS 74/88, reg. II-2/18.7);
- (EA) 1.2.2.9 examining the helicopter facilities (SOLAS 74/00, reg.II-2/18) (SOLAS 74/88, reg. II-2/18.8);
- (EA) 1.2.2.10 examining the arrangements for remote closing of valves for oil fuel, lubricating oil and other flammable oils and confirming, as far as practicable and as appropriate, the operation of the remote means of closing the valves on the tanks that contain oil fuel, lubricating oil and other flammable oils (SOLAS 74/00, regs. II-2/4.2.2.3.4) (SOLAS 74/88, reg. II-2/15.2.5);
- (EA) 1.2.2.11 examining and testing of the general emergency alarm system (SOLAS 74/88, reg.III/20);
- (EA) 1.2.2.12 examining the fire protection arrangements in cargo, vehicle and ro-ro spaces and confirming, as far as practicable and as appropriate, the operation of the means of control provided for closing the various openings (SOLAS 74/00, regs.II-2/10.7, 20.2.1, 20.3 and 20.6.2) (SOLAS 74/88, reg. II-2/53);
- (EA) 1.2.2.13 examining, when appropriate, the special arrangements for carrying dangerous goods, including checking the electrical equipment and wiring, the ventilation, the provision of protective clothing and portable appliances and the testing of the water supply, bilge pumping and any water spray system (SOLAS 74/00, reg.II-2/19 (except 19.3.8, 19.3.10 and 19.4)) (SOLAS 74/88, reg. II-2/54);



- (EA) 1.2.2.14 checking that emergency instructions are available for each person on board and that copies of the suitably updated muster list are posted in conspicuous places and that they are in a language understood by all persons on board and confirming that there are posters or signs in the vicinity of survival craft and their launching stations (SOLAS 74/00, regs. III/8, 9 and 37);
- (EA) 1.2.2.15 examining each survival craft, including its equipment and, when fitted, the on-load release and hydrostatic lock and, for inflatable liferafts, the hydrostatic release unit and float-free arrangements. Checking that the hand-held flares are not out of date (SOLAS 74/00, regs. III/20 and 31; LSAC sections 2.5, 3.1 to 3.3);
- (EA) 1.2.2.16 checking that the falls used in launching have been turned end for end in the previous 30 months and renewed in the past 5 years or have been subject to periodic inspection and been renewed within 4 years (SOLAS 74/00, reg. III/20);
- (EA) 1.2.2.17 examining the embarkation arrangements and launching appliances for each survival craft. Each lifeboat should be lowered to the embarkation position or, if the stowage position is the embarkation position, lowered a short distance and, if practicable, one of the survival craft should be lowered to the water. The operation of the launching appliances for davit-launched liferafts should be demonstrated. A check that the thorough examination of launching appliances, including the dynamic testing of the winch brake, and servicing of lifeboat on-load release gear have been carried out (SOLAS 74/00, regs.III/11, 12, 13, 16, 20 and 31; LSAC section 6.1);
- (EA) 1.2.2.18 examining each rescue boat, including its equipment (SOLAS 74/00, reg. III/31; LSAC sections 2.5 and 5.1);
- (EA) 1.2.2.19 confirming that there are posters or signs in the vicinity of the survival craft, their launching stations and containers, brackets, racks and other similar stowage locations for life-saving equipment (SOLAS 74/00, regs. III/9 and 20);
- (EA) 1.2.2.20 examining the embarkation and recovery arrangements for each rescue boat. If practicable, the rescue boat(s) should be lowered to the water and its recovery demonstrated (SOLAS 74/00, regs.III/14, 17 and 31; LSAC section 6.1);
- (EA) 1.2.2.21 testing that the engine of the rescue boat(s) and of each lifeboat, when so fitted, start satisfactorily and operate both ahead and astern;
- (EA) 1.2.2.22 examining and checking the operation of two-way VHF radiotelephone apparatus and radar transponders (SOLAS 74/88, reg. III/6);
- (EA) 1.2.2.23 examining the line-throwing appliance and checking that its rockets and the ship's distress signals are not out of date, and examining and checking

the operation of on board communications equipment and the general emergency alarm system (SOLAS 74/00, regs.II-2/12.2 and III/6 and 18; LSAC sections 3.1, 7.1 and 7.2);

- (EA) 1.2.2.24 examining the provision, disposition, stowage and the condition of the: lifebuoys, including those fitted with self-igniting lights, self-activating smoke signals and buoyant lines, lifejackets and their whistles and lights, immersion suits, anti-exposure suits and thermal protective aids and that their associated batteries are not out of date (SOLAS 74/88, regs. III/7 and 32, LSAC sections 2.2 and 2.5);
- (EA) 1.2.2.25 checking the lighting of the muster and embarkation stations and the alleyways, stairways and exits giving access to the muster and embarkation stations, including when supplied from the emergency source of power (SOLAS 74/88, regs. II-1/42 or 43 and III/11);
- (EA) 1.2.2.26 checking that the required the navigation lights, shapes and sound signalling equipment are in order (International Regulations for Preventing Collisions at Sea (COLREG) in force, regs. 20 to 24, 27 to 30 and 33);
- (EA) 1.2.2.27 checking that the following items of navigation equipment are in working order, as appropriate: daylight signalling lamp, magnetic compass, transmitting heading device, gyro compass, gyro compass repeaters, radar installation(s), electronic plotting aid, automatic tracking aid(s) or automatic radar plotting aid(s), echo-sounding device, speed and distance measuring device(s), rudder angle indicator, propeller rate of revolution indicator, variable-pitch propeller pitch and operational mode indicator, rate-of-turn indicator, heading or track control system, GNSS receiver, terrestrial radio navigation system and sound reception system, means of communication with emergency steering position, ECDIS including back-up arrangements, a pelorus or compass bearing device and means for correcting heading and bearings. Items that cannot be checked with the ship in port should be verified from records (SOLAS 74/00, reg.V/19);
- (EA) 1.2.2.28 checking that the International Code of Signals is available (SOLAS 74/00 reg.V/21);
- (EA) 1.2.2.29 rotational deployment of MES (SOLAS 74/88, reg. III/20.8.2; LSAC section 6.2.2.2);
- (EA) 1.2.2.30 checking the provision, specification, operation and annual performance test of the voyage data recorder, where fitted (SOLAS 74/00/04 reg. V/20);
- (EA) 1.2.2.31 checking the provision, operation and the annual test has been carried out for the automatic identification system, where fitted (SOLAS 74/00/04 reg. V/19);
- (EA) 1.2.2.32 checking the provision and specification of the pilot ladders and hoists/pilot transfer arrangements (SOLAS 74/00, reg. V/23).

- (EA) 1.2.3 For the life-saving appliances and the other equipment of cargo ships for the additional requirements for oil tankers the annual survey should consist of:
  - (EA) 1.2.3.1 checking the deck foam system, including the supplies of foam concentrate and testing that the minimum number of jets of water at the required pressure in the fire main is obtained (see (EA) 1.2.2.1) when the system is in operation (SOLAS 74/00, reg.II-2/10.8; FSSC ch.14) (SOLAS 74/88, reg. II-2/61);
  - (EA) 1.2.3.2 examining the inert gas system (SOLAS 74/00 reg.II-2/4.5.5; FSSC ch.15) (SOLAS 74/88, reg. II-2/62), and in particular:
    - (EA) 1.2.3.2.1 examining externally for any sign of gas or effluent leakage;
    - (EA) 1.2.3.2.2 confirming the proper operation of both inert gas blowers;
    - (EA) 1.2.3.2.3 observing the operation of the scrubber-room ventilation system;
    - (EA) 1.2.3.2.4 checking the deck water seal for automatic filling and draining;
    - (EA) 1.2.3.2.5 examining the operation of all remotely operated or automatically controlled valves and, in particular, the flue gas isolating valves;
    - (EA) 1.2.3.2.6 observing a test of the interlocking feature of soot blowers;
    - (EA) 1.2.3.2.7 observing that the gas pressure regulating valve automatically closes when the inert gas blowers are secured;
    - (EA) 1.2.3.2.8 checking, as far as practicable, the following alarms and safety devices of the inert gas system using simulated conditions where necessary:
      - (EA) 1.2.3.2.8.1 high oxygen content of gas in the inert gas main;
      - (EA) 1.2.3.2.8.2 low gas pressure in the inert gas main;
      - (EA) 1.2.3.2.8.3 low pressure in the supply to the deck water seal;
      - (EA) 1.2.3.2.8.4 high temperature of gas in the inert gas main;
      - (EA) 1.2.3.2.8.5 low water pressure or low water-flow rate;
      - (EA) 1.2.3.2.8.6 accuracy of portable and fixed oxygen-measuring equipment by means of calibration gas;
      - (EA) 1.2.3.2.8.7 high water level in the scrubber;
      - (EA) 1.2.3.2.8.8 failure of the inert gas blowers;

- (EA) 1.2.3.2.8.9 failure of the power supply to the automatic control system for the gas regulating valve and to the instrumentation for continuous indication and permanent recording of pressure and oxygen content in the inert gas main;
- (EA) 1.2.3.2.8.10 high pressure of gas in the inert gas main;
- (EA) 1.2.3.3 checking, when practicable, the proper operation of the inert gas system on completion of the checks listed above (FSSC ch.15) (SOLAS 74/88, reg. II-2/62);
- (EA) 1.2.3.4 examining the fixed fire-fighting system for the cargo pump rooms, (SOLAS 74/00, reg.II-2/10.9) (SOLAS 74/88, reg. II-2/63) and confirming, as far as practicable and when appropriate, the operation of the remote means for closing the various openings;
- (EA) 1.2.3.5 checking condition and operation of water spray and air supply systems that are in totally enclosed lifeboats and have self-contained air support systems (LSAC sections 4.4 and 4.6 to 4.9);
- (EA) 1.2.3.6 checking protection of cargo pump room (SOLAS 74/00, reg. II-2/4.5.10), and in particular:
  - (EA) 1.2.3.6.1 checking temperature sensing devices for bulkheads glands and alarms;
  - (EA) 1.2.3.6.2 checking interlock between lighting and ventilation;
  - (EA) 1.2.3.6.3 checking gas detection system;
  - (EA) 1.2.3.6.4 checking bilge level monitoring devices and alarms.
- (EA) 1.2.4 For the life-saving appliances and the other equipment of cargo ships the completion of the annual survey should consist of:
  - (EA) 1.2.4.1 after a satisfactory survey, the Cargo Ship Safety Equipment Certificate should be endorsed;
  - (EA) 1.2.4.2 if a survey shows that the condition of a ship or its equipment is unsatisfactory, see part “General”, section 4.8.
- (EP) **1.3 Periodical surveys** – see part “General” section 4.4.
  - (EP) 1.3.1 For the life-saving appliances and the other equipment of cargo ships the examination of current certificates and other records should consist of:
    - (EP) 1.3.1.1 the provisions of (EA) 1.2.1.
  - (EP) 1.3.2 For the life-saving appliances and the other equipment of cargo ships the periodical survey should consist of:
    - (EP) 1.3.2.1 the provisions of (EA) 1.2.2;

- (EP) 1.3.2.2 confirming during the examination of the fixed fire-fighting system for the machinery, cargo, vehicle, special category and ro-ro spaces that, as appropriate, any foam compounds and the CO<sub>2</sub> capacity have been checked and that the distribution pipework has been proved clear (SOLAS 74/00, regs. II-2/10.4, 10.5, 10.7 and 20.6.1; FSSC chs.5 to 7) (SOLAS 74/88, regs. II-2/7 and 53);
- (EP) 1.3.2.3 testing the operation of the remote means of control provided for the opening and closing of the skylights, the release of smoke, the closure of the funnel and ventilation openings, the closure of power operated and other doors, the stopping of ventilation and boiler forced and induced draft fans and the stopping of oil fuel and other pumps that discharge flammable liquids (SOLAS 74/00, regs. II-2/5.2, 8.3, 9.5 and 10.5) (SOLAS 74/88, reg. II-2/11);
- (EP) 1.3.2.4 testing any fire detection and alarm system (SOLAS 74/00, regs. II-2/7.2, 7.3, 7.4, 7.5.5, 19.3.3 and 20.4; FSSC ch.9) (SOLAS 74/88, regs. II-2/11, 13 14, 53 and 54);
- (EP) 1.3.2.5 testing, as feasible, the fire-extinguishing system for spaces containing paint and/or flammable liquids and deep-fat cooking equipment in accommodation and service spaces (SOLAS 74/00, regs. II-2/10.6.3 and 10.6.4; FSSC chs.5 to 7) (SOLAS 74/88, reg. II-2/18.7);
- (EP) 1.3.2.6 testing the remote closing of valves for oil fuel, lubricating oil and other flammable oils and the operation of the remote means of closing the valves on the tanks that contain oil fuel, lubricating oil and other flammable oils (SOLAS 74/00, reg. II-2/4.2.2.3.4) (SOLAS 74/88, reg. II-2/15.2.5);
- (EP) 1.3.2.7 testing the operation of the means of control provided for closing the various openings for the cargo, vehicle, special category and ro-ro spaces (SOLAS 74/00, regs. II-2/5.2 and 20.3) (SOLAS 74/88, reg. II-2/53);
- (EP) 1.3.2.8 testing, as feasible, the helicopter facilities (SOLAS 74/00, reg. II-2/18) (SOLAS 74/88, reg. II-2/18.8).
- (EP) 1.3.3 For the life-saving appliances and the other equipment for the additional requirements for oil tankers the periodical survey should consist of:
- (EP) 1.3.3.1 the provisions of (EA) 1.2.3;
- (EP) 1.3.3.2 confirming during the examination of the fixed fire-fighting system for the cargo pump rooms that, as appropriate, any foam compounds have been checked and that the distribution pipework has been proved clear (SOLAS 74/00, reg. II-2/10.9; FSSC chs. 5 to 7) (SOLAS 74/88, reg. II-2/63) and checking the operation of the remote means for closing the various openings.
- (EP) 1.3.4 For the life-saving appliances and the other equipment of cargo ships the completion of the periodical survey should consist of:

- (EP) 1.3.4.1 after a satisfactory survey, the cargo Ship Safety Equipment Certificate should be endorsed;
- (EP) 1.3.4.2 if a survey shows that the condition of a ship or its equipment is unsatisfactory, see part “General”, section 4.8.
- (ER) **1.4** **Renewal surveys** – see part “General” section 4.5
- (ER) 1.4.1 For the life-saving appliances and the other equipment of cargo ships the examination of current certificates and other records should consist of:
- (ER) 1.4.1.1 the provisions of (EA) 1.2.1, except for the validity of the Cargo Ship Safety Equipment Certificate.
- (ER) 1.4.2 For the life-saving appliances and other equipment of cargo ships the renewal survey should consist of:
- (ER) 1.4.2.1 the provisions of (EP) 1.3.2.
- (ER) 1.4.3 For the life-saving appliances and the other equipment for the additional requirements for oil tankers the renewal survey should consist of:
- (ER) 1.4.3.1 the provisions of (EP) 1.3.3;
- (ER) 1.4.3.2 examining the deck water seal for the inert gas system internally and checking the condition of the non-return valve (FSSC ch.15, paragraphs 2.2.4 and 2.3.1.4) (SOLAS 74/88, reg. II-2/62).
- (ER) 1.4.4 For the life-saving appliances and the other equipment of cargo ships the completion of the renewal survey should consist of:
- (ER) 1.4.4.1 after a satisfactory survey, the cargo Ship Safety Equipment Certificate should be issued.
- (C) **2** **GUIDELINES FOR SURVEYS FOR THE CARGO SHIP SAFETY CONSTRUCTION CERTIFICATE**
- (CI) **2.1** **Initial surveys** – see part “General”, section 4.1.
- (CI) 2.1.1 For the hull, machinery and equipment of cargo ships the examination of plans and designs should consist of:
- (CI) 2.1.1.1 examining the plans for the hull (SOLAS 74/88, regs. II-1/11, 12.1, 14, 18 and 19);
- (CI) 2.1.1.2 examining the plans for the bilge pumping (SOLAS 74/88, reg. II-1/21);
- (CI) 2.1.1.3 examining the stability information and the damage control plans (SOLAS 74/88/00, regs. II-1/22, 23-1 and 25);
- (CI) 2.1.1.4 examining the plans for the machinery installation (SOLAS 74/88, regs. II-1/26 to 36);

- (CI) 2.1.1.5 examining the plans for the electrical installation (SOLAS 74/88, regs. II-1/40, 41, 43, 44 and 45);
- (CI) 2.1.1.6 examining the plans for the periodically unattended machinery spaces (SOLAS 74/00, reg. II-2/4.2.5) (SOLAS 74/88, regs. II-1/46 to 53);
- (CI) 2.1.1.7 examining the plans for the structural fire protection, including ventilation systems, in accommodation and service spaces, control stations and machinery spaces and oil fuel and lubricating oil systems (SOLAS 74/00, regs. II-2/4.4, 4.2.2, 4.2.2.3, 4.2.2.4, 4.2.2.5, 5.2, 5.3.1, 5.3.2, 6.2, 6.3, 7.5.5, 7.7, 8.2, 8.4, 9.2.1, 9.2.2, 9.3, 9.5, 9.7.1, 9.7.2, 9.7.3, 9.7.5.2, 11.2, 11.3, 11.4, 11.5 and 17) (SOLAS 74/88 regs. II-2/42 to 52 (except 45 and 51)).
- (CI) 2.1.1.8 examining the plans for the structural fire protection, including ventilation systems, in cargo spaces (SOLAS 74/00 regs. II-2/5.2, 11.2, 11.3, 11.5, 19.3.8, 19.3.10, 20.2.1 and 20.3) (SOLAS 74/88 regs. II-1/42 to 54);
- (CI) 2.1.1.9 examining the plans for the means of escape (SOLAS 74/00 regs. II-2/13.2, 13.3.1, 13.3.3, 13.4.2 and 13.6; FSSC ch.13 paragraph 3) (SOLAS 74/88 reg. II-1/45);
- (CI) 2.1.1.10 examining the plans for the arrangements for gaseous fuel for domestic purposes (SOLAS 74/00 reg. II-2/4.3) (SOLAS 74/88 reg. II-1/ 51);
- (CI) 2.1.1.11 examining the plans for helicopter facilities for ships fitted with such facilities (SOLAS 74/00 reg. II-2/18) (SOLAS 74/88 reg. II-1/18.8);
- (CI) 2.1.1.12 examining the Cargo Securing Manual for ships carrying cargo units including containers (SOLAS 74/98 reg. VI/5.6);
- (CI) 2.1.1.13 checking for the loading booklet for carriage of cargoes in bulk (SOLAS 74/00 reg. VI/7);
- (CI) 2.1.1.14 examining the loading instrument for bulk carriers of 150 m in length and upwards (SOLAS 74/97 reg. XII/11);
- (CI) 2.1.1.15 confirming that bulk carriers constructed on or after 1 July 1999 of 150 m in length and upwards of single skin construction designed to carry solid bulk cargoes having a density of 1,000 kg/m<sup>3</sup> and above have sufficient strength to withstand flooding of any cargo hold (SOLAS 74/97 reg. XII/5);
- (CI) 2.1.1.16 examining the functionality of bilge well alarms to all cargo holds and conveyor tunnels (SOLAS 74/97 reg. XII/9);
- (CI) 2.1.1.17 confirming that the ship is constructed in accordance with the requirements of a recognized classification society or with equivalent national standards (SOLAS 74/00 reg. II-1/3-1);

- (CI) 2.1.1.18 confirming that a corrosion prevention system is fitted in dedicated ballast water tanks of oil tankers and bulk carriers (SOLAS 74/ reg.II-1/3-2).
- (CI) 2.1.1.19 examining, for oil tankers and bulk carriers when appropriate, the Ship Structure Access Manual (SOLAS 74/00/02 reg. II-1/3-6(4));
- (CI) 2.1.1.20 for bulk carriers, checking the arrangements for hold, ballast and dry space water level detectors and their audible and visual alarms. (SOLAS 74/02 reg. XII/12);
- (CI) 2.1.1.21 for bulk carriers, checking the arrangements for availability of draining and pumping systems forward of the collision bulkhead (SOLAS 74/02 reg. XII/13);
- (CI) 2.1.1.22 examining the calculation and drawings for the sufficient safe working load of towing and mooring equipment to enable the safe conduct of all towing and mooring operation in normal operation of the ship (SOLAS 74/04 reg. II-1/3-8).
- (CI) 2.1.2 For the hull, machinery and equipment of cargo ships the examination of plans and designs the additional requirements for oil tankers, chemical tankers and gas carriers should consist of:
  - (CI) 2.1.2.1 examining the plans for the steering gear (SOLAS 74/88 reg.II-1/29);
  - (CI) 2.1.2.2 examining the plans for the electrical installation (SOLAS 74/00 reg.II-1/43) (SOLAS 74/88 reg.II-1/45);
  - (CI) 2.1.2.3 examining the plans for the structural fire protection (SOLAS 74/00 reg.II-2/1.6, 4.5.1, 4.5.2, 4.5.9, 9.2.4, 9.3, 9.4, 9.5, 9.6.5 and 11.6) (SOLAS 74/88 regs.II-2/55 to 58);
  - (CI) 2.1.2.4 examining the plans for the cargo tank venting, cargo tank purging and gas-freeing and other ventilation arrangements and protection of the cargo tank structure against pressure or vacuum (SOLAS 74/00 reg.II-2/4.5.3, 4.5.4, 4.5.6, 4.5.8, 11.6 and 16.3) (SOLAS 74/88 reg.II-2/59);
  - (CI) 2.1.2.5 examining the plans of access to bow (SOLAS 74/00 reg.II-1/3-3);
  - (CI) 2.1.2.6 examining the plans for emergency towing, for tankers of not less than 20,000 tonnes deadweight (SOLAS 74/00 reg.II-1/3-4);
  - (CI) 2.1.2.7 checking the access to spaces in the cargo area of oil tankers (SOLAS 74/00, reg.II-1/12-2) (SOLAS 74/88/92 reg.II-1/12-2).
- (CI) 2.1.3 For the hull, machinery and equipment of cargo ships the survey during construction and after installation should consist of:
  - (CI) 2.1.3.1 confirming that the collision bulkhead is watertight up to the freeboard deck, that the valves fitted on the pipes piercing the collision bulkhead are operable from above the freeboard deck and that there are no doors,



- manholes, ventilation ducts or any other openings (SOLAS 74/88 reg.II-1/11);
- (CI) 2.1.3.2 confirming that the subdivision bulkheads are constructed and tested as watertight up to the freeboard deck or margin line, as applicable (SOLAS 74/88 reg.II-1/14);
- (CI) 2.1.3.3 confirming that each watertight door has been tested (SOLAS 74/88 reg.II-1/18);
- (CI) 2.1.3.4 confirming that the arrangements for operating any watertight doors are generally in accordance with the requirements for passenger ships and carrying out similar tests, (see (PI) 5.1.2.5 to (PI) 5.1.2.7) (SOLAS 74/88 reg.II-1/15);
- (CI) 2.1.3.5 confirming by a hose or flooding test the watertightness of watertight decks and trunks, tunnels and ventilators (SOLAS 74/88 reg.II-1/19);
- (CI) 2.1.3.6 confirming that each bilge pump and the bilge pumping system provided for each watertight compartment is working efficiently (SOLAS 74/88 reg.II-1/21);
- (CI) 2.1.3.7 confirming that the drainage system of enclosed cargo spaces situated on the freeboard deck is working efficiently (SOLAS 74/88 reg.II-1/21);
- (CI) 2.1.3.8 conducting an inclining test, when this is required (SOLAS 74/88 reg.II-1/22);
- (CI) 2.1.3.9 confirming that the machinery, boilers and other pressure vessels, associated piping systems and fittings are installed and protected as to reduce to a minimum any danger to persons on board, due regard being given to moving parts, hot surfaces and other hazards (SOLAS 74/00 reg.II-2/4.2 (except 4.2.2.3.4 relating to remote closing of valves included in safety equipment)) (SOLAS 74/88 reg.II-1/26) (SOLAS 74/88 reg.II-2.15 (except 15.25));
- (CI) 2.1.3.10 confirming that the normal operation of the propulsion machinery can be sustained or restored even though one of the essential auxiliaries becomes inoperative (SOLAS 74/88 reg.II-1/26);
- (CI) 2.1.3.11 confirming that means are provided so that the machinery can be brought into operation from the dead ship condition without external aid (SOLAS 74/88 reg.II-1/26);
- (CI) 2.1.3.12 confirming that the boilers, all parts of the machinery, all steam, hydraulic, pneumatic and other systems and their associated fittings which are under internal pressure have been subjected to the appropriate tests, including a pressure test as may be specified in the requirements of the Administration or the classification societies (SOLAS 74/88 reg.II-1/26);

- (CI) 2.1.3.13 confirming that means is provided to ensure that the safe speed is not exceeded where there is the risk of machinery overspeeding (SOLAS 74/88 reg.II-1/27);
- (CI) 2.1.3.14 confirming that, where practicable, means are provided to protect against overpressure in the parts of main, auxiliary and other machinery that are subject to internal pressure and may be subject to dangerous overpressure (SOLAS 74/88 reg.II-1/27);
- (CI) 2.1.3.15 confirming that, when required, crankcase explosion relief devices are fitted to internal combustion engines and that they are arranged so as to minimize the possibility of injury to personnel (SOLAS 74/88 reg.II-1/27);
- (CI) 2.1.3.16 confirming that main turbine propulsion machinery and, where applicable, main internal combustion propulsion machinery and auxiliary machinery are provided with automatic shut-off arrangements in the case of failures, such as lubricating oil supply failure, which could rapidly lead to a complete breakdown, serious damage or explosion (SOLAS 74/88 reg.II-1/27);
- (CI) 2.1.3.17 confirming and recording the ability of the machinery to reverse the direction of the thrust of the propeller in sufficient time and to bring the ship to rest within a reasonable distance, including the effectiveness of any supplementary means of manoeuvring or stopping the ship (SOLAS 74/88 reg.II-1/28);
- (CI) 2.1.3.18 confirming that the main and auxiliary steering gear are so arranged that the failure of one of them does not render the other inoperative (SOLAS 74/88 reg.II-1/29);
- (CI) 2.1.3.19 confirming that, where appropriate, essential components of the steering gear are permanently lubricated or provided with lubrication fittings (SOLAS 74/88 reg.II-1/29);
- (CI) 2.1.3.20 confirming that relief valves are fitted to any part of a steering gear hydraulic system which can be isolated and in which pressure can be generated from the power source or from external forces and that these relief valves are set to a pressure not exceeding the design pressure (SOLAS 74/88 reg.II-1/29);
- (CI) 2.1.3.21 confirming that the main steering gear is capable of steering the ship at maximum ahead service speed and is capable of putting the rudder over from 35° on one side to 35° on the other side with the ship at its deepest seagoing draught and running ahead at maximum ahead service speed and, under the same conditions, from 35° on either side to 30° on the other side in not more than 28 s (SOLAS 74/88 reg.II-1/29);
- (CI) 2.1.3.22 confirming that the auxiliary steering gear is capable of steering the ship at navigable speed and of being brought speedily into action in an emergency and that it is capable of putting the rudder over from 15° on one side to 15°

on the other side in not more than 60 s with the ship at its deepest seagoing draught and running ahead at one half of the maximum ahead service speed or 7 knots, whichever is the greater (SOLAS 74/88 reg.II-1/29);

- (CI) 2.1.3.23 confirming that the main and auxiliary steering gear power units restart automatically when power is restored after a power failure, that they are capable of being brought into operation from a position on the navigating bridge and that, in the event of a power failure to any one of the steering gear power units, an audible and visual alarm is given on the navigating bridge (SOLAS 74/88 reg.II-1/29);
- (CI) 2.1.3.24 confirming that, where the main steering gear comprises two or more identical power units and an auxiliary steering gear is not fitted, a defect can be isolated so that steering capability can be maintained or speedily regained after a single failure in its piping system or in one of the power units (SOLAS 74/88 reg.II-1/29);
- (CI) 2.1.3.25 confirming that the control systems for the main steering gear from both the navigating bridge and the steering gear compartment are operating satisfactorily (SOLAS 74/88 reg.II-1/29);
- (CI) 2.1.3.26 confirming that, where the main steering gear comprises two or more identical power units and an auxiliary steering gear is not fitted, the two independent control systems from the navigating bridge are operating satisfactorily (SOLAS 74/88 reg.II-1/29);
- (CI) 2.1.3.27 confirming that the control system for the auxiliary steering gear in the steering gear compartment and, if this gear is power operated, from the navigating bridge are operating satisfactorily and that the latter is independent of the control system for the main steering gear (SOLAS 74/88 reg.II-1/29);
- (CI) 2.1.3.28 confirming that the control system for any main and auxiliary steering gear control system operable from the navigating bridge is capable of being brought into operation from a position on the navigating bridge, that means are provided in the steering gear compartment for disconnecting it from the steering gear that it serves and that an audible and visual alarm is given on the navigating bridge in the event of a failure of electrical power supply (SOLAS 74/88 reg.II-1/29);
- (CI) 2.1.3.29 confirming that the electric power circuits and steering gear control systems, together with their associated components, cables and pipes, are separated, as far as practicable, throughout their length (SOLAS 74/88 reg.II-1/29);
- (CI) 2.1.3.30 confirming that the means of communication between the bridge and the steering gear compartment is operating satisfactorily and that, with ships having emergency steering positions, a telephone or other means of communication for relaying heading information and supplying visual compass readings to the emergency steering position are provided (SOLAS 74/00 reg.V/19.2.1) (SOLAS 74/88 reg.II-1/29);

- (CI) 2.1.3.31 confirming that the angular position of the rudder is indicated independently of the steering control system on the navigating bridge if the main steering gear is power-operated and that this angular position is given in the steering gear compartment (SOLAS 74/88 reg.II-1/29);
- (CI) 2.1.3.32 confirming that with a hydraulic power-operated steering gear the audible and visual low-level alarms on the navigating bridge and in the machinery space for each hydraulic fluid reservoir are operating satisfactorily and that at least one power actuating system including the reservoir can be recharged from a position within the steering gear compartment by means of a fixed storage tank (to which a contents gauge is fitted) with fixed piping (SOLAS 74/88 reg.II-1/29);
- (CI) 2.1.3.33 confirming that the steering gear compartment is readily accessible, that it is separated, as far as practicable, from machinery spaces and is provided with suitable arrangements to ensure working access to steering gear machinery and controls under safe conditions (SOLAS 74/88 reg.II-1/29);
- (CI) 2.1.3.34 confirming that with electric and electro-hydraulic steering gear the means for indicating on the navigating bridge and at a main machinery control position that the motors are running and that the overload alarm and alarm for the loss of a phase in a three phase supply located at the main machinery control position are operating satisfactorily (SOLAS 74/88 reg.II-1/30);
- (CI) 2.1.3.35 confirming that the main and auxiliary machinery essential for propulsion and the safety of the ship are provided with the effective means for its operation and control (SOLAS 74/88 reg.II-1/31);
- (CI) 2.1.3.36 confirming that appropriate means are provided where it is intended that the propulsion machinery should be remotely controlled from the navigating bridge, including, where necessary, the control, monitoring, reporting, alert and safety actions. (SOLAS 74/00/02 reg. II-1/31);
- (CI) 2.1.3.37 confirming that arrangements to operate main and other machinery from a machinery control room are satisfactory (SOLAS 74/88 reg.II-1/31);
- (CI) 2.1.3.38 confirming that, in general, means are provided for manually overriding automatic controls and that a failure does not prevent the use of the manual override (SOLAS 74/88 reg.II-1/31);
- (CI) 2.1.3.39 confirming that oil-fired and exhaust gas boilers, unfired steam generators, steam pipe systems and air pressure systems are fitted with the appropriate safety features (SOLAS 74/88 regs.II-1/32, 33 and 34);
- (CI) 2.1.3.40 confirming the operation of the ventilation for the machinery spaces (SOLAS 74/88 reg.II-1/35);
- (CI) 2.1.3.41 confirming that the measures to prevent noise in machinery spaces are effective (SOLAS 74/88 reg.II-1/36);

- (CI) 2.1.3.42 confirming that the engine room telegraph giving visual indication of the orders and answers both in the machinery space and on the navigating bridge is operating satisfactorily (SOLAS 74/88, reg.II-1/37);
- (CI) 2.1.3.43 confirming that the second means of communication between the navigation bridge and machinery space is also operating satisfactorily and that appropriate means are provided to any other positions from which the engines are controlled (SOLAS 74/88 reg.II-1/37);
- (CI) 2.1.3.44 confirming that the engineer's alarm is clearly audible in the engineers' accommodation (SOLAS 74/88 reg.II-1/38);
- (CI) 2.1.3.45 confirming that precautions, taken to prevent any oil that may escape under pressure from any pump, filter or heater from coming into contact with heated surfaces, are efficient;
- (CI) 2.1.3.46 confirming that the means of ascertaining the amount of oil contained in any oil tank are in good working condition;
- (CI) 2.1.3.47 confirming that the devices provided to prevent overpressure in any oil tank or in any part of the oil system, including the filling pipes, are in good working condition (SOLAS 74/00 reg.II-2/4.2.2.4);
- (CI) 2.1.3.48 confirming that forepeak tanks are not intended for carriage of oil fuel, lubrication oil and other flammable oils;
- (CI) 2.1.3.49 confirming that the electrical installations, including the main source of power and lighting systems, are installed in accordance with the approved plans (SOLAS 74/88 regs.II-1/40 and 41);
- (CI) 2.1.3.50 confirming that a self-contained emergency source of electrical power has been provided and that the appropriate systems are satisfactorily supplied (SOLAS 74/88 reg.II-1/43);
- (CI) 2.1.3.51 confirming that starting arrangements of each emergency generating set are satisfactory (SOLAS 74/88 reg.II-1/44);
- (CI) 2.1.3.52 confirming that precautions have been provided against shock, fire and other hazards of electrical origin (SOLAS 74/88 reg.II-1/45);
- (CI) 2.1.3.53 confirming that the arrangements for periodically unattended machinery spaces are satisfactory (SOLAS 74/88 regs.II-1/46 to 53) and in particular:
  - (CI) 2.1.3.53.1 checking the fire precautions and testing alarms, as appropriate;
  - (CI) 2.1.3.53.2 checking the means for the protection against flooding;
  - (CI) 2.1.3.53.3 checking the means to control the propulsion from the navigating bridge;

- (CI) 2.1.3.53.4 ensuring that a means of vocal communication between the main machinery control room or its control position, as appropriate, and the navigating bridge and engineer officer's accommodation is provided and is effective;
- (CI) 2.1.3.53.5 checking that an alarm system is provided with random testing of functions;
- (CI) 2.1.3.53.6 checking that means are provided to automatically shut down machinery or boiler operations in the event of serious malfunction and testing the alarms;
- (CI) 2.1.3.53.7 ensuring that special requirements for the machinery, boiler and electrical installations, as appropriate, are provided;
- (CI) 2.1.3.54 confirming that all aspects of the structural fire protection, including the ventilation systems, in accommodation and service spaces, control stations and machinery spaces are installed in accordance with the approved plans, testing the operation of the means of closing the main inlets and outlets of all ventilation systems and proving that the power ventilation is capable of being stopped from outside the space served (SOLAS 74/00 regs.II-2/4.4, 5.2, 5.3.1, 5.3.2, 6.2, 6.3, 7.5.5, 7.7, 8.2, 8.4, 9.2.1, 9.3, 9.4.2, 9.5, 9.7.1, 9.7.2, 9.7.3, 9.7.5.2, 11.2, 11.3, 11.4 and 11.5) (SOLAS 74/88 regs.II-2/42 to 44, 46 to 50 and 52);
- (CI) 2.1.3.55 confirming that all aspects of the structural fire protection, including the ventilation systems, in cargo spaces are installed in accordance with the approved plans, testing the operation of the means of closing the main inlets and outlets of all ventilation systems and proving that the power ventilation is capable of being stopped from outside the space served (SOLAS 74/00 regs.II-2/5.2.1, 11.2, 11.3, 11.5, 19.3.8, 19.3.10, 20.2.1 and 20.3) (SOLAS 74/88 regs.II-2/42 to 44, 46 to 50 and 52 to 54);
- (CI) 2.1.3.56 confirming that stairways and ladders are so arranged to provide a means of escape from all accommodation spaces and from spaces in which the crew is normally employed, other than machinery spaces, to the open deck and thence to the lifeboats and liferafts (SOLAS 74/00 regs.II-2/13.2, 13.3.1, 13.3.3 and 13.6; FSSC ch.13 paragraph 3) (SOLAS 74/88 reg.II-2/45) and in particular that:
  - (CI) 2.1.3.56.1 at all levels of accommodation there are provided at least two widely separated means of escape from each restricted space or group of spaces;
  - (CI) 2.1.3.56.2 below the lowest open deck the main means of escape is a stairway (the second being a trunk or a stairway);
  - (CI) 2.1.3.56.3 above the lowest open deck the means of escape are stairways or doors to an open deck or a combination of them;

- (CI) 2.1.3.56.4 the radiotelegraph station has direct access to the open deck or is provided with two means of access or egress, one of which is a porthole or window of sufficient size;
- (CI) 2.1.3.57 confirming that two widely separated means of escape and, when appropriate, a fire shelter from the lower part of the space, are provided from each machinery space of Category A and that suitable escape routes are provided from other machinery spaces (SOLAS 74/00 reg.II-2/13.4.2; FSSC ch.13 paragraph 3) (SOLAS 74/88 reg.II-2/45);
- (CI) 2.1.3.58 examining the arrangements for gaseous fuel for domestic purposes (SOLAS 74/00 reg.II-2/4.3);
- (CI) 2.1.3.59 confirming, when appropriate, that all aspects of the helicopter facilities are installed in accordance with the approved plans (SOLAS 74/00 reg.II-2/18) (SOLAS 74/88 reg.II-2/18.8);
- (CI) 2.1.3.60 confirming that asbestos is not used on board unless for applications where its use is allowed (SOLAS 74/00 reg.II-1/3-5);
- (CI) 2.1.3.61 confirming, for bulk carriers, that dedicated sea water ballast tanks have an efficient corrosion protection system such as hard coating (SOLAS 74/00 reg.II-1/3-2).
- (CI) 2.1.3.62 confirming for oil tankers and bulk carriers, when appropriate, the provision of means of access to cargo and other spaces in accordance with the arrangements in the Ship Structures Access Manual (SOLAS 74/00/02 reg. II-1/3-6);
- (CI) 2.1.3.63 for bulk carriers, examining and testing the hold, ballast and dry space water level detectors and their audible and visual alarms. (SOLAS 74/02 reg. XII/12);
- (CI) 2.1.3.64 for bulk carriers, checking the arrangements for availability of draining and pumping systems forward of the collision bulkhead (SOLAS 74/02 reg. XII/13);
- (CI) 2.1.3.65 confirming that ship's identification number is permanently marked (SOLAS 74/02, reg. XI-1/3);
- (CI) 2.1.3.66 confirming that the towing and mooring equipment is properly marked with any restriction associated with its safe operation (SOLAS 74/04 reg. II-1/3-8).
- (CI) 2.1.4 For the hull, machinery and equipment of cargo ships for the additional requirements for oil tankers the survey during construction and after installation should consist of:

- (CI) 2.1.4.1 confirming, when appropriate, that the main steering gear comprises the necessary two or more identical power units and the requisite arrangements to regain steering capability in the event of the prescribed single failure (SOLAS 74/88 reg.II-1/29);
- (CI) 2.1.4.2 confirming that a hull return system of distribution and earthed distribution system are not used (SOLAS 74/88 reg.II-1/45);
- (CI) 2.1.4.3 confirming that all aspects of the location of spaces and the structural fire protection, including the special arrangements when the ship is a combination carrier, are in accordance with the approved plans (SOLAS 74/00 regs.II-2/1.6, 4.5.1, 4.5.2, 4.5.9, 9.2.4, 9.3 and 9.6.5) (SOLAS 74/88 regs.II-2/55 to 58);
- (CI) 2.1.4.4 confirming that permanent approved gastight lighting enclosures for illuminating cargo pump rooms, having adequate strength and not impairing the integrity and gas tightness of the bulkheads or decks, are fitted in bulkheads and decks separating cargo pump rooms and other spaces;
- (CI) 2.1.4.5 confirming that all aspects of the cargo tank venting, cargo tank purging and gas-freeing and other ventilation arrangements and protection of the cargo tank structure against pressure or vacuum are in accordance with the approved plans (SOLAS 74/00 regs.II-2/4.5.3, 4.5.4, 4.5.6, 4.5.8 and 11.6) (SOLAS 74/88 regs.II-2/59 and 62.13.1 to 62.13.3);
- (CI) 2.1.4.6 confirming that access to bow is arranged in accordance with approved plans (SOLAS 74/00 reg.II-1/3-3);
- (CI) 2.1.4.7 confirming, for tankers of not less than 20,000 tonnes deadweight, that emergency towing is arranged in accordance with approved plans (SOLAS 74/00 reg.II-1/3-4);
- (CI) 2.1.4.8 confirming that dedicated sea water ballast have an efficient corrosion protection system such as hard coating (SOLAS 74/00 reg.II-1/3-2).
- (CI) 2.1.5 For the hull, machinery and equipment of cargo ships for the additional requirements for chemical tankers and gas carriers the survey during construction and after installation should consist of:
  - (CI) 2.1.5.1 the provisions of (CI) 2.1.4.
- (CI) 2.1.6 For the hull, machinery and equipment of cargo ships the check that the required documentation has been placed on board should consist of:
  - (CI) 2.1.6.1 confirming that the stability information and the damage control plans have been provided (SOLAS 74/88 regs.II-1/22 and 23-1);



- (CI) 2.1.6.2 confirming that the manoeuvring booklet has been provided and that the manoeuvring information has been displayed on the navigating bridge (SOLAS 74/88 reg.II-1/28);
- (CI) 2.1.6.3 confirming that the approved Cargo Securing Manual for ships carrying cargo units including containers is provided on board (SOLAS 74/94 reg.VI/5.6);
- (CI) 2.1.6.4 confirming that the approved loading instrument on bulk carriers of 150 m in length and upwards is provided on board (SOLAS 74/97 reg.XII/11).
- (CI) 2.1.6.5 confirming, for oil tankers and bulk carriers when appropriate, that the Ship Structure Access Manual is on board (SOLAS 74/00/02 reg. II-1/3-6(4));
- (CI) 2.1.6.6 confirming that a set of as-built construction drawings is available on board (SOLAS 74/04 reg. II-1/3-7).
- (CI) 2.1.7 For the hull, machinery and equipment of cargo ships the completion of the initial survey should consist of:
  - (CI) 2.1.7.1 after a satisfactory survey, the Cargo Ship Safety Construction Certificate should be issued.
- (CA) **2.2 Annual surveys** – see part “General”, section 4.2.
- (CA) 2.2.1 For the hull, machinery and equipment of cargo ships the examination of current certificates and other records should consist of:
  - (CA) 2.2.1.1 checking the validity, as appropriate, of the Cargo Ship Safety Equipment Certificate, the Cargo Ship Safety Radio Certificate and the Cargo Ship Safety Construction Certificate or the Cargo Ship Safety Certificate;
  - (CA) 2.2.1.2 checking the validity of the Safety Management Certificate (SMC) and that a copy of the Document of Compliance (DOC) is on board;
  - (CA) 2.2.1.3 checking the validity of the International Load Line Certificate or International Load Line Exemption Certificate;
  - (CA) 2.2.1.4 checking the validity of the International Oil Pollution Prevention Certificate;
  - (CA) 2.2.1.5 checking the certificates of class, if the ship is classed with a classification society;
  - (CA) 2.2.1.6 checking, when appropriate, the validity of the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk or the Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk;

- (CA) 2.2.1.7 checking, when appropriate, the validity of the International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk;
- (CA) 2.2.1.8 checking, when appropriate, the validity of the International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk;
- (CA) 2.2.1.9 checking, when appropriate, the validity of the International Sewage Pollution Prevention Certificate;
- (CA) 2.2.1.10 checking, when appropriate, the validity of the International Air Pollution Prevention Certificate;
- (CA) 2.2.1.11 checking that the ship's complement complies with the Minimum Safe Manning Document (SOLAS 74/00 reg.V/14) (SOLAS 74/88 reg.V/13(b));
- (CA) 2.2.1.12 checking that the master, officers and ratings are certificated as required by the STCW Convention;
- (CA) 2.2.1.13 checking whether any new equipment has been fitted and, if so, confirm that it has been approved before installation and that any changes are reflected in the appropriate certificate;
- (CA) 2.2.1.14 confirming that the stability information, including damage stability, where applicable, and the damage control plans are on board (SOLAS 74/88/00 regs.II-1/22, 23 and 25);
- (CA) 2.2.1.15 confirming that the manoeuvring booklet is on board and that the manoeuvring information is displayed on the navigating bridge (SOLAS 74/88 reg.II-1/28);
- (CA) 2.2.1.16 checking by the log-book entries that the testing and the emergency drills of the steering gear have been carried out (SOLAS 74/00 reg.V/26) (SOLAS 74/88 reg.V/19);
- (CA) 2.2.1.17 checking that the routine surveys of the boilers and other pressure vessels, as determined by the Administration, have been carried out as required and that safety devices, such as the boiler safety valves, have been tested;
- (CA) 2.2.1.18 checking that, as appropriate, the hull and machinery has been presented for survey in accordance with the continuous survey scheme approved by the Administration or a classification society;
- (CA) 2.2.1.19 confirming, when appropriate, that a complete file of the enhanced survey reports and the Condition Evaluation Report are on board\*;

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\* See the Guidelines on the Enhanced Programme of Inspections During Surveys of Bulk Carriers and Oil Tankers (resolution A.744(18)).

- (CA) 2.2.1.20 confirming, for bulk carriers, that the loading/unloading booklet required in SOLAS regulation VI/7 is on board (SOLAS 74/97 reg.XII/8.1);
- (CA) 2.2.1.21 confirming, for bulk carriers with restrictions imposed with respect to the carriage of cargoes with a density of 1,780 kg/m<sup>3</sup> above, that a triangle is permanently marked at midship (SOLAS 74/97 reg.XII/8.3);
- (CA) 2.2.1.22 confirming, for bulk carriers, that the loading instrument is on board and functioning (SOLAS 74/97 reg.XII/11);
- (CA) 2.2.1.23 confirming, for bulk carriers of 150 m in length and upwards of single skin construction designed to carry solid bulk cargoes having a density of 1,780 kg/m<sup>3</sup> above constructed before 1 July 1999 have after the implementation date given in SOLAS 94/97 reg.XII/3 sufficient stability and strength to withstand flooding of the foremost cargo hold (SOLAS 74/97 reg.XII/3, 4, 5 and 6);
- (CA) 2.2.1.24 confirming approved Cargo Securing Manual for ships carrying cargo units including containers is on board (SOLAS 74/94 reg.VI/5.6);
- (CA) 2.2.1.25 confirming that the loading booklet for carriage of cargoes in bulk is on board (SOLAS 74/00 reg.VI/7);
- (CA) 2.2.1.26 confirming, for oil tankers and bulk carriers when appropriate, that the Ship Structure Access Manual is on board (SOLAS 74/00/02, reg II-1/3-6(4));
- (CA) 2.2.1.27 confirming that structural alterations performed, if any, has been approved by the classification society and reported on the as-built drawings kept on board (SOLAS 74/04 reg. II-1/3-7).
- (CA) 2.2.2 For the hull\*, machinery and equipment of cargo ships the annual survey should consist of:
- (CA) 2.2.2.1 examining, in general and as far as can be seen, the hull and its closing appliances;
- (CA) 2.2.2.2 examining the anchoring and mooring equipment as far as can be seen. For ships built after 01/01/2007, confirming that the towing and mooring equipment is properly marked with any restriction associated with its safe operation (SOLAS 74/04 reg. II-1/3-8);
- (CA) 2.2.2.3 examining the collision and the other watertight bulkheads as far as can be seen (SOLAS 74/88 regs.II-1/11 and 14);

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\* See also the Guidelines on the Enhanced Programme of Inspections During Surveys of Bulk Carriers (resolution A.744(18), annex A).

- (CA) 2.2.2.4 examining and testing (locally and remotely) all the watertight doors in watertight bulkheads (SOLAS 74/88 reg.II-1/18);
- (CA) 2.2.2.5 examining each bilge pump and confirming that the bilge pumping system for each watertight compartment is satisfactory (SOLAS 74/88 reg.II-1/21);
- (CA) 2.2.2.6 confirming that the drainage from enclosed cargo spaces situated on the freeboard deck is satisfactory (SOLAS 74/88 reg.II-1/21);
- (CA) 2.2.2.7 confirming that the machinery, boilers and other pressure vessels, associated piping systems and fittings are installed and protected as to reduce to a minimum any danger to persons on board, due regard being given to moving parts, hot surfaces and other hazards (SOLAS 74/00 reg.II-2/4.2 (except 4.2.2.3.4 relating to remote closing of valves included in safety equipment)) (SOLAS 74/88 regs.II-1/26, 32, 33 and 34) (SOLAS 74/88 reg.II-2/15 (except 15.2.5));
- (CA) 2.2.2.8 confirming that the normal operation of the propulsion machinery can be sustained or restored even though one of the essential auxiliaries becomes inoperative (SOLAS 74/88 reg.II-1/26);
- (CA) 2.2.2.9 confirming that means are provided so that the machinery can be brought into operation from the dead ship condition without external aid (SOLAS 74/88 reg.II-1/26);
- (CA) 2.2.2.10 carrying out a general examination of the machinery, the boilers, all steam, hydraulic, pneumatic and other systems and their associated fittings to see whether they are being properly maintained and with particular attention to the fire and explosion hazards (SOLAS 74/88 regs.II-1/26 and 27);
- (CA) 2.2.2.11 examining and testing the operation of main and auxiliary steering arrangements, including their associated equipment and control systems (SOLAS 74/88 reg.II-1/29);
- (CA) 2.2.2.12 confirming that the means of communication between the navigation bridge and steering gear compartment and the means of indicating the angular position of the rudder are operating satisfactorily (SOLAS 74/88 reg.II-1/29);
- (CA) 2.2.2.13 confirming that with ships having emergency steering positions there are means of relaying heading information and, when appropriate, supply visual compass readings to the emergency steering position (SOLAS 74/88 regs.II-1/29 and SOLAS 74/00 reg.V/19 or the SOLAS 74/88 text in force prior to 1 July 2002 reg.V/12 as appropriate);
- (CA) 2.2.2.14 confirming that the various alarms required for hydraulic power-operated, electric and electro-hydraulic steering gears are operating satisfactorily and that the re-charging arrangements for hydraulic power-operated steering gears are being maintained (SOLAS 74/88 regs.II-1/29 and 30);

- (CA) 2.2.2.15 examining the means for the operation of the main and auxiliary machinery essential for the propulsion and the safety of the ship, including, when applicable, the means of remotely controlling the propulsion machinery from the navigating bridge (including the control, monitoring, reporting, alert and safety actions) and the arrangements to operate the main and other machinery from a machinery control room (SOLAS 74/88/00/02 reg. II-1/31);
- (CA) 2.2.2.16 confirming the operation of the ventilation for the machinery spaces (SOLAS 74/88 reg.II-1/35);
- (CA) 2.2.2.17 confirming that the measures to prevent noise in machinery spaces are effective (SOLAS 74/88 reg.II-1/36);
- (CA) 2.2.2.18 confirming that the engine room telegraph, the second means of communication between the navigation bridge and the machinery space and the means of communication with any other positions from which the engines are controlled are operating satisfactorily (SOLAS 74/88 reg.II-1/37);
- (CA) 2.2.2.19 confirming that the engineer's alarm is clearly audible in the engineers' accommodation (SOLAS 74/88 reg.II-1/38);
- (CA) 2.2.2.20 examining, as far as practicable, visually and in operation, the electrical installations, including the main source of power and the lighting systems (SOLAS 74/88 regs.II-1/40 and 41);
- (CA) 2.2.2.21 confirming, as far as practicable, the operation of the emergency source(s) of electrical power including their starting arrangements, the systems supplied and, when appropriate, their automatic operation (SOLAS 74/88 regs.II-1/43 and 44);
- (CA) 2.2.2.22 examining, in general, that the precautions provided against shock, fire and other hazards of electrical origin are being maintained (SOLAS 74/88 reg.II-1/45);
- (CA) 2.2.2.23 examining the arrangements for periodically unattended machinery spaces (SOLAS 74/88 regs.II-1/46 to 53) and, in particular, the random testing of alarm, automatic and shutdown functions;
- (CA) 2.2.2.24 confirming, as far as practicable, that no changes have been made in the structural fire protection, examining any manual and automatic fire doors and proving their operation, testing the means of closing the main inlets and outlets of all ventilation systems and testing the means of stopping power ventilation systems from outside the space served (SOLAS 74/00 regs.II-2/4.4, 5.2, 5.3.2, 5.3.2, 6.2, 6.3, 7.5.5, 7.7, 8.2, 8.3, 8.4, 9.2.1, 9.2.3, 9.3, 9.4.2, 9.5, 9.7.1, 9.7.2, 9.7.3, 9.7.5.2, 11.2, 11.3, 11.4, 11.5, 19.3.8, 19.3.10, 20.2.1 and 20.3) (SOLAS 74/88 regs.II-2/42 to 44, 46 to 50 and 52);

- (CA) 2.2.2.25 confirming that the means of escape from accommodation, machinery and other spaces are satisfactory ( SOLAS 74/00 reg. II-2/13.2, 13.3.1, 13.3.3, 13.4.2 and 13.6) (SOLAS 74/88 reg.II-2/45);
- (CA) 2.2.2.26 examining the arrangements for gaseous fuel for domestic purposes (SOLAS 74/00 reg.II-2/4.3) (SOLAS 74/88 reg.II-2/51);
- (CA) 2.2.2.27 examining visually the condition of any expansion joints in seawater systems;
- (CA) 2.2.2.28 confirming, when appropriate and as far as is practicable when examining internal spaces on oil tankers and bulk carriers, that the means of access to cargo and other spaces remains in good condition. (SOLAS 74/00/02 reg. II-1/3-6);
- (CA) 2.2.2.29 confirming that new equipment containing asbestos was not fitted on board since last survey (SOLAS 74/00 reg.II-1/3-5);
- (CA) 2.2.2.30 examining the functionality of bilge well alarms to all cargo holds and conveyor tunnels (SOLAS 74/97 reg.XII/9);
- (CA) 2.2.2.31 for bulk carriers, examining the hold, ballast and dry space water level detectors and their audible and visual alarms. (SOLAS 74/02 reg. XII/12);
- (CA) 2.2.2.32 for bulk carriers, checking the arrangements for availability of draining and pumping systems forward of the collision bulkhead (SOLAS 74/02 reg. XII/13);
- (CA) 2.2.2.33 confirming that ship's identification number is permanently marked (SOLAS74/02, reg. XI-1/3);
- (CA) 2.2.2.34 for single hull, single hold cargo ships, examining the cargo hold water level detector and its audible and visual alarm (SOLAS 74/04 reg. II-1/23-3).
- (CA) 2.2.3 For the hull<sup>\*</sup>, machinery and equipment of cargo ships for the additional requirements for oil tankers the annual survey should consist of:
- (CA) 2.2.3.1 confirming, when appropriate, that the requisite arrangements to regain steering capability in the event of the prescribed single failure are being maintained (SOLAS 74/88 reg.II-1/29);
- (CA) 2.2.3.2 examining the cargo tank openings, including gaskets, covers, coamings and screens;

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\* See also the Guidelines on the Enhanced Programme of Inspections During Surveys of Oil Tankers (resolution A.744(18), annex B).

- (CA) 2.2.3.3 examining the cargo tank pressure/vacuum valves and devices to prevent the passage of flame (SOLAS 74/00 reg. II-2/11.6);
- (CA) 2.2.3.4 examining the devices to prevent the passage of flame on vents to all bunker, oily-ballast and oily-slop tanks and void spaces, as far as practicable;
- (CA) 2.2.3.5 examining the cargo tank venting, cargo tank purging and gas-freeing and other ventilation systems (SOLAS 74/00 reg. II-2/4.5.3, 4.5.4, 4.5.6 and 4.5.8) (SOLAS 74/88 reg.II-2/59);
- (CA) 2.2.3.6 examining the cargo, crude oil washing, ballast and stripping systems both on deck and in the cargo pump rooms and the bunker system on deck;
- (CA) 2.2.3.7 confirming that all electrical equipment in dangerous zones is suitable for such locations, is in good condition and is being properly maintained;
- (CA) 2.2.3.8 confirming that potential sources of ignition in or near the cargo pump room are eliminated, such as loose gear, combustible materials, etc., that there are no signs of undue leakage and that access ladders are in good condition;
- (CA) 2.2.3.9 examining all pump room bulkheads for signs of oil leakage or fractures and, in particular, the sealing arrangements of all penetrations of cargo pump room bulkheads;
- (CA) 2.2.3.10 examining, as far as practicable, the cargo, bilge, ballast and stripping pumps for undue gland seal leakage, verification of proper operation of electrical and mechanical remote operating and shutdown devices and operation of cargo pump room bilge system, and checking that pump foundations are intact;
- (CA) 2.2.3.11 confirming that the pump room ventilation system is operational, ducting intact, dampers are operational and screens clean;
- (CA) 2.2.3.12 verifying that installed pressure gauges on cargo discharge lines and level indicator systems are operational;
- (CA) 2.2.3.13 examining access to bow arrangement (SOLAS 74/00 reg.II-1/3-3);
- (CA) 2.2.3.14 examining the towing arrangement for tankers of not less than 20,000 tonnes deadweight (SOLAS 74/00 reg.II-1/3-4);
- (CA) 2.2.3.15 confirming that the corrosion prevention system fitted to dedicated ballast water tanks of oil tankers and bulk carriers is maintained (SOLAS 74/00 reg.II-1/3-2);
- (CA) 2.2.3.16 examining the emergency lighting in all cargo pump rooms of tankers constructed after 1 July 2002 (SOLAS 74/00 reg.II-1/43).

- (CA) 2.2.4 For the hull, machinery and equipment of cargo ships for the additional requirements for chemical tankers and gas carriers the annual survey should consist of:
- (CA) 2.2.4.1 the provisions of (CA) 2.2.3.1.
- (CA) 2.2.5 For the hull, machinery and equipment of cargo ships the completion of the annual survey should consist of:
- (CA) 2.2.5.1 after a satisfactory survey, the Cargo Ship Safety Construction Certificate should be endorsed;
- (CA) 2.2.5.2 if a survey shows that the condition of a ship or its equipment is unsatisfactory, see part “General”, section 4.8.
- (CIn) **2.3 Intermediate surveys** – see part “General”, section 4.3
- (CIn) 2.3.1 For the hull, machinery and equipment of cargo ships the examination of current certificates and other records should consist of:
- (CIn) 2.3.1.1 the provisions of (CA) 2.2.1.
- (CIn) 2.3.2 For the hull, machinery and equipment of cargo ships the intermediate survey should consist of:
- (CIn) 2.3.2.1 the provisions of (CA) 2.2.2;
- (CIn) 2.3.2.2 for ships over 5 years of age, an internal examination of representative spaces used for water ballast;
- (CIn) 2.3.2.3 for ships over 10 years of age, other than ships engaged in the carriage of dry cargoes only, an internal examination of selected cargo spaces;
- (CIn) 2.3.2.4 for ships over 15 years of age, engaged in the carriage of dry cargoes only, an internal examination of selected cargo spaces.
- (CIn) 2.3.3 For the hull, machinery and equipment of cargo ships for the additional requirements for oil tankers the intermediate survey should consist of:
- (CIn) 2.3.3.1 the provisions of (CA) 2.2.3;
- (CIn) 2.3.3.2 should there be any doubt as to its condition when examining the various piping systems, the piping may be required to be pressure tested, gauged or both. Particular attention is to be paid to repairs such as welded doublers;
- (CIn) 2.3.3.3 for ships over ten years of age an internal examination of selected cargo spaces;



- (CIn) 2.3.3.4 testing the insulation resistance of electrical circuits in dangerous zones such as cargo pump rooms and areas adjacent to cargo tanks but in cases where a proper record of testing is maintained consideration should be given to accepting recent readings.
- (CIn) 2.3.4 For the hull, machinery and equipment of cargo ships for the additional requirements for chemical tankers and gas carriers the intermediate survey should consist of:
- (CIn) 2.3.4.1 the provisions of (CA) 2.2.3.1.
- (CIn) 2.3.5 For the hull, machinery and equipment of cargo ships the completion of the intermediate survey should consist of:
- (CIn) 2.3.5.1 after a satisfactory survey, the Cargo Ship Safety Construction Certificate should be endorsed;
- (CIn) 2.3.5.2 if a survey shows that the condition of a ship or its equipment is unsatisfactory, see part “General”, section 4.8.
- (CR) **2.4** **Renewal surveys** – see part “General”, section 4.5
- (CR) 2.4.1 For the hull, machinery and equipment of cargo ships the examination of current certificates and other records should consist of:
- (CR) 2.4.1.1 the provisions of (CA) 2.2.1, except for the validity of the Cargo Ship Safety Construction Certificate.
- (CR) 2.4.2 For the hull, machinery and equipment of cargo ships the renewal survey should consist of:
- (CR) 2.4.2.1 the provisions of (CIn) 2.3.2;
- (CR) 2.4.2.2 examination of sea valves and their connections to the hull;
- (CR) 2.4.2.3 examination of anchoring and mooring equipment for which purpose the anchors should be lowered and raised using the windlass.
- (CR) 2.4.3 For the hull, machinery and equipment of cargo ships for the additional requirements for oil tankers the renewal survey should consist of:
- (CR) 2.4.3.1 the provisions of (CIn) 2.3.3.
- (CR) 2.4.4 For the hull, machinery and equipment of cargo ships for the additional requirements for chemical tankers and gas carriers the renewal survey should consist of:
- (CR) 2.4.4.1 the provisions of (CA) 2.2.3.1.

- (CR) 2.4.5 For the hull, machinery and equipment of cargo ships for the additional requirements for bulk carriers, the renewal survey should consist of the provisions of (CI) 2.1.3.63.
- (CR) 2.4.5.1 after a satisfactory survey, the Cargo Ship Safety Construction Certificate should be issued.
- (B) 3 GUIDELINES FOR THE INSPECTION OF THE OUTSIDE OF THE SHIP'S BOTTOM OF CARGO SHIPS**
- (CB) 3.1 For the inspection of the outside of the ship's bottom of cargo ships the inspection should consist of:
- (CB) 3.1.1 examination of the ship's shell including bottom and bow plating, keel, bilge keels, stem, stern frame and rudder;
- (CB) 3.1.2 noting the clearances measured in the rudder bearings;
- (CB) 3.1.3 examination of the propeller and shaft seals, as far as practicable;
- (CB) 3.1.4 noting the clearance measured in the propeller shafts, as far as practicable;
- (CB) 3.1.5 examination of sea chests and strainers;
- (CB) 3.1.6 the survey of related items inspected at the same time (see part "General" section 5.1).
- (CB) 3.2 For the inspection of the outside of the ship's bottom of cargo ships the completion of the inspection should consist of:
- (CB) 3.2.1 after a satisfactory survey, the Cargo Ship Safety Construction Certificate should be endorsed;
- (CB) 3.2.2 if a survey shows that the condition of a ship or its equipment is unsatisfactory, see part "General" section 4.8.
- (R) 4 GUIDELINES FOR SURVEYS FOR THE CARGO SHIP SAFETY RADIO CERTIFICATE**
- (RI) 4.1 Initial surveys – see part "General" section 4.1**
- (RI) 4.1.1 For the radio installations, including those used in life-saving appliances, of cargo ships the examination of plans and design should consist of:
- (RI) 4.1.1.1 establishing the sea areas declared for operation, the equipment installed to fulfil the functional requirements for the sea areas of operation, the methods adopted to ensure the availability of the functional requirements and the arrangements for supply of an emergency source of energy (if any) (SOLAS 74/88 reg. II-1/43 and IV/1 to 15);

- (RI) 4.1.1.2 establishing which radio equipment is to be surveyed and, if duplication of equipment is used as a means of ensuring the availability of the functional requirements, establishing which is the “basic equipment” and which the “duplicated equipment” (SOLAS 74/88 reg.IV/15) (Additional radiocommunications equipment provided other than for SOLAS compliance should be noted);
- (RI) 4.1.1.3 confirming all SOLAS equipment complies with appropriate performance standards not inferior to those adopted by IMO (SOLAS 74/88 reg.IV/14);
- (RI) 4.1.1.4 examining the plans for the provision and position of the radio installation, including sources of energy and antennas (SOLAS 74/88 regs. II-1/43, IV/6, IV/14 and V/19);
- (RI) 4.1.1.5 examining the plans for the provision and positioning of the radio life-saving appliances (SOLAS 74/88 reg.III/6).
- (RI) 4.1.2 For the radio installations, including radio life-saving appliances, of cargo ships the survey during construction and after installation should consist of:
  - (RI) 4.1.2.1 examining the position, physical and electromagnetic protection and illumination of each radio installation (SOLAS 74/88 reg.IV/6);
  - (RI) 4.1.2.2 confirming the provision of equipment for the radio installation with due regard to the declared sea areas in which the ship will trade and the declared means of maintaining availability of functional requirements (SOLAS 74/88 regs.III/6, IV/7 to 11, 14 and 15);
  - (RI) 4.1.2.3 confirming the ability to initiate the transmission of ship-to-shore distress alerts by at least two separate and independent means, each using a different radiocommunication service, from the position from which the ship is normally navigated (SOLAS 74/88 regs.IV/4, 7 to 11);
  - (RI) 4.1.2.4 examining all antennas, including:
    - (RI) 4.1.2.4.1 visually checking all antennas, including INMARSAT antennas, and feeders for satisfactory siting and absence of defects (SOLAS 74/88 reg.IV/14);
    - (RI) 4.1.2.4.2 checking insulation and safety of all antennas;
  - (RI) 4.1.2.5 examining the reserve source of energy, including:
    - (RI) 4.1.2.5.1 checking there is sufficient capacity to operate the basic or duplicated equipment for 1 hour or 6 hours, as appropriate (SOLAS 74/88 reg.IV/13);
    - (RI) 4.1.2.5.2 and if the reserve source of energy is a battery:

- (RI) 4.1.2.5.2.1 checking its siting and installation (SOLAS 74/88 reg.IV/13);
- (RI) 4.1.2.5.2.2 where appropriate, checking its condition by specific gravity measurement or voltage measurement;
- (RI) 4.1.2.5.2.3 with the battery off charge, and the maximum required radio installation load connected to the reserve source of energy, checking the battery voltage and discharge current;
- (RI) 4.1.2.5.2.4 checking that the charger(s) are capable of re-charging the reserve battery within 10 hours (SOLAS 74/88 reg.IV/13);
- (RI) 4.1.2.5.2.5 checking that information of ship's position is provided continuously and automatically to all two-way communication equipment (SOLAS 74/88 reg.IV/18);
- (RI) 4.1.2.6 examining the VHF transceiver(s), including:
  - (RI) 4.1.2.6.1 checking for operation on channels 6, 13 and 16 (SOLAS 74/88 regs.IV/7 and 14);
  - (RI) 4.1.2.6.2 checking frequency tolerance, transmission line quality and radio frequency power output (SOLAS 74/88 reg.IV/14);
  - (RI) 4.1.2.6.3 checking for correct operation of all controls including priority of control units (SOLAS 74/88 reg.IV/14);
  - (RI) 4.1.2.6.4 checking that the equipment operates from the main, emergency (if provided) and reserve sources of energy (SOLAS 74/88 reg.IV/13);
  - (RI) 4.1.2.6.5 checking the operation of the VHF control unit(s) or portable VHF equipment provided for navigational safety (SOLAS 74/88 reg.IV/6);
  - (RI) 4.1.2.6.6 checking for correct operation by on-air contact with a coast station or other ship;
- (RI) 4.1.2.7 examining the VHF DSC controller and channel 70 DSC watch receiver, including:
  - (RI) 4.1.2.7.1 performing an off-air check confirming the correct Maritime Mobile Service Identity is programmed in the equipment (SOLAS 74/88 reg.IV/14);
  - (RI) 4.1.2.7.2 checking for correct transmission by means of a routine or test call to a coast station, other ship, on board duplicate equipment or special test equipment;
  - (RI) 4.1.2.7.3 checking for correct reception by means of a routine or test call from a coast station, other ship, on board duplicate equipment or special test equipment;

- (RI) 4.1.2.7.4 checking the audibility of the VHF/DSC alarm;
- (RI) 4.1.2.7.5 checking that the equipment operates from the main, emergency (if provided) and reserve sources of energy (SOLAS 74/88 reg.IV/13);
- (RI) 4.1.2.8 examining the MF/HF radiotelephone equipment, including:
  - (RI) 4.1.2.8.1 checking that the equipment operates from the main, emergency (if provided) and reserve sources of energy (SOLAS 74/88 reg.IV/13);
  - (RI) 4.1.2.8.2 checking the antenna tuning in all appropriate bands;
  - (RI) 4.1.2.8.3 checking the equipment is within frequency tolerance on all appropriate bands (SOLAS 74/88 reg.IV/14);
  - (RI) 4.1.2.8.4 checking for correct operation by contact with a coast station and/or measuring transmission line quality and radio frequency output;
  - (RI) 4.1.2.8.5 checking receiver performance by monitoring known stations on all appropriate bands;
  - (RI) 4.1.2.8.6 if control units are provided outside the navigating bridge, checking the control unit on the bridge has first priority for the purpose of initiating distress alerts (SOLAS 74/88 regs.IV/9, 10, 11 and 14);
- (RI) 4.1.2.9 examining the HF radiotelex equipment, including:
  - (RI) 4.1.2.9.1 checking that the equipment operates from the main, emergency (if provided) and reserve sources of energy (SOLAS 74/88 reg.IV/13);
  - (RI) 4.1.2.9.2 confirming that the correct selective calling number is programmed in the equipment;
  - (RI) 4.1.2.9.3 checking correct operation by inspection of recent hard copy or by a test with a coast radio station (SOLAS 74/88 regs.IV/10 and 11);
- (RI) 4.1.2.10 examining the MF/HF DSC controller(s), including:
  - (RI) 4.1.2.10.1 checking that the equipment operates from the main, emergency (if provided) and reserve sources of energy (SOLAS 74/88 reg.IV/13);
  - (RI) 4.1.2.10.2 confirming that the correct Maritime Mobile Service Identity is programmed in the equipment;
  - (RI) 4.1.2.10.3 checking the off-air self-test programme;
  - (RI) 4.1.2.10.4 checking operation by means of a test call on MF and/or HF to a coast radio station if the rules of the berth permit the use of MF/HF transmissions (SOLAS 74/88 regs.IV/9, 10 and 11);

- (RI) 4.1.2.10.5 checking the audibility of the MF/HF DSC alarm;
- (RI) 4.1.2.11 examining the MF/HF DSC watch receiver(s), including:
  - (RI) 4.1.2.11.1 confirming that only distress and safety DSC frequencies are being monitored (SOLAS 74/88 regs.IV/9 to 12);
  - (RI) 4.1.2.11.2 checking that a continuous watch is being maintained whilst keying MF/HF radio transmitters (SOLAS 74/88 reg.IV/12);
  - (RI) 4.1.2.11.3 checking for correct operation by means of a test call from a coast station or other ship;
- (RI) 4.1.2.12 examining the radiotelephone distress frequency watch receiver (SOLAS regs.IV/7 and 14), including:
  - (RI) 4.1.2.12.1 checking the mute/demute function;
  - (RI) 4.1.2.12.2 checking receiver sensitivity against known stations;
  - (RI) 4.1.2.12.3 checking the audibility of the loudspeaker;
- (RI) 4.1.2.13 examining the INMARSAT Ship Earth Station(s), including:
  - (RI) 4.1.2.13.1 checking that the equipment operates from the main, emergency (if provided) and reserve sources of energy, and that where an uninterrupted supply of information from the ship's navigational or other equipment is required ensuring such information remains available in the event of failure of the ship's main or emergency source of electrical power (SOLAS 74/88 regs.IV/13 and 14);
  - (RI) 4.1.2.13.2 checking the distress function by means of an approved test procedure where possible (SOLAS 74/88 regs. IV/10, 12 and 14);
  - (RI) 4.1.2.13.3 checking for correct operation by inspection of recent hard copy or by test call;
- (RI) 4.1.2.14 if appropriate, examining the NAVTEX equipment (SOLAS 74/88 regs. IV/7, 12 and 14), including:
  - (RI) 4.1.2.14.1 checking for correct operation by monitoring incoming messages or inspecting recent hard copy;
  - (RI) 4.1.2.14.2 running the self-test programme if provided;
- (RI) 4.1.2.15 examining the Enhanced Group Call equipment (SOLAS 74/88 regs. IV/7 and 14), including:
  - (RI) 4.1.2.15.1 checking for correct operation and area by monitoring incoming messages or by inspecting recent hard copy;

- (RI) 4.1.2.15.2 running the self-test programme if provided;
- (RI) 4.1.2.16 if appropriate, examining the radio equipment for receipt of maritime safety information by HF NBDP (SOLAS 74/88 regs.IV/7, 12 and 14), including:
  - (RI) 4.1.2.16.1 checking for correct operation by monitoring incoming messages or inspecting recent hard copy;
  - (RI) 4.1.2.16.2 running the self-test programme if provided;
- (RI) 4.1.2.17 examining the 406 MHz satellite EPIRB (SOLAS 74/88 regs.IV/7 and 14), including:
  - (RI) 4.1.2.17.1 checking position and mounting for float free operation;
  - (RI) 4.1.2.17.2 carrying out visual inspection for defects;
  - (RI) 4.1.2.17.3 carrying out the self-test routine;
  - (RI) 4.1.2.17.4 checking that the EPIRB ID is clearly marked on the outside of the equipment and, where possible, decoding the EPIRB identity number confirming it is correct;
  - (RI) 4.1.2.17.5 checking the battery expiry date;
  - (RI) 4.1.2.17.6 if provided, checking the hydrostatic release and its expiry date;
  - (RI) 4.1.2.17.7 checking the emission on operational frequencies, coding and registration on the 406 MHz signal without transmission of a distress call to the satellite;
  - (RI) 4.1.2.17.8 checking that the EPIRB has been subject to maintenance at intervals not exceeding five years at an approved shore-based maintenance facility (SOLAS 74/00 reg.IV/15.9);
  - (RI) 4.1.2.17.9 if possible, checking the emission on operational frequencies, coding and registration on the 121.5 MHz homing signal without transmission of a distress call to the satellite;
- (RI) 4.1.2.18 examining the two-way VHF radiotelephone apparatus (SOLAS 74/88 reg.III/6), including:
  - (RI) 4.1.2.18.1 checking for correct operation on Channel 16 and one other by testing with another fixed or portable VHF installation;
  - (RI) 4.1.2.18.2 checking the battery charging arrangements where re-chargeable batteries are used;

- (RI) 4.1.2.18.3 checking the expiry date of primary batteries where used;
- (RI) 4.1.2.18.4 where appropriate, checking any fixed installation provided in a survival craft;
- (RI) 4.1.2.19 examining the radar transponder(s) (SOLAS 74/88 regs.III/6, IV/7 and 14), including:
  - (RI) 4.1.2.19.1 checking the position and mounting;
  - (RI) 4.1.2.19.2 monitoring response on ship's 9 GHz radar;
  - (RI) 4.1.2.19.3 checking the battery expiry date;
- (RI) 4.1.2.20 examining the test equipment and spares carried to ensure carriage is adequate in accordance with the sea areas in which the ship trades and the declared options for maintaining availability of the functional requirements (SOLAS 74/88 reg.IV/15).
- (RI) 4.1.3 For the radio installations, including those used in life-saving appliances, the check that documentation, etc., has been placed on board should consist of:
  - (RI) 4.1.3.1 checking for a valid radio licence issued by the flag Administration (ITU RR Art.24);
  - (RI) 4.1.3.2 checking the radio operator's certificates of competence (SOLAS 74/88 reg.IV/16 and ITU RR Art.56);
  - (RI) 4.1.3.3 checking the radio record (log) (SOLAS 74/88 reg.IV/17 and ITU RR App.11);
  - (RI) 4.1.3.4 checking the carriage of up-to-date ITU publications (ITU RR App.11);
  - (RI) 4.1.3.5 checking the carriage of operating manuals for all equipment (SOLAS 74/88 reg.IV/15);
  - (RI) 4.1.3.6 checking the carriage of service manuals for all equipment when at-sea maintenance is the declared option (SOLAS 74/88 reg.IV/15).
- (RI) 4.1.4 For the radio installations, including those used in life-saving appliances, of cargo ships the completion of the initial survey should consist of:
  - (RI) 4.1.4.1 the surveyor preparing and forwarding a report of survey, indicating clearly the organization he represents, to the relevant authorities detailing results of the survey and recording omissions and deficiencies who, if satisfied, should issue a Cargo Ship Safety Radio Certificate and the associated Record of Equipment (form R).



- (RP) **4.2**            **Periodical surveys** – see part “General” section 4.4
- (RP) 4.2.1            For radio installations, including radio life-saving appliances, on cargo ships the examination of current certificates and other records should consist of:
- (RP) 4.2.1.1        checking the validity, as appropriate, of the Cargo Ship Safety Equipment Certificate, the Cargo Ship Safety Radio Certificate and the Cargo Ship Safety Construction Certificate or the Cargo Ship Safety Certificate;
- (RP) 4.2.1.2        checking the validity, where appropriate, of the Safety Management Certificate (SMC) and that a copy of the Document of Compliance (DOC) is on board;
- (RP) 4.2.1.3        checking the validity of the International Load Line Certificate or International Load Line Exemption Certificate;
- (RP) 4.2.1.4        checking the validity of the International Oil Pollution Prevention Certificate;
- (RP) 4.2.1.5        checking the certificates of class, if the ship is classed with a classification society;
- (RP) 4.2.1.6        checking, where appropriate, the validity of the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk or the Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk;
- (RP) 4.2.1.7        checking, when appropriate, the validity of the International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk;
- (RP) 4.2.1.8        checking, when appropriate, the validity of the International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk;
- (RP) 4.2.1.9        checking, when appropriate, the validity of the International Sewage Pollution Prevention Certificate;
- (RP) 4.2.1.10        checking, when appropriate, the validity of the International Air Pollution Prevention Certificate;
- (RP) 4.2.1.11        checking that the ship’s complement complies with the Minimum Safe Manning Document (SOLAS 74/88 reg.V/13(b));
- (RP) 4.2.1.12        checking that adequate information is on board to enable the equipment to be properly operated and maintained;
- (RP) 4.2.1.13        checking that the master, officers and ratings are certificated as required by the STCW Convention;

- (RP) 4.2.1.14 confirming that any new equipment has been properly approved before installation and that no changes have been made such as would affect the validity of the certificate;
- (RP) 4.2.1.15 confirming that a record has been kept in the period since the last survey to the satisfaction of the Administration and as required by the Radio Regulations (SOLAS 74/88 reg.IV/17);
- (RP) 4.2.1.16 checking documentary evidence that the actual capacity of the battery has been proved in port within the last 12 months (SOLAS 74/88 reg.IV/13);
- (RP) 4.2.1.17 confirming that the provisions of (RI) 4.1.3 have been met;
- (RP) 4.2.1.18 checking that the annual test has been carried out for the Satellite EPIRB and, if applicable, shore based maintenance has been carried out at intervals not exceeding five years (SOLAS 74/04 reg. IV/15).
- (RP) 4.2.2 For radio installations, including radio life-saving appliances, of cargo ships the periodical survey should consist of:
  - (RP) 4.2.2.1 the provisions of (RI) 4.1.2.
- (RP) 4.2.3 For radio installations, including those used in radio life-saving appliances, of cargo ships the completion of the periodical survey should consist of:
  - (RP) 4.2.3.1 after a satisfactory survey, the Cargo Ship Safety Radio Certificate should be endorsed;
  - (RP) 4.2.3.2 if a survey shows that the condition of a ship or its equipment is unsatisfactory, see part “General” section 4.8.
- (RR) **4.3** **Renewal surveys** – see part “General” section 4.5
  - (RR) 4.3.1 For the radio installations, including those used in life-saving appliances, of cargo ships the examination of current certificates and other records should consist of:
    - (RR) 4.3.1.1 the provisions of (RP) 4.2.1, except for the validity of the Cargo Ship Safety Radio Certificate.
  - (RR) 4.3.2 For the radio installations, including those used in radio life-saving appliances, on cargo ships the renewal survey should consist of:
    - (RR) 4.3.2.1 the provisions of (RI) 4.1.2.
  - (RR) 4.3.3 For the radio installations, including those used in radio life-saving appliances, on cargo ships the completion of the renewal survey should consist of:

- (RR) 4.3.3.1 after a satisfactory survey, issuing the Cargo Ship Safety Radio Certificate as per the provisions of (RI) 4.1.4.
- (P) 5 **GUIDELINES FOR SURVEYS FOR THE PASSENGER SHIP CERTIFICATE**
- (PI) 5.1 **Initial surveys** – see part “General” section 4.1.
- (PI) 5.1.1 For the hull, machinery and equipment of passenger ships the examination of plans and designs should consist of:
- (PI) 5.1.1.1 examining the subdivision and stability (SOLAS 74/88/95 regs.II-1/4 to 8, 8-1, 8-2, 8-3, 13 and 16);
- (PI) 5.1.1.2 examining the ballasting arrangements (SOLAS 74/88 reg.II-1/9);
- (PI) 5.1.1.3 examining the arrangement of the bulkheads, their construction and the openings therein, including the disposition and means of operation of the watertight doors (SOLAS 74/88 regs.II-1/10, 14, and 15);
- (PI) 5.1.1.4 examining the arrangement of the double bottoms (SOLAS 74/88 reg.II-1/12);
- (PI) 5.1.1.5 examining the arrangements for the openings in the shell plating below the margin line, the construction of the watertight doors, sidescuttles, watertight decks, trunks, etc., and the watertight integrity above the margin line (SOLAS 74/88 regs.II-1/17, 18, 19 and 20);
- (PI) 5.1.1.6 examining the plans for the bilge pumping (SOLAS 74/88 regs.II-1/21 and 39);
- (PI) 5.1.1.7 examining, when appropriate, the means of indicating the status of any bow doors and the leakage there from (SOLAS 74/88 reg.II-1/23-2);
- (PI) 5.1.1.8 examining the plans for the machinery installation (SOLAS 74/88 regs.II-1/26 to 36 and 54);
- (PI) 5.1.1.9 examining the plans for the electrical installation (SOLAS 74/88 regs.II-1/39, 40, 41, 42, 44 and 45);
- (PI) 5.1.1.10 checking, when appropriate, the provision of supplementary emergency lighting (SOLAS 74/88 reg.II-1/42-1);
- (PI) 5.1.1.11 examining the plans for the fire pumps, fire mains, hydrants, hoses and nozzles and the international shore connection (SOLAS 74/88 reg.II-1/39 and SOLAS 74/00 reg.II-2/10.2; FSSC chs.2 and 12) (SOLAS 74/88 reg.II-1/39 and regs.II-2/4 and 19);
- (PI) 5.1.1.12 checking the provision and specification of the fire extinguishers and the fireman’s outfits (SOLAS 74/88 regs.II-2/6 and 17);

- (PI) 5.1.1.13 examining the plans for the fire extinguishing and special arrangements in the machinery spaces (SOLAS 74/88 reg.II-1/39 and regs.II-2/7 and 11);
- (PI) 5.1.1.14 examining the arrangements for oil fuel, lubricating oil and other flammable oils (SOLAS 74/00 reg.II-2/4.2.3) (SOLAS 74/88 reg.II-2/15);
- (PI) 5.1.1.15 examining the plans for the structural fire protection, including the means of escape (SOLAS 74/00 regs.II-2/4.4.4, 5.2, 5.3, 7.5, 7.8.2, 8.4, 8.5, 9, 10.6, 11, 13, 17, 20; FSSC ch.13 sect56ns 1 and 2) (SOLAS 74/88 regs.II-2/23 to 36);
- (PI) 5.1.1.16 examining the plans for the protection of special category spaces and other cargo spaces (SOLAS 74/88 regs.II-2/37, 38 and 39);
- (PI) 5.1.1.17 examining the plans for the fixed fire detection and alarm system, the crew alarm and the public address system or other effective means of communication (SOLAS 74/00 reg.II-2/12) (SOLAS 74/88 reg.II-2/40);
- (PI) 5.1.1.18 examining the plans for the special arrangements for the carriage of dangerous goods, when appropriate, including water supplies, electrical equipment and wiring, fire detection, bilge pumping and personnel protection (SOLAS 74/88 regs.II-2/41 and 54);
- (PI) 5.1.1.19 examining the provision and disposition of the survival craft and rescue boats and the arrangements for mustering passengers (SOLAS 74/00 regs.III/11 to 17, 21 and 24);
- (PI) 5.1.1.20 examining the design of the survival craft, including their equipment, launching and recovery appliances and embarkation and launching arrangements (SOLAS 74/88 regs.III/20 to 24, 36, 38 to 44 and 48);
- (PI) 5.1.1.21 examining the design of the rescue boats, including their equipment and launching and recovery appliances and arrangements (SOLAS 74/88 regs.III/16, 20, 47 and 48);
- (PI) 5.1.1.22 examining the provision, specification and stowage of two-way VHF radiotelephone apparatus and radar transponders (SOLAS 74/88 reg.III/6);
- (PI) 5.1.1.23 examining the provision, specification and stowage of the distress flares and the line-throwing appliance and the provision of on board communications equipment and the general alarm system (SOLAS 74/88 regs.III/6, 17, 35, 49 and 50);
- (PI) 5.1.1.24 examining the provision, specification and stowage of the lifebuoys, including those fitted with self-igniting lights, self-activating smoke signals and buoyant lines, lifejackets, immersion suits and thermal protective aids (SOLAS 74/88 regs.III/7, 21 and 31 to 37);

- (PI) 5.1.1.25 examining the plans for the lighting of the muster and embarkation stations and the alleyways, stairways and exits giving access to the muster and embarkation stations, including the supply from the emergency source of power (SOLAS 74/88 regs.II-1/42 and III/11);
- (PI) 5.1.1.26 examining the plans for the positioning of, and the specification for, the navigation lights, shapes and sound signalling equipment (International Regulations for Preventing Collisions at Sea (COLREG) in force regs.20 to 24, 27 to 30 and 33);
- (PI) 5.1.1.27 examining the plans relating to the bridge design and arrangement of navigational systems and equipment and bridge procedures (SOLAS 74/00 reg.V/15 );
- (PI) 5.1.1.28 checking the provision and specification of the following navigation equipment as appropriate: daylight signalling lamp, magnetic compass, transmitting heading device, gyro compass, gyro compass repeaters, radar installation(s), automatic identification system, electronic plotting aid, automatic tracking aid(s) or automatic radar plotting aid(s), echo-sounding device, speed and distance indicator, rudder angle indicator, propeller rate of revolution indicator, variable pitch propeller pitch and operational mode indicator, rate-of-turn indicator, heading or track control system, GNSS receiver, terrestrial radio navigation system and sound reception system, ECDIS including back-up arrangements, a pelorus or compass bearing device and means for correcting heading and bearings (SOLAS 74/00 reg. V/19);
- (PI) 5.1.1.29 checking the provision and specification of the voyage data recorder (SOLAS 74/00 reg.V/20);
- (PI) 5.1.1.30 checking navigation bridge visibility (SOLAS 74/00 reg.V/22);
- (PI) 5.1.1.31 checking the provision and specification of the pilot ladders and hoists/pilot transfer arrangements (SOLAS 74/00 reg.V/23);
- (PI) 5.1.1.32 establishing the sea areas declared for operation, the equipment installed to fulfil the functional requirements for the sea areas of operation, the methods adopted to ensure the availability of the functional requirements and the arrangements for supply of an emergency source of energy (if any) (SOLAS 74/88 reg. II-1/42 and IV/1 to 15);
- (PI) 5.1.1.33 establishing which radio equipment is to be surveyed and, if duplication of equipment is used as a means of ensuring the availability of the functional requirements, establishing which is the “basic equipment” and which the “duplicated equipment” (SOLAS 74/88 reg.IV/15) (Additional radiocommunication equipment provided other than for SOLAS compliance should be noted);

- (PI) 5.1.1.34 confirming all SOLAS equipment complies with appropriate performance standards not inferior to those adopted by IMO (SOLAS 74/88 reg.IV/14);
- (PI) 5.1.1.35 examining the plans for the provision and positioning of the radio installation including sources of energy and antennas. (SOLAS 74/88 regs.II-1/42, IV/6 and 14);
- (PI) 5.1.1.36 examining the plans for the provision and positioning of the radio life-saving appliances (SOLAS 74/88 reg.III/6);
- (PI) 5.1.1.37 if applicable, checking that a list of all limitations on the operation of a passenger ship is kept on board and kept updated.
- (PI) 5.1.2 For the hull, machinery and equipment of passenger ships the survey during construction and after installation should consist of:
  - (PI) 5.1.2.1 examining the outside of the ship's bottom, including the bottom and bow plating, keel, bilge keels, stem, stern frame, the rudder, sea chests and strainers (SOLAS 74/88 reg.I/7(b)(i));
  - (PI) 5.1.2.2 confirming the arrangements for the subdivision, including the ship's stability in the damaged condition, and checking the subdivision load lines (SOLAS 74/88 regs.II-1/4 to 8, 13 and 16);
  - (PI) 5.1.2.3 checking the ballasting arrangements (SOLAS 74/88 reg.II-1/9);
  - (PI) 5.1.2.4 confirming the arrangement of the bulkheads, their construction and the openings therein, confirming that the collision bulkhead is watertight up to the freeboard deck, that the valves fitted on the pipes piercing the collision bulkhead are operable from above the freeboard deck and that there are no doors, manholes, ventilation ducts or any other openings, confirming that the other bulkheads, as required for the ship's subdivision, are watertight up to the bulkhead deck and confirming the construction of the watertight doors and that they have been tested (SOLAS 74/88 regs.II-1/10, 14, 15 and 18);
  - (PI) 5.1.2.5 confirming that the watertight integrity has been maintained where pipes, scuppers, etc., pass through subdivision watertight bulkheads (SOLAS 74/88 reg.II-1/15);
  - (PI) 5.1.2.6 confirming that a diagram is provided on the navigating bridge showing the location of the watertight doors together with indicators showing whether the doors are open or closed and confirming that the watertight doors and their means of operation have been installed in accordance with the approved plans (SOLAS 74/88 reg.II-1/15);
  - (PI) 5.1.2.7 testing the operation of the watertight doors both from the navigating bridge in the event of an emergency and locally at the door itself (SOLAS 74/88 reg.II-1/15) and, in particular, that:

- (PI) 5.1.2.7.1 they are operable locally from each side of the bulkhead;
- (PI) 5.1.2.7.2 provided with devices giving an indication of whether the door is open or closed at all remote operating positions;
- (PI) 5.1.2.7.3 provided with an audible alarm that is distinct from any other alarm in the area and, when appropriate, an intermittent visual signal;
- (PI) 5.1.2.7.4 control handles are provided on each side of the bulkhead so that a person may hold both handles in the open position and pass safely through the watertight door without accidentally setting the power closing mechanism into operation;
- (PI) 5.1.2.8 confirming that the watertight doors and their indicating devices are operable in the event of a failure of the main and emergency sources of power (SOLAS 74/88 reg.II-1/15);
- (PI) 5.1.2.9 checking, when appropriate, any watertight doors, that are not required to be closed remotely, fitted in watertight bulkheads dividing 'tween deck spaces and confirming that a notice is affixed concerning their closure (SOLAS 74/88 reg.II-1/15);
- (PI) 5.1.2.10 confirming that a notice is affixed to any portable plates on bulkheads in machinery spaces concerning their closure and, if appropriate, testing any power operated watertight door fitted in lieu (SOLAS 74/88 reg.II-1/15);
- (PI) 5.1.2.11 confirming the arrangements for closing sidescuttles and their deadlights, also scuppers, sanitary discharges and similar openings and other inlets and discharges in the shell plating below the margin line (SOLAS 74/88 reg.II-1/17);
- (PI) 5.1.2.12 confirming that valves for closing the main and auxiliary sea inlets and discharges in the machinery spaces are readily accessible and indicators showing the status of the valves are provided (SOLAS 74/88 reg.II-1/17);
- (PI) 5.1.2.13 confirming that gangway, cargo and coaling ports fitted below the margin line may be effectively closed and that the inboard end of any ash or rubbish chutes are fitted with an effective cover (SOLAS 74/88 reg.II-1/17);
- (PI) 5.1.2.14 confirming by a hose or flooding test the watertightness of watertight decks and trunks, tunnels and ventilators (SOLAS 74/88 reg.II-1/19);
- (PI) 5.1.2.15 confirming the arrangements to maintain the watertight integrity above the margin line (SOLAS 74/88 reg.II-1/20);
- (PI) 5.1.2.16 confirming the arrangements for the bilge pumping and that each bilge pump and the bilge pumping system provided for each watertight compartment is working efficiently (SOLAS 74/88 reg.II-1/21);

- (PI) 5.1.2.17 confirming that the drainage system of enclosed cargo spaces situated on the freeboard deck is working efficiently (SOLAS 74/88 reg.II-1/21);
- (PI) 5.1.2.18 conducting an inclining test (SOLAS 74/88 reg.II-1/22);
- (PI) 5.1.2.19 checking, when appropriate, the means of indicating the status of any bow doors and any leakage therefrom (SOLAS 74/88 reg.II-1/23-2);
- (PI) 5.1.2.20 confirming that the machinery, boilers and other pressure vessels, associated piping systems and fittings are installed and protected as to reduce to a minimum any danger to persons on board, due regard being given to moving parts, hot surfaces and other hazards (SOLAS 74/88 reg.II-1/26);
- (PI) 5.1.2.21 confirming that the normal operation of the propulsion machinery can be sustained or restored even though one of the essential auxiliaries becomes inoperative (SOLAS 74/88 reg.II-1/26);
- (PI) 5.1.2.22 confirming that means are provided so that the machinery can be brought into operation from the dead ship condition without external aid (SOLAS 74/88 reg.II-1/26);
- (PI) 5.1.2.23 confirming that the boilers, all parts of the machinery, all steam, hydraulic, pneumatic and other systems and their associated fittings which are under internal pressure have been subjected to the appropriate tests, including a pressure test (SOLAS 74/88 reg.II-1/26);
- (PI) 5.1.2.24 confirming that means is provided to ensure that the safe speed is not exceeded where there is the risk of machinery overspeeding (SOLAS 74/88 reg.II-1/27);
- (PI) 5.1.2.25 confirming that, where practicable, means are provided to protect against overpressure in the parts of main, auxiliary and other machinery that are subject to internal pressure and may be subject to dangerous overpressure (SOLAS 74/88 reg.II-1/27);
- (PI) 5.1.2.26 confirming that, when required, crankcase explosion relief devices are fitted to internal combustion engines and that they are arranged so as to minimize the possibility of injury to personnel (SOLAS 74/88 reg.II-1/27);
- (PI) 5.1.2.27 confirming that main turbine propulsion machinery and, where applicable, main internal combustion propulsion machinery and auxiliary machinery are provided with automatic shut-off arrangements in the case of failures, such as lubricating oil supply failure, which could rapidly lead to a complete breakdown, serious damage or explosion (SOLAS 74/88 reg.II-1/27);
- (PI) 5.1.2.28 confirming and recording the ability of the machinery to reverse the direction of the thrust of the propeller in sufficient time and to bring the ship to rest within a reasonable distance, including the effectiveness of any



supplementary means of manoeuvring or stopping the ship (SOLAS 74/88 reg.II- 1/28);

- (PI) 5.1.2.29 confirming that the main and auxiliary steering gear are so arranged that the failure of one of them does not render the other inoperative (SOLAS 74/88 reg.II-1/29);
- (PI) 5.1.2.30 confirming that, where appropriate, essential components of the steering gear are permanently lubricated or provided with lubrication fittings (SOLAS 74/88 reg.II-1/29);
- (PI) 5.1.2.31 confirming that relief valves are fitted to any part of a steering gear hydraulic system which can be isolated and in which pressure can be generated from the power source or from external forces and that these relief valves are set to a pressure not exceeding the design pressure (SOLAS 74/88 reg.II-1/29);
- (PI) 5.1.2.32 confirming that the main steering gear is capable of steering the ship at maximum ahead service speed and is capable of putting the rudder over from 35 degrees on one side to 35 degrees on the other side with the ship at its deepest seagoing draught and running ahead at maximum ahead service speed and, under the same conditions, from 35 degrees on either side to 30 degrees on the other side in not more than 28 seconds (SOLAS 74/88 reg.II-1/29);
- (PI) 5.1.2.33 confirming that the auxiliary steering gear is capable of steering the ship at navigable speed and of being brought speedily into action in an emergency and that it is capable of putting the rudder over from 15 degrees on one side to 15 degrees on the other side in not more than 60 seconds with the ship at its deepest seagoing draught and running ahead at one half of the maximum ahead service speed or 7 knots, whichever is the greater (SOLAS 74/88 reg.II-1/29);
- (PI) 5.1.2.34 confirming that the main or auxiliary steering gear power units restart automatically when power is restored after a power failure, that they are capable of being brought into operation from a position on the navigating bridge and that, in the event of a power failure to any one of the steering gear power units, an audible and visual alarm is given on the navigating bridge (SOLAS 74/88 reg.II-1/29);
- (PI) 5.1.2.35 confirming that, where the main steering gear comprises two or more identical power units and an auxiliary steering gear is not fitted, a defect can be isolated so that steering capability can be maintained or speedily regained after a single failure in its piping system or in one of the power units (SOLAS 74/88 reg.II-1/29);
- (PI) 5.1.2.36 confirming that the control systems for the main steering gear from both the navigating bridge and the steering gear compartment are operating satisfactorily (SOLAS 74/88 reg.II-1/29);

- (PI) 5.1.2.37 confirming that, where the main steering gear comprises two or more identical power units and an auxiliary steering gear is not fitted, the two independent control systems from the navigating bridge are operating satisfactorily (SOLAS 74/88 reg.II-1/29);
- (PI) 5.1.2.38 confirming that the control system for the auxiliary steering gear in the steering gear compartment and, if this gear is power operated, from the navigating bridge are operating satisfactorily and that the latter is independent of the control system for the main steering gear (SOLAS 74/88 reg.II-1/29);
- (PI) 5.1.2.39 confirming that the control system for any main and auxiliary steering gear control system operable from the navigating bridge is capable of being brought into operation from a position on the navigating bridge, that means are provided in the steering gear compartment for disconnecting it from the steering gear that it serves and that an audible and visual alarm is given on the navigating bridge in the event of a failure of electrical power supply (SOLAS 74/88 reg.II-1/29);
- (PI) 5.1.2.40 confirming that the electric power circuits and steering gear control system, together with their associated components, cables and pipes, are separated, as far as practicable, throughout their length (SOLAS 74/88 reg.II-1/29);
- (PI) 5.1.2.41 confirming that the means of communication between the bridge and the steering gear is operating satisfactorily and that, with ships having emergency steering positions, a telephone or other means of communication for relaying heading information and supplying visual compass readings to the emergency steering position are provided (SOLAS 74/88 regs.II-1/29 and V/12);
- (PI) 5.1.2.42 confirming that the angular position of the rudder is indicated independently of the steering control system on the navigating bridge if the main steering gear is power-operated and that this angular position is given in the steering gear compartment (SOLAS 74/88 reg.II-1/29, ch. V, reg. 5/12);
- (PI) 5.1.2.43 confirming that with a hydraulic power-operated steering gear the audible and visual low-level alarms on the navigating bridge and in the machinery space for each hydraulic fluid reservoir are operating satisfactorily and that at least one power actuating system including the reservoir can be recharged from a position within the steering gear compartment by means of a fixed storage tank to which a contents gauge is fitted with fixed piping (SOLAS 74/88 reg.II-1/29);
- (PI) 5.1.2.44 confirming that the steering gear compartment is readily accessible, that it is separated, as far as practicable, from machinery spaces and is provided with suitable arrangements to ensure working access to steering gear machinery and controls under safe conditions (SOLAS 74/88 reg.II-1/29);

- (PI) 5.1.2.45 confirming that with electric and electro-hydraulic steering gear the means for indicating on the navigating bridge and at a main machinery control position that the motors are running and that the overload alarm and alarm for the loss of a phase in a three phase supply located at the main machinery control position are operating satisfactorily (SOLAS 74/88 reg.II-1/30);
- (PI) 5.1.2.46 confirming that the main and auxiliary machinery essential for propulsion and the safety of the ship are provided with the effective means for its operation and control (SOLAS 74/88 reg.II-1/31);
- (PI) 5.1.2.47 confirming that appropriate means are provided where it is intended that the propulsion machinery should be remotely controlled from the navigating bridge, including, where necessary, the control, monitoring, reporting, alert and safety actions (SOLAS 74/00/02 reg. II-1/31);
- (PI) 5.1.2.48 confirming that arrangements to operate main and other machinery from a machinery control room are satisfactory (SOLAS 74/88 reg.II-1/31);
- (PI) 5.1.2.49 confirming that, in general, means are provided for manually overriding automatic controls and that a failure does not prevent the use of the manual override (SOLAS 74/88 reg.II-1/31);
- (PI) 5.1.2.50 confirming that oil-fired and exhaust gas boilers, unfired steam generators, steam pipe systems and air pressure systems are fitted with the appropriate safety features (SOLAS 74/88 regs.II-I/32, 33 and 34);
- (PI) 5.1.2.51 confirming the operation of the ventilation for the machinery spaces (SOLAS 74/88 reg.II-I/35);
- (PI) 5.1.2.52 confirming that the measures to prevent noise in machinery spaces are effective (SOLAS 74/88 reg.II-I/36);
- (PI) 5.1.2.53 confirming that the engine room telegraph giving visual indication of the orders and answers both in the machinery space and on the navigating bridge is operating satisfactorily (SOLAS 74/88, regulation II-1/37);
- (PI) 5.1.2.54 confirming that the second means of communication between the navigation bridge and machinery space is also operating satisfactorily and that appropriate means are provided to any other positions from which the engines are controlled (SOLAS 74/88 regulation II-1/37);
- (PI) 5.1.2.55 confirming that the engineer's alarm is clearly audible in the engineers' accommodation (SOLAS 74/88, regulation II-1/38);
- (PI) 5.1.2.56 confirming that precautions, taken to prevent any oil than may escape under pressure from any pump, filter or heater from coming into contact with heated surfaces, are efficient;
- (PI) 5.1.2.57 confirming that the means of ascertaining the amount of oil contained in any oil tank are in good working condition;

- (PI) 5.1.2.58 confirming that the devices provided to prevent overpressure in any oil tank or in any part of the oil system, including the filling pipes, are in good working condition;
- (PI) 5.1.2.59 confirming that forepeak tanks are not intended for carriage of oil fuel, lubrication oil and other flammable oils;
- (PI) 5.1.2.60 confirming that the electrical installations, including the main source of power and lighting systems, are installed in accordance with the approved plans (SOLAS 74/88 regs.II-1/40 and 41);
- (PI) 5.1.2.61 confirming that a self-contained emergency source of electrical power has been provided and that the appropriate systems are satisfactorily supplied (SOLAS 74/88 reg.II-1/42);
- (PI) 5.1.2.62 confirming that starting arrangements of each emergency generating set is satisfactory (SOLAS 74/88 reg.II-1/44);
- (PI) 5.1.2.63 checking, when appropriate, the disposition of and testing the supplementary emergency lighting (SOLAS 74/88 reg.II-1/42-1);
- (PI) 5.1.2.64 confirming that precautions have been provided against shock, fire and other hazards of electrical origin (SOLAS 74/88 reg.II-1/45);
- (PI) 5.1.2.65 confirming, when appropriate, that the arrangements for the machinery spaces being periodically unattended are satisfactory (SOLAS 74/88 reg.II-1/54);
- (PI) 5.1.2.66 examining the fire pumps and fire main and the disposition of the hydrants, hoses and nozzles and the international shore connection and checking that each fire pump, including the emergency fire pump, can be operated separately so that two jets of water are produced simultaneously from different hydrants at any part of the ship whilst the required pressure is maintained in the fire main (SOLAS 74/88 regs.II-2/4 and 19);
- (PI) 5.1.2.67 examining the provision and disposition of the fire extinguishers and the fireman's outfits (SOLAS 74/88 regs.II-2/6 and 17);
- (PI) 5.1.2.68 checking the operational readiness and maintenance of fire-fighting systems (SOLAS 74/00 reg.II-2/14) (SOLAS 74/88 regs.II-2/6 and 17);
- (PI) 5.1.2.69 examining the fixed fire fighting system for the machinery and cargo spaces, as appropriate, and confirming that the installation tests have been satisfactorily completed and that its means of operation are clearly marked (SOLAS 74/88 regs.II-2/7 and 53);
- (PI) 5.1.2.70 examining the fire extinguishing and special arrangements in the machinery spaces and confirming, as far as practicable and as appropriate, the operation of the remote means of control provided for the opening and closing of the skylights, the release of smoke, the closure of the funnel and

ventilation openings, the closure of power operated and other doors, the stopping of ventilation and boiler forced and induced draft fans and the stopping of oil fuel and other pumps that discharge flammable liquids (SOLAS 74/88 regs.II-2/7 and 11);

- (PI) 5.1.2.71 examining the arrangements for oil fuel, lubricating oil and other flammable oils and confirming, as far as practicable and as appropriate, the operation of the remote means of closing the valves on the tanks that contain oil fuel, lubricating oil and other flammable oils (SOLAS 74/88 reg.II-2/15);
- (PI) 5.1.2.72 examining any fire detection and alarm system and confirming that installation tests have been satisfactorily completed; (SOLAS 74/88 regs.II-2/11, 12, 13, 14, 36 and 41);
- (PI) 5.1.2.73 confirming that all aspects of the installation of the structural fire protection, including the structure, fire integrity, protection of stairways and lifts, openings in 'A' and 'B' Class divisions, ventilation systems and windows and sidescuttles, and the use of combustible material are in accordance with the approved plans (SOLAS 74/00 regs.II-2/4.4.4, 5.2, 5.3, 7.5, 7.8.2, 8.4, 8.5, 9, 10.6, 11, 13, 17, 20 and FSSC ch.13 sections 1 and 2) (SOLAS 74/88 regs.II-2/23 to 35);
- (PI) 5.1.2.74 testing any manual and automatic fire doors, including the means of closing the openings in 'A' and 'B' Class divisions (SOLAS 74/88 regs.II-2/30 and 31);
- (PI) 5.1.2.75 testing the means of closing the main inlets and outlets of all ventilation smoke extraction systems and proving that the power ventilation is capable of being stopped from outside the space served (SOLAS 74/88 reg.II-2/32);
- (PI) 5.1.2.76 confirming that stairways and ladders are so arranged to provide a means of escape to the lifeboat and liferaft and liferaft embarkation deck from all passenger and crew spaces and from those spaces in which the crew is normally employed (SOLAS 74/00 reg. II- 2/13.7) and in particular that:
  - (PI) 5.1.2.76.1 below the bulkhead deck there are two means of escape from each watertight compartment, one being independent of watertight doors;
  - (PI) 5.1.2.76.2 above the bulkhead deck two means of escape from each vertical zone or similar such area, one leading directly to a stairway forming a vertical escape;
  - (PI) 5.1.2.76.3 the radiotelegraph station, if provided, has direct access to the open deck or is provided with two means of access or egress, one of which is a porthole or window of sufficient size;
- (PI) 5.1.2.77 confirming that the means of escape from any special category spaces are generally in accordance with (PI) 5.1.2.76 (SOLAS 74/88 reg.II-2/28);

- (PI) 5.1.2.78 confirming that in the machinery spaces there are two widely separated means of escape leading to the lifeboat and liferaft embarkation decks, including, when from a space below the bulkhead deck, a continuous fire shelter (SOLAS 74/88 reg.II-2/28);
- (PI) 5.1.2.79 confirming the fire protection arrangements for special category spaces and other cargo spaces and testing, as appropriate, the operation of the means for closing the various openings (SOLAS 74/88 regs.II-2/37, 38 and 39);
- (PI) 5.1.2.80 confirming and testing, as appropriate, the fixed fire detection and alarm system, the special alarm and the public address system or other effective means of communication (SOLAS 74/88 reg.II-2/40);
- (PI) 5.1.2.81 examining, when appropriate, the special arrangements for carrying dangerous goods, including checking the electrical equipment and wiring and boundary insulation, the provision of protective clothing and portable appliances and the testing of the water supply, bilge pumping and any water spray system (SOLAS 74/88 regs.II-2/41 and 54);
- (PI) 5.1.2.82 checking the provision and disposition of the survival craft and rescue boats and the arrangements for mustering passengers (SOLAS 74/88 regs.III/11 to 16, 20 and 24);
- (PI) 5.1.2.83 examining each survival craft, including its equipment and that the required number of radar transponders are fitted in liferafts and those liferafts are clearly marked (SOLAS 74/88/00/02 reg. III/20, 21, 26, 33, 34, 36 and 38 to 44);
- (PI) 5.1.2.84 examining the embarkation arrangements for each survival craft and the testing of each launching appliance, including overload tests, tests to establish the lowering speed and the lowering of each survival craft to the water with the ship at its lightest sea-going draught, checking the recovery of each lifeboat (SOLAS 74/88 regs.III/11, 12, 13, 15, 20 and 48);
- (PI) 5.1.2.85 deployment of 50% of the MES after installation (LSAC section 5.1 and MSC/Circ.809);
- (PI) 5.1.2.86 examining each rescue boat, including its equipment (SOLAS 74/00 regs.III/21 and 26.3; LSAC section 5.1 and MSC/Circ.809);
- (PI) 5.1.2.87 examining the embarkation and recovery arrangements for each rescue boat and testing each launching and recovery appliances, including overload tests, tests to establish the lowering and recovery speeds and ensuring that each rescue boat can be lowered to the water and recovered with the ship at its lightest sea-going draught (SOLAS 74/88 regs.III/14, 16, 20 and 48);
- (PI) 5.1.2.88 examining the arrangements for mustering passengers (SOLAS 74/88 reg.III/24);

- (PI) 5.1.2.89 testing that the engine of the rescue boat(s) and of each lifeboat, when so fitted, start satisfactorily and operate both ahead and astern;
- (PI) 5.1.2.90 confirming that there are posters or signs in the vicinity of survival craft and their launching stations (SOLAS 74/88 reg.III/9);
- (PI) 5.1.2.91 examining the provision and stowage and checking the operation of two-way VHF radiotelephone apparatus and radar transponders, (SOLAS 74/88 reg.III/6);
- (PI) 5.1.2.92 examining the provision and stowage of the distress flares and the line-throwing appliance, checking the provision and operation of on board communications equipment and testing the means of operation of the general alarm system (SOLAS 74/88 reg.III/6);
- (PI) 5.1.2.93 examining the provision, disposition and stowage of the lifebuoys, including those fitted with self-igniting lights, self-activating smoke signals and buoyant lines, lifejackets, immersion suits and thermal protective aids (SOLAS 74/88 regs.III/7, 21 and 31 to 37);
- (PI) 5.1.2.94 checking the lighting of the muster and embarkation stations and the alleyways, stairways and exits giving access to the muster and embarkation stations, including when supplied from the emergency source of power (SOLAS 74/88 regs.II-1/42 and III/11);
- (PI) 5.1.2.95 checking that means of rescue is provided on ro-ro passenger ships (SOLAS 74/00 reg.III/26.4);
- (PI) 5.1.2.96 checking that a helicopter pick-up area is provided on ro-ro passenger ships (SOLAS 74/00 reg.III/28);
- (PI) 5.1.2.97 checking that a decision support system is provided for the Master (SOLAS 74/00 reg. III/29);
- (PI) 5.1.2.98 checking the electromagnetic compatibility of electrical and electronic equipment on or in the vicinity of the bridge (SOLAS 74/00 reg.V/17);
- (PI) 5.1.2.99 examining the provision and positioning and checking the operation of, as appropriate, the navigation lights, shapes and sound signalling equipment (International Regulations for Preventing Collisions at Sea in force, regs.20 to 24, 27 to 30 and 33);
- (PI) 5.1.2.100 checking the provision and specification of a daylight signalling lamp (SOLAS 74/88 reg.V/11);
- (PI) 5.1.2.101 checking, as appropriate, the provision and operation of the following equipment (SOLAS 74/00 reg.V/19):
  - (PI) 5.1.2.101.1 checking the magnetic compass, including examining the siting, movement, illumination and a pelorus or compass bearing device (SOLAS 74/00 reg.V/19);

- (PI) 5.1.2.101.2 nautical charts and nautical publications necessary for the intended voyage are available and have been updated and where electronic systems are used (ECDIS), the electronic charts have been updated and the required back-up system is provided and updated (SOLAS 74/00 reg.V/19);
- (PI) 5.1.2.101.3 global navigation satellite receiver or terrestrial radionavigation system;
- (PI) 5.1.2.101.4 sound reception system, when bridge is totally enclosed;
- (PI) 5.1.2.101.5 means of communication to emergency steering position, where provided;
- (PI) 5.1.2.101.6 spare magnetic compass;
- (PI) 5.1.2.101.7 daylight signalling lamp;
- (PI) 5.1.2.101.8 echo sounding device, including examining the display for good access, viewing and lighting;
- (PI) 5.1.2.101.9 radar(s), including examining the waveguide and cable runs for routing and protection and the display unit confirming lighting, plotting facilities, correct operation of all controls, functions and the true-motion facility if provided;
- (PI) 5.1.2.101.10 electronic plotting aid, automatic tracking aid or automatic radar plotting aid as appropriate, using the appropriate test facilities;
- (PI) 5.1.2.101.11 speed and distance measuring device;
- (PI) 5.1.2.101.12 transmitting heading device providing heading information to radar, plotting aids and automatic identification system equipment and distance devices;
- (PI) 5.1.2.101.13 heading or track control system;
- (PI) 5.1.2.102 checking for the provision, specification, operation and annual performance test of the voyage data recorder (SOLAS 74/00/04 reg. V/20);
- (PI) 5.1.2.103 checking that the International Code of Signals and a copy of Volume III of the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual have been provided. (SOLAS 74/00/02 reg. V/21);
- (PI) 5.1.2.104 checking the provision and, as appropriate, the deployment or operation of the pilot ladders and hoists/pilot transfer arrangements (SOLAS 74/00 reg.V/23);
- (PI) 5.1.2.105 examining the position, physical and electromagnetic protection and illumination of each radio installation (SOLAS 74/88 reg.IV/6);
- (PI) 5.1.2.106 confirming the provision of equipment for the radio installation with due regard to the declared sea areas in which the ship will trade and the



declared means of maintaining availability of functional requirements (SOLAS 74/88 regs.III/6, IV/7 to 11, 14 and 15);

- (PI) 5.1.2.107 confirming the ability to initiate the transmission of ship-to-shore distress alerts by at least two separate and independent means, each using a different radio communication service, from the position from which the ship is normally navigated (SOLAS 74/88 regs.IV/4,7 to 11);
- (PI) 5.1.2.108 examining all antennas, including:
  - (PI) 5.1.2.108.1 visually checking all antennas, including INMARSAT antennas, and feeders for satisfactory sitting and absence of defects (SOLAS 74/88 reg.IV/14);
  - (PI) 5.1.2.108.2 checking insulation and safety of all antennas;
- (PI) 5.1.2.109 examining the reserve source of energy, including:
  - (PI) 5.1.2.109.1 checking there is sufficient capacity to operate the basic or duplicated equipment for 1 hour or 6 hours, as appropriate (SOLAS 74/88 reg.IV/13);
  - (PI) 5.1.2.109.2 and, if the reserve source of energy is a battery:
    - (PI) 5.1.2.109.2.1 checking its sitting and installation (SOLAS 74/88 reg.IV/13);
    - (PI) 5.1.2.109.2.2 where appropriate, checking its condition by specific gravity measurement or voltage measurement;
    - (PI) 5.1.2.109.2.3 with the battery off charge, and the maximum required radio installation load connected to the reserve source of energy, checking the battery voltage and discharge current;
    - (PI) 5.1.2.109.2.4 checking that the charger(s) are capable of re-charging the reserve battery within 10 hours (SOLAS 74/88 reg.IV/13);
- (PI) 5.1.2.110 examining the VHF transceiver(s), including:
  - (PI) 5.1.2.110.1 checking for operation on channels 6, 13 and 16 (SOLAS 74/88 regs.IV/7 and 14);
  - (PI) 5.1.2.110.2 checking frequency tolerance, transmission line quality and radio frequency power output (SOLAS 74/88 reg.IV/14);
  - (PI) 5.1.2.110.3 checking for correct operation of all controls including priority of control units (SOLAS 74/88 reg.IV/14);
  - (PI) 5.1.2.110.4 checking that the equipment operates from the main, emergency (if provided) and reserve sources of energy (SOLAS 74/88 reg.IV/13);

- (PI) 5.1.2.110.5 checking the operation of the VHF control unit(s) or portable VHF equipment provided for navigational safety (SOLAS 74/88 reg.IV/6);
- (PI) 5.1.2.110.6 checking for correct operation by on-air contact with a coast station or other ship;
- (PI) 5.1.2.111 examining the VHF DSC controller and channel 70 DSC watch receiver, including:
  - (PI) 5.1.2.111.1 performing an off-air check confirming the correct Maritime Mobile Service Identity is programmed in the equipment (SOLAS 74/88 reg.IV/14);
  - (PI) 5.1.2.111.2 checking for correct transmission by means of a routine or test call to a coast station, other ship, on board duplicate equipment or special test equipment;
  - (PI) 5.1.2.111.3 checking for correct reception by means of a routine or test call from a coast station, other ship, on board duplicate equipment or special test equipment;
  - (PI) 5.1.2.111.4 checking the audibility of the VHF/DSC alarm;
  - (PI) 5.1.2.111.5 checking that the equipment operates from the main, emergency (if provided) and reserve sources of energy (SOLAS 74/88 reg.IV/13);
- (PI) 5.1.2.112 examining the MF/HF radiotelephone equipment, including:
  - (PI) 5.1.2.112.1 checking that the equipment operates from the main, emergency (if provided) and reserve sources of energy (SOLAS 74/88 reg.IV/13);
  - (PI) 5.1.2.112.2 checking the antenna tuning in all appropriate bands;
  - (PI) 5.1.2.112.3 checking the equipment is within frequency tolerance on all appropriate bands (SOLAS 74/88 reg.IV/14);
  - (PI) 5.1.2.112.4 checking for correct operation by contact with a coast station and/or measuring transmission line quality and radio frequency output;
  - (PI) 5.1.2.112.5 checking receiver performance by monitoring known stations on all appropriate bands;
  - (PI) 5.1.2.112.6 if control units are provided outside the navigating bridge, checking the control unit on the bridge has first priority for the purpose of initiating distress alerts (SOLAS 74/88 regs.IV/9, 10, 11 and 14);
  - (PI) 5.1.2.112.7 checking the correct operation of the radiotelephone alarm signal generating device on a frequency other than 2182 kHz;

- (PI) 5.1.2.113 examining the HF radiotelex equipment, including:
  - (PI) 5.1.2.113.1 checking that the equipment operates from the main, emergency (if provided) and reserve sources of energy (SOLAS 74/88 reg.IV/13);
  - (PI) 5.1.2.113.2 confirming that the correct selective calling number is programmed in the equipment;
  - (PI) 5.1.2.113.3 checking correct operation by inspection of recent hard copy or by a test with a coast radio station (SOLAS 74/88 regs.IV/10 and 11);
- (PI) 5.1.2.114 examining the MF/HF DSC controller(s), including:
  - (PI) 5.1.2.114.1 checking that the equipment operates from the main, emergency (if provided) and reserve sources of energy (SOLAS 74/88 reg.IV/13);
  - (PI) 5.1.2.114.2 confirming that the correct Maritime Mobile Service Identity is programmed in the equipment;
  - (PI) 5.1.2.114.3 checking the off-air self test programme;
  - (PI) 5.1.2.114.4 checking operation by means of a test call on MF and/or HF to a coast radio station if the rules of the berth permit the use of MF/HF transmissions (SOLAS 74/88 regs.IV/9 to 11);
  - (PI) 5.1.2.114.5 checking the audibility of the MF/HF DSC alarm;
- (PI) 5.1.2.115 examining the MF/HF DSC watch receiver(s), including:
  - (PI) 5.1.2.115.1 confirming that only distress and safety DSC frequencies are being monitored (SOLAS 74/88 regs.IV/9 to 12);
  - (PI) 5.1.2.115.2 checking that a continuous watch is being maintained whilst keying MF/HF radio transmitters (SOLAS 74/88 reg.IV/12);
  - (PI) 5.1.2.115.3 checking for correct operation by means of a test call from a coast station or other ship;
- (PI) 5.1.2.116 examining the radiotelephone distress frequency watch receiver (SOLAS regs.IV/7 and 14), including:
  - (PI) 5.1.2.116.1 checking the mute/demute function;
  - (PI) 5.1.2.116.2 checking receiver sensitivity against known stations;
  - (PI) 5.1.2.116.3 checking the audibility of the loudspeaker;
- (PI) 5.1.2.117 examining the INMARSAT ship earth station(s), including:

- (PI) 5.1.2.117.1 checking that the equipment operates from the main, emergency (if provided) and reserve sources of energy, and that where an uninterrupted supply of information from the ship's navigational or other equipment is required ensuring such information remains available in the event of failure of the ship's main or emergency source of electrical power. (SOLAS 74/88 regs.IV/13 and 14);
- (PI) 5.1.2.117.2 checking the distress function by means of an approved test procedure where possible (SOLAS 74/88 reg. IV/10, 12 and 14);
- (PI) 5.1.2.117.3 checking for correct operation by inspection of recent hard copy or by test call;
- (PI) 5.1.2.118 if appropriate, examining the NAVTEX equipment (SOLAS 74/88 regs.IV/7, 12 and 14), including:
  - (PI) 5.1.2.118.1 checking for correct operation by monitoring incoming messages or inspecting recent hard copy;
  - (PI) 5.1.2.118.2 running the self-test programme if provided;
- (PI) 5.1.2.119 examining the enhanced group call equipment (SOLAS 74/88 regs.IV/7 and 14), including:
  - (PI) 5.1.2.119.1 checking for correct operation and area by monitoring incoming messages or by inspecting recent hard copy;
  - (PI) 5.1.2.119.2 running the self-test programme if provided;
- (PI) 5.1.2.120 if appropriate, examining the radio equipment for receipt of maritime safety information by HF NBDP (SOLAS 74/88 regs.IV/7, 12 and 14), including:
  - (PI) 5.1.2.120.1 checking for correct operation by monitoring incoming messages or inspecting recent hard copy;
  - (PI) 5.1.2.120.2 running the self-test programme if provided;
- (PI) 5.1.2.121 examining the 406 MHz EPIRB (SOLAS 74/88 regs.IV/7 and 14), including:
  - (PI) 5.1.2.121.1 checking position and mounting for float free operation;
  - (PI) 5.1.2.121.2 carrying out visual inspection for defects;
  - (PI) 5.1.2.121.3 carrying out the self-test routine;
  - (PI) 5.1.2.121.4 checking that the EPIRB ID is clearly marked on the outside of the equipment and, where possible, decoding the EPIRB identity number confirming it is correct;

- (PI) 5.1.2.121.5 checking the battery expiry date;
- (PI) 5.1.2.121.6 if provided, checking the hydrostatic release and its expiry date;
- (PI) 5.1.2.122 examining the two-way VHF radiotelephone apparatus (SOLAS 74/88 reg.III/6), including:
  - (PI) 5.1.2.122.1 checking for correct operation on channel 16 and one other by testing with another fixed or portable VHF installation (SOLAS 74/88 reg.IV/14);
  - (PI) 5.1.2.122.2 checking the battery charging arrangements where re-chargeable batteries are used (SOLAS 74/88 reg.IV/14);
  - (PI) 5.1.2.122.3 checking the expiry date of primary batteries where used (SOLAS 74/88 reg.IV/14);
  - (PI) 5.1.2.122.4 where appropriate, checking any fixed installation provided in a survival craft (SOLAS 74/88 reg.IV/14);
- (PI) 5.1.2.123 examining the radar transponder(s) (SOLAS 74/88 reg.III/6 and regs.IV/7 and 14), including:
  - (PI) 5.1.2.123.1 checking the position and mounting;
  - (PI) 5.1.2.123.2 monitoring response on ship's 9 GHz radar;
  - (PI) 5.1.2.123.3 checking the battery expiry date;
- (PI) 5.1.2.124 examining the test equipment and spares carried to ensure carriage is adequate in accordance with the sea areas in which the ship trades and the declared options for maintaining availability of the functional requirements (SOLAS 74/88 reg.IV/15);
- (PI) 5.1.2.125 checking the distress panel installed at the conning position; or, where applicable, an additional EPIRB is placed near the conning position (SOLAS 74/88 reg.IV/6);
- (PI) 5.1.2.126 checking that positional information is provided continuously and automatically to all communications equipment included in the initial distress alert (SOLAS 74/88 reg.IV/6);
- (PI) 5.1.2.127 checking the distress alarm panel installed at the conning position and its visual and aural indications of received distress alerts (SOLAS 74/88 reg.IV/6);
- (PI) 5.1.2.128 checking the provision and operation of the means for two-way on-scene communication for search and rescue purposes and its operation on 121.5 MHz and 123.1 MHz from the position from which the ship is normally navigated (SOLAS 74/88 reg.IV/7);

- (PI) 5.1.2.129 confirming that ship's identification number is permanently marked. (SOLAS 74/02, reg. XI-1/3);
- (PI) 5.1.2.130 checking the provision, operation and the annual test has been carried out for the automatic identification system (SOLAS 74/00/04, reg. V/19).
- (PI) 5.1.3 For the hull, machinery and equipment of passenger ships the check that the required documentation has been placed on board should consist of:
- (PI) 5.1.3.1 confirming that the stability information and damage control plans have been provided (SOLAS 74/88 regs. II-1/22 and 23);
- (PI) 5.1.3.2 confirming that the manoeuvring booklet has been provided and that the manoeuvring information has been displayed on the navigating bridge (SOLAS 74/88 reg.II-1/28);
- (PI) 5.1.3.3 confirming that the fire control plans are permanently exhibited or, alternatively, emergency booklets have been provided to each officer and that a duplicate of the plans or the emergency booklet are available in a prominently marked enclosure external to the ship's deckhouse (SOLAS 74/00 regs.II-2/15.2.4 and 15.3.2) (SOLAS 74/88 reg.II-2/20). The fire control plan is in the language req4ired by the Administration;
- (PI) 5.1.3.4 confirming that the maintenance plans have been provided (SOLAS 74/88 reg. II-1/14.2.2 and 14.3);
- (PI) 5.1.3.5 confirming that the training manuals and the fire safety operational booklets have been provided (SOLAS 74/88 reg. II- 1/15.2.3 and 16.2);
- (PI) 5.1.3.6 confirming, when appropriate, that the ship is provided with a document indicating compliance with the special requirements for carrying dangerous goods (SOLAS 74/00 reg.II-2/19.4) (SOLAS 74/88 regs. II-2/41 and 54(3));
- (PI) 5.1.3.7 confirming that emergency instructions are available for each person on board, that the muster list is posted in conspicuous places and they are in a language understood by the persons on board (SOLAS 74/00 regs.III/8 and 53);
- (PI) 5.1.3.8 confirming that the training manual for the life-saving appliances has been provided (SOLAS 74/00 reg.III/35);
- (PI) 5.1.3.9 confirming that the checklist and instructions for MES, if provided, and on board maintenance of the life-saving appliances have been provided (SOLAS 74/00 reg.III/36);
- (PI) 5.1.3.10 confirming that a table or curve of residual deviations for the magnetic compass have been provided, and that a diagram of the radar installations shadow sectors is displayed (SOLAS 74/00 reg.V/19);

- (PI) 5.1.3.11 checking that operational and, where appropriate, maintenance manuals for all navigational equipment are provided (SOLAS 74/00 regs.V/16 and 19);
- (PI) 5.1.3.12 checking that the charts and nautical publications necessary for the intended voyage are available and have been up-dated (SOLAS 74/00 regs.V/19 and 27);
- (PI) 5.1.3.13 checking that the International Code of Signals is available where the ship is required to carry a radio installation (SOLAS 74/88 reg.V/21);
- (PI) 5.1.3.14 confirming that a list showing the operational limitations imposed to the ship is kept on board (SOLAS 74/00 reg.V/30);
- (PI) 5.1.3.15 checking that the life-saving signals to be used by ships, aircraft or persons in distress (SOLAS 74/00 reg.V/29);
- (PI) 5.1.3.16 checking the carriage of operating manuals for all equipment (SOLAS 74/88 reg.IV/15);
- (PI) 5.1.3.17 checking the carriage of service manuals for all equipment when at-sea maintenance is the declared option (SOLAS 74/88 reg.IV/15);
- (PI) 5.1.3.18 checking for a valid radio licence issued by the flag Administration (ITU RR Art.24);
- (PI) 5.1.3.19 checking the radio operators' certificates of competence (ITU RR Art.55);
- (PI) 5.1.3.20 checking the emission on operational frequencies, coding and registration on the 406 MHz signal without transmission of a distress call to the satellite;
- (PI) 5.1.3.21 checking the radio log (SOLAS 74/88 text in force prior to 1 February 1992 reg.IV/19 and ITU RR App.11);
- (PI) 5.1.3.22 checking the carriage of up-to-date ITU publications (ITU RR App.11);
- (PI) 5.1.3.23 checking that the EPIRB has been subject to maintenance at intervals not exceeding five years at an approved shore-based maintenance facility;
- (PI) 5.1.3.24 if possible, checking the emission on operational frequencies, coding and registration on the 121.5 MHz homing signal without transmission of the satellite system;
- (PI) 5.1.3.25 confirming that continuous synopsis record is provided (SOLAS 74/02, reg. XI-1/5);
- (PI) 5.1.3.26 checking that arrangements are provided to maintain records of navigational activities and daily reporting (SOLAS 74/00/03 reg. V/28).

