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## The International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978 (MARPOL 73/78) – Annex I (Prevention of Pollution by Oil) – Amending Resolutions since 2004

Notice to all **Owners, Ship Operators and Managers, Charterers, Masters and Officers of Merchant Ships, Shipbuilders, Port Authorities, Operators of Fixed and Floating Platforms and Drilling Rigs and Classification Societies.**

*This notice should be read with the Merchant Shipping (Prevention of Oil Pollution) Regulations 2019 and MGN 603(M)*

*This MIN may be withdrawn when the amendments become available on UK Treaties online (<http://treaties.fco.gov/treaties/treaty.htm>).*

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### Summary

This MIN provides information on the amendments made to the International Convention on MARPOL Annex I by the IMO Resolutions adopted since 2004.

## 1. Introduction/ Background

- 1.1 The Merchant Shipping (Prevention of Oil Pollution) Regulations 1996 (SI 1996/2154)<sup>1</sup> (“the 1996 Regulations”) transposed amendments to Annex I of the International Convention for the Prevention of Pollution by Sea 1973, as amended by the Protocol of 1978 to that Convention (MARPOL), which were adopted at the 36th session of the Marine Environmental Committee (MEPC) to the International Maritime Organisation (IMO) in November 1994.
- 1.2 Since the entry into force of the Protocol, the IMO has adopted several Resolutions which amend MARPOL Annex I. While these came into force internationally, and effectively operate on UK registered ships operating internationally, the UK still needed to transpose them into domestic law.

## 2. The Merchant Shipping (Prevention of Oil Pollution) Regulations 2019

- 2.1 In order to bring UK legislation up to date, the Merchant Shipping (Prevention of Oil Pollution) Regulations 2019 comes into force on 23 February 2019. These Regulations have the effect of implementing the outstanding amendments to the MARPOL Annex I, and revoked and replaced the 1996 Regulations.



<sup>1</sup> Amended by the Merchant Shipping (Prevention of Oil Pollution) (Amendment) Regulations 1997 (SI 1997/1910), (1999/1957), (2000/483), (2004/303), (2004/2110), (2005/1916), (2009/1210), (2014/3306), (2016/1025)

2.2 The new Regulations include an ambulatory reference provision. This means that, in the future, amendments to the technical provisions to MARPOL Annex I will come into force automatically in domestic law. Such amendments will be publicised in advance of their in-force date by means of a Parliamentary Statement to both Houses of Parliament and by way of a Marine Guidance Notice.

### 3. Summary of Amendments

3.1 This MIN collates the amendments to MARPOL Annex I made by IMO Resolutions since the UK's last transposition, for easy reference.

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File Ref: MS 204/003/0001

Published: January 2019  
Please note that all addresses and  
telephone numbers are correct at time of publishing

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**RESOLUTIONS AMENDING THE INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS, 1973 AS MODIFIED BY THE PROTOCOL OF 1978 (MARPOL 73/78) – ANNEX I (PREVENTION OF POLLUTION BY OIL) SINCE LAST TRANSPOSITION INTO UK LAW (IN THE YEAR 2003)**

Since the last UK transposition into UK law, the following Resolutions have amended Annex I of the International Convention for the Prevention of Pollution from Ships:

Resolution MEPC.117(52) of 15 October 2004  
Resolution MEPC.141(54) of 24 March 2006  
Resolution MEPC.154(55) of 13 October 2006  
Resolution MEPC.164(56) of 13 July 2007  
Resolution MEPC.186(59) of 17 July 2009  
Resolution MEPC.187(59) of 17 July 2009  
Resolution MEPC.189(60) of 26 March 2010  
Resolution MEPC.216(63) of 2 March 2012  
Resolution MEPC.235(65) of 17 May 2013  
Resolution MEPC.238(65) of 17 May 2013  
Resolution MEPC.246(66) of 4 April 2014  
Resolution MEPC.248(66) of 4 April 2014  
Resolution MEPC.256(67) of 17 October 2014  
Resolution MEPC.265(68) of 15 May 2015  
Resolution MEPC.266(68) of 15 May 2015

The changes brought about by these amendments are shown below.

The original text of the International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978 (MARPOL 73/78) – Annex I (Prevention of Pollution by Oil) may be found at the links provided below for comparison purposes:

Original text of International MARPOL Convention 73/78:  
<http://treaties.fco.gov.uk/treaties/treatyrecord.htm?tid=2850>



**Resolution MSC.117(52) of 15 October 2004**

Amendments to the text and/or new text to MARPOL Annex I:

**“Revised Annex I of MARPOL 73/78**

**CHAPTER 1 – GENERAL**

**Regulation 1**

*Definitions*

New paragraph 1.11.9

For the purposes of this Annex:

11 Special area means a sea area where for recognized technical reasons in relation to its oceanographical and ecological condition and to the particular character of its traffic the adoption of special mandatory methods for the prevention of sea pollution by oil is required.

For the purposes of this Annex, the special areas are defined as follows:

.1 the Mediterranean Sea area means the Mediterranean Sea proper including the gulfs and seas therein with the boundary between the Mediterranean and the Black Sea constituted by the 41° N parallel and bounded to the west by the Straits of Gibraltar at the meridian of 005°36' W;

.2 the Baltic Sea area means the Baltic Sea proper with the Gulf of Bothnia, the Gulf of Finland and the entrance to the Baltic Sea bounded by the parallel of the Skaw in the Skagerrak at 57°44.8' N;

.3 the Black Sea area means the Black Sea proper with the boundary between the Mediterranean Sea and the Black Sea constituted by the parallel 41° N;

.4 the Red Sea area means the Red Sea proper including the Gulfs of Suez and Aqaba bounded at the south by the rhumb line between Ras si Ane (12°28.5' N, 043°19.6' E) and Husn Murad (12°40.4' N, 043°30.2' E);

.5 the Gulfs area means the sea area located north-west of the rhumb line between as al Hadd (22°30' N, 059°48' E) and Ras al Fasteh (25°04' N, 061° 25' E);

.6 the Gulf of Aden area means that part of the Gulf of Aden between the Red Sea and the Arabian Sea bounded to the west by the rhumb line between Ras si Ane (12°28.5' N, 043°19.6' E) and Husn Murad (12°40.4' N, 043°30.2' E) and to the east by the rhumb line between Ras Asir (11°50' N, 051°16.9' E) and the Ras Fartak (15°35' N, 052°13.8' E);

.7 the Antarctic area means the sea area south of latitude 60°S; and

.8 the North West European waters include the North Sea and its approaches, the Irish Sea and its approaches, the Celtic Sea, the English Channel and its approaches and part of the North East Atlantic immediately to the west of Ireland. The area is bounded by lines joining the following points:

48° 27' N on the French coast  
48° 27' N; 006° 25' W



49° 52' N; 007° 44' W  
50° 30' N; 012° W  
56° 30' N; 012° W  
62° N; 003° W  
62° N on the Norwegian coast  
57° 44.8' N on the Danish and Swedish coasts

.9 the Oman area of the Arabian Sea means the sea area enclosed by the following coordinates:

22° 30.00' N; 059° 48.00' E  
23° 47.27' N; 060° 35.73' E  
22° 40.62' N; 062° 25.29' E  
21° 47.40' N; 063° 22.22' E  
20° 30.37' N; 062° 52.41' E  
19° 45.90' N; 062° 25.97' E  
18° 49.92' N; 062° 02.94' E  
17° 44.36' N; 061° 05.53' E  
16° 43.71' N; 060° 25.62' E  
16° 03.90' N; 059° 32.24' E  
15° 15.20' N; 058° 58.52' E  
14° 36.93' N; 058° 10.23' E  
14° 18.93' N; 057° 27.03' E  
14° 11.53' N; 056° 53.75' E  
13° 53.80' N; 056° 19.24' E  
13° 45.86' N; 055° 54.53' E  
14° 27.38' N; 054° 51.42' E  
14° 40.10' N; 054° 27.35' E  
14° 46.21' N; 054° 08.56' E  
15° 20.74' N; 053° 38.33' E  
15° 48.69' N; 053° 32.07' E  
16° 23.02' N; 053° 14.82' E  
16° 39.06' N; 053° 06.52' E

New paragraphs 1.28.3, 1.28.5, 1.28.7 to 8, 1.29 to 1.30

28.3 oil tanker delivered on or before 1 June 1982 means an oil tanker:

- .1 for which the building contract is placed on or before 1 June 1979; or
- .2 in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction on or before 1 January 1980; or
- .3 the delivery of which is on or before 1 June 1982; or
- .4 which has undergone a major conversion:
  - .1 for which the contract is placed on or before 1 June 1979; or
  - .2 in the absence of a contract, the construction work of which is begun on or before 1 January 1980; or



.3 which is completed on or before 1 June 1982

28.5 oil tanker delivered before 6 July 1996 means an oil tanker:

- .1 for which the building contract is placed before 6 July 1993; or
- .2 in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction before 6 January 1994; or
- .3 the delivery of which is before 6 July 1996; or
- .4 which has undergone a major conversion:
  - .1 for which the contract is placed before 6 July 1993; or
  - .2 in the absence of a contract, the construction work of which is begun before 6 January 1994; or
  - .3 which is completed before 6 July 1996.

28.7 oil tanker delivered on or after 1 February 2002 means an oil tanker:

- .1 for which the building contract is placed on or after 1 February 1999; or
- .2 in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction on or after 1 August 1999; or
- .3 the delivery of which is on or after 1 February 2002; or
- .4 which has undergone a major conversion:
  - .1 for which the contract is placed on or after 1 February 1999; or
  - .2 in the absence of a contract, the construction work of which is begun on or after 1 August 1999; or
  - .3 which is completed on or after 1 February 2002.

28.8 oil tanker delivered on or after 1 January 2010 means an oil tanker:

- .1 for which the building contract is placed on or after 1 January 2007; or
- .2 in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction on or after 1 July 2007; or
- .3 the delivery of which is on or after 1 January 2010; or
- .4 which has undergone a major conversion:
  - .1 for which the contract is placed on or after 1 January 2007; or
  - .2 in the absence of a contract, the construction work of which is begun on or after 1 July 2007; or



.3 which is completed on or after 1 January 2010.

29 Parts per million (ppm) means parts of oil per million parts of water by volume.

30 Constructed means a ship the keel of which is laid, or which is at a similar stage of construction.

## CHAPTER 2 - SURVEYS AND CERTIFICATION

### Regulation 7

*Issue or endorsement of certificate*

Following paragraph removed. Originally Regulation 5.3

~~3 Notwithstanding any other provisions of the amendments to this Annex adopted by the Marine Environment Protection Committee (MEPC) by resolution MEPC.39(29), any International Oil Pollution Prevention Certificate, which is current when these amendments enter into force, shall remain valid until it expires under the terms of this Annex prior to the amendments entering into force.~~

## CHAPTER 3 - REQUIREMENTS FOR MACHINERY SPACES OF ALL SHIPS PART A CONSTRUCTION

### PART B EQUIPMENT

#### Regulation 14

*Oil filtering equipment*

New paragraph 14.3

3 Ships, such as hotel ships, storage vessels, etc., which are stationary except for non-cargo-carrying relocation voyages need not be provided with oil filtering equipment. Such ships shall be provided with a holding tank having a volume adequate, to the satisfaction of the Administration, for the total retention on board of the oily bilge water. All oily bilge water shall be retained on board for subsequent discharge to reception facilities.

