MARITIME AND PORT AUTHORITY OF SINGAPORE
SHIPPING CIRCULAR TO SHIP OWNERS NO. 15 OF 2011

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18 JULY, 2011

Applicable to: This circular is for the attention of ship owners, managers, operators, agents, masters, crew members and surveyors

GUIDANCE ON SHIPBOARD OPERATIONAL MATTERS: CIRCULARS APPROVED BY THE 89th SESSION OF THE MARITIME SAFETY COMMITTEE (MSC 89) OF IMO

Refer to Shipping circular no. 14 of 2011 for *Resolutions adopted by the 89th Session of the Maritime Safety Committee (MSC 89) of IMO.*

1. The Maritime Safety Committee of IMO, at its 89th session (11–20 May 2011), approved a number of circulars which provide guidance to improve the safety and efficiency of shipboard operations. This shipping circular informs the Shipping Community of the MSC circulars, as listed below. Queries should be directed to the respective contact officers concerned. In general, MPA accepts the guidance given in the MSC circulars and ship owners and managers should approach the class of their vessels for further details.

Note: The MSC circular on the use of armed guards on board ship has been promulgated separately through Shipping Circular No. 11 of 2011.

Entry into enclosed spaces

2. MSC.1/Circ.1401 – Guidelines on Tank Entry for Tankers using Nitrogen as an Inerting Medium

a. MSC 89 approved two guidelines: a generic guidance for entry into enclosed spaces[1] and additionally, specific guidance for tank entry

[1] Draft Assembly resolution to be adopted by the 27th session of the Assembly in November 2011.

where nitrogen is the inerting medium. The draft Assembly resolution is included in this shipping circular.

b. *The guidance developed by the MSC revises the previous guidelines and shipowners should apply the new revised guidance in the safety procedures on board their vessels.*

Contact officer: Mr Ong Hua Siong (tel: 6375-6210)

Fire Safety

3. MSC.1/Circ.1395 – Lists of Solid Bulk Cargoes for which a Fixed Gas Fire-Extinguishing System may be exempted or for which a Fixed Gas Fire-Extinguishing System is ineffective

a. The circular is for the information of shipowners, as the list serves as guidance to administrations when granting exemptions under the provision of SOLAS regulation II-2/10.7.1.4. The list has been harmonised with the IMDG Code.

4. MSC.1/Circ.1396 – Amendment to the Recommendations on the Safe Use of Pesticides in Ships applicable to the Fumigation of Cargo Holds (MSC.1/Circ.1264)

a. The circular is intended to raise awareness of the probable fire risk when pesticides which generate phospine are used, as the residue may ignite.

Contact officer: Mr Ong Hua Siong (tel: 6375-6210)

Tankers: Protective coatings

5. MSC.1/Circ.1399 – Guidelines on Procedures for In-Service Maintenance and Repair of Coating Systems for Cargo Oil Tanks of Crude Oil Tankers

a. The circular is intended as guidance for the maintenance and repair of protective coatings for cargo oil tanks of crude oil tankers, under SOLAS regulation II-1/3-11 and the performance standard for protective coatings for cargo oil tanks of crude oil tankers, adopted by resolutions MSC.291(87) and MSC.288(87), respectively.

Contact officer: Mr Ong Hua Siong (tel: 6375-6210)

Pilot Transfer Arrangements

6. MSC.1/Circ.1402 – Safety of Pilot Transfer Arrangements

a. The circular formally includes pilot transfer arrangement as part of the safety equipment that port State control officers may examine in the course of their inspection.

b. *In view that PSC officers may inspect pilot transfer arrangements, shipowners should ensure that the pilot transfer arrangements on board their vessels are maintained in good operational condition. They should note that MSC 88 had previously adopted amendments to SOLAS regulation V/23 relating to pilot transfer arrangements (MSC.308(88)).*

Contact officer: Mr Ong Hua Siong (tel: 6375-6210)

Radiocommunications

7. MSC.1/Circ.1403 – Revised NAVTEX Manual

a. The circular replaces the existing text of the NAVTEX Manual. The revised text will enter into force on 1 Jan 2013.

Contact officer: Mr Pang Yock Foo (tel: 6375-6210)

Passenger ships: Safe Return to Port

8. MSC.1/Circ.1400 – Guidelines on Operational Information for Masters of Passenger Ships for Safe Return to Port by own Power or Under Tow

a. The circular is intended to provide additional guidance for the uniform implementation of SOLAS regulation II-1/8-1, which is expected to be adopted by MSC 90 in May 2012.

Contact officer: Mr Ong Hua Siong (tel: 6375-6210)

STCW: Manila amendments

9. STCW.7/Circ.16 – Clarification of transitional provisions relating to the 2010 Manila Amendments to the STCW Convention and Code

a. The circular provides clarification on revalidation of certificates and issuance of certificates to seafarers commencing approved seagoing service before and after 1 Jul 2013, as well as other issues such as security-related training.

b. Although intended for administrations, shipowners should take note of the circular for a better understanding of the transitional provisions relating to the 2010 Manila Amendments.

10. STCW.7/Circ.17 – Advice for port State control officers on transitional arrangements leading up to the full implementation of the requirements of the 2010 Manila Amendments to the STCW Convention and Code on 1 January 2017

a. The circular provide guidance to port State control authorities on the Manila amendments, so as to avoid any misunderstanding.

b. *MPA will apply the advice contained in the circular when exercising port State control. Although it is directed to port State control authorities, shipowners should also take note of its contents for a better understanding of the decision of the Maritime Safety Committee in this regard.*

Contact officer: Capt Sangam (tel: 6375-6205)

11. Shipowners are urged to take note and where necessary, implement the recommendations in the circulars. They may approach the nine approved classification societies to seek further guidance.

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MSC.1/Circ.1395
15 June 2011

LISTS OF SOLID BULK CARGOES FOR WHICH A FIXED GAS FIRE-EXTINGUISHING SYSTEM MAY BE EXEMPTED OR FOR WHICH A FIXED GAS FIRE-EXTINGUISHING SYSTEM IS INEFFECTIVE

1 The Maritime Safety Committee, at its sixty-fourth session (5 to 9 December 1994), agreed that there was a need to provide Administrations with guidelines regarding the provisions of SOLAS regulation II-2/10 concerning exemptions from the requirements for fire-extinguishing systems.

2 Consequently, the Committee approved MSC/Circ.671 whereby it agreed to:

.1 a list of solid bulk cargoes, for which a fixed gas fire-extinguishing system may be exempted (table 1) and recommended Member Governments to take into account the information contained in table 1 when granting exemptions under the provisions of SOLAS regulation II-2/10.7.1.4; and

.2 a list of solid bulk cargoes for which a fixed gas fire-extinguishing system is ineffective (table 2), and recommended that cargo spaces in a ship engaged in the carriage of cargoes listed in table 2 be provided with a fire-extinguishing system which provides equivalent protection. The Committee also agreed that Administrations should take account of the provisions of SOLAS regulation II-2/19.3.1 when determining suitable requirements for an equivalent fire-extinguishing system.

3 The Maritime Safety Committee, at its seventy-ninth session (1 to 10 December 2004), reviewed the above-mentioned tables and approved MSC/Circ.1146. The Committee decided that the annexed tables should be periodically reviewed and invited Member Governments to provide the Organization, when granting exemptions to ships for the carriage of cargoes not included in table 1, with data on the non-combustibility or fire risk properties of such cargoes. Member Governments were also requested to provide the Organization, when equivalent fire-extinguishing systems are required for the agreed carriage of cargoes not included in table 2, with data on the inefficiency of fixed gas fire-extinguishing systems for such cargoes.

4 The Maritime Safety Committee, at its eighty-ninth session (11 to 20 May 2011), noting the mandatory status of the IMSBC Code, reviewed the aforementioned lists of solid bulk cargoes to align certain names in the lists with those in the recent version of the IMDG Code, and approved them, as set out in tables 1 and 2 of the annex.

5 The purpose of this circular is to provide guidance to Administrations. It should not, however, be considered as precluding Administrations from their right to grant exemptions for cargoes not included in table 1 or to impose any conditions when granting such exemptions under the provisions of SOLAS regulation II-2/10.7.1.4.

6 This circular supersedes MSC/Circ.1146.

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ANNEX

TABLE 1

LIST OF SOLID BULK CARGOES FOR WHICH A FIXED GAS FIRE-EXTINGUISHING SYSTEM MAY BE EXEMPTED

1 Cargoes including, but not limited to, those listed in regulation II-2/10:

Ore
Coal (COAL and BROWN COAL BRIQUETTES)
Grain
Unseasoned timber

2 Cargoes listed in the International Maritime Solid Bulk Cargoes (IMSBC) Code, which are not combustible or constitute a low fire risk, as follows:

.1 all cargoes not categorized into Group B in the IMSBC Code; and

.2 the following cargoes categorized into Group B in the IMSBC Code:

ALUMINIUM SMELTING BY-PRODUCTS, UN 3170
(Both the names ALUMINIUM SMELTING BY-PRODUCTS or ALUMINIUM REMELTING BY-PRODUCTS are in use as proper shipping name)
ALUMINIUM FERROSILICON POWDER, UN 1395
ALUMINIUM SILICON POWDER, UNCOATED, UN 1398
CALCINED PYRITES (Pyritic ash)
DIRECT REDUCED IRON (A) Briquettes, hot moulded
FERROPHOSPHORUS (including briquettes)
FERROSILICON, with more than 30% but less than 90% silicon, UN 1408
FERROSILICON, with 25% to 30% silicon, or 90% or more silicon
FLUORSPAR (calcium fluoride)
LIME (UNSLAKED)
LOGS
MAGNESIA (UNSLAKED)
PEAT MOSS
PETROLEUM COKE*
PITCH PRILL
PULP WOOD
RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY MATERIAL (LSA-1), UN 2912 (non fissile or fissile – excepted)
RADIOACTIVE MATERIAL, SURFACE CONTAMINATED OBJECT(S) (SCO-I or SCO-II), UN 2913 (non fissile or fissile – excepted)
ROUNDWOOD
SAW LOGS
SILICOMANGANESE
SULPHUR, UN 1350
TIMBER
VANADIUM ORE
WOODCHIPS, with moisture content of 15% or more
ZINC ASHES, UN 1435

* When loaded and transported under the provisions of the IMSBC Code.

3 Solid bulk cargoes which are not listed in the IMSBC Code, provided that:

.1 they are assessed in accordance with section 1.3 of the Code;

.2 they do not present hazards of Group B as defined in the Code; and

.3 a certificate has been provided by the competent authority of the port of loading to the master in accordance with 1.3.2 of the Code.

TABLE 2

LIST OF SOLID BULK CARGOES FOR WHICH A FIXED GAS FIRE-EXTINGUISHING SYSTEM IS INEFFECTIVE AND FOR WHICH A FIRE-EXTINGUISHING SYSTEM GIVING EQUIVALENT PROTECTION SHALL BE AVAILABLE

The following cargoes categorized into Group B of the IMSBC Code:

ALUMINIUM NITRATE, UN 1438
AMMONIUM NITRATE, UN 1942 (with not more than 0.2% total combustible material, including any organic substance, calculated as carbon to the exclusion of any other added substance)
AMMONIUM NITRATE BASED FERTILIZER, UN 2067
AMMONIUM NITRATE BASED FERTILIZER, UN 2071
BARIUM NITRATE, UN 1446
CALCIUM NITRATE, UN 1454
LEAD NITRATE, UN 1469
MAGNESIUM NITRATE, UN 1474
POTASSIUM NITRATE, UN 1486
SODIUM NITRATE, UN 1498
SODIUM NITRATE AND POTASSIUM NITRATE, MIXTURE, UN 1499

ANNEX 2

DRAFT MSC CIRCULAR

AMENDMENT TO THE RECOMMENDATIONS ON THE SAFE USE OF PESTICIDES IN SHIPS APPLICABLE TO THE FUMIGATION OF CARGO HOLDS (MSC.1/CIRC.1264)

1 The Maritime Safety Committee, at its eighty-fourth session (7 to 16 May 2008), approved the Recommendations on the safe use of pesticides in ships applicable to the fumigation of cargo holds (MSC.1/Circ.1264), which apply to the carriage of solid bulk cargoes, including grain, in pursuance of the requirement of SOLAS regulation VI/4.

2 The Maritime Safety Committee, at its [eighty-ninth session (11 to 20 May 2011)], approved the following amendment to section 5 (Safety Precautions – General) of the aforementioned Recommendations, as prepared by the Sub-Committee on Dangerous Goods, Solid Cargoes and Containers at its fifteenth session:

"**5.3 Fire risk**

5.3.1 When Phosphine generating formulations are used to fumigate, any collected residue may ignite."

3 Member Governments are invited to bring the above amendment to the Recommendations to the attention of competent authorities, seafarers, fumigators, fumigant and pesticide manufacturers and others concerned.

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MSC.1/Circ.1399
10 June 2011

GUIDELINES ON PROCEDURES FOR IN-SERVICE MAINTENANCE AND REPAIR OF COATING SYSTEMS FOR CARGO OIL TANKS OF CRUDE OIL TANKERS

1 The Committee, at its eighty-ninth session (11 to 20 May 2011), having recognized the need for guidelines for maintenance and repair of protective coatings for cargo oil tanks of crude oil tankers, taking into account the amendments to SOLAS regulation II-1/3-11 and the performance standard for protective coatings for cargo oil tanks of crude oil tankers, adopted by resolutions MSC.291(87) and MSC.288(87), respectively, considered a proposal by the Sub-Committee on Ship Design and Equipment, at its fifty-fifth session, and approved Guidelines on procedures for in-service maintenance and repair of coating systems for cargo oil tanks of crude oil tankers, set out in the annex.

2 Member Governments are urged to bring the annexed Guidelines to the attention of shipowners, ship builders and other parties concerned for consideration during survey, assessment and repair of protective coatings in cargo oil tanks of crude oil tankers.

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ANNEX

GUIDELINES FOR MAINTENANCE AND REPAIR OF PROTECTIVE COATINGS FOR CARGO OIL TANKS OF CRUDE OIL TANKERS

CONTENTS

1 GENERAL

1.1 The purpose of these Guidelines is to assist surveyors, shipowners, ship managers, shipyards, flag Administrations and other interested parties in relation to monitoring, assessment, maintenance and repair of protective coatings in crude oil cargo tanks.

1.2 The ability of the coating system to reach its target useful life depends on the type of coating system, surface preparation, the design of the structures, paint application and coating inspection and maintenance. All these aspects contribute to the good performance of the coating system. These Guidelines focus on maintenance and repair procedures for crude oil cargo tank coatings.

1.3 Maintenance and repair of the protective coating system should be included in the ship's overall maintenance and repair scheme and shall be recorded in the Coating Technical File (CTF) as per resolution MSC.288(87). The effectiveness of the protective coating system should be monitored during the life of a ship by the Administration or an organization recognized by the Administration.

2 APPLICATION AND DEFINITIONS

2.1 These Guidelines apply to ships as specified in SOLAS regulation II-1/3-11 and focus on maintenance and repair procedures for coatings in cargo tanks of all crude oil tankers, hereinafter referred to as "crude oil cargo tanks" or "cargo tanks that are intended to carry crude oil". They only cover the maintenance and repair of coatings. Corrosion prevention systems other than coating are not covered by these Guidelines.

2.2 For the purpose of these Guidelines, the following definitions apply:

.1 *Maintenance* means minor coating restoration work regularly performed by a ship's crew using normal shipboard means and tools to maintain "GOOD" or "FAIR" coating conditions. Maintenance delays or slows down the coating deterioration and effects short term steel protection.

.2 *Repair* means coating restoration work of a longer term nature, usually performed during ship's dry-docking or scheduled repair period (ship idle) to restore the "FAIR" or "POOR" coating condition to "GOOD" condition. This will usually require specialized preparation, manpower and equipment such as blasting equipment, operators and dehumidifiers together with good surface preparation procedures.

2.3 These Guidelines have been developed using the best information currently available and taking into consideration that maintenance may take place when the ship is at sea, while repair usually takes place in dry dock or during scheduled repair periods (afloat at yard).

3 SURVEY RECOMMENDATIONS

3.1 Cargo tank entry

In order to undertake a survey, entry into cargo oil tanks is required. Crude oil cargo tanks must be considered an "enclosed space" and therefore all the recommendations contained in ISGOTT (International Safety Guide for Oil Tankers and Terminals)[1] regarding enclosed space entry and gas freeing should be strictly followed. For gas freeing and venting, reference is made to ISGOTT

[1] Refer to section on entry into enclosed spaces of the current version.

for procedures and equipment for this purpose. Due attention should also be paid to the Recommendations for entering enclosed spaces aboard ships (resolution A.864(20), as amended).

3.2 Survey application

3.2.1 The coating system in cargo tanks should be examined in connection with:

.1 intermediate surveys for all crude oil tankers of 5,000 tonnes deadweight or above exceeding ten years of age;

.2 renewal surveys for all crude oil tankers of 5,000 tonnes deadweight or above; and

.3 incidents during service of the ship indicate damage to the coating of cargo oil tanks or areas coated.

3.2.2 The condition of the coating in crude oil cargo tanks should be assigned and categorized as GOOD, FAIR or POOR based on visual inspection and estimated percentage of areas with coating failure and rusty surfaces (see table 1) and recorded[2]. In the case of widespread blistering[3] which has not been perforated a further evaluation of blistering percent and coating efficiency could be carried out by in order to decide categorization of coating[2].

4 COATING ASSESSMENT METHODS

4.1 "GOOD", "FAIR", "POOR"

4.1.1 The condition of the coating in crude oil cargo tanks is assigned and categorized as "GOOD", "FAIR" or "POOR", based on visual inspection and estimated percentage of areas with coating failure and rusty or blistered surfaces.

4.1.2 The definitions of coating conditions "GOOD", "FAIR" and "POOR" in the Guidelines on the enhanced programme of inspections during surveys of oil tankers (resolution A.744(18)) are as follows:

GOOD: Condition with only minor spot rusting.

FAIR: Condition with local breakdown of coating at edges of stiffeners and weld connections or light rusting over 20% or more of areas under consideration, but less than as defined for POOR condition.

POOR: Condition with general breakdown of coating over 20% or more of areas or hard scale at 10% or more of areas under consideration.

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2 Refer to appendix 10 to IACS Recommendation 87 – Guidelines for Coating Maintenance and Repairs for Ballast Tanks and Combined Cargo/Ballast Tanks on Oil Tankers, revision 1, 2006 – published by Witherby.

3 Blisters are a symptom of coating deterioration and should be noted when observed although the affected area does not require immediate repair. ISO 4628-2, 2003 describes how to assess blisters and rust, etc. IACS Recommendation 47, paragraph 4.3.2 may also provide guidelines for assessing areas.

4.1.3 These Guidelines clarify the above definitions in order to achieve unified assessment of cargo tank coating conditions as follows, see also table 1 below:

GOOD: Condition with spot breakdown on less than 5% of the area under consideration without visible failure of the coating, or non perforated blistering. Breakdown at edges or welds should be less than 20% of edges or weld lines in the area under consideration.

FAIR: Condition with breakdown of coating or penetration on less than 20% of the area under consideration. Total paint failure should be less than 10% of the area under consideration. Breakdown at edges or welds should be less than 50% of edges or weld lines in the area under consideration.

POOR: Condition with breakdown of coating or penetration on more than 20% or on total paint failure more than 10% of the area under consideration or local breakdown concentrated at edges or welds on more than 50% of edges or weld lines in the area under consideration.

Table 1 – "GOOD", "FAIR" and "POOR" coating conditions

	GOOD [3]	**FAIR**	**POOR**
Breakdown of coating (spot breakdown) [1][3]	< 5%	5 – 20%	> 20%
Area of complete breakdown [1]	-	< 10%	≥ 10%
Local breakdown of coating on edges or weld lines [2]	< 20%	20 – 50%	> 50%

Notes:
1 % is the percentage calculated on basis of the area under consideration or of the "critical structural area".
2 % is the percentage calculated on basis of edges or weld lines in the area under consideration or of the "critical structural area".
3 Spot breakdown, i.e. rusting in spots without visible failure of coating.

4.2 Areas under consideration

4.2.1 General

4.2.1.1 Recognizing that different areas in the tank experience different coating breakdown and corrosion patterns or erosion, the intent of this section is to subdivide the planar boundaries of the tank for evaluation of coating into areas small enough to be readily examined and evaluated by the surveyor. However, the areas subdivided should not be so small as to be structurally insignificant or too numerous to practically report on. Coating condition in each area should be reported using current practice and terminology (frame numbers, longitudinal numbers and/or strakes numbers, etc.). Each area is then rated "GOOD", "FAIR" or "POOR" and the tank rating should not be higher than the rating of its "area under consideration" having the lowest rating[4].

[4] Examples of how to report coating conditions with respect to areas under consideration are given in appendix 10 of IACS Recommendation 87 – published by Witherby.

4.2.1.2 Special attention should be given to coating in critical structural areas which are defined[5] as "locations which have been identified from calculations to require monitoring as indicated in the CTF from new building stage or from the service history of the subject ship or from similar or sister ships (if available) to be sensitive to cracking, buckling corrosion or erosion which would impair the structural integrity of the ship". Each critical structural area is rated "GOOD", "FAIR" or "POOR", applying table 1 and the rating of each "area under consideration" should then not be higher than the rating of its critical structural area (if present) having the lowest rating.

4.2.1.3 The ship specific guidelines should include, as an appendix, the actual details of the coated areas in each tank together with other details as specified in paragraph 7.2.2 of these Guidelines.

4.2.2 Coated areas of crude oil cargo tanks in oil tankers

4.2.2.1 Deck head with upper transverses and longitudinal bulkheads

Areas of under deck and bulkhead plating with attached structure (one area to consider for deck head and one area to consider for each bulkhead upper part with any structure and access platforms or stringers).

4.2.2.2 Bottom plating with transverse and longitudinal lower bulkheads

Areas of tank bottom, side and longitudinal bulkheads (hoppers) with attached structure (if any), in the lower coated areas.

4.2.2.3 Swash bulkheads

The upper and lower parts of all swash bulkheads located in cargo tanks together with any frames, brackets, and access outfittings in way.

4.2.2.4 Stringers

Stringers located outside the prescribed upper and lower coating areas are not required to be coated. However, in the case that shipowners have voluntarily coated the upper surfaces of such stringers then these coated surfaces should be included in reports solely for shipowner's benefit and choice of any action.

4.2.2.5 Transverse bulkheads (forward and aft)

Areas of transverse bulkheads and attached stiffeners and access outfittings in upper forward and aft transverse bulkheads.

4.3 In-service condition monitoring

In cases where tank entry is made and coating condition monitoring is carried out and a report provided, it should be in a format as set out in the appendix.

[5] Refer to appendix 5 of IACS Recommendation 87 – published by Witherby.

5 COATING MAINTENANCE

5.1 Process considerations when coating maintenance may be performed

5.1.1 The following considerations should be taken into account when coating maintenance is undertaken:

.1 safety, including tank entry requirements;

.2 tank surface cleaning;

.3 salt contamination;

.4 rust scale;

.5 pitting corrosion;

.6 temperature;

.7 condensation;

.8 ventilation; and

.9 compatibility of coating systems.

5.1.2 **Safety**. Refer to the Recommendations for entering enclosed spaces aboard ships (resolution A.864(20)), as amended, and ISGOTT[6]. It is an absolute requirement that all of the ship's safety and tank entry procedures and policies are adhered to. All risks for the entry into tanks should be taken into account. In addition, it is strongly recommended that all travel coating squad members are trained in safe usage of all the equipment and tools to be used for the project on board, before being sent to the ship.

