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REPORT OF THE MARITIME SAFETY COMMITTEE ON ITS SEVENTY-THIRD SESSION

Attached are annexes 18 to 37 to the report of the Maritime Safety Committee on its seventy-third session (MSC 73/21).

LIST OF ANNEXES

(See document MSC 73/21/Add.1 for annexes 1 to 5 and document MSC 73/21/Add.2 for annexes 6 to 17)

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ANNEX 18

NEW AND AMENDED TRAFFIC SEPARATION SCHEMES AND ASSOCIATED ROUTEING MEASURES

LANDFALL AND APPROACHES TO TALARA BAY

(Reference charts: PERU-HIDRONAV-1126,1984 edition, Rev.1998; 1150,1999 edition
Note: these charts are based on the World Geodetic System (WGS 84) Datum.)

Description of traffic separation scheme

The traffic separation scheme for the landfall and approaches to Talara Bay consists of the following:

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

(1) 04º 33'.10S; 08lº 19'.13W
(2) 04º 32'.90S; 081º 22'.13W
(3) 04º 33'.90S; 081º 22'.13W
(4) 04º 33'.70S; 081º 19'.13W

(b) A traffic zone for westbound traffic, between the separation zone and a line connecting the following geographical points:

(5) 04º 32'.40S; 081º 19'.13W
(6) 04º 31'.10S; 081º 22'.13W

(c) A traffic zone for eastbound traffic, between the separation zone and a line connecting the following geographical points:

(7) 04º 35'.70S: 081º 22'.13W
(8) 04º 34'.60S; 081º 19'.13W

LANDFALL OFF PUERTO SALAVERRY

(Reference charts: PERU-HIDRONAV–1270, 1988 edition, Rev.1998; 2111, 1987 edition, Rev.1994
Note: these charts are based on the World Geodetic System (WGS 84) Datum.)

Description of traffic separation scheme

The traffic separation scheme for the landfall off Puerto Salaverry consists of the following:

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

(1) 08º 12'.65S; 079º 02'.23W
(2) 08º 12'.65S; 079º 04'.63W
(3) 08º 13'.30S; 079º 04'.63W
(4) 08º 13'.30S; 079º 02'.23W

(b) A traffic lane for westbound traffic, between the separation zone and a line connecting the following geographical points:

(5) 08º 11'.96S; 079º 02'.23W
(6) 08º 11'.10S; 079º 04'.63W

(c) A traffic lane for eastbound traffic, between the separation zone and a line connecting the following geographical points:

(7) 08º 14'.80S; 079º 04'.63W
(8) 08º 14'.00S; 079º 02'.23W

LANDFALL AND APPROACHES TO FERROL BAY (PUERTO CHIMBOTE)

(Reference charts: PERU-HIDRONAV-1310, 1993 edition, Rev.1997; 2123, 1980 edition, Rev.1998
Note: these charts are based on the World Geodetic System (WGS 84) Datum.)

Description of traffic separation scheme

The traffic separation scheme for the landfall and approaches to Ferrol Bay (Puerto Chimbote) consists of the following:

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

(1) 09º 07'.20S; 078º 37'.83W
(2) 09º 07'.20S; 078º 40'.33W
(3) 09º 07'.80S; 078º 40'.33W
(4) 09º 07'.80S; 078º 37'.83W

(b) A traffic lane for westbound traffic, between the separation zone and a line connecting the following geographical points:

(5) 09º 06'.70S; 078º 37'.83W
(6) 09º 05'.80S; 078º 40'.33W

(c) A traffic lane for eastbound traffic, between the separation zone and a line connecting the following geographical points:

(7) 09º 09'.40S; 078º 40'.33W
(8) 09º 08'.40S; 078º 37'.83W

LANDFALL AND APPROACHES TO SAN NICOLAS BAY

(Reference charts: PERU-HIDRONAV-312, 1999 edition; 3122, 1999 edition
Note: these charts are based on the World Geodetic System (WGS 84) Datum.)

Description of traffic separation scheme

The traffic separation scheme for the landfall and approaches to San Nicolas Bay consists of the following:

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

(1) 15º 13'.10S; 075º 16'.13W
(2) 15º 13'.10S; 075º 18'.77W
(3) 15º 13'.85S; 075º 18'.77W
(4) 15º 13'.85S; 075º 16'.13W

(b) A traffic lane for westbound traffic, between the separation zone and a line connecting the following geographical points:

(5) 15º 12'.54S; 075º 16'.13W
(6) 15º 11'.70S; 075º 18'.77W

(c) A traffic zone for eastbound traffic, between the separation zone and a line between the following geographical points:

(7) 15º 15'.40S; 075º 18'.77W
(8) 15º 14'.45S; 075º 16'.13W

RIVER HUMBER ENTRANCE

(Reference charts: British Admiralty 1188, 1999 edition; 109, 1998 edition; 107, 1996 edition; 1190, 1997 edition.
Note: These charts are based on Ordnance Survey of Great Britain (1936) Datum.)

Description of the traffic separation scheme

Part I:
Entrance to River Humber within Port Area

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

(1)	53° 34'.20N,	000° 06'.42E	
(2)	53° 33'.52N,	000° 05'.80E	
(3)	53° 33'.12N,	000° 06'.90E	(Hobo)
(4)	53° 33'.90N,	000° 07'.53E	(No.3A Binks)
(1)	53° 34'.20N,	000° 06'.42E	

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

(5)	53° 33'.52N,	000° 07'.23E	(Delta)
(6)	53° 32'.71N,	000° 09'.75E	(Charlie)

(c) A traffic lane for inbound traffic established between the separation line specified in paragraph (b) above and straight line connecting the following geographical positions:

(4)	53° 33'.90N,	000° 07'.53E	(No.3A Binks)
(7)	53° 33'.14N,	000° 10'.37E	

(d) A traffic lane for outbound traffic established between the separation line specified in paragraph (b) above and straight line connecting the following geographical positions:

(3)	53° 33'.12N,	000° 06'.90E	(Hobo)
(8)	53° 32'.32N,	000° 09'.21E	(No.2B)

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

(7)	53° 33'.14N,	000° 10'.37E	
(8)	53° 32'.32N,	000° 09'.21E	(No.2B)
(9)	53° 32'.36N,	000° 11'.22E	
(10)	53° 33'.14N,	000° 11'.27E	
(11)	53° 33'.05N,	000° 10'.73E	(No.3 Chequer)
(7)	53° 33'.14N,	000° 10'.37E	

(f) A traffic separation line connecting the following geographical positions:

(12)	53° 32'.65N,	000° 11'.25E	(Bravo)
(13)	53° 32'.80N,	000° 13'.30E	(Alpha)

(g) A traffic lane for inbound traffic established between the separation line specified in paragraph (f) above and straight line connecting the following geographical positions:

(10)	53° 33'.14N,	000° 11'.27E
(14)	53° 33'.50N,	000° 13'.90E

(h) A traffic lane for outbound traffic established between the separation line specified in paragraph (f) above and straight line connecting the following geographical positions:

(9)	53° 32'.36N,	000° 11'.22E
(15)	53° 32'.39N,	000° 12'.90E

Part II:
River Humber Approaches

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

(15)	53° 32'.39N,	000° 12'.90E	
(16)	53° 32'.40N	000° 13'.28E	(No.2 Haile Sand)
(17)	53° 30'.57N,	000° 16'.72E	
(18)	53° 31'.88N,	000° 18'.40E	(Hotspur)
(19)	53° 33'.55N,	000° 18'.40E	
(20)	53° 34'.20N,	000° 17'.70E	(South Haile)
(21)	53° 34'.72N,	000° 16'.65E	(South Binks)
(22)	53° 33'.54N,	000° 14'.30E	(Spurn Light Float)
(14)	53° 33'.50N,	000° 13'.90E	
(15)	53° 32'.39N,	000° 12'.90E	

Eastern Approaches (Sea Reach)

(j) A separation line connecting the following geographical positions:

(23)	53° 32'.70N	000° 18'.40E	(Inner Sea Reach)
(24)	53° 32'.70N	000° 23'.06E	(Outer Sea Reach)

(k) A traffic lane for inbound traffic established between the separation line specified in (j) above and a straight line connecting the following geographical positions:

(19)	53° 33'.55N,	000° 18'.40E	
(25)	53° 33'.55N,	000° 23'.06E	

(l) A traffic lane for outbound traffic established between the separation line specified in paragraph (j) above and straight line connecting the following geographical positions:

(18)	53° 31'.88N,	000° 18'.40E	(Hotspur)
(26)	53° 31'.88N,	000° 23'.06E	

Southeast Approaches (Rosse Reach)

(m) A separation line connecting the following geographical positions:

(27)	53° 31'.22N	000° 17'.55E	(Inner Rosse Reach)
(28)	53° 29'.87N	000° 20'.90E	(Outer Rosse Reach)

(n) A traffic lane for inbound traffic established between the separation line specified in paragraph (m) above and a straight line connecting the following geographical positions:

(18)	53° 31'.88N,	000° 18'.40E	(Hotspur)
(29)	53° 30'.54N,	000° 21'.68E	

(o) A traffic lane for outbound traffic established between the separation line specified in paragraph (m) above and straight line connecting the following geographical positions:

(17) 53° 30'.57N, 000° 16'.72E
(30) 53° 29'.17N, 000° 20'.08E

Northeast Approaches (New Sand Hole)

(p) A separation line connecting the following geographical positions:

(31) 53° 34'.46N 000° 17'.17E
(32) 53° 36'.97N 000° 20'.75E

(q) A traffic lane for inbound traffic established between the separation line specified in paragraph (p) above, and a straight line connecting the following geographical positions:

(21) 53° 34'.72N 000° 16'.65E (South Binks)
(33) 53° 37'.25N 000° 20'.20E (Outer Binks)

(r) A traffic lane for outbound traffic established between the separation line specified in paragraph (p) above, and a straight line connecting the following geographical positions:

(20) 53° 34'.20N 000° 17'.70E (South Haile)
(34) 53° 36'.70N 000° 21'.30E (Middle New Sand)

AMENDMENTS TO THE TRAFFIC SEPARATION SCHEME IN PRINCE WILLIAM SOUND

(Reference Chart: United States 16700, 26th Edition – 19 September 1998
Note: This chart is based on North American 1983 Geodetic Datum.)

Description of the Traffic Separation Scheme

The traffic separation scheme "In Prince William Sound" consists of two parts:

Part I:
Prince William Sound

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

(1) 60º 20'.77N 146º 52'.31W
(2) 60º 48'.12N 147º 01'.78W
(3) 60º 48'.29N 146º 59'.77W
(4) 60º 20'.93N 146º 50'.32W

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

(5) 60º 20'.59N	146º 48'.18W
(6) 60º 49'.39N	146º 58'.19W

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

(7) 60º 49'.10N	147º 04'.19W
(8) 60º 20'.60N	146º 54'.31W

Part II:
Valdez Arm

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

(9) 60º 51'.08N	147º 00'.33W
(10) 60º 58'.60N	146º 48'.10W
(11) 60º 58'.30N	146º 47'.10W
(12) 60º 50'.45N	146º 58'.75W

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

(6) 60º 49'.39N	146º 58'.19W
(13) 60º 58'.01N	146º 46'.52W

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

(14) 60º 58'.93N	146º 48'.86W
(15) 60º 50'.61N	147º 03'.60W

Precautionary areas

Cape Hinchinbrook: A precautionary area is established, bounded by a line connecting the following geographical positions:

(5) 60º 20'.59N	146º 48'.18W
(16) 60º 12'.67N	146º 40'.43W
(17) 60º 11'.02N	146º 28'.65W
(18) 60º 05'.47N	146º 00'.01W
(19) 60º 00'.81N	146º 03'.53W
(20) 60º 05'.44N	146º 27'.58W
(21) 59º 51'.80N	146º 37'.51W
(22) 59º 53'.52N	146º 46'.84W
(23) 60º 07'.76N	146º 36'.24W
(24) 60º 11'.51N	146º 46'.64W
(8) 60º 20'.60N	146º 54'.31W

Bligh Reef: A precautionary area of radius 1’.5 miles is centred upon geographical position:

60º 49'.63N 147º 01'.33W

Note:
A pilot boarding area is located near the centre of the Bligh Reef precautionary area. Due to heavy vessel traffic, mariners are advised not to anchor or linger in this precautionary area except to pick up or disembark a pilot.

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ANNEX 19

RESOLUTION MSC.110(73)
(adopted on 1 December 2000)

MANDATORY SHIP REPORTING SYSTEM

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO regulation V/8-1 of the International Convention for the Safety of Life at Sea (SOLAS), 1974 concerning the adoption by the Organization of ship reporting systems,

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

TAKING INTO ACCOUNT the Guidelines and criteria for ship reporting systems adopted by resolution MSC.43(64),

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

1. ADOPTS, in accordance with SOLAS regulation V/8-1, the mandatory ship reporting system for the waters "Off Les Casquets and the adjacent coastal area", as described in the Annex to the present resolution;

2. DECIDES that the said mandatory ship reporting system will enter into force at 0000 hours UTC on 1 June 2001;

3. REQUESTS the Secretary-General to bring this resolution and its Annex to the attention of Member Governments and Contracting Governments to the SOLAS Convention.

ANNEX

DESCRIPTION OF THE MANDATORY SHIP REPORTING SYSTEM FOR THE WATERS OFF LES CASQUETS AND THE ADJACENT COASTAL AREA

1 CATEGORIES OF SHIPS REQUIRED TO PARTICIPATE IN THE SYSTEM

The new system will apply to ships of over 300 GT, in line with the MAREP, OUESSREP and CALDOVREP systems already in place in the Channel or west of the Channel.

Within the coverage zone, these provisions replace the MAREP system in force for ships of 300 GT and over. However, ships of less than 300 GT will have to continue to make reports in accordance with the provisions of the voluntary system in the following circumstances:

- When they are not in control of their manoeuvres, or moored in the traffic separation scheme or the coastal area;

- When their capacity to manoeuvre is limited, or

- When their aids to navigation are defective.

Outside the zone, the provisions of the MAREP system remain unchanged.

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

The reporting system would cover the TSS of Les Casquets and the adjacent coastal navigation area.

Thus, the area covered would be bounded by a line connecting the following four points:

A: 50º 10'.0 N / 002º 58'.0 W
B: 50º 10'.0 N / 002º 00'.0 W
C: 49º 20'.0 N / 002º 00'.0 W
D: 49º 20'.0 N / 002º 58'.0 W

The call should be made 2 nautical miles before entering the area (chart annexed).

Traffic crossing on regular routes

Ships making regular voyages from a port situated within the coverage area or in an adjacent area must send their reports to Jobourg. However, since ferries generally sail in accordance with fixed schedules, it will be possible for arrangements to be made on a case-by-case basis between ships and the Jobourg VTS.

Reference chart

The marine reference chart including all the area covered by the proposed system is French chart No.7311 of the Naval Hydrographical and Oceanographic Service (International chart No.1071).

3 FORMAT AND CONTENT OF REPORTS, AUTHORITY TO WHICH REPORTS SHOULD BE SENT, SERVICES AVAILABLE

The MANCHEREP reports required of ships entering the area covered by the system would be position reports of the OUESSREP and CALDOVREP type which are sent to the VTS by ships identifying themselves in the traffic separation schemes of Ouessant and the Pas de Calais.

A ship may elect, for reasons of commercial confidentiality, to communicate that section of the report which provides information on cargo by non-verbal means prior to entering the system.

The requirements listed below are taken from the standard reporting format set out in paragraph 2 of the appendix to resolution A.851(20).

3.1 Content

The report required should include:

.1 information considered to be essential:

(A) - name of ship, call sign or IMO number
(C or D) - position
(E and F) - course and speed

When they receive a position report message, the VTS operators do their best to correlate the position of the ship with the information available to them:

- echo radar at position indicated
- direction finding data
- description of the environment given by the officer of the watch
- position in relation to other ships (in case of dense traffic)
- course and speed.

Information on course and speed is thus an additional element enabling the VTS operators to correlate the announced position and if necessary to pick a ship out from within a group.

In addition, in accordance with the provisions of the SOLAS and MARPOL conventions, ships will be required to give information on any defects, damage, deficiencies or other limitations, as well as, if appropriate, information on pollution or cargo losses.

3.2 Recipient of report

The shore-based authority for the whole area is the Jobourg Vessel Traffic Service (VTS) (call sign 'Jobourg Trafic') operating from the premises of the Regional Operational Centre for Surveillance and Rescue (CROSS JOBOURG). This is a service of the Ministry of Equipment, Transport and Housing which is similar to the MRCC and the VTS.

The VTS broadcasts a regular information bulletin on ship traffic at 20 minutes and 50 minutes past the hour. This bulletin indicates:

- information on traffic
- urgent warnings to mariners concerning the area
- special weather bulletins.

This information is broadcast in French and English on VHF channel 80 following a call on VHF channel 16.

The VTS also broadcasts regular weather reports in French (07h00, 15h00 and 19h00 French time) and special reports in French and English at 3 minutes past the hour from coastal transmitters situated at Granville, Jobourg, Port en Bessin and Antifer.

In addition, if required, the VTS can provide personalized information on a ship, notably as an aid to positioning.

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

Ships detected and identified are tracked on radar. This tracking in no way exempts masters from their navigational responsibilities.

They are informed about traffic conditions in the traffic separation scheme, about the beaconing situation and about weather conditions; on request, they can receive personalized assistance.

The Channel vessel traffic services keep each other informed of transits by ships, particularly ships carrying hazardous cargoes.

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

The proposed communication requirements for the system are those defined for area A1 in the framework of the GMDSS.

Ship reporting is effected by radiotelephony on metric waves. The channels selected are VHF channel 13, on which there is continuous watch by the VTS, and channel 80, which is also used for broadcasting safety information.

The above-mentioned frequency plan would be used pending the modifications made necessary by the use of AIS transponders, which can also be used for transmitting reports. France will be sending a communication to IMO on the subject of the possibility of such transmissions.

If for any reason a ship finds it impossible to communicate with the VTS by VHF, it should use any other means of communication it may have available.

6 RULES AND REGULATIONS IN FORCE IN THE AREA OF THE PROPOSED SYSTEM

The International Regulations for Preventing Collisions at Sea (COLREGs) apply throughout the area covered by the proposed system.

Since the traffic separation scheme of Les Casquets is approved by IMO, regulation 10 applies therein.

Ships carrying dangerous goods coming from or bound for a port within the reporting zone must comply with the European Community directive HAZMAT (EC Directive 93/75).

In addition to these international regulations, the joint order issued by the Maritime Prefect for the Atlantic and the Maritime Prefect for the Channel and North Sea (No. 92/97 Brest, No.03/97 Cherbourg) regulates shipping in the approaches to the French North Sea, Channel and Atlantic coasts with a view to preventing accidental marine pollution.

These regulations provide, in particular, that ships carrying oil (MARPOL Annex I), dangerous liquid substances (MARPOL Annex II), noxious substances (MARPOL Annex III) or dangerous goods (IMDG Code) which are intending to pass through or to stay in French territorial waters, must give advance warning by sending a message to the appropriate CROSS five hours before entering those territorial waters, or six hours before setting sail.

The message sent to CROSS must indicate what movements the ship plans to make in territorial waters and the condition of its manoeuvring and navigational capabilities.

The same regulations require a watch to be kept on channel 16 VHF or other specific frequencies in certain areas, and also require that notification be given of any accident occurring less than 50 miles from the French coast and that the necessary measures be taken by the maritime authorities to reduce risks.

The United Kingdom has established a pollution control area under the Merchant Shipping (Prevention of Pollution) (Limits) Regulations, 1996. The reporting zone comes partially within these limits. Polluting ships within the zone may be prosecuted and sentenced to a heavy fine.

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

7.1 Shore-based facilities

The JOBOURG Vessel Traffic Service operates from the premises of the JOBOURG Regional Operational Centre for Surveillance and Rescue. This service has both radar and radio facilities.

7.2 Radar facilities

A radar monitoring system of the THOMSON TRS 3405 type is installed at the Jobourg centre. This facility has two transmitters/receivers. The main antenna is situated 202 metres above zero on the charts. An emergency radar facility of the THOMSON TRS 3410 type is also in service. The nominal range of the radar is 64 miles. The centre is manned by technical staff around the clock.