- (PI) 5.1.4 For the hull, machinery and equipment of passenger ships the completion of the initial survey should consist of:
- (PI) 5.1.4.1 after a satisfactory survey, the Passenger Ship Safety Certificate and its associated Record of Equipment (Form P) should be issued.
- (PR) **5.2** **Renewal surveys** – see part “General”, section 4.5
- (PR) 5.2.1 For the hull, machinery and equipment of passenger ships the examination of current certificates and other records should consist of:
- (PR) 5.2.1.1 checking the validity of the International Load Line Certificate or International Load Line Exemption Certificate;
- (PR) 5.2.1.2 checking the validity of the Safety Management Certificate (SMC) and that a copy of the Document of Compliance (DOC) is on board;
- (PR) 5.2.1.3 checking the validity of the International Oil Pollution Prevention Certificate;
- (PR) 5.2.1.4 checking the certificates of class, if the ship is classed with a classification society;
- (PR) 5.2.1.5 checking, when appropriate, the validity of the International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk;
- (PR) 5.2.1.6 checking, when appropriate, the validity of the International Sewage Pollution Prevention Certificate;
- (PR) 5.2.1.7 checking, when appropriate, the validity of the International Air Pollution Prevention Certificate;
- (PR) 5.2.1.8 checking that the ship's complement complies with the Minimum Safe Manning Document (SOLAS 74/88 reg.V/13(b));
- (PR) 5.2.1.9 checking that the master, officers and ratings are certificated as required by the STCW Convention;
- (PR) 5.2.1.10 checking whether any new equipment has been fitted and, if so, confirm that it has been approved before installation and that any changes are reflected in the appropriate certificate;
- (PR) 5.2.1.11 checking that the routine surveys of the boilers and other pressure vessels, as determined by the Administration, have been carried out as required and that safety devices, such as the boiler safety valves, have been tested;
- (PR) 5.2.1.12 checking that, as appropriate, the hull and machinery has been presented for survey in accordance with the continuous survey scheme approved by the Administration or a classification society;



- (PR) 5.2.1.13 confirming that the opening and the closing and locking of side scuttles positioned below the margin line are being recorded in the log-book (SOLAS 74/88 reg.II-1/17);
- (PR) 5.2.1.14 confirming that the closure of the cargo loading doors and the opening and closing of any doors at sea required for the operation of the ship or the embarking and disembarking of passengers are being recorded in the log-book (SOLAS 74/88 reg.II-1/20-1);
- (PR) 5.2.1.15 confirming that the stability information and damage control plans are readily available (SOLAS 74/88 regs.II-1/22 and 23);
- (PR) 5.2.1.16 confirming from the log-book entries that the openings required to be closed at sea are being kept closed and that the required drills and inspections of watertight doors, etc., are being carried out (SOLAS 74/88 reg. II-1/24 and 25);
- (PR) 5.2.1.17 confirming that the manoeuvring booklet is readily available and that the manoeuvring information is displayed on the navigating bridge (SOLAS 74/88 reg.II-1/28);
- (PR) 5.2.1.18 confirming that the fire control plans are permanently exhibited or, alternatively, emergency booklets have been provided and that a duplicate of the plans or the emergency booklet are available in a prominently marked enclosure external to the ship's deckhouse (SOLAS 74/88 reg.II-2/20);
- (PR) 5.2.1.19 confirming that the maintenance plans have been provided (SOLAS 74/00 reg. II-2/14.2.2 and 14.3);
- (PR) 5.2.1.20 confirming that the training manuals and the fire safety operational booklets have been provided (SOLAS 74/00 reg. II-2/15.2.3 and 16.2);
- (PR) 5.2.1.21 checking whether any fire has occurred on board necessitating the operation of the fixed fire-extinguishing systems or the portable fire extinguishers since the last survey and the entries into the ship's log-book;
- (PR) 5.2.1.22 checking, when appropriate, that the ship is provided with a document indicating compliance with the special requirements for carrying dangerous goods (SOLAS 74/00 reg.II-2/19.4) (SOLAS 74/88 reg.II-2/54(3));
- (PR) 5.2.1.23 confirming, when appropriate, that there is a special list, manifest or stowage plan for the carriage of dangerous goods (SOLAS 74/88 reg.VII/5);
- (PR) 5.2.1.24 confirming that emergency instructions are available for each person on board, that the muster list is posted in conspicuous places and they are in a language understood by the persons on board (SOLAS 74/00 regs.III/8 and 37);

- (PR) 5.2.1.25 checking that log-book entries are being made (SOLAS 74/00 regs.III/19 and 20) and in particular:
  - (PR) 5.2.1.25.1 the date when the last full muster of the passengers and crew for boat and fire drill took place;
  - (PR) 5.2.1.25.2 the records indicating that the lifeboat equipment was examined at that time and found to be complete;
  - (PR) 5.2.1.25.3 the last occasion when the lifeboats were swung out and when each one was lowered into the water;
  - (PR) 5.2.1.25.4 the records indicating that crew members have received the appropriate on board training;
- (PR) 5.2.1.26 confirming that the training manual and training aids for the life-saving appliances is on board (SOLAS 74/00 reg.III/35);
- (PR) 5.2.1.27 confirming that the instructions for on board maintenance of the life-saving appliances is on board (SOLAS 74/00 reg.III/36);
- (PR) 5.2.1.28 checking by the log-book entries that the testing and the emergency drills of the steering gear have been carried out (SOLAS 74/00 reg.V/26);
- (PR) 5.2.1.29 confirming that a table or curve of residual deviations for the magnetic compass and that a diagram of the radar installations shadow sectors is displayed (SOLAS 74/00 reg.V/19);
- (PR) 5.2.1.30 checking that operational and, where appropriate, maintenance manuals for all navigational equipment are provided (SOLAS 74/00 reg.V/16);
- (PR) 5.2.1.31 checking that the charts and nautical publications necessary for the intended voyage are available and have been up-dated (SOLAS 74/00 reg.V/27);
- (PR) 5.2.1.32 checking that the compass deviation book is properly maintained (SOLAS 74/00 reg.V/19);
- (R) 5.2.1.33 confirming that a list showing the operational limitations imposed to the ship is kept on board (SOLAS 74/00 reg.V/30);
- (R) 5.2.1.34 checking that the life-saving signals to be used by ships, aircraft or persons in distress (SOLAS 74/00 reg.V/29);
- (PR) 5.2.1.35 the provisions of (PI) 5.1.3.11 to (PI) 5.1.3.16;
- (PR) 5.2.1.36 confirming that a record has been kept in the period since the last survey to the satisfaction of the Administration and as required by the Radio Regulations (SOLAS 74/88 reg.IV/17);

- (PR) 5.2.1.37 checking documentary evidence that the actual capacity of the battery has been proved in port within the last 12 months (SOLAS 74/88 reg.IV/13);
- (PR) 5.2.1.38 if applicable, checking that a list of all limitations on the operation of a passenger ship is kept on board and updated;
- (PR) 5.2.1.39 confirming that continuous synopsis record is provided (SOLAS74/02, reg. XI-1/5);
- (PR) 5.2.1.40 checking that the annual test has been carried out for the Satellite EPIRB and, if applicable, shore based maintenance has been carried out at intervals not exceeding five years;
- (PR) 5.2.1.41 checking that arrangements are provided to maintain records of navigational activities and daily reporting (SOLAS 74/00/03 reg. V/28).
- (PR) 5.2.2 For the hull, machinery and equipment of passenger ships the renewal survey should consist of:
  - (PR) 5.2.2.1 examining the outside of the ship's bottom, including the bottom and bow plating, keel, bilge keels, stem, stern frame, the rudder, sea chests and strainers, noting the clearance measured in the rudder bearings, examining the propeller and shaft seals, as far as practicable, and noting the clearance measured in the propeller shafts (SOLAS 74/88 reg.I/7(b)(ii));
  - (PR) 5.2.2.2 examining the arrangements for the subdivision, including the ship's stability in the damaged condition, and checking the subdivision load lines (SOLAS 74/88 regs.II-1/4 to 8, 13 and 16);
  - (PR) 5.2.2.3 checking the ballasting arrangements (SOLAS 74/88 reg.II-1/9);
  - (PR) 5.2.2.4 examining the collision and other watertight bulkheads required for the ship's subdivision (SOLAS 74/88 regs.II-1/10, 14, 15 and 18);
  - (PR) 5.2.2.5 confirming that the watertight integrity has been maintained where pipes, scuppers, etc., pass through subdivision watertight bulkheads (SOLAS 74/88 reg. II- 1/15);
  - (PR) 5.2.2.6 confirming that a diagram is provided on the navigating bridge showing the location of the watertight doors together with indicators showing whether the doors are open or closed (SOLAS 74/88 reg.II-1/15);
  - (PR) 5.2.2.7 testing the operation of the watertight doors both from the navigating bridge in the event of an emergency and locally at the door itself (SOLAS 74/88 reg.II-1/15) and, in particular, that:
    - (PR) 5.2.2.7.1 they are operable locally from each side of the bulkhead;
    - (PR) 5.2.2.7.2 provided with devices giving an indication of whether the door is open or closed at all remote operating positions;

- (PR) 5.2.2.7.3 provided with an audible alarm that is distinct from any other alarm in the area and, when appropriate, an intermittent visual signal;
- (PR) 5.2.2.7.4 control handles are provided on each side of the bulkhead so that a person may hold both handles in the open position and pass safely through the watertight door without accidentally setting the power closing mechanism into operation;
- (PR) 5.2.2.8 confirming that the watertight doors and their indicating devices are operable in the event of a failure of the main and emergency sources of power (SOLAS 74/88 reg.II-1/15);
- (PR) 5.2.2.9 checking, when appropriate, any watertight doors, that are not required to be closed remotely, fitted in watertight bulkheads dividing 'tween deck spaces and confirming that a notice is affixed concerning their closure (SOLAS 74/88 reg.II-1/15);
- (PR) 5.2.2.10 confirming that a notice is affixed to any portable plates on bulkheads in machinery spaces concerning their closure and, if appropriate, testing any power operated watertight door fitted in lieu (SOLAS 74/88 reg.II-1/15);
- (PR) 5.2.2.11 examining the arrangements for closing side scuttles and their deadlights, also scuppers, sanitary discharges and similar openings and other inlets and discharges in the shell plating below the margin line (SOLAS 74/88 reg.II-1/17);
- (PR) 5.2.2.12 confirming that valves for closing the main and auxiliary sea inlets and discharges in the machinery spaces are readily accessible and indicators showing the status of the valves are provided (SOLAS 74/88 reg.II-1/17);
- (PR) 5.2.2.13 confirming that gangway, cargo and coaling ports fitted below the margin line may be effectively closed and that the inboard end of any ash or rubbish chutes are fitted with an effective cover (SOLAS 74/88 reg. II-1/17);
- (PR) 5.2.2.14 examining the arrangements to maintain the watertight integrity above the margin line (SOLAS 74/88 reg.II-1/20);
- (PR) 5.2.2.15 examining the arrangements for the bilge pumping and confirming that each bilge pump and the bilge pumping system provided for each watertight compartment is working efficiently (SOLAS 74/88 reg.II-1/21);
- (PR) 5.2.2.16 confirming that the drainage system of enclosed cargo spaces situated on the freeboard deck is working efficiently (SOLAS 74/88 reg.II-1/21);
- (PR) 5.2.2.17 examining, when appropriate, the means of indicating the status of any bow doors and any leakage there from (SOLAS 74/88 reg.II-1/23-2);
- (PR) 5.2.2.18 confirming that the machinery, boilers and other pressure vessels, associated piping systems and fittings are being maintained so as to reduce

to a minimum any danger to persons on board, due regard being given to moving parts, hot surfaces and other hazards (SOLAS 74/88 reg.II-1/26);

- (PR) 5.2.2.19 confirming that the normal operation of the propulsion machinery can be sustained or restored even though one of the essential auxiliaries becomes inoperative (SOLAS 74/88 reg.II-1/26);
- (PR) 5.2.2.20 confirming that means are provided so that the machinery can be brought into operation from the dead ship condition without external aid (SOLAS 74/88 reg.II-1/26);
- (PR) 5.2.2.21 examining, where practicable, the means provided to protect against overpressure in the parts of main, auxiliary and other machinery that are subject to internal pressure and may be subject to dangerous overpressure (SOLAS 74/88 reg.II-1/27);
- (PR) 5.2.2.22 examining, when appropriate, the crankcase explosion relief devices fitted to internal combustion engines and confirming that they are arranged so as to minimize the possibility of injury to personnel (SOLAS 74/88 reg.II-1/27);
- (PR) 5.2.2.23 confirming that the automatic shut-off arrangements fitted to the main turbine propulsion machinery and, where applicable, main internal combustion propulsion machinery and auxiliary machinery are being properly maintained (SOLAS 74/88 reg.II-1/27);
- (PR) 5.2.2.24 confirming, as far as practicable, the ability of the machinery to reverse the direction of the thrust of the propeller in sufficient time, including the effectiveness of any supplementary means of manoeuvring or stopping the ship (SOLAS 74/88 reg.II-1/28);
- (PR) 5.2.2.25 confirming that the main and auxiliary steering gear are being properly maintained, are arranged so that the failure of one does not render the other inoperative and that the auxiliary steering gear is capable of being brought speedily into action in an emergency (SOLAS 74/88 reg.II-1/29);
- (PR) 5.2.2.26 confirming that, where appropriate, essential components of the steering gear are permanently lubricated or provided with lubrication fittings (SOLAS 74/88 reg.II-1/29);
- (PR) 5.2.2.27 confirming that relief valves fitted to the steering gear hydraulic system which can be isolated and in which pressure can be generated from the power source or from external forces are being maintained and are set to a pressure not exceeding the design pressure (SOLAS 74/88 reg.II-1/29);
- (PR) 5.2.2.28 confirming that the main or auxiliary steering gear power units restart automatically when power is restored after a power failure, that they are capable of being brought into operation from a position on the navigating bridge and that, in the event of a power failure to any one of the steering

gear power units, an audible and visual alarm is given on the navigating bridge (SOLAS 74/88 reg.II-1/29);

- (PR) 5.2.2.29 confirming that the control systems for the main steering gear from both the navigating bridge and the steering gear compartment are operating satisfactorily (SOLAS 74/88 reg.II-1/29);
- (PR) 5.2.2.30 confirming that, where the main steering gear comprises two or more identical power units and an auxiliary steering gear is not fitted, the two independent control systems from the navigating bridge are operating satisfactorily (SOLAS 74/88 reg.II-1/29);
- (PR) 5.2.2.31 confirming that the control system for the auxiliary steering gear in the steering gear compartment and, if this gear is power operated, from the navigating bridge are operating satisfactorily and that the latter is independent of the control system for the main steering gear (SOLAS 74/88 reg.II-1/29);
- (PR) 5.2.2.32 confirming that an audible and visual alarm is given on the navigating bridge in the event of a failure of electrical power supply (SOLAS 74/88 reg.II-1/29);
- (PR) 5.2.2.33 confirming that the means of communication between the bridge and the steering gear is operating satisfactorily and that, with ships having emergency steering positions, a telephone or other means of communication for relaying heading information and supplying visual compass readings to the emergency steering position are provided (SOLAS 74/00 regs.II-1/29 and V/19);
- (PR) 5.2.2.34 confirming that the angular position of the rudder is indicated independently of the steering control system on the navigating bridge if the main steering gear is power-operated and that this angular position is given in the steering gear compartment (SOLAS 74/00 reg.II-1/29, reg.V/19);
- (PR) 5.2.2.35 confirming that with a hydraulic power-operated steering gear the audible and visual low-level alarms on the navigating bridge and in the machinery space for each hydraulic fluid reservoir are operating satisfactorily and that at least one power actuating system including the reservoir can be recharged from a position within the steering gear compartment by means of a fixed storage tank to which a contents gauge is fitted with fixed piping (SOLAS 74/88 reg.II-1/29);
- (PR) 5.2.2.36 confirming that the steering gear compartment is readily accessible and is provided with suitable arrangements to ensure working access to steering gear machinery and controls under safe conditions (SOLAS 74/88 reg.II-1/29);
- (PR) 5.2.2.37 confirming that with electric and electro-hydraulic steering gear the means for indicating on the navigating bridge and at a main machinery control position that the motors are running and, as far as practicable, that the

overload alarm and alarm for the loss of a phase in a three phase supply located at the main machinery control position are operating satisfactorily (SOLAS 74/88 reg.II-1/30);

- (PR) 5.2.2.38 confirming that the effective means of operation and control of the main and auxiliary machinery essential for the propulsion and the safety of the ship, are being maintained including, when appropriate, any means for remotely controlling the propulsion machinery from the navigating bridge (including the control, monitoring, reporting, alert and safety actions) (SOLAS 74/88/00/02 reg. II-1/31);
- (PR) 5.2.2.39 confirming that arrangements to operate main and other machinery from a machinery control room are satisfactory (SOLAS 74/88 reg.II-1/31);
- (PR) 5.2.2.40 confirming that the means provided for manually overriding automatic controls are being maintained and that a failure does not prevent the use of the manual override (SOLAS 74/88 reg.II-1/31);
- (PR) 5.2.2.41 confirming that the appropriate safety features fitted to the oil-fired and exhaust gas boilers, unfired steam generators, steam pipe systems and air pressure systems are being maintained (SOLAS 74/88 regs.II-I/32, 33 and 34);
- (PR) 5.2.2.42 confirming the operation of the ventilation for the machinery spaces (SOLAS 74/78 reg.II-I/35);
- (PR) 5.2.2.43 confirming that the measures to prevent noise in machinery spaces are effective (SOLAS 74/78 reg. II- I/36);
- (PR) 5.2.2.44 confirming that the engine room telegraph giving visual indication of the orders and answers both in the machinery space and on the navigating bridge is operating satisfactorily (SOLAS 74/88, reg.II-1/37);
- (PR) 5.2.2.45 confirming that the second means of communication between the navigation bridge and machinery space is also operating satisfactorily, including any appropriate means provided to any other positions from which the engines are controlled (SOLAS 74/88, reg.II-1/37);
- (PR) 5.2.2.46 confirming that the engineer's alarm is clearly audible in the engineers' accommodation (SOLAS 74/88, reg.II-1/38);
- (PR) 5.2.2.47 confirming that precautions, taken to prevent any oil that may escape under pressure from any pump, filter or heater from coming into contact with heated surfaces, are efficient;
- (PR) 5.2.2.48 confirming that the means of ascertaining the amount of oil contained in any oil tank are in good working condition;

- (PR) 5.2.2.49 confirming that the devices provided to prevent overpressure in any oil tank or in any part of the oil system, including the filling pipes, are in good working condition;
- (PR) 5.2.2.50 confirming that the electrical installations, including the main source of power and lighting systems, are being maintained (SOLAS 74/88 regs.II-1/40 and 41);
- (PR) 5.2.2.51 confirming that the self-contained emergency source of electrical power and its associated systems are operating satisfactorily (SOLAS 74/88 reg.II-1/42);
- (PR) 5.2.2.52 confirming that starting arrangements of each emergency generating set is satisfactory (SOLAS 74/88 reg.II-1/44);
- (PR) 5.2.2.53 checking, when appropriate, the disposition of and testing the supplementary emergency lighting (SOLAS 74/88 reg.II-1/42-1);
- (PR) 5.2.2.54 confirming that precautions provided against shock, fire and other hazards of electrical origin are being maintained (SOLAS 74/88 reg.II-1/45);
- (PR) 5.2.2.55 confirming, when appropriate, that the arrangements for the machinery spaces being periodically un- attended are satisfactory (SOLAS 74/88 reg.II-1/54);
- (PR) 5.2.2.56 examining the fire pumps and fire main and the disposition of the hydrants, hoses and nozzles and the international shore connection and checking that each fire pump can be operated separately so that two jets of water are produced simultaneously from different hydrants at any part of the ship whilst the required pressure is maintained in the fire main (SOLAS 74/00 reg.II-2/10.2; FSSC chs.2 and 12) (SOLAS 74/88 regs.II-2/4 and 19);
- (PR) 5.2.2.57 examining the provision and randomly examining the condition of the portable and non-portable fire extinguishers (SOLAS 74/00 reg.II-2/10.3; FSSC ch.4) (SOLAS 74/88 reg.II-2/6);
- (PR) 5.2.2.58 examining the fixed fire extinguishing system for the machinery spaces and confirming that its means of operation are clearly marked (SOLAS 74/00 regs.II-2/10.4 and 10.5; FSSC chs.2 and 12) (SOLAS 74/88 regs.II-2/5, 7, 9, 10 and 53);
- (PR) 5.2.2.59 examining the special arrangements in the machinery spaces and confirming, as far as practicable and as appropriate, the operation of the remote means of control provided for the opening and closing of the skylights, the release of smoke, the closure of the funnel and ventilation openings, the closure of power operated and other doors, the stopping of ventilation and boiler forced and induced draft fans and the stopping of oil fuel and other pumps that discharge flammable liquids (SOLAS 74/00 regs.II-2/5.2, 8.3 and 9.5) (SOLAS 74/88 reg.II-2/11);



- (PR) 5.2.2.60 examining the fire extinguishing arrangements in control stations, accommodation and service spaces (SOLAS 74/00 reg.II-2/10.6.1; FSSC ch.8) (SOLAS 74/88 reg.II-2/36);
- (PR) 5.2.2.61 examining the provision of fire extinguishing systems for the spaces containing flammable liquids and deep-fat cooking equipment in accommodation and service spaces (SOLAS 74/00 regs.II-2/10.6.3 and 10.6.4; FSSC chs.5, 6 and 7) (SOLAS 74/88 ch.II-2);
- (PR) 5.2.2.62 examining the arrangements for oil fuel, lubricating oil and other flammable oils and confirming, as far as practicable and as appropriate, the operation of the remote means of closing the valves on the tanks that contain oil fuel, lubricating oil and other flammable oils (SOLAS 74/00 reg.II-2/4.2) (SOLAS 74/88 reg.II-2/15);
- (PR) 5.2.2.63 examining and testing, as far as practicable, any fire detection and fire alarm arrangements in machinery spaces, if applicable, accommodation and service spaces and control spaces (SOLAS 74/00 reg.II-2/27 (except 7.5.5, 7.6 and 7.9); FSSC ch.9) (SOLAS 74/88 regs.II-2/11, 12, 13, 13-1, 14, 36 and 41);
- (PR) 5.2.2.64 confirming that the fire fighter's outfits and the emergency escape breathing devices – EEBD – are complete and in good condition and that the cylinders, including the spare cylinders, of the self-contained breathing apparatus, are suitably charged (SOLAS 74/00 regs.II-2/10.10, 13.3.4 and 13.4.3; FSSC ch.3) (SOLAS 74/88 reg. II-2/17);
- (PR) 5.2.2.65 checking the operational readiness and maintenance of fire-fighting systems (SOLAS 74/00 reg.II-2/14) (SOLAS 74/88/91 reg.II- 2/21);
- (PR) 5.2.2.66 confirming, as far as practicable, that no changes have been made in the structural fire protection, including the structure, fire integrity, protection of stairways and lifts, openings in 'A' and 'B' Class divisions, ventilation systems and windows and side scuttles, and the use of combustible material (SOLAS 74/00 regs.II-2/5.2, 5.3, 6, 8.2, 8.5, 9.2.1, 9.2.2, 9.3, 9.4.1, 9.5, 9.6 (except 9.6.5), 9.7 and 11 (except 11.6)) (SOLAS 74/88 regs.II-2/11, 16, 18, 23 to 35 and 37);
- (PR) 5.2.2.67 confirming, as far as practicable, that no changes have been made in the structural fire protection in cargo spaces intended for the carriage of dangerous goods (SOLAS 74/00 regs.II-2/19.3.8 and 19.3.10) (SOLAS 74/88 regs.II-2/4, 54.2.8, 54.2.10 and 54.2.11);
- (PR) 5.2.2.68 examining and testing any manual and automatic fire doors including the means of closing the openings in 'A' and 'B' Class divisions (SOLAS 74/00 reg.II-2/9.4.1) (SOLAS 74/88 regs.II-2/30 and 31);
- (PR) 5.2.2.69 examining and testing the main inlets and outlets of all ventilation systems and proving that the power ventilation is capable of being stopped from

outside the space served (SOLAS 74/00 reg.II-2/5.2.1) (SOLAS 74/88 regs.II-2/16 and 32);

- (PR) 5.2.2.70 confirming that the stairways and ladders, including the low-location lighting system, arranged to provide a means of escape to the lifeboat and liferaft and liferaft embarkation deck from all passenger and crew spaces and from those spaces in which the crew is normally employed are being maintained (SOLAS 74/00 regs.II-2/13.2, 13.3.1, 13.3.2 and 13.7; FSSC chs.11 and 13 (except paragraph 3)) (SOLAS 74/88 reg.II-2/28);
- (PR) 5.2.2.71 confirming that the means of escape from any special category spaces and ro-ro spaces are satisfactory (SOLAS 74/00 regs.II-2/13.5 and 13.6) (SOLAS 74/88 reg.II-2/28);
- (PR) 5.2.2.72 confirming that means of escape from the machinery spaces are satisfactory (SOLAS 74/00 reg.II-2/13.4.1) (SOLAS 74/88 reg.II-2/28);
- (PR) 5.2.2.73 examining the fire extinguishing arrangements including fire detection in cargo spaces for general cargo and dangerous goods and testing, as far as practicable and as appropriate, the operation of the means for closing the various openings (SOLAS 74/00 regs.II-2/7.6 and 10.7; FSSC ch.5) (SOLAS 74/88 reg.II-2/39);
- (PR) 5.2.2.74 examining the fire extinguishing arrangements including fire detection in vehicle, special category and ro-ro spaces and testing, as far as practicable and as appropriate, the operation of the means for closing the various openings (SOLAS 74/00 reg.II-2/20 (except 20.5); FSSC chs.5, 6, 7, 9 and 10) (SOLAS 74/88 regs.II-2/37, 38 and 38-1);
- (PR) 5.2.2.75 examining and testing, as appropriate and as far as practicable, the crew alarm and the public address system or other effective means of communication (SOLAS 74/00 reg. II-2/7.9 and 12; LSAC ch.7) (SOLAS 74/88 reg.II-2/40);
- (PR) 5.2.2.76 examining, when appropriate, the special arrangements for carrying dangerous goods, including checking the electrical equipment and wiring, fire detection, ventilation, the provision of personnel protection clothing and portable appliances and testing, as far as practicable, the water supply, bilge pumping and any water spray system (SOLAS 74/00 reg.II-2/19 (except 19.3.8, 19.3.10 and 19.4); FSSC chs.3, 4, 7, 9 and 10) (SOLAS 74/88 regs.II-2/41 and 54);
- (PR) 5.2.2.77 examining, when appropriate, the helicopter facilities (SOLAS 74/00 regs. II-2/18, III/28) (SOLAS 74/88 reg.II-2/18.8);
- (PR) 5.2.2.78 checking the requirement for passenger ships carrying more than 36 passengers constructed before 1 October 1994 (SOLAS 74/88/91 reg. II-2/41-1 and 41-2);

- (PR) 5.2.2.79 checking that emergency instructions are available for each person on board, the muster list is posted in conspicuous places and there are signs or posters in the vicinity of survival craft and their launching stations (SOLAS 74/96 regs.III/8, 9 and 37);
- (PR) 5.2.2.80 checking that the falls used in launching have been turned end for end in the previous 30 months and renewed in the past 5 years or have been subject to periodic inspection and been renewed within 4 years (SOLAS 74/96 reg. III/20);
- (PR) 5.2.2.81 examining each survival craft, including its equipment and, when fitted, the on-load release and hydrostatic lock, and for inflatable liferafts, the hydrostatic release unit and float free arrangements, including the date of servicing or replacement. Checking that the hand-flares are not out of date and that the required number of radar transponders are fitted in liferafts and those liferafts are clearly marked (SOLAS 74/96/00/02 reg. III/20, 21, 23, 24, 26, 34, 36 and 44; LSAC sections 2.3 to 2.5, 3.2 and 4.1 to 4.6);
- (PR) 5.2.2.82 examining the embarkation arrangements and launching appliances for each survival craft. Each lifeboat should be lowered to the embarkation position or, if the stowage position is the embarkation position, lowered a short distance and, if practicable, one of the survival craft should be lowered to the water. The operation of the launching appliances for davit launched liferafts should be demonstrated. A check that the thorough examination of launching appliances, including the dynamic testing of the winch brake, and servicing of lifeboat on-load release gear have been carried out (SOLAS 74/96 regs.III/11, 12, 13, 15, 16, 20, 21 and 23; LSAC sections 6.1 and 6.2);
- (PR) 5.2.2.83 rotational deployment of MES (SOLAS 74/88 reg. III/20.8.2 ; LSAC section 6.2.2.2);
- (PR) 5.2.2.84 examining each rescue boat, including its equipment (SOLAS 74/88 regs.III/17, 21, 26.3 and 34);
- (PR) 5.2.2.85 examining the embarkation and recovery arrangements for each rescue boat. If practicable, the rescue boat(s) should be lowered to the water and its recovery demonstrated while underway at 5 knots (SOLAS 74/88 regs.III/14, 16, 17, 20 and 21; LSAC section 6.1);
- (PR) 5.2.2.86 checking the arrangements for mustering passengers (SOLAS 74/96 regs.III/11, 24 and 25);
- (PR) 5.2.2.87 confirming that a means of rescue is provided on ro-ro passenger ships (SOLAS 74/00 regs.III/11, 26.4);
- (PR) 5.2.2.88 confirming that a helicopter pick-up area is provided on ro-ro passenger ships (SOLAS 74/00 reg.III/28);

- (PR) 5.2.2.89 confirming that a decision support system is provided for the Master (SOLAS 74/88 reg.III/29);
- (PR) 5.2.2.90 testing that the engine of the rescue boat(s) and of each lifeboat, when so fitted, start satisfactorily and operate both ahead and astern;
- (PR) 5.2.2.91 examining and checking the operation of two-way VHF radiotelephone apparatus and radar transponders (SOLAS 74/88 regs.III/6, IV/7 and 14);
- (PR) 5.2.2.92 examining the line-throwing appliance and checking that its rockets and the ship's distress signals are not out of date, and examining and checking the operation of on board communications equipment and the general alarm system (SOLAS 74/96 regs.III/6, 18 and 35; LSAC sections 3.1 and 7.1);
- (PR) 5.2.2.93 examining the provision, disposition, stowage and condition of the lifebuoys, including those fitted with self-igniting lights, self-activating smoke signals and buoyant lines, lifejackets, immersion suits, anti-exposure suits and thermal protective aids and that their associated batteries are not out of date (SOLAS 74/88 regs.III/7, 21, 22 and 31; LSAC sections 2.1 to 2.5 and 3.1 to 3.3);
- (PR) 5.2.2.94 checking the lighting of the muster and embarkation stations and the alleyways, stairways and exits giving access to the muster and embarkation stations, including when supplied from the emergency source of power (SOLAS 74/88 regs.II-1/42 and III/11);
- (PR) 5.2.2.95 checking that the required navigation lights, shapes and sound signalling equipment are in order (International Regulations for Preventing Collisions at Sea in force (COLREG), regs.20 to 24, 27 to 30 and 33);
- (PR) 5.2.2.96 checking the provision and specification of the following navigation equipment as appropriate: daylight signalling lamp, magnetic compass, transmitting heading device, gyro compass, gyro compass repeaters, radar installation(s), electronic plotting aid, automatic tracking aid(s) or automatic radar plotting aid(s), echo-sounding device, speed and distance indicator, rudder angle indicator, propeller rate of revolution indicator, variable pitch propeller pitch and operational mode indicator, rate-of-turn indicator, heading or track control system, GNSS receiver, terrestrial radio navigation system and sound reception system, ECDIS including back-up arrangements, a pelorus or compass bearing device and means for correcting heading and bearings. Items that cannot be checked with the ship in port should be verified from records (SOLAS 74/00 reg. V/19);
- (PR) 5.2.2.97 checking for the provision, specification operation and annual performance test of the voyage data recorder (SOLAS 74/00/04 reg. V/20);
- (PR) 5.2.2.98 checking that the International Code of Signals and a copy of Volume III of the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual have been provided. (SOLAS 74/00/02 reg. V/21);

- (PR) 5.2.2.99 checking the provision, operation and the annual test has been carried out for the automatic identification system, where fitted (SOLAS 74/00/04, reg. V/19);
- (PR) 5.2.2.100 checking the provision and specification of the pilot ladders and hoists/pilot transfer arrangements (SOLAS 74/00 reg.V/17);
- (PR) 5.2.2.101 the provisions of (PI) 5.1.2.105 to (PI) 5.1.2.126;
- (PR) 5.2.2.102 the provisions of (PI) 5.1.2.127 to (PI) 5.1.2.131;
- (PR) 5.2.2.103 confirming that ship's identification number is permanently marked. (SOLAS 74/02, reg. XI-1/3).
- (PR) 5.2.3 For the hull, machinery and equipment of passenger ships the completion of the renewal survey should consist of:
  - (PR) 5.2.3.1 after a satisfactory survey, the Passenger Ship Safety Certificate and its associated Record of Equipment (Form P) should be issued.

ANNEX 2

**SURVEY GUIDELINES UNDER THE 1966 LOAD LINE CONVENTION,  
AS MODIFIED BY THE 1988 PROTOCOL RELATING THERETO**

- (L) 1 **GUIDELINES FOR SURVEYS FOR THE INTERNATIONAL LOAD LINE CERTIFICATE OR INTERNATIONAL LOAD LINE EXEMPTION CERTIFICATE**
- (LI) 1.1 **Initial surveys** – see part “General” section 4.1
- (LI) 1.1.1 For the load line the examination of plans and designs should consist of:
  - (LI) 1.1.1.1 examining the structural strength at the draft corresponding to the assigned freeboard (LLC 66/88 reg.1);
  - (LI) 1.1.1.2 examining the intact stability, and, where applicable, the damaged stability information and the loading and ballasting information that is to be supplied to the master, and, where not dispensed by the Administration, inclining experimental data (LLC 66/88 reg.10);
  - (LI) 1.1.1.3 determining the freeboard, including specifying and the consideration of the conditions of assignment for the freeboard (LLC 66/88/05 regs.11 to 45).
- (LI) 1.1.2 For the load line the survey during construction and after installation should consist of:
  - (LI) 1.1.2.1 checking that, as far as its strength, the ship has been constructed in accordance with the approved plans (LLC 66/88 reg.1);
  - (LI) 1.1.2.2 confirming that the deck line and load line mark are properly positioned (LLC 66/88 regs.4 to 9);
  - (LI) 1.1.2.3 witnessing the inclining experiment or lightweight survey (LLC 66/88/03 reg.10);
  - (LI) 1.1.2.4 examining the superstructure end bulkheads and the openings therein (LLC 66/88 regs.11 and 12);
  - (LI) 1.1.2.5 examining the means of securing the weathertightness of cargo hatchways, other hatchways and other openings on the freeboard and superstructure decks (LLC 66/88 reg. 13 to 18);
  - (LI) 1.1.2.6 examining the ventilators and air pipes, including their coamings and closing appliances (LLC 66/88 regs.19 and 20);
  - (LI) 1.1.2.7 examining the watertight integrity of the closures to any openings in the ship’s side below the freeboard deck (LLC 66/88 reg.21);

- (LI) 1.1.2.8 examining the scuppers, inlets and discharges (LLC 66/88 reg.22);
- (LI) 1.1.2.9 examining the garbage chutes (LLC 66/88/03, reg. 22-1);
- (LI) 1.1.2.10 examining the spurling pipes and cable lockers (LLC 66/88/03, reg. 22-2);
- (LI) 1.1.2.11 examining the side scuttles and deadlights (LLC 66/88 reg.23);
- (LI) 1.1.2.12 examining the bulwarks including the provision of freeing ports, special attention being given to any freeing ports fitted with shutters (LLC 66/88/03 reg.24, 25);
- (LI) 1.1.2.13 examining the guardrails, gangways, walkways and other means provided for the protection of the crew and means for safe passage of crew (LLC 66/88/03 reg.25, 25-1);
- (LI) 1.1.2.14 special requirements for ships permitted to sail with type “A” or type “B-minus” freeboards (LLC 66/88/03 reg.26, 27);
- (LI) 1.1.2.15 checking, when applicable, of the fittings and appliances for timber deck cargoes (LLC 66/88 regs.42 to 45).
- (LI) 1.1.3 For the load line the check that certificates, etc., have been placed on board should consist of:
  - (LI) 1.1.3.1 checking that the loading and ballasting information has been supplied to the master (LLC 66/88 reg.10).
- (LI) 1.1.4 For the load line the completion of the initial survey should consist of:
  - (LI) 1.1.4.1 after a satisfactory survey, the International Load Line Certificate or International Load Line Exemption Certificate should be issued.
- (LA) **1.2 Annual surveys** – see part “General”, section 4.2
  - (LA) 1.2.1 For the load line the examination of current certificates and other records should consist of:
    - (LA) 1.2.1.1 checking the validity, as appropriate, of the Cargo Ship Safety Equipment Certificate, the Cargo Ship Safety Radio Certificate and the Cargo Ship Safety Construction Certificate or the Cargo Ship Safety Certificate;
    - (LA) 1.2.1.2 checking the validity of the Safety Management Certificate (SMC) and that a copy of the Document of Compliance (DOC) is on board;
    - (LA) 1.2.1.3 checking the validity of the International Load Line Certificate or International Load Line Exemption Certificate;
    - (LA) 1.2.1.4 checking the validity of the International Oil Pollution Prevention Certificate;

- (LA) 1.2.1.5 checking the certificate of class, if the ship is classed with a classification society;
- (LA) 1.2.1.6 checking, when appropriate, the validity of the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk or the Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk;
- (LA) 1.2.1.7 checking, when appropriate, the validity of the International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk;
- (LA) 1.2.1.8 checking, when appropriate, the validity of the International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk;
- (LA) 1.2.1.9 checking, when appropriate, the validity of the International Sewage Pollution Prevention Certificate;
- (LA) 1.2.1.10 checking, when appropriate, the validity of the International Air Pollution Prevention Certificate;
- (LA) 1.2.1.11 checking that the ship's complement complies with the Minimum Safe Manning Document (SOLAS 74/88 reg.V/14);
- (LA) 1.2.1.12 checking that the master, officers and ratings are certificated as required by the STCW Convention;
- (LA) 1.2.1.13 checking whether any new equipment has been fitted and, if so, confirm that it has been approved before installation and that any changes are reflected in the appropriate certificate;
- (LA) 1.2.1.14 checking that the stability and, where applicable, the loading and ballasting information is available (LLC 66/88 reg.10).
- (LA) 1.2.2 For the load line the annual survey should consist of:
  - (LA) 1.2.2.1 checking, in general, that there has been no deterioration in the strength of the hull (LLC 66/88 reg.1);
  - (LA) 1.2.2.2 checking of the positions of the deck line and load line which, if necessary, are to be re-marked and re-painted (LLC 66/88 regs.4 to 9);
  - (LA) 1.2.2.3 checking that no alterations have been made to the hull or superstructures that would affect the calculations determining the position of the load lines (LLC 66/88 regs.11 to 45);
  - (LA) 1.2.2.4 examining the superstructure end bulkheads and the openings therein (LLC 66/88 regs.11 and 12);



- (LA) 1.2.2.5 examining the means of securing the weathertightness of cargo hatchways, other hatchways and other openings on the freeboard and superstructure decks (LLC 66/88 regs.13 to 18);
- (LA) 1.2.2.6 examining the ventilators and air pipes, including their coamings and closing appliances (LLC 66/88 regs.19 and 20);
- (LA) 1.2.2.7 examining the watertight integrity of the closures to any openings in the ship's side below the freeboard deck (LLC 66/88 reg.21);
- (LA) 1.2.2.8 examining the scuppers, inlets and discharges (LLC 66/88 reg.22);
- (LA) 1.2.2.9 examining the garbage chutes (LLC 66/88/03, reg. 22-1);
- (LA) 1.2.2.10 examining the spurling pipes and cable lockers (LLC 66/88/03, reg. 22-2);
- (LA) 1.2.2.11 examining the side scuttles and deadlights (LLC 66/88 reg.23);
- (LA) 1.2.2.12 examining the bulwarks including the provision of freeing ports, special attention being given to any freeing ports fitted with shutters (LLC 66/88/03 reg.24, 25);
- (LA) 1.2.2.13 examining the guardrails, gangways, walkways and other means provided for the protection of the crew and means for safe passage of crew (LLC 66/88/03 reg.25, 25-1);
- (LA) 1.2.2.14 examining the special requirements for ships permitted to sail with type "A" or type "B-minus" freeboards (LLC 66/88/03 reg.26, 27);
- (LA) 1.2.2.15 checking, when applicable, the fittings and appliances for timber deck cargoes (LLC 66/88 regs.42 to 45).
- (LA) 1.2.3 For the load line the completion of the annual survey should consist of:
  - (LA) 1.2.3.1 after a satisfactory survey, the International Load Line Certificate or International Load Line Exemption Certificate should be endorsed;
  - (LA) 1.2.3.2 if a survey shows that the condition of a ship or its equipment is unsatisfactory, see part "General", section 4.8.
- (LR) **1.3** **Renewal surveys** – see part "General", section 4.5
  - (LR) 1.3.1 For the load line the examination of current certificates and other records should consist of:
    - (LR) 1.3.1.1 the provisions of (LA) 1.2.1, except for the validity of the International Load Line Certificate or International Load Line Exemption Certificate.
  - (LR) 1.3.2 For the load line the renewal survey should consist of:

- (LR) 1.3.2.1 the provisions of (LA) 1.2.2;
- (LR) 1.3.2.2 examining the hull to ensure that its strength is sufficient for the draft corresponding to the freeboard assigned (LLC 66/88 reg.1).
- (LR) 1.3.3 For the load line the completion of the renewal survey should consist of:
  - (LR) 1.3.3.1 after a satisfactory survey, the International Load Line Certificate or International Load Line Exemption Certificate should be issued.

ANNEX 3

**SURVEY GUIDELINES UNDER THE 1973/78 MARPOL CONVENTION**

- (O) 1 **GUIDELINES FOR SURVEYS FOR THE INTERNATIONAL OIL POLLUTION PREVENTION CERTIFICATE**
- (OI) 1.1 **Initial surveys** – see part “General”, section 4.1
- (OI) 1.1.1 For oil pollution prevention the examination of plans and designs should consist of:
  - (OI) 1.1.1.1 examining the arrangements for the control of the discharge of oil and examining the plans and designs of the oil discharge monitoring and control system and oily-water separating and oil filtering equipment; confirming that pollution prevention equipment is type approved in accordance with the relevant Resolution (MARPOL 90/04 Annex I regs. 14 & 15);
  - (OI) 1.1.1.2 examining the arrangements for operation in special areas (MARPOL 90/04 Annex I reg. 15);
  - (OI) 1.1.1.3 examining the arrangements for the segregation of oil and water ballast and the prohibition of carriage of oil in the forepeak tanks or in spaces forward of the collision bulkhead (MARPOL 90/04 Annex I reg. 16);
  - (OI) 1.1.1.4 examining the sludge tank and standard discharge arrangements (MARPOL 90/04 Annex I regs. 12 and 13);
  - (OI) 1.1.1.5 examining oil fuel tank protection arrangements (MARPOL 90/04 Annex I reg. 12A).
- (OI) 1.1.2 For the oil pollution prevention for the additional requirements for oil tankers the examination of plans and designs should consist of:
  - (OI) 1.1.2.1 examining the ODME Manual and the arrangements for the control of the discharge of oil and for the retention of oil on board. Verifying that the ODME is type approved in accordance with the relevant Resolution (MARPOL 90/04 Annex I regs. 29, 31 & 34);
  - (OI) 1.1.2.2 examining the arrangements for operation in special areas (MARPOL 90/04 Annex I reg. 34);
  - (OI) 1.1.2.3 examining the arrangements for the segregated ballast tanks, checking their capacity and ascertaining whether the draft and trim conditions will be met (MARPOL 90/04 Annex I reg. 18);

- (OI) 1.1.2.4 examining for the arrangements for crude oil washing, including shadow diagrams and the Operations and Equipment Manual, checking that an inert gas system is to be fitted (MARPOL 90/04 Annex I regs. 33 and 35);
- (OI) 1.1.2.5 examining, as appropriate, the arrangements for the prevention of oil pollution in the event of collision or stranding (MARPOL 90/04 Annex I regs. 19 to 22);
- (OI) 1.1.2.6 examining the protective location of the segregated ballast spaces and the arrangements for minimizing pollution due to side and bottom damages (MARPOL 90/04 Annex I regs. 18, and 24 to 26);
- (OI) 1.1.2.7 confirming, as appropriate, that arrangements are made for the maintenance and inspection of wing and double bottom tanks or spaces (MARPOL 90/04 Annex I reg. 19);
- (OI) 1.1.2.8 examining the arrangements for cargo pump-room bottom protection (double bottom where required) (MARPOL 90/04 Annex I reg.22);
- (OI) 1.1.2.9 examining the pumping, piping and discharge arrangements (MARPOL 90/04 Annex I reg. 30);
- (OI) 1.1.2.10 examining the shipboard oil pollution emergency plan or in the case of a chemical/product tanker the shipboard marine pollution emergency plan (MARPOL 90/04 Annex I reg. 37);
- (OI) 1.1.2.11 examining the arrangements of oil/water interface detector (MARPOL 90/04 Annex I reg.32);
- (OI) 1.1.2.12 examining, for oil tanker of 5,000 deadweight and above delivered after 1 February 2002, the intact stability. (MARPOL 90/04 Annex I reg.27);
- (OI) 1.1.2.13 examining, for oil tanker of 150 gross tonnage and above delivered after 31 December 1979, the subdivision and damage stability. (MARPOL 90/04 Annex I reg.28);
- (OI) 1.1.2.14 examining the accidental oil outflow performance (MARPOL 90/04 Annex I reg.23), as applicable.
- (OI) 1.1.3 For the oil pollution prevention the survey during construction and after installation should consist of:
  - (OI) 1.1.3.1 confirming the satisfactory installation and operation of, as appropriate, oil filtering equipment and when appropriate the operation of the automatic means provided to stop the discharge of effluent and the satisfactory operation of the alarm – or other installation (MARPOL 90/04 Annex I regs. 14 and 15);

- (OI) 1.1.3.2 confirming, when applicable, that the oil content meter and its recording device are operable and that there is a sufficient supply of consumables for the recording device on board (MARPOL 90/04 Annex I regs. 14 and 15);
- (OI) 1.1.3.3 testing, where fitted, the automatic stopping device required for discharges in Special Areas (MARPOL 90/04 Annex I reg. 15);
- (OI) 1.1.3.4 confirming the segregation of the oil fuel and water ballast system and the non-carriage of oil in forepeak tanks (MARPOL 90/04 Annex I reg. 16);
- (OI) 1.1.3.5 confirming that the oily residue (sludge) tank and its discharge arrangements are satisfactory and, when the size of the sludge tank is approved on the basis of such installations, confirming the satisfactory operation of homogenizers, sludge incinerators or other recognized means for the control of sludge (MARPOL 90/04 Annex I reg. 12);
- (OI) 1.1.3.6 confirming the provision of the standard discharge connection (MARPOL 90/04 Annex I reg. 13);
- (OI) 1.1.3.7 confirming oil fuel tank protection arrangements (MARPOL 90/04 Annex I reg. 12A).
- (OI) 1.1.4 For the oil pollution prevention for the additional requirements for oil tankers the survey during construction and after installation should consist of:
  - (OI) 1.1.4.1 confirming that the arrangements of slop tanks or cargo tanks designated as slop tanks, and associated piping systems, are satisfactory (MARPOL 90/04 Annex I regs. 29 and 34);
  - (OI) 1.1.4.2 confirming the satisfactory installation and operation of the oil discharge monitoring and control system, including any audible or visual alarms, the automatic and manual means to stop the discharge of effluent, the starting interlock, the accuracy of the flow meter and the applicable resolution's requirements for installation survey<sup>1</sup> (MARPOL 90/04 Annex I regs. 31 and 34);
  - (OI) 1.1.4.3 confirming that the oil content meter and its recording device are operable and that there is a sufficient supply of consumables for the recording device on board (MARPOL 90/04 Annex I regs. 31 and 34);
  - (OI) 1.1.4.4 confirming that the approved oil/water interface detectors are on board and are operational (MARPOL 90/04 Annex I reg. 32);
  - (OI) 1.1.4.5 confirming that the arrangements of pumps, pipes and valves are in accordance with the requirements for segregated ballast systems and that

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<sup>1</sup> Resolution A.586(14) or MEPC.108(49), as applicable.

there are no cross-connections between the cargo and segregated ballast systems (MARPOL 90/04 Annex I reg. 18);

- (OI) 1.1.4.6 where a portable spool piece is provided for the emergency discharge of segregated ballast by connecting the segregated ballast system to a cargo pump, confirming that non-return valves are fitted on the segregated ballast connections and that the spool piece is mounted in a conspicuous position in the pump room with a permanent notice restricting its use (MARPOL 90/04 Annex I reg. 18);
- (OI) 1.1.4.7 testing ballast pipelines that pass through cargo tanks and those cargo pipelines that pass through ballast tanks to ensure there is no cross contamination (MARPOL 90/04 Annex I reg. 18);
- (OI) 1.1.4.8 confirming that the crude oil washing system is installed in accordance with the approved plans (MARPOL 90/04 Annex I regs. 18 & 33) and, in particular:
  - (OI) 1.1.4.8.1 examining crude oil washing piping, pumps, valves and deck mounted washing machines for signs of leakage and to check that all anchoring devices for crude oil washing piping are intact and secure;
  - (OI) 1.1.4.8.2 carrying out pressure testing of the crude oil washing system to 1.5 times the working pressure;
  - (OI) 1.1.4.8.3 confirming in those cases where drive units are not integral with the tank washing machines, that the number of operational drive units specified in the Manual are on board;
  - (OI) 1.1.4.8.4 checking that, when fitted, steam heaters for water washing can be properly isolated during crude oil washing operations, either by double shut-off valves or by clearly identifiable blanks;
  - (OI) 1.1.4.8.5 checking that the prescribed means of communications between the deck watch keeper and the cargo control position is operational;
  - (OI) 1.1.4.8.6 confirming that an overpressure relief device (or other approved arrangement) is fitted to the pumps supplying the crude oil washing system;
  - (OI) 1.1.4.8.7 verifying that flexible hoses for supply of oil to the washing machines on combination carriers are of an approved type, are properly stored and are in good condition;
- (OI) 1.1.4.9 verifying the effectiveness of the crude oil washing system (MARPOL 90/04 Annex I reg. 33) and, in particular:
  - (OI) 1.1.4.9.1 checking that the crude oil washing machines are operable and to observe the proper operation of the washing machines by means of the movement indicators and/or sound patterns or other approved methods;

- (OI) 1.1.4.9.2 checking the effectiveness of the stripping system in appropriate cargo tanks by observing the monitoring equipment and by hand-dipping or other approved means;
- (OI) 1.1.4.9.3 verifying by internal tank inspection after crude oil washing that the installation and operational procedures laid down in the Operations and Equipment Manual are satisfactory;
- (OI) 1.1.4.10 confirming that, where there is a crude oil washing system, an inert gas system has been installed and tested in accordance with the requirements of SOLAS 74/88/2000 (see (E1) 1.1.4.2 in Annex 1);
- (OI) 1.1.4.11 confirming, as appropriate, that the arrangements for the prevention of oil pollution in the event of collision or stranding are in accordance with the approved plans (MARPOL 90/04 Annex I regs. 19 to 22);
- (OI) 1.1.4.12 confirming that the piping systems associated with the discharge of dirty ballast water or oil-contaminated water are satisfactory (MARPOL 90/04 Annex I reg. 30);
- (OI) 1.1.4.13 confirming that the observation and discharge control positions for visually observing the discharge of oil-contaminated water, including the testing of the communication system between the two positions are satisfactory (MARPOL 90/04 Annex I reg. 30);
- (OI) 1.1.4.14 confirming that the means of draining cargo pumps and cargo lines, including the provision of a stripping device and the connections for pumping to the slop or cargo tanks or ashore are satisfactory (MARPOL 90/04 Annex I reg. 30);
- (OI) 1.1.4.15 confirming that the arrangements for the part flow system, where fitted, are satisfactory (MARPOL 90/04 Annex I reg. 30);
- (OI) 1.1.4.16 confirming that closing devices installed in the cargo transfer system and cargo piping as appropriate are satisfactory (MARPOL 90/04 Annex I regs. 23 & 26);
- (OI) 1.1.4.17 confirming that the subdivision and stability arrangements, in addition to the provision of (OI) 1.1.4.16, to prevent progressive flooding are satisfactory (MARPOL 90/04 Annex I regs. 23 & 26);
- (OI) 1.1.4.18 confirming the arrangements for cargo pump-room bottom protection (double bottom where required) (MARPOL 90/04 Annex I reg.22).
- (OI) 1.1.5 For the oil pollution prevention the check that the documentation has been placed on board cargo ships should consist of:
- (OI) 1.1.5.1 confirming that certificates for type approval for the oil filtering equipment and oil content meters are available (MARPOL 90/04 Annex I reg. 14);

- (OI) 1.1.5.2 confirming that the Oil Record Book (Part I) has been provided (MARPOL 90/04 Annex I reg. 17);
- (OI) 1.1.5.3 confirming that the shipboard oil pollution emergency plan or in the case of a chemical/product tanker a shipboard marine pollution emergency plan has been provided (MARPOL 90/04 Annex I reg. 37);
- (OI) 1.1.5.4 confirming, as appropriate, that the Operating and Maintenance manuals for the 15ppm bilge separator and 15ppm bilge alarm are available.
- (OI) 1.1.6 For the oil pollution prevention the check that the documentation has been placed on board oil tankers should additionally consist of:
- (OI) 1.1.6.1 confirming that, if applicable, a Dedicated Clean Ballast Tank Operation Manual has been provided (MARPOL 90/04 Annex I reg. 18);
- (OI) 1.1.6.2 confirming that, if applicable, a Crude Oil Washing Operations and Equipment Manual has been provided (MARPOL 90/04 Annex I reg. 35);
- (OI) 1.1.6.3 confirming that an operations manual for the oil discharge monitoring and control system has been provided together with any other documentation requested by the applicable Resolution<sup>2</sup> (MARPOL 90/04 Annex I reg. 31);
- (OI) 1.1.6.4 confirming that certificates for type approval for the oil content meters, oil discharge monitoring and control system and oil/water interface detectors are available (MARPOL 90/04 Annex I regs. 31 and 32);
- (OI) 1.1.6.5 confirming that an Oil Record Book (Part II) has been provided (MARPOL 90/04 Annex I reg. 36);
- (OI) 1.1.6.6 confirming that the instructions for the operation of the part flow system have been provided or included in the ship's cargo and ballast handling manuals (MARPOL 90/04 Annex I reg. 30.6.5);
- (OI) 1.1.6.7 confirming that the information and data concerning the subdivision and damage stability has been provided (MARPOL 90/04 Annex I reg. 28);
- (OI) 1.1.6.8 confirming that the shipboard oil pollution emergency plan or in the case of a chemical/product tanker a shipboard marine pollution emergency plan has been provided (MARPOL 90/04 Annex I reg. 37);
- (OI) 1.1.6.9 confirming, for oil tanker of 5,000 deadweight and above delivered on/after 1 February 2002, the intact stability has been approved (MARPOL 90/04 Annex I reg.27);

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<sup>2</sup> Resolution A.586(14) or MEPC.108(49), as applicable.



- (OI) 1.1.6.10 confirming, for oil tankers of 5,000 deadweight and above that arrangements are in place to provide prompt access to shore based damage stability and residual structural strength computerized calculation programmes (MARPOL 90/04 Annex I reg. 37.4).
- (OI) 1.1.7 For the oil pollution prevention the completion of initial survey should consist of:
- (OI) 1.1.7.1 after satisfactory survey, the International Oil Pollution Prevention Certificate should be issued.
- (OA) **1.2** **Annual surveys** – see part “General”, section 4.2
- (OA) 1.2.1 For the oil pollution prevention the examination of current certificates and other records should consist of:
- (OA) 1.2.1.1 checking the validity, as appropriate, of the Cargo Ship Safety Equipment Certificate, the Cargo Ship Safety Radio Certificate and the Cargo Ship Safety Construction Certificate or the Cargo Ship Safety Certificate;
- (OA) 1.2.1.2 checking the validity of the International Load Line Certificate or International Load Line Exemption Certificate;
- (OA) 1.2.1.3 checking the validity of the International Oil Pollution Prevention Certificate;
- (OA) 1.2.1.4 checking the certificates of class, if the ship is classed with a classification society;
- (OA) 1.2.1.5 checking, when appropriate, the validity of the International Sewage Pollution Prevention Certificate;
- (OA) 1.2.1.6 checking, when appropriate, the validity of the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk or the Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk;
- (OA) 1.2.1.7 checking, when appropriate, the validity of the International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk;
- (OA) 1.2.1.8 checking, when appropriate, the validity of the International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk;
- (OA) 1.2.1.9 checking, when appropriate, the validity of the International Air Pollution Prevention Certificate;
- (OA) 1.2.1.10 checking, when appropriate, the validity of the International Sewage Pollution Prevention Certificate;

- (OA) 1.2.1.11 checking, when appropriate, the validity of the Safety Management Certificate (SMC) and that a copy of the Document of Compliance (DOC) is on board;
- (OA) 1.2.1.12 checking the validity of the International Ship Security Certificate;
- (OA) 1.2.1.13 checking that the ship's complement complies with the Minimum Safe Manning Document (SOLAS 74/88/2000 reg. V/14.2);
- (OA) 1.2.1.14 checking that the master, officers and ratings are certificated as required by the STCW Convention;
- (OA) 1.2.1.15 checking whether any new equipment has been fitted and, if so, confirm that it has been approved before installation and that any changes are reflected in the appropriate certificate;
- (OA) 1.2.1.16 checking from the certificates for the type approval of the oil filtering equipment (MARPOL 90/04 Annex I regs. 14 and 15);
- (OA) 1.2.1.17 checking, when appropriate, that the Operating and Maintenance manuals for the 15ppm bilge separator and 15ppm bilge alarm are available on board;
- (OA) 1.2.1.18 verifying, if applicable, that the 15ppm bilge alarm has been calibrated by the manufacturer or a person authorized by the manufacturer and that a valid calibration certificate is available on board<sup>3</sup>;
- (OA) 1.2.1.19 checking whether the appropriate entries have been made in Part I of the Oil Record Book (MARPOL 90/04 Annex I reg. 17).
- (OA) 1.2.2 For the oil pollution prevention the examination of current certificates and other records for oil tankers should additionally consist of:
- (OA) 1.2.2.1 confirming that the approved Dedicated Clean Ballast Tank Operation Manual, and/or the approved Operations and Equipment Manual for the Crude Oil Washing Systems, as appropriate, is/are on board (MARPOL 90/04 Annex I regs. 18 and 35);
- (OA) 1.2.2.2 confirming that, when appropriate, the approved operational procedures for existing oil tankers having special ballast arrangements are on board (MARPOL 90/04 Annex I reg. 18);  
*Note: This requirement will be obsolete with effect from June 2008 as all such tankers will be phased out under reg. 20.*

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<sup>3</sup> For installations complying with resolution MEPC.107(49).

- (OA) 1.2.2.3 confirming, when appropriate, that a CAS Statement of Compliance together with the CAS Final Report<sup>4</sup> are on board (MARPOL 90/04, Annex I, regulations 20.6, 20.7 & 21.6);
- (OA) 1.2.2.4 confirming that the Operating and Maintenance manual for the oil discharge monitoring and control system, is on board (MARPOL 90/04 Annex I reg. 31);
- (OA) 1.2.2.5 confirming that a valid calibration certificate of the oil discharge monitoring equipment is available on board<sup>5</sup>;
- (OA) 1.2.2.6 checking whether the appropriate entries have been made in Part II of the Oil Record Book (MARPOL 90/04 Annex I reg. 36);
- (OA) 1.2.2.7 confirming that for oil tankers of 5,000 deadweight and above delivered on/after 1 February 2002 the loading conditions and intact stability information in an approved form is on board (MARPOL 90/04 Annex I reg. 27);
- (OA) 1.2.2.8 confirming that subdivision and damage stability in an approved form, where applicable, is on board (MARPOL 90/04 Annex I reg.28);
- (OA) 1.2.2.9 confirming that the oil pollution emergency plan or in the case of a chemical/product tanker a shipboard marine pollution emergency plan is on board (MARPOL 90/04 Annex I reg. 37);
- (OA) 1.2.2.10 checking the certificates for the type approval of the oil pollution prevention equipment, such as the oil content meters and oil/water interface detectors, and sighting the records of the various oil discharge monitoring equipment, as applicable (MARPOL 90/04 Annex I reg.31);
- (OA) 1.2.2.11 checking that the ship is allowed continued operation according to the phase-out scheme of MARPOL 90/04 Annex I reg.20).
- (OA) 1.2.3 For the oil pollution prevention the annual survey should consist of:
- (OA) 1.2.3.1 examining externally the oil filtering equipment and confirming, as far as practicable, its satisfactory operation including, when appropriate, testing the operation of the automatic means provided to stop the discharge of effluent and the alarm for the oil filtering equipment (MARPOL 90/04 Annex I reg. 14 and 15);
- (OA) 1.2.3.2 testing, where fitted, the oil filtering equipment required for discharge in special areas (MARPOL 90/04 Annex I reg. 15);

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<sup>4</sup> Refer to resolution MEPC.94(46) as amended – Condition Assessment Scheme.

<sup>5</sup> For installations complying with resolution MEPC.108(49).

- (OA) 1.2.3.3 confirming the segregation of oil fuel and water ballast systems and that the arrangements prohibit the carriage of oil in forepeak tanks or in spaces forward of the collision bulkheads (MARPOL 90/04 Annex I reg. 16);
- (OA) 1.2.3.4 checking that the arrangement of oily residue (sludge) tank and its discharge arrangements are satisfactory and confirming that, where applicable, homogenizers, sludge incinerators or other recognized means for the control of sludge are satisfactory (MARPOL 90/04 Annex I reg. 12);
- (OA) 1.2.3.5 confirming that a standard discharge connection is provided (MARPOL 90/04 Annex I reg. 13).
- (OA) 1.2.4 For oil pollution prevention the annual survey of the additional requirements for oil tankers should consist of:
  - (OA) 1.2.4.1 examining the oil discharge monitoring and control system and its associated equipment (MARPOL 90/04 Annex I reg. 31) and, in particular:
    - (OA) 1.2.4.1.1 examining externally the system and equipment and, if applicable, verifying that the instrument is properly sealed;
    - (OA) 1.2.4.1.2 confirming, as far as practicable, the satisfactory operation of the oil discharge monitoring and control system including the oil content meter and, where applicable, the automatic and manual means provided to stop the discharge of effluent and the starting interlock;
    - (OA) 1.2.4.1.3 observing that indicators and recording devices are operable and verifying that sufficient supply of consumables for the recorders are on board;
    - (OA) 1.2.4.1.4 testing, as far as practicable, any audible or visual alarms fitted to the oil discharge monitoring and control system;
  - (OA) 1.2.4.2 examining, as far as practicable, the oil/water interface detectors (MARPOL 90/04 Annex I reg. 32);
  - (OA) 1.2.4.3 confirming that no cross connections have been fitted between the cargo and segregated ballast systems (MARPOL 90/04 Annex I reg. 18);
  - (OA) 1.2.4.4 where a portable spool piece is provided for the emergency discharge of segregated ballast by connecting the segregated ballast system to a cargo pump, confirming that non-return valves are fitted on the segregated ballast connections and that the spool piece is mounted in a conspicuous position in the pump room with a permanent notice restricting its use (MARPOL 90/04 Annex I reg. 18);
  - (OA) 1.2.4.5 confirming by sighting that there has been no contamination with oil in the segregated ballast tanks (MARPOL 90/04 Annex I reg. 18);

- (OA) 1.2.4.6 confirming, as far as practicable, that the dedicated clean ballast tank arrangement remains satisfactory (MARPOL 90/04 Annex I reg. 18);
- (OA) 1.2.4.7 confirming by sighting that there has been no contamination with oil in the dedicated clean ballast tanks (MARPOL 90/04 Annex I reg. 18);
- (OA) 1.2.4.8 confirming, as far as practicable, that the crude oil washing system remains satisfactory (MARPOL 90/04 Annex I reg. 33) and, in particular:
  - (OA) 1.2.4.8.1 examining externally the crude oil washing piping, pumps, valves and deck mounted washing machines for signs of leakage and checking that all anchoring devices for crude oil washing piping are intact and secure;
  - (OA) 1.2.4.8.2 confirming, in those cases where drive units are not integral with the tank cleaning machines, that the number of operational drive units as specified in the Manual are on board;
  - (OA) 1.2.4.8.3 checking that, when fitted, steam heaters for water washing can be properly isolated during crude oil washing operations, either by double shut-off valves or clearly identifiable blanks;
  - (OA) 1.2.4.8.4 checking that the prescribed means of communications between the deck watch keeper and the cargo control position is operational;
  - (OA) 1.2.4.8.5 confirming that an overpressure relief device (or other approved arrangement) is fitted to the pumps supplying the crude oil washing systems;
  - (OA) 1.2.4.8.6 confirming that flexible hoses for supply of oil to the washing machines on combination carriers, are of an approved type, are properly stored and are in good condition;
- (OA) 1.2.4.9 verifying, where applicable and as far as practicable, the effectiveness of the crude-oil washing system (MARPOL 90/04 Annex I reg. 33) and, in particular:
  - (OA) 1.2.4.9.1 checking tanks containing departure and/or arrival ballast water, as applicable, to confirm the effectiveness of the cleaning and stripping;
  - (OA) 1.2.4.9.2 checking, as far as practicable, that the crude oil washing machines are operable and, when the survey is carried out during crude oil washing operations, observing the proper operation of the washing machines by means of the movement indicators and/or sound patterns or other approved methods;
  - (OA) 1.2.4.9.3 checking, as far as practicable, the effectiveness of the stripping system in appropriate cargo tanks by observing the monitoring equipment and by hand-dipping or other approved means;

- (OA) 1.2.4.10 confirming that on those existing tankers operating with special ballast arrangements, the arrangements are as approved and are satisfactory (MARPOL 90/04 Annex I reg. 18);
- (OA) 1.2.4.11 confirming, as appropriate and as practicable, that the arrangements for the prevention of oil pollution in the event of collision or stranding are approved and are satisfactory (MARPOL 90/04 Annex I regs. 19 to 22);
- (OA) 1.2.4.12 examining the piping systems associated with the discharge of dirty or oil-contaminated water including the part flow system, if fitted (MARPOL 90/04 Annex I reg. 30);
- (OA) 1.2.4.13 testing the communication system between the observation and discharge control positions (MARPOL 90/04 Annex I reg. 30);
- (OA) 1.2.4.14 examining the means of draining cargo pumps and cargo lines, including the stripping device and the connections for pumping to the slop or cargo tanks or ashore (MARPOL 90/04 Annex I reg. 30);
- (OA) 1.2.4.15 confirming for oil tankers of 5,000 Deadweight and above, that arrangements are in place to provide prompt access to shore based damage stability and residual structural strength computerized calculation programmes (MARPOL 90/04 Annex I reg. 37.4).
- (OA) 1.2.5 For the oil pollution prevention the completion of the annual survey should consist of:
  - (OA) 1.2.5.1 after a satisfactory survey, the International Oil Pollution Prevention Certificate should be endorsed;
  - (OA) 1.2.5.2 if a survey shows that the condition of a ship or its equipment is unsatisfactory, see part “General”, section 4.8.
- (OIn) **1.3 Intermediate surveys** – see part “General”, section 4.3
  - (OIn) 1.3.1 For the oil pollution prevention the examination of current certificates and other records should consist of:
    - (OIn) 1.3.1.1 the provisions of (OA) 1.2.1.
  - (OIn) 1.3.2 For the oil pollution prevention the examination of current certificates and other records for oil tankers should additionally consist of:
    - (OIn) 1.3.2.1 the provisions of (OA) 1.2.2.
  - (OIn) 1.3.3 For oil pollution prevention the intermediate survey should consist of:
    - (OIn) 1.3.3.1 the provisions of (OA) 1.2.3;

- (OIn) 1.3.3.2 examining the oily-water separating equipment or oil filtering equipment or process unit, where fitted, including associated pumps, piping and fittings for wear and corrosion (MARPOL 90/04 Annex I regs. 14 & 15);
- (OIn) 1.3.3.3 examining the oil content meter (15 ppm alarm and bilge monitor) for obvious defects, deterioration or damage and checking the record of calibration of the meter when done in accordance with the manufacturer's operation and instruction manual (MARPOL 90/04 Annex I reg.14).
- (OIn) 1.3.4 For oil pollution prevention the intermediate survey of the additional requirements for oil tankers should consist of:
  - (OIn) 1.3.4.1 the provisions of (OA) 1.2.4;
  - (OIn) 1.3.4.2 examining the oil discharge monitoring and control system and the oil content meter for obvious defects, deterioration or damage, and to check the record or calibration of the meter when done in accordance with the manufacturer's operation and instruction manual (MARPOL 90/04 Annex I reg. 31);
  - (OIn) 1.3.4.3 confirming the satisfactory operation of the oil/water interface detectors (MARPOL 90/04 Annex I reg. 32);
  - (OIn) 1.3.4.4 for the crude oil washing system (MARPOL 90/04 Annex I reg. 33):
    - (OIn) 1.3.4.4.1 examining the crude oil washing piping outside the cargo tanks. If upon examination there is any doubt as to its condition, the piping may be required to be pressure tested, gauged or both. Particular attention should be paid to any repairs such as welded doublers;
    - (OIn) 1.3.4.4.2 confirming the satisfactory operation of the isolation valves to steam heaters for washing water, when fitted;
    - (OIn) 1.3.4.4.3 examining at least two selected cargo tanks for the express purpose of verifying the continued effectiveness of the installed crude oil washing and stripping systems. If the tank cannot be gas-freed for the safe entry of the surveyor, an internal examination should not be conducted. In this case this examination may be conducted in conjunction with the internal examination of cargo tanks required in (Cm) 2.3.3.3 in Annex 1;
  - (OIn) 1.3.4.5 examining the manual and/or remote operation of the individual tank valves (or other similar closing devices) to be kept closed at sea (MARPOL 90/04 Annex I regs. 23 & 26).
- (OIn) 1.3.5 For the oil pollution prevention the completion of the intermediate survey should consist of:
  - (OIn) 1.3.5.1 after a satisfactory survey, the International Oil Pollution Prevention Certificate should be endorsed;

- (OIn) 1.3.5.2 if a survey shows that the condition of a ship or its equipment is unsatisfactory; see part “General”, section 4.8.
- (OR) **1.4** **Renewal surveys** – see part “General” section 4.5
- (OR) 1.4.1 For the oil pollution prevention the examination of current certificates and other records should consist of:
- (OR) 1.4.1.1 the provisions of (OA) 1.2.1, except for the validity of the International Oil Pollution Prevention Certificate;
- (OR) 1.4.1.2 verifying that, if applicable, the 15ppm bilge alarm has been calibrated by the manufacturer or a person authorized by the manufacturer and that a valid calibration certificate is available on board<sup>6</sup>.
- (OR) 1.4.2 For the oil pollution prevention the examination of current certificates and other records for tankers should additionally consist of:
- (OR) 1.4.2.1 the provisions of (OA) 1.2.2;
- (OR) 1.4.2.2 verifying that, if applicable, the Oil Discharge Monitoring equipment has been calibrated and that a valid calibration certificate is available on board<sup>7</sup>.
- (OR) 1.4.3 For oil pollution prevention the renewal survey should consist of:
- (OR) 1.4.3.1 the provisions of (OIn) 1.3.3;
- (OR) 1.4.3.2 confirming, if necessary by simulated test or equivalent, the satisfactory operation of the oily-water separating equipment or oil filtering equipment (MARPOL 90/04 Annex I reg. 15);
- (OR) 1.4.3.3 confirming, if necessary by simulated test or equivalent, the satisfactory operation of the oil discharge monitoring and control system including where practicable the automatic and manual operation of the means provided to stop the discharge of effluent (MARPOL 90/04 Annex I reg. 15);
- (OR) 1.4.3.4 confirming the satisfactory operation of the alarm for the oil filtering system (MARPOL 90/04 Annex I reg. 15);
- (OR) 1.4.3.5 confirming the satisfactory operation of homogenizers, sludge incinerators or other recognized means for the control of sludge when the size of oily residue (sludge) tank is approved on the basis of such installations (MARPOL 90/04 Annex I reg.12).

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<sup>6</sup> For installations complying with resolution MEPC.107(49).

<sup>7</sup> For installations complying with resolution MEPC.108(49).



- (OR) 1.4.4 For oil pollution prevention the renewal survey of the additional requirements for oil tankers should consist of:
- (OR) 1.4.4.1 the provisions of (OIn) 1.3.4;
- (OR) 1.4.4.2 confirming that the arrangements of slop tanks or cargo tanks designated as slop tanks and associated piping systems are satisfactory (MARPOL 90/04 Annex I regs. 29 and 34);
- (OR) 1.4.4.3 confirming, if necessary by simulated test or equivalent, the satisfactory operation of the oil discharge monitoring and control system and its associated equipment, including the oil/water interface detectors (MARPOL 90/04 Annex I reg. 31 and 32);
- (OR) 1.4.4.4 confirming that the arrangements of pumps, pipes and valves are in accordance with the requirements for SBT systems (MARPOL 90/04 Annex I reg. 18);
- (OR) 1.4.4.5 confirming that the arrangements of pumps, pipes and valves are in accordance with the Revised Specifications for Oil Tankers with Dedicated Clean Ballast Tanks (MARPOL 90/04 Annex I reg. 18);
- (OR) 1.4.4.6 confirming that the crude oil washing system is in accordance with the requirements for such systems (MARPOL 90/04 Annex I reg. 33) and, in particular:
- (OR) 1.4.4.6.1 carrying out pressure testing of the crude oil washing system to at least the working pressure;
- (OR) 1.4.4.6.2 examining the cargo tanks for the express purpose of verifying the continued effectiveness of the installed crude oil washing and stripping systems;
- (OR) 1.4.4.6.3 examining internally, when fitted, the isolation valves for any steam heaters;
- (OR) 1.4.4.7 verifying, by internal tank inspection or by another alternative method acceptable to the Administration, the effectiveness of the crude oil washing system. If the tank cannot be gas-freed for the safe entry of the surveyor, an internal inspection should not be conducted. An acceptable alternative would be satisfactory results during the surveys required by (OA) 1.2.4.9 (MARPOL 90/04 Annex I reg. 33);
- (OR) 1.4.4.8 confirming that there is no leakage from those ballast pipelines passing through cargo tanks and those cargo pipelines passing through ballast tanks (MARPOL 90/04 Annex I regs. 18 and 33);
- (OR) 1.4.4.9 confirming that the pumping, piping and discharge arrangements are satisfactory (MARPOL 90/04 Annex I reg. 30) and, in particular:

- (OR) 1.4.4.9.1 confirming that the piping systems associated with the discharge of dirty ballast water or oil contaminated water are satisfactory;
- (OR) 1.4.4.9.2 confirming that the means of draining cargo pumps and cargo lines, including the stripping device and the connections for pumping to the slop or cargo tanks or ashore are satisfactory;
- (OR) 1.4.4.9.3 confirming that the arrangements for the part flow system, where fitted, are satisfactory;
- (OR) 1.4.4.10 confirming that closing devices installed in the cargo transfer system and cargo piping as appropriate are satisfactory (MARPOL 90/04 Annex I regs. 23 and 26);
- (OR) 1.4.4.11 confirming, as appropriate and as practicable, that the arrangements for the prevention of oil pollution in the event of collision or stranding are satisfactory (MARPOL 73/78/90 Annex I regs. 19 to 22);
- (OR) 1.4.4.12 confirming for oil tankers of 5,000 deadweight and above that arrangements are in place to provide prompt access to shore based damage stability and residual structural strength computerized calculation programmes (MARPOL 90/04 Annex I reg. 37.4).
- (OR) 1.4.5 For the oil pollution prevention the completion of the renewal survey should consist of:
- (OR) 1.4.5.1 after a satisfactory survey, the International Oil Pollution Prevention Certificate should be issued.”
- (N) **2 GUIDELINES FOR SURVEYS FOR THE INTERNATIONAL POLLUTION PREVENTION CERTIFICATE FOR THE CARRIAGE OF NOXIOUS SUBSTANCES IN BULK**
- (NI) **2.1 Initial surveys** – see part General section 4.1
- (NI) 2.1.1 For the carriage of noxious liquid substances in bulk the examination of plans and designs (as applicable to the cargoes the ship is to be certified to carry) should consist of:
- (NI) 2.1.1.1 drawing up the list of noxious liquid substances it is proposed the ship will be certified to carry (MARPOL 90/04 Annex II reg. 6);
- (NI) 2.1.1.2 examining the pumping system (MARPOL 90/04 Annex II reg. 12);
- (NI) 2.1.1.3 examining the stripping system (MARPOL 90/04 Annex II reg. 12);
- (NI) 2.1.1.4 examining the tank washing system and equipment (MARPOL 90/04 Annex II reg. 14 and App.4);

- (NI) 2.1.1.5 examining the underwater discharge arrangements (MARPOL 90/04 Annex II reg. 12);
- (NI) 2.1.1.6 examining the ventilation equipment for residue removal (MARPOL 90/04 Annex II reg. 13 and App.7);
- (NI) 2.1.1.7 examining the heating system for solidifying and high viscosity substances (MARPOL 90/04 Annex II reg. 14 and App.4);
- (NI) 2.1.1.8 examining the Procedures and Arrangements Manual (including cargo carriage requirements to meet Annex II regulations) (MARPOL 90/04 Annex II reg.14 and App.4);
- (NI) 2.1.1.9 examining the shipboard marine pollution emergency plan (MARPOL 90/04 Annex II reg. 17);
- (NI) 2.1.1.10 examining if applicable the construction and arrangements of a ship certified to carry individually identified vegetable oils under exemption from the carriage requirements (MARPOL 90/04 Annex II reg. 4.3).
- (NI) 2.1.2 For the carriage of noxious liquid substances in bulk the survey during construction and after installation (as applicable to the cargoes the ship is to be certified to carry) should consist of:
  - (NI) 2.1.2.1 confirming that the pumping and stripping systems are satisfactory and that portable pipes or bends in sufficient number, if required, are on board (MARPOL 90/04 Annex II reg.12);
  - (NI) 2.1.2.2 conducting the water test for assessing the stripping quantity (MARPOL 73/78/90/04 Annex II reg. 12 and App.5);
  - (NI) 2.1.2.3 confirming that the tank washing machines provided on board are in working order, are those described in the Procedures and Arrangements Manual and are installed in accordance with the approved plans (MARPOL 90/04 Annex II reg.14 and App.4);
  - (NI) 2.1.2.4 confirming that the wash water heating system, if required, is installed in accordance with the approved plans (MARPOL 90/04 Annex II reg.14 and App.4);
  - (NI) 2.1.2.5 confirming that the number and position of tank cleaning openings for portable machines are in accordance with the approved plans (MARPOL 90/04 Annex II reg.14 and App.4);
  - (NI) 2.1.2.6 confirming that the underwater discharge outlet(s) are in accordance with the approved plans (MARPOL 90/04 Annex II reg. 12);

- (NI) 2.1.2.7 verifying by actual test that the discharge rate of the pumps, where a variable rate type is used, can be controlled as specified in the Procedures and Arrangements Manual (MARPOL 90/04 Annex II reg.14 and App.4);
- (NI) 2.1.2.8 confirming that the ventilation equipment for residue removal is installed in accordance with the approved plan and is in working order and that the pressure in the driving medium for portable fans for ventilation equipment for residue removal can be achieved to give the required fan capacity (MARPOL 90/04 Annex II reg. 13 & App.7);
- (NI) 2.1.2.9 confirming that the heating system for solidifying and high viscosity substances is installed in accordance with the approved plan (MARPOL 90/04 Annex II reg.14 and App.4);
- (NI) 2.1.2.10 confirming if applicable the construction and arrangements of a ship certified to carry individually identified vegetable oils under exemption from the carriage requirements (MARPOL 90/04 Annex II reg. 4.3).
- (NI) 2.1.3 For the carriage of noxious liquid substances in bulk the check that the required documentation has been placed on board cargo ships (as applicable to the cargoes the ship is to be certified to carry) should consist of:
  - (NI) 2.1.3.1 confirming that Procedures and Arrangements Manual has been provided (MARPOL 90/04 Annex II reg. 14);
  - (NI) 2.1.3.2 confirming that the Cargo Record Book has been provided (MARPOL 90/04 Annex II reg. 15);
  - (NI) 2.1.3.3 confirming the shipboard marine pollution emergency plan is provided (MARPOL 90/04 Annex II reg. 17).
- (NI) 2.1.4 For the carriage of noxious liquid substances in bulk the completion of initial survey should consist of:
  - (NI) 2.1.4.1 after satisfactory survey, the International Certificate for the Carriage of Noxious Liquid Substances in Bulk should be issued.
- (NA) **2.2 Annual surveys** – see part “General”, section 4.2
  - (NA) 2.2.1 For the carriage of noxious liquid substances in bulk the examination of current certificates and other records should consist of:
    - (NA) 2.2.1.1 checking the validity, as appropriate, of the Cargo Ship Safety Equipment Certificate, the Cargo Ship Safety Radio Certificate and the Cargo Ship Safety Construction Certificate or the Cargo Ship Safety Certificate;
    - (NA) 2.2.1.2 checking the validity of the International Load Line Certificate or International Load Line Exemption Certificate;

- (NA) 2.2.1.3 checking the validity of the International Oil Pollution Prevention Certificate;
- (NA) 2.2.1.4 checking the certificates of class, if the ship is classed with a classification society;
- (NA) 2.2.1.5 checking, when appropriate, the validity of the International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk;
- (NA) 2.2.1.6 checking the validity of the International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk;
- (NA) 2.2.1.7 checking, when appropriate, the validity of the International Air Pollution Prevention Certificate;
- (NA) 2.2.1.8 checking, when appropriate, the validity of the International Sewage Pollution Prevention Certificate;
- (NA) 2.2.1.9 checking, when appropriate, the validity of the Safety Management Certificate (SMC) and that a copy of the Document of Compliance (DOC) is on board;
- (NA) 2.2.1.10 checking the validity of the International Ship Security Certificate;
- (NA) 2.2.1.11 checking that the ship's complement complies with the Minimum Safe Manning Document (SOLAS 74/88/2000 reg.V/ 14.2);
- (NA) 2.2.1.12 checking that the master, officers and ratings are certificated as required by the STCW Convention;
- (NA) 2.2.1.13 checking whether any new equipment has been fitted and, if so, confirm that it has been approved before installation and that any changes are reflected in the appropriate certificate;
- (NA) 2.2.1.14 confirming that the Procedures and Arrangements Manual is on board (MARPOL 90/04 Annex II reg. 14);
- (NA) 2.2.1.15 confirming that the Cargo Record Book is being correctly used (MARPOL 90/04 Annex II reg. 15);
- (NA) 2.2.1.16 confirming that the shipboard marine pollution emergency plan is on board (MARPOL 90/04 Annex II reg. 17).
- (NA) 2.2.2 For the carriage of noxious liquid substances in bulk the annual survey should consist of:
  - (NA) 2.2.2.1 examining externally and confirming that the pumping and piping systems, including a stripping system if fitted, and associated equipment remain as approved (MARPOL 90/04 Annex II reg. 12);

- (NA) 2.2.2.2 examining externally the tank washing piping and confirming that the type, capacity, number, and arrangement of the tank washing machines are as approved (MARPOL 90/04 Annex II reg.14 and App.4);
- (NA) 2.2.2.3 examining externally the wash water heating system (MARPOL 90/04 Annex II reg.14 and App.4);
- (NA) 2.2.2.4 examining externally, as far as practicable, the underwater discharge arrangements (MARPOL 90/04 Annex II reg. 12);
- (NA) 2.2.2.5 confirming that the means of controlling the rate of discharge of the residue is as approved (MARPOL 90/04 Annex II reg.14 and App.4);
- (NA) 2.2.2.6 confirming that the ventilation equipment for residue removal is as approved (MARPOL 90/04 Annex II App.7);
- (NA) 2.2.2.7 examining externally, as far as is accessible, the heating system required for solidifying and high viscosity substances (MARPOL 90/04 Annex II reg.14 and App.4);
- (NA) 2.2.2.8 examining any additional requirements listed on the International Certificate for the Carriage of Noxious Liquids in Bulk.
- (NA) 2.2.3 For the carriage of noxious liquid substances in bulk the completion of annual survey should consist of:
  - (NA) 2.2.3.1 after satisfactory survey, the International Certificate for the Carriage of Noxious Liquid Substances in Bulk should be endorsed;
  - (NA) 2.2.3.2 if a survey shows that the condition of a ship or its equipment is unsatisfactory, see part “General” section 4.8.
- (NIn) **2.3 Intermediate surveys** – see part “General”, section 4.3
  - (NIn) 2.3.1 For the carriage of noxious liquid substances in bulk the examination of current certificates and other records should consist of:
    - (NIn) 2.3.1.1 the provisions of (NA) 2.2.1.
  - (NIn) 2.3.2 For the carriage of noxious liquid substances in bulk the intermediate survey should consist of:
    - (NIn) 2.3.2.1 the provisions of (NA) 2.2.2;
    - (NIn) 2.3.2.2 verifying from the cargo record book that the pumping and stripping arrangements have been emptying the tanks efficiently and are all in working order (MARPOL 90/04 Annex II reg. 12 and 15);
    - (NIn) 2.3.2.3 confirming, if possible, that the discharge outlet(s) are in good condition (MARPOL 90/04 Annex II P & A Standards);

- (NIn) 2.3.2.4 confirming that the ventilation equipment for residue removal is satisfactory and that the pressure in the driving medium for portable fans for ventilation equipment for residue removal can be achieved to give the required fan capacity (MARPOL 90/04 Annex II App.7).
- (NIn) 2.3.3 For the carriage of noxious liquid substances in bulk the completion of intermediate survey should consist of:
- (NIn) 2.3.3.1 after satisfactory survey, the International Certificate for the Carriage of Noxious Liquid Substances in Bulk should be endorsed;
- (NIn) 2.3.3.2 if a survey shows that the condition of a ship or its equipment is unsatisfactory, see part “General”, section 4.8.
- (NR) **2.4** **Renewal surveys** – see part “General”, section 4.4
- (NR) 2.4.1 For the carriage of noxious liquid substances in bulk the examination of current certificates and other records should consist of:
- (NR) 2.4.1.1 the provisions of (NA) 2.2.1, except for the validity of the International Certificate for the Carriage of Noxious Liquid Substances in Bulk.
- (NR) 2.4.2 For the carriage of noxious liquid substances in bulk the renewal survey should consist of:
- (NR) 2.4.2.1 the provisions of (NIn) 2.3.2;
- (NR) 2.4.2.2 confirming that the pumping and stripping systems are satisfactory and that portable pipes or bends in sufficient number, if required, are on board (MARPOL 90/04 Annex II reg. 12);
- (NR) 2.4.2.3 conducting the water test for assessing the stripping quantity (MARPOL 90/04 Annex II reg. 12 and App. 5);
- (NR) 2.4.2.4 confirming that the tank washing machines provided on board are in working order, are those described in the Procedures and Arrangements Manual and are installed in accordance with the approved plans (MARPOL 90/04 Annex II reg.14 and App.4);
- (NR) 2.4.2.5 confirming that the wash water heating system, if required, is installed in accordance with the approved plans and is in working order (MARPOL 90/04 Annex II reg.14 and App.4);
- (NR) 2.4.2.6 confirming that the number and position of tank cleaning openings for portable machines are in accordance with the approved plans (MARPOL 90/04 Annex II reg.14 and App.4);
- (NR) 2.4.2.7 confirming that the underwater discharge outlet(s) are in good condition and are in accordance with the approved plans (MARPOL 90/04 Annex II reg. 12, 14 and App.4);

- (NR) 2.4.2.8 confirming that means are provided in the common discharge piping to isolate openings provided above the waterline (MARPOL 73/78/90 Annex II);
- (NR) 2.4.2.9 verifying by actual test that the discharge rate of the pumps, where a variable rate type is used, can be controlled as specified in the Procedures and Arrangements Manual (MARPOL 90/04 Annex II reg. 14 and App.4);
- (NR) 2.4.2.10 confirming that the ventilation equipment for residue removal is installed in accordance with the approved plan and is in working order (MARPOL 90/04 Annex II reg. 12, 14 and App.4);
- (NR) 2.4.2.11 confirming that the heating system for solidifying and high viscosity substances is installed in accordance with the approved plan and is in working order (MARPOL 90/04 Annex II reg. 12, 14 and App.4).
- (NR) 2.4.3 For the carriage of noxious liquid substances in bulk the completion of renewal survey should consist of:
- (NR) 2.4.3.1 after satisfactory survey, the International Certificate for the Carriage of Noxious Liquid Substances in Bulk should be issued.”
- (S) **3 GUIDELINES FOR SURVEYS FOR THE INTERNATIONAL SEWAGE POLLUTION PREVENTION CERTIFICATE**
- (SI) **3.1 Initial surveys** – see part “General”, section 4.1
- (SI) 3.1.1 For the sewage pollution prevention the examination of plans and designs should consist of:
- (SI) 3.1.1.1 examining as appropriate the arrangements for the provision of a sewage treatment plant, or of a sewage comminuting and disinfecting system, or of a sewage holding tank (MARPOL Annex IV reg.9);
- (SI) 3.1.1.2 if a sewage treatment plant is fitted, checking that it is type approved by the administration in accordance with the appropriate resolution (MARPOL Annex IV reg.9.1);
- (SI) 3.1.1.3 if a sewage comminuting and disinfecting system is fitted, checking that it is approved by the administration and that facilities for the temporary storage of sewage are provided (MARPOL Annex IV reg.9.2);
- (SI) 3.1.1.4 if a sewage holding tank is fitted, checking its capacity having regard to the number of person on board (MARPOL Annex IV reg.9.1.3);
- (SI) 3.1.1.5 examining the arrangements for the provision of a standard discharge connection (MARPOL Annex IV reg.10);
- (SI) 3.1.1.6 examining the arrangements for the provision of a pipeline for the discharge of sewage to a reception facility (MARPOL Annex IV reg. 10).



- (SI) 3.1.2 For the sewage pollution prevention the survey during construction and after installation should consist of:
  - (SI) 3.1.2.1 checking externally, as applicable, the sewage treatment plant or the sewage comminuting and disinfecting system, and confirming their operation (MARPOL Annex IV regs.4.1.1 and 9);
  - (SI) 3.1.2.2 if a sewage holding tank is fitted, checking that it has been constructed in a satisfactory manner, and checking that the holding tank has a means to indicate visually the amount of its contents (MARPOL Annex IV reg.9.1.3);
  - (SI) 3.1.2.3 confirming that a standard discharge connection is provided (MARPOL Annex IV reg.10);
  - (SI) 3.1.2.4 confirming that a pipeline for the discharge of sewage to a reception facility is provided (MARPOL Annex IV reg.10).
- (SR) **3.2 Renewal surveys** – See “General”, section 4.5
  - (SR) 3.2.1 For the sewage pollution prevention the examination of current certificates and other records should consist of:
    - (SR) 3.2.1.1 checking the validity, as appropriate, of the Cargo Ship Safety Equipment Certificate, the Cargo Ship Safety Radio Certificate and the Cargo Ship Safety Construction Certificate or the Cargo Ship Safety Certificate or Passenger Ship Safety Certificate;
    - (SR) 3.2.1.2 checking the validity of the International Load Line Certificate or International Load Line Exemption Certificate;
    - (SR) 3.2.1.3 checking the validity of the International Oil Pollution Prevention Certificate;
    - (SR) 3.2.1.4 checking the validity of the International Air Pollution Prevention Certificate;
    - (SR) 3.2.1.5 checking the validity of the International Ship Security Certificate;
    - (SR) 3.2.1.6 checking the certificates of class, if the ship is classed with a classification society;
    - (SR) 3.2.1.7 checking, when appropriate, the validity of the International Certificate of Fitness for the Carriage of Dangerous Chemicals in bulk or the Certificate of Fitness for the Carriage of Dangerous Chemical in Bulk;
    - (SR) 3.2.1.8 checking, when appropriate, the validity of the International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk;

- (SR) 3.2.1.9 checking when appropriate the validity of the International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk;
- (SR) 3.2.1.10 checking that the ship's complement complies with the Minimum Safe Manning Document (SOLAS 74/88 reg.V/13(b));
- (SR) 3.2.1.11 checking that the master, officers and ratings are certificated as required by the STCW Convention;
- (SR) 3.2.1.12 checking the validity of the Safety management certificate(SMC) and that a copy of the Document of Compliance (DOC) is on board, where applicable;
- (SR) 3.2.1.13 checking whether any new equipment has been fitted and, if so, confirm that it has been approved before installation and that any changes are reflected in the certificate.
- (SR) 3.2.2 For the sewage pollution prevention the renewal survey should consist of:
  - (SR) 3.2.2.1 confirming that no change has been made nor any new equipment installed which would affect the validity of the certificate (MARPOL Annex IV reg.4.8);
  - (SR) 3.2.2.2 examining externally the sewage pollution prevention system and confirming, as far as practicable its satisfactory operation.
- (SR) 3.2.3 For the sewage pollution prevention the completion of the renewal survey should consist of:
  - (SR) 3.2.3.1 after satisfactory survey the International Sewage Prevention Certificate should be issued.
- (A) 4 **GUIDELINES FOR THE SURVEYS FOR THE INTERNATIONAL AIR POLLUTION PREVENTION CERTIFICATE AND THE NO<sub>x</sub> TECHNICAL CODE**
- (AI) 4.1 **Initial surveys** – see part “General”, section 4.1
  - (AI) 4.1.1 For air pollution prevention the examination of plans and designs should consist of:
    - (AI) 4.1.1.1 examining the arrangements for systems using ozone-depleting substances (regulation 12 of Annex VI);
    - (AI) 4.1.1.2 examining the arrangements for Sulphur Oxides exhaust gas cleaning systems or other technological methods, if applicable (regulation 14 of Annex VI);
    - (AI) 4.1.1.3 examining the arrangements for vapour collection systems, if applicable (regulation 15 of Annex VI and MSC/Circ.585);

- (AI) 4.1.1.4 examining the arrangements for shipboard incinerators, if applicable (regulation 16 of Annex VI).
- (AI) 4.1.2 For air pollution prevention the survey should consist of:
  - (AI) 4.1.2.1 Ozone-depleting substances (regulation 12 of Annex VI):
    - (AI) 4.1.2.1.1 confirming the satisfactory installation and operation of systems using ozone depleting substances and there are no emissions of ozone depleting substances.
    - (AI) 4.1.2.2 Nitrogen oxide emissions from Diesel engines (regulation 13 of Annex VI):
      - (AI) 4.1.2.2.1 confirmed that all engines which are required to be certified are pre-certified in accordance with section 2.2 of the NO<sub>x</sub> Technical Code.
        - (AI) 4.1.2.2.1.1 *If engine parameter check method is used:*
          - (AI) 4.1.2.2.1.1.1 an on-board verification survey in accordance with paragraph 6.2 of the NO<sub>x</sub> Technical Code.
          - (AI) 4.1.2.2.1.2 *If the simplified method is used:*
            - (AI) 4.1.2.2.1.2.1 an on-board verification survey in accordance with paragraph 6.3 of the NO<sub>x</sub> Technical Code.
      - (AI) 4.1.2.3 Sulphur Oxides (regulation 14 of Annex VI):
        - (AI) 4.1.2.3.1 confirming the satisfactory installation and operation of the fuel switching arrangements when tanks are provided for low and normal sulphur content fuel;
        - (AI) 4.1.2.3.2 confirming the satisfactory installation and operation of the exhaust gas cleaning system (if fitted);
      - (AI) 4.1.2.4 Volatile Organic Compounds (regulation 15 of Annex VI) (if applicable):
        - (AI) 4.1.2.4.1 confirming the satisfactory installation of the vapour collection piping;
        - (AI) 4.1.2.4.2 confirming the satisfactory installation and operation of the means provided to eliminate the collection of condensation in the system, such as drains in low points of the line end;
        - (AI) 4.1.2.4.3 confirming the satisfactory installation of the piping to ensure it is electrically continuous and electrically bonded to the hull;
        - (AI) 4.1.2.4.4 confirming the satisfactory installation and operation of the isolation valves at the vapour manifolds;

- (AI) 4.1.2.4.5 confirming that the ends of each line are properly identified as vapour collection lines;
- (AI) 4.1.2.4.6 confirming that the vapour collection flanges are in accordance with the IMO guidelines and industrial standards;
- (AI) 4.1.2.4.7 confirming that where portable vapour lines are provided that they are electrically continuous;
- (AI) 4.1.2.4.8 confirming the satisfactory installation and operation of the closed gauging system and the readouts in the cargo control area;
- (AI) 4.1.2.4.9 confirming the satisfactory installation and operation of the overflow control system;
- (AI) 4.1.2.4.10 confirming the satisfactory installation and operation of both the audible and visual alarms, that the alarms are properly labelled; that the power failure alarm operates and that there is a means to check the operation of the alarms;
- (AI) 4.1.2.4.11 confirming the satisfactory installation and operation of the high and low pressure alarms provided for each main vapour line and that these alarms operate at the correct set points;
- (AI) 4.1.2.5 Shipboard Incinerators (regulation 16 of Annex VI) (installed on or after 1 January 2000):
  - (AI) 4.1.2.5.1 confirming the satisfactory installation and operation of each incinerator;
  - (AI) 4.1.2.5.2 confirming that warning and instruction plates are satisfactorily secured in prominent positions on or near the incinerator;
  - (AI) 4.1.2.5.3 confirming that the manufacturers name, incinerator model number/type and capacity in heat units per hour is permanently marked on the incinerator;
  - (AI) 4.1.2.5.4 confirming the satisfactory operation of the following alarms and safety devices are in good condition and fully operational;
    - (AI) 4.1.2.5.4.1 flue gas high temperature alarms and shutdowns;
    - (AI) 4.1.2.5.4.2 combustion temperature controls and shutdowns;
    - (AI) 4.1.2.5.4.3 combustion chamber negative pressure;
    - (AI) 4.1.2.5.4.4 flame safeguard control, alarms and shutdowns;
    - (AI) 4.1.2.5.4.5 all alarms both visual and audible are functioning and they indicate the cause of their failure;

- (AI) 4.1.2.5.4.6 power loss alarms and auto shutdown arrangements;
- (AI) 4.1.2.5.4.7 charging arrangements;
- (AI) 4.1.2.5.4.8 low fuel oil pressure alarm/shutdown;
- (AI) 4.1.2.5.4.9 emergency stop switch and electrical isolating arrangements;
- (AI) 4.1.2.5.4.10 interlocks;
- (AI) 4.1.2.5.5 confirming the satisfactory installation of drip trays under each burner, pump, and strainer.
- (AI) 4.1.3 For air pollution prevention the check that certificates and other relevant documentation have been placed on board should consist of:
  - (AI) 4.1.3.1 review (AA) 3.2.2.2 except for the bunker delivery notes and the records required in (AA) 3.2.2.2.3 and (AA) 3.2.2.2.7;
- (AI) 4.1.4 or air pollution prevention the completion of the initial survey should consist of:
  - (AI) 4.1.4.1 after satisfactory survey the International Air Pollution Prevention Certificate should be issued.
- (AA) **4.2** **Annual surveys** – see “General”, section 4.2
  - (AA) 4.2.1 For air pollution prevention the examination of current certificates and other records should consist of:
    - (AA) 4.2.1.1 checking the validity, as appropriate, of the Cargo Ship Safety Equipment Certificate, the Cargo Ship Safety Radio Certificate and the Cargo Ship Safety Construction Certificate or the Cargo Ship Safety Certificate;
    - (AA) 4.2.1.2 checking the validity of the Safety Management Certificate (SMC) and that a copy of the Document of Compliance (DOC) is on board, where applicable;
    - (AA) 4.2.1.3 checking the validity of the International Load Line Certificate or International Load Line Exemption Certificate;
    - (AA) 4.2.1.4 checking the validity of the International Oil Pollution Prevention Certificate;
    - (AA) 4.2.1.5 checking the certificates of class, if the ship is classed with a classification society;
    - (AA) 4.2.1.6 checking, when appropriate, the validity of the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk or the Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk;

- (AA) 4.2.1.7 checking that the ship's complement complies with the Minimum Safe Manning Document (SOLAS 74/88, regulation V/13(b));
- (AA) 4.2.1.8 checking that the master, officers and ratings are certificated as required by the STCW Convention;
- (AA) 4.2.1.9 checking whether any new equipment has been fitted and, if so, confirm that it has been approved before installation and that any changes are reflected in the appropriate certificate.
- (AA) 4.2.2 For air pollution prevention the annual survey should consist of:
- (AA) 4.2.2.1 General:
- (AA) 4.2.2.1.1 confirm that no changes have been made or any new equipment installed which would affect the validity of the certificate;
- (AA) 4.2.2.2 Documentation:
- (AA) 4.2.2.2.1 confirm that there are Engine International Air Pollution Prevention (EIAPP) Certificates for each engine, required to be certified, as described in Chapter 2.1 of the NO<sub>x</sub> Technical Code;
- (AA) 4.2.2.2.2 confirm that there is on board an approved technical file for each engine required to be certified;
- (AA) 4.2.2.2.3 confirm that there are bunker delivery notes on board and fuel oil samples are kept under the ships control (regulation 18 of Annex VI);
- (AA) 4.2.2.2.4 confirm that there is for each Exhaust Gas Cleaning System (EGCS)-SO<sub>x</sub> either a SO<sub>x</sub> Emission Control Area (SECA) Compliance Certificate for the EGCS-SO<sub>x</sub>, or an Onboard Monitoring Manual (OMM) as appropriate, plus in either cases a SECA Compliance Plan (regulation 14(4)(b) of Annex VI);
- (AA) 4.2.2.2.5 confirm that there is an IMO Type Approval Certificate for each incinerator on board (regulation 16(2)(a) of Annex VI);
- (AA) 4.2.2.2.6 confirm that there is a record book of engine parameters for each engine required to be certified in the case where the engine parameter check method is used as a mean of onboard NO<sub>x</sub> verification (NO<sub>x</sub> Technical Code, paragraph 6.2.3);
- (AA) 4.2.2.2.7 confirm that there is a record of fuel change over this record should take form of a log-book as described by the Administration (regulation 14.6 of Annex VI)\*;

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\* This information could be contained in the engine room log-book, the deck log-book, the official log-book, the oil record book or a separate log-book solely for this purpose.

- (AA) 4.2.2.2.8 confirm that there is a transfer procedure for the VOC collection system;
- (AA) 4.2.2.2.9 confirm that there is an instruction manual for each incinerator if required (regulation 16(7) of Annex VI);
- (AA) 4.2.2.3 Ozone-depleting substances:
  - (AA) 4.2.2.3.1 confirm that no new installation or equipment except those covered by (AA) 3.2.2.3.1 have been fitted to the ship after 19 May 2005. (regulation 12.1 of Annex VI);
  - (AA) 4.2.2.3.2 confirm that no installations containing hydrochlorofluocarbons (HCFCs) have been fitted after 1 January 2020;
  - (AA) 4.2.2.3.3 examine externally any installation or equipment as far as practicable to satisfactory maintenance to ensure that there are no emission of ozone-depleting substances.
- (AA) 4.2.2.4 Nitrogen oxide emissions from each Diesel engine:
  - (AA) 4.2.2.4.1 *If engine parameter check method is used:*
    - (AA) 4.2.2.4.1.1 review engine documentation contained in the technical file and the record book of engine parameters to check, as far as practicable, engine rating, duty and limitation/restrictions as given in the technical file;
    - (AA) 4.2.2.4.1.2 confirm that the engine has not undergone any modifications or adjustments outside the options and ranges permitted in the technical file since the last survey;
    - (AA) 4.2.2.4.1.3 conduct survey as detailed in the technical file;
  - (AA) 4.2.2.4.2 *If the simplified method is used:*
    - (AA) 4.2.2.4.2.1 review engine documentation contained in the technical file;
    - (AA) 4.2.2.4.2.2 confirm that the test procedure has been approved by the Administration;
    - (AA) 4.2.2.4.2.3 confirm that the analysers, engine performance sensors, ambient condition measurement equipment, span check gases and other test equipment are the correct type and have been calibrated in accordance with the NO<sub>x</sub> Technical Code;
    - (AA) 4.2.2.4.2.4 confirm that the correct test cycle, as defined in the engine's technical file, is used for this onboard confirmation test measurements;
    - (AA) 4.2.2.4.2.5 ensure that a fuel sample is taken during the test and submitted for analysis;

- (AA) 4.2.2.4.2.6 witness the test and confirm that a copy of the test report has been submitted for approval on completion of the test.
- (AA) 4.2.2.4.3 *If the direct measurement and monitoring method is used:*
- (AA) 4.2.2.4.3.1 review engine documentation method and technical file and verify that the direct measurement and monitoring manual is approved by the Administration;
- (AA) 4.2.2.4.3.2 the procedures to be checked in the direct monitoring and measure method and the data obtained as given in the approved onboard monitoring manual should be followed;
- (AA) 4.2.2.5 Sulphur Oxides:
- (AA) 4.2.2.5.1 review bunker notes for the use of the correct sulphur content fuel for the area of operation;
- (AA) 4.2.2.5.2 confirm that where there are tanks fitted for low and normal sulphur content fuel that fuel switching arrangement or procedures are provided and operational;
- (AA) 4.2.2.5.3 verify that there are records of the change over to and from low sulphur fuel during transit through a SO<sub>x</sub> emission control area;
- (AA) 4.2.2.5.4 alternative to .2 and .3 above, where EGCS-SO<sub>x</sub> or other equivalent devices are fitted, confirmation from the approved procedures for the equipment that it is in a satisfactory condition and operated in accordance with the required documentation.
- (AA) 4.2.2.6 Volatile Organic Compounds (VOCs):
- (AA) 4.2.2.6.1 confirm that the vapour collect system, if required, is approved taking into account MSC/Circ.585 “Standards for Vapour Emission Control Systems”;
- (AA) 4.2.2.6.2 confirm from a general examination that the vapour collection piping is in a satisfactory condition;
- (AA) 4.2.2.6.3 confirm that there is a means provided to eliminate the collection of condensation in the system, such as drains in low points of the line end. The drains should be checked to ensure they function correctly;
- (AA) 4.2.2.6.4 confirm that the piping is electrically bonded to the hull and that the bonding is intact;
- (AA) 4.2.2.6.5 confirm that the isolation valves at the vapour manifolds are operational and that the valve position indicators operate correctly;
- (AA) 4.2.2.6.6 confirm that the ends of each line is properly identified as vapour collection lines;



- (AA) 4.2.2.6.7 confirm that the vapour collection flanges are in accordance with the IMO guidelines and industrial standards;
- (AA) 4.2.2.6.8 confirm that where portable vapour lines are provided that they are in good condition;
- (AA) 4.2.2.6.9 confirm that the closed gauging system is operational and the readouts in the cargo control area are functional;
- (AA) 4.2.2.6.10 confirm that there is an overflow control system provided and that it is operational;
- (AA) 4.2.2.6.11 confirm that the alarm system is operational, both audible and visual alarms operate, the alarms are properly labelled; the power failure alarm operates and that there is a means to check the operation of the alarms and that this means is operational;
- (AA) 4.2.2.6.12 confirm that there are high and low pressure alarms provided for each main vapour line and that these alarms operate at the correct set points;
- (AA) 4.2.2.6.13 confirm that the high level and high high level (overfill) alarms act independently of each other.
- (AA) 4.2.2.7 Incinerators (installed on or after 1 January 2000):
  - (AA) 4.2.2.7.1 confirm from an external examination that each incinerator is in a generally satisfactory condition and free from leaks of gas or smoke;
  - (AA) 4.2.2.7.2 confirm that the warning and instruction plates are legible and secured in prominent positions on or near the incinerator;
  - (AA) 4.2.2.7.3 confirm that the manufacturers name, incinerator model number/type and capacity in heat units per hour is permanently marked on the incinerator;
  - (AA) 4.2.2.7.4 confirm that the incinerator casing insulation arrangements are in good condition;
  - (AA) 4.2.2.7.5 confirm as far as it is practicable, that the following alarms and safety devices are in good condition and fully operational:
    - (AA) 4.2.2.7.5.1 flue gas high temperature alarms and shutdowns;
    - (AA) 4.2.2.7.5.2 combustion temperature controls and shutdowns;
    - (AA) 4.2.2.7.5.3 combustion chamber negative pressure;
    - (AA) 4.2.2.7.5.4 flame safeguard control, alarms and shutdowns;
    - (AA) 4.2.2.7.5.5 all alarms both visual and audible are functioning and they indicate the cause of their failure;

- (AA) 4.2.2.7.5.6 power loss alarms and auto shutdown arrangements;
- (AA) 4.2.2.7.5.7 charging arrangements;
- (AA) 4.2.2.7.5.8 low fuel oil pressure alarm/shutdown;
- (AA) 4.2.2.7.5.9 emergency stop switch and electrical isolating arrangements;
- (AA) 4.2.2.7.5.10 interlocks;
- (AA) 4.2.2.7.6 confirm that drip trays are fitted under each burner, pump, and strainer and that they are in good condition.
- (AA) 4.2.3 For air pollution prevention the completion of the annual survey should consist of:
  - (AA) 4.2.3.1 after a satisfactory survey, the International Prevention of Air Pollution certificate should be endorsed;
  - (AA) 4.2.3.2 if a survey shows that the condition of the ship or its equipment is unsatisfactory – see “General”, section 4.8.
- (Ain) **4.3 Intermediate surveys** – see “General”, section 4.3
  - (Ain) 4.3.1 For air pollution prevention the examination of current certificates and other records should consist of:
    - (Ain) 4.3.1.1 the provisions of (AA) 3.2.1.
  - (Ain) 4.3.2 For air pollution prevention the intermediate survey should consist of:
    - (Ain) 4.3.2.1 the provisions of (AA) 3.2.2.
  - (Ain) 4.3.3 For air pollution prevention the completion of the intermediate survey should consist of:
    - (Ain) 4.3.3.1 after a satisfactory survey, the International Prevention of Air Pollution Certificate should be endorsed;
    - (Ain) 4.3.3.2 if a survey shows that the condition of the ship or its equipment is unsatisfactory see “General”, section 4.4.
- (AR) **4.4 Renewal surveys** – see “General”, section 4.5
  - (AR) 4.4.1 For air pollution prevention the examination of current certificates and other records should consist of:
    - (AR) 4.4.1.1 the provisions of (AA) 1.2.1 except the validity of the International Air Pollution Prevention Certificate.

- (AR) 4.4.2 For air pollution prevention the renewal survey should consist of:
  - (AR) 4.4.2.1 the provisions of (AA) 3.2.2;
  - (AR) 4.4.2.2 confirming, if necessary by simulated test or equivalent, the satisfactory operation of the vapour collection systems' closed gauging system and associated readouts;
  - (AR) 4.4.2.3 confirming, if necessary by simulated test or equivalent, the satisfactory operation of the vapour collection systems' overflow control and it's audible and visual alarms;
  - (AR) 4.4.2.4 confirming, if necessary by simulated test or equivalent, the satisfactory operation of the vapour collection systems' high and low pressure alarms for each main vapour line;
  - (AR) 4.4.2.5 confirm that the vapour collection systems piping is electrically continuous;
  - (AR) 4.4.2.6 confirm that the portable vapour lines are electrically continuous;
  - (AR) 4.4.2.7 confirming, if necessary by simulated test or equivalent, the satisfactory operation of the following alarms and safety devices;
    - (AR) 4.4.2.7.1 flue gas high temperature alarms and shutdowns;
    - (AR) 4.4.2.7.2 combustion temperature controls and shutdowns;
    - (AR) 4.4.2.7.3 combustion chamber negative pressure;
    - (AR) 4.4.2.7.4 flame safeguard control, alarms and shutdowns;
    - (AR) 4.4.2.7.5 all alarms both visual and audible are functional and they indicate the cause of their failure;
    - (AR) 4.4.2.7.6 power loss alarms and auto shutdown arrangements;
    - (AR) 4.4.2.7.7 charging arrangements;
    - (AR) 4.4.2.7.8 low fuel oil pressure alarm/shutdown;
    - (AR) 4.4.2.7.9 emergency stop switch and electrical isolating arrangements;
    - (AR) 4.4.2.7.10 interlocks.
- (AR) 4.4.3 For air pollution prevention the completion of the renewal survey should consist of:
  - (AR) 4.4.3.1 after satisfactory survey the International Prevention of Air Pollution Certificate should be issued.

ANNEX 4

**SURVEY GUIDELINES UNDER THE MANDATORY CODES**

- (D) 1 **GUIDELINES FOR THE SURVEYS FOR THE INTERNATIONAL CERTIFICATE OF FITNESS FOR THE CARRIAGE OF DANGEROUS CHEMICALS IN BULK AND THE CERTIFICATE OF FITNESS FOR THE CARRIAGE OF DANGEROUS CHEMICALS IN BULK**
- (DI) 1.1 **Initial surveys** – see part “General” section 4.1
- (DI) 1.1.1 For compliance with the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk the examination of plans and designs of the structure, equipment, fittings, arrangements and materials should consist of:
- (DI) 1.1.1.1 determining the products that it is intended that the ship will be permitted to carry and noting the corresponding minimum special requirements (IBC Code 83/90/00, ch.17) and any other special requirements (IBC Code 83/90/00, ch.15);
- (DI) 1.1.1.2 examining the plans for the ship type, location of the cargo tanks, cargo containment, materials of construction, cargo temperature control, cargo tank vent systems, environmental control, electrical installations, fire protection and fire extinction, instrumentation and the provision, specification and stowage of the equipment for personnel protection (IBC Code 83/90/00, chs.2, 4, 6, 7, 8, 9, 10, 11, 13 and 14);
- (DI) 1.1.1.3 examining the plans for the freeboard and intact stability, discharges below the bulkhead deck and survival capability (IBC Code 83/90/00, ch.2);
- (DI) 1.1.1.4 examining the plans for the ship arrangements IBC Code 83/90/00, ch.3);
- (DI) 1.1.1.5 examining the plans for the cargo transfer IBC Code 83/90/00, ch.5);
- (DI) 1.1.1.6 examining the plans for the mechanical ventilation in the cargo area (IBC Code 83/90/00, ch.12);
- (DI) 1.1.1.7 the provisions of (NI) 2.1.1 in Annex 3.
- (DI) 1.1.2 For compliance with the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk the survey during construction and after installation of the structure, equipment, fittings, arrangements and materials should consist of:
- (DI) 1.1.2.1 confirming that tanks containing cargo or residues of cargo are suitably segregated from accommodation, service and machinery spaces and from drinking water and stores for human consumption, that cargo piping does not pass through any accommodation, service or machinery space other

than cargo pump rooms or pump rooms and that cargoes are not to be carried in either the fore or the aft peak tank (IBC Code 83/90/00, ch.3);

- (DI) 1.1.2.2 examining the air intakes and openings into the accommodation, service and machinery spaces in relation to the cargo piping and vent systems and their entrances, air inlets and openings in relation to the cargo area (IBC Code 83/90/00, ch.3);
- (DI) 1.1.2.3 examining the arrangements of the cargo pump rooms (IBC Code 83/90/00, ch.3);
- (DI) 1.1.2.4 examining the accesses to spaces in the cargo area (IBC Code 83/90/00, ch.3);
- (DI) 1.1.2.5 examining the bilge and ballast arrangements and confirming that pumps and pipelines are identified (IBC Code 83/90/00, ch.3);
- (DI) 1.1.2.6 examining, when applicable, the bow or stern loading and unloading arrangements with particular reference to the air inlets and entrances to the accommodation, machinery and service spaces, the electrical equipment, fire-fighting arrangements and means of communication and testing the remote shut down for the cargo pumps (IBC Code 83/90/00, ch.3);
- (DI) 1.1.2.7 confirming that the cargo tank types are arranged and installed in accordance with the approved plans, internally examining the cargo tanks, water ballast tanks and other spaces in the cargo area and pressure testing the boundaries (IBC Code 83/90/00, ch.4);
- (DI) 1.1.2.8 examining the cargo transfer arrangements and confirming that any hoses are suitable for their intended purpose and, where appropriate, type-approved or marked with date of testing (IBC Code 83/90/00, ch.5);
- (DI) 1.1.2.9 examining and testing any cargo heating and cooling systems (IBC Code 83/90/00, ch.7);
- (DI) 1.1.2.10 confirming that the cargo tank vent systems have been installed in accordance with the approved plans (IBC Code 83/90/00, ch.8);
- (DI) 1.1.2.11 confirming that high-level alarms, or overflow control systems or spill valves or other equivalent means provided to control possible liquid rising in the venting system, are operating satisfactorily (IBC Code 83/90/00, ch.8);
- (DI) 1.1.2.12 confirming that suitable provision is made for drainage of vent lines and that no shut-off valves or other means of stoppage, including spectacle or blank flanges, are fitted either to the individual vents or to the header, if the vents are combined or either above or below pressure/vacuum relief valves with closed vent systems (IBC Code 83/90/00, ch.8);

- (DI) 1.1.2.13 confirming that suitable provisions are made for primary and secondary means (or alternative measures) for controlled tank venting (MSC.102(73), MEPC.79(43), chapter 8);
- (DI) 1.1.2.14 examining the location of the vent outlets in respect of the height above the weather deck or the fore and aft gangway, from the nearest air intakes or openings to accommodation, service and machinery spaces and ignition sources and confirming that any high velocity vents are of the approved type (IBC Code 83/90/00, ch.8);
- (DI) 1.1.2.15 examining the arrangements for the environmental control, including the means of storing or generating and drying an inert gas (IBC Code 83/90/00, ch.9);
- (DI) 1.1.2.16 examining the electrical installations and confirming that, when appropriate, special materials have been used and that the electrical equipment installed in hazardous locations, as permitted, is certified by a recognized authority for the cargoes to be carried (IBC Code 83/90/00, ch.10);
- (DI) 1.1.2.17 confirming that independent cargo tanks are electrically bonded to the hull and that all gasketed cargo pipe joints and hose connections are electrically bonded (IBC Code 83/90/00, ch.10);
- (DI) 1.1.2.18 examining the arrangements for the fire protection and fire extinction (IBC Code 83/90/00, ch.11);
- (DI) 1.1.2.19 examining the fixed fire fighting system for the cargo pump room and confirming that the installation tests have been satisfactorily completed and that its means of operation are clearly marked (IBC Code 83/90/00, ch.11);
- (DI) 1.1.2.20 checking the deck foam system for the cargo area, including the supplies of foam concentrate, and testing that the minimum number of jets of water at the required pressure in the fire main is obtained, see (EI) 1.1.3.1 in Annex 1, when the system is in operation (IBC Code 83/90/00, ch.11);
- (DI) 1.1.2.21 confirming that suitable portable fire extinguishing equipment for the cargoes to be carried is provided in the cargo area (IBC Code 83/90/00, ch.11);
- (DI) 1.1.2.22 examining, and confirming the satisfactory operation of, the arrangements for the mechanical ventilation of spaces in the cargo area normally entered during cargo handling operations (IBC Code 83/90/00, ch.12) and checking in particular that:
  - (DI) 1.1.2.22.1 it may be controlled from outside the space;
  - (DI) 1.1.2.22.2 warning notices concerning its use have been posted;

- (DI) 1.1.2.22.3 it is of the extraction type, with extraction from below the floor plates, unless the space houses electrical motors driving cargo pumps when it should be of the positive pressure type;
- (DI) 1.1.2.22.4 the ducting does not pass through accommodation, machinery and service spaces and that the exhaust ducts are clear of the ventilation inlets and openings to such spaces;
- (DI) 1.1.2.22.5 the electric motors driving ventilation fans are positioned outside the ventilation ducts and the ventilation fans and the ducts, in way of the fans only, are of non-sparking construction in hazardous locations;
- (DI) 1.1.2.23 examining, and confirming the satisfactory operation of, the arrangements for the mechanical ventilation of spaces normally entered other than those covered by (DI) 1.1.2.21 (IBC Code 83/90/00, ch.12);
- (DI) 1.1.2.24 confirming that double bottoms, cofferdams, duct keels, pipe tunnels, hold spaces and other spaces where cargo may accumulate are capable of being efficiently ventilated to ensure a safe environment when entry into the space is necessary and that, when appropriate, permanent ducting is provided and any ventilation fans comply with (DI) 1.1.2.22.5 (IBC Code 83/90/00, ch.12);
- (DI) 1.1.2.25 examining the intrinsically safe systems and circuits used for measurement, monitoring, control and communication purposes in all hazardous locations (IBC Code 83/90/00, ch.13);
- (DI) 1.1.2.26 checking the provision of equipment for personnel protection (IBC Code 83/90/00, ch.14) and in particular that:
  - (DI) 1.1.2.26.1 suitable protective clothing is available for the crew engaged in loading and discharging operations and that suitable storage is provided;
  - (DI) 1.1.2.26.2 the required safety equipment and associated breathing apparatus and air supplies and, when appropriate, emergency-escape respiratory and eye protection are provided and are properly stowed;
  - (DI) 1.1.2.26.3 medical first-aid equipment, including stretchers and oxygen resuscitation equipment are provided;
  - (DI) 1.1.2.26.4 arrangements have been made for the antidotes for the cargoes actually carried to be on board;
  - (DI) 1.1.2.26.5 decontamination arrangements and eyewashes are operational;
  - (DI) 1.1.2.26.6 the required gas detection instruments are on board and that arrangements have been made for the supply of the appropriate vapour detection tubes;

- (DI) 1.1.2.26.7 the stowage for cargo samples is satisfactory;
- (DI) 1.1.2.27 the provisions of (NI) 2.1.2 in annex 3.
- (DI) 1.1.3 For compliance with the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk the check that all the required documentation has been placed on board the ship should consist of:
  - (DI) 1.1.3.1 confirming that a loading and stability information booklet, containing details of typical service and ballast conditions, provisions for evaluating other conditions of loading, a summary of the ship's survival capabilities and sufficient information to ensure that the ship is loaded and operated in a safe and seaworthy manner is available on board (IBC Code 83/90/00, ch.2);
  - (DI) 1.1.3.2 confirming that damage survival capability information is supplied on the basis of loading information for all anticipated conditions of loading and variations in draught and trim (IBC Code 83/90/00, ch.2);
  - (DI) 1.1.3.3 confirming that a table giving the filling ratios for the cargo tanks at various densities has been provided (IBC Code 83/90/00, ch.16);
  - (DI) 1.1.3.4 confirming that a copy of the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk, or the equivalent national regulations, has been provided (IBC Code 83/90/00, ch.16);
  - (DI) 1.1.3.5 confirming that information relating to the chemical and physical properties of the products to be carried has been provided together with the measures to be taken in an accident have been provided (IBC Code 83/90/00, ch.16);
  - (DI) 1.1.3.6 confirming that a manual covering procedures for cargo transfer, tank cleaning, gas freeing, ballasting, etc., has been provided (IBC Code 83/90/00, ch.16);
  - (DI) 1.1.3.7 the provisions of (NI) 2.1.3 in annex 3;
  - (DI) 1.1.3.8 confirming that compatibility information to material of construction, protective linings and coating is provided onboard. (IBC Code 83/04 Ch 6).
- (DI) 1.1.4 For compliance with the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk the completion of the initial survey should consist of:
  - (DI) 1.1.4.1 after a satisfactory survey the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk should be issued.



