



**GUIDANCE FOR THE CLASSIFICATION AND  
CONSTRUCTION**

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**PART 7. CLASS NOTATION**

**VOLUME F**

**GUIDANCE FOR THE ENVIRONMENTAL  
SERVICE SYSTEMS FOR SHIPS, OFFSHORE  
UNITS, FLOATING INSTALLATIONS AND  
LIFTBOATS**

**2013 EDITION**

**BIRO KLASIFIKASI INDONESIA**





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## **PART 7. CLASS NOTATION**

### **VOLUME F**

# **GUIDANCE FOR THE ENVIRONMENTAL SERVICE SYSTEMS FOR SHIPS, OFFSHORE UNITS, FLOATING INSTALLATIONS AND LIFTBOATS**

## **2013 EDITION**

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## Foreword

This Guidance is for the use of designers, builders, owners, and operators in the shipping and offshore industry and specifies the BKI requirements and criteria for obtaining the optional notations Environmental Passport - Ships (EP) or Environmental Passport – Ships Plus (EP+) and Environmental Passport - Offshore (EP-OS) or Environmental Passport – Offshore Plus (EP-OS+).

The EP notation identifies the level of compliance with the Environmental Service System applicable in ships segment, in compatible with international environmental protection requirements and integrates associated BKI requirements which influence environmental protection.

For the EP+ notation, this Guidance invokes compliance with more stringent criteria for environmental protection related to management and support systems, sea discharges, and air discharges.

The EP-OS notation identifies the level of compliance with the Environmental Service System applicable in offshore segment, in compatible with international environmental protection requirements and integrates associated BKI requirements which influence environmental protection.

For the EP-OS+ notation, this Guidance invokes compliance with more stringent criteria for environmental protection related to management and support systems, sea discharges, and air discharges.

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# Section 1

## General

### A. Management and Support Systems

This Guidance has been developed with the objective of promoting an environmentally focused design, construction, and operation of BKI classed ships, offshore units, floating installations, and liftboats. The requirements specified in this Guidance are additional to all other relevant requirements of BKI Rules and Guidance. It identifies a foundational level which establishes that a ship, offshore unit, floating installation, or liftboat complies with international environmental regulations and associated BKI Rules or Guidance which are aimed at enhancing environmental protection. In addition, it establishes standards for a higher level of environmental protection that can be achieved through compliance with more stringent criteria related to management and support systems, sea discharges, and air discharges.

Ships designed, constructed, and operated in compliance with the foundational requirements of this Guidance may be assigned a class notation **EP**. Ships comply with EP requirement plus additional international requirements may be assigned a class notation **EP+**, Environmental Protection – Ship Plus

Offshore units, floating installations, and liftboats designed, constructed, and operated in compliance with the foundational requirements of this Guidance may be assigned a class notation **EP-OS**, Environmental Protection – Offshore. Offshore units, floating installations, and liftboats in compliance with the higher level requirements of this Guidance may be assigned a class notation **EP-OS+**, Environmental Protection – Offshore Plus.

### B. Basis of Notation

In general, the requirements of this Guidance are based on applicable international regulations and standards. If an international regulation or standard has been adopted by its oversight authority (regardless of the status of the ratification process), it is applicable to the appropriate notations of this Guidance.

Where a Flag State Administration, Coastal State Administration or Port State Administration has additional requirements related to environmental protection that are not addressed by this Guidance, such as requirements addressing carriage, storage, use or disposal of base oils, brines, oil-based muds, synthetic-based muds, cuttings, radioactive materials, explosives or chemicals employed during operations, it is the responsibility of the owner or operator to comply with such regulations.

#### 1. EP

Compliance with the applicable requirements of :

- Annexes I, II, III, IV, V, and VI to the International Convention for the Prevention of Pollution from Ships, MARPOL 73/78, as amended
- **SOLAS 74/88**, as amended: Chapter VII "Carriage of dangerous goods, International Convention on the Control of Harmful Anti-Fouling Systems on Ships, 2001"

#### 2. EP+

Compliance with the applicable requirements of EP plus :

- "International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004"
- MEPC.179(59), "Guidelines for the Development of the Inventory of Hazardous Materials"

- MEPC.1 / Circ. 681, "Interim Guidelines on the Method of Calculation of the Energy Efficiency Design Index for New Ships"
- MEPC.1 / Circ. 682, "Interim Guidelines for Voluntary Verification of the Energy Efficiency Design Index"

### **3. EP-OS Notation**

Compliance with the applicable requirements of Annexes I, IV, V, and VI to the International Convention for the Prevention of Pollution from Ships, MARPOL 73/78, as amended, is a prerequisite for receiving the class notation EP-OS. See Section 3 of this Guidance for additional requirements.

### **4. EP-OS+ Notation**

Compliance with applicable requirements of the EP-OS notation and Annexes I, IV, V, and VI to the International Convention for the Prevention of Pollution from Ships, MARPOL 73/78, as amended, is a prerequisite for receiving the class notation EP-OS+. See Section 4 of this Guidance for additional requirements.

## Section 2

### Documentation

#### A. Certification and Documentation

##### 1. EP Notation

The following certification and documentation are required, as applicable, in order to receive the Environmental Protection, notation:

- a. Safety Management Certificate in accordance with the International Safety Management Code (ISM Code)
- b. All mandatory certificates according to **MARPOL 73/78** and Annexes as amended
- c. Documentation verifying compliance with **MARPOL 73/78 Annexes**, as applicable
- d. List of environmentally relevant equipment, and corresponding documents not covered by **MARPOL 73/78**
- e. Measurement and assessment reports and documentation issued by authorities and by recognized or accredited bodies

##### 2. EP+ Notation

The certification and documentation as above mentioned including :

- a. Statement of compliance with the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009, or other similar proof of compliance
- b. Documentation verifying compliance with the requirements in the International Convention for the Control and Management of Ship's Ballast Water and Sediments, 2004

##### 3. EP-OS Notation

The following certification and documentation are required, as applicable, in order to receive the Environmental Protection – Offshore, EP-OS, notation:

- a. Safety Management Certificate in accordance with the International Safety Management Code (ISM Code)
- b. Documentation verifying a contract with the BKI Emergency Response Service (ERS) program, or with a similar program of another recognized Classification Society
- c. International Oil Pollution Prevention Certificate (IOPPC)
- d. International Sewage Prevention Pollution Certificate (ISPPC) or statement of compliance relating to the control of the discharge of sewage in accordance with MARPOL Annex IV, Regulation 11
- e. Documentation verifying compliance with the requirements in Annex V to MARPOL 73/78
- f. Documentation verifying compliance with the requirements in the International Convention for the Control and Management of Ship's Ballast Water and Sediments, 2004
- g. International Anti-Fouling System Certificate or relevant statement of compliance
- h. Declaration on Anti-Fouling System
- i. International Air Pollution Prevention Certificate (IAPPC) or statement of compliance relating to NOx control in accordance with MARPOL 73/78 Annex VI, Regulation 13.
- j. Statement of compliance with the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009, or other similar proof of compliance

##### 4. EP-OS+ Notation

In addition to A.3, the following certification and documentation are required, as applicable, in order to receive the Environmental Protection – Offshore Plus, EP-OS+, notation:

- a. Incinerator type approval certificate in accordance with IMO Resolution [MEPC 76\(40\)](#) and Resolution [MEPC.93\(45\)](#), Amendments to the Standard Specification for Shipboard Incinerators

## **B. Operational Procedures**

### **1. EP Notation**

The following operational procedures shall be submitted, as applicable:

- a. vapour emission control system
- b. VOC Management Plan
- c. plans for preventive measures, such as selective catalytic reduction (SCR)
- d. fuel oil management (SO<sub>x</sub>/NO<sub>x</sub> emission control)
- e. arrangement plan and refrigerant piping diagram for provision cooling, AC plant and, if so, fixed installed cargo refrigeration plant
- f. Sewage management plan
- g. garbage management plan
- h. Instructions and procedures addressing operation and control of NO<sub>x</sub> exhaust gas cleaning systems
- i. Fuel oil management for control of the Sox emission, including fueling management plan and procedure
- j. Instructions and procedures addressing operation and control of SO<sub>x</sub> exhaust gas cleaning systems
- k. Refrigerant systems management plan
- l. Stowage plan
- m. Ship Energy Efficiency Management Plan

### **2. EP+ Notation**

In addition to B.1, the following operational procedures shall be submitted, as applicable:

- a. ballast water management plan
- b. ballast water treatment plan
- c. Hazardous Inventory Material

### **3. EP-OS Notation**

The following documents are to be submitted for review, as appropriate:

- a. Machinery spaces bilge water management plan
- b. Produced oil and oily mixtures area bilge water management plan
- c. Sewage management plan
- d. Garbage management plan
- e. Ballast water management plan
- f. Instructions and procedures addressing operation and control of NO<sub>x</sub> exhaust gas cleaning systems
- g. Fuel oil management for control of the Sox emission, including fueling management plan and procedure
- h. Instructions and procedures addressing operation and control of SO<sub>x</sub> exhaust gas cleaning systems
- i. Refrigerant systems management plan

### **4. EP-OS+ Notation**

In addition to B.3, the sewage management plan of B.3.c is to include the grey water system.