## CHAPTER 4 - REQUIREMENTS FOR THE CARGO AREA OF OIL TANKERS PART A CONSTRUCTION

### Regulation 18

*Segregated Ballast Tanks*

Paragraph removed, original 13.9

~~9 Existing crude oil tankers referred to in paragraphs (7) or (8) of this regulation may, in lieu of being provided with segregated ballast tanks or operating with a cargo tank cleaning procedure using crude oil washing, operate with dedicated clean ballast tanks in accordance with the provisions of regulation 13A of this Annex for the following period:~~



~~— (a) for crude oil tankers of 70,000 tons deadweight and above, until two years after the date of entry into force of the present Convention; and~~

~~— (b) for crude oil tankers of 40,000 tons deadweight and above but below 70,000 tons deadweight, until four years after the date of entry into force of the present Convention.~~

## **Regulation 22**

*Pump-room bottom protection*

### New Regulation 22

1 This regulation applies to oil tankers of 5,000 tonnes deadweight and above constructed on or after 1 January 2007.

2 The pump-room shall be provided with a double bottom such that at any cross-section the depth of each double bottom tank or space shall be such that the distance  $h$  between the bottom of the pump-room and the ship's base line measured at right angles to the ship's base line is not less than specified below:

$h = B/15(m)$  or  
 $h = 2 \text{ m}$ , whichever is the lesser.

The minimum value of  $h = 1 \text{ m}$ .

3 In case of pump rooms whose bottom plate is located above the base line by at least the minimum height required in paragraph 2 above (e.g. gondola stern designs), there will be no need for a double bottom construction in way of the pump-room.

4 Ballast pumps shall be provided with suitable arrangements to ensure efficient suction from double bottom tanks.

5 Notwithstanding the provisions of paragraphs 2 and 3 above, where the flooding of the pump-room would not render the ballast or cargo pumping system inoperative, a double bottom need not be fitted.

## **Regulation 23**

*Accidental oil outflow performance*

### New Regulation 23

1 This regulation shall apply to oil tankers delivered on or after 1 January 2010, as defined in regulation 1.28.8.

2 For the purpose of this regulation, the following definitions shall apply:

.1 "Load line draught (dS)" is the vertical distance, in metres, from the moulded baseline at mid-length to the waterline corresponding to the summer freeboard to be assigned to the ship. Calculations pertaining to this regulation should be based on draught dS, notwithstanding assigned draughts that may exceed dS, such as the tropical loadline.

.2 "Waterline (dB)" is the vertical distance, in metres, from the moulded baseline at mid-length to the waterline corresponding to 30% of the depth DS.



.3 "Breadth (BS)" is the greatest moulded breadth of the ship, in metres, at or below the deepest load line dS.

.4 "Breadth (BB)" is the greatest moulded breadth of the ship, in metres, at or below the waterline dB.

.5 "Depth (DS)" is the moulded depth, in metres, measured at mid-length to the upper deck at side.

.6 "Length (L)" and "deadweight (DW)" are as defined in regulations 1.19 and 1.23, respectively.

3 To provide adequate protection against oil pollution in the event of collision or stranding the following shall be complied with:

.1 for oil tankers of 5,000 tonnes deadweight (DWT) and above, the mean oil outflow parameter shall be as follows:

$$\begin{array}{ll} O_M = 0.015 & \text{for } C = 200,000 \text{ m}^3 \\ O_M = 0.012 + (0.003/200,000) (400,000 - C) & \text{for } 200,000 \text{ m}^3 < C < 400,000 \text{ m}^3 \\ O_M = 0.012 & \text{for } C = 400,000 \text{ m}^3 \end{array}$$

for combination carriers between 5,000 tonnes deadweight (DWT) and 200,000 m<sup>3</sup> capacity, the mean oil outflow parameter may be applied, provided calculations are submitted to the satisfaction of the Administration, demonstrating that after accounting for its increased structural strength, the combination carrier has at least equivalent oil out flow performance to a standard double hull tanker of the same size having a  $O_M \leq 0.015$ .

$$\begin{array}{ll} O_M = 0.021 & \text{for } C = 100,000 \text{ m}^3 \\ O_M = 0.015 + (0.006/100,000) (200,000 - C) & \text{for } 100,000 \text{ m}^3 < C < 200,000 \text{ m}^3 \end{array}$$

where:

$O_M$  = mean oil outflow parameter.

$C$  = total volume of cargo oil, in m<sup>3</sup>, at 98% tank filling



- .2 for oil tankers of less than 5,000 tonnes deadweight (DWT) :

The length of each cargo tank shall not exceed 10 m or one of the following values, whichever is the greater:

- .1 where no longitudinal bulkhead is provided inside the cargo tanks:

$$(0.5 \frac{b_i}{B} + 0.1)L \quad \text{but not to exceed } 0.2L$$

- .2 where a centreline longitudinal bulkhead is provided inside the cargo tanks:

$$(0.25 \frac{b_i}{B} + 0.15)L$$

- .3 where two or more longitudinal bulkheads are provided inside the cargo tanks:

- .1 for wing cargo tanks:  $0.2L$

- .2 for centre cargo tanks:

.1 if  $\frac{b_i}{B} = 0.2L : 0.2L$

.2 if  $\frac{b_i}{B}$  is  $< 0.2$ :

- where no centreline longitudinal bulkhead is provided:

$$(0.5 \frac{b_i}{B} + 0.1) L$$

- where a centreline longitudinal bulkhead is provided:

$$(0.25 \frac{b_i}{B} + 0.15) L$$

- .4  $b_i$  is the minimum distance from the ship's side to the outer longitudinal bulkhead of the tank in question measured inboard at right angles to the centreline at the level corresponding to the assigned summer freeboard.

4 The following general assumptions shall apply when calculating the mean oil outflow parameter:

- .1 The cargo block length extends between the forward and aft extremities of all tanks arranged for the carriage of cargo oil, including slop tanks.
- .2 Where this regulation refers to cargo tanks, it shall be understood to include all cargo tanks, slop tanks and fuel tanks located within the cargo block length.
- .3 The ship shall be assumed loaded to the load line draught dS without trim or heel.
- .4 All cargo oil tanks shall be assumed loaded to 98% of their volumetric capacity.



The nominal density of the cargo oil (  $r_n$  ) shall be calculated as follows:

$$r_n = 1000 (DWT)/C \text{ (kg/m}^3\text{)}$$

.5 For the purposes of these outflow calculations, the permeability of each space within the cargo block, including cargo tanks, ballast tanks and other non-oil spaces shall be taken as 0.99, unless proven otherwise.

.6 Suction wells may be neglected in the determination of tank location provided that such wells are as small as practicable and the distance between the well bottom and bottom shell plating is not less than 0.5h, where h is the height as defined in regulation 19.3.2.

5 The following assumptions shall be used when combining the oil outflow parameters:

.1 The mean oil outflow shall be calculated independently for side damage and for bottom damage and then combined into the non-dimensional oil outflow parameter OM, as follows:

$$OM = (0.4 OMS + 0.6 OMB) / C$$

where:

OMS = mean outflow for side damage, in m<sup>3</sup>; and  
OMB = mean outflow for bottom damage, in m<sup>3</sup>.

.2 For bottom damage, independent calculations for mean outflow shall be done for 0 m and minus 2.5 m tide conditions, and then combined as follows:

$$OMB = 0.7 OMB(0) + 0.3 OMB(2.5)$$

where:

OMB(0) = mean outflow for 0 m tide condition; and  
OMB(2.5) = mean outflow for minus 2.5 m tide condition, in m<sup>3</sup>.

6 The mean outflow for side damage OMS shall be calculated as follows:

$$O_{MS} = C_3 \sum_i^n P_{s(i)} O_{s(i)} \quad (\text{m}^3)$$

where:

- $i$  = represents each cargo tank under consideration;
- $n$  = total number of cargo tanks;
- $P_{s(i)}$  = the probability of penetrating cargo tank  $i$  from side damage, calculated in accordance with paragraph 8.1 of this regulation;
- $O_{s(i)}$  = the outflow, in m<sup>3</sup>, from side damage to cargo tank  $i$ , which is assumed equal to the total volume in cargo tank  $i$  at 98% filling, unless it is proven through the application of the Guidelines referred to in regulation 19.5 that any significant cargo volume will be retained; and
- $C_3$  = 0.77 for ships having two longitudinal bulkheads inside the cargo tanks, provided these bulkheads are continuous over the cargo block and  $P_{s(i)}$  is developed in accordance with this regulation.  $C_3$  equals 1.0 for all other ships or when  $P_{s(i)}$  is developed in accordance with paragraph 10 of this regulation.



7 The mean outflow for bottom damage shall be calculated for each tidal condition as follows:

.1 
$$O_{MB(0)} = \sum_i^n P_{B(i)} O_{B(i)} C_{DB(i)} \text{ (m}^3\text{)}$$

where:

$i$  = represents each cargo tank under consideration;

$n$  = the total number of cargo tanks;

$P_{B(i)}$  = the probability of penetrating cargo tank  $i$  from bottom damage, calculated in accordance with, paragraph 9.1 of this regulation;

$O_{B(i)}$  = the outflow from cargo tank  $i$ , in  $\text{m}^3$ , calculated in accordance with paragraph 7.3 of this regulation; and

$C_{DB(i)}$  = factor to account for oil capture as defined in paragraph 7.4 of this regulation

.2 
$$O_{MB(2.5)} = \sum_i^n P_{B(i)} O_{B(i)} C_{DB(i)} \text{ (m}^3\text{)}$$

where:

$i, n, P_{B(i)}$  and  $C_{DB(i)}$  = as defined in subparagraph .1 above;

$O_{B(i)}$  = the outflow from cargo tank  $i$ , in  $\text{m}^3$ , after tidal change

.3 The oil outflow  $O_{B(i)}$  for each cargo oil tank shall be calculated based on pressure balance principles, in accordance with the following assumptions:

.1 The ship shall be assumed stranded with zero trim and heel, with the stranded draught prior to tidal change equal to the load line draught  $d_s$ .



.2 The cargo level after damage shall be calculated as follows:

$$h_c = \{ (d_s + t_c - Z_i) (\rho_s) - (1000 p) / g \} / \rho_n$$

where:

$h_c$  = the height of the cargo oil above  $Z_i$ , in metres;

$t_c$  = the tidal change, in m. Reductions in tide shall be expressed as negative values;

$Z_i$  = the height of the lowest point in the cargo tank above baseline, in m;

$\rho_s$  = density of seawater, to be taken as 1,025 kg/m<sup>3</sup>;

$p$  = if an inert gas system is fitted, the normal overpressure, in kPa, to be taken as not less than 5 kPa; if an inert gas system is not fitted, the overpressure may be taken as 0;

$g$  = the acceleration of gravity, to be taken as 9.81 m/s<sup>2</sup>; and

$\rho_n$  = nominal density of cargo oil, calculated in accordance with paragraph 4.4 of this regulation.