5.1.3 **Tank and surface cleaning**. Inadequate tank and surface cleaning, may leave a few microns of oil film thickness on the surface which will seriously affect any coating attachment and will shorten the effective life of the maintenance undertaken – see paragraph 6.1.3.

5.1.4 **Salt contamination** will cause accelerated deterioration of the maintenance coating if not removed prior to coating application. A recommended procedure to reduce salt contamination is to remove corrosion products including rust and black scale before washing the steel surface with fresh water. This should be the starting point in any surface preparation process in cargo tanks on board ships.

5.1.5 **Rust scale** that is not removed prior to coating application will cause early failure. Loose top-scale is easy to remove, however the inner (black) hard scale is much more adherent. When over-coated it will soon detach between the steel and the scale and come off, typically with the coating adhering very well to the outside of it. If the hard scale is not removed, the service life expectancy of the treatment is maximum 1 to 2 years regardless of the coating used.

[6] Refer to section on entry into enclosed spaces of the current version.

5.1.6 **Pitting corrosion** is a common problem in unprotected areas of cargo tanks that have been exposed to crude oil for some time. If it has been accepted that the pits need not be welded up, in order to prevent further accelerated damage, a coating should be applied. Soluble salts will be present within the pits and it is essential that these are removed otherwise corrosion will soon start inside over-coated pits, affecting the service life. As salt contamination is concentrated in pits the use of ISO 8502-6 and ISO 8502-9 may result in misleading results. Various methods of salt removal from pits have been proposed for long term repair, however, for shipboard maintenance purpose, high pressure fresh water washing is recommended.

5.1.7 **Temperature** is a critical parameter to consider. When trading in cold water, the risk of condensation is increased and the curing of two-component paints such as epoxy paints is retarded. Plan, if possible, the maintenance operation for periods, or locations, of warmer water. Otherwise lowering ballast water in side and double-bottom tanks to avoid contact with the back side of plating to be treated is recommended.

5.1.8 **Condensation** is always a risk on board ships. It is advisable that the crew have a good understanding about relative humidity and its relation to substrate temperature and dew point. A coating applied over a surface that is at or below the dew point, or that will be at or below the dew point while the coating is still curing, will not perform. Ideally the temperature should be at least 3°C above the dew point.

5.1.9 **Ventilation** is a vital factor for safety and quality of the coating application and must be carried out continuously during surface preparation, paint application, drying and curing. Ventilation arrangements must provide maximum efficiency, e.g., by arranging the ventilation so it extracts from the lowest and furthest corners to ensure the fast and efficient removal of solvents. The use of solvent free coating systems eliminates solvent release from the paint, but ventilation is still required during surface preparation and curing.

5.1.10 **Compatibility of coating systems** is of utmost importance for a good end result. To ensure compatibility of coating systems, using the same coating system as was originally employed is recommended. If this is not possible, the coating manufacturer recommendations should be followed. When applying touch up, the intact coat next to the damaged area should be feathered for good adhesion.

5.2 Principles for maintenance

Maintenance process:

.1 tank washing and oil film/mud removal and venting;

.2 fresh water rinsing;

.3 drying; and

.4 surface preparation, de-scaling/degreasing.

5.3 Recommended maintenance

Table 2 describes the recommended maintenance to maintain "GOOD" or "FAIR" coating conditions.

Table 2 – Recommended maintenance

Purpose	Preparation[7]	Coating system	Dry Film Thickness (DFT)
Maintenance of affected area • GOOD to GOOD • FAIR to FAIR	• Removal of cargo residues, mud, oil, grease, etc., by suitable tank cleaning • Drying • St 3[8] or equivalent according to manufacturer's recommendation • Check ambient conditions	• Epoxy-based system • The same coating system as was originally employed or according to manufacturer's recommendation	• According to manufacturer's recommendation

6 COATING REPAIRS

6.1 Process considerations when coating repairs may be performed

6.1.1 The following considerations should be taken into account when coating repairs are undertaken:

.1 safety, including tank entry requirements;

.2 tank cleaning;

.3 staging;

.4 salt contamination;

.5 rust scale;

.6 pitting corrosion;

.7 temperature;

.8 condensation;

.9 ventilation;

.10 dehumidification;

[7] Repair of pitted areas within the limits imposed by the Classification Society may require special treatments such as application of fillers before application of epoxy coatings.

[8] Refer to standard: ISO 8501-1:1988/Suppl:1994. Preparation of steel substrate before application of paints and related products – Visual assessment of surface cleanliness.

.11 compatibility of coating systems; and

.12 stripe coating/design/surface area.

6.1.2 **Safety**. Refer to the Recommendations for entering enclosed spaces aboard ships (resolution A.864(20)), as amended, and ISGOTT[9]. It is an absolute requirement that all of the ship's safety and tank entry procedures and policies are adhered to. When a ship is out of service, in a ship yard repair, local regulations apply regarding safety. The ship yard is responsible for their implementation.

6.1.3 **Tank cleaning**. Successful tank cleaning requires longer termed planning ahead, even for previous voyages to ensure concentrated Crude Oil Washing (COW) is carried out at the port(s) of discharge for the relevant cargo tanks. Especial attention should be given to tanks and areas to be cleaned and treated.

6.1.4 Subsequent to COW of the relevant tanks, water washing, that may include the use of suitable tank cleaning detergent, and the use of fresh water, will be required. If deadweight and draft limitations of preceding voyage allow collecting substantial quantities of fresh water from rivers or other sources, this will make for a much more successful water washing as it will limit the salt contamination of tank surfaces and facilitate hand washing during surface preparations. The aim of the tank cleaning is to provide surfaces without oil residues on areas to be repaired.

6.1.5 The shipowner's office must be contacted to confirm availability and reserve capacity for oily tank washings disposal ashore at subsequent ports. Similar good communication and co-operation will also be required even for programmed coating repairs.

6.1.6 Special care must be taken during the use of solvents and detergents which are essential to ensure oil free surfaces for good adhesion of future coats. Due consideration should be paid to the disposal of these solvents and detergents from the view points of protection and environment. The gases released to the tank atmosphere by these solvents are explosive and toxic or poisonous and should be removed as fast as possible from the tank atmosphere. Thus venting and gas freeing equipment and procedures as recommended in ISGOTT should be established.

6.1.7 When possible, control of the relative humidity during actual application of coating would increase the longevity of the coating and its adherence to the structure. Dehumidification is usually only an option during repairs alongside at an organized repair facility.

6.1.8 **Staging** must be arranged to allow good access to all surfaces. Staging must be arranged according to prevailing safety regulations. Staging poles and working platforms should be placed in a distance from the surface to provide suitable work space for all subsequent operations, special care should be taken secure access to corrugated bulkheads.

6.1.9 **Salt contamination** will cause accelerated deterioration of the coating if not removed prior to coating application. A recommended procedure to reduce salt contamination is to remove loose rust scale followed by thorough fresh water rinsing, preferably at elevated temperatures and high pressure. Test the salt content after washing and before coating using standard ISO 8502-9 or other equivalent method[10] and rewash if necessary. Observe, that salt contamination is concentrated in pits on pitted surfaces and the use of ISO 8502-6 and ISO 8502-9 may result in misleading results. This should be the starting point in any surface

[9] Refer to section on entry into enclosed spaces of the current version.

[10] Refer to MSC.1/Circ.1381 on Modifications to footnotes in the coating performance standards adopted by resolutions MSC.215(82) and MSC.288(87).

preparation process in cargo oil tanks on board ships after having thoroughly removed any oil contamination. In case of major repair or full recoating, any deviation should be agreed between the parties concerned and noted in the CTF.

6.1.10 **Rust scale** that is not removed prior to coating application will cause early failure. Loose top-scale is easy to remove, however the inner (black) hard scale is much more adherent. When over-coated it will soon detach between the steel and the scale and come off, typically with the coating adhering very well to the outside of it. If the hard scale cannot be removed, the service life expectancy of the treatment is 1 to 2 years regardless of the coating used.

6.1.11 **Pitting corrosion** is a major problem on board ships on area that have been exposed to seawater for some time. If it has been accepted that the pits need not be welded up in order to prevent further accelerated damage, a coating should be applied. Soluble salts will be present within the pits and it is essential that these are removed otherwise corrosion will soon start inside over-coated pits, affecting the service life. Various methods of salt removal from pits have been proposed. For example, water jetting followed by blast cleaning or possibly exposure to high humidity and repeated water jetting. Whichever method is chosen, any residues from the washing processes should be removed otherwise the soluble salt will precipitate out of the water on drying.

6.1.12 **Temperature** is a critical parameter to consider. When repairs are carried out in a shipyard, proper surface temperature control can more readily be achieved in the areas requiring coating.

6.1.13 **Condensation** is always a risk. It is an absolute necessity that the contractors have a good understanding about relative humidity and its relation to substrate temperature and dew point.

6.1.14 Applying coating on the surface that is at or below the dew point, or that will be at or below the dew point while the coating is wet, will not perform. Ideally the temperature should be at least 3°C above the dew point.

6.1.15 **Ventilation** is a vital factor for safety and quality of the coating application and must be carried out continuously during surface preparation, paint application, drying and curing. Ventilation arrangements must provide maximum efficiency, e.g., by arranging the ventilation so it extracts from the lowest and furthest corners to ensure the fast and efficient removal of solvents. The use of solvent free coating systems eliminates solvent release from the paint, but ventilation is still required during surface preparation and curing.

6.1.16 **Dehumidification** of the tank or space to be coated effectively prevents rerusting of the steel after surface preparation and allows paint application on a dry steel substrate. This will not only ensure that the paint is applied under proper conditions, but it will also reduce delays and thus improves productivity. There are two different types of dehumidification, i.e. desiccant and refrigeration. Both work well, the desiccant type being ideal in moderate and cold climates, and the refrigeration type in warmer climates. Dehumidification to 40% to 50% relative humidity is recommended.

6.1.17 **Compatibility of coating systems** is of utmost importance for a good end result. Unless the original coating system is totally removed, a coating system compatible to the original system should be used in accordance with the paint manufacturer recommendations. The coating system requires a Statement of Compliance or Type Approval Certificate according to the Performance standard for protective coatings for cargo oil tanks of crude oil tankers (resolution MSC.288(87)).

6.1.18 **Stripe coating/design/surface areas** should be differentiated with respect to coating application as degree of access varies. Edges, corners, weld seams and other areas that are difficult to coat need special treatment. "Stripe coating" is used to produce a satisfactory coating and to obtain specified Dry Film Thickness (DFT) on such areas. Stripe coats should be applied as a coherent film showing good film formation and no visible defects, such as pores or de-wetted areas. The application method employed should ensure that all areas which cannot be adequately coated by spray application are properly stripe coated.

6.1.19 It is recommended to apply a stripe coat before or after each main coat. This should be done using a colour that contrasts with each main coat, as this makes it easier to see that the stripe coat is satisfactory.

6.2 Principles for repairs

6.2.1 Repair process:

.1 tank cleaning, ventilation/gas-freeing and mucking-out;

.2 de-scaling;

.3 degreasing and oil film removal;

.4 fresh water rinsing;

.5 drying; and

.6 surface preparation (surface preparation method chosen depends on the amount of failure and the service life intended – see relevant tables 3.1 to 3.3 below).

6.2.2 It is essential that, if a contractor is providing the service, he can prove that all personnel are fully qualified to carry out the required work. It is also necessary that, whilst on board, the team is fully conversant with appropriate ship operation, safety and evacuation requirements.

6.2.3 It should be realized that more control over the coating process can be achieved in dock and, hence, the overall cost effectiveness of repair must establish whether the required service life will be achievable.

6.3 Recommended repair

6.3.1 Tables 3.1, 3.2 and 3.3 describe the recommended short, medium and long-term repairs.

6.3.2 Coating repair should be inspected by qualified inspectors certified to NACE Coating Inspector Level 2, FROSIO Inspector Level III or equivalent as verified by the Administration.

Table 3.1 – Recommended SHORT term repair

Purpose	Preparation[1]	Coating System		Dry film thickness (DFT)
Repair of affected area • POOR to GOOD • FAIR to GOOD	• Removal of mud, cargo residues, grease, etc., thorough tank cleaning • Drying • St 3 to Sa 2[11] surface preparation • Intact coating next to damage area should be feathered • Total soluble salts, calculated as sodium chloride, according to manufacturer's recommendation but not more than 80 mg/m^2 • Particular focus on pitted steel • Climatic control	(Not recommended for tankers of less than 18 years of age)	• Coating system approved according to resolution MSC.288(87) • The same coating system as was originally employed, or a coating system compatible with the original system, or equivalent according to manufacturer's recommendation. (Care must be taken to confirm that the coating used will have the necessary adhesion to such a surface for the target coating life)	• 250 µm DFT[12] • Minimum two spray coats with two stripe coats

Note: For partial or small spot area repairs it is well understood that these recommendations might not be possible but suitable preparation for the paint system being used should be according to paint manufacturer's recommendations.

[11] Refer to ISO 8501-1, 1998, Suppl.: 1994.

[12] Coating used approved at 320µm DFT, according to resolution MSC.288(87), is satisfactory for short-term at 250µm DFT.

Table 3.2 – Recommended MEDIUM term repair

Purpose	Preparation[1]	Coating System		Dry film thickness (DFT)
Repair of affected area • POOR to GOOD • FAIR to GOOD	• Removal of mud, cargo residues, grease, etc., thorough tank cleaning • Drying • Minimum Sa 2 to 2½[13] surface preparation • Re-cleaning with detergent • Intact coating next to damage area should be feathered • Total soluble salts, calculated as sodium chloride, according to manufacturer's recommendation but not more than 80 mg/m^2 • Particular focus on pitted steel • Climatic and temperature control	(Not recommended for tankers of less than 10 to 12 years of age)	• Coating system approved according to resolution MSC.288(87) • The same coating system as was originally employed, or a coating system compatible with the original system, or equivalent according to manufacturer's recommendation. (Care must be taken to confirm that the coating used will have the necessary adhesion to such a surface for the target coating life)	• 280 µm DFT[14] • Minimum two spray coats with two stripe coats

Note: For partial or small spot area repairs it is well understood that these recommendations might not be possible but suitable preparation for the paint system being used should be according to paint manufacturer's recommendations.

[13] Refer to ISO 8501-1, 1998, Suppl.: 1994.

[14] Coating used approved at 320µm DFT, according to resolution MSC.288(87), is satisfactory for medium-term at 280µm DFT.

Table 3.3 – Recommended LONG term repair

Purpose	Preparation[1]	Coating System		Dry film thickness (DFT)
Repair of affected area • POOR to GOOD • FAIR to GOOD	• Removal of mud, cargo residues, grease, etc., thorough tank cleaning • Drying • Minimum Sa 2½[13] surface preparation • Re-cleaning with detergent • Intact coating next to damage area should be feathered • Total soluble salts, calculated as sodium chloride, according to manufacturer's recommendation but not more than 50 mg/m^2 • Particular focus on pitted steel • Continuous climatic and plating surface temperature control (for condensation as well as application and curing temperature limitations of the paint system)	(Required for tankers of less than 5 to 7 years of age)	• Coating system approved according to resolution MSC.288(87) • The same coating system as was originally employed, or a coating system compatible with the original system, or equivalent according to manufacturer's recommendation.	• 320 µm DFT • Minimum two spray coats with two stripe coats

Note: For partial or small spot area repairs it is well understood that these recommendations might not be possible but suitable preparation for the paint system being used should be according to paint manufacturer's recommendations.

7 COATING TECHNICAL FILE (CTF)

7.1 Maintenance and repair activities should be recorded in the CTF in accordance with the relevant section of these Guidelines[15] and should be carried out in accordance with the procedures and recommendations provided in the CTF.

7.2 For maintenance, the following should be reported in the CTF:

.1 copy of Technical Data Sheet, including:

.1.1 product name and identification mark and/or number;

.1.2 materials, components and composition of the coating system, colours;

.1.3 minimum and maximum dry film thickness;

.1.4 application methods, tools and/or machines;

.1.5 condition of surface to be coated (de-rusting grade, cleanness, profile, etc.); and

.1.6 environmental limitations (temperature and humidity); and

.2 ship maintenance records of coating application, including:

.2.1 applied actual space and area (in square metres) of each compartment;

.2.2 ambient condition during coating; and

.2.3 method of surface preparation.

7.3 For repairs, the CTF should contain at least the following:

.1 copy of Statement of Compliance or Type Approval Certificate;

.2 copy of Technical Data Sheet, including:

.2.1 product name and identification mark and/or number;

.2.2 materials, components and composition of the coating system, colours;

.2.3 minimum and maximum dry film thickness;

.2.4 application methods, tools and/or machines;

.2.5 condition of surface to be coated (de-rusting grade, cleanness, profile, etc.); and

.2.6 environmental limitations (temperature and humidity);

[15] Resolution MSC.288(87), paragraph 3.4.3.

.3 shipyard work records of coating application, including:

.3.1 applied actual space and area (in square metres) of each compartment;

.3.2 applied coating system;

.3.3 time of coating, thickness, number of layers, etc.;

.3.4 ambient condition during coating; and

.3.5 method and standard of surface preparation;

.4 coating log issued by the coating inspector, stating that the coating was applied in accordance with the specifications to the satisfaction of the coating supplier representative and specifying deviations from the specifications (example of daily log and non-conformity report (see annex 2 to resolution MSC.288(87));

.5 shipyard's verified inspection report, including:

.5.1 completion date of inspection;

.5.2 result of inspection;

.5.3 remarks (if given); and

.5.4 inspector signature; and

.6 procedures for in-service maintenance and repair of coating system, if different than original coating system.

8 REFERENCES

IACS Recommendation 87 – Guidelines for Coating Maintenance and Repairs for Ballast Tanks and Combined Cargo/Ballast Tanks on Oil Tankers, revision 1, 2006.

ISGOTT (International Safety Guide for Oil Tankers and Terminals), 5th edition 2006.

Resolution A.864(20) – Recommendations for Entering Enclosed Spaces Aboard Ships, as amended.

Note: The above references are for information purposes only.

* * *

APPENDIX

STANDARDIZED REPORT INFORMATION

1 Ship's identity, including name and IMO number

2 Tank number

3 Inspection date

4 Name of inspector and inspecting body

5 Year last coated, either delivery date or latest repair

6 Coating name/type, manufacturer and product identification used

7 Last repaired

8 Surface area, designation and size

9 Coating condition (GOOD, FAIR or POOR)

10 Pitting corrosion – Yes/No

11 Blistering – Yes/No, blisters perforated – Yes/No

12 Amount of breakdown (in m^2 or % of areas under consideration)

13 Sounding pipe condition

14 Vent pipe and purge pipe condition

15 Pipes condition

16 Bellmouth condition and erosion underneath

17 Conditions of coatings of Permanent Means of Access (PMA)

18 Other comments (for example structural damage, mechanical damage, location and extent)

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MSC.1/Circ.1400
27 May 2011

GUIDELINES ON OPERATIONAL INFORMATION FOR MASTERS OF PASSENGER SHIPS FOR SAFE RETURN TO PORT BY OWN POWER OR UNDER TOW

1 The Maritime Safety Committee, at its eighty-ninth session (11 to 20 May 2011), having considered a proposal by the Sub-Committee on Stability and Load Lines and on Fishing Vessels Safety, at its fifty-third session, approved the Guidelines on operational information for masters of passenger ships for safe return to port by own power or under tow, set out in the annex, aiming at providing additional guidance for the uniform implementation of SOLAS regulation II-1/8-1, which is expected to be adopted by MSC 90 (May 2012)*.

2 Member Governments are invited to bring the annexed Guidelines to the attention of owners of passenger ships, operators and all other parties concerned.

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* The draft amendment to SOLAS regulation II-1/8-1 was approved by MSC 89, and is contained in the report of the Committee (MSC 89/25/Add.1, annex 17). Owners of passenger ships, masters, operators and all other parties concerned should prepare in advance for the adoption of the draft amendment to regulation II-1/8-1.

ANNEX

GUIDELINES ON OPERATIONAL INFORMATION FOR MASTERS OF PASSENGER SHIPS FOR SAFE RETURN TO PORT BY OWN POWER OR UNDER TOW

General

1 Stability information provided to the Master should be sourced from an approved stability computer situated on board the vessel or from a shore-based system and should be capable of providing information at any time.

2 The output format and units of the information supplied should be consistent with the format and units of the stability booklet in order to facilitate easy comparison.

3 Accuracy of programs using hull form with its subdivision models as their basis for stability calculations should have tolerances in accordance with the Guidelines for the approval of stability instruments (MSC.1/Circ.1229), when compared with the approved stability information; this applies equally to onboard and shore-based systems.

Onboard stability computers

4 At least two independent stability computers capable of processing the data and providing the necessary information should be installed.

5 Onboard stability computers should have an uninterruptible power supply (UPS) connected to both main and emergency switchboards.

6 The output should be within the tolerances specified in the Guidelines for the approval of stability instruments (MSC.1/Circ.1229).

7 Details of the loading condition of the ship at each departure should be input to the stability computer in order to encourage familiarity with the operation of the system and to save time on data input in the event of a casualty.

8 At least two crew members should be competent in the operation of the stability computer and capable of interpretation of the output in order to provide the required information.

9 An operation manual should be provided for the stability computer software. The manual should be printed in a language in which the operators are fully conversant.

Shore-based support

10 Owners or operators of passenger ships should ensure that their ships have prearranged, prompt access to computerized, shore-based damage stability and residual structural strength calculation programs. The output should be within the tolerances specified in the Guidelines for the approval of stability instruments (MSC.1/Circ.1229). Access to the shore-based calculation program should be available 24 hours a day. The computer model of the ship and its subdivision arrangements should be input at the commencement of the contract.

11 There should be a contract for the supply of shore-based support at all times during the validity of ship certification.

12 Shore-based support should be operational within one hour; whereby operational means the ability to input details of the conditions of the ship as instructed.

13 Shore-based support should be manned by adequately qualified persons with regard to stability and ship strength; no less than two qualified persons should be available to be on call at all times.

14 At least two independent computers capable of carrying out stability and global strength calculations should be available at all times.

15 The ship should be fitted with sufficiently reliable equipment to allow for communication with the supplier of shore-based support for all intended areas of operation.

Minimum stability and additional information requirements

16 Taking into account the most recent known loading and flooded condition of the ship and taking into account any measures that may be proposed to improve or affect the survivability of the ship, the following information should be provided:

.1 GM transverse in any loading condition;

.2 GZ and range;

.3 area under the GZ curve;

.4 maximum and actual values of free surface moments of all tanks and spaces below the bulkhead deck;

.5 location of flooding level indicators within tanks;

.6 draughts forward, midships and aft;

.7 angles of heel and trim;

.8 the effect of flooding and heel and trim angles on:

.1 operation of essential equipment;

.2 escape routes and evacuation times; and

.3 effective deployment of life saving appliances;

.9 profile areas of the ship both above and below the waterline, and means to establish their centres, in order to estimate the effects of wind pressure;

.10 currently applied global bending moment and sheer force;

.11 fuel consumption data accounting for estimates of increased resistance due to flooding; and

.12 ship specific particulars relating to the Guidelines for damage control plans and information to the master (MSC.1/Circ.1245).

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MSC.1/Circ.1401
9 June 2011

GUIDELINES ON TANK ENTRY FOR TANKERS USING NITROGEN AS AN INERTING MEDIUM

1 The Maritime Safety Committee at its eighty-ninth session (11 to 20 May 2011), having considered the proposal by the Sub-Committee on Bulk Liquids and Gases, at its fifteenth session, approved the Guidelines on tank entry for tankers using nitrogen as an inerting medium, set out in the annex.