The radar data are processed and then interpreted by the personnel on duty. Watch is maintained on display consoles.

The echo of every ship detected in the area of coverage is noted as an automatically referenced radar track. Any additional information is keyed in by the operators for each track identified. The vessel traffic service is equipped with a system for processing and filing radar data which permits the publication of statistics and trajectography.

7.3 Radiocommunication facilities

The personnel on watch duty use radio facilities installed at the JOBOURG centre. The vessel traffic service has four dedicated transmitter/receivers for its exclusive use.

In addition, the VTS can if necessary make occasional use of the VHF radio facilities of the MRCC. These are both local and off-site VHF facilities.

The VTS is also equipped with MHF facilities and with aeronautical VHF, which enables it to establish contact with aircraft carrying out monitoring missions.

The operators of the vessel traffic service use direction finders which are accurate to within one half of a degree. One of these is installed at Jobourg and the other at the Roches Douvres lighthouse. On each of these direction finders it is possible to select two different channels simultaneously.

7.4 Information exchange

Lastly, a database shared by all three Channel vessel traffic services makes it possible to exchange information on ships identified, so that procedures for contacts between the VTS and the ships can be simplified.

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

The VHF radiocommunication facilities of the vessel traffic service are installed in Jobourg. They consist of four single channel transmitter/receivers and one emergency multi-channel transmitter/receiver. One multi-channel transmitter/receiver normally dedicated to the Jobourg MRCC supplements the VTS facilities.

Failure of several of the VHF radio facilities of the VTS would not eliminate all possibility of contact between the VTS and ships. There is thus no need to make provision for any special procedure in such a case.

If need should arise for an MF link in the event of failure of the facilities at the Jobourg centre, a call would be made to the Ouessant VTS coastal radio station.

In the event of simultaneous breakdown of both radar monitoring facilities, the harbour master's office of Aurigny Island would take over the vessel traffic service of Les Casquets until such time as repairs had been completed.

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ANNEX 20

AMENDMENTS TO THE GENERAL PROVISIONS ON SHIPS' ROUTEING (resolution A.572(14), as amended)

Amend the General Provisions on Ships' Routeing, (resolution A.572(14), as amended), as follows:

Section 1

1 Paragraph 1.1. In the last part of the paragraph where it says "or grounding in or near environmentally sensitive areas.", amend to " **,** grounding or anchoring in or near environmentally sensitive areas."

Section 2

2 Paragraph 2.1.1. Add the words "no anchoring areas" between "areas to be avoided" and "inshore traffic zones"; and

3 Renumber existing paragraphs 2.1.14 and 2.1.15 to 2.1.15 and 2.1.16 and add a new paragraph 2.1.14 as follows:

2.1.14 No anchoring area

A routeing measure comprising an area within defined limits where anchoring is hazardous or could result in unacceptable damage to the marine environment. Anchoring in a no anchoring area should be avoided by all ships or certain classes of ships, except in case of immediate danger to the ship or the persons on board.

Section 3

4 Paragraph 3.1. Add the words "or types and quantities of bunker fuel" after the last word "cargoes"; and

5 Paragraph 3.11.4. Add the words "or types and quantities of bunker fuel" between "cargoes" and "of a routeing".

Section 4

6 Add a new paragraph 4.6.4 as follows:

.4 *No anchoring areas* (figure 19);

7 After figure 18 insert figure 19, as given below:

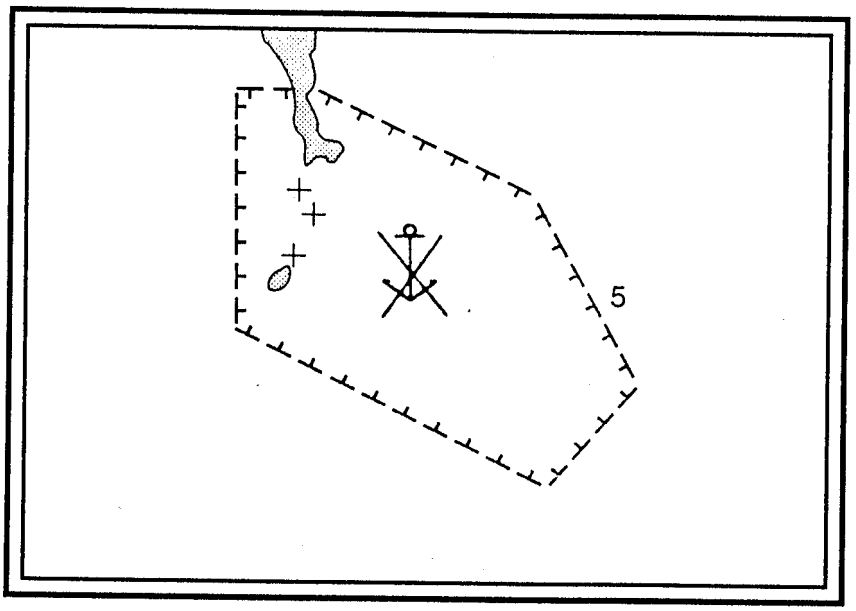

Figure 19 - *No anchoring area*

Section 5

8 Renumber existing paragraphs 5.6 to 5.7 and add a new paragraph 5.6 as follows:

"When establishing a no anchoring area for all ships or certain classes of ships, the necessity for creating such an area should be well demonstrated and the reasons stated. In general, these areas should be established only in areas where anchoring is hazardous, or where there is a possibility that unacceptable damage to the marine environment could result. The classes of ships which should avoid anchoring in an area should be considered and clearly identified in each particular case."

Section 8

9 Paragraph 8.1. Add the words "or types and quantities of bunker fuel" after the last word "cargoes".

Section 9

10 In paragraph 9.2, under the heading of "Legend", add "No anchoring areas" and under the heading of "Use of Legend", add "Shown on charts and referred to in notes.";

11 Table in paragraph 9.3, in row "5 Limits of restricted areas", column "Applications", add the words "no anchoring areas" between "avoided" and "and ends";

12 Under the heading Notes in paragraph 9.3, in the last sentence, replace "figures 1 to 18" by "figures 1 to 19";

13 Paragraph 9.4.16. Add "No anchoring area" on the right side of "Area to be avoided"; and

14 Add the following new paragraph 9.5.4 after paragraph 9.5.3:

"9.5.4 *No anchoring areas*

Notes on conditions governing no anchoring areas (classes and sizes of ships, etc,) should preferably be given on charts and should always be given in *Sailing Directions*."

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ANNEX 21

ROUTEING MEASURES OTHER THAN TRAFFIC SEPARATION SCHEMES

MANDATORY NO ANCHORING AREAS FOR ALL SHIPS ON FLOWER GARDEN BANKS CORAL REEFS

EAST FLOWER GARDEN BANK

(Reference chart: United States 11340, 65th edition, 5 February 2000.
Note*:* This chart is based on North American 1983 Geodetic Datum.)

Point Number	Latitude (N)	Longitude (W)
E-1	27º 52'.91	093º 37'.70
E-2	27º 53'.60	093º 38'.40
E-3	27º 55'.24	093º 38'.68
E-4	27º 57'.53	093º 38'.56
E-5	27º 58'.48	093º 37'.78
E-6	27º 59'.04	093º 35'.54
E-7	27º 59'.03	093º 35'.17
E-8	27º 55'.39	093º 34'.26
E-9	27º 54'.08	093º 34'.32
E-10	27º 53'.46	093º 35'.09
E-11	27º 52'.88	093º 36'.96

WEST FLOWER GARDEN BANK

(Reference chart: United States 11340, 65th edition, 5 February 2000.
Note*:* This chart is based on North American 1983 Geodetic Datum.)

Point Number	Latitude (N)	Longitude (W)
W-1	27º 49'.19	093º 50'.76
W-2	27º 50'.22	093º 52'.18
W-3	27º 51'.23	093º 52'.87
W-4	27º 51'.56	093º 52'.85
W-5	27º 52'.85	093º 52'.42
W-6	27º 55'.03	093º 49'.74
W-7	27º 54'.99	093º 48'.64
W-8	27º 54'.60	093º 47'.18
W-9	27º 54'.26	093º 46'.83
W-10	27º 53'.61	093º 46'.86
W-11	27º 52'.97	093º 47'.26
W-12	27º 50'.69	093º 47'.38
W-13	27º 49'.20	093º 48'.72

STETSON BANK

(Reference chart: United States 11300, 35th edition, 31 July 1990; 11330, 12th edition. 8 August 1998; 11340, 65th edition, 5 February 2000.
Note: These charts are based on North American 1983 Geodetic Datum.)

Point Number	Latitude (N)	Longitude (W)
S-1	28º 09'.52	094º 18'.53
S-2	28º 10'.17	094º 18'.50
S-3	28º 10'.13	094º 17'.40
S-4	28º 09'.48	094º 17'.43

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ANNEX 22

RESOLUTION MSC.111(73)
(adopted on 1 December 2000)

ADOPTION OF AMENDMENTS TO GUIDELINES AND CRITERIA FOR SHIP REPORTING SYSTEMS

THE MARITIME SAFETY COMMITTEE,

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

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

1. ADOPTS the amendments to section 3 of the Guidelines and Criteria for Ship Reporting Systems (resolution MSC.43(64)), set out in the Annex to the present resolution;

2. DETERMINES that the amendments to the Guidelines and Criteria for Ship Reporting Systems (resolution MSC.43(64)) shall enter into force on 1 July 2001;

3. INVITES Governments developing ship reporting systems for adoption by the Organization in accordance with SOLAS regulation V/8-1 to take account of the amendments set out in the Annex to the present resolution;

4. REQUESTS the Secretary-General to bring this resolution to the attention of all Contracting Governments to the SOLAS Convention and to Members of the Organization which are not Contracting Governments to the Convention.

ANNEX

AMENDMENTS TO GUIDELINES AND CRITERIA FOR SHIP REPORTING SYSTEMS (RESOLUTION MSC.43(64))

Section 3 - Criteria for planning, proposing and implementing adopted ship reporting systems by Contracting Governments

3.2 Add the words "or revising" between "Planning" and "ship reporting".

3.2.2 Add the words "or revising" between "In planning" and "a system".

3.2.2.2 Add the words "or types and quantities of bunker fuel" after the last word "cargoes".

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ANNEX 23

DRAFT ASSEMBLY RESOLUTION

AMENDMENTS TO THE INTERNATIONAL REGULATIONS FOR PREVENTING COLLISIONS AT SEA, 1972

THE ASSEMBLY,

RECALLING article VI of the Convention on the International Regulations for Preventing Collisions at Sea, 1972, on amendments to the Regulations,

HAVING CONSIDERED the amendments to the International Regulations for Preventing Collisions at Sea, 1972, adopted by the Maritime Safety Committee at its seventy-third session and communicated to all Contracting Parties in accordance with paragraph 2 of article VI of that Convention and also the recommendations of the Maritime Safety Committee concerning entry into force of these amendments,

1. ADOPTS, in accordance with paragraph 3 of article VI of the Convention, the amendments set out in the Annex to the present resolution;

2. DECIDES, in accordance with paragraph 4 of article VI of the Convention, that the amendments shall enter into force on [.. November 2003] unless by [... May 2002] more than one third of the Contracting Parties have notified their objection to the amendments;

3. REQUESTS the Secretary-General, in conformity with paragraph 3 of article VI, to communicate this resolution to all Contracting Parties to the Convention for acceptance;

4. INVITES Contracting Parties to notify any objections to the amendments not later than [... May 2002], whereafter the amendments will be deemed to have been accepted to enter into force as determined in the present resolution.

ANNEX

AMENDMENTS TO THE INTERNATIONAL REGULATIONS FOR PREVENTING COLLISIONS AT SEA, 1972

1 Rule 3

- Amend paragraph (a) as follows:

(a) The word "vessel" includes every description of water craft, including non-displacement craft, WIG craft and seaplanes, used or capable of being used as a means of transportation on water.

- Add a new paragraph (m) as follows:

(m) The term "Wing-In-Ground (WIG) craft" means a multimodal craft which, in its main operational mode, flies in close proximity to the surface by utilizing surface-effect action.

2 Rule 8

- Amend paragraph (a) as follows:

(a) Any action to avoid collision shall be taken in accordance with the rules of this Part and, if the circumstances of the case admit, be positive, made in ample time and with due regard to the observance of good seamanship.

3 Rule 18

- Add a new paragraph (f) as follows:

(f) (i) A WIG craft when taking-off, landing and in flight near the surface shall keep well clear of all other vessels and avoid impeding their navigation;

(ii) a WIG craft operating on the water surface shall comply with the Rules of this Part as a power-driven vessel.

4 Rule 23

- Add a new paragraph (c) as follows:

(c) A WIG craft only when taking-off, landing and in flight near the surface shall, in addition to the lights prescribed in paragraph (a) of this Rule, exhibit a high intensity all-round flashing red light.

5 Rule 31

- Amend Rule 31 as follows:

Where it is impracticable for a seaplane or a WIG craft to exhibit lights and shapes of the characteristics or in the positions prescribed in the Rules of this Part she shall exhibit lights and shapes as closely similar in characteristics and position as is possible.

6 Rule 33

- Amend Rule 33(a) as follows:

(a) A vessel of 12 m or more in length shall be provided with a whistle, a vessel of 20 m or more in length shall be provided with a bell in addition to a whistle, and a vessel of 100 m or more in length shall, in addition, be provided with a gong, the tone and sound of which cannot be confused with that of the bell. The whistle, bell and gong shall comply with the specification in Annex III to these Regulations. The bell or gong or both may be replaced by other equipment having the same respective sound characteristics, provided that manual sounding of the required signals shall always be possible.

7 Rule 35

- Add a new paragraph (i) and renumber accordingly:

(i) A vessel of 12 m or more but less than 20 m in length shall not be obliged to give the bell signals prescribed in paragraphs (g) and (h) of this Rule. However, if she does not, she shall make some other efficient sound signal at intervals of not more than 2 min.

8 ANNEX I

Section 13 High-speed craft

- Amend the existing text of this section as follows:

(a) The masthead light of high-speed craft may be placed at a height related to the breadth of the craft lower than that prescribed in paragraph 2(a)(i) of this annex, provided that the base angle of the isosceles triangles formed by the sidelights and masthead light, when seen in end elevation, is not less than 27º.

(b) On high-speed craft of 50 m or more in length, the vertical separation between fore mast and main mast light of 4.5 m required by paragraph 2(a)(ii) of this annex may be modified provided that such distance shall not be less than the value determined by the following formula:

$$y = \frac{(a + 17Y)C}{1000} + 2$$

where: y is the height of the main mast light above the fore mast light in metres;
a is the height of the fore mast light above the water surface in service condition in metres;
Y is the trim in service condition in degrees;
C is the horizontal separation of masthead lights in metres.

9 ANNEX III

Section 1 Whistles

- Amend paragraph (a):

(a) *Frequencies and range of audibility*

The fundamental frequency of the signal shall lie within the range 70-700Hz. The range of audibility of the signal from a whistle shall be determined by those frequencies, which may include the fundamental and/or one or more higher frequencies, which lie within the range 180-700Hz (+/-1%) for a vessel of 20 m or more in length, or 180-2100Hz (+/-1%) for a vessel of less than 20 m in length and which provide the sound pressure levels specified in paragraph 1(c) below.

- Amend paragraph (c):

(c) *Sound signal intensity and range of audibility*

A whistle fitted in a vessel shall be provided, in the direction of maximum intensity of the whistle and at a distance of 1 metre from it, a sound pressure level in at least one 1/3rd-octave band within the range of frequencies 180-700Hz (+/-1%) for a vessel of 20 m or more in length, or 180-2100Hz (+/-1%) for a vessel of less than 20 m in length, of not less than the appropriate figure given in the table below.

Length of vessel in metres	1/3rd-octave band level at 1 metre in dB referred to $2x10^{-5}N/m^2$	Audibility range in nautical miles
200 or more	143	2
75 but less than 200	138	1.5
20 but less than 75	130	1
Less than 20	120[*1]	0.5
	115[*2]	
	111[*3]	

[*1] When the measured frequencies lie within the range 180-450Hz
[*2] When the measured frequencies lie within the range 450-800Hz
[*3] When the measure frequencies lie within the range 800-2100Hz

Section 2 Bell or gong

- Amend paragraph (b) as follows:

(b) *Construction*

Bells and gongs shall be made of corrosion-resistant material and designed to give a clear tone. The diameter of the mouth of the bell shall be not less than 300 mm for vessels of 20 m or more in length. Where practicable, a power-driven bell striker is recommended to ensure constant force but manual operation shall be possible. The mass of the striker shall be not less than 3% of the mass of the bell.

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ANNEX 24

DRAFT ASSEMBLY RESOLUTION

REVISED MARITIME POLICY AND REQUIREMENTS FOR A FUTURE GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS)

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,

RECALLING ALSO resolutions A.529(13) on Accuracy Standards for Navigation and A.815(19) on the World-Wide Radionavigation System,

RECOGNIZING the need for a future civil and internationally-controlled global navigation satellite system (GNSS) to contribute to the provision of navigational position-fixing for maritime purposes throughout the world for general navigation, including navigation in harbour entrances and approaches and other waters in which navigation is restricted,

RECOGNIZING ALSO that the maritime needs for a future GNSS are not restricted to general navigation only, requirements for other maritime applications should also be considered as the strict separation between general navigation and other navigation and positioning applications can not always be made, and the intermodal use of GNSS is expected to increase in the future,

RECOGNIZING FURTHER the need to identify early the maritime user requirements for a future GNSS to ensure that such requirements are taken into account in the development of such a system,

BEING AWARE of the current work of the International Civil Aviation Organization (ICAO) on the aviation requirements for a future GNSS,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its seventy-third session,

1. ADOPTS the Revised Maritime Policy and Requirements for a Future Global Navigation Satellite System (GNSS), set out in the Annex to the present resolution;

2. INVITES Governments and international organizations providing or intending to provide services for the future GNSS to take account of the annexed Maritime Requirements in the development of their plans and to inform the Organization accordingly;

3. REQUESTS the Maritime Safety Committee to keep this policy and requirements under review and to adopt amendments thereto, as necessary;

4. REVOKES resolution A.860(20).

ANNEX

REVISED MARITIME POLICY AND REQUIREMENTS FOR A FUTURE GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS)

1 INTRODUCTION

1.1 A Global Navigation Satellite System (GNSS) is a satellite system that provides world-wide position, velocity and time determination for multi-modal use. It includes user receivers, one or more satellite constellations, ground segments and a control organization with facilities to monitor and control the world-wide conformity of the signals processed by the user receivers to pre-determined operational performance standards. A set of relevant definitions and a glossary are included in Appendix 1 to this annex.

1.2 For maritime users IMO is the international organization that will recognise a GNSS as a system which meets the carriage requirements for position-fixing equipment for a World-Wide Radionavigation System (WWRNS). The formal procedures and responsibilities for the recognition of a GNSS should be in accordance with paragraph 2 of the Annex to resolution A.815(19) on WWRNS, as far as applicable.

1.3 The present satellite navigation systems (see paragraph 2) are expected to be fully operational until at least the year 2010. Future GNSS(s) will improve, replace or supplement the present satellite navigation systems, which have shortcomings in regard to integrity, availability, control and system life expectancy (see paragraph 2).

1.4 Maritime users are expected to be only a small part of the very large group of users of a future GNSS. Land mobile users are potentially the largest group. Maritime users may not have the most demanding requirements.

1.5 Early identification of the maritime user requirements is intended to ensure that these requirements are considered in the development of future GNSS(s).

1.6 There are rapid developments in the field of radionavigation, radiocommunication and information technology. Developments in these technologies for maritime use have to be taken into consideration.

1.7 The long period required to develop and implement a GNSS has led the Organization to determine the maritime requirements for future GNSS(s) at an early stage.

1.8 However, as development of future GNSS(s) is presently only in a design stage, these requirements have been limited only to basic user requirements, without specifying the organizational structure and system architecture. The maritime requirements, as well as the Organization's recognition procedures, may need to be revised as a result of any subsequent developments.

1.9 When proposals for a specific future GNSS are presented to IMO for recognition, these proposals will be assessed on the basis of any revised requirements.

1.10 Early co-operation with air and land users and providers of services is essential to ensure that a multi-modal system is provided in the time expected.