.3 For cargo tanks bounded by the bottom shell, unless proven otherwise, oil outflow  $Q_{B(i)}$  shall be taken not less than 1% of the total volume of cargo oil loaded in cargo tank  $i$ , to account for initial exchange losses and dynamic effects due to current and waves.

.4 In the case of bottom damage, a portion from the outflow from a cargo tank may be captured by non-oil compartments. This effect is approximated by application of the factor  $C_{DB(i)}$  for each tank, which shall be taken as follows:

$C_{DB(i)} = 0.6$  for cargo tanks bounded from below by non-oil compartments;

$C_{DB(i)} = 1.0$  for cargo tanks bounded by the bottom shell.

8 The probability  $P_S$  of breaching a compartment from side damage shall be calculated as follows:

.1  $P_S = P_{SL} P_{SV} P_{ST}$

where:

$P_{SL} = 1 - P_{Sf} - P_{Sa}$  = probability the damage will extend into the longitudinal zone bounded by  $X_a$  and  $X_f$ ;

$P_{SV} = 1 - P_{Sa} - P_{Sl}$  = probability the damage will extend into the vertical zone bounded by  $Z_l$  and  $Z_a$ ; and

$P_{ST} = 1 - P_{Sy}$  = probability the damage will extend transversely beyond the boundary defined by  $y$ .



- 2  $P_{Sa}$ ,  $P_{Sf}$ ,  $P_{Sl}$ ,  $P_{Su}$  and  $P_{Sy}$  shall be determined by linear interpolation from the table of probabilities for side damage provided in paragraph 8.3 of this regulation, where:

$P_{Sa}$  = the probability the damage will lie entirely aft of location  $X_a/L$ ;

$P_{Sf}$  = the probability the damage will lie entirely forward of location  $X_f/L$ ;

$P_{Sl}$  = the probability the damage will lie entirely below the tank;

$P_{Su}$  = the probability the damage will lie entirely above the tank; and

$P_{Sy}$  = the probability the damage will lie entirely outboard of the tank.

Compartment boundaries  $X_a$ ,  $X_f$ ,  $Z_l$ ,  $Z_u$  and  $y$  shall be developed as follows:

$X_a$  = the longitudinal distance from the aft terminal of  $L$  to the aftmost point on the compartment being considered, in metres;

$X_f$  = the longitudinal distance from the aft terminal of  $L$  to the foremost point on the compartment being considered, in metres;

$Z_l$  = the vertical distance from the moulded baseline to the lowest point on the compartment being considered, in metres;

$Z_u$  = the vertical distance from the moulded baseline to the highest point on the compartment being considered, in metres.  $Z_u$  is not to be taken greater than  $D_s$ ; and

$y$  = the minimum horizontal distance measured at right angles to the centreline between the compartment under consideration and the side shell in metres; \*

\* For symmetrical tank arrangements, damages are considered for one side of the ship only, in which case all "y" dimensions are to be measured from that same side. For asymmetrical arrangements refer to the Explanatory Notes on matters related to the accidental oil outflow performance, adopted by the Organization by resolution MEPC.122(52).



3 Table of probabilities for side damage

$X_a/L$	$P_{Sa}$	$X_f/L$	$P_{Sf}$	$Z_1/D_S$	$P_{S1}$	$Z_n/D_S$	$P_{Sn}$
0.00	0.000	0.00	0.967	0.00	0.000	0.00	0.968
0.05	0.023	0.05	0.917	0.05	0.000	0.05	0.952
0.10	0.068	0.10	0.867	0.10	0.001	0.10	0.931
0.15	0.117	0.15	0.817	0.15	0.003	0.15	0.905
0.20	0.167	0.20	0.767	0.20	0.007	0.20	0.873
0.25	0.217	0.25	0.717	0.25	0.013	0.25	0.836
0.30	0.267	0.30	0.667	0.30	0.021	0.30	0.789
0.35	0.317	0.35	0.617	0.35	0.034	0.35	0.733
0.40	0.367	0.40	0.567	0.40	0.055	0.40	0.670
0.45	0.417	0.45	0.517	0.45	0.085	0.45	0.599
0.50	0.467	0.50	0.467	0.50	0.123	0.50	0.525
0.55	0.517	0.55	0.417	0.55	0.172	0.55	0.452
0.60	0.567	0.60	0.367	0.60	0.226	0.60	0.383
0.65	0.617	0.65	0.317	0.65	0.285	0.65	0.317
0.70	0.667	0.70	0.267	0.70	0.347	0.70	0.255
0.75	0.717	0.75	0.217	0.75	0.413	0.75	0.197
0.80	0.767	0.80	0.167	0.80	0.482	0.80	0.143
0.85	0.817	0.85	0.117	0.85	0.553	0.85	0.092
0.90	0.867	0.90	0.068	0.90	0.626	0.90	0.046
0.95	0.917	0.95	0.023	0.95	0.700	0.95	0.013
1.00	0.967	1.00	0.000	1.00	0.775	1.00	0.000

$P_{Sy}$  shall be calculated as follows:

$$P_{Sy} = (24.96 - 199.6 y/B_S) (y/B_S) \quad \text{for } y/B_S = 0.05$$

$$P_{Sy} = 0.749 + \{5 - 44.4 (y/B_S - 0.05)\} (y/B_S - 0.05) \quad \text{for } 0.05 < y/B_S < 0.1$$

$$P_{Sy} = 0.888 + 0.56 (y/B_S - 0.1) \quad \text{for } y/B_S = 0.1$$

$P_{Sy}$  shall not be taken greater than 1.

9 The probability  $P_B$  of breaching a compartment from bottom damage shall be calculated as follows:

$$.1 \quad P_B = P_{BL} P_{BT} P_{BV}$$

where:

$P_{BL} = 1 - P_{Bf} - P_{Ba}$  = probability the damage will extend into the longitudinal zone bounded by  $X_a$  and  $X_f$

$P_{BT} = 1 - P_{Bp} - P_{Bs}$  = probability the damage will extend into the transverse zone bounded by  $Y_p$  and  $Y_s$ ; and

$P_{BV} = 1 - P_{Bz}$  = probability the damage will extend vertically above the boundary defined by  $z$ .



2.  $P_{Ba}$ ,  $P_{Bf}$ ,  $P_{Bp}$ ,  $P_{Bs}$ , and  $P_{Bz}$  shall be determined by linear interpolation from the table of probabilities for bottom damage provided in paragraph 9.3 of this regulation, where:

$P_{Ba}$  = the probability the damage will lie entirely aft of location  $X_a/L$ ;

$P_{Bf}$  = the probability the damage will lie entirely forward of location  $X_f/L$ ;

$P_{Bp}$  = the probability the damage will lie entirely to port of the tank;

$P_{Bs}$  = the probability the damage will lie entirely to starboard of the tank; and

$P_{Bz}$  = the probability the damage will lie entirely below the tank.

Compartment boundaries  $X_a$ ,  $X_f$ ,  $Y_p$ ,  $Y_s$ , and  $z$  shall be developed as follows:

$X_a$  and  $X_f$  are as defined in paragraph 8.2 of this regulation;

$Y_p$  = the transverse distance from the port-most point on the compartment located at or below the waterline  $d_B$ , to a vertical plane located  $B_B/2$  to starboard of the ship's centreline, in metres;

$Y_s$  = the transverse distance from the starboard-most point on the compartment located at or below the waterline  $d_B$ , to a vertical plane located  $B_B/2$  to starboard of the ship's centreline, in metres; and

$z$  = the minimum value of  $z$  over the length of the compartment, where, at any given longitudinal location,  $z$  is the vertical distance from the lower point of the bottom shell at that longitudinal location to the lower point of the compartment at that longitudinal location, in metres.

3. Table of probabilities for bottom damage

$X_a/L$	$P_{Ba}$	$X_f/L$	$P_{Bf}$	$Y_p/B_B$	$P_{Bp}$	$Y_s/B_B$	$P_{Bs}$
0.00	0.000	0.00	0.969	0.00	0.844	0.00	0.000
0.05	0.002	0.05	0.953	0.05	0.794	0.05	0.009
0.10	0.008	0.10	0.936	0.10	0.744	0.10	0.032
0.15	0.017	0.15	0.916	0.15	0.694	0.15	0.063
0.20	0.029	0.20	0.894	0.20	0.644	0.20	0.097
0.25	0.042	0.25	0.870	0.25	0.594	0.25	0.133
0.30	0.058	0.30	0.842	0.30	0.544	0.30	0.171
0.35	0.076	0.35	0.810	0.35	0.494	0.35	0.211
0.40	0.096	0.40	0.775	0.40	0.444	0.40	0.253
0.45	0.119	0.45	0.734	0.45	0.394	0.45	0.297
0.50	0.143	0.50	0.687	0.50	0.344	0.50	0.344
0.55	0.171	0.55	0.630	0.55	0.297	0.55	0.394
0.60	0.203	0.60	0.563	0.60	0.253	0.60	0.444
0.65	0.242	0.65	0.489	0.65	0.211	0.65	0.494
0.70	0.289	0.70	0.413	0.70	0.171	0.70	0.544
0.75	0.344	0.75	0.333	0.75	0.133	0.75	0.594
0.80	0.409	0.80	0.252	0.80	0.097	0.80	0.644
0.85	0.482	0.85	0.170	0.85	0.063	0.85	0.694
0.90	0.565	0.90	0.089	0.90	0.032	0.90	0.744
0.95	0.658	0.95	0.026	0.95	0.009	0.95	0.794
1.00	0.761	1.00	0.000	1.00	0.000	1.00	0.844

$P_{Bz}$  shall be calculated as follows:

$$P_{Bz} = (14.5 - 67 z/D_S) (z/D_S) \quad \text{for } z/D_S = 0.1,$$

$$P_{Bz} = 0.78 + 1.1 (z/D_S - 0.1) \quad \text{for } z/D_S > 0.1.$$

$P_{Bz}$  shall not be taken greater than 1.



10 This regulation uses a simplified probabilistic approach where a summation is carried out over the contributions to the mean outflow from each cargo tank. For certain designs such as those characterized by the occurrence of steps/recesses in bulkheads/decks and for sloping bulkheads and/or a pronounced hull curvature, more rigorous calculations may be appropriate. In such cases one of the following calculation procedures may be applied:

.1 The probabilities referred to in 8 and 9 above may be calculated with more precision through application of hypothetical sub-compartments.\*

.2 The probabilities referred to in 8 and 9 above may be calculated through direct application of the probability density functions contained in the Guidelines referred to in regulation 19.5.

.3 The oil outflow performance may be evaluated in accordance with the method described in the Guidelines referred to in regulation 19.5.

\* Refer to the Explanatory Notes on matters related to the accidental oil outflow performance, adopted by the Organization by resolution MEPC.122(52).

11 The following provisions regarding piping arrangements shall apply:

.1 Lines of piping that run through cargo tanks in a position less than 0.30Bs from the ship's side or less than 0.30Ds from the ship's bottom shall be fitted with valves or similar closing devices at the point at which they open into any cargo tank. These valves shall be kept closed at sea at any time when the tanks contain cargo oil, except that they may be opened only for cargo transfer needed for essential cargo operations.