2 Member Governments are invited to bring the annexed Guidelines to the attention of shipowners, ship operators and seafarers, urging them to apply these Guidelines, as appropriate, to all tankers using nitrogen as an inerting medium.

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ANNEX

GUIDELINES ON TANK ENTRY FOR TANKERS USING NITROGEN AS AN INERTING MEDIUM

1 PURPOSE

The purpose of these Guidelines is to describe the procedures and minimum precautions, which are to be followed when personnel intend to enter a tank, in order to reduce the risk of asphyxiation after inerting the tanks by nitrogen. These Guidelines should be used in conjunction with the Revised Recommendations for entering enclosed spaces aboard ships.*

2 USE OF NITROGEN

2.1 Nitrogen is a colourless and odourless gas that can cause oxygen deficiency in confined spaces, and at exhaust openings on deck, during purging of tanks and void spaces.

2.2 Nitrogen (N_2) is classified as a simple asphyxiate, meaning that it will displace oxygen in high concentrations and create an oxygen deficient (< 21%) atmosphere without any significant physiological effects. Breathing is stimulated and controlled by carbon dioxide (CO_2) present in the lungs. As the CO_2 level increases, the brain sends a message to increase respiration. When the CO_2 level drops, the rate of respiration will also decrease in order to maintain the proper balance.

2.3 Everyone should understand that one deep breath of 100% N_2 will be fatal.

100% N_2 will displace CO_2 and O_2 completely and, in the absence of a CO_2 signal to the brain, the stimulus to breathe no longer exists.

3 PRE-PLANNING

3.1 Prior to entering a tank, all persons who are to be involved in the task should meet to:

.1 define the purpose of entering the tank;

.2 identify the steps to be taken to achieve the purpose;

.3 develop a plan of action; and

.4 assign responsibilities.

3.2 The meeting should address:

.1 scheduling of manpower – may include the following:

.1 authorization: the master will be ultimately responsible for authorizing tank entry. An officer should be designated as the responsible person with sufficient knowledge of the procedures to be established and complied with on board, in order for ensuring that the correct procedures are observed;

* The Revised Recommendations for entering enclosed spaces aboard ships (DSC 15/18, annex 6) are expected to be adopted at the twenty-seventh session of the Assembly.

.2 the person undertaking the testing of the atmosphere should be trained in the use of the equipment. Only properly calibrated equipment should be used and the manufacturers' instructions should be strictly followed;

.3 *attendant* means a person who is suitably trained within the safety management system, maintains a watch over those entering the tank, maintains communications with those inside the tank and initiates the emergency procedures in the event of an incident occurring; and

.4 *tank rescue team* are any members of the crew trained in the use of rescue and resuscitation equipment;

.2 tank washing;

.3 gas freeing;

.4 testing of the tank atmosphere;

.5 identifying and minimizing physical hazards;

.6 listing equipment needed, i.e. safety, fire fighting, communication, tools, escape and rescue;

.7 advising personnel who will enter the space of the hazards associated with the operation;

.8 maintaining safe conditions in the tank; and

.9 reviewing emergency procedures for rescue and fire fighting – may include the following:

.1 the person in charge of the rescue party should not enter the tank, but should coordinate the rescue operation from the tank access;

.2 in the event that a casualty must be removed from the tank, sufficient persons must be on deck and available to effect proper use of the rescue equipment;

.3 sufficient persons should be assigned to the tank rescue team. They should be familiar with the tank arrangement and trained in the use of the equipment and able to deliver first aid; and

.4 the decision to remove an injured person from the space must be based on the relative danger of his location and extent of his injuries, versus the danger of increasing his injuries by movement prior to effecting first aid.

4 INITIAL PREPARATION

4.1 Marking of cargo tanks

4.1.1 Tanks should be clearly marked to make it clear to all which are safe for entry and which must not be entered. Any tank where crew are working should be clearly marked as such.

4.1.2 Warning signs should also be posted at the gangway, and at other locations as deemed necessary by the master, when nitrogen is being produced on board or received from shore.

4.2 After a tank has been cleaned and ventilated, the following steps should be taken:

4.2.1 Ensure that the tank to be entered has been segregated from all other spaces which contain or may contain a non-gas free atmosphere. All common line valves should be lashed in the closed position and labelled.

4.2.2 Check that all cargo pipes in the tank being entered have been flushed and drained.

4.2.3 In addition to the safety equipment used for tank entry, rescue and resuscitation and fire-fighting equipment should be available, inspected and in proper working order. This may include the following:

.1 equipment to be immediately available on deck:

.1 rescue hoist equipment to enable an injured person to be removed from the tank;

.2 self-contained breathing apparatus;

.3 oxygen meter;

.4 gas meter; and

.5 toxic gas detector;

.2 equipment to be carried on board and readily available:

.1 stretchers;

.2 resuscitator;

.3 first-aid kit;

.4 fire hose with spray nozzle; and

.5 dry chemical and foam fire extinguishers;

.3 equipment for each member of the tank entry party: flashlight and protective clothing; and

.4 equipment to be carried by at least one member of the tank entry team: intrinsically safe two-way portable radiotelephone apparatus.

4.2.4 The attendant should stand by the tank entrance while people are in the tank. In addition, sufficient people to form a rescue team should be identified, readily available and should not be involved in the tank entry.

4.2.5 Establish a means of communication and emergency signals between the persons on deck and the persons in the tank. Ensure everybody understands these signals before tank entry and ensure that intrinsically safe two-way portable radiotelephone apparatus is available for the use of the attendant at the tank entrance.

5 TESTING THE ATMOSPHERE IN THE TANK

5.1 After a tank has been cleaned, ventilated and prepared for entry, it should be tested for oxygen content, and finally, as appropriate, for toxic gases at various levels from top to bottom.

5.2 The atmosphere can only be accepted as suitable for entry when all the relevant hazards have been identified and removed.

5.3 Appropriate testing of the atmosphere of a tank should be carried out with properly calibrated equipment by persons trained in the use of the equipment. The manufacturers' instructions should be strictly followed. Testing of the tank should be carried out before any person enters the tank, and at regular intervals thereafter until all work is completed. Where appropriate, the testing of the tank should be carried out at as many different levels as is necessary to obtain a representative sample of the atmosphere in the tank. In some cases, it may be difficult to test the atmosphere throughout the tank without entering the tank and this should be taken into account when assessing the risk to personnel entering the tank. The use of flexible hoses or fixed sampling lines which reach remote areas within the tank, may allow for safe testing without having to enter the tank.

5.4 All ventilation must be stopped prior to and during the atmosphere tests and resumed prior to any person entering the tank.

5.5 Criteria for Tank Entry

5.5.1 For entry purposes, steady readings of all the following should be obtained:

.1 21% oxygen by volume by oxygen content meter[*];

.2 not more than 1% of lower flammable limit (LFL) on a suitably sensitive combustible gas indicator, where the preliminary assessment has determined that there is potential for flammable gases or vapours; and

.3 not more than 50% of the occupational exposure limit (OEL) of any toxic vapours and gases.[**]

5.5.2 A responsible person should ensure that all measuring instruments in use have been properly calibrated and are maintained in accordance with the respective manufacturer's instructions.

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[*] National requirements may determine the safe atmosphere range.

[**] It should be noted that the term Occupational Exposure Limit (OEL) includes the Permissible Exposure Limit (PEL), Maximum Admissible Concentration (MAC) and Threshold Limit Value (TLV) or any other internationally recognized terms.

5.5.3 If these conditions cannot be met, additional ventilation should be applied to the tank and re-testing should be conducted after a suitable interval.

6 ADDITIONAL PRECAUTIONS FOR ENTRY INTO A TANK WHERE THE ATMOSPHERE IS KNOWN OR SUSPECTED TO BE UNSAFE

6.1 Tanks that have not been tested should be considered unsafe for persons to enter.

6.2 If the atmosphere in a tank is suspected or known to be unsafe, the tank should only be entered in the event of an emergency. The number of persons entering the tank should be the minimum compatible with the task to be performed.

6.3 Suitable breathing apparatus, e.g., of the air-line or self-contained type, should always be worn, and only personnel trained in its use should be allowed to enter the space. Air-purifying respirators should not be used.

6.4 Persons entering tanks should be provided with calibrated and tested personal multi-gas detectors that monitor the levels of oxygen, carbon monoxide and other gases, as appropriate. Rescue harnesses should be worn and, unless impractical, lifelines should be used. Appropriate protective clothing should be worn particularly where there is any risk of toxic substances or chemicals coming into contact with the skin or eyes of those entering the tank.

7 FINAL PREPARATION

The responsible person should ensure that:

.1 all personnel involved understand the emergency procedures;

.2 each person entering the tank is wearing the appropriate protective clothing and has the correct personal safety equipment;

.3 all personnel involved understand the task to be undertaken; and

.4 the equipment stated in paragraph 4.2.3 is readily available.

8 TANK ENTRY PERMIT

8.1 The relevant sections of the Tank Entry Permit (see appendix) should be filled in upon completion of preparations for tank entry. Entry permits may be made for multiple tank entries, however tanks which are not immediately entered should be re-tested and a new permit issued. At no time should a permit be granted for entry into more than six tanks.

8.2 The validity of an entry permit should not exceed 8 hours.

9 TANK ENTRY

After the tank entry requirements have been met, the tank may be entered by the work party. While persons are working in the space, safe working conditions must be maintained. Particular attention should be given to the following:

.1 the responsible person should ensure that the atmosphere is continuously monitored and order the evacuation of the space if the safe limits are exceeded, or if there is any doubt about it, at any stage of the operation;

.2 ventilation must be provided during the entire period of the operation. Where necessary, portable ducting should be provided to ensure a good supply of air to the actual working area inside the space;

.3 the responsible person should ensure that all identified risk mitigation measures are being enforced;

.4 the attendant should be in continuous attendance at the entrance to the tank;

.5 the responsible person should be aware of the location of every person in the tank at all times. The work party should stay together whenever possible;

.6 safety harnesses should be worn at all times when working in tanks;

.7 rescue equipment should be rigged and ready for use throughout the operation and persons assigned to the rescue party should be readily available; and

.8 access openings should be kept open and clear for emergency exit at all times.

10 LEAVING THE TANK

10.1 If the tank is vacated for any reason, such as for a meal break, ventilation should continue during the break and the atmosphere of the tank should be re-tested and the provisions of paragraph 7 should be observed.

10.2 When finally leaving the tank, the responsible person should ensure that all persons in the work party are accounted for and that all tools and equipment have been removed from the tank.

* * *

APPENDIX

EXAMPLE OF AN ENCLOSED SPACE ENTRY PERMIT*

This permit relates to entry into any enclosed space and should be completed by the master or responsible person.

GENERAL

Location/name of enclosed space
Reason for entry .....
This permit is valid from:_____hrs Date .....
to:_____hrs Date .....
(See note 1)

SECTION 1 – PRE-ENTRY PREPARATION
(To be checked by the master or nominated responsible person)

	Yes	No
• Has the space been thoroughly ventilated by mechanical means?	"	"
• Has the space been segregated by blanking off or isolating all connecting pipelines or valves and electrical power/equipment?	"	"
• Has the space been cleaned where necessary?	"	"
• Has the space been tested and found safe for entry? (See note 2)	"	"
• Pre-entry atmosphere test readings:		
- oxygen ..... % vol (21%)**	By:	
- hydrocarbon ..... % LFL (less than 1%)		
- toxic gases ..... ppm (less than 50% OEL of the specific gas) (See note 3)	Time:	
• Have arrangements been made for frequent atmosphere checks to be made while the space is occupied and after work breaks?	"	"
• Have arrangements been made for the space to be continuously ventilated throughout the period of occupation and during work breaks?	"	"
• Are access and illumination adequate?	"	"
• Is rescue and resuscitation equipment available for immediate use by the entrance to the space?	"	"
• Has an attendant been designated to be in constant attendance at the entrance to the space?	"	"
• Has the officer of the watch (bridge, engine-room, cargo control room) been advised of the planned entry?	"	"
• Has a system of communication between all parties been tested and emergency signals agreed?	"	"
• Are emergency and evacuation procedures established and understood by all personnel involved with the enclosed space entry?	"	"
• Is all equipment used in good working condition and inspected prior to entry?	"	"
• Are personnel properly clothed and equipped?	"	"

* It should be noted that this is a generic entry permit that may be used for all enclosed spaces on board all ships.

** Note that National requirements may determine the safe atmosphere range.

SECTION 2 – PRE-ENTRY CHECKS
(To be checked by each person entering the space)

	Yes	No
• I have received instructions or permission from the master or nominated responsible person to enter the enclosed space	"	"
• Section 1 of this permit has been satisfactorily completed by the master or nominated responsible person	"	"
• I have agreed and understand the communication procedures	"	"
• I have agreed upon a reporting interval of ..... minutes	"	"
• Emergency and evacuation procedures have been agreed and are understood	"	"
• I am aware that the space must be vacated immediately in the event of ventilation failure or if atmosphere tests show a change from agreed safe criteria	"	"

SECTION 3 – BREATHING APPARATUS AND OTHER EQUIPMENT
(To be checked jointly by the master or nominated responsible person and the person who is to enter the space)

	Yes	No
• Those entering the space are familiar with any breathing apparatus to be used	"	"
• The breathing apparatus has been tested as follows: - gauge and capacity of air supply - low pressure audible alarm if fitted - face mask – under positive pressure and not leaking		
• The means of communication has been tested and emergency signals agreed	"	"
• All personnel entering the space have been provided with rescue harnesses and, where practicable, lifelines	"	"

Signed upon completion of sections 1, 2 and 3 by:

Master or nominated responsible person ..... Date ..... Time .....

Attendant ..... Date ..... Time.....

Person entering the space..... Date ..... Time.....

SECTION 4 – PERSONNEL ENTRY
(To be completed by the responsible person supervising entry)

Names

Time in Time out

SECTION 5 – COMPLETION OF JOB
(To be completed by the responsible person supervising entry)

- Job completed: Date..... Time .....

- Space secured against entry Date..... Time.....
- The officer of the watch has been duly informed Date..... Time .....

Signed upon completion of sections 4 and 5 by:

Responsible person supervising entry: ..... Date ..... Time .....

THIS PERMIT IS RENDERED INVALID SHOULD VENTILATION OF THE SPACE STOP OR IF ANY OF THE CONDITIONS NOTED IN THE CHECKLIST CHANGE

Notes:

1 The permit should contain a clear indication as to its maximum period of validity.

2 In order to obtain a representative cross-section of the space's atmosphere, samples should be taken from several levels and through as many openings as possible. Ventilation should be stopped for about 10 minutes before the pre-entry atmosphere tests are taken.

3 Tests for specific toxic contaminants, such as benzene or hydrogen sulphide, should be undertaken depending on the nature of the previous contents of the space.

ANNEX 23

DRAFT ASSEMBLY RESOLUTION

ADOPTION OF THE REVISED RECOMMENDATIONS FOR ENTERING ENCLOSED SPACES ABOARD SHIPS

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 that it adopted, by resolution A.864(20), the Recommendations for entering enclosed spaces aboard ships, incorporating therein recommendations for entering cargo spaces, tanks, pump-rooms, fuel tanks, cofferdams, duct keels, ballast tanks and similar enclosed spaces,

BEING CONCERNED about at the continued loss of life resulting from personnel entering shipboard spaces in which the atmosphere is oxygen-depleted, oxygen enriched, toxic or flammable,

BEING AWARE of the work undertaken in this regard by the International Labour Organization, Governments and segments of the private sector,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its eighty-ninth session,

1. ADOPTS the Revised Recommendations for entering enclosed spaces aboard ships, set out in the Annex to the present resolution;

2. INVITES Governments to bring the annexed Revised Recommendations to the attention of shipowners, ship operators and seafarers, urging them to apply the Revised Recommendations, as appropriate, to all ships;

3. REQUESTS the Maritime Safety Committee to keep the Revised Recommendations under review and amend them, as necessary;

4. REVOKES resolution A.864(20).

ANNEX

REVISED RECOMMENDATIONS FOR ENTERING ENCLOSED SPACES ABOARD SHIPS

PREAMBLE

The objective of these Recommendations is to encourage the adoption of safety procedures aimed at preventing casualties to ships' personnel entering enclosed spaces where there may be an oxygen deficient, oxygen enriched, flammable and/or toxic atmosphere.

Investigations into the circumstances of casualties that have occurred have shown that accidents on board ships are in most cases caused by an insufficient knowledge of, or disregard for, the need to take precautions rather than a lack of guidance.

The following practical Recommendations apply to all types of ships and provide guidance to ship operators and seafarers. It should be noted that on ships where entry into enclosed spaces may be infrequent, for example, on certain passenger ships or small general cargo ships, the dangers may be less apparent, and accordingly there may be a need for increased vigilance.

The Recommendations are intended to complement national laws or regulations, accepted standards or particular procedures which may exist for specific trades, ships or types of shipping operations.

It may be impracticable to apply some recommendations to particular situations. In such cases, every endeavour should be made to observe the intent of the Recommendations, and attention should be paid to the risks that may be involved.

1 INTRODUCTION

The atmosphere in any enclosed space may be oxygen deficient or oxygen enriched and/or contain flammable and/or toxic gases or vapours. Such unsafe atmospheres could also subsequently occur in a space previously found to be safe. Unsafe atmospheres may also be present in spaces adjacent to those spaces where a hazard is known to be present.

2 DEFINITIONS

2.1 *Enclosed space* means a space which has any of the following characteristics:

.1 limited openings for entry and exit;

.2 inadequate ventilation; and

.3 is not designed for continuous worker occupancy,

and includes, but is not limited to, cargo spaces, double bottoms, fuel tanks, ballast tanks, cargo pump-rooms, cargo compressor rooms, cofferdams, chain lockers, void spaces, duct keels, inter-barrier spaces, boilers, engine crankcases, engine scavenge air receivers, sewage tanks, and adjacent connected spaces. This list is not exhaustive and a list should be produced on a ship-by-ship basis to identify enclosed spaces.

2.2 *Adjacent connected space* means a normally unventilated space which is not used for cargo but which may share the same atmospheric characteristics with the enclosed space such as, but not limited to, a cargo space accessway.

2.3 *Competent person* means a person with sufficient theoretical knowledge and practical experience to make an informed assessment of the likelihood of a dangerous atmosphere being present or subsequently arising in the space.

2.4 *Responsible person* means a person authorized to permit entry into an enclosed space and having sufficient knowledge of the procedures to be established and complied with on board, in order to ensure that the space is safe for entry.

2.5 *Attendant* means a person who is suitably trained within the safety management system, maintains a watch over those entering the enclosed space, maintains communications with those inside the space and initiates the emergency procedures in the event of an incident occurring.

3 SAFETY MANAGEMENT FOR ENTRY INTO ENCLOSED SPACES

3.1 The safety strategy to be adopted in order to prevent accidents on entry to enclosed spaces should be approached in a comprehensive manner by the company.

3.2 The company should ensure that the procedures for entering enclosed spaces are included among the key shipboard operations concerning the safety of the personnel and the ship, in accordance with paragraph 7 of the International Safety Management (ISM) Code.

3.3 The company should elaborate a procedural implementation scheme which provides for training in the use of atmospheric testing equipment in such spaces and a schedule of regular onboard drills for crews.

3.3.1 Competent and responsible persons should be trained in enclosed space hazard recognition, evaluation, measurement, control and elimination, using standards acceptable to the Administration.

3.3.2 Crew members should be trained, as appropriate, in enclosed space safety, including familiarization with onboard procedures for recognizing, evaluating and controlling hazards associated with entry into enclosed spaces.

3.4 Internal audits by the company and external audits by the Administration of the ship's safety management system should verify that the established procedures are complied with in practice and are consistent with the safety strategy referred to in paragraph 3.1.

4 ASSESSMENT OF RISK

4.1 The company should ensure that a risk assessment is conducted to identify all enclosed spaces on board the ship. This risk assessment should be periodically revisited to ensure its continued validity.

4.2 In order to ensure safety, a competent person should always make a preliminary assessment of any potential hazards in the space to be entered, taking into account previous cargo carried, ventilation of the space, coating of the space and other relevant factors. The competent person's preliminary assessment should determine the potential for the presence of an oxygen deficient, oxygen enriched, flammable or toxic atmosphere. The competent person should bear in mind that the ventilation procedures for an adjacent connected space may be different from the procedures for the ventilation of the enclosed space itself.

4.3 The procedures to be followed for testing the atmosphere in the space and for entry should be decided on the basis of the preliminary assessment. These will depend on whether the preliminary assessment shows that:

.1 there is minimal risk to the health or life of personnel entering the space; or

.2 there is no immediate risk to health or life but a risk could arise during the course of work in the space; or

.3 a risk to health or life is identified.

4.4 Where the preliminary assessment indicates minimal risk to health or life or potential for a risk to arise during the course of work in the space, the precautions described in sections 5, 6, 7 and 8 should be followed, as appropriate.

4.5 Where the preliminary assessment identifies a risk to life or health, if entry is to be made, the additional precautions specified in section 9 should also be followed.

4.6 Throughout the assessment process, there should be an assumption that the space to be entered is considered to be hazardous until positively proved to be safe for entry.

5 AUTHORIZATION OF ENTRY

5.1 No person should open or enter an enclosed space unless authorized by the master or the nominated responsible person and unless the appropriate safety procedures laid down for the particular ship have been followed.

5.2 Entry into enclosed spaces should be planned and the use of an entry permit system, which may include the use of a checklist, is recommended. An Enclosed Space Entry Permit should be issued by the master or the nominated responsible person, and completed by the personnel who enter the space prior to entry. An example of the Enclosed Space Entry Permit is provided in the appendix.

6 GENERAL PRECAUTIONS

6.1 Entry doors or hatches leading to enclosed spaces should at all times be secured against entry, when entry is not required.

6.2 A door or hatch cover which is opened to provide natural ventilation of an enclosed space may, wrongly, be taken to be an indication of a safe atmosphere and therefore, an attendant may be stationed at the entrance or the use of a mechanical barrier, such as a rope or chain positioned across the opening with an attached warning sign, could prevent such accidental entry.

6.3 The master or the responsible person should determine that it is safe to enter an enclosed space by ensuring that:

.1 potential hazards have been identified in the assessment and as far as possible isolated or made safe;

.2 the space has been thoroughly ventilated by natural or mechanical means to remove any toxic or flammable gases and to ensure an adequate level of oxygen throughout the space;

.3 the atmosphere of the space has been tested as appropriate with properly calibrated instruments to ascertain acceptable levels of oxygen and acceptable levels of flammable or toxic vapours;

.4 the space has been secured for entry and properly illuminated;

.5 a suitable system of communication between all parties for use during entry has been agreed and tested;

.6 an attendant has been instructed to remain at the entrance to the space whilst it is occupied;

.7 rescue and resuscitation equipment has been positioned ready for use at the entrance to the space and rescue arrangements have been agreed;

.8 personnel are properly clothed and equipped for the entry and subsequent tasks; and

.9 a permit has been issued, authorizing entry.

The precautions in subparagraphs .6 and .7 may not apply to every situation described in this section. The person authorizing entry should determine whether an attendant and the positioning of rescue equipment at the entrance to the space are necessary.