- (DA) **1.2**                    **Annual surveys** – see part “General” section 4.2
- (DA) 1.2.1                    For compliance with the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk and the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk the examination of current certificates and other records should consist of:
- (DA) 1.2.1.1                checking the validity, as appropriate, of the Cargo Ship Safety Equipment Certificate, the Cargo Ship Safety Radio Certificate and the Cargo Ship Safety Construction Certificate or the Cargo Ship Safety Certificate;
- (DA) 1.2.1.2                checking the validity of the Safety Management Certificate (SMC) and that a copy of the Document of Compliance (DOC) is on board;
- (DA) 1.2.1.3                checking the validity of the International Load Line Certificate or International Load Line Exemption Certificate;
- (DA) 1.2.1.4                checking the validity of the International Oil Pollution Prevention Certificate;
- (DA) 1.2.1.5                checking the certificates of class, if the ship is classed with a classification society;
- (DA) 1.2.1.6                checking, when appropriate, the validity of the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk or the Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk;
- (DA) 1.2.1.7                checking, when appropriate, the validity of the International Sewage Pollution Prevention Certificate;
- (DA) 1.2.1.8                checking, when appropriate, the validity of the International Air Pollution Prevention Certificate;
- (DA) 1.2.1.9                checking that the ship’s complement complies with the Minimum Safe Manning Document (SOLAS 74/88, reg.V/13(b));
- (DA) 1.2.1.10                checking that the master, officers and ratings are certificated as required by the STCW Convention;
- (DA) 1.2.1.11                checking whether any new equipment has been fitted and, if so, confirm that it has been approved before installation and that any changes are reflected in the appropriate certificate;
- (DA) 1.2.1.12                confirming that the loading and stability information booklet, containing details of typical service and ballast conditions, provisions for evaluating other conditions of loading, a summary of the ship's survival capabilities and sufficient information to ensure that the ship is loaded and operated in a safe and seaworthy manner is available on board (IBC Code 83/90/00, ch.2) (No BCH Code 85/90/00 reference);

- (DA) 1.2.1.13 confirming that damage survival capability information is supplied on the basis of loading information for all anticipated conditions of loading and variations in draught and trim (IBC Code 83/90/00, ch.2) (No BCH Code 85/90/00 reference);
- (DA) 1.2.1.14 confirming that a table giving the filling ratios for the cargo tanks at various densities has been provided (IBC Code 83/90/00, ch.16) (BCH Code 85/90/00, ch.IIIG);
- (DA) 1.2.1.15 confirming that a copy of the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk or the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk, or the equivalent national regulations, has been provided (IBC Code 83/90/00, ch.16) (BCH Code 85/90/00, ch.V);
- (DA) 1.2.1.16 confirming that information relating to the chemical and physical properties of the products to be carried has been provided together with the measures to be taken in an accident have been provided (IBC Code 83/90/00, ch.16) (BCH Code 85/90/00, ch.V);
- (DA) 1.2.1.17 confirming that a manual covering procedures for cargo transfer, tank cleaning, gas freeing, ballasting, etc., has been provided (IBC Code 83/90/00, ch.16) (BCH Code 85/90/00, ch.V);
- (DA) 1.2.1.18 confirming that the Procedures and Arrangements Manual is on board (IBC Code 83/90/00, ch.16A) (BCH Code 85/90/00, ch.VA);
- (DA) 1.2.1.19 confirming that the Shipboard marine pollution emergency plan is on board (MARPOL 73/78 – 02, Annex II reg.16);
- (DA) 1.2.1.20 confirming that the Cargo Record Book is on board and being correctly used (MARPOL 73/78 – 91/97/02, Annex II reg.9);
- (DA) 1.2.1.21 confirming that compatibility information to material of construction, protective linings and coating is provided onboard. (IBC Code 83/04 Ch 6).
- (DA) 1.2.2 For compliance with the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk and the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk the annual survey of the structure, equipment, fittings, arrangements and materials should consist of:
- (DA) 1.2.2.1 confirming that wheelhouse doors and windows, sidescuttles and windows in superstructure and deckhouse ends facing the cargo area are in a satisfactory condition (IBC Code 83/90/00, ch.3) (BCH Code 85/90/00, ch.IIC);

- (DA) 1.2.2.2 confirming that potential sources of ignition in or near the cargo pump room are eliminated, such as loose gear, combustible materials, etc., that there are no signs of undue leakage and that access ladders are in a satisfactory condition (IBC Code 83/90/00, ch.3) (BCH Code 85/90/00, ch.IIC);
- (DA) 1.2.2.3 confirming that removable pipe lengths or other approved equipment necessary for cargo separation are available in the pump room and are in a satisfactory condition (IBC Code 83/90/00, ch.3) (BCH Code 85/90/00, ch.IIC);
- (DA) 1.2.2.4 examining all pump room bulkheads for signs of cargo leakage or fractures and, in particular, the sealing arrangements of all penetrations of pump room bulkheads (IBC Code 83/90/00, ch.3) (BCH Code 85/90/00, ch.IIC);
- (DA) 1.2.2.5 confirming that the remote operation of the cargo pump bilge system is satisfactory (IBC Code 83/90/00, ch.3) (BCH Code 85/90, ch.IIC);
- (DA) 1.2.2.6 examining the bilge and ballast arrangements and confirming that pumps and pipelines are identified (IBC Code 83/90/00, ch.3) (No BCH Code 85/90/00 reference);
- (DA) 1.2.2.7 confirming, when applicable, that the bow or stern loading and unloading arrangements are in order and testing the means of communication and the remote shut down for the cargo pumps (IBC Code 83/90/00, ch.3) (No BCH Code 85/90/00 reference);
- (DA) 1.2.2.8 examining the cargo transfer arrangements and confirming that any hoses are suitable for their intended purpose and, where appropriate, type-approved or marked with date of testing (IBC Code 83/90/00, ch.5) (BCH Code 85/90/00, ch.IID);
- (DA) 1.2.2.9 examining, when applicable, the cargo heating or cooling systems, including any sampling arrangements, and confirming that the means for measuring the temperature and associated alarms are operating satisfactorily (IBC Code 83/90/00, ch.7) (BCH Code 85/90/00, ch.IIF);
- (DA) 1.2.2.10 examining, as far as practicable, the cargo tank vent system, including the pressure/vacuum valves and secondary means to prevent over- or under pressure and devices to prevent the passage of flame (IBC Code 83/90/00, MSC.102(73), MEPC.79(43), ch.8) (BCH Code 85/90/00 and MEPC.80(43), ch.IIE);
- (DA) 1.2.2.11 examining the gauging devices, high-level alarms and valves associated with overflow control (IBC Code 83/90/00, ch.8) (BCH Code 85/90/00, ch.IIE);
- (DA) 1.2.2.12 confirming that arrangements for sufficient gas to be carried or generated to compensate for normal losses and that the means provided for

monitoring ullage spaces are satisfactory (IBC Code 83/90/00, ch.9) (BCH Code 85/90/00, ch.IIH);

(DA) 1.2.2.13 confirming that arrangements are made for sufficient medium to be carried where drying agents are used on air inlets to cargo tanks (IBC Code 83/90/00, ch.9) (BCH Code 85/90/00, ch.IIH);

(DA) 1.2.2.14 confirming that all electrical equipment in dangerous zones is suitable for such locations is in satisfactory condition and has been properly maintained (IBC Code 83/90/00, ch.10) (BCH Code 85/90/00, ch.IIIB);

(DA) 1.2.2.15 examining the fixed fire-fighting system for the cargo pump room and the deck foam system for the cargo area and confirming that their means of operation are clearly marked (IBC Code 83/90/00, ch.11) (BCH Code 85/90/00, ch.IIIE);

(DA) 1.2.2.16 confirming that the condition of the portable fire extinguishing equipment for the cargoes to be carried in the cargo area is satisfactory (IBC Code 83/90/00, ch.11) (BCH Code 85/90/00, ch.IIIE);

(DA) 1.2.2.17 examining, as far as practicable, and confirming the satisfactory operation of, the arrangements for the ventilation of spaces normally entered during cargo handling operations and other spaces in the cargo area (IBC Code 83/90/00, ch.12) (BCH Code 85/90/00, ch.IIIA);

(DA) 1.2.2.18 confirming, as far as practicable, that the intrinsically safe systems and circuits used for measurement, monitoring, control and communication purposes in all hazardous locations are being properly maintained (IBC Code 83/90/00, ch.13) (BCH Code 85/90/00, ch.IIIC);

(DA) 1.2.2.19 examining the equipment for personnel protection (IBC Code 83/90/00, ch.14) (BCH Code 85/90/00, ch.IIIF) and in particular that:

(DA) 1.2.2.19.1 the protective clothing for crew engaged in loading and discharging operations and its stowage is in a satisfactory condition;

(DA) 1.2.2.19.2 the required safety equipment and associated breathing apparatus and associated air supplies and, when appropriate, emergency-escape respiratory and eye protection are in a satisfactory condition and are properly stowed;

(DA) 1.2.2.19.3 medical first-aid equipment, including stretchers and oxygen resuscitation equipment are in a satisfactory condition;

(DA) 1.2.2.19.4 arrangements have been made for the antidotes for the cargoes actually carried to be on board;

(DA) 1.2.2.19.5 decontamination arrangements and eyewashes are operational;

- (DA) 1.2.2.19.6 the required gas detection instruments are on board and that arrangements have been made for the supply of the appropriate vapour detection tubes;
- (DA) 1.2.2.19.7 the arrangements for the stowage of cargo samples are satisfactory;
- (DA) 1.2.2.20 the provisions of (NA) 2.2.2 in annex 3.
- (DA) 1.2.3 For compliance with the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk and the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk the completion of the annual survey should consist of:
- (DA) 1.2.3.1 after a satisfactory survey the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk or the Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk should be endorsed;
- (DA) 1.2.3.2 if a survey shows that the condition of a ship or its equipment is unsatisfactory - see part "General" section 4.8.
- (DIn) **1.3 Intermediate surveys** – see part "General", section 4.3
- (DIn) 1.3.1 For compliance with the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk and the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk the examination of current certificates and other records should consist of:
- (DIn) 1.3.1.1 the provisions of (DA) 1.2.1.
- (DIn) 1.3.2 For compliance with the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk and the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk the intermediate survey of the structure, equipment, fittings, arrangements and materials should consist of:
- (DIn) 1.3.2.1 the provisions of (DA) 1.2.2;
- (DIn) 1.3.2.2 examination of vent line drainage arrangements (IBC Code 83/90/00, ch.8) (BCH Code 85/90/00, ch.IIE);
- (DIn) 1.3.2.3 confirmation, where applicable, that pipelines and independent cargo tanks are electrically bonded to the hull (IBC Code 83/90/00, ch.10) (BCH Code 85/90/00, ch.IIIB);
- (DIn) 1.3.2.4 generally examining the electrical equipment and cables in dangerous zones such as cargo pump rooms and areas adjacent to cargo tanks to check for defective equipment, fixtures and wiring. The insulation resistance of the circuits should be tested and in cases where a proper record of testing is maintained, consideration should be given to accepting

recent readings (IBC Code 83/90/00, ch.10) (BCH Code 85/90/00, ch.IIIB);

- (DIn) 1.3.2.5 confirmation that spares are provided for cargo area mechanical ventilation fans (IBC Code 83/90/00, ch.12) (BCH Code 85/90/00, ch.IIIA);
- (DIn) 1.3.2.6 the provisions of (NIn) 2.3.2 in annex 3.
- (DIn) 1.3.3 For compliance with the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk and the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk the completion of the intermediate survey should consist of:
- (DIn) 1.3.3.1 after a satisfactory survey the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk or the Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk should be endorsed;
- (DIn) 1.3.3.2 if a survey shows that the condition of a ship or its equipment is unsatisfactory – see part “General”, section 4.8.
- (DR) 1.4 **Renewal surveys** – see part “General” section 4.4
- (DR) 1.4.1 For compliance with the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk and the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk the examination of current certificates and other records should consist of:
- (DR) 1.4.1.1 the provisions of (DA) 1.2.1, except the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk or the Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk.
- (DR) 1.4.2 For compliance with the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk and the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk the renewal survey of the structure, equipment, fittings, arrangements and materials should consist of:
- (DR) 1.4.2.1 the provisions of (DIn) 1.3.3;
- (DR) 1.4.2.2 the provisions of (NR) 2.4.2 in annex 3.
- (DR) 1.4.3 For compliance with the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk and the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk the completion of the renewal survey should consist of:

- (DR) 1.4.3.1 after a satisfactory survey the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk or the Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk should be issued.
- (G) 2 **GUIDELINES FOR SURVEYS FOR THE INTERNATIONAL CERTIFICATE OF FITNESS FOR THE CARRIAGE OF LIQUEFIED GASES IN BULK**
- (GI) 2.1 **Initial surveys** – see part “General”, section 4.1.
- (GI) 2.1.1 For compliance with the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk the examination of plans and designs of the structure, equipment, fittings, arrangements and materials should consist of:
- (GI) 2.1.1.1 determining the products that it is intended that the ship will be permitted to carry and noting the corresponding minimum special requirements (IGC Code 83/90/00, ch.19);
- (GI) 2.1.1.2 examining the plans for the ship type, cargo containment, control of vapour space within the cargo tanks, vapour detection, gauging, personnel protection, filling limits for cargo tanks and other special requirements (IGC Code 83/90/00, chs.2, 4, 6, 13, 14, 15, and 17);
- (GI) 2.1.1.3 examining the plans for the freeboard and intact stability, discharges below the bulkhead deck and survival capability (IGC Code 83/90/00, ch.2);
- (GI) 2.1.1.4 examining the plans for the ship arrangements (IGC Code 83/90/00, ch.3);
- (GI) 2.1.1.5 examining the plans for the process pressure vessels and liquid, vapour and pressure piping systems (IGC Code 83/90/00, chs.5 and 6);
- (GI) 2.1.1.6 examining the plans for the cargo pressure/temperature control (IGC Code 83/90/00, ch.7);
- (GI) 2.1.1.7 examining the plans for the cargo tank ventilation systems (IGC Code 83/90/00, ch.8);
- (GI) 2.1.1.8 examining the plans for the environmental control (IGC Code 83/90/00, ch.9);
- (GI) 2.1.1.9 examining the plans for the electrical installations (IGC Code 83/90/00, ch.10);
- (GI) 2.1.1.10 examining the plans for the fire protection and fire extinction (IGC Code 83/90/00, ch.11);
- (GI) 2.1.1.11 examining the plans for the mechanical ventilation in the cargo area (IGC Code 83/90/00, ch.12);

- (GI) 2.1.1.12 examining the plans for the instrumentation (gauging, gas detection) (IGC Code 83/90/00, ch.13);
- (GI) 2.1.1.13 examining, when applicable, the plans for the use of cargo as fuel (IGC Code 83/90/00, ch.16).
- (GI) 2.1.2 For compliance with the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk the survey during construction and after installation of the structure, equipment, fittings, arrangements and materials should consist of:
  - (GI) 2.1.2.1 confirming that the segregation in the cargo area and the arrangement of the accommodation, service and machinery spaces are in accordance with the approved plans (IGC Code 83/90/00, ch.3);
  - (GI) 2.1.2.2 examining the arrangements of the cargo pump rooms and cargo compressor rooms (IGC Code 83/90/00, ch.3);
  - (GI) 2.1.2.3 confirming that the manually operated emergency shutdown system together with the automatic shutdown of the cargo pumps and compressors are satisfactory (IGC Code 83/90/00, ch.3);
  - (GI) 2.1.2.4 examining the arrangement of the cargo control room (IGC Code 83/90/00, ch.3);
  - (GI) 2.1.2.5 examining the accesses to spaces in the cargo area (IGC Code 83/90/00, ch.3);
  - (GI) 2.1.2.6 confirming the arrangements for the air locks (IGC Code 83/90/00, ch.3);
  - (GI) 2.1.2.7 examining the bilge, ballast and oil fuel arrangements (IGC Code 83/90/00, ch.3);
  - (GI) 2.1.2.8 examining, when applicable, the bow or stern loading and unloading arrangements with particular reference to the air inlets and entrances to the accommodation, machinery and service spaces, the electrical equipment, fire-fighting arrangements and means of communication between the cargo control room and the shore location (IGC Code 83/90/00, ch.3);
  - (GI) 2.1.2.9 confirming that the cargo tanks are arranged and installed in accordance with the approved plans, internally examining the cargo tanks, water ballast tanks and other spaces in the cargo area, ensuring that the appropriate non-destructive and pressure testing are carried out (IGC Code 83/90/00, ch.4);
  - (GI) 2.1.2.10 for containment systems with glued secondary barriers, confirming that a tightness test has been carried out in accordance with the approved procedures of the system manufacturer before and after the initial cool down. Where significant differences in the results before and after cool down for each tanks or between tanks have been observed, confirming that



an investigation has been carried out including additional testing such as differential pressure, thermo graphic or acoustic emission testing where necessary (IGC Code 83/90/00, ch.4);

- (GI) 2.1.2.11 examining during the initial cool down, loading and discharging of the first cargo, of the overall performance of the cargo containment system and confirmation that the system is in compliance with the design parameters. For vessels carrying liquefied natural gas, the examination includes witnessing of the satisfactory operation of the following systems, if fitted:
  - (GI) 2.1.2.11.1 Gas detection system;
  - (GI) 2.1.2.11.2 Cargo control and monitoring systems such as level gauging; equipment, temperature sensors, pressures gauges, cargo pump room and compressors, and proper control of cargo heat exchanges, if operating;
  - (GI) 2.1.2.11.3 Nitrogen generating plant or inert gas generator;
  - (GI) 2.1.2.11.4 Nitrogen pressure control systems for insulation, interbarrier and annular spaces;
  - (GI) 2.1.2.11.5 Re-liquefaction plant;
  - (GI) 2.1.2.11.6 Equipment fitted for the burning of cargo vapours, such as boilers or engines gas combustion units;
  - (GI) 2.1.2.11.7 Cofferdam heating systems;
  - (GI) 2.1.2.11.8 On deck cargo piping systems including expansion and supporting arrangements;
  - (GI) 2.1.2.11.9 High level alarms by witnessing topping off process for cargo tanks (IGC Code 83/90/00, ch. 4);
- (GI) 2.1.2.12 examining the hull for cold spot following the first loaded voyage (IGC Code 83/90/00, ch. 4);
- (GI) 2.1.2.13 examining the cargo and process piping, including the expansion arrangements, insulation from the hull structure, pressure relief and drainage arrangements and carrying out a leak detection test (IGC Code 83/90/00, ch.5);
- (GI) 2.1.2.14 confirming that the cargo system valving arrangements are in accordance with the approved plans (IGC Code 83/90/00, ch.5);
- (GI) 2.1.2.15 confirming that any liquid and vapour hoses are suitable for their intended purpose and, where appropriate, type-approved or marked with date of testing (IGC Code 83/90/00, ch.5);

- (GI) 2.1.2.16 examining the arrangements for the cargo pressure/temperature control including, when fitted, any refrigeration system and confirming that any associated alarms are satisfactory (IGC Code 83/90/00, ch.7);
- (GI) 2.1.2.17 confirming that the cargo tank vent systems, including, when appropriate, any additional pressure relieving system for liquid level control and vacuum pressure systems, have been installed in accordance with the approved plans (IGC Code 83/90/00, ch.8);
- (GI) 2.1.2.18 examining the arrangements for the environmental control, including the means of storing or generating and drying an inert gas (IGC Code 83/90/00, ch.9);
- (GI) 2.1.2.19 examining the electrical installations with particular reference to the certified safe type equipment fitted in gas-dangerous spaces and zones (IGC Code 83/90/00, ch.10);
- (GI) 2.1.2.20 examining the arrangements for the fire protection and fire extinction (IGC Code 83/90/00, ch.11);
- (GI) 2.1.2.21 examining the fixed fire-fighting system for the cargo pump room and confirming that the installation tests have been satisfactorily completed and that its means of operation is clearly marked (IGC Code 83/90/00, ch.11);
- (GI) 2.1.2.22 examining the fire water main with particular reference to the provision of hydrants and isolation arrangements, checking that the two jets of water reach all areas of the cargo and containment area at the required pressure and testing the remote means of starting one main fire pump (IGC Code 83/90/00, ch.11);
- (GI) 2.1.2.23 examining and testing the water spray system for cooling, fire protection and crew protection and confirming that its means of operation is clearly marked (IGC Code 83/90/00, ch.11);
- (GI) 2.1.2.24 examining the dry chemical powder fire-extinguishing system for the cargo area, seeing that the fixed piping has been properly installed and has been proved clear and confirming that its means of operation is clearly marked (IGC Code 83/90/00, ch.11);
- (GI) 2.1.2.25 examining the carbon dioxide system for the cargo compressor and pump rooms and confirming that the installation tests have been satisfactorily completed and that its means of operation is clearly marked (IGC Code 83/90/00, ch.11);
- (GI) 2.1.2.26 confirming the provision and examining the disposition of the fire fighter's outfits (IGC Code 83/90/00, ch.11);

- (GI) 2.1.2.27 examining, and confirming the satisfactory operation of, the arrangements for the mechanical ventilation of spaces in the cargo area normally entered during cargo handling operations (IGC Code 83/90/00, ch.12) and checking in particular that:
  - (GI) 2.1.2.27.1 it may be controlled from outside the space;
  - (GI) 2.1.2.27.2 warning notices concerning its use have been posted;
  - (GI) 2.1.2.27.3 is fixed and is of the negative pressure type, permitting extraction from either the upper or lower parts of the space or from both the upper and lower parts when appropriate, for cargo compressor and pump rooms and for cargo control rooms when considered to be gas-dangerous spaces;
  - (GI) 2.1.2.27.4 is of the positive pressure type for spaces containing electric motors driving cargo compressors or pumps and other gas-safe spaces within the cargo area, except those containing inert gas generators;
  - (GI) 2.1.2.27.5 exhaust ducts are clear of the ventilation inlets and openings to accommodation spaces, service spaces, control stations and other gas-safe spaces;
  - (GI) 2.1.2.27.6 intakes are arranged to minimize the recycling or hazardous vapours;
  - (GI) 2.1.2.27.7 ducts from gas-dangerous spaces are not led through accommodation, service and machinery spaces and control stations, except when (GI) 2.1.2.30 applies;
  - (GI) 2.1.2.27.8 the electric motors driving ventilation fans are positioned outside the ventilation ducts when the carriage of flammable products is intended and the ventilation fans and the ducts, in way of the fans only, are of non-sparking construction in gas-dangerous spaces;
- (GI) 2.1.2.28 examining, and confirming the satisfactory operation of, the arrangements for the mechanical ventilation of spaces normally entered other than those covered by (GI) 2.1.2.24 (IGC Code 83/90/00, ch.12);
- (GI) 2.1.2.29 examining, and testing as appropriate, the liquid level indicators, overflow control, pressure gauges, high pressure and, when applicable, low pressure alarms, and temperature indicating devices for the cargo tanks (IGC Code 83/90/00, ch.13);
- (GI) 2.1.2.30 examining, and testing as appropriate, the gas detection equipment (IGC Code 83/90/00, ch.13);
- (GI) 2.1.2.31 confirming that two sets of portable gas detection equipment suitable for the cargoes to be carried and a suitable instrument for measuring oxygen levels have been provided (IGC Code 83/90/00, ch.13);

- (GI) 2.1.2.32 checking the provision of equipment for personnel protection (IGC Code 83/90/00, ch.14) and in particular that:
  - (GI) 2.1.2.32.1 two complete sets of safety equipment each permitting personnel to enter and work in a gas-filled space are provided and are properly stowed;
  - (GI) 2.1.2.32.2 the requisite supply of compressed air is provided and examining, when applicable, the arrangements for any special air compressor and low-pressure air line system;
  - (GI) 2.1.2.32.3 medical first-aid equipment, including stretchers and oxygen resuscitation equipment and antidotes, when available, for the products to be carried are provided;
  - (GI) 2.1.2.32.4 respiratory and eye protection suitable for emergency escape purposes are provided;
  - (GI) 2.1.2.32.5 decontamination arrangements and eyewashes are operational;
  - (GI) 2.1.2.32.6 when applicable, personnel are protected against the effects of a major cargo release by a special suitably designed and equipped space within the accommodation area;
  - (GI) 2.1.2.32.7 when applicable, the cargo control room is of the gas-safe type;
- (GI) 2.1.2.33 examining, when applicable, the arrangements for the use of cargo as fuel and testing that the gas supply to the machinery space is cut off should the exhaust ventilation not be functioning correctly and that the master gas fuel valve may be remotely closed from within the machinery space (IGC Code 83/90/00, ch.16).
- (GI) 2.1.3 For compliance with the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk the check that all the required documentation has been placed on board the ship should consist of:
  - (GI) 2.1.3.1 confirming that a loading and stability information booklet, containing details of typical service and ballast conditions, provisions for evaluating other conditions of loading, a summary of the ship's survival capabilities and sufficient information to ensure that the ship is loaded and operated in a safe and seaworthy manner is available on board (IGC Code 83/90/00, ch.2);
  - (GI) 2.1.3.2 confirming that damage survival capability information is supplied on the basis of loading information for all anticipated conditions of loading and variations in draught and trim (IGC Code 83/90/00, ch.2);
  - (GI) 2.1.3.3 confirming that necessary information for the safe carriage of the products to be carried has been provided (IGC Code 83/90/00, ch.18);

- (GI) 2.1.3.4 confirming that a copy of the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk, or the equivalent national regulations, has been provided (IGC Code 83/90/00, ch.18).
- (GI) 2.1.4 For compliance with the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk the completion of the initial survey should consist of:
- (GI) 2.1.4.1 after a satisfactory survey the International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk should be issued.
- (GA) **2.2** **Annual surveys** – see part “General”, section 4.2.
- (GA) 2.2.1 For compliance with the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk the examination of current certificates and other records should consist of:
- (GA) 2.2.1.1 checking the validity, as appropriate, of the Cargo Ship Safety Equipment Certificate, the Cargo Ship Safety Radio Certificate and the Cargo Ship Safety Construction Certificate or the Cargo Ship Safety Certificate;
- (GA) 2.2.1.2 checking the validity of the Safety Management Certificate (SMC) and that a copy of the Document of Compliance (DOC) is on board;
- (GA) 2.2.1.3 checking the validity of the International Load Line Certificate or International Load Line Exemption Certificate;
- (GA) 2.2.1.4 checking the validity of the International Oil Pollution Prevention Certificate;
- (GA) 2.2.1.5 checking the certificates of class, if the ship is classed with a classification society;
- (GA) 2.2.1.6 checking the validity of the International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk;
- (GA) 2.2.1.7 checking, when appropriate, the validity of the International Sewage Pollution Prevention Certificate;
- (GA) 2.2.1.8 checking, when appropriate, the validity of the International Air Pollution Prevention Certificate;
- (GA) 2.2.1.9 checking that the ship's complement complies with the Minimum Safe Manning Document (SOLAS 74/88 reg.V/13(b));
- (GA) 2.2.1.10 checking that the master, officers and ratings are certificated as required by the STCW Convention;

- (GA) 2.2.1.11 checking whether any new equipment has been fitted and, if so, confirm that it has been approved before installation and that any changes are reflected in the appropriate certificate;
- (GA) 2.2.1.12 confirming that the loading and stability information booklet, containing details of typical service and ballast conditions, provisions for evaluating other conditions of loading, a summary of the ship's survival capabilities and sufficient information to ensure that the ship is loaded and operated in a safe and seaworthy manner is available on board (IGC Code 83/90/00, ch.2);
- (GA) 2.2.1.13 confirming that damage survival capability information is supplied on the basis of loading information for all anticipated conditions of loading and variations in draught and trim (IGC Code 83/90/00, ch.2);
- (GA) 2.2.1.14 confirming that necessary information for the safe carriage of the products to be carried has been provided (IGC Code 83/90/00, ch.18);
- (GA) 2.2.1.15 confirming that a copy of the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk, or the equivalent national regulations, has been provided (IGC Code 83/90/00, ch.18);
- (GA) 2.2.1.16 confirming that there are records of the performance of the cargo containment system (IGC Code 83/90/00, ch. 4).
- (GA) 2.2.2 For compliance with the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk the annual survey of the structure, equipment, fittings, arrangements and materials should consist of:
  - (GA) 2.2.2.1 confirming that any special arrangements to survive conditions of damage are in order (IGC Code 83/90/00, ch.2);
  - (GA) 2.2.2.2 confirming that the wheelhouse doors and windows, sidescuttles and windows in superstructure and deckhouse ends in the cargo area are in a satisfactory condition (IGC Code 83/90/00, ch.3);
  - (GA) 2.2.2.3 examining the cargo pump rooms and cargo compressor rooms (IGC Code 83/90/00, ch.3);
  - (GA) 2.2.2.4 confirming that the manually operated emergency shutdown system together with the automatic shutdown of the cargo pumps and compressors are satisfactory (IGC Code 83/90/00, ch.3);
  - (GA) 2.2.2.5 examining the cargo control room (IGC Code 83/90/00, ch.3);
  - (GA) 2.2.2.6 examining the gas detection arrangements for cargo control rooms and the measures taken to exclude ignition sources where such spaces are not gas-safe (IGC Code 83/90/00, ch.3);

- (GA) 2.2.2.7 confirming the arrangements for the air locks are being properly maintained (IGC Code 83/90/00, ch.3);
- (GA) 2.2.2.8 examining, as far as practicable, the bilge, ballast and oil fuel arrangements (IGC Code 83/90/00, ch.3);
- (GA) 2.2.2.9 examining, when applicable, the bow or stern loading and unloading arrangements with particular reference to the electrical equipment, fire-fighting arrangements and means of communication between the cargo control room and the shore location (IGC Code 83/90/00, ch.3);
- (GA) 2.2.2.10 confirming that the sealing arrangements at the gas domes are satisfactory (IGC Code 83/90/00, ch.4);
- (GA) 2.2.2.11 confirming that portable or fixed drip trays or deck insulation for cargo leakage is in order (IGC Code 83/90/00, ch.4);
- (GA) 2.2.2.12 examining the cargo and process piping, including the expansion arrangements, insulation from the hull structure, pressure relief and drainage arrangements (IGC Code 83/90/00, ch.5);
- (GA) 2.2.2.13 confirming that the cargo tank and interbarrier space pressure and relief valves, including safety systems and alarms, are satisfactory (IGC Code 83/90/00, ch.5);
- (GA) 2.2.2.14 confirming that any liquid and vapour hoses are suitable for their intended purpose and, where appropriate, type-approved or marked with date of testing (IGC Code 83/90/00, ch.5);
- (GA) 2.2.2.15 examining the arrangements for the cargo pressure/temperature control including, when fitted, any refrigeration system and confirming that any associated alarms are satisfactory (IGC Code 83/90/00, ch.7);
- (GA) 2.2.2.16 examining the cargo, bunker, ballast and vent piping systems, including vent masts and protective screens, as far as practicable (IGC Code 83/90/00, ch.8);
- (GA) 2.2.2.17 confirming that arrangements are made for sufficient inert gas to be carried to compensate for normal losses and that means are provided for monitoring the spaces (IGC Code 83/90/00, ch.9);
- (GA) 2.2.2.18 confirming that the use of inert gas has not increased beyond that needed to compensate for normal losses by examining records of inert gas usage (IGC Code 83/90/00, ch.9);
- (GA) 2.2.2.19 confirming that any air-drying system and any interbarrier and hold space purging inert gas system are satisfactory (IGC Code 83/90/00, ch.9);

- (GA) 2.2.2.20 confirming that electrical equipment in gas-dangerous spaces and zones is in a satisfactory condition and is being properly maintained (IGC Code 83/90/00, ch.10);
- (GA) 2.2.2.21 examining the arrangements for the fire protection and fire extinction and testing the remote means of starting one main fire pump (IGC Code 83/90/00, ch.11);
- (GA) 2.2.2.22 examining the fixed fire-fighting system for the cargo pump room and confirming that its means of operation is clearly marked (IGC Code 83/90/00, ch.11);
- (GA) 2.2.2.23 examining the water spray system for cooling, fire protection and crew protection and confirming that its means of operation is clearly marked (IGC Code 83/90/00, ch.11);
- (GA) 2.2.2.24 examining the dry chemical powder fire-extinguishing system for the cargo area and confirming that its means of operation is clearly marked (IGC Code 83/90/00, ch.11);
- (GA) 2.2.2.25 examining the fixed installation for the gas-dangerous spaces and confirming its means of operation is clearly marked (IGC Code 83/90/00, ch.11);
- (GA) 2.2.2.26 confirming the provision and examining the condition of the fire fighter's outfits (IGC Code 83/90/00, ch.11);
- (GA) 2.2.2.27 examining, as far as practicable, and confirming the satisfactory operation of, the arrangements for the mechanical ventilation of spaces in the cargo area normally entered during cargo handling operations (IGC Code 83/90/00, ch.12);
- (GA) 2.2.2.28 examining, and confirming the satisfactory operation of, the arrangements for the mechanical ventilation of spaces normally entered other than those covered by (GI) 2.1.2.24 (IGC Code 83/90/00, ch.12);
- (GA) 2.2.2.29 examining, and testing as appropriate and as far as practicable, the liquid level indicators, overflow control, pressure gauges, high pressure and, when applicable, low pressure alarms, and temperature indicating devices for the cargo tanks (IGC Code 83/90/00, ch.13);
- (GA) 2.2.2.30 examining, and testing as appropriate, the gas detection equipment (IGC Code 83/90/00, ch.13);
- (GA) 2.2.2.31 confirming that two sets of portable gas detection equipment suitable for the cargoes to be carried and a suitable instrument for measuring oxygen levels have been provided (IGC Code 83/90/00, ch.13);



- (GA) 2.2.2.32 checking the provision of equipment for personnel protection (IGC Code 83/90/00, ch.14) and in particular that:
  - (GA) 2.2.2.32.1 two complete sets of safety equipment each permitting personnel to enter and work in a gas-filled space are provided and are properly stowed;
  - (GA) 2.2.2.32.2 the requisite supply of compressed air is provided and examining, when applicable, the arrangements for any special air compressor and low-pressure air line system;
  - (GA) 2.2.2.32.3 medical first-aid equipment, including stretchers and oxygen resuscitation equipment and antidotes, when available, for the products to be carried are provided;
  - (GA) 2.2.2.32.4 respiratory and eye protection suitable for emergency escape purposes are provided;
  - (GA) 2.2.2.32.5 decontamination arrangements and eyewashes are operational;
  - (GA) 2.2.2.32.6 examining, when applicable, the arrangements to protect personnel against the effects of a major cargo release by a special suitably designed and equipped space within the accommodation area;
- (GA) 2.2.2.33 examining, when applicable, the arrangements for the use of cargo as fuel and testing, as far as practicable, that the gas supply to the machinery space is cut off should the exhaust ventilation not be functioning correctly and that master gas fuel valve may be remotely closed from within the machinery space (IGC Code 83/90/00, ch.16).
- (GA) 2.2.3 For compliance with the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk the completion of the annual survey should consist of:
  - (GA) 2.2.3.1 after a satisfactory survey the International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk should be endorsed;
  - (GA) 2.2.3.2 if a survey shows that the condition of a ship or its equipment is unsatisfactory - see part "General" section 4.8.
- (GIn) 2.3 **Intermediate surveys** – see part "General", section 4.3.
  - (GIn) 2.3.1 For compliance with the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk the examination of current certificates and other records should consist of:
    - (GIn) 2.3.1.1 the provisions of (GA) 2.2.1.
  - (GIn) 2.3.2 For compliance with the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk the intermediate

survey of the structure, equipment, fittings, arrangements and materials should consist of:

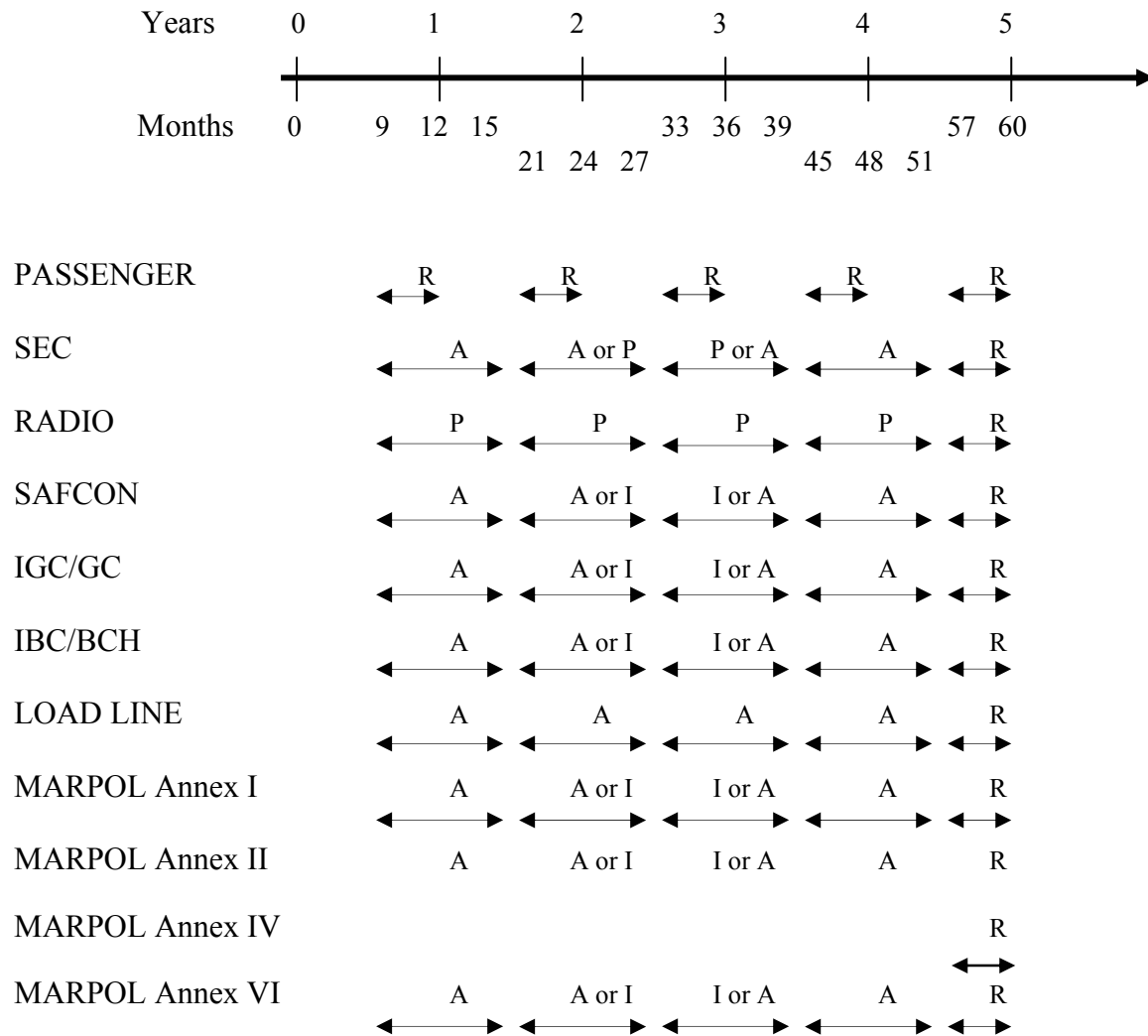
- (GIn) 2.3.2.1 the provisions of (GA) 2.2.2;
- (GIn) 2.3.2.2 confirming, where applicable, that pipelines and independent cargo tanks are electrically bonded to the hull (IGC Code 83/90/00, ch.10);
- (GIn) 2.3.2.3 generally examining the electrical equipment and cables in dangerous zones such as cargo pump rooms and areas adjacent to cargo tanks to check for defective equipment, fixtures and wiring. The insulation resistance of the circuits should be tested and in cases where a proper record of testing is maintained consideration should be given to accepting recent readings (IGC Code 83/90/00, ch.10);
- (GIn) 2.3.2.4 confirming that spares are provided for cargo area mechanical ventilation fans (IGC Code 83/90/00, ch.12);
- (GIn) 2.3.2.5 confirming that the heating arrangements, if any, for steel structures are satisfactory.
- (GIn) 2.3.3 For compliance with the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk the completion of the intermediate survey should consist of:
  - (GIn) 2.3.3.1 after a satisfactory survey the International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk should be endorsed;
  - (GIn) 2.3.3.2 if a survey shows that the condition of a ship or its equipment is unsatisfactory – see part “General” section 4.8.
- (GR) **2.4** **Renewal surveys** – see part “General”, section 4.4.
  - (GR) 2.4.1 For compliance with the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk the examination of current certificates and other records should consist of:
    - (GR) 2.4.1.1 the provisions of (GA) 2.2.1, except the International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk.
  - (GR) 2.4.2 For compliance with the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk the renewal survey of the structure, equipment, fittings, arrangements and materials should consist of:
    - (GR) 2.4.2.1 the provisions of (GIn) 2.3.3;
    - (GR) 2.4.2.2 examining the insulation and means of support of the cargo tanks and confirming that the secondary barrier remains effective (IGC Code 83/90/00, ch.4).

- (GR) 2.4.3 For compliance with the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk the completion of the renewal survey should consist of:
- (GR) 2.4.3.1 after a satisfactory survey the International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk should be issued.

**APPENDIX**

**THE HARMONIZED SYSTEM OF SURVEY AND CERTIFICATION**

**DIAGRAMMATIC ARRANGEMENT**



Code of types of survey:

- R - Renewal
- P - Periodical
- I - Intermediate
- A - Annual



MARITIME SAFETY COMMITTEE  
83rd session  
Agenda item 28

MSC 83/28/Add.2  
2 November 2007  
Original: ENGLISH

**REPORT OF THE MARITIME SAFETY COMMITTEE  
ON ITS EIGHTY-THIRD SESSION**

Attached are annexes 1 to 16 to the report of the Maritime Safety Committee on its eighty-third session (MSC 83/28).

For reasons of economy, this document is printed in a limited number. Delegates are kindly asked to bring their copies to meetings and not to request additional copies.

**LIST OF ANNEXES**

- ANNEX 1 RESOLUTION MSC.239(83) – ADOPTION OF AMENDMENTS TO THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974, AS AMENDED
- ANNEX 2 RESOLUTION MSC.240(83) – ADOPTION OF AMENDMENTS TO THE PROTOCOL OF 1988 RELATING TO THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974, AS AMENDED
- ANNEX 3 RESOLUTION MSC.241(83) – ADOPTION OF AMENDMENTS TO THE INTERNATIONAL CODE FOR THE SAFE CARRIAGE OF PACKAGED IRRADIATED NUCLEAR FUEL, PLUTONIUM AND HIGH-LEVEL RADIOACTIVE WASTES ON BOARD SHIPS (INF CODE)
- ANNEX 4 DRAFT AMENDMENTS TO SOLAS CHAPTERS II-1 AND II-2
- ANNEX 5 PROJECT PLAN FOR A SECOND TRIAL APPLICATION OF THE GUIDELINES FOR THE VERIFICATION OF COMPLIANCE WITH GBS USING THE IACS CSR FOR OIL TANKERS
- ANNEX 6 RESOLUTION MSC.242(83) – USE OF THE LONG-RANGE IDENTIFICATION AND TRACKING INFORMATION FOR MARITIME SAFETY AND MARINE ENVIRONMENT PROTECTION PURPOSES
- ANNEX 7 RESOLUTION MSC.243(83) – ESTABLISHMENT OF INTERNATIONAL LRIT DATA EXCHANGE ON AN INTERIM BASIS
- ANNEX 8 DRAFT AMENDMENTS TO SOLAS REGULATIONS II-2/10 AND II-2/19.4
- ANNEX 9 DRAFT AMENDMENTS TO THE GUIDELINES ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS AND OIL TANKERS (RESOLUTION A.744(18), AS AMENDED)
- ANNEX 10 RESOLUTION MSC.244(83) – ADOPTION OF PERFORMANCE STANDARD FOR PROTECTIVE COATINGS FOR VOID SPACES ON BULK CARRIERS AND OIL TANKERS
- ANNEX 11 DRAFT SOLAS REGULATION II-1/3-9 (MEANS OF EMBARKATION ON, AND DISEMBARKATION FROM, SHIPS)

- ANNEX 12 DRAFT AMENDMENTS TO SOLAS REGULATION II-1/3-4  
(EMERGENCY TOWING ARRANGEMENTS ON TANKERS)
- ANNEX 13 DRAFT MSC RESOLUTION ON ADOPTION OF THE  
INTERNATIONAL CODE ON INTACT STABILITY, 2008 (2008 IS  
CODE)
- ANNEX 14 DRAFT AMENDMENTS TO THE 1974 SOLAS CONVENTION
- ANNEX 15 DRAFT AMENDMENTS TO THE 1988 LL PROTOCOL
- ANNEX 16 RESOLUTION MSC.245(83) – RECOMMENDATION ON A STANDARD  
METHOD FOR EVALUATING CROSS-FLOODING ARRANGEMENTS

**(See document MSC 83/28/Add.1 for annexes 17, 32 and 35 and document  
MSC 83/28/Add.3 for annexes 18 to 31, 33, 34 and 36 to 44)**





**ANNEX 1****RESOLUTION MSC.239(83)  
(adopted on 12 October 2007)****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 amendment procedure applicable to the Annex to the Convention, other than to the provisions of chapter I thereof,

HAVING CONSIDERED, at its eighty-third 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 said amendments shall be deemed to have been accepted on 1 January 2009, 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 SOLAS 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 2009 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 IV  
RADIOCOMMUNICATIONS**

**PART A  
GENERAL**

- 1 The following new regulation 4-1 is added after the existing regulation 4:

**“Regulation 4-1  
GMDSS satellite providers**

The Maritime Safety Committee shall determine the criteria, procedures and arrangements for the evaluation, recognition, review and oversight of the provision of mobile satellite communication services in the Global Maritime Distress and Safety System (GMDSS) pursuant to the provisions of this chapter.”

**CHAPTER VI  
CARRIAGE OF CARGOES**

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

**“Regulation 5-1  
Material safety data sheets**

Ships carrying MARPOL Annex I cargoes, as defined in Appendix I to Annex I of the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973, and marine fuel oils shall be provided with a material safety data sheet prior to the loading of such cargoes based on the recommendations developed by the Organization.\*

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\* Refer to the Recommendation for material safety data sheets (MSDS) for MARPOL Annex I cargoes and marine fuel oils, adopted by the Organization by resolution MSC.150(77), as may be amended.”

## APPENDIX CERTIFICATES

### Form of Safety Certificate for Passenger Ships

3 In the table of paragraph 2.1.3 in the section commencing with the words “THIS IS TO CERTIFY:”, the reference to “regulation II-1/13” is replaced by the reference to “regulation II-1/18<sup>4</sup>”, the words “C.1, C.2, C.3” are replaced by “P.1, P.2, P.3” and the following footnote is added:

<sup>4</sup> For ships constructed before 1 January 2009, the applicable subdivision notation “C.1, C.2 and C.3” should be used.”

### Form of Nuclear Passenger Ship Safety Certificate

4 In the table of paragraph 2.1.3 in the section commencing with the words “THIS IS TO CERTIFY:” of the Form of Nuclear Passenger Ship Safety Certificate, the reference to “regulation II-1/13” is replaced by “regulation II-1/18<sup>3</sup>”, the words “C.1, C.2, C.3” are replaced by “P.1, P.2, P.3” and the following footnote is added:

<sup>3</sup> For ships constructed before 1 January 2009, the applicable subdivision notation “C.1, C.2 and C.3” should be used.”

5 After the existing paragraph 2.10 in the section commencing with the words “THIS IS TO CERTIFY:”, the following new paragraphs 2.11 and 2.12 are added:

“2.11. the ship was/was not/<sup>1</sup> subjected to an alternative design and arrangements in pursuance of regulation II-2/17 of the Convention;

2.12 a Document of approval of alternative design and arrangements for fire safety is/is not/<sup>1</sup> appended to this Certificate.

<sup>1</sup> Delete as appropriate.”

### Form of Nuclear Cargo Ship Safety Certificate

6 After the existing paragraph 2.9 in the section commencing with the words “THIS IS TO CERTIFY:”, the following new paragraphs 2.10 and 2.11 are added:

“2.10 the ship was/was not/<sup>3</sup> subjected to an alternative design and arrangements in pursuance of regulation II-2/17 of the Convention;

2.11 a Document of approval of alternative design and arrangements for fire safety is/is not/<sup>3</sup> appended to this Certificate.

<sup>3</sup> Delete as appropriate.”

\*\*\*



**ANNEX 2****RESOLUTION MSC.240(83)  
(adopted on 12 October 2007)****ADOPTION OF AMENDMENTS TO THE PROTOCOL OF 1988 RELATING 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”) and article VI of the Protocol of 1988 relating to the Convention (hereinafter referred to as “the 1988 SOLAS Protocol”) concerning the procedure for amending the 1988 SOLAS Protocol,

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

1. ADOPTS, in accordance with article VIII(b)(iv) of the Convention and article VI of the 1988 SOLAS Protocol, amendments to the appendix to the Annex to the 1988 SOLAS Protocol, the text of which is set out in the Annex to the present resolution;
2. DETERMINES, in accordance with article VIII(b)(vi)(2)(bb) of the Convention and article VI of the 1988 SOLAS Protocol, that the said amendments shall be deemed to have been accepted on 1 January 2009, unless, prior to that date, more than one third of the Parties to the 1988 SOLAS Protocol or Parties the combined merchant fleets of which constitute not less than 50% of the gross tonnage of the world’s merchant fleet, have notified their objections to the amendments;
3. INVITES the Parties concerned to note that, in accordance with article VIII(b)(vii)(2) of the Convention and article VI of the 1988 SOLAS Protocol, the amendments shall enter into force on 1 July 2009, upon their acceptance in accordance with paragraph 2 above;
4. RECOMMENDS the Parties concerned to issue certificates complying with the annexed amendments at the first renewal survey after 1 July 2009;
5. REQUESTS the Secretary-General, in conformity with article VIII(b)(v) of the Convention and article VI of the 1988 SOLAS Protocol, to transmit certified copies of the present resolution and the text of the amendments contained in the Annex to all Parties to the 1988 SOLAS Protocol;
6. FURTHER REQUESTS the Secretary-General to transmit copies of this resolution and its Annex to Members of the Organization, which are not Parties to the 1988 SOLAS Protocol.

ANNEX

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

**APPENDIX**

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

**Form of Safety Certificate for Passenger Ships**

1 The following new paragraphs 2.10 and 2.11 are added after the existing paragraph 2.9 in the section commencing with the words “THIS IS TO CERTIFY”:

“2.10 the ship was/was not/<sup>1</sup> subjected to an alternative design and arrangements in pursuance of regulation II-2/17 of the Convention;

2.11 a Document of approval of alternative design and arrangements for fire safety is/is not/<sup>1</sup> appended to this Certificate.

<sup>1</sup> Delete as appropriate.”

2 In the table of paragraph 2.1.3 in the section commencing with the words “THIS IS TO CERTIFY”, the reference to “regulation II-1/13” is replaced by the reference to “regulation II-1/18<sup>4</sup>”, the words “C.1, C.2, C.3” are replaced by “P.1, P.2, P.3” and the following footnote is added:

<sup>4</sup> For ships constructed before 1 January 2009, the applicable subdivision notation “C.1, C.2 and C.3” should be used.”

**Form of Safety Construction Certificate for Cargo Ships**

3 The following new paragraphs 5 and 6 are added after the existing paragraph 4 in the section commencing with the words “THIS IS TO CERTIFY”:

“5 the ship was/was not/<sup>4</sup> subjected to an alternative design and arrangements in pursuance of regulation II-2/17 of the Convention;

6 a Document of approval of alternative design and arrangements for fire safety is/is not/<sup>4</sup> appended to this Certificate.

<sup>4</sup> Delete as appropriate.”

**Form of Safety Equipment Certificate for Cargo Ships**

4 The following new paragraphs 2.7 and 2.8 are added after the existing paragraph 2.6 in the section commencing with the words “THIS IS TO CERTIFY”:

“2.7 the ship was/was not/<sup>4</sup> subjected to an alternative design and arrangements in pursuance of regulation II-2/17 of the Convention;

- 2.8 a Document of approval of alternative design and arrangements for fire safety is/is not/<sup>4</sup> appended to this Certificate.

<sup>4</sup> Delete as appropriate.”

### **Form of Safety Certificate for Cargo Ships**

5 The following new paragraphs 2.11 and 2.12 are added after the existing paragraph 2.10 in the section commencing with the words “THIS IS TO CERTIFY”:

“2.11 the ship was/was not/<sup>4</sup> subjected to an alternative design and arrangements in pursuance of regulation II-2/17 of the Convention;

- 2.12 a Document of approval of alternative design and arrangements for fire safety is/is not/<sup>4</sup> appended to this Certificate.

<sup>4</sup> Delete as appropriate.”

\*\*\*





## ANNEX 3

**RESOLUTION MSC.241(83)  
(adopted on 12 October 2007)****ADOPTION OF AMENDMENTS TO THE INTERNATIONAL CODE FOR THE SAFE  
CARRIAGE OF PACKAGED IRRADIATED NUCLEAR FUEL, PLUTONIUM AND  
HIGH-LEVEL RADIOACTIVE WASTES ON BOARD SHIPS (INF CODE)**

THE MARITIME SAFETY COMMITTEE,

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

NOTING resolution MSC.88(71) by which it adopted the International Code for the Safe Carriage of Packaged Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes on Board Ships (hereinafter referred to as “the INF Code”), which has become mandatory under chapter VII of the International Convention for the Safety of Life at Sea, 1974 (hereinafter referred to as “the Convention”),

NOTING ALSO article VIII(b) and regulation VII/14.1 of the Convention concerning the procedure for amending the INF Code,

HAVING CONSIDERED, at its eighty-third session, amendments to the INF Code, proposed and circulated in accordance with article VIII(b)(i) of the Convention,

1. ADOPTS, in accordance with article VIII(b)(iv) of the Convention, amendments to the INF Code, 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 2009, 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 2009 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 CODE FOR THE SAFE CARRIAGE OF  
PACKAGED IRRADIATED NUCLEAR FUEL, PLUTONIUM AND HIGH-LEVEL  
RADIOACTIVE WASTES ON BOARD SHIPS (INF CODE)**

**CHAPTER 2  
DAMAGE STABILITY**

- 1 In paragraph 2.2.1, the words “Part B” are replaced by the words “Part B-1”.
- 2 In paragraphs 2.2.2 and 2.3.2, the following new sentence is added at the end of the paragraphs:

“For ships less than 80 m in length, the subdivision index R at 80 m shall be used.”

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**ANNEX 4****DRAFT AMENDMENTS TO SOLAS CHAPTERS II-1 AND II-2****CHAPTER II-1  
CONSTRUCTION – STRUCTURE, SUBDIVISION AND STABILITY,  
MACHINERY AND ELECTRICAL INSTALLATIONS****Regulation 35-1 – Bilge pumping arrangements**

1 The following new paragraph 2.6.3 is added after the existing paragraph 2.6.2:

“2.6.3 Provisions for the drainage of closed vehicle and ro-ro spaces and special category spaces shall also comply with regulations II-2/20.6.1.4 and II-2/20.6.1.5.”

**CHAPTER II-2  
CONSTRUCTION – FIRE PROTECTION, FIRE DETECTION AND  
FIRE EXTINCTION****Regulation 20 – Protection of vehicle, special category and ro-ro spaces**

2 The existing paragraph 6.1.4 is replaced by the following:

“6.1.4 When fixed pressure water-spraying systems are provided, in view of the serious loss of stability which could arise due to large quantities of water accumulating on the deck or decks during the operation of the fixed pressure water-spraying system, the following arrangements shall be provided:

.1 in passenger ships:

.1.1 in the spaces above the bulkhead deck, scuppers shall be fitted so as to ensure that such water is rapidly discharged directly overboard, [to the satisfaction of the Administration,] taking into account the guidelines developed by the Organization\*;

.1.2.1 in ro-ro passenger ships discharge valves for scuppers, fitted with positive means of closing operable from a position above the bulkhead deck in accordance with the requirements of the International Convention on Load Lines in force, shall be kept open while the ships are at sea;

.1.2.2 any operation of valves referred to in paragraph 6.1.4.1.2.1 shall be recorded in the log-book;

.1.3 in the spaces below the bulkhead deck, the Administration may require pumping and drainage facilities to be provided additional to the requirements of regulation II-1/35-1. In such case, the drainage system shall be sized to remove no less than 125% of the combined capacity of

both the water spraying system pumps and the required number of fire hose nozzles, [to the satisfaction of the Administration,] taking into account the guidelines developed by the Organization\*. The drainage system valves shall be operable from outside the protected space at a position in the vicinity of the extinguishing system controls. Bilge wells shall be of sufficient holding capacity and shall be arranged at the side shell of the ship at a distance from each other of not more than 40 m in each watertight compartment;

- .2 in cargo ships, the drainage and pumping arrangements shall be such as to prevent the build-up of free surfaces. In such case, the drainage system shall be sized to remove no less than 125% of the combined capacity of both the water spraying system pumps and the required number of fire hose nozzles, [to the satisfaction of the Administration,] taking into account the guidelines developed by the Organization\*. The drainage system valves shall be operable from outside the protected space at a position in the vicinity of the extinguishing system controls. Bilge wells shall be of sufficient holding capacity and shall be arranged at the side shell of the ship at a distance from each other of not more than 40 m in each watertight compartment. If this is not possible the adverse effect upon stability of the added weight and free surface of water shall be taken into account to the extent deemed necessary by the Administration in its approval of the stability information.\*\* Such information shall be included in the stability information supplied to the master as required by regulation II-1/5-1.

The requirement of this paragraph shall apply to ships constructed on or after [date of entry into force]. Ships constructed on or after 1 July 2002 and before [date of entry into force] shall comply with the previously applicable requirements of paragraph 6.1.4, as amended by resolution MSC.91(72).

6.1.5 In addition to provisions in paragraph 6.1.4 for closed vehicles and ro-ro spaces and special category spaces [measures shall be taken] to prevent the blockage of drainage arrangements, [to the satisfaction of the Administration,] taking into account the guidelines developed by the Organization\*. Ships constructed before [date of entry into force] shall comply with the requirements of this paragraph by the first survey after [date of entry into force].

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\* Refer to the Guidelines for drainage systems in closed vehicle and ro-ro spaces and special category spaces (to be developed).

\*\* Refer to the Recommendation on fixed fire-extinguishing systems for special category spaces adopted by the Organization by resolution A.123(V).

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## ANNEX 5

### PROJECT PLAN FOR A SECOND TRIAL APPLICATION OF THE GUIDELINES FOR THE VERIFICATION OF COMPLIANCE WITH GBS USING THE IACS CSR FOR OIL TANKERS

#### A. Project objectives

The objective of the project is to conduct a second trial application of Tier III of the GBS for oil tankers and bulk carriers with the intention of validating the Tier III verification framework, identifying shortcomings and making proposals for improvement and implementation.

#### B. Terms of reference

The terms of reference for the project are as follows:

- .1 further develop the Draft Guidelines for the verification of compliance with GBS, parts A and B, based on the report of the GBS Working Group (MSC 83/WP.5) and taking into account documents MSC 83/5/13, MSC 83/5/14 and MSC 83/5/15, along with detailed feedback provided by individual delegations (MSC 84/5), with a view towards:
  - .1 ensuring functional requirements are included in Tier II only;
  - .2 ensuring evaluation criteria allow for the consideration of alternatives and facilitate the development of new technology and concepts;
  - .3 ensuring consistency between the information and documentation requirements, evaluation criteria and functional requirements;
  - .4 utilizing periodic reporting of rule performance as appropriate; and
  - .5 ensuring the evaluation criteria provide the Group of Experts with sufficient flexibility to exercise judgment during the verification within the bounds of the functional requirements;
- .2 conduct a trial of the refined GBS Tier III evaluation process using the IACS Common Structural Rules (CSR) for oil tankers;
- .3 examine and evaluate:
  - .1 the verification framework of Tier III;
  - .2 the resources needed to conduct an appropriate verification; and
  - .3 the efficiency and effectiveness of the verification process;
- .4 prepare and submit to MSC 84 an interim report of the Pilot Panel documenting the progress made; and

- .5 prepare the final report of the Pilot Panel for MSC 85, including:
  - .1 draft Guidelines for the verification of compliance with GBS, parts A and B;
  - .2 if identified, potential modifications of Tiers I and II;
  - .3 an assessment of the resource implications of the verification process, considering both initial verification and the maintenance of verification; and
  - .4 recommendations to enhance the efficiency of the verification process, considering any possible flexibility between self-assessment combined with audit and in depth evaluation.

### **C. Project organization**

- 1 Project Co-ordinator (PC): leads the pilot project; executes project plan; facilitates necessary meetings; assembles reports of the pilot project for submission to MSC.
- 2 Pilot Panel (PP): consists of no more than 15 members; refines draft Guidelines for the verification of compliance with GBS, reviews information provided by IACS to the Pilot Panel and evaluates the submitted information according to the terms of reference.
- 3 IACS: demonstrates, using CSR for oil tankers, how a classification society rule set could be verified as meeting Tiers I and II, considering the draft Guidelines for the verification of compliance with GBS (Tier III); responds to inquiries from the Pilot Panel; submits lessons learned and resource implications of the verification process for inclusion in the report to MSC 85.

### **D. Pilot Panel membership**

- 1 The Pilot Panel, as established after MSC 82, will be reconvened for the second trial application. IMO Member States or international organization who nominated individual Pilot Panel members should notify the IMO Secretariat of the ability of their nominee to participate in Phase II by 15 November 2007.
- 2 In the event that individual Panel members are not able to participate in this Phase II effort, replacement members of the Pilot Panel (PP) will be determined as follows:
  - .1 IMO members and international organizations may nominate\* suitable experts by 15 November 2007 and include a statement on individuals' qualifications and ability to meet project milestones (see timetable in section E).
  - .2 The MSC Chairman, in consultation with the Secretariat, will select the PP members and inform the selected members and the PC.

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\* Nominations should be sent to the attention of Mr. K. Sekimizu, Director Maritime Safety Division, and copied by e-mail to [hhoppe@imo.org](mailto:hhoppe@imo.org).

3 Nominated individuals should have adequate knowledge of rules and rule development and be able to correctly interpret the rules for correlation with relevant regulatory requirements and at least one of the following:

- .1 ship design and construction;
- .2 safety requirements;
- .3 environmental protection requirements;
- .4 ship operational efficiency; and
- .5 survey, inspection and maintenance regimes.

**E. Provisional schedule for the pilot project**

<b>Date</b>	<b>Who</b>	<b>Action</b>
15 November 2007	Pilot Panel Members	Confirm availability for Phase II with Secretariat.
15 November 2007	Member States, NGOs, IGOs	Nominate replacement members for Pilot Panel.
1 December 2007	MSC Chairman, IMO Secretariat	Inform PC and PP of membership of PP.
1 December 2007	PC, PP	Begin refinement of Tier III based on working group report and documents submitted to MSC 83.
February 2008	PC, PP	Meeting to complete initial revision of Tier III.
Mid-February 2008	PC	Commence trial application. Provide revised Tier III to IACS.
March 2008	PC	Submit interim progress report to MSC 84.
April 2008	PC, PP, IACS	IACS presentation meeting, evaluation discussion and additional questions.
June 2008	PP, PC	Meeting to finalize trial application and prepare report to MSC 85.
Mid-August 2008	PC	Submit report to MSC 85.

**F. Meetings**

The meeting venues will be advised by the Project Co-ordinator. Each attendee of the meetings shall pay their individual costs. The IMO Secretariat is invited to attend the meetings.

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**ANNEX 6****RESOLUTION MSC.242(83)  
(adopted on 12 October 2007)****USE OF THE LONG-RANGE IDENTIFICATION AND TRACKING INFORMATION  
FOR MARITIME SAFETY AND MARINE ENVIRONMENT PROTECTION  
PURPOSES**

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO the provisions of regulation V/19-1 (the regulation) of the International Convention for the Safety of Life at Sea, 1974, as amended (the Convention) on the Long-range identification and tracking (LRIT) of ships and, in particular, that, as from 31 December 2008, ships shall transmit and Contracting Governments to the Convention (Contracting Governments) shall be able to receive, pursuant to the provisions of the regulation, LRIT information transmitted by ships,

RECALLING FURTHER that, at its seventy-ninth session, it had agreed that the purpose and scope of long-range identification and tracking should be extended to include safety and environmental protection applications,

ALSO RECALLING that regulation V/19-1.8.1 states that, subject to the provisions of regulations V/19-1.8.2 to V/19-1.11.2, Contracting Governments shall be able to receive LRIT information about ships, for security and other purposes as agreed by the Organization,

NOTING that the use of LRIT information for safety and marine environment protection purposes would provide significant added value through an improvement of the knowledge of ships positions and identity,

BEARING IN MIND that the conditions for the entry into force of regulation V/19-1 have been met and the regulation will enter into force on 1 January 2008,

HAVING CONSIDERED, at its eighty-third session, a proposal to allow the use of LRIT information for safety and marine environment protection purposes stating that the LRIT information specified in regulation V/19-1.5 was adequate in that respect and provided a significant added value for these objectives,

1. AGREES that Contracting Governments may request, receive and use, LRIT information for safety and marine environment protection purposes;
2. AGREES ALSO to reaffirm the present decisions within the framework of regulation V/19-1.8.1 once regulation V/19-1 had entered into force;
3. INVITES the Marine Environment Protection Committee to note this decision.

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## ANNEX 7

**RESOLUTION MSC.243(83)  
(adopted on 12 October 2007)****ESTABLISHMENT OF INTERNATIONAL LRIT DATA EXCHANGE  
ON AN INTERIM BASIS**

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO the provisions of regulation V/19-1 (the regulation) of the International Convention for the Safety of Life at Sea, 1974, as amended (the Convention) on the Long-range identification and tracking (LRIT) of ships and, in particular, that, as from 31 December 2008, ships shall transmit and Contracting Governments to the Convention (Contracting Governments) shall be able to receive, pursuant to the provisions of the regulation, LRIT information transmitted by ships,

BEARING IN MIND that the conditions for the entry into force of regulation V/19-1 have been met and the regulation will enter into force on 1 January 2008,

RECALLING FURTHER the Performance standards and functional requirements on long-range identification and tracking of ships (the Performance standards) adopted by resolution MSC.210(81), in particular, section 10 on the International LRIT Data Exchange,

ALSO RECALLING the Arrangements for the timely establishment of the LRIT system adopted by resolution MSC.211(81) and, in particular, that the International LRIT Data Centre and the International LRIT Data Exchange should commence trials and testing of the LRIT system not later than 1 July 2008,

MINDFUL of the key and pivotal role of the International LRIT Data Exchange in the LRIT system architecture,

DESIRING to put the necessary arrangements in place so as to ensure that the LRIT system becomes fully operational, as planned, on 31 December 2008,

NOTING that the proposal for the establishment of the International LRIT Data Centre and the International LRIT Data Exchange which was presented for consideration did not find, during its eighty-third session, favour amongst the Contracting Governments,

HAVING CONSIDERED, at its eighty-third session, as a result of the developments, a contingency offer from the United States in relation to the establishment and operation of the International LRIT Data Exchange on an interim basis and until such time the Committee would be able to make the necessary permanent arrangements,

1. RECOGNIZES (in view of the fact that the Contracting Governments have accepted the offer of the United States to host, build and operate, on an interim and temporary basis the International LRIT Data Exchange) pursuant to paragraph 10.1 of the Performance standards the aforesaid exchange as the International LRIT Data Exchange referred to in the Performance standards subject to the terms and conditions set out in the Annex to the present resolution;
2. AGREES that, bearing in mind that the contingency offer from the United States is only an interim arrangement and a permanent solution should be found for the International LRIT Data Exchange as soon as possible (within two years as from 1 January 2008 subject to a further review by the Committee), it will start, no later than at its eighty-fourth session, arrangements for seeking a solution for the establishment and operation of the International LRIT Data Exchange on a permanent basis;
3. REQUESTS the Secretariat to prepare, following any necessary consultations with the United States, a draft resolution on the establishment of an International LRIT Data Exchange on an interim basis, within the framework of regulation V/19-1.14, for consideration and adoption by the Committee at its eighty-fourth session.

ANNEX

**ESTABLISHMENT OF INTERNATIONAL LRIT DATA EXCHANGE  
ON AN INTERIM BASIS**

The International LRIT Data Exchange should be established and operated by the United States under the following conditions:

- 1 The International LRIT Data Exchange should comply with the salient aspects of:
  - (1) regulation V/19-1;
  - (2) the Performance standards;
  - (3) the technical standards and specifications approved by the Committee;
  - (4) the criteria for the location of the International LRIT Data Centre and the International LRIT Data Exchange; and
  - (5) any guidance in relation to financial and operational matters issued by the Committee.
  
- 2 The International LRIT Data Exchange would be provided by the United States at their own expense and, in this respect, the United States has clarified that its present intention was that consistent with their domestic laws and procurement regulations, the capital, operating and maintenance costs for the interim International LRIT Data Exchange would be borne by the United States. Their intention was that none of the LRIT Data Centres and none of the Contracting Governments would be required to make any payment to the United States for the services provided by the International LRIT Data Exchange.
  
- 3 The United States, while not withdrawing their reservation, during the eighty-second session of the Committee, with respect to the decision of Committee in relation to the appointment of the International Mobile Satellite Organization as the LRIT Co-ordinator, will co-operate fully and will meet all its obligations vis-à-vis IMSO as LRIT Co-ordinator in respect of participation of IMSO in the initial developmental testing and in connection with the audit of the performance of the International LRIT Data Exchange within the framework established by regulation V/19-1 and section 14 of the Performance standards.
  
- 4 The Contracting Governments agree that the United States does not assume any form of liability in case of any technical failure of the International LRIT Data Exchange. However, the LRIT information should be secured and not be accessible.

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**ANNEX 8**

**DRAFT AMENDMENTS TO SOLAS REGULATIONS II-2/10 AND II-2/19.4**

**CHAPTER II-2  
CONSTRUCTION – FIRE PROTECTION, FIRE DETECTION AND  
FIRE EXTINCTION**

**Regulation 10 – Fire fighting**

- 1 The following new paragraph 4.1.5 is added after the existing paragraph 4.1.4:

“4.1.5 By the first scheduled dry-docking after [1 July 2009], fixed carbon dioxide fire-extinguishing systems for the protection of machinery spaces and cargo pump-rooms on all ships shall comply with the provisions of paragraph 2.2.2 of chapter 5 of the Fire Safety Systems Code.”

**Regulation 19 – Carriage of dangerous goods**

- 2 In paragraph 4, the words “, as defined in regulation VII/2,” are deleted.

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## ANNEX 9

### **DRAFT AMENDMENTS TO THE GUIDELINES ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS AND OIL TANKERS (RESOLUTION A.744(18), AS AMENDED)**

#### **Contents**

- 1 After the existing title of “ANNEX A” the following new title is inserted:

#### **“Part A**

#### **GUIDELINES ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS HAVING SINGLE-SIDE SKIN CONSTRUCTION”**

- 2 After the existing list of contents for “ANNEX A”, the following is inserted:

#### **“Part B**

#### **GUIDELINES ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS HAVING DOUBLE-SIDE SKIN CONSTRUCTION**

#### **1 General**

- 1.1 Application
- 1.2 Definitions
- 1.3 Repairs
- 1.4 Surveyors

#### **2 Renewal survey**

- 2.1 General
- 2.2 Dry-dock survey
- 2.3 Space protection
- 2.4 Hatch covers and coamings
- 2.5 Extent of overall and close-up surveys
- 2.6 Extent of thickness measurements
- 2.7 Extent of tank pressure testing

#### **3 Annual survey**

- 3.1 General
- 3.2 Examination of the hull
- 3.3 Examination of hatch covers and coamings
- 3.4 Examination of cargo holds
- 3.5 Examination of ballast tanks

#### **4 Intermediate survey**

- 4.1 General
- 4.2 Bulk carriers 5 to 10 years of age
- 4.3 Bulk carriers 10 to 15 years of age
- 4.4 Bulk carriers exceeding 15 years of age

#### **5 Preparations for survey**

- 5.1 Survey programme
- 5.2 Conditions for survey
- 5.3 Access to structures
- 5.4 Equipment for survey
- 5.5 Survey at sea or at anchorage
- 5.6 Survey planning meeting

#### **6 Documentation on board**

- 6.1 General
- 6.2 Survey report file
- 6.3 Supporting documents
- 6.4 Review of documentation on board

#### **7 Procedures for thickness measurements**

- 7.1 General
- 7.2 Certification of thickness measurement company
- 7.3 Reporting

#### **8 Reporting and evaluation of survey**

- 8.1 Evaluation of survey report
- 8.2 Reporting

Annex 1 Requirements for close-up survey at renewal surveys

Annex 2 Requirements for thickness measurements at renewal surveys

Annex 3 Owner's inspection report

Annex 4A Survey programme

Annex 4B Survey planning questionnaire

Annex 5 Procedures for certification of a company engaged in thickness measurement of hull structures

Annex 6 Survey reporting principles

Annex 7	Condition evaluation report
Annex 8	Recommended procedures for thickness measurements
Annex 9	Guidelines for technical assessment in conjunction with planning for enhanced surveys of bulk carriers relevant survey
Annex 10	Requirements for extent of thickness measurements at those areas of substantial corrosion of bulk carriers with double-side skin construction within the cargo length area
Annex 11	Strength of cargo hatch cover securing arrangements for bulk carriers
Annex 12	Procedural requirements for thickness measurements”

## **ANNEX A**

### **GUIDELINES ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS**

- 3 After the above title, the following is inserted:

#### **“Part A**

#### **GUIDELINES ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS HAVING SINGLE-SIDE SKIN CONSTRUCTION”**

##### **1.1 Application**

- 4 The existing text of paragraph 1.1.1 is replaced by the following:

“1.1.1 The Guidelines should apply to all self-propelled bulk carriers of 500 gross tonnage and above having single-side skin construction. Where a bulk carrier has a combination of single- and double-side skin construction, the relevant requirements of parts A and B should apply to that construction, as applicable.”

- 5 The following new part B is inserted after part A:

## “Part B

### GUIDELINES ON THE ENHANCED PROGRAMME OF INSPECTIONS DURING SURVEYS OF BULK CARRIERS HAVING DOUBLE-SIDE SKIN CONSTRUCTION

#### 1 General

##### 1.1 Application\*

**1.1.1** The Guidelines should apply to all self-propelled bulk carriers of 500 gross tonnage and above having double-side skin construction. Where a bulk carrier has a combination of single- and double-side skin construction, the relevant requirements of parts A and B should apply to that construction, as applicable.

**1.1.2** The Guidelines should apply to surveys of hull structure and piping systems in way of cargo holds, cofferdams, pipe tunnels, void spaces within the cargo length area and all ballast tanks. The surveys should be carried out during the surveys prescribed by regulation I/10 of the Convention.

**1.1.3** The Guidelines contain the extent of examination, thickness measurements and tank testing. The survey should be extended when substantial corrosion and/or structural defects are found and include additional close-up survey when necessary.

##### 1.2 Definitions

**1.2.1** *Bulk carrier* is a ship which is constructed generally with single deck, topside tanks and hopper side tanks in cargo spaces, and is intended primarily to carry dry cargo in bulk and includes such types as ore carriers and combination carriers.\*\*

**1.2.2** *Ballast tank* is a tank which is used for water ballast and includes side ballast tanks, ballast double bottom spaces, topside tanks, hopper side tanks and peak tanks. A double-side tank should be considered, for survey purposes, as a separate tank even if it is in connection to either the topside tank or the hopper side tank.

**1.2.3** *Spaces* are separate compartments including holds and tanks.

**1.2.4** *Overall survey* is a survey intended to report on the overall condition of the hull structure and determine the extent of additional close-up surveys.

**1.2.5** *Close-up survey* is a survey where the details of structural components are within the close visual inspection range of the surveyor, i.e., preferably within reach of hand.

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\* The intention of these Guidelines is to ensure that an appropriate level of review of plans and documents is conducted and consistency in application is attained. Such evaluation of survey reports, survey programmes, planning documents, etc., should be carried out at the managerial level of the Administration or organization recognized by the Administration.

\*\* For combination carriers, additional requirements are specified in the Guidelines on the enhanced programme of inspections during surveys for oil tankers, set out in Annex B.

**1.2.6** *Transverse section* includes all longitudinal members such as plating, longitudinals and girders at the deck, sides, bottom, inner bottom, hopper sides, inner sides, top wing inner sides and longitudinal bulkheads.

**1.2.7** *Representative spaces* are those which are expected to reflect the condition of other spaces of similar type and service and with similar corrosion prevention systems. When selecting representative spaces, account should be taken of the service and repair history on board and identifiable critical and/or suspect areas.

**1.2.8** *Suspect areas* are locations showing substantial corrosion and/or are considered by the surveyor to be prone to rapid wastage.

**1.2.9** *Substantial corrosion* is an extent of corrosion such that assessment of corrosion pattern indicates a wastage in excess of 75% of allowable margins, but within acceptable limits.

**1.2.10** A *corrosion prevention system* is normally considered a full hard coating.

Protective coating should usually be epoxy coating or equivalent. Other coating systems may be considered acceptable as alternatives provided that they are applied and maintained in compliance with the manufacturer's specifications.

Where soft coatings have been applied, safe access should be provided for the surveyor to verify the effectiveness of the coating and to carry out an assessment of the conditions of internal structures which may include spot removal of the coating. When safe access cannot be provided, the soft coating should be removed.

**1.2.11** *Coating condition* is defined as follows:

GOOD condition with only minor spot rusting;

FAIR condition with local breakdown of coating at edges of stiffeners and weld connections and/or light rusting over 20% or more of areas under consideration, but less than as defined for POOR condition;

POOR condition with general breakdown of coating over 20% or more of areas or hard scale at 10% or more of areas under consideration.

**1.2.12** *Critical structural areas* are locations which have been identified from calculations to require monitoring or from the service history of the subject ship or from similar or sister ships to be sensitive to cracking, buckling or corrosion which would impair the structural integrity of the ship.

**1.2.13** *Cargo length area* is that part of the ship which includes all cargo holds and adjacent areas including fuel tanks, cofferdams, ballast tanks and void spaces.

**1.2.14** *Intermediate survey* is a survey carried out either at the second or third annual survey or between these surveys.

**1.2.15** A *prompt and thorough repair* is a permanent repair completed at the time of survey to the satisfaction of the surveyor, therein removing the need for the imposition of any associated condition of classification or recommendation.

**1.2.16** *Convention* means the International Convention for the Safety of Life at Sea, 1974, as amended.

**1.2.17** *Specially considered* means sufficient close-up inspection and thickness measurements are taken to confirm the actual average condition of the structure under coating.

### **1.3 Repairs**

**1.3.1** Any damage in association with wastage over the allowable limits (including buckling, grooving, detachment or fracture), or extensive areas of wastage over the allowable limits, which affects or, in the opinion of the Administration, will affect the ship's structural, watertight or weathertight integrity, should be promptly and thoroughly repaired. Areas which should be considered include:

- .1 side shell frames, their end attachments or adjacent shell plating;
- .2 deck structure and deck plating;
- .3 bottom structure and bottom plating;
- .4 watertight or oiltight bulkheads; and
- .5 hatch covers or hatch coamings.

Where adequate repair facilities are not available, the Administration may allow the ship to proceed directly to a repair facility. This may require discharging the cargo and/or temporary repairs for the intended voyage.

**1.3.2** Additionally, when a survey results in the identification of corrosion or structural defects, either of which, in the opinion of the Administration, will impair the ship's fitness for continued service, remedial measures should be implemented before the ship continues in service.

### **1.4 Surveyors**

For bulk carriers of 20,000 tons deadweight and above, two surveyors should jointly carry out the first scheduled renewal survey after the bulk carrier passes 10 years of age, and all subsequent renewal surveys and intermediate surveys. If the surveys are carried out by a recognized organization, the surveyors should be exclusively employed by such recognized organizations.

## **2 Renewal survey**

### **2.1 General**

**2.1.1** The renewal survey may be commenced at the fourth annual survey and be progressed during the succeeding year with a view to completion by the fifth anniversary date.

**2.1.2** As part of the preparation for the renewal survey, the survey programme should be dealt with in advance of the survey. The thickness measurement should not be held before the fourth annual survey.

**2.1.3** The survey should include, in addition to the requirements of the annual survey, examination, tests and checks of sufficient extent to ensure that the hull and related piping is in a satisfactory condition and is fit for its intended purpose for the new period of validity of the Cargo Ship Safety Construction Certificate, subject to proper maintenance and operation and to renewal surveys being carried out.

**2.1.4** All cargo holds, ballast tanks, including double bottom and double-side tanks, pipe tunnels, cofferdams and void spaces bounding cargo holds, decks and outer hull should be examined, and this examination should be supplemented by thickness measurement and testing, as required by 2.6 and 2.7, to ensure that the structural integrity remains effective. The examination should be sufficient to discover substantial corrosion, significant deformation, fractures, damages or other structural deterioration.

**2.1.5** All piping systems within the above spaces should be examined and operationally tested under working conditions to ensure that the condition remains satisfactory.

**2.1.6** The survey extent of ballast tanks converted to void spaces should be specially considered in relation to the requirements for ballast tanks.

### **2.2 Dry-dock survey**

**2.2.1** A survey in dry dock should be a part of the renewal survey. There should be a minimum of two inspections of the outside of the ship's bottom during the five-year period of the certificate. In all cases, the maximum interval between bottom inspections should not exceed 36 months.

**2.2.2** For ships of 15 years of age and over, inspection of the outside of the ship's bottom should be carried out with the ship in dry dock. For ships of less than 15 years of age, alternate inspections of the ship's bottom not conducted in conjunction with the renewal survey may be carried out with the ship afloat. Inspection of the ship afloat should only be carried out when the conditions are satisfactory and the proper equipment and suitably qualified staff are available.

**2.2.3** If a survey in dry-dock is not completed in conjunction with the enhanced survey during renewal survey or if the 36 month maximum interval referred to in 2.2.1 is not complied with, the Cargo Ship Safety Construction Certificate should cease to be valid until a survey in dry-dock is completed.

## **2.3 Space protection**

Where provided, the condition of the corrosion prevention system of ballast tanks should be examined. For ballast tanks, excluding double bottom tanks, where a coating is found in POOR condition as defined in 1.2.11, and it is not renewed, or where a soft coating has been applied, or where a coating has not been applied, the tanks in question should be examined at annual intervals. When such breakdown of coating is found in ballast double bottom tanks, or where a soft coating has been applied or where a coating has not been applied, the tanks in question may be examined at annual intervals. When considered necessary by the surveyor, or where extensive corrosion exists, thickness measurement should be carried out. Where a protective coating is provided in cargo holds and is found in good condition, the extent of close-up surveys and thickness measurements may be specially considered.

## **2.4 Hatch covers and coamings**

**2.4.1** A thorough inspection of the items listed in 3.3 should be carried out.

**2.4.2** Checking of the satisfactory operation of all mechanically operated hatch covers should be made, including:

- .1** stowage and securing in open condition;
- .2** proper fit and efficiency of sealing in closed condition;
- .3** operational testing of hydraulic and power components, wires, chains and link drives.

**2.4.3** The effectiveness of sealing arrangements of all hatch covers by hose testing or equivalent should be checked.

**2.4.4** Thickness measurement of the hatch cover and coaming plating and stiffeners should be carried out as given in annex 2.

## **2.5 Extent of overall and close-up surveys**

**2.5.1** An overall survey of all spaces excluding fuel oil tanks should be carried out at the renewal survey. Fuel oil tanks in way of cargo holds should be sufficiently examined to ensure that their condition is satisfactory.

**2.5.2** Each renewal survey should include a close-up examination of sufficient extent to establish the condition of the cargo holds and ballast tanks as indicated in annex 1.

## **2.6 Extent of thickness measurements**

**2.6.1** The requirements for thickness measurements at the renewal survey are given in annex 2.

**2.6.2** Representative thickness measurements to determine both general and local levels of corrosion in the transverse web frames in all water ballast tanks should be carried out. Thickness measurements should also be carried out to determine the corrosion levels on



the transverse bulkhead plating. The thickness measurements may be dispensed with provided the surveyor is satisfied by the close-up examination that there is no structural diminution, and the coating where applied remains efficient.

**2.6.3** The surveyor may extend the thickness measurements as deemed necessary. Provisions for extended measurements for areas with substantial corrosion as defined in 1.2.9 are given in annex 10.

**2.6.4** For areas in spaces where coatings are found to be in GOOD condition as defined in 1.2.11, the extent of thickness measurements according to annex 2 may be specially considered by the Administration. Where a protective coating is provided in cargo holds and is found in good condition, the extent of close-up surveys and thickness measurements may be specially considered.

**2.6.5** Transverse sections should be chosen where the largest reductions are suspected to occur or are revealed from deck plating measurements.

## **2.7 Extent of tank pressure testing**

**2.7.1** All boundaries of ballast tanks, deep tanks and cargo holds used for ballast within the cargo hold length should be pressure tested. Representative tanks for fresh water, fuel oil and lubrication oil should also be pressure tested.

**2.7.2** Generally, the hydrostatic pressure should correspond to a water level to the top of hatches for ballast/cargo holds, or top of air pipes for ballast tanks or fuel tanks.

## **3 Annual survey**

### **3.1 General**

The annual survey should consist of an examination for the purpose of ensuring, as far as practicable, that the hull hatch covers, coamings and piping are maintained in a satisfactory condition and should take into account the service history, condition and extent of the corrosion prevention system of ballast tanks and areas identified in the survey report file.

### **3.2 Examination of the hull**

**3.2.1** Examination of the hull plating and its closing appliances should be carried out as far as can be seen.

**3.2.2** Examination of watertight penetrations should be carried out as far as practicable.

### **3.3 Examination of hatch covers and coamings**

**3.3.1** It should be confirmed that no unapproved changes have been made to the hatch covers, hatch coamings and their securing and sealing devices since the last survey.

**3.3.2** A thorough survey of cargo hatch covers and coamings is only possible by examination in the open as well as closed positions and should include verification of proper opening and closing operation. As a result, at least the hatch covers sets within the

forward 25% of the ship's length and at least one additional set, such that all the sets on the ship are assessed at least once in every 5-year period, should be surveyed open, closed and in operation to the full extent in each direction at each annual survey, including:

- .1 stowage and securing in open condition;
- .2 proper fit and efficiency of sealing in closed condition; and
- .3 operational testing of hydraulic and power components, wires, chains and link drives.

The closing of the covers should include the fastening of all peripheral, and cross joint cleats or other securing devices. Particular attention should be paid to the condition of hatch covers in the forward 25% of the ship's length, where sea loads are normally greatest.

**3.3.3** If there are indications of difficulty in operating and securing hatch covers, additional sets above those required by 3.3.2, at the discretion of the surveyor, should be tested in operation.

**3.3.4** Where the cargo hatch securing system does not function properly, repairs should be carried out under the supervision of the Administration. Where hatch covers or coamings undergo substantial repairs, the strength of securing devices should be upgraded to comply with annex 13.

**3.3.5** For each cargo hatch cover set, at each annual survey, the following items should be surveyed:

- .1 cover panels, including side plates, and stiffener attachments that may be accessible in the open position by close-up survey (for corrosion, cracks, deformation);
- .2 sealing arrangements of perimeter and cross joints (gaskets for condition and permanent deformation, flexible seals on combination carriers, gasket lips, compression bars, drainage channels and non-return valves);
- .3 clamping devices, retaining bars, cleating (for wastage, adjustment, and condition of rubber components);
- .4 closed cover locating devices (for distortion and attachment);
- .5 chain or rope pulleys;
- .6 guides;
- .7 guide rails and track wheels;
- .8 stoppers;
- .9 wires, chains, tensioners and gypsies;

- .10 hydraulic system, electrical safety devices and interlocks; and
- .11 end and interpanel hinges, pins and stools where fitted.

**3.3.6** At each hatchway, at each annual survey, the coamings, with plating, stiffeners and brackets should be checked for corrosion, cracks and deformation, especially of the coaming tops.

**3.3.7** Where considered necessary, the effectiveness of sealing arrangements may be proved by hose or chalk testing supplemented by dimensional measurements of seal compressing components.

**3.3.8** Where portable covers, wooden or steel pontoons are fitted, the satisfactory condition of the following should be confirmed:

- .1 wooden covers and portable beams, carriers or sockets for the portable beam, and their securing devices;
- .2 steel pontoons, including close-up survey of hatch cover plating;
- .3 tarpaulins;
- .4 cleats, battens and wedges;
- .5 hatch securing bars and their securing devices;
- .6 loading pads/bars and the side plate edge;
- .7 guide plates and chocks;
- .8 compression bars, drainage channels and drain pipes (if any).

#### **3.4 Examination of cargo holds**

**3.4.1** For bulk carriers over 10 years of age, the following should be carried out:

- .1 overall survey of two selected cargo holds. Where a protective coating is provided in cargo holds and is found in GOOD condition, the extent of close-up surveys and thickness measurements may be specially considered; and
- .2 when considered necessary by the surveyor, thickness measurement should be carried out. If the results of these thickness measurements indicate that substantial corrosion is found, the extent of thickness measurements should be increased in accordance with annex 10.

**3.4.2** For bulk carriers over 15 years of age, the following should be carried out:

- .1 overall survey of all cargo holds. Where a protective coating is provided in cargo holds and is found in GOOD condition, the extent of close-up surveys and thickness measurements may be specially considered; and

- .2 when considered necessary by the surveyor, thickness measurement should be carried out. If the results of these thickness measurements indicate that substantial corrosion is found, the extent of thickness measurements should be increased in accordance with annex 10.

**3.4.3** All piping and penetrations in cargo holds, including overboard piping, should be examined for bulk carriers over 10 years of age.

### **3.5 Examination of ballast tanks**

Examination of ballast tanks should be carried out when required as a consequence of the results of the renewal survey and intermediate survey. When considered necessary by the surveyor, thickness measurement should be carried out. If the results of these thickness measurements indicate that substantial corrosion is found, the extent of thickness measurements should be increased in accordance with annex 10.

## **4 Intermediate survey**

### **4.1 General**

**4.1.1** Notwithstanding the provisions of 1.1.2, items that are additional to the requirements of the annual survey may be surveyed either at the second or third annual survey or between these surveys.

**4.1.2** The extent of survey is dependent upon the age of the ship as specified in 4.2, 4.3 and 4.4.

### **4.2 Bulk carriers 5 to 10 years of age**

#### **4.2.1 Ballast tanks**

**4.2.1.1** For spaces used for salt water ballast, an overall survey of representative spaces selected by the surveyor should be carried out. If such inspections reveal no visible structural defects, the examination may be limited to a verification that the protective coating remains efficient.

**4.2.1.2** Where POOR coating condition, corrosion or other defects are found in salt water ballast spaces or where protective coating was not applied from the time of construction, the examination should be extended to other ballast spaces of the same type.

**4.2.1.3** In salt water ballast spaces other than double bottom tanks, where a protective coating is found in POOR condition and it is not renewed, or where soft coating has been applied, or where a protective coating was not applied from the time of construction, the tanks in question should be examined and thickness measurements carried out as considered necessary at annual intervals. When such breakdown of coating is found in salt water ballast double bottom tanks, where a soft coating has been applied, or where a coating has not been applied, the tanks in question should be examined at annual intervals. When considered necessary by the surveyor, or where extensive corrosion exists, thickness measurements should be carried out.

**4.2.1.4** In addition to the above requirements, areas found to be suspect areas at the previous renewal survey should be overall and close-up surveyed.

#### **4.2.2 Cargo holds**

**4.2.2.1** An overall survey of all cargo holds should be carried out.

**4.2.2.2** Where considered necessary by the surveyor as a result of the overall survey of any one cargo hold as described in 4.2.2.1, the survey should be extended to include a close-up survey of that cargo hold as well as a close-up survey of sufficient extent of those areas of the structure as deemed necessary.

#### **4.2.3 Extent of thickness measurement**

**4.2.3.1** Thickness measurement should be carried out to an extent sufficient to determine both general and local corrosion levels at areas subject to close-up survey as described in 4.2.2.1. The minimum requirement for thickness measurements at the intermediate survey are areas found to be suspect areas at the previous renewal survey.

**4.2.3.2** Where substantial corrosion is found, the extent of thickness measurements should be increased in accordance with the requirements of annex 10.

**4.2.3.3** The thickness measurement may be dispensed with provided the surveyor is satisfied by the close-up survey, that there is no structural diminution and the protective coating, where applied, remains effective.

#### **4.3 Bulk carriers 10 to 15 years of age**

##### **4.3.1 Ballast tanks**

**4.3.1.1** For bulk carriers:

All salt water ballast tanks should be examined. If such inspections reveal no visible structural defects, the examination may be limited to a verification that the protective coating remains efficient.

**4.3.1.2** For ore carriers:

- .1 all web frame rings – in one ballast wing tank;
- .2 one deck transverse – in each of the remaining ballast wing tanks;
- .3 both transverse bulkheads – in one ballast wing tank; and
- .4 one transverse bulkhead – in each remaining ballast wing tank.

**4.3.1.3** In addition, the requirements described in 4.2.1.2 to 4.2.1.4 apply.

#### **4.3.2 Cargo holds**

**4.3.2.1** An overall survey of all cargo holds should be carried out.

**4.3.2.2** Where considered necessary by the surveyor as a result of the overall survey of any one cargo hold as described in 4.3.2.1, the survey should be extended to include a close-up survey of that cargo hold as well as a close-up survey of sufficient extent of those areas of the structure as deemed necessary.

#### **4.3.3 Extent of thickness measurement**

**4.3.3.1** Thickness measurement should be carried out to an extent sufficient to determine both general and local corrosion levels at areas subject to close-up survey as described in 4.3.2.1. The minimum requirement for thickness measurements at the intermediate survey are areas found to be suspect areas at the previous renewal survey.

**4.3.3.2** In addition, the requirements described in 4.2.3.2 and 4.2.3.3 apply.

#### **4.4 Bulk carriers exceeding 15 years of age**

**4.4.1** The requirements of the intermediate survey should be to the same extent as the previous renewal survey required in 2 and 5.1. However, pressure testing of tanks and cargo holds used for ballast is not required unless deemed necessary by the attending surveyor.

**4.4.2** In application of 4.4.1, the intermediate survey may be commenced at the second annual survey and be progressed during the succeeding year with a view to completion at the third annual survey in lieu of the application of 2.1.1.

### **5 Preparations for survey**

#### **5.1 Survey programme**

**5.1.1** A specific survey programme should be worked out in advance of the renewal survey by the owner in co-operation with the Administration. The survey programme should be in a written format based on the information in annex 4A. The survey should not commence until the survey programme has been agreed.

**5.1.2** Prior to the development of the survey programme, the survey planning questionnaire should be completed by the owner based on the information set out in annex 4B, and forwarded to the Administration.

**5.1.3** In developing the survey programme, the following documentation should be collected and consulted with a view to selecting tanks, holds, areas and structural elements to be examined:

- .1** survey status and basic ship information;
- .2** documentation on board, as described in 7.2 and 7.3;

- .3 main structural plans (scantlings drawings), including information regarding use of high-tensile steels (HTS);
- .4 relevant previous survey and inspection reports from both the classification society and the owner;
- .5 information regarding the use of ship's holds and tanks, typical cargoes and other relevant data;
- .6 information regarding corrosion protection level on the new building; and
- .7 information regarding the relevant maintenance level during operation.

**5.1.4** The submitted survey programme should account for, and comply, as a minimum, with the provisions of annexes 1 and 2 and paragraph 2.7 for close-up survey, thickness measurement and tank testing, respectively, and should include relevant information, including at least:

- .1 basic ship information and particulars;
- .2 main structural plans (scantling drawings), including information regarding use of high-tensile steels (HTS);
- .3 plan of holds and tanks;
- .4 list of holds and tanks with information on use, protection and condition of coating;
- .5 conditions for survey (e.g., information regarding tank cleaning, gas-freeing, ventilation, lighting, etc.);
- .6 provisions and methods for access to structures;
- .7 equipment for surveys;
- .8 nomination of holds and tanks and areas for close-up survey (per annex 1);
- .9 nomination of sections for thickness measurement (per annex 2);
- .10 nomination of tanks for testing (per 2.7); and
- .11 damage experience related to ship in question.

**5.1.5** The Administration should advise the owner of the maximum acceptable structural corrosion diminution levels applicable to the ship.

**5.1.6** Use may also be made of the Guidelines for technical assessment in conjunction with the planning of enhanced surveys for bulk carriers, contained in annex 9. These Guidelines are a recommended tool which may be invoked at the discretion of the Administration, when considered necessary and appropriate, in conjunction with the preparation of the required survey programme.

## **5.2 Conditions for survey**

**5.2.1** The owner should provide the necessary facilities for a safe execution of the survey.

**5.2.2** In order to enable the attending surveyors to carry out the survey, provisions for proper and safe access, should be agreed between the owner and the Administration.

**5.2.3** Details of the means of access should be provided in the survey planning questionnaire.

**5.2.4** In cases where the provisions of safety and required access are judged by the attending surveyors not to be adequate, the survey of the spaces involved should not proceed.

**5.2.5** Cargo holds, tanks and spaces should be safe for access. Cargo holds, tanks and spaces should be gas free and properly ventilated. Prior to entering a tank, void or enclosed space, it should be verified that the atmosphere in the tank is free from hazardous gas and contains sufficient oxygen.

**5.2.6** Cargo holds, tanks and spaces should be sufficiently clean and free from water, scale, dirt, oil residues, sediments, etc., to reveal corrosion, deformation, fractures, damages or other structural deterioration as well as the condition of the coating. In particular, this applies to areas which are subject to thickness measurement.

**5.2.7** Sufficient illumination should be provided to reveal corrosion, deformation, fractures, damages or other structural deterioration as well as the condition of the coating.

**5.2.8** The surveyor(s) should always be accompanied by, at least, one responsible person, assigned by the owner, experienced in tank and enclosed spaces inspection. In addition, a back-up team of at least two experienced persons should be stationed at the hatch opening of the tank or space that is being surveyed. The back-up team should continuously observe the work in the tank or space and should keep life-saving and evacuation equipment ready for use.

**5.2.9** A communication system should be arranged between the survey party in the cargo hold, tank or space being examined, the responsible officer on deck and, as the case may be, the navigation bridge. The communication arrangements should be maintained throughout the survey.

## **5.3 Access to structures\***

**5.3.1** For overall survey, means should be provided to enable the surveyor to examine the structure in a safe and practical way.

**5.3.2** For close-up survey, one or more of the following means for access, acceptable to the surveyor, should be provided:

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\* Refer to the Guidelines on the means of access to structures for inspection and maintenance of oil tankers and bulk carriers (MSC/Circ.686).



- .1 permanent staging and passages through structures;
- .2 temporary staging and passages through structures;
- .3 lifts and moveable platforms;
- .4 portable ladders;
- .5 other equivalent means.

#### **5.4 Equipment for survey**

**5.4.1** Thickness measurements should normally be carried out by means of ultrasonic test equipment. The accuracy of the equipment should be proven to the surveyor as required.

**5.4.2** One or more of the following fracture detection procedures may be required if deemed necessary by the surveyor:

- .1 radiographic equipment;
- .2 ultrasonic equipment;
- .3 magnetic particle equipment;
- .4 dye penetrant;
- .5 other equivalent means.

**5.4.3** Explosimeter, oxygen-meter, breathing apparatus, lifelines, riding belts with rope and hook and whistles together with instructions and guidance on their use should be made available during the survey. A safety check-list should be provided.

**5.4.4** Adequate and safe lighting should be provided for the safe and efficient conduct of the survey.

**5.4.5** Adequate protective clothing should be made available and used (e.g., safety helmet, gloves, safety shoes, etc.) during the survey.

#### **5.5 Survey at sea or at anchorage**

**5.5.1** Survey at sea or at anchorage may be accepted provided the surveyor is given the necessary assistance from the personnel on board. Necessary precautions and procedures for carrying out the survey should be in accordance with 5.1, 5.2, 5.3 and 5.4.

**5.5.2** A communication system should be arranged between the survey party in the spaces and the responsible officer on deck.

**5.5.3** When rafts or boats will be used for close-up survey, the following conditions should be observed:

- .1 only rough duty, inflatable rafts or boats, having satisfactory residual buoyancy and stability even if one chamber is ruptured, should be used;
- .2 the boat or raft should be tethered to the access ladder and an additional person should be stationed down the access ladder with a clear view of the boat or raft;
- .3 appropriate lifejackets should be available for all participants;
- .4 the surface of water in the tank or hold should be calm (under all foreseeable conditions the expected rise of water within the tank should not exceed 0.25 m) and the water level either stationary or falling. On no account should the level of the water be rising while the boat or raft is in use;
- .5 the tank, hold or space should contain clean ballast water only. Even a thin sheen of oil on the water is not acceptable; and
- .6 at no time should the water level be allowed to be within 1 m of the deepest under deck web face flat so that the survey team is not isolated from a direct escape route to the tank hatch. Filling to levels above the deck transverses should only be contemplated if a deck access manhole is fitted and open in the bay being examined, so that an escape route for the survey party is available at all times. Other effective means of escape to the deck may be considered.

**5.5.4** Rafts or boats alone may be allowed for inspection of the under deck areas for tanks or spaces, if the depth of the webs is 1.5 m or less.

**5.5.5** If the depth of the webs is more than 1.5 m, rafts or boats alone may be allowed only:

- .1 when the coating of the under deck structure is in GOOD condition and there is no evidence of wastage; or
- .2 if a permanent means of access is provided in each bay to allow safe entry and exit. This means of access should be direct from the deck via a vertical ladder with a small platform fitted approximately 2 m below the deck. Other effective means of escape to the deck may be considered.

If neither of the above conditions are met, then staging or other equivalent means should be provided for the survey of the under deck areas.

**5.5.6** The use of rafts or boats alone in 5.5.4 and 5.5.5 does not preclude the use of boats or rafts to move about within a tank during a survey.

## **5.6 Survey planning meeting**

**5.6.1** The establishment of proper preparation and the close co-operation between the attending surveyor(s) and the owner's representatives onboard prior to and during the survey are an essential part in the safe and efficient conduct of the survey. During the survey on board safety meetings should be held regularly.

**5.6.2** Prior to commencement of any part of the renewal and intermediate survey, a survey planning meeting should be held between the attending surveyor(s), the owner's representative in attendance, the thickness measurement company operator (as applicable) and the master of the ship for the purpose to ascertain that all the arrangements envisaged in the survey programme are in place, so as to ensure the safe and efficient conduct of the survey work to be carried out.

**5.6.3** The following is an indicative list of items that should be addressed in the meeting:

- .1** schedule of the ship (i.e., the voyage, docking and undocking manoeuvres, periods alongside, cargo and ballast operations, etc.);
- .2** provisions and arrangements for thickness measurements (i.e., access, cleaning/de-scaling, illumination, ventilation, personal safety);
- .3** extent of the thickness measurements;
- .4** acceptance criteria (refer to the list of minimum thicknesses);
- .5** extent of close-up survey and thickness measurement considering the coating condition and suspect areas/areas of substantial corrosion;
- .6** execution of thickness measurements;
- .7** taking representative readings in general and where uneven corrosion/pitting is found;
- .8** mapping of areas of substantial corrosion; and
- .9** communication between attending surveyor(s) the thickness measurement company operator(s) and owner's representative(s) concerning findings.

## **6 Documentation on board**

### **6.1 General**

**6.1.1** The owner should obtain, supply and maintain on board the ship documentation as specified in 6.2 and 6.3, which should be readily available for the surveyor. The condition evaluation report referred to in 6.2 should include a translation into English.

**6.1.2** The documentation should be kept on board for the lifetime of the ship.

## **6.2 Survey report file**

**6.2.1** A survey report file should be a part of the documentation on board consisting of:

- .1** reports of structural surveys (annex 6);
- .2** condition evaluation report (annex 7); and
- .3** thickness measurement reports (annex 8).

**6.2.2** The survey report file should be available also in the owner's and the Administration offices.

## **6.3 Supporting documents**

**6.3.1** The following additional documentation should be available on board:

- .1** main structural plans of holds and ballast tanks;
- .2** previous repair history;
- .3** cargo and ballast history;
- .4** inspections by ship's personnel with reference to:
  - .4.1** structural deterioration in general;
  - .4.2** leakages in bulkheads and piping;
  - .4.3** condition of coating or corrosion prevention system, if any. A guidance for reporting is shown in annex 3;
- .5** survey programme as required by 5.1 until such time as the renewal survey has been completed,

and any other information that would help to identify critical structural areas and/or suspect areas requiring inspection.

## **6.4 Review of documentation on board**

Prior to survey, the surveyor should examine the completeness of the documentation on board, and its contents as a basis for the survey.

## **7 Procedures for thickness measurements**

### **7.1 General**

**7.1.1** The required thickness measurements, if not carried out by the recognized organization acting on behalf of the Administration, should be witnessed by a surveyor of the recognized organization. The surveyor should be on board to the extent necessary to control the process.

**7.1.2** The thickness measurement company should be part of the survey planning meeting to be held prior to commencing the survey.

**7.1.3** In all cases the extent of the thickness measurements should be sufficient as to represent the actual average condition.

**7.1.4** Procedural requirements for thickness measurements are set out in annex 12.

## **7.2 Certification of thickness measurement company**

The thickness measurements should be carried out by a qualified company certified by an organization recognized by the Administration according to principles stated in annex 5.

## **7.3 Reporting**

**7.3.1** A thickness measurement report should be prepared and submitted to the Administration. The report should give the location of measurements, the thickness measured as well as corresponding original thickness. Furthermore, the report should give the date when the measurements were carried out, type of measuring equipment, names of personnel and their qualifications and be signed by the operator. The thickness measurement report should follow the principles as specified in the recommended procedures for thickness measurements set out in annex 8.

**7.3.2** The surveyor should verify and countersign the thickness measurement reports.

## **8 Reporting and evaluation of survey**

### **8.1 Evaluation of survey report**

**8.1.1** The data and information on the structural condition of the ship collected during the survey should be evaluated for acceptability and continued structural integrity of the ship.

**8.1.2** The analysis of data should be carried out and endorsed by the Administration and the conclusions of the analysis should form a part of the condition evaluation report.

### **8.2 Reporting**

**8.2.1** Principles for survey reporting are shown in annex 6.

**8.2.2** When a survey is split between different survey stations, a report should be made for each portion of the survey. A list of items examined and/or tested (pressure testing, thickness measurements, etc.) and an indication of whether the item has been credited, should be made available to the next attending surveyor(s), prior to continuing or completing the survey.

**8.2.3** A condition evaluation report of the survey and results should be issued to the owner as shown in annex 7 and placed on board the ship for reference at future surveys. The condition evaluation report should be endorsed by the Administration.

ANNEX 1

**REQUIREMENTS FOR CLOSE-UP SURVEY AT RENEWAL SURVEYS**

<b>AGE ≤ 5 years</b>	<b>5 &lt; AGE ≤ 10 years</b>	<b>10 &lt; AGE ≤ 15 years</b>	<b>AGE &gt; 15 years</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<p>One transverse web with associated plating and longitudinals in two representative water ballast tanks of each type. This is to include the foremost topside and double-side water ballast tanks on either side. (A)</p> <p>Two selected cargo hold transverse bulkheads, including internal structure of upper and lower stools, where fitted. (C)</p> <p>All cargo hold hatch covers and coaming. (D)</p>	<p>One transverse web with associated plating and longitudinals as applicable in each water ballast tank. (A)</p> <p>Forward and aft transverse bulkhead including stiffening system in a transverse section including topside, hopper side and double-side ballast tanks. (A)</p> <p>25% of ordinary transverse frames in the foremost double-side tanks. (B)</p> <p>One transverse bulkhead in each cargo hold, including internal structure of upper and lower stools, where fitted. (C)</p> <p>All cargo hold hatch covers and coamings. (D)</p> <p>All deck plating and under deck structures inside line of hatch openings between cargo hold hatches. (E)</p>	<p>All transverse webs with associated plating and longitudinals as applicable in each water ballast tank. (A)</p> <p>All transverse bulkheads including stiffening system in each water ballast tank. (A)</p> <p>25% of ordinary transverse frames in the foremost double-side tanks. (B)</p> <p>All cargo hold transverse bulkheads including internal structure of upper and lower stools, where fitted. (C)</p> <p>All cargo hold hatch covers and coamings. (D)</p> <p>All deck plating and under deck structures inside line of hatch openings between cargo hold hatches. (E)</p>	<p>All transverse webs with associated plating and longitudinals as applicable in each water ballast tank. (A)</p> <p>All transverse bulkheads including stiffening system in each water ballast tank. (A)</p> <p>All ordinary transverse frames in all double-side tanks. (B)</p> <p>Areas (C) – (E) as for column 3</p>

- (A) Transverse web or watertight transverse bulkhead in topside, hopper side and double-side ballast tanks. In fore and aft peak tanks transverse web means a complete transverse web frame ring including adjacent structural members.
- (B) Ordinary transverse frame in double-side tanks.
- (C) Cargo hold transverse bulkheads, platings, stiffeners and girders.
- (D) Cargo hold hatch covers and coamings.
- (E) Deck plating and under deck structure inside line of hatch openings between cargo hold hatches.

**Note:** Close-up survey of transverse bulkheads to be carried out at four levels:

- Level (a) Immediately above the inner bottom and immediately above the line of gussets (if fitted) and shedders for ships without lower stool.
- Level (b) Immediately above and below the lower stool shelf plate (for those ships fitted with lower stools), and immediately above the line of the shedder plates.
- Level (c) About mid-height of the bulkhead.
- Level (d) Immediately below the upper deck plating and immediately adjacent to the upper wing tank, and immediately below the upper stool shelf plate for those ships fitted with upper stools, or immediately below the topside tanks.

ANNEX 2

**REQUIREMENTS FOR THICKNESS MEASUREMENTS AT RENEWAL SURVEYS**

AGE ≤ 5 years	5 < AGE ≤ 10 years	10 < AGE ≤ 15 years	AGE > 15 years
1	2	3	4
<p><b>1</b> Suspect areas</p>	<p><b>1</b> Suspect areas</p> <p><b>2</b> Within the cargo length area: two transverse sections of deck plating outside line of cargo hatch openings</p> <p><b>3</b> Measurement, for general assessment and recording of corrosion pattern, of those structural members subject to close-up survey according to annex 1</p> <p><b>4</b> All cargo holds hatch covers and coamings (plating and stiffeners)</p> <p><b>5</b> All deck plating inside line of openings between cargo hold hatches</p> <p><b>6</b> Wind and water strakes in way of transverse sections considered under point 2 above</p>	<p><b>1</b> Suspect areas</p> <p><b>2</b> Within the cargo length area:</p> <p>.1 each deck plate outside line of cargo hatch openings</p> <p>.2 two transverse sections, one of which should be in the amidship area, outside line of cargo hatch openings</p> <p><b>3</b> Measurement, for general assessment and recording of corrosion pattern, of those structural members subject to close-up survey according to annex 1</p> <p><b>4</b> All cargo hold hatch covers and coamings (plating and stiffeners)</p> <p><b>5</b> All deck plating inside line of openings between cargo hold hatches</p> <p><b>6</b> All wind and water strakes within the cargo length area</p> <p><b>7</b> Selected wind and water strakes outside the cargo length area</p>	<p><b>1</b> Suspect areas</p> <p><b>2</b> Within the cargo length area:</p> <p>.1 each deck plate outside line of cargo hatch openings</p> <p>.2 three transverse sections, one of which should be in the amidship area, outside line of cargo hatch openings</p> <p>.3 each bottom plate</p> <p><b>3</b> Points 3 to 7 referred to in column 3</p>



ANNEX 3

**OWNER'S INSPECTION REPORT**

**Structural condition**

Ship's name: ..... <i>OWNER'S INSPECTION REPORT - Structural condition</i>						
For tank/hold no.: .....						
Grade of steel:      deck: .....      side: ..... bottom: .....      longitudinal bulkhead: .....						
Elements	Cracks	Buckles	Corrosion	Coating condition	Pitting	Modification/ Other repair
Deck: Bottom: Side: Side framing: Longitudinal bulkheads: Transverse bulkheads:						
Repairs carried out due to: Thickness measurements carried out (dates):  Results in general:  Overdue surveys:  Outstanding conditions of class:  Comments:						
Date of inspection: ..... Inspected by: ..... Signature: .....						

## ANNEX 4A

### SURVEY PROGRAMME

#### Basic information and particulars

Name of ship:
IMO number:
Flag State:
Port of registry:
Gross tonnage:
Deadweight (metric tonnes):
Length between perpendiculars (m):
Shipbuilder:
Hull number:
Recognized organization (RO):
RO ship identity:
Date of delivery of the ship:
Owner:
Thickness measurement company:

#### 1 Preamble

##### 1.1 Scope

**1.1.1** The present survey programme covers the minimum extent of overall surveys, close-up surveys, thickness measurements and pressure testing within the cargo length area, cargo holds, ballast tanks, including fore and aft peak tanks, required by the Guidelines.

**1.1.2** The arrangements and safety aspects of the survey should be acceptable to the attending surveyor(s).

##### 1.2 Documentation

All documents used in the development of the survey programme should be available onboard during the survey as required by section 6.

#### 2 Arrangement of cargo holds, tanks and spaces

This section of the survey programme should provide information (either in the form of plans or text) on the arrangement of cargo holds, tanks and spaces that fall within the scope of the survey.

#### 3 List of cargo holds, tanks and spaces with information on their use, extent of coatings and corrosion protection system

This section of the survey programme should indicate any changes relating to (and should update) the information on the use of the holds and tanks of the ship, the extent of coatings and the corrosion protective system provided in the Survey Planning Questionnaire.

#### **4 Conditions for survey**

This section of the survey programme should provide information on the conditions for survey, e.g., information regarding cargo hold and tank cleaning, gas freeing, ventilation, lighting, etc.

#### **5 Provisions and method of access to structures**

This section of the survey programme should indicate any changes relating to (and should update) the information on the provisions and methods of access to structures provided in the Survey Planning Questionnaire.

#### **6 List of equipment for survey**

This section of the survey programme should identify and list the equipment that will be made available for carrying out the survey and the required thickness measurements.

#### **7 Survey requirements**

##### **7.1 Overall survey**

This section of the survey programme should identify and list the spaces that should undergo an overall survey for this ship in accordance with 2.4.1 and 2.5.1.

##### **7.2 Close-up survey**

This section of the survey programme should identify and list the hull structures that should undergo a close-up survey for this ship in accordance with 2.5.2.

#### **8 Identification of tanks for tank testing**

This section of the survey programme should identify and list the cargo holds and tanks that should undergo tank testing for this ship in accordance with 2.7.

#### *9 Identification of areas and sections for thickness measurements*

This section of the survey programme should identify and list the areas and sections where thickness measurements should be taken in accordance with 2.6.1.

#### **10 Minimum thickness of hull structures**

This section of the survey programme should specify the minimum thickness for hull structures of this ship that are subject to survey, according to .1 or .2:

- .1  Determined from the attached wastage allowance table and the original thickness to the hull structure plans of the ship;
- .2  Given in the following table(s):

Area or location	Original thickness (mm)	as-built	Minimum thickness (mm)	Substantial corrosion thickness (mm)
<b>Deck</b>				
Plating				
Longitudinals				
Longitudinal girders				
Cross deck plating				
Cross deck stiffeners				
<b>Bottom</b>				
Plating				
Longitudinals				
Longitudinal girders				
<b>Inner bottom</b>				
Plating				
Longitudinals				
Longitudinal girders				
Floors				
<b>Ship side in way of topside tanks</b>				
Plating				
Longitudinals				
<b>Ship side in way of hopper side tanks</b>				
Plating				
Longitudinals				
<b>Ship side in way of double-side tanks (if applicable)</b>				
Plating				
Longitudinals or ordinary transverse frames				
Longitudinal stringers				
<b>Longitudinal bulkhead (if applicable)</b>				
Plating				
Longitudinals (if applicable)				
Longitudinal girders (if applicable)				
<b>Transverse bulkheads</b>				
Plating				
Stiffeners (if applicable)				
Upper stool plating				
Upper stool stiffeners				
Lower stool plating				
Lower stool stiffeners				
<b>Transverse web in topside tanks</b>				
Plating				
Flanges				
Stiffeners				

<b>Transverse web in hopper tanks</b>			
Plating			
Flanges			
Stiffeners			
<b>Transverse web in double-side tanks</b>			
Plating			
Flanges			
Stiffeners			
<b><i>Hatch covers</i></b>			
Plating			
Stiffeners			
<b><i>Hatch coamings</i></b>			
Plating			
Stiffeners			

*Note:* The wastage allowance tables should be attached to the survey programme.

## 11 Thickness measurement company

This section of the survey programme should identify changes, if any, relating to the information on the thickness measurement company provided in the Survey Planning Questionnaire.

## 12 Damage experience related to the ship

This section of the survey programme should, using the tables provided below, provide details of the hull damages for at least the last three years in way of the cargo holds, ballast tanks and void spaces within the cargo length area. These damages are subject to survey.

### Hull damages sorted by location for this ship

<b>Cargo hold, tank or space number or area</b>	<b>Possible cause, if known</b>	<b>Description of the damages</b>	<b>Location</b>	<b>Repair</b>	<b>Date of repair</b>

**Hull damages for sister or similar ships (if available) in the case of design related damage**

<b>Cargo hold, tank or space number or area</b>	<b>Possible cause, if known</b>	<b>Description of the damages</b>	<b>Location</b>	<b>Repair</b>	<b>Date of repair</b>

**13 Areas identified with substantial corrosion from previous surveys**

This section of the survey programme should identify and list the areas of substantial corrosion from previous surveys.

**14 Critical structural areas and suspect areas**

This section of the survey programme should identify and list the critical structural areas and the suspect areas, when such information is available.

**15 Other relevant comments and information**

This section of the survey programme should provide any other comments and information relevant to the survey.

**Appendices**

**Appendix 1 – List of plans**

The provisions of 5.1.4.2 require that the main structural plans of cargo holds and ballast tanks (scantling drawings), including information regarding the use of high-tensile steel (HTS), should be available. This appendix of the survey programme should identify and list the main structural plans which form part of the survey programme.

**Appendix 2 – Survey Planning Questionnaire**

The Survey Planning Questionnaire (annex 4B), which has been submitted by the owner, should be appended to the survey programme.

**Appendix 3 – Other documentation**

This part of the survey programme should identify and list any other documentation that forms part of the plan.

Prepared by the owner in co-operation with the Administration for compliance with 5.1.4.

Date: ..... (name and signature of authorized owner's representative)

Date: ..... (name and signature of authorized representative of the Administration)

## ANNEX 4B

### **SURVEY PLANNING QUESTIONNAIRE**

1 The following information will enable the owner, in co-operation with the Administration, to develop a Survey Plan complying with the requirements of the Guidelines. It is essential that the owner provides, when completing the present questionnaire, up-to-date information. The present questionnaire, when completed, should provide all information and material required by the Guidelines.

#### **Particulars**

Ship's name:

IMO number:

Flag State:

Port of registry:

Owner:

Recognized organization:

Gross tonnage:

Deadweight (metric tonnes):

Date of delivery:

#### **Information on access provision for close-up surveys and thickness measurement**

2 The owner should indicate, in the table below, the means of access to the structures subject to close-up survey and thickness measurement. A close-up survey is an examination where the details of structural components are within the close visual inspection range of the attending surveyor, i.e., preferably within reach of hand.



Hold/Tank No.	Structure	Temporary staging	Rafts	Ladders	Direct access	Other means (please specify)
F.P.	Fore peak					
A.P.	Aft peak					
Cargo holds	Hatch side coamings					
	Topside sloping plate					
	Upper stool plating					
	Cross deck					
	Double-side tank plating					
	Transverse bulkhead					
	Hopper tank plating					
	Lower stool					
	Tank top					
Topside tanks	Under deck structure					
	Side shell and structure					
	Sloping plate and structure					
	Webs and bulkheads					
Hopper tanks	Hopper sloping plate and structure					
	Side shell and structure					
	Bottom structure					
	Webs and bulkheads					
Double-side tanks	Side shell and structure					
	Inner skin and structure					
	Webs and bulkheads					
	Double bottom structure					
	Upper stool internal structure					
	Lower stool internal structure					
Wing tanks of double ore carriers	Under deck and structure					
	Side shell and structure					
	Side shell vertical web and structure					
	Longitudinal bulkhead and structure					
	Longitudinal bulkhead web and structure					
	Bottom plating and structure					
	Cross ties/stringers					

<b>History of bulk cargoes of a corrosive nature (e.g., high-sulphur content)</b>	

### Owner's inspections

3 Using a format similar to that of the table below (which is given as an example), the owner should provide details of the results of their inspections, for the last 3 years – in accordance with the Guidelines – on all CARGO holds and BALLAST tanks and VOID spaces within the cargo area.

Tank/Hold No.	Corrosion protection (1)	Coating extent (2)	Coating condition (3)	Structural deterioration (4)	Hold and tank history (5)
Cargo holds					
Topside tanks					
Hopper tanks					
Double-side skin tanks					
Double bottom tanks					
Upper stools					
Lower stools					
Wing tanks (ore carriers)					
Fore peak					
Aft peak					
Miscellaneous other spaces:					

**Note:** Indicate tanks which are used for oil/ballast.

- 1) HC = hard coating; SC = soft coating; A = anodes; NP = no protection
- 2) U = upper part; M = middle part; L = lower part; C = complete
- 3) G = good; F = fair; P = poor; RC = recoated (during the last 3 years)
- 4) N = no findings recorded; Y = findings recorded, description of findings should be attached to this questionnaire
- 5) DR = damage and repair; L = leakages; CV = conversion (description to be attached to this questionnaire)

Name of owner's representative: .....  Signature: .....  Date: .....
---

**Reports of port State control inspections**

List the reports of port State control inspections containing hull structural related deficiencies, relevant information on rectification of the deficiencies:


**Safety management system**

List non-conformities related to hull maintenance, including the associated corrective actions:


**Name and address of the approved thickness measurement company:**


## ANNEX 5

### **PROCEDURES FOR CERTIFICATION OF A COMPANY ENGAGED IN THICKNESS MEASUREMENT OF HULL STRUCTURES**

#### **1 Application**

This guidance applies for certification of the company which intends to engage in the thickness measurement of hull structures of ships.

#### **2 Procedures for certification**

##### *Submission of documents*

**2.1** The following documents should be submitted to an organization recognized by the Administration for approval:

- .1 outline of the company, e.g., organization and management structure;
- .2 experience of the company on thickness measurement of hull structures of ships;
- .3 technicians' careers, i.e., experience of technicians as thickness measurement operators, technical knowledge and experience of hull structure, etc. Operators should be qualified according to a recognized industrial NDT Standard;
- .4 equipment used for thickness measurement such as ultrasonic testing machines and their maintenance/calibration procedures;
- .5 a guide for thickness measurement operators;
- .6 training programmes for technicians for thickness measurement;
- .7 measurement record format in accordance with recommended procedures for thickness measurements (see annex 8).

##### *Auditing of the company*

**2.2** Upon reviewing the documents submitted with satisfactory results, the company should be audited in order to ascertain that the company is duly organized and managed in accordance with the documents submitted, and eventually is capable of conducting thickness measurement of the hull structure of ships.

**2.3** Certification is conditional upon an on-board demonstration of thickness measurement as well as satisfactory reporting.

### **3 Certification**

**3.1** Upon satisfactory results of both the audit of the company referred to in 2.2 and the demonstration tests referred to in 2.3, the Administration or organization recognized by the Administration should issue a certificate of approval as well as a notice to the effect that the thickness measurement operation system of the company has been certified.

**3.2** Renewal/endorsement of the certificate should be made at intervals not exceeding three years by verification that original conditions are maintained.

### **4 Report of any alteration to the certified thickness measurement operation system**

In cases where any alteration to the certified thickness measurement operation system of the company is made, such an alteration should be immediately reported to the organization recognized by the Administration. Re-audit should be made where deemed necessary by the organization recognized by the Administration.

### **5 Withdrawal of the certification**

The certification may be withdrawn in the following cases:

- .1** where the measurements were improperly carried out or the results were improperly reported;
- .2** where the surveyor found any deficiencies in the approved thickness measurement operation systems of the company; and
- .3** where the company failed to report any alteration referred to in 4 to the organization recognized by the Administration as required.

## ANNEX 6

### SURVEY REPORTING PRINCIPLES

As a principle, for bulk carriers subject to the Guidelines, the surveyor should include the following contents in his report for survey of hull structure and piping systems, as relevant for the survey.

#### **1 General**

**1.1** A survey report should be generated in the following cases:

- .1** in connection with commencement, continuation and/or completion of periodical hull surveys, i.e., annual, intermediate and renewal surveys, as relevant;
- .2** when structural damages/defects have been found;
- .3** when repairs, renewals or modifications have been carried out; and
- .4** when condition of class (recommendation) has been imposed or has been deleted.

**1.2** The reporting should provide:

- .1** evidence that prescribed surveys have been carried out in accordance with applicable requirements;
- .2** documentation of surveys carried out with findings, repairs carried out and condition of class (recommendation) imposed or deleted;
- .3** survey records, including actions taken, which should form an auditable documentary trail. Survey reports should be kept in the survey report file required to be on board;
- .4** information for planning of future surveys; and
- .5** information which may be used as input for maintenance of classification rules and instructions.

**1.3** When a survey is split between different survey stations, a report should be made for each portion of the survey. A list of items surveyed, relevant findings and an indication of whether the item has been credited, are to be made available to the next attending surveyor, prior to continuing or completing the survey. Thickness measurement and tank testing carried out is also to be listed for the next surveyor.

#### **2 Extent of the survey**

**2.1** Identification of compartments where an overall survey has been carried out.

**2.2** Identification of locations, in each ballast tank and cargo hold including hatch covers and coamings, where a close-up survey has been carried out, together with information on the means of access used.

**2.3** Identification of locations, in each ballast tank and cargo hold including hatch covers and coamings, where thickness measurement has been carried out.

*Note:* As a minimum, the identification of location of close-up survey and thickness measurement should include a confirmation with description of individual structural members corresponding to the extent of requirements stipulated in Annex A based on type of periodical survey and the ship's age.

Where only partial survey is required, e.g., one transverse web, two selected cargo hold transverse bulkheads, the identification should include location within each ballast tank and cargo hold by reference to frame numbers.

**2.4** For areas in ballast tanks and cargo holds where protective coating is found to be in good condition and the extent of close-up survey and/or thickness measurement has been specially considered, structures subject to special consideration should be identified.

**2.5** Identification of tanks subject to tank testing.

**2.6** Identification of piping systems on deck and within cargo holds, ballast tanks, pipe tunnels, cofferdams and void spaces where:

- .1 examination including internal examination of piping with valves and fittings and thickness measurement, as relevant, has been carried out; and
- .2 operational test to working pressure has been carried out.

### **3 Result of the survey**

**3.1** Type, extent and condition of protective coating in each tank, as relevant (rated GOOD, FAIR or POOR) including identification of tanks fitted with anodes.

**3.2** Structural condition of each compartment with information on the following, as relevant:

- .1 identification of findings, such as:
  - .1.1 corrosion with description of location, type and extent;
  - .1.2 areas with substantial corrosion;
  - .1.3 cracks/fractures with description of location and extent;
  - .1.4 buckling with description of location and extent; and
  - .1.5 indents with description of location and extent;

- .2 identification of compartments where no structural damages/defects are found. The report may be supplemented by sketches/photos; and
- .3 thickness measurement report should be verified and signed by the surveyor controlling the measurements on board.

#### **4 Actions taken with respect to findings**

**4.1** Whenever the attending surveyor is of the opinion that repairs are required, each item to be repaired should be identified in a numbered list. Whenever repairs are carried out, details of the repairs effected should be reported by making specific reference to relevant items in the numbered list.