2 PRESENT SITUATION

2.1 Currently two State-owned military-controlled satellite navigation systems are available for civilian use. These systems are mainly used in shipping, in aviation, and in land mobile transport; the systems are also used for hydrography, survey, timing, agricultural, construction and scientific purposes. For maritime use the following aspects of each system are most relevant:

.1 GPS*

.1.1 The Global Positioning System (GPS) is a space-based three-dimensional positioning, three-dimensional velocity and time system which is operated for the Government of the United States by the United States Air Force. GPS achieved full operational capability (FOC) in 1995. The system will undergo a modernisation programme between 2002 and 2010, when the performance of the system will be improved.

.1.2 GPS is expected to be available for the foreseeable future, on a continuous, world-wide basis and free of direct user fees. The United States expects to be able to provide at least six years notice prior to termination or elimination of GPS. This service, which is available on a non-discriminatory basis to all users has, since FOC, met accuracy requirements for general navigation with a horizontal position accuracy of 100 m (95%).

.1.3 Accordingly, GPS has been recognized as a component of the World-Wide Radionavigation System (WWRNS) for navigation use in waters other than harbour entrances and approaches and restricted waters.

.1.4 Without augmentation, GPS accuracy does not meet the requirements for navigation in harbour entrances and approaches or restricted waters. GPS does not provide instantaneous warning of system malfunction. However, differential corrections can enhance accuracy (in limited geographic areas) to 10 m or less (95%) and also offer external integrity monitoring. Internal integrity provision is possible by autonomous integrity monitoring using redundant observations from either GNSS or other (radio) navigation systems or both.

.2 GLONASS*

.2.1 GLONASS (Global Navigation Satellite System) is a space-based three-dimensional positioning, three-dimensional velocity and time system, which is managed for the Government of the Russian Federation by the Russian Space Agency.

* **Note**. When GPS and GLONASS are mentioned in this Annex the Standard Position Services (SPS) provided by these systems are being referred to.

.2.2 GLONASS has been recognized as a component of the WWRNS. GLONASS was declared fully operational in 1996, and was declared to be operational at least until 2010 for unlimited civilian use on a long-term basis and to be free of direct-user fees. Early in 2000, the intended space segment was not fully available.

.2.3 GLONASS is meant to provide long-term service for national and foreign civil users in accordance with existing commitments. When fully operational, the service will meet the requirements for general navigation with a horizontal position accuracy of 45 m (95%). Without augmentation, GLONASS accuracy is not suitable for navigation in harbour entrances and approaches.

.2.4 GLONASS does not provide instantaneous warning of system malfunction. However, augmentation can greatly enhance both accuracy and integrity. Differential corrections can enhance accuracy to 10 m or less (95%) and offer external integrity monitoring. Internal integrity provision may be possible by using redundant observations from either GNSS or other (radio) navigation systems or both.

2.2 There are several techniques that can improve the accuracy and/or integrity of GPS and GLONASS by augmentation. The widespread use of differential correction signals from stations using the appropriate maritime radionavigation frequency band between 283.5 and 325 kHz for local augmentation and craft or receiver autonomous integrity monitoring may be mentioned as examples. In addition, integrated receivers are already developed and in development, combining signals from GPS, GLONASS, LORAN-C and/or Chayka. Wide area augmentation systems are also being developed using differential correction signals from geostationary satellites such as EGNOS for Europe, WAAS for the United States and MSAS for Japan. Receivers for these augmentation systems are being developed.

2.3 Within the overall context of radionavigation the developments concerning terrestrial systems must also be taken into consideration. DECCA is phased out in many countries, OMEGA was phased out in 1997. The future of the United States controlled LORAN-C networks is under consideration. However, the Russian Federation-controlled CHAYKA networks will not be considered for phasing out until at least the year 2010. Civil-controlled LORAN-C and LORAN-C/Chayka networks are in operation in the Far East, North-West Europe and other parts of the world, with plans for extension in some areas. A number of Loran-C and Chayka stations are transmitting on an experimental basis differential GPS correction.

3 MARITIME REQUIREMENTS FOR A FUTURE GNSS

3.1 The maritime requirements for a future GNSS can be subdivided into the following general, operational, institutional and transitional requirements:

General requirements

.1 A future GNSS should primarily serve the operational user requirements for general navigation. This includes navigation in harbour entrances and approaches, and other waters in which navigation is restricted.

.2 A future GNSS should also serve other operational navigation and positioning purposes where applicable.

.3 A future GNSS should have the operational and institutional capability to meet additional area-specific requirements through local augmentation, if this capability is not otherwise provided. Augmentation provisions should be harmonised world-wide to avoid the necessity of carrying more than one shipborne receiver or other devices.

.4 A future GNSS should have the operational and institutional capability to be used by an unlimited number of multi-modal users at sea, in the air and on land.

.5 A future GNSS should be reliable and of low user cost. With regard to the allocation and recovery of costs, a distinction should be made between maritime users that rely on the system for reasons of safety and those that additionally benefit from the system in commercial or economic terms. Also the interests of both shipping and the coastal States should be taken into consideration when dealing with allocation and recovery of costs.

.6 Some possible cost-recovery options are identified as follows:

- through funding by international organizations concerned (IMO, ICAO, etc.);

- through cost-sharing between Governments or commercial entities (e.g. satellite communication providers); or

- through private investments and direct user charges or licensing fees.

Operational requirements

.7 Future GNSS(s) should meet the maritime user's operational requirements for general navigation, including navigation in harbour entrances and approaches and other waters where navigation is restricted. The minimum maritime user requirements for general navigation are given in Appendix 2 to this annex.

.8 Future GNSS(s) should meet the maritime operational requirements for positioning applications. The minimum maritime user requirements for positioning are given in Appendix 3 of this annex.

.9 Future GNSS(s) should operate with the geodetic and time reference systems compatible with present satellite navigation systems.

.10 Service provider(s) are not responsible for the performance of the shipborne equipment. This equipment should meet performance standards adopted by IMO.

.11 The development and use of integrated receivers using future GNSS(s) and terrestrial systems is recommended.

.12 Future GNSS(s) should enable shipborne equipment to provide the user with information on position, time, course and speed over the ground.

.13 Shipborne equipment for GNSS(s), including integrated receivers mentioned in 3.11, should have a data interface capability with other shipborne equipment to provide and/or use information for navigation and positioning such as: ECDIS, AIS, the GMDSS, track control, VDR, ship heading and attitude indication and ship motion monitoring.

.14 Users should all be timely informed of degradations in performance of individual satellite signals and/or of the total service, by the provision of integrity messages.

Institutional requirements

.15 Future GNSS(s) should have institutional structures and arrangements for control by an international civil organization in particular representing the contributing Governments and users.

.16 International civil organizations should have institutional structures and arrangements to enable (supervision of) the provision, operation, monitoring and control of the system(s) and/or service(s) to the predetermined requirements at minimum cost.

.17 These requirements can be achieved either by the use of existing organization(s) or by the establishment of new organization(s). An organization can provide and operate the system by itself or monitor and control the service provider.

.18 IMO itself is not in a position to provide and operate a GNSS. However, IMO has to be in a position to assess and recognise the following aspects of a GNSS:

- provision of the service to maritime users on a non-discriminatory basis;
- operation of the GNSS in respect of its ability to meet maritime user requirements;
- application of internationally established cost-sharing and cost-recovery principles; and
- application of internationally established principles on liability issues.

Transitional requirements

.19 Future GNSS(s) should be developed in parallel to, or could evolve in part or in whole from the present satellite navigation systems.

.20 A regional satellite navigation system that is fully operational may be recognised as a component of the WWRNS*.

* **Note**: (see resolution A.815(19)).

.21 Shipborne receivers or other devices required for a future GNSS should, where practicable, be compatible with the shipborne receiver or other devices required for the present satellite navigation systems.

4 REQUIRED ACTIONS AND TIME-SCALE

4.1 The continuing involvement of IMO will be necessary. The maritime requirements given in this Annex should be continually reassessed and updated on the basis of new developments and specific proposals.

4.2 The involvement of IMO should be positive and interactive and the Organization should consider establishing a forum whereby meaningful discussions can take place with air and land users, to resolve difficult mutual institutional matters and consider a joint way forward.

4.3 Recognizing that ICAO is studying the aviation requirements for a GNSS and that there are prospects of a Joint IMO/ICAO Planning Group for the development of the GNSS, close contacts between IMO and ICAO are necessary.

4.4 International, regional and national organizations, as well as individual companies, involved in the development of future GNSSs, should be informed of the requirements set by IMO for acceptance of a future GNSS. These IMO requirements should be incorporated in their GNSS plans to be accepted for maritime use.

4.5 The anticipated time-scale for introduction of future GNSSs is given in Appendix 4 to this annex. The time-scales for the expected introduction and phasing out of radionavigation systems, such as the present satellite navigation systems, the augmentation facilities and terrestrial systems, are also included in Appendix 4. The time-scales of these systems determine the time-scale for the decision-making process within IMO.

4.6 For the early and orderly participation of IMO in the introduction of future GNSS(s), the process of decision-making should include means to:

- review this resolution periodically;
- consider proposals urgently when submitted; and,
- recognise new systems when submitted.

Appendix 1

Terms used in GNSS

Accuracy. The degree of conformance between the estimated or measured parameter of a craft at a given time and its true parameter at that time. (Parameters in this context may be position co-ordinates, velocity, time, angle, etc.)

- *Absolute accuracy (Geodetic or Geographic accuracy).* The accuracy of a position estimate with respect to the geographic or geodetic co-ordinates of the Earth.

- *Geodetic or Geographic accuracy*. See Absolute accuracy.

- *Predictable accuracy.* The accuracy of the estimated position solution with respect to the charted solution.

- *Relative accuracy*. The accuracy with which a user can determine position relative to that of another user of the same navigation system at the same time.

- *Repeatable accuracy*. The accuracy with which a user can return to a position whose co-ordinates have been measured at a previous time using uncorrelated measurements from the same navigation system.

Alert limit (or threshold value). The maximum allowable error in the measured position - during integrity monitoring - before an alarm is triggered.

Along-track error. The component of the Vessel Technical Error in the direction of the intended track.

Ambiguity. The condition obtained when one set of measurements derived from a navigation system defines more than one point, direction, line of position or surface of position.

Augmentation. Any technique of providing enhancement to the GNSS in order to provide improved navigation performance to the user.

- *Satellite-based augmentation system (SBAS).* A system providing additional satellite signals in order to enhance the performance of the GNSS service.

- *Ground-based augmentation system (GBAS).* A system providing additional signals from a ground-based station in order to enhance the performance of the GNSS service.

Availability. The percentage of time that an aid, or system of aids, is performing a required function under stated conditions. The non-availability can be caused by scheduled and/or unscheduled interruptions.

- *Signal availability.* The availability of a radio signal in a specified coverage area.

- *System availability.* The availability of a system to a user, including signal availability and the performance of the user's receiver.

Chart error. Position errors in the chart caused by inaccuracies in surveying and by errors in the reference geodetic system.

Circular error probable (CEP). The radius of a circle, centred on the measured position, inside which the true position lies with 50% confidence.

Confidence interval. The numerical range within which an unknown is estimated to be with a given confidence.

Confidence level. The percentage of confidence that a given statement is correct, or the percentage of confidence that a stated interval (numerical range) includes an unknown.

Confidence limits. The extremes of a confidence interval.

Continuity. The probability that, assuming a fault free receiver, a user will be able to determine position with specified accuracy and is able to monitor the integrity of the determined position over the (short) time interval applicable for a particular operation within a limited part of the coverage area.

Correction. The numerical value of a correction is the best estimate that can be made of the difference between the true and the measured value of a parameter. The sign is such that a correction that is to be added to an observed reading is taken as positive.

Coverage. The coverage provided by a radionavigation system is that surface area or space volume in which the signals are adequate to permit the user to determine position to a specified level of performance.

Cross-track error. The component of the Vessel Technical Error perpendicular to the intended track.

Craft autonomous integrity monitoring (CAIM). This is a technique whereby various navigation sensor information available on the craft is autonomously processed to monitor the integrity of the navigation signals. (See also Receiver autonomous integrity monitoring.)

Differential system. An augmentation system whereby radionavigation signals are monitored at a known position and the corrections so determined are transmitted to users in the coverage area.

Dilution of precision. The factor by which the accuracy of the GNSS position and time co-ordinates are degraded by geometrical considerations of the constellation of GNSS satellites used by the receiver.

- *Geometric dilution of precision (GDOP).* The factor for the combined 3D-position and time accuracy.

- *Position dilution of precision* (PDOP). The factor for the 3D-position accuracy.

- *Horizontal dilution of precision (HDOP).* The factor for the horizontal position accuracy.

- *Vertical dilution of precision (VDOP).* The factor for the vertical accuracy.

- *Time dilution of precision (TDOP).* The factor for the time accuracy.

Distance root mean square (dRMS). The root mean square of the radial distances from the true position to the observed positions obtained from a number of trials.

Failure. The unintended termination of the ability of a system, or part of a system, to perform its required function.

Failure rate. The average number of failures of a system, or part of a system, per unit time. (See also mean time between failures.)

Fix. A position determined by processing information from a number of navigation observations.

Fix rate. The number of fixes per unit time.

Fix interval (seconds). The maximum time in seconds between fixes.

Global navigation satellite service. The signal in space provided to the user by GNSS space and ground segments.

GLONASS (Global Navigation Satellite System). This is a space-based, radio positioning, navigation and time-transfer system operated by the Government of the Russian Federation.

Global Navigation Satellite System (GNSS). A world-wide position, time and velocity radio determination system comprising space, ground and user segments.

GNSS service. The service relates to the properties of the signal in space provided by the space and ground segments of the GNSS.

GNSS system. The system relates to the properties of the GNSS service plus the receiver.

Global Positioning System (GPS). This is a space-based, radio positioning, navigation and time-transfer system operated by the United States Government.

Gross errors. Gross errors, or "outliers", are errors other than random errors or systematic errors. They are often large and, by definition, unpredictable. They are typically caused by sudden changes in the prevailing physical circumstances, by system faults or operator errors.

Integrated navigation system. A system in which the information from two or more navigation aids is combined in a symbiotic manner to provide an output that is superior to any one of the component aids.

Integrity. The ability to provide users with warnings within a specified time when the system should not be used for navigation.

Integrity monitoring. The process of the determination whether the system performance (or individual observations) allow use for navigation purposes. Overall GNSS system integrity is described by three parameters: *the threshold value or alert limit, the time to alarm and the integrity risk.* The output of integrity monitoring is, that individual (erroneous) observations or the overall GNSS system can not be used for navigation.

- *Internal integrity monitoring* is performed aboard a craft.

- *External integrity monitoring* is provided by external stations.

Integrity risk. The probability that a user will experience a position error larger than the threshold value without an alarm being raised within the specified time-to-alarm at any instant of time at any location in the coverage area.

Latency. The time lag between the navigation observations and the presented navigation solution.

Marginally detectable bias (MDB). The minimum size of the gross error in an observation that may be detected with given probabilities of type 1 and type 2 errors. A type 1 error occurs when an observation without a gross error is wrongly rejected, and a type 2 error occurs when an observation with a gross error is wrongly accepted.

Marginally detectable error (MDE). The maximum position-offset caused by a MDB in one of the observations.

Mean time between failures (MTBF). The average time between two successive failures of a system or part of a system.

Navigation. The process of planning, recording and controlling the movement of a craft from one place to another.

Navigation system error (NSE). The combined error of the GNSS position estimate and the *chart error*. The maximum NSE can be described by:

NSEmax = Chart error + GNSS error + other navigation errors

Pseudolite (pseudo satellite). A ground-based augmentation station transmitting a GNSS-like signal providing additional navigation ranging for the user.

Precision. The accuracy of a measurement or a position with respect to random errors.

PZ-90 geodetic system. A consistent set of parameters used in GLONASS describing the size and shape of the Earth, positions of a network of points with respect to the centre of mass of the Earth, transformations from major geodetic datums and the potential of the Earth, developed in 1990.

Radio determination. The determination of position, or the obtaining of information relating to position, by means of the propagation properties of radio waves.

Radiolocation. Radio determination used for purposes other than radionavigation.

Radionavigation. The use of radio signals to support navigation for the determination of position or direction, or for obstruction warning.

Random error. That error of which only the statistical properties can be predicted.

Receiver autonomous integrity monitoring (RAIM). A technique whereby the redundant information available at a GNSS receiver is autonomously processed to monitor the integrity of the navigation signals. (See also craft autonomous integrity monitoring.)

Redundancy. The existence of multiple equipment or means for accomplishing a given function in order to increase the reliability of the total system.

Reliability (of an observation). A measure of the effectiveness with which gross errors may be detected. This "internal" reliability is usually expressed in terms of the marginally detectable bias (MDB).

Reliability (of a position fix). A measure of the propagation of a non-detected gross error in an observation, to the position fix. This "external" reliability is usually expressed in terms of the marginally detectable error (MDE).

Repeatability. The accuracy of a positioning system, taking into account only the random errors. The repeatability is normally expressed in a 95% probability circle.

Root mean square error (RMS). RMS error refers to the variability of a measurement in one dimension. In this one dimensional case, the RMS error is also an estimate of the standard deviation of the errors.

Single point of failure. That part of a navigation system that lacks redundancy, so that a failure in that part would result in a failure of the whole system.

Systematic error. An error which is non-random in the sense that it conforms to some kind of pattern.

Service capacity. The number of users a service can accommodate simultaneously.

Threshold value (or alert limit) is the maximum allowable error in the measured position –during integrity monitoring - before an alarm is triggered.

Time to alarm. The time elapsed between the occurrence of a failure in the system and its presentation on the bridge.

Total System Error (TSE). The overall navigation performance can be described by the TSE. Assuming the contributions to TSE from NSE and VTE are random, the TSE can be described as:

$$TSE^2 = NSE^2 + VTE^2$$

True position (2D). The error-free latitude and longitude co-ordinates in a specified geodetic datum.

True position (3D). The error-free latitude, longitude and height co-ordinates in a specified geodetic datum.

Vessel Technical Error (VTE). This is the difference between the indicated craft position and the indicated command or desired position. It is a measure of the accuracy with which the craft is controlled.

World geodetic system (WGS). A consistent set of parameters describing the size and shape of the Earth, positions of a network of points with respect to the centre of mass of the Earth, transformations from major geodetic datums and the potential of the Earth.