6.4 Only trained personnel should be assigned the duties of entering, functioning as attendants or functioning as members of rescue teams. Ships' crews with rescue and first aid duties should be drilled periodically in rescue and first aid procedures. Training should include as a minimum:

.1 identification of the hazards likely to be faced during entry into enclosed spaces;

.2 recognition of the signs of adverse health effects caused by exposure to hazards during entry; and

.3 knowledge of personal protective equipment required for entry.

6.5 All equipment used in connection with entry should be in good working condition and inspected prior to use.

7 TESTING THE ATMOSPHERE

7.1 Appropriate testing of the atmosphere of a space should be carried out with properly calibrated equipment by persons trained in the use of the equipment. The manufacturers' instructions should be strictly followed. Testing of the space should be carried out before any person enters the space and at regular intervals thereafter until all work is completed. Where appropriate, the testing of the space should be carried out at as many different levels as is necessary to obtain a representative sample of the atmosphere in the space. In some cases it may be difficult to test the atmosphere throughout the enclosed space without entering the space (e.g., the bottom landing of a stairway) and this should be taken into account when assessing the risk to personnel entering the space. The use of flexible hoses or fixed sampling lines, which reach remote areas within the enclosed space, may allow for safe testing without having to enter the space.

7.2 For entry purposes, steady readings of all of the following should be obtained:

.1 21% oxygen by volume by oxygen content meter;

Note: National requirements may determine the safe atmosphere range.

.2 not more than 1% of lower flammable limit (LFL) on a suitably sensitive combustible gas indicator, where the preliminary assessment has determined that there is potential for flammable gases or vapours; and

.3 not more than 50% of the occupational exposure limit (OEL)* of any toxic vapours and gases.

If these conditions cannot be met, additional ventilation should be applied to the space and re-testing should be conducted after a suitable interval.

7.3 Any gas testing should be carried out with ventilation to the enclosed space stopped, and after conditions have stabilized, in order to obtain accurate readings.

7.4 Where the preliminary assessment has determined that there is potential for the presence of toxic gases and vapours, appropriate testing should be carried out, using fixed or portable gas or vapour detection equipment. The readings obtained by this equipment should be below the occupational exposure limits for the toxic gases or vapours given in accepted national or international standards, in accordance with paragraph 7.2. It should be noted that testing for flammability or oxygen content does not provide a suitable means of measuring for toxicity, nor *vice versa*.

7.5 It should be emphasized that the internal structure of the space, cargo, cargo residues and tank coatings may also present situations where oxygen deficient areas may exist, and should always be suspected, even when an enclosed space has been satisfactorily tested as being suitable for entry. This is particularly the case for spaces where the path of the supply and outlet ventilation is obstructed by structural members or cargo.

8 PRECAUTIONS DURING ENTRY

8.1 The atmosphere should be tested frequently whilst the space is occupied and persons should be instructed to leave the space should there be a deterioration in the conditions.

8.2 Persons entering enclosed spaces should be provided with calibrated and tested multi-gas detectors that monitor the levels of oxygen, carbon monoxide and other gases as appropriate.

8.3 Ventilation should continue during the period that the space is occupied and during temporary breaks. Before re-entry after a break, the atmosphere should be re-tested. In the event of failure of the ventilation system, any persons in the space should leave immediately.

8.4 Particular care should be exhibited when working on pipelines and valves within the space. If conditions change during the work, increased frequency of testing of the atmosphere should be performed. Changing conditions that may occur include increasing

* It should be noted that the term Occupational Exposure Limit (OEL) includes the Permissible Exposure Limit (PEL), Maximum Admissible Concentration (MAC) and Threshold Limit Value (TLV) or any other internationally recognized terms.

ambient temperatures, the use of oxygen-fuel torches, mobile plant, work activities in the enclosed space that could evolve vapours, work breaks, or if the ship is ballasted or trimmed during the work.

8.5 In the event of an emergency, under no circumstances should the attending crew member enter the space before help has arrived and the situation has been evaluated to ensure the safety of those entering the space to undertake rescue operations. Only properly trained and equipped personnel should perform rescue operations in enclosed spaces.

9 ADDITIONAL PRECAUTIONS FOR ENTRY INTO A SPACE WHERE THE ATMOSPHERE IS KNOWN OR SUSPECTED TO BE UNSAFE

9.1 Spaces that have not been tested should be considered unsafe for persons to enter. If the atmosphere in an enclosed space is suspected or known to be unsafe, the space should only be entered when no practical alternative exists. Entry should only be made for further testing, essential operation, safety of life or safety of a ship. The number of persons entering the space should be the minimum compatible with the work to be performed.

9.2 Suitable breathing apparatus, e.g., of the air-line or self-contained type, should always be worn, and only personnel trained in its use should be allowed to enter the space. Air-purifying respirators should not be used as they do not provide a supply of clean air from a source independent of the atmosphere within the space.

9.3 Persons entering enclosed spaces should be provided with calibrated and tested multi-gas detectors that monitor the levels of oxygen, carbon monoxide and other gases as appropriate.

9.4 Rescue harnesses should be worn and, unless impractical, lifelines should be used.

9.5 Appropriate protective clothing should be worn, particularly where there is any risk of toxic substances or chemicals coming into contact with the skin or eyes of those entering the space.

9.6 The advice in paragraph 8.5 concerning emergency rescue operations is particularly relevant in this context.

10 HAZARDS RELATED TO SPECIFIC TYPES OF SHIPS OR CARGO

10.1 Dangerous goods in packaged form

10.1.1 The atmosphere of any space containing dangerous goods may put at risk the health or life of any person entering it. Dangers may include flammable, toxic or corrosive gases or vapours that displace oxygen, residues on packages and spilled material. The same hazards may be present in spaces adjacent to the cargo spaces. Information on the hazards of specific substances is contained in the International Maritime Dangerous Goods (IMDG) Code, the Emergency Procedures for Ships Carrying Dangerous Goods (EMS) and Material Safety Data Sheets (MSDS)[*]. If there is evidence or suspicion that leakage of dangerous substances has occurred, the precautions specified in section 9 should be followed.

[*] Refer to the Recommendations for material safety data sheets (MSDS) for MARPOL Annex I oil cargo and oil fuel (resolution MSC.286(86)).

10.1.2 Personnel required to deal with spillages or to remove defective or damaged packages should be appropriately trained and wear suitable breathing apparatus and appropriate protective clothing.

10.2 Liquid bulk

The tanker industry has produced extensive advice to operators and crews of ships engaged in the bulk carriage of oil, chemicals and liquefied gases, in the form of specialist international safety guides. Information in the guides on enclosed space entry amplifies these Recommendations and should be used as the basis for preparing entry plans.

10.3 Solid bulk

On ships carrying solid bulk cargoes, dangerous atmospheres may develop in cargo spaces and adjacent spaces. The dangers may include flammability, toxicity, oxygen depletion or self-heating, as identified in the shipper's declaration. For additional information, reference should be made to the International Maritime Solid Bulk Cargoes (IMSBC) Code.

10.4 Use of Nitrogen as an inert gas*

Nitrogen is a colourless and odourless gas that, when used as an inert gas, causes oxygen deficiency in enclosed spaces and at exhaust openings on deck during purging of tanks and void spaces and use in cargo holds. It should be noted that one deep breath of 100% nitrogen gas will be fatal.

10.5 Oxygen-depleting cargoes and materials

A prominent risk with such cargoes is oxygen depletion due to the inherent form of the cargo, for example, self-heating, oxidation of metals and ores or decomposition of vegetable oils, fish oils, animal fats, grain and other organic materials or their residues. The materials listed below are known to be capable of causing oxygen depletion. However, the list is not exhaustive. Oxygen depletion may also be caused by other materials of vegetable or animal origin, by flammable or spontaneously combustible materials and by materials with a high metal content, including, but not limited to:

.1 grain, grain products and residues from grain processing (such as bran, crushed grain, crushed malt or meal), hops, malt husks and spent malt;

.2 oilseeds as well as products and residues from oilseeds (such as seed expellers, seed cake, oil cake and meal);

.3 copra;

.4 wood in such forms as packaged timber, round wood, logs, pulpwood, props (pit props and other propwood), woodchips, woodshavings, wood pellets and sawdust;

.5 jute, hemp, flax, sisal, kapok, cotton and other vegetable fibres (such as esparto grass/Spanish grass, hay, straw, bhusa), empty bags, cotton waste, animal fibres, animal and vegetable fabric, wool waste and rags;

.6 fish, fishmeal and fishscrap;

* Refer to the Guidelines on tank entry for tankers using nitrogen as an inerting medium (MSC.1/Circ.1401).

.7 guano;

.8 sulphidic ores and ore concentrates;

.9 charcoal, coal, lignite and coal products;

.10 direct reduced iron (DRI);

.11 dry ice;

.12 metal wastes and chips, iron swarf, steel and other turnings, borings, drillings, shavings, filings and cuttings; and

.13 scrap metal.

10.6 Fumigation

When a ship is fumigated, the detailed recommendations contained in the Recommendations on the safe use of pesticides in ships (MSC.1/Circ.1358) should be followed. Spaces adjacent to fumigated spaces should be treated as if fumigated.

11 CONCLUSION

Failure to observe simple procedures can lead to persons being unexpectedly overcome when entering enclosed spaces. Observance of the principles and procedures outlined above will form a reliable basis for assessing risks in such spaces and for taking necessary precautions.

APPENDIX

EXAMPLE OF AN ENCLOSED SPACE ENTRY PERMIT

This permit relates to entry into any enclosed space and should be completed by the master or responsible person and by any persons entering the space, e.g., competent person and attendant.

GENERAL

Location/name of enclosed space

Reason for entry .....

This permit is valid from:_____hrs Date .....
to:_____hrs Date .....
(See Note 1)

SECTION 1 – PRE-ENTRY PREPARATION

(To be checked by the master or nominated responsible person)

	Yes	No
• Has the space been thoroughly ventilated by mechanical means?	.....	.....
• Has the space been segregated by blanking off or isolating all connecting pipelines or valves and electrical power/equipment?	.....	.....
• Has the space been cleaned where necessary?	.....	.....
• Has the space been tested and found safe for entry? (See note 2)	.....	.....
• Pre-entry atmosphere test readings:		
- oxygen .....% vol (21%)* By:		
- hydrocarbon .....% LFL (less than 1%)		
- toxic gases ..... ppm (less than 50% OEL of the specific gas) Time: (See note 3)		
• Have arrangements been made for frequent atmosphere checks to be made while the space is occupied and after work breaks?	.....	.....
• Have arrangements been made for the space to be continuously ventilated throughout the period of occupation and during work breaks?	.....	.....
• Are access and illumination adequate?	.....	.....

* Note that national requirements may determine the safe atmosphere range.

	Yes	No
• Is rescue and resuscitation equipment available for immediate use by the entrance to the space?	"	"
• Has an attendant been designated to be in constant attendance at the entrance to the space?	"	"
• Has the officer of the watch (bridge, engine-room, cargo control room) been advised of the planned entry?	"	"
• Has a system of communication between all parties been tested and emergency signals agreed?	"	"
• Are emergency and evacuation procedures established and understood by all personnel involved with the enclosed space entry?	"	"
• Is all equipment used in good working condition and inspected prior to entry?	"	"
• Are personnel properly clothed and equipped?	"	"

SECTION 2 – PRE-ENTRY CHECKS
(To be checked by each person entering the space)

	Yes	No
• I have received instructions or permission from the master or nominated responsible person to enter the enclosed space	"	"
• Section 1 of this permit has been satisfactorily completed by the master or nominated responsible person	"	"
• I have agreed and understand the communication procedures	"	"
• I have agreed upon a reporting interval of ..... minutes	"	"
• Emergency and evacuation procedures have been agreed and are understood	"	"
• I am aware that the space must be vacated immediately in the event of ventilation failure or if atmosphere tests show a change from agreed safe criteria	"	"

SECTION 3 – BREATHING APPARATUS AND OTHER EQUIPMENT
(To be checked jointly by the master or nominated responsible person and the person who is to enter the space)

	Yes	No
• Those entering the space are familiar with any breathing apparatus to be used	.....	.....
• The breathing apparatus has been tested as follows:		
- gauge and capacity of air supply	.....	.....
- low pressure audible alarm if fitted	.....	.....
- face mask – under positive pressure and not leaking	.....	.....
• The means of communication has been tested and emergency signals agreed	.....	.....
• All personnel entering the space have been provided with rescue harnesses and, where practicable, lifelines	.....	.....

Signed upon completion of sections 1, 2 and 3 by:

Master or nominated responsible person ..... Date ..... Time

Attendant ..... Date ..... Time

Person entering the space..... Date ..... Time

SECTION 4 – PERSONNEL ENTRY
(To be completed by the responsible person supervising entry)

Names .....

Time in ..... Time out .....

SECTION 5 – COMPLETION OF JOB
(To be completed by the responsible person supervising entry)

• Job completed	Date	Time .....
• Space secured against entry	Date	Time .....
• The officer of the watch has been duly informed	Date	Time.....

Signed upon completion of sections 4 and 5 by:

Responsible person supervising entry ..... Date ..... Time .....

THIS PERMIT IS RENDERED INVALID SHOULD VENTILATION OF THE SPACE STOP OR IF ANY OF THE CONDITIONS NOTED IN THE CHECKLIST CHANGE

Notes:

1 The permit should contain a clear indication as to its maximum period of validity.

2 In order to obtain a representative cross-section of the space's atmosphere, samples should be taken from several levels and through as many openings as possible. Ventilation should be stopped for about 10 min before the pre-entry atmosphere tests are taken.

3 Tests for specific toxic contaminants, such as benzene or hydrogen sulphide, should be undertaken depending on the nature of the previous contents of the space.

_____

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MSC.1/Circ.1402
14 June 2011

SAFETY OF PILOT TRANSFER ARRANGMENTS

1 The Maritime Safety Committee, at its eighty-eighth session (24 November to 3 December 2010), adopted, by resolution MSC.308(88), amendments to SOLAS regulation V/23 relating to pilot transfer arrangements.

2 The Committee also agreed to encourage Member Governments to formally include pilot transfer arrangement as part of the safety equipment that their port State control officers would be examining in the course of an initial port State control inspection with a view to minimizing the risk of injury and loss of life in pilot transfer arrangements.

3 Consequently, the Committee, at its eighty-ninth session (11 to 20 May 2011), approved the issuance of this circular and invited Member Governments to bring it and the above-mentioned requirements of SOLAS 74 concerning the safety of pilot transfer arrangements to the attention of duly authorized officials exercising port State control and other parties, as appropriate.

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MSC.1/Circ.1403
23 May 2011

MSC CIRCULAR

REVISED NAVTEX MANUAL

1 The Maritime Safety Committee (MSC), at its eighty-ninth session (11 to 20 May 2011), noted and approved the revised NAVTEX Manual, prepared by IHO, WMO and IMSO and agreed by the Sub-Committee on Radiocommunications and Search and Rescue (COMSAR), at its fifteenth session (7 to 11 March 2011), as set out in the attachment.

2 This circular supersedes documents COMSAR/Circ.7, COMSAR/Circ.28 and COMSAR/Circ.34, and replaces the existing text of the NAVTEX Manual.

3 The Committee decided that the revised text of the NAVTEX Manual will come into force on 1 January 2013.

PREFACE

SOLAS regulation IV/12.2 states that "Every ship, while at sea, shall maintain a radio watch for broadcasts of maritime safety information on the appropriate frequency or frequencies on which such information is broadcast for the area in which the ship is navigating".

At the request of the IMO Sub-Committee on Radiocommunications, the NAVTEX Manual was first produced in 1988. Three subsequent editions have been produced, with the fourth edition published in 2005 containing amendments endorsed by the Maritime Safety Committee at its seventy-eighth session in May 2004 by MSC/Circ.1122.

At its seventh meeting in September 2005, the IHO Commission on the Promulgation of Radio Navigational Warnings (CPRNW[1]) established a Working Group to review all World-Wide Navigational Warning Service (WWNWS) documentation. The Working Group included representation from the WMO and firstly prepared revisions to IMO resolutions A.705(17), "Promulgation of Maritime Safety Information" and A.706(17), "World-Wide Navigational Warning Service". The proposed revisions of these resolutions were circulated to IHO Member States under IHB CL 104/2007, endorsed by COMSAR at its twelfth session in April 2008 and subsequently approved by the Maritime Safety Committee at its eighty-fifth session in November/December 2008 by MSC.1/Circ.1287 and MSC.1/Circ.1288 respectively.

The Working Group then prepared the revised Joint IMO/IHO/WMO Manual on Maritime Safety Information incorporating the revised information from resolutions A.705(17), as amended, and A.706(17), as amended. The revised text was circulated to IHO Member States under cover of IHB CL 70/2008, endorsed by COMSAR at its thirteenth session in January 2009 and subsequently approved by the Maritime Safety Committee at its eighty-sixth session in May/June 2009.

The Working Group subsequently prepared the third revision of the International SafetyNET Manual. The revised text of the International SafetyNET Manual was circulated to IHO Member States under cover of IHB CL 68/2009, endorsed by COMSAR at its fourteenth session in March 2010 and approved by the Maritime Safety Committee at its eighty-seventh session in May 2010 by MSC.1/Circ.1364.

Continuing with the holistic approach of reviewing all maritime safety information documents from the top-down, the Working Group prepared the fifth revision of the NAVTEX Manual. The revised text of the NAVTEX Manual was circulated to IHO Member States under cover of IHB CL 74/2010, endorsed by COMSAR at its fifteenth session in March 2011 and subsequently approved by the Maritime Safety Committee at its eighty-ninth session in May 2011.

[1] CPRNW was renamed the IHO WWNWS Sub Committee (WWNWS) with effect from 1 January 2009.

CONTENTS

1 – GENERAL INFORMATION

NAVTEX is an international automated direct-printing service for promulgation of navigational and meteorological warnings, meteorological forecasts and other urgent information to ships. It was developed to provide a low-cost, simple and automated means of receiving maritime safety information on board ships at sea in coastal waters. The information transmitted may be relevant to all sizes and types of vessel and the selective message-rejection feature ensures that every mariner can receive a safety information broadcast which is tailored to his particular needs.

NAVTEX fulfils an integral role in the Global Maritime Distress and Safety System (GMDSS) developed by the International Maritime Organization (IMO) and incorporated into the 1988 amendments to the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended, as a requirement for ships to which the Convention applies.

This Manual describes the structure and operation of the NAVTEX Service. It is intended primarily for use by Maritime Administrations and others concerned with the preparation and broadcasting of maritime safety information. It will also be of interest to seafarers, shipowners and others who need to receive such information in order to safely go about their business at sea. It should be used in conjunction with the Joint IMO/IHO/WMO Manual on Maritime Safety Information (also published as the IHO/IMO World-Wide Navigational Warning Service Guidance Document, IHO Publication S-53, and S-53 Appendix 1).

2 – NAVTEX SERVICE

2.1 Introduction

2.1.1 NAVTEX provides shipping with navigational and meteorological warnings, meteorological forecasts and other urgent information (as listed in **Table 1**, Section 5) by automatic display or print-out from a dedicated receiver. It is suitable for use in all sizes and types of ships. **Figure 1** illustrates the way the service is typically structured.

2.1.2 NAVTEX is a component of the IMO/IHO World-Wide Navigational Warning Service (WWNWS) defined by IMO Assembly resolution A.706(l7), as amended, and the WMO Manual on Marine Meteorological Services, Part 1*bis*, Provision of warnings and weather and sea bulletins (GMDSS application). It has also been included as an element of the Global Maritime Distress and Safety System (GMDSS).

2.1.3 In the GMDSS, a NAVTEX receiving capability is part of the mandatory equipment which is required to be carried in certain vessels under the provisions of the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended.

2.1.4 Authority for co-ordinating the use of the frequencies 518 kHz, 490 kHz and 4209·5 kHz for NAVTEX services worldwide was effectively delegated by ITU to IMO at WRC-95 through Resolution 339. This was reaffirmed at WRC-97. IMO has vested responsibility for the overall management and co-ordination of the global NAVTEX services in its Co-ordinating Panel on NAVTEX Services. The co-ordination function of the panel with respect to National NAVTEX broadcasts on 490 kHz and 4209·5 kHz is limited to the allocation of transmission identification characters[2]. The Terms of Reference for this panel are attached

[2] The transmitter identification character is a single letter allocated to each transmitter to identify the NAVTEX station and broadcast times.

at Annex 1. It shall be noted that the provisions of the NAVTEX manual do not apply when planning a national NAVTEX service on other nationally assigned frequencies.

2.1.5 Details of operational and planned NAVTEX services are published periodically in the various national lists of radio signals, in an annex to the International Telecommunication Union's (ITU) List IV – List of coast stations and special service stations, and in the GMDSS Master Plan published by IMO in its series of GMDSS Circulars.

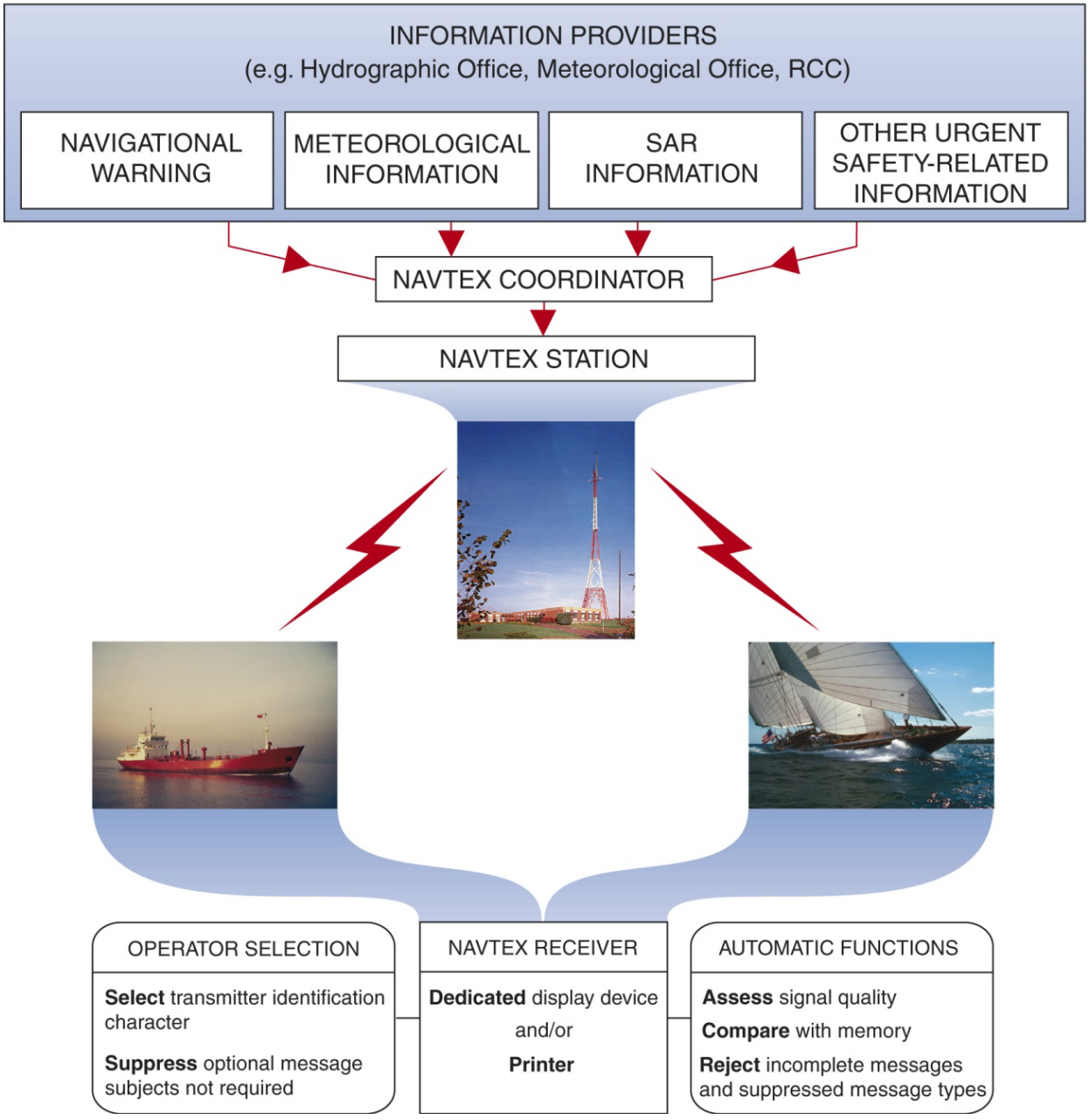

Figure 1 – Basic concept of the NAVTEX system

2.2 Definitions

2.2.1 For the purposes of this manual, the following definitions apply:

.1 *Coastal warning* means a navigational warning or in-force bulletin promulgated as part of a numbered series by a National co-ordinator. Broadcast shall be made by the International NAVTEX service to defined NAVTEX service areas and/or by the International SafetyNET service to coastal warning areas. (In addition, Administrations may issue coastal warnings by other means).