## C. Plans and Additional Information

One set of stamped copies of the following plans and information is to be placed onboard the vessel, offshore unit, floating installation, or liftboat for the Operator’s use and for presentation to the BKI Surveyor at appropriate surveys.

### 1. EP Notation

The following additional plans shall be submitted, if applicable:

- a. details of the fuel oil system
- b. details of the refrigeration system
- c. details of the fire fighting system
- d. details of the incinerator system
- e. details of the sewage system
- f. details of the garbage management system
- g. Effective 4 April 1995; MARPOL 73/78 Annex I, Regulation 26 requires a Shipboard Oil Pollution Emergency Plan (SOPEP) for all tankers of 150 gross tons or more and all other vessels of 400 gross tons or more. The “Guidelines for the Development of Shipboard Oil Pollution Emergency Plans”, IMO MEPC 54 (32), advises that detailed guidance to the vessel’s master should be provided to take stability and stress into consideration when taking actions to mitigate the spillage of oil or to free the vessel from aground. While it does not require, it strongly suggests, that when there is excessive damage, consultation with shore-based technical assistance is appropriate before taking any action that may jeopardize the vessel. Accordingly, following plan must be kept on board:
  - a. Lines Plan or Hull Offsets or Electronic Data file
  - b. Class Approved Trim and Stability Manual.
  - c. Class Approved Loading Manual
  - d. Lightship Weight Distribution\*
  - e. Total Lightship Weight, LCG and VCG\*
  - f. Allowable values of Bending Moment and Shear force\*  
\*Note: May be included in the Trim & Stability Manual or Loading Manual
  - g. General Arrangement
  - h. Capacity Plan
  - i. Midship Section
  - j. Shell Expansion
  - k. Construction Profile and Deck Plans
  - l. Transverse Bulkhead in midship section plus collision bulkhead plus bulkhead forward of engine room
  - m. Docking Plan Fore End Construction
  - n. Aft End Construction
  - o. Engine Room and Inner Bottom Construction
  - p. Vents and Overflows
  - q. Cargo Piping Diagram
  - r. Approved Damage Stability Calculations
  - s. Fire/Damage Control Plan
  - t. Bilge and Ballast Piping Diagram
  - b. Pumping Curves (Cargo, Ballast, and Bilge)

### 2. EP+ Notation

In addition to C.1, the following additional plans shall be submitted, if applicable:

- a. details of the ballast tank arrangement and ballast system

### 3. EP-OS Notation

The following plans or information are to be submitted for approval, review or reference, as appropriate:

- a. Inventory of hazardous and potentially hazardous materials as per the Guidelines For The Development Of The Inventory Of Hazardous Materials, IMO Resolution MEPC.179(59)
- b. Fuel oil storage, settling and service tanks arrangement, including overfilling prevention arrangement
- c. Produced oil and oily mixtures loading and discharge facilities arrangement drawings, including connections, spill trays and drainage systems
- d. For floating installations used for offshore storage of produced oil and oily mixtures, arrangements of ballast tanks and tanks for produced oil and oily mixtures, including piping systems and overfilling prevention arrangement for tanks of produced oil and oily mixtures
- e. Details and diagrams of sewage system, including processing equipment
- f. List of equipment and arrangements for the handling/stowage of garbage
- g. Diagrammatic details of ballast system, including details of water treatment, if applicable
- h. Details of hull coating system, including anti-fouling coating specification
- i. Details of NO<sub>x</sub> control and measurement procedures
- j. Details of SO<sub>x</sub> control, including fuel oil system arrangements and/or exhaust gas abatement systems
- k. Diagrammatic details of any permanently installed refrigerant system
- l. Details of fire extinguishing media used in fixed fire fighting systems and extinguishers

The following operational procedures shall be submitted, as applicable:

- a. Vapour emission control system
- b. VOC Management Plan
- c. Plans for preventive measures, such as selective catalytic reduction (SCR)
- d. Arrangement plan and refrigerant piping diagram for Provision cooling, AC plant and, if so, fixed installed cargo refrigeration plant
- e. Ballast water management plan
- f. Ballast water treatment plan
- g. Garbage management plan

### 4. EP-OS+ Notation

In addition to C.1, the following plans or information are to be submitted for approval, review or reference, as appropriate:

- a. Lubricating oil tanks and other oil tanks (e.g., hydraulic oil) arrangement, including over filling prevention arrangement
- b. Details and diagrams of incinerator to include the feed to the incinerator and the incinerator's operating system

## D. Definitions

*Active Substance* – a substance or organism, including a virus or a fungus that has a general or specific action on or against harmful aquatic organisms and pathogens.

*Anti-Fouling System* – a coating, paint, surface treatment, surface or device used to control or prevent attachment of unwanted organisms.

*Ballast Water* – water, with its suspended matter, taken onboard to control trim, list, draft, stability or stresses.

*Ballast Water Management* – mechanical, physical, chemical and biological processes, either singularly or in combination, to remove, render harmless or avoid the uptake or discharge of harmful aquatic organisms and pathogens within ballast water and sediments.

*Domestic Waste Water (Grey Water)* – non-industrial drainage from dish washing, laundry or bathing, or any waste water generated in the living spaces that does not contain sewage.

*Emission Control Area (ECA)* – any sea area designated by IMO, including any port areas or coastal areas, where there exists a need to prevent, reduce, and control emissions of NO<sub>x</sub> or SO<sub>x</sub> and particulate matter. Criteria and procedures for designation of ECAs are set forth in Appendix III of MARPOL Annex VI.

*Floating Installation* – a mobile or non-mobile offshore structure designed for operation afloat which provides hydrocarbon processing and/or hydrocarbon storage with the capacity to offload hydrocarbons. This includes such configurations as:

- i. Floating Production, Storage and Offloading System (FPSO) – processes, stores and offloads hydrocarbons
- ii. Floating Production (and Offloading) System (FPS) – processes and offloads hydrocarbons without storage capacity
- iii. Floating Storage and Offloading System (FSO) – stores and offloads hydrocarbons without hydrocarbon processing facilities
- iv. Floating Offshore Installation (FOI) – may process and offload hydrocarbons and may or may not have storage capacity, but the production facilities are not classed.

*Food Wastes* – any spoiled or unspoiled victual substances, such as fruits, vegetables, dairy products, poultry, meat products, food scraps, food particles and all other materials contaminated by such wastes generated onboard, principally in the galley and dining areas.

*Garbage* – all kinds of victual, domestic and operational waste generated during the normal operation of an offshore unit, floating installation, or liftboat and liable to be disposed of continuously or periodically. Excluding Annex V, garbage does not consist of those substances which are defined or listed in other MARPOL Annexes.

*Global Warming Potential* – a measure of how much a given mass of greenhouse gas is estimated to contribute to global warming. It is a relative scale which compares the radiative efficiency (heat-absorbing ability) and decay rate of a gas to the same properties of carbon dioxide. It is calculated over a specific time interval.

*Liftboat* – a self-propelled, self-elevating vessel with a relatively large open deck capable of carrying equipment and supplies in support of various offshore mineral exploration and production or offshore construction activities; also has the capability of rapidly raising its hull clear of the water on its own legs so as to provide a stable platform from which maintenance and construction work may be conducted.

*Offshore Unit* – a self-propelled or non-self-propelled mobile offshore structure designed for operation afloat or supported by the sea bed, which:

- i. Engages in drilling operations for the exploration for or exploitation of resources beneath the sea bed (e.g., MODU), or
- ii. Provides support for various offshore exploration, exploitation, and production of sea-bed mineral resources or offshore construction activities (e.g., MOU) such as:
  - Column - stabilized accommodation units
  - Self-elevating construction and maintenance vessels
  - Column-stabilized pipe laying units
  - Column-stabilized crane units
  - Offshore liquid natural gas terminals such as Floating, Storage and Regasification Units (FSRUs) and Floating Liquefied Natural Gas Units (FLNGs)
  - Similar units used by the offshore industry.

*Refrigerant Systems* – includes refrigeration plants and systems, and centralized air conditioning systems.

*Sediments* – matter settled out of on board ballast water.