GLOSSARY

AIS	Automatic Identification System
CAIM	Craft Autonomous Integrity Monitoring
Chayka	A radionavigation system, similar to Loran-C, operated by the Government of the Russian Federation
Decca Navigator	A low frequency hyperbolic radionavigation system based on phase comparison techniques
DGPS	Differential GPS
EGNOS	European Geostationary Navigation Overlay Service
EU	European Union
FOC	Full Operational Capability
DTOA	The Difference in Time Of Arrival of events in two signals
GLONASS	Global Navigation Satellite System, operated by the Government of the Russian Federation
GMDSS	Global Maritime Distress and Safety System
GNSS	Global Navigation Satellite System
GNSS-1	Global Navigation Satellite System, based on augmentation of GPS and GLONASS in development by the EU.
GNSS-2	Future Global Navigation Satellite System in development by the EU
GPS	Global Positioning System operated by the Government of the United States
HSC	High Speed Craft
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
ICAO	International Civil Aviation Organisation
IHO	International Hydrographic Organisation
IMO	International Maritime Organisation
IOC	Initial Operational Capability
ITU	International Telecommunication Union
LAAS	Local Area Augmentation System
LADGNSS	Local Area Differential GNSS
LORAN-C	A low frequency hyperbolic radionavigation system based on measurements of TOA or DTOA of events in pulsed signals
MSAS	Multi-purpose Satellite Augmentation System developed by the Government of Japan
MSC	Maritime Safety Committee

NAV	Sub-Committee on Safety on Navigation of IMO
NSE	Navigation System Error
RAIM	Receiver Autonomous Integrity Monitoring
SAR	Search and Rescue
SIS	Signal in Space
TOA	Time Of Arrival of an event in a signal
TSE	Total System Error
VDR	Voyage Data Recorder
VTE	Vessel Technical Error
VTS	Vessel Traffic Services
WAAS	Wide Area Augmentation System developed by the Government of the United States
WRC	World Radio Conference of the ITU
WWRNS	World Wide Radio Navigation System

Appendix 2

Table of the minimum maritime user requirements for general navigation

	System level parameters				Service level parameters			
	Absolute Accuracy	Integrity			Availability % per 30 days	Continuity % over 3 hours	Coverage	Fix interval[2] (seconds)
	Horizontal (metres)	Alert limit (metres)	Time to alarm[2] (Seconds)	Integrity risk (per 3 hours)				
Ocean	10	25	10	10^{-5}	99.8	N/A[1]	Global	1
Coastal	10	25	10	10^{-5}	99.8	N/A[1]	Global	1
Port approach and restricted waters	10	25	10	10^{-5}	99.8	99.97	Regional	1
Port	1	2.5	10	10^{-5}	99.8	99.97	Local	1
Inland waterways	10	25	10	10^{-5}	99.8	99.97	Regional	1

Notes: 1: Continuity is not relevant to ocean and coastal navigation
2: More stringent requirements may be necessary for ships operating above 30 knots

Appendix 3

Tables showing the minimum maritime user requirements for positioning

	System level parameters					Service level parameters			
	Accuracy		Integrity			Availability % per 30 days	Continuity % over 3 hours	Coverage	Fix interval[2] (seconds)
	Horizontal (metres)	Vertical[1] (metres)	Alert limit (metres)	Time to alarm[2] (Seconds)	Integrity risk (per 3 hours)				
Operations	**Relative accuracy**								
• tugs and pushers	1		2.5	10	10^{-5}	99.8	99.97	Local	1
• icebreakers	1		2.5	10	10^{-5}	99.8	99.97	Local	1
• automatic collision avoidance	10		25	10	10^{-5}	99.8	99.97	Global	1
	Absolute accuracy								
• track control	10	N/A	25	10	10^{-5}	99.8	99.97	Global	1
• automatic docking	0.1		0.25	10	10^{-5}	99.8	99.97	Local	1
Traffic management[3]	**Absolute accuracy**								
• ship-to-ship co-ordination	10		25	10	10^{-5}	99.8	99.97	Global	1
• ship-to-shore co-ordination	10		25	10	10^{-5}	99.8	99.97	Regional	1
• shore-to-ship traffic management	10		25	10	10^{-5}	99.8	99.97	Regional	1

Notes: 1: There may be a requirement for accuracy in the vertical plane for some port and restricted water operations
2: More stringent requirements may be necessary for ships operating above 30 knots
3: Traffic management applications in some areas, e.g. the Baltic, may require higher accuracy.

Table 1: Manoeuvring and traffic management applications.

Appendix 3 (continued)

	System level parameters					Service level parameters			
	Accuracy		Integrity			Availability % per 30 days	Continuity % over 3 hours	Coverage	Fix interval (seconds)
	Horizontal (metres)	Vertical (metres)	Alert limit (metres)	Time to alarm (Seconds)	Integrity risk (per 3 hours)				
Search and rescue	10	N/A	25	10	10^{-5}	99.8	N/A	Global	1
Hydrography	1 - 2	0.1	2.5 - 5	10	10^{-5}	99.8	N/A	Regional	1
Oceanography	10	10	25	10	10^{-5}	99.8	N/A	Global	1
Marine engineering, construction, maintenance and management									
• dredging	0.1	0.1	0.25	10	10^{-5}	99.8	N/A	Local	1
• cable and pipeline laying	1	N/A	2.5	10	10^{-5}	99.8	N/A	Regional	1
• construction works	0.1	0.1	0.25	10	10^{-5}	99.8	N/A	Local	1
Aids to navigation management	1	N/A	2.5	10	10^{-5}	99.8	N/A	Regional	1

Table 2: Search and rescue, hydrography, oceanography, marine engineering, construction, maintenance and management and aids to navigation management

Appendix 3 (continued)

	System level parameters					Service level parameters			
	Accuracy		Integrity			Availability % per 30 days	Continuity % over 3 hours	Coverage	Fix interval[1] (seconds)
	Horizontal (metres)	Vertical (metres)	Alert limit (metres)	Time to alarm[1] (Seconds)	Integrity risk (per 3 hours)				
Port operations	**Absolute accuracy**								
• local VTS	1	N/A	2.5	10	10^{-5}	99.8	N/A	Local	1
• container/cargo management	1	1	2.5	10	10^{-5}	99.8	N/A	Local	1
• law enforcement	1	1	2.5	10	10^{-5}	99.8	N/A	Local	1
• cargo handling	0.1	0.1	0.25	1	10^{-5}	99.8	N/A	Local	1
Casualty analysis	**Predictable accuracy**								
• ocean	10	N/A	25	10	10^{-5}	99.8	N/A	Global	1
• coastal	10	N/A	25	10	10^{-5}	99.8	N/A	Global	1
• port approach and restricted waters	1	N/A	2.5	10	10^{-5}	99.8	N/A	Regional	1
Offshore exploration and exploitation	**Absolute accuracy**								
• exploration	1	N/A	2.5	10	10^{-5}	99.8	N/A	Regional	1
• appraisal drilling	1	N/A	2.5	10	10^{-5}	99.8	N/A	Regional	1
• field development	1	N/A	2.5	10	10^{-5}	99.8	N/A	Regional	1
• support to production	1	N/A[2]	2.5	10	10^{-5}	99.8	N/A	Regional	1
• post-production	1	N/A[2]	2.5	10	10^{-5}	99.8	N/A	Regional	1

Notes: 1: More stringent requirements may be necessary for ships operating above 30 knots.
2: A vertical accuracy of a few cm (less than 10) is necessary to monitor platform subsidence.

Table 3: Port operations, casualty analysis, and offshore exploration and exploitation

Appendix 3 (continued)

	System level parameters					Service level parameters			
	Accuracy		Integrity			Availability % per 30 days	Continuity % over 3 hours	Coverage	Fix interval[1] (seconds)
	Horizontal (metres)	Vertical (metres)	Alert limit (metres)	Time to alarm[1] (Seconds)	Integrity risk (per 3 hours)				
Fisheries	**Absolute accuracy**								
• location of fishing grounds	10	N/A	25	10	10^{-5}	99.8	N/A	Global	1
• positioning during fishing[2]	10	N/A	25	10	10^{-5}	99.8	N/A	Global	1
• yield analysis	10	N/A	25	10	10^{-5}	99.8	N/A	Global	1
• fisheries monitoring	10	N/A	25	10	10^{-5}	99.8	N/A	Global	1
Recreation and leisure	**Absolute Accuracy**								
• Ocean	10	N/A	25	10	10^{-5}	99.8	N/A	Global	1
• Coastal	10	N/A	25	10	10^{-5}	99.8	N/A	Global	1
• Port approach and restricted waters	10	N/A	25	10	10^{-5}	99.8	99.97	Regional	1

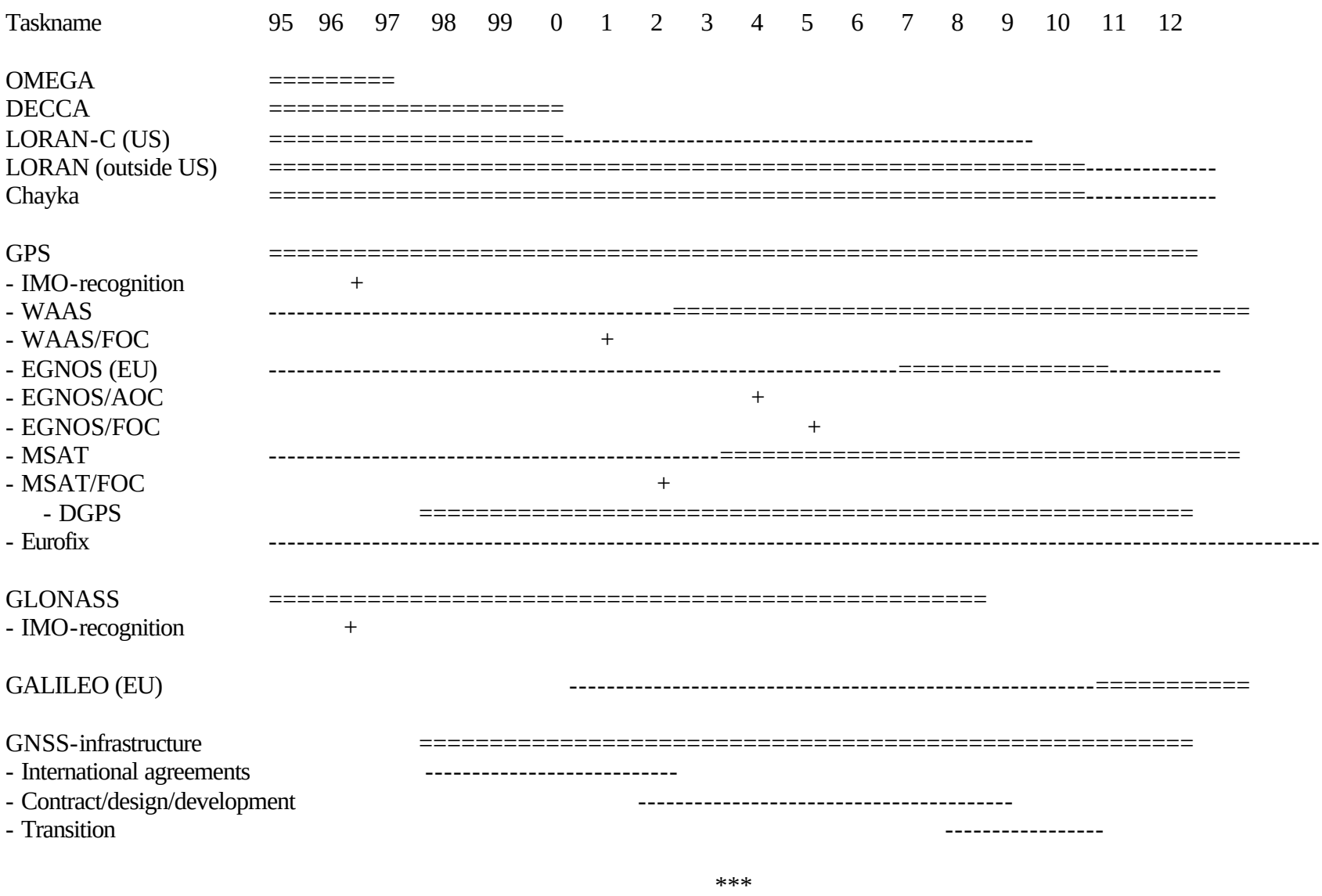
Notes: 1: More stringent requirements may be necessary for ships operating above 30 knots
2. Positioning during fishing in local areas may have more stringent requirements.

Table 4: Fisheries, recreation and leisure applications

Appendix 4

Development of future global navigation satellite systems/GNSSs (Indicative)

Year		95	96	97	98	99	0	1	2	3	4	5	6	7	8	9	10	11	12
Taskname																			
IMO	- intern	==========																	
	- ISWG/1	+																	
	- NAV/41	+																	
	- ISWG/2		+																
	- NAV/42		+																
	- MSC/66		+																
	- NAV/43			+															
	- Assembly/20			+															
	- Assembly/21					+													
	- MSC/73						+												
	- Assembly/22							+											
ITU		==========																	
	- Agenda WRC 2000					+													
	WRC 2000 and 2003																		
	- allocate frequency						+			+									


Taskname
95 96 97 98 99 0 1 2 3 4 5 6 7 8 9 10 11 12
OMEGA
DECCA
LORAN-C (US)
LORAN (outside US)
Chayka
GPS
- IMO-recognition
- WAAS
- WAAS/FOC
- EGNOS (EU)
- EGNOS/AOC
- EGNOS/FOC
- MSAT
- MSAT/FOC
- DGPS
- Eurofix
GLONASS
- IMO-recognition
GALILEO (EU)
GNSS-infrastructure
- International agreements
- Contract/design/development
- Transition

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ANNEX 25

RESOLUTION MSC.112(73)
(adopted on 1 December 2000)

ADOPTION OF THE REVISED PERFORMANCE STANDARDS FOR SHIPBORNE GLOBAL POSITIONING SYSTEM (GPS) RECEIVER EQUIPMENT

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO resolution A.886(21), by which the Assembly resolved that the function of adopting performance standards and technical specifications, as well as amendments thereto shall be performed by the Maritime Safety Committee and/or the Marine Environment Protection Committee, as appropriate, on behalf of the Organization,

RECALLING FURTHER that, in accordance with resolution A.815(19) by which the Assembly adopted the IMO policy for the recognition and acceptance of suitable radionavigation systems intended for international use to provide ships with navigational position-fixing throughout their voyages, the Global Positioning System (GPS) has been recognized as a possible component of the world-wide radionavigation system,

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

RECOGNIZING the need to improve the previously adopted, by resolution A.819(19), performance standards for shipborne GPS receiver equipment in order to ensure the operational reliability of such equipment and taking into account the technological progress and experience gained,

HAVING CONSIDERED the recommendation on the revision of resolution A.819(19) made by the Sub-Committee on Safety of Navigation at its forty-sixth session,

1. ADOPTS the Revised Recommendation on Performance Standards for Shipborne Global Positioning System (GPS) Receiver Equipment, set out in the Annex to the present resolution;

2. RECOMMENDS Governments to ensure that GPS receiver equipment:

(a) if installed on or after 1 July 2003, conform to performance standards not inferior to those specified in the annex to the present resolution; and

(b) if installed before 1 July 2003, conform to performance standards not inferior to those specified in the annex to resolution A.819(19).

ANNEX

REVISED RECOMMENDATION ON PERFORMANCE STANDARDS FOR SHIPBORNE GLOBAL POSITIONING SYSTEM (GPS) RECEIVER EQUIPMENT

1 INTRODUCTION

1.1 The Global Positioning System (GPS) is a space-based positioning, velocity and time system that has three major segments: space, control and user. The GPS space segment will normally be composed of 24 satellites in six orbits. The satellites operate in circular 20,200 km orbits at an inclination angle of 55° with a 12-hour period. The spacing of satellites in orbit will be arranged so that a minimum of four satellites will be in view to users world-wide, with a position dilution of precision (PDOP) of = 6. Each satellite transmits on two "L" band frequencies, L1 (1575,42 MHz) and L2 (1227,6 MHz). L1 carries a precise (P) code and coarse/acquisition (C/A) code. L2 carries the P code. A navigation data message is superimposed on these codes. The same navigation data message is carried on both frequencies.

1.2 Receiver equipment for the GPS intended for navigational purposes on ships with maximum speeds not exceeding 70 knots should, in addition to the general requirements contained in resolution A.694(17)*, comply with the following minimum performance requirements.

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

2 GPS RECEIVER EQUIPMENT

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

.1 antenna capable of receiving GPS signals;

.2 GPS receiver and processor;

.3 means of accessing the computed latitude/longitude position;

.4 data control and interface; and

.5 position display and, if required, other forms of output.

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

* Refer to Publication IEC 60945.

3 PERFORMANCE STANDARDS FOR GPS RECEIVER EQUIPMENT

The GPS receiver equipment should:

.1 be capable of receiving and processing the Standard Positioning Service (SPS) signals as modified by Selective Availability (SA) and provide position information in latitude and longitude World Geodetic System (WGS)-84 co-ordinates in degrees, minutes and thousandths of minutes and time of solution referenced to UTC (USNO). Means may be provided for transforming the computed position based upon WGS-84 into data compatible with the datum of the navigational chart in use. Where this facility exists, the display should indicate that co-ordinate conversion is being performed, and should identify the co-ordinate system in which the position is expressed;

.2 operate on the L1 signal and C/A code;

.3 be provided with at least one output from which position information can be supplied to other equipment. The output of position information based upon WGS-84 should be in accordance with international standards;*

.4 have static accuracy such that the position of the antenna is determined to within 100 m (95%) with horizontal dilution of precision (HDOP) = 4 (or PDOP = 6);

.5 have dynamic accuracy such that the position of the ship is determined to within 100 m (95%) with HDOP = 4 (or PDOP = 6) under the conditions of sea states and ship's motion likely to be experienced in ships; **

.6 be capable of selecting automatically the appropriate satellite-transmitted signals for determining the ship's position with the required accuracy and update rate;

.7 be capable of acquiring satellite signals with input signals having carrier levels in the range of -130 dBm to -120 dBm. Once the satellite signals have been acquired, the equipment should continue to operate satisfactorily with satellite signals having carrier levels down to -133 dBm;

.8 be capable of acquiring position to the required accuracy, within 30 min, when there is no valid almanac data;

.9 be capable of acquiring position to the required accuracy, within 5 min, when there is valid almanac data;

.10 be capable of re-acquiring position to the required accuracy, within 5 min, when the GPS signals are interrupted for a period of at least 24 h but there is no loss of power;

.11 be capable of re-acquiring position to the required accuracy, within 2 min, when subjected to a power interruption of 60 s;

---

* IEC Publication 61162.

** Refer to resolution A.694(17), Publications IEC 6721-3-6, IEC 60945 and IEC 61108-1.

.12 generate and output to a display and digital interface* a new position solution at least once every 1 s;**

.13 have a minimum resolution of position, i.e. latitude and longitude, of 0.001 minutes;

.14 generate and output to the digital interface* course over the ground (COG), speed over the ground (SOG) and universal time co-ordinated (UTC). Such outputs should have a validity mark aligned with that on the position output. The accuracy requirement for COG and SOG should not be inferior to the relevant Performance Standards for Heading*** and SDME;****

.15 have the facilities to process differential GPS (DGPS) data fed to it in accordance with the standards of Recommendation ITU-R M.823 and the appropriate RTCM standard. When a GPS receiver is equipped with a differential receiver, performance standards for static and dynamic accuracies (paragraphs 3.4 and 3.5 above) should be 10 m (95%); and

.16 be capable of operating satisfactorily in typical interference conditions.

4 PROTECTION

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

5 FAILURE WARNINGS AND STATUS INDICATIONS

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

5.2 The GPS receiver equipment should provide as a minimum:

.1 an indication within 5 s if either:

.1.1 the specified HDOP has been exceeded; or

---

* Conforming to the IEC 61162 series.

** For craft meeting the HSC Code, a new position solution at least every 0.5 s is recommended.

*** Resolution A.424(XI).

**** Resolution A.824(19).

.1.2 a new position has not been calculated for more than 1 s.*

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

.2 a warning of loss of position;

.3 differential GPS status indication of:

.3.1 the receipt of DGPS signals; and

.3.2 whether DGPS corrections are being applied to the indicated ship's position;

.4 DGPS integrity status and alarm; and

.5 DGPS text message display.

***

* For craft meeting the HSC Code, a new position solution at least every 0.5 s is recommended.

ANNEX 26

RESOLUTION MSC.113(73)
(adopted on 1 December 2000)

ADOPTION OF THE REVISED PERFORMANCE STANDARDS FOR SHIPBORNE GLONASS RECEIVER EQUIPMENT

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO resolution A.886(21), by which the Assembly resolved that the function of adopting performance standards and technical specifications, as well as amendments thereto shall be performed by the Maritime Safety Committee and/or the Marine Environment Protection Committee, as appropriate, on behalf of the Organization,

RECALLING FURTHER that, in accordance with resolution A.815(19) by which the Assembly adopted the IMO policy for the recognition and acceptance of suitable radionavigation systems intended for international use to provide ships with navigational position-fixing throughout their voyages, the Global Navigation Satellite System (GLONASS) has been recognized as a possible component of the world-wide radionavigation system,

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

RECOGNIZING the need to improve the previously adopted, by resolution MSC.53(66), performance standards for shipborne GLONASS receiver equipment in order to ensure the operational reliability of such equipment and taking into account the technological progress and experience gained,

HAVING CONSIDERED the recommendation on the revision of resolution MSC.53(66) made by the Sub-Committee on Safety of Navigation at its forty-sixth session,

1. ADOPTS the Revised Recommendation on Performance Standards for GLONASS Receiver Equipment, set out in the Annex to the present resolution;

2. RECOMMENDS Governments to ensure that GLONASS receiver equipment:

(a) if installed on or after 1 July 2003, conform to performance standards not inferior to those specified in the Annex to the present resolution; and

(b) if installed before 1 July 2003, conform to performance standards not inferior to those specified in the Annex to resolution MSC.53(66).