.2 *Coastal warning area* means a unique and precisely defined sea area within a NAVAREA/METAREA or Sub-Area established by a coastal State for the purpose of co-ordinating the broadcast of coastal maritime safety information through the SafetyNET service.

.3 *Global Maritime Distress and Safety System (GMDSS)* means the global communications service based upon automated systems, both satellite and terrestrial, to provide distress alerting and promulgation of maritime safety information for mariners.

.4 *HF NBDP* means High Frequency narrow-band direct-printing, using radio telegraphy as defined in Recommendation ITU-R M.688.

.5 *In-force bulletin* means a list of serial numbers of those NAVAREA, Sub-Area or coastal warnings in force issued and broadcast by the NAVAREA Co-ordinator, Sub-Area Co-ordinator or National Co-ordinator during at least the previous six weeks.

.6 *International NAVTEX service* means the co-ordinated broadcast and automatic reception on 518 kHz of maritime safety information by means of narrow-band direct-printing telegraphy using the English language[3].

.7 *International SafetyNET service* means the co-ordinated broadcasting and automated reception of maritime safety information via the Inmarsat Enhanced Group Call (EGC) system, using the English language, in accordance with the provisions of the International Convention for the Safety of Life at Sea, 1974, as amended.

.8 *Local warning* means a navigational warning which covers inshore waters, often within the limits of jurisdiction of a harbour or port authority.

.9 *Maritime safety information (MSI)*[4] means navigational and meteorological warnings, meteorological forecasts and other urgent safety-related messages broadcast to ships.

.10 *Maritime safety information service* means the internationally and nationally co-ordinated network of broadcasts containing information which is necessary for safe navigation.

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3 As set out in this Manual.

4 As defined in regulation IV/2 of the 1974 SOLAS Convention, as amended.

.11 *METAREA* means a geographical sea area[5] established for the purpose of co-ordinating the broadcast of marine meteorological information. The term METAREA followed by a roman numeral may be used to identify a particular sea area. The delimitation of such areas is not related to and shall not prejudice the delimitation of any boundaries between States.

.12 *METAREA issuing service* means the National Meteorological Service which has accepted responsibility for ensuring that meteorological forecasts and warnings for shipping are disseminated through the international SafetyNET and NAVTEX services to the designated area for which the Service has accepted responsibility under the broadcast requirements of the GMDSS[6].

.13 *Meteorological information* means the marine meteorological warning and forecast information in accordance with the provisions of the International Convention for the Safety of Life at Sea, 1974, as amended.

.14 *National Co-ordinator* means the national authority charged with collating and issuing coastal warnings within a national area of responsibility.

.15 *National NAVTEX service* means the broadcast and automatic reception of maritime safety information by means of narrow-band direct-printing telegraphy using frequencies other than 518 kHz and languages as decided by the Administration concerned.

.16 *National SafetyNET service* means the broadcasting and automated reception of maritime safety information via the Inmarsat EGC system, using languages as decided by the Administration concerned.

.17 *NAVAREA* means a geographical sea area[7] established for the purpose of co-ordinating the broadcast of navigational warnings. The term NAVAREA followed by a roman numeral may be used to identify a particular sea area. The delimitation of such areas is not related to and shall not prejudice the delimitation of any boundaries between States.

.18 *NAVAREA Co-ordinator* means the authority charged with co-ordinating, collating and issuing NAVAREA warnings for a designated NAVAREA.

.19 *NAVAREA warning* means a navigational warning or in-force bulletin promulgated as part of a numbered series by a NAVAREA Co-ordinator.

.20 *Navigational warning* means a message containing urgent information relevant to safe navigation broadcast to ships in accordance with the provisions of the International Convention for the Safety of Life at Sea, 1974, as amended.

.21 *NAVTEX* means the system for the broadcast and automatic reception of maritime safety information by means of narrow band direct-printing telegraphy[8].

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5 Which may include inland seas, lakes and waterways navigable by seagoing ships.

6 In the context of this manual, "designated area" means the NAVTEX service area.

7 Which may include inland seas, lakes and waterways navigable by seagoing ships.

8 See Annex 2.

.22 *NAVTEX coverage area* means an area defined by an arc of a circle having a radius from the transmitter calculated according to the method and criteria given in IMO resolution A.801(19), Annex 4.

.23 *NAVTEX service area* means a unique and precisely defined sea area, wholly contained within the NAVTEX coverage area, for which maritime safety information is provided from a particular NAVTEX transmitter. It is normally defined by a line that takes full account of local propagation conditions and the character and volume of information and maritime traffic patterns in the region, as given in IMO resolution A.801(19), Annex 4.

.24 *NAVTEX Co-ordinator* means the authority charged with operating and managing one or more NAVTEX stations broadcasting maritime safety information as part of the International NAVTEX service.

.25 *Other urgent safety-related information* means maritime safety information broadcast to ships that is not defined as a navigational warning, meteorological information or SAR information. This may include, but is not limited to, significant malfunctions or changes to maritime communications systems, and new or amended mandatory ship reporting systems or maritime regulations affecting ships at sea.

.26 *Rescue Co-ordination Centre (RCC)* means a unit responsible for promoting efficient organization of search and rescue services and for co-ordinating the conduct of search and rescue operations within a search and rescue region.

.27 *SafetyNET* means the international service for the broadcasting and automatic reception of maritime safety information via the Inmarsat EGC system. SafetyNET receiving capability is part of the mandatory equipment which is required to be carried by certain ships in accordance with the provisions of the International Convention for the Safety of Life at Sea, 1974, as amended.

.28 *SAR information* means distress alert relays and other urgent search and rescue information broadcast to ships.

.29 *Sub-Area* means a sub-division of a NAVAREA/METAREA in which a number of countries have established a co-ordinated system for the promulgation of maritime safety information. The delimitation of such areas is not related to and shall not prejudice the delimitation of any boundaries between States.

.30 *Sub-Area Co-ordinator* means the authority charged with co-ordinating, collating and issuing Sub-Area warnings for a designated Sub-Area.

.31 *Sub-Area warning* means a navigational warning promulgated as part of a numbered series by a Sub-Area Co-ordinator. Broadcast shall be made by the International NAVTEX service to defined NAVTEX service areas or by the International SafetyNET service (through the appropriate NAVAREA Co-ordinator).

.32 *UTC* means Co-ordinated Universal Time which is equivalent to GMT (or ZULU) as the international time standard.

.33 *World-Wide Navigational Warning Service (WWNWS)*[9] means the internationally and nationally co-ordinated service for the promulgation of navigational warnings**.**

.34 In the operating procedures *co-ordination* means that the allocation of the time for data broadcast is centralized, the format and criteria of data transmissions are compliant as described in the Joint IMO/IHO/WMO Manual on Maritime Safety Information and that all services are managed as set out in IMO Assembly resolutions A.705(17) as amended and A.(706)17, as amended.

2.2.2 Delimitation of NAVAREAS

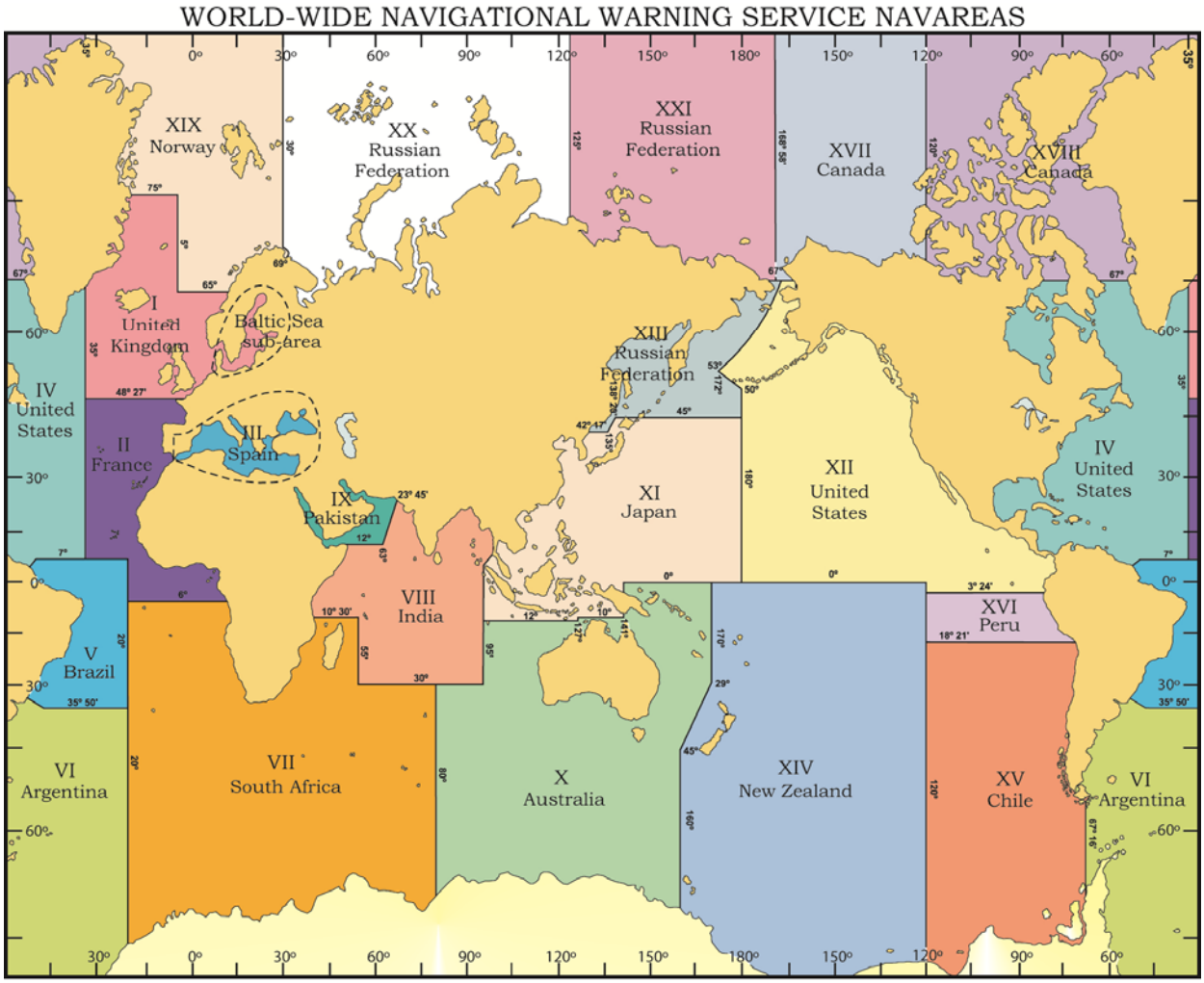


Figure 2
NAVAREAS for co-ordinating and promulgating navigational warnings
The delimitation of such areas is not related to and shall not prejudice the delimitation of any boundaries between States.

9 As set out in resolution A.706(17), as amended.

2.2.3 Delimitation of METAREAS

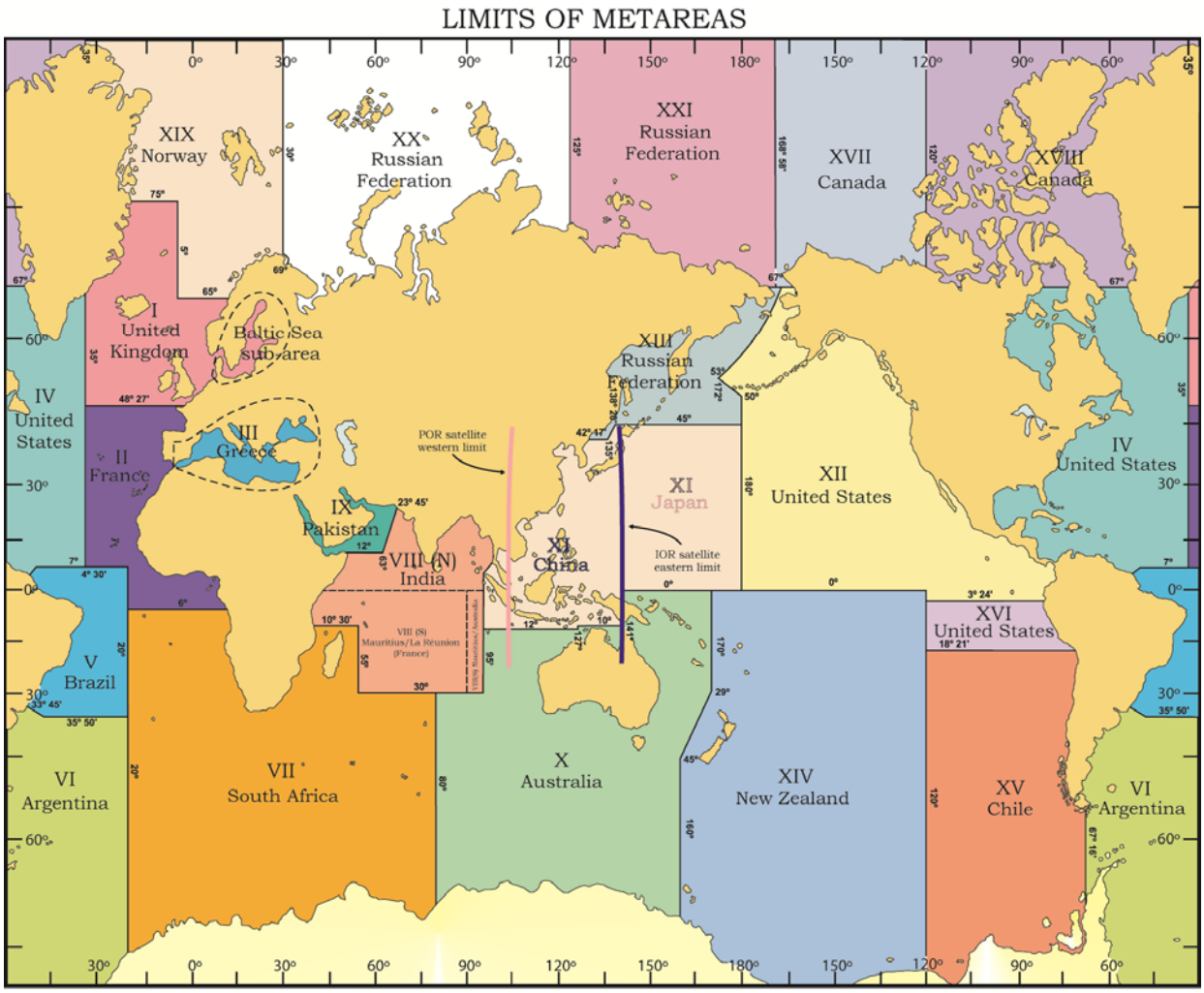


Figure 3
METAREAS for co-ordinating and promulgating meteorological warnings and forecasts
The delimitation of such areas is not related to and shall not prejudice the delimitation of any boundaries between States.

3 – GENERAL FEATURES OF NAVTEX SYSTEM

3.1 The principal features are:

.1 use of a single frequency, with transmissions from stations within and between NAVAREAs and METAREAs co-ordinated on a time-sharing basis to reduce the risk of mutual interference. The following frequencies may be used for NAVTEX broadcasts:

518 kHz

Type of service:	International
Content:	Maritime safety information
Language:	English
Co-ordination:	By IMO NAVTEX Co-ordinating Panel

490 kHz and 4209·5 kHz

Type of service:	National
Content:	Maritime safety information
Language:	As selected by the national administration
Co-ordination:	Transmitter identification character allocated by IMO NAVTEX Co-ordinating Panel

Other national frequencies allocated by the ITU

Type of service:	National
Content:	As selected by the national administration
Language:	As selected by the national administration
Co-ordination:	By appropriate national administration

.2 a dedicated NAVTEX receiver, comprising radio receivers, a signal processor and either:

a) an integrated printing device; or
b) a dedicated display device with a printer output port and a non-volatile message memory; or
c) a connection to an integrated navigation system and a non-volatile message memory;

which has the ability to select messages to be printed, or viewed and stored in a memory according to:

a) a technical code ($B_1B_2B_3B_4$), which appears in the preamble of each message; and
b) whether or not the particular message has already been printed/received;

3.2 The operational and technical characteristics of the NAVTEX system are contained in Recommendation ITU-R M.540[10]. Performance standards for shipborne equipment, if installed before 1 July 2005, are laid down in IMO Assembly resolution A.525(13). If installed on or after 1 July 2005, they should conform to IMO resolution MSC.148(77)[11].

4 – PLANNING NAVTEX SERVICES

4.1 When planning NAVTEX services, it is strongly recommended that administrations obtain guidance at an early stage from IMO, through its NAVTEX Co-ordinating Panel. This may be particularly important when installation of new stations and/or purchase of new equipment is under consideration. Details of how to contact the Panel may be found at Annex 1.

4.2 International NAVTEX services on 518 kHz

When planning an International NAVTEX service it is essential to appreciate the high level of national and international co-ordination required. The central principles which should be borne in mind are as follows:

10 See Annex 2.
11 See Annex 3.

.1 all NAVTEX stations are part of the strategic infrastructure of both the GMDSS and WWNWS.

.**2** it is essential for the efficiency and effectiveness of the service that a minimum number of stations are used. This may require national administrations to either share facilities or promulgate information provided by administrations of other nations.

.3 each station shall contribute to the overall service in a co-ordinated way, bearing in mind the geographical area covered by each station and the effective co-ordination and control of information to be transmitted.

.4 the two basic areas which must be defined when establishing a NAVTEX station are the NAVTEX coverage area and the NAVTEX service area. Each station will provide all the information for a particular NAVTEX service area. The boundaries of the NAVTEX service area must be wholly contained within the coverage area, and must not overlap with adjacent NAVTEX service areas **(see Figure 4)**.

.5 national administrations seeking to establish NAVTEX services shall undertake preliminary discussions with the NAVAREA Co-ordinator, METAREA Issuing Services and neighbouring administrations prior to formal application to IMO through the IMO NAVTEX Co-ordinating Panel. These discussions shall consider the most appropriate NAVTEX service area boundaries, possible geographical locations for transmitter sites to ensure optimal coverage and links with Information Providers.

.6 the range of a NAVTEX transmitter depends on the transmitted power and local radio propagation conditions. The actual range achieved shall be adjusted to the minimum required for adequate reception in the specified NAVTEX service area, taking into account the needs of ships approaching from other areas. Experience indicates that the required range of 250 to 400 nautical miles will normally be attained by transmitted power of no more than 1 kW during daylight with a 60% reduction during night conditions.

.7 after the choice of transmitter sites, the main need for co-ordination lies in the assignment of B_1 transmitter identification characters (time schedules) and the agreement of proposed NAVTEX service areas (if appropriate). Preliminary discussions between national administrations seeking to establish or amend NAVTEX services and neighbouring administrations shall be co-ordinated by the NAVAREA Co-ordinator prior to formal application for a B_1 transmitter identification character. Throughout the process the IMO NAVTEX Co-ordinating Panel is available to advise and liaise on the final limits of NAVTEX service areas if these cannot be agreed locally.

.8 the IMO NAVTEX Co-ordinating Panel will only allocate B_1 transmitter identification characters after the NAVTEX service areas have been agreed.

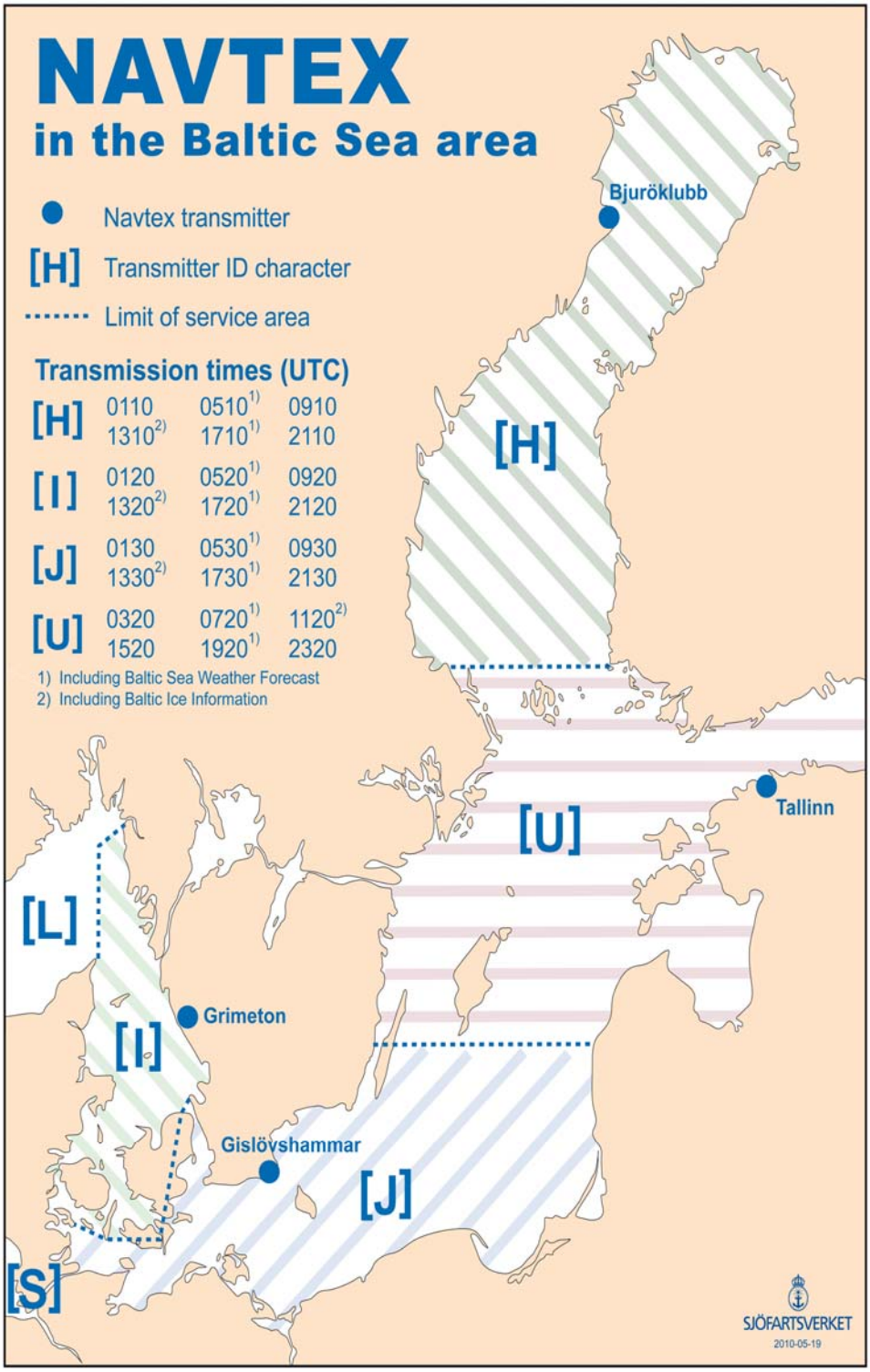


Figure 4 – Example of NAVTEX service areas

The Baltic Sea and its approaches has been divided into four individual NAVTEX service areas. Within each service area, maritime safety information is provided from a separate NAVTEX station which has been allocated a dedicated B_1 transmitter identification character. It is a fundamental requirement that the range of each NAVTEX transmitter is sufficient to include the whole of the NAVTEX service area assigned to its B_1 transmitter identification character.