.2 Credit for reducing oil outflow through the use of an emergency rapid cargo transfer system or other system arranged to mitigate oil outflow in the event of an accident may be taken into account only after the effectiveness and safety aspects of the system are approved by the Organization. Submittal for approval shall be made in accordance with the provisions of the Guidelines referred to in regulation 19.5.

## **Regulation 25**

*Hypothetical outflow of oil*

### New paragraph 25.6

6 This regulation does not apply to oil tankers delivered on or after 1 January 2010, as defined in regulation 1.28.8.

## **Regulation 26**

*Limitations of size and arrangement of cargo tanks*

### New paragraph 26.7

7 This regulation does not apply to oil tankers delivered on or after 1 January 2010, as defined in regulation 1.28.8.

## **Regulation 30**

*Pumping, piping and discharge arrangement*

### Additional line to paragraph 6 (6.1.3) and new paragraph 7

6 On every oil tanker the discharge of ballast water or oil contaminated water from cargo



tank areas shall take place above the waterline, except as follows:

.1 Segregated ballast and clean ballast may be discharged below the waterline:

.1 in ports or at offshore terminals, or

.2 at sea by gravity, or

.3 at sea by pumps if the ballast water exchange is performed under the provisions of regulation D-1.1 of the International Convention for the Control and Management of Ships' Ballast Water and Sediments.

provided that the surface of the ballast water has been examined either visually or by other means immediately before the discharge to ensure that no contamination with oil has taken place.

7 Every oil tanker of 150 gross tonnage and above delivered on or after 1 January 2010, as defined in regulation 1.28.8, which has installed a sea chest that is permanently connected to the cargo pipeline system, shall be equipped with both a sea chest valve and an inboard isolation valve. In addition to these valves, the sea chest shall be capable of isolation from the cargo piping system whilst the tanker is loading, transporting, or discharging cargo by use of a positive means that is to the satisfaction of the Administration. Such a positive means is a facility that is installed in the pipeline system in order to prevent, under all circumstances, the section of pipeline between the sea chest valve and the inboard valve being filled with cargo.

## **CHAPTER 5 - PREVENTION OF POLLUTION ARISING FROM AN OIL POLLUTION INCIDENT**

### **Regulation 37**

*Shipboard oil pollution emergency plan*

#### New paragraph 37.4

4 All oil tankers of 5,000 tons deadweight or more shall have prompt access to computerised, shore-based damage stability and residual structural strength calculation programs.

## **CHAPTER 7 - SPECIAL REQUIREMENTS FOR FIXED OR FLOATING PLATFORMS**

### **Regulation 39**

*Special requirements for fixed or floating platforms*

#### New paragraph 39.3

3 In verifying compliance with this Annex in relation to platforms configured as FPSOs or FSUs, in addition to the requirements of paragraph 2, Administrations should take account of the Guidelines developed by the Organization\*.

\* Refer to resolution MEPC ...(..) "Guidelines for the application of MARPOL Annex I requirements to FPSOs and FSUs."



## **Resolution MSC.141(54) of 24 March 2006**

Amendments to regulation 1, addition to regulation 12A, consequential amendments to the IOPP Certificate and amendments to regulation 21 of the revised Annex I of MARPOL 73/78:

### **1 Addition of paragraph 28.9 to regulation 1**

“28.9 ship delivered on or after 1 August 2010 means a ship:

- .1 for which the building contract is placed on or after 1 August 2007; or
- .2 in the absence of a building contract, the keels of which are laid or which are at a similar stage of construction on or after 1 February 2008; or
- .3 the delivery of which is on or after 1 August 2010; or
- .4 which have undergone a major conversion:
  - .1 for which the contract is placed after 1 August 2007; or
  - .2 in the absence of contract, the construction work of which is begun after 1 February 2008; or
  - .3 which is completed after 1 August 2010.”

### **2 Addition of new regulation 12A on oil fuel tank protection**

*The following new regulation 12A is added after the existing regulation 12:*

#### **“Regulation 12A – Oil fuel tank protection**

1 This regulation shall apply to all ships with an aggregate oil fuel capacity of 600 m<sup>3</sup> and above which are delivered on or after 1 August 2010, as defined in regulation 1.28.9 of this Annex.

2 The application of this regulation in determining the location of tanks used to carry oil fuel does not govern over the provisions of regulation 19 of this Annex.

3 For the purpose of this regulation, the following definitions shall apply:

- .1 “Oil fuel” means any oil used as fuel oil in connection with the propulsion and auxiliary machinery of the ship in which such oil is carried.
- .2 “Load line draught (dS)” is the vertical distance, in metres, from the moulded baseline at mid-length to the waterline corresponding to the summer freeboard draught to be assigned to the ship.
- .3 “Light ship draught” is the moulded draught amidships corresponding to the lightweight.
- .4 “Partial load line draught (dP)” is the light ship draught plus 60% of the difference between the light ship draught and the load line draught dS. The partial load line draught (dp) shall be measured in metres.
- .5 “Waterline (dB)” is the vertical distance, in metres, from the moulded baseline at mid-length to the waterline corresponding to 30% of the depth DS.



.6 "Breadth (BS)" is the greatest moulded breadth of the ship, in metres, at or below the deepest load line draught (dS).

.7 "Breadth (BB)" is the greatest moulded breadth of the ship, in metres, at or below the waterline (dB).

.8 "Depth (DS)" is the moulded depth, in metres, measured at mid-length to the upper deck at side. For the purpose of the application, "upper deck" means the highest deck to which the watertight transverse bulkheads except aft peak bulkheads extend.

.9 "Length (L)" means 96% of the total length on a waterline at 85% of the least moulded depth measured from the top of the keel, or the length from the foreside of the stem to the axis of the rudder stock on that waterline, if that be greater. In ships designed with a rake of keel the waterline on which this length is measured shall be parallel to the designed waterline. The length (L) shall be measured in metres.

.10 "Breadth (B)" means the maximum breadth of the ship, in metres, measured amidships to the moulded line of the frame in a ship with a metal shell and to the outer surface of the hull in a ship with a shell of any other material.

.11 "Oil fuel tank" means a tank in which oil fuel is carried, but excludes those tanks which would not contain oil fuel in normal operation, such as overflow tanks.

.12 "Small oil fuel tank" is an oil fuel tank with a maximum individual capacity not greater than 30 m<sup>3</sup>.

.13 "C" is the ship's total volume of oil fuel, including that of the small oil fuel tanks, in m<sup>3</sup>, at 98% tank filling.

.14 "Oil fuel capacity" means the volume of a tank in m<sup>3</sup>, at 98% filling.

4 The provisions of this regulation shall apply to all oil fuel tanks except small oil fuel tanks, as defined in 3.12, provided that the aggregate capacity of such excluded tanks is not greater than 600 m<sup>3</sup>.

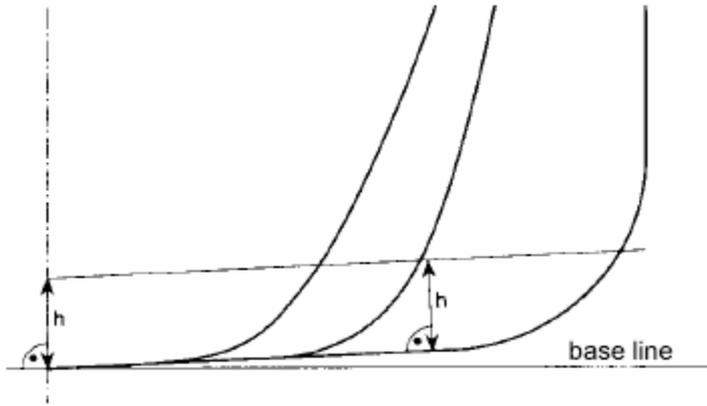
5 Individual oil fuel tanks shall not have a capacity of over 2,500 m<sup>3</sup>.

6 For ships, other than self-elevating drilling units, having an aggregate oil fuel capacity of 600 m<sup>3</sup> and above, oil fuel tanks shall be located above the moulded line of the bottom shell plating nowhere less than the distance h as specified below:

$h = B/20$  m or,  
 $h = 2.0$  m, whichever is the lesser.  
The minimum value of  $h = 0.76$  m

In the turn of the bilge area and at locations without a clearly defined turn of the bilge, the oil fuel tank boundary line shall run parallel to the line of the midship flat bottom as shown in Figure 1.





**Figure 1 – Oil fuel tank boundary lines for the purpose of paragraph 6**

7 For ships having an aggregate oil fuel capacity of 600 m<sup>3</sup> or more but less than 5,000 m<sup>3</sup>, oil fuel tanks shall be located inboard of the moulded line of the side shell plating, nowhere less than the distance  $w$  which, as shown in Figure 2, is measured at any cross-section at right angles to the side shell, as specified below:

$$w = 0.4 + 2.4 C/20,000 \text{ m}$$

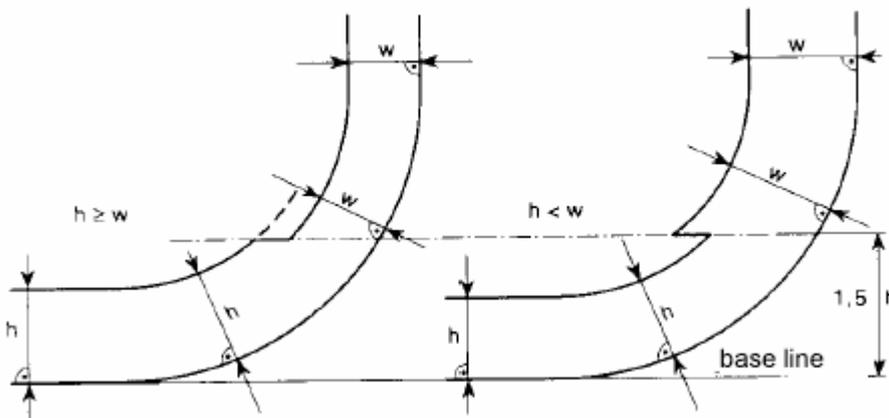
The minimum value of  $w = 1.0 \text{ m}$ , however for individual tanks with an oil fuel capacity of less than 500 m<sup>3</sup> the minimum value is 0.76 m.

8 For ships having an aggregate oil fuel capacity of 5,000 m<sup>3</sup> and over, oil fuel tanks shall be located inboard of the moulded line of the side shell plating, nowhere less than the distance  $w$  which, as shown in Figure 2, is measured at any cross-section at right angles to the side shell, as specified below:

$$w = 0.5 + C/20,000 \text{ m or}$$

$w = 2.0 \text{ m}$ , whichever is the lesser.

The minimum value of  $w = 1.0 \text{ m}$



**Figure 2 – Oil fuel tank boundary lines for the purpose of paragraphs 7 and 8**



9 Lines of oil fuel piping located at a distance from the ship's bottom of less than  $h$ , as defined in paragraph 6, or from the ship's side less than  $w$ , as defined in paragraphs 7 and 8 shall be fitted with valves or similar closing devices within or immediately adjacent to the oil fuel tank. These valves shall be capable of being brought into operation from a readily accessible enclosed space the location of which is accessible from the navigation bridge or propulsion machinery control position without traversing exposed freeboard or superstructure decks. The valves shall close in case of remote control system failure (fail in a closed position) and shall be kept closed at sea at any time when the tank contains oil fuel except that they may be opened during oil fuel transfer operations.