ANNEX

REVISED RECOMMENDATION ON PERFORMANCE STANDARDS FOR SHIPBORNE GLONASS RECEIVER EQUIPMENT

1 INTRODUCTION

1.1 The Global Navigation Satellite System (GLONASS) is a space-based positioning, velocity, and time system that has three major segments: Space, Control and User. The GLONASS Space Segment, will normally be composed of 24 satellites placed in three orbital planes with eight satellites in each plane. The satellites operate in circular 19,100 km orbits at an inclination angle of 64.8° and with an 11 h and 15 min period. The spacing of satellites in orbit will be arranged so that a minimum of four satellites will be in view to users world-wide, with a position dilution of precision (PDOP) of $\leq$6. Satellites of the system transmit signals on "L" band frequencies. Each satellite has separate lettered frequencies L1 (1602, 5625-1615.5 MHz).

1.2 Each L1 frequency carries a code standard accuracy (C), which is used in shipborne GLONASS receiver equipment. A navigation data message is superimposed on this code.

1.3 Receiver equipment for the GLONASS intended for navigational purposes on ships with maximum speeds not exceeding 70 knots should, in addition to the general requirements contained in resolution A.694(17)*, comply with the following minimum performance requirements.

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

2 GLONASS RECEIVER EQUIPMENT

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

.1 antenna capable of receiving GLONASS signals;

.2 GLONASS receiver and processor;

.3 means of accessing the computed latitude/longitude position;

.4 data control and interface; and

.5 position display and, if required, other forms of output.

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

* Refer to IEC Publication 60945.

3 PERFORMANCE STANDARDS FOR GLONASS RECEIVER EQUIPMENT

The GLONASS receiver equipment should:

.1 be capable of receiving and processing the Standard Positioning Service (SPS) signals of the GLONASS system and provide position information in latitude and longitude PZ-90 co-ordinates in degrees, minutes and thousandths of minutes and time of solution referenced to UTC (SU). Means should be provided to transform the computed position based upon PZ-90 into WGS-84 or into data compatible with the datum of the navigational chart in use. Where this facility exists, the display should indicate that the co-ordinate conversion is being performed and should identify the co-ordinate system in which the position is expressed;

.2 operate on the Standard Positioning Service (on lettered L1 frequencies and C code);

.3 be provided with at least one output from which position information can be supplied to other equipment. The output of position information based upon PZ-90 or WGS-84, should be in accordance with international standards;[*]

.4 have static accuracy such that the position of the antenna is determined to within 45 m (95%) with horizontal dilution of position (HDOP) = 4 (PDOP = 6);

.5 have dynamic accuracy such that the position of the antenna is determined to within 45 m (95%) with horizontal dilution of position (HDOP) = 4 (PDOP = 6) under the conditions of sea states and ship's motion likely to be experienced in ships;[**]

.6 be capable of selecting automatically the appropriate satellite transmitted signals for determination of the ship's position with the required accuracy and update rate;

.7 be capable of acquiring satellite signals with input signals having carrier levels in the range of - 130 dBm to - 120 dBm. Once the satellite signals have been acquired the equipment should continue to operate satisfactorily with satellite signal having carrier levels down to - 133 dBm;

.8 be capable of acquiring position to the required accuracy, within 30 min, when there is no valid almanac data;

.9 be capable of acquiring position to the required accuracy, within 5 min, when there is valid almanac data;

.10 be capable of re-acquiring position to the required accuracy, within 5 min, when the GLONASS signals are interrupted for a period of at least 24 h, but there is no loss of power;

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[*] IEC Publication 61162.

[**] Resolution A.694(17), Publications IEC 6721 3-6, IEC 60945 and IEC 61108-2.

.11 be capable of re-acquiring position to the required accuracy, within 2 min, when subjected to a power interruption of 60 s;

.12 generate and output to a display and digital interface* a new position solution at least once every 1 s;**

.13 have a minimum resolution of position, i.e. latitude and longitude of 0.001 minutes;

.14 generate and output to the digital interface* course over the ground (COG), speed over the ground (SOG) and universal time co-ordinated (UTC). Such outputs should have a validity mark aligned with that on the position output. The accuracy requirement for COG and SOG should not be inferior to the relevant Performance Standards for Heading*** and SDME;****

.15 have the facilities to receive and process differential GLONASS (DGLONASS) data fed to it in accordance with the standards of Recommendation ITU-R M.823. When a GLONASS receiver is equipped with a differential receiver, performance standards for static and dynamic accuracies (paragraphs 3.4 and 3.5 above) should be 10 m (95%);***** and

.16 be capable of operating satisfactorily in typical interference conditions.

4 PROTECTION

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

5 FAILURE WARNINGS AND STATUS INDICATIONS

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

5.2 The GLONASS receiver equipment should provide as a minimum:

.1 an indication within 5 s if either:

.1.1 the specified HDOP has been exceeded; or

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* Publication IEC 61162 series.

** For craft meeting the HSC Code, a new position solution at least every 0.5 s is recommended.

*** Resolution A.424(XI).

**** Resolution A.824(19).

***** Refer to resolution A.815(19) on the World-wide Radionavigation System.

.1.2 a new position has not been calculated for more than 1 s.*

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

.2 a warning of loss of position;

.3 differential GLONASS status indication of:

.3.1 the receipt of DGLONASS signals; and

.3.2 whether DGLONASS corrections are being applied to the indicated ship's position;

.4 DGLONASS integrity status and alarm; and

.5 DGLONASS text message display.

***

* For craft meeting the HSC Code, a new position solution at least every 0.5 s is recommended.

ANNEX 27

RESOLUTION MSC.114(73)
(adopted on 1 December 2000)

ADOPTION OF THE REVISED PERFORMANCE STANDARDS FOR SHIPBORNE DGPS AND DGLONASS MARITIME RADIO BEACON RECEIVER EQUIPMENT

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO resolution A.886(21), by which the Assembly resolved that the function of adopting performance standards and technical specifications, as well as amendments thereto shall be performed by the Maritime Safety Committee and/or the Marine Environment Protection Committee, as appropriate, on behalf of the Organization,

NOTING that differential services broadcast information for augmenting the Global Positioning System (GPS) and the Global Navigation Satellite System (GLONASS) to provide the accuracy and integrity required for entrances and harbour approaches and other waters in which the freedom to manoeuvre is limited,

NOTING ALSO that shipborne maritime radio beacon receiving equipment providing augmentation information to position-fixing equipment should be designed to satisfy the detailed requirements of the particular system concerned,

RECOGNIZING the need to improve the previously adopted, by resolution MSC.64(67), Annex 2, performance standards for shipborne DGPS and DGLONASS maritime radio beacon receiver equipment in order to ensure the operational reliability of such equipment and taking into account the technological progress and experience gained,

HAVING CONSIDERED the recommendation on the revision of resolution MSC.64(67), Annex 2 made by the Sub-Committee on Safety of Navigation at its forty-sixth session,

1. ADOPTS the Revised Recommendation on Performance Standards for Shipborne DGPS and DGLONASS Maritime Radio Beacon Receiver Equipment, set out in the Annex to the present resolution;

2. RECOMMENDS Governments to ensure that DGPS and DGLONASS maritime radio beacon receiver equipment:

(a) if installed on or after 1 July 2003, 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 1999 but before 1 July 2003, conform to performance standards not inferior to those specified in the Annex to resolution MSC.64(67), Annex 2.

ANNEX

REVISED RECOMMENDATION ON PERFORMANCE STANDARDS FOR SHIPBORNE DGPS AND DGLONASS MARITIME RADIO BEACON RECEIVER EQUIPMENT

1 INTRODUCTION

1.1 Differential services broadcast information for augmenting the Global Positioning System (GPS) and the Global Navigation Satellite System (GLONASS) to provide the accuracy and integrity required for entrances and harbour approaches and other waters in which the freedom to manoeuvre is limited. Various service providers are broadcasting differential information applicable to localized areas. Different services provide information for augmenting GPS, GLONASS, or both.

1.2 Receiver equipment for the reception and proper decoding of differential GPS and GLONASS maritime radio beacon broadcasts (fully compliant with Recommendation ITU-R M.823) intended for navigational purposes on ships with maximum speeds not exceeding 70 knots should, in addition to the general requirements contained in resolution A.694(17)*, comply with the following minimum performance requirements.

1.3 These standards cover the basic requirements of maritime radio beacon receiver equipment providing augmentation information to position-fixing equipment. It does not cover other computational facilities which may be in the equipment.

2 DGPS AND DGLONASS MARITIME RADIO BEACON RECEIVER EQUIPMENT

The words "DGPS and DGLONASS maritime radio beacon receiver equipment" as used in these performance standards include all the components and units necessary for the system to properly perform its intended functions. The equipment should include the following minimum facilities:

.1 antenna capable of receiving DGPS or DGLONASS maritime radio beacon signals;

.2 DGPS and DGLONASS maritime radio beacon receiver and processor;

.3 receiver control interface; and

.4 data output interface.

* Refer to IEC Publication 60945.

3 FUNCTIONAL REQUIREMENTS

The DGPS and DGLONASS maritime radio beacon receiver equipment should:

.1 operate in the band of 283.5 to 315 kHz in Region 1 and 285 to 325 kHz in Regions 2 and 3 in accordance with Recommendation ITU-R M.823;

.2 provide means of automatically and manually selecting the station;

.3 make the data available for use with a delay not exceeding 100 ms after its reception;

.4 be capable of acquiring a signal in less than 45 s in the presence of electrical storms;

.5 have at least one serial data output that conforms to the relevant international marine interface standard*;

.6 have an omni-directional antenna in the horizontal plane; and

.7 be capable of operating satisfactorily in typical interference conditions.

4 PROTECTION

Precautions should be taken to ensure that no permanent damage can result from an accidental short circuit or grounding of the antenna or any of its input or output connections or any of the DGPS and DGLONASS maritime radio beacon receiver equipment inputs or outputs for a duration of 5 min.

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* Refer to IEC Publication 61162.

ANNEX 28

RESOLUTION MSC.115(73)
(adopted on 1 December 2000)

ADOPTION OF THE REVISED PERFORMANCE STANDARDS FOR SHIPBORNE COMBINED GPS/GLONASS RECEIVER EQUIPMENT

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO resolution A.886(21), by which the Assembly resolved that the function of adopting performance standards and technical specifications, as well as amendments thereto shall be performed by the Maritime Safety Committee and/or the Marine Environment Protection Committee, as appropriate, on behalf of the Organization,

RECALLING FURTHER that, in accordance with resolution A.815(19) by which the Assembly adopted the IMO policy for the recognition and acceptance of suitable radionavigation systems intended for international use to provide ships with navigational position-fixing throughout their voyages, the Global Positioning System (GPS) and the Global Navigation Satellite System (GLONASS) have been recognized as possible components of the world-wide radionavigation system,

NOTING that shipborne combined receiving equipment for the world-wide radionavigation system offer improved availability, integrity, accuracy and resistance to interference,

RECOGNIZING the need to improve the previously adopted, by resolution MSC.74(69), Annex 1, performance standards for shipborne combined GPS/GLONASS receiver equipment in order to ensure the operational reliability of such equipment and taking into account the technological progress and experience gained,

HAVING CONSIDERED the recommendation on the revision of resolution MSC.74(69), Annex 1 made by the Sub-Committee on Safety of Navigation at its forty-sixth session,

1. ADOPTS the Revised Recommendation on Performance Standards for Shipborne Combined Receiver Equipment, set out in the Annex to the present resolution;

2. RECOMMENDS Governments to ensure that combined GPS/GLONASS receiver equipment:

(a) if installed on or after 1 July 2003, conform to performance standards not inferior to those specified in the Annex to the present resolution; and

(b) if installed before 1 July 2003, conform to performance standards not inferior to those specified in Annex 1 to resolution MSC.74(69).

ANNEX

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

1 INTRODUCTION

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

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

1.3 Receiver equipment capable of combining individual satellite measurements from GPS and GLONASS constellations to form a single solution is intended for navigational purposes on ships with maximum speeds not exceeding 70 knots. Such equipment should, in addition to the general requirements contained in resolution A.694(17)*, comply with the following minimum performance requirements.

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

2 COMBINED GPS/GLONASS RECEIVER EQUIPMENT

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

.1 antenna capable of receiving both GPS and GLONASS signals;

.2 combined GPS/GLONASS receiver and processor;

.3 means of accessing the computed latitude/longitude position;

.4 data control and interface; and

.5 position display.

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

* Refer to Publication IEC 60945.

3 PERFORMANCE STANDARDS FOR COMBINED GPS/GLONASS RECEIVER EQUIPMENT

3.1 The combined GPS/GLONASS receiver equipment should:

.1.1 be capable of receiving and processing the Standard Positioning Service (SPS) signals of the GPS as modified by Selective Availability (SA) and range code signals in GLONASS and provide position information in latitude and longitude World Geodetic System (WGS) 84 co-ordinates in degrees, minutes and thousandths of minutes. Means may be provided to transform the computed position into data compatible with the datum of the navigational chart in use. Where this facility exists, the display and any data output should indicate that the co-ordinate conversation is being performed and should identify the co-ordinate system in which the position is expressed;

.1.2 operate on the L1 frequency signal and C/A code in GPS and L1 frequency signal and range code in GLONASS;

.1.3 be provided with at least one output from which position information can be supplied to other equipment. The output of position information should be in accordance with the relevant international standards;*

.1.4 have static accuracy such that the position of the antenna is determined to within 35 m (95%) in non-differential mode and 10 m (95%) in differential mode with horizontal dilution of precision (HDOP) $\leq$ 4 or position dilution of precision (PDOP) $\leq$ 6;

.1.5 have dynamic accuracy such that the position of the ship is determined to within 35 m (95%) in non-differential mode and 10 m (95%) in differential mode with HDOP $\leq$ 4 or PDOP $\leq$ 6 under the conditions of sea states and ship's motion likely to be experienced in ships**;

.1.6 be capable of selecting automatically the appropriate satellite transmitted signals for determination of the ship's position with the required accuracy and update rate;

.1.7 be capable of acquiring satellite signals with input signals having carrier levels in the range of -130 dBm to -120 dBm. Once the satellite signals have been acquired the equipment should continue to operate satisfactorily with satellite signals having carrier levels down to -133 dBm;

.1.8 be capable of acquiring position to the required accuracy, within 30 min, when there is no valid almanac data;

.1.9 be capable of acquiring position to the required accuracy, within 5 min, when there is valid almanac data;

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* Publication IEC 61162.

** Resolution A.694(17); Publications IEC 6721-3-6, IEC 60945 and IEC 61108-3.

.1.10 be capable of re-acquiring position to the required accuracy, within 5 min, when all GPS and GLONASS signals are interrupted for a period of at least 24 h, but there is no loss of power;

.1.11 be capable of re-acquiring position to the required accuracy, within 2 min, when subjected to a power interruption of 60 s;

.1.12 be capable of re-acquiring an individual satellite signal and utilizing it in the position solution within 10 s after being blocked for 30 s;

.1.13 generate and output to a display and digital interface* a new position solution at least once every 1 s;

.1.14 have a minimum resolution of position, i.e. latitude and longitude of 0.001 minutes;

.1.15 generate output to the digital interface* course over the ground (COG), speed over the ground (SOG) and universal time co-ordinated (UTC). Such outputs should have a validity mark aligned with that on the position output. The accuracy requirement for COG and SOG should not be inferior to the relevant Performance Standards for Heading** and SDME;***

.1.16 have the facilities to process DGPS and DGLONASS data fed to it, in accordance with Recommendation ITU-R M.823 and the appropriate RTCM standard; and

.1.17 be capable of operating satisfactorily in typical interference conditions.

4 PROTECTION

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

5 FAILURE WARNINGS AND STATUS INDICATIONS

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

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

.1 an indication within 5 s if either:

.1.1 the specified HDOP has been exceeded; or

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* Conforming to Publication IEC 61162 series.

** Resolution A.424(XI).

*** Resolution A.824(19).

.1.2 a new position has not been calculated for more than 1 s.

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

.2 a warning of loss of position;

.3 DGPS and DGLONASS status indication of:

.3.1 the receipt of DGPS and DGLONASS signals; and

.3.2 whether DGPS and DGLONASS corrections are being applied to the indicated ship's position;

.4 DGPS and DGLONASS integrity status and alarm; and

.5 DGPS and DGLONASS text message display.

***

ANNEX 29

RESOLUTION MSC.116(73)
(adopted on 1 December 2000)

PERFORMANCE STANDARDS FOR MARINE TRANSMITTING HEADING DEVICES (THDs)

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO resolution A.886(21), by which the Assembly resolved that the function of adopting performance standards and technical specifications, as well as amendments thereto shall be performed by the Maritime Safety Committee and/or the Marine Environment Protection Committee, as appropriate, on behalf of the Organization,

RECALLING FURTHER that, in accordance with the revised chapter V of the SOLAS Convention ships of 300 gross tonnage and upwards and less than 500 gross tonnage, which do not carry a gyro compass, are required to carry a THD, or other means to transmit heading information,

RECALLING FURTHER ALSO that in accordance with the HSC Code passenger craft certified to carry 100 passenger or less which do not carry a gyro compass are required to carry an instrument suitable for providing a heading reference,

NOTING that a properly adjusted THD will fulfil these carriage requirements,

RECOGNIZING the need to prepare appropriate performance standards for THDs,

HAVING CONSIDERED the recommendation on the performance standards for THDs made by the Sub-Committee on Safety of Navigation at its forty-sixth session,

1. ADOPTS the Recommendation on Performance Standards for Marine Transmitting Heading Devices (THDs), set out in the Annex to the present resolution;

2. RECOMMENDS Governments to ensure that THDs installed on or after 1 July 2002 conform to performance standards not inferior to those specified in the Annex to the present resolution.

ANNEX

RECOMMENDATION ON PERFORMANCE STANDARDS FOR MARINE TRANSMITTING HEADING DEVICES (THDs)

1 SCOPE

1.1 A transmitting heading device (THD) is an electronic device, which provides information about the ship's true heading.

1.2 In addition to the general requirements contained in resolution A.694(17)* and the relevant standard for the sensing part used, the THD equipment should comply with the following minimum requirements.

1.3 Where the IMO performance standards which apply to the sensing part do not specify a geographical operating area the THD should operate from 70º latitude south to 70º latitude north as minimum.

2 APPLICATION

2.1 The THDs complying with the requirements contained in this recommendation can be used for heading information as contained in chapter V of the SOLAS Convention.

2.2 In addition such THD should meet the dynamic requirements contained in the HSC Code, chapter 13 for the carriage of a suitable device providing heading information.

3 DEFINITION

3.1 *Heading*: for the purpose of these standards any ship's heading to be input to the THD function.

3.2 *Sensing part*: a sensing function of detecting any heading information connected to the transmitting device.

3.3 *Transmitting part*: device which receives a heading information from the sensing part and convert to the required accurate signal.

3.4 *True heading*: horizontal angle between the vertical plane passing through the true meridian and the vertical plane passing a through the craft's fore and aft datum line. It is measured from true north (000º) clockwise through 360º.

3.5 *Transmission and resolution error*: error which is caused by the method used to transmit the original information to a receiving device. Such method may have a limited capability to code any possible value of the information e.g. step output with 1/6º resolution. This error is caused by the method used inside the THD and at its output to code the information.

* Publication IEC 60945.

3.6 *Static error*: error which is caused by any reason and which stays unchanged in value during the operation of the system. This error should be measured under static conditions.

3.7 *Dynamic error*: error which is caused by dynamic influences acting on the system such as vibration, roll, pitch or linear acceleration. This error may have an amplitude and usually a frequency related to the environmental influences and the parameters of the system itself.

3.8 *Follow-up error*: error which is caused by the delay between the existence of a value to be sensed and the availability of the corresponding signal or data stream at the output of the system. This error is e.g. the difference between the real heading of turning vessel and the available information at the output of the system. The follow-up error disappears when the system is static.