**4.2** Repairs carried out should be reported with identification of:

- .1 compartment;
- .2 structural member;
- .3 repair method (i.e., renewal or modification), including:
  - .3.1 steel grades and scantlings (if different from the original); and
  - .3.2 sketches/photos, as appropriate;
- .4 repair extent; and
- .5 non-destructive test (NDT)/tests.

**4.3** For repairs not completed at the time of survey, condition of class/recommendation should be imposed with a specific time limit for the repairs. In order to provide correct and proper information to the surveyor attending for survey of the repairs, condition of class/recommendation should be sufficiently detailed with identification of each item to be repaired. For identification of extensive repairs, reference may be made to the survey report.



ANNEX 7

**CONDITION EVALUATION REPORT  
Issued upon completion of renewal survey**

***General particulars***

Ship's name: Class/Administration identity number:  
Previous class/Administration identity number(s):  
IMO number:

Port of registry: National flag:  
Previous national flag(s):

Deadweight (metric tonnes): Gross tonnage:  
National:  
ITC (1969):

Date of build: Classification notation:

Date of major conversion:

Type of conversion: Owner:  
Previous owner(s)

- 1 The survey reports and documents listed below have been reviewed by the undersigned and found to be satisfactory
- 2 The renewal survey has been completed in accordance with the present Guidelines on (date) .....

Condition evaluation report completed by	Name Signature	Title
Office	Date	
Condition evaluation report verified by	Name Signature	Title
Office	Date	

Attached reports and documents:

- 1)
- 2)
- 3)
- 4)
- 5)
- 6)

***Contents of condition evaluation report***

- Part 1 – General particulars: – *See front page*
- Part 2 – Report review: – Where and how survey was done
- Part 3 – Close-up survey: – Extent (which tanks/holds)
- Part 4 – Thickness measurements:
  - Reference to thickness measurement report
  - Summary of where measured
  - Separate form indicating the spaces with substantial corrosion, and corresponding:
    - thickness diminution
    - corrosion pattern
- Part 5 – Tank corrosion prevention system:
  - Separate form indicating:
    - location of coating/anodes
    - condition of coating (if applicable)
- Part 6 – Repairs: – Identification of spaces/areas
- Part 7 – Condition of class/flag State requirements:
- Part 8 – Memoranda:
  - Acceptable defects
  - Any points of attention for future surveys, e.g., for suspect areas
  - Extended annual/intermediate survey due to coating breakdown
- Part 9 – Conclusion: – Statement on evaluation/verification of survey report

***Extract of thickness measurements***

Reference is made to the thickness measurement report:

<b>Position of substantially corroded tanks/areas<sup>1</sup> or areas with deep pitting<sup>3</sup></b>	<b>Thickness diminution [%]</b>	<b>Corrosion pattern<sup>2</sup></b>	<b>Remarks: e.g. (e.g., ref. attached sketches)</b>

**Notes:**

- 1 Substantial corrosion, i.e., 75% – 100% of acceptable margins wasted.
- 2 P = Pitting  
C = Corrosion in general
- 3 Any bottom plating with a pitting intensity of 20% or more, with wastage in the substantial corrosion range or having an average depth of pitting of 1/3 or more of actual plate thickness should be noted.

***Tank/hold corrosion prevention system***

Tank/hold Nos. <sup>1</sup>	Tank/hold corrosion prevention system <sup>2</sup>	Coating condition <sup>3</sup>	Remarks

**Notes:**

- 1 All ballast tanks and cargo holds should be listed.
- 2 C = Coating                      A = Anodes                      NP = No protection
- 3 Coating condition according to the following standard:
  - GOOD                      condition with only minor spot rusting.
  - FAIR                      condition with local breakdown of coating at edges of stiffeners and weld connections and/or light rusting over 20% or more of areas under consideration, but less than as defined for POOR condition.
  - POOR                      condition with general breakdown of coating over 20% or more of areas or hard scale at 10% or more of areas under consideration.

If coating condition POOR is given, extended annual surveys should be introduced. This should be noted in part 7 of the Contents of condition evaluation report.

## ANNEX 8

### **RECOMMENDED PROCEDURES FOR THICKNESS MEASUREMENTS**

- 1 This annex should be used for recording thickness measurements as required by part B of Annex A.
- 2 Thickness measurement sheet forms TM1-DSBC, TM2-DSBC, TM3-DSBC, TM4-DSBC, TM5-DSBC and TM6-DSBC (appendices 2 to 5) should be used, as appropriate, for recording thickness measurements and these sheets should be bound with the cover sheet of the report of GENERAL PARTICULARS in appendix 1. The maximum allowable diminution should be stated. The maximum allowable diminution could be stated in an attached document.
- 3 Appendices 3 to 5 are guidance diagrams and notes relating to the reporting forms and the procedure for the thickness measurements.

**APPENDIX 1**  
**THICKNESS MEASUREMENT REPORT**  
**GENERAL PARTICULARS**

Ship's name:

IMO Number:

Administration Identification Number:

Port of registry:

Gross tonnage:

Deadweight:

Date of build:

Classification society:

---

Name of Company performing the thickness measurement:

Thickness measurement company certified by:

Certificate No.:

Certificate valid from: ..... to .....

Place of measurement:

First date of measurement:

Last date of measurement:

Renewal survey/intermediate survey\* due:

Details of measurement equipment:

Qualification of operator:

---

Report Number:

Consisting of ..... Forms

---

Name of operator: ..... Name of surveyor: .....

Signature of operator: ..... Signature of surveyor: .....

Company official stamp: ..... Administration official stamp: .....

---

\* Delete as appropriate.

APPENDIX 2

TMI-DSBC Report on THICKNESS MEASUREMENT OF ALL DECK PLATING, ALL BOTTOM SHEEL PLATING AND SIDE SHELL PLATING\*  
 (\* - delete as appropriate)

Ship's name ..... Class Identity No. .... Report No. .... IMO No. ....

STRAKE POSITION	No. or Letter	Org. Thk. mm	Forward Reading				Aft Reading				Mean Diminution			
			Gauged P	Gauged S	Diminution P mm	Diminution S %	Diminution P mm	Gauged S	Diminution P %	Diminution S mm	P	S	mm	
12th forward														
11th														
10th														
9th														
8th														
7th														
6th														
5th														
4th														
3rd														
2nd														
1st														
Amidships														
1st aft														
2nd														
3rd														
4th														
5th														
6th														
7th														
8th														
9th														
10th														
11th														
12th														

Operator's Signature ..... NOTES - See Reverse

## NOTES TO REPORT TM1-DSBC

- 1 This report should be used for recording the thickness measurement of:
  - .1 all strength deck plating within cargo length area;
  - .2 all keel, bottom shell plating and bilge plating within the cargo length area;
  - .3 side shell plating including selected wind and water strakes outside cargo length area; and
  - .4 all wind and water strakes within cargo length area.
- 2 The strake position should be cleared as follows:
  - .1 for strength deck indicate the number of the strake of plating inboard from the stringer plate;
  - .2 for bottom plating indicate the number of the strake of plating outboard from the keel plate; and
  - .3 for side shell plating give number of the strake of plating sheerstrake and letter as shown on shell expansion.
- 3 Only the deck plating strakes outside line of openings are to be recorded.
- 4 Measurements should be taken at the forward and aft areas of all plates and where plates cross ballast/cargo tank boundaries separate measurements for the area of plating in way of each type of tank should be recorded.
- 5 The single measurements recorded are to represent the average of multiple measurements.
- 6 The maximum allowable diminution could be stated in an attached document.

**TM2-DSBC(i) Report on THICKNESS MEASUREMENT OF SHELL AND DECK PLATING at transverse sections (one, two or three transverse sections)**

Ship's name ..... Class Identity No. .... Report No. .... IMO No. ....

STRAKE POSITION	STRENGTH DECK AND SHEERSTRAKE PLATING																	
	FIRST TRANSVERSE SECTION AT FRAME NUMBER				SECOND TRANSVERSE SECTION AT FRAME NUMBER				THIRD TRANSVERSE SECTION AT FRAME NUMBER									
	No. or Letter	Org. Thk. mm	Max. Alwb. Dim. mm	Gauged P S	Diminution P mm %	Diminution S mm %	No. or Letter	Org. Thk. mm	Max. Alwb. Dim. mm	Gauged P S	Diminution P mm %	Diminution S mm %	No. or Letter	Org. Thk. mm	Max. Alwb. Dim. mm	Gauged P S	Diminution P mm %	Diminution S mm %
Stringer Plate																		
1st strake in board																		
2nd																		
3rd																		
4th																		
5th																		
6th																		
7th																		
8th																		
9th																		
10th																		
11th																		
12th																		
13th																		
14th																		
centre strake																		
sheer strake																		
TOPSIDE TOTAL																		

Operator's Signature ..... NOTES – See Reverse



## NOTES TO REPORT TM2-DSBC(i)

- 1 This report should be used for recording the thickness measurement of:  
  
Strength deck plating and sheerstrake plating transverse sections:  
  
One, two or three sections within the cargo length area, comprising the structural items (0), (1) and (2) as shown on the diagrams of typical transverse sections (Appendices 3 and 4).
- 2 Only the deck plating strakes outside line of hatch openings should be recorded.
- 3 The top side area comprises deck plating, stringer plate and sheerstrake (including rounded gunwales).
- 4 The exact frame station of measurement should be stated.
- 5 The single measurements recorded should represent the average of multiple measurements.
- 6 The maximum allowable diminution could be stated in an attached document.

**TM2-DSBC(ii) Report on THICKNESS MEASUREMENT OF SHELL AND DECK PLATING at transverse sections (one, two or three transverse sections)**

Ship's name ..... Class Identity No. .... Report No. .... IMO No. ....

STRAKE POSITION	SHELL PLATING																		
	FIRST TRANSVERSE SECTION AT FRAME NUMBER				SECOND TRANSVERSE SECTION AT FRAME NUMBER				THIRD TRANSVERSE SECTION AT FRAME NUMBER										
	No. or Letter	Org. Thk. mm	Max. Alwb. Dim. mm	Gauged P S	Diminution P %	Diminution S mm	No. or Letter	Org. Thk. mm	Max. Alwb. Dim. mm	Gauged P S	Diminution P %	Diminution S mm	No. or Letter	Org. Thk. mm	Max. Alwb. Dim. mm	Gauged P S	Diminution P %	Diminution S mm	
1st below sheer strake																			
2nd																			
3rd																			
4th																			
5th																			
6th																			
7th																			
8th																			
9th																			
10th																			
11th																			
12th																			
13th																			
14th																			
15th																			
16th																			
17th																			
18th																			
19th																			
20th																			
keel strake																			
<b>BOTTOM TOTAL</b>																			

Operator's Signature ..... NOTES - See Reverse

## NOTES TO REPORT TM2-DSBC(ii)

- 1 This report should be used for recording the thickness measurement of:  
  
Shell plating at transverse sections:  
  
One, two or three sections within the cargo length area, comprising the structural items (3), (4), (5) and (6) as shown on the diagrams of typical transverse sections in appendices 3 and 4.
- 2 The bottom area comprises keel, bottom and bilge plating.
- 3 The exact frame station of measurement should be stated.
- 4 The single measurements recorded should represent the average of multiple measurements.
- 5 The maximum allowable diminution could be stated in an attached document.

**TMB-DSBC Report on THICKNESS MEASUREMENT OF LONGITUDINAL MEMBERS at transverse sections (one, two or three transverse sections)**

Ship's name ..... Class Identity No. .... Report No. .... IMO No. ....

STRUCTURAL MEMBER	FIRST TRANSVERSE SECTION AT FRAME NUMBER							SECOND TRANSVERSE SECTION AT FRAME NUMBER							THIRD TRANSVERSE SECTION AT FRAME NUMBER								
	Item No.	Org. Thk. mm	Gauged		Diminution P		Diminution S mm	Item No.	Org. Thk. mm	Gauged		Diminution P		Diminution S mm	Item No.	Org. Thk. mm	Gauged		Diminution P		Diminution S mm		
			P	S	mm	%				mm	%	P	S				mm	%	mm	%		P	S
	Max. Alwb. Dim.	mm						Max. Alwb. Dim.	mm						Max. Alwb. Dim.	mm							

Operator's Signature ..... NOTES – See Reverse

### NOTES TO REPORT TM3-DSBC

- 1 This report should be used for recording the thickness measurement of:  
  
Longitudinal members at transverse sections:  
  
Two, or three sections within the cargo length area comprising the appropriate structural items (10) to (25) as shown on diagrams of typical transverse sections in appendices 3 and 4.
- 2 The exact frame station of measurement should be stated.
- 3 The single measurements recorded should represent the average of multiple measurements.
- 4 The maximum allowable diminution could be stated in an attached document.



## NOTES TO REPORT TM4-DSBC

- 1 This report should be used for recording the thickness measurement:  
  
Transverse structural members, comprising the appropriate structural items (30) to (34) as shown on diagrams of typical transverse sections illustrated in appendices 3 and 4.
- 2 Guidance for areas of measurements is indicated in appendix 5.
- 3 The single measurements recorded should represent the average of multiple measurements.
- 4 The maximum allowable diminution could be stated in an attached document.





## **NOTES TO REPORT TM5-DSBC**

- 1 This report should be used for recording the thickness measurement of:  
Watertight transverse bulkheads in cargo holds.
- 2 Guidance for areas of measurements is indicated in appendix 3.
- 3 The single measurements recorded should represent the average of multiple measurements.
- 4 The maximum allowable diminution could be stated in an attached document.

**TM6-DSBC**      Report on **THICKNESS MEASUREMENT OF MISCELLANEOUS STRUCTURAL MEMBERS**

Ship's name ..... Class Identity No. .... Report No. .... IMO No. ....

STRUCTURAL MEMBER:	SKETCH						
LOCATION OF STRUCTURE:							
Description	Org. Thk.	Max. Allow. Dim.	Gauged		Diminution P		Diminution S
	mm	mm	P	S	mm	%	mm

Operator's Signature ..... NOTES – See Reverse

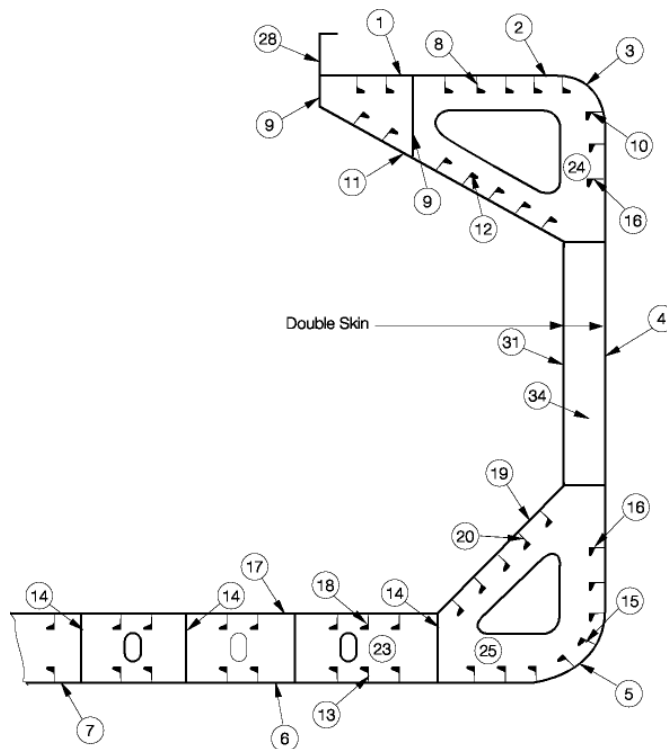
## NOTES TO REPORT TM6-DSBC

- 1 This report should be used for recording the thickness measurement of:  
  
Miscellaneous structural members including the structural items (40), (41) and (42) as shown on diagrams of typical transverse sections illustrated in Appendix 3.
- 2 Guidance for areas of measurements is indicated in appendix 5.
- 3 The single measurements recorded should represent the average of multiple measurements.
- 4 The maximum allowable diminution could be stated in an attached document.

**APPENDIX 3**

**THICKNESS MEASUREMENT – DOUBLE-SIDE SKIN CONSTRUCTION**

Typical transverse section of a double skin bulk carrier with indication of longitudinal and transverse members.



Report on TM2-DSBC(i) and (ii)	
1	Strength deck plating
2	Stringer plate
3	Sheerstrake
4	Side shell plating
5	Bilge plating
6	Bottom shell plating
7	Keel plate

Report on TM3-DSBC	
8	Deck longitudinals
9	Deck girders
10	Sheerstrake longitudinals
11	Topside tank sloping plating
12	Topside tank sloping plating longitudinals
13	Bottom longitudinals
14	Bottom girders
15	Bilge longitudinals
16	Side shell longitudinals, if any
17	Inner bottom plating
18	Inner bottom longitudinals
19	Hopper plating
20	Hopper longitudinals
31	Inner side plating
	- Inner side longitudinals, if any
	- Horizontal girders in wing ballast tanks

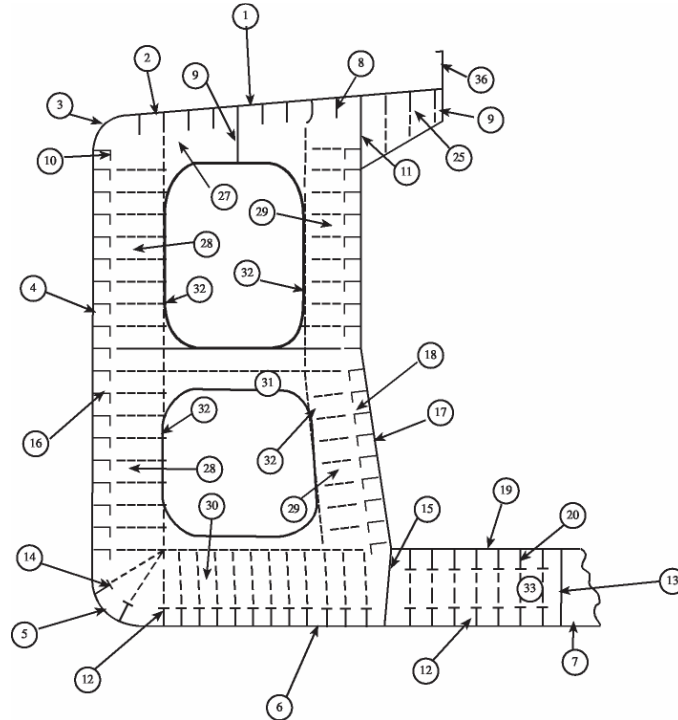
Report on TM4-DSBC	
23	Double bottom tank floors
25	Hopper side tank transverses
34	Transverse web frame
	- Topside tank transverses

Report on TM6-DSBC	
28	Hatch coamings
	- Deck plating between hatches
	- Hatch covers

**APPENDIX 4**

**THICKNESS MEASUREMENT - ORE CARRIERS**

Typical transverse section of an ore carrier with indication of longitudinal and transverse members.



Report on TM2-DSBC(i) and (ii)	
1	Strength deck plating
2	Stringer plate
3	Sheerstrake
4	Side shell plating
5	Bilge plating
6	Bottom shell plating
7	Keel plate

Report on TM6-DSBC	
36	Hatch coamings
37	Deck plating between hatches
38	Hatch covers
39	
40	

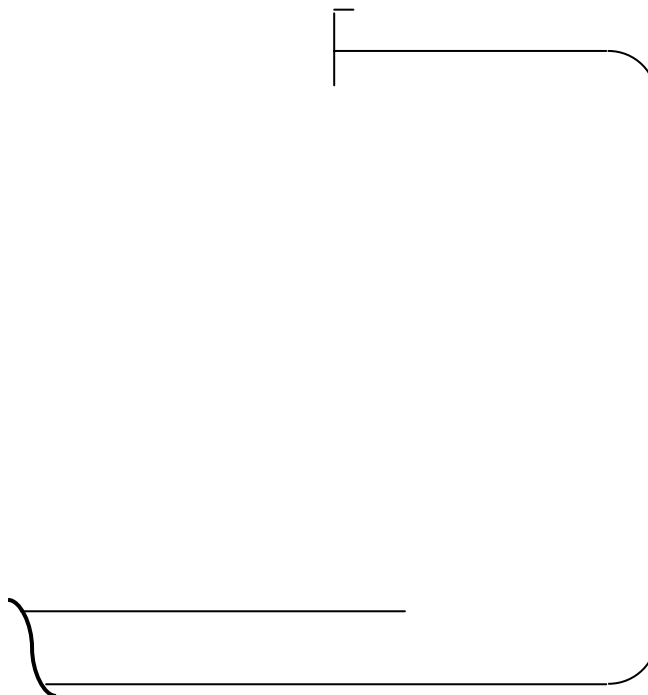
Report on TM3-DSBC	
8	Deck longitudinals
9	Deck girders
10	Sheerstrake longitudinals
11	Longitudinal bulkhead top strake
12	Bottom longitudinals
13	Bottom girders
14	Bilge longitudinals
15	Longitudinal bulkhead lower strake
16	Side shell longitudinals
17	Longitudinal bulkhead plating (remainder)
18	Longitudinal bulkhead longitudinals
19	Inner bottom plating
20	Inner bottom longitudinals
21	
22	
23	
24	

Report on TM4-DSBC	
25	Deck transverse centre tank
26	Bottom transverse centre tank
27	Deck transverse wing tank
28	Side shell vertical web
29	Longitudinal bulkhead vertical web
30	Bottom transverse wing tank
31	Struts
32	Transverse web face plate
33	Double bottom floors
34	
35	

**APPENDIX 5**

**THICKNESS MEASUREMENT – DOUBLE-SIDE SKIN CONSTRUCTION**

Transverse section outline: the diagram may be used for those ships where the diagrams given in appendices 3 and 4 are not suitable.



<b>Report on TM2-DSBC(i) and (ii)</b>	
1	Strength deck plating
2	Stringer plate
3	Sheerstrake
4	Side shell plating
5	Bilge plating
6	Bottom shell plating
7	Keel plate

<b>Report on TM3-DSBC</b>			
8	Deck longitudinals	17	Inner bottom plating
9	Deck girders	18	Inner bottom longitudinals
10	Sheerstrake longitudinals	19	Hopper plating
11	Topside tank sloping plating	20	Hopper longitudinals
12	Topside tank sloping plating longitudinals	31	Inner side plating
13	Bottom longitudinals	-	Inner side longitudinals, if any
14	Bottom girders	-	Horizontal girders in wing ballast tanks
15	Bilge longitudinals		
16	Side shell longitudinals, if any		

<b>Report on TM4-DSBC</b>	
23	Double bottom tank floors
25	Hopper side tank transverses
34	Transverse web frame
	- Topside tank transverses

<b>Report on TM6-DSBC</b>	
28	Hatch coamings
	- Deck plating between hatches
	- Hatch covers

## ANNEX 9

# **GUIDELINES FOR TECHNICAL ASSESSMENT IN CONJUNCTION WITH PLANNING FOR ENHANCED SURVEYS OF BULK CARRIERS\***

## **1 INTRODUCTION**

These guidelines contain information and suggestions concerning technical assessments, which may be of use in conjunction with the planning of enhanced surveys of double skin bulk carriers. As indicated in 5.1.6, the guidelines are a recommended tool which may be invoked at the discretion of the Administration, when considered necessary and appropriate, in conjunction with the preparation of the required survey programme.

## **2 PURPOSE AND PRINCIPLES**

### **2.1 Purpose**

**2.1.1** The purpose of the technical assessments described in these guidelines is to assist in identifying critical structural areas, nominating suspect areas and in focusing attention on structural elements or areas of structural elements which may be particularly susceptible to, or evidence a history of, wastage or damage. This information may be useful in nominating locations, areas holds and tanks for thickness measurement, close-up survey and tank testing.

**2.1.2** Critical structural areas are locations which have been identified from calculations to require monitoring or from the service history of the subject ship or from similar or sister ships (if available) to be sensitive to cracking, buckling or corrosion which would impair the structural integrity of the ship.

### **2.2 Minimum requirements**

However, these guidelines may not be used to reduce the requirements pertaining to thickness measurement, close-up survey and tank testing contained in annexes 1 and 2 of part B and in paragraph 2.7, respectively, which, in all cases, should be complied with as a minimum.

### **2.3 Timing**

As with other aspects of survey planning, the technical assessments described in these guidelines should be worked out by the owner or operator in co-operation with the Administration well in advance of the commencement of the renewal survey, i.e., prior to commencing the survey and normally at least 12 to 15 months before the survey's completion due date.

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\* References:

- 1 IACS, "Unified Requirement Z10.5, "Hull Surveys of Double Skin Bulk Carriers""
- 2 IACS, "Bulk Carriers: Guidelines for Surveys, Assessment and Repair of Hull Structures, January 2002"
- 3 TSCF, "Guidelines for the Inspection and Maintenance of Double Hull Tanker Structures, 1995"
- 4 TSCF, "Guidance Manual for Tanker Structures, 1997"

## **2.4 Aspects to be considered**

**2.4.1** Technical assessments, which may include quantitative or qualitative evaluation of relative risks of possible deterioration, of the following aspects of a particular ship may be used as a basis for the nomination of holds, tanks and areas for survey:

- .1** design features such as stress levels on various structural elements, design details and extent of use of high-tensile steel;
- .2** former history with respect to corrosion, cracking, buckling, indents and repairs for the particular ship as well as similar vessels, where available; and
- .3** information with respect to types of cargo carried, use of different holds/tanks for cargo/ballast, protection of holds and tanks and condition of coating, if any.

**2.4.2** Technical assessments of the relative risks of susceptibility to damage or deterioration of various structural elements and areas are to be judged and decided on the basis of recognized principles and practices, such as may be found in references 2, 3 and 4.

## **3 TECHNICAL ASSESSMENT**

### **3.1 General**

**3.1.1** There are three basic types of possible failure, which may be the subject of technical assessment in connection with planning of surveys; corrosion, cracks and buckling. Contact damages are not normally covered by the survey planning since indents are usually noted in memoranda and assumed to be dealt with as a normal routine by surveyors.

**3.1.2** Technical assessments performed in conjunction with the survey planning process should, in principle, be as shown schematically in figure 1. The approach is basically an evaluation of the risk in the following aspects based on the knowledge and experience related to:

- .1** design; and
- .2** corrosion.

**3.1.3** The design should be considered with respect to structural details, which may be susceptible to buckling or cracking as a result of vibration, high stress levels or fatigue.

**3.1.4** Corrosion is related to the ageing process, and is closely connected with the quality of corrosion prevention systems fitted at new building, and subsequent maintenance during the service life. Corrosion may also lead to cracking and/or buckling.

### **3.2 Methods**

#### **3.2.1 Design details**

**3.2.1.1** Damage experience related to the ship in question and sister and/or similar ships, where available, is the main source of information to be used in the process of planning. In addition, a selection of structural details from the design drawings is to be included.



**3.2.1.2** Typical damage experience to be considered will consist of:

- .1 number, extent, location and frequency of cracks; and
- .2 location of buckles.

**3.2.1.3** This information may be found in the survey reports and/or the owner's files, including the results of the owner's own inspections. The defects should be analyzed, noted and marked on sketches.

**3.2.1.4** In addition, general experience should be utilized. Also, reference should be made to reference 2, which contains a catalogue of typical damages and proposed repair methods for various structural details on single skin bulk carriers. Reference should also be made to reference 3, which contains catalogues of typical damages and proposed repair methods for double hull oil tanker structural details which may to some extent be similar to structural details in double skin bulk carriers. Such figures should be used together with a review of the main drawings, in order to compare with the actual structure and search for similar details that may be susceptible to damage. In particular, chapter 3 of reference 3 deals with various aspects specific to double hull tankers, such as stress concentration locations, misalignment during construction, corrosion trends, fatigue considerations and areas requiring special attention, while chapter 4 of reference 3 addresses experience gained on structural defects in double hulls (chemical tankers, OBO carriers, ore/oil carriers, gas carriers), which should also be considered in working out the survey planning.

**3.2.1.5** The review of the main structural drawings, in addition to using the above-mentioned figures, should include checking for typical design details where cracking has been experienced. The factors contributing to damage should be carefully considered.

**3.2.1.6** The use of high-tensile steel (HTS) is an important factor. Details showing good service experience where ordinary, mild steel has been used may be more susceptible to damage when HTS, and its higher associated stresses, are utilized. There is extensive and, in general, good experience, with the use of HTS for longitudinal material in deck and bottom structures. Experience in other locations, where the dynamic stresses may be higher, is less favourable, e.g., side structures.

**3.2.1.7** In this respect, stress calculations of typical and important components and details, in accordance with relevant methods, may prove useful and should be considered.

**3.2.1.8** The selected areas of the structure identified during this process should be recorded and marked on the structural drawings to be included in the Survey Programme.

## **3.2.2** Corrosion

**3.2.2.1** In order to evaluate relative corrosion risks, the following information should generally be considered:

- .1 usage of tanks, holds and spaces;
- .2 condition of coatings;
- .3 cleaning procedures;

- .4 previous corrosion damage;
- .5 ballast use and time for cargo holds;
- .6 risk of corrosion in cargo holds and ballast tanks; and
- .7 location of ballast tanks adjacent to heated fuel oil tanks.

**3.2.2.2** Reference 4 gives definitive examples which can be used for judging and describing coating condition, using typical pictures of conditions.

**3.2.2.3** The evaluation of corrosion risks should be based on information in both reference 2 and reference 4, as far as applicable to double-side skin construction, together with relevant information on the anticipated condition of the ship as derived from the information collected in order to prepare the Survey Programme and the age of the ship. The various holds, tanks and spaces should be listed with the corrosion risks nominated accordingly.

### **3.2.3** Locations for close-up survey and thickness measurement

**3.2.3.1** On the basis of the table of corrosion risks and the evaluation of design experience, the locations for initial close-up survey and thickness measurement (areas and sections) may be nominated.

**3.2.3.2** The sections subject to thickness measurement should normally be nominated in tanks, holds and spaces where corrosion risk is judged to be the highest.

**3.2.3.3** The nomination of tanks, holds and spaces for close-up survey should initially be based on highest corrosion risk, and should always include ballast tanks. The principle for the selection should be that the extent is increased by age or where information is insufficient or unreliable.

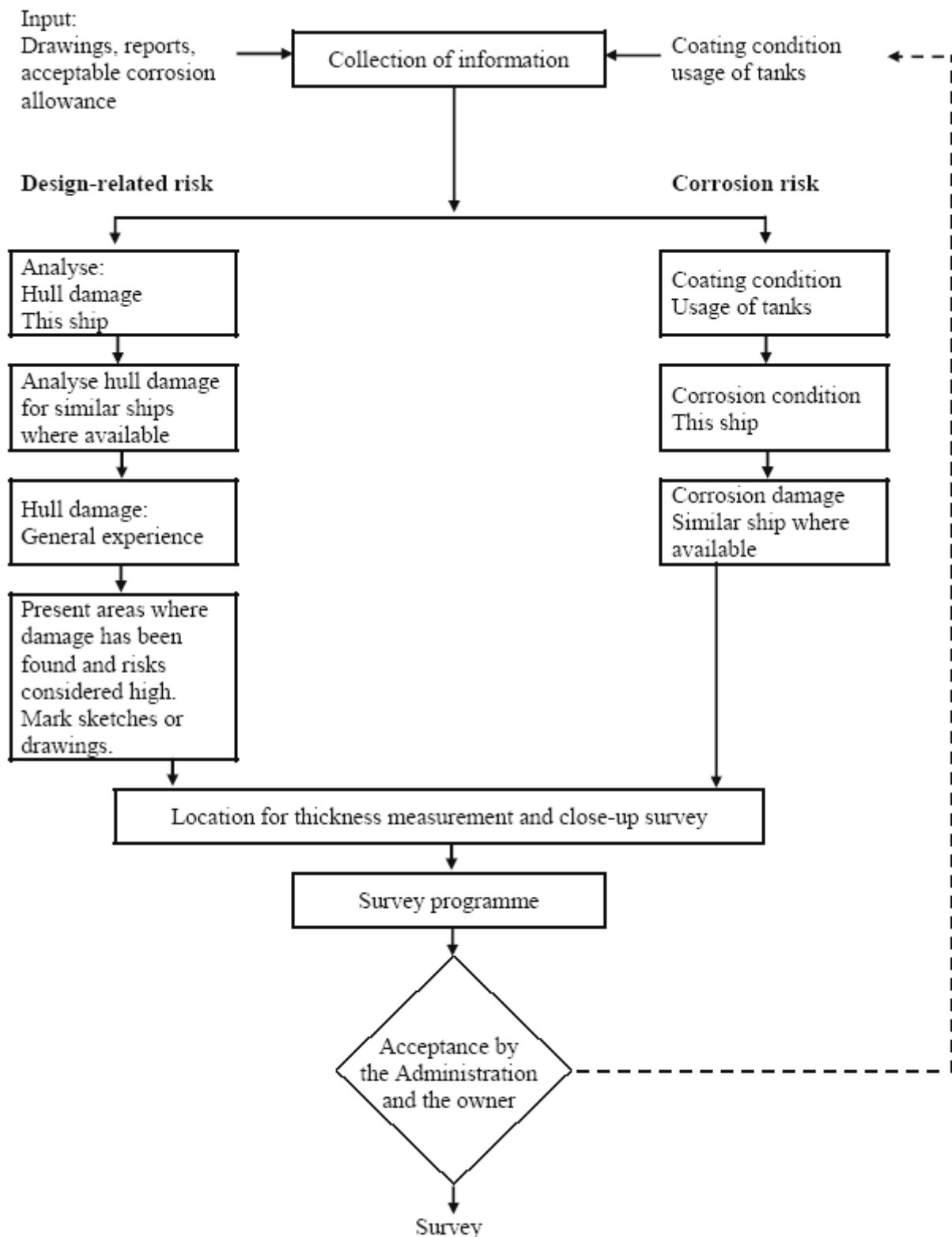


Figure 1 – Technical assessment and the survey planning process

ANNEX 10

**REQUIREMENTS FOR EXTENT OF THICKNESS MEASUREMENTS AT THOSE AREAS OF SUBSTANTIAL CORROSION OF BULK CARRIERS WITH DOUBLE-SIDE SKIN CONSTRUCTION WITHIN THE CARGO LENGTH AREA**

<b>TABLE 1 – BOTTOM, INNER BOTTOM AND HOPPER STRUCTURE</b>		
<b>Structural member</b>	<b>Extent of measurement</b>	<b>Pattern of measurement</b>
Bottom, inner bottom and hopper structure plating	Minimum of three bays across double bottom tank, including aft bay Measurements around and under all suction bell mouths	Five-point pattern for each panel between longitudinals and floors
Bottom, inner bottom and hopper structure longitudinals	Minimum of three longitudinals in each bay where bottom plating measured	Three measurements in line across flange and three measurements on the vertical web
Bottom girders, including the watertight ones	At fore and aft watertight floors and in centre of tanks	Vertical line of single measurements on girder plating with one measurement between each panel stiffener, or a minimum of three measurements
Bottom floors, including the watertight ones	Three floors in the bays where bottom plating measured, with measurements at both ends and middle	Five-point pattern over two square metre area
Hopper structure web frame ring	Three floors in bays where bottom plating measured	Five-point pattern over one square metre of plating Single measurements on flange
Hopper structure transverse watertight bulkhead or swash bulkhead	– lower 1/3 of bulkhead	– five-point pattern over one square metre of plating
	– upper 2/3 of bulkhead	– five-point pattern over two square metre of plating
	– stiffeners (minimum of three)	– For web, five-point pattern over span (two measurements across web at each end and one at centre of span). For flange, single measurements at each end and centre of span
Panel stiffening	Where applicable	Single measurements

<b>TABLE 2 – DECK STRUCTURE INCLUDING CROSS STRIPS, MAIN CARGO HATCHWAYS, HATCH COVERS, COAMINGS AND TOPSIDE TANKS</b>		
<b>Structural member</b>	<b>Extent of measurement</b>	<b>Pattern of measurement</b>
Cross deck strip plating	Suspect cross deck strip plating	Five-point pattern between under deck stiffeners over 1 metre length
Under deck stiffeners	Transverse members Longitudinal member	Five-point pattern at each end and mid span Five-point pattern on both web and flange
Hatch covers	Side and end skirts, each three locations Three longitudinal bands, outboard strakes (2) and centreline strake (1)	Five-point pattern at each location Five-point measurement each band
Hatch coamings	Each side and end of coaming, one band lower 1/3, one band upper 2/3 of coaming	Five-point measurement each band i.e., end or side coaming
Topside ballast tanks	a) watertight transverse bulkheads: - Lower 1/3 of bulkhead - Upper 2/3 of bulkhead - Stiffeners	Five-point pattern over 1 sq. metre of plating Five-point pattern over 1 sq. metre of plating Five-point pattern over 1 metre length
Topside ballast tanks	b) two representative swash transverse bulkheads: - Lower 1/3 of bulkhead - Upper 2/3 of bulkhead - Stiffeners	Five-point pattern over 1 sq. metre of plating Five-point pattern over 1 sq. metre of plating Five-point pattern over 1 metre length
Topside ballast tanks	c) three representative bays of slope plating: - Lower 1/3 of tank - Upper 2/3 of tank	Five-point pattern over 1 sq. metre of plating Five point pattern over 1 sq. metre of plating
Topside ballast tanks	d) Longitudinals, suspect and adjacent	Five point pattern on both web and flange over 1 metre length
Main deck plating	Suspect plates and adjacent (4)	Five-point pattern over 1 sq. metre of plating
Main deck longitudinal	Suspect plates	Five point pattern on both web and flange over 1 metre length
Web frames/transverses	Suspect plates	Five-point pattern over 1 sq. metre

**TABLE 3 – STRUCTURE IN DOUBLE-SIDE BALLAST TANKS**

<b>Structural member</b>	<b>Extent of measurement</b>	<b>Pattern of measurement</b>
Side shell and inner plating:  – Upper strake and strakes in way of horizontal girders – All other strakes	– Plating between each pair of transverse frames / longitudinals in a minimum of three bays (along the tank) – Plating between every third pair of longitudinals in same three bays	– Single measurement – Single measurement
Side shell and inner side transverse frames / longitudinals on:  – upper strake – all other strakes	– Each transverse frame / longitudinal in same three bays – Every third transverse frame / longitudinal in same three bays	– Three measurements across web and 1 measurement on flange – Three measurements across web and 1 measurement on flange
Transverse frames / longitudinals: – brackets	Minimum of three at top, middle and bottom of tank in same three bays	Five-point pattern over area of bracket
Vertical web and transverse bulkheads:  – strakes in a way of horizontal girders – other strakes	– Minimum of two webs and both transverse bulkheads – Minimum of two webs and both transverse bulkheads	– Five-point pattern over approx. two square metre area – Two measurements between each pair of vertical stiffeners
Horizontal girders	Plating on each girder in a minimum of three bays	Two measurements between each pair of longitudinal girder stiffeners
Panel stiffening	Where applicable	Single measurements

**TABLE 4 – TRANSVERSE BULKHEADS IN CARGO HOLDS**

<b>Structural member</b>	<b>Extent of measurement</b>	<b>Pattern of measurement</b>
Lower stool, where fitted	<ul style="list-style-type: none"> <li>– Transverse band within 25 mm of welded connection to inner bottom</li> <li>– Transverse bands within 25 mm of welded connection to shelf plate</li> </ul>	<ul style="list-style-type: none"> <li>– Five-point pattern between stiffeners over one metre length</li> <li>– Five-point pattern between stiffeners over one metre length</li> </ul>
Transverse bulkheads	<ul style="list-style-type: none"> <li>– Transverse band at approximately mid height</li> <li>– Transverse band at part of bulkhead adjacent to upper deck or below upper stool shelf plate (for those ships fitted with upper stools)</li> </ul>	<ul style="list-style-type: none"> <li>– Five-point pattern over one square metre of plating</li> <li>– Five-point pattern over one square metre of plating</li> </ul>

ANNEX 11

**STRENGTH OF CARGO HATCH COVER SECURING ARRANGEMENTS  
FOR BULK CARRIERS**

**1 Securing devices**

The strength of securing devices should comply with the following requirements:

**.1** Panel hatch covers should be secured by appropriate devices (bolts, wedges or similar) suitably spaced alongside the coamings and between cover elements. Arrangement and spacing should be determined with due attention to the effectiveness for weather-tightness, depending upon the type and the size of the hatch cover, as well as on the stiffness of the cover edges between the securing devices.

**.2** The net sectional area of each securing device is not to be less than:

$$A = 1.4 a / f (\text{cm}^2)$$

where:

- a = spacing between securing devices not to be taken less than 2 metres
- f =  $(\sigma_Y / 235)^e$
- $\sigma_Y$  = specified minimum upper yield stress in  $\text{N/mm}^2$  of the steel used for fabrication, not to be taken greater than 70% of the ultimate tensile strength
- e = 0.75 for  $\sigma_Y > 235$   
= 1.0 for  $\sigma_Y \leq 235$

Rods or bolts should have a net diameter not less than 19 mm for hatchways exceeding  $5 \text{ m}^2$  in area.

**.3** Between cover and coaming and at cross-joints, a packing line pressure sufficient to obtain weathertightness should be maintained by the securing devices. For packing line pressures exceeding 5 N/mm, the cross section area should be increased in direct proportion. The packing line pressure should be specified.

**.4** The cover edge stiffness should be sufficient to maintain adequate sealing pressure between securing devices. The moment of inertia, I, of edge elements be less than:

$$I = 6 p a^4 (\text{cm}^4)$$

where:

- p = packing line pressure in N/mm, minimum 5 N/mm
- a = spacing in m of securing devices



- .5 Securing devices should be of reliable construction and securely attached to the hatchway coamings, decks or covers. Individual securing devices on each cover are to have approximately the same stiffness characteristics.
- .6 Where rod cleats are fitted, resilient washers or cushions should be incorporated.
- .7 Where hydraulic cleating is adopted, a positive means should be provided to ensure that it remains mechanically locked in the closed position in the event of failure of the hydraulic system.

## **2 Stoppers**

**2.1** Nos.1 and 2 hatch covers should be effectively secured, by means of stoppers, against the transverse forces arising from a pressure of  $175 \text{ kN/m}^2$ .

**2.2** No.2 hatch covers should be effectively secured, by means of stoppers, against the longitudinal forces acting on the forward end arising from a pressure of  $175 \text{ kN/m}^2$ .

**2.3** No.1 hatch cover should be effectively secured, by means of stoppers, against the longitudinal forces acting on the forward end arising from a pressure of  $230 \text{ kN/m}^2$ . This pressure may be reduced to  $175 \text{ kN/m}^2$  if a forecastle is fitted.

**2.4** The equivalent stress in stoppers and their supporting structures and calculated in the throat of the stopper welds is not to exceed the allowable value of  $0.8 \sigma_Y$ .

## **3 Materials and welding**

Where stoppers or securing devices are fitted to comply with this annex, they should be manufactured of materials, including welding electrodes, to the satisfaction of the Administration.

## ANNEX 12

### **PROCEDURAL REQUIREMENTS FOR THICKNESS MEASUREMENTS**

#### **1 General**

Thickness measurements required in the context of hull structural surveys, if not carried out by the society itself should be witnessed by a surveyor. The attendance of the surveyor should be recorded. This also applies to thickness measurements taken during voyages.

#### **2 Survey meeting**

**2.1** Prior to commencement of the renewal or intermediate survey, a meeting should be held between the attending surveyor(s), the owner's representative(s) in attendance and the thickness measurement firm's representative(s) so as to ensure the safe and efficient execution of the surveys and thickness measurements to be carried out on board.

**2.2** Communication with the thickness measurement operator(s) and owner's representative(s) should be agreed during the meeting, with respect to the following:

- .1** reporting of thickness measurements on regular basis;
- .2** prompt notification to the surveyor in case of findings such as:
  - .2.1** excessive and/or extensive corrosion or pitting/grooving of any significance;
  - .2.2** structural defects like buckling, fractures and deformed structures;
  - .2.3** detached and/or holed structure; and
  - .2.4** corrosion of welds.

**2.3** The survey report should indicate where and when the meeting took place and who attended (the name of the surveyor(s), the owner's representative(s) and the thickness measurement firm's representative(s)).

#### **3 Monitoring of the thickness measurement process on board**

**3.1** The surveyor should decide final extent and location of thickness measurements after overall survey of representative spaces onboard.

**3.2** In case the owner prefers to commence the thickness measurements prior to the overall survey, then the surveyor should advise that the planned extent and locations of thickness measurements are subject to confirmation during the overall survey. Based on findings, the surveyor may require additional thickness measurements to be taken.

**3.3** The surveyor should direct the gauging operation by selecting locations such that readings taken represent, on average, the condition of the structure for that area.

**3.4** Thickness measurements taken mainly to evaluate the extent of corrosion, which may affect the hull girder strength, should be carried out in a systematic manner such that all longitudinal structural members are gauged, as required.

**3.5** Where thickness measurements indicate substantial corrosion or wastage in excess of allowable diminution, the surveyor should direct locations for additional thickness measurements in order to delineate areas of substantial corrosion and to identify structural members for repairs/renewals.

**3.6** Thickness measurements of structures in areas where close-up surveys are required should be carried out simultaneously with close-up survey.

#### **4 Review and verification**

**4.1** Upon completion of the thickness measurements, the surveyor should confirm that no further gaugings are needed, or specify additional gaugings.

**4.2** Where these guidelines allow the extent of thickness measurements to be reduced after special considerations by the surveyor, these special considerations should be reported, where appropriate.

**4.3** In case thickness measurements are partly carried out, the extent of remaining thickness measurements should be reported for the use of the next surveyor.”

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**ANNEX 10**

**RESOLUTION MSC.244(83)  
(adopted on 5 October 2007)**

**ADOPTION OF PERFORMANCE STANDARD FOR PROTECTIVE COATINGS  
FOR VOID SPACES ON BULK CARRIERS AND OIL TANKERS**

THE MARITIME SAFETY COMMITTEE,

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

HAVING ADOPTED, by resolution MSC.215(82), the Performance standard for protective coatings for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers and, by resolution MSC.216(82), amended SOLAS regulation II-1/3-2 to make the performance standard mandatory;

RECOGNIZING the need to also develop a performance standard for protective coatings for void spaces on bulk carriers and oil tankers,

HAVING CONSIDERED, at its eighty-third session, the proposed Performance standard for protective coatings for void spaces on bulk carriers and oil tankers,

1. ADOPTS the Performance standard for protective coatings for void spaces on bulk carriers and oil tankers, the text of which is set out in the Annex to the present resolution;
2. INVITES Member Governments to utilize the Performance standard when applying protective coatings to void spaces on bulk carriers and oil tankers.

## ANNEX

### PERFORMANCE STANDARD FOR PROTECTIVE COATINGS FOR VOID SPACES ON BULK CARRIERS AND OIL TANKERS

#### 1 PURPOSE

This Standard provides technical requirements for protective coatings for void spaces constructed of steel in bulk carriers and oil tankers.

#### 2 DEFINITIONS

For the purpose of this Standard, the following definitions apply:

- 2.1 *Dew point* is the temperature at which air is saturated with moisture.
- 2.2 *DFT* is dry film thickness.
- 2.3 *Dust* is loose particle matter present on a surface prepared for painting, arising from blast-cleaning or other surface preparation processes, or resulting from the action of the environment.
- 2.4 *Edge grinding* is the treatment of edge before secondary surface preparation.
- 2.5 “*GOOD*” *condition* is the condition with minor spot rusting as defined in the Guidelines on the enhanced programme of inspections during surveys of bulk carriers and oil tankers (resolution A.744(18)).
- 2.6 *Hard coating* is a coating that chemically converts during its curing process or a non-convertible air drying coating which may be used for maintenance purposes. It can be either inorganic or organic.
- 2.7 *NDFT* is the nominal dry film thickness. 90/10 practice means that 90% of all thickness measurements should be greater than or equal to NDFT and none of the remaining 10% measurements should be below 0.9 x NDFT.
- 2.8 *Primer coat* is the first coat of the coating system applied in the shipyard after shop primer application.
- 2.9 *Shop primer* is the prefabrication primer coating applied to steel plates, often in automatic plants (and before the first coat of a coating system).
- 2.10 *Stripe coating* is painting of edges, welds, hard to reach areas, etc., to ensure good paint adhesion and proper paint thickness in critical areas.
- 2.11 *Target useful life* is the target value, in years, of the durability for which the coating system is designed.

2.12 *Technical Data Sheet* is paint manufacturers' Product Data Sheet which contains detailed technical instruction and information relevant to the coating and its application.

2.13 *Totally enclosed space* is a space which has no means of access and no ventilation.

2.14 *Void space* is an enclosed space below the bulkhead deck, within and forward of, the cargo area of oil tankers or the cargo length area of bulk carriers, excluding:

- .1 a dedicated seawater ballast tank;
- .2 a space for the carriage of cargo;
- .3 a space for the storage of any substance (e.g., oil fuel, fresh water, provisions);
- .4 a space for the installation of any machinery (e.g., cargo pump, ballast pump, bow thruster);
- .5 any space in normal use by personnel; and
- .6 a double-side skin space of bulk carriers of 150 m in length and upwards which shall comply with the Performance standard for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers adopted by resolution MSC.215(82).

For the purpose of this regulation, "cargo area" and "cargo length area" are as defined in resolution A.744(18).

### **3 GENERAL PRINCIPLES**

3.1 The ability of the coating system to reach its target useful life depends on the type of coating system, steel preparation, application and coating inspection and maintenance. All these aspects contribute to the good performance of the coating system.

3.2 Inspection of surface preparation and coating processes should be agreed upon between the shipowner, the shipyard and the coating manufacturer and presented to the Administration for review. Clear evidence of these inspections should be reported and be included in the Coating Technical File (CTF) (see paragraph 3.4).

3.3 When considering the standard provided in section 4, the following should be taken into account:

- .1 it is essential that specifications, procedures and the various different steps in the coating application process (including, but not limited to, surface preparation) are strictly applied by the shipbuilder in order to prevent premature decay and/or deterioration of the coating system;
- .2 the coating performance can be improved by adopting measures at the ship design stage such as reducing scallops, using rolled profiles, avoiding complex geometric configurations and ensuring that the structural configuration permits easy access for tools and to facilitate cleaning, drainage and drying of the space to be coated; and

- .3 the coating performance standard provided in this resolution is based on the experience of manufacturers, shipyards and ship operators; it is not intended to exclude suitable alternative coating systems, providing a performance at least equivalent to that specified in this Standard is demonstrated. Acceptance criteria for alternative systems are provided in section 8.

### **3.4 Coating Technical File**

3.4.1 Specification of the coating system applied to void spaces in bulk carriers and oil tankers, records of the shipyard's and shipowner's coating work, detailed criteria for coating selection, job specifications, inspection, maintenance and repair should be documented in the Coating Technical File (CTF), which should be reviewed by the Administration or an organization recognized by the Administration.

#### **3.4.2 *New construction stage***

The Coating Technical File should contain at least the following items relating to this Standard and should be delivered by the shipyard at the new ship construction stage:

- .1 copy of Statement of Compliance or Type Approval Certificate;
- .2 copy of Technical Data Sheet, including:
  - .1 product name and identification mark and/or number;
  - .2 materials, components and composition of the coating system, colours;
  - .3 minimum and maximum dry film thickness;
  - .4 application methods, tools and/or machines;
  - .5 condition of surface to be coated (de-rusting grade, cleanness, profile, etc.); and
  - .6 environmental limitations (temperature and humidity);
- .3 shipyard work records of coating application, including:
  - .1 applied actual space and area (in square metres) of each void space;
  - .2 applied coating system;
  - .3 time of coating, thickness, number of layers, etc.;
  - .4 ambient condition during coating; and
  - .5 method of surface preparation;
- .4 procedures for inspection and repair of coating system during ship construction;
- .5 coating log issued by the coating inspector, stating that the coating was applied in accordance with the specifications to the satisfaction of the coating supplier representative and specifying deviations from the specifications (example of daily log and non-conformity report, see annex 2);
- .6 shipyard's verified inspection report, including:
  - .1 completion date of inspection;
  - .2 result of inspection;
  - .3 remarks (if given);
  - .4 inspector signature; and
- .7 procedures for in-service maintenance and repair of coating system.



### **3.4.3 Maintenance, repair and partial re-coating**

Maintenance, repair and partial re-coating activities should be recorded in the Coating Technical File in accordance with the relevant section of the guidelines for coating maintenance and repair<sup>1</sup>.

### **3.4.4 Re-coating**

If full re-coating is carried out, the items specified in paragraph 3.4.2 should be recorded in the Coating Technical File.

3.4.5 The Coating Technical File should be kept on board and maintained throughout the life of the ship.

## **3.5 Health and safety**

The shipyard is responsible for the implementation of national regulations to ensure the health and safety of individuals and to minimize the risk of fire and explosion.

## **4 COATING STANDARD**

### **4.1 Performance standard**

This Standard is based on specifications and requirements which intend to provide a target useful coating life of 15 years, which is considered to be the time period, from initial application, over which the coating system is intended to remain in “GOOD” condition. The actual useful life will vary, depending on numerous variables including actual conditions encountered in service.

### **4.2 Standard application**

4.2.1 Protective coatings for the following void spaces should comply with the requirements in this Standard:

- .1 in bulk carriers:
  - .1 double bottom pipe passages / pipe tunnels;
  - .2 small void spaces located behind gusset or shedder plates at the bottom of corrugation bulkheads with the exception of totally enclosed spaces;
  - .3 other small void spaces in cargo spaces, with the exception of totally enclosed spaces;
  - .4 lower transverse stool of transverse bulkheads, with the exception of totally enclosed spaces<sup>2</sup>; and
  - .5 upper transverse stool of transverse bulkheads, with the exception of totally enclosed spaces<sup>2</sup>; and

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<sup>1</sup> To be developed by the Organization.

<sup>2</sup> Noting, *inter alia*, the mandatory provisions of resolution A.744(18), as amended, regarding the requirement to undertake close-up surveys of the internal structure of upper and lower stools, where fitted.

- .2 in oil tankers:
  - .1 forward cofferdam/cofferdam separating cargo from forepeak;
  - .2 cofferdam in cargo area/cofferdam separating incompatible cargoes;
  - .3 aft cofferdam;
  - .4 duct keel/pipe tunnels;
  - .5 lower bulkhead stools; and
  - .6 upper bulkhead stools.

4.2.2 Protective coatings for the following void spaces should comply with the requirements in the Performance standard for protective coatings for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers (resolution MSC.215(82)):

- .1 in bulk carriers:
  - .1 double-side skin spaces in ships of less than 150 m in length; and
  - .2 upper and lower side void spaces and double bottoms void spaces in cargo area; and
- .2 in oil tankers:

double-side skin (DSS) voids including sides, bottoms/double hull voids spaces protecting cargo oil tanks.

4.2.3 No requirements are contained in this Standard for protective coatings for the following void spaces in bulk carriers and oil tankers:

- .1 totally enclosed spaces located behind gusset or shedder plates at the bottom of corrugation bulkheads and other small totally enclosed spaces in cargo tanks;
- .2 lower transverse stool of transverse bulkheads that are totally enclosed spaces;
- .3 upper transverse stool of transverse bulkheads that are totally enclosed spaces;
- .4 transducer voids; and
- .5 any spaces not specifically mentioned in paragraphs 4.2.1 and 4.2.2.

### **4.3 Special application**

4.3.1 This Standard covers protective coating requirements for the ship steel structure. It is noted that other independent items are fitted within the tanks to which coatings are applied to provide protection against corrosion.

4.3.2 It is recommended that this Standard be applied, to the extent possible, to those portions of permanent means of access provided for inspection, not integral to the ship structure, such as rails, independent platforms, ladders, etc. Other equivalent methods of providing corrosion protection for non-integral items may also be used, provided they do not impair the performance of the coatings of the surrounding structure. Access arrangements that are integral to the ship structure, such as increased stiffener depths for walkways, stringers, etc., should fully comply with this Standard.

4.3.3 It is also recommended that supports for piping, measuring devices, etc., be coated in accordance with the provisions for non-integral items indicated in paragraph 4.3.2.

#### **4.4 Basic coating requirements**

4.4.1 The requirements for protective coating systems, which should be applied at ship construction to void spaces in bulk carriers and oil tankers meeting the standard specified in paragraph 4.1, are listed in table 1.

4.4.2 Coating manufacturers should provide a specification of the protective coating system to satisfy the requirements of table 1.

4.4.3 The Administration or an organization recognized by the Administration should verify the Technical Data Sheet and Statement of Compliance or Type Approval Certificate for the protective coating system.

4.4.4 The shipyard should apply the protective coating in accordance with the verified Technical Data Sheet and its own verified application procedures.

**Table 1 - Basic coating system requirements for void spaces in bulk carriers and oil tankers**

	Characteristic	Requirement
<b>1 Design of coating system</b>		
.1	Selection of the coating system	<p>The selection of the coating system should be considered by the parties involved with respect to the service conditions and planned maintenance. The following aspects, among other things should be considered:</p> <ul style="list-style-type: none"> <li>.1 location of space relative to heated surfaces;</li> <li>.2 required surface conditions;</li> <li>.3 required surface cleanliness and dryness;</li> <li>.4 relative humidity;</li> <li>.5 access and maintenance; and</li> <li>.6 mechanical ventilation.</li> </ul> <p>Coating manufacturers should have products with documented satisfactory performance records and technical data sheets. The manufacturers should also be capable of rendering adequate technical assistance. Performance records, Technical Data Sheet and technical assistance (if given) should be recorded in the Coating Technical File.</p> <p>Coatings for application underneath sun-heated decks or on bulkheads forming boundaries of heated spaces should be able to withstand repeated heating and/or cooling without becoming brittle.</p>
.2	Coating type	<p>Epoxy-based systems.</p> <p>Other coating systems with performance according to the test procedure in annex 1.</p> <p>When a multi-coat system is applied, contrasting colour is recommended for each coat.</p> <p>The top coat should be of a light colour in order to facilitate in-service inspection.</p>

	Characteristic	Requirement
.3	Coating pre-qualification test	<p>Epoxy-based systems tested prior to the date of adoption of this standard in a laboratory by a method corresponding to the test procedure in annex 1 or equivalent, which, as a minimum, meets the requirements for rusting and blistering may be accepted;</p> <p>or any coating system which meets the requirements in table 1.1.3 of the Performance standard for protective coating for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers (resolution MSC.215(82)), is accepted and may be applied in accordance with this Standard;</p> <p>or which have documented field exposure for 5 years with a final coating condition of not less than “GOOD” may also be accepted.</p> <p>For other systems, including epoxy-based systems tested after the adoption of this Standard, testing according to the procedure in annex 1 to this Standard should be required.</p>
.4	Job specification	<p>There should be a minimum of one stripe coat and one spray coat. The stripe coat should be applied on thermally cut free edges and small holes only.</p> <p>Surface contaminants such as rust, grease, dust, salt, oil, etc., should be removed prior to painting with proper methods according to the paint manufacturer’s recommendation. Abrasive inclusions embedded in the coating should be removed. Job specifications should include the dry-to-recoat times and walk-on time given by the manufacturer.</p>
.5	NDFT (nominal total dry film thickness) <sup>3</sup>	<p>NDFT 200 µm with a 90/10 rule for epoxy based coatings, other systems to coating manufacturer’s specifications.</p> <p>Maximum total dry film thickness according to manufacturer’s detailed specifications.</p> <p>Care should be taken to avoid increasing the thickness in an exaggerated way. Wet film thickness should be regularly checked during application.</p> <p>Thinner should be limited to those types and quantities recommended by the manufacturer.</p>

<sup>3</sup> Type of gauge and calibration in accordance with SSPC-PA2:2004. Paint Application Specification No.2.

	Characteristic	Requirement
<b>2 PSP (Primary surface preparation)</b>		
.1	Blasting and profile <sup>4,5</sup>	<p>Sa 2½; with profiles between 30-75 µm.</p> <p>Blasting should not be carried out when:</p> <p>.1 the relative humidity is above 85%; or</p> <p>.2 the surface temperature of steel is less than 3°C above the dew point.</p> <p>Checking of the steel surface cleanliness and roughness profile should be carried out at the end of the surface preparation and before the application of the primer, in accordance with the manufacturer's recommendations.</p>
.2	Water soluble salt limit equivalent to NaCl <sup>6</sup>	≤ 50 mg/m <sup>2</sup> of sodium chloride.
.3	Shop primer	<p>Zinc containing inhibitor free zinc silicate based or equivalent.</p> <p>Compatibility with main coating system should be confirmed by the coating manufacturer.</p>
<b>3 SSP (Secondary surface preparation)</b>		
.1	Steel condition	<p>The steel surface should be prepared so that the coating selected can achieve an even distribution at the required NDFT and have an adequate adhesion by removing sharp edges, grinding weld beads and removing weld spatter and any other surface contaminant<sup>7</sup>.</p> <p>Edges to be smooth, subject to one pass grinding or at least equivalent process before painting<sup>8</sup>.</p>

<sup>4</sup> Reference standard: ISO 8501-1:1988/Suppl:1994. Preparation of steel substrate before application of paints and related products – Visual assessment of surface cleanliness.

<sup>5</sup> Reference standard: ISO 8503-1/2:1988. Preparation of steel substrate before application of paints and related products – Surface roughness characteristics of blast-cleaned steel substrates.

<sup>6</sup> Conductivity measured in accordance with ISO 8502-9:1998. Preparation of steel substrate before application of paints and related products – Test for the assessment of surface cleanliness.

<sup>7</sup> Reference standard: ISO 8501-3:2001 (grade P1). Preparation of steel substrate before application of paints and related products – Visual assessment of surface cleanliness.

<sup>8</sup> Reference standard: ISO 8501-3:2001 (grade P2). Preparation of steel substrate before application of paints and related products – Visual assessment of surface cleanliness.

	Characteristic	Requirement
.2	Surface treatment <sup>4</sup>	<p>For damaged shop primer:</p> <p>Sa 2 or St 3 on damaged shop primer and welds;</p> <p>For intact shop primer:</p> <p>Sa 2 removing at least 70% of intact shop primer, which has not passed a pre-qualification certified by test procedures in table 1.1.3.</p> <p>If the complete coating system comprising epoxy-based main coating and shop primer has passed a pre-qualification certified by test procedures in table 1.1.3 intact shop primer may be retained provided the same epoxy coating system is used. The retained shop primer should be cleaned by sweep blasting, high pressure water washing or other methods in accordance with the manufacturer's recommendation.</p> <p>If a zinc silicate shop primer has passed the pre-qualification test of table 1.1.3 as part of an epoxy coating system, it may be used in combination with other epoxy coatings certified under table 1.1.3, provided that the compatibility has been confirmed by the manufacturer by the test in accordance with paragraph 1.7 of appendix 1 to annex 1 of the Performance standard for protective coatings for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers, without wave movement.</p>
.3	Surface treatment after erection <sup>4</sup>	<p>St 3 or better or Sa 2 where practicable on butts and damages.</p> <p>Coating in overlap to be feathered.</p>
.4	Profile requirements <sup>5</sup>	In case of full or partial blasting 30-75 µm, otherwise as recommended by the coating manufacturer.
.5	Dust <sup>9</sup>	Dust quantity rating "2" for dust size class "3", "4" and "5".
.6	Water soluble salts limit equivalent to NaCl after blasting/grinding <sup>6</sup>	≤ 100 mg/m <sup>2</sup> of sodium chloride.
.7	Oil contamination	No oil contamination.

<sup>9</sup> Reference standard: ISO 8502-3:1993. Preparation of steel substrate before application of paints and related products – Test for the assessment of surface cleanliness.

	Characteristic	Requirement
<b>4 Miscellaneous</b>		
.1	Ventilation	Adequate ventilation is necessary for the proper drying and curing of coating. Ventilation should be maintained throughout the application process and for a period after application is completed, as recommended by the coating manufacturer.
.2	Environmental conditions	Coating should be applied under controlled humidity and surface conditions, in accordance with the manufacturer's specifications. In addition, coating should not be applied when: <ul style="list-style-type: none"> <li>.1 the relative humidity is above 85%; or</li> <li>.2 the surface temperature is less than 3°C above the dew point.</li> </ul>
.3	Testing of coating <sup>3</sup>	Destructive testing should be avoided.  Dry film thickness should be measured after each coat for quality control purposes and the total dry film thickness should be confirmed after completion of final coat, using appropriate thickness gauges.
.4	Repair	Any defective areas, e.g. pin-holes, bubbles, voids, etc. should be marked up and appropriate repairs effected. All such repairs should be re-checked and documented.

## 5 COATING SYSTEM APPROVAL

Results from prequalification tests (table 1.1.3) of the coating system should be documented, and a Statement of Compliance or Type Approval Certificate should be issued if found satisfactory by a third party, independent of the coating manufacturer.

## 6 COATING INSPECTION REQUIREMENTS

### 6.1 General

6.1.1 To ensure compliance with this Standard, the following should be carried out by qualified coating inspectors certified to NACE Coating Inspector Level 2, FROSIO Inspector level III or equivalent as verified by the Administration<sup>10</sup>.

6.1.2 Coating inspectors should inspect surface preparation and coating application during the coating process by carrying out, as a minimum, those inspection items identified in section 6.2 to ensure compliance with this Standard. Emphasis should be placed on initiation of each stage of surface preparation and coatings application, as improper work is extremely difficult to correct later in the coating progress. Representative structural members should be non-destructively

<sup>10</sup> In accordance with SOLAS regulation I/6, for the purposes of this Standard, the Administration may entrust a recognized organization acting on its behalf to determine compliance with the provisions of this Standard.



examined for coating thickness. The inspector should verify that appropriate collective measures have been carried out.

6.1.3 Results from the inspection should be recorded by the inspector and should be included in the CTF (refer to annex 2, Example of Daily Log and Non-conformity Report).

## 6.2 Inspection items

Construction stage		Inspection items
Primary surface preparation	1	The surface temperature of steel, the relative humidity and the dew point should be measured and recorded before the blasting process starts and at times of sudden changes in weather.
	2	The surface of steel plates should be tested for soluble salt checked for oil, grease and other contamination.
	3	The cleanliness of the steel surface should be monitored in the shop primer application process.
	4	The shop primer material should be confirmed to meet the requirements of 2.3 of table 1.
Thickness		If compatibility with the main coating system has been declared, then the thickness and curing of the zinc silicate shop primer should be confirmed to conform to the specified values.
Block assembly	1	After completing construction of the block and before secondary surface preparation starts, a visual inspection for steel surface treatment including edge treatment should be carried out.  Any oil, grease or other visible contamination should be removed.
	2	After blasting/grinding/cleaning and prior to coating, a visual inspection of the prepared surface should be carried out.  On completion of blasting and cleaning and prior to the application of the first coat of the system, the steel surface should be tested for levels of remaining soluble salts in at least one location per block.
	3	The surface temperature, the relative humidity and the dew point should be monitored and recorded during the coating application and curing.
	4	Inspection should be performed of the steps in the coating application process mentioned in table 1.
	5	DFT measurements should be taken to prove that the coating has been applied to the thickness as specified and outlined in annex 3.

Construction stage	Inspection items	
Erection	1	Visual inspection for steel surface condition, surface preparation and verification of conformance to other requirements in table 1, and the agreed specification should be performed.
	2	The surface temperature, the relative humidity and the dew point should be measured and recorded before coating starts and regularly during the coating process.
	3	Inspection should be performed of the steps in the coating application process mentioned in table 1.

## 7 VERIFICATION REQUIREMENTS

The following should be carried out by the Administration prior to reviewing the Coating Technical File for the ship subject to this Standard:

- .1 check that the Technical Data Sheet and Statement of Compliance or Type Approval Certificate comply with the Standard;
- .2 check that the coating identification on representative containers is consistent with the coating identified in the Technical Data Sheet and Statement of Compliance or Type Approval Certificate;
- .3 check that the inspector is qualified in accordance with the qualification standards in paragraph 6.1.1;
- .4 check that the inspector's reports of surface preparation and the coating's application indicate compliance with the manufacturer's Technical Data Sheet and Statement of Compliance or Type Approval Certificate; and
- .5 monitor implementation of the coating inspection requirements.

## 8 ALTERNATIVE SYSTEMS

8.1 All systems that are not an epoxy-based system applied according to table 1 of this Standard are defined as alternative systems.

8.2 This Standard is based on recognized and commonly used coating systems. It is not meant to exclude other, alternative, systems with proven equivalent performance, for example non epoxy-based systems.

8.3 Acceptance of alternative systems should be subject to documented evidence that they ensure a corrosion prevention performance at least equivalent to that indicated in this Standard.

8.4 As a minimum, the documented evidence should consist of satisfactory performance corresponding to that of a coating system which conforms to the Standard as described in section 4, a target useful life of 15 years in either actual field exposure for five years with final coating condition not less than "GOOD" or laboratory testing. Laboratory tests should be conducted in accordance with the test procedure given in annex 1 of this Standard.

## ANNEX 1

### TEST PROCEDURE FOR COATING QUALIFICATION FOR VOID SPACES OF BULK CARRIERS AND OIL TANKERS

#### 1 Scope

This procedure provides details of the test procedure referred to in section 4, table 1, items .1.2 and .1.3 and paragraph 8.3 of this Standard.

#### 2 Definition

*Coating specification* means the specification of coating systems which includes the type of coating system, steel preparation, surface preparation, surface cleanliness, environmental conditions, application procedure, acceptance criteria and inspection.

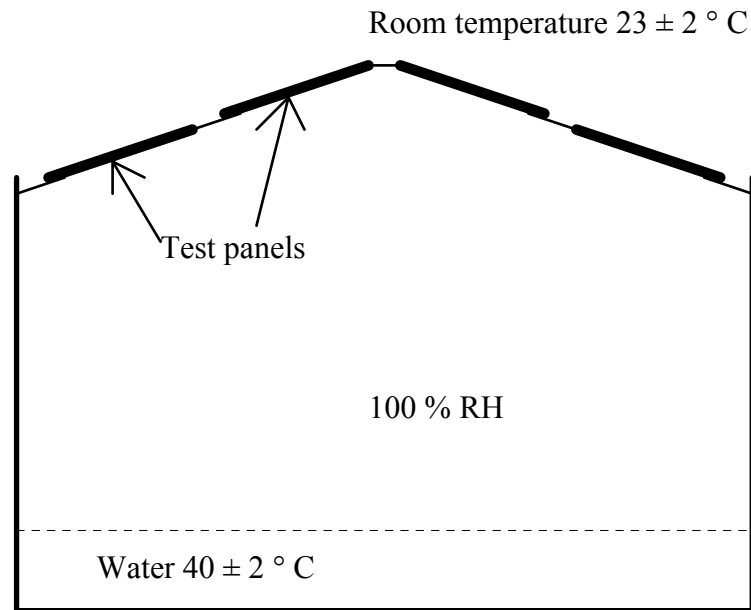
#### 3 Test

Coating specification should be verified by a condensation chamber test in accordance with the procedures specified in this section.

##### 3.1 Test condition

Condensation chamber tests should be conducted in accordance with ISO 6270.

- .1 The exposure time should be 30 days.
- .2 There should be 3 test panels.
- .3 The size of each test panel should be 150 mm x 150 mm x 3 mm. All of the panels should be treated according to the Performance standard, tables 1, 2 and 3, and coating system applied according to table 1.1.4 and 1.1.5. At the primer stage, two of the panels should be weathered for at least 2 months and cleaned by low pressure washing or other mild method. Blast sweep or high pressure washing, or other primer removal methods should not be used. The third plate should have the primer removed to St 3 before the top coat is applied. Weathering method and extent should take into consideration that the primer should be the foundation for a 15 year target life system. To facilitate innovation, alternative preparation, coating systems and dry film thicknesses may be used when clearly defined.
- .4 The reverse side of the test piece should be painted appropriately, in order not to affect the test results.



**Figure 1: Condensation chamber**

### 3.2 Test results

3.2.1 Prior to the testing, the following measured data of the coating system should be reported:

- .1 infrared (IR) identification of the base and hardener components of the coating;
- .2 specific gravity<sup>11</sup>, of the base and hardener components of the paint; and
- .3 number of pinholes, low voltage detector at 90 V.

3.2.2 After the testing, the following measured data should be reported:

- .1 blisters and rust<sup>12</sup>;
- .2 dry film thickness (DFT) (use of a template);
- .3 adhesion value<sup>13</sup>; and
- .4 flexibility<sup>14</sup> modified according to panel thickness (3 mm steel, 300  $\mu\text{m}$  coating, 150 mm cylindrical mandrel gives 2% elongation) for information only.

<sup>11</sup> According to ISO 2811-74.

<sup>12</sup> According to ISO 4628/2 and ISO 4628/3.

<sup>13</sup> According to ISO 4624.

<sup>14</sup> According to ASTM D4145.

### 3.3 Acceptance criteria

3.3.1 The test results based on section 2 should satisfy the following criteria:

<b>Item</b>	<b>Acceptance criteria for epoxy-based systems applied according to table 1 of this standard</b>	<b>Acceptance criteria for alternative systems</b>
Blisters on panel	No blisters	No blisters
Rust on panel	Ri 0 (0%)	Ri 0 (0%)
Number of pinholes	0	0
Adhesive failure	> 3.5 MPa  Adhesive failure between substrate and coating or between coats for 60% or more of the areas	> 5 MPa  Adhesive failure between substrate and coating or between coats for 60% or more of the areas
Cohesive failure	> 3 MPa  Cohesive failure in coating for 40% or more of the area	> 5 MPa  Cohesive failure in coating for 40% or more of the area

3.3.2 Epoxy-based systems tested prior to the date of adoption of this Standard should satisfy only the criteria for blistering and rust in the table above.

3.3.3 Epoxy-based systems tested when applied according to table 1 of this Standard should satisfy the criteria for epoxy-based systems as indicated in the table above.

3.3.4 Alternative systems not necessarily epoxy-based and/or not necessarily applied according to table 1 of this Standard should satisfy the criteria for alternative systems as indicated in the table above.

### 3.4 Test report

The test report should include the following information:

- .1 name of the manufacturer;
- .2 date of tests;
- .3 product name/identification of both paint and primer;
- .4 batch number;

- .5 data of surface preparation on steel panels, including the following:
  - .1 surface treatment;
  - .2 water soluble salts limit;
  - .3 dust; and
  - .4 abrasive inclusions;
  
- .6 application data of coating system, including the following:
  - .1 shop primed;
  - .2 number of coats;
  - .3 recoat interval<sup>15</sup>;
  - .4 dry film thickness (DFT) prior to testing<sup>15</sup>;
  - .5 thinner<sup>15</sup>;
  - .6 humidity<sup>15</sup>;
  - .7 air temperature<sup>15</sup>; and
  - .8 steel temperature;
  
- .7 test results according to section 2; and
  
- .8 judgment according to section 3.

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<sup>15</sup> Both of actual specimen data and manufacturer's requirement/recommendation.

ANNEX 2

EXAMPLE OF DAILY LOG AND NON-CONFORMITY REPORT

DAILY LOG

Sheet No:

<b>Ship:</b>		<b>Void No:</b>		<b>Database:</b>					
<b>Part of structure:</b>									
<b>SURFACE PREPARATION</b>									
<b>Method:</b>					<b>Area (m<sup>2</sup>):</b>				
<b>Abrasive:</b>					<b>Grain size:</b>				
<b>Surface temperature:</b>					<b>Air temperature:</b>				
<b>Relative humidity (max):</b>					<b>Dew point:</b>				
<b>Standard achieved:</b>									
<b>Rounding of edges:</b>									
<b>Comments:</b>									
<b>Job No.:</b>			<b>Date:</b>			<b>Signature:</b>			
<b>COATING APPLICATION:</b>									
<b>Method:</b>									
Coat No.	System	Batch No.	Date	Air temp.	Surf temp.	RH%	Dew point	DFT* Meas.*	Specified
* Measured minimum and maximum DFT. DFT readings to be attached to daily log									
<b>Comments:</b>									
<b>Job No:</b>			<b>Date:</b>			<b>Signature:</b>			

**NON-CONFORMITY REPORT**

**Sheet No:**

<b>Ship:</b>	<b>Void No:</b>	<b>Database:</b>
<b>Part of structure:</b>		
<b>DESCRIPTION OF THE INSPECTION FINDINGS TO BE CORRECTED</b>		
<b>Description of findings:</b>		
<b>Reference document (daily log):</b>		
<b>Action taken:</b>		
<b>Job No.:</b>	<b>Date:</b>	<b>Signature:</b>



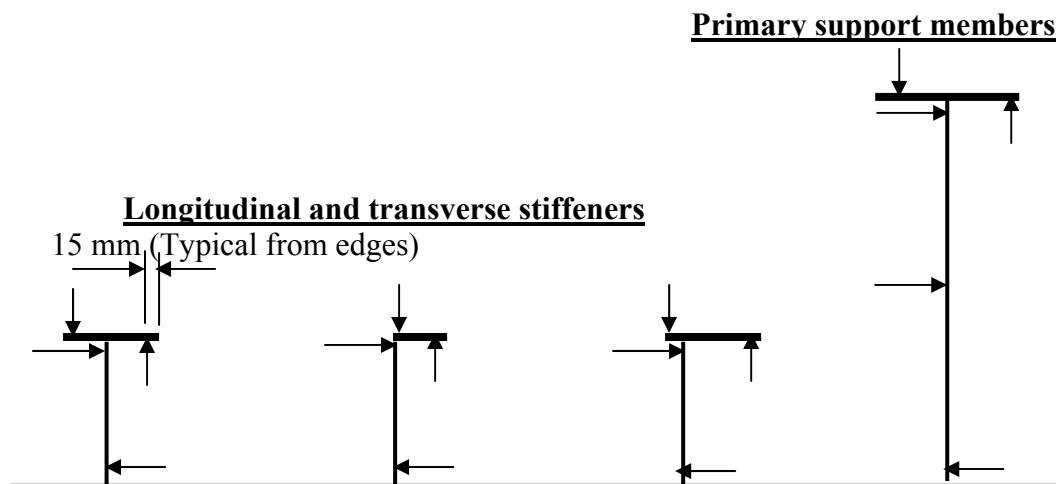
## ANNEX 3

### DRY FILM THICKNESS MEASUREMENTS

The following verification check points of DFT should be taken:

- .1 one gauge reading per 5 m<sup>2</sup> of flat surface areas;
- .2 one gauge reading at 2 to 3 m intervals and as close as possible to tank boundaries, but not further than 15 mm from edges of tank boundaries;
- .3 longitudinal and transverse stiffener members:

One set of gauge readings as shown below, taken at 2 to 3 m run and not less than two sets between primary support members;



**Figure 2**

**Note:** Arrows of diagram indicate critical areas and should be understood to mean indication for both sides.

- .4 three gauge readings for each set of primary support members and two gauge readings for each set of other members as indicated by the arrows in the diagram;
- .5 for primary support members (girders and transverses) one set of gauge readings for 2 to 3 m run as shown in figure 3 above but not less than three sets;
- .6 around openings one gauge reading from each side of the opening;
- .7 five gauge readings per square metre (m<sup>2</sup>) but not less than three gauge readings taken at complex areas (i.e. large brackets of primary support members); and
- .8 additional spot checks should be taken to verify coating thickness for any area considered necessary by the coating inspector.

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## ANNEX 11

**DRAFT SOLAS REGULATION II-1/3-9 (MEANS OF  
EMBARKATION ON, AND DISEMBARKATION FROM, SHIPS)****CHAPTER II-1****CONSTRUCTION – STRUCTURE, SUBDIVISION AND STABILITY, MACHINERY  
AND ELECTRICAL INSTALLATIONS**

- 1 The following new regulation 3-9 is added after the existing regulation II-1/3-8:

**“Regulation 3-9****Means of embarkation on and disembarkation from ships**

1 Ships constructed on or after [date of entry into force] shall be provided with means of embarkation on and disembarkation from ships for use in port and in port-related or pilotage operations, such as gangways and accommodation ladders, in accordance with paragraph 2, unless the Administration deems that compliance with a particular provision is unreasonable or impractical\*.

2 The means of embarkation and disembarkation required in paragraph 1 shall be constructed and installed based on the guidelines developed by the Organization.\*\*

3 For all ships the means of embarkation and disembarkation shall be inspected and maintained\*\* in suitable condition for their intended purpose, taking into account any restrictions related to safe loading. All wires used to support the means of embarkation and disembarkation shall be maintained as specified in regulation III/20.4.”

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\* Circumstances where compliance may be deemed unreasonable or impractical may include where the ship:

- .1 has small freeboards and is provided with boarding ramps; or
- .2 is engaged in voyages between designated ports where appropriate shore accommodation/embarkation ladders (platforms) are provided.

\*\* Refer to the Guidelines for construction, maintenance and inspection of accommodation ladders and gangways (MSC.1/Circ....).



**ANNEX 12****DRAFT AMENDMENTS TO SOLAS REGULATION II-1/3-4  
(EMERGENCY TOWING ARRANGEMENTS ON TANKERS)****CHAPTER II-1  
CONSTRUCTION – STRUCTURE, SUBDIVISIONS AND STABILITY, MACHINERY  
AND ELECTRICAL INSTALLATIONS****Regulation 3-4 – Emergency towing arrangements on tankers**

- 1 The existing title of the regulation is replaced by the following:  
**“Emergency towing arrangements and procedures”**
- 2 The existing paragraphs 1 to 3 are replaced by the following:  
**“1 Emergency towing arrangements on tankers**
  - 1.1 Emergency towing arrangements shall be fitted at both ends on board every tanker of not less than 20,000 tonnes deadweight.
  - 1.2 For tankers constructed on or after 1 July 2002:
    - .1 the arrangements shall, at all times, be capable of rapid deployment in the absence of main power on the ship to be towed and easy connection to the towing ship. At least one of the emergency towing arrangements shall be pre-rigged ready for rapid deployment; and
    - .2 emergency towing arrangements at both ends shall be of adequate strength taking into account the size and deadweight of the ship, and the expected forces during bad weather conditions. The design and construction and prototype testing of emergency towing arrangements shall be approved by the Administration, based on the Guidelines developed by the Organization\*.
  - 1.3 For tankers constructed before 1 July 2002, the design and construction of emergency towing arrangements shall be approved by the Administration, based on the Guidelines developed by the Organization\*.
- 2 Emergency towing procedures on ships**
  - 2.1 This paragraph applies to:
    - .1 all passenger ships not later than 1 January 2010;

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\* Refer to the Guidelines on emergency towing arrangements for tankers, adopted by the Maritime Safety Committee by resolution MSC.35(63), as may be amended.

- .2 cargo ships constructed on or after 1 January 2010; and
- .3 cargo ships constructed before 1 January 2010 not later than 1 January 2012.

2.2 Ships shall be provided with a ship-specific emergency towing procedure. Such a procedure shall be carried aboard the ship for use in emergency situations and shall be based on existing arrangements and equipment available on board the ship.

2.3 The procedure\* shall include:

- .1 drawings of fore and aft deck showing possible emergency towing arrangements;
- .2 inventory of equipment on board that can be used for emergency towing;
- .3 means and methods of communication; and
- .4 sample procedures to facilitate the preparation for and conducting of emergency towing operations.”

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\* Refer to the Guidelines for owners/operators on preparing for emergency towing procedures (MSC.1/Circ....).

**ANNEX 13****DRAFT MSC RESOLUTION****ADOPTION OF THE INTERNATIONAL CODE ON INTACT STABILITY, 2008  
(2008 IS CODE)**

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.749(18) entitled “Code on Intact Stability for All Types of Ships Covered by IMO Instruments”, as amended by resolution MSC.75(69),

RECOGNIZING the need to update the aforementioned Code and the importance of establishing mandatory international intact stability requirements,

NOTING resolution MSC...[(85)], by which it adopted, *inter alia*, amendments to the International Convention for the Safety of Life at Sea, 1974, as amended (1974 SOLAS Convention) and to the Protocol of 1988 relating to the International Convention on Load Lines, 1966, (1988 LL Protocol) to make the introduction and the provisions of part A of the International Code on Intact Stability, 2008 mandatory under the Convention and the Protocol,

HAVING CONSIDERED, at its [eighty-fifth] session, the text of the proposed International Code on Intact Stability, 2008,

1. ADOPTS the International Code on Intact Stability, 2008 (2008 IS Code), the text of which is set out in the Annex to the present resolution;
2. INVITES Contracting Governments to the 1974 SOLAS Convention and Parties to the 1988 LL Protocol to note that the 2008 IS Code will take effect on [1 July 2010] upon the entry into force of the respective amendments to the 1974 SOLAS Convention and 1988 LL Protocol;
3. REQUESTS the Secretary-General to transmit certified copies of the present resolution and the text of the 2008 IS Code contained in the Annex to all Contracting Governments to the 1974 SOLAS Convention and Parties to the 1988 LL Protocol;
4. FURTHER REQUESTS the Secretary-General to transmit copies of this resolution and the Annex to all Members of the Organization which are not Contracting Governments to the 1974 SOLAS Convention and Parties to the 1988 LL Protocol;
5. RECOMMENDS Governments concerned to use the recommendatory provisions contained in part B of the 2008 IS Code as a basis for relevant safety standards, unless their national stability requirements provide at least an equivalent degree of safety.

ANNEX

**INTERNATIONAL CODE ON INTACT STABILITY, 2008  
(2008 IS CODE)**

**CONTENTS**

<b>PREAMBLE</b> .....	5
<b>INTRODUCTION</b> .....	6
1    Purpose.....	6
2    Definitions.....	6
<b>PART A – MANDATORY CRITERIA</b> .....	11
<b>Chapter 1 – General</b> .....	11
1.1    Application.....	11
1.2    Dynamic stability phenomena in waves .....	11
<b>Chapter 2 – General criteria</b> .....	12
2.1    General.....	12
2.2    Criteria regarding righting lever curve properties .....	12
2.3    Severe wind and rolling criterion (weather criterion).....	13
<b>Chapter 3 – Special criteria for certain types of ships</b> .....	18
3.1    Passenger ships .....	18
3.2    Oil tankers of 5,000 dwt and above .....	19
3.3    Cargo ships carrying timber deck cargoes .....	19
3.4    Cargo ships carrying grain in bulk.....	19
3.5    High-speed craft.....	20
<b>PART B – RECOMMENDATIONS FOR CERTAIN TYPES OF SHIPS AND ADDITIONAL GUIDELINES</b> .....	21
<b>Chapter 1 – General</b> .....	21
1.1    Purpose.....	21
1.2    Application.....	21
<b>Chapter 2 – Recommended design criteria for certain types of ships</b> .....	22
2.1    Fishing vessels .....	22
2.2    Pontoons.....	24
2.3    Containerships greater than 100 m .....	26
2.4    Offshore supply vessels .....	28
2.5    Special purpose ships.....	30
2.6    Mobile offshore drilling units (MODUs).....	31



<b>Chapter 3 – Guidance in preparing stability information .....</b>	<b>41</b>
3.1 Effect of free surfaces of liquids in tanks .....	41
3.2 Permanent ballast .....	42
3.3 Assessment of compliance with stability criteria.....	43
3.4 Standard conditions of loading to be examined.....	43
3.5 Calculation of stability curves .....	46
3.6 Stability booklet.....	47
3.7 Operational measures for ships carrying timber deck cargoes .....	49
3.8 Operating booklets for certain ships .....	51
<b>Chapter 4 – Stability calculations performed by stability instruments.....</b>	<b>52</b>
4.1 Stability instruments .....	52
<b>Chapter 5 – Operational provisions against capsizing.....</b>	<b>58</b>
5.1 General precautions against capsizing .....	58
5.2 Operational precautions in heavy weather.....	58
5.3 Ship handling in heavy weather.....	59
<b>Chapter 6 – Icing considerations .....</b>	<b>61</b>
6.1 General.....	61
6.2 Cargo ships carrying timber deck cargoes.....	61
6.3 Fishing vessels .....	61
6.4 Offshore supply vessels 24 m to 100 m in length.....	64
<b>Chapter 7 – Considerations for watertight and weathertight integrity.....</b>	<b>65</b>
7.1 Hatchways.....	65
7.2 Machinery space openings.....	66
7.3 Doors.....	66
7.4 Cargo ports and other similar openings .....	67
7.5 Sidescuttles, window scuppers, inlets and discharges .....	67
7.6 Other deck openings .....	69
7.7 Ventilators, air pipes and sounding devices.....	69
7.8 Freeing ports .....	71
7.9 Miscellaneous .....	72
<b>Chapter 8 – Determination of lightship parameters.....</b>	<b>73</b>
8.1 Application.....	73
8.2 Preparations for the inclining test .....	74
8.3 Plans required.....	76
8.4 Test procedure.....	76
8.5 Inclining test for MODUs .....	77
8.6 Stability test for pontoons .....	78

<b>Annex 1 – Detailed guidance for the conduct of an inclining test.....</b>	<b>79</b>
1 Introduction.....	79
2 Preparations for the inclining test.....	79
2.1 Free surface and tankage.....	79
2.2 Mooring arrangements.....	81
2.3 Test weights.....	82
2.4 Pendulums.....	83
2.5 U-tubes.....	85
2.6 Inclometers.....	85
3 Equipment required.....	86
4 Test procedure.....	86
4.1 Initial walk through and survey.....	87
4.2 Freeboard/draught readings.....	88
4.3 The incline.....	89
<b>Annex 2 – Recommendations for skippers of fishing vessels on ensuring a vessel’s endurance in conditions of ice formation.....</b>	<b>93</b>
1 Prior to departure.....	93
2 At sea.....	94
3 During ice formation.....	95
4 List of equipment and hand tools.....	97

## **PREAMBLE**

1 This Code has been assembled to provide, in a single document, mandatory requirements in the introduction and in part A and recommended provisions in part B relating to intact stability, based primarily on existing IMO instruments. Where recommendations in this Code appear to differ from other IMO Codes, the other Codes should be taken as the prevailing instrument. For the sake of completeness and for the convenience of the user, this Code also contains relevant provisions from mandatory IMO instruments.

2 Criteria included in the Code are based on the best “state-of-the-art” concepts, available at the time they were developed, taking into account sound design and engineering principles and experience gained from operating ships. Furthermore, design technology for modern ships is rapidly evolving and the Code should not remain static but should be re-evaluated and revised, as necessary. To this end, the Organization will periodically review the Code taking into consideration both experience and further development.

3 A number of influences such as the dead ship condition, wind on ships with large windage area, rolling characteristics, severe seas, etc., were taken into account based on the state-of-the-art technology and knowledge at the time of the development of the Code.

4 It was recognized that in view of a wide variety of types, sizes of ships and their operating and environmental conditions, problems of safety against accidents related to stability have generally not yet been solved. In particular, the safety of a ship in a seaway involves complex hydrodynamic phenomena which up to now have not been fully investigated and understood. Motion of ships in a seaway should be treated as a dynamical system and relationships between ship and environmental conditions like wave and wind excitations are recognized as extremely important elements. Based on hydrodynamic aspects and stability analysis of a ship in a seaway, stability criteria development poses complex problems that require further research.

## INTRODUCTION

### 1 Purpose

1.1 The purpose of the Code is to present mandatory and recommendatory stability criteria and other measures for ensuring the safe operation of ships, to minimize the risk to such ships, to the personnel on board and to the environment. This introduction and part A of the Code address the mandatory criteria and part B contains recommendations and additional guidelines.

1.2 This Code contains intact stability criteria for the following types of ships and other marine vehicles of 24 m in length and above unless otherwise stated:

- .1 cargo ships;
- .2 cargo ships carrying timber deck cargoes;
- .3 passenger ships;
- .4 fishing vessels;
- .5 special purpose ships;
- .6 offshore supply vessels;
- .7 mobile offshore drilling units;
- .8 pontoons; and
- .9 cargo ships carrying containers on deck and containerships.

1.3 Administrations may impose additional requirements regarding the design aspects of ships of novel design or ships not otherwise covered by the Code.

### 2 Definitions

For the purpose of this Code the definitions given hereunder shall apply. For terms used, but not defined in this Code, the definitions as given in the 1974 SOLAS Convention as amended shall apply.

2.1 *Administration* means the Government of the State whose flag the ship is entitled to fly.

2.2 *Passenger ship* is a ship which carries more than twelve passengers as defined in regulation I/2 of the 1974 SOLAS Convention, as amended.

2.3 *Cargo ship* is any ship which is not a passenger ship, a ship of war and troopship, a ship which is not propelled by mechanical means, a wooden ship of primitive build, a fishing vessel and a mobile offshore drilling unit.

2.4 *Oil tanker* means a ship constructed or adapted primarily to carry oil in bulk in its cargo spaces and includes combination carriers and any chemical tanker as defined in Annex II of the MARPOL Convention when it is carrying a cargo or part cargo of oil in bulk.

2.4.1 *Combination carrier* means a ship designed to carry either oil or solid cargoes in bulk.

2.4.2 *Crude oil tanker* means an oil tanker engaged in the trade of carrying crude oil.

2.4.3 *Product carrier* means an oil tanker engaged in the trade of carrying oil other than crude oil.

2.5 *Fishing vessel* is a vessel used for catching fish, whales, seals, walrus or other living resources of the sea.

2.6 *Special purpose ship* means a mechanically self-propelled ship which, by reason of its function, carries on board more than 12 special personnel as defined in paragraph 1.3.3 of the Code of Safety for Special Purpose Ships (resolution A.534(13)), including passengers (ships engaged in research, expeditions and survey; ships for training of marine personnel; whale and fish factory ships not engaged in catching; ships processing other living resources of the sea, not engaged in catching or other ships with design features and modes of operation similar to ships mentioned above which, in the opinion of the Administration may be referred to this group).

2.7 *Offshore supply vessel* means a vessel which is engaged primarily in the transport of stores, materials and equipment to offshore installations and designed with accommodation and bridge erections in the forward part of the vessel and an exposed cargo deck in the after part for the handling of cargo at sea.

2.8 *Mobile offshore drilling unit* (MODU or unit) is a ship capable of engaging in drilling operations for the exploration or exploitation of resources beneath the sea-bed such as liquid or gaseous hydrocarbons, sulphur or salt.

2.8.1 *Column-stabilized unit* is a unit with the main deck connected to the underwater hull or footings by columns or caissons.

2.8.2 *Surface unit* is a unit with a ship- or barge-type displacement hull of single or multiple hull construction intended for operation in the floating condition.

2.8.3 *Self-elevating unit* is a unit with moveable legs capable of raising its hull above the surface of the sea.

2.8.4 *Coastal State* means the Government of the State exercising administrative control over the drilling operations of the unit.

2.8.5 *Mode of operation* means a condition or manner in which a unit may operate or function while on location or in transit. The modes of operation of a unit include the following:

- .1 *operating conditions* means conditions wherein a unit is on location for the purpose of conducting drilling operations, and combined environmental and operational loadings are within the appropriate design limits established for such operations. The unit may be either afloat or supported on the sea-bed, as applicable;
- .2 *severe storm conditions* means conditions wherein a unit may be subjected to the most severe environmental loadings for which the unit is designed. Drilling

operations are assumed to have been discontinued due to the severity of the environmental loadings, the unit may be either afloat or supported on the sea-bed, as applicable; and

.3 *transit conditions* means conditions wherein a unit is moving from one geographical location to another.

2.9 *High-speed craft* (HSC)<sup>1</sup> is a craft capable of a maximum speed, in metres per second (m/s), equal to or exceeding:

$$3.7 * \nabla^{0.1667}$$

where:  $\nabla$  = displacement corresponding to the design waterline (m<sup>3</sup>).

2.10 *Containership* means a ship which is used primarily for the transport of marine containers.

2.11 *Freeboard* is the distance between the assigned load line and freeboard deck<sup>2</sup>.

2.12 *Length of ship*. The length should be taken as 96% of the total length on a waterline at 85% of the least moulded depth measured from the top of the keel, or as the length from the fore side of the stem to the axis of the rudder stock on the waterline, if that be greater. In ships designed with a rake of keel the waterline on which this length is measured should be parallel to the designed waterline.

2.13 *Moulded breadth* is the maximum breadth of the ship measured amidships to the moulded line of the frame in a ship with a metal shell and to the outer surface of the hull in a ship with a shell of any other material.

2.14 *Moulded depth* is the vertical distance measured from the top of the keel to the top of the freeboard deck beam at side. In wood and composite ships, the distance is measured from the lower edge of the keel rabbet. Where the form at the lower part of the midship section is of a hollow character, or where thick garboards are fitted, the distance is measured from the point where the line of the flat of the bottom continued inwards cuts the side of the keel. In ships having rounded gunwales, the moulded depth should be measured to the point of intersection of the moulded lines of the deck and side shell plating, the lines extending as though the gunwale were of angular design. Where the freeboard deck is stepped and the raised part of the deck extends over the point at which the moulded depth is to be determined, the moulded depth should be measured to a line of reference extending from the lower part of the deck along a line parallel with the raised part.

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<sup>1</sup> The Code of Safety for High-Speed Craft, 2000 (2000 HSC Code) has been developed following a thorough revision of the Code of Safety for High-Speed Craft, 1994 (1994 HSC Code) which was derived from the previous Code of Safety for Dynamically Supported Craft (DSC Code) adopted by IMO in 1977, recognizing that safety levels can be significantly enhanced by the infrastructure associated with regular service on a particular route, whereas the conventional ship safety philosophy relies on the ship being self-sustaining with all necessary emergency equipment being carried on board.

<sup>2</sup> For the purposes of application of chapters I and II of Annex I of the International Convention on Load Lines, 1966 or the Protocol of 1988 as amended, as applicable to open-top containerships, "freeboard deck" is the freeboard deck according to the International Convention on Load Lines, 1966 or the Protocol of 1988 as amended, as applicable as if hatch covers are fitted on top of the hatch cargo coamings.

2.15 *Near-coastal voyage* means a voyage in the vicinity of the coast of a State as defined by the Administration of that State.

2.16 *Pontoon* is considered to be normally:

- .1 non self-propelled;
- .2 unmanned;
- .3 carrying only deck cargo;
- .4 having a block coefficient of 0.9 or greater;
- .5 having a breadth/depth ratio of greater than 3; and
- .6 having no hatchways in the deck except small manholes closed with gasketed covers.

2.17 *Timber* means sawn wood or lumber, cants, logs, poles, pulpwood and all other types of timber in loose or packaged forms. The term does not include wood pulp or similar cargo.

2.18 *Timber deck cargo* means a cargo of timber carried on an uncovered part of a freeboard or superstructure deck. The term does not include wood pulp or similar cargo.<sup>3</sup>

2.19 *Timber load line* means a special load line assigned to ships complying with certain conditions related to their construction set out in the International Convention on Load Lines and used when the cargo complies with the stowage and securing conditions of the Code of Safe Practice for Ships Carrying Timber Deck Cargoes, 1991 (resolution A.715(17)).

2.20 *Certification of the inclining test weights* is the verification of the weight marked on a test weight. Test weights should be certified using a certificated scale. The weighing should be performed close enough in time to the inclining test to ensure the measured weight is accurate.

2.21 *Draught* is the vertical distance from the moulded baseline to the waterline.

2.22 The *inclining test* involves moving a series of known weights, normally in the transverse direction, and then measuring the resulting change in the equilibrium heel angle of the ship. By using this information and applying basic naval architecture principles, the ship's vertical centre of gravity (VCG) is determined.

2.23 *Lightship condition* is a ship complete in all respects, but without consumables, stores, cargo, crew and effects, and without any liquids on board except that machinery and piping fluids, such as lubricants and hydraulics, are at operating levels.

2.24 A *lightweight survey* involves taking an audit of all items which should be added, deducted or relocated on the ship at the time of the inclining test so that the observed condition of

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<sup>3</sup> Refer to regulation 42(1) of the International Convention on Load Lines, 1966 or the Protocol of 1988 as amended, as applicable.

the ship can be adjusted to the lightship condition. The mass, longitudinal, transverse and vertical location of each item should be accurately determined and recorded. Using this information, the static waterline of the ship at the time of the inclining test as determined from measuring the freeboard or verified draught marks of the ship, the ship's hydrostatic data, and the sea water density, the lightship displacement and longitudinal centre of gravity (LCG) can be obtained. The transverse centre of gravity (TCG) may also be determined for mobile offshore drilling units (MODUs) and other ships which are asymmetrical about the centreline or whose internal arrangement or outfitting is such that an inherent list may develop from off-centre mass.

2.25 An *in-service inclining test* means an inclining test which is performed in order to verify the pre-calculated  $GM_C$  and the deadweight's centre of gravity of an actual loading condition.

2.26 A *Stability Instrument* is an instrument installed on board a particular ship by means of which it can be ascertained that stability requirements specified for the ship in Stability Booklet are met in any operational loading condition. A Stability Instrument comprises hardware and software.



## **PART A MANDATORY CRITERIA**

### **CHAPTER 1 – GENERAL**

#### **1.1 Application**

1.1.1 The criteria stated under chapter 2 of this part present a set of minimum requirements that shall apply to cargo<sup>4</sup> and passenger ships of 24 m in length and over.

1.1.2 The criteria stated under chapter 3 are special criteria for certain types of ships. For the purpose of part A the definitions given in the Introduction apply.

#### **1.2 Dynamic stability phenomena in waves**

Administrations shall be aware that some ships are more at risk of encountering critical stability situations in waves. Necessary precautionary provisions may need to be taken in the design to address the severity of such phenomena. The phenomena in seaways which may cause large roll angles and/or accelerations have been identified hereunder.

Having regard to the phenomena described in this section, the Administration may for a particular ship or group of ships apply criteria demonstrating that the safety of the ship is sufficient. Any Administration which applies such criteria should communicate to the Organization particulars thereof. It is recognized by the Organization that performance oriented criteria for the identified phenomena listed in this section need to be developed and implemented to ensure a uniform international level of safety.

##### **1.2.1 *Righting lever variation***

Any ship exhibiting large righting lever variations between wave trough and wave crest condition may experience parametric roll or pure loss of stability or combinations thereof.

##### **1.2.2 *Resonant roll in dead ship condition***

Ships without propulsion or steering ability may be endangered by resonant roll while drifting freely.

##### **1.2.3 *Broaching and other manoeuvring related phenomena***

Ships in following and quartering seas may not be able to keep constant course despite maximum steering efforts which may lead to extreme angles of heel.

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<sup>4</sup> For container ships of 100 m in length and over, provisions of chapter 2.3 of part B may be applied as an alternative to the application of chapter 2.2 of this part. Offshore supply vessels and special purpose ships are not required to comply with provisions of chapter 2.3 of part A. For offshore supply vessels, provisions of chapter 2.4 of part B may be applied as an alternative to the application of chapter 2.2 of this part. For special purpose ships, provisions of chapter 2.5 of part B may be applied as an alternative to the application of chapter 2.2 of this part.

## CHAPTER 2 – GENERAL CRITERIA

### 2.1 General

2.1.1 All criteria shall be applied for all conditions of loading as set out in part B, 3.3 and 3.4.

2.1.2 Free surface effects (part B, 3.1) shall be accounted for in all conditions of loading as set out in part B, 3.3 and 3.4.

2.1.3 Where anti-rolling devices are installed in a ship, the Administration shall be satisfied that the criteria can be maintained when the devices are in operation and that failure of power supply or the failure of the device(s) will not result in the vessel being unable to meet the relevant provisions of this Code.

2.1.4 A number of influences such as icing of topsides, water trapped on deck, etc., adversely affect stability and the Administration is advised to take these into account, so far as is deemed necessary.

2.1.5 Provisions shall be made for a safe margin of stability at all stages of the voyage, regard being given to additions of weight, such as those due to absorption of water and icing (details regarding ice accretion are given in part B, chapter 6 – Icing considerations) and to losses of weight such as those due to consumption of fuel and stores.

2.1.6 Each ship shall be provided with a stability booklet, approved by the Administration, which contains sufficient information (see part B, 3.6) to enable the master to operate the ship in compliance with the applicable requirements contained in the Code. If a stability instrument is used as a supplement to the stability booklet for the purpose of determining compliance with the relevant stability criteria such instrument shall be subject to the approval by the Administration (see part B, chapter 4 – Stability calculations performed by stability instruments).

2.1.7 If curves or tables of minimum operational metacentric height (GM) or maximum centre of gravity (VCG) are used to ensure compliance with the relevant intact stability criteria those limiting curves shall extend over the full range of operational trims, unless the Administration agrees that trim effects are not significant. When curves or tables of minimum operational metacentric height (GM) or maximum centre of gravity (VCG) versus draught covering the operational trims are not available, the master must verify that the operating condition does not deviate from a studied loading condition, or verify by calculation that the stability criteria are satisfied for this loading condition taking into account trim effects.

### 2.2 Criteria regarding righting lever curve properties

2.2.1 The area under the righting lever curve (GZ curve) shall not be less than 0.055 metre-radians up to  $\varphi = 30^\circ$  angle of heel and not less than 0.09 metre-radians up to  $\varphi = 40^\circ$  or the angle of down-flooding  $\varphi_f^5$  if this angle is less than  $40^\circ$ . Additionally, the area under the righting lever curve (GZ curve) between the angles of heel of  $30^\circ$  and  $40^\circ$  or between  $30^\circ$  and  $\varphi_f$ , if this angle is less than  $40^\circ$ , shall not be less than 0.03 metre-radians.

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<sup>5</sup>  $\varphi_f$  is an angle of heel at which openings in the hull, superstructures or deckhouses which cannot be closed weathertight immerse. In applying this criterion, small openings through which progressive flooding cannot take place need not be considered as open.

2.2.2 The righting lever GZ shall be at least 0.2 m at an angle of heel equal to or greater than 30°.

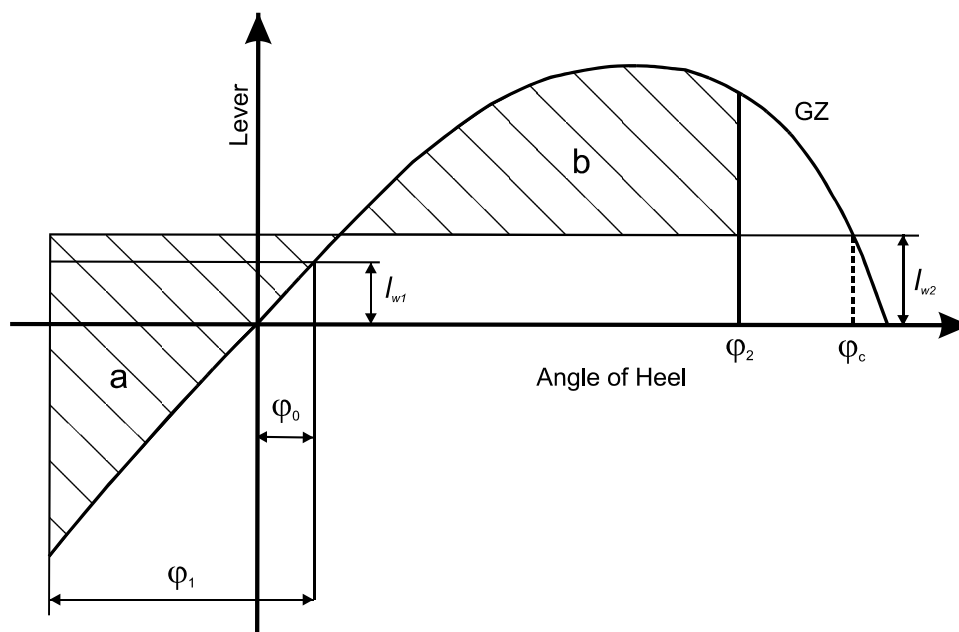
2.2.3 The maximum righting lever shall occur at an angle of heel not less than 25°. If this is not practicable, alternative criteria, based on an equivalent level of safety<sup>6</sup>, may be applied subject to the approval of the Administration.

2.2.4 The initial metacentric height  $GM_0$  shall not be less than 0.15 m.

### 2.3 Severe wind and rolling criterion (weather criterion)

2.3.1 The ability of a ship to withstand the combined effects of beam wind and rolling shall be demonstrated, with reference to the figure 2.3.1 as follows:

- .1 the ship is subjected to a steady wind pressure acting perpendicular to the ship's centreline which results in a steady wind heeling lever ( $l_{w1}$ );
- .2 from the resultant angle of equilibrium ( $\varphi_0$ ), the ship is assumed to roll owing to wave action to an angle of roll ( $\varphi_1$ ) to windward. The angle of heel under action of steady wind ( $\varphi_0$ ) should not exceed 16° or 80% of the angle of deck edge immersion, whichever is less;
- .3 the ship is then subjected to a gust wind pressure which results in a gust wind heeling lever ( $l_{w2}$ ); and
- .4 under these circumstances, area  $b$  shall be equal to or greater than area  $a$ , as indicated in figure 2.3.1 below:



**Figure 2.3.1 – Severe wind and rolling**

<sup>6</sup> Refer to the Explanatory Notes to the International Code on Intact Stability, 2008 (MSC.1/Circ.[...]).

where the angles in figure 2.3.1 are defined as follows:

$\varphi_0$  = angle of heel under action of steady wind

$\varphi_1$  = angle of roll to windward due to wave action (see 2.3.1.2, 2.3.4 and footnote 6)

$\varphi_2$  = angle of down-flooding ( $\varphi_f$ ) or  $50^\circ$  or  $\varphi_c$ , whichever is less,

where:

$\varphi_f$  = angle of heel at which openings in the hull, superstructures or deckhouses which cannot be closed weathertight immerse. In applying this criterion, small openings through which progressive flooding cannot take place need not be considered as open.

$\varphi_c$  = angle of second intercept between wind heeling lever  $l_{w2}$  and GZ curves.

2.3.2 The wind heeling levers  $l_{w1}$  and  $l_{w2}$  referred to in 2.3.1.1 and 2.3.1.3 are constant values at all angles of inclination and shall be calculated as follows:

$$l_{w1} = \frac{P * A * Z}{1000 * g * \Delta} \quad (m) \quad \text{and}$$

$$l_{w2} = 1.5 * l_{w1} \quad (m)$$

where:

$P$  = wind pressure of 504 Pa. The value of  $P$  used for ships in restricted service may be reduced subject to the approval of the Administration

$A$  = projected lateral area of the portion of the ship and deck cargo above the waterline ( $m^2$ )

$Z$  = vertical distance from the centre of  $A$  to the centre of the underwater lateral area or approximately to a point at one half the mean draught (m)

$\Delta$  = displacement (t)

$g$  = gravitational acceleration of  $9.81 \text{ m/s}^2$

2.3.3 Alternative means for determining the wind heeling lever ( $l_{w1}$ ) may be accepted, to the satisfaction of the Administration, as an equivalent to calculation in 2.3.2. When such alternative tests are carried out, reference shall be made based on the Guidelines developed by the Organization<sup>7</sup>. The wind velocity used in the tests shall be 26 m/s in full scale with uniform velocity profile. The value of wind velocity used for ships in restricted services may be reduced to the satisfaction of the Administration.

<sup>7</sup> Refer to the Interim Guidelines for alternative assessment of the weather criterion (MSC.1/Circ.1200).

2.3.4 The angle of roll ( $\varphi_1$ )<sup>8</sup> referred to in 2.3.1.2 shall be calculated as follows:

$$\varphi_1 = 109 * k * X_1 * X_2 * \sqrt{r * s} \quad (\text{degrees})$$

where:

$X_1$  = factor as shown in table 2.3.4-1

$X_2$  = factor as shown in table 2.3.4-2

$k$  = factor as follows:

$k$  = 1.0 for round-bilged ship having no bilge or bar keels

$k$  = 0.7 for a ship having sharp bilges

$k$  = as shown in table 2.3.4-3 for a ship having bilge keels, a bar keel or both

$$r = 0.73 + 0.6 OG/d$$

with:

$$OG = KG - d$$

$d$  = mean moulded draught of the ship (m)

$s$  = factor as shown in table 2.3.4-4, where  $T$  is the ship roll natural period. In absence of sufficient information, the following approximate formula can be used:

$$\text{Rolling period} \quad T = \frac{2 * C * B}{\sqrt{GM}} \quad (s)$$

where:

$$C = 0.373 + 0.023(B/d) - 0.043(L_{wl}/100).$$

The symbols in tables 2.3.4-1, 2.3.4-2, 2.3.4-3 and 2.3.4-4 and the formula for the rolling period are defined as follows:

$L_{wl}$  = length of the ship at waterline (m)

$B$  = moulded breadth of the ship (m)

<sup>8</sup> The angle of roll for ships with anti-rolling devices should be determined without taking into account the operation of these devices unless the Administration is satisfied with the proof that the devices are effective even with sudden shutdown of their supplied power.

$d$  = mean moulded draught of the ship (m)

$C_B$  = block coefficient (-)

$A_k$  = total overall area of bilge keels, or area of the lateral projection of the bar keel, or sum of these areas (m<sup>2</sup>)

$GM$  = metacentric height corrected for free surface effect (m).

**Table 2.3.4-1 – Values of factor  $X_1$**

B/d	$X_1$
≤ 2.4	1.0
2.5	0.98
2.6	0.96
2.7	0.95
2.8	0.93
2.9	0.91
3.0	0.90
3.1	0.88
3.2	0.86
3.4	0.82
≥ 3.5	0.80

**Table 2.3.4-2 – Values of factor  $X_2$**

$C_B$	$X_2$
≤ 0.45	0.75
0.50	0.82
0.55	0.89
0.60	0.95
0.65	0.97
≥ 0.70	1.00

**Table 2.3.4-3 – Values of factor  $k$**

$\frac{A_k \times 100}{L_{WL} \times B}$	$k$
0	1.0
1.0	0.98
1.5	0.95
2.0	0.88
2.5	0.79
3.0	0.74
3.5	0.72
≥ 4.0	0.70

**Table 2.3.4-4 – Values of factor  $s$**

$T$	$s$
$\leq 6$	0.100
7	0.098
8	0.093
12	0.065
14	0.053
16	0.044
18	0.038
$\geq 20$	0.035

(Intermediate values in these tables shall be obtained by linear interpolation)

2.3.5 The tables and formulae described in 2.3.4 are based on data from ships having:

- .1  $B/d$  smaller than 3.5;
- .2  $(KG/d-1)$  between -0.3 and 0.5;
- .3  $T$  smaller than 20 s.

For ships with parameters outside of the above limits the angle of roll ( $\phi_1$ ) may be determined with model experiments of a subject ship with the procedure described in MSC.1/Circ.1200 as the alternative. In addition, the Administration may accept such alternative determinations for any ship, if deemed appropriate.

## CHAPTER 3 – SPECIAL CRITERIA FOR CERTAIN TYPES OF SHIPS

### 3.1 Passenger ships

Passenger ships shall comply with the requirements of 2.2 and 2.3.

3.1.1 In addition, the angle of heel on account of crowding of passengers to one side as defined below shall not exceed 10°.

3.1.1.1 A minimum weight of 75 kg shall be assumed for each passenger except that this value may be increased subject to the approval of the Administration. In addition, the mass and distribution of the luggage shall be approved by the Administration.

3.1.1.2 The height of the centre of gravity for passengers shall be assumed equal to:

- .1 1 m above deck level for passengers standing upright. Account may be taken, if necessary, of camber and sheer of deck; and
- .2 0.3 m above the seat in respect of seated passengers.

3.1.1.3 Passengers and luggage shall be considered to be in the spaces normally at their disposal, when assessing compliance with the criteria given in 2.2.1 to 2.2.4.

3.1.1.4 Passengers without luggage shall be considered as distributed to produce the most unfavourable combination of passenger heeling moment and/or initial metacentric height, which may be obtained in practice, when assessing compliance with the criteria given in 3.1.1 and 3.1.2, respectively. In this connection, a value higher than four persons per square metre is not necessary.

3.1.2 In addition, the angle of heel on account of turning shall not exceed 10° when calculated using the following formula:

$$M_R = 0.200 * \frac{v_0^2}{L_{WL}} * \Delta * \left( KG - \frac{d}{2} \right)$$

where:

$M_R$  = heeling moment (kNm)

$v_0$  = service speed (m/s)

$L_{WL}$  = length of ship at waterline (m)

$\Delta$  = displacement (t)

$d$  = mean draught (m)

$KG$  = height of centre of gravity above baseline (m)



### **3.2 Oil tankers of 5,000 dwt and above**

Oil tankers, as defined in the section Definitions, shall comply with regulation 27 of Annex I to MARPOL 73/78.

### **3.3 Cargo ships carrying timber deck cargoes**

Cargo ships carrying timber deck cargoes shall comply with the requirements of 2.2 and 2.3 unless the Administration is satisfied with the application of alternative provision 3.3.2.

#### **3.3.1 Scope**

The provisions given hereunder apply to all ships of 24 m in length and over engaged in the carriage of timber deck cargoes. Ships that are provided with, and make use of, their timber load line shall also comply with the requirements of regulations 41 to 45 of the 1966 Load Line Convention.

#### **3.3.2 Alternative stability criteria**

For ships loaded with timber deck cargoes and provided that the cargo extends longitudinally between superstructures (where there is no limiting superstructure at the after end, the timber deck cargo shall extend at least to the after end of the aftermost hatchway)<sup>9</sup> transversely for the full beam of ship, after due allowance for a rounded gunwale, not exceeding 4% of the breadth of the ship and/or securing the supporting uprights and which remains securely fixed at large angles of heel may be:

3.3.2.1 The area under the righting lever curve (GZ curve) shall not be less than 0.08 metre-radians up to  $\phi = 40^\circ$  or the angle of flooding if this angle is less than  $40^\circ$ .

3.3.2.2 The maximum value of the righting lever (GZ) shall be at least 0.25 m.

3.3.2.3 At all times during a voyage, the metacentric height  $GM_0$  shall not be less than 0.1 m, taking into account the absorption of water by the deck cargo and/or ice accretion on the exposed surfaces (details regarding ice accretion are given in part B, chapter 6 (Icing considerations)).

3.3.2.4 When determining the ability of the ship to withstand the combined effects of beam wind and rolling according to 2.3, the  $16^\circ$  limiting angle of heel under action of steady wind shall be complied with, but the additional criterion of 80% of the angle of deck edge immersion may be ignored.

### **3.4 Cargo ships carrying grain in bulk**

The intact stability of ships engaged in the carriage of grain shall comply with the requirements of the International Code for the Safe Carriage of Grain in Bulk adopted by resolution MSC.23(59).<sup>10</sup>

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<sup>9</sup> Refer to regulation 44(2) of the International Convention on Load Lines, 1966 or the Protocol of 1988 relating thereto as amended, as applicable.

<sup>10</sup> Refer to part C of chapter VI of the 1974 SOLAS Convention as amended by resolution MSC.23(59).

### **3.5 High-speed craft**

High-speed craft, as defined in paragraph 2 of the Introduction (Definitions), constructed on or after 1 January 1996, to which chapter X of the 1974 SOLAS Convention applies, shall comply with stability requirements of the 1994 HSC Code (resolution MSC.36(63)). Any high-speed craft to which chapter X of the 1974 SOLAS Convention applies, irrespective of its date of construction, which has undergone repairs, alterations or modifications of major character; and a high-speed craft constructed on or after 1 July 2002, shall comply with stability requirements of the 2000 HSC Code (resolution MSC.97(73)).

**PART B**  
**RECOMMENDATIONS FOR CERTAIN TYPES OF SHIPS AND ADDITIONAL**  
**GUIDELINES**

**CHAPTER 1 – GENERAL**

**1.1 Purpose**

The purpose of this part of the Code is to:

- .1 recommend stability criteria and other measures for ensuring the safe operation of certain types of ships to minimize the risk to such ships, to the personnel on board and to the environment; and
- .2 provide guideline for stability information, operational provisions against capsizing, icing considerations, considerations for watertight integrity and the determination of lightship parameters.

**1.2 Application**

1.2.1 This part of the Code contains recommended intact stability criteria for certain types of ships and other marine vehicles not included in part A or intended to supplement those of part A in particular cases regarding size or operation.

1.2.2 Administrations may impose additional requirements regarding the design aspects of ships of novel design or ships not otherwise covered by the Code.

1.2.3 The criteria stated in this part should give guidance to Administrations if no national requirements are applied.

## CHAPTER 2 – RECOMMENDED DESIGN CRITERIA FOR CERTAIN TYPES OF SHIPS

### 2.1 Fishing vessels

#### 2.1.1 Scope

The provisions given hereunder apply to decked seagoing fishing vessels as defined in Definitions. The stability criteria given in 2.1.3 and 2.1.4 below should be complied with for all conditions of loading as specified in 3.4.1.6, unless the Administration is satisfied that operating experience justifies departures therefrom.

#### 2.1.2 General precautions against capsizing

Apart from general precautions referred to in part B, 5.1, 5.2 and 5.3, the following measures should be considered as preliminary guidance on matters influencing safety as related to stability:

- .1 all fishing gear and other heavy material should be properly stowed and placed as low in the vessel as possible;
- .2 particular care should be taken when pull from fishing gear might have a negative effect on stability, e.g., when nets are hauled by power-block or the trawl catches obstructions on the sea-bed. The pull of the fishing gear should be from as low a point on the vessel, above the waterline, as possible;
- .3 gear for releasing the deck load in fishing vessels which carry the catch on deck, e.g., herring, should be kept in good working condition;
- .4 when the main deck is prepared for carrying deck load by dividing it with pound boards, there should be slots between them of suitable size to allow easy flow of water to freeing ports, thus preventing trapping of water;
- .5 to prevent a shift of the fish load carried in bulk, portable divisions in the holds should be properly installed;
- .6 reliance on automatic steering may be dangerous as this prevents changes to course which may be needed in bad weather;
- .7 necessary care should be taken to maintain adequate freeboard in all loading conditions, and where load line regulations are applicable they should be strictly adhered to at all times; and
- .8 particular care should be taken when the pull from fishing gear results in dangerous heel angles. This may occur when fishing gear fastens onto an underwater obstacle or when handling fishing gear, particularly on purse seiners, or when one of the trawl wires tears off. The heel angles caused by the fishing gear in these situations may be eliminated by employing devices which can relieve or remove excessive forces applied through the fishing gear. Such devices should not impose a danger to the vessel through operating in circumstances other than those for which they were intended.

### 2.1.3 *Recommended general criteria*<sup>11</sup>

2.1.3.1 The general intact stability criteria given in part A, 2.2.1 to 2.2.3 should apply to fishing vessels having a length of 24 m and over, with the exception of requirements on the initial metacentric height GM, (part A, 2.2.4), which, for fishing vessels, should not be less than 0.35 m for single-deck vessels. In vessels with complete superstructure or vessels of 70 m in length and over the metacentric height may be reduced to the satisfaction of the Administration but in no case should be less than 0.15 m.

2.1.3.2 The adoption by individual countries of simplified criteria which apply such basic stability values to their own types and classes of vessels is recognized as a practical and valuable method of economically judging the stability.

2.1.3.3 Where arrangements other than bilge keels are provided to limit the angle of roll, the Administration should be satisfied that the stability criteria referred to in 2.1.3.1 are maintained in all operating conditions.

### 2.1.4 *Severe wind and rolling criterion (weather criterion) for fishing vessels*

2.1.4.1 The Administration may apply the provisions of part A, 2.3 to fishing vessels of 45 m length and over.

2.1.4.2 For fishing vessels in the length range between 24 m and 45 m, the Administration may apply the provisions of part A, 2.3. Alternatively the values of wind pressure (see part A, 2.3.2) may be taken from the following table:

$h$ (m)	1	2	3	4	5	6 and over
$P$ (Pa)	316	386	429	460	485	504

where  $h$  is the vertical distance from the centre of the projected vertical area of the vessel above the waterline, to the waterline.

### 2.1.5 *Recommendation for an interim simplified stability criterion for decked fishing vessels under 30 m in length*

2.1.5.1 For decked vessels with a length less than 30 m, the following approximate formula for the minimum metacentric height  $GM_{min}$  (in metres) for all operating conditions should be used as the criterion:

$$GM_{min} = 0.53 + 2B \left[ 0.075 - 0.37 \left( \frac{f}{B} \right) + 0.82 \left( \frac{f}{B} \right)^2 - 0.014 \left( \frac{B}{D} \right) - 0.032 \left( \frac{l_s}{L} \right) \right]$$

where:

- $L$  is the length of the vessel on the waterline in maximum load condition (m)
- $l_s$  is the actual length of enclosed superstructure extending from side to side of the vessel (m)

<sup>11</sup> Refer to regulation III/2 of the 1993 Torremolinos Protocol.

- $B$  is the extreme breadth of the vessel on the waterline in maximum load condition (m)
- $D$  is the depth of the vessel measured vertically amidships from the base line to the top of the upper deck at side (m)
- $f$  is the smallest freeboard measured vertically from the top of the upper deck at side to the actual waterline (m).

The formula is applicable for vessels having:

- .1  $f/B$  between 0.02 and 0.20;
- .2  $l_s/L$  smaller than 0.60;
- .3  $B/D$  between 1.75 and 2.15;
- .4 sheer fore and aft at least equal to or exceeding the standard sheer prescribed in regulation 38(8) of the International Convention on Load Lines, 1966 or the Protocol of 1988 as amended, as applicable; and
- .5 height of superstructure included in the calculation is not less than 1.8 m.

For ships with parameters outside the above limits the formula should be applied with special care.

2.1.5.2 The above formula is not intended as a replacement for the basic criteria given in 2.1.3 and 2.1.4 but is to be used only if circumstances are such that cross curves of stability, KM curve and subsequent GZ curves are not and cannot be made available for judging a particular vessel's stability.

2.1.5.3 The calculated value of GM, should be compared with actual GM values of the vessel in all loading conditions. If an inclining experiment based on estimated displacement, or another approximate method of determining the actual GM is used, a safety margin should be added to the calculated  $GM_{min}$ .

## **2.2 Pontoons**

### **2.2.1 Application**

The provisions given hereunder apply to seagoing pontoons. A pontoon is considered to be normally:

- .1 non self-propelled;
- .2 unmanned;
- .3 carrying only deck cargo;
- .4 having a block coefficient of 0.9 or greater;

- .5 having a breadth/depth ratio of greater than 3.0; and
- .6 having no hatchways in the deck except small manholes closed with gasketed covers.

### **2.2.2 *Stability drawings and calculations***

The following information is typical of that required to be submitted to the Administration for approval:

- .1 lines drawing;
- .2 hydrostatic curves;
- .3 cross curves of stability;
- .4 report of draught and density readings and calculation of lightship displacement and longitudinal centre of gravity;
- .5 statement of justification of assumed vertical centre of gravity;
- .6 simplified stability guidance such as a loading diagram, so that the pontoon may be loaded in compliance with the stability criteria.

### **2.2.3 *Concerning the performance of calculations***

The following guidance is suggested:

- .1 no account should be taken of the buoyancy of deck cargo (except buoyancy credit for adequately secured timber);
- .2 consideration should be given to such factors as water absorption (e.g. timber), trapped water in cargo (e.g. pipes) and ice accretion;
- .3 in performing wind heel calculations:
  - .3.1 the wind pressure should be constant and for general operations be considered to act on a solid mass extending over the length of the cargo deck and to an assumed height above the deck;
  - .3.2 the centre of gravity of the cargo should be assumed at a point mid-height of the cargo; and
  - .3.3 the wind lever should be taken from the centre of the deck cargo to a point at one half the mean draught;
- .4 calculations should be performed covering the full range of operating draughts; and

- .5 the down-flooding angle should be taken as the angle at which an opening through which progressive flooding may take place is immersed. This would not be an opening closed by a watertight manhole cover or a vent fitted with an automatic closure.

#### **2.2.4 Intact stability criteria**

2.2.4.1 The area under the righting lever curve up to the angle of maximum righting lever should not be less than 0.08 metre-radians.