.9 once a NAVTEX transmitter has been declared operational, if a national administration wishes to:

a) move the transmitter site; and/or
b) amend the limits of its NAVTEX service area

then the whole co-ordination process outlined above must be repeated, keeping the NAVTEX Co-ordinating Panel informed at all times.

.10 a national NAVTEX Co-ordinator shall be established to oversee the operation of the NAVTEX services established by each national administration. The responsibilities of the NAVTEX Co-ordinator are defined in Section 12 of this Manual.

4.3 National NAVTEX services on 490 kHz or 4209·5 kHz

The provisions of the NAVTEX Manual apply to National NAVTEX Services on 490 kHz or 4209.5 kHz. When planning a National NAVTEX Service, the IMO NAVTEX Co-ordinating Panel is responsible for the allocation of B_1 transmitter identification characters; however, the establishment of NAVTEX service areas and the compulsory use of the English language are not required.

4.4 National NAVTEX services on other frequencies

The provisions of the NAVTEX manual do not apply when planning a national NAVTEX service on nationally assigned frequencies.

5 – NAVTEX MESSAGE TECHNICAL CHARACTERS

5.1 Overview of technical characters, B_1, B_2, B_3, B_4

5.1.1 NAVTEX messages include instructions to the NAVTEX receiver for processing maritime safety information in the form of the NAVTEX message identity, which consists of four technical "B" characters which make up an alphanumeric code. In order for messages to be correctly processed, they must consist of data conforming to these B characters:

B_1 Transmitter Identification Character
B_2 Subject Indicator Character
B_3B_4 Message Numbering Characters

B_1 Transmitter Identification Character	**B_2 Subject Indicator Character**	**B_3 B_4 Message Numbering Characters**
1 letter	1 letter	2 digits
A to X	A = Navigational warnings	01 to 99 (message numbering characters "00" are not to be used for routine messages)
	B = Meteorological warnings	
	C = Ice reports	
	D[12] = Search and rescue information, acts of piracy warnings, tsunamis and other natural phenomena	
	E = Meteorological forecasts	
	F = Pilot and VTS service messages	
	G = AIS service messages (non navigational aid)	
	H = LORAN messages	
	I = currently not used	
	J = GNSS messages	
	K = Other electronic navigational aid system messages	
	L = Other Navigational warnings – additional to B_2 character A[13]	
	M = N = O = P = Q = R = S = T = U = currently not used	
	V = W = X = Y = Special services allocation by the IMO NAVTEX Co-ordinating Panel	
	Z = No messages on hand	

Table 1 – Technical "B" characters which make up the full NAVTEX message identity

12 Use of B_2 character D will automatically set off the alarm at the NAVTEX receiver.

13 On some older NAVTEX receivers it may be possible to deselect B_2 character L (continuation of B_2 subject group A), however, it is strongly recommended that this character is not deselected.

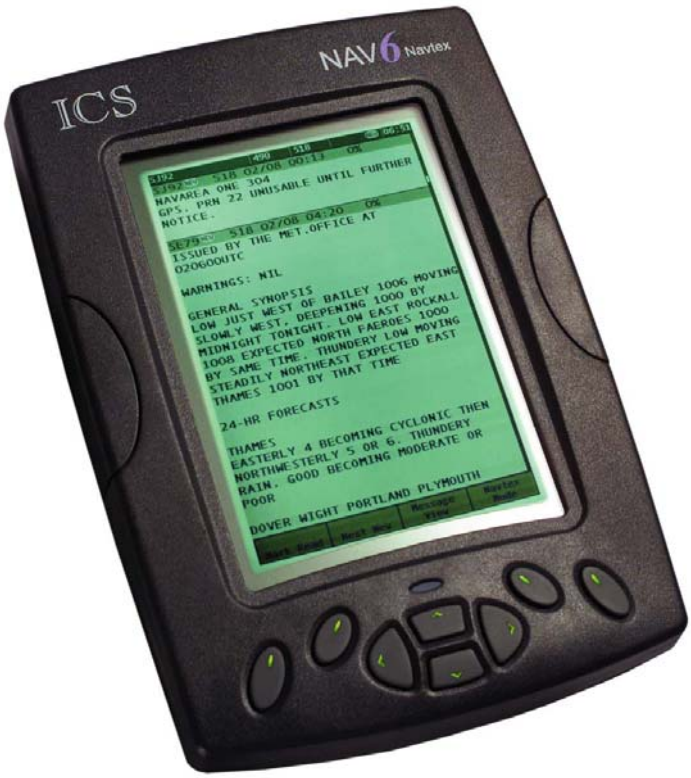


Figure 5 – Example of NAVTEX receiver with LCD Screen

5.2 B_1 – Transmitter Identification Character

5.2.1 The transmitter identification character is a single letter which is allocated to each transmitter. It is used to identify the broadcasts which are to be accepted by the receiver and those to be rejected, and also the time slot for the transmission.

5.2.2 In order to avoid erroneous reception and interference of transmissions from two stations having the same transmitter identification character, it is necessary to ensure that such stations have a large geographical separation. Allocation of transmitter identification characters by alphabetical sequence to adjacent sites can also cause problems; hence, consecutive transmitter identification characters are not normally allocated to adjacent stations. Experience has shown that this removes the risk of a station which over-runs its time slot masking the phasing signal of an adjacent station which is about to begin its transmission.

5.2.2 NAVTEX transmissions have a designed maximum range of about 400 nautical miles. The minimum distance between two transmitters with the same transmitter identification identifier must, therefore, be sufficient to ensure that a receiver cannot be within range of both at the same time.

5.2.3 Close co-ordination between transmitting stations in adjacent NAVAREAs/METAREAs is necessary to achieve this separation. For this reason, national administrations shall request the advice of the IMO NAVTEX Co-ordinating Panel at an early stage in the planning of a new NAVTEX service. The Panel will allocate B_1 transmitter identification characters in such a way as to minimize the risk of interference occurring.

5.2.5 **Table 2** shows the transmitter identification characters and their associated transmission start times used by the IMO NAVTEX Co-ordinating Panel to evaluate and allocate transmitter identification characters A to X, regardless of the geographical position of the station anywhere in the world. Each transmitter identification character is allocated a maximum transmission time of 10 minutes every 4 hours. Because the NAVTEX system always utilizes a single frequency, it is **fundamental** to its successful operation that the following time slots are strictly adhered to, and that broadcasts do not overrun their allotted 10 minutes.

Transmitter identification character (B_1)	Transmission start times (UTC)					
A	0000	0400	0800	1200	1600	2000
B	0010	0410	0810	1210	1610	2010
C	0020	0420	0820	1220	1620	2020
D	0030	0430	0830	1230	1630	2030
E	0040	0440	0840	1240	1640	2040
F	0050	0450	0850	1250	1650	2050
G	0100	0500	0900	1300	1700	2100
H	0110	0510	0910	1310	1710	2110
I	0120	0520	0920	1320	1720	2120
J	0130	0530	0930	1330	1730	2130
K	0140	0540	0940	1340	1740	2140
L	0150	0550	0950	1350	1750	2150
M	0200	0600	1000	1400	1800	2200
N	0210	0610	1010	1410	1810	2210
O	0220	0620	1020	1420	1820	2220
P	0230	0630	1030	1430	1830	2230
Q	0240	0640	1040	1440	1840	2240
R	0250	0650	1050	1450	1850	2250
S	0300	0700	1100	1500	1900	2300
T	0310	0710	1110	1510	1910	2310
U	0320	0720	1120	1520	1920	2320
V	0330	0730	1130	1530	1930	2330
W	0340	0740	1140	1540	1940	2340
X	0350	0750	1150	1550	1950	2350

Table 2 – NAVTEX transmission start times

5.2.6 In some regions, it has become necessary to accommodate a large number of stations. In extreme cases, it has even been necessary to reuse some transmitter identification characters for a second time within a region. Where this occurs every effort is made to ensure stations with the same character are as far apart as possible to reduce the risk of mutual interference.

5.3 B_2 – Subject Indicator Character

5.3.1 Information is grouped by subject in the NAVTEX broadcast and each subject group is allocated a B_2 subject indicator character.

5.3.2 The subject indicator character is used by the receiver to identify the different classes of messages as listed in **Table 1**.

5.3.3 Some subject indicator characters can be used to reject messages concerning certain subjects which may not be required by the ship (e.g., LORAN messages may be rejected by deselecting the B_2 subject indicator character H on the NAVTEX receiver on board a ship which is not fitted with a LORAN receiver).

5.3.4 Reception of messages, transmitted using subject indicator characters A, B, D and L, which have been allocated for navigational warnings, meteorological warnings, search and rescue information, acts of piracy warnings, tsunamis and other natural phenomena, is mandatory and cannot be deselected on the NAVTEX receiver. This has been designed to ensure that ships using NAVTEX always receive the most essential information.

5.3.5 It is not possible to transmit or receive two NAVTEX messages with the same NAVTEX message identity (made up of the four technical characters). Therefore the B_2 subject indicator character L has been designated for use in the unlikely event that a NAVTEX Co-ordinator has more than 99 navigational warning messages in force and requiring transmission at the same time, all using B_2 subject indicator character A, with the same B_1 transmitter identification character.

5.3.6 Messages received which have been transmitted using subject indicator character D will set off an alarm built into the NAVTEX receiver.

5.3.7 In the International NAVTEX Service, Administrations shall obtain the agreement of the IMO NAVTEX Co-ordinating Panel for all proposals for the use of special service subject indicator characters. Such proposals shall meet the following criteria:

.1 The full international service must remain unaffected.

.2 The special service broadcasts shall be transmitted only when time allows, and with due regard to the necessity for the frequency to remain unused for a high percentage of the time.

.3 The special service broadcast shall only be used for its approved purpose.

5.4 B_3 B_4 – Message Numbering Characters (NAVTEX Number)

5.4.1 Each message within each subject group, is allocated a two digit sequential serial number, beginning at 01 and ending at 99. The B_3B_4 message numbering characters together, are often referred to as the "NAVTEX number".

5.4.2 The NAVTEX number is solely allocated as a component of the NAVTEX message identity and should not be confused with (and bears no correlation to), the series identity and consecutive number of the NAVAREA or Coastal warning contained in the message.

5.4.3 Messages broadcast using NAVTEX number B_3B_4 = 00 cannot be rejected and will automatically override any selection of B_1 transmitter identification characters as well as any B_2 subject indicator characters selected on the NAVTEX receiver.

5.4.4 Use of NAVTEX number B_3B_4 = 00 must therefore be **strictly controlled,** since messages carrying it will always be printed or displayed every time they are received. Routine messages and service messages must never be allocated B_3B_4 = 00. The correct use of B_2 characters A, B, D and L, will ensure that messages containing safety information will always be printed or displayed on first receipt.

6 – MESSAGE IDENTITY

6.1 The individual NAVTEX message identity is the amalgamation of all four technical characters $B_1B_2B_3B_4$ (transmitter identification character/subject indicator character/message numbering characters).

6.2 When a message is received for the first time by a NAVTEX receiver, the message identity is recorded and stored in the memory for 72 hours. This ensures that subsequent transmissions of the same message are not re-printed or repeated in the display, unless they are re-received over 72 hours later. In the unlikely event that all 99 NAVTEX numbers for a particular subject group, from a particular transmitter, are in use at the same time, or have been allocated within the past 72 hours, an alternative B_2 character must be utilized; for example, B_2 = L has been set aside to be used for additional navigational warnings if all 99 NAVTEX numbers for subject group B_2 = A are in use.

6.3 Each NAVTEX message identity shall be allocated by the relevant NAVTEX Co-ordinator, who is the authority responsible for the selection of information to be broadcast by each transmitter within each subject group. A single NAVTEX Co-ordinator may have more than one transmitter under their control. Specific advice on the use of alternative B_2 subject indicator characters as mentioned in **6.2** above, can be provided by the IMO NAVTEX Co-ordinating Panel.

7 – MESSAGE FORMAT

7.1 NAVTEX messages must be composed in accordance to the guidelines contained in the Joint IMO/IHO/WMO Manual on Maritime Safety Information and IHO Publication S-53. The format of all messages shall be in strict accordance with **Figure 6**. This defines the essential elements of the messages which influence the operation of the receiver. Great care is required to avoid errors of syntax in the groups ZCZC $B_1B_2B_3B_4$ and NNNN as they will cause receivers to operate incorrectly, and may well result in messages not being received.

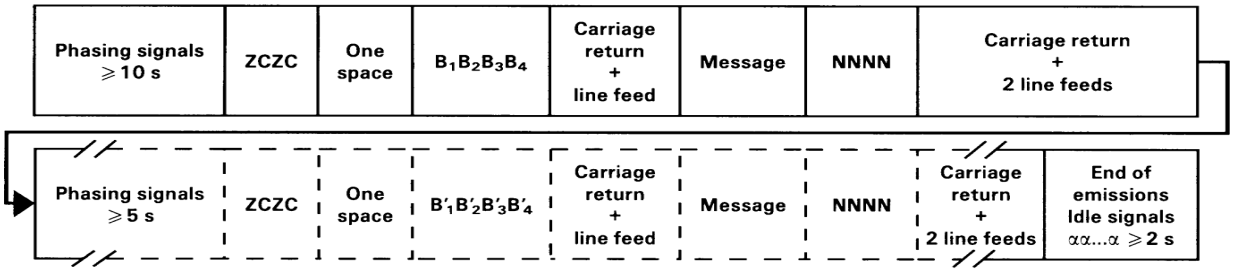


Figure 6 – Standard format for NAVTEX messages

7.2 The phasing signal is automatically transmitted by the NAVTEX transmitter at the beginning of each message and is critical to the effective operation of the system. It is this signal which enables a receiver to lock-on to a particular station's transmission, providing the frequency is not already in use.

7.3 If another station within transmitting range and with a time slot prior to the station selected overruns its time slot (regardless of the B_1 transmitter identification character in use), its transmission will blank the phasing signal of the subsequent transmitter. It will then seem to the receiver as if the second station is off the air and its broadcast will not be received, possibly denying the user significant safety information. This is the primary reason behind the importance of each station adhering to its allocated time slots. Similarly if the phasing signal for a particular station is too short, some receivers will be unable to lock on to the transmission.

7.4 Basic message elements:

Element	Example
Phasing signal	
Start of message group	ZCZC
One space	
NAVTEX message identity	FA01
Carriage return + line feed	
Message content	(Date Time Group – Optional e.g. 040735 UTC OCT 10) NAV I 114/10 ENGLISH CHANNEL. START POINT SOUTHWARD. CHART BA 442 (INT 1701). UNEXPLODED ORDNANCE LOCATED 49-51.97N 003-39.54W AND 49-55.24N 003-40.79W.
End of message instruction	NNNN
Carriage return + two line feeds	
Phasing signal	

Table 3 – Basic message elements

7.5 When a message has been received error-free, a record is made by the receiver of the NAVTEX message identity. This unique identifier is used to suppress the printing or display of repeated transmissions of the same message.

7.6 On national NAVTEX services it is important to keep to the same basic message format as that required for the International NAVTEX service. It is also important to ensure that the full broadcast does not overrun the allocated time slot. However, in order to meet national requirements, message content may deviate from the guidelines provided for the International NAVTEX Service if required.

7.7 Examples of Navigational Warning messages

```
ZCZC LA18
140356 UTC AUG 10
NORWEGIAN NAV.WARNING 280
CHART 4
AREA OSLOFJORDEN
TORPENE LIGHTBUOY 59-46.1N 010-
33.2E UNLIT
NNNN

ZCZC LA26
250911 UTC JUN 10
DANISH NAVIGATIONAL WARNING NO.
154/10
KATTEGAT, AALBORG BIGHT
LIGHTHOUSE SVITRINGEN RENDE NO.13
56-54.4N 010-30.6E DESTROYED AND
MAKES AN OBSTRUCTION.
DEPTH ABOVE FOUNDATION 1 METRE.
THE POS. IS MARKED AS FOLLOWS:
GREEN LIGHT BUOY Q.G. APPROX 50M
SW
YELLOW BUOY APPROX. 50M N
YELLOW BUOY APPROX. 50M ESE
MARINERS ARE ADVISED TO KEEP WELL
CLEAR
NNNN

ZCZC SA38
NAVTEX-HAMBURG (NCC)
131120 UTC SEP 10
NAV WARN NO. 428
TSS TERSCHELLING-GERMAN BIGHT
'TG 2/GW' LIGHTBUOY 53-52N 006-22E
OFF STATION AND DAMAGED.
NNNN

ZCZC TA93
151530 UTC JAN
OOSTENDERADIO - INFO 17/10
1. OSTEND HARBOUR - WORKING AREA
EASTERN BREAKWATER. ALL SHIPPING
(EXCEPT GOVERNMENT VESSELS AND
WORKBOATS INVOLVED IN THIS
PROJECT) FORBIDDEN IN THE WORK ING
AREA BOUNDED BY THE FOLLOWING POS:
51-14.278N 002-55.719E
51-14.424N 002-55.696E
51-14.840N 002-55.370E
51-14.579N 002-55.058E
51-14.462N 002-55.186E
51-14.381N 002-55.293E
51-14.253N 002-55.360E
SHIPPING REQUESTED TO PASS WITH
REDUCED SPEED
2. CANCEL INFO 121/09
NNNN
```

```
ZCZC KA79
AVURNAV CHERBOURG 098
DOVER STRAIT TSS
AIS AID TO NAVIGATION
MMSI NUMBER: 992271107
ETABLISHED ON ZC2 BOUY
50-53.6N 001-30.9E (WGS 84)
NNNN

ZCZC MA99
301435 UTC AUG 10
WZ 972
ENGLAND, EAST COAST.
THAMES ESTUARY.
1. EXPOSED CABLE EXISTS ON SEABED
IN VICINITY OF LINE JOINING:
51-28.7N 000-46.8E
51-29.2N 001-01.7E
51-28.5N 001-09.5E
51-28.8N 001-14.0E
51-28.3N 001-18.6E AND
51-28.7N 001-25.2E.
WIDE BERTH REQUESTED.
2. CANCEL WZ957
NNNN

ZCZC JA93
101200 UTC SEP
GERMAN NAV WARN 424
WESTERN BALTIC. FEHMARN.
PUTTGARDEN.
UNDERWATER OPERATIONS BY 'DEEP
DIVER 1/J8HC7', IN VICINITY OF:
54-32.8N 011-16.9E. GUARD VESSELS
STANDING BY VHF CHANNEL 16. 0.5 NM
BERTH REQUESTED
NNNN

ZCZC MA97
291351 UTC AUG
NAVAREA I 238/10
ENGLAND EAST COAST.
THAMES ESTUARY APPROACHES.
CHART BA 1138(INT 1561).
WAVERIDER LIGHT-BUOY AND FOUR
GUARD
LIGHT-BUOYS, ALL FL (5) Y.20S,
ESTABLISHED 51-42.5N 001-51.0E.
WIDE BERTH REQUESTED.
NNNN

ZCZC JA38
051444 UTC AUG
KALININGRAD NAV WARN 097
SOUTHEASTERN BALTIC, KUSHKAYA KOSA
LIGHT LESNOJ 55-01.0N 020-36.8E
UNLIT
NNNN
```

7.8 Examples of Meteorological messages

OE35
ISSUED BY THE MET OFFICE AT 0620
ON TUESDAY 14 SEPTEMBER

GALE WARNINGS: LUNDY FASTNET IRISH
SEA ROCKALL MALIN
HEBRIDES BAILEY FAIR ISLE FAEROES
SE ICELAND

THE GENERAL SITUATION AT MIDNIGHT
LOW NE OF ICELAND 986, MOV
SWWARDS, THEN SEWARDS, EXP N
HEBRIDES 988 BY MIDNIGHT TONIGHT

24-HR FCSTS

LUNDY FASTNET
SW VEER NW 5 TO 7, OCNL GALE 8 AT
FIRST. ROUGH. RAIN,
FAIR LATER. MOD OR POOR, BECMG
GOOD

IRISH SEA
SW VEER NW 5 TO 7, OCNL GALE 8,
PERHAPS SEV GALE 9 LATER.
ROUGH. RAIN THEN SQUALLY SHWRS.
MOD OR GOOD, OCNL POOR AT
FIRST

ROCKALL MALIN HEBRIDES BAILEY
W 6 TO GALE 8, OCNL SEV GALE 9,
VEER NW LATER. VERY ROUGH
OR HIGH. SQUALLY SHWRS. MOD OR
GOOD, OCNL POOR

FAIR ISLE FAEROES
SW 5 TO 7, OCNL GALE 8 IN S, VEER
N 5 OR 6 LATER. ROUGH
BECMG VERY ROUGH OR HIGH. SQUALLY
SHWRS. MOD OR GOOD

SE ICELAND
SW BECMG CYCLONIC, THEN N 5 TO 7,
INCR GALE 8 LATER.
ROUGH, BECMG VERY ROUGH IN S.
SQUALLY SHWRS. MOD OR GOOD,
OCNL POOR

OUTLOOK FLW 24 HOURS:
STRG WINDS EXP IN LUNDY AND
FASTNET. GALES EXP IN ALL
OTHER AREAS WITH SEV GALES IN
IRISH SEA, MALIN, HEBRIDES
AND SE ICELAND

IB54
WWJP73 RJTD 140600
IMPORTANT WARNING FOR YOKOHAMA
NAVTEX AREA 140600 UTC ISSUED AT
140900 UTC

LOW 1002HPA AT 38N 150E MOVING SE
10 KNOTS
COLD FRONT FROM 38N 150E TO 34N
143E 31N 139E 30N 133E
STATIONARY FRONT FROM 30N 133E TO
30N 127E 31N 122E 31N 119E

WARNING(NEAR GALE) EASTERN SEA OFF
SANRIKU

WARNING(DENSE FOG) EASTERN SEA OFF
SANRIKU POOR VISIBILITY 0.3 MILES
OR LESS IN PLACES

NEXT WARNING WILL BE ISSUED BEFORE
141500 UTC

8 – LANGUAGE AND NATIONAL BROADCAST OPTIONS

8.1 International NAVTEX Service messages on 518 kHz shall be broadcast only in English.

8.2 There is often a requirement for NAVTEX broadcasts to be made in national languages in addition to English. This shall **only** be achieved by the provision of a national NAVTEX service. National NAVTEX services use frequencies other than 518 kHz, and languages as decided by the Administrations concerned. These National NAVTEX services may be broadcast on 490 kHz or 4209·5 kHz, or on an alternative nationally assigned frequency.