4 OPERATIONAL REQUIREMENT

4.1 Functionality

4.1.1 The THD receives a heading signal and generates a suitable output signal for other devices.

4.1.2 Any sensor part may be included in the device.

4.1.3 Any correcting devices or parameters should be protected against inadvertent operation.

4.2 Presentation of information

4.2.1 All displays with the exception of the sensor, and all outputs of heading should indicate true heading.

4.2.2 Manually settable values used for electronic correction should be indicatable by adequate means.

4.3 Accuracy

4.3.1 The THD should be tested for accuracy with the sensing part connected. If the sensing part is so designed that it is included in the transmitting part, the equipment should be tested together with all parts.

4.3.2 The THD should meet at least the following accuracy at the output of the device under sea conditions as specified in resolution A.424(XI) or A.821(19) as applicable:

.1 Transmission and resolution errors. The transmission error including the resolution error should be less than ±0.2º;

.2 Static errors. The static error should be less than ±1.0º;

.3 Dynamic errors.* The dynamic error amplitude should be less than ±1.5º. The dynamic error frequency should be less than 0.033Hz equivalent to a period not shorter than 30s if the amplitude of the dynamic error exceeds ±0.5º; and

.4 Follow-up errors: The follow-up error for different rates of turn should be:

.4.1 less than ±0.5º at rates up to 10º/s; and

.4.2 less than ±1.5º between a rate of 10º/s and 20º/s.

4.4 **Interfacing**

At least one output should be in accordance with the relevant international marine interface standard.**

5 ELECTROMAGNETIC COMPATIBILITY

The device, with regard to electromagnetic interference and immunity, should, in addition to resolution A.694(17),*** comply with resolution A.813(19).****

6 FAILURE CONDITIONS

An alarm should be provided to indicate malfunctions of the THD or a failure of the power supply.

***

* If the sensing part is a magnetic one it should meet resolution A.382(X) and should be tested separately in accordance with the relevant standard.

** Publication IEC 61162.

*** Publication IEC 60945.

**** Publication IEC 60533.

ANNEX 30

PROPOSED AMENDMENTS TO CHAPTER 13 OF THE 1994 HSC CODE

CHAPTER 13
NAVIGATIONAL EQUIPMENT

1 The title of chapter 13 is replaced by the following:

"**SHIPBORNE NAVIGATIONAL SYSTEMS AND EQUIPMENT AND VOYAGE DATA RECORDER**"*

2 The existing paragraph 13.1 is replaced by the following:

"13.1 General

13.1.1 This chapter covers equipment which relate to the navigation of the craft as distinct from the safe functioning of the craft. The following paragraphs represent the minimum requirements for normal safe navigation unless it is demonstrated to the Administration that an equivalent level of safety is achieved by other means.

13.1.2 The equipment and its installation should be to the satisfaction of the Administration."

3 The following new paragraphs are added after the existing paragraph 13.12:

"13.13 Voyage data recorders (VDR)**

13.13.1 To assist in casualty investigation, passenger craft should be fitted with a voyage data recorder (VDR) as follows:

.1 ro-ro passenger craft, not later than the first survey after [1 January 2003]; and

.2 passenger craft other than ro-ro passenger craft, not later than 1 January 2004.

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* According to regulation X/3.1.1 of the Convention, the provisions of chapter V of the Convention also apply to high-speed craft, with the exception of those regulations V/18, V/19 and V/20.

** Refer to resolution A.861(20) on Recommendation on Performance Standards for voyage data recorders (VDRs).

Alternative text of 13.13.1

13.13.1 To assist in casualty investigation, passenger craft should be fitted with a voyage data recorder (VDR), not later than 1 January 2004.

13.13.2 Administration may exempt passenger craft, other than ro-ro passenger craft, from being fitted with a VDR where it can be demonstrated that interfacing a VDR with the existing equipment on the craft is unreasonable and impracticable.

13.13.3 The voyage data recorder (VDR) system, including all sensors, should be subjected to an annual performance test. The test should be conducted by an approved testing or servicing facility to verify the accuracy, duration and recoverability of the recorded data. In addition, tests and inspections should be conducted to determine the serviceability of all protective enclosure and devices fitted to aid location. A copy of a certificate of compliance issued by the testing facility stating the date of compliance and the applicable performance standards should be retained on board the craft.

13.14 Nautical charts and nautical publications

13.14.1 Craft should be provided with nautical charts and nautical publications to plan and display the craft's route for the intended voyage and to plot and monitor positions throughout the voyage. An electronic chart display and information system (ECDIS) may be accepted as meeting the chart carriage requirements of this paragraph.

13.14.2 Back-up arrangements should be provided to meet the functional requirements of 13.14.1, if this function is partly or fully fulfilled by electronic means.[***]

13.15 Automatic identification system (AIS)

13.15.1 Craft should be provided with automatic identification system (AIS), as follows:

.1 in the case of passenger craft, not later than 1 July 2003;

.2 in the case of cargo craft of 3,000 gross tonnage and upwards, not later than 1 July 2006; and

.3 in the case of cargo craft of less than 3,000 gross tonnage, not later than 1 July 2007.

[***] An appropriate folio of paper nautical charts may be used as a back-up arrangement for ECDIS. Other back-up arrangements for ECDIS are acceptable (see appendix 6 to resolution A.817(19), as amended).

13.15.2 AIS should:

.1 provide automatically to appropriately equipped shore stations, other vessels and aircraft information, including the craft's identity, type, course, speed, navigational status and other safety-related information;

.2 receive automatically such information from similarly fitted vessels;

.3 monitor and track vessels; and

.4 exchange data with shore based facilities.

13.15.3 The requirements of paragraph 13.15.2 should not be applied to cases where international agreements, rules or standards provide for the protection of navigational information.

13.15.4 AIS should be operated taking into account the guidelines developed by the Organization.*

_____

* Refer to resolution … Guidelines on the operation of AIS on ships (to be developed before this regulation enters into force)".

4 The existing paragraph 13.13 is re-numbered as paragraph 13.16.

ANNEX 1

RECORD OF EQUIPMENT FOR COMPLIANCE WITH THE INTERNATIONAL CODE OF SAFETY HIGH-SPEED CRAFT

5 The following new section 5 is added after existing paragraph 4.3:

"5 Details of navigational systems and equipment

1.1	Magnetic compass	……
1.2	Gyro-compass	……
2	Speed and distance measuring device	……
3	Echo-sounding device	……
4.1	9 GHz radar	……
4.2	Second radar (3 GHz/9 GHz*)	……
4.3	Automatic radar plotting aid (ARPA)/Automatic tracking aid (ATA)*	…… ……

5	Receiver for global navigation satellite system/ Terrestrial navigation system/ Other means of position fixing*,**	……
6.1	Rate of turn indicator	……
6.2	Rudder angle indicator/Direction of steering thrust indicator*	……
7.1	Nautical charts/Electronic chart display and information system (ECDIS)*	……
7.2	Back-up arrangements for ECDIS	……
7.3	Nautical publications	……
7.4	Back-up arrangement for nautical publications	……
8	Search light	……
9	Daylight signaling lamp	……
10	Night vision equipment	……
11	Means to show the mode of the propulsion systems	……
12	Automatic steering aid (Automatic pilot)	……
13	Automatic identification system (AIS)	……
14	Voyage data recorder (VDR)	……

* Delete as appropriate.

** In case of “other means” they shall be specified”.

***

ANNEX 31

AMENDMENTS TO CHAPTER XII OF THE INTERNATIONAL CODE OF SIGNALS

Chapter XII – "Single-Letter Signals with Complements"

1 A new signal is added as follows:

"SIGNAL	MEANING
Z-with one numeral	To call or address shore visual signal stations (Numeral to be approved by local port authority)."

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ANNEX 32

DRAFT ASSEMBLY RESOLUTION

UNIFORM WORDING FOR REFERENCING IMO INSTRUMENTS

THE ASSEMBLY,

NOTING the practice whereby, in order to give full effect to the provisions of certain instruments developed by the Organization under specific IMO conventions in the same manner as to the regulations of the convention themselves, such instruments have been treated as mandatory and have the same legal status as the parent convention, in which case appropriate references have been made in the conventions to this effect,

NOTING ALSO the practice concerning performance standards and technical specifications developed by the Organization, which are not regarded as mandatory instruments for treaty purposes but in respect of which Parties to the conventions concerned are obliged to establish national standards at least equivalent and, in any case, not inferior to those developed by the Organization,

NOTING FURTHER that other recommendations and guidelines, including industry standards, have been developed by the Organization to assist Administrations in the implementation of the relevant standards and are treated as recommendations for implementation by Member Governments with certain flexibility and at their discretion,

RECOGNIZING the need to ensure that, where reference is made to IMO and other instruments, a uniform wording is used to clearly indicate the legal status of the instrument concerned and set the procedures for amendments thereto as appropriate, after the IMO body concerned has decided on such status,

RECALLING that the Maritime Safety Committee and Marine Environment Protection Committee approved MSC/Circ.930-MEPC/Circ.364 on Guidelines on methods for making reference to IMO and other instruments in IMO conventions and other mandatory instruments, the usefulness of which was subsequently endorsed by the Legal Committee and the Facilitation Committee,

HAVING CONSIDERED the recommendations of the Maritime Safety Committee at its seventy-third session, the Legal Committee, at its [……] session, the Marine Environment Protection Committee at its [……..] session and the Facilitation Committee at its [……] session,

1. ADOPTS the Guidelines on methods for making reference to IMO and other instruments in IMO conventions and other mandatory instruments, set out in the Annex to the present resolution;

2. DIRECTS the above Committees to make use of the aforementioned Guidelines when making reference to IMO and other instruments in IMO conventions and other mandatory instruments which are within their area of responsibility;

3. REVOKES circular MSC/Circ.930 – MEPC/Circ.364.

ANNEX

GUIDELINES ON METHODS FOR MAKING REFERENCE TO IMO AND OTHER INSTRUMENTS IN IMO CONVENTIONS AND OTHER MANDATORY INSTRUMENTS

General

1 The purpose of these Guidelines is to provide a standard text for inclusion in new IMO conventions and other mandatory instruments relating to maritime safety and pollution prevention and in future amendments to existing conventions and other instruments, in order to ensure that, where reference is made to IMO and other instruments, a uniform wording is used to clearly indicate the legal status of the instrument in question after the IMO body concerned has decided on such a status.

IMO instruments to be treated as mandatory

2 When Contracting Governments or Parties to an IMO convention have decided that full effect should be given to the provisions of certain codes or requirements under that convention in the same manner as the regulations of the convention themselves, such instruments should be treated as mandatory and have the same legal status as the parent convention.

3 The most appropriate method for referencing, in an IMO convention, instruments determined to become mandatory under the parent convention is to follow the SOLAS provisions used for making the IBC and IGC Codes (under chapter VII) and HSC Code (under chapter X) mandatory, i.e.:

.1 to expressly refer to such instruments in the text of the relevant convention regulations;

.2 to expressly provide that future amendments to such instruments should follow the amendment procedures laid down in the relevant article of the parent convention; and

.3 to expressly prescribe in the text of the relevant convention regulations that "such requirements shall be treated mandatory" in case the word "should" has been used in such instruments instead of "shall".

4 For such instruments, the use of terms such as "guidelines" or "guidance", which might be misunderstood as implying recommendations, should be avoided as far as possible.

5 It would be preferable to adopt the text of the instrument being referenced at the time of adoption of the relevant amendments to the convention concerned and to prepare an authentic text of the instrument, which will be used as the basis for the preparation of any certified copies of future amendments to such an instrument.

Performance standards and technical specifications in IMO instruments

6 The SOLAS, MARPOL and other IMO conventions contain provisions referring to performance standards and technical specifications, such as performance standards for GMDSS equipment, shipboard navigational equipment, oil discharge and monitoring systems, etc. which are accompanied by footnotes identifying such performance standards or technical specifications as adopted by the Organization, i.e. by means of Assembly resolutions, MSC or MEPC resolutions, etc. Such standards and specifications referred to in the footnotes are not regarded as mandatory instruments for treaty purposes, since they do not appear in the authentic text of the parent convention and can be updated by the Secretariat as necessary; hence, they do not constitute an integral part of the parent convention. Nevertheless, Contracting Governments or Parties to the parent conventions are obliged to establish national standards not inferior, or at least equivalent, to those developed by the Organization.

7 In referencing such standards and specifications, the expressions shown in the following examples should be used:

- "equipment shall conform to performance standards not inferior to those adopted by the Organization";

- "equipment shall be tested in accordance with specifications at least equivalent to those developed by the Organization"; or

- "the manual shall be drawn up to a standard at least equivalent to that developed by the Organization."

8 Expressions, such as "the equipment shall comply with the standards adopted by the Organization" or "... in accordance with the standards adopted by the Organization", should not be used in order to avoid any misunderstanding that the standards not identified in the regulation are mandatory.

9 Standards and specifications referred to in footnotes should not appear in the authentic text of the convention and may be updated by the Secretariat as necessary when a new edition of the relevant publication is prepared.

10 For such standards and specifications, the use of terms such as "guidelines" or "guidance" should be avoided as far as possible.

11 The standards and specifications referred to above should clearly indicate their effective date and application to new and existing ships, or both, and new and existing installations of equipment, or both, unless this is already specified in the relevant regulations of the parent convention.

12 Future amendments to performance standards and technical specifications should be processed and adopted in accordance with the Committees' Rules of Procedure and the Guidelines on the organization and method of work of the Committees and their subsidiary bodies. When such amendments are adopted as new standards superseding existing ones (with new resolution numbers), the revised standard(s) should normally take effect not earlier than six months after adoption unless expressly decided otherwise by the relevant Committee at the time of adoption.

IMO instruments to be treated as recommendations

13 When Contracting Governments or Parties to an IMO convention have decided that they should implement certain instruments, such as guidelines, manuals or guidance, with certain discretion and flexibility, such instruments should be treated as recommendatory instruments.

14 Instruments of recommendatory status should be referred to in the footnote accompanying the relevant regulations of the parent convention. In such cases:

.1 clear expressions should be used in the regulation indicating the recommendatory status of the instrument, e.g. "... shall be approved by the Administration, taking into account the recommendations developed by the Organization" or "...., based on the guidelines developed by the Organization"; and

.2 self-contradictory expressions, such as "shall comply with the recommendations", should be avoided.

15 Guidelines or recommendations referred to in the footnotes should not appear in the authentic text of the convention and may be updated by the Secretariat as necessary when a new edition of the relevant publication is prepared.

Method for referencing instruments in mandatory IMO instruments

16 The above procedures should also apply for the purpose of referencing IMO instruments in mandatory instruments, such as the IBC, IGC, HSC Codes, etc.

17 If the Committee concerned decides that an instrument referred to in the mandatory instrument should be treated as mandatory, the text to make reference to such an instrument in accordance with paragraph 3 above should be included in the relevant regulation of the parent convention rather than in the mandatory instrument itself.

Method for referencing industry standards in mandatory IMO instruments

18 If industry standards, such as ISO or IEC standards, or IACS unified requirements, are to be referred to in IMO conventions or other mandatory instruments, the following method should be used:

.1.1 industry standards to be treated as mandatory should be adopted by the relevant Committee in the form of an appropriate resolution, and should be referenced as described in paragraphs 2 to 5 above;

.1.2 industry standards containing performance standards or technical specifications should be referred to as "standards acceptable to the Organization" with an appropriate footnote to identify such standards, e.g. "equipment shall conform to performance standards not inferior to those acceptable to the Organization" or "equipment shall be tested in accordance with specifications at least equivalent to those acceptable to the Organization"; and

.2 in the case of industry standards which should be treated as recommendations and referred to in footnotes, expressions similar to those mentioned in paragraph 14 above should be used, e.g. "... should be tested in accordance with specifications at least equivalent to those acceptable to the Organization".

19 The standards referred to in footnotes should clearly indicate their edition, such as the number or the effective date. When amended by the relevant industry organization, the revised edition of the standards should be approved by the relevant Committee and the footnote amended accordingly.

20 The provisions of paragraph 11 should apply, *mutatis mutandis*, to the standards referred to in paragraph 18.1.2.

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ANNEX 33

AMENDMENTS TO THE GUIDELINES ON THE ORGANIZATION AND METHOD OF WORK OF THE MARITIME SAFETY COMMITTEE AND THE MARINE ENVIRONMENT PROTECTION COMMITTEE AND THEIR SUBSIDIARY BODIES (MSC/Circ.931-MEPC/Circ.366)*

CO-ORDINATION OF WORK AND REVIEW OF WORK PROGRAMMES

1 The following new paragraph 14-1 is added after existing paragraph 14:

"*14-1 Notwithstanding the above provision that proposals for the inclusion of new work programme items, submitted by non-governmental organizations, should be co-sponsored by Governments, such organizations should not be restrained from submitting comments and recommendations on items on the agenda of any IMO body, thus providing expert advice, contributing to the discussion and enabling the bodies concerned to reach optimal decisions."*

WORKING ARRANGEMENTS

Committee and subsidiary bodies

2 Existing paragraph 28 is amended as follows:

"28 Subsidiary bodies should not include in their work programmes new subjects or expand existing subjects unless directed or authorized to do so by the Committee(s). Subsidiary bodies should not develop amendments to, or interpretations of, any relevant IMO instrument without authorization from the Committee(s). *However, when seeking the Committee's authorization to act as provided in the previous two sentences, subsidiary bodies should ensure that their request complies with the provisions of paragraphs 13.1 and 13.2 above. As subsidiary bodies may not have sufficient time to develop the required information given that usually their work programme are normally only discussed at the end of their sessions, interested delegations should, in consultation with the subsidiary body Chairman and the Secretariat, prepare the information which should accompany the proposal necessary for the Committee(s) to decide whether a new item should be included in the subsidiary body's work programme".*

3 Existing paragraph 29 is amended as follows:

"29 *The Secretariat should not accept for circulation to subsidiary body meetings proposals for new work programme items.* Where a Member Government considers a matter is of sufficient urgency and importance, a well-documented proposal may be submitted simultaneously to the Committee and to the relevant subsidiary body(ies); however, any *further* work *by* subsidiary body(ies) on such a proposal should be subject to the approval of the Committee(s) (see paragraph 7 of the attachment to appendix 3). In addition, a subsidiary body may deal with urgent matters requested by other subsidiary bodies, pending formal approval by the Committee(s)."

* Modifications to the text of the Guidelines are shown in italics.

Working groups and correspondence groups

4 Existing paragraph 32 is amended as follows:

"32 The Committee and their subsidiary bodies should *keep* the number of working groups formed during their sessions to a *minimum; however, a* maximum of three *working groups could be established, where necessary,* bearing in mind the difficulties small delegations experience in being represented on such groups and the fact that such groups work without interpretation. *When a working group has completed its task and has been terminated, another working group should not be convened in its place during the same session.* To such an end, subsidiary bodies should endeavour to consider, as appropriate, items on their agenda in plenary, rather than establishing groups to deal with them."

5 The following new paragraph 32-1 is added after existing paragraph 32:

"32-1 Where more than three working groups are needed to deal with different subjects in one session, the Committee(s) and subsidiary body(ies) should establish a priority order for possible subject items and decide accordingly. Where more than three unrelated topics need to be covered by independent working groups over several sessions, arrangements could be made for groups concerned to meet at alternate sessions of the Committee and subsidiary body concerned within the maximum of three groups per session."

6 Existing paragraph 37 is amended as follows:

"37 Subject to approval by the Council, intersessional meetings of working groups may be convened without interpretation services. Intersessional meetings should only be held *if considered to be absolutely essential and* after careful consideration of their need by the Committee(s) *on a case-by-case basis*, taking into account the priority and urgency of the specific matter such meetings will be invited to address. Intersessional meetings of such groups should be held at IMO Headquarters immediately before or after an agreed session of the parent body concerned. Other arrangements may be considered; however, no arrangements should be made with respect to intersessional meetings until such meetings have been approved by the Committee(s)."

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ANNEX 34

WORK PROGRAMMES OF THE SUB-COMMITTEES

SUB-COMMITTEE ON BULK LIQUIDS AND GASES (BLG)

		Target completion date/number of sessions needed for completion	Reference
1	**Evaluation of safety and pollution hazards of chemicals and preparation of consequential amendments**	Continuous	BLG 1/20, section 3; BLG 4/18, section 11
2	Casualty analysis (co-ordinated by FSI)	Continuous	MSC 70/23, paragraphs 9.17 and 20.4
H.1	**Revision of MSC/Circ.677**	2001	MSC 63/23, paragraph 18.4; BLG 4/18, section 3
H.2	**Matters related to the probabilistic methodology for oil outflow analysis**	2001	BLG 1/20 paragraphs 8.7 to 8.11; BLG 4/18, section 5
H.3	**Review of Annex I of MARPOL 73/78**	2002	BLG 1/20, section 9; BLG 4/18, paragraph 15.2.5
H.4	**Review of Annex II of MARPOL 73/78**	2004	BLG 1/20, section 9; BLG 4/18, paragraph 15.2.5

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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 BLG 6 shown in annex 35.