*Sewage (Black Water) –*

- i. Drainage and other wastes from any form of toilets and urinals
- ii. Drainage from medical premises (dispensary, sickbay, etc.) via wash basins, wash tubs, and scuppers located in such premises
- iii. Other waste waters when mixed with the drainages defined in *i*) through *ii*)

**E. Abbreviations**

AFS	Anti-fouling system
BWM	Ballast water management
CFC	Chlorofluorocarbons
ECA	Emission control area
GWP	Global warming potential (based on a 100-year time horizon)
HCFC	Hydro-chlorofluorocarbons
IACS	International Association of Classification Societies
IAPP	International Air Pollution Prevention Certificate
IMO	International Maritime Organization
IOPP	International Oil Pollution Prevention Certificate
ISM Code	International Safety Management Code
ISPP	International Sewage Pollution Prevention Certificate
MARPOL	International Convention for the Prevention of Pollution from Ships
MEPC	Marine Environmental Protection Committee (IMO)
MODU	Mobile offshore drilling unit
MOU	Mobile offshore unit
MSC	Maritime Safety Committee (IMO)
NO <sub>x</sub>	Nitrogen oxides
ODS	Ozone depleting substances
ppm	Parts per million
SO <sub>x</sub>	Sulfur oxides

**F. References**

The following international standards, guidelines, and recommendations were considered in developing this Guidance:

- i. IMO MARPOL 73/78 Annex I – Regulations for the Prevention of Pollution by Oil
- ii. IMO MARPOL 73/78 Annex IV – Regulations for the Prevention of Pollution by Sewage from Ships
- iii. IMO MARPOL 73/78 Annex V – Regulations for the Prevention of Pollution by Garbage from Ships
- iv. IMO MARPOL 73/78 Annex VI – Regulations for the Prevention of Air Pollution from Ships, IMO Resolution MEPC.176(58)

*Anti-Fouling Systems* – IMO International Convention on the Control of Harmful Anti-Fouling Systems on Ships, 2001 (AFS Convention) and associated Conference resolutions

*Ballast Water* – International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention), IMO BWM/CONF/36 and associated Guidelines

*Diesel Engine Exhaust NO<sub>x</sub> Content* – Technical Code on Control Emission of Nitrogen Oxides from Marine Diesel Engines (NO<sub>x</sub> Technical Code, 2008), IMO Resolution MEPC.177(58)

*Exhaust Gas Cleaning Systems* – IMO Resolution MEPC.170(57) Guidelines for Exhaust Gas Cleaning Systems



*Garbage Management* – IMO MEPC Circular 317 Guidelines for the Development of Garbage Management Plans

*Prevention of Oil Pollution from Offshore Floating Installations* – IMO Resolution MEPC.139(53) Guidelines for the Application of the Revised MARPOL Annex I Requirements to Floating Production, Storage and Offloading Facilities (FPSOs) and Floating Storage Units (FSUs) as amended by IMO Resolution MEPC.142(54)

*Safety Management* – IMO Resolution A.741(18) International Management Code for the Safe Operation of Ships and for Pollution Prevention (International Safety Management (ISM) Code)

*Sewage Treatment Plants* – IMO Resolution MEPC.159(55) Revised Guidelines on Implementation of Effluent Standards and Performance Tests for Sewage Treatment Plants

*Shipboard Incinerators* – IMO Resolution MEPC 76(40) Standard Specification for Shipboard Incinerators

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## Section 3

### EP and EP+ Notation

#### A. Management and Support Systems

The essential management practices and systems associated with the **EP**, and **EP+** notation are presented in this Subsection.

##### 1. Environmental Officer

An Environmental Officer is to be assigned onboard any ships, offshore unit, floating installation, or liftboat receiving the **EP**, **EP+** notation. This individual is responsible for the administration of the onboard environmental program which includes, but is not limited to:

- a. Compliance with current IMO environmental regulations
- b. Implementation of relevant procedures and waste management plans associated with this Guidance and the IMO environmental regulations
- c. Upkeep of relevant logs and records
- d. Training of personnel in relevant environmental practices

##### 2 Safety and Environmental Management

Ships, Self-propelled offshore units, self-propelled floating installations, and liftboats are to comply with the requirements of the International Safety Management Code (ISM Code).

##### 3 Support Systems–Emergency Response Service Program

For **EP+** is to be implemented with the BKI ERS program, or with a similar program of another recognized classification society.

The means for broadband communication and its supporting equipment's e.g. fleet broadband, global positioning device etc. shall be provided on board to support the emergency respond service where it is important to maintain a direct line of communication see BKI Guideline for Emergency Response Service section 3.B.

The routine maintenance of those equipment's shall be performed and planned to ensure the readiness.

##### 4 Recycling

For **EP+** are to hold and maintain compliance with Regulation 5 of the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009 pertaining to the preparation of an Inventory of Hazardous Materials.

#### B. Technical Requirement for EP Notation

The technical requirements in this Section control the operational and environmentally relevant discharges and emissions:

- a) into the sea of:
  - oil or oily mixtures
  - noxious liquid and solid substances
  - sewage
  - garbage

- ballast water
- bilge water
- biocides from anti-fouling coatings

b) into the air of:

- climate-damaging substances in refrigerants and fire extinguishing media
- volatile organic compounds
- SO<sub>x</sub> emissions
- NO<sub>x</sub> emissions
- flue gases of incineration plants.

## **1. Oil**

### **1.1 Application**

The requirements according to Annex I of **MARPOL 73/78**, Regulations for the Prevention of Pollution by Oil, apply to all ships.

### **1.2 Discharge of oil**

Discharge of oil or oily mixtures from ships into the sea is prohibited.

### **1.3 Oil record books**

Oil record books shall be provided in a form according to Appendix III to Annex I of **MARPOL 73/78**.

## **2. Bilge water**

### **2.1 Scope of application**

**2.1.1** The requirements of **MARPOL 73/78**, Annex I, apply to all ships.

**2.1.2** IMO Resolution MEPC.107 (49), Guidelines and Specifications for Pollution Prevention Equipment for Machinery Space Bilges of Ships, applies to all ships.

**2.1.3** The following requirements are applicable to oily water removed from the machinery space bilges of any ship.

### **2.2 Discharge of bilge water**

**2.2.1** The discharge of oily bilge water is prohibited, unless the oil content does not exceed 15 ppm.

**2.2.2** All ships shall be equipped with:

- 15 ppm bilge water separator
- 15 ppm monitor and alarm
- automatic stopping device

in accordance with the requirements for the equipment as detailed in the Rules for Machinery Installations, Volume III, Section 11, O.3.

**2.2.3** The piping and pumping arrangements of the 15 ppm bilge water separator shall be independent of all other piping systems.

## 2.3 Holding tanks

Holding tank capacity of sufficient size shall be provided for the delivery of bilge water to shore.

## 3. Noxious and/or dangerous cargoes

For the transportation of noxious and/or dangerous cargoes, the applicable requirements of Annex II and Annex III of **MARPOL 73/78**, the IGC Code, the IBC Code and the IMDG Code shall be met.

Fulfillment of these demands shall be demonstrated by the following certificates, depending on the ship type and the kind of cargo:

- International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk
- International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk
- International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk

## 4. Sewage

**4.1** All requirements according to Annex IV of **MARPOL 73/78**, Regulations for the Prevention of Pollution by Sewage, apply to all ships. Compliance shall be verified with the International Sewage Pollution Prevention Certificate.

**4.2** An initial survey as well as renewal surveys are required in accordance with the provisions of Regulation 4 of Annex IV of **MARPOL 73/78**.

**4.3** Discharge of sewage into the sea is prohibited unless any of the conditions of Regulation 3 or Regulation 11 of Annex IV of **MARPOL 73/78** is applicable.

**4.4** Standard dimensions of connections for shore discharge shall be in accordance with the data given in Regulation 10 of Annex IV of **MARPOL 73/78**.

**4.5** All means of grey water treatment and the capacity of holding tanks on board shall be documented.

**4.6** The Sewage Treatment Plant has to be examined and satisfactorily tested in accordance with the International Maritime Organization Resolution MEPC.159(55) to meet the operational requirements referred to in Regulation 9.1.1 of Annex IV of the International Convention for the Prevention of Pollution from Ships, 1973/78 as modified by Resolution MEPC.115(51).

## 5. Anti-fouling systems

**5.1** Application of biocide free anti-fouling is recommended.

**5.2** The anti-fouling systems used on ships shall not contain any organotin compounds which act as biocides.

**5.3** The application, re-application, installation or use of harmful anti-fouling systems containing organotin compounds which act as biocides is prohibited from January 1st, 2003.

**5.4** The certification of TBT-free anti-fouling systems on ships shall be in accordance with the "International Convention on the Control of Harmful Anti-Fouling Systems on Ships".

## 6. Garbage

### 6.1 Scope of application

The requirements of **MARPOL 73/78**, Annex V "Regulations for the Prevention of Pollution by Garbage from Ships" apply to all ships.

### 6.2 Garbage handling

**6.2.1** A garbage management plan shall be established in accordance with Regulation 9 of Annex V of **MARPOL 73/78** and kept on board of all ships. This plan shall provide written procedures for the collecting, storing, processing and disposing of garbage, including the use of the equipment on board. A person in charge of carrying out the plan has to be designated.

**6.2.2** A garbage record book, comprising all relevant information of the discharge operations or completed incineration, shall be kept on board. All operations and each completed page shall be signed according to Regulation 9 (3) of Annex V of **MARPOL 73/78** and the Appendix to Annex V.

**6.2.3** Equipment shall be provided on board for sorting, minimizing and storing the garbage prior to discharge or incineration. The respective procedures for sorting, minimizing and storing shall be incorporated into the garbage management plan.

**6.2.4** Every ship of 12 metres or more in length overall shall display placards which notify the crew and passengers of the garbage disposal requirements of regulations 3 and 5 of Annex V of **MARPOL 73/78**.

**6.2.5** Compliance with the above-mentioned requirements is confirmed by a "Certificate Concerning the Prevention of Pollution by Garbage".

The requirements refer to Annex VI "Regulations for the Prevention of Air Pollution from Ships" of **MARPOL 73/78**.