2.2.4.2 The static angle of heel due to a uniformly distributed wind load of 540Pa (wind speed 30 m/s) should not exceed an angle corresponding to half the freeboard for the relevant loading condition, where the lever of wind heeling moment is measured from the centroid of the windage area to half the draught.

2.2.4.3 The minimum range of stability should be:

For $L \leq 100$ m	20°
For $L \geq 150$ m	15°
For intermediate length	by interpolation.

### **2.3 Containerships greater than 100 m**

#### **2.3.1 Application<sup>12</sup>**

These requirements apply to containerships greater than 100 m in length as defined in paragraph 2 of the Introduction (Definitions). They may also be applied to other cargo ships in this length range with considerable flare or large water plane areas. The Administration may apply the following criteria instead of those in part A, 2.2.

#### **2.3.2 Intact stability**

2.3.2.1 The area under the righting lever curve (GZ curve) should not be less than 0.009/ $C$  metre-radians up to  $\varphi = 30^\circ$  angle of heel, and not less than 0.016/ $C$  metre-radians up to  $\varphi = 40^\circ$  or the angle of flooding  $\varphi_f$  (as defined in part A, 2.2) if this angle is less than  $40^\circ$ .

2.3.2.2 Additionally, the area under the righting lever curve (GZ curve) between the angles of heel of  $30^\circ$  and  $40^\circ$  or between  $30^\circ$  and  $\varphi_f$ , if this angle is less than  $40^\circ$ , should not be less than 0.006/ $C$  metre-radians.

2.3.2.3 The righting lever GZ should be at least 0.033/ $C$  m at an angle of heel equal or greater than  $30^\circ$ .

2.3.2.4 The maximum righting lever GZ should be at least 0.042/ $C$  m.

2.3.2.5 The total area under the righting lever curve (GZ curve) up to the angle of flooding  $\varphi_f$  should not be less than 0.029/ $C$  metre-radians.

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<sup>12</sup> Since the criteria in this section were empirically developed with the data of containerships less than 200 m in length, they should be applied to ships beyond such limits with special care.



2.3.2.6 In the above criteria the form factor  $C$  should be calculated using the formula and figure 2.3-1:

$$C = \frac{d D'}{B_m^2} \sqrt{\frac{d}{KG}} \left( \frac{C_B}{C_W} \right)^2 \sqrt{\frac{100}{L}}$$

where:

$d$  = mean draught (m)

$D'$  = moulded depth of the ship, corrected for defined parts of volumes within the hatch coamings according to the formula:

$$D' = D + h \left( \frac{2b - B_D}{B_D} \right) \left( \frac{2 \sum l_H}{L} \right), \text{ as defined in figure 2.3-1;}$$

$D$  = moulded depth of the ship (m);

$B_D$  = moulded breadth of the ship (m);

$KG$  = height of the centre of mass above base, corrected for free surface effect, not be taken as less than  $d$  (m);

$C_B$  = block coefficient;

$C_W$  = water plane coefficient;

$l_H$  = length of each hatch coaming within  $L/4$  forward and aft from amidships (m) (see figure 2.3-1);

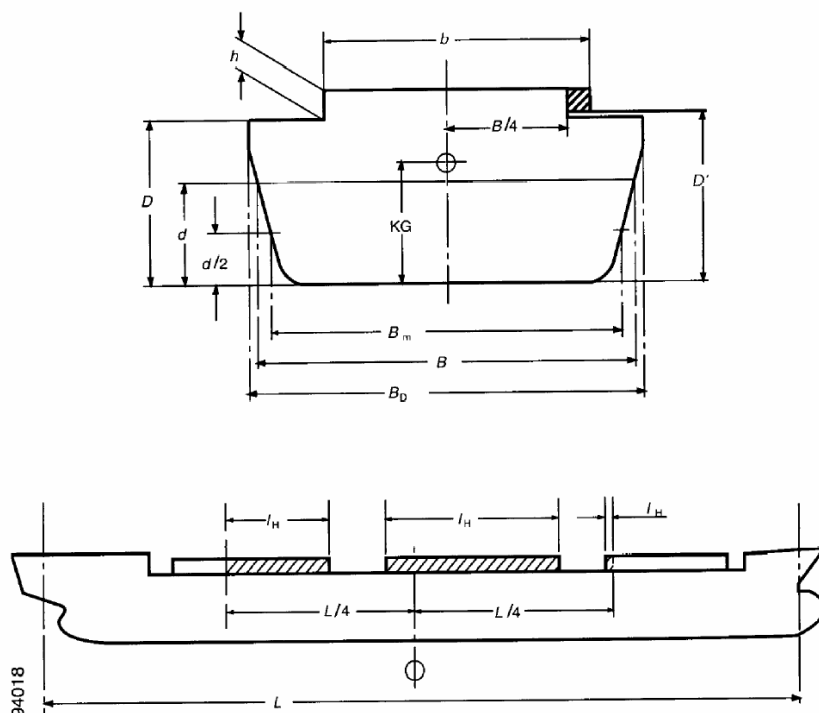
$b$  = mean width of hatch coamings within  $L/4$  forward and aft from amidships (m) (see figure 2.3-1);

$h$  = mean height of hatch coamings within  $L/4$  forward and aft from amidships (m) (see figure 2.3-1);

$L$  = length of the ship (m);

$B$  = breadth of the ship on the waterline (m);

$B_m$  = breadth of the ship on the waterline at half mean draught (m).



**Figure 2.3-1**

The shaded areas in figure 2.3-1 represent partial volumes within the hatch coamings considered contributing to resistance against capsizing at large heeling angles when the ship is on a wave crest.

2.3.2.7 The use of electronic loading and stability instrument is encouraged in determining the ship's trim and stability during different operational conditions.

## 2.4 Offshore supply vessels

### 2.4.1 Application

2.4.1.1 The provisions given hereunder apply to offshore supply vessels, as defined in paragraph 2 of the Introduction (Definitions), of 24 m in length and over. The alternative stability criteria contained in 2.4.5 apply to vessels of not more than 100 m in length.

2.4.1.2 For a vessel engaged in near-coastal voyages, as defined in Definitions, the principles given in 2.4.2 should guide the Administration in the development of its national standards. Relaxations from the requirements of the Code may be permitted by an Administration for vessels engaged in near-coastal voyages off its own coasts provided the operating conditions are, in the opinion of that Administration, such as to render compliance with the provisions of the Code unreasonable or unnecessary.

2.4.1.3 Where a ship other than an offshore supply vessel, as defined in Definitions, is employed on a similar service, the Administration should determine the extent to which compliance with the provisions of the Code is required.

## **2.4.2 Principles governing near-coastal voyages**

2.4.2.1 The Administration defining near-coastal voyages for the purpose of the present Code should not impose design and construction standards for a vessel entitled to fly the flag of another State and engaged in such voyages in a manner resulting in a more stringent standard for such a vessel than for a vessel entitled to fly its own flag. In no case should the Administration impose, in respect of a vessel entitled to fly the flag of another State, standards in excess of the Code for a vessel not engaged in near-coastal voyages.

2.4.2.2 With respect to a vessel regularly engaged in near-coastal voyages off the coast of another State the Administration should prescribe design and construction standards for such a vessel at least equal to those prescribed by the Government of the State off whose coast the vessel is engaged, provided such standards do not exceed the Code in respect of a vessel not engaged in near-coastal voyages.

2.4.2.3 A vessel which extends its voyages beyond a near-coastal voyage should comply with the present Code.

## **2.4.3 Constructional precautions against capsizing**

2.4.3.1 Access to the machinery space should, if possible, be arranged within the forecastle. Any access to the machinery space from the exposed cargo deck should be provided with two weathertight closures. Access to spaces below the exposed cargo deck should preferably be from a position within or above the superstructure deck.

2.4.3.2 The area of freeing ports in the side bulwarks of the cargo deck should at least meet the requirements of regulation 24 of the International Convention on Load Lines, 1966 or the Protocol of 1988 relating thereto, as amended, as applicable. The disposition of the freeing ports should be carefully considered to ensure the most effective drainage of water trapped in pipe deck cargoes or in recesses at the after end of the forecastle. In vessels operating in areas where icing is likely to occur, no shutters should be fitted in the freeing ports.

2.4.3.3 The Administration should give special attention to adequate drainage of pipe stowage positions having regard to the individual characteristics of the vessel. However, the area provided for drainage of the pipe stowage positions should be in excess of the required freeing port area in the cargo deck bulwarks and should not be fitted with shutters.

2.4.3.4 A vessel engaged in towing operations should be provided with means for quick release of the towing hawser.

## **2.4.4 Operational procedures against capsizing**

2.4.4.1 The arrangement of cargo stowed on deck should be such as to avoid any obstruction of the freeing ports or of the areas necessary for the drainage of pipe stowage positions to the freeing ports.

2.4.4.2 A minimum freeboard at the stern of at least 0.005 *L* should be maintained in all operating conditions.

## **2.4.5 Stability criteria**

2.4.5.1 The stability criteria given in part A, 2.2 should apply to all offshore supply vessels except those having characteristics which render compliance with part A, 2.2 impracticable.

2.4.5.2 The following equivalent criteria should be applied where a vessel's characteristics render compliance with part A, 2.2 impracticable:

- .1 the area under the curve of righting levers (GZ curve) should not be less than 0.070 metre-radians up to an angle of 15° when the maximum righting lever (GZ) occurs at 15° and 0.055 metre-radians up to an angle of 30° when the maximum righting lever (GZ) occurs at 30° or above. Where the maximum righting lever (GZ) occurs at angles of between 15° and 30°, the corresponding area under the righting lever curve should be:

$$0.055 + 0.001 (30^\circ - \varphi_{\max}) \text{ metre-radians}^{13};$$

- .2 the area under the righting lever curve (GZ curve) between the angles of heel of 30° and 40°, or between 30° and  $\varphi_f$  if this angle is less than 40°, should be not less than 0.03 metre-radians;
- .3 the righting lever (GZ) should be at least 0.20 m at an angle of heel equal to or greater than 30°;
- .4 the maximum righting lever (GZ) should occur at an angle of heel not less than 15°;
- .5 the initial transverse metacentric height ( $GM_0$ ) should not be less than 0.15 m; and
- .6 reference is made also to part A, 2.1.3 to 2.1.5 and part B, 5.1.

## **2.5 Special purpose ships**

### **2.5.1 Application**

The provisions given hereunder apply to special purpose ships, as defined in Definitions, of not less than 500 gross tonnage. The Administration may also apply these provisions as far as reasonable and practicable to special purpose ships of less than 500 gross tonnage.

### **2.5.2 Stability criteria**

The intact stability of special purpose ships should comply with the provisions given in part A, 2.2 except that the alternative criteria given in part B, 2.4.5 which apply to offshore supply vessels may be used for special purpose ships of less than 100 m in length of similar design and characteristics.

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<sup>13</sup>  $\varphi_{\max}$  is the angle of heel in degrees at which the righting lever curve reaches its maximum.

## 2.6 Mobile offshore drilling units (MODUs)

### 2.6.1 Application

2.6.1.1 The provisions given hereunder apply to mobile offshore drilling units as defined in Definitions, the keels of which are laid or which are at a similar stage of construction on or after 1 May 1991. For MODUs constructed before that date, the corresponding provisions of chapter 3 of resolution A.414(XI) should apply.

2.6.1.2 The coastal State may permit any unit designed to a lesser standard than that of this chapter to engage in operations, having taken account of the local environmental conditions. Any such unit should, however, comply with safety requirements which in the opinion of the coastal State are adequate for the intended operation and ensure the overall safety of the unit and the personnel on board.

### 2.6.2 Righting moment and wind heeling moment curves

2.6.2.1 Curves of righting moments and of wind heeling moments similar to figure 2.6-1 with supporting calculations should be prepared covering the full range of operating draughts, including those in transit conditions, taking into account the maximum deck cargo and equipment in the most unfavourable position applicable. The righting moment curves and wind heeling moment curves should be related to the most critical axes. Account should be taken of the free surface of liquids in tanks.

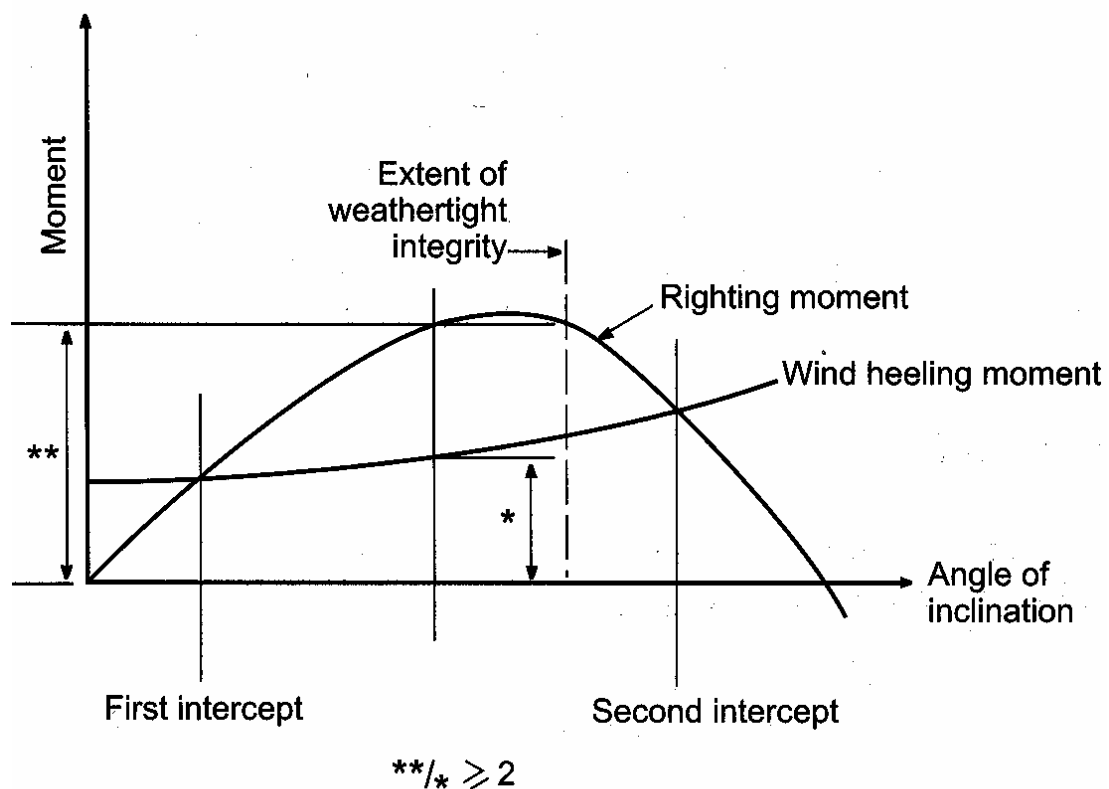


Figure 2.6-1 – Righting moment and wind heeling moment curves

2.6.2.2 Where equipment is of such a nature that it can be lowered and stowed, additional wind heeling moment curves may be required and such data should clearly indicate the position of such equipment.

2.6.2.3 The curves of wind heeling moment should be drawn for wind forces calculated by the following formula:

$$F = 0.5 * C_S * C_H * \rho * V^2 * A$$

where:

- $F$  is the wind force (N)
- $C_S$  is the shape coefficient depending on the shape of the structural member exposed to the wind (see table 2.6.2.3-1)
- $C_H$  is the height coefficient depending on the height above sea level of the structural member exposed to wind (see table 2.6.2.3-2)
- $\rho$  is the air mass density (1.222 kg/m<sup>3</sup>)
- $V$  is the wind velocity (m/s)
- $A$  is the projected area of all exposed surfaces in either the upright or the heeled condition (m<sup>2</sup>).

**Table 2.6.2.3-1 – Values of the coefficient  $C_S$**

Shape	$C_S$
Spherical	0.40
Cylindrical	0.50
Large flat surface (hull, deck-house, smooth under-deck areas)	1.00
Drilling derrick	1.25
Wires	1.20
Exposed beams and girders under deck	1.30
Small parts	1.40
Isolated shapes (crane, beam, etc.)	1.50
Clustered deck-houses or similar structures	1.10

**Table 2.6.2.3-2 – Values of the coefficient  $C_H$**

<b>Height above sea level (m)</b>	<b><math>C_H</math></b>
0 – 15.3	1.00
15.3 – 30.5	1.10
30.5 – 46.0	1.20
46.0 – 61.0	1.30
61.0 – 76.0	1.37
76.0 – 91.5	1.43
91.5 – 106.5	1.48
106.5 – 122.0	1.52
122.0 – 137.0	1.56
137.0 – 152.5	1.60
152.5 – 167.5	1.63
167.5 – 183.0	1.67
183.0 – 198.0	1.70
198.0 – 213.5	1.72
213.5 – 228.5	1.75
228.5 – 244.0	1.77
244.0 – 256.0	1.79
Above 256	1.80

2.6.2.4 Wind forces should be considered from any direction relative to the unit and the value of the wind velocity should be as follows:

- .1 in general, a minimum wind velocity of 36 m/s (70 knots) for offshore service should be used for normal operating conditions and a minimum wind velocity of 51.5 m/s (100 knots) should be used for the severe storm conditions; and
- .2 where a unit is to be limited in operation to sheltered locations (protected inland waters such as lakes, bays, swamps, rivers, etc.), consideration should be given to a reduced wind velocity of not less than 25.8 m/s (50 knots) for normal operating conditions.

2.6.2.5 In calculating the projected areas to the vertical plane, the area of surfaces exposed to wind due to heel or trim, such as under decks, etc., should be included, using the appropriate shape factor. Open truss work may be approximated by taking 30% of the projected block area of both the front and back section, i.e. 60% of the projected area of one side.

2.6.2.6 In calculating the wind heeling moments, the lever of the wind overturning force should be taken vertically from the centre of pressure of all surfaces exposed to the wind to the centre of lateral resistance of the underwater body of the unit. The unit is to be assumed floating free of mooring restraint.

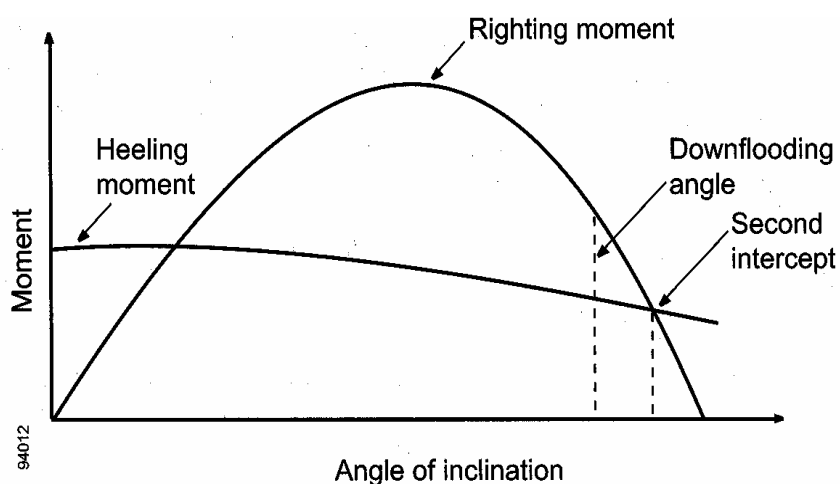
2.6.2.7 The wind heeling moment curve should be calculated for a sufficient number of heel angles to define the curve. For ship-shaped hulls the curve may be assumed to vary as the cosine function of ship heel.

2.6.2.8 Wind heeling moments derived from wind-tunnel tests on a representative model of the unit may be considered as alternatives to the method given in 2.6.2.3 to 2.6.2.7. Such heeling moment determination should include lift and drag effects at various applicable heel angles.

### 2.6.3 *Intact stability criteria*

2.6.3.1 The stability of a unit in each mode of operation should meet the following criteria (see also figure 2.6-2):

- .1 for surface and self-elevating units the area under the righting moment curve to the second intercept or down-flooding angle, whichever is less, should be not less than 40% in excess of the area under the wind heeling moment curve to the same limiting angle;
- .2 for column-stabilized units the area under the righting moment curve to the angle of down-flooding should be not less than 30% in excess of the area under the wind heeling moment curve to the same limiting angle; and
- .3 the righting moment curve should be positive over the entire range of angles from upright to the second intercept.



**Figure 2.6-2 – Righting moment and heeling moment curves**

2.6.3.2 Each unit should be capable of attaining a severe storm condition in a period of time consistent with the meteorological conditions. The procedures recommended and the approximate length of time required, considering both operating conditions and transit conditions, should be contained in the operating manual, as referred to in 3.6.2. It should be possible to achieve the severe storm condition without the removal or relocation of solid consumables or other variable load. However, the Administration may permit loading a unit past the point at which solid consumables would have to be removed or relocated to go to severe storm condition under the following conditions, provided the allowable KG requirement is not exceeded:

- .1 in a geographic location where weather conditions annually or seasonally do not become sufficiently severe to require a unit to go to severe storm condition; or



- .2 where a unit is required to support extra deckload for a short period of time that is well within the bounds of a favourable weather forecast.

The geographic locations and weather conditions and loading conditions when this is permitted should be identified in the operating manual.

2.6.3.3 Alternative stability criteria may be considered by the Administration provided an equivalent level of safety is maintained and if they are demonstrated to afford adequate positive initial stability. In determining the acceptability of such criteria, the Administration should consider at least the following and take into account as appropriate:

- .1 environmental conditions representing realistic winds (including gusts) and waves appropriate for world-wide service in various modes of operation;
- .2 dynamic response of a unit. Analysis should include the results of wind-tunnel tests, wave tank model tests, and non-linear simulation, where appropriate. Any wind and wave spectra used should cover sufficient frequency ranges to ensure that critical motion responses are obtained;
- .3 potential for flooding taking into account dynamic responses in a seaway;
- .4 susceptibility to capsizing considering the unit's restoration energy and the static inclination due to the mean wind speed and the maximum dynamic response; and
- .5 an adequate safety margin to account for uncertainties.

An example of alternative criteria for twin-pontoon column-stabilized semi-submersible units is given in section 2.6.4.

#### **2.6.4 *An example of alternative intact stability criteria for twin-pontoon column-stabilized semi-submersible units***

2.6.4.1 The criteria given below apply only to twin-pontoon column-stabilized semi-submersible units in severe storm conditions which fall within the following ranges of parameters:

$$V_p/V_t \quad \text{is between 0.48 and 0.58}$$

$$A_{wp}/(V_c)^{2/3} \quad \text{is between 0.72 and 1.00}$$

$$L_{wp}/[V_c * (L_{ptn}/2)] \quad \text{is between 0.40 and 0.70}$$

The parameters used in the above equations are defined in paragraph 2.6.4.3.

#### 2.6.4.2 Intact stability criteria

The stability of a unit in the survival mode of operation should meet the following criteria.

### 2.6.4.2.1 Capsize criteria

These criteria are based on the wind heeling moment and righting moment curves calculated as shown in section 2.6.2 of the Code at the survival draught. The reserve energy area 'B' must be equal to or greater than 10% of the dynamic response area 'A' as shown in figure 2.6-3.

$$\text{Area 'B'}/\text{Area 'A'} \geq 0.10$$

where:

Area 'A' is the area under the righting moment curve measured from  $\varphi_1$  to  $(\varphi_1 + 1.15 * \varphi_{dyn})$

Area 'B' is the area under the righting moment curve measured from  $(\varphi_1 + 1.15 * \varphi_{dyn})$  to  $\varphi_2$

$\varphi_1$  is the first intercept with the 100 knot wind moment curve

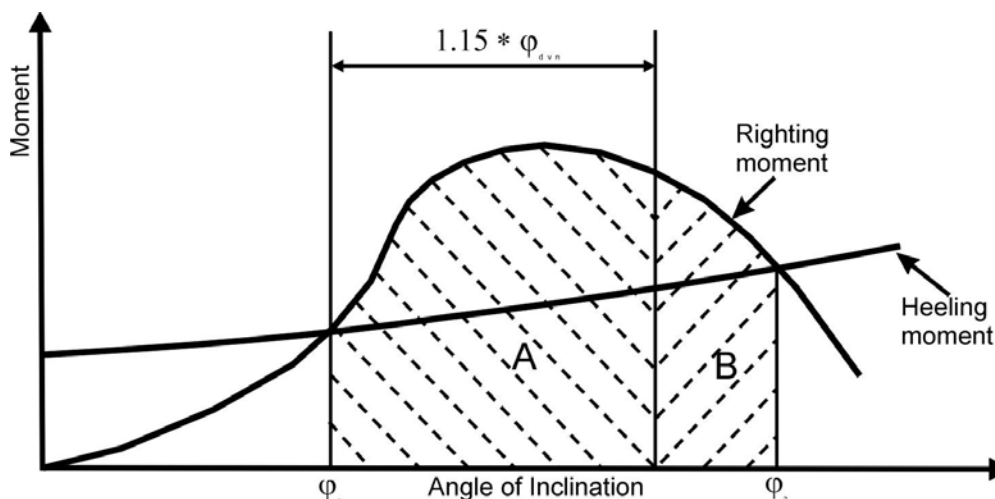
$\varphi_2$  is the second intercept with the 100 knot wind moment curve

$\varphi_{dyn}$  is the dynamic response angle due to waves and fluctuating wind

$$\varphi_{dyn} = (10.3 + 17.8 * C)/(1 + GM/(1.46 + 0.28 * BM))$$

$$C = (L_{p_{tn}}^{5/3} * VCP_{w1} * A_w * V_p * V_c^{1/3})/(L_{wp}^{5/3} * V_t)$$

Parameters used in the above equations are defined in paragraph 2.6.4.3.



**Figure 2.6-3 – Righting moment and heeling moment curves**

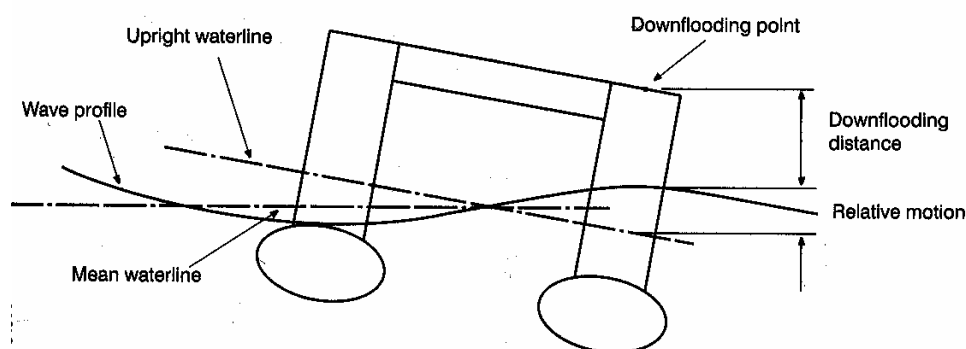
### 2.6.4.2.2 Down-flooding criteria

These criteria are based on the physical dimensions of the unit and the relative motion of the unit about a static inclination due to a 75 knot wind measured at the survival draught. The initial down-flooding distance (DFD<sub>0</sub>) should be greater than the reduction in down-flooding distance at the survival draught as shown in figure 2.6-4.

$$DFD_0 - RDFD > 0.0$$

where:

- $DFD_0$  is the initial down-flooding distance to  $D_m$  (m)
- $RDFD$  is the reduction in down-flooding distance (m) equal to  $SF (k * QSD_1 + RMW)$
- $SF$  is equal to 1.10, which is a safety factor to account for uncertainties in the analysis, such as non-linear effects
- $k$  (correlation factor) is equal to  $0.55 + 0.08 * (a - 4.0) + 0.056 * (1.52 - GM)$ ;  
(GM cannot be taken to be greater than 2.44 m)
- $a$  is equal to  $(FBD_0/D_m) * (S_{ptn} * L_{cc}) / A_{wp}$   
(a cannot be taken to be less than 4.0)
- $QSD_1$  is equal to  $DFD_0$  minus quasi-static down-flooding distance at  $\phi_1$  (m), but not to be taken less than 3.0 m
- $RMW$  is the relative motion due to waves about  $\phi_1$  (m), equal to  $9.3 + 0.11 * (X - 12.19)$
- $X$  is equal to  $D_m * (V_t/V_p) * (A_{wp}^2 / I_{wp}) * (L_{ccc} / L_{ptn})$   
(X cannot be taken to be less than 12.19 m).



**Figure 2.6-4 – Definition of down-flooding distance and relative motion**

The parameters used in the above equations are defined in paragraph 2.6.4.3.

#### 2.6.4.3 Geometric parameters

$A_{wp}$  is the waterplane area at the survival draught, including the effects of bracing members as applicable ( $m^2$ ).

$A_w$  is the effective wind area with the unit in the upright position (i.e. the product of projected area, shape coefficient and height coefficient) ( $m^2$ ).

- BM is the vertical distance from the metacentre to the centre of buoyancy with the unit in the upright position (m).
- $D_m$  is the initial survival draught (m).
- $FBD_0$  is the vertical distance from  $D_m$ , to the top of the upper exposed weathertight deck at the side (m).
- GM for paragraph 2.6.4.2.1, GM is the metacentric height measured about the roll or diagonal axis, whichever gives the minimum reserve energy ratio, 'B'/'A'. This axis is usually the diagonal axis as it possesses a characteristically larger projected wind area which influences the three characteristic angles mentioned above (m).
- GM for paragraph 2.6.4.2.2, GM is the metacentric height measured about the axis which gives the minimum down-flooding distance margin (i.e. generally the direction that gives the largest  $QSD_1$ ) (m).
- $I_{wp}$  is the water plane second moment of inertia at the survival draught, including the effects of bracing members as applicable ( $m^4$ ).
- $L_{ccc}$  is the longitudinal distance between centres of the corner columns (m).
- $L_{ptn}$  is the length of each pontoon (m).
- $S_{ptn}$  is the transverse distance between the centrelines of the pontoons (m).
- $V_c$  is the total volume of all columns from the top of the pontoons to the top of the column structure, except for any volume included in the upper deck ( $m^3$ ).
- $V_p$  is the total combined volume of both pontoons ( $m^3$ ).
- $V_t$  is the total volume of the structures (pontoons, columns and bracings) contributing to the buoyancy of the unit, from its baseline to the top of the column structure, except for any volume included in the upper deck ( $m^3$ ).
- $VCP_{w1}$  is the vertical centre of wind pressure above  $D_m$  (m).

#### 2.6.4.4 Capsize criteria assessment form

##### Input data

GM	.....	=	m
BM	.....	=	m
$VCP_{w1}$	.....	=	m
$A_w$	.....	=	$m^2$
$V_t$	.....	=	$m^3$

$V_c$	.....	=	$m^3$
$V_p$	.....	=	$m^3$
$I_{wp}$	.....	=	$m^4$
$L_{ptn}$	.....	=	$m$

Determine

$\varphi_1$	.....	=	..... deg
$\varphi_2$	.....	=	..... deg
$C$	= $(L_{ptn}^{5/3} * VCP_{w1} * A_w * V_p * V_c^{1/3}) / (I_{wp}^{5/3} * V_t) \dots$	=	..... $m^{-1}$
$\varphi_{dyn}$	= $(10.3 + 17.8C) / (1.0 + GM / (1.46 + 0.28BM)) \dots$	=	..... deg
Area 'A'	.....	=	..... m-deg
Area 'B'	.....	=	..... m-deg

Results

Reserve energy ratio:

'B'/'A' = ..... (minimum = 0.10)  
 GM = ..... m (KG = ..... m)

**Note:** The minimum GM is that which produces a 'B'/'A' ratio = 0.10

2.6.4.5 Down-flooding criteria assessment form

Input data

$DFD_0$	.....	=	..... m
$FBD_0$	.....	=	..... m
GM	.....	=	..... m
$D_m$	.....	=	..... m
$V_t$	.....	=	..... $m^3$
$V_p$	.....	=	..... $m^3$
$A_{wp}$	.....	=	..... $m^2$
$I_{wp}$	.....	=	..... $m^4$

$$L_{ccc} \dots\dots\dots = \dots\dots \text{ m}$$

$$L_{ptn} \dots\dots\dots = \dots\dots \text{ m}$$

$$S_{ptn} \dots\dots\dots = \dots\dots \text{ m}$$

$$SF \dots\dots\dots = 1.10$$

Determine

$$\phi_1 \dots\dots\dots = \dots \text{ deg}$$

$$DFD_1 \dots\dots\dots = \dots \text{ m}$$

$$QSD_1 = DFD_0 - DFD_1 \dots\dots\dots = \dots \text{ m}$$

$$a = (FBD_0/D_m) * (S_{ptn} * L_{ccc}) / A_{wp} \dots\dots\dots = \dots \text{ (} a_{min} = 4.0 \text{)}$$

$$k = 0.55 + 0.08 * (a - 4.0) + 0.056 * (1.52 - GM) \dots = \dots \text{ m (} GM_{max} = 2.44 \text{ m)}$$

$$X = D_m * (V_t/V_p) * (A_{wp}^2 / I_{wp}) * (L_{ccc} / L_{ptn}) \dots\dots\dots = \dots \text{ m (} X_{min} = 12.19 \text{ m)}$$

$$RMW = 9.3 + 0.11 * (X - 12.19) \dots\dots\dots = \dots \text{ m}$$

$$RDFD = SF * (k * QSD_1 + RMW) \dots\dots\dots = \dots \text{ m}$$

Results

Down-flooding margin:

$$DFD_0 - RDFD = \dots\dots\dots \text{ (minimum = 0.0 m)}$$

$$GM = \dots\dots\dots \text{ m (KG = } \dots\dots\dots \text{ m)}$$

**Note:** The minimum GM is that which produces a down-flooding margin = 0.0 m.

## CHAPTER 3 – GUIDANCE IN PREPARING STABILITY INFORMATION

### 3.1 Effect of free surfaces of liquids in tanks

3.1.1 For all loading conditions, the initial metacentric height and the righting lever curve should be corrected for the effect of free surfaces of liquids in tanks.

3.1.2 Free surface effects should be considered whenever the filling level in a tank is less than 98% of full condition. Free surface effects need not be considered where a tank is nominally full, i.e. filling level is 98% or above. Free surface effects for small tanks may be ignored under condition specified in 3.1.12.<sup>14</sup>

But nominally full cargo tanks should be corrected for free surface effects at 98% filling level. In doing so, the correction to initial metacentric height should be based on the inertia moment of liquid surface at 5° of heeling angle divided by displacement, and the correction to righting lever is suggested to be on the basis of real shifting moment of cargo liquids.

3.1.3 Tanks which are taken into consideration when determining the free surface correction may be in one of two categories:

- .1 tanks with filling levels fixed (e.g. liquid cargo, water ballast). The free surface correction should be defined for the actual filling level to be used in each tank; or
- .2 tanks with filling levels variable (e.g. consumable liquids such as fuel oil, diesel oil and fresh water, and also liquid cargo and water ballast during liquid transfer operations). Except as permitted in 3.1.5 and 3.1.6, the free surface correction should be the maximum value attainable between the filling limits envisaged for each tank, consistent with any operating instructions.

3.1.4 In calculating the free surface effects in tanks containing consumable liquids, it should be assumed that for each type of liquid at least one transverse pair or a single centreline tank has a free surface and the tank or combination of tanks taken into account should be those where the effect of free surfaces is the greatest.

3.1.5 Where water ballast tanks, including anti-rolling tanks and anti-heeling tanks, are to be filled or discharged during the course of a voyage, the free surface effects should be calculated to take account of the most onerous transitory stage relating to such operations.

3.1.6 For ships engaged in liquid transfer operations, the free surface corrections at any stage<sup>15</sup> of the liquid transfer operations may be determined in accordance with the filling level in each tank at that stage of the transfer operation.

3.1.7 The corrections to the initial metacentric height and to the righting lever curve should be addressed separately as follows.

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<sup>14</sup> Refer to the intact stability design criteria, contained in MARPOL regulation I/27, together with the associated Unified Interpretation 45.

<sup>15</sup> A sufficient number of loading conditions representing the initial, intermediate and final stages of the filling or discharge operation using the free surface correction at the filling level in each tank at the considered stage may be evaluated to fulfil this recommendation.

3.1.8 In determining the correction to initial metacentric height, the transverse moments of inertia of the tanks should be calculated at 0° angle of heel according to the categories indicated in 3.1.3.

3.1.9 The righting lever curve may be corrected by any of the following methods subject to the agreement of the Administration:

- .1 correction based on the actual moment of fluid transfer for each angle of heel calculated; or
- .2 correction based on the moment of inertia, calculated at 0° angle of heel, modified at each angle of heel calculated.

3.1.10 Corrections may be calculated according to the categories indicated in 3.1.2.

3.1.11 Whichever method is selected for correcting the righting lever curve, only that method should be presented in the ship's stability booklet. However, where an alternative method is described for use in manually calculated loading conditions, an explanation of the differences which may be found in the results, as well as an example correction for each alternative, should be included.

3.1.12 Small tanks which satisfy the following condition corresponding to an angle of inclination of 30°, need not be included in the correction:

$$M_{fs} / \Delta_{min} < 0.01 \text{ m}$$

where:

$M_{fs}$  free surface moment (mt)

$\Delta_{min}$  is the minimum ship displacement calculated at  $d_{min}$  (t)

$d_{min}$  is the minimum mean service draught of the ship without cargo, with 10% stores and minimum water ballast, if required (m).

3.1.13 The usual remainder of liquids in empty tanks need not be taken into account in calculating the corrections, provided that the total of such residual liquids does not constitute a significant free surface effect.

## 3.2 Permanent ballast

If used, permanent ballast should be located in accordance with a plan approved by the Administration and in a manner that prevents shifting of position. Permanent ballast should not be removed from the ship or relocated within the ship without the approval of the Administration. Permanent ballast particulars should be noted in the ship's stability booklet.



### **3.3 Assessment of compliance with stability criteria<sup>16</sup>**

3.3.1 Except as otherwise required by this Code, for the purpose of assessing in general whether the stability criteria are met, stability curves using the assumptions given in this Code should be drawn for the loading conditions intended by the owner in respect of the ship's operations.

3.3.2 If the owner of the ship does not supply sufficiently detailed information regarding such loading conditions, calculations should be made for the standard loading conditions.

### **3.4 Standard conditions of loading to be examined**

#### **3.4.1 Loading conditions**

The standard loading conditions referred to in the text of the present Code are as follows.

##### *3.4.1.1 For a passenger ship:*

- .1 ship in the fully loaded departure condition with cargo, full stores and fuel and with the full number of passengers with their luggage;
- .2 ship in the fully loaded arrival condition, with cargo, the full number of passengers and their luggage but with only 10% stores and fuel remaining;
- .3 ship without cargo, but with full stores and fuel and the full number of passengers and their luggage; and
- .4 ship in the same condition as at 0 above with only 10% stores and fuel remaining.

##### *3.4.1.2 For a cargo ship:*

- .1 ship in the fully loaded departure condition, with cargo homogeneously distributed throughout all cargo spaces and with full stores and fuel;
- .2 ship in the fully loaded arrival condition with cargo homogeneously distributed throughout all cargo spaces and with 10% stores and fuel remaining;
- .3 ship in ballast in the departure condition, without cargo but with full stores and fuel; and
- .4 ship in ballast in the arrival condition, without cargo and with 10% stores and fuel remaining.

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<sup>16</sup> Care should be taken in the assessment of compliance with stability criteria, especially conditions in which liquid transfer operations might be expected or anticipated, to insure that the stability criteria is met at all stages of the voyage.

3.4.1.3 *For a cargo ship intended to carry deck cargoes:*

- .1 ship in the fully loaded departure condition with cargo homogeneously distributed in the holds and with cargo specified in extension and mass on deck, with full stores and fuel; and
- .2 ship in the fully loaded arrival condition with cargo homogeneously distributed in holds and with a cargo specified in extension and mass on deck, with 10% stores and fuel.

3.4.1.4 *For a ship intended to carry timber deck cargoes:*

The loading conditions which should be considered for ships carrying timber deck cargoes are specified in 3.4.1.3. The stowage of timber deck cargoes should comply with the provisions of chapter 3 of the Code of Safe Practice for Ships Carrying Timber Deck Cargoes, 1991 (resolution A.715(17)).<sup>17</sup>

3.4.1.5 *For an offshore supply vessel the standard loading conditions should be as follows:*

- .1 vessel in fully loaded departure condition with cargo distributed below deck and with cargo specified by position and weight on deck, with full stores and fuel, corresponding to the worst service condition in which all the relevant stability criteria are met;
- .2 vessel in fully loaded arrival condition with cargo as specified in 3.4.1.5.1, but with 10% stores and fuel;
- .3 vessel in ballast departure condition, without cargo but with full stores and fuel;
- .4 vessel in ballast arrival condition, without cargo and with 10% stores and fuel remaining; and
- .5 vessel in the worst anticipated operating condition.

3.4.1.6 *For fishing vessels the standard loading conditions referred to in 2.1.1 are as follows*<sup>18</sup>:

- .1 departure conditions for the fishing grounds with full fuel, stores, ice, fishing gear, etc.;
- .2 departure from the fishing grounds with full catch and a percentage of stores, fuel, etc., as agreed by the Administration;
- .3 arrival at home port with 10% stores, fuel, etc. remaining and full catch; and
- .4 arrival at home port with 10% stores, fuel, etc. and a minimum catch, which should normally be 20% of full catch but may be up to 40% provided the Administration is satisfied that operating patterns justify such a value.

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<sup>17</sup> Refer to chapter VI of the 1974 SOLAS Convention and to part C of chapter VI of the 1974 SOLAS Convention as amended by resolution MSC.22(59).

<sup>18</sup> Refer to regulation III/7 of the 1993 Torremolinos Protocol.

### **3.4.2 Assumptions for calculating loading conditions**

3.4.2.1 For the fully loaded conditions mentioned in 3.4.1.2.1, 3.4.1.2.2, 3.4.1.3.1 and 3.4.1.3.2 if a dry cargo ship has tanks for liquid cargo, the effective deadweight in the loading conditions therein described should be distributed according to two assumptions, i.e. with cargo tanks full, and with cargo tanks empty.

3.4.2.2 In the conditions mentioned in 3.4.1.1.1, 3.4.1.2.1 and 3.4.1.3.1 it should be assumed that the ship is loaded to its subdivision load line or summer load line or if intended to carry a timber deck cargo, to the summer timber load line with water ballast tanks empty.

3.4.2.3 If in any loading condition water ballast is necessary, additional diagrams should be calculated taking into account the water ballast. Its quantity and disposition should be stated.

3.4.2.4 In all cases, the cargo in holds is assumed to be fully homogeneous unless this condition is inconsistent with the practical service of the ship.

3.4.2.5 In all cases, when deck cargo is carried, a realistic stowage mass should be assumed and stated, including the height of the cargo.

3.4.2.6 Considering timber deck cargo the following assumptions are to be made for calculating the loading conditions referred to in 3.4.1.4:

- .1 the amount of cargo and ballast should correspond to the worst service condition in which all the relevant stability criteria of part A 2.2 or the optional criteria given in part A 3.3.2, are met. In the arrival condition, it should be assumed that the weight of the deck cargo has increased by 10% due to water absorption.

3.4.2.7 For offshore supply vessels the assumptions for calculating loading conditions should be as follows:

- .1 if a vessel is fitted with cargo tanks, the fully loaded conditions of 3.4.1.5.1 and 3.4.1.5.2 should be modified, assuming first the cargo tanks full and then the cargo tanks empty;
- .2 if in any loading condition water ballast is necessary, additional diagrams should be calculated, taking into account the water ballast, the quantity and disposition of which should be stated in the stability information;
- .3 in all cases when deck cargo is carried a realistic stowage weight should be assumed and stated in the stability information, including the height of the cargo and its centre of gravity;
- .4 where pipes are carried on deck, a quantity of trapped water equal to a certain percentage of the net volume of the pipe deck cargo should be assumed in and around the pipes. The net volume should be taken as the internal volume of the pipes, plus the volume between the pipes. This percentage should be 30 if the freeboard amidships is equal to or less than 0.015 L and 10 if the freeboard amidships is equal to or greater than 0.03 L. For intermediate values of the freeboard amidships the percentage may be obtained by linear interpolation.

In assessing the quantity of trapped water, the Administration may take into account positive or negative sheer aft, actual trim and area of operation; or

- .5 if a vessel operates in zones where ice accretion is likely to occur, allowance for icing should be made in accordance with the provisions of chapter 6 (Icing considerations).

3.4.2.8 For fishing vessels the assumptions for calculating loading conditions should be as follows:

- .1 allowance should be made for the weight of the wet fishing nets and tackle, etc. on deck;
- .2 allowance for icing, where this is anticipated to occur, should be made in accordance with the provisions of 6.3;
- .3 in all cases the cargo should be assumed to be homogeneous unless this is inconsistent with practice;
- .4 in conditions referred to in 3.4.1.6.2 and 3.4.1.6.3 deck cargo should be included if such a practice is anticipated;
- .5 water ballast should normally only be included if carried in tanks which are specially provided for this purpose.

### **3.5 Calculation of stability curves**

#### **3.5.1 *General***

Hydrostatic and stability curves should be prepared for the trim range of operating loading conditions taking into account the change in trim due to heel (free trim hydrostatic calculation). The calculations should take into account the volume to the upper surface of the deck sheathing. Furthermore, appendages and sea chests need to be considered when calculating hydrostatics and cross curves of stability. In the presence of port-starboard asymmetry, the most unfavourable righting lever curve should be used.

#### **3.5.2 *Superstructures, deckhouses, etc., which may be taken into account***

3.5.2.1 Enclosed superstructures complying with regulation 3(10)(b) of the 1966 Load Line Convention and 1988 Protocol as amended may be taken into account.

3.5.2.2 Additional tiers of similarly enclosed superstructures may also be taken into account. As guidance windows (pane and frame) that are considered without deadlights in additional tiers above the second tier if considered buoyant should be designed with strength to sustain a safety margin<sup>19</sup> with regard to the required strength of the surrounding structure.<sup>20</sup>

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<sup>19</sup> As a guidance for Administrations a safety margin of 30% should be applied.

<sup>20</sup> IMO guidance for testing these windows is to be developed.

3.5.2.3 Deckhouses on the freeboard deck may be taken into account, provided that they comply with the conditions for enclosed superstructures laid down in regulation 3(10)(b) of the 1966 Load Line Convention and 1988 Protocol relating thereto, as amended.

3.5.2.4 Where deckhouses comply with the above conditions, except that no additional exit is provided to a deck above, such deckhouses should not be taken into account; however, any deck openings inside such deckhouses should be considered as closed even where no means of closure are provided.

3.5.2.5 Deckhouses, the doors of which do not comply with the requirements of regulation 12 of the 1966 Load Line Convention and 1988 Protocol as amended should not be taken into account; however, any deck openings inside the deckhouse are regarded as closed where their means of closure comply with the requirements of regulations 15, 17 or 18 of the 1966 Load Line Convention and 1988 Protocol as amended.

3.5.2.6 Deckhouses on decks above the freeboard deck should not be taken into account, but openings within them may be regarded as closed.

3.5.2.7 Superstructures and deckhouses not regarded as enclosed can, however, be taken into account in stability calculations up to the angle at which their openings are flooded (at this angle, the static stability curve should show one or more steps, and in subsequent computations the flooded space should be considered non-existent).

3.5.2.8 In cases where the ship would sink due to flooding through any openings, the stability curve should be cut short at the corresponding angle of flooding and the ship should be considered to have entirely lost its stability.

3.5.2.9 Small openings such as those for passing wires or chains, tackle and anchors, and also holes of scuppers, discharge and sanitary pipes should not be considered as open if they submerge at an angle of inclination more than 30°. If they submerge at an angle of 30° or less, these openings should be assumed open if the Administration considers this to be a source of significant flooding.

3.5.2.10 Trunks may be taken into account. Hatchways may also be taken into account having regard to the effectiveness of their closures.

### **3.5.3 *Calculation of stability curves for ships carrying timber deck cargoes***

In addition to the provisions given above, the Administration may allow account to be taken of the buoyancy of the deck cargo assuming that such cargo has a permeability of 25% of the volume occupied by the cargo. Additional curves of stability may be required if the Administration considers it necessary to investigate the influence of different permeabilities and/or assumed effective height of the deck cargo.

## **3.6 Stability booklet**

3.6.1 Stability data and associated plans should be drawn up in the working language of the ship and any other language the Administration may require. Reference is also made to the International Safety Management (ISM) Code, adopted by the Organization by resolution A.741(18). All translations of the stability booklet should be approved.

3.6.2 Each ship should be provided with a stability booklet, approved by the Administration, which contains sufficient information to enable the master to operate the ship in compliance with the applicable requirements contained in the Code. The Administration may have additional requirements. On a mobile offshore drilling unit, the stability booklet may be referred to as an operating manual. The stability booklet may include information on longitudinal strength. This Code addresses only the stability-related contents of the booklet.<sup>21</sup>

3.6.3 For ships carrying timber deck cargoes:

- .1 comprehensive stability information should be supplied which takes into account timber deck cargo. Such information should enable the master, rapidly and simply, to obtain accurate guidance as to the stability of the ship under varying conditions of service. Comprehensive rolling period tables or diagrams have proved to be very useful aids in verifying the actual stability conditions;<sup>22</sup>
- .2 the Administration may deem it necessary that the master be given information setting out the changes in deck cargo from that shown in the loading conditions, when the permeability of the deck cargo is significantly different from 25% (refer to 3.5.3); and
- .3 conditions should be shown indicating the maximum permissible amount of deck cargo having regard to the lightest stowage rate likely to be met in service.

3.6.4 The format of the stability booklet and the information included will vary dependent on the ship type and operation. In developing the stability booklet, consideration should be given to including the following information<sup>23</sup>:

- .1 a general description of the ship;
- .2 instructions on the use of the booklet;
- .3 general arrangement plans showing watertight compartments, closures, vents, downflooding angles, permanent ballast, allowable deck loadings and freeboard diagrams;
- .4 hydrostatic curves or tables and cross curves of stability calculated on a free-trimming basis, for the ranges of displacement and trim anticipated in normal operating conditions;
- .5 capacity plan or tables showing capacities and centres of gravity for each cargo stowage space;
- .6 tank sounding tables showing capacities, centres of gravity, and free surface data for each tank;

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<sup>21</sup> Refer to regulation II-1/22 of the 1974 SOLAS Convention, as amended, regulation 10 of the International Convention on Load Lines, 1966 or the Protocol of 1988 as amended, as applicable and regulation III/10 of the 1993 Torremolinos Protocol.

<sup>22</sup> Refer to regulation II-1/22 of the 1974 SOLAS Convention, as amended, and regulation 10(2) of the International Convention on Load Lines, 1966 or the Protocol of 1988 as amended, as applicable.

<sup>23</sup> Refer to Model Loading and Stability Manual (MSC/Circ.920).

- .7 information on loading restrictions, such as maximum KG or minimum GM curve or table that can be used to determine compliance with the applicable stability criteria;
- .8 standard operating conditions and examples for developing other acceptable loading conditions using the information contained in the stability booklet;
- .9 a brief description of the stability calculations done including assumptions;
- .10 general precautions for preventing unintentional flooding;
- .11 information concerning the use of any special cross-flooding fittings with descriptions of damage conditions which may require cross-flooding;
- .12 any other necessary guidance for the safe operation of the ship under normal and emergency conditions;
- .13 a table of contents and index for each booklet;
- .14 inclining test report for the ship, or:
  - .14.1 where the stability data is based on a sister ship, the inclining test report of that sister ship along with the lightship measurement report for the ship in question; or
  - .14.2 where lightship particulars are determined by other methods than from inclining of the ship or its sister, a summary of the method used to determine those particulars;
- .15 recommendation for determination of ship's stability by means of an in-service inclining test.

3.6.5 As an alternative to the stability booklet mentioned in 3.6.1, a simplified booklet in an approved form containing sufficient information to enable the master to operate the ship in compliance with the applicable provisions of the Code as may be provided at the discretion of the Administration concerned.

### **3.7 Operational measures for ships carrying timber deck cargoes**

3.7.1 The stability of the ship at all times, including during the process of loading and unloading timber deck cargo, should be positive and to a standard acceptable to the Administration. It should be calculated having regard to:

- .1 the increased weight of the timber deck cargo due to:
  - .1.1 absorption of water in dried or seasoned timber, and
  - .1.2 ice accretion, if applicable (chapter 6 (Icing considerations));
- .2 variations in consumables;

- .3 the free surface effect of liquid in tanks; and
- .4 weight of water trapped in broken spaces within the timber deck cargo and especially logs.

3.7.2 The master should:

- .1 cease all loading operations if a list develops for which there is no satisfactory explanation and it would be imprudent to continue loading;
- .2 before proceeding to sea, ensure that:
  - .2.1 the ship is upright;
  - .2.2 the ship has an adequate metacentric height; and
  - .2.3 the ship meets the required stability criteria.

3.7.3 The masters of ships having a length less than 100 m should also:

- .1 exercise good judgement to ensure that a ship which carries stowed logs on deck has sufficient additional buoyancy so as to avoid overloading and loss of stability at sea;
- .2 be aware that the calculated  $GM_0$  in the departure condition may decrease continuously owing to water absorption by the deck cargo of logs, consumption of fuel, water and stores and ensure that the ship has adequate  $GM_0$  throughout the voyage; and
- .3 be aware that ballasting after departure may cause the ship's operating draught to exceed the timber load line. Ballasting and deballasting should be carried out in accordance with the guidance provided in the Code of Safe Practice for Ships Carrying Timber Deck Cargoes, 1991 (resolution A.715(17)).

3.7.4 Ships carrying timber deck cargoes should operate, as far as possible, with a safe margin of stability and with a metacentric height which is consistent with safety requirements but such metacentric height should not be allowed to fall below the recommended minimum, as specified in part A, 3.3.2.

3.7.5 However, excessive initial stability should be avoided as it will result in rapid and violent motion in heavy seas which will impose large sliding and racking forces on the cargo causing high stresses on the lashings. Operational experience indicates that metacentric height should preferably not exceed 3% of the breadth in order to prevent excessive accelerations in rolling provided that the relevant stability criteria given in part A, 3.3.2 are satisfied. This recommendation may not apply to all ships and the master should take into consideration the stability information obtained from the ship's stability booklet.



### **3.8 Operating booklets for certain ships**

3.8.1 Special purpose ships and novel craft, should be provided with additional information in the stability booklet such as design limitations, maximum speed, worst intended weather conditions or other information regarding the handling of the craft that the master needs to operate the ship safely.

3.8.2 For double hull oil tankers of single cargo tank across design, an operation manual for loading and unloading cargo oil should be provided, including operational procedures of loading and unloading cargo oil and detailed data of the initial metacentric height of the oil tanker and that of free surface correction of liquids in cargo oil tanks and ballast tanks during loading and unloading cargo oil (including ballasting and discharging) and cargo oil washing of tanks.<sup>24</sup>

3.8.3 The stability booklet of ro-ro passenger ships should contain information concerning the importance of securing and maintaining all closures watertight due to the rapid loss of stability which may result when water enters the vehicle deck and the fact that capsize can rapidly follow.

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<sup>24</sup> Refer to the Guidance on intact stability of existing tankers during liquid transfer operations (MSC/Circ.706 – MEPC/Circ.304).

## CHAPTER 4 – STABILITY CALCULATIONS PERFORMED BY STABILITY INSTRUMENTS

### 4.1 Stability instruments<sup>25</sup>

A stability instrument installed onboard should cover all stability requirements applicable to the ship. The software is subject to approval by the Administration. Active and passive systems are defined in 4.1.2. These requirements cover passive systems and the off-line operation mode of active systems only.

#### 4.1.1 *General*

4.1.1.1 The scope of stability calculation software should be in accordance with the approved stability booklet and should at least include all information and perform all calculations or checks as necessary to ensure compliance with the applicable stability requirements.

4.1.1.2 An approved stability instrument is not a substitute for the approved stability booklet, and is used as a supplement to the approved stability booklet to facilitate stability calculations.

4.1.1.3 The input/output information should be easily comparable with the approved stability booklet so as to avoid confusion and possible misinterpretation by the operator.

4.1.1.4 An operation manual is to be provided for the stability instrument.

4.1.1.5 The language in which the stability calculation results are displayed and printed out as well as the operation manual is written should be the same as used in the ship's approved stability booklet. A translation into a language considered appropriate may be required.

4.1.1.6 The stability instrument is ship specific equipment and the results of the calculations are only applicable to the ship for which it has been approved.

4.1.1.7 In case of modifications of the ship which cause alterations in the stability booklet, the specific approval of any original stability calculation software is no longer valid. The software is to be modified accordingly and re-approved.

4.1.1.8 Any change in software version related to the stability calculation should be reported to and be approved by the Administration.

#### 4.1.2 *Data entry system*

4.1.2.1 A passive system requires manual data entry.

4.1.2.2 An active system replaces partly the manual entry with sensors reading and entering the contents of tanks, etc.

4.1.2.3 Any integrated system which controls or initiates actions based on the sensor-supplied inputs is not within the scope of this Code except the part calculating the stability.

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<sup>25</sup> Refer to the Guidelines for the approval of stability instruments (MSC.1/Circ.1229).

#### **4.1.3 *Types of stability software***

Three types of calculations performed by stability software are acceptable depending upon a vessel's stability requirements:

##### *Type 1*

Software calculating intact stability only (for vessels not required to meet a damage stability criterion).

##### *Type 2*

Software calculating intact stability and checking damage stability on basis of a limit curve (e.g. for vessels applicable to SOLAS part B-1 damage stability calculations, etc.) or previously approved loading conditions.

##### *Type 3*

Software calculating intact stability and damage stability by direct application of pre-programmed damage cases for each loading condition (for some tankers etc.). The results of the direct calculations performed by the stability instrument could be accepted by the Administration even if they differ from the required minimum GM or maximum VCG stated in the approved stability booklet.

Such deviations could be accepted under the condition that all relevant stability requirements will be complied with by the results of the direct calculations.

#### **4.1.4 *Functional requirements***

4.1.4.1 The stability instrument should present relevant parameters of each loading condition in order to assist the master in his judgement on whether the ship is loaded within the approved limits. The following parameters should be presented for a given loading condition:

- .1 detailed deadweight data items including centre of gravity and free surfaces, if applicable;
- .2 trim; list;
- .3 draught at the draught marks and perpendiculars;
- .4 summary of loading condition displacement; VCG; LCG, TCG; VCB, LCB, TCB, LCF, GM and  $GM_L$ ;
- .5 table showing the righting lever versus heeling angle including trim and draught;
- .6 down-flooding angle and corresponding down-flooding opening; and
- .7 compliance with stability criteria: Listings of all calculated stability criteria, the limit values, the obtained values and the conclusions (criteria fulfilled or not fulfilled).

4.1.4.2 If direct damage stability calculations are performed, the relevant damage cases according to the applicable rules should be pre-defined for automatic check of a given loading condition.

4.1.4.3 A clear warning should be given on screen and in hard copy printout if any of the limitations are not complied with.

4.1.4.4 The data are to be presented on screen and in hard copy printout in a clear unambiguous manner.

4.1.4.5 The date and time of a saved calculation should be part of the screen display and hard copy printout.

4.1.4.6 Each hard copy printout should contain identification of the calculation program including version number.

4.1.4.7 Units of measurement are to be clearly identified and used consistently within a loading calculation.

#### **4.1.5 *Acceptable tolerances***

Depending on the type and scope of programs, the acceptable tolerances are to be determined differently, according to 4.1.5.1 or 4.1.5.2. Deviation from these tolerances should not be accepted unless the Administration considers that there is a satisfactory explanation for the difference and that there will be no adverse effect on the safety of the ship.

The accuracy of the results should be determined using an independent program or the approved stability booklet with identical input.

4.1.5.1 Programs which use only pre-programmed data from the approved stability booklet as the basis for stability calculations should have zero tolerances for the printouts of input data.

Output data tolerances are to be close to zero, however, small differences associated with calculation rounding or abridged input data are acceptable. Additionally differences associated with the use of hydrostatic and stability data for trims and the method calculating free surface moments that differ from those in the approved stability booklet are acceptable subject to review by the Administration.

4.1.5.2 Programs which use hull form models as their basis for stability calculations should have tolerances for the printouts of basic calculated data established against either data from the approved stability booklet or data obtained using the Administration's approval model.

#### **4.1.6 *Approval procedure***

4.1.6.1 *Conditions of approval of the stability instrument*

The software approval includes:

- .1 verification of type approval, if any;

- .2 verification that the data used is consistent with the current condition of the ship (refer to paragraph 4.1.6.2);
- .3 verification and approval of the test conditions; and
- .4 verification that the software is appropriate for the type of ship and stability calculations required.

The satisfactory operation of the stability instrument is to be verified by testing upon installation (refer to paragraph 4.1.8). A copy of the approved test conditions and the operation manual for the stability instrument are to be available on board.

#### 4.1.6.2 *Specific approval*

4.1.6.2.1 The accuracy of the computational results and actual ship data used by the calculation program for the particular ship on which the program will be installed should be to the satisfaction of the Administration.

4.1.6.2.2 Upon application for data verification, minimum of four loading conditions should be taken from the ship's approved stability booklet, which are to be used as the test conditions. For ships carrying liquids in bulk, at least one of the conditions should include partially filled tanks. For ships carrying grain in bulk, one of the grain loading conditions should include a partially filled grain compartment. Within the test conditions each compartment should be loaded at least once. The test conditions normally are to cover the range of load draughts from the deepest envisaged loaded condition to the light ballast condition and should include at least one departure and one arrival condition.

4.1.6.2.3 The following data, submitted by the applicant, should be consistent with arrangements and most recently approved lightship characteristics of the ship according to current plans and documentation on file, subject to possible further verification on board:

- .1 identification of the calculation program including version number. Main dimensions, hydrostatic particulars and, if applicable, the ship's profile;
- .2 the position of the forward and aft perpendiculars, and if appropriate, the calculation method to derive the forward and aft draughts at the actual position of the ship's draught marks;
- .3 ship's lightweight and centre of gravity derived from the most recently approved inclining experiment or light weight survey;
- .4 lines plan, offset tables or other suitable presentation of hull form data including all relevant appendages, if necessary to model the ship;
- .5 compartment definitions, including frame spacing, and centres of volume, together with capacity tables (sounding/ullage tables), free surface corrections, if appropriate; and
- .6 cargo and consumables distribution for each loading condition.

Verification by the Administration does not absolve the shipowner of responsibility for ensuring that the information programmed into the stability instrument is consistent with the current condition of the ship and approved stability booklet.

#### **4.1.7 User manual**

A simple and straightforward user manual written in the same language as the stability booklet is to be provided, containing descriptions and instructions, as appropriate, for at least the following:

- .1 installation;
- .2 function keys;
- .3 menu displays;
- .4 input and output data;
- .5 required minimum hardware to operate the software;
- .6 use of the test loading conditions;
- .7 computer-guided dialogue steps; and
- .8 list of warnings.

A user manual in electronic format may be provided in addition to the written manual.

#### **4.1.8 Installation testing**

4.1.8.1 To ensure correct working of the stability instrument after the final or updated software has been installed, it is the responsibility of the ship's master to have test calculations carried out according to the following pattern in the presence of an Administration's surveyor. From the approved test conditions at least one load case (other than light ship) should be calculated.

**Note:** Actual loading condition results are not suitable for checking the correct working of the stability instrument.

4.1.8.2 Normally, the test conditions are permanently stored in the stability instrument. Steps to be performed:

- .1 retrieve the test load case and start a calculation run; compare the stability results with those in the documentation;
- .2 change several items of deadweight (tank weights and the cargo weight) sufficiently to change the draught or displacement by at least 10%. The results are to be reviewed to ensure that they differ in a logical way from those of the approved test condition;
- .3 revise the above modified load condition to restore the initial test condition and compare the results. The relevant input and output data of the approved test condition are to be replicated; and

- .4 alternatively, one or more test conditions should be selected and the test calculations performed by entering all deadweight data for each selected test condition into the program as if it were a proposed loading. The results should be verified as identical to the results in the approved copy of the test conditions.

#### **4.1.9 Periodical testing**

4.1.9.1 It is the responsibility of the ship's master to check the accuracy of the stability instrument at each annual survey by applying at least one approved test condition. If an Administration's representative is not present for the stability instrument check, a copy of the test condition results obtained by this check is to be retained on board as documentation of satisfactory testing for the Administration's representative's verification.

4.1.9.2 At each renewal survey this checking for all approved test loading conditions is to be done in the presence of the Administration's representative.

4.1.9.3 The testing procedure should be carried out in accordance with paragraph 4.1.8.

#### **4.1.10 Other requirements**

4.1.10.1 Protection against unintentional or unauthorized modification of programs and data should be provided.

4.1.10.2 The program should monitor operation and activate an alarm when the program is incorrectly or abnormally used.

4.1.10.3 The program and any data stored in the system should be protected from corruption by loss of power.

4.1.10.4 Error messages with regard to limitations such as filling a compartment beyond capacity or more than once, or exceeding the assigned load line, etc., should be included.

4.1.10.5 If any software related to stability measures such as sea keeping abilities of the vessel, evaluation of in-service inclining experiments and processing the results for further calculation, as well as the evaluation of roll period measurements is installed on board, such software should be reported to the Administration for consideration.

4.1.10.6 Program functionalities should include mass and moment calculations with numerical and graphical presentation of the results, such as initial stability values, righting lever curve, areas under the righting lever curve and range of stability.

4.1.10.7 All input data from automatically measuring sensors, such as gauging devices or draught reading systems should be presented to the user for verification. The user should have the possibility to override faulty readings manually.

## **CHAPTER 5 – OPERATIONAL PROVISIONS AGAINST CAPSIZING**

### **5.1 General precautions against capsizing**

5.1.1 Compliance with the stability criteria does not ensure immunity against capsizing, regardless of the circumstances, or absolve the master from his responsibilities. Masters should therefore exercise prudence and good seamanship having regard to the season of the year, weather forecasts and the navigational zone and should take the appropriate action as to speed and course warranted by the prevailing circumstances.<sup>26</sup>

5.1.2 Care should be taken that the cargo allocated to the ship is capable of being stowed so that compliance with the criteria can be achieved. If necessary, the amount should be limited to the extent that ballast weight may be required.

5.1.3 Before a voyage commences, care should be taken to ensure that the cargo, cargo handling cranes and sizeable pieces of equipment have been properly stowed or lashed so as to minimize the possibility of both longitudinal and lateral shifting, while at sea, under the effect of acceleration caused by rolling and pitching.<sup>27</sup>

5.1.4 A ship, when engaged in towing operations, should possess an adequate reserve of stability to withstand the anticipated heeling moment arising from the tow line without endangering the towing ship. Deck cargo on board the towing ship should be so positioned as not to endanger the safe working of the crew on deck or impede the proper functioning of the towing equipment and be properly secured. Tow line arrangements should include towing springs and a method of quick release of the tow.

5.1.5 The number of partially filled or slack tanks should be kept to a minimum because of their adverse effect on stability. The negative effect on stability of filled pool tanks should be taken into consideration.

5.1.6 The stability criteria contained in part A chapter 2 set minimum values, but no maximum values are recommended. It is advisable to avoid excessive values of metacentric height, since these might lead to acceleration forces which could be prejudicial to the ship, its complement, its equipment and to safe carriage of the cargo. Slack tanks may, in exceptional cases, be used as a means of reducing excessive values of metacentric height. In such cases, due consideration should be given to sloshing effects.

5.1.7 Regard should be paid to the possible adverse effects on stability where certain bulk cargoes are carried. In this connection, attention should be paid to the IMO Code of Safe Practice for Solid Bulk Cargoes.

### **5.2 Operational precautions in heavy weather**

5.2.1 All doorways and other openings, through which water can enter into the hull or deckhouses, forecastle, etc., should be suitably closed in adverse weather conditions and accordingly all appliances for this purpose should be maintained on board and in good condition.

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<sup>26</sup> Refer to the Revised Guidance to the master for avoiding dangerous situations in adverse weather and sea conditions (MSC.1/Circ.1228).

<sup>27</sup> Refer to the Guidelines for the preparation of the Cargo Securing Manual (MSC/Circ.745).



5.2.2 Weathertight and watertight hatches, doors, etc., should be kept closed during navigation, except when necessarily opened for the working of the ship and should always be ready for immediate closure and be clearly marked to indicate that these fittings are to be kept closed except for access. Hatch covers and flush deck scuttles in fishing vessels should be kept properly secured when not in use during fishing operations. All portable deadlights should be maintained in good condition and securely closed in bad weather.

5.2.3 Any closing devices provided for vent pipes to fuel tanks should be secured in bad weather.

5.2.4 Fish should never be carried in bulk without first being sure that the portable divisions in the holds are properly installed.

### **5.3 Ship handling in heavy weather**

5.3.1 In all conditions of loading necessary care should be taken to maintain a seaworthy freeboard.

5.3.2 In severe weather, the speed of the ship should be reduced if propeller emergence, shipping of water on deck or heavy slamming occurs.

5.3.3 Special attention should be paid when a ship is sailing in following, quartering or head seas because dangerous phenomena such as parametric resonance, broaching to, reduction of stability on the wave crest, and excessive rolling may occur singularly, in sequence or simultaneously in a multiple combination, creating a threat of capsizing. A ship's speed and/or course should be altered appropriately to avoid the above-mentioned phenomena.<sup>28</sup>

5.3.4 Reliance on automatic steering may be dangerous as this prevents ready changes to course which may be needed in bad weather.

5.3.5 Water trapping in deck wells should be avoided. If freeing ports are not sufficient for the drainage of the well, the speed of the ship should be reduced or the course changed, or both. Freeing ports provided with closing appliances should always be capable of functioning and are not to be locked.

5.3.6 Masters should be aware that steep or breaking waves may occur in certain areas, or in certain wind and current combinations (river estuaries, shallow water areas, funnel shaped bays, etc.). These waves are particularly dangerous, especially for small ships.

5.3.7 In severe weather, the lateral wind pressure may cause a considerable angle of heel. If anti-heeling measures (e.g. ballasting, use of anti-heeling devices, etc.) are used to compensate for heeling due to wind, changes of the ship's course relative to the wind direction may lead to dangerous angles of heel or capsizing. Therefore, heeling caused by the wind should not be compensated with anti-heeling measures, unless, subject to the approval by the Administration, the vessel has been proven by calculation to have sufficient stability in worst case conditions (i.e. improper or incorrect use, mechanism failure, unintended course change, etc.). Guidance on the use of anti-heeling measures should be provided in the stability booklet.

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<sup>28</sup> Refer to the Revised Guidance to the master for avoiding dangerous situations in adverse weather and sea conditions (MSC.1/Circ.1228).

5.3.8 Use of operational guidelines for avoiding dangerous situations in severe weather conditions or an on-board computer based system is recommended. The method should be simple to use.

5.3.9 High-speed craft should not be intentionally operated outside the worst intended conditions and limitations specified in the relevant certificates, or in documents referred to therein.

## CHAPTER 6 – ICING CONSIDERATIONS

### 6.1 General

6.1.1 For any ship operating in areas where ice accretion is likely to occur, adversely affecting a ship's stability, icing allowances should be included in the analysis of conditions of loading.

6.1.2 Administrations are advised to take icing into account and are permitted to apply national standards where environmental conditions are considered to warrant a higher standard than those recommended in the following sections.

### 6.2 Cargo ships carrying timber deck cargoes

6.2.1 The master should establish or verify the stability of his ship for the worst service condition, having regard to the increased weight of deck cargo due to water absorption and/or ice accretion and to variations in consumables.<sup>29</sup>

6.2.2 When timber deck cargoes are carried and it is anticipated that some formation of ice will take place, an allowance should be made in the arrival condition for the additional weight.

### 6.3 Fishing vessels

The calculations of loading conditions for fishing vessels (refer to 3.4.2.8) should, where appropriate, include allowance for ice accretion, in accordance with the following provisions.

#### 6.3.1 Allowance for ice accretion<sup>30</sup>

For vessels operating in areas where ice accretion is likely to occur, the following icing allowance should be made in the stability calculations:

- .1 30 kg per square metre on exposed weather decks and gangways;
- .2 7.5 kg per square metre for projected lateral area of each side of the vessel above the water plane;
- .3 the projected lateral area of discontinuous surfaces of rail, sundry booms, spars (except masts) and rigging of vessels having no sails and the projected lateral area of other small objects should be computed by increasing the total projected area of continuous surfaces by 5% and the static moments of this area by 10%.

Vessels intended for operation in areas where ice is known to occur should be:

- .4 designed to minimize the accretion of ice; and
- .5 equipped with such means for removing ice as the Administration may require; for example, electrical and pneumatic devices, and/or special tools such as axes or wooden clubs for removing ice from bulwarks, rails and erections.

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<sup>29</sup> Refer to regulation 44(10) of the 1966 Load Line Convention and regulation 44(7) of the 1988 Load Line Protocol as amended.

<sup>30</sup> Refer to regulation III/8 of the 1993 Torremolinos Protocol.

### **6.3.2 Guidance relating to ice accretion**

In the application of the above standards the following icing areas should apply:

- .1 the area north of latitude 65° 30' N, between longitude 28° W and the west coast of Iceland; north of the north coast of Iceland; north of the rhumb line running from latitude 66° N, longitude 15° W to latitude 73° 30' N, longitude 15° E, north of latitude 73° 30' N between longitude 15° E and 35° E, and east of longitude 35° E, as well as north of latitude 56° N in the Baltic Sea;
- .2 the area north of latitude 43° N bounded in the west by the North American coast and the east by the rhumb line running from latitude 43° N, longitude 48° W to latitude 63° N, longitude 28° W and thence along longitude 28° W;
- .3 all sea areas north of the North American Continent, west of the areas defined in 6.3.2.1 and 6.3.2.2;
- .4 the Bering and Okhotsk Seas and the Tartary Strait during the icing season; and
- .5 south of latitude 60° S.

A chart to illustrate the areas is attached at the end of this chapter.

For vessels operating in areas where ice accretion may be expected:

- .6 within the areas defined in 6.3.2.1, 6.3.2.3, 6.3.2.4 and 6.3.2.5 known to having icing conditions significantly different from those described in 6.3.1, ice accretion requirements of one half to twice the required allowance may be applied; and
- .7 within the area defined in 6.3.2.2, where ice accretion in excess of twice the allowance required by 6.3.1 may be expected, more severe requirements than those given in 6.3.1 may be applied.

### **6.3.3 Brief survey of the causes of ice formation and its influence upon the seaworthiness of the vessel**

6.3.3.1 The skipper of a fishing vessel should bear in mind that ice formation is a complicated process which depends upon meteorological conditions, condition of loading and behaviour of the vessel in stormy weather as well as on the size and location of superstructures and rigging. The most common cause of ice formation is the deposit of water droplets on the vessel's structure. These droplets come from spray driven from wave crests and from ship-generated spray.

6.3.3.2 Ice formation may also occur in conditions of snowfall, sea fog (including arctic sea smoke), a drastic fall in ambient temperature, as well as from the freezing of drops of rain on impact with the vessel's structure.

6.3.3.3 Ice formation may sometimes be caused or accentuated by water shipped on board and retained on deck.

6.3.3.4 Intensive ice formation generally occurs on stem, bulwark and bulwark rail, front walls of superstructures and deck-houses, hawse holes, anchors, deck gear, forecastle deck and upper deck, freeing ports, aerials, stays, shrouds, masts and spars.

6.3.3.5 It should be borne in mind that the most dangerous areas as far as ice formation is concerned are the sub-Arctic regions.

6.3.3.6 The most intensive ice formation takes place when wind and sea come from ahead. In beam and quartering winds, ice accumulates quicker on the windward side of the vessel, thus leading to a constant list which is extremely dangerous.

6.3.3.7 Listed below are meteorological conditions causing the most common type of ice formation due to spraying of a vessel. Examples of the weight of ice formation on a typical fishing vessel of displacement in the range 100 t to 500 t are also given. For larger vessels the weight will be correspondingly greater.

6.3.3.8 Slow accumulations of ice take place:

- .1 at ambient temperature from  $-1^{\circ}\text{C}$  to  $-3^{\circ}\text{C}$  and any wind force;
- .2 at ambient temperature  $-4^{\circ}\text{C}$  and lower and wind force from 0 to 9 m/s; and
- .3 under the conditions of precipitation, fog or sea mist followed by a drastic fall of the ambient temperature.

Under all these conditions the intensity of ice accumulation may not exceed 1.5 t/h.

6.3.3.9 At ambient temperature of  $-4^{\circ}\text{C}$  to  $-8^{\circ}\text{C}$  and wind force 10 to 15 m/s, rapid accumulation of ice takes place. Under these conditions the intensity of ice accumulation can lie within the range 1.5 to 4 t/h.

6.3.3.10 Very fast accumulation of ice takes place:

- .1 at ambient temperature of  $-4^{\circ}\text{C}$  and lower and wind forces of 16 m/s and over; and
- .2 at ambient temperature  $-9^{\circ}\text{C}$  and lower and wind force 10 to 15 m/s.

Under these conditions the intensity of ice accumulation can exceed 4 t/h.

6.3.3.11 The skipper should bear in mind that ice formation adversely affects the seaworthiness of the vessel as ice formation leads to:

- .1 an increase in the weight of the vessel due to accumulation of ice on the vessel's surfaces which causes the reduction of freeboard and buoyancy;
- .2 a rise of the vessel's centre of gravity due to the high location of ice on the vessel's structures with corresponding reduction in the level of stability;
- .3 an increase of windage area due to ice formation on the upper parts of the vessel and hence an increase in the heeling moment due to the action of the wind;

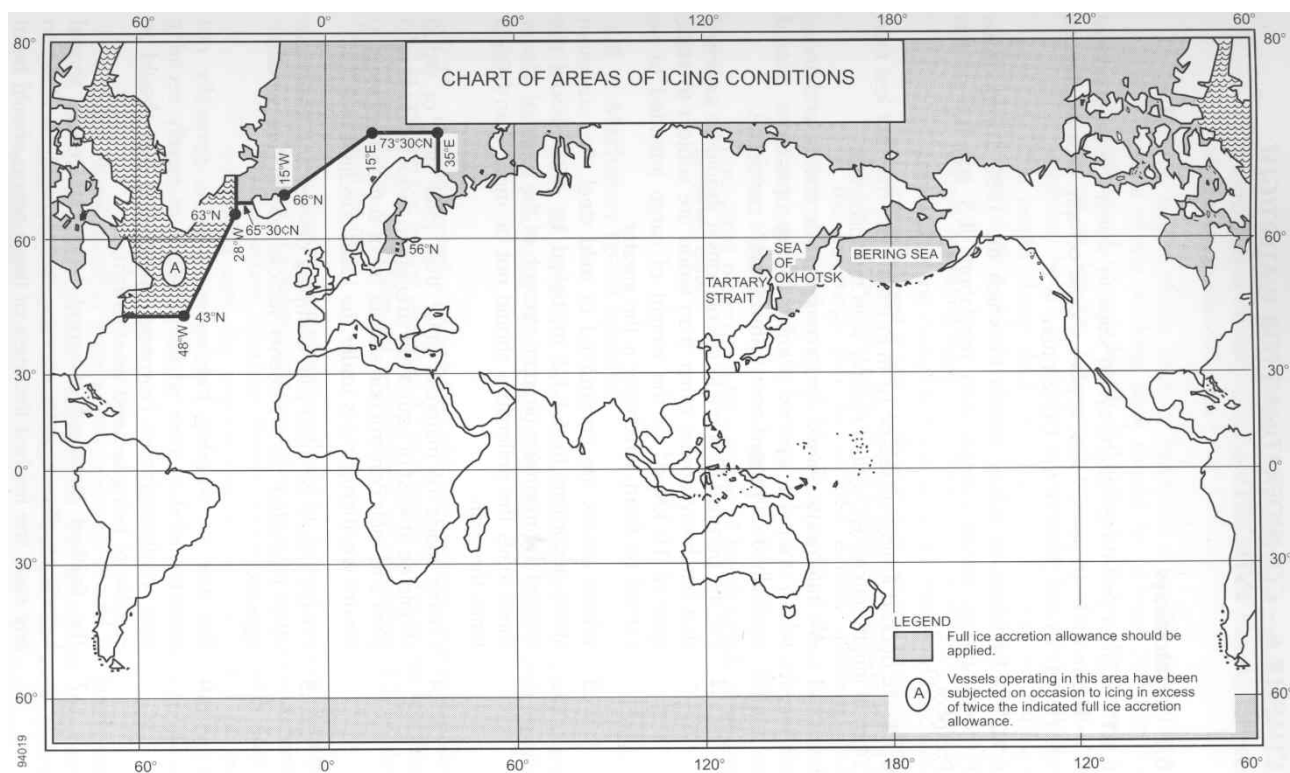
- .4 a change of trim due to uneven distribution of ice along the vessel's length;
- .5 the development of a constant list due to uneven distribution of ice across the breadth of the vessel; and
- .6 impairment of the manoeuvrability and reduction of the speed of the vessel.

6.3.4 Operational procedures related to ensuring a fishing vessel's endurance in conditions of ice formation are given in annex 2 (Recommendations for skippers of fishing vessels on ensuring a vessel's endurance in conditions of ice formation).

#### 6.4 Offshore supply vessels 24 m to 100 m in length

For vessels operating in areas where ice accretion is likely to occur:

- .1 no shutters should be fitted in the freeing ports; and
- .2 with regard to operational precautions against capsizing, reference is made to the recommendations for skippers of fishing vessels on ensuring a vessel's endurance in conditions of ice formation, as given in paragraph 6.3.3 and in annex 2 (Recommendations for skippers of fishing vessels on ensuring a vessel's endurance in conditions of ice formation).



## CHAPTER 7 – CONSIDERATIONS FOR WATERTIGHT AND WEATHERTIGHT INTEGRITY

### 7.1 Hatchways

7.1.1 Cargo and other hatchways in ships to which the International Convention on Load Lines, 1966, applies should comply with regulations 13, 14, 15, 16 and 26(5) of this Convention.

7.1.2 Hatchways in fishing vessels to which the 1993 Torremolinos Protocol applies should comply with regulations II/5 and II/6 of this Protocol.

7.1.3 In decked fishing vessels of 12 m in length and over but less than 24 m in length hatchways should comply with the following:

7.1.3.1 All hatchways should be provided with covers and those which may be opened during fishing operations should normally be arranged near to the vessel's centreline.

7.1.3.2 For the purpose of strength calculations it should be assumed that hatchway covers other than wood are subject to static load of  $10 \text{ kN/m}^2$  or the weight of cargo intended to be carried on them, whichever is the greater.

7.1.3.3 Where covers are constructed of mild steel, the maximum stress according to 7.1.3.2 multiplied by 4.25 should not exceed the minimum ultimate strength of the material. Under these loads the deflections should not be more than 0.0028 times the span.

7.1.3.4 Covers made of materials other than mild steel or wood should be at least of equivalent strength to those made of mild steel and their construction should be of sufficient stiffness to ensure weathertightness under the loads specified in 7.1.3.2.

7.1.3.5 Covers should be fitted with clamping devices and gaskets or other equivalent arrangements sufficient to ensure weathertightness.

7.1.3.6 The use of wooden hatchway covers is generally not recommended in view of the difficulty of rapidly securing their weathertightness. However, where fitted they should be capable of being secured weathertight.

7.1.3.7 The finished thickness of wood hatchway covers should include an allowance for abrasion due to rough handling. In any case, the finished thickness of these covers should be at least 4 mm for each 100 mm of unsupported span subject to a minimum of 40 mm and the width of their bearing surfaces should be at least 65 mm.

7.1.3.8 The height above deck of hatchway coamings on exposed parts of the working deck should be at least 300 mm for vessels of 12 m in length and at least 600 mm for vessels of 24 m in length. For vessels of intermediate length the minimum height should be obtained by linear interpolation. The height above deck of hatchway coamings on exposed parts of the superstructure deck should be at least 300 mm.

7.1.3.9 Where operating experience has shown justification and on approval of the competent authority the height of hatchway coamings, except those which give direct access to machinery spaces may be reduced from the height as specified in 7.1.3.8 or the coamings may be omitted entirely, provided that efficient watertight hatch covers other than wood are fitted. Such

hatchways should be kept as small as practicable and the covers should be permanently attached by hinges or equivalent means and be capable of being rapidly closed or battened down.

## **7.2 Machinery space openings**

7.2.1 In ships to which the International Convention on Load Lines, 1966 or the Protocol of 1988 as amended, as applicable, applies machinery space openings should comply with regulation 17.

7.2.2 In fishing vessels to which the 1993 Torremolinos Protocol applies and in new decked fishing vessels of 12 m in length and over, but less than 24 m in length, the following requirements of regulation II/7 of this Protocol should be met:

- .1 machinery space openings should be framed and enclosed by casings of a strength equivalent to the adjacent superstructure. External access openings therein should be fitted with doors complying with the requirements of regulation II/4 of the Protocol or, in vessels less than 24 m in length, with hatch covers other than wood complying with the requirements of 7.1.3 of this chapter; and
- .2 openings other than access openings should be fitted with covers of equivalent strength to the unpierced structure, permanently attached thereto and capable of being closed weathertight.

7.2.3 In offshore supply vessels, access to the machinery space should, if possible, be arranged within the forecastle. Any access to the machinery space from the exposed cargo deck should be provided with two weathertight closures. Access to spaces below the exposed cargo deck should preferably be from a position within or above the superstructure deck.

## **7.3 Doors**

7.3.1 In passenger ships to which the International Convention for the Safety of Life at Sea, 1974, applies, doors should comply with regulations II-1/13 and 16 of this Convention.

7.3.2 In ships to which the International Convention on Load Lines, 1966 or the Protocol of 1988 relating thereto, as amended, as applicable, applies, doors should comply with regulation 12 of this Convention.

7.3.3 In fishing vessels to which the 1993 Torremolinos Protocol applies, doors should comply with regulation II/2 and regulation II/4 of this Protocol.

7.3.4 In decked fishing vessels of 12 m in length and over but less than 24 m in length:

- .1 Watertight doors may be of the hinged type and should be capable of being operated locally from each side of the door. A notice should be attached to the door on each side stating that the door should be kept closed at sea.
- .2 All access openings in bulkheads of enclosed deck erections, through which water could enter and endanger the vessel, should be fitted with doors permanently attached to the bulkhead, framed and stiffened so that the whole structure is of equivalent strength to the unpierced structure, and weathertight when closed, and



means should be provided so that they can be operated from each side of the bulkhead.

- .3 The height above deck of sills in those doorways, companionways, deck erections and machinery casings situated on the working deck and on superstructure decks which give direct access to parts of that deck exposed to the weather and sea should be at least equal to the height of hatchway coamings as specified in 7.1.3.8.
- .4 Where operating experience has shown justification and on approval of the competent authority, the height above deck of sills in the doorways specified in 7.3.4.3 except those giving direct access to machinery spaces, may be reduced to not less than 150 mm on superstructure decks and not less than 380 mm on the working deck for vessels 24 m in length, or not less than 150 mm on the working deck for vessels of 12 m in length. For vessels of intermediate length the minimum acceptable reduced height for sills in doorways on the working deck should be obtained by linear interpolation.

#### **7.4 Cargo ports and other similar openings**

7.4.1 Cargo ports and other similar openings in ships to which the International Convention on Load Lines, 1966 or the Protocol of 1988 relating thereto, as amended, as applicable, applies should comply with regulation 21 of this Convention.

7.4.2 Openings through which water can enter the vessel and fish flaps on stern trawlers in fishing vessels to which the 1993 Torremolinos Protocol applies should comply with regulation II/3 of this Protocol.

7.4.3 Cargo port and other similar openings in passenger ships to which the International Convention for the Safety of Life at Sea, 1974 applies should comply with regulations II-1/15, 17 and 22 of this Convention. In addition, such openings in ro-ro passenger ships to which this Convention applies, should comply with regulation II-1/17-1 of this Convention.

7.4.4 Cargo port and other similar openings in cargo ships to which the International Convention for the Safety of Life at Sea, 1974 applies should comply with regulation II-1/15-10 of this Convention.

#### **7.5 Sidescuttles, window scuppers, inlets and discharges**

7.5.1 In passenger ships to which the International Convention for the Safety of Life at Sea, 1974 applies, openings in shell plating below the bulkhead deck should comply with regulation II-1/15 of this Convention.

Watertight integrity above the bulkhead deck should comply with regulation II-1/17 of this Convention.

In addition, in ro-ro passenger ships, watertight integrity below the bulkhead deck should comply with regulation II-1/23 and integrity of the hull and superstructure should comply with regulation II-1/17-1 of this Convention.

7.5.2 In ships to which the International Convention on Load Lines, 1966 or the Protocol of 1988 relating thereto, as amended, as applicable, applies, scuppers, inlets and discharges

should comply with regulation 22 and sidescuttles should comply with regulation 23 of this Convention.

7.5.3 In fishing vessels to which the 1993 Torremolinos Protocol applies, sidescuttles and windows should comply with regulation II/12 and inlets and discharges should comply with regulation II/13 of this Protocol.

7.5.4 In decked fishing vessels of 12 m in length and over but less than 24 m in length, sidescuttles, windows and other openings and inlets and discharges should comply with the following:

- .1 sidescuttles to spaces below the working deck and to enclosed spaces on the working deck should be fitted with hinged deadlights capable of being closed watertight;
- .2 sidescuttles should be fitted in a position such that their sills are above a line drawn parallel to the working deck at side having its lowest point 500 mm above the deepest operating waterline;
- .3 sidescuttles, together with their glasses and deadlights, should be of substantial construction to the satisfaction of the competent authority;
- .4 skylights leading to spaces below the working deck should be of substantial construction and capable of being closed and secured weathertight, and with provision for adequate means of closing in the event of damage to the inserts. Skylights leading to machinery spaces should be avoided as far as practicable;
- .5 toughened safety glass or suitable permanently transparent material of equivalent strength should be fitted in all wheelhouse windows exposed to the weather. The means of securing windows and the width of the bearing surfaces should be adequate, having regard to the window material used. Openings leading to spaces below deck from a wheelhouse whose windows are not provided with the protection required by 0 should be fitted with a weathertight closing appliance;
- .6 deadlights or a suitable number of storm shutters should be provided where there is no other method of preventing water from entering the hull through a broken window or sidescuttle;
- .7 the competent authority may accept sidescuttles and windows without deadlights in side or aft bulkheads of deck erections located on or above the working deck if satisfied that the safety of the vessel will not be impaired;
- .8 the number of openings in the sides of the vessel below the working deck should be the minimum compatible with the design and proper working of the vessel and such openings should be provided with closing arrangements of adequate strength to ensure watertightness and the structural integrity of the surrounding structure;
- .9 discharges led through the shell either from spaces below the working deck or from spaces within deck erections should be fitted with efficient and accessible means for preventing water from passing inboard. Normally each separate discharge should have an automatic non-return valve with a positive means of

closing it from a readily accessible position. Such a valve is not required if the competent authority considers that the entry of water into the vessel through the opening is not likely to lead to dangerous flooding and that the thickness of the pipe is sufficient. The means for operating the valve with a positive means of closing should be provided with an indicator showing whether the valve is open or closed. The open inboard end of any discharge system should be above the deepest operating waterline at an angle of heel satisfactory to the competent authority;

- .10 in machinery spaces main and auxiliary sea inlets and discharges essential for the operation of machinery should be controlled locally. Controls should be readily accessible and should be provided with indicators showing whether the valves are open or closed. Suitable warning devices should be incorporated to indicate leakage of water into the space; and
- .11 fittings attached to the shell and all valves should be of steel, bronze or other ductile material. All pipes between the shell and valves should be of steel, except that in vessels constructed of material other than steel, other suitable materials may be used.

7.5.5 In cargo ships to which the International Convention for the Safety of Life at Sea, 1974 applies, external openings should comply with regulation II-1/15-2 of this Convention.

## **7.6 Other deck openings**

7.6.1 Miscellaneous openings in freeboard and superstructure decks in ships to which the International Convention on Load Lines, 1966 or the Protocol of 1988 relating thereto, as amended, as applicable, applies should comply with regulation 18 of this Convention.

7.6.2 In decked fishing vessels of 12 m and over where it is essential for fishing operations, flush deck scuttles of the screw, bayonet or equivalent type and manholes may be fitted provided these are capable of being closed watertight and such devices should be permanently attached to the adjacent structure. Having regard to the size and disposition of the openings and the design of the closing devices, metal-to-metal closures may be fitted if they are effectively watertight. Openings other than hatchways, machinery space openings, manholes and flush scuttles in the working or superstructure deck should be protected by enclosed structures fitted with weathertight doors or their equivalent. Companionways should be situated as close as practicable to the centreline of the vessel.<sup>31</sup>

## **7.7 Ventilators, air pipes and sounding devices**

7.7.1 Ventilators in ships to which the International Convention on Load Lines, 1966 or the Protocol of 1988 relating thereto, as amended, as applicable, applies should comply with regulation 19 and air pipes should comply with regulation 20 of this Convention.

7.7.2 Ventilators in fishing vessels to which the 1993 Torremolinos Protocol applies should comply with regulation II/9 and air pipes should comply with regulation II/10 of this Protocol. Sounding devices should comply with regulation II/11 of this Protocol.

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<sup>31</sup> Refer to regulation II/8 of the 1993 Torremolinos Protocol.

7.7.3 Ventilators and air pipes in fishing vessels of 12 m in length and over but less than 24 m in length should comply with the following:

- .1 ventilators should have coamings of substantial construction and should be capable of being closed weathertight by devices permanently attached to the ventilator or adjacent structure. Ventilators should be arranged as close to the vessel's centreline as possible and, where practicable, should extend through the top of a deck erection or companionway;
- .2 the coamings of ventilators should be as high as practicable. On the working deck the height above deck of coamings of ventilators, other than machinery space ventilators, should be not less than 760 mm and on superstructure decks not less than 450 mm. When the height of such ventilators may interfere with the working of the vessel their coaming heights may be reduced to the satisfaction of the competent authority. The height above deck of machinery space ventilator openings should be to the satisfaction of the competent authority;
- .3 closing appliances need not be fitted to ventilators the coamings of which extend more than 2.5 m above the working deck or more than 1.0 m above a deck-house top or superstructure deck;
- .4 where air pipes to tanks or other spaces below deck extend above the working or superstructure decks the exposed parts of the pipes should be of substantial construction and, as far as is practicable, located close to the vessel's centreline and protected from damage by fishing or lifting gear. Openings of such pipes should be protected by efficient means of closing, permanently attached to the pipe or adjacent structure, except that where the competent authority is satisfied that they are protected against water trapped on deck, these means of closing may be omitted; and
- .5 where air pipes are situated near the side of the vessel their height above deck to the point where water may have access below should be at least 760 mm on the working deck and at least 450 mm on the superstructure deck. The competent authority may accept reduction of the height of an air pipe to avoid interference with the fishing operations.

7.7.4 In offshore supply vessels air pipes and ventilators should comply with the following:

- .1 air pipes and ventilators should be fitted in protected positions in order to avoid damage by cargo during operations and to minimize the possibility of flooding. Air pipes on the exposed cargo and forecastle decks should be fitted with automatic closing devices; and
- .2 due regard should be given to the position of machinery space ventilators. Preferably they should be fitted in a position above the superstructure deck, or above an equivalent level if no superstructure deck is fitted.

## 7.8 Freeing ports

7.8.1 Where bulwarks on the weather portion of the freeboard or superstructure decks or, in fishing vessels, the working decks form wells, freeing ports should be arranged along the length of the bulwark as to ensure that the deck is freed of water most rapidly and effectively. Lower edges of freeing ports should be as near the deck as practicable.<sup>32</sup>

7.8.2 In ships to which the International Convention on Load Lines, 1966 or the Protocol of 1988 as amended, as applicable, applies freeing ports should comply with regulation 24 of this Convention.

7.8.3 In decked fishing vessels of 12 m in length and over, freeing ports should comply with the following.<sup>33</sup>

7.8.3.1 The minimum freeing port area  $A$  in m<sup>2</sup>, on each side of the vessel for each well on the working deck, should be determined in relation to the length  $l$  and height of bulwark in the well as follows:

.1  $A = K * l$

where:

$$K = 0.07 \text{ for vessels of 24 m in length and over}$$

$$K = 0.035 \text{ for vessels of 12 m in length;}$$

for intermediate lengths the value of  $K$  should be obtained by linear interpolation ( $l$  need not be taken as greater than 70% of the vessel's length);

.2 where the bulwark is more than 1.2 m in average height, the required area should be increased by 0.004 m<sup>2</sup> per metre of length of well for each 0.1 m difference in height; and

.3 where the bulwark is less than 0.9 m in average height, the required area may be decreased by 0.004 m<sup>2</sup> per metre of length of well for each 0.1 m difference in height.

7.8.3.2 The freeing port area calculated according to 7.8.3.1 should be increased where the Administration or competent authority considers that the vessel's sheer is not sufficient to ensure rapid and effective freeing of the deck of water.

7.8.3.3 Subject to the approval of the Administration or competent authority, the minimum freeing port area for each well on the superstructure deck should be not less than one-half the area  $A$  given in 7.8.3.1 except that where the superstructure deck forms a working deck for fishing operations the minimum area on each side should be not less than 75% of the area  $A$ .

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<sup>32</sup> Refer to regulation 24(5) of the International Convention on Load Lines, 1966 or the Protocol of 1988 as amended, as applicable and regulation 11/14(4) of the 1993 Torremolinos Protocol.

<sup>33</sup> Refer to regulation II/1 4 of the 1993 Torremolinos Protocol.

7.8.3.4 Freeing ports should be so arranged along the length of bulwarks as to provide the most rapid and effective freeing of the deck from water. Lower edges of freeing ports should be as near the deck as practicable.

7.8.3.5 Pound boards and means for stowage and working the fishing gear should be arranged so that the effectiveness of the freeing ports will not be impaired or water trapped on deck and prevented from easily reaching the freeing ports. Pound boards should be so constructed that they can be locked in position when in use and will not hamper the discharge of shipped water.

7.8.3.6 Freeing ports over 0.3 m in depth should be fitted with bars spaced not more than 0.23 m nor less than 0.15 m apart or provided with other suitable protective arrangements. Freeing port covers, if fitted, should be of approved construction. If devices are considered necessary for locking freeing port covers during fishing operations they should be to the satisfaction of the competent authority and easily operable from a readily accessible position.

7.8.3.7 In vessels intended to operate in areas subject to icing, covers and protective arrangements for freeing ports should be capable of being easily removed to restrict ice accumulation. Size of opening and means provided for removal of these protective arrangements should be to the satisfaction of the competent authority.

7.8.3.8 In addition, in fishing vessels of 12 m in length and above but less than 24 m in length where wells or cockpits are fitted in the working deck or superstructure deck with their bottoms above the deepest operating waterline, efficient non-return means of drainage overboard should be provided. Where bottoms of such wells or cockpits are below the deepest operating waterline, drainage to the bilges should be provided.

7.8.4 In offshore supply vessels the Administration should give special attention to adequate drainage of pipe stowage positions, having regard to the individual characteristics of the vessel. However, the area provided for drainage of the pipe stowage positions should be in excess of the required freeing port area in the cargo deck bulwark and should not be fitted with shutters.

## **7.9 Miscellaneous**

7.9.1 Ships engaged in towing operations should be provided with means for quick release of the towing hawser.

## CHAPTER 8 – DETERMINATION OF LIGHTSHIP PARAMETERS

### 8.1 Application

8.1.1 Every passenger ship regardless of size and every cargo ship having a length, as defined in the International Convention on Load Lines, 1966 or the Protocol of 1988 relating thereto, as amended, as applicable, of 24 m and upwards, should be inclined upon its completion and the elements of its stability determined.<sup>34</sup>

8.1.2 The Administration may allow the inclining test of an individual ship as required by paragraph 8.1.1 to be dispensed with provided basic stability data are available from the inclining test of a sister ship and it is shown to the satisfaction of the Administration that reliable stability information for the exempted ship can be obtained from such basic data.

To be dispensed from an inclining test, the deviation of lightship mass is not to exceed,

- |                        |  |
|------------------------|--|
| for $L^{35} < 50$ m:   | 2% of the lightship mass of the lead ship or as given in the information on stability; |
| for $L > 160$ m:       | 1% of the lightship mass of the lead ship or as given in the information on stability; |
| for intermediate $L$ : | by linear interpolation,   |

and the deviation of the lightship's longitudinal centre of gravity (LCG) referred to  $L$  should not be greater than 0.5% of the lightship's LCG of the lead ship or as given in the information on stability regardless of the ship's length.

8.1.3 The Administration may allow the inclining test of an individual ship or class of ships especially designed for the carriage of liquids or ore in bulk to be dispensed with when reference to existing data for similar ships clearly indicates that due to the ship's proportions and arrangements more than sufficient metacentric height will be available in all probable loading conditions.

8.1.4 Where any alterations are made to a ship so as to materially affect the stability, the ship should be re-inclined.

8.1.5 At periodic intervals not exceeding five years, a lightweight survey should be carried out on all passenger ships to verify any changes in lightship displacement and longitudinal centre of gravity. The ship should be re-inclined whenever, in comparison with the approved stability information, a deviation from the lightship displacement exceeding 2% or a deviation of the longitudinal centre of gravity exceeding 1% of  $L$  is found, or anticipated.

8.1.6 The inclining test prescribed is adaptable for ships with a length below 24 m if special precautions are taken to ensure the accuracy of the test procedure.

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<sup>34</sup> Refer to regulation II-1/5 of the 1974 SOLAS Convention, as amended.

<sup>35</sup> For the purpose of paragraphs 8.1.2 and 8.1.5 the length ( $L$ ) means the subdivision length ( $L_S$ ) as defined in regulation II-1/2.1 of the 1974 SOLAS Convention, as amended. For ships to which the Convention applies, and for other ships the length ( $L$ ) means the length of ship as defined in 2.12 of the Purpose and Definitions of this Code.

## **8.2 Preparations for the inclining test**

### **8.2.1 *Notification of the Administration***

Written notification of the inclining test should be sent to the Administration as it requires or in due time before the test. An Administration representative should be present to witness the inclining test and the test results be submitted for review.

The responsibility for making preparations, conducting the inclining test and lightweight survey, recording the data, and calculating the results rests with the shipyard, owner or naval architect. While compliance with the procedures outlined herein will facilitate an expeditious and accurate inclining test, it is recognized that alternative procedures or - arrangements may be equally efficient. However, to minimize risk of delay, it is recommended that all such variances be submitted to the Administration for review prior to the inclining test.

#### **8.2.1.1 *Details of notification***

Written notification should provide the following information as the Administration may require:

- .1 identification of the ship by name and shipyard hull number, if applicable;
- .2 date, time, and location of the test;
- .3 inclining weight data:
  - .1 type;
  - .2 amount (number of units and weight of each);
  - .3 certification;
  - .4 method of handling (i.e. sliding rail or crane);
  - .5 anticipated maximum angle of heel to each side;
- .4 measuring devices:
  - .1 pendulums – approximate location and length;
  - .2 U-tubes – approximate location and length;
  - .3 inclinometers – location and details of approvals and calibrations;
- .5 approximate trim;
- .6 condition of tanks;
- .7 estimated weights to deduct, to complete, and to relocate in order to place the ship in its true lightship condition;



- .8 detailed description of any computer software to be used to aid in calculations during the inclining test; and
- .9 name and telephone number of the person responsible for conducting the inclining test.

### **8.2.2 *General condition of the ship***

8.2.2.1 A ship should be as complete as possible at the time of the inclining test. The test should be scheduled to minimize the disruption in the ship's delivery date or its operational commitments.

8.2.2.2 The amount and type of work left to be completed (mass to be added) affect the accuracy of the lightship characteristics, so good judgement should be used. If the mass or centre of gravity of an item to be added cannot be determined with confidence, it is best to conduct the inclining test after the item is added.

8.2.2.3 Temporary material, tool boxes, staging, sand, debris, etc., on board should be reduced to absolute minimum before the inclining test. Excess crew or personnel not directly involved in the inclining test should be removed from on board the ship before the test.

8.2.2.4 Decks should be free of water. Water trapped on deck may shift and pocket in a fashion similar to liquids in a tank. Any rain, snow or ice accumulated on the ship should be removed prior to the test.

8.2.2.5 The anticipated liquid loading for the test should be included in the planning for the test. Preferably, all tanks should be empty and clean, or completely full. The number of slack tanks should be kept to an absolute minimum. The viscosity of the fluid, the depth of the fluid and the shape of the tank should be such that the free surface effect can be accurately determined.

8.2.2.6 The ship should be moored in a quiet, sheltered area free from extraneous forces such as propeller wash from passing vessels, or sudden discharges from shore side pumps. The tide conditions and the trim of the ship during the test should be considered. Prior to the test, the depth of water should be measured and recorded in as many locations as are necessary to ensure that the ship will not contact the bottom. The specific gravity of water should be accurately recorded. The ship should be moored in a manner to allow unrestricted heeling. The access ramps should be removed. Power lines, hoses, etc., connected to shore should be at a minimum, and kept slack at all times.

8.2.2.7 The ship should be as upright as possible; with inclining weights in the initial position, up to one-half degree of list is acceptable. The actual trim and deflection of keel, if practical, should be considered in the hydrostatic data. In order to avoid excessive errors caused by significant changes in the water plane area during heeling, hydrostatic data for the actual trim and the maximum anticipated heeling angles should be checked beforehand.

8.2.2.8 The total weight used should be sufficient to provide a minimum inclination of one degree and a maximum of four degrees of heel to each side. The Administration may, however, accept a smaller inclination angle for large ships provided that the requirements on pendulum deflection or U-tube difference in height in 8.2.2.9 are complied with. Test weights should be compact and of such a configuration that the vertical centre of gravity of the weights can be accurately determined. Each weight should be marked with an identification number and its

mass. Re-certification of the test weights should be carried out prior to the incline. A crane of sufficient capacity and reach, or some other means, should be available during the inclining test to shift weights on the decking in an expeditious and safe manner. Water ballast transfer may be carried out, when it is impractical to incline using solid weights if acceptable to the Administration.

8.2.2.9 The use of three pendulums is recommended but a minimum of two should be used to allow identification of bad readings at any one pendulum station. They should each be located in an area protected from the wind. One or more pendulums may be substituted by other measuring devices (U-tubes or inclinometers) at the discretion of the Administration. Alternative measuring devices should not be used to reduce the minimum inclining angles recommended in 8.2.2.8.

The use of an inclinometer or U-tube should be considered in each separate case. It is recommended that inclinometers or other measuring devices only be used in conjunction with at least one pendulum.

8.2.2.10 Efficient two-way communications should be provided between central control and the weight handlers and between central control and each pendulum station. One person at a central control station should have complete control over all personnel involved in the test.

### **8.3 Plans required**

The person in charge of the inclining test should have available a copy of the following plans at the time of the inclining test:

- .1 lines plan;
- .2 hydrostatic curves or hydrostatic data;
- .3 general arrangement plan of decks, holds, inner bottoms, etc.;
- .4 capacity plan showing capacities and vertical and longitudinal centres of gravity of cargo spaces, tanks, etc. When ballast water is used as inclining weight, the transverse and vertical centres of gravity for the applicable tanks for each angle of inclination, must be available;
- .5 tank sounding tables;
- .6 draught mark locations; and
- .7 docking drawing with keel profile and draught mark corrections (if available).

### **8.4 Test procedure**

8.4.1 Procedures followed in conducting the inclining test and lightweight survey should be in accordance with the recommendations laid out in annex 1 (Detailed guidance for the conduct of an inclining test to this Code).

8.4.1.1 Freeboard/draught readings should be taken to establish the position of the waterline in order to determine the displacement of the ship at the time of the inclining test. It is recommended that at least five freeboard readings, approximately equally spaced, be taken on

each side of the ship or that all draught marks (forward, midship and aft) be read on each side of the ship. Draught/freeboard readings should be read immediately before or immediately after the inclining test.

8.4.1.2 The standard test employs eight distinct weight movements. Movement No.8, a recheck of the zero point, may be omitted if a straight line plot is achieved after movement No.7. If a straight line plot is achieved after the initial zero and six weight movements, the inclining test is complete and the second check at zero may be omitted. If a straight line plot is not achieved, those weight movements that did not yield acceptable plotted points should be repeated or explained.

8.4.2 A copy of the inclining data should be forwarded to the Administration along with the calculated results of the inclining test in an acceptable report format, if required.

8.4.3 All calculations performed during the inclining test and in preparation of an inclining test report may be carried out by a suitable computer program. Output generated by such a program may be used for presentation of all or partial data and calculations included in the test report if it is clear, concise, well documented, and generally consistent in form and content with Administration requirements.

## **8.5 Inclining test for MODUs**

8.5.1 An inclining test should be required for the first unit of a design, when as near to completion as possible, to determine accurately the lightship data (weight and position of centre of gravity).

8.5.2 For successive units which are identical by design, the lightship data of the first unit of the series may be accepted by the Administration in lieu of an inclining test, provided the difference in lightship displacement or position of centre of gravity due to weight changes for minor differences in machinery, outfitting or equipment, confirmed by the results of a deadweight survey, are less than 1% of the values of the lightship displacement and principal horizontal dimensions as determined for the first of the series. Extra care should be given to the detailed weight calculation and comparison with the original unit of a series of column-stabilized, semi-submersible types as these, even though identical by design, are recognized as being unlikely to attain an acceptable similarity of weight or centre of gravity to warrant a waiver of the inclining test.

8.5.3 The results of the inclining test, or deadweight survey and inclining experiment adjusted for weight differences, should be indicated in the Operating Manual.

8.5.4 A record of all changes to machinery, structure, outfit and equipment that affect the lightship data, should be maintained in the Operating Manual or a lightship data alterations log and be taken into account in daily operations.

8.5.5 For column-stabilized units, a deadweight survey should be conducted at intervals not exceeding five years. Where the deadweight survey indicates a change from the calculated lightship displacement in excess of 1% of the operating displacement, an inclining test should be conducted.

8.5.6 An inclining test or a deadweight survey should be carried out in the presence of an officer of the Administration, or a duly authorized person or representative of an approved organization.

## **8.6 Stability test for pontoons**

An inclining experiment is not normally required for a pontoon, provided a conservative value of the lightship vertical centre of gravity (KG) is assumed for the stability calculations. The KG can be assumed at the level of the main deck although it is recognized that a lesser value could be acceptable if fully documented. The lightship displacement and longitudinal centre of gravity should be determined by calculation based on draught and density readings.

## ANNEX 1

### DETAILED GUIDANCE FOR THE CONDUCT OF AN INCLINING TEST

#### 1 INTRODUCTION

This annex supplements the inclining standards put forth in part B, chapter 8 (Determination of lightship parameters) of this Code. This annex contains important detailed procedures for conducting an inclining test in order to ensure that valid results are obtained with maximum precision at a minimal cost to owners, shipyards and the Administration. A complete understanding of the correct procedures used to perform an inclining test is imperative in order to ensure that the test is conducted properly and so that results can be examined for accuracy as the inclining experiment is conducted.

#### 2 PREPARATIONS FOR THE INCLINING TEST

##### 2.1 Free surface and tankage

2.1.1 If there are liquids on board the ship when it is inclined, whether in the bilges or in the tanks, they will shift to the low side when the ship heels. This shift of liquids will exaggerate the heel of the ship. Unless the exact weight and distance of liquid shifted can be precisely calculated, the metacentric height (GM) calculated from the inclining test will be in error. Free surface should be minimized by emptying the tanks completely and making sure all bilges are dry; or by completely filling the tanks so that no shift of liquid is possible. The latter method is not the optimum because air pockets are difficult to remove from between structural members of a tank, and the weight and centre of the liquid in a full tank should be accurately determined in order to adjust the lightship values accordingly. When tanks must be left slack, it is desirable that the sides of the tanks be parallel vertical planes and the tanks be regular in shape (i.e. rectangular, trapezoidal, etc.) when viewed from above, so that the free surface moment of the liquid can be accurately determined. For example, the free surface moment of the liquid in a tank with parallel vertical sides can be readily calculated by the formula:

$$M_{fs} = l * b^3 * \rho_t / 12 \quad (\text{mt})$$

where:

$l$  = length of tank (m)

$b$  = breadth of tank (m)

$\rho_t$  = specific gravity of liquid in tank (t/m<sup>3</sup>)

$$\text{Free surface correction} = \frac{\sum M_{fs}(1) + M_{fs}(2) + \dots + M_{fs}(x)}{\Delta} \quad (\text{m})$$

where:

$M_{fs}$  = free surface moment (mt)

$\Delta$  = displacement (t)

Free surface correction is independent of the height of the tank in the ship, location of the tank, and direction of heel. As the width of the tank increases, the value of free surface moment increases by the third power. The distance available for the liquid to shift is the predominant factor. This is why even the smallest amount of liquid in the bottom of a wide tank or bilge is normally unacceptable and should be removed prior to the inclining experiment. Insignificant amounts of liquids in V-shaped tanks or voids (e.g. a chain locker in the bow), where the potential shift is negligible, may remain if removal of the liquid would be difficult or would cause extensive delays.

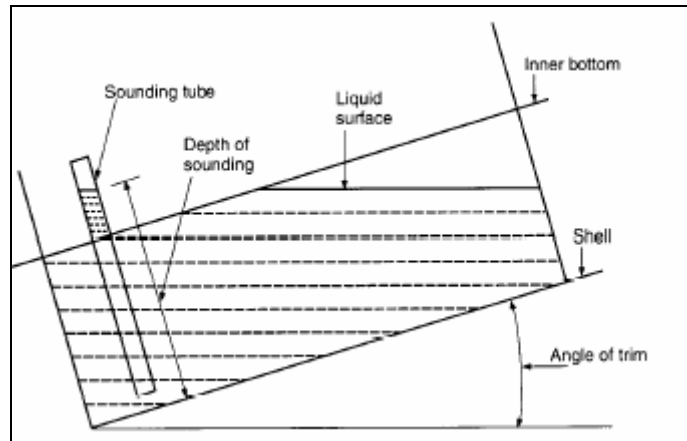
When ballast water is used as inclining weight, the actual transverse and vertical movements of the liquid should be calculated taking into account the change of heel of the ship. Free surface corrections as defined in this paragraph should not apply to the inclining tanks.

2.1.2 **Free surface and slack tanks:** The number of slack tanks should normally be limited to one port/starboard pair or one centreline tank of the following:

- .1 fresh water reserve feed tanks;
- .2 fuel/diesel oil storage tanks;
- .3 fuel/diesel oil day tanks;
- .4 lube oil tanks;
- .5 sanitary tanks; or
- .6 potable water tanks.

To avoid pocketing, slack tanks should normally be of regular (i.e. rectangular, trapezoidal, etc.) cross section and be 20% to 80% full if they are deep tanks and 40% to 60% full if they are double-bottom tanks. These levels ensure that the rate of shifting of liquid remains constant throughout the heel angles of the inclining test. If the trim changes as the ship is inclined, then consideration should also be given to longitudinal pocketing. Slack tanks containing liquids of sufficient viscosity to prevent free movement of the liquids, as the ship is inclined (such as bunker at low temperature), should be avoided since the free surface cannot be calculated accurately. A free surface correction for such tanks should not be used unless the tanks are heated to reduce viscosity. Communication between tanks should never be allowed. Cross-connections, including those via manifolds, should be closed. Equal liquid levels in slack tank pairs can be a warning sign of open cross connections. A bilge, ballast, and fuel oil piping plan can be referred to, when checking for cross connection closures.

2.1.3 **Pressed-up tanks:** “Pressed up” means completely full with no voids caused by trim or inadequate venting. Anything less than 100% full, for example the 98% condition regarded as full for operational purposes, is not acceptable. Preferably, the ship should be rolled from side to side to eliminate entrapped air before taking the final sounding. Special care should be taken when pressing fuel oil tanks to prevent accidental pollution. An example of a tank that would appear “pressed up”, but actually contains entrapped air, is shown in figure A1-2.1.3.



**Figure A1-2.1.3**

2.1.4 **Empty tanks:** It is generally not sufficient to simply pump tanks until suction is lost. Enter the tank after pumping to determine if final stripping with portable pumps or by hand is necessary. The exceptions are very narrow tanks or tanks where there is a sharp deadrise, since free surface would be negligible. Since all empty tanks should be inspected, all manholes should be open and the tanks well ventilated and certified as safe for entry. A safe testing device should be on hand to test for sufficient oxygen and minimum toxic levels. A certified marine chemist's certificate certifying that all fuel oil and chemical tanks are safe for human entry should be available, if necessary.

## 2.2 Mooring arrangements

The importance of good mooring arrangements cannot be overemphasized. The arrangement selections will be dependent upon many factors. Among the most important are depth of water, wind and current effects. Whenever possible, the ship should be moored in a quiet, sheltered area free from extraneous forces such as propeller wash from passing ships, or sudden discharges from shore side pumps. The depth of water under the hull should be sufficient to ensure that the hull will be entirely free of the bottom. The tide conditions and the trim of the ship during the test should be considered. Prior to the test, the depth of water should be measured and recorded in as many locations as necessary to ensure the ship will not contact the bottom. If marginal, the test should be conducted during high tide or the ship moved to deeper water.

2.2.1 The mooring arrangement should ensure that the ship will be free to list without restraint for a sufficient period of time to allow a satisfactory reading of the heeling angle, due to each weight shift, to be recorded.

2.2.2 The ship should be held by lines at the bow and the stern, attached to bollards and/or cleats on the deck. If suitable restraint of the ship cannot be achieved using deck fittings, then temporary padeyes should be attached as close as possible to the centreline of the ship and as near the waterline as practical. Where the ship can be moored to one side only, it is good practice to supplement the bow and stern lines with two spring lines in order to maintain positive control of the ship, as shown in figure A1-2.2.2. The leads of the spring lines should be as long as practicable. Cylindrical camels should be provided between the ship and the dock. All lines should be slack, with the ship free of the pier and camels, when taking readings.

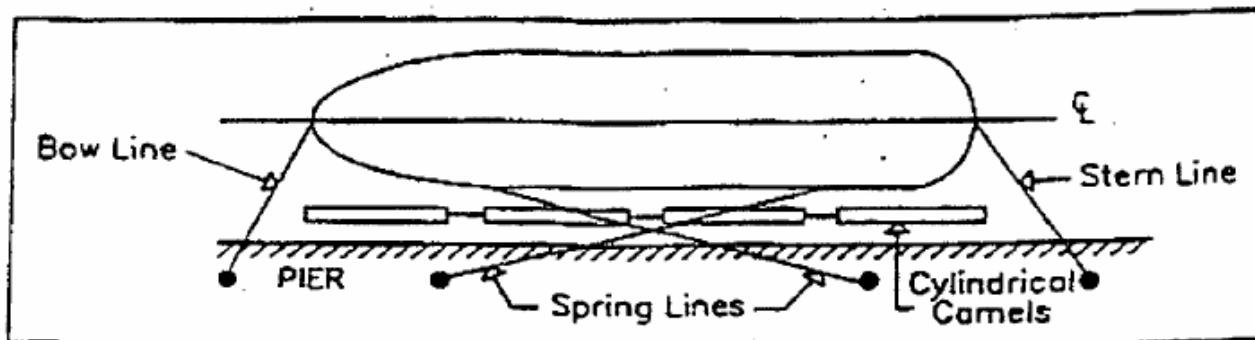


Figure A1-2.2.2

2.2.2.1 If the ship is held off the pier by the combined effect of the wind and current, a superimposed heeling moment will act on the ship throughout the test. For steady conditions this will not affect the results. Gusty winds or uniformly varying wind and/or current will cause these superimposed heeling moments to change, which may require additional test points to obtain a valid test. The need for additional test points can be determined by plotting test points as they are obtained.

2.2.2.2 If the ship is pressed against the fenders by wind and/or current, all lines should be slack. The cylindrical camels will prevent binding but there will be an additional superimposed heeling moment due to the ship bearing against the camels. This condition should be avoided where possible but, when used, consideration should be given to pulling the ship free of the dock and camels and letting the ship drift as readings are taken.

2.2.2.3 Another acceptable arrangement is where the combined wind and current are such that the ship may be controlled by only one line at either the bow or the stern. In this case, the control line should be led from on or near the centreline of the ship with all lines but the control line slack, the ship is free to veer with the wind and/or current as readings are taken. This can sometimes be troublesome because varying wind and/or current can cause distortion of the plot.

2.2.3 The mooring arrangement should be submitted to the approval authority for review prior to the test.

2.2.4 If a floating crane is used for handling inclining weights, it should not be moored to the ship.

## 2.3 Test weights

2.3.1 Weights, such as porous concrete, that can absorb significant amounts of moisture should only be used if they are weighed just prior to the inclining test or if recent weight certificates are presented. Each weight should be marked with an identification number and its weight. For small ships, drums completely filled with water may be used. Drums should normally be full and capped to allow accurate weight control. In such cases, the weight of the drums should be verified in the presence of the Administration representative using a recently calibrated scale.

2.3.2 Precautions should be taken to ensure that the decks are not overloaded during weight movements. If deck strength is questionable then a structural analysis should be performed to determine if existing framing can support the weight.



2.3.3 Generally, the test weights should be positioned as far outboard as possible on the upper deck. The test weights should be on board and in place prior to the scheduled time of the inclining test.

2.3.4 Where the use of solid weights to produce the inclining moment is demonstrated to be impracticable, the movement of ballast water may be permitted as an alternative method. This acceptance would be granted for a specific test only, and approval of the test procedure by the Administration is required. As a minimal prerequisite for acceptability, the following conditions should be required:

- .1 inclining tanks should be wall-sided and free of large stringers or other internal members that create air pockets. Other tank geometries may be accepted at the discretion of the Administration;
- .2 tanks should be directly opposite to maintain ship's trim;
- .3 specific gravity of ballast water should be measured and recorded;
- .4 pipelines to inclining tanks should be full. If the ship's piping layout is unsuitable for internal transfer, portable pumps and pipes/hoses may be used;
- .5 blanks must be inserted in transfer manifolds to prevent the possibility of liquids being "leaked" during transfer. Continuous valve control must be maintained during the test;
- .6 all inclining tanks must be manually sounded before and after each shift;
- .7 vertical, longitudinal and transverse centres should be calculated for each movement;
- .8 accurate sounding/ullage tables must be provided. The ship's initial heel angle should be established prior to the incline in order to produce accurate values for volumes and transverse and vertical centres of gravity for the inclining tanks at every angle of heel. The draught marks amidships (port and starboard) should be used when establishing the initial heel angle;
- .9 verification of the quantity shifted may be achieved by a flow meter or similar device; and
- .10 the time to conduct the inclining must be evaluated. If time requirements for transfer of liquids are considered too long, water may be unacceptable because of the possibility of wind shifts over long periods of time.

## 2.4 Pendulums

2.4.1 The pendulums should be long enough to give a measured deflection, to each side of upright, of at least 15 cm. Generally, this will require a pendulum length of at least 3 m. It is recommended that pendulum lengths of 4 to 6 m be used. Usually, the longer the pendulum the greater the accuracy of the test; however, if excessively long pendulums are used on a tender ship the pendulums may not settle down and the accuracy of the pendulums would then be questionable. On large ships with high GM, pendulum lengths in excess of the length recommended above may be required to obtain the minimum deflection. In such cases, the

trough, as shown in figure A1-2.4.6, should be filled with high-viscosity oil. If the pendulums are of different lengths, the possibility of collusion between station recorders is avoided.

2.4.2 On smaller ships, where there is insufficient headroom to hang long pendulums, the 15 cm deflection should be obtained by increasing the test weight so as to increase the heel. On most ships the typical inclination is between one and four degrees.

2.4.3 The pendulum wire should be piano wire or other monofilament material. The top connection of the pendulum should afford unrestricted rotation of the pivot point. An example is that of a washer with the pendulum wire attached suspended from a nail.

2.4.4 A trough filled with a liquid should be provided to dampen oscillations of the pendulum after each weight movement. It should be deep enough to prevent the pendulum weight from touching the bottom. The use of a winged plumb bob at the end of the pendulum wire can also help to dampen the pendulum oscillations in the liquid.

2.4.5 The battens should be smooth, light-coloured wood, 1 to 2 cm thick, and should be securely fixed in position so that an inadvertent contact will not cause them to shift. The batten should be aligned close to the pendulum wire but not in contact with it.

2.4.6 A typical satisfactory arrangement is shown in figure A1-2.4.6. The pendulums may be placed in any location on the ship, longitudinally and transversely. The pendulums should be in place prior to the scheduled time of the inclining test.

2.4.7 It is recommended that inclinometers or other measuring devices only be used in conjunction with at least one pendulum. The Administration may approve an alternative arrangement when this is found impractical.

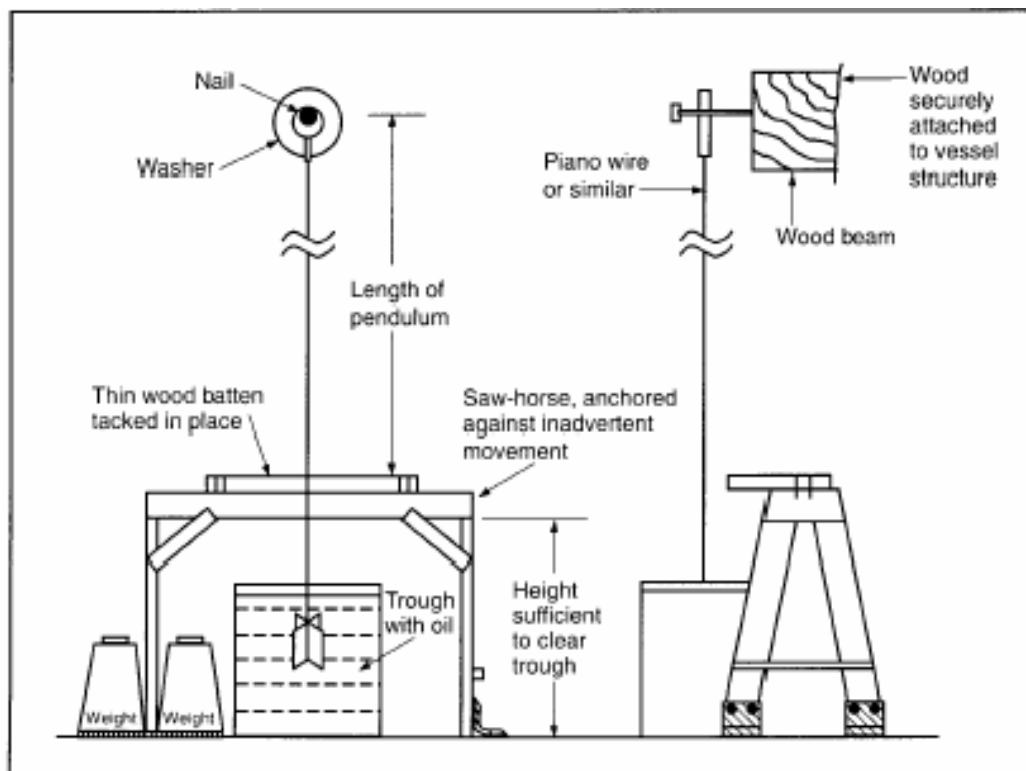


Figure A1-2.4.6

## 2.5 U-tubes

2.5.1 The legs of the device should be securely positioned as far as outboard as possible and should be parallel to the centreline plane of the ship. The distance between the legs should be measured perpendicular to the centreline plane. The legs should be vertical, as far as practical.