Sub-Committee on Bulk Liquids and Gases (BLG) (continued)

			Target completion date/number of sessions needed for completion	Reference
H.5	Environmental and safety aspects of alternative tanker designs under MARPOL 73/78 regulation I/13F			BLG 3/18, paragraph 15.7
	.1	development of the final guidelines	2 sessions	BLG 1/20, paragraph 8.15
	.2	assessment of alternative tanker designs, if any	Continuous (as necessary)	BLG 1/20, section 16; BLG 4/18, paragraph 15.3
H.6	**Requirements for personnel protection involved in the transportation of cargoes containing toxic substances in all types of tankers**		2002	BLG 1/20, section 12; BLG 4/18, section 9
H.7	**Oil tagging systems**		2003	MEPC 45/20, paragraph 17.4
H.8	**Evaluation of the IMO Greenhouse Gas emission study**		2001	MEPC 45/20, paragraph 17.4
L.1	Development of guidelines for ships operating in ice-covered waters (co-ordinated by DE)		2 sessions	DE 43/18, section 12; MSC 71/23, paragraph 20.43
L.2	**Application of MARPOL requirements to FPSOs and FSUs**		2002	MEPC 41/20, paragraph 7.7; MSC 69/22, paragraph 20.8.1; BLG 4/18, section 14
L.3	**Amendments to requirements on electrical installations in the IBC and IGC Codes**		2002	MSC 71/23, paragraph 20.3

SUB-COMMITTEE ON DANGEROUS GOODS, SOLID CARGOES AND CONTAINERS (DSC)

		Target completion date/number of sessions needed for completion	Reference
1	**Harmonization of the IMDG Code with the UN Recommendations on the Transport of Dangerous Goods**	Continuous	MSC 63/23, paragraph 10.6
2	**Reports on incidents involving dangerous goods or marine pollutants in packaged form on board ships or in port areas**	Continuous	CDG 45/22, section 11 and paragraph 20.2
3	**Amendments to the BC Code, including evaluation of properties of solid bulk cargoes**	Continuous	BC 34/17, section 3; DSC 2/16, paragraph 16.2.5.1
4	**Casualty analysis** (co-ordinated by FSI)	Continuous	MSC 70/23, paragraphs 9.17 and 20.4
H.1	**Amendment 31-02 to the IMDG Code, its annexes and supplements (EmS, MFAG)**	2002	DSC 3/15 paragraph 12.6; DSC 5/13, paragraph 10.5
H.2	**Implementation of Annex III of MARPOL 73/78**	2002	DSC 3/15, paragraph 12.6; DSC 5/13, paragraph 10.4
H.3	**Cargo securing manual**	2002	DSC 5/13, paragraph 10.5; MSC 73/21, paragraph 18.8

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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 DSC 6 shown in annex 35.

Sub-Committee on Dangerous Goods, Solid Cargoes and Containers (DSC) (continued)

			Target completion date/number of sessions needed for completion	Reference
H.4	Implementation of IMO instruments and training requirements for cargo-related matters			
	.1	**development of an instrument for multimodal training requirements**	2001	DSC 2/16, paragraph 13.10; DSC 5/13, paragraph 10.4
H.5	**Revision of the Emergency Schedules (EmS)**		2002	DSC 3/15, paragraph 3.2.21
H.6	**Review of the BC Code**		2002	DSC 3/15, paragraph 12.7
H.7	**Amendments to SOLAS chapters VI and VII and MARPOL Annex III to make the IMDG Code mandatory**		2001	MSC 70/23, paragraph 20.6; MSC 71/23, paragraph 20.7; MSC 73/21, paragraph 18.11
H.8	**Stowage and segregation requirements for freight containers on containerships with partially weatherproof hatchway covers** (co-ordinated by SLF)		2001	DSC 5/13, paragraph 10.6; MSC 72/23, paragraph 21.15
H.9	**Development of a manual on loading and unloading of solid bulk cargoes for terminal representatives**		2002	MSC 72/23, paragraph 21.17
L.1	Guidelines for the development of shipboard emergency plans for marine pollutants		1 session*	CDG 42/22, section 9 and paragraph 20.2; DSC 2/16, paragraph 16.2.5.3

* To be decided by the MEPC.

SUB-COMMITTEE ON FIRE PROTECTION (FP)

		Target completion date/number of sessions needed for completion	Reference
1	**Analysis of fire casualty records**	Continuous	FP 43/18, section 12; FSI 8/19, section 11
H.1	**Guidelines on alternative design and arrangements for fire safety**	2001	FP 44/19, section 4 and paragraph 16.1.4; MSC 72/23, paragraph 21.21.1
H.2	**Fire-fighting systems in machinery and other spaces**	2001	FP 43/18, paragraph 8.1; FP 44/19, section 9 and paragraph 16.1.2.2
H.3	**Recommendation on evacuation analysis for passenger ships and high-speed passenger craft**	2002	MSC 71/23, paragraph 20.13; FP 43/18, paragraphs 4.12 to 4.14
H.4	**Unified interpretations of SOLAS chapter II-2 and related fire test procedures**	2002	FP 43/18, paragraphs 5.7, 7.25 and 15.3.5.1; FP 44/19, section 6 and paragraph 16.1.2.6
L.1	**Role of the human element: revision of resolution A.654(16) on Graphical symbols for fire control plans**	2001	FP 39/19, section 13; FP 44/19, section 14 and paragraph 16.1.2.3
L.2	**Fire test procedures: fire-retardant materials for the construction of lifeboats**	2002	FP 43/18, paragraph 15.3; FP 44/19, section 8 and paragraph 16.1.2.4

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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 45 shown in annex 35.

Sub-Committee on Fire Protection (FP) (continued)

		Target completion date/number of sessions needed for completion	Reference
L.3	**Development of guidelines for ships operating in ice-covered waters** (co-ordinated by DE)	2001	MSC 71/23, paragraph 20.43; FP 44/19, section 12 and paragraph 16.1.2.5
L.4	**Smoke control and ventilation**	2002	FP 39/19, section 9; FP 44/19, section 5 and paragraph 16.1.2.1
L.5	**Revision of resolution A.602(15)**	2002	FP 44/19, paragraphs 6.33 and 16.1.3.2; MSC 72/23, paragraph 21.21.2

SUB-COMMITTEE ON FLAG STATE IMPLEMENTATION (FSI)

			Target completion date/number of sessions needed for completion	Reference
1	Reporting under IMO instruments and analysis/evaluation of reports (other than port State control reports)		Continuous	FSI 8/19, section 10
	.1	**mandatory reports under MARPOL 73/78**	Continuous	MSC 70/23, paragraph 20.12.1; FSI 8/19, section 10
2	**Casualty statistics and investigations**		Continuous	MSC 68/23, paragraphs 7.16 to 7.24; FSI 8/19, section 11
3	Port State control		Continuous	MSC 68/23, paragraphs 7.10 to 7.15
	.1	**regional co-operation on port State control**	Continuous	FSI 8/19, section 12
	.2	**reporting procedures on port State control detentions and analysis and evaluation of reports**	Continuous	MSC 71/23, paragraph 20.16; FSI 8/19, paragraph 16.6.3
	.3	PSC on seafarers' working hours	2 sessions	MSC 70/23, paragraph 20.12.3; FSI 7/14, paragraphs 7.11 to 7.13; MSC 71/23, paragraph 13.13

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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 FSI 9 shown in annex 35.

Sub-Committee on Flag State Implementation (FSI) (continued)

			Target completion date/number of sessions needed for completion	**Reference**
4	Survey and certification		Continuous	MSC 67/22, paragraph 19.5
	.1	**review of resolutions A.744(18) and A.746(18)**	2002	MSC 69/22, paragraph 10.9; FSI 8/19, section 7 MSC 72/23, paragraph 21.27
(L)	.2	**introduction of the HSSC into MARPOL Annex VI on prevention of air pollution**	2001	MEPC 41/20, paragraph 8.22.1; MSC 69/22, paragraph 20.28; FSI 8/19, section 9
H.1	Implementation of IMO instruments		Continuous	
	.1	**responsibilities of Governments and measures to encourage flag State compliance**	Continuous	MSC 68/23, paragraphs 7.2 to 7.8; FSI 8/19, section 3
	.2	comprehensive analysis of difficulties encountered in the implementation of IMO instruments	Continuous	MSC 69/22, paragraph 20.28; FSI 8/19, section 4
	.3	**self-assessment of flag State performance**	2002	MSC 70/23, paragraphs 9.2 to 9.14; MSC 71/23, paragraph 20.15; FSI 8/19, section 5
H.2	**Implications arising when a vessel loses the right to fly the flag of a State**		2001	MSC 68/23, paragraph 7.7; MSC 70/23, paragraph 22.12.4; FSI 8/19, section 6

Sub-Committee on Flag State Implementation (FSI) (continued)

		Target completion date/number of sessions needed for completion	Reference
H.3	**Revision of the SOLAS expression "ships constructed"**	2002	MSC 71/23, paragraph 20.19; FSI 8/19, paragraph 16.7
H.4	**Use of the Spanish language in SOLAS certificates, manuals and other documents**	2002	MSC 72/23, paragraph 21.26
H.5	**Illegal, unreported and unregulated fishing (IUU) and related matters**	2002	MSC 72/23, paragraph 21.28
H.6	Development of guidelines for survey and certification for anti-fouling paints	2 sessions	MEPC 45/20, paragraph 17.1

SUB-COMMITTEE ON RADIOCOMMUNICATIONS AND SEARCH AND RESCUE (COMSAR)

			Target completion date/number of sessions needed for completion	Reference
1	**Global Maritime Distress and Safety System (GMDSS)**			COMSAR 4/14, section 3
	.1	**matters relating to the GMDSS Master Plan**	Continuous	COMSAR 4/14, paragraphs 3.1 to 3.18
	.2	replies to questionnaire on casualties	Continuous	COMSAR 1/30, paragraphs 3.15 to 3.16
	.3	exemptions from radio requirements	Continuous	COMSAR 4/14, paragraphs 3.38 to 3.41
2	Promulgation of maritime safety information (MSI) (in co-operation with ITU, IHO, WMO and Inmarsat)			
	.1	**operational and technical co-ordination provisions of Maritime Safety Information (MSI) services**	Continuous	COMSAR 4/14, paragraphs 3.23 to 3.37
3	**ITU World Radiocommunication Conference matters**		Continuous	COMSAR 4/14, section 5
4	**Radiocommunication ITU-R Study Group 8 matters**		Continuous	COMSAR 4/14, section 5
5	**Satellite services (Inmarsat and COSPAS-SARSAT)**		Continuous	COMSAR 4/14, section 6

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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 COMSAR 5 shown in annex 35.

Sub-Committee on Radiocommunications and Search and Rescue (COMSAR) (continued)

			Target completion date/number of sessions needed for completion	Reference
6	**Matters concerning search and rescue, including those related to the 1979 SAR Conference and the introduction of the GMDSS**			
	.1	**harmonization of aeronautical and maritime search and rescue procedures, including SAR training matters**	2000	COMSAR 4/14, paragraphs 8.1 to 8.19
	.2	**plan for the provision of maritime SAR services, including procedures for routeing distress information in the GMDSS**	Continuous	COMSAR 4/14, paragraphs 8.20 to 8.55
	.3	**revision of the IAMSAR Manual**	Continuous	MSC 71/23, paragraph 20.22; COMSAR 4/14, paragraphs 8.58 to 8.68
7	**Emergency radiocommunications: false alerts and interference**		2000	COMSAR 4/14, section 7
8	Casualty analysis (co-ordinated by FSI)		Continuous	MSC 70/23, paragraphs 9.17 and 20.4
H.1	Work consequential to the 1988 GMDSS Conference			MSC 66/24, paragraphs 10.6 to 10.8 and 21.52; COMSAR 1/30, section 4
	.1	review of the locating functions in the GMDSS	1 session	COMSAR 1/30, paragraph 4.26

Sub-Committee on Radiocommunications and Search and Rescue (COMSAR) (continued)

		Target completion date/number of sessions needed for completion	Reference
H.2	VTS and automatic ship identification transponder/transceiver systems (co-ordinated by NAV)	1 session	MSC 66/24, paragraph 21.24.2; COMSAR 1/30, paragraphs 8.6 to 8.8
H.3	**IMO Standard Marine Communication Phrases** (co-ordinated by NAV)	2000	COMSAR 1/30, section 23; MSC 71/23, paragraph 20.24
H.4	**Review of the Joint IMO/IHO/WMO MSI Manual**	2000	COMSAR 1/30, paragraph 5.9; COMSAR 3/14, paragraph 11.4.4.1
H.5	Procedures for responding to DSC alerts	2 sessions	COMSAR 4/14, paragraph 3.49; MSC 72/23, paragraph 21.32
H.6	**Development of criteria for general communications**	2002	MSC 69/22, paragraph 20.36; COMSAR 4/14, paragraphs 3.55 to 3.60
H.7	Amendments to SOLAS chapter IV pursuant to the criteria set out in resolution A.888(21)	3 sessions	MSC 72/23, paragraph 21.33.1.2
H.8	Development of a procedure for recognition of mobile-satellite systems	2 sessions	MSC 72/23, paragraph 21.33.1.3
L.1	**Development of guidelines for ships operating in ice-covered waters** (co-ordinated by DE)	2000	MSC 68/23, paragraph 20.4; MSC 71/23, paragraph 20.43; COMSAR 4/14, section 10

Sub-Committee on Radiocommunications and Search and Rescue (COMSAR) (continued)

		Target completion date/number of sessions needed for completion	Reference
L.2	**Harmonization of GMDSS requirements for radio installations on board SOLAS ships**	2002	MSC 71/23, paragraph 20.23

SUB-COMMITTEE ON SAFETY OF NAVIGATION (NAV)

		Target completion date/number of sessions needed for completion	Reference
1	**Routeing of ships, ship reporting and related matters**	Continuous	MSC 72/23, paragraphs 10.69 to 10.71 and 20.41 to 20.42; NAV 46/16, section 3
2	**ITU matters, including Radio-communication ITU-R Study Group 8 matters**	Continuous	MSC 69/22, paragraphs 5.69 to 5.70; NAV 46/16, paragraphs 8.1 to 8.9
3	Casualty analysis (co-ordinated by FSI)	Continuous	MSC 70/23, paragraphs 9.17 and 20.4; NAV 46/16, paragraphs 15.24 to 15.28
H.1	**World-wide radio navigation system**	2001	MSC 69/22, paragraphs 5.65 and 20.43; NAV 46/16, paragraphs 7.1 to 7.10
H.2	**Revision of resolution A.815(19) on World-wide radionavigation system**	2001	NAV 46/16, paragraph 7.11; MSC 73/21, paragraph 18.21.1
H.3	**Performance standards for bridge watch alarms**	2001	MSC 71/23, paragraph 20.28; NAV 46/16, paragraphs 7.12 to 7.14

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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 NAV 47 shown in annex 35.

Sub-Committee on Safety of Navigation (NAV) (continued)

		Target completion date/number of sessions needed for completion	Reference
H.4	**Guidelines for recording events related to navigation**	2001	MSC 72/23, paragraph 21.39.1; NAV 46/16, paragraphs 10.1 to 10.8
H.5	**Guidelines on automatic identification system (AIS) operational matters** (in co-operation with COMSAR)	2001	MSC 72/23, paragraphs 10.65 to 10.68; NAV 46/16, paragraphs 10.9 to 10.29
H.6	**Guidelines on voyage data recorders' ownership and recovery**	2001	NAV 46/16, paragraph 15.38; MSC 73/21, paragraph 18.21.2
H.7	**Training and certification of maritime pilots and revision of resolution A.485(XII)** (co-ordinated by STW)	2001	MSC 72/23, paragraph 21.39; NAV 46/16, paragraphs 15.9 to 15.19
H.8	Feasibility study on carriage of VDR on existing cargo ships	3 sessions	MSC 73/21, paragraph 18.22
H.9	**Effective voyage planning for large passenger ships**	2003	MSC 73/21, paragraph 18.23
L.1	Development of guidelines for ships operating in ice-covered waters (co-ordinated by DE)	2001	MSC 69/22, paragraph 20.51; MSC 71/23, paragraph 20.43; NAV 46/16, paragraphs 12.1 to 12.5
L.2	**Integrated bridge systems (IBS) operational aspects**	2001	MSC 70/23, paragraph 20.17.2; NAV 46/16, section 5

SUB-COMMITTEE ON SHIP DESIGN AND EQUIPMENT (DE)

		Target completion date/number of sessions needed for completion	Reference
1	**Casualty analysis** (co-ordinated by FSI)	Continuous	MSC 70/23, paragraphs 9.17 and 20.4
H.1	**Low-powered radio homing devices for liferafts on ro-ro passenger ships**	2001	MSC 66/24, paragraph 21.24.1; DE 43/18, section 7; MSC 73/21, paragraph 9.3
H.2	**Asbestos-related problems on board ships**	2001	MSC 68/23, paragraph 20.7; DE 43/18, section 6
H.3	**Development of guidelines for ships operating in ice-covered waters** (in co-operation with BLG, FP, COMSAR, NAV, SLF, STW and MEPC)	2001	MSC 68/23, paragraph 20.4**;** DE 43/18, section 12
H.4	**Guidelines under MARPOL Annex VI on prevention of air pollution from ships**	2003	MEPC 41/20, paragraph 8.22.1;
	.1 **guidelines for on-board NOx monitoring and recording devices**		
	.2 **guidelines for sampling of fuel oil for combustion purposes**		DE 43/18, section 10 and paragraph 16.1.1.2; MEPC 45/20, paragraph 17.7

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 44 shown in annex 35.

Sub-Committee on Ship Design and Equipment (DE) (continued)

		Target completion date/number of sessions needed for completion	Reference
H.5	**Revision of resolutions MEPC.60(33) and A.586(14)**	2002	MEPC 42/22, paragraph 15.7; DE 43/18, section 11
H.6	**Amendments to resolution A.744(18)**	2001	MSC 70/23, paragraphs 9.29 and 20.23; DE 43/18, section 13
H.7	**Use of desalinators on lifeboats and liferafts**	2002	MSC 71/23 paragraph 20.38; DE 43/18, paragraphs 16.1.3.1 and 16.2.2
H.8	Safety aspects of water ballast management	1 session	MSC 71/23, paragraph 9.11
H.9	**Interpretation of MARPOL regulation I/16 on oil filtering equipment**	2002	MEPC 45/20, paragraph 17
H.10	**Matters related to incinerators**	2002	MEPC 45/20, paragraph 17
H.11	Amendments to the 2000 HSC Code	2 sessions	MSC 73/21, paragraph 18.27
L.1	Development of requirements for wing-in-ground (WIG) craft	2003	DE 42/15, section 8; DE 43/18, section 8 and paragraph 16.1.2.3

Sub-Committee on Ship Design and Equipment (DE) (continued)

		Target completion date/number of sessions needed for completion	Reference
L.2	**Improved thermal protection**	2001	DE 42/15, paragraph 14.3; MSC 71/23, paragraph 20.36; DE 43/18, section 9
L.3	Guidelines under MARPOL Annex VI on prevention of air pollution from ships	2003	MEPC 41/20, paragraph 8.22.1; DE 42/15, paragraphs 10.2 to 10.4
	.1 guidelines on equivalent methods to reduce on-board NOx emission		
	.2 guidelines on on-board exhaust gas cleaning systems		
	.3 guidelines on other technological methods verifiable or enforceable to limit SOx emission		
L.4	**Revision of the Interim Standards for ship manoeuvrability (resolution A.751(18))**	2002	MSC 71/23, paragraph 20.39; DE 43/18, paragraphs 16.1.3.2 and 16.2.1
L.5	**Amendments to SOLAS requirements on electrical installations**	2002	MSC 71/23, paragraph 20.45; DE 43/18, paragraphs 16.1.3.3 and 16.2.3

SUB-COMMITTEE ON STABILITY AND LOAD LINES AND ON FISHING VESSELS SAFETY (SLF)

		Target completion date/number of sessions needed for completion	Reference
1	Analysis of intact stability casualty records	Continuous	SLF 30/18, paragraphs 4.16 and 4.17
2	Analysis of damage cards	Continuous	SLF 41/18, paragraph 17.5
3	Improved stability criteria and systematic model tests	Continuous	SLF 39/18, paragraph 15.4 and annex 7
H.1	Harmonization of damage stability provisions in IMO instruments (probabilistic method)		
	.1 **development of revised SOLAS chapter II-1 parts A, B and B-1**	2003	SLF 42/18, section 3; MSC 72/23, paragraph 21.52; SLF 43/16, section 3
	.2 development of explanatory notes for harmonized SOLAS chapter II-1 parts A, B and B-1	2 sessions	MSC 69/22, paragraph 20.60.1; SLF 42/18, section 5
H.2	**Revision of technical regulations of the 1966 LL Convention**	2002	SLF 43/16, paragraph 4.29
H.3	**Revision of the fishing vessel Safety Code and Voluntary Guidelines**	2004	SLF 43/16, section 5

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 44 shown in annex 35.