These regulations shall not apply to:

- emissions necessary for the purpose of securing the safety of a ship or saving life at sea, or
- emissions resulting from damage to a ship or its equipment; see Annex VI, Regulation 3 of **MARPOL 73/78**.

## 7. NO<sub>x</sub> emissions from marine diesel engines

**7.1** The requirements apply to diesel engines with a power output of more than 130 kW.

**7.2** The requirements do not apply to marine diesel engines used solely for emergency purposes, such as diesel engines in lifeboats and emergency diesel engines.

**7.3** Operation of each marine diesel engine to which these Guidance apply is prohibited unless the emission of nitrogen oxides (calculated as the total weighted emissions of NO<sub>2</sub>) from the engine is within the following Tier II limits:

- 14.4 g/kWh, when **n** is less than 130 rpm
- $44 \cdot n^{-0.23}$  g/kWh, when **n** is 130 or more but less than 2000 rpm
- 7.7 g/kWh, when **n** is 2000 rpm or more

where **n** is the rated engine speed measured in crank shaft revolutions per minute [rpm].

**7.4** The operation of a marine diesel engine exceeding the applicable limit is prohibited unless an exhaust gas cleaning system or any other equivalent method, as approved by BKI in accordance with the

NOx Technical Code, is applied to the engine in order to reduce on-board NOx emissions to at least the limit specified in 1.3.

**7.5** Testing, survey and certification of marine diesel engines to ensure compliance with the NOx emission limits of 1.3 shall be carried out according to the NOx Technical Code. In the event of compliance with all requirements, an "Engine International Air Pollution Prevention Certificate" (EIAPP) shall be issued in accordance with the form specified by Resolution MEPC.177(58).

**7.6** Any alternative technical solution according to Annex VI, Regulation 4 for NOx reduction is permitted provided the requirements according to 1.3 are fulfilled.

**7.7** On request and on a voluntary basis, the average weighted NOx emission value can be calculated from on-board measurements, if practicable. The measurements shall be performed according to the requirements of the NOx Technical Code. The measurements shall be carried out by an accredited control laboratory that is competent in the field of emission measurements on internal combustion engines and boiler plants running on gaseous and liquid fuels (e.g. accredited under the terms of EN ISO/IEC 17025, as applicable). The results shall be presented in a measurement report.

**7.8** The technical file of any marine diesel engine containing at least the information specified in the NOx Technical Code (section 2.4) shall be approved and kept on board. Emphasis shall be laid on the description of a practicable system of onboard NOx verification procedures which form the basis for periodical surveys.

## **8. SOx emissions from diesel engines**

**8.1** The requirements refer to Revised **MARPOL** Annex VI, Regulation 14 as amended by Resolution MEPC.176(58) and apply to all ships.

**8.2** The sulphur content of any fuel oil used on board ships in general shall not exceed

- 4.5 % of mass prior to 1 January 2012
- 3.5 % of mass on and after 1 January 2012
- 0.5 % of mass on and after 1 January 2020

**8.3** While ships are operating within an Emission Control Area, the sulphur content of fuel oil used on board ships shall not exceed

- 1.0 % of mass on and after 1 July 2010; and
- 0.1 % of mass on and after 1 January 2015

**8.4** Exhaust gas cleaning systems may be used to reduce the emissions of SOx provided that the requirements of Resolution MEPC.170(57) Guidelines of Exhaust Gas Cleaning Systems are met.

**8.5** Any alternative technical solution according to Annex VI, Regulation 4 for SOx reduction is permitted provided such technical solution is at least as effective in terms of emission reduction as required according to 2.2 and 2.3.

**8.6** A fuel oil management system shall be installed to document:

- the maximum sulphur content of the fuel oil intended for combustion purposes as delivered to the ship, according to 2.2 and 2.3
- representative fuel oil samples taken from the ship's bunker manifold
- records of any purchase order.

**8.7** Bunker delivery notes shall be kept on board and retained for at least 3(three) years. The

samples of fuel oil shall be kept on board and retained for at least 12 (twelve) months from the date of delivery.

## **9. Vapour emission control systems**

### **9.1 Scope of application**

The requirements refer to all tankers intended for the transportation of volatile products in bulk, such as gasoline, other petroleum products, organic chemicals and crude oil.

The requirements are not applicable to terminals and to FPSOs (Floating Production, Storage and Offloading vessels).

### **9.2 Requirements for ship equipment**

All tankers which are subject to vapour emission control shall be provided with a vapour emission collection and control system approved by BKI. These tankers shall use such a system during the loading of the said cargoes.

**9.3** The requirements of the Revised Annex VI, Regulation 15 and IMO "Standards for Vapour Emission Control Systems" (MSC/Circ.585) apply to all vapour emission collection and control systems installed on board.

## **10. Shipboard incineration**

**10.1** The requirements of **MARPOL 73/78**, Annex VI, Regulation 16, apply to all shipboard incinerators and to their usage.

**10.2** Type approval in accordance with IMO Resolution MEPC 76(40) is necessary for all incinerators installed on board.

**10.3** The incineration of garbage shall be documented in the garbage record book.

**10.4** The incineration of oily residues and oily wastes shall be documented in the oil record book.

## **11. Refrigeration systems**

### **11.1 Scope of application**

**11.1.1** The following requirements are applicable to refrigeration plants used for cargo refrigeration, gas re-liquefaction, air conditioning, provision cooling and catering systems on all ships.

**11.1.2** The requirements are not applicable to any stand-alone refrigeration or air conditioning systems, such as those found in galleys, pantries, bars, crew accommodation or technical spaces.

### **11.2 Refrigerants**

**11.2.1** Refrigeration systems shall be filled with environment friendly refrigerants. The use of natural refrigerants such as NH<sub>3</sub>, CO<sub>2</sub> etc. is strongly recommended.

**11.2.2** The use of ozone-depleting refrigerants is not allowed. Exception will be made to the HCFCs in existing ships until 1 January 2020.

The Global Warming Potential (GWP) of any refrigerant used on board shall not exceed 3800.

**11.2.3** Refrigeration systems shall be arranged with a suitable means of protection to prevent the release



of any substantial quantity of the refrigerant.

### **11.3 Refrigerant monitoring**

**11.3.1** Periodic leak-detection procedures shall be established to minimize refrigerant leakage.

**11.3.2** Consumption, disposal and leaks of refrigerants shall be documented. Documentation, e.g. by means of a log book, shall be kept available on board. For each system, the annual refrigerant leakage rate shall not exceed 10 % of its total charge.

**11.3.3** A leak detection system appropriate for the type of refrigerant shall be provided to monitor continuously the refrigeration machinery spaces or installation areas of refrigerating machinery.

An alarm shall be given when the refrigerant concentration exceeds a predetermined limit. The alarm shall be linked to the general machinery alarm system.

### **11.4 Refrigerant recovery**

**11.4.1** Maintenance, servicing and repair work shall be carried out without releasing any substantial quantity of refrigerant.

**11.4.2** For the purpose of refrigerant recovery, at least one refrigerant compressor of each system shall be capable of evacuating the system into a liquid receiver or gas cylinders dedicated to this purpose. The capacity of the refrigerant receiver or the gas cylinders shall not be less than a full charge of the largest refrigerant system. Additionally, recovery units shall be provided to evacuate residual quantities from a refrigeration system either into the liquid receiver or into gas cylinders dedicated to this purpose. Recovery units may be permanently installed or of a mobile type.

## **12. Fire fighting**

### **12.1 Scope of application**

The requirements apply to fixed fire extinguishing systems and to portable fire extinguishers.

### **12.2 Fire extinguishing media**

**12.2.1** Fire-fighting systems should be provided with environment friendly fire-fighting substances. The use of natural substances such as CO<sub>2</sub>, argon, nitrogen, water etc. is recommended.

**12.2.2** The use of halo-carbons (halons) as fire fighting substances is not permitted.

**12.2.3** Alternative substances to halons are permitted, provided that they have a GWP of less than 4000.

### **12.3 Fire fighting systems and equipment**

The requirements of IMO Resolution MSC.98(73), the International Code for Fire Safety Systems (FSS Code), apply to all ships.

## **13. Ship Energy Efficiency Management Plan**

### **13.1 Scope of application**

According to the MEPC.203(62) introducing the amended MARPOL Annex VI, new chapter 4, regulation 22, from 01/01/2013 Ship Energy Efficiency Management Plan (SEEMP) is mandatory for ships over 400 GT

## **13.2 The plan and certificate**

**13.2.1** The Ship Energy Efficiency Management Plan (SEEMP) is a management plan designed to improve the ship energy efficiency by implementing operational or technical measures such as but not limited to speed optimization, optimum trim, propeller polishing, and Energy Saving Devices

**13.2.2** The SEEMP is listed in the “record of construction relating to energy efficiency” attached to the International Energy Efficiency Certificate. The International Energy Efficiency Certificate is defined in Appendix VIII of the IMO Resolution MEPC 203.(62). It includes in particular the requirement for the SEEMP for all existing and new ships above 400 GT.

## Section 4

### EP-OS Notation

#### A. Management and Support Systems

The essential management practices and systems associated with the **EP-OS** notation are presented in this Subsection.