10 Suction wells in oil fuel tanks may protrude into the double bottom below the boundary line defined by the distance  $h$  provided that such wells are as small as practicable and the distance between the well bottom and the bottom shell plating is not less than  $0.5 h$ .

11 Alternatively to paragraphs 6 and either 7 or 8, ships shall comply with the accidental oil fuel outflow performance standard specified below:

- .1 The level of protection against oil fuel pollution in the event of collision or grounding shall be assessed on the basis of the mean oil outflow parameter as follows:

$$O_M < 0.0157 - 1.14E-6 \cdot C \quad 600 \text{ m}^3 = C < 5,000 \text{ m}^3$$

$$O_M < 0.010 \quad C = 5,000 \text{ m}^3$$

Where  $O_M$  = mean oil outflow parameter;  
 $C$  = total oil fuel volume.

- .2 The following general assumption shall apply when calculating the mean oil outflow parameter:
  - .1 the ship shall be assumed loaded to the partial load line draught  $d_p$  without trim or heel;



- .2 all oil fuel tanks shall be assumed loaded to 98% of their volumetric capacity;
- .3 the nominal density of the oil fuel ( $\rho_n$ ) shall generally be taken as 1,000 kg/m<sup>3</sup>. If the density of the oil fuel is specifically restricted to a lesser value, the lesser value may be applied; and
- .4 for the purpose of these outflow calculations, the permeability of each oil fuel tank shall be taken as 0.99, unless proven otherwise.

.3 The following assumptions shall be used when combining the oil outflow parameters:

- .1 The mean oil outflow shall be calculated independently for side damage and for bottom damage and then combined into a non-dimensional oil outflow parameter  $O_M$ , as follows:

$$O_M = (0.4 O_{MS} + 0.6 O_{MB}) / C$$

where:

- $O_{MS}$  = mean outflow for side damage, in m<sup>3</sup>
- $O_{MB}$  = mean outflow for bottom damage, in m<sup>3</sup>
- $C$  = total oil fuel volume.

- .2 For bottom damage, independent calculations for mean outflow shall be done for 0 m and 2.5 m tide conditions, and then combined as follows:

$$O_{MB} = 0.7 O_{MB(0)} + 0.3 O_{MB(2.5)}$$

where:

- $O_{MB(0)}$  = mean outflow for 0 m tide condition, and
- $O_{MB(2.5)}$  = mean outflow for minus 2.5 m tide condition, in m<sup>3</sup>.

- .4 The mean outflow for side damage  $O_{MS}$  shall be calculated as follows:

$$O_{MS} = \sum_1^n P_{S(i)} O_{S(i)} \quad [m^3]$$

where:

- $i$  = represents each oil fuel tank under consideration;
- $n$  = total number of oil fuel tanks;
- $P_{S(i)}$  = the probability of penetrating oil fuel tank  $i$  from side damage, calculated in accordance with paragraph 11.6 of this regulation;
- $O_{S(i)}$  = the outflow, in m<sup>3</sup>, from side damage to oil fuel tank  $i$ , which is assumed equal to the total volume in oil fuel tank  $i$  at 98% filling.

- .5 The mean outflow for bottom damage shall be calculated for each tidal condition as follows:



$$.1 \quad O_{MB(0)} = \sum_1^n P_{B(i)} O_{B(i)} C_{DB(i)} [m^3]$$

where:

- $i$  = represents each oil fuel tank under consideration;
- $n$  = total number of oil fuel tanks;
- $P_{B(i)}$  = the probability of penetrating oil fuel tank  $i$  from bottom damage, calculated in accordance with paragraph 11.7 of this regulation;
- $O_{B(i)}$  = the outflow from oil fuel tank  $i$ , in  $m^3$ , calculated in accordance with paragraph 11.5.3 of this regulation; and
- $C_{DB(i)}$  = factor to account for oil capture as defined in paragraph 11.5.4.

$$.2 \quad O_{MB(2.5)} = \sum_1^n P_{B(i)} O_{B(i)} C_{DB(i)} \quad [m^3]$$

where:

- $i$ ,  $n$ ,  $P_{B(i)}$  and  $C_{DB(i)}$  = as defined in subparagraph .1 above
- $O_{B(i)}$  = the outflow from oil fuel tank  $i$ , in  $m^3$ , after tidal change.

.3 The oil outflow  $O_{B(i)}$  for each oil fuel tank shall be calculated based on pressure balance principles, in accordance with the following assumptions:

- .1 The ship shall be assumed stranded with zero trim and heel, with the stranded draught prior to tidal change equal to the partial load line draught  $d_p$ .
- .2 The oil fuel level after damage shall be calculated as follows:

$$h_F = \{(d_p + t_c - Z_l)(\rho_s)\} / \rho_n$$

- where:  $h_F$  = the height of the oil fuel surface above  $Z_l$ , in m;
- $t_c$  = the tidal change, in m. Reductions in tide shall be expressed as negative values;
- $Z_l$  = the height of the lowest point in the oil fuel tank above the baseline, in m;
- $\rho_s$  = density of seawater, to be taken as  $1,025 \text{ kg/m}^3$ ; and,
- $\rho_n$  = nominal density of the oil fuel, as defined in 11.2.3.

.3 The oil outflow  $O_{B(i)}$  for any tank bounding the bottom shell plating shall be taken not less than the following formula, but no more than the tank capacity:

$$O_{B(i)} = H_w \cdot A$$



where:

$H_W = 1.0 \text{ m}$ , when  $Y_B = 0$

$H_W = B_B/50$  but not greater than  $0.4 \text{ m}$ , when  $Y_B$  is greater than  $B_B/5$  or  $11.5 \text{ m}$ , whichever is less

“ $H_W$ ” is to be measured upwards from the midship flat bottom line. In the turn of the bilge area and at locations without a clearly defined turn of the bilge,  $H_W$  is to be measured from a line parallel to the midship flat bottom, as shown for distance “ $h$ ” in Figure 1.

For  $Y_B$  values outboard  $B_B/5$  or  $11.5 \text{ m}$ , whichever is less,  $H_W$  is to be linearly interpolated.

$Y_B =$  the minimum value of  $Y_B$  over the length of the oil fuel tank, where at any given location,  $Y_B$  is the transverse distance between the side shell at waterline  $d_B$  and the tank at or below waterline  $d_B$ .

$A =$  the maximum horizontal projected area of the oil fuel tank up to the level of  $H_W$  from the bottom of the tank.

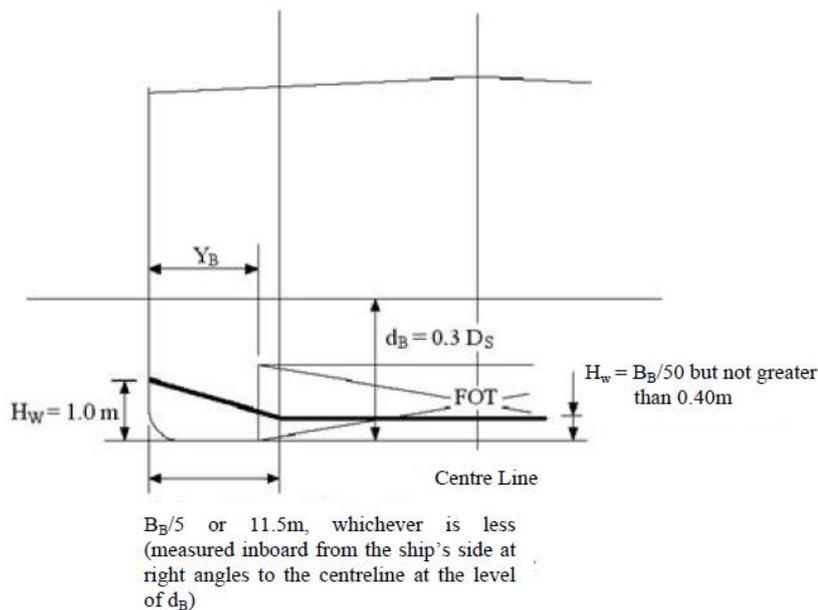


Figure 3 – Dimensions for calculation of the minimum oil outflow for the purpose of subparagraph 11.5.3.3

.4 In the case of bottom damage, a portion from the outflow from an oil fuel tank may be captured by non-oil compartments. This effect is approximated by application of the factor CDB(i) for each tank, which shall be taken as follows:

CDB(i) = 0.6 for oil fuel tanks bounded from below by non-oil compartments;

CDB(i) = 1 otherwise.

.6 The probability PS of breaching a compartment from side damage shall be calculated as follows:

.1  $PS = PSL \cdot PSV \cdot PST$

where:  $PSL = (1 - PSf - PSa)$  = probability the damage will extend into the longitudinal zone bounded by  $Xa$  and  $Xf$ ;

$PSV = (1 - PSu - PSI)$  = probability the damage will extend into the vertical zone bounded by  $Zl$  and  $Zu$ ;

$PST = (1 - PSy)$  = probability the damage will extend transversely beyond the boundary defined by  $y$ ;

.2  $PSa$ ,  $PSf$ ,  $PSu$  and  $PSI$  shall be determined by linear interpolation from the table of probabilities for side damage provided in 11.6.3, and  $PSy$  shall be calculated from the formulas provided in 11.6.3, where:

$PSa$  = the probability the damage will lie entirely aft of location  $Xa/L$ ;

$PSf$  = the probability the damage will lie entirely forward of location  $Xf/L$ ;

$PSI$  = probability the damage will lie entirely below the tank;

$PSu$  = probability the damage will lie entirely above the tank; and

$PSy$  = probability the damage will lie entirely outboard the tank.

Compartment boundaries  $Xa$ ,  $Xf$ ,  $Zl$ ,  $Zu$  and  $y$  shall be developed as follows:

$Xa$  = the longitudinal distance from aft terminal of  $L$  to the aft most point on the compartment being considered, in m;

$Xf$  = the longitudinal distance from aft terminal of  $L$  to the foremost point on the compartment being considered, in m;

$Zl$  = the vertical distance from the moulded baseline to the lowest point on the compartment being considered, in m. Where  $Zl$  is greater than  $DS$ ,  $Zl$  shall be taken as  $DS$ ;

$Zu$  = the vertical distance from the moulded baseline to the highest point on the compartment being considered, in m. Where  $Zu$  is greater than  $DS$ ,  $Zu$  shall be taken as  $DS$ ; and,

$y$  = the minimum horizontal distance measured at right angles to the centreline between the compartment under consideration and the side shell, in m.



In way of the turn of the bilge, y need not to be considered below a distance h above baseline, where h is lesser of B/10, 3 m or the top of the tank.