2.5.2 Arrangements should be made for recording all readings at both legs. For easy reading and checking for air pockets, clear plastic tube or hose should be used throughout. The U-tube should be pressure-tested prior to the inclining test to ensure watertightness.

2.5.3 The horizontal distance between the legs of the U-tube should be sufficient to obtain a level difference of at least 15 cm between the upright and the maximum inclination to each side.

2.5.4 Normally, water would be used as the liquid in the U-tube. Other low-viscosity liquids may also be considered.

2.5.5 The tube should be free of air pockets. Arrangements should be made to ensure that the free flow of the liquid in the tube is not obstructed.

2.5.6 Where a U-tube is used as a measuring device, due consideration should be given to the prevailing weather conditions (see 4.1.1.3):

- .1 if the U-tube is exposed to direct sunlight, arrangements should be made to avoid temperature differences along the length of the tube;
- .2 if temperatures below 0°C are expected, the liquid should be a mixture of water and an anti-freeze additive; and
- .3 where heavy rain squalls can be expected, arrangements should be made to avoid additional water entering the U-tube.

## 2.6 Inclinometers

The use of inclinometers should be subject to at least the following recommendations:

- .1 the accuracy should be equivalent to that of the pendulum;
- .2 the sensitivity of the inclinometer should be such that the non-steady heeling angle of the ship can be recorded throughout the measurement;
- .3 the recording period should be sufficient to accurately measure the inclination. The recording capacity should be generally sufficient for the whole test;
- .4 the instrument should be able to plot or print the recorded inclination angles on paper;
- .5 the instrument should have linear performance over the expected range of inclination angles;
- .6 the instrument should be supplied with the manufacturer's instructions giving details of calibration, operating instructions, etc.; and

- .7 it should be possible to demonstrate the required performance to the satisfaction of the Administration during the inclining test.

### **3 EQUIPMENT REQUIRED**

Besides the physical equipment necessary such as the inclining weights, pendulums, small boat, etc., the following are necessary and should be provided by or made available to the person in charge of the inclining:

- .1 engineering scales for measuring pendulum deflections (rules should be subdivided sufficiently to achieve the desired accuracy);
- .2 sharp pencils for marking pendulum deflections;
- .3 chalk for marking the various positions of the inclining weights;
- .4 a sufficiently long measuring tape for measuring the movement of the weights and locating different items on board;
- .5 a sufficiently long sounding tape for sounding tanks and taking freeboard readings;
- .6 one or more well maintained specific gravity hydrometers with range sufficient to cover 0.999 to 1.030, to measure the specific gravity of the water in which the ship is floating (a hydrometer for measuring specific gravity of less than 1.000 may be needed in some locations);
- .7 other hydrometers as necessary to measure the specific gravity of any liquids on board;
- .8 graph paper to plot inclining moments versus tangents;
- .9 a straight edge to draw the measured waterline on the lines drawing;
- .10 a pad of paper to record data;
- .11 an explosion-proof testing device to check for sufficient oxygen and absence of lethal gases in tanks and other closed spaces such as voids and cofferdams;
- .12 a thermometer; and
- .13 draught tubes (if necessary).

### **4 TEST PROCEDURE**

The inclining experiment, the freeboard/draught readings and the survey may be conducted in any order and still achieve the same results. If the person conducting the inclining test is confident that the survey will show that the ship is in an acceptable condition and there is the possibility of the weather becoming unfavourable, then it is suggested that the inclining be performed first and the survey last. If the person conducting the test is doubtful that the ship is complete enough for the test, it is recommended that the survey be performed first since this

could invalidate the entire test, regardless of the weather conditions. It is very important that all weights, the number of people on board, etc., remain constant throughout the test.

#### **4.1 Initial walk through and survey**

The person responsible for conducting the inclining test should arrive on board the ship well in advance of the scheduled time of the test to ensure that the ship is properly prepared for the test. If the ship to be inclined is large, a preliminary walk through may need to be done the day preceding the actual incline. To ensure the safety of personnel conducting the walk through, and to improve the documentation of surveyed weights and deficiencies, at least two persons should make the initial walk through. Things to check include: all compartments are open, clean, and dry, tanks are well ventilated and gas-free, movable or suspended items are secured and their position documented, pendulums are in place, weights are on board and in place, a crane or other method for moving weights is available, and the necessary plans and equipment are available. Before beginning the inclining test, the person conducting the test should:

- .1 consider the weather conditions. The combined adverse effect of wind, current and sea may result in difficulties or even an invalid test due to the following:
  - .1 inability to accurately record freeboards and draughts;
  - .2 excessive or irregular oscillations of the pendulums;
  - .3 variations in unavoidable superimposed heeling moments;

In some instances, unless conditions can be sufficiently improved by moving the ship to a better location, it may be necessary to delay or postpone the test. Any significant quantities of rain, snow, or ice should be removed from the ship before the test. If bad weather conditions are detected early enough and the weather forecast does not call for improving conditions, the Administration representative should be advised prior to departure from the office and an alternative date scheduled;

- .2 make a quick overall survey of the ship to make sure the ship is complete enough to conduct the test and to ensure that all equipment is in place. An estimate of items which will be outstanding at the time of the inclining test should be included as part of any test procedure submitted to the Administration. This is required so that the Administration representative can advise the shipyard/naval architect if in their opinion the ship will not be sufficiently complete to conduct the incline and that it should be rescheduled. If the condition of the ship is not accurately depicted in the test procedure and at the time of the inclining test the Administration representative considers that the ship is in such condition that an accurate incline cannot be conducted, the representative may refuse to accept the incline and require that the incline be conducted at a later date;
- .3 enter all empty tanks after it is determined that they are well ventilated and gas-free to ensure that they are dry and free of debris. Ensure that any pressed-up tanks are indeed full and free of air pockets. The anticipated liquid loading for the incline should be included in the procedure required to be submitted to the Administration;

- .4 survey the entire ship to identify all items which need to be added to the ship, removed from the ship, or relocated on the ship to bring the ship to the lightship condition. Each item should be clearly identified by weight and vertical and longitudinal location. If necessary, the transverse location should also be recorded. The inclining weights, the pendulums, any temporary equipment and dunnage, and the people on board during the inclining test are all among the weights to be removed to obtain the lightship condition. The person calculating the lightship characteristics from the data gathered during the incline and survey and/or the person reviewing the inclining test may not have been present during the test and should be able to determine the exact location of the items from the data recorded and the ship's drawings. Any tanks containing liquids should be accurately sounded and the soundings recorded;
  
- .5 it is recognized that the weight of some items on board, or that are to be added, may have to be estimated. If this is necessary, it is in the best interest of safety to be on the safe side when estimating, so the following rules of thumb should be followed:
  - .1 when estimating weights to be added:
    - .1.1 estimate high for items to be added high in the ship; and
    - .1.2 estimate low for items to be added low in the ship;
  - .2 when estimating weights to be removed:
    - .2.1 estimate low for items to be removed from high in the ship; and
    - .2.2 estimate high for items to be removed from low in the ship;
  - .3 when estimating weights to be relocated:
    - .3.1 estimate high for items to be relocated to a higher point in the ship; and
    - .3.2 estimate low for items to be relocated to a lower point in the ship.

## **4.2 Freeboard/draught readings**

4.2.1 Freeboard/draught readings should be taken to establish the position of the waterline in order to determine the displacement of the ship at the time of the inclining test. It is recommended that at least five freeboard readings, approximately equally spaced, be taken on each side of the ship or that all draught marks (forward, midship, and aft) be read on each side of the ship. Draught mark readings should be taken to assist in determining the waterline defined by freeboard readings, or to verify the vertical location of draught marks on ships where their location has not been confirmed. The locations for each freeboard reading should be clearly marked. The longitudinal location along the ship should be accurately determined and recorded since the (moulded) depth at each point will be obtained from the ship's lines. All freeboard measurements should include a reference note clarifying the inclusion of the coaming in the measurement and the coaming height.

4.2.2 Draught and freeboard readings should be read immediately before or immediately after the inclining test. Weights should be on board and in place and all personnel who will be on board during the test, including those who will be stationed to read the pendulums, should be on board and in location during these readings. This is particularly important on small ships. If readings are made after the test, the ship should be maintained in the same condition as during the test. For small ships, it may be necessary to counterbalance the list and trim effects of the freeboard measuring party. When possible, readings should be taken from a small boat.

4.2.3 A small boat should be available to aid in the taking of freeboard and draught mark readings. It should have low freeboard to permit accurate observation of the readings.

4.2.4 The specific gravity of the flotation water should be determined at this time. Samples should be taken from a sufficient depth of the water to ensure a true representation of the flotation water and not merely surface water, which could contain fresh water from run-off of rain. A hydrometer should be placed in a water sample and the specific gravity read and recorded. For large ships, it is recommended that samples of the flotation water be taken forward, midship, and aft and the readings averaged. For small ships, one sample taken from midships should be sufficient. The temperature of the water should be taken and the measured specific gravity corrected for deviation from the standard, if necessary. A correction to water specific gravity is not necessary if the specific gravity is determined at the inclining experiment site. Correction is necessary if specific gravity is measured when sample temperature differs from the temperature at the time of the inclining (e.g., if check of specific gravity is done at the office).

4.2.5 A draught mark reading may be substituted for a given freeboard reading at that longitudinal location if the height and location of the mark have been verified to be accurate by a keel survey while the ship was in dry-dock.

4.2.6 A device, such as a draught tube, can be used to improve the accuracy of freeboard/draught readings by damping out wave action.

4.2.7 The dimensions given on a ship's lines drawing are normally moulded dimensions. In the case of depth, this means the distance from the inside of the bottom shell to the inside of the deck plate. In order to plot the ship's waterline on the lines drawing, the freeboard readings should be converted to moulded draughts. Similarly, the draught mark readings should be corrected from extreme (bottom of keel) to moulded (top of keel) before plotting. Any discrepancy between the freeboard/draught readings should be resolved.

4.2.8 The mean draught (average of port and starboard readings) should be calculated for each of the locations where freeboard/draught readings are taken and plotted on the ship's lines drawing or outboard profile to ensure that all readings are consistent and together define the correct waterline. The resulting plot should yield either a straight line or a waterline which is either hogged or sagged. If inconsistent readings are obtained, the freeboards/draughts should be retaken.

### **4.3 The incline**

4.3.1 Prior to any weight movements the following should be checked:

- .1 the mooring arrangement should be checked to ensure that the ship is floating freely (this should be done just prior to each reading of the pendulums);

- .2 the pendulums should be measured and their lengths recorded. The pendulums should be aligned so that when the ship heels, the wire will be close enough to the batten to ensure an accurate reading but will not come into contact with the batten. The typical satisfactory arrangement is shown in figure A1-2.4.6;
- .3 the initial position of the weights is marked on the deck. This can be done by tracing the outline of the weights on the deck;
- .4 the communications arrangement is adequate; and
- .5 all personnel are in place.

4.3.2 A plot should be run during the test to ensure that acceptable data are being obtained. Typically, the abscissa of the plot will be heeling moment  $W(x)$  (weight times distance  $x$ ) and the ordinate will be the tangent of the heel angle (deflection of the pendulum divided by the length of the pendulum). This plotted line does not necessarily pass through the origin or any other particular point for no single point is more significant than any other point. A linear regression analysis is often used to fit the straight line. The weight movements shown in figure A2-4.3.2-1 give a good spread of points on the test plot.

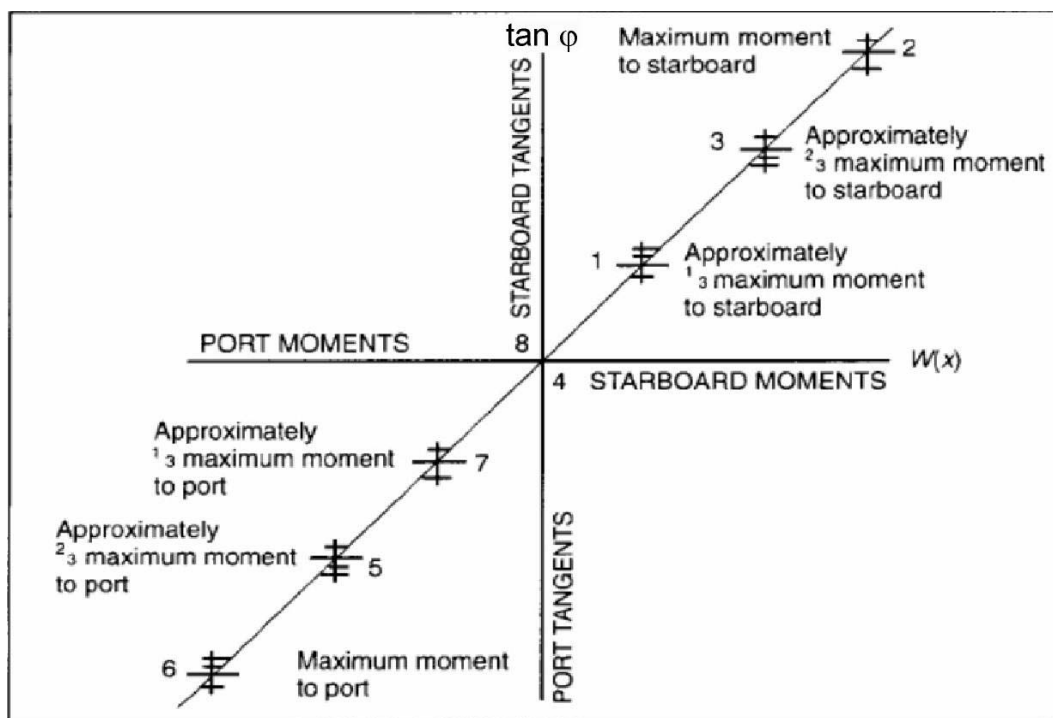


Figure A1-4.3.2-1

The plotting of all the readings for each of the pendulums during the inclining experiment aids in the discovery of bad readings. Since  $W(x)/\tan \phi$  should be constant, the plotted line should be straight. Deviations from a straight line are an indication that there were other moments acting on the ship during the inclining. These other moments should be identified, the cause corrected, and the weight movements repeated until a straight line is achieved. Figures A1-4.3.2-2 to A1-4.3.2-5 illustrate examples of how to detect some of these other moments during the inclining, and a recommended solution for each case. For simplicity, only the average of the readings is shown on the inclining plots.



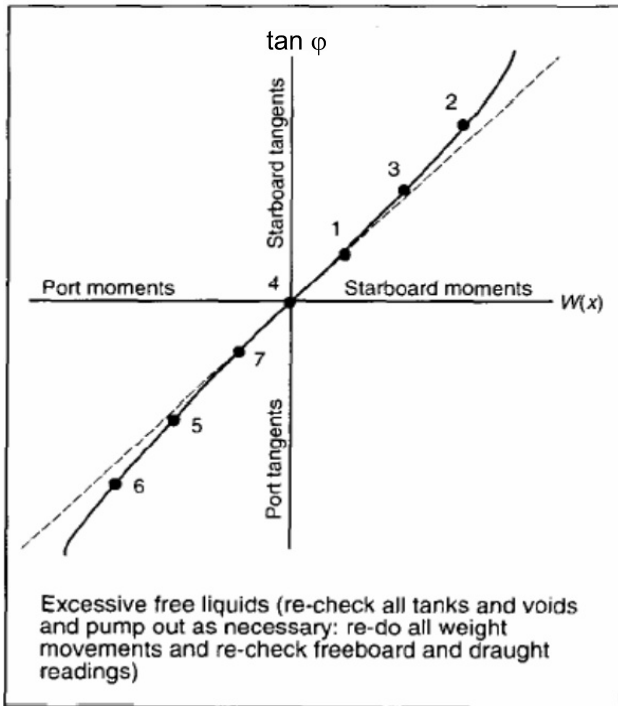


Figure A1-4.3.2-2

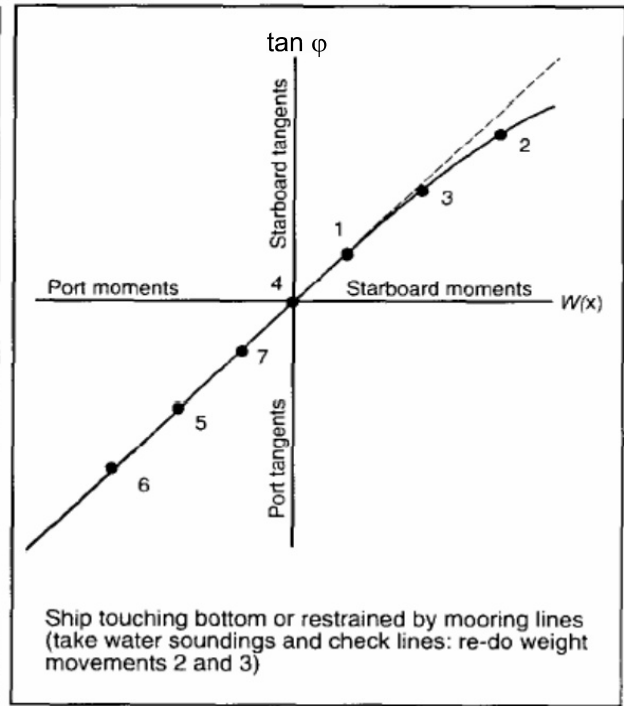


Figure A1-4.3.2-3

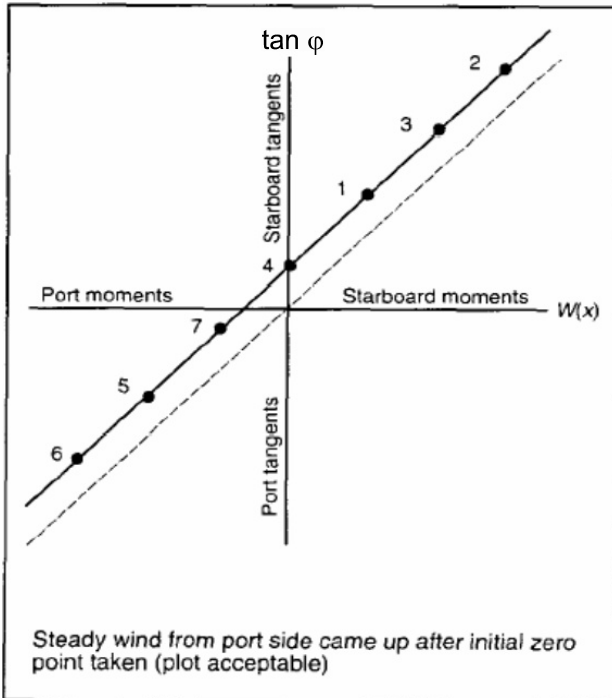


Figure A1-4.3.2-4

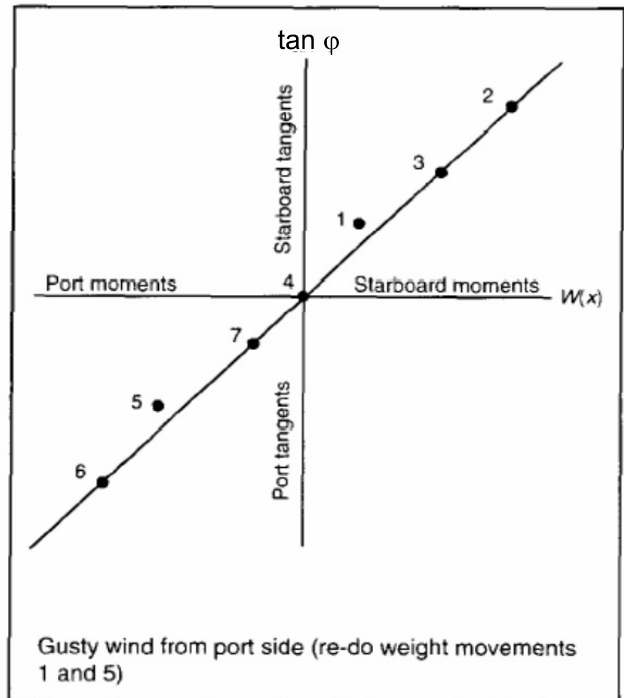


Figure A1-4.3.2-5

4.3.3 Once everything and everyone is in place, the zero position should be obtained and the remainder of the experiment conducted as quickly as possible, while maintaining accuracy and proper procedures, in order to minimize the possibility of a change in environmental conditions during the test.

4.3.4 Prior to each pendulum reading, each pendulum station should report to the control station when the pendulum has stopped swinging. Then, the control station will give a “standby” warning and then a “mark” command. When “mark” is given, the batten at each position should be marked at the location of the pendulum wire. If the wire was oscillating slightly, the centre of the oscillations should be taken as the mark. If any of the pendulum readers does not think the reading was a good one, the reader should advise the control station and the point should be retaken for all pendulum stations. Likewise, if the control station suspects the accuracy of a reading, it should be repeated for all the pendulum stations. Next to the mark on the batten should be written the number of the weight movement, such as zero for the initial position and one to seven for the weight movements.

4.3.5 Each weight movement should be made in the same direction, normally transversely, so as not to change the trim of the ship. After each weight movement, the distance the weight was moved (centre to centre) should be measured and the heeling moment calculated by multiplying the distance by the amount of weight moved. The tangent is calculated for each pendulum by dividing the deflection by the length of the pendulum. The resultant tangents are plotted on the graph. Provided there is good agreement among the pendulums with regard to the  $\tan \varphi$  value, the average of the pendulum readings may be graphed instead of plotting each of the readings.

4.3.6 Inclining data sheets should be used so that no data are forgotten and so that the data are clear, concise, and consistent in form and format. Prior to departing the ship, the person conducting the test and the Administration representative should initial each data sheet as an indication of their concurrence with the recorded data.

## ANNEX 2

### RECOMMENDATIONS FOR SKIPPERS OF FISHING VESSELS ON ENSURING A VESSEL'S ENDURANCE IN CONDITIONS OF ICE FORMATION

#### 1 Prior to departure

1.1 Firstly, the skipper should, as in the case of any voyages in any season, ensure that the vessel is generally in a seaworthy condition, giving full attention to basic requirements such as:

- .1 loading of the vessel within the limits prescribed for the season (paragraph 1.2.1 below);
- .2 weathertightness and reliability of the devices for closing cargo and access hatches, outer doors and all other openings in the decks and superstructures of the vessel and the watertightness of the sidescuttles and of ports or similar openings in the sides below the freeboard deck to be checked;
- .3 condition of the freeing ports and scuppers as well as operational reliability of their closures to be checked;
- .4 emergency and life-saving appliances and their operational reliability;
- .5 operational reliability of all external and internal communication equipment; and
- .6 condition and operational reliability of the bilge and ballast pumping systems.

1.2 Further, with special regard to possible ice accretion, the skipper should:

- .1 consider the most critical loading condition against approved stability documents with due regard to fuel and water consumption, distribution of supplies, cargoes and fishing gear and with allowance for possible ice accretion;
- .2 be aware of the danger in having supplies and fishing gear stored on open weather deck spaces due to their large ice accretion surface and high centre of gravity;
- .3 ensure that a complete set of warm clothing for all members of the crew is available on the vessel as well as a complete set of hand tools and other appliances for combating ice accretion, a typical list thereof for small vessels is shown in section 4 of this annex;
- .4 ensure that the crew is acquainted with the location of means for combating ice accretion, as well as the use of such means, and that drills are carried out so that members of the crew know their respective duties and have the necessary practical skills to ensure the vessel's endurance under conditions of ice accretion;
- .5 acquaint himself with the meteorological conditions in the region of fishing grounds and en route to the place of destination; study the synoptical maps of this region and weather forecasts; be aware of warm currents in the vicinity of the fishing grounds, of the nearest coastline relief, of the existence of protected bays and of the location of ice fields and their boundaries; and

- .6 acquaint himself with the timetable of the radio stations transmitting weather forecasts and warnings of the possibility of ice accretion in the area of the relevant fishing grounds.

## **2 At sea**

2.1 During the voyage and when the vessel is on the fishing grounds the skipper should keep himself informed on all long-term and short-term weather forecasts and should arrange for the following systematic meteorological observations to be systematically recorded:

- .1 temperatures of the air and of the sea surface;
- .2 wind direction and force;
- .3 direction and height of waves and sea state;
- .4 atmospheric pressure, air humidity; and
- .5 frequency of splashing per minute and the intensity of ice accumulation on different parts of the vessel per hour.

2.2 All observed data should be recorded in the vessel's log-book. The skipper should compare the weather forecasts and icing charts with actual meteorological conditions, and should estimate the probability of ice formation and its intensity.

2.3 When the danger of ice formation arises, the following measures should be taken without delay:

- .1 all the means of combating ice formation should be ready for use;
- .2 all the fishing operations should be stopped, the fishing gear should be taken on board and placed in the under-deck spaces. If this cannot be done all the gear should be fastened for storm conditions on its prescribed place. It is particularly dangerous to leave the fishing gear suspended since its surface for ice formation is large and the point of suspension is generally located high;
- .3 barrels and containers with fish, packing, all gear and supplies located on deck as well as portable mechanisms should be placed in closed spaces as low as possible and firmly lashed;
- .4 all cargoes in holds and other compartments should be placed as low as possible and firmly lashed;
- .5 the cargo booms should be lowered and fastened;
- .6 deck machinery, hawser reels and boats should be covered with duck covers;
- .7 lifelines should be fastened on deck;

- .8 freeing ports fitted with covers should be brought into operative condition, all objects located near scuppers and freeing ports and preventing water drainage from deck should be taken away;
- .9 all cargo and companion hatches, manhole covers, weathertight outside doors in superstructures and deck-houses and portholes should be securely closed in order to ensure complete weathertightness of the vessel, access to the weather deck from inner compartments should be allowed only through the superstructure deck;
- .10 a check should be carried out as to whether the amount of water ballast on board and its location is in accordance with that recommended in “Stability guidance to skippers”; if there is sufficient freeboard, all the empty bottom tanks fitted with ballast piping should be filled with seawater;
- .11 all fire-fighting, emergency and life-saving equipment should be ready for use;
- .12 all drainage systems should be checked for their effectiveness;
- .13 deck lighting and searchlights should be checked;
- .14 a check should be carried out to make sure that each member of the crew has warm clothing; and
- .15 reliable two-way radio communication with both shore stations and other vessels should be established; radio calls should be arranged for set times.

2.4 The skipper should seek to take the vessel away from the dangerous area, keeping in mind that the lee edges of icefields, areas of warm currents and protected coastal areas are a good refuge for the vessel during weather when ice formation occurs.

2.5 Small fishing vessels on fishing grounds should keep nearer to each other and to larger vessels.

2.6 It should be remembered that the entry of the vessel into an icefield presents certain danger to the hull, especially when there is a high sea swell. Therefore the vessel should enter the icefield at a right angle to the icefield edge at low speed without inertia. It is less dangerous to enter an icefield bow to the wind. If a vessel must enter an icefield with the wind on the stern, the fact that the edge of the ice is more dense on the windward side should be taken into consideration. It is important to enter the icefield at the point where the ice floes are the smallest.

### **3 During ice formation**

3.1 If in spite of all measures taken the vessel is unable to leave the dangerous area, all means available for removal of ice should be used as long as it is subjected to ice formation.

3.2 Depending on the type of vessel, all or many of the following ways of combating ice formation may be used:

- .1 removal of ice by means of cold water under pressure;
- .2 removal of ice with hot water and steam; and

- .3 breaking up of ice with ice crows, axes, picks, scrapers, or wooden sledge-hammers and clearing it with shovels.

3.3 When ice formation begins, the skipper should take into account the recommendations listed below and ensure their strict fulfilment:

- .1 report immediately ice formation to the shipowner and establish with him constant radio communication;
- .2 establish radio communication with the nearest vessels and ensure that it is maintained;
- .3 do not allow ice formation to accumulate on the vessel, immediately take steps to remove from the vessel's structures even the thinnest layer of ice and ice sludge from the upper deck;
- .4 check constantly the vessel's stability by measuring the roll period of the vessel during ice formation. If the rolling period increases noticeably, immediately take all possible measures in order to increase the vessel's stability;
- .5 ensure that each member of the crew working on the weather deck is warmly dressed and wears a safety line securely attached to the guardrail;
- .6 bear in mind that the work of the crew on ice clearing entails the danger of frost-bite. For this reason it is necessary to make sure that members of the crew working on deck are replaced periodically;
- .7 keep the following structures and gears of the vessel first free from ice:
  - .7.1 aerials;
  - .7.2 running and navigational lights;
  - .7.3 freeing ports and scuppers;
  - .7.4 lifesaving craft;
  - .7.5 stays, shrouds, masts and rigging;
  - .7.6 doors of superstructures and deck-houses; and
  - .7.7 windlass and hawse holes;
- .8 remove the ice from large surfaces of the vessel, beginning with the upper structures (such as bridges, deck-houses, etc.), because even a small amount of ice on them causes a drastic worsening of the vessel's stability;
- .9 when the distribution of ice is not symmetrical and a list develops, the ice must be cleared from the lower side first. Bear in mind that any correction of the list of the vessel by pumping fuel or water from one tank to another may reduce stability during the process when both tanks are slack;

- .10 when a considerable amount of ice forms on the bow and a trim appears, ice must be quickly removed. Water ballast may be redistributed in order to decrease the trim;
- .11 clear ice from the freeing ports and scuppers in due time in order to ensure free drainage of the water from the deck;
- .12 check regularly for water accumulation inside the hull;
- .13 avoid navigating in following seas since this may drastically worsen the vessel's stability;
- .14 register in the vessel's log-book the duration, nature and intensity of ice formation, amount of ice on the vessel, measures taken to combat ice formation and their effectiveness; and
- .15 if, in spite of all the measures taken to ensure the vessel's endurance in conditions of ice formation, the crew is forced to abandon the vessel and embark on life-saving craft (lifeboats, rafts) then, in order to preserve their lives, it is necessary to do all possible to provide all the crew with warm clothing or special bags as well as to have a sufficient number of lifelines and bailers for speedy bailing out of water from the life-saving craft.

#### **4 List of equipment and hand tools**

A typical list of equipment and hand tools required for combating ice formation:

- .1 ice crows or crowbars;
- .2 axes with long handles;
- .3 picks;
- .4 metal scrapers;
- .5 metal shovels;
- .6 wooden sledge-hammers;
- .7 fore and aft lifelines to be rigged each side of the open deck fitted with travellers to which lizards can be attached.

Safety belts with spring hooks should be provided for no less than 50% of the members of the crew (but not less than 5 sets), which can be attached to the lizards.

- Notes:**
- 1 The number of hand tools and lifesaving appliances may be increased, at the shipowner's discretion.
  - 2 Hoses which may be used for ice combating should be readily available on board.

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## ANNEX 14

### DRAFT AMENDMENTS TO THE 1974 SOLAS CONVENTION

#### CHAPTER II-1 CONSTRUCTION – STRUCTURE, SUBDIVISION AND STABILITY, MACHINERY AND ELECTRICAL INSTALLATIONS

##### PART A GENERAL

#### Regulation 2 – Definitions

1 The following new paragraph 27 is added after the existing paragraph 26:

“27 *Intact Stability Code, 2008 (2008 IS Code)* means the International Code on Intact Stability, 2008, consisting of an introduction, part A (the provisions of which shall be treated as mandatory) and part B (the provisions of which shall be treated as recommendatory), as adopted by resolution MSC ...(...), provided that:

- .1 amendments to the introduction and part A of the Code are adopted, brought into force and take effect in accordance with article VIII of the present Convention concerning the amendment procedures applicable to the annex other than chapter I; and
- .2 amendments to part B of the Code are adopted by the Maritime Safety Committee in accordance with its Rules of Procedure.”

##### PART B-1 STABILITY

#### Regulation 5 – Intact stability information

2 In the existing title of the regulation, the word “information” is deleted.

3 In paragraph 1, the following new sentence is added after the existing sentence:

“In addition to any other applicable requirements of the present regulations, ships having a length of 24 m and upwards constructed on or after [date to be determined] shall as a minimum comply with the requirements of part A of the Intact Stability Code, 2008.”

#### Regulation 5-1 – Stability information to be supplied to the master

4 Subparagraph .1 of paragraph 2 is replaced by the following:

- “.1 curves or tables of minimum operational metacentric height (GM) versus draught which assures compliance with the intact stability requirements according to the requirements of part A of the Intact Stability Code, 2008 and relevant damage stability requirements, alternatively corresponding curves or tables of the

maximum allowable vertical centre of gravity (KG) versus draught, or with the equivalents of either of these curves;”

5 Subparagraph .3 of paragraph 2 is replaced by the following:

“.3 all other data and aids which might be necessary to maintain the required intact stability according to the requirements of part A of the Intact Stability Code, 2008 and stability after damage.”

\*\*\*

**ANNEX 15**

**DRAFT AMENDMENTS TO THE 1988 LL PROTOCOL**

**ANNEX B  
ANNEXES TO THE CONVENTION AS MODIFIED BY THE PROTOCOL OF 1988  
RELATING THERETO**

**ANNEX I  
REGULATIONS FOR DETERMINING LOAD LINES**

**CHAPTER I  
GENERAL**

**Regulation 1 – Strength and intact stability of ships**

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

“(3) *Compliance*

- (a) Ships constructed before [date to be determined] shall comply with an intact stability standard acceptable to the Administration;
- (b) Ships constructed on or after [date to be determined] shall as a minimum comply with the requirements of part A of the Intact Stability Code, 2008.”

**Regulation 3 – Definitions of terms used in the annexes**

2 The following new paragraph (16) is added after the existing paragraph (15):

“(16) *Intact Stability Code, 2008* (2008 IS Code) means the International Code on Intact Stability, 2008, consisting of an introduction, part A (the provisions of which shall be treated as mandatory) and part B (the provisions of which shall be treated as recommendatory), as adopted by resolution MSC ...(...), provided that:

- .1 amendments to the introduction and part A of the Code are adopted, brought into force and take effect in accordance with article VI of the 1988 LL Protocol concerning the amendment procedure applicable to Annex B to the Protocol; and
- .2 amendments to part B of the Code are adopted by the Maritime Safety Committee in accordance with its Rules of Procedure.”

**CHAPTER II**  
**CONDITIONS OF ASSIGNMENT OF FREEBOARD**

**Regulation 10 – Information to be supplied to the master**

3 The existing text of paragraph (2) is replaced by the following:

“(2) Information shall be approved by the Administration or a recognized organization, and shall be provided to the master. Stability information, and loading information, also related to ship strength when required under paragraph (1), shall be carried on board at all times together with evidence that the information has been so approved.”

\*\*\*

**ANNEX 16****RESOLUTION MSC.245(83)  
(adopted on 12 October 2007)****RECOMMENDATION ON A STANDARD METHOD FOR EVALUATING  
CROSS-FLOODING ARRANGEMENTS**

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.266(VIII) entitled "Recommendation on a standard method for establishing compliance with the requirements for cross-flooding arrangements in passenger ships", adopted by the Assembly at its eighth session,

NOTING that the above Recommendation does not include provisions for cross-flooding arrangements other than pipes (i.e., cross-flooding times through ducts) or a provision to ensure adequate air ventilation for efficient cross-flooding (i.e., to account for the restrictive effect of air counter pressure during cross-flooding),

NOTING ALSO the revised SOLAS chapter II-1 subdivision and damage stability requirements for passenger and cargo ships, adopted by resolution MSC.216(82),

RECOGNIZING the need to establish a methodology for evaluating cross-flooding arrangements on ships subject to the applicable subdivision and damage stability requirements of SOLAS chapter II-1 to ensure uniform treatment of cross-flooding and equalization arrangements,

HAVING CONSIDERED the recommendations made by the Sub-Committee on Stability and Load Lines and on Fishing Vessels Safety at its fiftieth session,

1. ADOPTS the Recommendation on a standard method for evaluating cross-flooding arrangements, the text of which is set out in the Annex to the present resolution;
2. INVITES Governments to apply the annexed Recommendation to cross-flooding calculations and to bring the Recommendation to the attention of all parties concerned.

ANNEX

**RECOMMENDATION ON A STANDARD METHOD FOR EVALUATING  
CROSS-FLOODING ARRANGEMENTS**

<b>Table of contents</b>	<b>Page</b>
1 Definitions .....	3
2 Formulae .....	4
3 Air pipe venting criteria .....	5
4 Alternatives .....	5
Appendix 1 Example for treatment of heel angles and water heads at different stages of cross-flooding .....	6
Appendix 2 Friction coefficients in cross-flooding arrangement .....	7
Appendix 3 Example using figures for a passenger ship .....	10

## 1 Definitions

$\sum k$ : Sum of friction coefficients in the considered cross-flooding arrangement.

$S (m^2)$ : Cross-section area of the cross-flooding pipe or duct. If the cross-section area is not circular, then:

$$S_{equiv} = \frac{\pi \cdot D_{equiv}^2}{4}$$

where:

$$D_{equiv} = \frac{4 \cdot A}{p}$$

A = actual cross-section area

p = actual cross-section perimeter

$\theta_0 (^\circ)$ : Angle before commencement of cross-flooding. This assumes that the cross-flooding device is fully flooded but that no water has entered into the equalizing compartment on the opposite side of the damage (see appendix 1).

$\theta_f (^\circ)$ : Heel angle at final equilibrium ( $\theta_f \leq \theta$ ).

$\theta (^\circ)$ : Any angle of heel between the commencement of cross-flooding and the final equilibrium at a given time.

$W_f (m^3)$ : Volume of water which is used to bring the ship from commencement of cross-flooding  $\theta_0$  to final equilibrium  $\theta_f$ .

$W_\theta (m^3)$ : Volume of water which is used to bring the ship from any angle of heel  $\theta$  to the final equilibrium  $\theta_f$ .

$H_0 (m)$ : Head of water before commencement of cross-flooding, with the same assumption as for  $\theta_0$ .

$H_\theta (m)$ : Head of water when any angle of heel  $\theta$  is achieved.

$h_f (m)$ : Final head of water after cross-flooding ( $h_f = 0$ , when the level inside the equalizing compartment is equal to the free level of the sea).

## 2 Formulae

2.1 Time required from commencement of cross-flooding  $\theta_0$  to the final equilibrium  $\theta_f$ :

$$T_f = \frac{2W_f}{S \cdot F} \cdot \frac{\left(1 - \sqrt{\frac{h_f}{H_0}}\right)}{\sqrt{2gH_0}} \cdot \frac{1}{\left(1 - \frac{h_f}{H_0}\right)}$$

2.2 Time required to bring the ship from any angle of heel  $\theta$  to the final equilibrium  $\theta_f$ :

$$T_\theta = \frac{2W_\theta}{S \cdot F} \cdot \frac{\left(1 - \sqrt{\frac{h_f}{H_\theta}}\right)}{\sqrt{2gH_\theta}} \cdot \frac{1}{\left(1 - \frac{h_f}{H_\theta}\right)}$$

2.3 Time required from commencement of cross-flooding  $\theta_0$  until any angle of heel  $\theta$  is achieved:

$$T = T_f - T_\theta$$

2.4 Dimensionless factor of reduction of speed through an equalization device, being a function of bends, valves, etc., in the cross-flooding system:

$$F = \frac{1}{\sqrt{\sum k}}$$

where  $F$  is not to be taken as more than 1.

Values for  $k$  can be obtained from appendix 2 or other appropriate sources.

2.5 Cross-flooding through successive devices of different cross-section:

If the same flow crosses successive flooding devices of cross-section  $S_1, S_2, S_3, \dots$  having corresponding friction coefficients  $k_1, k_2, k_3, \dots$ , then the total  $k$  coefficient referred to  $S_1$  is:

$$\Sigma k = k_1 + k_2 \cdot S_1^2 / S_2^2 + k_3 \cdot S_1^2 / S_3^2 \dots$$

2.6 If different flooding devices are not crossed by the same volume, each  $k$  coefficient should be multiplied by the square of the ratio of the volume crossing the device and the volume crossing the reference section (which will be used for the time calculation):

$$\Sigma k = k_1 + k_2 \cdot S_1^2 / S_2^2 \cdot W_2^2 / W_1^2 + k_3 \cdot S_1^2 / S_3^2 \cdot W_3^2 / W_1^2 \dots$$



2.7 For cross-flooding through devices in parallel that lead to the same space, equalisation time should be calculated assuming that:

$$S \cdot F = S_1 \cdot F_1 + S_2 \cdot F_2 + \dots$$

with  $F = 1/\sqrt{\Sigma k}$  for each device of cross-section  $S_i$

### 3 Air pipe venting criteria

3.1 In arrangements where the total air pipe sectional area is 10% or more of the cross-flooding sectional area, the restrictive effect of any air back pressure may be neglected in the cross-flooding calculations. The air pipe sectional area should be taken as the minimum or the net sectional area of any automatic closing devices, if that is less.

3.2 In arrangements where the total air pipe sectional area is less than 10% of the cross-flooding sectional area, the restrictive effect of air back pressure should be considered in the cross-flooding calculations. The following method may be used for this purpose:

The  $k$  coefficient used in the calculation of cross-flooding time should take into account the drop of head in the air pipe. This can be done using an equivalent coefficient  $k_e$ , which is calculated according to the following formula:

$$k_e = k_w + k_a \cdot (\rho_a/\rho_w) \cdot (S_w/S_a)^2$$

where:

$k_w$	=	$k$ coefficient for the cross-flooding arrangement (water)
$k_a$	=	$k$ coefficient for the air pipe
$\rho_a$	=	air density
$\rho_w$	=	water density
$S_w$	=	cross-section area of the cross-flooding device (water)
$S_a$	=	cross-section of air pipe

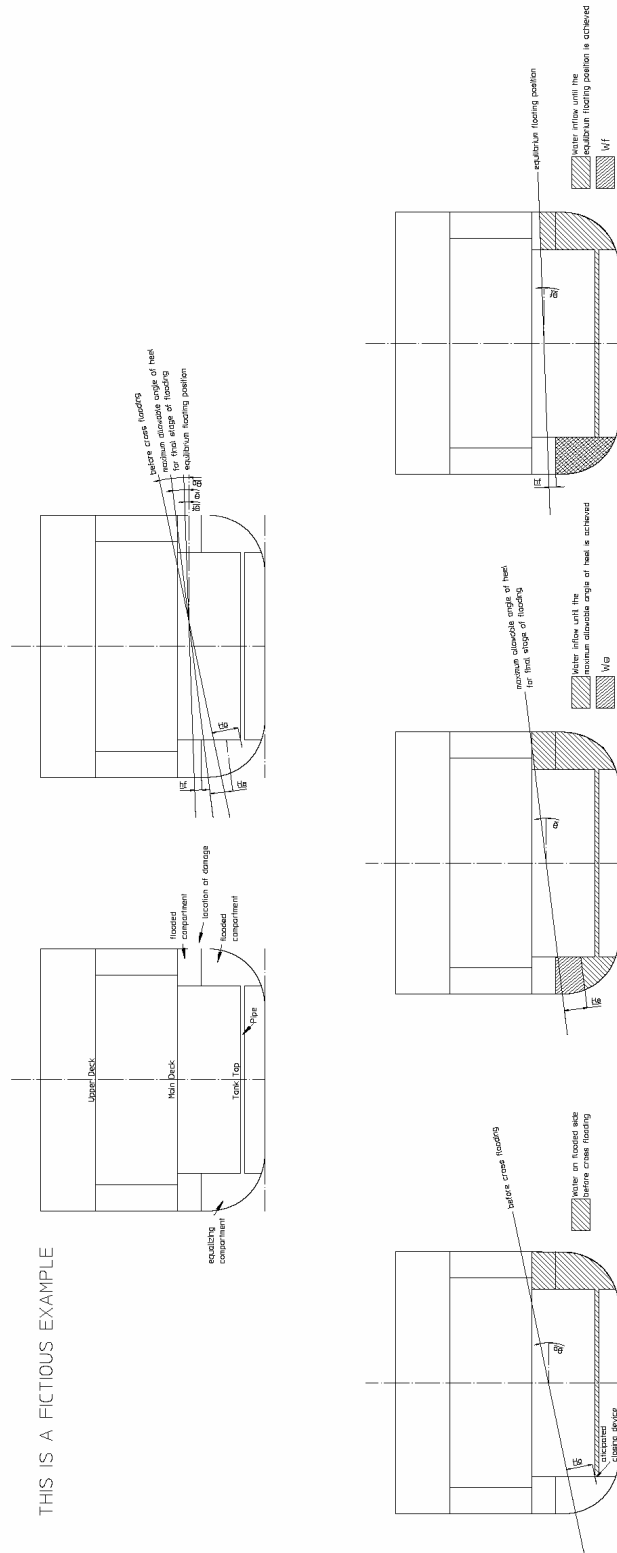
### 4 Alternatives

As an alternative to the provisions in sections 2 and 3, and for arrangements other than those shown in appendix 2, direct calculation using computational fluid dynamics (CFD), time-domain simulations or model testing may also be used.

APPENDIX 1

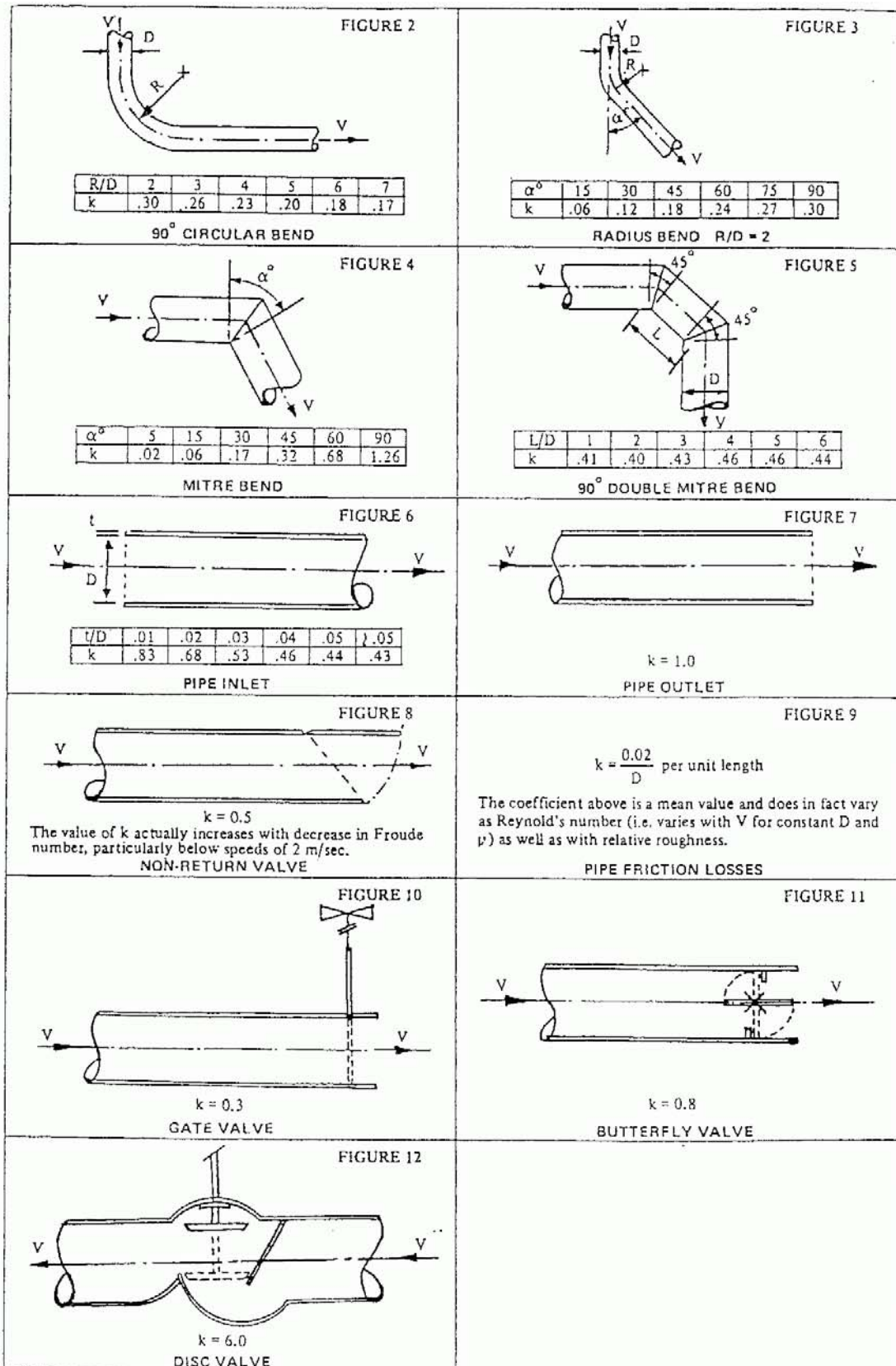
EXAMPLE FOR TREATMENT OF HEEL ANGLES AND WATER HEADS  
 AT DIFFERENT STAGES OF CROSS-FLOODING

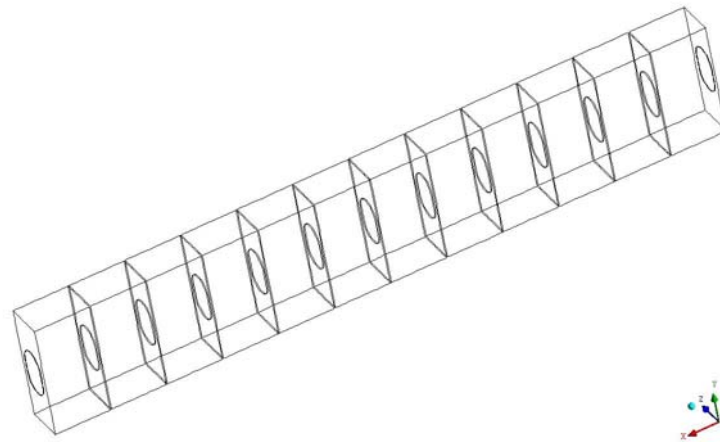
Figure 1



APPENDIX 2

FRICITION COEFFICIENTS IN CROSS-FLOODING ARRANGEMENT

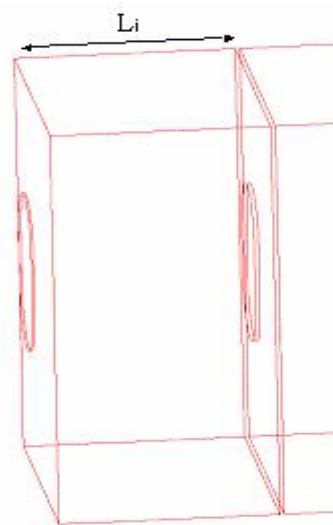




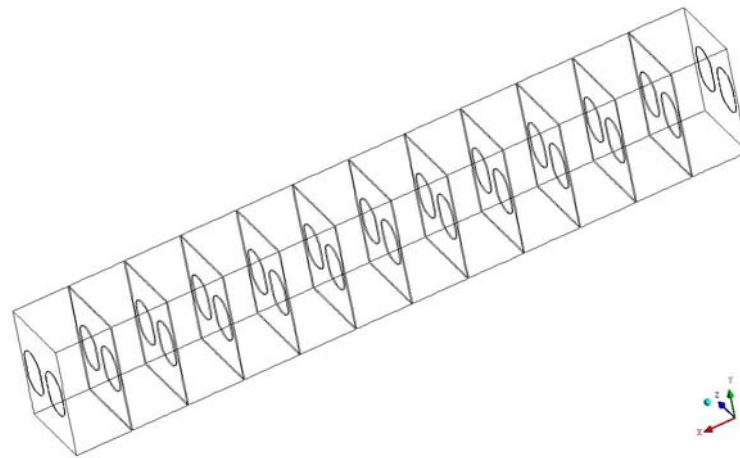
**Figure 13**  
**Cross-flooding through a series of structural ducts with 1 manhole**

$$\begin{array}{ll}
 k = 0.2748 \cdot L_i + 0.0313 & \text{if } 0 < L_i < 1 \\
 k = -0.0986 \cdot L_i^3 + 0.6873 \cdot L_i^2 - 1.0212 \cdot L_i + 0.7386 & \text{if } 1 \leq L_i \leq 4 \\
 k = 1.34 & \text{if } L_i > 4
 \end{array}$$

**Note:**  $k$  is the friction coefficient related to each space between two adjacent girders.  $k$  is evaluated with effective cross-section area therefore in calculations use the real cross-section area  $A$  and not  $S_{\text{equiv}}$ . The pressure loss for entrance in the first manhole is already computed in the calculation, and  $k = 1$  has to be added to take into account the outlet losses.



$L_i$  (in metres)



**Figure 14**  
**Cross-flooding through a series of structural ducts with 2 manholes**

$$\begin{array}{ll} k = 0.4045 \cdot L_i + 0.0627 & \text{if } 0 < L_i < 1 \\ k = 0.0424 \cdot L_i^3 - 0.3593 \cdot L_i^2 + 1.1401 \cdot L_i - 0.356 & \text{if } 1 \leq L_i \leq 4 \\ k = 1.17 & \text{if } L_i > 4 \end{array}$$

**Note:**  $k$  is the friction coefficient related to each space between two adjacent girders.  $k$  is evaluated with effective cross-section area therefore in calculations use the real cross-section area  $A$  and not  $S_{\text{equiv}}$ . The pressure loss for entrance in the first manhole is already computed in the calculation, and  $k = 1$  has to be added to take into account the outlet losses.

### APPENDIX 3

#### EXAMPLE USING FIGURES FOR A PASSENGER SHIP

Dimension of the considered cross-flooding pipe:

Diameter	$D = 0.39 \text{ m}$
Length	$l = 21.0 \text{ m}$
Cross-section area	$S = 0.12 \text{ m}^2$
Wall thickness	$t = 17.5 \text{ mm}$

k-values for the considered cross-flooding system:

Inlet	0.45
Pipe friction $\frac{0.02l}{D}$	1.08
2 radius bends ( $\alpha = 45^\circ$ )	0.36
Non-return valve	0.50
Outlet	<u>1.00</u>
	$\sum k = 3.39$

Sufficient air venting is assumed to be in place.

From this follows:

$$F = \frac{1}{\sqrt{\sum k}}$$

$$F = \frac{1}{\sqrt{3.39}} = 0.54$$

Time required from commencement of cross flooding  $\theta_0$  to the final equilibrium condition  $\theta_f$ :

$$T_f = \frac{2W_f}{S \cdot F} \cdot \frac{\left(1 - \sqrt{\frac{h_f}{H_0}}\right)}{\sqrt{2gH_0}} \cdot \frac{1}{\left(1 - \frac{h_f}{H_0}\right)}$$

Head of water before commencement of cross-flooding:

$$H_0 = 5.3 \text{ m}$$

Volume of water which is used to bring the ship from commencement of cross-flooding to the final equilibrium condition:

$$W_f = 365 \text{ m}^3$$

Final head of water after cross-flooding:

$$h_f = 1.5m$$

$$T_f = \frac{2 \cdot 365m^3}{0.12m^2 \cdot 0.54} \cdot \frac{\left(1 - \sqrt{\frac{1.5m}{5.3m}}\right)}{\sqrt{2 \cdot 9.81m/s^2 \cdot 5.3m}} \cdot \frac{1}{\left(1 - \frac{1.5m}{5.3m}\right)}$$

$$T_f = 721s = 12.0 \text{ min}$$

Time required to bring the vessel from the maximum allowable angle of heel for final stage of flooding  $\theta$  to the final equilibrium condition  $\theta_f$ :

$$T_\theta = \frac{2W_\theta}{S * F} \cdot \frac{\left(1 - \sqrt{\frac{h_f}{H_\theta}}\right)}{\sqrt{2gH_\theta}} \cdot \frac{1}{\left(1 - \frac{h_f}{H_\theta}\right)}$$

Maximum allowable angle of heel for final stage of flooding

$$\theta = 7^\circ$$

Head of water when the maximum allowable angle of heel for final stage of flooding is achieved

$$H_\theta = 3.7m$$

Volume of water which is used to bring the vessel from the maximum allowable angle of heel for final stage of flooding to the final equilibrium condition

$$W_\theta = 160m^3$$

$$T_\theta = \frac{2 \cdot 160m^3}{0.12m^2 \cdot 0.54} \cdot \frac{\left(1 - \sqrt{\frac{1.5m}{3.7m}}\right)}{\sqrt{2 \cdot 9.81m/s^2 \cdot 3.7m}} \cdot \frac{1}{\left(1 - \frac{1.5m}{3.7m}\right)}$$

$$T_\theta = 354s = 5.9 \text{ min}$$

Time required from commencement of cross-flooding  $\theta_o$  until the maximum allowable angle of heel for final stage of flooding  $\theta$  is achieved:

$$T = T_f - T_\theta = 12.0 \text{ min} - 5.9 \text{ min} = 6.1 \text{ min}$$



IMO

MARITIME SAFETY COMMITTEE  
83rd session  
Agenda item 28

MSC 83/28/Add.3  
2 November 2007  
Original: ENGLISH

**REPORT OF THE MARITIME SAFETY COMMITTEE  
ON ITS EIGHTY-THIRD SESSION**

Attached are annexes 18 to 31, 33, 34 and 36 to 44 to the report of the Maritime Safety Committee on its eighty-third session (MSC 83/28).

\* \* \*

For reasons of economy, this document is printed in a limited number. Delegates are kindly asked to bring their copies to meetings and not to request additional copies.



**LIST OF ANNEXES**

- ANNEX 18 RESOLUTION MSC.246(83) – PERFORMANCE STANDARDS FOR SURVIVAL CRAFT AIS SEARCH AND RESCUE TRANSMITTERS (AIS-SART) FOR USE IN SEARCH AND RESCUE OPERATIONS
- ANNEX 19 RESOLUTION MSC.247(83) – ADOPTION OF AMENDMENTS TO PERFORMANCE STANDARDS FOR SURVIVAL CRAFT RADAR TRANSPONDERS FOR USE IN SEARCH AND RESCUE OPERATIONS (RESOLUTION A.802(19))
- ANNEX 20 DRAFT AMENDMENTS TO REGULATIONS III/6.2.2, III/26.2.5 AND IV/7.1.3 OF, AND THE APPENDIX TO THE ANNEX, TO THE 1974 SOLAS CONVENTION
- ANNEX 21 DRAFT AMENDMENTS TO THE 1988 SOLAS PROTOCOL
- ANNEX 22 DRAFT AMENDMENTS TO THE INTERNATIONAL CODE OF SAFETY FOR HIGH-SPEED CRAFT, 1994 (1994 HSC CODE)
- ANNEX 23 DRAFT AMENDMENTS TO THE INTERNATIONAL CODE OF SAFETY FOR HIGH-SPEED CRAFT, 2000 (2000 HSC CODE)
- ANNEX 24 NEW AND AMENDED TRAFFIC SEPARATION SCHEMES AND ASSOCIATED ROUTEING MEASURES
- ANNEX 25 ROUTEING MEASURES OTHER THAN TRAFFIC SEPARATION SCHEMES
- ANNEX 26 RESOLUTION MSC.248(83) – ADOPTION OF A NEW SHIP REPORTING SYSTEM “THE PAPAĀNAUMOKUĀKEA MARINE NATIONAL MONUMENT” PARTICULARLY SENSITIVE SEA AREA (PSSA)
- ANNEX 27 RESOLUTION MSC.249(83) – ADOPTION OF A NEW MANDATORY SHIP REPORTING SYSTEM “ON THE APPROACHES TO THE POLISH PORTS IN THE GULF OF GDANSK”
- ANNEX 28 RESOLUTION MSC.250(83) – ADOPTION OF A NEW MANDATORY SHIP REPORTING SYSTEM “OFF THE SOUTH AND SOUTHWEST COAST OF ICELAND”
- ANNEX 29 RESOLUTION MSC.251(83) – ADOPTION OF AMENDMENTS TO THE EXISTING MANDATORY SHIP REPORTING SYSTEMS “OFF USHANT”, “OFF LES CASQUETS” AND DOVER STRAIT/PAS DE CALAIS”
- ANNEX 30 RESOLUTION MSC.252(83) – ADOPTION OF THE REVISED PERFORMANCE STANDARDS FOR INTEGRATED NAVIGATION SYSTEMS (INS)

- ANNEX 31 RESOLUTION MSC.253(83) – ADOPTION OF THE PERFORMANCE STANDARDS FOR NAVIGATION LIGHTS, NAVIGATION LIGHT CONTROLLERS AND ASSOCIATED EQUIPMENT
- ANNEX 33 DRAFT MSC RESOLUTION ON THE CODE OF THE INTERNATIONAL STANDARDS AND RECOMMENDED PRACTICES FOR A SAFETY INVESTIGATION INTO A MARINE CASUALTY OR MARINE INCIDENT (CASUALTY INVESTIGATION CODE)
- ANNEX 34 DRAFT AMENDMENTS TO SOLAS CHAPTER XI-1
- ANNEX 36 DRAFT ASSEMBLY RESOLUTION ON THE NEED FOR CAPACITY-BUILDING FOR THE DEVELOPMENT AND IMPLEMENTATION OF NEW, AND AMENDMENTS TO EXISTING, INSTRUMENTS
- ANNEX 37 RESOLUTION MSC.254(83) – ADOPTION OF AMENDMENTS TO THE PERFORMANCE STANDARDS AND FUNCTIONAL REQUIREMENTS FOR THE LONG-RANGE IDENTIFICATION AND TRACKING OF SHIPS
- ANNEX 38 WORK PROGRAMMES OF THE SUB-COMMITTEES
- ANNEX 39 PROVISIONAL AGENDAS FOR THE SUB-COMMITTEES
- ANNEX 40 STATEMENT BY THE DELEGATION OF THE MARSHALL ISLANDS
- ANNEX 41 STATEMENT BY THE DELEGATION OF THE UNITED STATES
- ANNEX 42 STATEMENT BY THE DELEGATION OF FRANCE
- ANNEX 43 STATEMENT BY THE DELEGATION OF THE UNITED KINGDOM
- ANNEX 44 STATEMENT BY THE REPRESENTATIVE OF ICS

**(See document MSC 83/28/Add.1 for annexes 17, 32 and 35 and document MSC 83/28/Add.2 for annexes 1 to 16)**

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**ANNEX 18**

**RESOLUTION MSC.246(83)  
(adopted on 8 October 2007)**

**ADOPTION OF PERFORMANCE STANDARDS FOR  
SURVIVAL CRAFT AIS SEARCH AND RESCUE TRANSMITTERS (AIS-SART)  
FOR USE IN SEARCH AND RESCUE OPERATIONS**

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO resolution A.886(21) on Procedure for the adoption of, and amendments to, performance standards and technical specifications, by which the Assembly resolved that the function of adoption performance standards and technical specifications, as well as amendments thereto shall be performed by the Maritime Safety Committee,

RECOGNIZING that new designs of radar are being introduced which do not employ traditional pulsed technology,

RECOGNIZING ALSO that ships are now fitted with an automatic identification system (AIS),

NOTING the results of operational trials on AIS Search and Rescue Transmitter (AIS-SART) reported by Governments,

HAVING CONSIDERED the recommendation made by the Sub-Committee on Radiocommunications and Search and Rescue at its eleventh session, and the Maritime Safety Committee at its eighty-third session,

1. ADOPTS the Recommendation on Performance Standards for survival craft AIS Search and Rescue Transmitter (AIS-SART) for Use in Search and Rescue Operations set out in the Annex to the present resolution;
2. RECOMMENDS Governments to ensure that AIS-SARTs used in search and rescue operations installed on or after 1 January 2010 conform to the performance standards not inferior to those set out in annex to the present resolution.

## ANNEX

### **PERFORMANCE STANDARDS FOR SURVIVAL CRAFT AIS SEARCH AND RESCUE TRANSMITTERS (AIS-SART) FOR USE IN SEARCH AND RESCUE OPERATIONS**

#### **1 INTRODUCTION**

AIS Search and Rescue Transmitter (AIS-SART), in addition to meeting the requirements of the relevant ITU-R Recommendation and the general requirements set out in resolution A.694(17)\*, should comply with the following performance standards.

#### **2 GENERAL**

The AIS-SART should be capable of transmitting messages that indicate the position, static and safety information of a unit in distress. The transmitted messages should be compatible with existing AIS installations. The transmitted messages should be recognized and displayed by assisting units in the reception range of AIS-SART, and clearly distinguish the AIS-SART from an AIS installation.

##### 2.1 The AIS-SART should:

- .1 be capable of being easily activated by unskilled personnel;
- .2 be fitted with means to prevent inadvertent activation;
- .3 be equipped with a means which is either visual or audible, or both visual and audible, to indicate correct operation;
- .4 be capable of manual activation and deactivation; provision for automatic activation may be included;
- .5 be capable of withstanding without damage drops from a height of 20 m into water;
- .6 be watertight at a depth of 10 m for at least 5 min;
- .7 maintain water tightness when subjected to a thermal shock of 45°C under specified conditions of immersion;
- .8 be capable of floating (not necessarily in an operating position) if it is not an integral part of the survival craft;
- .9 be equipped with buoyant lanyard, suitable for use as a tether, if it is capable of floating;
- .10 not be unduly affected by seawater or oil;
- .11 be resistant to deterioration in prolonged exposure to sunlight;

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\* Publication IEC 60945.

- .12 be of a highly visible yellow/orange colour on all surfaces where this will assist detection;
- .13 have a smooth external construction to avoid damaging the survival craft;
- .14 be provided with an arrangement to bring the AIS-SART antenna to a level of at least 1 metre above sea level, together with illustrated instructions;
- .15 be capable of transmitting with a reporting interval of 1 minute or less;
- .16 equipped with an internal position source and be capable of transmitting its current position in each message; and
- .17 be capable of being tested for all functionalities using specific test information.

2.2 The AIS-SART should have sufficient battery capacity to operate for 96 h within a temperature range of -20°C to +55°C, and to provide for testing of the functions on the equipment. The AIS-SART should have a unique identifier to ensure the integrity of the VHF data link.

2.3 The AIS-SART should be so designed as to be able to operate under ambient temperatures of -20°C to +55°C. It should not be damaged in stowage throughout the temperature range of -30°C to +70°C.

2.4 The AIS-SARTs should be detectable at a range of 5 nautical miles over water.

2.5 The AIS-SART should continue transmission even if the position and time synchronization from the positioning system is lost or fails.

2.6 The AIS-SART should transmit within 1 minute of activation.

### **3 TECHNICAL CHARACTERISTICS**

Technical characteristics of the AIS-SART should be in accordance with relevant ITU recommendations.

### **4 LABELLING**

In addition to the items specified in resolution A.694(17)\*\*, the following should be clearly indicated on the exterior of the equipment:

- .1 brief operating and test instructions; and
- .2 expiry date for the primary battery used.

\*\* Recommendations on general requirements for shipborne radio equipment forming part of the Global Maritime Distress and Safety System (GMDSS) and for Electronic Navigational Aids

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**ANNEX 19**

**RESOLUTION MSC.247(83)  
(adopted on 8 October 2007)**

**ADOPTION OF AMENDMENTS TO PERFORMANCE STANDARDS  
FOR SURVIVAL CRAFT RADAR TRANSPONDERS  
FOR USE IN SEARCH AND RESCUE OPERATIONS  
(RESOLUTION A.802(19))**

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO resolution A.886(21) on Procedure for the adoption of, and amendments to, performance standards and technical specifications, by which the Assembly resolved that the function of adoption performance standards and technical specifications, as well as amendments thereto shall be performed by the Maritime Safety Committee,

HAVING CONSIDERED the recommendation made by the Sub-Committee on Radiocommunications and Search and Rescue at its eleventh session, and the Maritime Safety Committee at its eighty-third session,

1. ADOPTS the amendments to resolution A.802(19) on performance standards for survival craft radar transponders for use in search and rescue operations;
2. RECOMMENDS Governments to ensure that SARTs used in search and rescue operations installed on or after 1 January 2010 conform to the performance standards not inferior to those set out in annex to the present resolution.



ANNEX

**AMENDMENTS TO PERFORMANCE STANDARDS  
FOR SURVIVAL CRAFT RADAR TRANSPONDERS  
FOR USE IN SEARCH AND RESCUE OPERATIONS  
(RESOLUTION A.802(19))**

Amend section 2, paragraph 2.5 to read as follows:

“2.5 Horizontal polarization or circular polarization should be used for transmission and reception.”

\*\*\*

## ANNEX 20

DRAFT AMENDMENTS TO REGULATIONS III/6.2.2, III/26.2.5 AND IV/7.1.3 OF, AND  
THE APPENDIX TO THE ANNEX, TO THE 1974 SOLAS CONVENTION

## CHAPTER III

## LIFE-SAVING APPLIANCES AND ARRANGEMENTS

**Regulation 6 – Communications**

1 The existing paragraph 2.2 is replaced by the following:

*“2.2 Search and rescue locating devices*

At least one search and rescue locating device shall be carried on each side of every passenger ship and of every cargo ship of 500 gross tonnage and upwards. At least one search and rescue locating device shall be carried on every cargo ship of 300 gross tonnage and upwards but less than 500 gross tonnage. Such search and rescue locating devices shall conform to performance standards not inferior to those adopted by the Organization.\* The search and rescue locating devices\*\* shall be stowed in such location that they can be rapidly placed in any survival craft other than the liferaft or liferafts required by regulation 31.1.4. Alternatively one search and rescue locating device shall be stowed in each survival craft other than those required by regulation 31.1.4. On ships carrying at least two search and rescue locating devices and equipped with free-fall lifeboats one of the search and rescue locating devices shall be stowed in a free-fall lifeboat and the other located in the immediate vicinity of the navigation bridge so that it can be utilized on board and ready for transfer to any of the other survival craft.”

**Regulation 26 – Additional requirements for ro-ro passenger ships**

2 The existing paragraph 2.5 is replaced by the following:

“Liferafts carried on ro-ro passenger ships shall be fitted with a search and rescue locating device in the ratio of one search and rescue locating device for every four liferafts. The search and rescue locating device shall be mounted inside the liferaft so its antenna is more than one metre above the sea level when the liferaft is deployed, except that for canopied reversible liferafts the search and rescue locating device shall be so arranged as to be readily accessed and erected by survivors. Each search and rescue locating device shall be arranged to be manually erected when the liferaft is deployed. Containers of liferafts search and rescue locating devices shall be clearly marked.”

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\* Refer to the Recommendation on performance standards for survival craft radar transponders for use in search and rescue operations, adopted by the Organization by resolution MSC.247(83) (A.802(19), as amended) and the Recommendation on performance standards for survival craft AIS Search and Rescue transmitter (AIS-SART), adopted by the Organization by resolution MSC.246(83).

\*\* One of these search and rescue locating devices may be the search and rescue locating device required by regulation IV/7.1.3.

## CHAPTER IV

### RADIOCOMMUNICATIONS

#### **Regulation 7 – Radio equipment: General**

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

“.3 a search and rescue locating device capable of operating either in the 9 GHz band or on frequencies dedicated for AIS, which:”

### APPENDIX CERTIFICATES

#### **Record of Equipment for the Nuclear Passenger Ship Safety Certificate (Form PNUC)**

4 In the Record of Equipment for Nuclear Passenger Ship Safety Certificate (Form PNUC), in section 2, the existing item 11.1 is replaced by the following:

“11.1 Number of search and rescue locating devices  
11.1.1 Radar search and rescue transponders (SART)  
11.1.2 AIS search and rescue transmitters (AIS-SART)”

and in section 3, the existing item 6 is replaced by the following:

“6 Ship’s search and rescue locating device  
6.1 Radar search and rescue transponder (SART)  
6.2 AIS search and rescue transmitter (AIS-SART)”

#### **Record of Equipment for the Nuclear Cargo Safety Certificate (Form CNUC)**

5 In the Record of Equipment for Nuclear Cargo Ship Safety Certificate (Form CNUC), in section 2, the existing item 10.1 is replaced by the following:

“10.1 Number of search and rescue locating devices  
10.1.1 Radar search and rescue transponders (SART)  
10.1.2 AIS search and rescue transmitters (AIS-SART)”

and in section 3, the existing item 6 is replaced by the following:

“6 Ship’s search and rescue locating device  
6.1 Radar search and rescue transponder (SART)  
6.2 AIS search and rescue transmitter (AIS-SART)”

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## ANNEX 21

### DRAFT AMENDMENTS TO THE 1988 SOLAS PROTOCOL MODIFICATIONS AND ADDITIONS TO THE ANNEX TO THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974

#### APPENDIX

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

*(Note: In view of a number of amendments which have not yet entered into force or have been approved with a view to adoption, the references to the existing items need to be checked at the stage of the adoption.)*

#### **Record of Equipment for Passenger Ship Safety Certificate (Form P)**

1 In the Record of Equipment for Passenger Ship Safety Certificate (Form P), in section 2, the existing item 11.1 is deleted and replaced by the following:

- “11.1 Number of search and rescue locating devices
  - 11.1.1 Radar search and rescue transponders (SART)
  - 11.1.2 AIS search and rescue transmitters (AIS-SART)”

2 In the Record of Equipment for Passenger Ship Safety Certificate (Form P), in section 3, the existing item 6 is deleted and replaced by the following:

- “6 Ship’s search and rescue locating device
  - 6.1 Radar search and rescue transponder (SART)
  - 6.2 AIS search and rescue transmitter (AIS-SART)”

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

3 In the Record of Equipment for Cargo Ship Safety Equipment Certificate (Form E), in section 2, the existing item 9.1 is deleted and replaced by the following:

- “9.1 Number of search and rescue locating devices
  - 9.1.1 Radar search and rescue transponders (SART)
  - 9.1.2 AIS search and rescue transmitters (AIS-SART)”

#### **Record of Equipment for Cargo Ship Radio Certificate (Form R)**

4 In the Record of Equipment for Cargo Ship Safety Radio Certificate (Form R), in section 2, the existing item 6 is deleted and replaced by the following:

- “6 Ship’s search and rescue locating device
  - 6.1 Radar search and rescue transponder (SART)
  - 6.2 AIS search and rescue transmitter (AIS-SART)”

### **Record of Equipment for the Cargo Ship Safety Certificate (Form C)**

5 In the Record of Equipment for Cargo Ship Safety Certificate (Form C), in section 2, the existing item 10.1 is deleted and replaced by the following:

- “10.1 Number of search and rescue locating devices
- 10.1.1 Radar search and rescue transponders (SART)
- 10.1.2 AIS search and rescue transmitters (AIS-SART)”

6 In the Record of Equipment for Cargo Ship Safety Certificate (Form C), in section 3, the existing item 6 is deleted and replaced by the following:

- “6 Ship’s search and rescue locating device
- 6.1 Radar search and rescue transponder (SART)
- 6.2 AIS search and rescue transmitter (AIS-SART)”

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**ANNEX 22****DRAFT AMENDMENTS TO THE INTERNATIONAL CODE OF SAFETY  
FOR HIGH-SPEED CRAFT, 1994 (1994 HSC CODE)****CHAPTER 8  
LIFE-SAVING APPLIANCES AND ARRANGEMENTS****8.2 Communications**

1 The existing subparagraph .2 of paragraph 8.2.1 is replaced by the following:

“2 at least one search and rescue locating device shall be carried on each side of every passenger high-speed craft and every cargo high-speed craft of 500 gross tonnage and upwards. Such search and rescue locating device should conform to performance standards not inferior to those adopted by the Organization.<sup>1</sup> The search and rescue locating device should be stowed in such locations that they can be rapidly placed in any one of the liferafts. Alternatively, one search and rescue locating device should be stowed in each survival craft.”

**CHAPTER 14  
RADIOCOMMUNICATIONS****14.6 Radio equipment: general**

2 The existing subparagraph .3 of paragraph 14.6.1 is replaced by the following:

“3 a search and rescue locating device which:”

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<sup>1</sup> Refer to the Recommendation on performance standards for survival craft radar transponders for use in search and rescue operations, adopted by the Organization by resolution MSC.247(83) (A.802(19), as amended) and the Recommendation on performance standards for survival craft AIS Search and Rescue transmitter (AIS-SART), adopted by the Organization by resolution MSC.246(83).



**ANNEX 23****DRAFT AMENDMENTS TO THE INTERNATIONAL CODE OF SAFETY  
FOR HIGH-SPEED CRAFT, 2000 (2000 HSC CODE)****CHAPTER 8  
LIFE-SAVING APPLIANCES AND ARRANGEMENTS****8.2 Communications**

1 The existing subparagraph .2 of paragraph 8.2.1 is replaced by the following:

“.2 at least one search and rescue locating device shall be carried on each side of every passenger high-speed craft and every cargo high-speed craft of 500 gross tonnage and upwards. Such search and rescue locating device shall conform to performance standards not inferior to those adopted by the Organization.\* The search and rescue locating device shall be stowed in such locations that they can be rapidly placed in any one of the liferafts. Alternatively, one search and rescue locating device shall be stowed in each survival craft.”

**CHAPTER 14  
RADIOCOMMUNICATIONS****14.7 Radio equipment: general**

2 The existing subparagraph .3 of paragraph 14.7.1 is replaced by the following:

“.3 a search and rescue locating device which:”

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\* Refer to the Recommendation on performance standards for survival craft radar transponders for use in search and rescue operations, adopted by the Organization by resolution MSC.247(83) (A.802(19), as amended) and the Recommendation on performance standards for survival craft AIS Search and Rescue transmitter (AIS-SART), adopted by the Organization by resolution MSC.246(83).





## ANNEX 24

**NEW AND AMENDED TRAFFIC SEPARATION SCHEMES AND  
ASSOCIATED ROUTEING MEASURES**

**NEW TRAFFIC SEPARATION SCHEME “MAAS NORTH-WEST”  
FORMING PART OF THE ROUTEING SYSTEM “IN THE APPROACHES TO HOOK  
OF HOLLAND AND AT NORTH HINDER”**

(Reference Chart: Netherlands 1630 (INT 1416) (Edition 1 dated February 2005)

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

**2 Maas North-West traffic separation scheme**

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

(13) 52° 08'.01 N 003° 39'.60 E      (14) 52° 06'.34 N 003° 43'.33 E  
(15) 52° 06'.12 N 003° 42'.98 E      (16) 52° 07'.77 N 003° 39'.30 E

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

(11) 52° 07'.40 N 003° 45'.00 E      (12) 52° 09'.16 N 003° 41'.06 E

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

(17) 52° 06'.61 N 003° 37'.84 E      (18) 52° 05'.06 N 003° 41'.32 E

**NEW TRAFFIC SEPARATION SCHEME “ON THE APPROACHES TO THE POLISH  
PORTS IN THE GULF OF GDAŃSK”**

(Reference chart: Polish Chart No.73 (INT 1288) published by the Hydrographic Office of the Polish Navy (Edition 2004).

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

**TRAFFIC SEPARATION SCHEME “EAST”**

The traffic separation scheme (TSS) “East” consists of:

- two traffic lanes 1.0 nautical mile wide;
- one intermediate traffic separation zone 0.5 mile wide in two parts: northeast and southwest;
- one traffic separation line connecting two parts of the intermediate traffic separation zone.

The direction of navigation is:

- inbound traffic lane, 163° (T) from the seaward limit of the scheme to the turning point marked by the buoy ZN, thence 206° to the southern limit of the scheme marked by the buoy ZS northeast of the Gdańsk Northern Port (Port Północny) pilot embarkation position;

- outbound traffic lane, 026° (T) as far as the turning point marked by the buoy ZN, thence 343° (T) to the seaward limit of the scheme.

Description of the traffic separation scheme (the co-ordinates listed below are in WGS-84):

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

(1)	54° 40'.43 N	019° 03'.79 E
(2)	54° 40'.57 N	019° 04'.61 E
(3)	54° 37'.33 N	019° 06'.28 E
(4)	54° 37'.19 N	019° 05'.46 E

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

(5)	54° 36'.47 N	019° 05'.36 E
(6)	54° 36'.26 N	019° 06'.13 E
(7)	54° 26'.45 N	018° 58'.03 E
(8)	54° 26'.67 N	018° 57'.25 E

- (c) A traffic separation line connecting the following geographical positions:

(9)	54° 37'.26 N	019° 05'.87 E
(10)	54° 36'.80 N	019° 06'.10 E (buoy ZN)
(11)	54° 36'.36 N	019° 05'.74 E

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

(12)	54° 40'.15 N	019° 02'.15 E
(13)	54° 36'.90 N	019° 03'.81 E
(14)	54° 27'.10 N	018° 55'.71 E

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

(15)	54° 40'.86 N	019° 06'.26 E
(16)	54° 36'.69 N	019° 08'.39 E
(17)	54° 26'.02 N	018° 59'.57 E

### **TRAFFIC SEPARATION SCHEME “WEST”**

The traffic separation scheme (TSS) “West” consists of:

- two traffic lanes 0.75 to 0.5 mile wide (northeast part of the TSS) separated by traffic separation line;
- two traffic lanes 0.5 mile wide in two parts (southwest and west) separated by traffic separation line;

- one precautionary area;
- one associated inshore traffic zones.

The direction of navigation is:

- inbound traffic lane, 205° from the seaward limit of the scheme to the turning point marked by the buoy HEL (northeast part of the TSS), then 221° as far as the turning point at the buoy GN in the Precautionary Area, thence:
  - 221° to the southwestern limit of the scheme marked by the buoy NP northeast of the Gdańsk New Port (Nowy Port) pilot embarkation position; or
  - 092° to the western limit of the scheme marked by the buoy GD east of the Gdynia pilot embarkation position;
- outbound traffic lane: 041° (southwest part of the TSS for vessels leaving Gdańsk New Port (Nowy Port) or 272° (west part of the TSS for vessels leaving Gdynia) to the turning point marked by the buoy GN in the Precautionary Area, then 041° as far as the turning point at the buoy HEL, thence 025° to the seaward limit of the scheme.

Description of the traffic separation scheme (the co-ordinates listed below are in WGS-84):

**Northeast part:**

(f) A separation line connecting the following geographical positions:

(18)	54° 40'.00 N	018° 57'.00 E
(19)	54° 36'.30 N	018° 54'.00 E
(20)	54° 35'.43 N	018° 53'.29 E (buoy HEL)
(21)	54° 35'.10 N	018° 52'.80 E
(22)	54° 32'.40 N	018° 48'.74 E

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

(23)	54° 40'.32 N	018° 55'.84 E
(24)	54° 36'.62 N	018° 52'.84 E
(25)	54° 35'.43 N	018° 52'.15 E
(26)	54° 32'.73 N	018° 48'.09 E

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

(27)	54° 39'.68 N	018° 58'.16 E
(28)	54° 35'.98 N	018° 55'.16 E
(29)	54° 34'.77 N	018° 53'.45 E
(30)	54° 32'.07 N	018° 49'.39 E

**Precautionary area:**

- (i) A precautionary area bounded by a line connecting the following geographical positions:

(31)	54° 32'.07 N	018° 49'.39 E
(32)	54° 32'.40 N	018° 48'.74 E
(33)	54° 32'.73 N	018° 48'.09 E
(34)	54° 32'.44 N	018° 46'.22 E
(35)	54° 31'.94 N	018° 46'.20 E
(36)	54° 31'.45 N	018° 46'.17 E
(37)	54° 31'.12 N	018° 46'.81 E
(38)	54° 30'.79 N	018° 47'.46 E
(39)	54° 31'.56 N	018° 48'.61 E

**Southwest part:**

- (j) A separation line connecting the following geographical positions:

(40)	54° 31'.12 N	018° 46'.81 E
(41)	54° 28'.48 N	018° 42'.84 E

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

(42)	54° 31'.45 N	018° 46'.17 E
(43)	54° 28'.81 N	018° 42'.20 E

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

(44)	54° 30'.79 N	018° 47'.46 E
(45)	54° 28'.15 N	018° 43'.49 E

**West part:**

- (m) A separation line connecting the following geographical positions:

(46)	54° 31'.94 N	018° 46'.20 E
(47)	54° 32'.04 N	018° 41'.10 E

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

(48)	54° 32'.44 N	018° 46'.22 E
(49)	54° 32'.54 N	018° 41'.13 E

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

(50)	54° 31'.45 N	018° 46'.17 E
(51)	54° 31'.54 N	018° 41'.07 E

- (p) Inshore traffic zone:

The inshore traffic zone is established in the waters between the inner limit of the northeastern and western part of the traffic separation scheme “WEST” and the adjacent Polish coast and limited:

- from north by a line connecting the following geographical positions:

(23)	54° 40'.32 N	018° 55'.84 E
(52)	54° 40'.32 N	018° 44'.85 E

- from west by a line connecting the following geographical positions:

(49)	54° 32'.54 N	018° 41'.13 E
(53)	54° 41'.66 N	018° 41'.13 E

#### **Recommended track between GD and NP buoys**

- 1 A recommended track is established between the following geographical positions:

(54)	54° 32'.05 N	018° 39'.84 E	(buoy GD)
(55)	54° 27'.90 N	018° 42'.05 E	(buoy NP)

- 2 The direction (T) of navigation is 163° – 343°.

#### **Recommended track between GN and PP buoys**

- 1 A recommended track is established between the following geographical positions:

(56)	54° 31'.56 N	018° 48'.61 E	(vicinity of buoy GN)
(57)	54° 28'.23 N	018° 54'.54 E	
(58)	54° 25'.88 N	018° 54'.54 E	(vicinity of buoy PP)

- 2 The directions (T) of navigation are: 134° – 314° and 000° – 180°.

#### **NEW TRAFFIC SEPARATION SCHEMES “OFF THE SOUTHWEST COAST OF ICELAND”**

(Reference chart: Icelandic Chart No.31 (INT 1105) Dyrhólaey – Snæfellsnes (new edition June 2004).

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

## **Description of the traffic separation schemes**

### *Part I*

#### **Traffic separation scheme northwest of Gardskagi Point**

The routing measures consist of a traffic separation scheme northwest of Gardskagi Point with attached two-way routes at both ends.

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

- (1) 64° 09'.02 N 022° 41'.40 W
- (2) 64° 09'.02 N 022° 49'.60 W
- (3) 64° 07'.03 N 022° 53'.25 W
- (4) 64° 06'.65 N 022° 52'.14 W
- (5) 64° 08'.40 N 022° 48'.92 W
- (6) 64° 08'.40 N 022° 41'.40 W

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

- (7) 64° 05'.91 N 022° 50'.06 W
- (8) 64° 07'.20 N 022° 47'.51 W
- (9) 64° 07'.20 N 022° 41'.40 W

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

- (10) 64° 10'.26 N 022° 41'.40 W
- (11) 64° 10'.26 N 022° 50'.94 W
- (12) 64° 07'.80 N 022° 55'.46 W

#### **Description of the two-way routes**

A two-way route for east/west-bound traffic north of Gardskagi Point is established by lines connecting the following geographical positions:

- (9) 64° 07'.20 N 022° 41'.40 W
- (10) 64° 10'.26 N 022° 41'.40 W
- (13) 64° 10'.26 N 022° 33'.26 W
- (14) 64° 07'.20 N 022° 33'.26 W

A two-way route for north-east/south-west-bound traffic west of Gardskagi Point is established by lines connecting the following geographical positions:

- (15) 64° 05'.63 N 022° 59'.45 W
- (12) 64° 07'.80 N 022° 55'.46 W

- (16) 64° 03'.54 N 022° 54'.70 W  
(7) 64° 05'.91 N 022° 50'.06 W

*Part II*

**Traffic separation scheme southwest of the Reykjanes Peninsula**

The routing measures consist of a traffic separation scheme southwest of the Reykjanes Peninsula, with an attached two-way route.

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

- (30) 63° 31'.75 N 023° 32'.28 W  
(31) 63° 33'.90 N 023° 33'.92 W  
(32) 63° 31'.55 N 023° 33'.62 W  
(33) 63° 33'.69 N 023° 35'.26 W

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

- (29) 63° 32'.00 N 023° 29'.50 W  
(34) 63° 34'.30 N 023° 31'.23 W

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

- (35) 63° 30'.82 N 023° 36'.06 W  
(36) 63° 33'.37 N 023° 38'.00 W

**Description of the two-way route**

A two-way route (the outer route) west of the Reykjanes Peninsula, located off the southwest corner of the proposed western Area to be Avoided, is established by lines connecting the following geographical positions:

- (34) 63° 34'.30 N 023° 31'.23 W  
(36) 63° 33'.37 N 023° 38'.00 W  
(28) 63° 42'.00 N 023° 37'.00 W  
(37) 63° 41'.00 N 023° 43'.69 W

**Notes:**

- 1.1 All ships of over 5,000 gross tonnage in size and all ships carrying dangerous or noxious cargoes in bulk or cargo tanks should navigate the outer route, southwest of the Reykjanes Peninsula, unless they are permitted to navigate the inner route, Hullid Passage, according to the provisions of paragraphs 1.2 and 1.4 below.



- 1.2 Ships of up to 5,000 gross tonnage not carrying dangerous or noxious cargoes in bulk or cargo tanks may transit the inner route.
- 1.3 Ships of up to 20,000 gross tonnage may transit the inner route provided that:
  - .1 the ship does not carry any dangerous or noxious cargoes in bulk or cargo tanks; and
  - .2 the master of the ship has attended a course held by Icelandic authorities and achieved transit permit. In order to be eligible to attend the course, the master must have been involved in six passages without any incidents and/or remarks to Faxaflói Bay ports as master or chief mate in the preceding 18 months. The master's transit permit expires if the master has not navigated a ship to Faxaflói Bay port in 24 months.
- 1.4 Tankers with a cargo capacity of up to 5,000 gross tonnage may navigate the inner route carrying gas cargoes or petroleum products with a maximum kinematic viscosity of 11.0 cSt at 40°C<sup>1</sup>. The master shall fulfil the conditions as provided for in paragraph 1.3.2 above.
- 2 Mariners should be aware that fishing vessels may be encountered in the area and should navigate accordingly.
- 3 Exceptions applying to the routing measures are in accordance with SOLAS chapter V, regulation 1.1. Exempt are warships, naval auxiliaries and other ships owner or operated by a contracting Government and used only on Government non-commercial service. The exceptions do not apply to the TSS.

## **AMENDMENTS TO EXISTING MANDATORY ROUTE FOR TANKERS FROM NORTH HINDER TO THE GERMAN BIGHT AND VICE VERSA**

Replace the existing text under "Application and use of the route" by the following new text:

### **Application and use of the route**

The route is mandatory for use by the following classes of ships:

- (a) tankers of 10,000 tons gross tonnage and upwards, carrying oil as defined under Annex I to the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78);
- (b) chemical tankers of 5,000 tons gross tonnage and upwards, carrying noxious liquid substances in bulk assessed or provisionally assessed as Category X or Y of Annex II to the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78);

---

<sup>1</sup> According to ISO 8217:2005.

- (c) chemical tankers and NLS tankers of 10,000 tons gross tonnage and upwards, carrying Noxious Liquid Substances in bulk assessed or provisionally assessed as Category Z of Annex II to the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78); and
- (d) ships of 10,000 tons gross tonnage and upwards, carrying liquefied gasses in bulk.

These ships shall avoid the sea area between the mandatory route and the adjacent Frisian Islands' coast, except when joining or leaving the route at the nearest point of the route to the port of departure or destination which permits a safe passage to or from that port.

The classes of ships referred to above shall use the mandatory route or part of it:

- (i) when sailing from North Hinder to the Baltic or to North Sea ports of Norway, Sweden, Denmark, Germany or the Netherlands north of latitude 53°N and vice versa;
- (ii) when sailing between North Sea ports of the Netherlands north and/or Germany, except in cases of adjacent port areas;
- (iii) when sailing between United Kingdom or Continental North Sea ports south of latitude 53°N and Scandinavian and Baltic ports; and
- (iv) when sailing between North Hinder, United Kingdom or Continental ports south of latitude 53°N and offshore and offshore-based loading facilities in the North Sea area. However this provision does not apply to ships sailing between ports on the east coast of the United Kingdom, including Orkney and Shetland Islands.

Ships which, because of their draft, cannot safely navigate the mandatory route – in particular the southern part of it (the routeing measures a, b and c above) – are exempted from the requirements to use the southern part of the mandatory route and are strongly recommended to use the western route of the routeing system “Off Friesland” or part of it, as appropriate, instead.

This alternative western route is formed by the following routeing measures:

- .1 Deep-water route from North Hinder to Indefatigable Bank via DR 1 lightbuoy;
- .2 TSS “Off Botney Ground”; and
- .3 Deep-water route from TSS “Off Botney Ground” to the Precautionary Area “Friesland Junction”.

Shipmasters should enter this deviation in the ships' log.

**AMENDMENTS TO THE EXISTING TRAFFIC SEPARATION SCHEMES “OFF TEXEL”,  
“OFF VLIELAND, VLIELAND NORTH AND VLIELAND JUNCTION”,  
“TERSCHELLING-GERMAN BIGHT” AND “GERMAN BIGHT WESTERN APPROACH”**

Replace in each of the above-mentioned routing systems the existing “Special Provisions” text by the following new text:

**Note:**

The following classes of ships are referred to the provisions being part of the description of the “Mandatory route for tankers from North Hinder to the German Bight and vice versa”:

- (a) tankers of 10,000 tons gross tonnage and upwards, carrying oil as defined under Annex I to the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78);
- (b) chemical tankers of 5,000 tons gross tonnage and upwards, carrying Noxious Liquid Substances in bulk assessed or provisionally assessed as Category X or Y of Annex II to the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78);
- (c) chemical tankers and NLS tankers of 10,000 tons gross tonnage and upwards, carrying Noxious Liquid Substances in bulk assessed or provisionally assessed as Category Z of Annex II to the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78);
- (d) ships of 10,000 tons gross tonnage and upwards, carrying liquefied gases in bulk.

**AMENDMENTS TO THE EXISTING TRAFFIC SEPARATION SCHEMES “IN THE APPROACHES TO HOOK OF HOLLAND AND AT NORTH HINDER”**

The following traffic separation schemes to be amended as presented below:

(Reference chart: Netherlands 1630 (INT 1416) (Edition 1, dated February 2005).

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

**1 Maas North traffic separation scheme**

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

- |                  |               |                  |               |
|------------------|---------------|------------------|---------------|
| (1) 52° 15'.00 N | 003° 59'.38 E | (2) 52° 07'.18 N | 003° 56'.56 E |
| (3) 52° 15'.00 N | 003° 56'.42 E | (5) 52° 07'.27 N | 003° 54'.34 E |
| (4) 52° 10'.26 N | 003° 55'.54 E |                  |               |

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

(7) 52° 07'.04 N      004° 00'.00 E      (6) 52° 15'.00 N      004° 02'.80 E

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

(8) 52° 15'.00 N      003° 53'.39 E      (9) 52° 10'.26 N      003° 52'.49 E  
(10) 52° 07'.40 N      003° 51'.36 E

### 3 Maas West Inner traffic separation scheme

- (a) A separation zone to the north of the Eurochannel is outward bounded by a line connecting the following geographical positions:

(21) 52° 02'.36 N      003° 32'.20 E      (22) 52° 02'.74 N      003° 41'.25 E  
(23) 52° 01'.07 N      003° 41'.47 E      (24) 52° 00'.20 N      003° 30'.73 E

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

(32) 52° 02'.17 N      003° 37'.83 E      (33) 52° 02'.00 N      003° 33'.98 E  
(34) 52° 00'.90 N      003° 33'.23 E      (35) 52° 01'.26 N      003° 37'.63 E

- (b) A separation zone to the south of the Eurochannel is bounded by a line connecting the following geographical positions:

(25) 52° 00'.42 N      003° 41'.55 E      (26) 51° 59'.48 N      003° 30'.24 E  
(27) 51° 58'.03 N      003° 29'.26 E      (28) 51° 59'.72 N      003° 41'.65 E

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

(19) 52° 04'.84 N      003° 40'.97 E      (20) 52° 04'.73 N      003° 33'.81 E

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

(29) 51° 54'.59 N      003° 26'.92 E      (30) 51° 57'.10 N      003° 40'.05 E  
(31) 51° 57'.21 N      003° 41'.98 E

**Note:** The inside of the area in the separation zone to the north of the Eurochannel, bounded by a line connection geographical positions (32), (33), (34) and (35) above, is designated as an anchorage area.

#### 4 Inshore traffic zone

The area between the landward boundary of the Maas West Inner traffic separation scheme and the coast, which lies between a line connecting positions (29) 51° 54'.59 N 003° 26'.92 E, (59) 51° 51'.73 N 003° 24'.96 E and (60) 51° 43'.73 N 003° 42'.25 E and a line connecting geographical positions (29) above, (30) 51° 57'.10 N 003° 40'.05 E and (56) 51° 58'.27 N 004° 00'.62 E is designated as an inshore traffic zone.

#### 5 Maas Centre precautionary area

- (a) A precautionary area is established off the entrance to the Rotterdam Waterway. The area is bounded by a line connecting geographical positions: (58) North Mole Head Light, (57) South Mole Head Light, thence along the southern sea wall to geographical position (56) 51° 58'.27 N 004° 00'.62 E, thence to geographical positions (31), (19), (11), (7) and (58) North Mole head Light.
- (b) The focal point of the precautionary area is located at the following geographical position: (79) 52° 01'.68 N 03° 53'.11 E.

*Note:* An area to be avoided “At Maas Centre” is established around position (79) above. It consists of a circle of 0.6 mile radius.

(See also Caution 1 and the description of the area to be avoided in part D I/5.6)

#### 6 Maas Junction precautionary area

A precautionary area is established at the junction between the Maas West Inner and Maas West Outer traffic separation schemes. The precautionary area is bounded by a line connecting the following geographical positions:

(20), (29), (50), (36) and (20) above.

#### 7 Maas West Outer traffic separation scheme

- (a) A separation zone to the north of the Eurochannel is outward bounded by a line connecting the following geographical positions:

(38) 52° 01'.40 N	003° 09'.19 E	(39) 52° 01'.99 N	003° 23'.17 E
(40) 51° 59'.42 N	003° 21'.43 E	(41) 51° 58'.46 N	003° 09'.83 E

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

(42) 51° 59'.68 N	003° 21'.06 E	(43) 52° 01'.59 N	003° 22'.35 E
(44) 52° 01'.37 N	003° 16'.88 E	(45) 51° 59'.37 N	003° 17'.33 E

- (b) A separation zone to the south of the Eurochannel is outward bounded by a line connecting the following geographical positions:

(46) 51° 58'.71 N      003° 20'.95 E      (47) 51° 57'.81 N      003° 09'.99 E  
(48) 51° 55'.47 N      003° 10'.51 E      (49) 51° 56'.71 N      003° 19'.59 E

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

(52) 51° 56'.96 N      003° 19'.25 E      (53) 51° 58'.36 N      003° 20'.19 E  
(54) 51° 58'.06 N      003° 16'.64 E      (55) 51° 56'.60 N      003° 16'.54 E

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

(36) 52° 04'.61 N      003° 24'.96 E      (37) 52° 04'.37 N      003° 08'.52 E

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

(50) 51° 52'.66 N      003° 16'.84 E      (51) 51° 51'.62 N      003° 11'.37 E

*Note:* The inside of the area in the separation zone to the north of the Eurochannel, bounded by a line connecting geographical positions (42), (43), (44) and (45) above, and the inside of the area in the separation zone to the south of the Eurochannel, bounded by a line connecting geographical positions (52), (53), (54) and (55) above, are designated as anchorage areas.

## **8 North Hinder South traffic separation scheme**

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

(69) 51° 31'.07 N      002° 07'.90 E      (70) 51° 29'.84 N      002° 10'.62 E  
(71) 51° 47'.88 N      002° 35'.27 E      (72) 51° 48'.53 N      002° 34'.04 E

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

(73) 51° 26'.97 N      002° 16'.95 E      (74) 51° 36'.20 N      002° 27'.25 E  
(75) 51° 45'.42 N      002° 39'.92 E

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

(76) 51° 33'.66 N      002° 02'.17 E      (77) 51° 51'.35 N      002° 28'.70 E

The delineations of North Hinder North traffic separation scheme and North Hinder Junction precautionary area remain the same.

The geographical positions for the description of the scheme are revised for WGS-84 chart Datum.

## 9 North Hinder North traffic separation scheme

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

(61) 52° 07'.53 N      003° 02'.64 E      (62) 52° 09'.78 N      003° 05'.84 E  
(63) 52° 11'.29 N      003° 03'.03 E      (64) 52° 09'.03 N      002° 59'.83 E

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

(65) 52° 13'.26 N      002° 59'.34 E      (66) 52° 10'.99 N      002° 56'.14 E

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

(67) 52° 05'.54 N      003° 06'.31 E      (68) 52° 07'.81 N      003° 09'.51 E

## 10 North Hinder Junction precautionary area

- (a) A precautionary area is established off North Hinder. The area is bounded by a line connecting the following geographical positions:

(75) 51° 45'.42 N      002° 39'.92 E      (51) 51° 51'.62 N      003° 11'.37 E  
(37) 52° 04'.37 N      003° 08'.52 E      (66) 52° 10'.99 N      002° 56'.14 E  
(77) 51° 51'.35 N      002° 28'.70 E      and (75) above.

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

(78) 52° 00'.09 N      002° 51'.09 E

This position coincides with the location of North Hinder buoy.

A circular area to be avoided with a diameter of one mile is established around position (78). (See also caution 5 and the description of the area to be avoided in Part D I/5.6.)

*Note:*

### Cautions

Amend as follows: (amended parts are underlined)

- 1 (In the “Maas Centre” precautionary area, near the area to be avoided)  
Ships should proceed with caution in the area where the traffic lanes merge. Any ship which is not compelled to adhere to the deep-water route should, if practicable, not enter the circular area to be avoided “At Maas Centre”. All ships should keep this circular area on their port side unless the available water depth, the density of traffic, the pilotage or the weather conditions warrant otherwise.

- 2 (Maas Junction precautionary area between Maas West Outer traffic separation scheme and Maas West Inner traffic separation scheme). Mariners are warned that in this precautionary area ships on routes to and from TSS “Off Texel”, the river Scheldt and Europoort are merging or crossing.
- 3 (no change)
- 4 (no change)
- 5 (In the “North Hinder Junction” precautionary area, near the area to be avoided.) Ships should proceed with caution in this area where traffic lanes merge. Ships should, where practicable, not enter the area to be avoided “At North Hinder Junction Point” around North Hinder buoy. All ships should keep the circular area to be avoided on their port side unless the density of traffic, the pilotage (helicopter operations) or the weather conditions warrant otherwise.

## **AMENDMENTS TO THE EXISTING TRAFFIC SEPARATION SCHEME “IN THE SOUND”**

(Reference charts: Danish chart No.131 (INT 1331) (14th edition February 2006)  
Swedish chart No.922, 5th edition January 2007.

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

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

- (a) A separation line connects the following geographical positions:
- |     |              |               |     |              |               |
|-----|--------------|---------------|-----|--------------|---------------|
| (1) | 56° 07'.30 N | 012° 31'.46 E | (3) | 55° 58'.88 N | 012° 41'.23 E |
| (2) | 56° 03'.27 N | 012° 39'.01 E |     |              |               |
- (b) A traffic lane for northbound traffic is established between the separation line and a separation line connecting the following geographic positions:
- |     |              |               |     |              |               |
|-----|--------------|---------------|-----|--------------|---------------|
| (4) | 56° 08'.03 N | 012° 32'.69 E | (6) | 56° 03'.35 N | 012° 39'.97 E |
| (5) | 56° 06'.39 N | 012° 34'.74 E | (7) | 55° 59'.08 N | 012° 42'.37 E |
- (c) A traffic lane for southbound traffic is established between the separation line and a separation line connecting the following geographical positions:
- |     |              |               |      |              |               |
|-----|--------------|---------------|------|--------------|---------------|
| (8) | 56° 06'.58 N | 012° 30'.22 E | (10) | 56° 03'.10 N | 012° 38'.21 E |
| (9) | 56° 05'.50 N | 012° 33'.22 E | (11) | 56° 01'.66 N | 012° 37'.79 E |
- (d) In the southern part of this traffic lane the southbound traffic is divided into two lanes by a separation zone, bounded by a line connecting the following geographical positions:
- |      |              |               |      |              |               |
|------|--------------|---------------|------|--------------|---------------|
| (12) | 56° 00'.80 N | 012° 38'.20 E | (14) | 56° 00'.80 N | 012° 39'.35 E |
| (13) | 56° 01'.66 N | 012° 38'.82 E |      |              |               |



- (e) A traffic lane eastern most for southbound traffic is established between the separation line and a separation line connecting the following geographic positions:

(15)	56° 00'.80 N	012° 39'.35 E	(17)	55° 58'.82 N	012° 39'.98 E
(16)	55° 59'.98 N	012° 39'.87 E			

### **Inshore traffic zones**

#### *Western inshore traffic zone*

The area between the western landward boundary of the traffic separation scheme and the Danish coast and between a line drawn in the direction 224° from position (8) to position (20) and a line drawn in the direction of 257° from position (11) to position (21) is designated as an inshore traffic zone.

(8)	56° 06'.58 N	012° 30'.22 E
(20)	56° 05'.64 N	012° 28'.64 E
(11)	56° 01'.66 N	012° 37'.79 E
(21)	56° 01'.47 N	012° 36'.37 E

#### *Eastern inshore traffic zone*

The area between the eastern landward boundary of the traffic separation scheme and the Swedish coast and between a line drawn in a direction 049° from position (4) to position (18) and a line drawn in a direction of 060° from position (6) to position (19) is designated as an inshore traffic zone.

(4)	56° 08'.03 N	012° 32'.69 E
(18)	56° 08'.72 N	012° 34'.09 E
(6)	56° 03'.35 N	012° 39'.97 E
(19)	56° 03'.66 N	012° 40'.82 E

#### **Note:**

#### *Cross-channel traffic*

All precautions, including if necessary a reduction of speed, should be taken in the area between Helsingborg and Helsingør, which is widely used by local cross-channel ferry traffic.

## AMENDMENTS TO THE EXISTING TRAFFIC SEPARATION SCHEME “IN THE APPROACHES TO CHEDABUCTO BAY”

(Reference charts: Canadian Hydrographic Service 4013 (2002 edition; 4307, 2002 edition; 4335, 1998 edition).

*Note:* These charts are based on North American 1983 Geodetic Datum, which is equivalent to WGS-84.)

### Description of the traffic separation scheme

The traffic separation scheme “In the approaches to Chedabucto Bay” consists of three parts:

#### *Part I*

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

- |                                |                                |
|--------------------------------|--------------------------------|
| (1) 45° 24'.00 N 060° 36'.70 W | (3) 45° 23'.70 N 060° 28'.20 W |
| (2) 45° 24'.20 N 060° 27'.17 W | (4) 45° 23'.82 N 060° 36'.48 W |

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

- |                                |                                |
|--------------------------------|--------------------------------|
| (5) 45° 26'.00 N 060° 23'.20 W | (6) 45° 25'.43 N 060° 41'.70 W |
|--------------------------------|--------------------------------|

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

- |                                |                                 |
|--------------------------------|---------------------------------|
| (7) 45° 22'.30 N 060° 34'.50 W | (8) 45° 22'.15 N, 060° 31'.60 W |
|--------------------------------|---------------------------------|

#### *Part II*

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

- |                                 |                                 |
|---------------------------------|---------------------------------|
| (9) 45° 22'.57 N 060° 40'.00 W  | (11) 45° 19'.30 N 060° 37'.80 W |
| (10) 45° 19'.88 N 060° 36'.50 W | (12) 45° 22'.68 N 060° 42'.17 W |

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

- |                                 |                                 |
|---------------------------------|---------------------------------|
| (13) 45° 21'.35 N 060° 33'.30 W | (14) 45° 22'.30 N 060° 34'.50 W |
|---------------------------------|---------------------------------|

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

- |                                 |                                 |
|---------------------------------|---------------------------------|
| (15) 45° 22'.90 N 060° 46'.50 W | (17) 45° 14'.47 N 060° 48'.38 W |
| (16) 45° 21'.28 N 060° 44'.40 W |                                 |

*Part III*

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

- |      |              |               |      |              |               |
|------|--------------|---------------|------|--------------|---------------|
| (18) | 45° 24'.00 N | 060° 41'.70 W | (22) | 45° 28'.45 N | 061° 10'.33 W |
| (19) | 45° 23'.82 N | 060° 41'.50 W | (23) | 45° 24'.92 N | 061° 06'.07 W |
| (20) | 45° 23'.82 N | 061° 05'.00 W | (24) | 45° 24'.00 N | 061° 02'.65 W |
| (21) | 45° 28'.36 N | 061° 10'.46 W |      |              |               |

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

- |      |              |               |      |              |               |
|------|--------------|---------------|------|--------------|---------------|
| (25) | 45° 25'.43 N | 060° 41'.70 W | (27) | 45° 25'.63 N | 061° 06'.29 W |
| (26) | 45° 24'.77 N | 061° 03'.26 W | (28) | 45° 28'.70 N | 061° 09'.94 W |

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

- |      |              |               |      |              |               |
|------|--------------|---------------|------|--------------|---------------|
| (29) | 45° 22'.90 N | 060° 46'.50 W | (31) | 45° 28'.12 N | 061° 10'.83 W |
| (30) | 45° 22'.89 N | 061° 04'.52 W |      |              |               |

**AMENDMENTS TO THE EXISTING TRAFFIC SEPARATION SCHEME “IN THE STRAIT OF DOVER AND ADJACENT WATERS”**

(Reference Chart: British Admiralty 2449, 2450, 2451 June 2007.

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

**Description of the traffic separation scheme**

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

- |     |              |               |
|-----|--------------|---------------|
| (1) | 51° 25'.31 N | 002° 04'.03 E |
| (2) | 51° 26'.77 N | 002° 01'.48 E |
| (3) | 51° 31'.07 N | 002° 07'.90 E |
| (4) | 51° 29'.84 N | 002° 10'.62 E |

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

- |     |              |               |
|-----|--------------|---------------|
| (5) | 51° 26'.97 N | 002° 16'.95 E |
| (6) | 51° 22'.83 N | 002° 12'.29 E |

(c) A separation zone is bounded by lines connecting the following geographical positions:

(7)	51° 22'.03 N	001° 58'.39 E
(8)	51° 22'.49 N	001° 57'.61 E
(9)	51° 16'.53 N	001° 52'.29 E

(d) A precautionary area with recommended directions of traffic flow is established connecting geographical positions (1), (2), (8) and (7) above.

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

(10)	51° 16'.53 N	001° 52'.29 E
(11)	51° 06'.13 N	001° 38'.10 E

(f) A separation zone is bounded by lines connecting the following geographical positions:

(12)	51° 05'.77 N	001° 38'.65 E
(13)	51° 06'.49 N	001° 37'.55 E
(14)	50° 57'.59 N	001° 23'.00 E
(15)	50° 51'.14 N	001° 17'.20 E
(16)	50° 33'.37 N	000° 36'.50 E
(17)	50° 26'.91 N	000° 01'.09 W
(18)	50° 22'.12 N	000° 00'.91 E
(19)	50° 32'.71 N	000° 57'.73 E
(20)	50° 42'.87 N	001° 18'.30 E
(21)	50° 56'.87 N	001° 24'.03 E

(g) A traffic lane for south-westbound traffic is established between the separation zones/lines described in paragraphs (a), (c), (e) and (f) above and the following separation line/zone:

a separation line connection the following geographical positions:

(22)	51° 33'.66 N	002° 02'.17 E
(23)	51° 27'.35 N	001° 52'.76 E
(24)	51° 14'.13 N	001° 43'.99 E
(25)	51° 06'.93 N	001° 30'.90 E
(26)	50° 52'.29 N	001° 02'.65 E

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

(27)	50° 52'.47 N	001° 02'.45 E
(28)	50° 39'.37 N	000° 32'.50 E
(29)	50° 34'.64 N	000° 04'.29 W
(30)	50° 32'.71 N	000° 03'.49 W
(31)	50° 38'.91 N	000° 32'.70 E
(32)	50° 52'.09 N	001° 02'.85 E

- (h) A traffic lane for north-eastbound traffic is established between the separation zones/lines described in paragraphs (a), (c), (e) and (f) above and the following separation line/zone:

a separation zone is bounded by lines connecting the following geographical positions:

(33)	50° 16'.34 N	000° 03'.31 E
(34)	50° 14'.49 N	000° 04'.11 E
(35)	50° 26'.37 N	001° 00'.20 E
(36)	50° 39'.29 N	001° 22'.63 E
(37)	50° 39'.69 N	001° 22'.20 E
(38)	50° 26'.94 N	000° 59'.90 E

a separation line connects the following geographical positions:

(39)	50° 39'.49 N	001° 22'.40 E
(40)	50° 44'.54 N	001° 26'.90 E
(41)	50° 53'.64 N	001° 30'.70 E
(42)	51° 04'.34 N	001° 45'.89 E

a separation zone is bounded by lines connecting the following geographical positions:

(43)	51° 04'.34 N	001° 45'.89 E
(44)	51° 06'.44 N	001° 48'.89 E
(45)	51° 11'.23 N	002° 04'.09 E
(46)	51° 09'.84 N	002° 03'.12 E

an uncharted line representing the junction of the scheme with the adjacent scheme “At West Hinder” and joining the following geographical positions:

(47)	51° 11'.23 N	002° 04'.09 E
(6)	51° 22'.83 N	002° 12'.29 E

A separation zone is established within this lane as described in (i) below.

- (i) A separation zone is bounded by the lines connecting the following geographical positions:

(48)	51° 18'.43 N	002° 04'.69 E
(49)	51° 16'.03 N	002° 04'.19 E
(50)	51° 13'.71 N	002° 00'.99 E
(51)	51° 09'.35 N	001° 47'.10 E
(52)	51° 09'.75 N	001° 45'.61 E
(53)	51° 12'.35 N	001° 51'.03 E
(54)	51° 15'.05 N	001° 54'.40 E

- (j) A deep-water route forming part of the north-eastbound traffic lane between the separation zone described in (i) above and the separation zone/line described in paragraphs (c) and (e) above has been established between a line connecting the following geographical positions:

- (i) 51° 09'.75 N      001° 45'.61 E
- (ii) 51° 10'.26 N      001° 43'.74 E

and

- (iii) 51° 22'.03 N      001° 58'.39 E
- (iv) 51° 18'.43 N      002° 04'.69 E

**Note:**

An area to be avoided around the Foxtrot 3 station (51° 24'.15 N; 002° 00'.38 E) is described in part D, section I.

An uncharted line representing the junction of the scheme with the adjacent scheme “In the Approaches to Hook of Holland and At North Hinder” and joining the following geographical positions:

- (5) 51° 26'.97 N      002° 16'.95 E
- (4) 51° 29'.84 N      002° 10'.62 E
- (3) 51° 31'.07 N      002° 07'.90 E
- (22) 51° 33'.66 N      002° 02'.17 E

**Inshore traffic zones**

The area between the outer boundary of the traffic separation scheme and the English coast which lies between a line:

- (v) 51° 08'.42 N      001° 22'.24 E
- (vi) 51° 02'.53 N      001° 22'.24 E

and a line between:

- (vii) 50° 34'.64 N      000° 04'.29 W
- (viii) 50° 49'.60 N      000° 16'.86 W

is designated as an inshore traffic zone.

The area between the outer boundary of the traffic separation scheme and the French coast which lies between:

- (ix) 50° 53'.64 N      001° 30'.70 E
- (x) 50° 52'.10 N      001° 34'.96 E

and a line between:

- (xi) 50° 30'.09 N      001° 06'.66 E
- (xii) 50° 30'.09 N      001° 34'.59 E

is designated as an inshore traffic zone.

**Warnings**

- 1 A deep-water route forming part of the north-eastbound traffic lane is established to the north-west of the Sandettie Bank, and masters considering the use of this route should take into account the proximity of traffic using the south-westbound lane.
- 2 The main traffic lane for north-eastbound traffic lies to the south-east of the Sandettie Bank and shall be followed by all such ships as can safely navigate therein having regard to their draught.
- 3 In the area of the deep-water route east of the separation line, ships are recommended to avoid overtaking.

***Note:***

It is important that ships passing through the Dover Strait listen to the appropriate VHF broadcasts by the Channel Navigation Information Service which provide information concerning traffic, navigation and visibility conditions in the Strait.

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## ANNEX 25

### ROUTEING MEASURES OTHER THAN TRAFFIC SEPARATION SCHEMES

#### RECOMMENDED TRACKS, WHICH ARE MANDATORY AS A CONDITION OF PORT ENTRY, THROUGH THE GALAPAGOS AREA TO BE AVOIDED TO ENTER THE PARTICULARLY SENSITIVE SEA AREA (PSSA)

(Reference charts: I.O.A. 2, latest edition 1992 and I.O.A. 20 (second edition, 1992)

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

All ships and barges carrying cargoes of oil or potentially hazardous material entering and departing any port in the Galapagos and all ship 500 gross tonnage and above entering and departing any port in the Galapagos shall use the following routes:

1. On the eastern side of the Area to be Avoided, westbound ships shall follow the route established by a recommended track between the following two geographical positions:

(1) 01° 05'.14 S	087° 54'.73 W
(2) 01° 05'.14 S	088° 41'.32 W

2. On the eastern side of the Area to be Avoided, eastbound ships shall follow the route established by a recommended track between the following two geographical positions:

(3) 01° 10'.16 S	087° 57'.71 W
(4) 01° 10'.16 S	088° 44'.26 W

3. On the western side of the Area to be Avoided, westbound ships shall follow the route established by a recommended track between the following two geographical positions:

(5) 01° 21'.08 S	092° 43'.73 W
(6) 01° 14'.47 S	092° 06'.35 W

4. On the western side of the Area to be Avoided, eastbound ships shall follow the route established by a recommended track between the following two geographical positions:

(7) 01° 26'.19 S	092° 43'.83 W
(8) 01° 18'.94 S	092° 02'.81 W

#### ESTABLISHMENT OF AN AREA TO BE AVOIDED AROUND OIL RIGS OFF THE BRAZILIAN COAST – CAMPOS BASIN

(Reference chart: Brazilian Hydrographic office, 23000 (First edition, October 2003).)

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

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

In order to avoid risks of collision, pollution and environmental damage in the Area to be Avoided with a high concentration of oil rigs, production systems and FPSOs, all ships, except



those involved in support activities to oil and gas production and prospecting, should avoid the following area bounded by a line connecting the following geographical positions:

(1)	23° 02'.57 S	041° 03'.27 W
(2)	22° 41'.90 S	040° 56'.40 W
(3)	22° 07'.40 S	040° 22'.57 W
(4)	21° 35'.50 S	039° 34'.50 W
(5)	21° 54'.57 S	039° 13'.43 W
(6)	22° 57'.23 S	040° 14'.30 W

**Notes:**

- 1 Oil and gas production rigs display night signalling lights, comprising a fixed red light at the top and a white rhythmical light, indicative letter “U” (. . -) in Morse code – Mo(U)B. Non-authorized navigation inside safety zones around oil rigs is prohibited.
- 2 Transit of supply vessels between the harbour of the town of Macaé and the area of Oil Drilling and Production Rigs (area to be avoided): caution is advised in navigation when transiting the area of considerable volume of maritime traffic that crosses routes.

**AMENDMENTS TO THE SIX EXISTING RECOMMENDED AREAS TO BE AVOIDED “IN THE REGION OF THE NORTH-WEST HAWAIIAN ISLANDS” (THE PAPAĀNAUMOKUĀKEA MARINE NATIONAL MONUMENT, PARTICULARLY SENSITIVE SEA AREA (PSSA)\*)**

(Reference chart: United States 19016 (2007 edition; 19019, 2007 edition; 19022, 2007 edition).

**Note:** These charts are based on World Geodetic System 1984 Datum (WGS-84) and astronomic datum<sup>1</sup>.)

**Description of the Areas to be Avoided**

Given the magnitude of obstacles that make navigation in these areas hazardous, and in order to increase maritime safety, protection of the environment, preservation of cultural resources and areas of cultural importance significant to Native Hawaiians, and facilitate the ability to respond to developing maritime emergencies in the Papahānaumokuākea Marine National Monument, all ships solely in transit should avoid the following areas:

- 1 Those areas contained within a circle of radius of 50 nautical miles centred upon the following geographical positions:

(1)	28° 25'.18 N	178° 19'.75 W (Kure Atoll)
(2)	28° 14'.20 N	177° 22'.10 W (Midway Atoll)
(3)	27° 50'.62 N	175° 50'.53 W (Pearl and Hermes Atoll)
(4)	26° 03'.82 N	173° 58'.00 W (Lisianski Island)
(5)	25° 46'.18 N	171° 43'.95 W (Laysan Island)

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\* MEPC 57 in March 2008 is expected to take the final decision on designation of this PSSA.

<sup>1</sup> The charts are available in paper, raster, or ENC form and may be found at <http://chartmaker.ncd.noaa.gov/NSD/coastpilot.htm>. Mariners are also urged to consult the latest edition of the United States Coast Pilot No.7, available at <http://chartmaker.ncd.noaa.gov/nsd/coastpilot7.htm> and in particular Chapter 14 which pertains to Hawaii, available at [http://chartmaker.ncd.noaa.gov/nsd/Cp7/CP7-39ed-Ch14\\_7.pdf](http://chartmaker.ncd.noaa.gov/nsd/Cp7/CP7-39ed-Ch14_7.pdf).

- |      |              |  |
|------|--------------|--|
| (6)  | 25° 25'.45 N | 170° 35'.32 W (Maro Reef)                        |
| (7)  | 25° 19'.50 N | 170° 00'.88 W (Between Maro Reef and Raita Bank) |
| (8)  | 25° 00'.00 N | 167° 59'.92 W (Gardner Pinnacles)                |
| (9)  | 23° 45'.52 N | 166° 14'.62 W (French Frigate Shoals)            |
| (10) | 23° 34'.60 N | 164° 42'.02 W (Necker Island)                    |
| (11) | 23° 03'.38 N | 161° 55'.32 W (Nihoa Island)                     |

2 The areas contained between the following geographical positions:

		Begin Co-ordinates		End Co-ordinates	
		Latitude	Longitude	Latitude	Longitude
<b>Area 1</b>	Lisianski Island (N) ---> Laysan Island	26° 53'.22 N	173° 49'.64 W	26° 35'.58 N	171° 35'.60 W
	Lisianski Island (S) ---> Laysan Island	25° 14'.42 N	174° 06'.36 W	24° 57'.63 N	171° 57'.07 W
<b>Area 2</b>	Gardner Pinnacles (N) --> French Frigate Shoals	25° 38'.90 N	167° 25'.31 W	24° 24'.80 N	165° 40'.89 W
	Gardner Pinnacles (S) --> French Frigate Shoals	24° 14'.27 N	168° 22'.13 W	23° 05'.84 N	166° 47'.81 W

## AMENDMENTS TO THE EXISTING DEEP-WATER ROUTE LEADING TO EUROPOORT

The Deep-water route leading to Europoort is not amended.

The geographical positions for the description of the route are revised for WGS-84 chart datum.

(Reference chart: Netherlands 1630 (INT 1416) (Edition 1, dated February 2005).

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

### Description of the deep-water route

The deep-water route is bounded by a line connecting the following geographical positions:

- |        |              |               |  |
|--------|--------------|---------------|--|
| (i)    | 52° 00'.68 N | 003° 56'.94 E |  |
| (ii)   | 52° 00'.99 N | 003° 57'.12 E |  |
| (iii)  | 52° 02'.03 N | 003° 54'.24 E |  |
| (iv)   | 51° 58'.46 N | 003° 09'.83 E | (position (41) of the Maas West Outer traffic separation scheme) |
| (v)    | 51° 59'.88 N | 003° 09'.51 E |  |
| (vi)   | 52° 00'.74 N | 003° 02'.08 E |  |
| (vii)  | 52° 00'.56 N | 002° 59'.28 E |  |
| (viii) | 51° 57'.13 N | 002° 54'.43 E |  |
| (ix)   | 51° 57'.61 N | 002° 59'.91 E |  |
| (x)    | 51° 56'.96 N | 003° 00'.06 E |  |
| (xi)   | 52° 01'.26 N | 003° 51'.70 E |  |
| (xii)  | 52° 01'.23 N | 003° 54'.22 E |  |
| (xiii) | 52° 00'.91 N | 003° 56'.07 E | and position (i)   |

### *Note:*

*Least water depths*

Limiting depths in the route should be ascertained by reference to the latest large-scale navigational charts of the area, noting that the charted depth are checked and maintained by frequent surveys and dredging.

## **AMENDMENT TO THE EXISTING AREA TO BE AVOIDED “AT MASS CENTRE” AND “AT NORTH HINDER JUNCTION POINT”**

### **AT MAAS CENTRE**

(Reference chart: Netherlands 1630 (INT 1416) (Edition 1, dated February 2005)

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

Amend the geographical position of the area to be avoided “AT MAAS CENTRE” as follows:

52° 01'.68 N            003° 53'.11 E

### **AT NORTH HINDER JUNCTION POINT**

(Reference chart: Netherlands 1630 (INT.1416) (Edition 1, dated February 2005).

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

The description of the area to be avoided “At North Hinder Junction point is not amended, but the geographical position of the centre of the circular area to be avoided is revised for chart datum WGS-84 as follows:

52° 00'.09 N            002° 51'.09 E

## **RECOMMENDATIONS ON NAVIGATION TO THE POLISH PORTS THROUGH THE GULF OF GDAŃSK TRAFFIC AREA**

### **1 Use of ships routeing system**

The Traffic Separation Schemes for the approaches to the ports of Gdańsk and Gdynia in the Gulf of Gdańsk have been adopted by IMO and rule 10 of the International Regulations for Preventing Collisions at Sea, 1972, as amended, applies. Subject to any factors that may adversely affect safe navigation, ships proceeding from the Baltic Sea to the ports of Gdańsk and Gdynia and vice versa are strongly recommended to use the traffic separation schemes in the Gulf of Gdańsk.

1.1 Ships proceeding from the Baltic Sea to Gdańsk Northern Port (Port Północny) and vice versa are strongly recommended to use the traffic separation scheme “EAST”.

1.2 Ships proceeding from the Baltic Sea to Gdańsk New Port (Nowy Port) and vice versa are strongly recommended to use the northeast part and southwest part of the traffic separation scheme “WEST”.

1.3 Ships proceeding from the Baltic Sea to Gdynia and vice versa are strongly recommended to use the northeast part and west part of the traffic separation scheme “WEST”.

1.4 Ships approaching and navigating within the precautionary area should navigate with caution and should follow the recommended direction of traffic flow.

1.5 Ships engaged on international voyages proceeding between Gdańsk New Port (Nowy Port) (port, road) and Gdynia (port, road) are required\* to proceed along the 163° – 343° recommended track established between GD and NP buoys or transit along the proper one-way traffic lanes between GD, GN and NP buoys.

Ships engaged on international voyages proceeding from Gdańsk Northern Port (Port Północny) to Gdynia (port, road) or to Gdańsk New Port (Nowy Port) (port, road) are required\*, after leaving pilot near the buoy PP, to proceed into north direction. After passing anchorage No.5 for tankers they are required\* to alter course to 314° and steer into direction of the buoy GN established in the Precautionary Area, alter course at this buoy and proceed further along the proper one-way traffic lane.

Ships engaged on international voyages proceeding from Gdańsk New Port (Nowy Port) (port, road) or from Gdynia (port, road) to Gdańsk Northern Port (Port Północny) (port, road) are required\* to proceed along the proper one-way traffic lane to the Precautionary Area established around buoy GN, thence they are required\* to alter course to 134° and proceed along recommended track into direction of buoy ZS. After passing anchorage No.5 for tankers, they are required\* to alter course to south and proceed into direction of the pilot embarkation position marked by the buoy PP.