9 – INFORMATION CONTROL

9.1 The time-shared nature of NAVTEX services imposes the need for strict discipline in controlling the information flow of the broadcast. To achieve this, it is necessary to co-ordinate the messages in each B_2 category at each transmitter. In general, all messages shall be brief and clear and avoid duplication. Strict adherence to relevant guidelines such as those in IMO Assembly resolution A.706(17), as amended, the Joint IMO/IHO/WMO Manual on Maritime Safety Information and the WMO Manual on Marine Meteorological Services, Part 1*bis*, Provision of warnings and weather and sea bulletins (GMDSS application) is recommended, but certain additional operating procedures have also been found necessary:

.1 messages in each category shall be broadcast in reverse order of receipt by the NAVTEX Co-ordinator, with the latest being broadcast first; and

.2 cancellation messages shall be broadcast once only. The cancelled message shall not be transmitted on the broadcast in which its cancellation message appears.

10 – MESSAGE CONTENT

10.1 It is important that national administrations operating or planning NAVTEX services are quite clear about what sort of information shall or shall not be included in the messages.

10.2 The International NAVTEX service shall be used for transmitting maritime safety information only and shall NOT be used as a medium for providing Notices to Mariners or for broadcasting Local Warnings. NAVTEX is essentially a medium for broadcasting information that is **needed** by ships to safely navigate through the NAVTEX service area of the appropriate NAVTEX station, particularly those ships on coastal passages. More detailed guidance in respect to different classes of messages is given below. Examples of the content and layout of NAVTEX messages are shown in the Joint IMO/IHO/WMO Manual on Maritime Safety Information. This publication shall be available to all personnel responsible for the drafting of messages to be broadcast by NAVTEX stations.

10.2.1 Navigational warnings

.1 coastal warnings and NAVAREA warnings (B_2 = A or L) issued under the guidance of IMO Assembly resolution A.706(17), as amended, which would be of concern to ships in the NAVTEX service area allocated to the transmitter shall be included in the broadcast. Relevant coastal warnings shall normally be repeated at every scheduled transmission for as long as they remain in force; however, if they are readily available to mariners by other official means, for example in Notices to Mariners, then after a period of six weeks they may

no longer be broadcast. NAVTEX Co-ordinators shall arrange to receive NAVAREA warnings appropriate to their area for inclusion in their broadcasts. These shall be broadcast at least twice each day – to avoid overloading the broadcast time slot, they shall normally be scheduled for transmission during slots that do not include weather forecasts (see **12.4**);

.2 a summary of navigational warnings remaining in force shall normally be broadcast each week; and

.3 local warnings shall not be broadcast on NAVTEX, i.e. information relating to inshore waters, often within the limits of jurisdiction of a harbour or port authority, as defined in IMO Assembly resolution A.706(17), as amended.

10.2.2 Meteorological warnings and forecasts

.1 meteorological warnings (B_2 = B), e.g., gale warnings, shall be allocated a priority of IMPORTANT (see Section 11) and be repeated at subsequent scheduled transmissions for as long as the warning is in force. These messages shall contain **only** the appropriate warnings and shall be separate from the weather forecasts;

.2 weather forecasts (B_2 = E) shall be broadcast at least twice each day. This service shall be carefully co-ordinated where transmitters are geographically close together;

.3 routine ice reports are normally broadcast on NAVTEX once a day; and

.4 ice accretion warnings (icing warnings) are normally included in gale warnings. If no gale warning is issued, they are to be treated as a meteorological warning (**see 10.2.2.1**).

10.2.3 Search and rescue information

.1 the NAVTEX broadcast is not suitable for distress traffic. Therefore, **only** the initial distress message shall be retransmitted on NAVTEX, using B_2 = D, in order to alert mariners to a distress situation, by setting off an audio alarm.

.2 a single authority, which will normally be a Maritime Rescue Co-ordination Centre (MRCC), shall be designated SAR Co-ordinator to input information via the NAVTEX Co-ordinator, for a NAVTEX message. The initial shore-to-ship distress-related message shall have previously been broadcast on the appropriate distress frequency prior to any related NAVTEX message being broadcast.

10.2.4 Piracy attack warnings

Piracy attack warnings shall be transmitted using B_2 = D, in order to alert mariners by setting off an audio alarm. They shall be broadcast immediately on receipt and at subsequent scheduled transmissions.

10.2.5 Tsunamis and other natural phenomena warning messages

Tsunami warnings, and negative tidal surge warnings shall be transmitted using B_2 = D, in order to alert mariners by setting off an audio alarm. They shall be broadcast immediately on receipt and at subsequent scheduled transmissions.

10.2.6 Pilot and VTS service messages

Technical subject indicator character B_2 = F, is only to be used for broadcasting temporary alterations, movement or suspension to pilot or VTS services. This category is for the information of all ships and is not to be used for specific instructions to individual ships or pilots.

10.2.7 No messages on hand

When there are no NAVTEX messages to be disseminated at a scheduled broadcast time, a brief message shall be transmitted to advise the mariner that there is no message traffic on hand. Technical subject indicator character B_2 = Z is to be used to announce "NO MESSAGES ON HAND".

10.2.8 Use of abbreviations

Common examples of abbreviations used in the international NAVTEX service are contained in the Joint IMO/IHO/WMO manual on Maritime Safety Information.

10.2.9 National NAVTEX services

Transmissions on 490 kHz or 4209·5 kHz, may simply repeat the messages broadcast over the International NAVTEX service but in a national language, or they may be tailored to meet particular national requirements, for example by providing different or additional information to that broadcast on the International NAVTEX service, targeted at recreational vessels or fishing fleets.

11 – MESSAGE PRIORITIES AND BROADCAST PROCEDURES IN THE INTERNATIONAL NAVTEX SERVICE

11.1 Message priorities

11.1.1 The message originator is responsible for assessing the urgency of the information and inserting the appropriate priority marking. One of three message priorities is used to dictate the timing of the first broadcast of a new warning in the NAVTEX service. In descending order of urgency, they are:

VITAL	for immediate broadcast, subject to avoiding interference to ongoing transmissions. Such messages shall also be passed to the appropriate NAVAREA Co-ordinator for possible transmission as a NAVAREA message via SafetyNET;
IMPORTANT	for broadcast at the next available period when the frequency is unused; and
ROUTINE	for broadcast at the next scheduled transmission.

11.1.2 Both **VITAL** and **IMPORTANT** messages shall be repeated, at least once at the next scheduled transmission time slot, if the situation is still extant.

11.1.3 The message priority is a procedural instruction for the NAVTEX Co-ordinator or the transmitting station and shall **not** be included in the message. By selecting the appropriate priority of **VITAL**, **IMPORTANT** or **ROUTINE** at the transmission terminal, the message will be broadcast with the correct priority.

11.1.4 In order to avoid unnecessary disruption to the service, the priority marking **VITAL** is to be used only in cases of **extreme urgency**, i.e. to relay an initial shore-to-ship distress-related message or acts of piracy warnings, tsunamis and other natural phenomena warnings. In addition, **VITAL** messages are to be kept as brief as possible. The information provider is responsible for ensuring that the NAVTEX Co-ordinator is fully and immediately aware when a message shall be broadcast with the priority of **VITAL**.

11.1.5 **VITAL** messages will normally be broadcast using NAVTEX number B_3B_4 = 00.

11.2 Broadcast procedures

.1 **VITAL** priority messages.

Messages assessed as VITAL, are to be broadcast immediately, subject to avoiding interference to ongoing transmissions. On receipt of a message with a **VITAL** priority, the NAVTEX Co-ordinator will commence monitoring the NAVTEX frequency. If the frequency is clear, the VITAL message is to be transmitted immediately. If the frequency is in use, the Co-ordinator shall contact the station which, according to the schedule, will be transmitting during the following time slot and ask it to postpone their transmission start by one minute, to allow a space for the VITAL message. Once the **VITAL** message has been transmitted, the scheduled station is free to start its routine transmissions;

.2 **IMPORTANT** priority messages.

Messages assessed as **IMPORTANT**, are to be broadcast during the next available period when the NAVTEX frequency is unused. This is to be identified by monitoring the frequency. It is expected that this level of priority will be sufficient for the majority of urgent information; and

.3 **ROUTINE** priority messages.

Messages assessed as **ROUTINE,** are to be broadcast at the next scheduled transmission time. This level of priority will be appropriate for almost all messages broadcast on NAVTEX and is always to be used unless special circumstances dictate the use of the procedures for an IMPORTANT or VITAL priority message.

11.3 Meteorological NAVTEX Messages

The following priorities shall be assigned to meteorological NAVTEX messages:

a) Meteorological forecasts = ROUTINE priority
b) Meteorological warnings = IMPORTANT priority
c) Tsunami warnings = VITAL priority
d) For other natural phenomena warnings, either IMPORTANT or VITAL priorities may be used.

11.4 National NAVTEX Services

The broadcast procedures concerning differing message priorities are the same for both the International and National NAVTEX services.

12 – RESPONSIBILITIES OF A NAVTEX CO-ORDINATOR

12.1 The NAVTEX Co-ordinator is responsible for the messages transmitted by each station under their control. This responsibility includes checking that the content of each message is in accordance with the Joint IMO/IHO/WMO Manual on Maritime Safety Information and also, that it is relevant to the NAVTEX service area of the transmitting station. Thus a user may choose to accept messages, as appropriate, either from the single transmitter which serves the sea area around their position or from a number of transmitters. Ideally, the user should select the station within whose coverage area their vessel is currently operating and the station into whose coverage area their vessel will transit next.

12.2 The NAVTEX Co-ordinator must:

.1 act as the central point of contact on matters relating to NAVTEX transmissions for a given transmitter or number of transmitters;

.2 be responsible for continuously ensuring quality-control for the operation of the NAVTEX transmitting stations under its jurisdiction. This shall be achieved with the co-operation of the information providers to ensure that:

a) messages are always concise and can be transmitted within the designated 10 minute time slots assigned by the IMO NAVTEX Co-ordinating Panel;

b) **MINIMUM** power is used to achieve satisfactory range performance; and

c) the co-ordinated service is operating satisfactorily;

.3 assess all requests for NAVTEX messages immediately upon receipt;

.4 schedule each message for broadcast in accordance with the requested priority of VITAL, IMPORTANT or ROUTINE;

.5 monitor the international NAVTEX frequency along with any other National frequency used by the transmitters under their jurisdiction in order to ensure that the messages have been correctly broadcast;

.6 monitor the international NAVTEX frequency along with any other National frequency used in order to identify vacant transmission periods required for VITAL or IMPORTANT messages;

.7 pass maritime safety information which warrants promulgation outside of their NAVTEX service area directly to the appropriate authority, using the quickest possible means;

.8 allocate a message identity to each message, including the sequential NAVTEX number;

.9 ensure that NAVTEX messages which have been cancelled are removed from the broadcast schedule at the same time as the cancellation message is promulgated;

.10 promote and oversee the use of established international standards and practices with respect to the format and protocols associated with NAVTEX messages;

.11 maintain records of source data relating to NAVTEX messages in accordance with the requirement of the National Administration of the NAVAREA Co-ordinator;

.12 be aware of the responsibilities of a NAVAREA, Sub-area and National Co-ordinator contained in IMO resolution A.706(17), as amended, paying particular attention to the specific guidance for the promulgation of internationally co-ordinated maritime safety information provided there-in; and

.13 take into account the need for contingency planning

12.3 Management of the service

.1 Data priority:

Most information broadcast on NAVTEX services relates to either Navigational Warnings or Meteorological Information. These types of information often originate from different organizations within a country and it is not until they arrive with the NAVTEX Co-ordinator that an assessment can be made as to whether there is too much information for the relevant broadcast time slot. Each data provider may consider their data to be more important and therefore, require transmission in full. However, the NAVTEX Co-ordinator needs to control the overall volume of data broadcast and may need to refer back to data providers to prioritise their information and reduce the amount of data to be broadcast. Some NAVTEX Co-ordinators utilize digital systems which include software that provides a readout of predicted transmission times for data held ready for broadcast. This enables the Co-ordinator to anticipate any problems and take action before the scheduled broadcast.

Data to meet purely national requirements shall not be broadcast on the International NAVTEX service, but shall be migrated to a national NAVTEX service (see section 14).

.2 Data formatting:

The period of each transmission shall be kept to a minimum by strictly formatting messages and avoiding the use of free text whenever possible.

12.4 Balancing the volume of data to be broadcast throughout the daily transmission cycle

For many categories of message there is no option with regards to when they shall be transmitted. However, in order to minimize the risk of over-running the allocated 10-minute time slot, it is possible to balance the overall length of transmissions by broadcasting NAVAREA warnings at different times from weather forecasts and the weekly summary of navigation warnings in force. An example of how this may be managed is given below for a station with a B_1 transmitter identification character C:

Time Slot	Content
0020-0030	coastal warnings NAVAREA warnings
0420-0430	coastal warnings summary of navigational warnings in-force (once/week only)
0820-0830	coastal warnings weather forecasts
1220-1230	coastal warnings NAVAREA warnings
1620-1630	coastal warnings ice reports
2020-2030	coastal warnings weather forecasts

13 – BEST PRACTICE FOR THOSE USING THE SERVICE

13.1 In order to ensure that all necessary maritime safety information has been received, it is recommended that the NAVTEX receiver is switched on at least 12 hours before sailing, or preferably left on at all times.

13.2 **Logging**. The reception of weather forecasts or navigational warnings on NAVTEX does not need to be noted in the radio log; the NAVTEX printout (or the non-volatile message memory) satisfies the requirements of regulation 17 of chapter IV of the 1974 SOLAS Convention, as amended.

14 – MUTUAL INTERFERENCE BETWEEN NAVTEX STATIONS

14.1 The two principal causes of interference are:

a) transmission overruns; and
b) excessive power output.

14.2 ***Although NAVTEX continues to be generally reliable and an effective medium for the promulgation of maritime safety information, the world-wide infrastructure continues to expand and the volume of information that each Administration disseminates through the international NAVTEX service continues to increase. There is a danger that in some geographical areas, without firm management, both the system and system users may become overloaded with information on the single frequency used. This is of particular importance when handling messages of VITAL priority.***

14.3 Many stations are filling their allotted 10-minute time slots and an increasing number are over-running. Instances of interference with neighbouring stations, as a result of over-running the time allocation, are also increasing. Where adjacent stations have transmitter identification characters which follow alphabetically (i.e. adjacent time slots), if the first station over runs, it may mask the phasing signal of the second station such that, to the user, it seems as if the second station is off the air. Safety-critical information from the second station, although broadcast, may not be received by the system users. Over-run is usually caused by one or more of the following which must be avoided at all costs, preferably by controlling the volume of data broadcast:

.1 a significant increase in safety-critical activity such as cable laying. Navigational warnings promulgating such activity often include numerous waypoints which are listed by Latitude and Longitude;

.2 meteorological information provided in a manner which is not concise and easily assimilated by the system user or for a much wider area than is covered by the NAVTEX station; and

.3 additional information provided for non-SOLAS system users, e.g., longer-range weather forecasts for fishing and recreational vessels.

14.4 As the GMDSS spreads to non-SOLAS mariners, their requirements for information are often different from the SOLAS ships and may be determined at a national level. SOLAS ships trading internationally usually pass through the area of coverage of a NAVTEX transmitter in a day; for them a 24-hour weather forecast usually suffices. However, fishing vessels and recreational vessels often remain in the same vicinity for several days and may require much longer range forecasts which take up more transmission time.

14.5 In order to keep the quantity of information that is broadcast on 518 kHz to manageable levels and to reduce avoidable interference on this frequency, Administrations must:

.1 monitor the volume of data broadcast and, together with adjacent Administrations, actively manage the system to ensure that interference caused by over-running allocated time slots is eliminated; and

.2 transmit non-English language broadcasts for SOLAS vessels and broadcasts of information provided specifically for non-SOLAS vessels on 490 kHz or 4209·5 kHz as required. B_1 characters for these frequencies will be allocated by the IMO NAVTEX Co-ordinating Panel, on request.

14.6 Excessive power output also causes interference between stations with the same B_1 transmitter identification character/time slot, but located in different regions. This has particularly been identified at night, as the number of operational NAVTEX stations increases. Occasionally, this can be caused by atmospheric conditions, but is generally caused by excessive power output from one of the stations. It is recommended that Administrations restrict the power output from their transmitters to that required to cover the designated NAVTEX service area, particularly at night, in order to avoid interference. As a general rule, transmitted power shall not exceed 1 kW by day and 300 watts by night.

14.7 When interference is detected, particularly when it affects the service to system users, the matter shall be addressed immediately. When the interference is with adjacent stations, attempts shall be made to resolve the problem locally. Advice may also be sought from the NAVAREA Co-ordinator. If this is unsuccessful, the IMO NAVTEX Co-ordinating Panel shall be alerted to the problem and their advice sought. When the interference is from a station with the same B_1 character in a different area, the NAVTEX Co-ordinating Panel must be contacted and they will initiate any necessary investigation/action.

15 – NOTIFICATION OF NAVTEX SERVICES

15.1 National Administrations shall ensure that mariners are informed of the establishment of, and/or changes to, NAVTEX services by inclusion of full details in Notices to Mariners and lists of radio signals. In addition, full details shall be forwarded to the appropriate NAVAREA Co-ordinator, METAREA Issuing Service and:

- International Maritime Organization
  4 Albert Embankment
  London SE1 7SR
  United Kingdom

- International Telecommunication Union
  Radiocommunication Bureau
  Place des Nations
  1211 Genève 20
  Switzerland

Annex 1

IMO NAVTEX Co-ordinating Panel Terms of Reference

1 Terms of Reference

.1 advise Administrations planning to implement a NAVTEX service on the frequencies 518 kHz, 490 kHz or 4209·5 kHz, on the operational aspects of the system. In particular, advise on the optimum number of stations, the allocation of transmission identifying characters (B_1) and broadcast message criteria;

.2 co-ordinate with Administrations over the operational aspects of NAVTEX in the planning stages in order to prevent mutual interference owing to the number of stations, transmitter power, or transmission identifying character assignment;

.3 remain aware of system problems which arise, through reports from sea and correspondence with operational NAVTEX Co-ordinators. When problems are identified, liaise with appropriate Administrations involved, NAVAREA Co-ordinators, METAREA Issuing Services, the Sub-Committee, IHO or WMO, as appropriate, recommend solutions or mitigating measures and, when agreed, co-ordinate their implementation; and

.4 prepare documentation supporting the system for the Sub-Committee, including both that needed by Administrations to guide their operations, and that needed to inform the user of the service (mariner, shipowner and operator).

2 Contact addresses

The NAVTEX Co-ordinating Panel can be contacted at the following addresses:

The Chairman
IMO NAVTEX Co-ordinating Panel
International Maritime Organization
4 Albert Embankment
London SE1 7SR
United Kingdom

Telephone: +44 (0)20 7735 7611
Telefax: +44 (0)20 7587 3210
E-mail: info@imo.org

3 Panel membership and participation

3.1 The IMO NAVTEX Co-ordinating Panel is open to membership by all Member Governments and also includes one member nominated by each of the following international organizations:

i) International Maritime Organization (IMO)
ii) World Meteorological Organization (WMO)
iii) International Hydrographic Organization (IHO)
iv) International Mobile Satellite Organization (IMSO)

3.2 The following may be represented as observers on the panel:

i) IHO World-Wide Navigational Warnings Service Sub-Committee
ii) International SafetyNET Co-ordinating Panel
iii) Expert Team on Maritime Safety Services (ETMSS) of the WMO/IOC Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM)

3.3 The work of the Panel is conducted mainly by correspondence. Meetings, when appropriate, are announced in advance and normally scheduled to be held in the margins of other IMO or IHO meetings.

Annex 2

RECOMMENDATION ITU-R M.540*

Operational and Technical Characteristics for an Automated Direct-Printing Telegraph System for Promulgation of Navigational and Meteorological Warnings and Urgent Information to Ships

(Question 5/8)

The CCIR,† (1978-1982-1990)

CONSIDERING

(a) that the availability of navigational and meteorological warnings and urgent information on board ships is of great importance for safety;

(b) that the existing radiocommunication system for promulgation of navigational and meteorological warnings and urgent information to ships can be improved by use of modern techniques;

(c) that the IMO has established the following definitions on the promulgation of maritime safety information:

- *NAVTEX* means the system for the broadcast and automatic reception of maritime safety information by means of narrow-band direct-printing telegraphy;
- *international NAVTEX service* means the co-ordinated broadcast and automatic reception on 518 kHz of maritime safety information by means of narrow-band direct-printing telegraphy using the English language, as set out in the NAVTEX manual, published by the IMO;
- *national NAVTEX service* means the broadcast and automatic reception of maritime safety information by means of narrow-band direct-printing telegraphy using frequencies and languages as decided by the Administrations concerned;

(d) that the 1988 Amendments to the International Convention for the Safety of Life at Sea, 1974, require that every ship to which the Convention applies shall be provided with a receiver capable of receiving international NAVTEX service broadcasts;

(e) that several countries are operating a co-ordinated international NAVTEX service based on narrow-band direct-printing in accordance with Article 14A of the Radio Regulations;

(f) that the system should be applicable to the maritime mobile service (both international and national);

† The name "CCIR" was changed to "Radiocommunication Bureau" by the reorganization of the International Telecommunication Union on 1 March 1993.

(g) that it is desirable that the service fulfils the requirements of all types of ships desiring to use it;

(h) that although each area may need specific guidance, the use of standard technical and operational characteristics would facilitate the extension of the service,

UNANIMOUSLY RECOMMENDS

1. that the operational characteristics for the promulgation of navigational and meteorological warnings and urgent information using NBDP should be in accordance with Annex I;

2. that the technical characteristics for the promulgation of navigational and meteorological warnings and urgent information using NBDP should be in accordance with Annex II.

Annex I to Recommendation ITU-R M.540

OPERATIONAL CHARACTERISTICS

1 Narrow-band direct-printing techniques should be used for an automated telegraph system for promulgation of navigational and meteorological warnings and urgent information to ships. Common frequencies for such transmissions should be internationally agreed upon and the frequency 518 kHz has been designated for world-wide use in the international NAVTEX service (see Radio Regulations Nos. 474, 2971B and N2971B).

1.1 For national NAVTEX services Administrations should also utilize the format of this Recommendation on the appropriate frequencies as defined in the Radio Regulations.

2 The radiated power from the coast station transmitter should only be that sufficient to cover the intended service area of that coast station. The range extension occurring during night hours should also be considered.

3 The information transmitted should primarily be of the type used for coastal waters preferably using a single frequency (Resolution No. 324 (Mob-87)).

4 The transmission time allocated to each station should be restricted to that which is adequate for the anticipated messages to be broadcast to the area concerned.

5 Scheduled broadcasts should take place at intervals not exceeding eight hours and be co-ordinated, to avoid interference with broadcasts from other stations.

6 ***Message priorities***

6.1 Three message priorities are used to dictate the timing of the first broadcast of a new warning in the NAVTEX service. In descending order of urgency they are:

VITAL: for immediate broadcast, subject to avoiding interference to ongoing transmissions;

IMPORTANT: for broadcast at the next available period when the frequency is unused; and

ROUTINE: for broadcast at the next scheduled transmission period.

Note: Both VITAL and IMPORTANT warnings will normally need to be repeated, if still valid, at the next scheduled transmission period.

6.2 In order to avoid unnecessary disruption to the service, the priority marking VITAL is to be used only in cases of extreme urgency, such as some distress alerts. In addition, VITAL messages are to be kept as brief as possible.

6.3 Periods should be scheduled between the regular transmission periods permitting immediate/early transmission of VITAL messages.