### .3 Table of Probabilities for side damage

$X_a/L$	$P_{Sa}$	$X_f/L$	$P_{Sf}$	$Z_v/D_s$	$P_{S1}$	$Z_u/D_s$	$P_{Su}$
0,00	0,000	0,00	0,967	0,00	0,000	0,00	0,968
0,05	0,023	0,05	0,917	0,05	0,000	0,05	0,952
0,10	0,068	0,10	0,867	0,10	0,001	0,10	0,931
0,15	0,117	0,15	0,817	0,15	0,003	0,15	0,905
0,20	0,167	0,20	0,767	0,20	0,007	0,20	0,873
0,25	0,217	0,25	0,717	0,25	0,013	0,25	0,836
0,30	0,267	0,30	0,667	0,30	0,021	0,30	0,789
0,35	0,317	0,35	0,617	0,35	0,034	0,35	0,733
0,40	0,367	0,40	0,567	0,40	0,055	0,40	0,670
0,45	0,417	0,45	0,517	0,45	0,085	0,45	0,599
0,50	0,467	0,50	0,467	0,50	0,123	0,50	0,525
0,55	0,517	0,55	0,417	0,55	0,172	0,55	0,452
0,60	0,567	0,60	0,367	0,60	0,226	0,60	0,383
0,65	0,617	0,65	0,317	0,65	0,285	0,65	0,317
0,70	0,667	0,70	0,267	0,70	0,347	0,70	0,255
0,75	0,717	0,75	0,217	0,75	0,413	0,75	0,197
0,80	0,767	0,80	0,167	0,80	0,482	0,80	0,143
0,85	0,817	0,85	0,117	0,85	0,553	0,85	0,092
0,90	0,867	0,90	0,068	0,90	0,626	0,90	0,046
0,95	0,917	0,95	0,023	0,95	0,700	0,95	0,013
1,00	0,967	1,00	0,000	1,00	0,775	1,00	0,000

$P_{Sy}$  shall be calculated as follows:

$$\begin{aligned}
 P_{Sy} &= (24.96 - 199.6 y/B_s) (y/B_s) && \text{for } y/B_s = 0.05 \\
 P_{Sy} &= 0.749 + \{5 - 44.4 (y/B_s - 0.05)\} \{(y/B_s) - 0.05\} && \text{for } 0.05 < y/B_s < 0.1 \\
 P_{Sy} &= 0.888 + 0.56 (y/B_s - 0.1) && \text{for } y/B_s = 0.1
 \end{aligned}$$

$P_{Sy}$  is not to be taken greater than 1.

.7 The probability PB of breaching a compartment from bottom damage shall be calculated as follows:

1 For symmetrical tank arrangements, damages are considered for one side of the ship only, in which case all "y" dimensions are to be measured from that side. For asymmetrical arrangements reference is made to the Explanatory Notes on matters related to the accidental oil outflow performance, adopted by the Organization by resolution MEPC.122(52).



$$.1 \text{ PB} = \text{PBL} \cdot \text{PBT} \cdot \text{PBV}$$

where:  $\text{PBL} = (1 - \text{PBf} - \text{PBa})$  = probability the damage will extend into the longitudinal zone bounded by  $X_a$  and  $X_f$ ;

$\text{PBT} = (1 - \text{PBp} - \text{PBs})$  = probability the damage will extend into transverse zone bounded by  $Y_p$  and  $Y_s$ ; and

$\text{PBV} = (1 - \text{PBz})$  = probability the damage will extend vertically above the boundary defined by  $z$ ;

.2  $\text{PBa}$ ,  $\text{PBf}$ ,  $\text{PBp}$  and  $\text{PBs}$  shall be determined by linear interpolation from the table of probabilities for bottom damage provided in 11.7.3, and  $\text{PBz}$  shall be calculated from the formulas provided in 11.7.3, where:

$\text{PBa}$  = the probability the damage will lie entirely aft of location  $X_a/L$ ;

$\text{PBf}$  = the probability the damage will lie entirely forward of location  $X_f/L$ ;

$\text{PBp}$  = probability the damage will lie entirely to port of the tank;

$\text{PBs}$  = probability the damage will lie entirely to starboard the tank; and

$\text{PBz}$  = probability the damage will lie entirely below the tank. Compartment boundaries  $X_a$ ,  $X_f$ ,  $Y_p$ ,  $Y_s$  and  $z$  shall be developed as follows:

$X_a$  and  $X_f$  as defined in 11.6.2;

$Y_p$  = the transverse distance from the port-most point on the compartment located at or below the waterline  $dB$ , to a vertical plane located  $BB/2$  to starboard of the ship's centreline;

$Y_s$  = the transverse distance from the starboard-most point on the compartment located at or below the waterline  $dB$ , to a vertical plane located  $BB/2$  to starboard of the ship's centreline; and

$z$  = the minimum value of  $z$  over the length of the compartment, where, at any given longitudinal location,  $z$  is the vertical distance from the lower point of the bottom shell at that longitudinal location to the lower point of the compartment at that longitudinal location.



.3 Table of probabilities for bottom damage

$X_a/L$	$P_{Ba}$	$X_f/L$	$P_{Bf}$	$Y_p/B_B$	$P_{Bp}$	$Y_s/B_B$	$P_{Bs}$
0,00	0,000	0,00	0,969	0,00	0,844	0,00	0,000
0,05	0,002	0,05	0,953	0,05	0,794	0,05	0,009
0,10	0,008	0,10	0,936	0,10	0,744	0,10	0,032
0,15	0,017	0,15	0,916	0,15	0,694	0,15	0,063
0,20	0,029	0,20	0,894	0,20	0,644	0,20	0,097
0,25	0,042	0,25	0,870	0,25	0,594	0,25	0,133
0,30	0,058	0,30	0,842	0,30	0,544	0,30	0,171
0,35	0,076	0,35	0,810	0,35	0,494	0,35	0,211
0,40	0,096	0,40	0,775	0,40	0,444	0,40	0,253
0,45	0,119	0,45	0,734	0,45	0,394	0,45	0,297
0,50	0,143	0,50	0,687	0,50	0,344	0,50	0,344
0,55	0,171	0,55	0,630	0,55	0,297	0,55	0,394
0,60	0,203	0,60	0,563	0,60	0,253	0,60	0,444
0,65	0,242	0,65	0,489	0,65	0,211	0,65	0,494
0,70	0,289	0,70	0,413	0,70	0,171	0,70	0,544
0,75	0,344	0,75	0,333	0,75	0,133	0,75	0,594
0,80	0,409	0,80	0,252	0,80	0,097	0,80	0,644
0,85	0,482	0,85	0,170	0,85	0,063	0,85	0,694
0,90	0,565	0,90	0,089	0,90	0,032	0,90	0,744
0,95	0,658	0,95	0,026	0,95	0,009	0,95	0,794
1,00	0,761	1,00	0,000	1,00	0,000	1,00	0,844

$P_{Bz}$  shall be calculated as follows:

$$P_{Bz} = (14.5 - 67 z/D_S) (z/D_S) \quad \text{for } z/D_S = 0.1$$

$$P_{Bz} = 0.78 + 1.1 \{(z/D_S - 0.1)\} \quad \text{for } z/D_S > 0.1$$

$P_{Bz}$  is not to be taken greater than 1.

- .8 For the purpose of maintenance and inspection, any oil fuel tanks that do not border the outer shell plating shall be located no closer to the bottom shell plating than the minimum value of  $h$  in paragraph 6 and no closer to the side shell plating than the applicable minimum value of  $w$  in paragraph 7 or 8.

12 In approving the design and construction of ships to be built in accordance with this regulation, Administrations shall have due regard to the general safety aspects, including the need for maintenance and inspection of wing and double bottom tanks or spaces.”

### 3 Consequential amendments to the Supplement of the IOPP Certificate (Forms A and B)

The following new paragraph 2A is added to the Supplement of the IOPP Certificate (Forms A and B):

“2A.1 The ship is required to be constructed according to regulation 12A and complies with the requirements of:

paragraphs 6 and either 7 or 8 (double hull construction) ?

paragraph 11 (accidental oil fuel outflow performance). ?

2A.2 The ship is not required to comply with the requirements of regulation 12A. ? ”



#### **4 Amendments to regulation 21**

*The text of existing paragraph 2.2 of regulation 21 on Prevention of oil pollution from oil tankers carrying heavy grade oil as cargo is replaced by the following:*

“oils, other than crude oils, having either a density at 15°C higher than 900 kg/m<sup>3</sup> or a kinematic viscosity at 50°C higher than 180 mm<sup>2</sup>/s; or”

#### **Resolution MSC.154(55) of 13 October 2006**

Designation of the Southern South Africa n waters as a Special Area:

A new subparagraph .10 is added to regulation 1.11 as follows:

.10 *the Southern South African waters* means the sea area enclosed by the following co-ordinates:

31° 14" S; 017° 50"E  
31° 30" S; 017° 12"E  
32° 00" S; 017° 06"E  
32° 32" S; 016° 52"E  
34° 06" S; 017° 24"E  
36° 58" S; 020° 54"E  
36° 00" S; 022° 30"E  
35° 14" S; 022° 54"E  
34° 30" S; 026° 00"E  
33° 48" S; 027° 25"E  
33° 27" S; 027° 12"E

#### **Resolution MSC.164(56) of 13 July 2007**

Reception facilities outside Special Areas:

Regulation 38.2.5 is replaced by the following:

“all ports in respect of oily bilge waters and other residues that cannot be discharged in accordance with regulations 15 and 34 of this Annex; and”

#### **Resolution MSC.186(59) of 17 July 2009**

Addition of a new chapter 8 to MARPOL Annex I and consequential amendments to the Supplement to the IOPP Certificate, Form B:

*A new chapter 8 is added:*

**“CHAPTER 8 – PREVENTION OF POLLUTION DURING TRANSFER OF OIL CARGO BETWEEN OIL TANKERS AT SEA**

#### **Regulation 40**

*Scope of application*

1 The regulations contained in this chapter apply to oil tankers of 150 gross tonnage



and above engaged in the transfer of oil cargo between oil tankers at sea (STS operations) and their STS operations conducted on or after 1 April 2012. However, STS operations conducted before that date but after the approval of the Administration of STS operations Plan required under regulation 41.1 shall be in accordance with the STS operations Plan as far as possible.

2 The regulations contained in this chapter shall not apply to oil transfer operations associated with fixed or floating platforms including drilling rigs; floating production, storage and offloading facilities (FPSOs) used for the offshore production and storage of oil; and floating storage units (FSUs) used for the offshore storage of produced oil<sup>1</sup>.

3 The regulations contained in this chapter shall not apply to bunkering operations.

4 The regulations contained in this chapter shall not apply to STS operations necessary for the purpose of securing the safety of a ship or saving life at sea, or for combating specific pollution incidents in order to minimize the damage from pollution.

5 The regulations contained in this chapter shall not apply to STS operations where either of the ships involved is a warship, naval auxiliary or other ship owned or operated by a State and used, for the time being, only on government non-commercial service. However, each State shall ensure, by the adoption of appropriate measures not impairing operations or operational capabilities of such ships that the STS operations are conducted in a manner consistent, so far as is reasonable and practicable, with this chapter.

<sup>1</sup> Revised Annex I of MARPOL, chapter 7 (resolution MEPC.117(52)) and UNCLOS article 56 are applicable and address these operations.



## **Regulation 41**

### *General Rules on safety and environmental protection*

1 Any oil tanker involved in STS operations shall carry on board a Plan prescribing how to conduct STS operations (STS operations Plan) not later than the date of the first annual, intermediate or renewal survey of the ship to be carried out on or after 1 January 2011. Each oil tanker's STS operations Plan shall be approved by the Administration. The STS operations Plan shall be written in the working language of the ship.