## **2 Crossing traffic**

There is a crossing traffic consisting mainly of recreational sailing vessels, fishing vessels and high-speed crafts between Polish harbours situated in the Gulf of Gdańsk. This increases the risk of collision in this area. Mariners are reminded that when risk of collision is deemed to exist the rules of the 1972 Collision Regulations fully apply and in particular the rules of part B, sections II and III, of which rules 15 and 19(d) are of specific relevance in the crossing situation.

## **3 Fishing and recreational sailing activities**

Mariners should be aware that concentrations of recreational crafts may be encountered in the summer in the Gulf of Gdańsk between Gdynia, Sopot, Hel and Gdańsk and should navigate with caution. Fishing vessels are operating mainly from harbours situated in the Pucka Bay to fishing grounds in the Gulf of Gdańsk. Fishing vessels are reminded of the requirements of rule 10(i), and sailing vessels and all other vessels of less than 20 metres in length of the requirements of rule 10(j) of the 1972 Collision Regulations.

## **4 Pilotage**

Under national laws pilotage is mandatory in the roads and ports.

## **5 Defects affecting safety**

Ships having defects affecting operational safety should take appropriate measures to overcome these defects before entering the Gulf of Gdańsk.

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\* Under the national law of Poland.

## **6 Ship reporting system and navigation information service**

A mandatory ship reporting system (GDANREP) is established in the southwest part of the Gulf of Gdańsk in the territorial and internal waters of Poland.

All ships navigating in the GDANREP ship reporting area are required to make use of the mandatory ship reporting system and information broadcasts made and operated by the Polish Maritime Administration through VTS “Gulf of Gdańsk”, and to keep watch on VHF as appropriate.

Vessel Traffic Service “Gulf of Gdańsk” monitors compliance with the ships routing system and mandatory ship reporting system adopted by the Organization.

## **7 Areas temporarily closed to navigation and fishing**

Mariners are reminded that there the extensive areas temporarily closed to navigation and fishing are established in the waters of Gulf of Gdańsk.

### **ESTABLISHMENT OF A NEW TWO-WAY ROUTE OFF THE SOUTHWEST COAST OF ICELAND**

(Reference chart: Icelandic Chart No.31 (INT 1105) Dyrhólaey – Snæfellsnes (new edition June 2004).

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

#### **Description of the two-way route in the Hullid passage**

The routing measures consist of a two-way route (the inner route) west of the Reykjanes Peninsula, located between the proposed eastern and western Areas to be Avoided, established by lines connecting the following geographical positions:

(18)	64° 01'.70 N	022° 58'.30 W
(19)	63° 49'.20 N	022° 47'.30 W
(20)	63° 48'.00 N	022° 48'.40 W
(21)	63° 47'.00 N	022° 47'.60 W
(22)	63° 45'.80 N	022° 44'.40 W
(23)	63° 40'.90 N	022° 40'.20 W
(26)	63° 39'.70 N	022° 46'.70 W
(27)	63° 59'.10 N	023° 03'.50 W

### **ESTABLISHMENT OF NEW AREAS TO BE AVOIDED OFF THE SOUTHWEST COAST OF ICELAND**

(Reference chart: Icelandic Chart No.31 (INT 1105) Dyrhólaey – Snæfellsnes (new edition June 2004).

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

**Description of areas to be avoided**

**(a) Off the south and southwest coast – Eastern Area**

The area to be avoided is bounded by lines connecting the following geographical positions:

(25)	Dyrhólaey Light	63° 24'.13 N	019° 07'.83 W
(24)	S of Surtsey Island	63° 10'.00 N	020° 38'.00 W
(23)	S of Reykjanes Point	63° 40'.90 N	022° 40'.20 W
(22)	SW of Reykjanes Point	63° 45'.80 N	022° 44'.40 W
(21)	Húllid Passage SE part	63° 47'.00 N	022° 47'.60 W
(20)	Húllid Passage NE part	63° 48'.00 N	022° 48'.40 W
(19)	SW of Litla Sandvik	63° 49'.20 N	022° 47'.30 W
(18)	Off Sandgerdi	64° 01'.70 N	022° 58'.30 W
(8)	NW of Gardskagi Point	64° 07'.20 N	022° 47'.50 W
(9)	N of Gardskagi Point	64° 07'.20 N	022° 41'.40 W
(17)	Gardskagi Light	64° 04'.92 N	022° 41'.40 W

**(b) West of Reykjanes Peninsula – Western Area**

The area to be avoided is bounded by lines connecting the following geographical positions:

(26)	SE corner	63° 39'.70 N	022° 46'.70 W
(27)	N corner	63° 59'.10 N	023° 03'.50 W
(28)	W corner	63° 42'.00 N	023° 37'.00 W
(29)	SW corner	63° 32'.00 N	023° 29'.50 W

**(c) Faxaflói Bay – Sydra-Hraun Bank Area**

The area to be avoided is bounded by lines connecting the following geographical positions:

(1)	SW corner	64° 10'.30 N	022° 29'.00 W
(2)	SE corner	64° 10'.30 N	022° 20'.00 W
(3)	E corner	64° 12'.00 N	022° 17'.50 W
(4)	NE corner	64° 14'.20 N	022° 20'.00 W
(5)	NW corner	64° 14'.20 N	022° 29'.00 W
(6)	W corner	64° 12'.00 N	022° 31'.00 W

**Notes:**

1. The routing measures are applicable to all SOLAS ships of 500 gross tonnage or more. The eastern area may, however, be transited by ships as specified in paragraph 2 below.
2. Ships calling at ports located within the Eastern ATBA may navigate inside the area. Ships of less than 5,000 gross tonnage engaged on voyages between Icelandic ports and not carrying dangerous or noxious cargoes in bulk or in cargo tanks may transit the area south of latitude 63° 45' N.

## **AMENDMENTS TO THE RECOMMENDATION ON NAVIGATION THROUGH THE ENTRANCES TO THE BALTIC SEA**

### **Route – T**

1. When passing through the entrances to the Baltic Sea, ships should note that the maximum obtainable depth in most parts of route T is 17 metres. However, in some areas the maximum obtainable depth is to some extent permanently reduced due to sand migration.
2. The effect of sea level variations caused by a combination of tide and metrological conditions together with unknown obstructions on the sea bottom and sand migration could decrease the depth with as much as 2 metres. Bearing these facts in mind, ships should:
  - .1 not pass the area unless they have a draught, with which it is safe to navigate, taking into account draught increasing effects such as squat effect and the effect of a course alteration, etc.;
  - .2 exhibit the signal prescribed in rule 28 of the International Regulations for Preventing Collisions at Sea, 1972, as amended, in certain areas in the Storebælt (Great Belt), Hatter Rev, Vengeancegrund and in the narrow route east of Langeland, when constrained by their draught.
3. Ships with a draught of 11 metres or more should, furthermore:
  - .1 use for the passage the pilotage services locally established by the coastal States; and
  - .2 be aware that anchoring may be necessary owing to the weather and sea conditions in relation to the size and draught of the ship and the sea level and, in this respect, take special account of the information available from the pilot and from radio navigation information services in the area.
4. Ships irrespective of size or draught, carrying a shipment of irradiated nuclear fuel, plutonium and high level radioactive wastes on board ships (INF-Code materials) should:
  - .1 use for the passage the pilotage services locally established by the coastal States.
5. Shipowners and masters should consider the full potential of new and improved navigation equipment in the SOLAS chapter V, including Electronic Chart Display and Information System (ECDIS) when navigating these narrow waters.

### **THE SOUND**

1. Loaded oil tankers with a draught of 7 metres or more, loaded chemical tankers and gas carriers, irrespective of size, and ships carrying a shipment of irradiated nuclear fuel, plutonium and high level radioactive wastes (INF-Code materials), when navigating the Sound between a line connecting Svinbådan Lighthouse and Hornbæk Harbour and a line connecting Skanör Harbour and Aflandshage (the southernmost point of Amager Island) should:

- .1 use the pilotage services established by the Governments of Denmark and Sweden;
- .2 be aware that anchoring may be necessary owing to the weather and sea conditions in relation to the size and draught of the ship and the sea level and, in this respect, take special account of the information available from the pilot and from radio navigation information services in the area.

2. Shipowners and masters should consider the full potential of new and improved navigation equipment in the SOLAS chapter V, including Electronic Chart Display and Information System (ECDIS) when navigating these narrow waters.

### **ESTABLISHMENT OF NEW MANDATORY NO ANCHORING AREAS ON SHARKS BANK AND LONG SHOAL**

(Reference charts: Chart No.502 (edition 2, January 2006).

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

#### **Description of the mandatory No Anchoring Areas**

##### **Sharks Bank**

To avoid destruction of this unique, fragile and pristine coral reef ecosystem from anchoring, all ships shall avoid anchoring in the area bounded by a line connecting the following geographical positions which is designated as a mandatory no anchoring area:

(1)	13° 05' 18".6 N	059° 38' 06".1 W
(2)	13° 05' 23".6 N	059° 37' 56".7 W
(3)	13° 05' 08".6 N	059° 37' 57".1 W
(4)	13° 05' 16".0 N	059° 37' 49".3 W

##### **Long Shoal**

To avoid destruction of this unique, fragile and pristine coral reef ecosystem from anchoring, ships 25 ft and greater shall avoid anchoring in the area bounded by a line connecting the following geographical positions which is designated as a mandatory no anchoring area:

(1)	13° 07' 25".4 N	059° 38' 40".2 W
(2)	13° 07' 22".9 N	059° 38' 27".4 W
(3)	13° 07' 00".8 N	059° 38' 43".3 W
(4)	13° 07' 00".7 N	059° 38' 30".5 W

### **ESTABLISHMENT OF NEW RECOMMENDED SEASONAL AREA TO BE AVOIDED IN ROSEWAY BASIN, SOUTH OF NOVA SCOTIA**

(Reference chart: Canadian Hydrographic Service Chart 4003 (2003 edition).

*Note:* This chart is based on North American 1983 Geodetic Datum, which is equivalent to WGS-84 Datum.)



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

In order to significantly reduce the risk of ship strikes of the highly endangered North Atlantic right whale, it is recommended that ships of 300 gross tonnage and upwards solely in transit **during the period of 1 June through 31 December** should avoid the area bounded by lines connecting the following geographical positions:

(1)	43° 16'.00 N	064° 55'.00 W
(2)	42° 47'.00 N	064° 59'.00 W
(3)	42° 39'.00 N	065° 31'.00 W
(4)	42° 52'.00 N	066° 05'.00 W

### **AMENDMENTS TO THE EXISTING DEEP-WATER ROUTE FORMING PART OF THE NORTH-EASTBOUND TRAFFIC LANE OF THE STRAIT OF DOVER AND ADJACENT WATERS TRAFFIC SEPARATION SCHEME**

(Reference chart: British Admiralty 2449 (edition 9, June 2007).

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

### **Description of the deep-water route**

The deep-water route forming part of the north-eastbound traffic lane between the separation zone described in paragraph (i) and the separation zone/line described in paragraphs (c) and (e) of the separation scheme “In the Strait of Dover and adjacent waters” has been established between a line connecting the following geographical positions:

(i)	51° 09'.75 N	001° 45'.61 E
(ii)	51° 10'.26 N	001° 43'.74 E
(iii)	51° 22'.03 N	001° 58'.39 E
(iv)	51° 18'.43 N	002° 04'.69 E

### *Notes:*

#### **WARNING**

The main traffic lane for north-eastbound traffic lies to the south-east of the Sandettie Bank and should be followed by all such ships as can safely navigate therein having regard to their draught.

### **AMENDMENTS TO THE EXISTING AREA TO BE AVOIDED AROUND THE FOXTROT 3 STATION “IN THE STRAIT OF DOVER AND ADJACENT WATERS” TRAFFIC SEPARATION SCHEME**

(Reference chart: British Admiralty 2449 (edition 9, June 2007).

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

### **Description of the area to be avoided, by all ships**

The Foxtrot 3 station is in an area of heavy crossing traffic with some 11,000 crossing movements per annum and has suffered damage on several occasions. Therefore, with the aim of preventing further damage, an “area to be avoided” has been established centred on the Foxtrot 3 station.

The area to be avoided, by all ships with a radius of 500 metres, is centred on the following geographical position:

Foxtrot 3 51° 24'.15 N 002° 00'.38 E

## **AMENDMENTS TO THE RECOMMENDATIONS ON NAVIGATION THROUGH THE ENGLISH CHANNEL AND THE DOVER STRAIT**

1. Amend the existing paragraph 1.4 as follows:

1.4 “Ships leaving the traffic separation scheme “At West Hinder” and intending to proceed through the Dover Strait should, when crossing the north-eastbound traffic lane of the traffic separation scheme “In the Strait of Dover and adjacent waters” and proceeding through the precautionary area in the vicinity of the Foxtrot 3 station (51° 24'.15 N; 002° 00'.38 E), maintain a course so as to leave the Foxtrot 3 station on their port side.”

2. Amend the existing section 7 as follows:

### **7 “Mandatory and voluntary ship movement reporting schemes**

7.1 A mandatory ship movement reporting scheme (CALDOVREP) has been jointly operated by the Governments of the United Kingdom and France in the English Channel and the Dover Strait since 1 July 1999. It is compulsory for all merchant ships of 300 gross tonnage and over to participate in the scheme.

7.2 Ships of less than 300 gross tonnage should continue to make reports under the existing voluntary MAREP scheme in circumstances where they:

- are “not under command” or at anchor in the TSS or its ITZs;
- are “restricted in their ability to manoeuvre”; or
- have defective navigational aids.

The MAREP arrangements outside the coverage area remain unchanged.”

3. Amend the existing paragraph 8.1 as follows:

8.1 “Ships having defects affecting operational safety, in addition to reporting such defects through the CALDOVREP scheme or by participating in the MAREP scheme, should take appropriate measures to overcome these defects before entering the Dover Strait.”

4. Amend the existing paragraph 9.1 as follows:

9.1 “All ships navigating in the English Channel and the Dover Strait are recommended to make use of the information broadcasts made by the information services operated by the Governments of the United Kingdom and France, and to keep watch on VHF as appropriate, as set out in the CALDOVREP and MAREP schemes.”

## AMENDMENTS TO THE DEEP-WATER ROUTE “NORTH-EAST OF GEDSER”

(Reference charts: Danish chart No.197 (3<sup>rd</sup> edition, April 2006).  
German chart No.163 (INT 1351) (12<sup>th</sup> edition 2006).

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

### Description of the deep-water route

A deep-water route with a minimum depth of water below mean sea level of 16.5 metres is bounded by a line connecting the following geographical positions:

(1) 54° 27'.10 N	012° 10'.50 E	(6) 54° 46'.06 N	012° 44'.03 E
(2) 54° 27'.73 N	012° 11'.30 E	(7) 54° 35'.36 N	012° 16'.93 E
(3) 54° 31'.30 N	012° 12'.80 E	(8) 54° 31'.00 N	012° 15'.20 E
(4) 54° 36'.46 N	012° 15'.83 E	(9) 54° 27'.40 N	012° 13'.10 E
(5) 54° 46'.86 N	012° 43'.23 E	(10) 54° 26'.57 N	012° 11'.90 E

### *Note:*

Ships, other than ships which must use the deep-water route due to their draught, are recommended to use the areas to the north and south of this route, in such manner that eastbound ships proceed on the south side of the deep-water route and westbound ships on the north side.

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**ANNEX 26**

**RESOLUTION MSC.248(83)**

**(adopted on 8 October 2007)**

**ADOPTION OF A NEW SHIP REPORTING SYSTEM  
“THE PAPAĀNAUMOKUĀKEA MARINE NATIONAL MONUMENT”  
PARTICULARLY SENSITIVE SEA AREA (PSSA)**

THE MARITIME SAFETY COMMITTEE,

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

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

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

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

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

1. ADOPTS, in accordance with SOLAS regulation V/11, the new ship reporting system for “The Papahānaumokuākea Marine National Monument” Particularly Sensitive Sea Area (PSSA);
2. DECIDES that the ship reporting system for “The Papahānaumokuākea Marine National Monument” Particularly Sensitive Sea Area (PSSA) – (CORAL SHIPREP) – will enter into force at 0000 hours UTC on 1 May 2008; and
3. REQUESTS the Secretary-General to bring this resolution and its Annex to the attention of the Member Governments and SOLAS Contracting Governments to the 1974 SOLAS Convention.

## ANNEX

### **SHIP REPORTING SYSTEM FOR “THE PAPA HĀNAUMOKUĀKEA MARINE NATIONAL MONUMENT” PARTICULARLY SENSITIVE SEA AREA (PSSA) (CORAL SHIPREP)<sup>1</sup>**

A ship reporting system (CORAL SHIPREP) is established in “The Papahānaumokuākea Marine National Monument” Particularly Sensitive Sea Area (PSSA)

#### **1 Categories of ships**

##### **1.1 Ships required to participate in the system**

1.1.1 As a condition of entry to a United States port or place, all ships 300 gross tonnage or greater, and all ships in the event of a developing emergency, and that are in transit through the reporting area are required to participate in CORAL SHIPREP, except for sovereign immune vessels which are exempt under SOLAS regulation V/1.

##### **1.2 Ships recommended to participate in the system**

1.2.1 All ships 300 gross tonnage or greater, fishing vessels, and all ships in the event of a developing emergency, and that are in transit through the reporting area are recommended to participate in CORAL SHIPREP.

#### **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 geographical coverage of CORAL SHIPREP is depicted by the geographical positions in the appendix.

2.2 The reference charts that include the ship reporting area are United States 19016, 2007 edition, 19019, 2007 edition, and 19022, 2007 edition. These charts are based on World Geodetic System 1984 Datum (WGS-84) and astronomic datum.

#### **3 Format, content of reports, times and geographical positions for submitting reports, authorities to whom reports should<sup>2</sup> be sent, available services**

##### *3.1 Format*

3.1.1 The ship report should be drafted in accordance with the format shown in paragraph 2 of the appendix to resolution A.851(20).

##### *3.2 Content*

3.2.1 The report for a ship entering the system should contain the following information:

System identifier: CORAL SHIPREP

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<sup>1</sup> This ship reporting system was prepared based on the in-principle approval of PSSA in question by MEPC 56 and pending the final designation of the PSSA by MEPC 57 to be held in March 2008.

<sup>2</sup> For those ships that are required to report the use of the word “should” in this annex is to be read as “shall”.

A	Name of the ship, call sign, or IMO identification number
B	Date and Time (UTC)
C or D	Position
E or F	Course and speed of ship
I	Destination
L	Intended route through the reporting area
O	Vessel draft
P	General categories of hazardous cargo on board
Q or R	Defects or deficiencies, if relevant
T	Contact information of ship's agent or owner
U	Ship size and type (e.g., length, tonnage, and type)
W	Total number of persons on board

3.2.2 The report for a ship leaving the system should contain the following information:

System identifier: CORAL SHIPREP

A	Name of the ship, call sign, or IMO identification number
B	Date and Time (UTC)
C or D	Position

3.2.3 A ship may elect, for reasons of commercial confidentiality, to communicate that section of the report which provides information on general categories of hazardous cargo by non-verbal means prior to entering the reporting area.

### 3.3 *Geographical positions for submitting reports*

3.3.1 Each ship should submit a full report in accordance with paragraph 3.2.1 as soon as it crosses the boundary to enter the ship reporting system.

3.3.2 Each ship should submit a report in accordance with paragraph 3.2.2 as soon as it crosses the boundary to leave the ship reporting system.

3.3.3 Further reports should be made whenever there is a change in navigation status or circumstances, particularly in relation to item Q of the reporting format.

### 3.4 *Authority to whom reports should be sent*

3.4.1 The shore-based Authority is the United States Coast Guard's Communication Area Master Station Pacific (CAMSPAC). For ships 300 gross tonnage and greater, an e-mail address to be used for reporting through INMARSAT-C will be provided in advance of implementation

of this system through Notices to Mariners. In the event of a developing emergency, ships are urged to call the United States Coast Guard 14th District. Vessels unable to report in through INMARSAT-C should report to [nwhi.notification@noaa.gov](mailto:nwhi.notification@noaa.gov).

#### **4 Information to be provided to ship and procedures to be followed**

4.1 The CORAL SHIPREP shore-based Authority will provide critical alerts and information to shipping about specific and urgent situations and other information that may affect safety of navigation within the IMO-adopted Areas To Be Avoided and “The Papahānaumokuākea Marine National Monument” Particularly Sensitive Sea Area, as well as remind ships about the existence of the IMO-adopted Areas To Be Avoided and necessity of navigating with extreme caution through the Particularly Sensitive Sea Area.<sup>3</sup>

4.2 Navigational warnings and emergency broadcasts will be issued as NAVTEX messages or specifically directed at GMDSS equipped vessels using INMARSAT-C.

#### **5 Radio Communication required for the system and frequencies on which reports should be transmitted**

5.1 This system will be based on INMARSAT-C and an e-mail and ships equipped with such capabilities should report through INMARSAT-C.

5.2 In the event of a developing emergency, a ship is urged to call the United States Coast Guard 14th District at 001-808-541-2500 to request a response and assistance.

5.3 For vessels unable to communicate through INMARSAT-C, reports should be made prior to, during, or after transiting through the reporting area to [nwhi.notification@noaa.gov](mailto:nwhi.notification@noaa.gov).

5.4 Commercially sensitive information will be kept confidential and should be transmitted prior to entry into the reporting system. Such information may be sent to [nwhi.notification@noaa.gov](mailto:nwhi.notification@noaa.gov).

5.5 The language used for reports to the system should be English, employing the IMO *Standard Marine Communications Phrases*, where necessary.

5.6 Communications associated with CORAL SHIPREP are, in accordance with SOLAS regulation V/11, free of charge to affected vessels.

#### **6 Relevant rules and regulations in force in the area of the system**

##### *6.1 International actions*

6.1.1 The United States has taken appropriate action to implement the international conventions to which it is party.

6.1.2 In recognition of the fragile environment in this area and potential hazards to navigation, the IMO has adopted several Areas To Be Avoided to protect the Northwestern Hawaiian Islands and has designated the area as a Particularly Sensitive Sea Areas where mariners should navigate with extreme caution.<sup>3</sup>

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<sup>3</sup> Pending the final decision of MEPC 57 on the designation of this PSSA.

6.1.3 The United States applies its laws in accordance with international law, which includes navigational rights under customary international law as reflected in the United Nations Convention on the Law of the Sea. No restrictions shall apply to or be enforced against foreign flagged vessels unless in accordance with such law.

## 6.2 *Domestic Actions*

6.2.1 The United States has taken considerable action to ensure maritime safety and to protect the fragile environment and cultural resources and areas of cultural importance significant to Native Hawaiians in the NWHI. This area has been the subject of a variety of protective measures, including designation of this area as the Northwestern Hawaiian Islands Marine National Monument (subsequently renamed the Papahānaumokuākea Marine National Monument) in recognition of its fragility and to protect the many species of coral, fish, birds, marine mammals, and other flora and fauna, as well as to protect historical and archaeological heritage resources, including cultural resources and areas of significant importance to Native Hawaiians.

6.2.2 Regulations in this area, *inter alia*, prohibit taking, possessing, injuring, or disturbing any resource; altering the seabed; anchoring or deserting a vessel; and possessing fishing gear unless stowed. All of these activities may be allowed by permit; however, permits cannot be issued for such things as releasing an introduced species. Activities such as discharging or depositing any material into the Monument, or discharging or depositing any material outside the Monument that subsequently injures Monument resources, except discharges incidental to vessel use, such as approved marine sanitation device effluent, cooling water, and engine exhaust are also prohibited. The United States strictly regulates entry into the Monument and, for those vessels subject to United States jurisdiction, requires the mandatory use of vessel monitoring systems on those vessels that may be allowed into the Monument for specific purposes.

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

7.1 The shore-based Authority is the United States Coast Guard's Communications Area Master Station Pacific (CAMSPAC). CAMSPAC provides maritime distress communication services and safety and weather broadcasts to commercial and recreational mariners, and also provides secure voice communications and record message delivery services for all United States Coast Guard cutters, aircraft, and shore units. Additionally, CAMSPAC is one of the United States Coast Guard's Pacific Area's (PACAREA) Continuity of Operations sites. CAMSPAC delivers contingency and interagency communication services for Incident Commanders by deploying a state-of-the-art transportable communications center. CAMSPAC is the Operational Commander of the United States Coast Guard's Pacific Area Communications System, consisting of communication stations in Honolulu Hawaii, Kodiak Alaska, and remote facilities in Guam. There are approximately 150 people assigned to CAMSPAC.

7.2 CORAL SHIPREP will use INMARSAT-C communications equipment. A computer server handles and sorts incoming reports and sends the return message. Incoming reports are text messages that arrive via either internet e-mail or telex. When the ship reporting system server receives a report, the server sends the ship a specific return message. Area co-ordinators will monitor and update the information to the server for inclusion in the outgoing message.



## **8 Alternative communication if the shore-based facilities fail**

8.1 NAVTEX Broadcast Notice to Mariners may be used to notify mariners of the temporary failure of the system and can provide mariners with basic information necessary to navigate safely through this area.

8.2 For those ships reporting through INMARSAT-C, the standard protocol now used for such systems will be used to re-route incoming and outgoing communications through an alternative address and it is expected that this will minimize the system's downtime, though a short delay may occur.

## **9 Measures to be taken if a ship does not report**

9.1.1 All means will be used to encourage and promote the full participation of the ships recommended to submit reports.

9.1.2 If reports are not submitted by those ships required to report and the ship can be positively identified, appropriate action will be taken – including interaction with the flag State – in accordance with customary international law as reflected in the 1982 United Nations Convention on the Law of the Sea.

APPENDIX

GEOGRAPHICAL CO-ORDINATES

SHIP REPORTING SYSTEM

(Reference chart: United States 19016 (2007 edition; 19019, 2007 edition; 19022, 2007 edition.)  
These charts are based on World Geodetic System 1984 Datum (WGS-84) and astronomic datum.)

1 Outer Boundary

Point	LATITUDE	LONGITUDE
1	29°25'.47 N	178°16'.97 W
2	28°43'.73 N	175°13'.84 W
3	27°00'.77 N	173°25'.78 W
4	26°44'.91 N	171°28'.07 W
5	26°24'.23 N	170°20'.59 W
6	25°56'.43 N	167°32'.10 W
7	24°50'.20 N	165°58'.69 W
8	24°05'.52 N	161°56'.86 W
9	24°05'.29 N	161°56'.62 W
10	24°04'.37 N	161°51'.53 W
11	24°03'.44 N	161°46'.45 W
12	24°02'.41 N	161°41'.39 W
13	24°01'.31 N	161°36'.35 W
14	23°59'.68 N	161°31'.55 W
15	23°57'.85 N	161°26'.85 W
16	23°55'.54 N	161°22'.31 W
17	23°52'.96 N	161°17'.92 W
18	23°50'.12 N	161°13'.72 W
19	23°46'.94 N	161°10'.08 W
20	23°43'.49 N	161°06'.47 W
21	23°39'.71 N	161°03'.09 W
22	23°35'.72 N	161°00'.14 W
23	23°31'.59 N	160°57'.46 W
24	23°27'.32 N	160°55'.23 W
25	23°22'.74 N	160°53'.71 W
26	23°18'.29 N	160°52'.17 W
27	23°13'.57 N	160°51'.04 W
28	23°08'.68 N	160°50'.46 W
29	23°03'.70 N	160°50'.17 W
30	22°58'.67 N	160°50'.35 W
31	22°53'.84 N	160°51'.04 W
32	22°49'.11 N	160°52'.20 W
33	22°44'.46 N	160°53'.56 W
34	22°40'.03 N	160°55'.52 W
35	22°35'.73 N	160°57'.68 W
36	22°31'.54 N	161°00'.25 W
37	22°27'.57 N	161°03'.23 W

38	22°23'.76 N	161°06'.64 W
39	22°20'.24 N	161°10'.23 W
40	22°17'.02 N	161°14'.13 W
41	22°14'.04 N	161°18'.34 W
42	22°11'.35 N	161°22'.80 W
43	22°09'.19 N	161°27'.45 W
44	22°07'.29 N	161°32'.11 W
45	22°05'.87 N	161°36'.94 W
46	22°04'.62 N	161°41'.89 W
47	22°03'.94 N	161°47'.09 W
48	22°03'.41 N	161°52'.36 W
49	22°03'.41 N	161°57'.51 W
50	22°03'.82 N	162°02'.83 W
51	22°04'.49 N	162°08'.04 W
52	22°05'.43 N	162°13'.12 W
53	22°05'.97 N	162°16'.41 W
54	22°06'.29 N	162°16'.85 W
55	22°34'.57 N	164°47'.27 W
56	22°47'.60 N	166°38'.23 W
57	24°03'.82 N	168°27'.91 W
58	24°25'.76 N	170°45'.39 W
59	24°46'.54 N	171°53'.03 W
60	25°07'.60 N	174°28'.71 W
61	27°05'.82 N	176°35'.51 W
62	27°27'.32 N	178°38'.66 W
63	27°28'.93 N	178°43'.56 W
64	27°30'.64 N	178°48'.40 W
65	27°32'.74 N	178°52'.96 W
66	27°35'.06 N	178°57'.30 W
67	27°37'.89 N	179°01'.49 W
68	27°40'.90 N	179°05'.60 W
69	27°44'.17 N	179°09'.41 W
70	27°47'.74 N	179°12'.85 W
71	27°51'.45 N	179°16'.00 W
72	27°55'.32 N	179°18'.82 W

73	27°59'.33 N	179°21'.13 W
74	28°03'.49 N	179°23'.15 W
75	28°07'.82 N	179°24'.76 W
76	28°12'.31 N	179°26'.18 W
77	28°16'.95 N	179°27'.05 W
78	28°21'.61 N	179°27'.63 W
79	28°26'.18 N	179°27'.77 W
80	28°30'.87 N	179°27'.48 W
81	28°35'.61 N	179°26'.95 W
82	28°40'.09 N	179°25'.75 W
83	28°44'.46 N	179°24'.31 W
84	28°48'.70 N	179°22'.50 W
85	28°52'.81 N	179°20'.43 W
86	28°56'.71 N	179°17'.77 W

87	29°00'.58 N	179°14'.92 W
88	29°04'.18 N	179°11'.69 W
89	29°07'.62 N	179°08'.20 W
90	29°10'.86 N	179°04'.37 W
91	29°13'.76 N	179°00'.21 W
92	29°16'.24 N	178°55'.78 W
93	29°18'.51 N	178°51'.26 W
94	29°20'.45 N	178°46'.50 W
95	29°22'.26 N	178°41'.67 W
96	29°23'.52 N	178°36'.64 W
97	29°24'.53 N	178°31'.54 W
98	29°25'.16 N	178°26'.31 W
99	29°25'.42 N	178°20'.92 W
100	29°25'.29 N	178°16'.70 W

## 2 Inner Boundary Around Kure Atoll, Midway Atoll, and Pearl and Hermes Atoll

Point	LATITUDE	LONGITUDE
1	27°14'.76 N	176°29'.87 W
2	27°24'.95 N	177°33'.31 W
3	27°35'.87 N	178°29'.90 W
4	27°36'.64 N	178°33'.93 W
5	27°37'.53 N	178°37'.32 W
6	27°38'.60 N	178°40'.65 W
7	27°39'.85 N	178°43'.90 W
8	27°41'.28 N	178°47'.05 W
9	27°42'.89 N	178°50'.10 W
10	27°44'.66 N	178°53'.03 W
11	27°46'.59 N	178°55'.83 W
12	27°48'.67 N	178°58'.49 W
13	27°50'.89 N	179°01'.00 W
14	27°53'.22 N	179°03'.39 W
15	27°55'.69 N	179°05'.61 W
16	27°58'.29 N	179°07'.61 W
17	28°01'.01 N	179°09'.47 W
18	28°03'.81 N	179°11'.10 W
19	28°06'.71 N	179°12'.53 W
20	28°09'.67 N	179°13'.75 W
21	28°12'.70 N	179°14'.75 W
22	28°15'.78 N	179°15'.54 W
23	28°18'.91 N	179°16'.11 W
24	28°22'.04 N	179°16'.45 W
25	28°24'.72 N	179°16'.56 W
26	28°25'.20 N	179°16'.57 W
27	28°25'.81 N	179°16'.56 W
28	28°28'.35 N	179°16'.44 W
29	28°31'.49 N	179°16'.10 W
30	28°34'.61 N	179°15'.54 W

31	28°37'.69 N	179°14'.75 W
32	28°40'.71 N	179°13'.74 W
33	28°43'.68 N	179°12'.54 W
34	28°46'.58 N	179°11'.13 W
35	28°49'.39 N	179°09'.52 W
36	28°52'.11 N	179°07'.70 W
37	28°54'.72 N	179°05'.70 W
38	28°57'.21 N	179°03'.51 W
39	28°59'.58 N	179°01'.15 W
40	29°01'.81 N	178°58'.62 W
41	29°03'.90 N	178°55'.93 W
42	29°05'.83 N	178°53'.10 W
43	29°07'.60 N	178°50'.13 W
44	29°09'.21 N	178°47'.04 W
45	29°10'.64 N	178°43'.84 W
46	29°11'.89 N	178°40'.54 W
47	29°12'.95 N	178°37'.16 W
48	29°13'.82 N	178°33'.71 W
49	29°14'.50 N	178°30'.21 W
50	29°14'.99 N	178°26'.66 W
51	29°15'.28 N	178°23'.08 W
52	29°15'.36 N	178°19'.49 W
53	29°15'.25 N	178°15'.90 W
54	29°14'.94 N	178°12'.32 W
55	29°14'.43 N	178°08'.78 W
56	29°03'.47 N	177°12'.07 W
57	29°02'.55 N	177°07'.29 W
58	28°38'.96 N	175°35'.47 W
59	28°38'.67 N	175°34'.35 W

60	28°34'.91 N	175°19'.74 W
61	28°26'.24 N	175°10'.65 W
62	28°24'.61 N	175°08'.95 W
63	28°24'.53 N	175°09'.04 W
64	28°20'.09 N	175°04'.91 W
65	28°16'.05 N	175°01'.92 W
66	28°11'.78 N	174°59'.33 W
67	28°07'.29 N	174°57'.23 W
68	28°02'.63 N	174°55'.68 W
69	27°57'.84 N	174°54'.62 W
70	27°53'.01 N	174°54'.05 W
71	27°48'.12 N	174°54'.05 W
72	27°43'.28 N	174°54'.62 W
73	27°38'.48 N	174°55'.71 W
74	27°33'.81 N	174°57'.32 W
75	27°29'.30 N	174°59'.43 W
76	27°25'.00 N	175°02'.03 W
77	27°20'.93 N	175°05'.07 W

78	27°17'.18 N	175°08'.59 W
79	27°13'.73 N	175°12'.47 W
80	27°10'.59 N	175°16'.67 W
81	27°07'.88 N	175°21'.25 W
82	27°05'.57 N	175°26'.09 W
83	27°03'.66 N	175°31'.15 W
84	27°02'.22 N	175°36'.40 W
85	27°01'.29 N	175°41'.78 W
86	27°00'.73 N	175°47'.22 W
87	27°00'.68 N	175°52'.74 W
88	27°01'.09 N	175°58'.16 W
89	27°01'.99 N	176°03'.53 W
90	27°03'.34 N	176°08'.81 W
91	27°05'.12 N	176°13'.91 W
92	27°07'.37 N	176°18'.79 W
93	27°09'.98 N	176°23'.40 W
94	27°13'.02 N	176°27'.74 W
95	27°13'.77 N	176°28'.70 W

### 3 Inner Boundary Around Lisianski Island, Laysan Island, Maro Reef, and Raita Bank

Point	LATITUDE	LONGITUDE
1	26°50'.89 N	173°30'.79 W
2	26°36'.00 N	171°37'.70 W
3	26°35'.49 N	171°33'.84 W
4	26°35'.10 N	171°30'.84 W
5	26°34'.07 N	171°27'.50 W
6	26°33'.35 N	171°25'.16 W
7	26°14'.26 N	170°23'.04 W
8	26°08'.69 N	169°48'.96 W
9	26°08'.36 N	169°49'.03 W
10	26°07'.62 N	169°45'.83 W
11	26°06'.03 N	169°40'.57 W
12	26°03'.97 N	169°35'.64 W
13	26°01'.51 N	169°30'.91 W
14	25°58'.65 N	169°26'.45 W
15	25°55'.32 N	169°22'.34 W
16	25°51'.67 N	169°18'.60 W
17	25°47'.78 N	169°15'.19 W
18	25°43'.54 N	169°12'.34 W
19	25°39'.05 N	169°09'.93 W
20	25°34'.37 N	169°08'.08 W
21	25°29'.54 N	169°06'.76 W
22	25°24'.61 N	169°05'.93 W
23	25°19'.63 N	169°05'.64 W
24	25°14'.65 N	169°05'.93 W

25	25°09'.69 N	169°06'.66 W
26	25°04'.85 N	169°08'.02 W
27	25°00'.17 N	169°09'.96 W
28	24°55'.66 N	169°12'.35 W
29	24°51'.35 N	169°15'.14 W
30	24°47'.37 N	169°18'.48 W
31	24°43'.69 N	169°22'.22 W
32	24°40'.34 N	169°26'.31 W
33	24°37'.42 N	169°30'.78 W
34	24°35'.00 N	169°35'.64 W
35	24°33'.02 N	169°40'.66 W
36	24°31'.34 N	169°45'.88 W
37	24°30'.31 N	169°51'.08 W
38	24°29'.68 N	169°56'.53 W
39	24°29'.56 N	170°01'.81 W
40	24°29'.61 N	170°04'.57 W
41	24°35'.77 N	170°44'.39 W
42	24°36'.29 N	170°47'.58 W
43	24°37'.18 N	170°50'.37 W
44	24°37'.76 N	170°52'.17 W
45	24°56'.23 N	171°50'.19 W
46	25°16'.61 N	174°24'.84 W
47	25°29'.56 N	174°38'.45 W
48	25°33'.28 N	174°42'.03 W
49	25°37'.33 N	174°45'.20 W

50	25°41'.68 N	174°47'.84 W
51	25°46'.23 N	174°50'.05 W
52	25°50'.93 N	174°51'.77 W
53	25°55'.80 N	174°52'.91 W
54	26°00'.71 N	174°53'.47 W
55	26°05'.67 N	174°53'.61 W
56	26°10'.59 N	174°53'.07 W
57	26°15'.46 N	174°52'.08 W
58	26°20'.20 N	174°50'.57 W
59	26°24'.75 N	174°48'.44 W
60	26°29'.15 N	174°45'.94 W
61	26°33'.26 N	174°42'.96 W
62	26°37'.11 N	174°39'.49 W
63	26°40'.60 N	174°35'.63 W
64	26°43'.75 N	174°31'.43 W

65	26°46'.49 N	174°26'.87 W
66	26°48'.90 N	174°22'.09 W
67	26°50'.79 N	174°17'.03 W
68	26°52'.20 N	174°11'.79 W
69	26°53'.21 N	174°06'.43 W
70	26°53'.74 N	174°00'.98 W
71	26°53'.74 N	173°55'.48 W
72	26°53'.29 N	173°50'.02 W
73	26°52'.56 N	173°44'.58 W
74	26°51'.85 N	173°39'.14 W
75	26°51'.13 N	173°33'.69 W
76	26°50'.75 N	173°30'.87 W

**4 Inner Boundary Around Gardner Pinnacles, French Frigate Shoals, and Necker Island**

Point	LATITUDE	LONGITUDE
1	25°49'.64 N	167°52'.66 W
2	25°49'.70 N	167°52'.65 W
3	25°48'.99 N	167°48'.35 W
4	25°47'.09 N	167°36'.72 W
5	25°39'.84 N	167°26'.48 W
6	25°35'.10 N	167°19'.79 W
7	25°10'.43 N	166°45'.00 W
8	24°40'.91 N	166°03'.36 W
9	24°35'.64 N	165°34'.99 W
10	24°23'.78 N	164°31'.12 W
11	24°23'.59 N	164°31'.14 W
12	24°23'.31 N	164°29'.74 W
13	24°21'.85 N	164°24'.52 W
14	24°20'.10 N	164°19'.39 W
15	24°17'.75 N	164°14'.56 W
16	24°14'.99 N	164°09'.97 W
17	24°11'.86 N	164°05'.69 W
18	24°08'.30 N	164°01'.80 W
19	24°04'.48 N	163°58'.23 W
20	24°00'.27 N	163°55'.22 W
21	23°55'.85 N	163°52'.59 W
22	23°51'.17 N	163°50'.56 W
23	23°46'.33 N	163°48'.98 W
24	23°41'.37 N	163°47'.99 W
25	23°36'.34 N	163°47'.56 W
26	23°31'.27 N	163°47'.60 W
27	23°26'.27 N	163°48'.28 W
28	23°21'.34 N	163°49'.50 W

29	23°16'.53 N	163°51'.14 W
30	23°11'.96 N	163°53'.47 W
31	23°07'.54 N	163°56'.15 W
32	23°03'.46 N	163°59'.38 W
33	22°59'.65 N	164°03'.01 W
34	22°56'.27 N	164°07'.10 W
35	22°53'.22 N	164°11'.49 W
36	22°50'.60 N	164°16'.18 W
37	22°48'.48 N	164°21'.16 W
38	22°46'.73 N	164°26'.28 W
39	22°45'.49 N	164°31'.60 W
40	22°44'.83 N	164°37'.03 W
41	22°44'.65 N	164°42'.51 W
42	22°44'.92 N	164°47'.99 W
43	22°45'.11 N	164°49'.52 W
44	22°45'.39 N	164°51'.48 W
45	22°45'.17 N	164°51'.53 W
46	22°50'.26 N	165°34'.99 W
47	22°55'.50 N	166°19'.63 W
48	22°55'.93 N	166°23'.32 W
49	22°57'.41 N	166°36'.00 W
50	23°03'.75 N	166°45'.00 W
51	23°05'.48 N	166°47'.45 W
52	24°12'.70 N	168°22'.86 W
53	24°12'.88 N	168°22'.78 W
54	24°16'.05 N	168°27'.28 W
55	24°19'.15 N	168°31'.66 W

56	24°22'.27 N	168°35'.95 W
57	24°25'.71 N	168°39'.94 W
58	24°29'.51 N	168°43'.55 W
59	24°33'.67 N	168°46'.63 W
60	24°38'.06 N	168°49'.29 W
61	24°42'.68 N	168°51'.46 W
62	24°47'.45 N	168°53'.12 W
63	24°52'.34 N	168°54'.28 W
64	24°57'.32 N	168°54'.82 W
65	25°02'.32 N	168°54'.95 W
66	25°07'.30 N	168°54'.43 W
67	25°12'.19 N	168°53'.32 W
68	25°16'.99 N	168°51'.76 W

69	25°21'.57 N	168°49'.60 W
70	25°25'.94 N	168°46'.93 W
71	25°30'.09 N	168°43'.86 W
72	25°33'.89 N	168°40'.42 W
73	25°37'.37 N	168°36'.52 W
74	25°40'.49 N	168°32'.24 W
75	25°43'.24 N	168°27'.68 W
76	25°45'.57 N	168°22'.82 W
77	25°47'.43 N	168°17'.76 W
78	25°48'.79 N	168°12'.47 W
79	25°49'.72 N	168°07'.09 W
80	25°50'.11 N	168°01'.62 W
81	25°50'.18 N	168°00'.09 W

## 5 Inner Boundary Around Nihoa Island

Point	LATITUDE	LONGITUDE
1	23°52'.82 N	161°44'.54 W
2	23°52'.10 N	161°41'.20 W
3	23°51'.18 N	161°37'.92 W
4	23°50'.08 N	161°34'.71 W
5	23°48'.79 N	161°31'.58 W
6	23°47'.33 N	161°28'.55 W
7	23°45'.69 N	161°25'.62 W
8	23°43'.88 N	161°22'.81 W
9	23°41'.92 N	161°20'.13 W
10	23°39'.80 N	161°17'.60 W
11	23°37'.54 N	161°15'.21 W
12	23°35'.14 N	161°12'.99 W
13	23°32'.62 N	161°10'.93 W
14	23°29'.99 N	161°09'.05 W
15	23°27'.25 N	161°07'.35 W
16	23°24'.42 N	161°05'.85 W
17	23°21'.51 N	161°04'.54 W
18	23°18'.52 N	161°03'.43 W
19	23°15'.48 N	161°02'.53 W
20	23°12'.39 N	161°01'.84 W
21	23°09'.27 N	161°01'.35 W
22	23°06'.13 N	161°01'.09 W
23	23°02'.97 N	161°01'.03 W
24	22°59'.82 N	161°01'.19 W
25	22°56'.69 N	161°01'.57 W
26	22°53'.58 N	161°02'.15 W
27	22°50'.51 N	161°02'.95 W
28	22°47'.50 N	161°03'.95 W
29	22°44'.55 N	161°05'.15 W
30	22°41'.67 N	161°06'.54 W

31	22°38'.88 N	161°08'.13 W
32	22°36'.19 N	161°09'.90 W
33	22°33'.61 N	161°11'.85 W
34	22°31'.14 N	161°13'.97 W
35	22°28'.81 N	161°16'.25 W
36	22°26'.61 N	161°18'.69 W
37	22°24'.56 N	161°21'.26 W
38	22°22'.66 N	161°23'.97 W
39	22°20'.92 N	161°26'.80 W
40	22°19'.35 N	161°29'.74 W
41	22°17'.95 N	161°32'.78 W
42	22°16'.73 N	161°35'.90 W
43	22°15'.70 N	161°39'.10 W
44	22°14'.85 N	161°42'.37 W
45	22°14'.20 N	161°45'.68 W
46	22°13'.73 N	161°49'.03 W
47	22°13'.47 N	161°52'.41 W
48	22°13'.40 N	161°55'.80 W
49	22°13'.53 N	161°59'.18 W
50	22°13'.85 N	162°02'.55 W
51	22°14'.31 N	162°05'.45 W
52	22°14'.37 N	162°05'.89 W
53	22°14'.59 N	162°06'.88 W
54	22°15'.87 N	162°12'.18 W
55	22°17'.70 N	162°17'.31 W
56	22°19'.97 N	162°22'.20 W
57	22°22'.73 N	162°26'.84 W
58	22°25'.88 N	162°31'.15 W
59	22°29'.41 N	162°35'.09 W

60	22°33'.28 N	162°38'.61 W
61	22°37'.47 N	162°41'.72 W
62	22°41'.93 N	162°44'.34 W
63	22°46'.63 N	162°46'.47 W
64	22°51'.48 N	162°48'.05 W
65	22°56'.46 N	162°49'.09 W
66	23°01'.50 N	162°49'.58 W
67	23°06'.58 N	162°49'.49 W
68	23°11'.61 N	162°48'.89 W
69	23°16'.57 N	162°47'.70 W
70	23°21'.36 N	162°45'.98 W
71	23°26'.02 N	162°43'.75 W
72	23°30'.40 N	162°41'.01 W
73	23°34'.51 N	162°37'.83 W

74	23°38'.26 N	162°34'.18 W
75	23°41'.69 N	162°30'.18 W
76	23°44'.72 N	162°25'.79 W
77	23°47'.36 N	162°21'.11 W
78	23°49'.55 N	162°16'.16 W
79	23°51'.24 N	162°10'.99 W
80	23°52'.44 N	162°05'.63 W
81	23°53'.14 N	162°00'.25 W
82	23°53'.36 N	161°54'.75 W
83	23°53'.09 N	161°49'.28 W
84	23°52'.82 N	161°47'.09 W
85	23°52'.39 N	161°44'.67 W

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**ANNEX 27**

**RESOLUTION MSC.249(83)**

**(adopted on 8 October 2007)**

**ADOPTION OF A NEW MANDATORY SHIP REPORTING SYSTEM “ON THE APPROACHES TO THE POLISH PORTS IN THE GULF OF GDAŃSK”**

THE MARITIME SAFETY COMMITTEE,

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

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

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

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

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

1. ADOPTS, in accordance with SOLAS regulation V/11, the new mandatory ship reporting system “On the approaches to the Polish ports in the Gulf of Gdańsk”;
2. DECIDES that the ship reporting system, “On the approaches to the Polish ports in the Gulf of Gdańsk (GDANREP)”, will enter into force at 0000 hours UTC on 1 May 2008; and
3. REQUESTS the Secretary-General to bring this resolution and its Annex to the attention of the Member Governments and SOLAS Contracting Governments to the 1974 SOLAS Convention.



ANNEX

**MANDATORY SHIP REPORTING SYSTEM “ON THE APPROACHES TO THE  
POLISH PORTS IN THE GULF OF GDAŃSK” (GDANREP)**

A ship reporting system (GDANREP) is established in the Gulf of Gdańsk in the territorial and internal waters of Poland.

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

1.1 Ships of the following categories are required to participate in the system proceeding to or from Polish ports or passing through the reporting area between Polish ports in the Gulf of Gdańsk, or ships visiting the area:

- all passenger ships as defined in Chapter 1 of 1974 SOLAS, as amended;
- ships of 150 gross tonnage and above;
- all vessels engaged in towing.

**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 the mandatory ship reporting system covers the territorial and internal waters of Poland in the Gulf of Gdańsk, south of parallel 54° 45' N, between Reporting Line and Polish coastline.

2.2 The reference chart is Polish chart No.151 (INT 1291) published by the Hydrographic Office of the Polish Navy (Edition 2004). Chart datum is World Geodetic System 1984 (WGS-84) Datum.

2.3 For the purpose of this system Reporting Line means the line joining the following geographical positions:

(1)	54° 45'.00 N	018° 32'.56 E
(2)	54° 45'.00 N	019° 06'.10 E
(3)	54° 36'.20 N	019° 24'.20 E
(4)	54° 27'.49 N	019° 38'.30 E

2.4 For the purpose of this system Reporting Points are situated at the following geographical positions:

(5)	54° 35'.58 N	018° 52'.82 E
(6)	54° 35'.23 N	018° 53'.76 E
(8)	54° 36'.76 N	019° 04'.67 E
(9)	54° 36'.66 N	019° 07'.51 E
(10)	54° 31'.70 N	018° 40'.70 E
(11)	54° 28'.10 N	018° 42'.90 E
(12)	54° 25'.30 N	018° 54'.80 E

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

Reports should be made using VHF voice transmissions. A ship may elect, for reasons of commercial confidentiality, to communicate, in compliance with the relevant national regulations, that section of the report which provides information on cargo by non-verbal means prior to entering the ship reporting area.

#### **3.1 *Format***

Designators to be used in the GDANREP area are derived from the format-type given in paragraph 2 of the appendix to resolution A.851(20).

System identifier: GDANREP (SP)(PR)(FR)

#### **3.2 *Content***

A full report from a ship to the shore-based Authority by voice should contain the following information:

##### **3.2.1 Sailing Plan (SP)**

- |         |  |
|---------|--|
| A       | Name of the ship, call sign, IMO identification number (if applicable), MMSI number, flag  |
| C or D  | Position (expressed in latitude and longitude or bearing to and distance from a landmark)  |
| E and F | Course and speed of the ship   |
| G       | Name of last port of call  |
| I       | Destination, ETA and ETD   |
| O       | Maximum present draught  |
| P       | Cargo and, if dangerous or polluting goods present on board, quantity and UN numbers and IMO hazard classes or pollution category thereof, as appropriate  |
| Q or R  | Defects, damage, deficiencies or other limitations (vessels towing are to report length of tow and name of object in tow) or any other circumstances affecting normal navigation in accordance with the provisions of the SOLAS and MARPOL Conventions |
| T       | Contact information of ship's agent or owner   |
| W       | Total number of persons on board   |
| X       | Miscellaneous remarks, amount and nature of bunkers if over 5000 tons, navigational status   |

### 3.2.2 Position Report (PR)

- A Name of the ship, call sign, IMO identification number (or MMSI for transponder reports)
- C or D Position (expressed in latitude and longitude or bearing to and distance from a landmark)

### 3.2.3 Final Report (FR)

- A Name of the ship, call sign, IMO identification number (or MMSI for transponder reports)
- C or D Position (expressed in latitude and longitude or bearing to and distance from a landmark)

### 3.2.4 Other Reports

When an incident or accident which can affect the safety of the ship, safety of navigation or any incident giving rise to pollution, or threat of pollution, to the marine environment occurs within the ship reporting system area, the vessel(s) shall immediately report to the shore-based Authority the type, time, and location of the incident, extent of damage or pollution, and whether assistance is needed. The vessel(s) shall provide without delay any additional information related to the incident or accident as requested by the shore-based Authority, given, when appropriate, in the format-type of detailed report as given in paragraph 3 of the appendix to resolution A.851(20).

**Note:**

On receipt of a position message, the system operators will establish the relationship between the ship's position and the information supplied by the position-fixing equipment available to them. Information on course and speed will help operators to identify one ship among a group of ships.

All VHF-, telephone-, radar-, AIS- and other relevant information are recorded and the records are stored for 30 days.

### 3.3 *Times and geographical position for submitting reports*

Participating vessels are to report to the shore-based authorities the information required in paragraph 3.2 in the following schedule:

- 3.3.1 The ship shall transmit the Sailing Plan (SP) on entry into the ship reporting system area by crossing Reporting Line.
- 3.3.2 The ship shall transmit the Position Report (PR) on passing the Reporting Points.
- 3.3.3 The ship shall transmit the Final Report (FR) when finally exiting from the ship reporting system area by crossing Reporting Line.

3.3.4 In the case of incidents or accidents as described in paragraph 3.2.4 the ship(s) shall transmit the Other Report(s) immediately to the shore-based Authority. The vessel(s) shall provide any additional information related to the incident or accident as requested by the shore-based Authority.

3.4 *Authority to whom reports should be sent and available services*

The shore-based Authority is Director of Maritime Office in Gdynia, Poland. The ships participating in the system shall transmit reports by radio to VTS Centre "Gulf of Gdańsk". The authority monitors shipping within the mandatory ship reporting area of the Gulf of Gdańsk by radar and AIS. This does not relieve ship masters of their responsibility for the navigation of their ship.

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

4.1 *Information provided*

4.1.1 Authority provides information to shipping about specific and urgent situations which could cause conflicting traffic movements and other information concerning safety of navigation, for instance:

- information on weather conditions, ice, water level;
- information on navigational conditions including navigational warnings (status of aids to navigation, presence of other ships and, if necessary, their position, etc.);
- recommended route to be followed and status of areas temporarily closed for navigation.

4.1.2 Information is broadcasted by VTS Centre "Gulf of Gdańsk" station on the working channel or on the reserve channel, following the announcement on the working channel in the form of routine bulletins or when necessary or on request. Scheduled times of the routine weather bulletins and navigational warnings broadcasts are available in the relevant nautical publications.

4.1.3 Participating ships shall maintain listening watch on the designated VTS working channel.

4.1.4 Information broadcasts will be preceded by an announcement on VHF channel 16 on which channel it will be made. All ships navigating in the area should listen to the announced broadcast.

4.1.5 If necessary, individual information can be provided to a ship on the working channel, particularly in relation to positioning and navigational assistance or local conditions. If a ship needs to anchor due to breakdown or emergency the operator can recommend suitable anchorage in the area.

4.2 *Ice routeing in winter*

During severe ice conditions the traffic separation schemes may be declared not valid. Mariners will be informed of the cancellation through Notices to Mariners and by

VHF broadcasts from the VTS Centre. Ships reporting to the Centre, will receive information on the recommended route through the ice and/or are requested to contact the regional ice-braking co-ordinator for further instructions.

#### 4.3 *Deviations*

If a ship participating in the mandatory ship reporting system fails to appear on the radar screen or fails to communicate with the authority or an emergency is reported, MRCC in the area is responsible for initiating a search for the ship in accordance with the rules laid down for the search and rescue service, including the involvement of other participating ships known to be in that particular area.

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

5.1 The radio communications equipment required for the system is that defined in the GMDSS for sea area A1.

5.2 Reports shall be made by voice on VHF radio using the primary VTS working channel.

5.3 When submitting reports the system identifier GDANREP can be omitted.

5.4 The voice call sign of the VTS Centre "Gulf of Gdańsk" is "VTS Zatoka".

5.5 The VHF working channels of the VTS Centre "Gulf of Gdańsk" are:

Primary	channel 71	call and short report information
Reserve	channel 66	as designated by VTS
Other	channel 16	call and distress

5.6 Ships are required to maintain a continuous listening watch in the area on VTS working channel and to report and take any action required by the maritime Authorities to reduce risks.

5.7 Confidential information may be transmitted by other means, including electronically, in compliance with relevant national regulations.

5.8 The language used for communication shall be English or Polish, using the IMO Standard Marine Communications Phrases, where necessary.

### **6 Relevant rules and regulations in force in the area of the system**

#### 6.1 *Regulations for Preventing Collisions at Sea*

The International Regulations for Preventing Collisions at Sea, 1972, as amended, are applicable throughout the reporting area.

## 6.2 *Traffic Separation Schemes*

The Traffic Separation Schemes in the Gulf of Gdańsk have been adopted by IMO and rule 10 of the International Regulations for Preventing Collisions at Sea applies.

## 6.3 *Pilotage*

Pilotage is mandatory in national waters under national laws.

## 6.4 *National regulations*

Relevant local regulations issued under authority of Director of Maritime Office in Gdynia, including Port Regulations, are in force in the Polish internal waters and are promulgated in the nautical publications.

## 6.5 *Dangerous and polluting cargoes*

Ships carrying dangerous or polluting cargoes and bound to or from any port within the ship reporting area must comply with the international and national regulations. The ship reporting system does not relieve ships masters of their responsibility to give the nationally required reports and information to any other relevant authorities. Discharges of oil and ship-generated waste is monitored by the authority. Ships causing pollution within the area can be prosecuted and fined.

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

7.1 VTS “Gulf of Gdańsk” is equipped with radars network, VHF communications network, VHF-DF, Automatic Identification System (AIS) facilities, hydro-meteorological sensors and information processing and retrieval system. Its functions are data collection and evaluation, provision of information, navigation assistance, and provision of maritime safety-related information to allied services.

7.2 VTS Centre maintains a continuous 24-hour watch and is manned by two operators at all times. The VTS Centre is staffed with personnel trained according to national and international recommendations.

7.3 VTS Centre shares traffic image and ship reporting data with MRCC in Gdynia and other allied services.

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

The system is designed with sufficient system redundancy to cope with normal equipment failure, with multiple receivers on each channel. Should a VTS Centre suffer an irretrievable breakdown and call off itself from the system until the failure is repaired, it could be relieved by one of the Harbour Master’s Traffic Control, which jointly use the VTS traffic image and reporting data and is operated by the shore-based Authority.

**9 Description of plans for providing a response to an emergency that poses a risk to the safety of life at sea or threatens the marine environment**

9.1 *SAR plan*

The national maritime SAR plan establishes the MRCC in Gdynia, which is responsible in the event of an emergency that poses risk to the safety of life at sea and for deploying SAR units operating in the reporting area.

9.2 *National contingency plan*

The Director of Maritime Office in Gdynia is the authority responsible for prevention and control of pollution produced by oil and other harmful substances in the reporting area waters. Given the extent of the damage that can be caused by oil spills, there is a National Contingency Plan to deal with them, upon which various authorities co-operate under operational co-ordination of MRCC.

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

10.1 The primary objective of the system is to enhance the safe navigation and the protection of the marine environment through the exchange of information between the ship and the shore. All means will be used to encourage and promote the full participation of ships required to submit reports under SOLAS regulation V/11.

10.2 If reports are not submitted and the offending ship can be positively identified, then information will be passed to the relevant Flag State Authorities for investigation and possible prosecution in accordance with national legislation. Information will be passed also to Port State Control, while at the same time an investigation will be launched with a view to possible legal action being taken in accordance with national legislation.

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**ANNEX 28**

**RESOLUTION MSC.250(83)**

**(adopted on 8 October 2007)**

**ADOPTION OF A NEW MANDATORY SHIP REPORTING SYSTEM  
“OFF THE SOUTH AND SOUTHWEST COAST OF ICELAND (TRANSREP)”**

THE MARITIME SAFETY COMMITTEE,

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

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

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

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

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

1. ADOPTS, in accordance with SOLAS regulation V/11, the new mandatory ship reporting system “Off the southwest coast of Iceland”;
2. DECIDES that the ship reporting system, “Off the southwest coast of Iceland (TRANSREP)”, will enter into force at 0000 hours UTC on 1 July 2008; and
3. REQUESTS the Secretary-General to bring this resolution and its Annex to the attention of the Member Governments and SOLAS Contracting Governments to the 1974 SOLAS Convention.



ANNEX

**MANDATORY SHIP REPORTING SYSTEM “OFF THE SOUTH AND SOUTHWEST COAST OF ICELAND (TRANSREP)”**

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

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

- .1 ships calling at ports located within the eastern ATBA off the south and southwest coast of Iceland; and
- .2 ships of less than 5,000 gross tonnage permitted to transit the eastern ATBA south of latitude 63° 45' N when engaged on voyages between Icelandic ports and not carrying dangerous or noxious cargoes in bulk or in cargo tanks.

Pursuant to SOLAS 1974, the mandatory ship reporting system does not apply to any warship, naval auxiliary, coast guard vessel, or other vessel owned or operated by a contracting government and used, for the time being, only on government non-commercial service. However, such ships are encouraged to participate in the reporting system. The mandatory ship reporting system does not apply to fishing vessels with fishing rights within Iceland's exclusive economic zone (EEZ) and research vessels.

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

The reporting system covers the proposed ATBA (the eastern area) off the south and southwest coast of Iceland located entirely within Icelandic territorial waters, and is bounded by lines connecting the following geographical positions:

(25)	Dyrhólaey Light	63° 24'.13 N	019° 07'.83 W
(24)	S of Surtsey Island	63° 10'.00 N	020° 38'.00 W
(23)	S of Reykjanes Point	63° 40'.90 N	022° 40'.20 W
(22)	SW of Reykjanes Point	63° 45'.80 N	022° 44'.40 W
(21)	Húllid Passage SE part	63° 47'.00 N	022° 47'.60 W
(20)	Húllid Passage NE part	63° 48'.00 N	022° 48'.40 W
(19)	SW of Litla Sandvik	63° 49'.20 N	022° 47'.30 W
(18)	Off Sandgerdi	64° 01'.70 N	022° 58'.30 W
(8)	NW of Gardskagi Point	64° 07'.20 N	022° 47'.50 W
(9)	N of Gardskagi Point	64° 07'.20 N	022° 41'.40 W
(17)	Gardskagi Light	64° 04'.92 N	022° 41'.40 W

(The reference chart, which includes all the area of coverage for the system is Icelandic Chart No.31, INT 1105 *Dyrhólaey – Snæfellsnes*, (new edition June 2004) based on Datum WGS-84.)

### **3 Format, contents of report, times and geographical positions for submitting reports, Authority to whom reports must be sent and available services**

The ship report, short title “TRANSREP”, shall be made to the shore-based Authority, Icelandic Maritime Traffic Service (MTS), located in Reykjavík. Reports should be made using VHF voice transmissions.

#### *3.1 Format*

The ship report to the shore-based Authority shall be in accordance with the format shown in paragraph 5.5. The information requested from ships is derived from the standard reporting format and procedures set out in paragraph 2 of the appendix to resolution A.851(20).

#### *3.2 Content*

The report required from a ship to the shore-based Authority contains only information which is essential to meet the objectives of the system:

Information considered to be essential:

- |        |  |
|--------|--|
| A      | Name of ship, call sign and IMO number   |
| C or D | Position (latitude and longitude or in relation to a landmark)                       |
| E      | Course   |
| F      | Speed  |
| G      | Port of departure  |
| H      | Date, time and point of entry into system  |
| I      | Port of destination  |
| K      | Date, time and point of exit from system or departure from a harbour within the ATBA |
| L      | Intended track within the ATBA   |

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

#### *3.3 Geographical position for submitting reports*

Ships entering the ATBA shall report to the MTS their estimated time of crossing the area limits, specified in paragraph 2, 4 hours prior to entering the area or when departing from harbours in Faxaflói Bay. Ships leaving harbours within the ATBA shall report on departure.

#### *3.4 Authority*

The shore-based Authority is the Icelandic Maritime Traffic Service (MTS), which is operated by the Icelandic Coast Guard.

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

Detected and identified ships are monitored by AIS, which in no way releases their master from his responsibility for safe navigation.

Following the reception of a report, the Maritime Traffic Service can, on request, provide:

- information on navigational conditions; and
- information on weather conditions.

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

- .1 TRANSREP will be based on VHF voice radiocommunications.
- .2 The call to the shore-based Authority shall be made on VHF channel 70 (16).
- .3 However, a ship which cannot use VHF channel 70 (16) in order to transmit the reports should use MF DSC or INMARSAT.
- .4 The language used for communication shall be English, using the IMO Standard Marine Communication Phrases, where necessary.
- .5 Information to be reported:
  - A Name of ship, call sign and IMO number
  - C or D Position (latitude and longitude or in relation to a landmark)
  - E Course
  - F Speed
  - G Port of departure
  - H Date, time and point of entry into system
  - I Port of destination
  - K Date, time and point of exit from system or departure from a harbour within the ATBA
  - L Intended track within the ATBA

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

Relevant laws in force include domestic legislation and regulations to implement the Convention on the International Regulations for Preventing Collisions at Sea, 1972, the International Convention for the Safety of Life at Sea, 1974, and the International Convention for the Prevention of Pollution from Ships, 73/78.

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

The Icelandic Maritime Traffic Service (MTS).

- The MTS is equipped with AIS covering the whole of the ATBA;
- VHF, MF, HF and INMARSAT communication equipment;
- Telephone, telefax and e-mail communication facilities, and
- Personnel operating the system: The MTS is manned by Coast Guard personnel on a 24-hour basis.

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

TRANSREP is planned with a sufficient system redundancy to cope with normal equipment failure.

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**ANNEX 29**

**RESOLUTION MSC.251(83)**

**(adopted on 8 October 2007)**

**ADOPTION OF AMENDMENTS TO THE EXISTING MANDATORY SHIP  
REPORTING SYSTEMS “OFF USHANT”, “OFF LES CASQUETS”  
AND “DOVER STRAIT/PAS DE CALAIS”**

THE MARITIME SAFETY COMMITTEE,

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

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

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

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

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

1. ADOPTS, in accordance with SOLAS regulation V/11, the amendments to the existing mandatory ship reporting systems “Off Ushant” (OUESSREP), “Off Les Casquets” (MANCHEREP) and “Dover Strait/Pas de Calais” (CALDOVREP);
2. DECIDES that the said amendments to the existing mandatory ship reporting systems, “Off Ushant (OUESSREP)”, “Off Les Casquets (MANCHEREP)” and “Dover Strait/Pas de Calais (CALDOVREP)”, will enter into force at 0000 hours UTC on 1 May 2008; and
3. REQUESTS the Secretary-General to bring this resolution and its annex to the attention of the Member Governments and SOLAS Contracting Governments to the 1974 SOLAS Convention.

ANNEX

**AMENDMENTS TO THE EXISTING MANDATORY SHIP REPORTING SYSTEMS  
“OFF USHANT (OUESSREP)”, “OFF LES CASQUETS (MANCHEREP)” AND “IN  
DOVER STRAIT/PAS DE CALAIS (CALDOVREP)”**

**1 OFF USHANT (OUESSREP)**

**Amend paragraph 3.1 “Content” and paragraph 1.4 “Reporting format” of the SUMMARY to read as follows:** (see Appendix)

**2 OFF LES CASQUETS (MANCHEREP)**

**Amend paragraph 3.1 “Content” to read as follows:** (see Appendix)

**3 IN DOVER STRAIT/PAS DE CALAIS (CALDOVREP)**

**Amend paragraph 3.2 “Content” and section 4 “Reporting format” of the SUMMARY to read as follows:** (see Appendix)

**Appendix**

“The report required should include:

- A – Name, call sign, IMO No. (or MMSI No. for reporting by transponder);
- B – Date and time;
- C or D – Position in latitude and longitude or true bearing and distance from a clearly identified landmark;
- E – True course;
- F – Speed;
- G – Port of departure;
- I – Port of destination and expected time of arrival;
- O – Present draught;
- P – Cargo and, if dangerous goods are on board, IMO quantity and class;
- Q or R – Defect, damage and/or deficiencies affecting ship’s structure, cargo or equipment, or any other circumstance affecting normal navigation, in accordance with the SOLAS or MARPOL Conventions;
- T – Address for provision of information concerning a cargo of dangerous goods;
- W – Number of persons on board;
- X – Miscellaneous:
  - Estimated quantity of bunker fuel and characteristics for ships carrying over 5,000 tonnes bunker fuel;
  - Navigation conditions.”

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**ANNEX 30**

**RESOLUTION MSC.252(83)**

**(adopted on 8 October 2007)**

**ADOPTION OF THE REVISED PERFORMANCE STANDARDS FOR  
INTEGRATED NAVIGATION SYSTEMS (INS)**

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO resolution A.886(21), by which the Assembly resolved that the function of adopting performance standards and technical specifications, as well as amendments thereto shall be performed by the Maritime Safety Committee and/or the Marine Environment Protection Committee, as appropriate, on behalf of the Organization,

RECALLING FURTHER regulation V/15 of the International Convention for the Safety of Life at Sea (SOLAS), 1974, concerning principles relating to bridge design, design and arrangement of navigational systems and equipment and bridge procedures,

NOTING that SOLAS regulation V/18 requires type approved navigational systems conforming to appropriate performance standards,

RECOGNIZING the need to revise the performance standards for Integrated Navigation Systems (INS) to enhance the safety of navigation by providing integrated and augmented functions to avoid geographic, traffic and environmental hazards,

HAVING CONSIDERED the recommendation on the revised performance standards for Integrated Navigation Systems made by the Sub-Committee on Safety of Navigation at its fifty-third session, and the Maritime Safety Committee at its eighty-third session,

1. ADOPTS the Revised Recommendation on performance standards for Integrated Navigation Systems (INS), set out in the Annex to the present resolution;
2. RECOMMENDS Governments ensure that Integrated Navigation Systems (INS):
  - (a) if installed on or after 1 January 2011, conform to performance standards not inferior to those specified in the Annex to the present resolution; and
  - (b) if installed on or after 1 January 2000 but before 1 January 2011, conform to performance standards not inferior to those specified in the Annex 3 to resolution MSC.86(70).

## ANNEX

### **PERFORMANCE STANDARDS FOR INTEGRATED NAVIGATION SYSTEMS (INS)**

#### **1 Purpose of integrated navigation systems**

1.1 The purpose of integrated navigation systems (INS) is to enhance the safety of navigation by providing integrated and augmented functions to avoid geographic, traffic and environmental hazards.

1.2 By combining and integrating functions and information the INS provides “added value” for the operator to plan, monitor and/or control safety of navigation and progress of the ship.

1.3 Integrity monitoring is an intrinsic function of the INS. The INS supports safety of navigation by evaluating inputs from several sources, combining them to provide information giving timely alerts of dangerous situations and system failures and degradation of integrity of this information.

1.4 The INS presents correct, timely, and unambiguous information to the users and provides subsystems and subsequent functions within the INS and other connected equipment with this information.

1.5 The INS supports mode and situation awareness.

1.6 The INS aims to ensure that, by taking human factors into consideration; the workload is kept within the capacity of the operator in order to enhance safe and expeditious navigation and to complement the mariner's capabilities, while at the same time to compensate for their limitations.

1.7 The INS aims to be demonstrably suitable for the user and the given task in a particular context of use.

1.8 The purpose of the alert management is specified in module C.

#### **2 Scope**

##### **2.1 Navigational tasks**

2.1.1 An INS comprises navigational tasks such as “Route planning”, “Route monitoring”, “Collision avoidance”, “Navigation control data”, “Navigation status and data display” and “Alert management”, including the respective sources, data and displays which are integrated into one navigation system. These tasks are described in paragraph 7.

2.1.2 An INS is defined as such if work stations provide multifunctional displays integrating at least the following navigational tasks/functions:

- “Route monitoring”
- “Collision avoidance”

and may provide manual and/or automatic navigation control functions.

### 2.1.3 Other mandatory tasks

2.1.3.1 An alert management is a part of the INS. The scope and the requirements of the alert management are specified in module C.

2.1.3.2 The presentation of navigation control data for manual control as specified in paragraph 7.5.2 of these performance standards is part of the INS.

2.1.4 Other navigational tasks/functions may also be integrated in the INS.

### 2.2 Task stations

2.2.1 The tasks are allocated to, and operated by the operator on, a defined set of multi-functional “task stations”.

2.2.2 The scope of an INS may differ dependent on the number and kind of tasks integrated.

2.2.3 Configuration, use, operation and display of the INS is situation-dependent on:

- shift underway, at anchor, and moored,
- manual and automatic navigation control in different waters,
- planned routine navigation and special manoeuvres.

## 3 Application of these performance standards

### 3.1 Purpose of these standards

3.1.1 The purpose of these performance standards is to support the proper and safe integration of navigational functions and information.

3.1.2 The purpose is in particular:

- to allow the installation and use of an INS instead of stand-alone navigational equipment onboard ships; and
- to promote safe procedures for the integration process;

both for

- comprehensive integration; and
- partial integration,

of navigational functions, data and equipment.

3.1.3 These standards supplement for INS functional requirements of the individual Performance Standards adopted by the Organization.



### 3.2 Application to tasks

3.2.1 These performance standards are applicable to systems where functions/equipment of at least the navigational tasks mentioned in paragraph 2.1.2 are combined.

3.2.2 If further tasks are integrated, the requirements of these standards should apply to all additional functions implemented in the INS.

### 3.3 Modules of these standards

3.3.1 These performance standards are based on a modular concept which should provide for individual configurations and for extensions, if required.

3.3.2 These standards contain four modules:

- Module A for the requirements for the integration of navigational information,
- Module B for the operational/functional requirements for INS based on a task-related structure,
- Module C for the requirements of the Alert management, and
- Module D for the Documentation requirements.

### 3.4 Application of modules

These performance standards are applicable to all INS as follows:

3.4.1 Modules A, C, D and paragraphs 6, 8 to 13 of module B are applicable for any INS.

3.4.2 Additionally, for each task integrated into the INS, the INS should fulfil both:

- the requirements of the respective tasks as specified in paragraph 7 of module B and
- the relevant modules of performance standards for stand-alone equipment as specified in Table 1.

Table 1

INS Tasks and functions (Para of this standard)	Additionally applicable modules of specific equipment standards for task integrated into the INS. The modules are specified in the appendices of these performance standards, if not specified in the equipment standards.
Collision avoidance (7.4)	Radar PS (Res. MSC.192(79)) (Modules specified in Appendix 3) Module A: "Sensor and Detection" Module B: "Operational requirements" Module C: "Design and Technical requirements"
Route planning (7.2) Route monitoring (7.3)	ECDIS PS (Res. MSC.232(82)) Module A: "Database" Module B: "Operational and functional requirements"
Track control (7.5.3 and 8.6, 8.7)	Track Control PS Res. MSC.74(69), Annex 2 (Modules specified in Appendix 4) Module B: "Operational and functional requirements"

### 3.5 Acceptance of INS as navigational equipment

3.5.1 These standards may allow for accepting INS to substitute for some carriage requirements of navigational equipment as equivalent to other means under SOLAS regulation V/19. In this case, the INS should comply with:

- these performance standards; and
- for the relevant tasks of these performance standards, with the applicable modules of the equipment performance standards as specified in Table 2.

Table 2

Allow for accepting the INS as	INS in compliance with	
	Tasks and functions (Para of this standard)	Applicable modules of specific equipment standards as specified in the Appendices of the document
Radar system	Collision avoidance (7.4)	Radar PS (Res. MSC.192(79)) (Modules specified in Appendix 3) Module A: "Sensor and Detection" Module B: "Operational requirements" Module C: "Design and Technical requirements"
ECDIS	Route planning (7.2) Route monitoring (7.3)	ECDIS PS (Res. MSC.232(82)) Module A: "Database" Module B: "Operational and functional requirements"
Heading control system (HCS)	Navigation control data (7.5) or Navigation status and data display (7.7)	Res. A.342, as amended – MSC.64(67), Annex 3
Track control system, (TCS)	Navigation control data and track control (7.5.3 and 8.6, 8.7)	Track Control Res. MSC.74(69), Annex 2 (Modules specified in Appendix 4) Module B: "Operational and functional requirements"
Presentation of AIS data	Collision avoidance (7.4) Navigation control data (7.5)	MSC.74 (69), Annex 3
Echo sounding system	Route monitoring (7.3)	MSC.74(69), Annex 4
EPFS	Navigation control data (7.5) or Navigation status and data display (7.7)	GPS Res. A.819(19), as amended, MSC.112(73) or GALILEO, Res. MSC.233(82) or GLONAS, Res. MSC.53(66), as amended MSC.113(73)
SDME	Navigation control data (7.5) or Navigation status and data display (7.7)	Res. MSC.96(72)

3.6 The application of the alert management is specified in module C.

3.7 Other relevant standards

3.7.1 The workstation design, layout and arrangement is not addressed in this performance standards, but in MSC/Circ.982.

## **4 Definitions**

For the purpose of these standards the definitions in Appendix 1 apply.

### **Module A – Integration of Information**

## **5 Requirements for integration of navigational information**

### **5.1 Interfacing and data exchange**

5.1.1 An INS should combine, process and evaluate data from connected sensors and sources.

5.1.2 The availability, validity and integrity of data exchange within the INS and from connected sensors and sources should be monitored.

5.1.3 A failure of data exchange should not affect any independent functionality.

5.1.4 Interfacing to, from, and within the INS should comply with international standards for data exchange and interfacing as appropriate.

5.1.5 The interface(s) should comply with the interface requirements of the alert management as described in Module C of these performance standards.

### **5.2 Accuracy**

5.2.1 INS data should comply with the accuracy and resolution required by applicable performance standards of the Organization.

### **5.3 Validity, plausibility, latency**

#### **5.3.1 Validity**

5.3.1.1 Data failing validity checks should not be used by the INS for functions dependent on these data, unless for cases where the relevant performance standards specifically allow use of invalid data. There should be no side effects for functions not depending on this data.

5.3.1.2 When data used by the INS for a function becomes invalid, or unavailable, a warning should be given. When data not actually in use by the INS becomes invalid, or unavailable, a this should be indicated at least as a caution.

#### **5.3.2 Plausibility**

5.3.2.1 Received or derived data that is used or distributed by the INS should be checked for plausible magnitudes of values.

5.3.2.2 Data which has failed the plausibility checks should not be used by the INS and should not affect functions not dependent on these data.

### 5.3.3 Latency

5.3.3.1 Data latency (timeliness and repetition rate of data) within the INS should not degrade the functionality specified in the relevant performance standards.

## 5.4 Consistent common reference system (CCRS)

### 5.4.1 Consistency of data

5.4.1.1 The INS should ensure that the different types of information are distributed to the relevant parts of the system, applying a “consistent common reference system” for all types of information.

5.4.1.2 Details of the source and the method of processing of such data should be provided for further use within INS.

5.4.1.3 The CCRS should ensure that all parts of the INS are provided with the same type of data from the same source.

### 5.4.2 Consistent common reference point

5.4.2.1 The INS should use a single consistent common reference point for all spatially related information. For consistency of measured ranges and bearings, the recommended reference location should be the conning position. Alternative reference locations may be used where clearly indicated or distinctively obvious. The selection of an alternative reference point should not affect the integrity monitoring process.

### 5.4.3 Consistency of thresholds

5.4.3.1 The INS should support the consistency of thresholds for monitoring and alert functions.

5.4.3.2 The INS should ensure by automatic means that consistent thresholds are used by different parts of an INS, where practicable.

5.4.3.3 A caution may be given when thresholds entered by the bridge team differ from thresholds set in other parts of the INS.

## 5.5 Integrity monitoring

5.5.1 The integrity of data should be monitored and verified automatically before being used, or displayed.

5.5.2 The integrity of information should be verified by comparison of the data derived independently from at least two sensors and/or sources, if available.

5.5.3 The INS should provide manual or automatic means to select the most accurate method of integrity monitoring from the available sensors and/or sources.

5.5.4 A clear indication of the sensors and sources of data selected for integrity monitoring should be provided.

5.5.5 The INS should provide a warning, if integrity verification is not possible or failed.

5.5.6 Data which fails the integrity monitoring function or data where integrity monitoring is not possible should not be used for automatic control systems/functions.

## 5.6 Marking of data

5.6.1 The data should be marked with the source and the results of validity, plausibility checks and integrity monitoring to enable subsequent functions to decide whether their input data complies with their requirements or not.

## 5.7 Selection of sensors and sources

5.7.1 INS should provide two user selectable sensor/source selection modes when multiple sensors/sources are available; manual sensor/source selection mode and automatic sensor/source selection mode.

5.7.2 In manual sensor/source selection mode it should be possible to select individual sensors/sources for use in the INS. In case a more suitable sensor/source is available this should be indicated.

5.7.3 In automatic sensor/source selection mode, the most suitable sensors/sources available should be automatically selected for use in the INS. It should further be possible to manually exclude individual sensors/sources from being automatically selected.

## **Module B – Task related requirements for Integrated Navigation Systems**

### **6 Operational requirements**

6.1 The design of the INS should ease the workload of the bridge team and pilot in safely and effectively carrying out the navigation functions incorporated therein.

6.2 The integration should provide all functions, depending of the task for which the INS is used and configured, to facilitate the tasks to be performed by the bridge team and pilot in safely navigating the ship.

6.3 Each part of the INS should comply with all applicable requirements adopted by the Organization, including the requirements of these performance standards.

6.4 When functions of equipment connected to the INS provide facilities in addition to these performance standards, the operation and, as far as is reasonably practicable, the malfunction of such additional facilities should not degrade the performance of the INS below the requirements of these standards.

6.5 The integration of functions of individual equipment into the INS should not degrade the performance below the requirements specified for the individual equipment by the Organization.

6.6 Alerts should be generated and presented according to Module C.

## 7 Task and functional requirements for an INS

### 7.1 General

7.1.1 The configuration of the INS should be modular and task - oriented. The navigational tasks of an INS are classified as “Route planning”, “Route monitoring”, “Collision avoidance”, “Navigation control data”, “Status and data display” and “Alert management”. Each of these tasks comprises the respective functions and data.

7.1.2 All tasks of an INS should use the same electronic chart data and other navigational databases such as routes, maps, tide information.

7.1.3 If Electronic Navigational Charts (ENCs) are available, they should be used as common data source for INS.

7.1.4 Paragraphs 7.2 to 7.5 and 7.7 apply, if the respective task is integrated into the INS.

### 7.2 Task “Route planning”

#### 7.2.1 ECDIS performance standards related mandatory functions and data

The INS should provide the route planning functions and data as specified in Module A and B of the revised ECDIS performance standards (resolution MSC.232(82)).

#### 7.2.2 Procedures for voyage planning

The INS should be capable of supporting procedures for relevant parts of voyage planning, as adopted by the Organization<sup>1</sup>.

#### 7.2.3 Additional mandatory functions

The INS should provide means for

- administering the route plan (store and load, import, export, documentation, protection),
- having the route check against hazards based on the planned minimum under keel clearance as specified by the mariner,
- checking of the route plan against manoeuvring limitation, if available in the INS, based on parameters turning radius, rate of turn (ROT), wheel-over and course changing points, speed, time, ETAs,
- drafting and refining the route plan against meteorological information if available in the INS.

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<sup>1</sup> Resolution A.893(21) on Guidelines for voyage planning.

### 7.3 Task “Route monitoring”

#### 7.3.1 ECDIS performance standards related mandatory functions and data

The INS should provide the route monitoring functions and data as specified in Module A and B in the ECDIS performance standards.

#### 7.3.2 Additional mandatory functions

The INS should provide capability for

- optionally overlaying radar video data on the chart to indicate navigational objects, restraints and hazards to own ship in order to allow position monitoring evaluation and object identification,
- determination of deviations between set values and actual values for measured under-keel clearance and initiating an under-keel clearance alarm, if fitted,
- the alphanumeric display the present values of Latitude, Longitude, heading, COG, SOG, STW, under-keel clearance, ROT (measured or derived from change of heading),
- AIS reports of AtoNs,

and if track control is integrated into the INS,

- it should be possible to include the planned track and to provide, monitor and display the track related and manoeuvring data.

#### 7.3.3 Optional Functions

For navigational purposes, the display of other route-related information on the chart display is permitted, e.g.,

- tracked radar targets and AIS targets
- AIS binary and safety-related messages
- initiation and monitoring of man-over-board and SAR manoeuvres (search and rescue and man-over-board modes)
- NAVTEX
- tidal and current data
- weather data
- ice data.

#### 7.3.4 Search and rescue mode

7.3.4.1 If available it should be possible to select on the route monitoring display a predefined display mode for a “search and rescue” situation, that can be accessed upon simple operator command.

7.3.4.2 In the search and rescue mode a superimposed graphical presentation of the datum (geographic point, line, or area used as a reference in search planning), initial most probable area for search, commence search point and search pattern chosen by the operator (expanding square search pattern, sector search pattern or parallel track search pattern) with track spacing defined by him should be presented.

### 7.3.5 Man-over-board (MOB) mode

7.3.5.1 If available it should be possible to select on the route monitoring display a predefined display mode for a “man-over-board” situation, that can be accessed upon simple operator command.

7.3.5.2 In the man-over-board mode a superimposed graphical presentation of a operator selectable man-over-board manoeuvre should be presented.

7.3.5.3 The man-over-board position should be memorised by a simple operator action.

7.3.5.4 An urgency manoeuvring procedure should be available at the display taking set and drift into consideration.

### 7.4 Task “Collision Avoidance”

#### 7.4.1 Radar performance standards related mandatory functions and data

The INS should provide the collision avoidance functions and data as specified in Module A and B of the Radar performance standards.

#### 7.4.2 Additional mandatory functions

7.4.2.1 It should be possible to present less information of ENC database objects than specified in MSC.232(82) for display base.

#### 7.4.2.2 Target association and target data integration

If target information from multiple sensors/sources (radar and AIS; 2 radar sensors) are provided on one task station:

- the possibility of target association should be provided for mutual monitoring and to avoid the presentation of more than one symbol for the same target,
- the association of AIS and radar targets should follow the requirements of resolutions MSC.192(79) and MSC.191(79),
- common criteria should be used for raising target related alerts, e.g., CPA/TCPA.

#### 7.4.2.3 Target identifier

For identical targets unique and identical target identifiers should be used for presentation on all INS displays.

Where a target from more than one source can be presented on one display the identifier should be amended as required. Amended target identifiers should be used for all INS display presentations.



#### 7.4.2.4 Combined radar signals

A display may present combined radar signals from more than one radar source. The malfunctions of this additional facility should not degrade the presentation of the radar source selected as primary. The primary and the other source(s) should be indicated as such.

#### 7.4.3 Optional functions

Optionally, the following information may be displayed:

- true scaled ship symbols and CPA/TCPA and bow crossing range (BCR) / bow crossing time (BCT) related to the real dimensions
- chart data from the common database of INS: traffic-related object layers.

#### 7.5 Task “Navigation Control Data”

##### 7.5.1 General

To support the manual and automatic control of the ship’s primary movement the INS navigation control task should provide the following functionality:

- display of data for the manual control of the ship’s primary movement
- display of data for the automatic control of the ship’s primary movement
- presentation and handling of external safety related messages.

##### 7.5.2 Presentation of navigation control data for manual control

7.5.2.1 For manual control of the ship’s primary movement the INS navigation control display should allow at least to display the following information:

- under keel clearance (UKC) and UKC profile
- STW, SOG, COG
- position
- heading, ROT (measured or derived from change of heading)
- rudder angle
- propulsion data
- set and drift, wind direction and speed (true and/or relative selectable by the operator), if available
- the active mode of steering or speed control
- time and distance to wheel-over or to the next waypoint
- safety related messages e.g., AIS safety-related and binary messages, Navtex.

##### 7.5.3 Presentation of navigation control data for automatic control

7.5.3.1 For automatic control of the ship’s primary movement, the INS navigation control display should allow at least and as default the display of the following information:

- all information listed for manual control
- set and actual radius or rate of turn to the next segment.

7.5.4 The navigation control data should be presented:

- in digital and where appropriate in analogue form, e.g., mimic elements, logically arranged on and around a symbolic outline of a ship,
- if applicable, together with their “set- values”,
- if applicable and on demand together with a history presentation to indicate the trend of the parameter.

7.6 Task “Alert management”

7.6.1 Scope, operational requirements and alert-related requirements are specified in Module C of these performance standards.

7.7 Task “Status and data display”

7.7.1 Mandatory data display functions

The INS should provide the following data display functions:

- presentation of mode and status information
- presentation of the ship’s static, dynamic and voyage-related AIS data
- presentation of the ship’s available relevant measured motion data together with their “set – values”
- presentation of received safety related messages, such as AIS safety-related and binary messages, Navtex
- presentation of INS configuration
- presentation of sensor and source information.

7.7.2 Mandatory data management functions

The INS should provide the following management functions:

- setting of relevant parameters
- editing AIS own ship’s data and information to be transmitted by AIS messages.

7.7.3 Optional data display functions

The INS may provide on demand:

- tidal and current data
- weather data, ice data
- additional data of the tasks Navigation control and Route monitoring and AIS target data.

## **8 Functional requirements for INS task stations**

### 8.1 Number of task stations

8.1.1 The number of task stations on the bridge depends on the tasks integrated into the INS. It should support the simultaneous operation and presentation of at least the minimum set of tasks necessary to meet the carriage requirements of SOLAS regulation V/19.

8.1.2 To specify the required number of task stations the required backup arrangements as mandated by the carriage requirements of SOLAS regulation V/19 should be taken into account.

### 8.2 For each tasks of:

- route monitoring
- collision avoidance
- navigation control data,

a task station should be provided, if the respective task is part of the INS.

### 8.3 Additional tasks

For the tasks of:

- route planning,
- status and data display, and
- alert management,

means should be provided to operate the tasks at least at one of the task stations referred to on paragraph 8.2 or at least at another additional task station at the choice of the bridge team and pilot.

### 8.4 Remote route planning

For the task “Route planning”, a separate remote task station may be provided.

8.5 The allocation of the tasks to the task stations should be sufficiently flexible, to support all navigational situations, and should be sufficiently simple to support team working and awareness of operator roles. The selection of the task at the task station should be possible by a simple operator action.

### 8.6 Track control

If the function of track control is implemented in the INS,

8.6.1 it should be possible to display the planned route graphically on the task stations for:

- “Route monitoring”, and/or
- “Collision avoidance”.

8.6.2 the control and operation of this function by the user should be possible via the task stations for:

- “Route monitoring”, and/or
- “Collision avoidance”.

## 8.7 Automatic control functions

### 8.7.1 Task station with control

Only one, clearly indicated task station should be in control of an automatic function and only one task station should at any time be assigned to accept control commands. It should clearly be indicated to the bridge team and pilot, if not otherwise obvious, which task station is in control of these functions.

8.7.2 It should be possible to take over the control from a task station. In this case the set control values and limits should remain unchanged.

8.7.3 The information relevant for the selected control function should be available for continuous display, at least upon a single operator command, and should in be presented when an automatic control function is activated or changed.

### 8.7.4 Override

8.7.4.1 It should be allowed by a single operator action to override or by-pass any automated function, regardless of the operational mode and the failure status of the INS.

8.7.4.2 The INS should resume automatic functions only after an appropriate message and intentional operator action, considering all necessary starting conditions.

## **9 Functional requirements for displays of INS**

### 9.1 General

9.1.1 The INS should comply with the presentation requirements adopted by the Organization<sup>2</sup>.

9.1.2 All essential information should be displayed clearly and continuously. Additional navigational information may be displayed, but should not mask, obscure or degrade essential information required for the display by its primary task, as specified in this performance standards.

9.1.3 The INS should be capable of displaying data available from the sensors.

9.1.4 The information should be displayed together with the indication of its source (sensor data, result of calculation or manual input), unit of measurement and status, including mode.

9.1.5 Display and update of essential information available in the equipment as well as safety related automatic functions should not be inhibited due to operation of the equipment.

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<sup>2</sup> MSC.191(79), SN/Circ.243.

## 9.2 Default display configurations and operational modes

9.2.1 The INS should offer default display configurations for the tasks route monitoring and collision avoidance selectable at each task station to provide the bridge team and pilot with a standardized display. This configuration should be accessible by a simple operator action. The basic requirements for these display configurations are specified in Appendix 6.

9.2.2 The INS should provide operational modes for open sea, coastal, confined waters (pilotage, harbour berthing, anchorage).

### 9.2.3 User-defined display modes

It is recommended that the INS provides means to generate pre-defined or operator-defined display modes, that are optimally suitable to the navigation task.

9.2.4 When switching the task from one task station to another, the current display configuration should be maintained.

## 9.3 Mode and status awareness

9.3.1 The operational mode in use should be clearly indicated to the bridge team and pilot.

9.3.2 If the mode in use is not the normal mode, to fully perform the functions required for the INS, this should be clearly indicated.

Example of modes other than the normal mode are:

- degraded condition modes, in which the INS cannot fully perform all functions
- “service modes”
- simulation mode
- training (familiarization) mode
- other modes, in which the INS cannot be used for navigation.

9.3.3 If the system is in a degraded condition this should be sufficiently clear that the bridge team and pilot can understand the nature of the failure and its consequences.

9.3.4 The INS should indicate the operational status of automated functions and integrated components, systems and/or subsystems.

## 9.4 Information display

9.4.1 It should be possible to display the complete system configuration, the available configuration and the configuration in use.

9.4.2 The INS should provide the means to display the type of data, source and availability.

9.4.3 The INS should provide the means to display the type of function and availability.

9.4.4 The INS should provide the means to display the device identification and its availability.

9.4.5 Ships and system related parameters and settings should be displayed on demand.

## **10 Human Machine Interface**

### **10.1 General**

10.1.1 For the design and layout of human machine interface (HMI) of the INS, MSC/Circ.982 and relevant guidance on application of SOLAS regulation V/15 adopted by the Organization should be taken into account.

10.1.2 Integrated graphical and alphanumeric display and control functions should adopt a consistent human machine interface (HMI) philosophy and implementation.

10.1.3 The design and implementation of the INS should ensure that it is simple to operate by a trained user.

### **10.2 System Design**

10.2.1 The design of the system should facilitate the tasks to be performed by the bridge team and pilot in navigating the ship safely under all operational conditions.

10.2.2 The configuration of the equipment and presentation of information at workstations should permit observation or monitoring by the bridge team and pilot under all operating conditions.

10.2.3 The design of the system should avoid the potential single point failure by one person during operation, and should minimize the risk of human error.

10.2.4 The operation of the system should be designed to avoid distraction from the task of safe navigation.

### **10.3 Display**

10.3.1 Information should be presented consistently within and between different sub-systems. Standardized information presentation, symbols and coding should be used according to resolution MSC.191(79).

### **10.4 Input**

10.4.1 The INS should be so designed that the requested manual inputs are consistent throughout the system and can be easily executed.

10.4.2 The INS should be designed that the basic functions can be easily operated.

10.4.3 Complex or error-prone interaction with the system should be avoided.

10.4.4 For manual inputs that may cause unintended results, the INS should request confirmation before acceptance, thus providing a plausibility check.

10.4.5 Checks in the dialogue and in the input handling should be provided to prevent erroneous data or control inputs.

10.4.6 Wherever possible, an “undo” function should be provided.

## **11 INS Back-up requirements and redundancies**

### **11.1 General**

11.1.1 Adequate back-up arrangements should be provided to ensure safe navigation in case of a failure within the INS.

11.1.1.1 In case of failure of one part or function of the INS, including network failures, it should be possible to operate each other individual part or function separately; at least the requirements specified for individual equipment adopted by the Organization should be met, as far as applicable.

11.1.1.2 The back-up arrangement should enable a safe take-over of the INS functions and ensure that an INS failure does not result in a critical situation.

11.1.2 The failure of a single task station should not result in the loss of a function mandated by the carriage requirements of SOLAS.

11.1.3 In case of a breakdown of one task station, at least one task station should be able to take over the tasks.

11.1.4 The failure or loss of one hardware component of the INS should not result in the loss of any one of the INS tasks:

- Route planning
- Route monitoring
- Collision avoidance
- Navigation control data
- Status and data display
- Alert management.

Where track control is an INS function, this would not require the duplication of heading control or autopilot.

11.1.5 The INS should allow that the back-up component automatically (if possible) takes over the operation of the primary component.

## 11.2 Hardware Redundancies

### 11.2.1 Required navigational sensor/source back-up

For the following sensors/sources of an INS, an approved back-up should be available for the INS:

- electronic position fixing
- heading measurement
- speed measurement
- radar
- chart database.

## 12 System failures and fallback arrangement

12.1 The INS should, after a failure, and when the back-up activation is not successful support the availability of essential information and functions through the use of appropriate fallback arrangements (see 12.7).

### 12.2 Restored operation

Normal operation, after use of a fallback arrangement, should only be restored upon confirmation by the operator.

### 12.3 Failure or change of sensor

12.3.1 The failure or change of a sensor should not result in sudden changes of control commands or loss of manoeuvring control. This may be accomplished by appropriate integrity checks using the information from several sources.

12.3.2 In case of a sensor or source failure, the system should provide an alert and indicate (an) alternative sensor(s) or source(s), as available.

12.3.3 If sensors or sources are not able to provide necessary ship status or navigation data for automatic control functions, a dead reckoning procedure should provide the missing information, as far as practicable.

### 12.4 Storage of system related parameters

All system related parameters and settings should be stored in a protected way for reconfiguration of the INS.

12.5 The automatic response to malfunctions should result in the safest possible configuration accompanied by an alert.

### 12.6 Alert management

12.6.1 System failures should be alerted according to the requirements described in Module C.

12.6.2 Loss of system communication between the alert management and the navigational systems and sensors should be indicated as a warning at the central alert management HMI.



12.6.3 A system failure of the alert management or the loss of system communication between the alert management and the navigational functions, sources and/or sensors, should not lead to the loss of the alert announcement functionality of the individual navigational functions, sources/sensors.

## 12.7 Fallback for navigational information failure

12.7.1 In the event of failures of navigational information and to maintain minimum basic operation,

- there should be a permanent indication of the failed input information and the fallback activated,
- the respective actions of the alert management should be activated, and
- the fallback arrangements listed below should be provided.

### 12.7.2 Route monitoring

#### 12.7.2.1 Failure of heading information (Azimuth Stabilization)

The INS should display own ship's position and over-ground-motion vector in the chart and not the ship's heading line.

#### 12.7.2.2 Failure of course and speed over ground information

The INS should display own ship's position and heading line.

### 12.7.3 Collision avoidance

In the case of failure of:

- Heading information
- Speed through the water information
- Course and speed over ground information
- Position input information
- Radar video input information
- AIS input information,

the INS should operate as defined in the operational Module B4 of the proposed modular structure for radar performance standards as set out in appendix 3.

### 12.7.4 Heading/Track control

The requirements for the applicable control function as specified in the individual performance standards should apply.

## 13 Technical requirements

### 13.1 General

13.1.1 In addition to meeting the relevant requirements of resolution A.694(17)\*, the INS should comply with the requirements of these performance standards.

13.1.2 Means should be provided to monitor and to display hardware malfunctions of the INS. Alerts should be provided in case of malfunctions.

### 13.2 Requirements for hardware and/or processors

#### 13.2.1 Sensor

13.2.1.1 A sensor or part thereof is not part of the INS, if it only supplies raw data.

13.2.1.2 Processing of raw data from sensors may be part of the INS.

13.2.1.3 In case sources perform functions of the INS these functions and interfaces should conform with the relevant parts of these performance standards.

#### 13.2.2 Actuator and controller

An actuator, controller or part thereof is not part of the INS, if it only receives data or commands and does not perform other functions of the INS as required by these standard.

### 13.3 Requirements for software

13.3.1 The operational software should fulfil the requirements of the relevant international standards related to maritime navigation and communication equipment.

### 13.4 Requirements for power supply

13.4.1 Power supply requirements applying to parts of the INS as a result of other IMO requirements should remain applicable.

13.4.2 The INS including the sensors for position, speed, heading and depth should be supplied:

- .1 from both the main and the emergency source of electrical power with automated changeover through a local distribution board with provision to preclude inadvertent shutdown; and
- .2 from a transitional source of electrical power for a duration of not less than 45 s.

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\* Refer to publication IEC 60945.

### 13.5 Power interruptions and shutdown

13.5.1 After a power interruption full functionality of the INS should be available after recovery of all subsystems. The INS should not increase the recovery time of individual subsystem functions after power restoration.

13.5.2 If subjected to a power interruption the INS should, upon restoration of power, maintain the configuration in use and continue automated operation, as far as practicable. Automatic control functions should only be restored upon confirmation by the operator.

### 13.6 Communication protocols

13.6.1 Standardized and approved communication protocols for interfaces should be used where possible\*.

### 13.7 Installation

13.7.1 The INS should be installed so that it can meet the requirements of the relevant International Standards.

13.7.2 The INS should be installed taking into account the guidelines in MSC/Circ.982 and relevant guidance on application of SOLAS regulation V/15, adopted by the Organization.

## **Module C – Alert management**

### **14 Purpose**

14.1 The purpose of the alert management is to enhance the handling, distribution and presentation of alerts within an INS.

### **15 Scope**

15.1 To enhance the safety of navigation these performance standards provide requirements for the treatment of alerts within an INS and its associated individual operational/functional-modules and sensor/source-modules.

15.2 The alert management harmonizes the priority, classification, handling, distribution and presentation of alerts, to enable the bridge team to devote full attention to the safe navigation of the ship and to immediately identify any abnormal situation requiring action to maintain the safe navigation of the ship.

15.3 These performance standards specify a central alert management HMI to support the bridge team in the immediate identification of any abnormal situation, of the source and reason for the abnormal situation and support the bridge team in its decisions for the necessary actions to be taken.

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\* Refer to publication IEC 61162.

15.4 The alert management architecture and the acknowledgement concept specified, avoid unnecessary distraction of the bridge team by redundant and superfluous audible and visual alarm announcements and reduces the cognitive load on the operator by minimizing the information presented to which is necessary to assess the situation.

15.5 The alert management should support the proper application of SOLAS regulation V/15.

15.6 The architecture of the module of the performance standards is kept extendable to allow to include further alerts on the bridge and the development of performance standards for a bridge alert management.

## **16 Application**

16.1 These performance standards are applicable to any navigational aid within an INS and its associated individual operational/functional-modules and sensor/source-modules.

16.2 In addition to meeting the requirements of these performance standards the INS alert management should comply with the relevant requirements of the Organization<sup>3</sup>.

16.3 The general principles of these standards as described in paragraphs 19 and 20 of these performance standards should apply to all alerts presented on the bridge, as far as practicable.

## **17 Definitions**

For the purpose of these standards the definitions in Appendix 1 apply.

## **18 General requirements**

18.1 The alert management should provide:

- the means used to draw the attention of the bridge team to the existence of abnormal situations,
- the means to enable the bridge team to identify and address that condition,
- the means for the bridge team and pilot to assess the urgency of different abnormal situations in cases where more than one abnormal situation has to be handled,
- the means to enable the bridge team to handle alert announcements, and
- the means to manage all alert related states in a distributed system structure in consistent manner.

18.2 If practicable, there should be not more than one alert for one situation that requires attention.

18.3 The alert management should as a minimum be able to handle all alerts required by performance standards adopted by the Organization for navigational equipment comprised by the INS or connected to the INS. The alert management should have the capability to handle all other alerts of navigational equipment comprised by the INS or connected to the INS in identical manner and should incorporate all alerts that are critical to the safety of navigation.

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<sup>3</sup> MSC.128(75), MSC.191(79).

18.4 The logical architecture of the alert management and the handling concept for alerts should provide the capability to minimize the number of alerts especially those on a high priority level (e.g. using system knowledge from redundancy concepts inside INS and evaluating inherent necessities for alerts against navigational situations, operational modes or activated navigational functions).

18.5 It should be possible to provide the central alert management HMI at least on the navigating and manoeuvring workstation and allowing the handling by the bridge team.

18.6 The audible announcement of alerts should enhance the guidance of the bridge team to the task stations or displays which are directly assigned to the function generating the alert and presenting the cause of the announcement and related information for decision support, e.g., dangerous target alarms should appear and have to be acknowledged at the workstation where the collision avoidance function is provided.

18.7 As alerts can be displayed at several locations, the system should be consistent as far as practicable with respect to how alerts are displayed, silenced and acknowledged at any one task station of the INS.

## **19 Priorities and categories**

### 19.1 Priorities of alerts

19.1.1 The alert management should distinguish between the three priorities listed:

- Alarms
- Warnings and
- Cautions

19.1.2 Alarms should indicate conditions requiring immediate attention and action by the bridge team.

19.1.3 Warnings should indicate changed conditions and should be presented for precautionary reasons which are not immediately hazardous but which may become so, if no action is taken.

19.1.4 Cautions should indicate a condition which does not warrant an alarm or warning condition, but still requires attention and out of the ordinary consideration of the situation or of given information.

19.1.5 Alerts additional to the alerts required by the organization should be assigned to an priority level using the criteria for classification.

### 19.2 Criteria for classification of alerts

19.2.1 Criteria for classification of alarms:

- conditions requiring immediate attention and action by the bridge team to avoid any kind of hazardous situation and to maintain the safe navigation of the ship
- or escalation required as alarm from a not acknowledged warning.

#### 19.2.2 Criteria for classification of warnings:

- Conditions or situations which require immediate attention for precautionary reasons, to make the bridge team aware of conditions which are not immediately hazardous, but may become so.

#### 19.2.3 Criteria for classification of cautions:

- awareness of a condition which still requires attention out of the ordinary consideration of the situation or of given information.

### 19.3 Categories of alerts

#### 19.3.1 Alerts should be separated for the alert handling in INS into two categories of alerts:

##### 19.3.1.1 Category A alerts

Category A alerts are specified as alerts where graphical e.g. radar, ECDIS, information at the task station directly assigned to the function generating the alert is necessary, as decision support for the evaluation the alert related condition.

Category A alerts should include alerts indicating:

- danger of collision
- danger of grounding.

##### 19.3.1.2 Category B alerts

Category B alerts are specified as alerts where no additional information for decision support is necessary besides the information which can be presented at the central alert management HMI. Category B alerts are all alerts not falling under Category A.

19.4 A classification in priorities and categories of alerts for INS and for alerts of the individual performance standards is attached as Appendix 5.

## **20 State of alerts**

### 20.1 General

20.1.1 The presentation of alarms and warnings is defined in the performance standards for presentation of navigation-related information on shipborne navigational displays (resolution MSC.191(79)).

20.1.2 The state of an alert should be unambiguous for the alert management, the INS and all associated operational and sensor/source displays.

## 20.2 Alarms

20.2.1 The alert management should distinguish between different announcement states of each individual alarm:

- unacknowledged alarm
- acknowledged alarm.

20.2.2 When an alarm condition is detected, it should be indicated as unacknowledged alarm:

- (a) initiate an audible signal, accompanied by the visual alarm announcement;
- (b) provide a message of sufficient detail to enable the bridge team to identify and address the alarm condition;
- (c) may be accompanied by speech output presented at least in English.

20.2.3 An unacknowledged alarm should be clearly distinguishable from those existing and already acknowledged. Unacknowledged alarms should be indicated flashing and by an audible signal.

20.2.4 The characteristics of the audible alarm signal, whether used singly or in combination with speech, should be such that there is no possibility of mistaking it for the audible signal used for a warning.

20.2.5 It should be possible to temporarily silence alarms. If an alarm is not acknowledged within 30 s the audible signal should start again or as specified in the equipment performance standards.

20.2.6 The audible signal, if not temporarily silenced, and the visual signal for an unacknowledged alarm should continue until the alarm is acknowledged, except specified otherwise in the equipment performance standards.

20.2.7 An acknowledged alarm should be indicated by a steady visual indication.

20.2.8 The visual signal for an acknowledged alarm should continue until the alarm condition is rectified.

## 20.3 Warnings

20.3.1 The alert management should distinguish between different announcement states of each individual warning:

- unacknowledged warning
- acknowledged warning.

20.3.2 When a warning condition is detected, it should be indicated as unacknowledged warning:

- (a) initiate a momentarily audible signal, accompanied by the visual warning announcement;
- (b) provide a message of sufficient detail to enable the bridge team to identify and address the warning condition;
- (c) may be accompanied by speech output presented at least in English.

20.3.3 An unacknowledged warning should be clearly distinguishable from those existing and already acknowledged. Unacknowledged warnings should be indicated by a flashing and by an audible signal.

20.3.4 When a warning occurs a momentarily audible signal should be given. The characteristics of the audible warning signal, whether used singly or in combination with speech, should be such that there is no possibility of mistaking it for the audible signal used for an alarm.

20.3.5 The visualization for an unacknowledged warning should continue until the warning is acknowledged, except specified otherwise in the equipment performance standards.

20.3.6 An acknowledged warning should be indicated by a steady visual indication.

20.3.7 The visual signal for an acknowledged warning should continue until the warning condition is rectified.

## 20.4 Cautions

20.4.1 A caution should be indicated by a steady visual indication. No acknowledgement should be necessary for a caution.

20.4.2 A caution should be automatically removed after the condition is rectified.

20.4.3 A message should be provided of sufficient detail to enable the bridge team to identify and address the caution condition.

## 20.5 Alert escalation

20.5.1 After a time defined by the user unless otherwise specified by the organization, an unacknowledged alarm should be transferred to the bridge navigational watch alarm system (BNWAS), if available. The unacknowledged alarm should remain visible and audible.

20.5.2 An unacknowledged warning should be changed to alarm priority, as required by specific requirements for the individual equipment or after 60 s unless otherwise set by the user.

20.5.3 The alert escalation should be in compliance with the alert escalation requirements of the individual performance standards.



## **21 Consistent presentation of alerts within the INS**

21.1 To ensure a consistent presentation of alerts and the presentation of a reduced number of high priority alerts within the INS:

- .1 the alerts released by navigational functions, sensors, sources should be presented as far as practicable, after evaluation with the system knowledge of the INS, to reduce the number of high priority alerts;
- .2 the priority of the alert is to be defined in compliance with the relevant paragraphs of this performance standards;
- .3 the priority of any alert should be assigned and presented consistently for all parts of the INS;
- .4 the alert releasing sensor/source or function (system) should provide the alert related information of the alert message for explanation and decision support, including information for user support in respect to the alert messages, as far as possible;
- .5 if additional information regarding decision support and user guidance is available with the system knowledge of the INS, this information should be made available for the user;
- .6 HMI's presenting alert information should have the capability to present the alert information, provided by the alert releasing sensor/source or function (system) and the information added with system knowledge of the INS.

21.2 The audible announcement of category A alerts should occur at the task stations or displays which are directly assigned to the function generating the alert.

## **22 Central alert management HMI**

22.1 All alerts should be displayed on the central alert management HMI.

22.2 The central alert management HMI should offer the possibility to display category A alerts as "aggregated alerts", *i.e.*, a single visual indication indicates the existence of many alerts on the task station presenting the function, e.g. one alert should indicate the existence of multiple dangerous target alerts existing at the task station for collision avoidance.

22.3 The central alert management HMI should provide the means to announce and indicate alerts to draw the attention of the bridge team.

22.4 The central alert management HMI should have the capability to substitute the audible alert announcement of the individual equipment, except for category A alerts.

22.5 The central alert management HMI should allow to identify alerts, and enable the immediate identification of the alert releasing function or sensor/source.

22.6 The central alert management HMI should be designed that alert messages of the different priorities are clearly distinguishable from each other.

22.7 The alert messages should be completed with aids for decision making, as far as practicable. An explanation or justification of an alert should be available on request.

22.8 The central alert management HMI should enable an immediate acknowledgement of the alarms and warnings by a single operator action, except for category A.

22.9 The central alert management HMI should be able to display at least 20 recent incidents/faults at the same time.

22.10 If the central alert management HMI is such that it can not contain all active messages requiring the bridge team's attention, then there should be a clear and unambiguous indication that there are additional active messages requiring attention.

22.11 It should be possible to display the additional active messages by a single operator action.

22.12 It should be possible to return to the display containing the highest priority alerts by a single operator action.

22.13 Silencing of audible alerts

22.13.1 It should be possible to temporarily silence all audible alerts at the central alert management HMI.

22.13.2 The audible signal should be reactivated, if the alert has not been acknowledged within the specified times in paragraph 20 for alarms and warnings.

22.14 Category B Alert history list

22.14.1 An operator accessible alert history list should be provided by the central alert management HMI.

22.14.2 When a category B alert is no longer active the message should be kept with its entire content in an alert history list, with the date and time the alert was raised, acknowledged and rectified.

22.14.3 The messages of the alert history list should be displayed in chronological order.

22.14.4 Access to the alert history list and return to the active alert display should be possible by a simple operator action.

22.14.5 The system should provide a clear and unambiguous indication when the alert history list is being accessed and displayed.

22.14.6 The system should revert automatically to the active alert display when it detects a new alert condition.

22.14.7 The central alert management HMI should support the search and identification of alerts in the alert history list.

22.14.8 It should be possible to keep the content of the alert history list at least for 24 h.

## **23 Acknowledgement and cancellation location**

### **23.1 Acknowledgement**

23.1.1 The acknowledgement of alarms and warnings should only be possible at a HMI (task station) where an appropriate situation assessment and decision support can be carried out.

## **24 Self-monitoring of alert management**

24.1 The system communication between the alert management and the systems and sources/sensors initiating the alerts should be monitored.

24.2 Provisions should be made for functional testing of alerts, including the system communication between the alert management and the systems and sources/sensors initiating the alerts.

24.3 The alert management should have the capability to provide alerts for failure and loss of functions (systems), sources and sensors. These should be indicated at the central alert management HMI.

## **25 Interface requirements for alert related communication**

25.1 Connected sources, sensors and systems taking part in the alert related communication should follow a standardized communication concept. Internal alert related communication within an individual source, sensor and equipment may use an alternative communication concept.

25.2 The communication protocol should allow the implementation of the functions described in these standards. In particular, this includes:

25.2.1 Transmission of all relevant alert priorities, states, associated quality information, additional alert message information for, e.g., explanation of alert, decision support.

25.2.2 Transmission of alert source identity so that originator component and/or function can be determined, as well as it being possible to differentiate between alerts originating from the same device but at different time and also between alerts indicating different conditions from the same device at the same time.

25.2.3 Transmission of acknowledgement and silence signals between the device where the alert was silenced or acknowledged and the device where it originates and where it may also have to be silenced/acknowledged.

25.2.4 Transmission mechanisms that avoid that signals in one or the other directions are lost (by fully reliable transmissions or by suitable retransmissions).

25.2.5 Mechanisms that allow consistent reconnection of a component of the INS system to the system after disconnect at any time and in any alert condition.

25.2.6 In general, mechanisms that allows consistency in the complete INS with regards to alert management.

## **26 Integration of systems in alert management**

26.1.1 All systems, sources and sensors incorporated, connected in the INS should be part of the alert management.

26.1.2 The following equipment and systems, if installed, and not incorporated in the INS should be also included in the alert management as far as possible:

- heading information system
- heading/track control system
- electronic position-fixing systems
- speed and distance measuring equipment
- radar with target tracking functions
- ECDIS
- AIS
- echo sounding equipment
- GMDSS equipment
- relevant machinery alarms for early warning.

26.1.3 The following equipment and systems, if installed, should be connected to the alert management:

- bridge navigational watch alarm.

## **Module D – Documentation requirements**

### **27 Manuals**

27.1 Operating manuals should include:

- an overall functional description of the INS
- the redundancy concept and the availability of functions
- a description of possible failures and their effects on the system (e.g. by using part of the failure analysis)
- guidance for the adjustment of the limits for alerts
- the implications of using different reference locations
- details of each data convention and common references: attitude axis, rotation, reference location of CCRP
- details of the integrity monitoring provided by external sensors or subsystems and their required settings

- details of the mechanism for marking valid, doubtful and invalid data
- for an INS providing automatic control functions (e.g. for heading, track or speed) details of the external override and/or bypassing devices used in the reversionary mode.

27.2 The installation manuals should include adequate information to allow the INS to be installed so that it can meet all requirements adopted by the Organization.

27.3 The installation manuals should include the following:

- details of sources, components and the interconnections forming the INS
- details of the interfaces and connections for data import and export and the interconnection diagrams and interfacing details for external parts of the INS and for devices, sensors to be connected
- instructions for the installation and connection of facilities for alert acknowledgement and cancellation including the back-up officer alarm in case of an INS providing automatic control functions (e.g. for heading, track or speed)
- the details of the power supply arrangements
- recommendations on the physical layout of equipment and necessary space for maintenance
- for an INS providing automatic control functions (e.g. for heading, track or speed) details of the installation and connection of external override and/or bypassing devices used in the reversionary mode and if rudder angle, heading, propulsion data – e.g. power, propeller pitch, are not be presented on a display of the INS workstation, the necessary details.

## **28 Information regarding the system configuration**

28.1 Manufacturer or system integrator of INS should declare the following information relating to the system configuration, if applicable:

- basic system configuration
- interconnecting block diagram (Hardware)
- sources identification
- override
- priority of control (task stations)
- data flow schematic diagram and its interpretation
- default conditions
- back-up arrangement
- redundancy arrangement
- explanation of scope to fulfil requirements of SOLAS regulation V/19 with particular INS (for one equipment concept)

other useful materials for inspector (such evidence of fulfilled requirements as other means).

## **29 Failure analysis**

29.1.1 A failure analysis, at INS functional level, should be performed and documented for the INS. The failure analysis should verify that the INS is designed on “fail-to-safe” principle and that failure of one part of the integrated system should not affect the functionality of other parts, except for those functions directly dependent on the defective part.

## **30 Guidance to equipment manufacturers for the provision of onboard familiarization material**

Material enabling onboard familiarization training should be provided for the INS. The onboard familiarization material should explain all configuration, functions, limitations, controls, displays, alerts and indications of the INS. Guidance and recommendations to the equipment manufacturers for the provision of onboard familiarization material are given in Appendix 2.

## Appendix 1

### DEFINITIONS

<b>Added Value</b>	The functionality and information, which are provided by the INS, in addition to the requirements of the performance standard for the individual equipment.
<b>Alarm</b>	An alarm is the highest priority of an alert. Condition requiring immediate attention and action by the bridge team, to maintain the safe navigation of the ship.
<b>Alert</b>	Alerts are announcing abnormal situations and conditions requiring attention. Alerts are divided in three priorities: alarms, warnings and cautions.
<b>Alert announcements</b>	Visual and acoustical presentation of alerts.
<b>Alert history list</b>	Accessible list of past alerts.
<b>Alert management</b>	Concept for the harmonized regulation of the monitoring, handling, distribution and presentation of alerts on the bridge.
<b>Automatic control functions</b>	Functions that include automatic heading, and/or track and/or speed control or other navigation related automatic control functions.
<b>Category A alerts</b>	Alerts where graphical information at the task station directly assigned to the function generating the alert is necessary, as decision support for the evaluation the alert related condition.
<b>Category B alerts</b>	Alerts where no additional information for decision support is necessary besides the information which can be presented at the central alert management HMI.
<b>Caution</b>	Lowest priority of an alert. Awareness of a condition which does not warrant a alarm or warning condition, but still requires attention out of the ordinary consideration of the situation or of given information.
<b>Collision avoidance</b>	The navigational task of detecting and plotting other ships and objects to avoid collisions.
<b>Consistent common reference system (CCRS)</b>	A sub-system or function of an INS for acquisition, processing, storage, surveillance and distribution of data and information providing identical and obligatory reference to sub-systems and subsequent functions within an INS and to other connected equipment, if available.

<b>Consistent common reference point (CCRP)</b>	The Consistent Common Reference Point (CCRP) is a location on own ship, to which all horizontal measurements such as target range, bearing, relative course, relative speed, closest point of approach (CPA) or time to closest point of approach (TCPA) are referenced, typically the conning position of the bridge.
<b>Degraded condition</b>	Reduction in system functionality resulting from failure.
<b>Essential functions</b>	Indispensable functions to be available as required for the relevant operational use.
<b>Essential information</b>	Indispensable information to be available as required for the relevant functions.
<b>External safety related messages</b>	Data received from outside of the ship concerning the safety of navigation, through equipment listed in SOLAS chapter V and/or NAVTEX.
<b>Failure analysis</b>	The logical, systematic examination of an item, including its diagrams or formulas, to identify and analyse the probability, causes and consequences of potential and real failures.
<b>Human factor</b>	Workload, capabilities and limits of a user trained according to the regulations of the Organization.
<b>Human machine interface (HMI)</b>	The part of a system an operator interacts with. The interface is the aggregate of means by which the users interact with a machine, device, and system (the system). The interface provides means for input, allowing the users to control the system and output, allowing the system to inform the users.
<b>Indication</b>	Display of regular information and conditions, not part of alert management.
<b>Integrated navigation system</b>	An INS is a composite navigation system which performs at least the following tasks: collision avoidance, route monitoring thus providing “added value” for the operator to plan, monitor and safely navigate the progress of the ship. The INS allows meeting the respective parts of SOLAS regulation V/19 and supports the proper application of SOLAS regulation V/15.
<b>Integrity</b>	Ability of the INS to provide the user with information within the specified accuracy in a timely, complete and unambiguous manner, and alerts within a specified time when the system should be used with caution or not at all.



<b>Partial integrations</b>	Smaller integrations which are not covering the tasks “route monitoring” and “collision avoidance”.
<b>Man-over-board mode (MOB)</b>	Display mode for operations and actions of a ship after a Man-over-board accident happened (release of safety equipment, e.g., life buoy and life belt, performance of a return manoeuvre etc.).
<b>Multifunction display</b>	A single visual display unit that can present, either simultaneously or through a series of selectable pages, information from more than a single function of an INS.
<b>Mode awareness</b>	The perception of the mariner regarding the currently active Modes of Control, Operation and Display of the INS including its subsystems, as supported by the presentations and indications at an INS display or workstation.
<b>Navigation control data</b>	Task that provides information for the manual and automatic control of the ship’s movement on a task station.
<b>One equipment concept</b>	The equipment which is recognized as one type of equipment by integrating the function of mandatory equipment of SOLAS of a plural number.
<b>Operational modes</b>	Modes of operation depending on the sea area.
<b>Operational/functional modules</b>	Modules comprising the operational/functional requirements for navigational systems.
<b>Plausibility of data</b>	The quality representing, if data values are within the normal range for the respective type of data.
<b>Route monitoring</b>	The navigational task of continuous surveillance of own ships position in relation to the pre-planned route and the waters.
<b>Safety related automatic functions</b>	Automatic functions that directly impinge on hazards to ship or personnel, e.g., target tracking.
<b>Search and rescue mode</b>	Display mode for operations of a ship involved in search and rescue actions.
<b>Sensor</b>	A navigational aid (measuring device), with or without its own display, processing and control as appropriate, automatically providing information to operational systems or INS.
<b>Sensor/source modules</b>	Modules comprising the sensor/source requirements.

<b>Ship's primary movement</b>	The longitudinal directional, lateral directional and heading-rotational movement of the ship.
<b>Simple operator action</b>	A procedure achieved by no more than two hard-key or soft-key actions, excluding any necessary cursor movements, or voice actuation using programmed codes.
<b>Single operator action</b>	A procedure achieved by no more than one hard-key or soft-key action, excluding any necessary cursor movements, or voice actuation using programmed codes.
<b>Situation awareness</b>	Situation awareness is the mariner's perception of the navigational and technical information provided, the comprehension of their meaning and the projection of their status in the near future, as required for timely reaction to the situation. Situation awareness includes mode awareness.
<b>Source</b>	A device, or location of generated data or information (e.g. chart database), which is part of the INS automatically providing information to INS.
<b>System alerts</b>	Alerts related to equipment failure or loss (system failures).
<b>System integrator</b>	The organization responsible for ensuring that the INS complies with the requirements of this standard.
<b>System position</b>	Position calculated in the INS out of at least two positioning sensors.
<b>Task station</b>	Multifunction display with dedicated controls providing the possibility to display and operate any navigational tasks. A task station is part of a workstation.
<b>Track</b>	Path to be followed over ground.
<b>Track control</b>	Control of the ship movement along a track.
<b>Warning</b>	Condition requiring no-immediate attention or action by the bridge team. Warnings are presented for precautionary reasons to make the bridge team aware of changed conditions which are not immediately hazardous, but may become so, if no action is taken.
<b>Watchdog</b>	System which monitors the software and Hardware well running at regular intervals.
<b>Workstation</b>	The combination of all job-related items, including the console with all devices, equipment and the furniture, to fulfil certain tasks. Workstations for the Bridge are specified in MSC/Circ.982.

## Appendix 2

### GUIDANCE TO EQUIPMENT MANUFACTURERS FOR THE PROVISION OF ON-BOARD FAMILIARIZATION MATERIAL

#### 1 General

1.1 It is a requirement of the International Safety Management Code (ISM) that personnel working on assignments related to safety and the protection of the environment need to be given proper familiarization with their duties.

1.2 To assist with this process it is required that the INS equipment manufacturer or system integrator provides suitable training material that may be used by the ship operator as a basis for onboard familiarization of users.

1.3 The material is intended to be used by bridge officers who have had generic training in the use of INS through attending shore-based instruction based on the Organization's Model Course 1.32 "Operational use of Integrated Bridge Systems including Integrated Navigation Systems".

1.4 The intention of the familiarization material is that it should give a rapid means of understanding the configuration of the INS and its method of operation. General concepts concerning the use of INS are not required to be part of the material, as these would unnecessarily increase the duration of the familiarization training.

1.5 The material should be organized such that it represents the actual equipment and configuration that is fitted to the ship.

#### 2 On-board familiarization training for INS

2.1 The aim of familiarization training is to explain the configuration, functions, limitations, controls, displays, alerts and indications of the specifically installed INS.

2.2 It should allow an OOW, unfamiliar with the ship's equipment but trained in the generic use of INS, to become rapidly acquainted with the installed system.

2.3 Emphasis should be given on producing effective familiarization training that can be completed in the shortest possible time. This will help maximize the probability that the process will be properly completed.

2.4 For a typical system it may be expected that it will take no longer than 30 minutes for a qualified user to undertake INS familiarization training. This time does not include the time taken to become familiar with major interconnected functionality, such as radar and ECDIS.

2.5 Familiarization can take a number of forms. The following are illustrative examples but other effective methods of training are acceptable:

- computer-based training on the ship. Such training may also be appropriate to be used remotely (e.g., on a notebook computer of a new user, prior to joining the ship)
- a training mode on the fitted INS

- a training video (on tape, disk or solid state memory), supported by a self-training manual
- a stand-alone self-training manual.

2.6 The topics that need to be covered are listed in section 3 below.

2.7 The functions of the INS should be broken down into logical top-down descriptions.

2.8 The familiarization material does not replace the User Instruction Manual. Appropriate references can be made to it from within the material. This may be beneficial when describing more detailed operations or to reference large diagrams.

2.9 For lesser used, non-critical functions it is only necessary to reference the relevant section in the User Instruction Manual, rather than them having to be included in their entirety in the familiarization material. Ideally, material is provided for such functions but with instructions to enable the user to skip these sections, as appropriate, until a more convenient opportunity.

2.10 Familiarization is best given within the context of the ship's normal bridge operating procedures. These procedures are normally contained within the Ship Operating Manual or equivalent document.

### **3 Familiarization training framework**

#### **3.1 General description**

3.1.1 This should start with a top-level functionality description including the identification of the types of automatic control that are provided (if any).