##### 1. Environmental Officer

An Environmental Officer is to be assigned onboard any offshore unit, floating installation, or liftboat receiving the **EP-OS** notation. This individual is responsible for the administration of the onboard environmental program which includes, but is not limited to:

- i. Compliance with current IMO environmental regulations
- ii. Implementation of relevant procedures and waste management plans associated with this Guidance and the IMO environmental regulations
- iii. Upkeep of relevant logs and records
- iv. Training of personnel in relevant environmental practices

##### 1.1 Safety and Environmental Management

Self-propelled offshore units, self-propelled floating installations, and liftboats are to comply with the requirements of the International Safety Management Code (ISM Code).

##### 1.2 Support Systems—Emergency Response Service Program

For offshore units designed for operations afloat, floating installations, and liftboats 500 gross tons and over, an approved contract is to be implemented with the BKI ERS program, or with a similar program of another recognized classification society.

##### 1.3 Recycling

Offshore units, floating installations, and liftboats are to hold and maintain compliance with Regulation 5 of the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009 pertaining to the preparation of an Inventory of Hazardous Materials.

#### B. Sea Discharge – Oil

This Subsection addresses requirements aimed at reducing the potential adverse effects on these a environment by oil discharges from offshore units, floating installations, and liftboats.

##### 1. Machinery Spaces

Offshore units, floating installations, and liftboats are to hold and maintain a valid IOPP Certificate with Form A in accordance with the requirements of MARPOL Annex I.

Offshore units and floating installations are to comply with the requirements of MARPOL Annex I in accordance with Regulation 39 and Unified Interpretation 56 while on location and engaged in the exploration, exploitation, and associated processing of sea-bed mineral resources.

In addition, offshore units, floating installations, and liftboats are to comply with the requirements of B.1.1 through B.1.5.

## 1.1 Protection of Fuel Oil Tanks

*Offshore Units:* Arrangements of fuel oil tanks are to comply with following Tank Protection Requirements.

### 1.1.1 General

The requirements apply to offshore units having an aggregate fuel oil capacity (including tanks of 30 m<sup>3</sup> or less) of 600 m<sup>3</sup> and above. However, the requirements need not be applied to individual fuel oil tanks with a capacity not greater than 30 m<sup>3</sup>, provided that the aggregate capacity of such excluded tanks is not greater than 600 m<sup>3</sup>. Further, individual fuel oil tanks are not to have capacity greater than 2500 m<sup>3</sup>. Fuel oil tanks of any volume are not to be used for ballast water. Those tanks which would not contain oil fuel in normal operation, such as overflow tanks, are excluded. Fuel oil capacity of a tank is the volume of the tank at 98% filling.

### 1.1.2 Protective Location of Tanks

The protective locations for the tanks specified in B.1.1.1 above are to be as follows:

- (a). Deterministic Approach. All applicable tanks are to be located not less than the distance as specified in B.1.1.2 (a)i, ii) and iii), as relevant, from the unit's bottom or side shell plating. Small suction wells may extend below fuel oil tank's bottom if they are as small as possible and the distance between the unit's bottom plate and the suction well bottom is not reduced by more than half of the distance required by B.1.1.2 (a)i).

- i) For all offshore units, except of the MODU self-elevating type, having an aggregate fuel oil capacity of 600 m<sup>3</sup> and above, all tanks, including those in the unit's pontoons, are to be arranged above the unit's molded line of bottom shell plating at the distance h as specified below:

$$h = B/20 \text{ m, or}$$

$$h = 2.0 \text{ m, whichever is smaller}$$

where B is the breadth of the unit or, if applicable, the pontoon, in m. h is in no case to be less than 0.76 m.

- ii) For all offshore units having an aggregate fuel oil capacity greater than or equal to 600 m<sup>3</sup> but less than 5000 m<sup>3</sup>, tanks are to be arranged inboard of the molded line of side plating not less than the distance w as specified below:

$$w = 0.4 + 2.4C/20000 \text{ m}$$

where

C = unit's total volume of fuel oil (including tanks of 30 m<sup>3</sup> or less), in m<sup>3</sup>, at 98% tank filling

w = at least 1.0 m

for individual tanks smaller than 500 m<sup>3</sup>, w is to be at least 0.76 m

- iii) For all offshore units having an aggregate fuel oil capacity of 5000 m<sup>3</sup> and above, tanks are to be arranged inboard of the molded line of side plating not less than the distance w, as specified below:

$$w = 0.5 + C/20000 \text{ m, or}$$

$$w = 2.0 \text{ m, whichever is smaller}$$

where C is the unit's total volume of fuel oil (including tanks of 30 m<sup>3</sup> or less) in m<sup>3</sup> at 98% tank filling.

The minimum value of w = 1.0 m.

- iv) When applying B.1.1.2 (a) to column-stabilized drilling units, the tank protection specified by paragraphs B.1.1.2 (a)ii) and by B.1.1.2 (a)iii) applies only to those areas subject to damage as per Chapter 3 / 3.5 of IMO MODU Code.
- (b) Probabilistic Approach. As an alternative to the deterministic approach of 4-2-5/11.3.2(a), arrangements complying with the level of protection for both side and bottom damage in accordance with the accidental oil fuel outflow performance standard of Regulation 12A, Annex I, MARPOL73/78, as amended, are acceptable.

*Floating Installations:* Arrangements of fuel oil tanks are to comply with IMO Resolution MEPC.142(54).

*Liftboats:* Arrangements of fuel oil tanks are to comply with BKI Part 1 – Seagoing Ships, Volume II Rules for Hull, Section 12.

## 1.2 High Level Alarms

All fuel oil tanks are to be fitted with an alarm to warn of the level reaching a predetermined high level.

## 1.3 Oil Filtering Equipment

Oil filtering equipment for machinery spaces is to be provided with alarm arrangements to indicate when the oil content of the effluent exceeds 15 ppm. In addition, automatic stopping arrangements are to be provided for any discharge of oily mixtures when the oil content in the effluent exceeds 15 ppm.

The oil filtering equipment for machinery spaces is not to be used to discharge oily waste which originates from any area other than machinery spaces, or to discharge machinery space oily waste mixed with oily waste, other than the collection trays in 5.1.5, which originates from any other area of the offshore unit, floating installation, or liftboat.

## 1.4 Sludge Tank

The total capacity of sludge tanks is to meet the criteria specified in MARPOL Annex I, Unified Interpretations 15.1 and 15.2, as applicable, based on the greater of the maximum period of voyage between ports where sludge can be discharged ashore or 30 days, fuel oil consumption, homogenizers or sludge incinerators installed, and fuel purification.

The sludge tank is not to be used for the storage of sludge waste which originates from any area other than machinery spaces or to be used for the storage of sludge from machinery space mixed with sludge or any other waste which originates from any other area of the offshore unit, floating installation, or liftboat.

## 1.5 Collecting Trays

Collecting trays with capacities of at least the following are to be fitted under all vents for fuel oil tanks, lubricating oil tanks, other oil tanks (e.g., hydraulic oil) and overflow tanks, and filling manifolds:

- i. 0.12 m<sup>3</sup> for all offshore units, all floating installations, and liftboats of 1,600 gross tons or more
- ii. 0.06 m<sup>3</sup> for liftboats of 300 or more but less than 1,600 gross tons
- iii. 0.02 m<sup>3</sup> for liftboats of less than 300 gross tons

In addition, collecting trays are to be provided with means for the disposal of any drainage without discharging it into the sea.

## 2. Produced Oil and Oily Mixtures Area

Floating installations used for offshore storage of produced oil and oily mixtures are to comply with the requirements of MARPOL Annex I in accordance with IMO Resolution MEPC.139(53) as amended by IMO Resolution MEPC.142(54) and required form (Supplement to the IOPP Certificate – Record of Construction and Equipment for FPSOs and FSUs).

In addition, these floating installations are to comply with the requirements of 3.1.1 through 3.1.5 and B.1 through B.2.

## 2.1 Gauging Systems

Tanks containing produced oil and oily mixtures are to be fitted with tank overfill protection in accordance with BKI Part 1 – Seagoing Ships, Volume III Rules for Machinery Installation.

## 2.2 Produced Oil and Oily Mixtures Deck Area

The produced oil and oily mixtures deck area is to be fitted with means and arrangements to reduce the likelihood of a produced oil and oily mixtures spill on deck reaching the sea. These means and arrangements are to include, as a minimum but not be limited to, the following:

- i. Collecting trays with capacities of at least the following are to be fitted under loading manifolds or transfer connections for produced oil and oily mixtures:
  - a. 0.06 m<sup>3</sup> for loading hoses or arms with inside diameters of 50 mm (2 in.) or less
  - b. 0.12 m<sup>3</sup> for loading hoses or arms with inside diameters of more than 50 mm (2 in.) but less than 100 mm (4 in.)
  - c. 0.24 m<sup>3</sup> for loading hoses or arms with inside diameters of 100 mm (4 in.) or more but less than 150 mm (6 in.)
  - d. 0.36 m<sup>3</sup> for loading hoses or arms with inside diameters of 150 mm (6 in.) or more but less than 300 mm (12 in.)
  - e. 0.48 m<sup>3</sup> for loading hoses or arms with inside diameters of 300 mm (12 in.) or more

In addition, collecting trays are to be provided with means for the disposal of any drainage without discharging it into the sea.