2 The STS operations Plan shall be developed taking into account the information contained in the best practice guidelines for STS operations identified by the Organization<sup>2</sup>. The STS operations Plan may be incorporated into an existing Safety Management System required by chapter IX of the International Convention for the Safety of Life at Sea, 1974, as amended, if that requirement is applicable to the oil tanker in question.

3 Any oil tanker subject to this chapter and engaged in STS operations shall comply with its STS operations Plan.

4 The person in overall advisory control of STS operations shall be qualified to perform all relevant duties, taking into account the qualifications contained in the best practice guidelines for STS operations identified by the Organization<sup>3</sup>.

5 Records<sup>4</sup> of STS operations shall be retained on board for three years and be readily available for inspection by a Party to the present Convention.

## **Regulation 42**

### *Notification*

1 Each oil tanker subject to this chapter that plans STS operations within the territorial sea, or the exclusive economic zone of a Party to the present Convention shall notify that Party not less than 48 hours in advance of the scheduled STS operations. Where, in an exceptional case, all of the information specified in paragraph 2 is not available not less than 48 hours in advance, the oil tanker discharging the oil cargo shall notify the Party to the present Convention, not less than 48 hours in advance that an STS operation will occur and the information specified in paragraph 2 shall be provided to the Party at the earliest opportunity.

<sup>2</sup> IMO's "Manual on Oil Pollution, Section I, Prevention" as amended, and the ICS and OCIMF "Ship-to-ship Transfer Guide, Petroleum", fourth edition, 2005.

<sup>3</sup> IMO's "Manual on Oil Pollution, Section I, Prevention" as amended, and the ICS and OCIMF "Ship-to-ship Transfer Guide, Petroleum", fourth edition, 2005.

<sup>4</sup> Revised Annex I of MARPOL chapters 3 and 4 (resolution MEPC.117(52)); requirements for recording bunkering and oil cargo transfer operations in the Oil Record Book, and any records required by the STS operations Plan.



2 The notification specified in paragraph 1 of this regulation<sup>5</sup> shall include at least the following:

- .1 name, flag, call sign, IMO Number and estimated time of arrival of the oil tankers involved in the STS operations;
- .2 date, time and geographical location at the commencement of the planned STS operations;
- .3 whether STS operations are to be conducted at anchor or underway;
- .4 oil type and quantity;
- .5 planned duration of the STS operations;
- .6 identification of STS operations service provider or person in overall advisory control and contact information; and
- .7 confirmation that the oil tanker has on board an STS operations Plan meeting the requirements of regulation 41.

3 If the estimated time of arrival of an oil tanker at the location or area for the STS operations changes by more than six hours, the master, owner or agent of that oil tanker shall provide a revised estimated time of arrival to the Party to the present Convention specified in paragraph 1 of this regulation.”

*2 In the Record of Construction and Equipment for Oil Tankers, Form B, new section 8A is added as follows:*

**“8A Ship-to-ship oil transfer operations at sea**

(regulation 41)

8A.1 The oil tanker is provided with an STS operations Plan in compliance with regulation 41.”

<sup>5</sup> The national operational contact point as listed in document MSC-MEPC.6/Circ.4 of 31 December 2007 or its subsequent amendments.



**Resolution MSC.187(59) of 17 July 2009**

Amendments to regulations 1, 12, 13, 17 and 38 of MARPOL Annex I, Supplement to the IOPP Certificate and Oil Record Book Parts I and II:

**Regulation 1 – Definitions**

1 The following new subparagraphs .31, .32, .33 and .34 are added after existing subparagraph .30:

“.31 **Oil residue (sludge)** means the residual waste oil products generated during the normal operation of a ship such as those resulting from the purification of fuel or lubricating oil for main or auxiliary machinery, separated waste oil from oil filtering equipment, waste oil collected in drip trays, and waste hydraulic and lubricating oils.

.32 **Oil residue (sludge) tank means** a tank which holds oil residue (sludge) from which sludge may be disposed directly through the standard discharge connection or any other approved means of disposal.

.33 **Oily bilge water** means water which may be contaminated by oil resulting from things such as leakage or maintenance work in machinery spaces. Any liquid entering the bilge system including bilge wells, bilge piping, tank top or bilge holding tanks is considered oily bilge water.

.34 **Oily bilge water holding tank** means a tank collecting oily bilge water prior to its discharge, transfer or disposal.”

**Regulation 12 – Tanks for oil residues (sludge)**

2 Paragraph 1 is amended to read as follows:

“1 Every ship of 400 gross tonnage and above shall be provided with a tank or tanks of adequate capacity, having regard to the type of machinery and length of voyage, to receive the oil residues (sludge) which cannot be dealt with otherwise in accordance with the requirements of this Annex.”

3 The following new paragraph 2 is inserted, after the existing paragraph 1:

“2 Oil residue (sludge) may be disposed of directly from the oil residue (sludge) tank(s) through the standard discharge connection referred to in regulation 13, or any other approved means of disposal. The oil residue (sludge) tank(s):

.1 shall be provided with a designated pump for disposal that is capable of taking suction from the oil residue (sludge) tank(s); and

.2 shall have no discharge connections to the bilge system, oily bilge water holding tank(s), tank top or oily water separators except that the tank(s) may be fitted with drains, with manually operated self-closing valves and arrangements for subsequent visual monitoring of the settled water, that lead to an oily bilge water holding tank or bilge well, or an alternative arrangement, provided such arrangement does not connect directly to the bilge piping system.”

4 Existing paragraphs 2 and 3 are renumbered 3 and 4, respectively.



**Regulations 12, 13, 17 and 38**

5 The word “sludge” in regulations 12.2, 13, 17.2.3, 38.2 and 38.7 is replaced by the words “oil residue (sludge)”.

6 The words “and other oil residues” in regulation 17.2.3 are deleted.

**AMENDMENTS TO THE SUPPLEMENT TO THE IOPP CERTIFICATE FORM A (SHIPS OTHER THAN OIL TANKERS) AND FORM B (OIL TANKERS)**

1 The existing Section 3 of the Supplement to the IOPP Certificate, Form A and Form B, is replaced by the following:

**“3 Means for retention and disposal of oil residues (sludge) (regulation 12) and oily bilge water holding tank(s)\***

3.1 The ship is provided with oil residue (sludge) tanks for retention of oil residues (sludge) on board as follows:

Tank identification	Tank location		Volume (m <sup>3</sup> )
	Frames (from)-(to)	Lateral position	
Total volume: .....			m <sup>3</sup>

3.2 Means for the disposal of oil residues (sludge) retained in oil residue (sludge) tanks:

3.2.1 Incinerator for oil residues (sludge), maximum capacity      kW or kcal/h (delete as appropriate).....

3.2.2 Auxiliary boiler suitable for burning oil residues (sludge).....

3.2.3 Other acceptable means, state which .....

3.3 The ship is provided with holding tank(s) for the retention on board of oily bilge water as follows:

Tank identification	Tank location		Volume (m <sup>3</sup> )
	Frames (from)-(to)	Lateral position	
Total volume: .....			m <sup>3</sup>

\* Oily bilgewater holding tank(s) are not required by the Convention; if such tank(s) are provided they shall be listed in Table 3.3.



2 The term “(double bottom requirements)” at the end of paragraph 5.8.2 of Form B is deleted.

3 Paragraphs 5.8.5 and 5.8.7 are replaced by the following:

“5.8.5 The ship is not subject to regulation 20 (check which box(es) apply):

- .1 The ship is less than 5,000 tonnes deadweight
- .2 The ship complies with regulation 20.1.2
- .3 The ship complies with regulation 20.1.3

“5.8.7 The ship is not subject to regulation 21 (check which box(es) apply):

- .1 The ship is less than 600 tonnes deadweight
- .2 The ship complies with regulation 19  
(Deadweight tonnes  $\geq$  5,000)
- .3 The ship complies with regulation 21.1.2
- .4 The ship complies with regulation 21.4.2  
(600  $\leq$  Deadweight tonnes  $<$  5,000)
- .5 The ship does not carry “heavy grade oil” as defined  
in regulation 21.2 of MARPOL Annex I

4 Delete paragraph 6.1.5.4 from the Supplement to the International Oil Pollution Prevention Certificate, Form B.

## AMENDMENTS TO THE OIL RECORD BOOK PARTS I AND II

1 Sections (A) to (H) of the Oil Record Book Part I are replaced by the following:

### “(A) Ballasting or cleaning of oil fuel tanks

1 Identity of tank(s) ballasted.

2 Whether cleaned since they last contained oil and, if not, type of oil previously carried.

3 Cleaning process:

- .1 position of ship and time at the start and completion of cleaning;
- .2 identify tank(s) in which one or another method has been employed (rinsing through, steaming, cleaning with chemicals; type and quantity of chemicals used, in m<sup>3</sup>);
- .3 identity of tank(s) into which cleaning water was transferred and the quantity in m<sup>3</sup>.



4 Ballasting:

- .1 position of ship and time at start and end of ballasting;
- .2 quantity of ballast if tanks are not cleaned, in m3.

**(B) Discharge of dirty ballast or cleaning water from oil fuel tanks referred to under Section (A)**

5 Identity of tank(s).

6 Position of ship at start of discharge.

7 Position of ship on completion of discharge.

8 Ship's speed(s) during discharge.

9 Method of discharge:

- .1 through 15 ppm equipment;
- .2 to reception facilities.

10 Quantity discharged, in m3.

**(C) Collection, transfer and disposal of oil residues (sludge)**

11 Collection of oil residues (sludge).

Quantities of oil residues (sludge) retained on board. The quantity should be recorded weekly<sup>1</sup>: (this means that the quantity must be recorded once a week even if the voyage lasts more than one week):

- .1 identity of tank(s)
- .2 capacity of tank(s) ..... m3
- .3 total quantity of retention ..... m3
- .4 quantity of residue collected by manual operation ..... m3  
(Operator initiated manual collections where oil residue (sludge) is transferred into the oil residue (sludge) holding tank(s).)

<sup>1</sup> Only those tanks listed in item 3.1 of Forms A and B of the Supplement to the IOPP Certificate used for oil residues (sludge).



12 Methods of transfer or disposal of oil residues (sludge).

State quantity of oil residues transferred or disposed of, the tank(s) emptied and the quantity of contents retained in m<sup>3</sup>:

- .1 to reception facilities (identify port)<sup>2</sup>;
- .2 to another (other) tank(s) (indicate tank(s) and the total content of tank(s));
- .3 incinerated (indicate total time of operation);
- .4 other method (state which).

**(D) Non-automatic starting of discharge overboard, transfer or disposal otherwise of bilge water which has accumulated in machinery spaces**

13 Quantity discharged, transferred or disposed of, in m<sup>3</sup>.

14 Time of discharge, transfer or disposal (start and stop).

15 Method of discharge, transfer, or disposal:

- .1 through 15 ppm equipment (state position at start and end);
- .2 to reception facilities (identify port)<sup>2</sup>;
- .3 to slop tank or holding tank or other tank(s) (indicate tank(s); state quantity retained in tank(s), in m<sup>3</sup>).