Sub-Committee on Stability and Load Lines and on Fishing Vessels Safety (SLF) (continued)

		Target completion date/number of sessions needed for completion	Reference
H.4	Role of the human element		
	.1 **damage consequence diagrams**	2001	SLF 42/18, paragraph 6.8; MSC 71/23, paragraph 20.51; SLF 43/16, section 7
H.5	Safety aspects of ballast water management	1 session	MSC 71/23, paragraph 9.11
H.6	**Guidelines for the conduct of high-speed craft model tests**	2001	MSC 72/23, paragraph 21.49; SLF 43/16, section 12
H.7	**Amendments to the 2000 HSC Code**	2001	MSC 73/21, paragraph 18.31
L.1	Harmonization of damage stability provisions in IMO instruments (probabilistic method)		SLF 41/18, section 13; MSC 65/25, paragraph 21.23
	.1 harmonization of damage stability provisions in other IMO instruments, including the 1993 Torremolinos Protocol	3 sessions	SLF 37/25, paragraph 22.2; MSC 65/25, paragraph 21.23; SLF 41/18, section 13
L.2	**Development of guidelines for ships operating in ice-covered waters** (co-ordinated by DE)	2002	MSC 68/23, paragraph 20.4; SLF 43/16, section 10
L.3	**Containership partially weathertight hatch covers** (in co-operation with DE, DSC and FP)	2002	MSC 68/23, paragraph 20.60; SLF 43/16, section 11
L.4	Review of the Intact Stability Code	Continuous	SLF 41/18, paragraph 3.14; MSC 69/22, paragraph 20.6

SUB-COMMITTEE ON STANDARDS OF TRAINING AND WATCHKEEPING (STW)

		Target completion date/number of sessions needed for completion	Reference
1	**Validation of model training courses**	Continuous	STW 31/17, paragraph 14.4
2	**Casualty analysis** (co-ordinated by FSI)	Continuous	MSC 70/23, paragraphs 9.17 and 20.4
H.1	**Training and certification of maritime pilots and revision of resolution A.485(XII)** (in co-operation with NAV)	2001	MSC 69/22, paragraph 20.71; STW 31/17, paragraph 4.6
H.2	**IMO Standard Marine Communication Phrases** (co-ordinated by NAV)	2001	STW 31/17, paragraph 11.7
H.3	**Follow-up action to the 1995 STCW Conference** including:		
	.1 guidance regarding recognition of certificates (regulation I/10)	2001	STW 31/17, paragraph 5.31
	.2 clarification of STCW Convention and STCW Code provisions	2002	
	.3 review of training-related resolutions and circulars with a view to revoking	2001	STW 30/13, paragraph 5.16
	.4 guidance on the preparation and review of independent evaluations required by STCW regulation I/8 and section A-I/7 of the STCW Code	2001	STW 31/17, paragraph 5.30

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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 32 shown in annex 35.

Sub-Committee on Standards Of Training and Watchkeeping (STW) (continued)

			Target completion date/number of sessions needed for completion	Reference
H.4	**Follow-up action to the 1995 STCW-F Conference** including:			STW 29/14, paragraph 8.6
	.1	guidance on training, certification and watchkeeping standards for fishing vessel personnel serving on board large fishing vessels (resolution 6)	2001	STW 31/17, paragraph 7.11
	.2	requirements for officers in charge of an engineering watch and watchkeeping provisions (resolution 7)	2001	
	.3	clarification of STCW-F Convention requirements	Continuous	
H.5	**Unlawful practices associated with certificates of competency**		2001	MSC 71/23, paragraph 20.55.2; STW 31/17, paragraph 6.15
L.1	**Development of guidelines for ships operating in ice-covered waters** (co-ordinated by DE)		2001	MSC 71/23, paragraph 20.43; STW 31/17, paragraph 13.2
L.2	**Development of requirements for training in ballast water management**		2001	MSC 71/23, paragraph 20.55.3; STW 30/13, paragraph 12.3
L.3	**Development of guidance on training in the use of ECDIS**		2001	MSC 71/23, paragraph 20.55.4; STW 31/17, paragraph 9.3
L.4	Review of the implementation of STCW chapter VII		2 sessions	STW 31/17, paragraph 14.4; MSC 72/23, paragraph 21.56

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ANNEX 35

PROVISIONAL AGENDAS FOR THE FORTHCOMING SESSIONS OF THE SUB-COMMITTEES*

SUB-COMMITTEE ON BULK LIQUIDS AND GASES (BLG) – 6TH SESSION

Opening of the session

1 Adoption of the agenda

2 Decisions of other IMO bodies

3 Revision of MSC/Circ.677

4 Matters related to the probabilistic methodology for oil outflow analysis

5 Review of Annex I of MARPOL 73/78

6 Review of Annex II of MARPOL 73/78

7 Evaluation of safety and pollution hazards of chemicals and preparation of consequential amendments**

8 Amendments to requirements on electrical installations in the IBC and IGC Codes

9 Application of MARPOL requirements to FPSOs and FSUs

10 Requirements for personnel protection involved in the transportation of cargoes containing toxic substances in all types of tankers

11 Oil tagging systems

12 Evaluation of IMO Greenhouse gas emission study

13 Work programme and agenda for BLG 7

14 Election of Chairman and Vice-Chairman for 2002

15 Any other business

16 Report to the Committees

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* Agenda item numbers do not necessarily indicate priority.
** Item under continuous review.

SUB-COMMITTEE ON DANGEROUS GOODS, SOLID CARGOES AND CONTAINERS (DSC) – 6TH SESSION

Opening of the session

1 Adoption of the agenda

2 Decisions of other IMO bodies

3 Amendments to the IMDG Code, its annexes and supplements (EmS, MFAG), including harmonization of the IMDG Code with the UN Recommendations on the Transport of Dangerous Goods

.1 amendment 31-02 to the IMDG Code, its annexes and supplements (EmS, MFAG)

.2 implementation of Annex III of MARPOL 73/78

4 Revision of the Emergency Schedules (EmS)

5 Review of the BC Code, including evaluation of properties of solid bulk cargoes

6 Cargo securing manual

7 Casualty and incident reports and analysis

8 Development of an instrument for multimodal training requirements

9 Stowage and segregation requirements for freight containers on containerships with partially weatherproof hatchway covers

10 Development of a manual on loading and unloading of solid bulk cargoes for terminal representatives

11 Amendments to SOLAS chapters VI and VII and MARPOL Annex III to make the IMDG Code mandatory

12 Work programme and agenda for DSC 7

13 Election of Chairman and Vice-Chairman for 2002

14 Any other business

15 Report to the Maritime Safety Committee

SUB-COMMITTEE ON FIRE PROTECTION (FP) – 45TH SESSION

Opening of the session

1 Adoption of the agenda

2 Decisions of other IMO bodies

3 Recommendation on evacuation analysis for passenger ships and high-speed passenger craft

4 Guidelines on alternative design and arrangements for fire safety

5 Smoke control and ventilation

6 Unified interpretations of SOLAS chapter II-2 and related fire test procedures

7 Fire-retardant materials for the construction of lifeboats

8 Fire-fighting systems in machinery and other spaces

9 Development of guidelines for ships operating in ice-covered waters

10 Analysis of fire casualty records*

11 Role of the human element: revision of resolution A.654(16) on Graphical symbols for fire control plans

12 Revision of resolution A.602(15)

13 Work programme and agenda for FP 46

14 Election of Chairman and Vice-Chairman for 2002

15 Any other business

16 Report to the Maritime Safety Committee

* Items under continuous review.

SUB-COMMITTEE ON FLAG STATE IMPLEMENTATION (FSI) – 9TH 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 Self-assessment of flag State performance

5 Implications arising when a vessel loses the right to fly the flag of a State

6 Regional co-operation on port State control

7 Reporting procedures on port State control detentions and analysis and evaluation of reports

8 Mandatory reports under MARPOL 73/78

9 Introduction of the HSSC into MARPOL Annex VI on prevention of air pollution

10 Casualty statistics and investigations

11 Revision of the SOLAS expression "ships constructed"

12 Review of resolutions A.744(18) and A.746(18)

13 Use of the Spanish language in SOLAS certificates, manuals and other documents

14 Illegal, unregulated and unreported (IUU) fishing and related matters

15 Work programme and agenda for FSI 10

16 Election of Chairman and Vice-Chairman for 2002

17 Any other business

18 Report to the Committees

SUB-COMMITTEE ON RADIOCOMMUNICATIONS AND SEARCH AND RESCUE (COMSAR) – 5TH 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

.3 review of the Joint IMO/IHO/WMO MSI Manual

.4 harmonization of GMDSS requirements for radio installations on board SOLAS ships

4 Development of criteria for general communications

5 ITU maritime radiocommunication matters

.1 Radiocommunication ITU-R Study Group 8

.2 ITU World Radiocommunication Conference

6 Satellite services (Inmarsat and COSPAS-SARSAT)

7 Emergency radiocommunications: false alerts and interference

8 Matters concerning search and rescue, including those related to the 1979 SAR Conference and the introduction 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 routeing distress information in the GMDSS

.3 revision of the IAMSAR Manual

9 IMO Standard Maritime Communication Phrases

10 Development of guidelines for ships operating in ice-covered waters

Sub-Committee on Radiocommunications and Search and Rescue (COMSAR) – 5th session
(continued)

11 Work programme and agenda for COMSAR 6

12 Election of Chairman and Vice-Chairman for 2001

13 Any other business

14 Report to the Maritime Safety Committee

SUB-COMMITTEE ON SAFETY OF NAVIGATION (NAV) – 47TH 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 Integrated bridge system (IBS) operational aspects

5 Guidelines relating to SOLAS chapter V on:

.1 recording events related to navigation

.2 automatic identification system (AIS) operational matters

.3 voyage data recorders' ownership and recovery

6 Training and certification of maritime pilots and revision of resolution A.485(XII)

7 Navigational aids and related matters on:

.1 world-wide radio navigation system

.2 revision of resolution A.815(19) on World-wide radionavigation system

.3 performance standards for bridge watch alarms

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

9 Effective voyage planning for large passenger ships

10 Work programme and agenda for NAV 48

11 Election of Chairman and Vice-Chairman for 2002

12 Any other business

13 Report to the Maritime Safety Committee

* Items under continuous review.

SUB-COMMITTEE ON SHIP DESIGN AND EQUIPMENT (DE) – 44TH SESSION

Opening of the session

1 Adoption of the agenda

2 Decisions of other IMO bodies

3 Casualty analysis

4 Revision of the Interim Standards for ship manoeuvrability

5 Use of desalinators on lifeboats and liferafts

6 Asbestos-related problems on board ships

7 Low-powered radio homing devices for liferafts on ro-ro passenger ships

8 Amendments to SOLAS requirements on electrical installations

9 Improved thermal protection

10 Guidelines under MARPOL Annex VI on prevention of air pollution from ships

.1 guidelines for on-board NOx monitoring and recording devices

.2 guidelines for sampling of fuel oil for combustion purposes

11 Revision of resolutions MEPC.60(33) and A.586(14)

12 Development of guidelines for ships operating in ice-covered waters

13 Amendments to resolution A.744(18)

14 Interpretation of MARPOL regulation I/16 on oil filtering equipment

15 Matters related to incinerators

16 Work programme and agenda for DE 45

17 Election of Chairman and Vice-Chairman for 2002

18 Any other business

19 Report to the Maritime Safety Committee

SUB-COMMITTEE ON STABILITY AND LOAD LINES ON FISHING VESSELS SAFETY (SLF) – 44TH SESSION

Opening of the session

1 Adoption of the agenda

2 Decisions of other IMO bodies

3 Development of revised SOLAS chapter II-1 parts A, B and B-1

4 Revision of technical regulations of the 1966 LL Convention

5 Revision of the fishing vessel Safety Code and Voluntary Guidelines

6 Damage consequence diagrams

7 Guidelines for the conduct of high-speed craft model tests

8 Development of guidelines for ships operating in ice-covered waters

9 Containership partially weathertight hatch covers

10 Amendments to the 2000 HSC Code

11 Work programme and agenda for SLF 45

12 Election of Chairman and Vice-Chairman for 2002

13 Any other business

14 Report to the Maritime Safety Committee

SUB-COMMITTEE ON STANDARDS OF TRAINING AND WATCHKEEPING (STW) – 32ND SESSION

Opening of the session

1 Adoption of the agenda

2 Decisions of other IMO bodies

3 Validation of model training courses

4 Training and certification of maritime pilots and revision of resolution A.485(XII)

5 Follow-up action to the 1995 STCW Conference

6 Unlawful practices associated with certificates of competency

7 Follow-up action to the 1995 STCW-F Conference

8 Casualty analysis

9 Development of guidance on training in the use of ECDIS

10 IMO Standard Marine Communication Phrases

11 Development of requirements for training in ballast water management

12 Development of guidelines for ships operating in ice-covered waters

13 Work programme and agenda for STW 33

14 Election of Chairman and Vice-Chairman for 2002

15 Any other business

16 Report to the Maritime Safety Committee.

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ANNEX 36

DRAFT MSC/MEPC CIRCULAR

THE BENEFICIAL IMPACT OF THE ISM CODE AND ITS ROLE AS AN INDICATOR OF SAFE OPERATION AND ENVIRONMENTAL PROTECTION

Introduction

1 The Maritime Safety Committee, at its seventy-third session (27 November to 6 December 2000) [and the Marine Environment Protection Committee, at its forty-sixth session (23 to 27 April 2001)], being firmly convinced of the beneficial impact the ISM Code would have on enhanced safety and environmental protection, recalled the action taken by the Assembly and the two Committees to promote the Code's timely and effective implementation.

2 The Committee[s] also recalled that the purpose of the Code is to provide an international standard for the safe management and operation of ships and for pollution prevention; and that it is the commitment, competence, attitudes and motivation of individuals at all levels that determines the end result in accomplishing the Code's objectives.

Safety-management system

3 The Committee[s] further recalled that the safety management objectives of a Company complying with the ISM Code should, in addition to providing for safe practices in ship operation and a safe working environment, include a safety management system (SMS) which ensures:

.1 compliance with mandatory rules and regulations adopted by the Organization;

.2 that applicable codes, guidelines and standards recommended by the Organization, Administrations, classification societies and maritime industry organizations are taken into account; and furthermore

.3 that procedures are in place for internal audits and management reviews.

Safety management audits

4 In recalling the ISM Code certification process relevant for the issuance of a Document of Compliance (DOC) for a Company, and Safety Management Certificate (SMC) for a ship, the Committee[s] noted that safety management audits are required for initial, periodical or intermediate, and renewal verifications to demonstrate that the Company’s safety management system meets the standard required by the Code.

5 The Committee further noted that the issue of the DOC and the SMC involves SMS audits by external organizations and, in addition, a Company’s own internal audits which should be at least as thorough as the external SMS audit process.

Multiple inspections

6 The Committee[s], on being informed of the Secretary-General's initiative to address the problem of the proliferation of ship inspections by various interests representing flag and port States, insurers, cargo owners, charterers etc., agreed that one of the beneficial impacts of the effective implementation of the ISM Code would also be the reduction of the need for the number and scope of non-statutory inspections. In this connection, the Committee[s] noted with satisfaction the improvement in safety and environmental protection derived from the implementation of the Code, as reported by insurers and others.

7 In order to limit, as far as possible, operational difficulties and the inconvenience caused to shipmasters and officers, as well as to the smooth running of their ships in port, due to the proliferation of inspections, the Committee[s] urged the various interests engaged in ships' inspections to give greater recognition to the role of the ISM Code in ensuring a sound approach to the maintenance of safety and environmental protection.

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ANNEX 37

STATEMENT BY THE DELEGATION OF THE RUSSIAN FEDERATION

1 The Russian Federation expresses extreme concern in connection with the hasty decision by MSC 72 not to undertake a global research into potential dangers of materials containing asbestos, outcome of international scientific studies on the matter and not to ask for advice of authoritative international organizations (*i.e*. the International Labour Organization (ILO) and the World Health Organization (WHO)).

2 It is known that the degree of danger of materials containing asbestos for human health depends on many particular factors requiring close examining and taking into account. Such particular factors which are of great importance and to be considered in the first place:

.1 differences in chemical composition of chrysotile asbestoses applied in ship-building materials. They can or cannot contain the most dangerous substance for human health - amphibils;

.2 differences in the initial structure of asbestos of which the most dangerous one for human health is the loose structure requiring the use of spraying;

.3 differences in the design of materials containing asbestos (mainly as an isolation) where dust-proof and hydro cap layers reduce essentially possibility of danger into locations where people work;

.4 biomedical character of effects of harmful components of an asbestos to be accepted as judgement of competent organization in the field of medicine and labour safety;

.5 existence of internationally recognised standards of safety in relation to materials containing asbestos developed by the ILO in its Convention No. 162, 1986 - Labour safety at usage of an asbestos; and

.6 scales of possible social and economic consequences of prohibitive measures concerning an asbestos for the countries - manufactures of the material.

3 In the Russian Federation the asbestos industry has been in existence for more than one hundred years. Chrysotile asbestos and its effects on human health have been studied for more than 50 years. The main outcome of the studies is as follows:

.1 the Russian chrysotile asbestos used in manufacturing of ship-building materials does not contain impurities of amphibils;

.2 any friable asbestos and its spraying are not applied in the Russian Federation;

.3 insulating materials containing asbestos are coated with dust-proof and hydro cap layers;

.4 the Hygienic standards of the Federal sanitary regulations and norms of the Russian Federation marginal densities of harmful materials in the air (dust of an asbestos) have been defined and issued in 1998;

.5 results of the researches conducted by the Russian Academy of Medical Sciences have proved the feasibility of application of materials containing asbestos, provided national safety measures, those of the ILO Convention No. 162 and Recommendation's ILO No. 172 are met; and

.6 a research conducted within the framework of the Russian-Finnish-American programme of studying asbestos effects on human health and health statuses of personnel working in the Siberian asbestos fields has not revealed asbestos stipulated diseases and pathologies. In this connection it is necessary to underline that ship conditions in matching with conditions at a field of an asbestos are much more safe.

4 The Commission of European Communities in accepting in its asbestos directive No. IP/99/572 of 27 July 1999 prohibitive measures concerning an asbestos, directs the Scientific Committee on Toxicity, Ecotoxicity and Environment to undertake a further review of "any relevant new scientific data on the health risk of chrysotile asbestos and its substitutes before 1 January 2003"; should it be necessary, the Commission "will propose appropriate changes to legislation".

5 It is necessary, unfortunately, to state that during the consideration of the matter neither the MSC nor DE and FP Sub-Committees requested and considered positions of the authoritative international organizations in the field of the health protection, in spite of the proposals made by the Russian Federation.

6 Taking into account the above said, the Russian Federation objects to the adoption of the new regulation II-1/3-5 of the SOLAS Convention and intends to use its rights under article VIII(b)(vii)(2) that it exempts itself from giving effect to that regulation.

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