- ii. Continuous coamings of approximately 150 mm height, but nowhere less than 50 mm above the upper edge of the sheer strake, are to be fitted to keep any spills on deck and away from accommodation and service areas. In addition, the deck drainage system is to be provided with means for the disposal of any drainage without discharging it into the sea.

## C. Sea Discharge – Sewage

This Subsection addresses requirements aimed at reducing the potential adverse effects on the sea environment by sewage discharges from offshore units, floating installations, and liftboats.

Offshore units, floating installations, and liftboats are to hold and maintain a valid International Sewage Pollution Prevention Certificate in accordance with the requirements of MARPOL Annex IV or a statement of compliance relating to the control of the discharge of sewage in accordance with MARPOL Annex IV, Regulation 11.

In addition, offshore units, floating installations, and liftboats are to comply with the requirements of C.1 through C.5.

### 1. Treatment

A sewage treatment plant, type approved by the Flag Administration, is to be provided. Sewage treatment plants installed before 1 January 2010 are to comply with MARPOL Annex IV under the guidelines specified in IMO Resolution MEPC.2 (VI). Plants installed on or after 1 January 2010 are to comply with IMO Resolution MEPC.159 (55).

Alternatively for liftboats, a sewage comminuting and disinfecting system or an appropriately sized sewage holding tank is to be provided in accordance with MARPOL Annex IV, Regulation 9.

## 2. Piping Arrangement

A suitable discharge pipeline is to be provided which leads to the exterior of the offshore unit, floating installation, or liftboat and can be fitted with a standard shore connection, as specified in MARPOL Annex IV, Regulation 10.

## 3. Sewage Management Plan

A sewage management plan is to be placed on board for the guidance of the operating personnel. This plan is to give clear guidance to the crew about the sewage system and is to include, as a minimum:

- i. Offshore unit, floating installation, or liftboat name and BKI registration number
- ii. Simplified diagrams and component description of the sewage system
- iii. Step-by-step instructions for the operation and management of the sewage system
- iv. Methods and means of recording all sewage discharges, whether to sea or to any reception facility. The recorded data shall include, as a minimum, date of discharge; quantity of sewage discharge; location and type of reception facility; and for sea discharges while underway the distance to the nearest land and the speed of the offshore unit, floating installation, or liftboat.

The sewage management plan is to be submitted for review by BKI to verify the presence of the above information, which is to be consistent with the design information and limitations considered in the classification of the offshore unit, floating installation, or liftboat. BKI is not responsible for the operation of the sewage system.

## D. Sea Discharge – Garbage

This Subsection addresses requirements aimed towards the prevention of pollution to the sea environment by garbage discharges from offshore units, floating installations, and liftboats.

Offshore units, floating installations, and liftboats are to comply with the provisions of MARPOL Annex V and the requirements of D.1.

### 1. Garbage Management Plan

A garbage management plan is to be placed on board for the guidance of the crew. This plan is to be in accordance with MEPC / Circular 317, Guidelines for the Development of Garbage Management Plans, and is to include, as a minimum:

- i. Offshore unit, floating installation, or liftboat name and BKI registration number
- ii. Procedures for collecting and separating, processing (including volume reduction), storing and disposing of garbage
- iii. Procedures for the operation of the equipment onboard associated with the handling of garbage

## E. Sea Discharge – Water Ballast

### 1. General

This Subsection addresses requirements aimed towards the prevention of transporting harmful aquatic organisms and pathogens via water ballast discharges from offshore units, floating installations in transit conditions (e.g., delivery voyages, voyages for dry-docking, voyages for site relocation, etc.), and liftboats.

Offshore units, floating installations in transit condition, and liftboats are to comply with the appropriate requirements of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention) and the requirements of E.2 through E.5.

This Subsection does not address requirements for the design of ballast systems or ballast water treatment systems.

## 2. Ballast Water Management Plan

A ballast water management plan is to be placed onboard for the guidance of the crew. This plan is to be in accordance with IMO Resolution MEPC.127(53), “Guidelines for Ballast Water Management and Development of Ballast Water Management Plans (G4)”.

## 3. Methods of Ballast Water Management

Methods of ballast water management are to consist of ballast water exchange or ballast water management systems in accordance with the BWM Convention.

### 3.1 Ballast Water Exchange

The three accepted methods for ballast water exchange are as follows:

- i. *Sequential method* – a process by which a ballast tank is first emptied and then refilled with replacement ballast water to achieve at least a 95% volumetric exchange.
- ii. *Flow-through method* – a process by which replacement ballast water is pumped into a ballast tank allowing the water to overflow the tank.
- iii. *Dilution method* – a process by which replacement ballast water is filled through the top of the ballast tank with simultaneous discharge from the bottom at the same flow rate.

As a minimum, ballast water exchange procedures are to be in accordance with IMO Resolution MEPC.124(53), “Guidelines for Ballast Water Exchange (G6)”. Design and construction of ballast water exchange arrangements are to be in accordance with IMO Resolution MEPC.149(55), “Guidelines for Ballast Water Exchange Design and Construction Standards (G11)”.

### 3.2 Ballast Water Management Systems

Ballast water management systems are to be type-approved in accordance with IMO Resolution MEPC.174(58), “Guidelines for Approval of Ballast Water Management Systems (G8)”.

In addition, ballast water management systems that make use of active substances are to comply with IMO Resolution MEPC.169(57), “Procedure for Approval of Ballast Water Management Systems that Make Use of Active Substances (G9)”.

## 4. Ballast Water Records

Records of ballast water management are to be maintained onboard in accordance with Regulation B-2 and Appendix II of the BWM Convention.

## 5. Responsible Officer

The Environmental Officer is to be responsible for verifying that all applicable ballast water handling and treatment procedures of the ballast water management plan are followed and for recording and maintaining the appropriate records of same. See A.1.

## F. Sea Discharge – Anti fouling Systems

This Subsection addresses requirements aimed at reducing the potential adverse effects of introducing organotin compounds to the sea environment by anti-fouling systems of offshore units, floating installations, and liftboats.

Liftboats 400 gross tons and above are to hold and maintain a valid International Anti-Fouling System Certificate or statement of compliance in accordance with the requirements of the AFS Convention.



Liftboats 24 meters or more in length, but less than 400 gross tons, are to hold and maintain a valid Declaration on Anti-Fouling System in accordance with the requirements of the AFS Convention.

In addition, offshore units, floating installations, and liftboats constructed or dry-docked on or after 1 January 2003 are to comply with the requirements of F.1.

### **1. Application of organotin compounds**

Anti-fouling systems for hulls or external parts or surfaces:

- i. Are not to bear organotin compounds which act as biocides, or
- ii. Are to bear a coating that forms a barrier to prevent leaching of organotin compounds from an underlying non-compliant system

Small quantities of organotin compounds (such as mono- and di-substituted organotin compounds) are allowed as a chemical catalyst. The levels of these compounds are not to provide a biocidal effect and are not to be present above 2,500 milligram (mg) total tin per kilogram (kg) of dry paint.

### **G. Air discharge – Nitrogen Oxides (NO<sub>x</sub>) Emission**

This Subsection addresses requirements aimed towards the prevention of pollution to the air environment by NO<sub>x</sub> emission from offshore units, floating installations, and liftboats.

#### **1. Diesel Engines**

For NO<sub>x</sub> emissions, marine diesel engines with power output greater than 130 kW, installed on or after 1 January 2000, are to comply with the requirements of this paragraph. In addition, these requirements apply to marine diesel engines which undergo major conversions, as defined by MARPOL Annex VI, on or after 1 January 2000. They do not apply to diesel engines which:

- i. Are used solely for emergencies
- ii. Are installed in lifeboats
- iii. Are solely dedicated to the exploration, exploitation, and associated offshore processing of sea-bed mineral resources (for example diesel engines driving pumps or equipment solely associated with cuttings, muds, stimulation fluids during well completion, etc).

Marine diesel engines are to be certified for NO<sub>x</sub> emission in accordance with the requirements of Regulation 13, MARPOL Annex VI and the NO<sub>x</sub> Technical Code, 2008.

#### **1.1 Tier I**

1.1 (a) *Construction on or after 1 January 2000.* The operation of marine diesel engines, excluding *i)* through *iii)* above, which are installed on offshore units, floating installations, and liftboats constructed on or after 1 January 2000 and prior to 1 January 2011 are prohibited unless the NO<sub>x</sub> emissions from the engines' exhausts are within the Tier I limits of Regulation 13, MARPOL Annex VI.

1.1 (b) *Construction prior to 1 January 2000.* Marine diesel engines, excluding *i)* through *iii)* above, with a power output of more than 5,000 kilowatt (kW) and a per cylinder displacement at or above 90 liters installed on offshore units, floating installations, and liftboats constructed on or after 1 January 1990 but prior to 1 January 2000 are to comply with the Tier I emission levels and the requirements of Regulations 13.7.1 through 13.7.5 of MARPOL Annex VI.