6.4 By use of the message serial number 00 in the preamble of a message (see also Annex 11 § 6) it is possible to override any exclusion of coast stations or of message types which might have been made in the receiving equipment.

7 Initial shore-to-ship distress-related messages should first be broadcast on the appropriate distress frequency by coast stations in whose SAR area distress cases are handled.

8 Participating transmitting stations should be provided with monitoring facilities to enable them to:

- monitor their own transmissions as to signal quality and transmission format;
- confirm that the channel is not occupied.

9 In case a message is repeated by more than one transmitting station within the same NAVTEX region (e.g., for better coverage) the original preamble B_1~B_4 (see annex II) should be used.

10 In order to avoid overloading of the channel it is desirable to use a single language and where a single language is used it shall be English.

11 Dedicated onboard equipment is recommended.

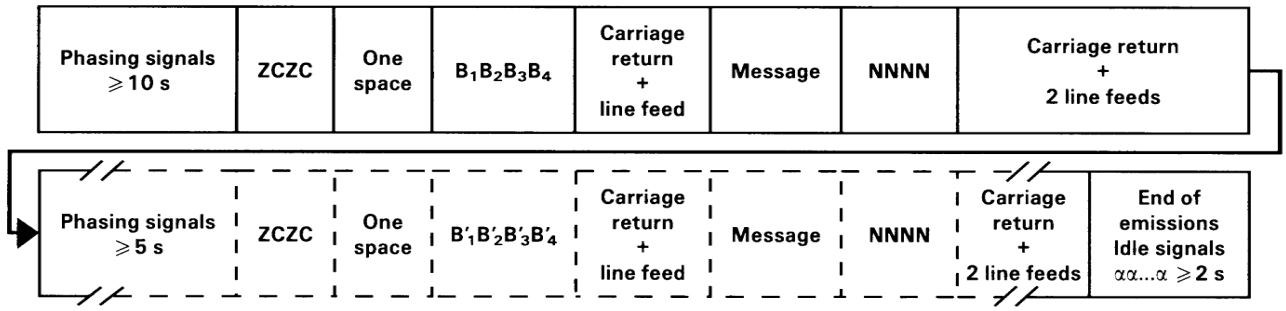
12 Other operational characteristics and detailed guidance are given in the NAVTEX Manual developed by the International Maritime Organization.

Annex II to Recommendation ITU-R M.540

TECHNICAL CHARACTERISTICS

1 The signals transmitted should be in conformity with the collective B-mode of the direct-printing system specified in Recommendations 476 and 625.

2 The technical format of the transmission should be as follows:



in which ZCZC defines the end of the phasing period,

the B_1 character is a letter (A-Z)[14] identifying the transmitter coverage area,

the B_2 character is a letter (A-Z) for each type of message.

2.1 Both the B_1 characters identifying the different transmitter coverage areas and the B_2 characters identifying the different types of messages are defined by IMO and chosen from Table I of Recommendations 476 and 625, combination numbers 1-26.

2.1.1 Ship equipment should be capable of automatically rejecting unwanted information using character B_1.

2.1.2 Ship equipment should be capable of disabling print-out of selected types of messages using character B_2 with the exception of messages with B_2 characters A, B, and D[15] (see also § 2.1).

2.1.3 If any facility is rejected or disabled in § 2.1.1 and 2.1.2 above, the extent of any such limitation must be clearly indicated to the user.

2.2 B_3B_4 is a two-character serial number for each B_2, starting with 01 except in special cases where the serial number 00 is used (see § 6 below).

2.3 The characters ZCZC $B_1B_2B_3B_4$ need not be printed.

3 The printer should only be activated if the preamble B_1~B_4 is received without errors.

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14 Only letters A-X are used on 518 kHz, 490 kHz and 4209·5 kHz, see Table 2 of the NAVTEX Manual.

15 B_2 character L (continuation of B_2 subject group A), shall also not be capable of being suppressed (see IEC 61097-6).

4 Facilities should be provided to avoid printing of the same message several times on the same ship, when such a message has already been satisfactorily received.

5 The necessary information for the measures under § 4 above should be deduced from the sequence $B_1B_2B_3B_4$ and from the message.

6 A message should always be printed if $B_3B_4 = 00$.

7 Extra (redundant) letter and figure shifts should be used in the message to reduce garbling.

8 In case a message is repeated by another transmitting station (e.g., for better coverage) the original preamble B_1~B_4 should be used.

9 The equipment on board ships should be neither unduly complex or expensive.

10 The transmitter frequency tolerance for the mark and the space signals should be better than $\pm$ 10 Hz.

Annex 3

IMO RESOLUTION MSC.148(77)
(adopted on 3 June 2003)

Adoption of the Revised Performance Standards for Narrow-Band Direct-Printing Telegraph Equipment for the Reception of Navigational and Meteorological Warnings and Urgent Information to Ships (NAVTEX)

THE MARITIME SAFETY COMMITTEE,

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

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

NOTING the carriage requirement in SOLAS chapter IV/7.1.4 for a receiver capable of receiving International NAVTEX narrow-band direct-printing (NBDP) broadcasts for the promulgation of navigational and meteorological warnings to shipping,

NOTING FURTHER the success of the International NAVTEX service in the promulgation of Maritime Safety Information (MSI),

NOTING ALSO with regard to the enhanced storage, processing and display possibilities offered by recent technical advances,

CONSIDERING that further growth in information promulgated to ships will be constrained by the capacity of the International NAVTEX service and the increasing importance of National NAVTEX services,

HAVING CONSIDERED the recommendations on the revision of resolution A.525(13) MSC.148(77) made by the Sub-Committee on Radiocommunications and Search and Rescue at its seventh session,

1. ADOPTS the revised Recommendation on Performance Standards for Narrow-Band Direct-Printing Telegraph Equipment for the Reception of Navigational and Meteorological Warnings and Urgent Information to Ships (NAVTEX), set out in the Annex to the present resolution;

2. RECOMMENDS Governments to ensure that NAVTEX receiver equipment:

   (a) if installed on or after 1 July 2005 conforms to performance standards not inferior to those specified in the Annex to the present resolution;

   (b) if installed before 1 July 2005, conforms to performance standards not inferior to those specified in the Annex to resolution A.525(13).

Annex to IMO RESOLUTION MSC.148(77)

Revised recommendation on performance standards for Narrow-band direct-printing telegraph equipment for The reception of navigational and meteorological Warnings and urgent information to ships (NAVTEX)

1 INTRODUCTION

1.1 The equipment, in addition to meeting the requirements of the Radio Regulations, the provisions of Recommendation ITU-R M.540 applicable to shipborne equipment and the general requirements set out in resolution A.694(17), should comply with the following performance standards.

2 GENERAL

2.1 The equipment should comprise radio receivers, a signal processor and:

either:

.1 an integrated printing device; or

.2 a dedicated display device[1], printer output port and a non-volatile message memory; or

.3 a connection to an integrated navigation system and a non-volatile message memory.

3 CONTROLS AND INDICATORS

3.1 Details of the coverage areas and message categories which have been excluded by the operator from reception and/or display should be readily available.

4 RECEIVERS

4.1 The equipment should contain one receiver operating on the frequency prescribed by the Radio Regulations for the International NAVTEX System. The equipment should contain a second receiver capable of working at the same time as the first one on at least two other frequencies recognized for the transmission of NAVTEX information. The first receiver should have priority in the display or printing of received information. Printing or displaying of messages from one receiver should not prevent reception by the other receiver.

4.2 The receiver sensitivity should be such that for a source with an e.m.f. of 2μV in series with a non-reactive impedance of 50 Ω, the character error rate is below 4%.

5 DISPLAY DEVICE AND PRINTER

5.1 The display device and/or printer should be able to display a minimum of 32 characters per line.

[1] Where there is no printer, the dedicated display device should be located in the position from which the ship is normally navigated.

5.2 If a dedicated display device is used, the following requirements should be met:

.1 an indication of newly received unsuppressed messages should be immediately displayed until acknowledged or until 24 hours after receipt; and

.2 newly received unsuppressed messages should also be displayed.

5.3 The display device should be able to display at least 16 lines of message text.

5.4 The design and size of the display device should be such that displayed information is easily read under all conditions by observers at normal working distances and viewing angles.

5.5 If automatic line feed entails division of a word, this should be indicated in the displayed/printed text.

5.6 When displaying received messages on a display device, a clear indication of the end of a message should be given by automatically adding line feeds after the message or including some other form of delineation. The printer or printer output should automatically insert line feeds after completing print of the received message.

5.7 The equipment should display/print an asterisk if the character is received corrupted.

5.8 Where the printer is not integrated, it should be possible to select the following data to be output to a printer:

.1 all messages as they are received;

.2 all messages stored in the message memory;

.3 all messages received on specified frequencies, from specified locations or having specified message designators;

.4 all messages currently displayed; and

.5 individual messages selected from those appearing on the display.

6 STORAGE

6.1 Non-volatile message memory

6.1.1 For each receiver fitted it should be possible to record at least 200 messages of average length 500 characters (printable and non-printable) in non-volatile message memory. It should not be possible for the user to erase messages from memory. When the memory is full, the oldest messages should be overwritten by new messages.

6.1.2 The user should be able to tag individual messages for permanent retention. These messages may occupy up to 25% of the available memory and should not be overwritten by new messages. When no longer required, the user should be able to remove the tag on these messages which may then be overwritten in normal course.

6.2 Message identifications

6.2.1 The equipment should be capable of internally storing at least 200 message identifications for each receiver provided.

6.2.2 After between 60 h and 72 h, a message identification should automatically be erased from the store. If the number of received message identifications exceeds the capacity of the store, the oldest message identification should be erased.

6.2.3 Only message identifications which have been satisfactorily received should be stored; a message is satisfactorily received if the error rate is below 4%.

6.3 Programmable control memories

6.3.1 Information for location (B1)[2] and message (B2)[2] designators in programmable memories should not be erased by interruptions in the power supply of less than 6 h.

7 ALARMS

7.1 The receipt of search and rescue information (B2 = D) should give an alarm at the position from which the ship is normally navigated. It should only be possible to reset this alarm manually.

8 TEST FACILITIES

8.1 The equipment should be provided with a facility to test that the radio receiver, the display device/printer and non-volatile message memory are functioning correctly.

9 INTERFACES

9.1 The equipment should include at least one interface for the transfer of received data to other navigation or communication equipment.

9.2 All interfaces provided for communication with other navigation or communication equipment should comply with the relevant international standards.[3]

9.3 If there is no integrated printer, the equipment should include a standard printer interface.

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[2] Refer to Recommendation ITU-R M.540.

[3] Refer to publication IEC 61162.

Annex 4

EXTRACT FROM IMO RESOLUTION A.801(19), ANNEX 4

Criteria for use when providing a NAVTEX service

1 There are two basic areas which must be defined when establishing a NAVTEX service. They are:

Coverage area: An area defined by an arc of a circle having a radius from the transmitter calculated according to the method and criteria given in this annex.

Service area: A unique and precisely defined sea area, wholly contained within the coverage area, for which maritime safety information is provided from a particular NAVTEX transmitter. It is normally defined by a line that takes full account of local propagation conditions and the character and volume of information and maritime traffic patterns in the region.

2 Governments desiring to provide a NAVTEX service should use the following criteria for calculating the coverage area of the NAVTEX transmitter they intend to install, in order to:

- determine the most appropriate location for NAVTEX stations having regard to existing or planned stations;
- avoid interference with existing or planned NAVTEX stations;
- establish a service area for promulgation to seafarers.

3 The ground-wave coverage may be determined for each coast station by reference to Recommendation ITU-R PN.368-7 and ITU-R Report P.322[16] for the performance of a system under the following conditions:

Frequency	- 518 kHz
Bandwidth	- 500 Hz
Propagation	- ground-wave
Time of day	- [17]
Season	- [17]
Transmitter power	- [18]
Antenna efficiency	- [18]
RF S/N in 500 Hz bandwidth	- 8 db[19]
Percentage of time	- 90

4 Full coverage of NAVTEX service area should be verified by field strength measurements.

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16 Recommendations ITU-R PN.368-7 and ITU-R Report P.322 are superseded by: Recommendation ITU-R P.368-9 and Recommendation ITU-R P.372-10 respectively.

17 Administrations should determine time periods in accordance with NAVTEX time transmission table (NAVTEX Manual, Table 2) and seasons appropriate to their geographic area based on prevailing noise level.

18 The range of a NAVTEX transmitter depends on the transmitter power and local propagation conditions. The actual range achieved should be adjusted to the minimum required for adequate reception in the NAVTEX area served, taking into account the needs of ships approaching from other areas. Experience has indicated that the required range of 250 to 400 nautical miles can generally be attained by transmitter power in the range between 100 and 1,000 W during daylight with a 60% reduction at night.

19 Bit error rate 1×10^{-2}.

Annex 5

PROCEDURE FOR AMENDING THE NAVTEX MANUAL

1 Proposals for amendments to the NAVTEX Manual shall be examined in substance by the Sub-Committee on Radiocommunications and Search and Rescue (COMSAR), followed by approval of the Maritime Safety Committee.

2 Amendments to the Manual should normally be approved at intervals of approximately two years or at such longer periods as may be determined by the Maritime Safety Committee. Amendments approved by the Maritime Safety Committee will be notified to all concerned, will provide at least 12 months' notification and will come into force on 1 January of the following year.

3 The agreement of the International Hydrographic Organization and World Meteorological Organization, and the active participation of other bodies, shall be sought according to the nature of the proposed amendments.

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STCW.7/Circ.16
24 May 2011

INTERNATIONAL CONVENTION ON STANDARDS OF TRAINING, CERTIFICATION AND WATCHKEEPING FOR SEAFARERS (STCW), 1978, AS AMENDED

Clarification of transitional provisions relating to the 2010 Manila Amendments to the STCW Convention and Code

1 Pursuant to resolution 4 of the 2010 STCW Conference, encouraging the orderly transition to full and effective implementation of the 2010 Manila Amendments to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1978, and the Seafarers' Training, Certification and Watchkeeping Code, the Maritime Safety Committee (MSC) at its eighty-ninth session (11 to 20 May 2011) considered a series of issues that required urgent clarification.

2 The Committee considered the implementation of the provisions of the 2010 Manila Amendments with the following matters requiring urgent clarification:

.1 revalidation of certificates issued in accordance with the provisions of the Convention in force prior to 1 January 2012 and the issuance of certificates to seafarers who commence approved seagoing service, an approved education and training programme or an approved training course before and after 1 July 2013;

.2 transitional provisions which do not relate to certification issues; and

.3 security-related training provisions.

3 To assist Parties with the implementation of the 2010 Manila Amendments, the Committee prepared a number of clarifications, as set out in the annex.

4 Member Governments and Parties to the STCW Convention are invited to take full account of the guidance in the annex when implementing the 2010 Manila Amendments to the STCW Convention and Code.

5 As recommended in paragraph 1 of resolution 4 of the 2010 STCW Conference, any difficulties encountered in implementing requirements of the 2010 Manila Amendments to the STCW Convention and Code should be brought to the attention of the Maritime Safety Committee. This should be done as soon as possible to allow the Committee to respond to urgent needs for technical assistance or to develop additional guidance.

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ANNEX

CLARIFICATIONS

I Issuance and revalidation of certificates and endorsements issued in accordance with the provisions of the Convention which applied immediately prior to 1 January 2012

1 Regulation I/15 provides that a Party may, until 1 January 2017, continue to renew and revalidate certificates and endorsements in accordance with the provisions of the Convention which applied immediately prior to 1 January 2012. Conversely, regulation I/11, paragraph 4, requires Member States to compare the standards of competence which it required of candidates for certificates issued before 1 January 2017 with those specified for the appropriate certificate in part A of the Code and determine the need for the holders to undergo appropriate refresher and updating training or assessment. This may raise the question of whether a certificate revalidated in accordance with regulation I/15 should be valid beyond 1 January 2017.

2 Resolution 4 of the STCW Conference recognizes the need for full compliance to be achieved by the 1 January 2017. Therefore, in order to promote uniform implementation of the 2010 Manila Amendments to the STCW Convention and Code, regulation I/15 should be applied as follows:

.1 for seafarers holding certificates issued in accordance with the provisions of the Convention which applied immediately prior to 1 January 2012 and who **have not met** the requirements of the 2010 Manila Amendments, the validity of any revalidated certificate should not extend beyond 1 January 2017;

.2 for seafarers holding certificates issued in accordance with the provisions of the Convention which applied immediately prior to 1 January 2012 who **have met** the requirements of the 2010 Manila Amendments, the validity of any revalidated certificate can extend beyond 1 January 2017;

.3 for seafarers who commenced approved seagoing service, an approved education and training programme or an approved training course **before 1 July 2013** the validity of any certificate issued should not extend beyond 1 January 2017, unless they meet the requirements of the 2010 Manila Amendments; and

.4 for seafarers who commenced approved seagoing service, an approved education and training programme or an approved training course **after 1 July 2013** the validity of any certificate issued may extend beyond 1 January 2017.

3 Noting that table B-I/2 contains a list of certificates or documentary evidence required under the relevant provisions of the Convention, Administrations should take into account that the certificates or documentary evidence under the 2010 Manila Amendments have changed in respect of contents and title. Administrations may issue certificates or documentary evidence under the provisions of the 1995 STCW Amendments with a validity that should not extend beyond 1 January 2017 or new certificates under the provisions of the 2010 Manila Amendments, as appropriate.

4 The medical requirements under regulation I/9 were significantly changed under the 2010 Manila Amendments. Regulation I/15 is also applicable to medical certificates issued under regulation I/9 and, therefore, medical certificates issued in accordance with the 1995 STCW Amendments should not have a validity that extends beyond 1 January 2017. Administrations may continue to issue medical certificates under the 1995 STCW Amendments until 1 January 2017 or new certificates under the provisions of the 2010 Manila Amendments, as appropriate.

II Transitional provisions which do not relate to certification issues

5 Regulation I/15 applies to the certification of seafarers. Therefore, any amendments to chapters I and VIII that do not directly involve certification of seafarers, under regulation I/15, should be implemented by 1 January 2012.

6 The interrelated nature of the various STCW regulations will have practical implications for Parties when implementing some of the provisions in chapters I and VIII. In particular, but not limited to, the amended requirements of chapter VIII which will come into force on 1 January 2012, however, some aspects of seafarer training, for example, Engine-room Resource Management (ERM) or Bridge Resource Management (BRM), are not required to be completed until 1 January 2017.

7 Bearing in mind resolution 4 of the STCW Conference, which recognizes the need for full compliance to be achieved by 1 January 2017, and considering the interrelated nature of the various STCW regulations amendments, Parties and Companies are urged to ensure that the implementation of the necessary training and certification of seafarers for full compliance with the 2010 Manila Amendments is commenced as soon as possible.

III Security-related training provisions

8 Noting the close entry into force date of the 2010 Manila Amendments, it is recognized that practical difficulties may arise for all seafarers with security-related requirements to obtain necessary certifications and/or the necessary endorsements required in accordance with regulation VI/6 of the 2010 Manila Amendments. Parties are urged to note that transitional provisions under section A-VI/6 provide for, up until 1 January 2014, the recognition of seafarers who commenced an approved seagoing service prior to 1 January 2012.

9 Taking into account the above paragraph 8, Parties should inform their Port State Control authorities that, until 1 January 2014, even if a seafarer's documentation with regard to the security-related training in regulation VI/6 is not in accordance with the 2010 Manila Amendments, it would be sufficient to accept compliance with section 13 of the International Ship and Port Facility Security (ISPS) Code.

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STCW.7/Circ.17
24 May 2011

INTERNATIONAL CONVENTION ON STANDARDS OF TRAINING, CERTIFICATION AND WATCHKEEPING FOR SEAFARERS (STCW), 1978, AS AMENDED

Advice for port State control officers on transitional arrangements leading up to the full implementation of the requirements of the 2010 Manila Amendments to the STCW Convention and Code on 1 January 2017

1 The Maritime Safety Committee, at its eighty-ninth session (11 to 20 May 2011), noted the need for some clarifications on the implementation of the 2010 Manila Amendments to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1978, as amended, in light of their imminent entry into force, on 1 January 2012.

2 The Committee noted that the amended requirements of chapter VIII come into force on 1 January 2012. However, some aspects of seafarer training, for example, Engine-room Resource Management (ERM) or Bridge Resource Management (BRM), are not required to be completed until 1 January 2017.

3 The Committee was particularly concerned that, close to the entry into force date of 1 January 2012, there may be practical difficulties for all seafarers with security related requirements to obtain necessary certifications and/or the necessary endorsements required in accordance with regulation VI/6 of the 2010 Manila Amendments. In this context, the Committee noted that transitional provisions under section A-VI/6 provide, until 1 January 2014, for the recognition of seafarers who commenced an approved seagoing service prior to 1 January 2012.

4 The Committee urged Parties and Companies to ensure that the necessary training and certification of seafarers for full compliance with the 2010 Manila Amendments is commenced as soon as possible.

5 The Committee recommended that Administrations should inform their port State control authorities that, until 1 January 2014, even if a seafarer's documentation with regard to the security-related training in regulation VI/6 is not in accordance with the 2010 Manila Amendments, it would be sufficient to accept compliance with section 13 of the International Ship and Port Facility Security (ISPS) Code.

6 The Committee agreed that:

.1 for seafarers holding certificates issued in accordance with the provisions of the Convention which applied immediately prior to 1 January 2012 and who **have not met** the requirements of the 2010 Manila Amendments, the validity of any revalidated certificate should not extend beyond 1 January 2017;

.2 for seafarers holding certificates issued in accordance with the provisions of the Convention which applied immediately prior to 1 January 2012 who **have met** the requirements of the 2010 Manila Amendments, the validity of any revalidated certificate can extend beyond 1 January 2017;

.3 for seafarers who commenced approved seagoing service, an approved education and training programme or an approved training course **before 1 July 2013,** the validity of any certificate issued should not extend beyond 1 January 2017, unless they meet the requirements of the 2010 Manila Amendments; and

.4 for seafarers who commenced approved seagoing service, an approved education and training programme or an approved training course **after 1 July 2013** the validity of any certificate issued may extend beyond 1 January 2017.

7 Noting that table B-I/2 contains a list of certificates or documentary evidence required under the relevant provisions of the Convention, the Committee recommends that Administrations should take into account that the certificates or documentary evidence under the 2010 Manila Amendments have changed in respect of contents and title. Administrations may issue certificates or documentary evidence under the provisions of the 1995 STCW Amendments with a validity that should not extend beyond 1 January 2017 or new certificates under the provisions of the 2010 Manila Amendments, as appropriate.

8 As the medical requirements under regulation I/9 were significantly changed under the 2010 Manila Amendments, the Committee agreed that regulation I/15 was also applicable to medical certificates issued under regulation I/9 and, therefore, medical certificates issued in accordance with the 1995 STCW Amendments should not have a validity that extends beyond 1 January 2017. Accordingly, Administrations may continue to issue medical certificates under the 1995 STCW Amendments until 1 January 2017 or new certificates under the provisions of the 2010 Manila Amendments, as appropriate.

9 The Committee recommended that for seafarers' certificates that have expiry dates beyond 1 January 2017, port State control authorities should accept the certificate issued as *prima facie* evidence that the seafarer had met the standard of competence required by the 2010 Manila Amendments in accordance with the control provisions of article X and regulation I/4.

10 Member Governments are invited to be guided accordingly and to bring the contents of this circular to the attention of all concerned, especially port State control officers when exercising control under the provisions of article X and regulation I/4.