3.1.2 A description should be given of the connected equipment that forms the INS, to a level that a normal user would require for operation (not maintenance). This description could be in the form of a block diagram.

3.1.3 The general philosophy of operation should be explained, including a description of the human machine interfaces. If automatic modes of operation are provided a general description of these is also required.

3.1.4 The physical location of all workstations and other displays and controls should be identified.

3.1.5 A description of the CCRS and identification of the CCRS (s) should be given. If more than one point is defined, the intended use of all individual reference points should be given, together with an explanation of how a point is selected and indicated.

3.1.6 For all navigation parameters the manual and/or automatic backup and fall-back sequences when sensors become inoperable should be explained.

3.1.7 Instructions on setting basic display controls such as brightness, contrast, colour and day/night colour schemes should be given.

### 3.2 Detailed operation (normal conditions)

3.2.1 The functions described should include all systems and subsystems that are part of the INS and any ship's functionality that can be controlled through the INS, such as the:

- navigation subsystems
- steering controls
- propulsion controls

3.2.2 Depending on the type of INS fitted, the following specific information should be given:

- detailed operation of the automatic controls that are included, such as track controller functions
- the method(s) used to switch between operating modes and how to revert to manual operation
- the method of accessing the main/top-level display of all workstations and other INS equipment, including instructions to rapidly revert to such a display from whatever configuration has been set previously
- description of the displayed information on non-controllable displays, (if included within the installed configuration), e.g., a basic conning display
- the route planning and checking functions that are available
- the route monitoring functions that are available
- the operation of the Bridge navigational watch alarm facility, if fitted.

3.2.3 Where appropriate, for each function, the following information should be included:

- function name
- function description
- description of menu structure and displayed information
- description of operator controls
- required manually input information, if any
- description of how to configure task stations and user-modifiable displays and other data to user preferences. The method to rapidly revert to 'sensible' defaults must be given, even if it is considered that user configurations are not essential functions that need to be included as part of the familiarization material
- description of alerts and indicators, including mode indication. Procedural action on receiving alarms and warnings is covered in section 3.3
- the access of latency, integrity and accuracy data.

### 3.3 Detailed operation (abnormal and emergency conditions)

3.3.1 The following information should be included:

- details of conditions in which any automatic mode should not be used or should be used with certain restrictions or cautions
- identification of major failure alarms and warnings
- procedures involving the INS to follow on encountering alarms and warnings, other major failures, incidents or accidents, including:
  - (i) reversion to a mode with lesser automation or to manual operation
  - (ii) emergency disabling of functions that are causing or worsening the emergency.

### Appendix 3

## PROPOSED MODULAR STRUCTURE FOR RADAR PERFORMANCE STANDARDS (RESOLUTION MSC.192(79))

Module	Paragraph of MSC.192(79)	Contents
<b>A</b>		<b>Sensor and Technical Requirements</b>
<b>A1</b>		<b>Sensor and Signals</b>
	5.1	Frequency
	5.3.3.1-3	Signal processing
	5.3.4	SARTs and radar beacons
	5.6	Roll and pitch (Detection)
<b>A2</b>		<b>Target detection, discrimination and accuracy</b>
	5.2	Range and bearing accuracy
	5.3	Detection
	5.3.1.1	Detection in clear conditions
	5.3.1.2	Detection at close ranges
	5.3.1.3.1-4	Detection in clutter conditions
	5.4	Minimum range
	5.5	Range and bearing discrimination
<b>A3</b>		<b>Design and Installation</b>
	5.8	Radar availability delay
	5.9.1	CCRP and off-set compensation
	7.1.1 part	Design for maximum availability
	7.1.2	Record operational hours
	7.3	Transmitter mute over preset sector
	7.4	Antenna
	7.5	Radar system installation
<b>B</b>		<b>Operational Requirements</b>
<b>B1</b>		<b>Display and operation</b>
	2 Application	Table 1: Screen size
	5.3.2	Gain and anti-clutter functions
	5.7	(Means for) Radar performance optimization and tuning
	5.9.2-5.9.4	Radar measurements - CCRP
	5.10	Display range scales
	5.11	Fixed rings
	5.12	Variable range markers
	5.13	Bearing scale
	5.14	Heading line
	5.15	EBLs
	5.16	Parallel Index lines
	5.17	Remote measurement of range and bearing
	5.18	User cursor
	5.19	Azimuth stabilization
	5.20	Display mode of the radar picture
	5.21	Off-centring
	5.22	Ground and sea stabilization
	5.23	Target trails and past positions
	5.35	Integrating multiple radars
	7.6.2	Target simulation for training

<b>B2</b>		<b>Target information (tracking and AIS)</b>
	2 Application	Table 1: Screen size
	5.24	Presentation
	5.25	Target (radar) tracking and acquisition
	5.26	AIS reported targets
	5.27	AIS graphical presentation
	5.28	AIS and radar target data
	5.29	Operational alarms
	5.30	AIS and radar target association
	5.31	Trial manoeuvre
<b>B3</b>		<b>Chart and route overlay</b>
	5.32	Display of maps, navigation lines and routes
	5.33	Display of charts
<b>B4</b>		<b>Failure, back-up and fallback arrangements</b>
	5.34.1	Picture freeze alarm
	5.34.2	Signal or sensor failure
	7.1 part	Design to facilitate simple fault diagnosis
	9	Backup and failure arrangement
<b>B5</b>		<b>Ergonomic Criteria</b>
	5.34 para 1	Presentation of alarms
	6.1	Operational controls
	6.2	Display presentation
	7.2	Display device requirements
	7.6.1	(General:) Design for simple use by trained person
<b>C</b>		<b>Interfacing</b>
	8.1	Input data
	8.2	Input data integrity and latency
	8.3	Output data
<b>D</b>		<b>Documentation</b>
	5.3.1.3.5	Degradation in performance
	5.3.3.4	Basic aspects of signal processing
	6.3	Instructions and documentation
	7.1.3	Routine servicing and restricted life components

**Appendix 4**

**PROPOSED MODULAR STRUCTURE FOR TRACK CONTROL PERFORMANCE STANDARDS (RESOLUTION MSC.74(69), ANNEX 2)**

<b>Module</b>	<b>Modular structure with paragraphs of track control PS (MSC.74(69))</b>
<b>B</b>	<b>Operational Requirements</b>
<b>B1</b>	<b>Functionality</b> 5 Operational requirements
<b>B2</b>	<b>Operation</b> 6 Ergonomic criteria
<b>B3</b>	<b>Connection to sensors</b> 7.1 Sensors
<b>B4</b>	<b>Failure, back-up and fallback arrangements</b> 8 Fallback arrangements
<b>C</b>	<b>Interfacing</b> 7.2 Status Information 7.3 Standards



## Appendix 5

### CLASSIFICATION OF ALERTS

For the purpose of transferring requirements for alarms and indications of existing individual performance standards into 3 priority classes of alerts within the INS performance standard, the alarms of the individual performance standards are subdivided into two classes of alarms being alarms and warnings in the INS performance standard.

Table 1: Classification of INS alerts as specified in these performance standards

Source	Cause	Alarm	Warn.	Caut.	Categ. A	Categ. B
INS	System function lost	X				X
	Integrity verification not possible (5.5.5)		X			X
	Invalid information for functions in use (5.3.1.2)		X			X
	Invalid information for functions not in use (5.3.1.2)			X		X
	Different thresholds entered (5.4.3.3)			X		X
	Loss of system communication (12.6.2)		X			X

**Table 2: Classification for INS for alerts specified in the individual equipment performance standards**

Source	Cause	Alarm	Warn.	Caut.	Categ. A	Categ. B
Heading control systems	Failure or reduction in power supply	X				X
	Off heading alarm		X		X	
	Heading monitor (deviation from second heading source)		X			X
Track Control systems	Early course change indication (track control via waypoints)		X		X	
	Actual course change indication		X		X	
	Wheel over line (actual course change indication not acknowledged) 1) alarm 2) back-up navigator alarm	X			X	
	Failure or reduction in power supply		X			X
	Position monitor		X		X	
	Heading monitor		X		X	
	Sensor failure (heading, position, speed) 1) alarm 2) back-up navigator alarm	X				X
	Cross-track alarm	X			X	
	Course difference (heading deviates from track course)		X		X	
Low speed alarm		X			X	
ECDIS	Positioning system failure		X			X
	Crossing safety contour	X			X	
	Deviation from planned route – off-track alarm	X			X	
	Area with special conditions – cross the boundary		X*	X*	X	
	Approach to critical point		X		X	
	Different geodetic datum		X			X
	System malfunction (system malfunction of backup device)		X			X
RADAR/AIS	Target capacity		X		X	
	CPA/TCPA alarm	X			X	
	Acquisition/activation zone		X		X	
	Lost target alarm		X		X	
	Failure of any signal or sensor in use		X			X
GNSS	HDOP exceeded			X		X
	No calculation of position					X
	Loss of position		X			X
	Loss of differential signal		X			X
	Differential corrections not applied		X			X
	Differential integrity status		X			X

Echo sounder	Depth below keel alarm	X			X	
	Failure or reduction in power supply		X			X
Gyro compass	System fault		X			X
Bridge watch alarm	Malfunction		X			X
	Power supply failure		X			X

X\* : selected by the user.

## Appendix 6

### DEFAULT DISPLAY CONFIGURATIONS

As required in paragraph 9.2.1, the INS should offer as basic operational settings the following default display configurations for the tasks route monitoring and collision avoidance.

#### Task “Route monitoring”

Function	Setting
Display category	ECDIS Standard display
Selected sea area	Around own ship with appropriate off-set
Range	3 nm
Orientation	True motion, north-up
Manual updates	If applied
Operator’s notes	If applied
position sensor	GNSS (system position provided by INS)
Past track	On
Selected route	Last selected route, including route parameters
Look-ahead time	6 min

**Task “Collision avoidance”**

<b>Function</b>	<b>Setting</b>
Band	X-band, if selectable
Gain and anti-clutter functions	Automatically optimized
Tuning	Automatically optimized
Range	6 nm
Fixed rings	Off
VRMs	One VRM on
EBLs	One EBL on
Parallel index lines	Off or last setting, if applied
Display mode of the radar picture	True motion, north-up
Off-centring	Appropriate look-ahead
Target trails	On
Past positions	Off
Radar target tracking	Continued
Vector mode	Relative
Vector time	6 min
Automatic radar target acquisition	Off
Graphical AIS reported target display	On
Radar and AIS Target fusion	On
Operational alarms (except collision warnings)	Off
Collision warnings	On (limits CPA 2 nm; TCPA 12 min)
Display of maps, navigation lines and routes	Last setting
Display of charts	Off

\*\*\*

**ANNEX 31**

**RESOLUTION MSC.253(83)**

**(adopted on 8 October 2007)**

**ADOPTION OF THE PERFORMANCE STANDARDS FOR NAVIGATION LIGHTS,  
NAVIGATION LIGHT CONTROLLERS AND ASSOCIATED EQUIPMENT**

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO resolution A.886(21), by which the Assembly resolved that the function of adopting performance standards and technical specifications, as well as amendments thereto shall be performed by the Maritime Safety Committee and/or the Marine Environment Protection Committee, as appropriate, on behalf of the Organization,

RECALLING FURTHER Rule 21, Rule 23 and Rule 34(b) of the Convention on the International Regulations for Preventing Collisions at sea (COLREGs), 1972, concerning the requirements on the use of Navigation Lights,

NOTING that that the purpose of Navigation Lights is to identify ships and to notify their intentions at sea and that the purpose of Navigation Light Controllers is to provide means of control and monitoring of the status of navigation lights onboard the vessel to the Officer of the Watch (OOW),

RECOGNIZING the need to develop performance standards for Navigation Lights, Navigation Light Controllers and associated equipment to be fitted onboard vessels in accordance with COLREGs,

HAVING CONSIDERED the recommendation made by the Sub-Committee on Safety of Navigation at its fifty-third session, and the Maritime Safety Committee at its eighty-third session,

1. ADOPTS the Recommendation on Performance Standards for Navigation Lights, Navigation Light Controllers and associated equipment, set out in the annex to the present resolution;
2. RECOMMENDS Governments ensure that Navigation Lights, Navigation Light Controllers and associated equipment installed on or after 1 January 2009 conform to performance standards not inferior to those specified in the annex to the present resolution.

## ANNEX

### **PERFORMANCE STANDARDS FOR NAVIGATION LIGHTS, NAVIGATION LIGHT CONTROLLERS AND ASSOCIATED EQUIPMENT**

#### **1 Scope**

These performance standards apply to Navigation Lights (NLs), Navigation Light Controllers (NLCs) and associated equipment to be fitted onboard vessels in accordance with COLREGs. These equipment should be designed, tested, installed and maintained based on these standards, taking into account that the purpose of Navigation Lights is to identify ships and to notify their intentions at sea and that the purpose of a Navigation Lights Controller is to provide means of control and monitoring of the status of navigation lights onboard the vessel to the Officer of the Watch (OOW).

#### **2 Application**

In addition to the general requirements set out in resolution A.694(17)<sup>1</sup>, navigation lights, navigation lights controllers and associated equipment should meet the requirements of these standards.

#### **3 Definitions**

3.1 *Associated equipment* means equipment necessary for the operation of NLs and NLCs.

3.2 *COLREGs* means Convention on the International Regulations for Preventing Collisions at Sea, 1972, including their annexes.

3.3 *Lamp* means a source producing light, including incandescent sources, Light Emitting Diodes (LED) and other non-incandescent sources.

3.4 *Length* means the length overall.

3.5 *Navigation Light (NL)* means the following lights:

- .1 masthead light, sidelights, sternlight, towing light, all-round light, flashing light as defined in Rule 21 of COLREGs;
- .2 all-round flashing yellow light required for air-cushion vessels by Rule 23 of COLREGs; and
- .3 manoeuvring light required by Rule 34(b) of COLREGs.

The light source includes lamps, its housing, placing and means for delimiting the angle of lighting.

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<sup>1</sup> Refer to publication IEC 60945.

3.6 *Navigation Light Controller (NLC)* means a device enabling operational control of a Navigation Light.

3.7 *SOLAS* means the International Convention for the Safety of Life at Sea, 1974, as amended.

## **4 Navigation Lights**

### **4.1 General**

4.1.1 Unless expressly required otherwise, NLs should appear steady and non-flashing.

4.1.2 Lenses of NLs should be produced in a robust, non-corroding material, which should ensure a long-term durability for the optical qualities of the lens.

4.1.3 A masthead light, sidelights and a sternlight installed on board a ship not less than 50 m in length should be duplicated or be fitted with duplicate lamps.

4.1.4 Only lamps specified by the manufacturer should be used in each particular NL to avoid reduction of NL's performance due to unsuitable lamps.

4.1.5 A sufficient number of spare lamps for NLs should be carried onboard, taking into account the duplication of NLs or lamps, as appropriate.

### **4.2 Luminous intensity distribution**

4.2.1 In the horizontal directions where decrease of luminous intensity to "practical cut-off" is required by section 9 of Annex I to COLREGs, the luminous intensity should be no more than 10% of the average luminous intensity within the prescribed sector for vessels not less than 12 m in length.

4.2.2 Within the prescribed sector in which the minimum luminous intensity is required by section 9 of Annex I to COLREGs, the horizontal intensity distribution of the light should be uniform in such a way that the measured minimum and maximum luminous intensity values (in candelas) do not differ by more than a factor of 1.5, to avoid luminous intensity changes which may result in the appearance of a flashing light for vessels not less than 12 m in length.

4.2.3 Within the prescribed sector in which the minimum luminous intensity is required by section 10 of Annex I to COLREGs, the vertical intensity distribution of the light should be uniform in such a way that the measured minimum and maximum luminous intensity values (in candelas) do not differ by more than a factor of 1.5, to avoid luminous intensity changes which may result in the appearance of a flashing light for vessels not less than 12 m in length.

### **4.3 Special requirements for lights using LEDs**

The luminous intensity of LEDs gradually decreases while the electricity consumption remains unchanged. The rate of decrease of luminous intensity depends on the output of LEDs and temperatures of LEDs. To prevent shortage of luminous intensity of LEDs:



.1 An alarm function should be activated to notify the Officer of the Watch that the luminous intensity of the light reduces below the level required by COLREGs;

or

.2 LEDs should only be used within the lifespan (practical term of validity) specified by the manufacturer to maintain the necessary luminous intensity of LEDs. The lifespan of LEDs should be determined and clearly notified by the manufacturer based on the appropriate test results on the decrease of luminous intensity of the LEDs under various temperature conditions and on the temperature condition of LEDs in the light during operation, taking the appropriate margin into account.

## **5 Navigation Light Controller**

5.1 An NLC should facilitate ON/OFF controls of individual NLs.

5.2 An NLC should provide visual indications of “ON”/“OFF” status of NLs.

5.3 Pre-programmed NL group settings may be provided.

5.4 An NLC on board a ship not less than 50 m in length should provide the alarm for:

.1 failure of power supply to NLs; and

.2 failure, including short circuit, of a lamp which is switched ON.

5.5 An NLC on board a ship not less than 50 m in length should present the status of all NLs in a logical presentation, meeting the requirements set out in resolution MSC.191(79), *e.g.*, by symbol marks on a display.

5.6 All indicators of an NLC should be dimmable to ensure easy reading without disturbing the night vision of the Officer of the Watch. The brightness of a display, if fitted, of an NLC should be controllable.

5.7 An NLC should support the use of standardized serial interfaces for marine navigation and communication systems<sup>2</sup>.

5.8 The NLC should have a bi-directional interface to transfer alarms to external systems and receive acknowledgements of alarms from external systems. The interface should comply with the relevant international standards<sup>2</sup>.

## **6 Power supply and fallback arrangements**

6.1 Each NL should be connected, via separate circuits, to a NLC located on the bridge in order to avoid any NL failure, including short circuit, that affect any other NLs connected to the NLC. A NLC may only be additionally connected to special signal lights such as lights required by canal authorities.

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<sup>2</sup> Refer to IEC 61162 series.

6.2 It should be possible to operate the NLC and NLs when supplied by an emergency source of electrical power in accordance with the appropriate requirements of chapter II-1 of the 1974 SOLAS Convention, as amended.

6.3 Automatic switch over to the alternative source of power is permitted.

## **7 Associated equipment**

Screens for sidelight may be a part of a ship's structure. All associated equipment should be produced in a robust, non-corroding material, which should ensure a long-term durability for the relevant operation.

## **8 Marking**

Each NL should be marked with:

- .1 the manufacturers name or symbol, and designation of type;
- .2 the type/category of the NL in accordance with COLREGs;
- .3 serial and certificate number;
- .4 head line directions;
- .5 range in nautical miles; and
- .6 nominal wattage of the light source in watts, if different values lead to different ranges.

## **9 Installation of navigation lights and associated equipment**

In addition to the relevant requirements of COLREGs, the installation of NLs and associated equipment should comply with the following requirements:

- .1 The manufacturer of NLs should provide guidance on the installation of NLs and the design and installation of screens for sidelights, as required by COLREGs;
- .2 NLs should be installed in such a way so as to prevent navigation watch keeping personnel from direct or reflected undue glare;
- .3 NLs should be installed in such way as to ensure that the light shows over the required arcs of visibility, and should satisfy the required vertical separation and location requirements in all normal operating trim conditions; and
- .4 Equipment for operation of the manoeuvring light, mounted in accordance with COLREGs, should be located at conning position. The equipment may be located near the steering wheel or the autopilot/track control.

## **10 Maintenance**

10.1 NLs should be so designed that the lamp specified by the manufacturer can be efficiently and readily replaced, without elaborate recalibration or readjustment.

10.2 NLs, NLCs and associated equipment should be so constructed and installed, as necessary, that they are readily accessible for inspection and maintenance purposes.

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**ANNEX 33**

**DRAFT MSC RESOLUTION ON THE  
CODE OF THE INTERNATIONAL STANDARDS AND RECOMMENDED  
PRACTICES FOR A SAFETY INVESTIGATION INTO A MARINE CASUALTY  
OR MARINE INCIDENT (CASUALTY INVESTIGATION CODE)**

THE MARITIME SAFETY COMMITTEE,

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

NOTING with concern that, despite the best endeavours of the Organization, casualties and incidents resulting in loss of life, loss of ships and pollution of the marine environment continue to occur,

NOTING ALSO that the safety of seafarers and passengers and the protection of the marine environment can be enhanced by timely and accurate reports identifying the circumstances and causes of marine casualties and incidents,

NOTING FURTHER the importance of the United Nations Convention on the Law of the Sea, done at Montego Bay on 10 December 1982, and of the customary international law of the sea,

NOTING IN ADDITION the responsibilities of flag States under the provisions of the International Convention for the Safety of Life at Sea, 1974 (regulation I/21) (hereinafter referred to as the Convention), the International Convention on Load Lines, 1966 (article 23) and the International Convention for the Prevention of Pollution from Ships, 1973 (article 12), to conduct casualty investigations and to supply the Organization with relevant findings,

CONSIDERING the need to ensure that all very serious marine casualties are investigated,

CONSIDERING ALSO the Guidelines on fair treatment of seafarers in the event of maritime accident (resolution A.987(24)),

ACKNOWLEDGING that the investigation and proper analysis of marine casualties and incidents can lead to greater awareness of casualty causation and result in remedial measures, including better training, for the purpose of enhancing safety of life at sea and protection of the marine environment,

RECOGNIZING the need for a code to provide, as far as national laws allow, a standard approach to marine casualty and incident investigation with the objective of preventing marine casualties and incidents in the future,

RECOGNIZING ALSO the international nature of shipping and the need for co-operation between Governments having a substantial interest in a marine casualty or incident for the purpose of determining the circumstances and causes thereof,

NOTING resolution MSC....(...) by which it adopted amendments to chapter XI-1 of the Convention to make parts I and II of the Code of the International Standards and Recommended Practices for a Safety Investigation into a Marine Casualty or Marine Incident (Casualty Investigation Code) mandatory under the Convention,

HAVING CONSIDERED, at its [eighty-fourth] session, the text of the proposed Casualty Investigation Code,

1. ADOPTS the Code of the International Standards and Recommended Practices for a Safety Investigation into a Marine Casualty or Marine Incident (Casualty Investigation Code), set out in the Annex to the present resolution;
2. INVITES Contracting Governments to the SOLAS Convention to note that the Code will take effect on ..... upon entry into force of the amendments to the SOLAS Convention;
3. REQUESTS the Secretary-General of the Organization to transmit certified copies of the present resolution and the text of the Code contained in the Annex to all Contracting Governments to the SOLAS Convention;
4. FURTHER REQUESTS the Secretary-General of the Organization to transmit copies of the present resolution and the text of the Code contained in the Annex to all Members of the Organization which are not Contracting Governments to the SOLAS Convention;
5. SUPERSEDES resolution A.849(20).

## ANNEX

**CODE OF THE INTERNATIONAL STANDARDS AND RECOMMENDED  
PRACTICES FOR A SAFETY INVESTIGATION INTO A MARINE CASUALTY  
OR MARINE INCIDENT (CASUALTY INVESTIGATION CODE)**

**Table of Contents**

	<b>Page</b>
Foreword	4
Part I – General Provisions	6
Chapter 1 – Purpose	6
Chapter 2 – Definitions	7
Chapter 3 – Application of Chapters in Part II and III	10
Part II – Mandatory Standards	11
Chapter 4 – Marine Safety Investigation Authority	11
Chapter 5 – Notification	11
Chapter 6 – Requirement to Investigate Very Serious Casualties	12
Chapter 7 – Flag State’s Agreement With Another Substantially Interested State to Conduct a Marine Safety Investigation	12
Chapter 8 – Powers of an Investigation	13
Chapter 9 – Parallel investigations	13
Chapter 10 – Co-operation	13
Chapter 11 – Investigation not to be Subject to External Direction	13
Chapter 12 – Obtaining Evidence from Seafarers	14
Chapter 13 – Draft Marine Safety Investigation Reports	14
Chapter 14 – Marine Safety Investigation Reports	15
Part III – Recommended Practices	16
Chapter 15 – Administrative Responsibilities	16
Chapter 16 – Principles of Investigation	16
Chapter 17 – Investigation of Marine Casualties (other than Very Serious Marine Casualties) and Marine Incidents	18
Chapter 18 – Factors That Should be Taken Into Account When Seeking Agreement Under Chapter 7 of Part II	18
Chapter 19 – Acts of Unlawful Interference	19
Chapter 20 – Notification to Parties Involved and Commencement of an Investigation	19
Chapter 21 – Co-ordinating an Investigation	19
Chapter 22 – Collection of Evidence	21
Chapter 23 – Confidentiality of Information	21
Chapter 24 – Protection for Witnesses and Involved Parties	23
Chapter 25 – Draft and Final Report	23
Chapter 26 – Re-Opening an Investigation	24

***International Standards and Recommended Practices for a Safety Investigation into a Marine Casualty or Marine Incident***

**Foreword**

1 This Code incorporates and builds on the best practices in Marine Casualty and Marine Incident investigation that were established by the Code for the Investigation of Marine Casualties and Incidents, adopted in November 1997 by the International Maritime Organization (the Organization), by resolution A.849(20). The Code for the Investigation of Marine Casualties and Incidents sought to promote co-operation and a common approach to Marine Casualty and Marine Incident investigations between States.

*Background*

2 The Organization has encouraged co-operation and recognition of mutual interest through a number of resolutions. The first was resolution A.173(ES.IV) (Participation in Official Inquiries into Maritime Casualties) adopted in November 1968. Other resolutions followed including: resolution A.322 (The Conduct of Investigations into Casualties) adopted in November in 1975; resolution A.440(XI) (Exchange of Information for Investigations into Marine Casualties) and resolution A.442(XI) (Personnel and Material Resource Needs of Administrations for the Investigation of Casualties and the Contravention of Conventions), both adopted in November 1979; resolution A.637(16) (Co-operation in Maritime Casualty Investigations) adopted in 1989.

3 These individual resolutions were amalgamated and expanded by the Organization with the adoption of the Code for the Investigation of Marine Casualties and Incidents. Resolution A.884(21) (Amendments to the Code for the Investigation of Marine Casualties and Incidents resolution A.849(20)) adopted in November 1999, enhanced the Code by providing guidelines for the investigation of human factors.

4 The International Convention for the Safety of Life at Sea (SOLAS), 1948, included a provision requiring flag State Administrations to conduct investigations into any casualty suffered by a ship of its flag if an investigation may assist in identifying regulatory issues as a contributing factor. This provision was retained in the 1960 and 1974 SOLAS Conventions. It was also included in the International Convention on Load Lines, 1966. Further, flag States are required to inquire into certain Marine Casualties and Marine Incidents occurring on the High Seas<sup>1</sup>.

5 The sovereignty of a coastal State extends beyond its land and Inland Waters to the extent of its Territorial Sea<sup>2</sup>. This jurisdiction gives the coastal State an inherent right to investigate Marine Casualties and Marine Incidents connected with its territory. Most national Administrations have legal provisions to cover the investigation of a shipping incident within its Inland Waters and Territorial Sea, regardless of the flag.

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<sup>1</sup> Reference is made to the United Nations Convention on the Law of the Sea (UNCLOS), article 94(7).

<sup>2</sup> Reference is made to the United Nations Convention on the Law of the Sea (UNCLOS), article 2.

*Treatment of Seafarers*

6 Most recently, the International Labour Organization's Maritime Labour Convention, 2006 (which has not yet come into force), provides a provision for the investigation of some Serious Marine Casualties as well as setting out working conditions for seafarers. Recognizing the need for special protection for seafarers during an investigation, the Organization adopted, in December 2005, the "Guidelines on Fair Treatment of Seafarers in the Event of a Maritime Accident" through resolution A.987(24). The Guidelines were promulgated by the IMO and the ILO on 1 July 2006.

*Adoption of the Code*

7 Since the adoption of the first SOLAS Convention, there have been extensive changes in the structure of the international maritime industry and changes in international law. These changes have potentially increased the number of States with an interest in the process and outcomes of Marine Safety Investigations, in the event of a Marine Casualty or Marine Incident, increasing the potential for jurisdictional and other procedural differences between affected States.

8 This Code, while it specifies some mandatory requirements, recognizes the variations in international and national laws in relation to the investigation of Marine Casualties and Marine Incidents. The Code is designed to facilitate objective Marine Safety Investigations for the benefit of flag States, coastal States, the Organization and the shipping industry in general.



## **PART I**

### **GENERAL PROVISIONS**

#### **Chapter 1**

##### **PURPOSE**

- 1.1 The objective of this Code is to provide a common approach for States to adopt in the conduct of Marine Safety Investigations into Marine Casualties and Marine Incidents. Marine Safety Investigations do not seek to apportion blame or determine liability. Instead a Marine Safety Investigation, as defined in this Code, is an investigation conducted with the objective of preventing Marine Casualties and Marine Incidents in the future. The Code envisages that this aim will be achieved through States:
- (a) applying consistent methodology and approach, to enable and encourage a broad ranging investigation, where necessary, in the interests of uncovering the Causal Factors and other safety risks; and
  - (b) providing reports to the Organization to enable a wide dissemination of information to assist the international marine industry to address safety issues.
- 1.2 A Marine Safety Investigation should be separate from, and independent of, any other form of investigation. However, it is not the purpose of this Code to preclude any other form of investigation, including investigations for action in civil, criminal and administrative proceedings. Further, it is not the intent of the Code for a State or States conducting a Marine Safety Investigation to refrain from fully reporting on the Causal Factors of a Marine Casualty or Marine Incident because blame or liability, may be inferred from the findings.
- 1.3 This Code recognizes that under the Organization instruments, each flag State has a duty to conduct an investigation into any casualty occurring to any of its ships, when it judges that such an investigation may assist in determining what changes in the present regulations may be desirable, or if such a casualty has produced a major deleterious effect upon the environment. The Code also takes into account that a flag State shall<sup>3</sup> cause an inquiry to be held, by or before a suitably qualified person or persons into certain Marine Casualties or Marine Incidents of navigation on the High Seas. However, the Code also recognizes that where a Marine Casualty or Marine Incident occurs within the territory, including the Territorial Sea, of a State, that State has a right<sup>4</sup> to investigate the cause of any such Marine Casualty or Marine Incident which might pose a risk to life or to the environment, involve the coastal State's search and rescue authorities, or otherwise affect the coastal State.

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<sup>3</sup> Reference is made to the United Nations Convention on the Law of the Sea (UNCLOS), article 94.

<sup>4</sup> Reference is made to the United Nations Convention on the Law of the Sea (UNCLOS), article 2.

## Chapter 2

### DEFINITIONS

When the following terms are used in the Mandatory Standards and Recommended Practices for Marine Safety Investigations they have the following meaning.

**AGENT** means any person, natural or legal, engaged on behalf of the owner, charterer or operator of a ship, or the owner of the cargo, in providing shipping services, including managing arrangements for the ship being the subject of a Marine Safety Investigation.

**CAUSAL FACTOR** means actions, omissions, events or conditions, without which:

- (a) the Marine Casualty or Marine Incident would not have occurred; or
- (b) adverse consequences associated with the Marine Casualty or Marine Incident would probably not have occurred or have been as serious;
- (c) another action, omission, event or condition, associated with an outcome in paragraph (a) or (b), would probably not have occurred.

**COASTAL STATE** means a State in whose territory, including its Territorial Sea, a Marine Casualty or Marine Incident occurs.

**EXCLUSIVE ECONOMIC ZONE** means the Exclusive Economic Zone as defined by Article 55 of the United Nations Convention on the Law of the Sea.

**FLAG STATE** means a State whose flag a ship is entitled to fly.

**HIGH SEAS** means the High Seas as defined in Article 86 of the United Nations Convention on the Law of the Sea.

**INTERESTED PARTY** means an organization, or individual, who, as determined by the Marine safety Investigating State(s), has significant interests, rights or legitimate expectations with respect to the outcome of a Marine Safety Investigation.

**INTERNATIONAL SAFETY MANAGEMENT (ISM) CODE** means the International Management Code for the Safe Operation of Ships and for Pollution Prevention as adopted by the Organization by resolution A.741(18), as amended.

**MARINE CASUALTY** means an event, or a sequence of events, that has resulted in any of the following which has occurred directly in connection with the operations of a ship:

1. the death of, or serious injury to, a person;
2. the loss of a person from a ship;
3. the loss, presumed loss or abandonment of a ship;

4. material damage to a ship;
5. the stranding or disabling of a ship, or the involvement of a ship in a collision;
6. material damage to marine infrastructure external to a ship, that could seriously endanger the safety of the ship, another ship or an individual; or
7. Severe Damage to the Environment, or the potential for Severe Damage to the Environment, brought about by the damage of a ship or ships.

However, a Marine Casualty does not include a deliberate act or omission, with the intention to cause harm to the safety of a ship, an individual or the environment.

**MARINE INCIDENT** means an event, or sequence of events, other than a Marine Casualty, which has occurred directly in connection with the operations of a ship that endangered, or, if not corrected, would endanger the safety of the ship, its occupants or any other person or the environment.

However, a Marine Incident does not include a deliberate act or omission, with the intention to cause harm to the safety of a ship, an individual or the environment.

**MARINE SAFETY INVESTIGATION** means an investigation or inquiry (however referred to by a State), into a Marine Casualty or Marine Incident, conducted with the objective of preventing Marine Casualties and Marine Incidents in the future. The investigation includes the collection of, and analysis of, evidence, the identification of Causal Factors and the making of safety recommendations as necessary.

**MARINE SAFETY INVESTIGATION REPORT** means a report that contains:

- (a) a summary outlining the basic facts of the Marine Casualty or Marine Incident and stating whether any deaths, injuries or pollution occurred as a result;
- (b) the identity of the flag State, owners, operators, the company as identified in the safety management certificate, and the classification society (subject to any national laws concerning privacy);
- (c) where relevant the details of the dimensions and engines of any ship involved, together with a description of the crew, work routine and other matters, such as time served on the ship;
- (d) a narrative detailing the circumstances of the Marine Casualty or Marine Incident;
- (e) analysis and comment on the Causal Factors including any mechanical, human and organizational factors;
- (f) a discussion of the Marine Safety Investigation's findings, including the identification of safety issues, and the Marine Safety Investigation's conclusions; and

- (g) where appropriate, recommendations with a view to preventing future Marine Casualties and Marine Incidents.

**MARINE SAFETY INVESTIGATION AUTHORITY** means an authority in a State, responsible for conducting investigations in accordance with this Code.

**MARINE SAFETY INVESTIGATING STATE(S)** means the flag State or, where relevant, the State or States that take the responsibility for the conduct of the Marine Safety Investigation as mutually agreed in accordance with this Code.

**MARINE SAFETY RECORD** means the following types of records collected for a Marine Safety Investigation:

- (a) all statements taken for the purpose of a Marine Safety Investigation;
- (b) all communications between persons pertaining to the operation of the ship;
- (c) all medical or private information regarding persons involved in the Marine Casualty or Marine Incident;
- (d) all records of the analysis of information or evidential material acquired in the course of a Marine Safety Investigation;
- (e) information from the voyage data recorder.

**MATERIAL DAMAGE** in relation to a Marine Casualty means:

- (1) Damage that:
  - (a) significantly affects the structural integrity, performance or operational characteristics of marine infrastructure or a ship; and
  - (b) requires major repair or replacement of a major component or components.or
- (2) destruction of the marine infrastructure or ship.

**SEAFARER** means any person who is employed or engaged or works in any capacity on board a ship.

**SERIOUS INJURY** means an injury which is sustained by a person, resulting in incapacitation where the person is unable to function normally for more than 72 hours, commencing within seven days from the date when the injury was suffered.

**SEVERE DAMAGE TO THE ENVIRONMENT** means damage to the environment which, as evaluated by the State(s) affected, or the flag State, as appropriate, produces a major deleterious effect upon the environment.

***SUBSTANTIALLY INTERESTED STATE*** means a State:

1. which is the flag State of a ship involved in a Marine Casualty or Marine Incident;  
or
2. which is the coastal State involved in a Marine Casualty or Marine Incident; or
3. whose environment was severely or significantly damaged by a Marine Casualty (including the environment of its waters and territories recognized under international law); or
4. where the consequences of a Marine Casualty or Marine Incident caused, or threatened, serious harm to that State or to artificial islands, installations, or structures over which it is entitled to exercise jurisdiction; or
5. where, as a result of a Marine Casualty, nationals of that State lost their lives or received serious injuries; or
6. that has important information at its disposal that the Marine Safety Investigating State(s) consider useful to the investigation; or
7. that for some other reason establishes an interest that is considered significant by the Marine Safety Investigating State(s).

***TERRITORIAL SEA*** means Territorial Sea as defined by Section 2 of Part II of the United Nations Convention on the Law of the Sea.

***VERY SERIOUS MARINE CASUALTY*** means a Marine Casualty involving the total loss of the ship or a death or Severe Damage to the Environment.

### **Chapter 3**

#### **APPLICATION OF CHAPTERS IN PARTS II AND III**

- 3.1 Part II of this Code contains Mandatory Standards for Marine Safety Investigations. Some clauses apply only in relation to certain categories of Marine Casualties and are mandatory only for Marine Safety Investigations into those Marine Casualties.
- 3.2 Clauses in part III of this Code may refer to clauses in this part that apply only to certain Marine Casualties. The clauses in part III may recommend that such clauses be applied in Marine Safety Investigations into other Marine Casualties or Marine Incidents.

## PART II

### MANDATORY STANDARDS

#### Chapter 4

#### MARINE SAFETY INVESTIGATION AUTHORITY

- 4.1 The Government of each State must provide the Organization with detailed contact information of the Marine Safety Investigation Authority(ies) carrying out Marine Safety Investigations within their State.

#### Chapter 5

#### NOTIFICATION

- 5.1 When a Marine Casualty occurs on the High Seas or in an Exclusive Economic Zone, the flag State of a ship, or ships, involved, shall notify other Substantially Interested States as soon as is reasonably practicable.
- 5.2 When a Marine Casualty occurs within the territory, including the Territorial Sea, of a coastal State, the flag State, and the coastal State, shall notify each other and between them notify other Substantially Interested States as soon as is reasonably practicable.
- 5.3 Notification must not be delayed due to the lack of complete information.
- 5.4 **Format and content:** The notification must contain as much of the following information as is readily available:
- (a) The name of the ship and its flag State;
  - (b) The IMO Number;
  - (c) The nature of the Marine Casualty;
  - (d) The location of the Marine Casualty;
  - (e) Time and date of the Marine Casualty;
  - (f) The number of any seriously injured or killed persons;
  - (g) Consequences of the Marine Casualty to individuals, property and the environment; and
  - (h) The identification of any other ship involved.

## **Chapter 6**

### **REQUIREMENT TO INVESTIGATE VERY SERIOUS MARINE CASUALTIES**

- 6.1 A Marine Safety Investigation shall be conducted into every Very Serious Marine Casualty.
- 6.2 Subject to any agreement in accordance with chapter 7, the flag State of a ship involved in a Very Serious Marine Casualty is responsible for ensuring that a Marine Safety Investigation is conducted and completed in accordance with this Code.

## **Chapter 7**

### **FLAG STATE'S AGREEMENT WITH ANOTHER SUBSTANTIALLY INTERESTED STATE TO CONDUCT A MARINE SAFETY INVESTIGATION**

- 7.1 Without limiting the rights of States to conduct their own separate Marine Safety Investigation, where a Marine Casualty occurs within the territory, including Territorial Sea, of a State, the flag State(s) involved in the Marine Casualty and the coastal State shall consult to seek agreement on which State or States will be the Marine Safety Investigating State(s) in accordance with a requirement, or a recommendation acted upon, to investigate under this Code.
- 7.2 Without limiting the rights of States to conduct their own separate Marine Safety Investigation, if a Marine Casualty occurs on the High Seas or in the Exclusive Economic Zone of a State, and involves more than one flag State, then the States shall consult to seek agreement on which State or States will be the Marine Safety Investigating State(s) in accordance with a requirement, or a recommendation acted upon, to investigate under this Code.
- 7.3 For a Marine Casualty referred to in 7.1 or 7.2, agreement may be reached by the relevant States with another Substantially Interested State for that State or States to be the Marine Safety Investigating State(s).
- 7.4 Prior to reaching an agreement, or if an agreement is not reached, in accordance with 7.1, 7.2 or 7.3, then the existing obligations and rights of States under this Code, and under other international laws, to conduct a Marine Safety Investigation, remain with the respective parties to conduct their own investigation.
- 7.5 By fully participating in a Marine Safety Investigation conducted by another Substantially Interested State, the flag State shall be considered to fulfil its obligations under this Code, regulation 21 of the Annex to the Safety of Life at Sea Convention and Article 94, section 7 of the United Nations Convention on the Law of the Sea.

## **Chapter 8**

### **POWERS OF AN INVESTIGATION**

- 8.1 All States must ensure that their national laws provide investigator(s) carrying out a Marine Safety Investigation with the ability to board a ship, interview the master and crew and any other person involved, and acquire evidential material for the purposes of a Marine Safety Investigation.

## **Chapter 9**

### **PARALLEL INVESTIGATIONS**

- 9.1 Where the Marine Safety Investigating State(s) is conducting a Marine Safety Investigation under this Code, nothing prejudices the right of another Substantially Interested State to conduct its own separate Marine Safety Investigation.
- 9.2 While recognizing that the Marine Safety Investigating State(s) must be able to fulfil obligations under this Code, the Marine Safety Investigating State(s) and any other Substantially Interested State conducting a Marine Safety Investigation must seek to co-ordinate the timing of their investigations, to avoid conflicting demands upon witnesses and access to evidence, where possible.

## **Chapter 10**

### **CO-OPERATION**

- 10.1 All Substantially Interested States must co-operate with the Marine Safety Investigating State(s) to the extent practicable. The Marine Safety Investigating State(s) must provide for the participation of the Substantially Interested States to the extent practicable<sup>5</sup>.

## **Chapter 11**

### **INVESTIGATION NOT TO BE SUBJECT TO EXTERNAL DIRECTION**

- 11.1 Marine Safety Investigating State(s) must ensure that investigator(s) carrying out a Marine Safety Investigation are impartial and objective. The Marine Safety Investigation must be able to report on the results of a Marine Safety Investigation without direction or interference from any persons or organizations who may be affected by its outcome.

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<sup>5</sup> The reference to “extent practicable” may be taken to mean, as an example, that co-operation or participation is limited because national laws make it impracticable to fully co-operate or participate.



## **Chapter 12**

### **OBTAINING EVIDENCE FROM SEAFARERS**

- 12.1 Where a Marine Safety Investigation requires a Seafarer to provide evidence to it, the evidence shall be taken at the earliest practical opportunity. The Seafarer shall be allowed to return to his/her ship, or be repatriated at the earliest possible opportunity. The Seafarers human rights must, at all times, be upheld.
- 12.2 All Seafarers from whom evidence is sought must be informed of the nature and basis of the Marine Safety Investigation. Further, a Seafarer from whom evidence is sought shall be informed, and allowed access to legal advice, regarding:
- (a) Any potential risk that they may incriminate themselves in any proceedings subsequent to the Marine Safety Investigation;
  - (b) Any right not to self-incriminate or to remain silent;
  - (c) Any protections afforded to the Seafarer to prevent the evidence being used against them if they provide the evidence to the Marine Safety Investigation.

## **Chapter 13**

### **DRAFT MARINE SAFETY INVESTIGATION REPORTS**

- 13.1 Subject to 13.2 and 13.3, where it is requested, the Marine Safety Investigating State(s) must send a copy of a draft report to a Substantially Interested State to allow the Substantially Interested State to make comment on the draft report.
- 13.2 Marine Safety Investigating State(s) are only bound to comply with clause 13.1 where the Substantially Interested State receiving the report guarantees not to circulate, nor cause to circulate, publish or give access to the draft report, or any part thereof, without the express consent of the Marine Safety Investigating State(s) or unless such reports or documents have already been published by the Marine Safety Investigating State(s).
- 13.3 The Marine Safety Investigating State(s) are not bound to comply with clause 13.1 if:
- (a) the Marine Safety Investigating State(s) request that the Substantially Interested State receiving the report to affirm that evidence included in the draft report will not be admitted in civil or criminal proceedings against a person who gave the evidence; and
  - (b) the Substantially Interested State refuses to provide such an affirmation.
- 13.4 The Marine Safety Investigating State(s) must invite the Substantially Interested States to submit their comments on the draft report within 30 days or some other mutually agreed period. The Marine Safety Investigating State(s) must consider the comments

before preparing the final report and where the acceptance or rejection of the comments will have direct impact on the interests of the State that submitted them, the Marine Safety Investigating State(s) must notify the Substantially Interested State of the manner in which the comments were addressed. If the Marine Safety Investigating State(s) receives no comments after the 30 days or the mutually agreed period has expired, then it may proceed to finalize the report.

- 13.5 The Marine Safety Investigating State(s) must seek to fully verify the accuracy and completeness of the draft report by the most practical means.

## **Chapter 14**

### **MARINE SAFETY INVESTIGATION REPORTS**

- 14.1 The Marine Safety Investigating State(s) must submit the final version of a Marine Safety Investigation Report to the Organization for every Marine Safety Investigation conducted into a Very Serious Marine Casualty.
- 14.2 Where a Marine Safety Investigation is conducted into a Marine Casualty or Marine Incident, other than a Very Serious Marine Casualty, and a Marine Safety Investigation Report is produced which contains information which may prevent or lessen the seriousness of Marine Casualties or Marine Incidents in the future, the final version must be submitted to the Organization.
- 14.3 The Marine Safety Investigation Report referred in 14.1 and 14.2 must utilize all the information obtained during a Marine Safety Investigation, taking into account its scope, required to ensure that all the relevant safety issues are included and understood so that safety action can be taken as necessary.
- 14.4 The final Marine Safety Investigation Report must be made available to the public and the shipping industry by the Marine Safety Investigating State(s), or the Marine Safety Investigating State(s) must undertake to assist the public and the shipping industry with details, necessary to access the report, where it is published by another State or the Organization.

## PART III

### RECOMMENDED PRACTICES

#### Chapter 15

##### ADMINISTRATIVE RESPONSIBILITIES

- 15.1 States should ensure that Marine Safety Investigating Authorities have available to them sufficient material and financial resources and suitably qualified personnel to enable them to facilitate the State's obligations to undertake Marine Safety Investigations into Marine Casualties and Marine Incidents under this Code.
- 15.2 Any investigator forming part of a Marine Safety Investigation should be appointed on the basis of the skills outlined in resolution A.973(24) for marine investigators.
- 15.3 However, 15.2 does not preclude the appropriate appointment of investigators with necessary specialist skills to form part of a Marine Safety Investigation on a temporary basis, neither does it preclude the use of consultants to provide expert advice on any aspect of a Marine Safety Investigation.
- 15.4 Any person who is an investigator, in a Marine Safety Investigation, or assisting a Marine Safety Investigation, should be bound to operate in accordance with this Code.

#### Chapter 16

##### PRINCIPLES OF INVESTIGATION

- 16.1 **Independence:** A Marine Safety Investigation should be unbiased to ensure the free flow of information to it.
- 16.1.1 In order to achieve the outcome in 16.1, the investigator(s) carrying out a Marine Safety Investigation should have functional independence from:
- (a) the parties involved in the Marine Casualty or Marine incident;
  - (b) anyone who may make a decision to take administrative or disciplinary action against an individual or organization involved in a Marine Casualty or Marine Incident; and
  - (c) judicial proceedings;
- 16.1.2 The investigator(s) carrying out a Marine Safety Investigation should be free of interference from the parties in paragraphs (a), (b) and (c) of 16.1.1 with respect to:
- (a) the gathering of all available information relevant to the Marine Casualty or Marine Incident, including voyage data recordings and vessel traffic scheme recordings;

- (b) analysis of evidence and the determination of Causal Factors;
  - (c) drawing conclusions relevant to the Causal Factors;
  - (d) distributing a draft report for comment and preparation of the final report;  
and
  - (e) if appropriate, the making of safety recommendations.
- 16.2 **Safety Focused:** It is not the objective of a Marine Safety Investigation to determine liability, or apportion blame. However, the investigator(s) carrying out a Marine Safety Investigation should not refrain from fully reporting on the Causal Factors because fault or liability may be inferred from the findings.
- 16.3 **Co-operation:** Where it is practicable and consistent with the requirements and recommendations of this Code, in particular Chapter 10 on Co-operation, the Marine Safety Investigating State(s) should seek to facilitate maximum co-operation between Substantially Interested States and other persons or organizations conducting an investigation into a Marine Casualty or Marine Incident.
- 16.4 **Priority:** A Marine Safety Investigation should, as far as possible, be afforded the same priority as any other investigation, including investigations by a State for criminal purposes being conducted into the Marine Casualty or Marine Incident.
- 16.4.1 In accordance with 16.4 investigator(s) carrying out a Marine Safety Investigation should not be prevented from having access to evidence in circumstances where another person or organization is carrying out a separate investigation into a Marine Casualty or Marine Incident.
- 16.4.2 The evidence for which ready access should be provided should include:
- (a) survey and other records held by the flag State, the owners, and classification societies;
  - (b) all recorded data, including voyage data recorders; and
  - (c) evidence that may be provided by government surveyors, coastguard officers, vessel traffic service operators, pilots or other marine personnel.
- 16.5 **Scope of a Marine Safety Investigation:** Proper identification of Causal Factors requires timely and methodical investigation, going far beyond the immediate evidence and looking for underlying conditions, which may be remote from the site of the Marine Casualty or Marine Incident, and which may cause other future Marine Casualties and Marine Incidents. Marine Safety Investigations should therefore be seen as a means of identifying not only immediate Causal Factors but also failures that may be present in the whole chain of responsibility.

## **Chapter 17**

### **INVESTIGATION OF MARINE CASUALTIES (OTHER THAN VERY SERIOUS CASUALTIES) AND MARINE INCIDENTS**

- 17.1 A Marine Safety Investigation should be conducted into Marine Casualties (other than Very Serious Marine Casualties – which are addressed in Chapter 6 of this Code) and Marine Incidents, by the flag State of a ship involved, if it is considered likely that a Marine Safety Investigation will provide information that can be used to prevent Marine Casualties and Marine Incidents in the future.
- 17.2 Chapter 7 contains the mandatory requirements for determining who the Marine Safety Investigating State(s) are for a Marine Casualty. Where the occurrence being investigated in accordance with this chapter is a Marine Incident, Chapter 7 should be followed as a recommended practice as if it referred to Marine Incidents.

## **Chapter 18**

### **FACTORS THAT SHOULD BE TAKEN INTO ACCOUNT WHEN SEEKING AGREEMENT UNDER CHAPTER 7 OF PART II**

- 18.1 When the flag State(s), a coastal State (if involved) or other Substantially Interested States are seeking to reach agreement, in accordance with Chapter 7 of Part II on which State or State(s) will be the Marine Safety Investigating State(s) under this Code, the following factors should be taken into account:
- (a) whether the Marine Casualty or Marine Incident occurred in the territory, including Territorial Sea, of a State;
  - (b) whether the ship or ships involved in a Marine Casualty or Marine Incident occurring on the High Seas, or in the Exclusive Economic Zone, subsequently sail into the Territorial Sea of a State;
  - (c) the resources and commitment required of the flag State and other Substantially Interested States;
  - (d) the potential scope of the Marine Safety Investigation and the ability of the flag State or another Substantially Interested State to accommodate that scope;
  - (e) the need of the investigator(s) carrying out a Marine Safety Investigation to access evidence and consideration of the State or States best placed to facilitate that access to evidence;
  - (f) any perceived or actual adverse effects of the Marine Casualty or Marine incident on other States;
  - (g) the nationality of the crew, passengers and other persons affected by the Marine Casualty or Marine Incident.

## **Chapter 19**

### **ACTS OF UNLAWFUL INTERFERENCE**

- 19.1 If in the course of a Marine Safety Investigation it becomes known or is suspected that an offence is committed under Articles 3, *3bis*, *3ter* or *3quarter* of the Convention for the Suppression of Unlawful Acts Against the Safety or Maritime Navigation, the Marine Safety Investigation Authority should immediately seek to ensure that the maritime security authorities of the State(s) concerned are informed.

## **Chapter 20**

### **NOTIFICATION TO PARTIES INVOLVED AND COMMENCEMENT OF AN INVESTIGATION**

- 20.1 When a Marine Safety Investigation is commenced under this Code, the master, the owner and Agent of a ship involved in the Marine Casualty or Marine Incident being investigated, should be informed as soon as practicable of:
- (a) the Marine Casualty or Marine Incident under investigation;
  - (b) the time and place at which the Marine Safety Investigation will commence;
  - (c) the name and contact details of the Marine Safety Investigation Authority(ies);
  - (d) the relevant details of the legislation under which the Marine Safety Investigation is being conducted;
  - (e) the rights and obligations of the parties subject to the Marine Safety Investigation;  
and
  - (f) the rights and obligations of the State or States conducting the Marine Safety Investigation.
- 20.2 Each State should develop a standard document detailing the information in 20.1 that can be transmitted electronically to the master, the agent and the owner of the ship.
- 20.3 Recognizing that any ship involved in a Marine Casualty or Marine Incident may continue in service, and that a ship should not be delayed more than is absolutely necessary, the Marine Safety Investigating State(s) conducting the Marine Safety Investigation should start the Marine Safety Investigation as soon as is reasonably practicable, without delaying the ship unnecessarily.

## **Chapter 21**

### **CO-ORDINATING AN INVESTIGATION**

- 21.1 The recommendations in this Chapter should be applied in accordance with the principles in Chapter 10 and Chapter 11 of this Code.

- 21.2 The Marine Safety Investigating State(s) should ensure that there is an appropriate framework within the State for:
- (a) the designation of investigators to the Marine Safety Investigation including an investigator to lead the Marine Safety Investigation;
  - (b) the provision of a reasonable level of support to members of the Marine Safety Investigation;
  - (c) the development of a strategy for the Marine Safety Investigation in liaison with other Substantially Interested States;
  - (d) ensuring the methodology followed during the Marine Safety Investigation is consistent with that recommended in resolution A.884(21), as amended;
  - (e) ensuring the Marine Safety Investigation takes into account any recommendations or instruments published by the Organization or International Labour Organization, relevant to conducting a Marine Safety Investigation; and
  - (f) ensuring the Marine Safety Investigation takes into account the safety management procedures and the safety policy of the operator of a ship in terms of the International Management Code for the Safe Operation of Ships and for Pollution Prevention adopted by the Organization by resolution A.741(18), as amended.
- 21.3 The Marine Safety Investigating State(s) should allow a Substantially Interested State to participate in aspects of the Marine Safety Investigation relevant to it, to the extent practicable.
- 21.3.1 Participation should include allowing representatives of the Substantially Interested State to:
- (a) interview witnesses;
  - (b) view and examine evidence and make copies of documents;
  - (c) make submissions in respect of the evidence, comment on and have their views properly reflected in the final report; and
  - (d) be provided with the draft and final reports relating to the Marine Safety Investigation<sup>6</sup>.
- 21.4 To the extent practical, Substantially Interested States should assist the Marine Safety Investigating State(s) with access to relevant information for the Marine Safety Investigation. To the extent practical, the investigator(s) carrying out a Marine Safety Investigation should also be afforded access to Government surveyors, coastguard officers, ship traffic service operators, pilots and other marine personnel of a Substantially Interested State<sup>6</sup>.

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<sup>6</sup> The reference to 'extent practical' may be taken to mean, as an example, that co-operation or participation is limited because national laws make it impractical to fully co-operate or participate.

- 21.5 The Flag State of a ship involved in a Marine Casualty or Marine Incident should help to facilitate the availability of the crew to the investigator(s) carrying out the Marine Safety Investigation.

## **Chapter 22**

### **COLLECTION OF EVIDENCE**

- 22.1 A Marine Safety Investigating State(s) should not unnecessarily detain a ship for the collection of evidence from it or have original documents or equipment removed unless this is essential for the purposes of the Marine Safety Investigation. Investigators should make copies of documents where practicable.
- 22.2 Investigator(s) carrying out a Marine Safety Investigation should secure records of interviews and other evidence collected during a Marine Safety Investigation in a manner which prevents access by persons who do not require it for the purpose of the investigation.
- 22.3 Investigator(s) carrying out the Marine Safety Investigation should make effective use of all recorded data including voyage data recorders if fitted. Voyage data recorders should be made available for downloading by the investigator(s) carrying out a Marine Safety Investigation or an appointed representative.
- 22.3.1 In the event that the Marine Safety Investigating State(s) do not have adequate facilities to read a voyage data recorder, States with such a capability should offer their services having due regard to the:
- (a) available resources;
  - (b) capabilities of the readout facility;
  - (c) timeliness of the readout; and
  - (d) location of the facility.

## **Chapter 23**

### **CONFIDENTIALITY OF INFORMATION**

- 23.1 States should ensure that investigator(s) carrying out a Marine Safety Investigation only disclose information from a Marine Safety Record where:
- (a) it is necessary or desirable to do so for transport safety purposes and any impact on the future availability of safety information to a Marine Safety Investigation is taken into account; or



- (b) as otherwise permitted in accordance with this Code<sup>7</sup>.
- 23.2 States involved in Marine Safety Investigation under this Code should ensure that any Marine Safety Record in its possession is not disclosed in criminal, civil, disciplinary or administrative proceedings unless:
- (a) the appropriate authority for the administration of justice in the State determines that any adverse domestic or international impact that the disclosure of the information might have on any current or future Marine Safety Investigations is outweighed by the public interest in the administration of justice; and<sup>8</sup>
- (b) where appropriate in the circumstances, the State which provided the Marine Safety Record to the Marine Safety Investigation authorizes its disclosure.
- 23.3 Marine Safety Records should be included in the final report, or its appendices, *only* when pertinent to the analysis of the Marine Casualty or Marine Incident. Parts of the record not pertinent, and not included in the final report, should not be disclosed.
- 23.4 States need only supply information from a Marine Safety Record to a Substantially Interested State where doing so will not undermine the integrity and credibility of any Marine Safety Investigation being conducted by the State or States providing the information.
- 23.4.1 The State supplying the information from a Marine Safety Record may require that the State receiving the information undertake to keep it confidential.

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<sup>7</sup> States recognize that there are merits in keeping information from a Marine Safety Record confidential where it needs to be shared with people outside the Marine Safety Investigation for the purpose of conducting the Marine Safety Investigation. An example is where information from a Marine Safety Record needs to be provided to an external expert for their analysis or second opinion. Confidentiality would seek to ensure that sensitive information is not inappropriately disclosed for purposes other than the Marine Safety Investigation, at a time when it has not been determined how the information will assist in determining the contributing factors in a Marine Casualty or Marine Incident. Inappropriate disclosure may infer blame or liability on the parties involved in the Marine Casualty or Marine Incident.

<sup>8</sup> Examples of where it may be appropriate to disclose information from a Marine Safety Record in criminal, civil, disciplinary or administrative proceedings may include:

- (a) where a person the subject of the proceedings has engaged in conduct with the intention to cause a destructive result; or
- (b) where a person the subject of the proceedings has been aware of a substantial risk that a destructive result will occur and having regard to the circumstances known to him or her it is unjustifiable to take the risk.

## Chapter 24

### PROTECTION FOR WITNESSES AND INVOLVED PARTIES

- 24.1 If a person is required by law to provide evidence that may incriminate them, for the purposes of a Marine Safety Investigation, the evidence should, so far as national laws allow, be prevented from admission into evidence in civil or criminal proceedings against the individual.
- 24.2 A person from whom evidence is sought should be informed about the nature and basis of the investigation. A person from whom evidence is sought should be informed, and allowed access to legal advice, regarding:
- (a) Any potential risk that they may incriminate themselves in any proceedings subsequent to the Marine Safety Investigation;
  - (b) Any right not to self-incriminate or to remain silent;
  - (c) Any protections afforded to the person to prevent the evidence being used against them if they provide the evidence to the Marine Safety Investigation.

## Chapter 25

### DRAFT AND FINAL REPORT

- 25.1 Marine Safety Investigation Reports from a Marine Safety Investigation should be completed as quickly as practicable.
- 25.2 Where it is requested, and where practicable, the Marine Safety Investigating State(s) should send a copy of a draft Marine Safety Investigation Report for comment to Interested Parties. However, this recommendation does not apply where there is no guarantee that that the Interested Party will not circulate, nor cause to circulate, publish or give access to the draft Marine Safety Investigation Report, or any part thereof, without the express consent of the Marine Safety Investigating States(s).
- 25.3 The Marine Safety Investigating State(s) should allow the Interested Party 30 days or some other mutually agreed time to submit their comments on the Marine Safety Investigation Report. The Marine Safety Investigating State(s) should consider the comments before preparing the final Marine Safety Investigation Report and where the acceptance or rejection of the comments will have direct impact on the interests of the Interested Party that submitted them, the Marine Safety Investigating State(s) should notify the Interested Party of the manner in which the comments were addressed. If the Marine Safety Investigating State(s) receives no comments after the 30 days or the mutually agreed period has expired, then it may proceed to finalize the Marine Safety Investigation Report<sup>9</sup>.

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<sup>9</sup> See chapter 13 where provisions with respect to providing interested parties with reports on request may alternatively be included as a mandatory provision.

- 25.4 Where it is permitted by the national laws of the State preparing the Marine Safety Investigation Report, the draft and final report should be prevented from being admissible in evidence in proceedings related to the Marine Casualty or Marine Incident that may lead to disciplinary measures, criminal conviction or the determination of civil liability.
- 25.5 At any stage during a Marine Safety Investigation interim safety measures may be recommended.
- 25.6 Where a Substantially Interested State disagrees with the whole or a part of a final Marine Safety Investigation Report, it may submit its own report to the Organization.

## **Chapter 26**

### **RE-OPENING AN INVESTIGATION**

- 26.1 Marine Safety Investigating State(s) which have completed a Marine Safety Investigation, should reconsider their findings and consider re-opening the investigation when new evidence is presented which may materially alter the analysis and conclusions reached.
- 26.2 When significant new evidence relating to any Marine Casualty or Marine Incident is presented to the Marine Safety Investigating State(s) that have completed a Marine Safety Investigation, the evidence should be fully assessed and referred to other Substantially Interested States for appropriate input.

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## ANNEX 34

## DRAFT AMENDMENTS TO SOLAS CHAPTER XI-1

- 1 The following new regulation 6 is added after the existing regulation 5:

**“Regulation 6***Additional requirements for the investigation of marine casualties and incidents*

Taking into account regulation I/21, each Administration shall conduct investigations of marine casualties and incidents, in accordance with the provisions of the present Convention, as supplemented by the provisions of the Code of the International Standards and Recommended Practices for a Safety Investigation into a Marine Casualty or Marine Incident (Casualty Investigation Code) adopted by resolution MSC....(...), and:

- .1 the provisions of parts I and II of the Casualty Investigation Code shall be fully complied with;
- .2 the related guidance and explanatory material contained in part III of the Casualty Investigation Code should be taken into account to the greatest possible extent in order to achieve a more uniform implementation of the Casualty Investigation Code;
- .3 amendments to parts I and II of the Casualty Investigation Code shall be adopted, brought into force and take effect in accordance with the provisions of article VIII of the present Convention concerning the amendment procedures applicable to the annex other than chapter I; and
- .4 part III of the Casualty Investigation Code shall be amended by the Maritime Safety Committee in accordance with its rules of procedure.”

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**ANNEX 36****DRAFT ASSEMBLY RESOLUTION ON THE NEED FOR CAPACITY-BUILDING FOR THE DEVELOPMENT AND IMPLEMENTATION OF NEW, AND AMENDMENTS TO EXISTING, INSTRUMENTS**

THE ASSEMBLY,

RECALLING resolution A.500(XII) directing the Council and the Committees to entertain proposals for new conventions or amendments to existing conventions only on the basis of clear and well-documented demonstration of compelling need, taking into account the undesirability of modifying conventions not yet in force or of amending existing conventions unless such latter instruments have been in force for a reasonable period of time and experience has been gained of their operation, having regard to the costs to the maritime industry and the burden on the legislative and administrative resources of Member States,

NOTING with satisfaction progress achieved in the implementation of the provisions of resolution A.500(XII),

APPRECIATING the efforts of the Council through its Strategic Plan regarding the importance of capacity-building to ensure universal and uniform application of the Organization's instruments,

NOTING FURTHER that, unless the Council, the Committees and their subsidiary bodies adopt a cradle to grave approach in relation to capacity-building; technical co-operation and assistance, the chances of success in the ratification and realization of effective implementation of such instruments may be reduced by the level of unpreparedness or lack of capacity that many Governments, particularly of developing countries, experience at the point when implementation of such instruments is urgently required,

CONSIDERING that the lack of capacity within States has a direct relationship to the level and quality of implementation of existing, new and/or amended instruments and that the low speed of ratification is partly due to the lack of understanding of the original intentions of the instrument and what is required of Member States in order to realize full benefits of implementation,

TAKING INTO ACCOUNT that even though States may have ratified newly adopted or amended instruments, the lack of preparation through capacity-building and training, or the absence of a guidance document to implementation, results in an undesirable lack of success to effective implementation of these instruments,

1. DIRECTS the Council to co-ordinate the work of the Committees and their subsidiary bodies towards ensuring as far as possible a balanced level of implementation of new instruments;
2. RECOMMENDS that the Council and the Committees as a means to promote and enhance capacity-building efforts consider proposals for the development of new instruments and/or amendment of existing ones after an assessment of implications for capacity-building and technical co-operation has been undertaken;

3. FURTHER RECOMMENDS that the Committees establish a mechanism for the identification of new instruments requiring technical assistance intervention prior to implementation; identification of issues requiring special focus when developing related technical co-operation and assistance interventions relating to implementation of new measures; and the identification of new instruments requiring a simplified guide for implementation;
4. INVITES the Council to monitor progress of implementation of this policy on a regular basis.

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**ANNEX 37**

**RESOLUTION MSC.254(83)**

**(adopted on 12 October 2007)**

**ADOPTION OF AMENDMENTS TO THE  
PERFORMANCE STANDARDS AND FUNCTIONAL REQUIREMENTS FOR THE  
LONG-RANGE IDENTIFICATION AND TRACKING OF SHIPS**

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO resolution A.886(21) on Procedure for the adoption of, and amendments to, performance standards and technical specifications, by which the Assembly resolved that the function of adopting performance standards and technical specifications, as well as amendments thereto shall be performed by the Maritime Safety Committee,

RECALLING FURTHER the provisions of the regulation V/19-1 of the International Convention for the Safety of Life at Sea, 1974, as amended (the Convention), relating to the long-range identification and tracking of ships,

ALSO RECALLING the Performance standards and functional requirements for the long-range identification and tracking of ships (the Performance standards) adopted by resolution MSC.210(81),

RECOGNIZING the need to adopt certain amendments to the Performance standards,

HAVING CONSIDERED the recommendations made, at its eighty-third session,

1. **ADOPTS** the amendments to the Performance standards and functional requirements for the long-range identification and tracking of ships, set out in the Annex to the present resolution;
2. **RECOMMENDS** Contracting Governments to the Convention to ensure that all Long-range identification and tracking (LRIT) Data Centres and the International LRIT Data Exchange conform to functional requirements not inferior to those specified in the Performance standards, as modified by the amendments, set out in the Annex to the present resolution; and
3. **AGREES** to review and amend, in the light of experience gained as necessary, the Performance standards and functional requirements for the long-range identification and tracking of ships, as modified by the amendments, set out in the Annex to the present resolution.



ANNEX

**AMENDMENTS TO THE  
PERFORMANCE STANDARDS AND FUNCTIONAL REQUIREMENTS FOR THE  
LONG-RANGE IDENTIFICATION AND TRACKING OF SHIPS**

**4 Shipborne equipment**

*1 After the existing paragraph 4.4, the following new paragraph is inserted:*

“4.4.1 When a ship is undergoing repairs in dry-dock or in port or is laid up for a long period, the master or the Administration may reduce the frequency of the transmission LRIT information to one report every 24-hour period, or may temporarily stop the transmission of such information.”

**7 LRIT Data Centre**

*2 After the existing paragraph 7.1, the following new paragraphs are inserted:*

“7.1A When providing archived LRIT information to LRIT Data Users, LRIT Data Centres should utilize the version of the LRIT Data Distribution Plan which was applicable at the time when the LRIT information requested were originally received. Thus, all LRIT Data Centres should also archive the LRIT Data Distribution Plan covering the time period of the archived LRIT information.

7.1B All Regional or Co-operative LRIT Data Centres and the International LRIT Data Centre should automatically maintain journal(s) for all of the internally routed LRIT information. The journal(s) should only contain message header information which may be used for audit purposes. The journal(s) should be transmitted to the International LRIT Data Exchange at regular intervals in order to be combined with the journal(s) maintained by the International LRIT Data Exchange.”

**10 International LRIT Data Exchange**

*3 After the existing paragraph 10.3.5, the following new paragraph is inserted:*

“5A receive journal(s) from Regional, Co-operative, and the International LRIT Data Centre and combine these journal(s) with its own journal(s);”

4 *After the existing paragraph 10.3.12, the following new paragraph is inserted:*

“.13 not be able to view or access the LRIT information;”

5 *The existing paragraph 10.3.13 is renumbered as “10.3.14” and the “.” is deleted and replaced by “; and”.*

6 *The following is inserted at the end of the renumbered 10.3.14:*

“.15 receive updated pricing information from LRIT Data Centres, create a master price list for all LRIT Data Centres and transmit the master price list to an LRIT Data Centre on request.”

7 *After the existing paragraph 10.3.15, the following new paragraph is inserted:*

“10.4 The LRIT Co-ordinator should have access to all journals. Contracting Governments and LRIT Data Centres should have only access to their share of the journals (i.e. with respect to LRIT information requested and provided). The journal(s) should be accessed off-line.”

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## ANNEX 38

## WORK PROGRAMMES OF THE SUB-COMMITTEES

## SUB-COMMITTEE ON BULK LIQUIDS AND GASES (BLG)

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
1	<b>Evaluation of safety and pollution hazards of chemicals and preparation of consequential amendments</b>	Continuous	BLG 10/19, section 3 BLG 11/16, section 3
2	<b>Casualty analysis</b> (co-ordinated by FSI)	Continuous	MSC 70/23, paragraphs 9.17 and 20.4; MSC 80/24, paragraph 21.6; BLG 11/16, section 12
3	<b>Consideration of IACS unified interpretations</b>	Continuous	MSC 78/26, paragraph 22.12; BLG 11/16, section 11
H.1	Environmental and safety aspects of alternative tanker designs under MARPOL Annex I, regulation 19		BLG 3/18, paragraph 15.7
	.1 assessment of alternative tanker designs, if any (as necessary)	Continuous	BLG 1/20, section 16; BLG 4/18, paragraph 15.3
H.2	<b>Development of provisions for gas-fuelled ships</b> (in co-operation with FP and DE)	2009	MSC 78/26, paragraph 24.11; BLG 11/16, section 6
H.3	<b>Development of guidelines for uniform implementation of the 2004 BWM Convention</b>	2008	MEPC 52/24, paragraph 2.21.6; BLG 11/16, section 4

**Notes:** 1 “H” means a high priority item and “L” means a low priority item. However, within the high and low priority groups, items have not been listed in any order of priority.

2 Items printed in bold letters have been selected for the provisional agenda for BLG 12.

**Sub-Committee on Bulk Liquids and Gases (BLG) (continued)**

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
H.4	<b>Amendments to MARPOL Annex I for the prevention of marine pollution during oil transfer operations between ships at sea</b>	2008	MEPC 53/24, paragraph 20.6; BLG 11/16, section 4
H.5	<b>Review of MARPOL Annex VI and the NO<sub>x</sub> Technical Code</b>	2008	MEPC 53/24, paragraph 4.50; BLG 11/16, section 5
H.6	<b>Application of the requirements for the carriage of bio-fuels and bio-fuel blends</b>	2008	MEPC 55/23, paragraphs 19.4 and 19.5
H.7	<b>Development of international measures for minimizing the translocation of invasive aquatic species through bio-fouling of ships</b>	2010	MEPC 56/23, paragraph 19.12
H.8	<b>Review of the Recommendation for material safety data sheets for MARPOL Annex I cargoes and marine fuels</b>	2008	BLG 11/16, paragraph 14.14; MSC 83/28, paragraph 25.8
H.9	<b>Revision of the IGC Code</b> (in co-operation with FP, DE, SLF and STW as necessary and when requested by BLG)	2010	MSC 83/28, paragraph 25.7
H.10	Safety requirements for natural gas hydrate pellet carriers	3 sessions*	MSC 83/28, paragraph 25.6
L.1	Guidelines on other technological methods verifiable or enforceable to limit SO <sub>x</sub> emissions	2 sessions	MEPC 53/24, paragraph 4.40; BLG 11/16, section 9

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\* The Sub-Committee has been instructed to include the item in the provisional agenda for BLG 13.

**SUB-COMMITTEE ON DANGEROUS GOODS, SOLID CARGOES AND CONTAINERS (DSC)**

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
1	<b>Harmonization of the IMDG Code with the UN Recommendations on the Transport of Dangerous Goods</b>	Continuous	MSC 63/23, paragraph 10.6; DSC 11/19, section 3 paragraph 10.6; DSC 11/19, section 3
2	<b>Reports on incidents involving dangerous goods or marine pollutants in packaged form on board ships or in port areas</b>	Continuous	CDG 45/22, section 11 and paragraph 20.2; DSC 11/19, section 6
3	<b>Amendments to the BC Code, including evaluation of properties of solid bulk cargoes</b>	Continuous	BC 34/17, section 3; DSC 11/19, section 4
4	<b>Casualty analysis (co-ordinated by FSI)</b>	Continuous	MSC 70/23, paragraphs 9.17 and 20.4; DSC 11/19, section 6
H.1	<b>Amendment (35-10) to the IMDG Code and supplements</b>	2009	DSC 3/15, paragraph 12.6; DSC 12/19, section 3
H.2	<b>Amendments to the CSS Code</b>	2008	MSC 78/26, paragraph 24.15.3; DSC 12/19, section 8

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- Notes:**
- 1 “H” means high priority item and “L” means a low priority item. However, within the high and low priority groups, items have not been listed in any order of priority.
  - 2 Items printed in bold letters have been selected for the provisional agenda for DSC 13.

**Sub-Committee on Dangerous Goods, Solid Cargoes and Containers (DSC) (continued)**

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
H.3	<b>Extension of the BLU Code to include grain</b>	2008	MSC 79/23, paragraph 20.7; DSC 11/19, section 12
H.4	<b>Guidance on providing safe working conditions for securing of containers</b>	2008	MSC 80/24, paragraph 21.8; DSC 12/19, section 10
H.5	<b>Review of the Recommendations on the safe use of pesticides in ships</b>	2008	DSC 10/17, paragraph 4.23; DSC 12/19, section 11
H.6	<b>Guidance on protective clothing</b>	2008	MSC 81/25, paragraph 23.8; DSC 11/19, paragraph 16.1.3.1
H.7	<b>Revision of the Code of Safe Practice for Ships Carrying Timber Deck Cargoes</b>	2010	MSC 82/24, paragraph 21.11
H.8	<b>Form and procedure for approval of the Cargo Securing Manual</b>	2008	MSC 82/24, paragraph 21.12
H.9	<b>Stowage of water-reactive materials</b> (in co-operation with FP as necessary and when requested by DSC)	2009	MSC 83/28, paragraph ...
H.10	<b>Amendments to the International Convention for Safe Containers, 1972</b>	2009	DSC 12/19, section 16; MSC 83/28, paragraph 25.13.1
H.11	<b>Review of Guidelines for packing of cargo transport units</b>	2009	DSC 12/19, section 16; MSC 83/28, paragraph 25.13.2

**SUB-COMMITTEE ON FIRE PROTECTION (FP)**

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
1	<b>Analysis of fire casualty records</b>	Continuous	MSC 75/24, paragraph 22.18; FP 51/19, section 10
2	<b>Consideration of IACS unified interpretations</b>	Continuous	MSC 78/26, paragraph 22.12; FP 51/19, section 9
H.1	<b>Performance testing and approval standards for fire safety systems</b>	2009	MSC 74/24, paragraph 21.12; FP 51/19, section 3
H.2	<b>Comprehensive review on the Fire Test Procedures Code</b>	2008	MSC 80/24, paragraph 21.11; FP 51/19, section 4
H.3	<b>Review of the SPS Code</b> (co-ordinated by DE)	2008	MSC 78/26, paragraph 24.9; FP 51/19, section 6
H.4	<b>Development of provisions for gas-fuelled ships</b> (co-ordinated by BLG)	2009	MSC 78/26, paragraph 24.19; FP 51/19, section 7
H.5	<b>Measures to prevent fires in engine-rooms and cargo pump-rooms</b>	2009	MSC 79/23, paragraph 20.11; FP 51/19, section 8
H.6	<b>Fire resistance of ventilation ducts</b>	2009	MSC 81/25, paragraph 23.13; MSC 83/28, paragraph 25.22

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- Notes:**
- 1 “H” means a high priority item and “L” means a low priority item. However, within the high and low priority groups, items have not been listed in any order of priority.
  - 2 Items printed in bold letters have been selected for the provisional agenda for FP 52.



**Sub-Committee on Fire Protection (FP) (continued)**

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
H.7	<b>Application of requirements for dangerous goods in package form in SOLAS and the 2000 HSC Code</b> (in co-operation with DSC)	2008	MSC 81/25, paragraph 23.14; FP 51/19, section 12
H.8	<b>Unified interpretation on the number and arrangement of portable extinguishers</b>	2008	MSC 81/25, paragraphs 23.15 and 23.16; FP 51/19, section 13
H.9	<b>Review of fire safety of external areas on passenger ships</b>	2009	MSC 81/25, paragraph 23.17.1; FP 51/19, section 14
H.10	<b>Fixed hydrocarbon gas detection systems on double-hull oil tankers</b> (in co-operation with BLG as necessary and when requested by FP)	2009	MSC 82/24, paragraph 21.18; FP 51/19, paragraph 10.10
H.11	<b>Clarification of SOLAS chapter II-2 requirements regarding interrelation between central control station and safety centre</b>	2009	MSC 82/24, paragraph 21.20
H.12	Harmonization of the requirements for the location of entrances, air inlets and openings in the superstructures of tankers (in co-operation with BLG as necessary and when requested by FP)	2 sessions	FP 51/19, paragraph 9.9; MSC 83/28, paragraph 25.24.2
H.13	Amendments to SOLAS chapter II-2 related to the releasing controls and means of escape for spaces protected by fixed carbon dioxide systems	2 sessions	FP 51/19, paragraph 3.20; MSC 83/28, paragraph 25.24.1
H.14	Guidelines for drainage systems in closed vehicle and ro-ro spaces and special category spaces (in co-operation with SLF)	2009*	MSC 83/28, paragraph 25.20

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\* The Sub-Committee has been instructed to include the item in the provisional agenda for FP 53.

**Sub-Committee on Fire Protection (FP) (continued)**

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
H.15	Review of fire protection requirements for on-deck cargo areas (in co-operation of DSC as necessary and when requested by FP)	3 sessions	MSC 83/28, paragraph 25.21
H.16	Means of escape from machinery spaces	2 sessions	MSC 83/28, Paragraph 25.23
H.17	<b>Measures to prevent explosions on oil and chemical tankers transporting low-flash point cargoes (in co-operation with BLG and DE as necessary and when requested by FP)</b>	2009	FP 51/19, paragraph 10.8; MSC 83/28, paragraph 9.26
H.18	<b>Recommendation on evacuation analysis for new and existing passenger ships</b>	2008	MSC 73/21, paragraph 4.16; MSC 83/28, paragraph 8.7
L.1	Smoke control and ventilation	2 sessions	FP 39/19, section 9; FP 46/16, section 4

**SUB-COMMITTEE ON FLAG STATE IMPLEMENTATION (FSI)**

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
1	<b>Mandatory reports under MARPOL</b>	Continuous	MSC 70/23, paragraph 20.12.1; MEPC 56/23, paragraph 14.4; FSI 15/18, section 4
2	<b>Casualty statistics and investigations</b>	Continuous	MSC 68/23, paragraphs 7.16 to 7.24; FSI 15/18, section 6
3	<b>Harmonization of port State control activities</b>	Continuous	MSC 71/23, paragraph 20.16; MSC 80/24, paragraph 21.16; FSI 15/18, section 7
4	<b>Responsibilities of Governments and measures to encourage flag State compliance</b>	Continuous	MSC 68/23, paragraphs 7.2 to 7.8; FSI 15/18, section 3
5	<b>Comprehensive analysis of difficulties encountered in the implementation of IMO instruments</b>	Continuous	MSC 69/22, paragraph 20.28; FSI 8/19, paragraph 4.3; FSI 15/18, section 11
6	<b>Review of the Survey Guidelines under the HSSC (resolution A.948(23))</b>	Continuous	MSC 72/23, paragraph 21.27; FSI 15/18, section 12
7	<b>Consideration of IACS unified interpretations</b>	Continuous	MSC 78/26, paragraph 22.12; FSI 15/18, section 13
8	<b>Review of the Code for the Implementation of Mandatory IMO Instruments</b>	Continuous	MSC 83/28, paragraph 25.27

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  - 2 Items printed in bold letters have been selected for the provisional agenda for FSI 16.

**Sub-Committee on Flag State Implementation (FSI) (continued)**

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
H.1	<b>PSC guidelines on seafarers' working hours</b>	2009	MSC 70/23, paragraph 20.12.3; FSI 15/18, paragraph 10.5
H.2	<b>Illegal, unregulated and unreported (IUU) fishing and implementation of resolution A.925(22)</b>	2008	MSC 72/23, paragraph 21.28; FSI 10/17, section 11; MSC 75/24, paragraphs 13.11 and 22.25.3; FSI 15/18, section 14
H.3	<b>Development of guidelines on port State control under the 2004 BWM Convention</b>	2008	MEPC 52/24, paragraph 2.21.2; FSI 15/18, section 9
H.4	<b>Port reception facilities-related issues</b>	2010	MEPC 53/24, paragraph 9.7; FSI 15/18, section 5
H.5	Code of conduct during demonstrations/campaigns against ships on high seas (co-ordinated by NAV)	2 sessions	MSC 82/24, paragraph 21.26

**SUB-COMMITTEE ON RADIOCOMMUNICATIONS AND SEARCH AND RESCUE (COMSAR)**

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
1	<b>Global Maritime Distress and Safety System (GMDSS)</b>		COMSAR 10/16, section 3; COMSAR 11/18, section 3
	.1 <b>matters relating to the GMDSS Master Plan</b>	Continuous	COMSAR 10/16, paragraphs 3.1 to 3.4
	.2 exemptions from radio requirements	Continuous	COMSAR 4/14, paragraphs 3.38 to 3.41; COMSAR 11/18, paragraphs 3.1 to 3.4
2	Promulgation of maritime safety information (MSI) (in co-operation with ITU, IHO, WMO and IMSO)		
	.1 <b>operational and technical co-ordination provisions of maritime safety information (MSI) services, including review of the related documents</b>	Continuous	COMSAR 10/16, paragraphs 3.5 to 3.29; COMSAR 11/18, paragraphs 3.5 to 3.22
3	<b>ITU World Radiocommunication Conference matters</b>	Continuous	COMSAR 10/16, paragraphs 4.3 to 4.16 and 4.13 to 4.20; COMSAR 11/18, paragraphs 4.3 to 4.16
4	<b>Radiocommunication ITU-R Study Group 8 matters</b>	Continuous	COMSAR 10/16, paragraphs 4.1, 4.2 and 4.9 to 4.12; COMSAR 11/18, paragraphs 4.1 and 4.2

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  - 2 Items printed in bold letters have been selected for the provisional agenda for COMSAR 12.

**Sub-Committee on Radiocommunications and Search and Rescue (COMSAR) (continued)**

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
5	<b>Satellite services (Inmarsat and COSPAS-SARSAT)</b>	Continuous	COMSAR 10/16, section 5; COMSAR 11/18, section 5
6	<b>Matters concerning search and rescue, including those related to the 1979 SAR Conference and the implementation of the GMDSS</b>		
.1	<b>harmonization of aeronautical and maritime search and rescue procedures, including SAR training matters</b>	2008	COMSAR 10/16, paragraphs 6.1 to 6.16; COMSAR 11/18, paragraphs 6.1 to 6.26
.2	<b>plan for the provision of maritime SAR services, including procedures for routing distress information in the GMDSS</b>	Continuous	COMSAR 10/16, paragraphs 6.27 to 6.41; COMSAR 11/18, paragraphs 6.27 to 6.48
.3	<b>revision of the IAMSAR Manual</b>	Continuous	MSC 71/23, paragraph 20.2; COMSAR 11/18, section 8
.4	<b>medical assistance in SAR services</b>	2008	MSC 75/24, paragraph 22.29; COMSAR 11/18, paragraphs 6.49 to 6.51
7	<b>Casualty analysis (co-ordinated by FSI)</b>	Continuous	MSC 70/23, paragraphs 9.17 and 20.4; MSC 78/26, paragraph 24.8

**Sub-Committee on Radiocommunications and Search and Rescue (COMSAR) (continued)**

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
H.1	<b>Developments in maritime radiocommunication systems and technology</b>	2008	MSC 74/24, paragraph 21.25.1; COMSAR 11/18, section 7
H.2	<b>Guidelines for uniform operating limitations of high-speed craft</b> (co-ordinated by DE)	2008	MSC 81/25, paragraph 23.45; COMSAR 11/18, section 3
H.3	<b>Development of an e-navigation strategy</b> (co-ordinated by NAV)	2008	MSC 81/25, paragraphs 23.34 to 23.37; COMSAR 11/18, section 14
H.4	Development of procedures for updating shipborne navigation and communication equipment (co-ordinated by NAV)	2 sessions	MSC 83/28, paragraph 25.30
L.1	<b>Replacements for use of NBDP (radio telex) for maritime distress and safety communications in maritime MF/HF bands</b>	2008	MSC 81/25, paragraph 23.23; COMSAR 11/18, section 12

**SUB-COMMITTEE ON SAFETY OF NAVIGATION (NAV)**

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
1	<b>Routeing of ships, ship reporting and related matters</b>	Continuous	MSC 72/23, paragraphs 10.69 to 10.71, 20.41 and 20.42; NAV 53/22, section 3
2	<b>Casualty analysis</b> (co-ordinated by FSI)	Continuous	MSC 70/23, paragraphs 9.17 and 20.4; NAV 53/22, section 17
3	<b>Consideration of IACS unified interpretations</b>	Continuous	MSC 78/26, paragraph 22.12; NAV 53/22, section 18
H.1	<b>Worldwide radionavigation system (WWRNS)</b>	2008	MSC 75/24, paragraph 22.37; NAV 53/22, section 12
.1	new developments in the field of GNSS, especially Galileo	2008	
.2	review and amendment of IMO policy for GNSS (resolution A.915(22))	2008	
.3	recognition of radionavigation systems as components of the WWRNS (resolution A.953(23))	2008	
H.2	<b>ITU matters, including Radiocommunication ITU-R Study Group 8 matters</b>	2009	MSC 69/22, paragraphs 5.69 and 5.70; NAV 53/22, section 9

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  - 2 Items printed in bold letters have been selected for the provisional agenda for NAV 54.



**Sub-Committee on Safety of Navigation (NAV) (continued)**

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
H.3	<b>Development of guidelines for IBS, including performance standards for bridge alert management</b>	2009	MSC 78/26, paragraph 24.30; NAV 53/22, section 4
H.4	<b>Amendments to COLREG Annex I related to colour specification of lights</b>	2008	MSC 80/24, paragraph 21.24.1; NAV 53/22, section 8
H.5	<b>Carriage requirements for a bridge navigational watch alarm system</b>	2008	MSC 81/25, paragraph 23.27; NAV 53/22, section 6
H.6	<b>Development of an e-navigation strategy (in co-operation with COMSAR)</b>	2008	MSC 81/25, paragraphs 23.34 to 23.37; NAV 53/22, section 13
H.7	<b>Development of carriage requirements for ECDIS</b>	2008	MSC 81/25, paragraphs 23.39 and 23.40; NAV 53/22, section 14
H.8	<b>Guidelines for uniform operating limitations of high-speed craft (co-ordinated by DE)</b>	2008	MSC 81/25, paragraph 23.45; NAV 53/22, section 15
H.9	<b>Guidelines on the layout and ergonomic design of safety centres on passenger ships</b>	2008	MSC 81/25, paragraph 23.42; NAV 53/22, section 16
H.10	<b>Amendments to the General Provisions on Ships' Routeing</b>	2008	MSC 82/24, paragraph 21.34
H.11	<b>Review of COLREGs regarding the right of way of vessels over pleasure craft</b>	2008	MSC 82/24, paragraph 21.35

**Sub-Committee on Safety of Navigation (NAV) (continued)**

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
H.12	<b>Code of conduct during demonstrations/ campaigns against ships on high seas</b> (in co-operation with FSI)	2009	MSC 82/24, paragraph 21.36
H.13	<b>Measures to minimize incorrect data transmissions by AIS equipment</b> (in co-operation with FSI and COMSAR as necessary)	2009	MSC 82/24, paragraph 21.38
H.14	<b>Review of vague expressions in SOLAS regulation V/22</b>	2009	MSC 82/24, paragraphs 21.39 to 21.40
H.15	<b>Revision of the Guidance on the application of AIS binary messages</b>	2009	MSC 82/24, paragraph 21.41
H.16	<b>Improved safety of pilot transfer arrangements</b> (in co-operation with DE)	2009	MSC 82/24, paragraph 21.42
H.17	Amendments to the Performance standards for VDR and S-VDR	2 sessions	MSC 83/28, paragraph 25.34
H.18	Development of procedures for updating shipborne navigation and communication equipment (in co-operation with COMSAR)	2 sessions	MSC 83/28, paragraph 25.33

**SUB-COMMITTEE ON SHIP DESIGN AND EQUIPMENT (DE)**

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
1	Casualty analysis (co-ordinated by FSI)	Continuous	MSC 70/23, paragraphs 9.17 and 20.4; DE 50/27, section 17
2	<b>Consideration of IACS unified interpretations</b>	Continuous	MSC 78/26, paragraph 22.12; DE 50/27, section 8
H.1	<b>Amendments to resolution A.744(18)</b>	2008	DE 45/27, paragraphs 7.18 and 7.19; DE 50/27, section 3
H.2	<b>Measures to prevent accidents with lifeboats</b> (in co-operation with FSI, NAV and STW)	2008	MSC 74/24, paragraph 21.34; DE 50/27, section 12
H.3	<b>Compatibility of life-saving appliances</b>	2008	DE 47/15, paragraph 5.3; MSC 78/26, paragraph 24.37.1; DE 50/27, section 13
H.4	<b>Review of the SPS Code</b> (in co-operation with DSC, FP, NAV, COMSAR and SLF)	2008	MSC 78/26, paragraph 24.9; DE 50/27, section 9

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- Notes:**
- 1 "H" means a high priority item and "L" means a low priority item. However, within the high and low priority groups, items have not been listed in any order of priority.
  - 2 Items printed in bold letters have been selected for the provisional agenda for DE 51.

**Sub-Committee on Ship Design and Equipment (DE) (continued)**

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
H.5	<b>Development of provisions for gas-fuelled ships</b> (co-ordinated by BLG)	2008	MSC 78/26, paragraph 24.39; DE 50/27, section 7
H.6	<b>Test standards for extended service intervals of inflatable liferafts</b>	2008	MSC 78/26, paragraph 24.41; DE 50/27, section 14
H.7	<b>Amendments to the Guidelines for ships operating in Arctic ice-covered waters</b> (in co-operation with SLF, as necessary)	2008	MSC 79/23, paragraph 8.25; DE 50/27, section 15
H.8	<b>Revision of the Code on Alarms and Indicators</b> (in co-operation with appropriate sub-committees, as necessary)	2008	MSC 79/23, paragraph 20.28; DE 50/27, section 10
H.9	<b>Amendments to the MODU Code</b>	2008	MSC 79/23, paragraph 22.51; DE 50/27, section 11
H.10	<b>Guidelines for uniform operating limitations of high-speed craft</b> (in co-operation with COMSAR, NAV and SLF)	2009	MSC 81/25, paragraph 23.45; DE 50/27, section 18
H.11	<b>Guidelines for maintenance and repair of protective coatings</b>	2008	MSC 81/25, paragraph 23.48.1; DE 50/27, section 19
H.12	<b>Requirements and standard for corrosion protection of means of access arrangements</b>	2008	MSC 81/25, paragraph 23.48.2; DE 50/27, section 20
H.13	<b>Performance standards for recovery systems</b>	2008	MSC 81/25, paragraph 23.49.1; DE 50/27, section 21

**Sub-Committee on Ship Design and Equipment (DE) (continued)**

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
H.14	<b>Guidelines for the approval of novel life-saving appliances</b>	2008	MSC 81/25, paragraph 23.49.2; DE 50/27, section 22
H.15	<b>Review of MEPC.1/Circ.511 and relevant MARPOL Annex I and Annex VI requirements</b>	2008	MEPC 55/23, paragraph 6.16; DE 50/27, section 23
H.16	<b>Guidance to ensure consistent policy for determining the need for watertight doors to remain open during navigation</b>	2009	SLF 49/17, paragraph 3.11; MSC 82/24, paragraph 21.47
H.17	<b>Review of SOLAS requirements on new installation of materials containing asbestos</b>	2009	MSC 82/24, paragraph 21.48; DE 50/27, paragraphs 25.19 to 25.21
H.18	Development of a new framework of requirements for life-saving appliances (in co-operation with FP and COMSAR as necessary and when requested by DE)	4 sessions	MSC 82/24, paragraph 21.49
H.19	Improved safety of pilot transfer arrangements (co-ordinated by NAV)	2 sessions	MSC 82/24, paragraph 21.50
H.20	<b>Cargo oil tank coating and corrosion protection</b>	2009	MSC 82/24, paragraphs 21.51 and 23.12; DE 50/27, paragraphs 25.15 to 25.18

**Sub-Committee on Ship Design and Equipment (DE) (continued)**

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
H.21	Development of safety objectives and functional requirements of the Guidelines on alternative design and arrangements for SOLAS chapters II-1 and III	3 sessions	MSC 82/24, paragraphs 3.92 and 21.52
H.22	<b>Interpretation of SOLAS regulations II-1/1.3 and II-1/3-6</b>	2008	MSC 82/24, paragraphs 7.8 and 21.53; DE 50/27, paragraphs 25.24 to 25.28
H.23	Protection against noise on board ships	2 sessions	MSC 83/28, paragraph 25.41
L.1	<b>Revision of resolution A.760(18)</b>	2008	DE 46/32, paragraph 31.23; DE 50/27, section 16
L.2	Free-fall lifeboats with float-free capabilities	1 session	MSC 76/23, paragraphs 20.41.3 and 20.48; DE 47/25, paragraph 22.6
L.3	Guidelines on equivalent methods to reduce on-board NOx emission	2 sessions	MEPC 41/20, paragraph 8.22.1; BLG 10/19, paragraph 12.3; MEPC 55/23, paragraph 19.9

**Sub-Committee on Ship Design and Equipment (DE) (continued)**

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
L.4	Performance standards for protective coatings	2 sessions	MSC 76/23, paragraphs 20.41.2 and 20.48; DE 50/27, section 4
	.1 mandatory application of the Performance standard for protective coatings for void spaces on bulk carriers and oil tankers		
	.2 performance standard for protective coatings for void spaces on all types of ships		

**SUB-COMMITTEE ON STABILITY AND LOAD LINES AND ON FISHING VESSELS SAFETY (SLF)**

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
1	Analysis of intact stability casualty records	Continuous	MSC 70/23, paragraph 20.4; SLF 30/18, paragraphs 4.16 and 4.17
2	Analysis of damage cards	Continuous	MSC 70/23, paragraph 20.4; SLF 50/19, section 12
3	<b>Consideration of IACS unified interpretations</b>	Continuous	MSC 78/26, paragraph 22.12
H.1	<b>Development of explanatory notes for harmonized SOLAS chapter II-1</b>	2008	MSC 69/22, paragraph 20.60.1; SLF 50/19, section 3
H.2	<b>Safety of small fishing vessels</b> (in co-operation with DE, COMSAR, FP, NAV and STW, as necessary)	2010	MSC 79/23, paragraphs 11.15 and 20.32; SLF 50/19, section 5
H.3	<b>Revision of the Intact Stability Code</b>	2010	SLF 41/18, paragraph 3.14; SLF 50/19, section 4
H.4	<b>Development of options to improve effect on ship design and safety of the 1969 TM Convention</b>	2008	MSC 81/25, paragraph 23.53 SLF 50/19, section 6
H.5	<b>Guidelines for uniform operating limitations on high-speed craft</b> (co-ordinated by DE)	2008	MSC 81/25, paragraph 23.45; SLF 50/19, section 7

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- Notes:**
- 1 “H” means a high priority item and “L” means a low priority item. However, within the high and low priority groups, items have not been listed in any order of priority.
  - 2 Items printed in bold letters have been selected for inclusion in the provisional agenda for SLF 51.



**Sub-Committee on Stability and Load Lines and on Fishing Vessels Safety (SLF) (continued)**

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
H.6	<b>Time-dependent survivability of passenger ships in damaged condition</b>	2009	MSC 81/25, paragraph 23.54; SLF 50/19, section 8
H.7	<b>Guidance on the impact of open watertight doors on existing and new ship survivability</b>	2008	SLF 49/17, section 3; MSC 82/24, paragraph 21.56; SLF 50/19, section 15
H.8	<b>Stability and sea-keeping characteristics of damaged passenger ships in a seaway when returning to port by own power or under tow</b>	2008	MSC 82/24, paragraph 21.57; SLF 50/19, section 8
H.9	<b>Guidelines for drainage systems in closed vehicle and ro-ro spaces and special category spaces (in co-operation with FP)</b>	2009	MSC 83/28, paragraph 25.49
H.10	<b>Guidelines for verification of damage stability requirements for tankers and bulk carriers (in co-operation with DE and STW as necessary and when requested by SLF)</b>	2009	MSC 83/28, paragraph 25.52

**SUB-COMMITTEE ON STANDARDS OF TRAINING AND WATCHKEEPING (STW)**

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
1	<b>Validation of model training courses</b>	Continuous	STW 31/17, paragraph 14.4; STW 38/17, section 3
2	<b>Casualty analysis</b> (co-ordinated by FSI)	Continuous	MSC 70/23, paragraphs 9.17 and 20.4; MSC 77/26, paragraphs 18.10 and 23.40.2; STW 38/17, section 10
H.1	<b>Unlawful practices associated with certificates of competency</b>	Continuous	MSC 71/23, paragraph 20.55.2; STW 38/17, section 4
H.2	Measures to enhance maritime security	2 sessions	MSC 75/24, paragraphs 22.9 and 22.45; STW 38/17, section 6
H.3	<b>Comprehensive review of the STCW Convention and the STCW Code</b>	2010	STW 37/18, section 15; MSC 81/25, paragraphs 23.57.2, 23.40.2, 23.62 and 23.63; STW 38/17, section 12
H.4	<b>Review of the principles for establishing the safe manning levels of ships</b> (in co-operation with NAV)	2008	MSC 81/25, paragraphs 23.58 to 23.60 STW 38/17, section 13

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**Notes:** 1 “H” means a high priority item and “L” means a low priority item. However, within the high and low priority groups, items have not been listed in any order of priority.

2 Items printed in bold letters have been selected for the provisional agenda for STW 39.

**Sub-Committee on Standards of Training and Watchkeeping (STW) (continued)**

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
H.5	Development of training standards for recovery systems	2 sessions	MSC 81/25, paragraph 23.64
H.6	<b>Training for seafarer safety representatives</b>	2009	MSC 82/24, paragraph 21.23
L.1	Review of the implementation of STCW chapter VII	2 sessions	MSC 72/23, paragraph 21.56; STW 35/19, section 14
L.2	Clarification of the STCW-F Convention provisions and follow-up action to the associated Conference resolutions	2 sessions	STW 34/14, paragraph 11.8

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**ANNEX 39****PROVISIONAL AGENDAS FOR THE FORTHCOMING SESSIONS  
OF THE SUB-COMMITTEES****SUB-COMMITTEE ON BULK LIQUIDS AND GASES (BLG) – 12<sup>TH</sup> SESSION\***

- Opening of the session
- 1 Adoption of the agenda
  - 2 Decisions of other IMO bodies
  - 3 Evaluation of safety and pollution hazards of chemicals and preparation of consequential amendments
  - 4 Application of the requirements for the carriage of bio-fuels and bio-fuel blends
  - 5 Development of guidelines for uniform implementation of the 2004 BWM Convention
  - 6 Review of MARPOL Annex VI and the NO<sub>x</sub> Technical Code
  - 7 Development of provisions for gas-fuelled ships
  - 8 Amendments to MARPOL Annex I for the prevention of marine pollution during oil transfer operations between ships at sea
  - 9 Casualty analysis
  - 10 Consideration of IACS unified interpretations
  - 11 Development of international measures for minimizing the translocation of invasive aquatic species through bio-fouling of ships
  - 12 Review of the Recommendation for material safety data sheets for MARPOL Annex I cargoes and marine fuels
  - 13 Revision of the IGC Code
  - 14 Work programme and agenda for BLG 13
  - 15 Election of Chairman and Vice-Chairman for 2009
  - 16 Any other business
  - 17 Report to the Committees

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\* Agenda item numbers do not necessarily indicate priority.

**SUB-COMMITTEE ON DANGEROUS GOODS, SOLID CARGOES AND CONTAINERS (DSC) –  
13<sup>TH</sup> SESSION\***

- Opening of the session
- 1 Adoption of the agenda
- 2 Decisions of other IMO bodies
- 3 Amendments to the IMDG Code and supplements, including harmonization of the  
IMDG Code with the UN Recommendations on the Transport of Dangerous Goods
  - .1 harmonization of the IMDG Code with the UN Recommendations on the  
Transport of Dangerous Goods
  - .2 amendment (34-08) to the IMDG Code and supplements
- 4 Amendments to the BC Code, including evaluation of properties of solid bulk cargoes
- 5 Casualty and incident reports and analysis
- 6 Extension of the BLU Code to include grain
- 7 Review of the Recommendations on the safe use of pesticides in ships
- 8 Guidance on protective clothing
- 9 Revision of the Code of safe practice for ships carrying timber deck cargoes
- 10 Form and procedure for approval of the Cargo securing manual
- 11 Mandatory application of the provisions on safe working conditions for securing of  
containers
- 12 Stowage of water-reactive materials
- 13 Amendments to the International Convention for Safe Containers, 1972
- 14 Review of Guidelines for packing of cargo transport units
- 15 Work programme and agenda for DSC 14
- 16 Election of Chairman and Vice-Chairman for 2009
- 17 Any other business
- 18 Report to the Maritime Safety Committee

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\* Agenda item numbers do not necessarily indicate priority.

**SUB-COMMITTEE ON FIRE PROTECTION (FP) – 52<sup>ND</sup> SESSION\***

- Opening of the session
- 1 Adoption of the agenda
  - 2 Decisions of other IMO bodies
  - 3 Performance testing and approval standards for fire safety systems
  - 4 Comprehensive review of the Fire Test Procedures Code
  - 5 Review of fire safety of external areas on passenger ships
  - 6 Measures to prevent fires in engine-rooms and cargo pump-rooms
  - 7 Fire resistance of ventilation ducts
  - 8 Review of the SPS Code
  - 9 Application of requirements for dangerous goods in package form in SOLAS and the 2000 HSC Code
  - 10 Unified interpretation on the number and arrangement of portable extinguishers
  - 11 Development of provisions for gas-fuelled ships
  - 12 Consideration of IACS unified interpretations
  - 13 Fixed hydrocarbon gas detection systems on double-hull oil tankers
  - 14 Clarification of SOLAS chapter II-2 requirements regarding interrelation between central control station and safety centre
  - 15 Analysis of fire casualty records
  - 16 Measures to prevent explosions on oil and chemical tankers transporting low-flash point cargoes
  - 17 Recommendation on evacuation analysis for new and existing passenger ships
  - 18 Work programme and agenda for FP 53
  - 19 Election of Chairman and Vice-Chairman for 2009
  - 20 Any other business

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\* Agenda item numbers do not necessarily indicate priority.

**SUB-COMMITTEE ON FLAG STATE IMPLEMENTATION (FSI) – 16<sup>TH</sup> SESSION\***

- Opening of the session
- 1 Adoption of the agenda
- 2 Decisions of other IMO bodies
- 3 Responsibilities of Governments and measures to encourage flag State compliance
- 4 Mandatory reports under MARPOL
- 5 Port reception facilities-related issues
- 6 Casualty statistics and investigations
- 7 Harmonization of port State control activities
- 8 Development of guidelines on port State control under the 2004 BWM Convention
- 9 PSC Guidelines on seafarers' working hours
- 10 Comprehensive analysis of difficulties encountered in the implementation of IMO instruments
- 11 Review of the Survey Guidelines under the HSSC (resolution A.948(23))
- 12 Consideration of IACS Unified Interpretations
- 13 Illegal, unregulated and unreported (IUU) fishing and implementation of resolution A.925(22)
- 14 Review of the Code for the Implementation of Mandatory IMO Instruments
- 15 Work programme and agenda for FSI 17
- 16 Election of Chairman and Vice-Chairman for 2009
- 17 Any other business
- 18 Report to the Committees

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\* Agenda item numbers do not necessarily indicate priority.

**SUB-COMMITTEE ON RADIOCOMMUNICATIONS AND SEARCH AND RESCUE (COMSAR) –  
12<sup>TH</sup> SESSION\***

- Opening of the session
- 1 Adoption of the agenda
- 2 Decisions of other IMO bodies
- 3 Global Maritime Distress and Safety System (GMDSS)
  - .1 matters relating to the GMDSS Master Plan
  - .2 operational and technical co-ordination provisions of maritime safety information (MSI) services, including review of the related documents
- 4 ITU maritime radiocommunication matters
  - .1 Radiocommunication ITU-R Study Group 8 matters
  - .2 ITU World Radiocommunication Conference matters
- 5 Satellite services (Inmarsat and COSPAS-SARSAT)
- 6 Matters concerning search and rescue, including those related to the 1979 SAR Conference and the implementation of the GMDSS
  - .1 harmonization of aeronautical and maritime search and rescue procedures, including SAR training matters
  - .2 plan for the provision of maritime SAR services, including procedures for routing distress information in the GMDSS
  - .3 medical assistance in SAR services
- 7 Developments in maritime radiocommunication systems and technology
- 8 Revision of the IAMSAR Manual
- 9 Replacements for use of NBDP (radio telex) for maritime distress and safety communications in maritime MF/HF bands
- 10 Guidelines for uniform operating limitations of high-speed craft
- 11 Development of an e-navigation strategy
- 12 Work programme and agenda for COMSAR 13
- 13 Election of Chairman and Vice-Chairman for 2009
- 14 Any other business
- 15 Report to the Maritime Safety Committee

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\* Agenda item numbers do not necessarily indicate priority.



**SUB-COMMITTEE ON SAFETY OF NAVIGATION (NAV) – 54<sup>TH</sup> SESSION\***

- Opening of the session
- 1 Adoption of the agenda
  - 2 Decisions of other IMO bodies
  - 3 Routeing of ships, ship reporting and related matters
  - 4 Development of guidelines for IBS, including performance standards for bridge alert management
  - 5 Amendments to the General Provisions on Ships' Routeing
  - 6 Carriage requirements for a bridge navigational watch alarm system
  - 7 Review of COLREGs regarding the right of way of vessels over pleasure craft
  - 8 Amendments to COLREG Annex I related to colour specification of lights
  - 9 ITU matters, including Radiocommunication ITU-R Study Group 8 matters
  - 10 Code of conduct during demonstrations/campaigns against ships on high seas
  - 11 Measures to minimize incorrect data transmissions by AIS equipment
  - 12 Worldwide radionavigation system (WWRNS)
  - 13 Development of an e-navigation strategy
  - 14 Development of carriage requirements for ECDIS
  - 15 Guidelines for uniform operating limitations of high-speed craft
  - 16 Guidelines on the layout and ergonomic design of safety centres on passenger ships
  - 17 Review of vague expressions in SOLAS regulation V/22
  - 18 Revision of the Guidance on the application of AIS binary message
  - 19 Improved safety of pilot transfer arrangements
  - 20 Casualty analysis

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\* Agenda item numbers do not necessarily indicate priority.

- 21 Consideration of IACS unified interpretations
- 22 Work programme and agenda for NAV 55
- 23 Election of Chairman and Vice-Chairman for 2009
- 24 Any other business
- 25 Report to the Maritime Safety Committee

**SUB-COMMITTEE ON SHIP DESIGN AND EQUIPMENT (DE) – 51<sup>ST</sup> SESSION\***

- Opening of the session
- 1 Adoption of the agenda
  - 2 Decisions of other IMO bodies
  - 3 Amendments to resolution A.744(18)
  - 4 Development of provisions for gas-fuelled ships
  - 5 Review of the SPS Code
  - 6 Revision of the Code on Alarms and Indicators
  - 7 Amendments to the MODU Code
  - 8 Measures to prevent accidents with lifeboats
  - 9 Compatibility of life-saving appliances
  - 10 Test standards for extended service intervals of inflatable liferafts
  - 11 Amendments to the Guidelines for ships operating in Arctic ice-covered waters
  - 12 Revision of resolution A.760(18)
  - 13 Guidelines for uniform operating limitations of high-speed craft
  - 14 Guidelines for maintenance and repair of protective coatings
  - 15 Requirements and standard for corrosion protection of means of access arrangements
  - 16 Performance standards for recovery systems
  - 17 Guidelines for the approval of novel life-saving appliances
  - 18 Review of MEPC.1/Circ.511 and relevant MARPOL Annex I and Annex VI requirements
  - 19 Guidance to ensure consistent policy for determining the need for watertight doors to remain open during navigation
  - 20 Cargo oil tank coating and corrosion protection

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\* Agenda item numbers do not necessarily indicate priorities.

- 21 Interpretation of SOLAS regulations II-1.3 and II-1/3-6
- 22 Review of SOLAS requirements on new installation of materials containing asbestos
- 23 Consideration of IACS unified interpretations
- 24 Definition of the term “bulk carrier”
- 25 Work programme and agenda for DE 52
- 26 Election of Chairman and Vice-Chairman for 2009
- 27 Any other business
- 28 Report to the Maritime Safety Committee

**SUB-COMMITTEE ON STABILITY AND LOAD LINES AND ON FISHING VESSELS SAFETY (SLF) –  
51<sup>ST</sup> SESSION\***

- Opening of the session
- 1 Adoption of the agenda
  - 2 Decisions of other IMO bodies
  - 3 Development of explanatory notes for harmonized SOLAS chapter II-1
  - 4 Revision of the Intact Stability Code
  - 5 Safety of small fishing vessels
  - 6 Development of options to improve effect on ship design and safety of the 1969 TM Convention
  - 7 Guidelines for uniform operating limitations on high-speed craft
  - 8 Time dependant survivability of passenger ships in damaged condition
  - 9 Consideration of IACS unified interpretations
  - 10 Guidance on the impact of open watertight doors on existing and new ship survivability
  - 11 Stability and sea-keeping characteristics of damaged passenger ships in a seaway when returning to port by own power or under tow
  - 12 Guidelines for drainage systems in closed vehicle and ro-ro spaces and special category spaces
  - 13 Guidelines for verification of damage stability requirements for tankers and bulk carriers
  - 14 Work programme and agenda for SLF 52
  - 15 Election of Chairman and Vice-Chairman for 2009
  - 16 Any other business
  - 17 Report to the Maritime Safety Committee

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\* Agenda item numbers do not necessarily indicate priority.

**SUB-COMMITTEE ON STANDARDS OF TRAINING AND WATCHKEEPING (STW) – 39<sup>TH</sup> SESSION\***

- Opening of the session
- 1 Adoption of the agenda
  - 2 Decisions of other IMO bodies
  - 3 Validation of model training courses
  - 4 Unlawful practices associated with certificates of competency
  - 5 Training for seafarer safety representatives
  - 6 Casualty analysis
  - 7 Comprehensive review of the STCW Convention and the STCW Code
  - 8 Review of the principles for establishing the safe manning levels of ships
  - 9 Work programme and agenda for STW 40
  - 10 Election of Chairman and Vice-Chairman for 2009
  - 11 Any other business
  - 12 Report to the Maritime Safety Committee

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\* Agenda item numbers do not necessarily indicate priority.



**ANNEX 40****STATEMENT BY THE DELEGATION OF THE MARSHALL ISLANDS****Introduction of the proposal of the LRIT Consortium in  
relation to the establishment and operation of the  
International LRIT Data Centre and International LRIT Data Exchange**

Good morning Mr. Chairman and Honourable delegates. In introducing this paper, the Marshall Islands wishes to explicitly reiterate to the Committee, for absolute clarity, that the Administration, because of its active involvement in the development of LRIT, has been requested to and is acting solely as a conduit for the submission of the proposal in the annex to document MSC 83/6/6 on behalf of an LRIT Consortium, which, as it turns out, is the only response to the LRIT Coordinator's RFP for the development and operation of the IDC and IDE. The Marshall Islands emphasize that, as indicated in paragraph 4 of the aforementioned document, we have submitted the proposal without obligation or intent to be involved in any way in the activities of the Consortium, including that of the hosting of the IDE and IDC.

The Consortium partners consist of Pole Star Space Applications Limited as lead contractor (a legal entity incorporated in the United Kingdom), GateHouse A/S (incorporated in Denmark) and Wallem Innovative Solutions Inc. (incorporated in the Philippines), with services provided by Singapore Telecommunications Limited (SingTell) (incorporated in Singapore). Collectively, the Consortium's core competencies cover all the necessary areas required to both develop the LRIT System in a timely manner – and may I remind you all that this is by the 30<sup>th</sup> June 2008 next year, – and operate the System in accordance with the associated Performance Standards. Each of the partners has a high professional standing in their respective maritime fields; Pole Star – in the provision of commercial LRIT services to shipping, GateHouse – in the provision of advanced AIS data management solutions, Wallem Innovative Solutions – in the provision of offshore user support services, and SingTel – in the provision of hosting and satellite communication services.

Now on to the high-level detail of their proposal. With regard to project management, a senior management team will be put in place to ensure effective project execution and budgetary control. Pole Star, as the lead contractor located in London and consequently with easy access to both IMSO and/or the IMO, would have the responsibility of overall project management and be Consortium point-of-contact, and for this would provide a dedicated project manager. GateHouse would have responsibility for technical management and for this would provide a dedicated technical manager to liaise closely with the Pole Star project manager. All options would be considered with respect to the most efficient utilisation of the project manager including possible secondment to, or co-location at IMSO or the IMO.

In terms of project implementation, in order for an operationally-compliant System to be implemented in the shortest possible timeframe with the minimum of risk, the proposal sets out a two-phase approach each having two sub-phases as follows:



Phase 1a – which relates to system development – proposes the development of a System operationally compliant to the Performance Standards using existing proven and resilient commercial systems. The commercial systems to be used would be enhanced to comply with specifically, the communication protocol, system security, and external interface to the Data Distribution Plan (DDP) - as defined in the technical specifications developed by the *Ad-Hoc* Engineering Group.

Phase 1b is a 3-year operational phase where the System is utilized by Contracting Governments for tracking ships in a combination of flag, port, and coastal State capacities.

Phase 2a relates to an upgrade of the System to be fully technically compliant with the technical specifications developed by the *Ad Hoc* Engineering Group; and

Phase 2b is a 2-year operational phase.

With regard to technical management, in order to take advantage of co-development, co-location and co-management efficiencies the proposal sets out the IDC and IDE as an integrated development (although in reality the IDC and IDE are two physical entities hosted on separate servers with separate back-up and redundancy strategies in place). User support will be critical to the success of the overall LRIT program, and the proposal sets out a 24/7 user support operations centre, managed and operated by Wallem Innovative Solutions using its Clark facility in the Philippines. Similarly, system hosting and network services would be of crucial importance, and the proposal sets out a data network centre managed and operated by SingTel using its EXPAN-Singapore world-class facility. With respect to airtime, in order to take advantage of bulk purchase discounts it is further proposed to enter into a service agreement with SingTel for the provision of Inmarsat C and Iridium airtime for Sea Areas A1-A3 and A4 respectively.

With regard to financial management, a complete Phase 1 costing of eleven million pounds sterling is presented, consisting of six hundred and fifty thousand pounds to fund the Phase 1a system development and ten million three hundred and fifty thousand pounds for the full three year Phase 1b operations. In order to fund this, the proposal puts forward a simple dual-user financial model whereby a Contracting Government is a “provider” and/or “user” of System services, i.e. a Contracting Government providing its flagged-ships to the System for LRIT management and a Contracting Government using the System to obtain LRIT information respectively. To participate in the System, all Contracting Governments, both providers and users, would be required to take out a funded subscription.

For purposes of financial modelling the proposal assumes a total of twenty thousand ships would be managed by the System on behalf of those Contracting Governments not establishing an NDC, or joining an RDC or CDC. To fund a System supporting this volume of ships to the expected compliance-level requires commitment from Contracting Governments to provide start-up development funding and an ongoing operational commitment to utilise LRIT information. Without start-up commitment, the System could not be developed and without operational commitment the System would not be sustainable. To this end, the dual-user financial model being proposed consists firstly of a provider subscription fee payable on a per ship basis by those participating Contracting Governments requiring integration of their flagged ships into the IDC, and secondly a user fee payable by those Contracting Governments utilising LRIT information from those ships integrated into the IDC.

To summarize the financial reality, all Contracting Governments are required to contribute at different levels in order to meet the expenditures associated with ensuring the sustained financial viability of the LRIT system. The proposed financial model is designed such that the start-up development cost is borne by the data providers and the operating cost is borne by the data users. Consequently, the cost of a single position report decreases with an increase in the overall demand for position reports. In conjunction with an assumed twenty thousand ship IDC and a one hundred pound per ship provider subscription fee, the number of annual position reports required to be utilised in order to achieve a twelve and half pence or twenty-five US cent position report target price is twenty-four million. Currently there are indicative commitments of just over eight million position reports from the United States, Canada, Australia and India, i.e. only thirty-three per cent. This, of course, does not include those also indicated in MSC 83/WP.9 and as provided through Committee member interventions made at this meeting.

The primary parameters of the financial model are; the number of ships in the IDC and the associated provider subscription fee, coupled with the indicative usage commitment, and the derived position report fee. These parameters are mutually inclusive and flexible such that the levels set out in the proposal could be varied to provide a trade-off between the provider subscription fee and position report fee depending upon the number of subscribers and usage commitment.

At this point in our introduction Mr. Chairman, rather than go into any further detail on this matter, we would like to inform the Committee that we have prepared a J-paper for presentation in the Working Group detailing a revised financial model.

The revised financial model, which is being put forward also at the request of the Intersessional MSC Working Group on LRIT, separates out the subscription fee into an IDE licensing fee applicable to all participating Data Centres and an IDC commissioning fee applicable to all ships joining the IDC, and the usage fee separated into an IDE usage fee applicable to all transactions passing through the system and IDC usage fee applicable to the use of LRIT information from those ships integrated into the IDC. In order not to cross-subsidize the development and operation of the IDE and IDC, the IDE “licensing” fee funds the development of the IDE and the IDC “licensing” fee funds the development of the IDC, whilst the IDE “usage” fee funds the operation of the IDE and the IDC “usage” fee funds the operation of the IDC. This model clarifies several issues raised by the proposal. It provides a clear separation of IDE and IDC development and operations costs, and furthermore provides a logical and fair approach to the implementation of LRIT. The J-paper when presented will also allow us to detail the variable relationship between the primary parameters, the impact of any reduction in the number of ships using the IDC, the sliding scale of indicative usage against resultant position report pricing, and the respective costs of an IDE or IDC-only implementation.

Finally, with regard to legal aspects and administrative housekeeping, the Consortium has taken into account the core documentation prepared by the Committee as specified in section 4.2 of the request for submission of proposals issued by IMSO, and it is the view of the Consortium that the proposal includes sufficient technical, operational, financial, legal and administrative details to allow IMSO and the IMO to evaluate the proposal, and the Committee to take a decision on where the IDE and IDC shall be located and who would operate it.

In the expectation that, in the time frame from the meeting of MSC 83, Contracting Governments do commit to a sustainable level of subscription and usage, and assuming an approved financial model, then the Consortium would commit to entering into detailed contract negotiations with IMSO and/or the IMO Secretariat in order to conclude a formal agreement for the provision of the LRIT facilities concerned. At this stage the legal aspects detailed in the request for submission of proposals issued by IMSO can be addressed with respect to data protection assurances, legal regime and organizational status. The legal formulation of the Consortium would be decided during the contract negotiation phase. A formal Joint Venture might be established between two or more of the partners or alternatively services offered by one or more of the partners might be based upon a traditional commercial service provision contract to the other partners.

Mr. Chairman, thank you and the Committee for your perseverance.

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**ANNEX 41****STATEMENT BY THE DELEGATION OF THE UNITED STATES**

The International Convention for the Safety of Life at Sea (SOLAS) Convention is a technical instrument, established many decades ago, for the principal purposes of protecting lives, property, and the marine environment. Our delegation is concerned that some would like to use SOLAS as a vehicle to establish compulsory individual legal rights and required legal processes; use of the SOLAS Convention for that purpose is not acceptable to this delegation. Although the United States believes that a code for casualty investigations is needed, we regret that we cannot support the Code in its current form. As presently drafted, the Code contains language that would unnecessarily bind Parties as to legal rights and procedures. These provisions, while worthy of consideration by another Committee and international bodies competent to do so, are incompatible with the technical nature of SOLAS. In fact, there already exists such an instrument under the cognizance of both the IMO Legal Committee (LEG) and International Labour Organization (ILO). That instrument, the “Joint IMO/ILO Guidelines for the Fair Treatment of Seafarers in the Event of a Maritime Accident,” is presently under review by those bodies. The issues presented by the submitted meeting documents (and debate) are essentially the same as those under discussion with regard to the Joint IMO/ILO Guidelines. Furthermore, there is significant potential for the Code as presently worded to seriously conflict with the Joint IMO/ILO Guidelines.

The SOLAS Convention has a long and successful history. In the view of this delegation, its fundamental nature should not be changed to take it beyond the competency of this Committee or perhaps even this Organization.

After careful review of the existing text of the draft Code, the Government of the United States has identified significant areas of substantive and procedural concern that would currently prevent it from allowing these amendments to enter into force for the United States. Accordingly, our delegation would suggest that the draft Code be returned to the 16th session of the Sub-Committee on Flag State Implementation for further consideration to remove individual legal rights and legal process requirements and to prevent inconsistencies with the outcomes from other bodies (i.e., LEG 93).

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**Translation****ANNEX 42****DECLARATION BY THE DELEGATION OF FRANCE**

We wish to inform the Committee about the inquiry report, published recently by the French Marine Accident Investigation Office (BEAmer) concerning the loss of containers in the Bay of Biscay by the **Otello**, owned by CMA CGM.

The report is now available in French on the BEAmer web site. An English version should be available online by the end of October.

The **Otello** is a container vessel, 334 m in length and with a capacity of 8238 TEUs. In February 2006, after the ship had navigated up the Spanish coast and rounded Cape Finisterre on its way to Le Havre, it was noticed in the southern Bay of Biscay that around fifty containers had been lost at sea and that several stacks had collapsed to starboard aft.

Weather conditions were difficult, with a freshening breeze and a very rough sea causing sizeable platform shift, but they were not exceptional for the area at that time of year.

The investigation revealed three groups of contributing factors:

The first concerns automatic twistlocks and their reliability;

The second concerns loading procedures, the weight of the containers, their state of repair, their securing and the influence of the cargo chain from consignors to ships.

The third relates to construction and platform shifts on ships, and to using expert systems to assist crews with the conduct of vessels.

In the particular case of the CMA CGM's **Otello**, the shipowner took immediate measures that followed the issued guidelines: replacement of automatic twistlocks on the afterdeck by semi-automatic ones; strengthened fastening, expert examinations, studies, and experimental instrumentation on a sister ship to help the operators prevent the occurrence of certain types of ship behaviour.

In more general terms, the report's conclusions complement and concur with those mentioned by the representative of the United Kingdom concerning the **Annabella**.

To our knowledge, the two reports which have just been summarized for you are not the only ones. Other reports on this type of accident exist. A study being conducted under the auspices of the MARIN laboratory should produce some particularly significant results.

This is why France has drawn the Committee's attention to this matter as one for the Organization to address urgently, with all the factors involved in both loading and transport needing to undergo thorough scrutiny as soon as possible. Several solutions are possible, either on the basis of the existing instruments or by developing a code of practice, in which regard we support the proposals of the United Kingdom delegation.

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## ANNEX 43

## STATEMENT BY THE DELEGATION OF THE UNITED KINGDOM

We would like to inform the committee that the United Kingdom Maritime Accident Investigation Branch (MAIB) has recently published its report into an incident involving the container vessel **Annabella**, in which a container stack collapsed. The full report into the incident is available on the MAIB website at [www.maib.gov.uk](http://www.maib.gov.uk).

The MAIB make several recommendations which we believe will be of significant interest to the Committee.

The ship was on passage in the Baltic Sea to Helsinki and, in the evening of 25 February 2007, encountered heavy seas which caused the vessel to roll and pitch heavily. The next morning it was discovered that a stack of seven 30 foot cargo containers had collapsed, causing damage to the containers, the upper three of which contained hazardous cargo, Butylene gas (IMDG Class 2.1).

After consultation with the Finnish Maritime Authority, The ship was redirected to Kotka where the emergency services attended and specialist contractors safely unloaded the damaged hazardous containers. We would like, at this point, to express our appreciation to the Finnish Maritime Authority, the port authority at Kotka and the emergency services for their actions in addressing this incident.

The MAIB has concluded that the collapse of the cargo containers occurred because the lower containers were not strong enough to support the stack as their maximum allowable stack weight had been exceeded and no lashing bars had been applied. The MAIB considers that there are shortcomings in the flow of information relating to container stowage between the shippers, planners, the loading terminal and the vessel, with the pace of modern container operations making it very difficult for ship's staff to maintain control of the loading plan. We are aware that the MAIB has recommended that the International Chamber of Shipping (ICS) work with industry to develop, then promote adherence to, a best practice safety code and has given several recommendations on what should be referenced and included in such a code.

The United Kingdom will consider carefully all these recommendations, together with issues that are becoming apparent in the MAIB's ongoing investigation into the structural failure and flooding of the container vessel **MSC Napoli** earlier this year. The report into this incident is expected to be available early next year.

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**ANNEX 44****STATEMENT BY THE OBSERVER FROM ICS**

The International Chamber of Shipping (ICS) has received, and is considering in detail, the various elements of the UK MAIB recommendations arising from the **Annabella** incident. In order to do this we have already formed an industry expert group, in conjunction with the World Shipping Council. The aim of the group is to produce industry best practice guidelines and the first meeting has already been convened. I would hope that this work can be completed within 2008 and once completed it will be passed to IMO for the Committee's consideration.

We would be pleased to engage in discussion with other investigating authorities, such as France, to ensure the inclusion of as many lessons as possible from these unfortunate incidents.

I take this opportunity to urge that flag State investigation reports should be tabled at IMO, with the utmost expediency, so that industry can respond in like manner.

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