#### **1.2 Tier II**

1.2 (a) *Construction on or after 1 January 2011.* The operation of marine diesel engines, excluding *i)* through *iii)* above, which are installed on offshore units, floating installations, and liftboats constructed on or after 1 January 2011 are prohibited unless the NO<sub>x</sub> emissions from the engines' exhausts are within the Tier II limits of Regulation 13, MARPOL Annex VI.

### 1.3 Tier III

1.3 (a) *Construction on or after 1 January 2016.* The operation of marine diesel engines, excluding *i* through *iii* above, which are installed on offshore units, floating installations, and liftboats constructed on or after 1 January 2016 and operating in an Emission Control Area (ECA) are prohibited unless the NO<sub>x</sub> emissions from the engines' exhausts are within the Tier III limits of Regulation 13, MARPOL Annex VI.

### 1.4 NO<sub>x</sub> Exhaust Gas Cleaning Systems

Special consideration will be given to exhaust gas cleaning systems provided the systems are at least as effective in terms of NO<sub>x</sub> emission reduction as required by G.1.1 through G.1.3 and Regulation 13, MARPOL Annex VI. Exhaust gas cleaning systems are to:

- i. Comply with the appropriate IMO guidelines
- ii. Be operated and controlled in accordance with manufacturers' instructions and procedures
- iii. Be acceptable to BKI

## H. Air Discharge – Sulfur oxides (SO<sub>x</sub>) Emission

This Subsection addresses requirements aimed at reducing the potential adverse effects on the air environment by SO<sub>x</sub> emission from offshore units, floating installations, and liftboats.

### 1. Fuel Oil for Combustion

#### 1.1 Fuel Oil Quality

Fuel oil delivered and used onboard is to:

- i. Comply with the requirements of Regulation 18.3, MARPOL Annex VI
- ii. Be free from inorganic acid
- iii. Be derived from blends of hydrocarbons from petroleum refining as per Regulation 18.3.1 or methods other than petroleum refining as per Regulation 18.3.2

When approved by the appropriate Administration, compliance with the requirements of Regulation 18, MARPOL Annex VI does not apply to the use of hydrocarbons that are produced and subsequently used on site as fuel.

#### 1.2 Fuel Oil Sulfur Content – Global

When operating globally outside an ECA, the sulfur content of fuel oil used onboard is not to exceed the following limits:

- i. 3.5% mass/mass prior to 1 January 2020
- ii. 0.5% mass/mass on and after 1 January 2020

#### 1.3 Fuel Oil Sulfur Content – Emission Control Areas (ECAs)

When operating within an ECA, the sulfur content of fuel oil used onboard is not to exceed the following limits:

- i. 1.5% mass/mass prior to 1 July 2010
- ii. 1.0% mass/mass on and after 1 July 2010
- iii. 0.1% mass/mass on and after 1 January 2015

ECAs include the Baltic Sea, North Sea, and any other sea area designated by IMO. See Section 2.D of this Guideline and Regulation 14.3 of MARPOL Annex VI.

## 2. Fuel Oil management Plan

### 2.1 General

A fuel oil management plan is to be placed onboard for the guidance of the crew. This plan is to include, as a minimum:

- i. Offshore unit, floating installation, or liftboat name and BKI registration number
- ii. Procedures for bunkering fuels onboard
- iii. Means used for the control of SO<sub>x</sub> emissions from oil fired equipment (such as internal combustion engines, incinerators, etc)
- iv. Compliance with the requirements of H.3.2 and H.3.3, as applicable

The fuel oil management plan is to be submitted for review by BKI to verify the presence of the above information, which is to be consistent with the design information and limitations considered in the classification of the offshore unit, floating installation, or liftboat. BKI is not responsible for the operation of fuel oil systems.

### 2.2 Emission Control Areas (ECAs)

Self-propelled offshore units, self-propelled floating installations, or liftboats that use or intend to use separate fuels for propulsion when entering or leaving an ECA are to include, as a minimum, the following:

- i. Step-by-step instructions and procedures on how to perform the fuel oil changeover
- ii. Diagrammatic details of the fuel oil system including details of change over for SO<sub>x</sub> control
- iii. Methods and means of recording the volume of low-sulfur fuel oils in tanks, and date, time, and position of the self-propelled offshore unit, self-propelled floating installation, or liftboat when any operation of fuel oil changeover is completed prior to entry into or is commenced after exit from an ECA

### 2.3 Fuel Oil Availability

2.3 (a) *Course of Action.* When fuel oil complying with H.1.2 or H.1.3, as applicable, is not available, the fuel oil management plan is to contain a course of action which includes any of, but not be limited to, the following:

- i. Bunker the minimal amount of fuel oil necessary to proceed to a port or terminal where fuel oil complying with H.1.2 or H.1.3, as applicable, can be obtained
- ii. Carriage of sufficient amounts of Marine Distillate Fuels, such as grades DMA, DMB, and DMC of ISO 8217, in appropriate bunker tanks
- iii. If fuel oil compatibility can be confirmed by a fuel oil test company, the high sulfur fuel oil exceeding H.1.2 or H.1.3, as applicable, should be diluted by mixing with a low sulfur fuel oil taken onboard from the next available bunkering source
- iv. If fuel oil compatibility can be confirmed by a fuel oil company, the high sulfur fuel oil exceeding H.1.2 or H.1.3, as applicable, and low sulfur fuel oil can be mixed, to the required ratio, in a settling tank to obtain fuel oil with sulfur content complying with H.1.2 or 3/H.1.3, as applicable, prior to use in marine diesel engines, oil fired boilers, or other oil fired equipment
- v. Use of exhaust gas cleaning systems

2.3 (b) *Records.* Upon receiving fuel oil not in compliance with the sulfur content of H.1.2, or H.1.3, as applicable, the following is to be recorded in the appropriate log:

- i. Date, time, and name of bunkering source
- ii. Sulfur content as indicated on the bunker delivery note or provided documentation or a statement when a bunker delivery note or similar documentation did not accompany the delivered fuel
- iii. List of fuel oil tanks bunkered with non-compliant fuel oil or fuel oil not accompanied with a bunker delivery note or similar documentation
- iv. Volume of non-compliant fuel oil or fuel oil not accompanied with a bunker delivery note or similar documentation in each tank

- v. Course of action taken (see H.3.3(a))

### 3. SO<sub>x</sub> Exhaust Gas Cleaning Systems

For marine diesel engines, oil fired boilers and inert gas generators, special consideration will be given to exhaust gas cleaning systems provided the systems are at least as effective in terms of SO<sub>x</sub> emission reduction as required by H.1.2, H.1.3, and Regulation 14, MARPOL Annex VI. Exhaust gas cleaning systems are to:

- i. Comply with IMO Resolution MEPC. 170(57), Guidelines for Exhaust Gas Cleaning Systems, if installed before 1 July 2010 and MEPC. 184(59), 2009 Guidelines for Exhaust Gas Cleaning Systems, if installed on or after 1 July 2010.
- ii. Be operated and controlled in accordance with manufacturers' instructions and procedures
- iii. Be acceptable to BKI

### I. Air Discharge – Incinerators

This Subsection addresses requirements aimed towards the prevention of pollution to the air environment by incinerators from offshore units, floating installations, and liftboats.

Where installed onboard, incinerators are to be type-approved in accordance with IMO Resolution MEPC.76(40), Standard Specification for Shipboard Incinerators. In particular, incinerators are to comply with the emission standards of Annex A1 of the IMO Resolution.

Onboard incineration is to conform to Regulation 16 of MARPOL Annex VI, and the following substances are prohibited from being incinerated:

- i. MARPOL Annex I, II, and III cargo residues
- ii. Polychlorinated biphenyls (PCBs)
- iii. Garbage containing more than traces of heavy metals
- iv. Refined petroleum products containing halogen compounds
- v. Sewage sludge and sludge oil, either of which is not generated onboard
- vi. Polyvinylchlorides (PVCs) except by incinerators issued IMO Type Approval Certificates
- vii. Exhaust gas cleaning system residues

Incineration of any garbage, excluding *iii*), is to be recorded in the Garbage Record Book in accordance with MARPOL Annex V. See Subsection D.

### J. Air Discharge – Refrigerant Systems

This Subsection addresses requirements aimed at reducing the potential adverse effects on the air environment by refrigerant systems onboard offshore units, floating installations, and liftboats.

#### 1. General Requirements

The requirements of Subsection J are applicable to refrigerant systems (see Subsection D) onboard offshore units, floating installations, and liftboats.

Stand-alone air-conditioning or refrigerator units and permanently sealed equipment, where there are no refrigerant charging connections or potentially removable components containing ozone depleting substances (ODS), are not subject to the requirements of Subsection J.

#### 2. Acceptable Refrigerants

Refrigerant systems are to be provided with environmentally friendly refrigerants. The use of ozone depleting refrigerants is prohibited other than hydro-chlorofluorocarbons (HCFCs) which will be permitted prior to 1 January 2020.

### 3. Systems Arrangements

Refrigerant systems are to be arranged with appropriate means for isolation of sections and components to allow for system maintenance without releasing any substantial quantity of the refrigerant.

Recovery units are to be installed for the evacuation of the system in order to minimize unavoidable release of refrigerant during recovery. For refrigerant recovery, compressors/recovery units are to be capable of evacuating a system charge into an independent/separate liquid storage container(s). The recovered refrigerant storage capacity of this storage container(s) is to be at least 125% of the largest volume of refrigerant in any one segment of the refrigeration system which can be isolated. Each portion of the system that can be isolated is to have piping connections suitable for the attachment of the recovery equipment.

### 4. System Leak Monitoring

Annual refrigerant leakage is to be not more than 10% of the total refrigerant charge of each system.

An appropriate leak detection system is to be provided to continuously monitor spaces into which the refrigerant could leak. Further, an alarm is to be given in a manned location when the refrigerant concentration exceeds a predetermined limit (for example, 25 ppm for ammonia or 300 ppm for halogenated fluorocarbons). Corrective action to repair a refrigerant leak is to be taken as soon as practicable after the activation of the alarm.

### 5. Refrigerant Systems Management Plan

A refrigerant systems management plan is to be placed onboard for the guidance of the operating personnel. This plan is to give clear guidance to the crew about the refrigerant systems and is to include, as a minimum:

- i. Offshore unit, floating installation, or liftboat name and BKI registration number
- ii. Simplified diagrams and component description of all refrigerant systems
- iii. Procedures detailing the means to control the loss, leakage, venting and disposal of refrigerants
- iv. Methods and means of recording in mass (kilograms) refrigerant inventory. The recorded data shall include, as a minimum, the following:
  - a) Supply of refrigerant onboard
  - b) Discharge of refrigerant to the atmosphere due to leaks or system maintenance
  - c) Recovered refrigerant including its storage location
  - d) Refrigerant disposal to reception facilities or vessels acting as reception facilities

The refrigerant systems management plan is to be submitted for review by BKI to verify the presence of the above information, which is to be consistent with the design information and limitations considered in the classification of the offshore unit, floating installation, or liftboat. BKI is not responsible for the operation of refrigerant systems.

## K. Air Discharge – Fire-fighting Systems

This Subsection addresses requirements aimed at reducing the potential adverse effects on the air environment by fire-fighting systems onboard offshore units, floating installations, and liftboats.

### 1. Fire-extinguishing Medium

The use of Halons or perfluorocarbon mediums is not permitted in fixed fire extinguishing systems or portable fire extinguishers. Alternative mediums to Halons or perfluorocarbons may be acceptable, provided:

- i. They contain no ozone depleting substances
- ii. They have a GWP less than 4000

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## Section 5

### EP-OS+ Notation

#### A. Management and Support Systems

Offshore units, floating installations, and liftboats are to comply with the appropriate management and support systems requirements of Section 4.A.

#### B. Sea Discharge – Oil

In addition to the text in Section 4.B, offshore units, floating installations, and liftboats are to comply with B.1.

##### 1. Machinery Spaces

###### 1.1 Protection of Fuel Oil Tanks and Lubricating Oil Tanks

*Offshore Units:* In addition to Section 3.B.1.1, arrangements of fuel oil tanks and lubricating oil tanks are to comply with the requirements below :

In addition to the requirements for fuel oil tank protection as specified in Section 3.B.1.1 utilizing the deterministic approach of Section 3.B.1.1.2(a), lubricating oil tanks are also to be arranged in the same manner as required by the deterministic approach Section 3.B.1.1.2(a). Further, the following exemptions are applicable to lubrication oil tanks:

- i. In application of equation in Section 3.B.1.2(a) ii) or iii), total volume of lubricating oil tanks need not be accounted for C (unit's total volume of oil fuel in m<sup>3</sup> at 98% tank filling).
- ii. Tanks used as propulsion engine lubricating oil drain tanks need not be located in a protected location away from the vessel's side or bottom plates.

*Liftboats:* In addition to Section 3.B.1.1, arrangements of fuel oil tanks and lubricating oil tanks are to comply with the requirements of BKI Part 1 – Seagoing Ships, Volume II Rules for Hull, Section 12.

###### 1.2 High Level Alarms

In addition to 3.B.1.2, lubricating oil tanks and other oil tanks (e.g., hydraulic oil) are to be fitted with an alarm to warn of the level reaching a pre-determined high level.

###### 1.3 Oil Filtering Equipment

Oil filtering equipment for machinery spaces is to be provided with alarm arrangements to indicate when the oil content of the effluent exceeds 5 ppm. In addition, automatic stopping arrangements are to be provided for any discharge of oily mixtures when the oil content in the effluent exceeds 5 ppm.

#### C. Sea Discharge – Sewage

Offshore units, floating installations, and liftboats are to comply with the appropriate sea discharge – sewage requirements of Section 3.C and the requirements of C.1 and C.2.

##### 1. Sewage Treatment Plant

A sewage treatment plant type approved by the Flag Administration is to be provided. Sewage treatment plants installed before 1 January 2010 are to comply with MARPOL Annex IV under the guidelines specified in IMO Resolution MEPC.2(VI). Plants installed on or after 1 January 2010 are to comply with IMO Resolution MEPC.159(55).

## **2. Domestic Waste Water (Grey Water)**

Sewage treatment plants are to be equipped with means to treat grey water in addition to sewage.

For liftboats in port, a sewage holding tank, if installed in conjunction with the treatment plant, is to have sufficient capacity for the storage of both sewage and grey water. The tank is to be fitted with a high level alarm.

## **D. Sea Discharge – Garbage**

Offshore units, floating installations, and liftboats are to comply with the appropriate sea discharge –garbage requirements of Section 3.D and the requirements of D.1 and D.2.

### **1. Arrangements**

For offshore units and floating installations, dedicated and separate arrangements are to be provided for garbage requiring short-term storage and garbage requiring long-term storage.

### **2. Food Wastes**

Beyond three nautical miles from land, liftboats are not to dispose of food wastes into the sea except when they have been passed through a comminuter or grinder. Such comminuted or ground food wastes are to be capable of passing through a screen with openings no greater than 25 mm.

In addition, food wastes from offshore units, floating installations, and liftboats may be incinerated. See Subsection H.

## **E. Sea Discharge – Anti-Fouling Systems**

Offshore units, floating installations, and liftboats are to comply with the appropriate sea discharge – anti-fouling systems requirements of Section 3.F.

## **F. Air Discharge – Nitrogen Oxides (NOx) Emission**

Offshore units, floating installations, and liftboats are to comply with the appropriate air discharge – NOx emission requirements of Section 3.G and the requirement of F.1.

### **1. Sea-bed Mineral Activities**

For offshore units and floating installations, marine diesel engines solely dedicated to the exploration, exploitation, and associated offshore processing of sea-bed mineral resources are to comply with the appropriate NOx emission levels of Sec 3.G.1.1 through 3.G.1.3.

## **G. Air Discharge – Sulfur Oxides (SOx) Emission**

Offshore units, floating installations, and liftboats are to comply with the appropriate air discharge – SOx emission requirements of Section 3.H and the requirement of G.1.



### **1. Fuel Oil Sulfur Content - Global**

In lieu of Section 3.H.1.2.i, the sulfur content of fuel oil used onboard is not to exceed the limit of 3.0% mass/mass prior to 1 January 2020.

### **H. Air Discharge – Incinerators**

For offshore units, floating installations, and liftboats 500 gross tons and over, at least one incinerator is to be installed onboard and is to comply with the air discharge – incinerators requirements of Section 3.I, unless stowage arrangements for all garbage and other shipboard wastes generated during the ship’s normal service are provided until off-loaded to shore, and related procedures are available onboard.

### **I. Air Discharge – Refrigerant Systems**

Offshore units, floating installations, and liftboats are to comply with the appropriate air discharge – refrigerant systems requirements of Section 3.J and the requirements of I.1.

#### **1. Acceptable Refrigerants**

In lieu of Section 3.J.2, refrigerant systems are to be provided with environmentally friendly refrigerants. The use of ozone depleting refrigerants is prohibited other than hydro-chlorofluorocarbons (HCFCs), which will be permitted prior to 1 January 2020. Furthermore, the use of refrigerants with global warming potential (GWP) greater than 2000 are prohibited.

### **J. Air Discharge – Fire-fighting Systems**

Offshore units, floating installations, and liftboats are to comply with the appropriate air discharge – fire-fighting systems requirements of Section 3.K and the requirement of J.1.

#### **1. Fire-extinguishing Medium**

In lieu of 3.K.1.ii, the GWP is to be less than 2000.

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## Section 6

### Survey After Construction

#### A. Surveys

As applicable, all annual, intermediate and renewal or periodical surveys for the various MARPOL Annexes are to be satisfactorily completed, as well as completion of the periodical survey requirements of machinery, as specified in the appropriate sections of BKI Part 5 – Offshore technology, Volume I Rules for Classification and Surveys, Section 3 and 5 and:

- Annual survey for Regulation 5 of the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009
- Functional/confirmatory survey for Ballast Water Management Systems

At each periodical survey, the attending Surveyor is to verify the following are maintained onboard:

- i. Certification and documentation as outlined in Section 2.A
- ii. Operational procedures as outlined in Section 2.B.

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