**(E) Automatic starting of discharge overboard, transfer or disposal otherwise of bilge water which has accumulated in machinery spaces**

16 Time and position of ship at which the system has been put into automatic mode of operation for discharge overboard, through 15 ppm equipment.

17 Time when the system has been put into automatic mode of operation for transfer of bilge water to holding tank (identify tank).

18 Time when the system has been put into manual operation.

**(F) Condition of the oil filtering equipment**

19 Time of system failure<sup>4</sup>.

20 Time when system has been made operational.

21 Reasons for failure.

**(G) Accidental or other exceptional discharges of oil**

22 Time of occurrence.

23 Place or position of ship at time of occurrence.

24 Approximate quantity and type of oil.

25 Circumstances of discharge or escape, the reasons therefor and general remarks.

2 The ship's master should obtain from the operator of the reception facilities, which includes barges and tank trucks, a receipt or certificate detailing the quantity of tank washings, dirty ballast, residues or oily mixtures transferred, together with the time and date of the transfer. This receipt or certificate, if attached to the Oil Record Book Part I, may aid the master of the ship in proving that the ship was not involved in an alleged pollution incident. The receipt or certificate should be kept together with the Oil Record Book Part I.

3 In case of discharge or disposal of bilge water from holding tank(s), state identity and capacity of holding tank(s) and quantity retained in holding tank.

4 The condition of the oil filtering equipment covers also the alarm and automatic stopping devices, if applicable.



## **(H) Bunkering of fuel or bulk lubricating oil**

26 Bunkering:

- .1 Place of bunkering.
- .2 Time of bunkering.
- .3 Type and quantity of fuel oil and identity of tank(s) (state quantity added, in tonnes and total content of tank(s)).
- .4 Type and quantity of lubricating oil and identity of tank(s) (state quantity added, in tonnes and total content of tank(s)).”

2 Section (J) of the Oil Record Book Part II is replaced by the following:

### **“(J) Collection, transfer and disposal of residues and oily mixtures not otherwise dealt with**

55 Identity of tanks.

56 Quantity transferred or disposed of from each tank. (State the quantity retained, in m3.)

57 Method of transfer or disposal:

- .1 disposal to reception facilities (identify port and quantity involved);
- .2 mixed with cargo (state quantity);
- .3 transferred to or from (an)other tank(s) including transfer from machinery space oil residue (sludge) and oily bilge water tanks (identify tank(s); state quantity transferred and total quantity in tank(s), in m3); and
- .4 other method (state which); state quantity disposed of in m3.”

## ***Resolution MSC.189(60) of 26 March 2010***

Addition of a new chapter 9 to MARPOL Annex I:

A new chapter 9 is added as follows:

### **"CHAPTER 9 – SPECIAL REQUIREMENTS FOR THE USE OR CARRIAGE OF OILS IN THE ANTARCTIC AREA**

#### ***Regulation 43***

*Special requirements for the use or carriage of oils in the Antarctic area*

1 With the exception of vessels engaged in securing the safety of ships or in a search and rescue operation, the carriage in bulk as cargo or carriage and use as fuel of the following:

- .1 crude oils having a density at 15°C higher than 900 kg/m<sup>3</sup>;
- .2 oils, other than crude oils, having a density at 15°C higher than 900 kg/m<sup>3</sup> or a kinematic viscosity at 50°C higher than 180 mm<sup>2</sup>/s; or
- .3 bitumen, tar and their emulsions,

shall be prohibited in the Antarctic area, as defined in Annex I, regulation 1.11.7.

2 When prior operations have included the carriage or use of oils listed in paragraphs 1.1 to 1.3 of this regulation, the cleaning or flushing of tanks or pipelines is not required."



**Resolution MSC.216(63) of 2 March 2012**

Regional arrangements for port reception facilities under MARPOL Annex I:

**1 New paragraphs 3bis and 4bis are added to regulation 38 of Annex I:**

*3bis* Small Island Developing States may satisfy the requirements in paragraphs 1 to 3 of this regulation through regional arrangements when, because of those States' unique circumstances, such arrangements are the only practical means to satisfy these requirements. Parties participating in a regional arrangement shall develop a Regional Reception Facilities Plan, taking into account the guidelines developed by the Organization.

The Government of each Party participating in the arrangement shall consult with the Organization, for circulation to the Parties of the present Convention:

- .1 how the Regional Reception Facilities Plan takes into account the Guidelines;
- .2 particulars of the identified Regional Ships Waste Reception Centres; and
- .3 particulars of those ports with only limited facilities.

*4bis* Small Island Developing States may satisfy the requirements in paragraph 4 of this regulation through regional arrangements when, because of those States' unique circumstances, such arrangements are the only practical means to satisfy these requirements. Parties participating in a regional arrangement shall develop a Regional Reception Facilities Plan, taking into account the guidelines developed by the Organization.

The Government of each Party participating in the arrangement shall consult with the Organization for circulation to the Parties of the present Convention:

- .1 how the Regional Reception Facilities Plan takes into account the Guidelines;
- .2 particulars of the identified Regional Ships Waste Reception Centres; and
- .3 particulars of those ports with only limited facilities.

**2 New paragraphs 2bis and 2ter are added to regulation 18 of Annex II:**

*2bis* Small Island Developing States may satisfy the requirements in paragraphs 1, 2 and 4 of this regulation through regional arrangements when, because of those States' unique circumstances, such arrangements are the only practical means to satisfy these requirements. Parties participating in a regional arrangement shall develop a Regional Reception Facilities Plan, taking into account the guidelines developed by the Organization.

The Government of each Party participating in the arrangement shall consult with the Organization for circulation to the Parties of the present Convention:

- .1 how the Regional Reception Facilities Plan takes into account the Guidelines;
- .2 particulars of the identified Regional Ships Waste Reception Centres; and
- .3 particulars of those ports with only limited facilities.

*2ter* Where regulation 13 of this annex requires a prewash and the Regional Reception Facility Plan is applicable to the port of unloading, the prewash and subsequent discharge to a reception facility shall be carried out as prescribed in regulation 13 of this annex or at a



Regional Ship Waste Reception Centre specified in the applicable Regional Reception Facility Plan.

**3 New paragraph 1bis is added to regulation 12 of Annex IV:**

1bis Small Island Developing States may satisfy the requirements in paragraph 1 of this regulation through regional arrangements when, because of those States' unique circumstances, such arrangements are the only practical means to satisfy these requirements. Parties participating in a regional arrangement shall develop a Regional Reception Facilities Plan, taking into account the guidelines developed by the Organization.

The Government of each Party participating in the arrangement shall consult with the Organization for circulation to the Parties of the present Convention:

- .1 how the Regional Reception Facilities Plan takes into account the Guidelines;
- .2 particulars of the identified Regional Ships Waste Reception Centres; and
- .3 particulars of those ports with only limited facilities.

**4 New paragraph 2bis is added to regulation 8 of Annex V<sup>1</sup>:**

2bis Small Island Developing States may satisfy the requirements in paragraphs 1 and 2.1 of this regulation through regional arrangements when, because of those States' unique circumstances, such arrangements are the only practical means to satisfy these requirements. Parties participating in a regional arrangement shall develop a Regional Reception Facilities Plan, taking into account the guidelines developed by the Organization.

The Government of each Party participating in the Arrangement shall consult with the Organization for circulation to the Parties of the present Convention:

- .1 how the Regional Reception Facilities Plan takes into account the Guidelines;
- .2 particulars of the identified Regional Ships Waste Reception Centres; and
- .3 particulars of those ports with only limited facilities.

<sup>1</sup> Text of revised Annex V, adopted by resolution MEPC.201(62).



**Resolution MSC.235(65) of 17 May 2013**

Amendments to Form A and Form B of Supplements to the IOPP Certificate under MARPOL Annex I:

**1 Amendments to the Supplement to the IOPP Certificate (Form A)**

The existing paragraph 3.2.1 is replaced by the following:

"3.2.1 Incinerator for oil residues (sludge).....□"

**2 Amendments to the Supplement to the IOPP Certificate (Form B)**

The existing paragraph 3.2.1 is replaced by the following:

"3.2.1 Incinerator for oil residues (sludge).....□"

**Resolution MSC.238(65) of 17 May 2013**

Amendments to MARPOL Annex I to make the RO Code mandatory:

**Amendments to MARPOL Annex I**

Regulation 6

The existing text of the last sentence of paragraph 3.1 is replaced by the following:

"Such organizations, including classification societies, shall be authorized by the Administration in accordance with the provisions of the present Convention and with the Code for Recognized Organizations (RO Code), consisting of part 1 and part 2 (the provisions of which shall be treated as mandatory) and part 3 (the provisions of which shall be treated as recommendatory), as adopted by the Organization by resolution MEPC.237(65), as may be amended by the Organization, provided that:

.1 amendments to part 1 and part 2 of the RO Code are adopted, brought into force and take effect in accordance with the provisions of article 16 of the present Convention concerning the amendment procedures applicable to this annex;

.2 amendments to part 3 of the RO Code are adopted by the Marine Environment Protection Committee in accordance with its Rules of Procedure; and

.3 any amendments referred to in .1 and .2 adopted by the Maritime Safety Committee and the Marine Environment Protection Committee are identical and come into force or take effect at the same time, as appropriate."

**Resolution MSC.246(66) of 4 April 2014**

Amendments to MARPOL Annex I to make the use of the III Code mandatory:

**Amendments to MARPOL Annex I**



1 The following is added at the end of regulation 1:

"35 *Audit* means a systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which audit criteria are fulfilled.

36 *Audit Scheme* means the IMO Member State Audit Scheme established by the Organization and taking into account the guidelines developed by the Organization\*.

37 *Code for Implementation* means the IMO Instruments Implementation Code (III Code) adopted by the Organization by resolution A.1070(28).

38 *Audit Standard* means the Code for Implementation.

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\* Refer to the *Framework and Procedures for the IMO Member State Audit Scheme*, adopted by the Organization by resolution A.1067(28)."

2 A new chapter 10 is added to read as follows:

## **"Chapter 10 – Verification of compliance with the provisions of this Convention**

### **Regulation 44**

#### ***Application***

Parties shall use the provisions of the Code for Implementation in the execution of their obligations and responsibilities contained in this Annex.

### **Regulation 45**

#### ***Verification of compliance***

1 Every Party shall be subject to periodic audits by the Organization in accordance with the audit standard to verify compliance with and implementation of this Annex.

2 The Secretary-General of the Organization shall have responsibility for administering the Audit Scheme, based on the guidelines developed by the Organization\*.

3 Every Party shall have responsibility for facilitating the conduct of the audit and implementation of a programme of actions to address the findings, based on the guidelines developed by the Organization\*.

4 Audit of all Parties shall be:

.1 based on an overall schedule developed by the Secretary-General of the Organization, taking into account the guidelines developed by the Organization\*; and

.2 conducted at periodic intervals, taking into account the guidelines developed by the Organization\*.

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\* Refer to the *Framework and Procedures for the IMO Member State Audit Scheme*, adopted by the Organization by resolution A.1067(28)."



## **Resolution MSC.248(66) of 4 April 2014**

### Amendments to MARPOL Annex I on mandatory carriage requirements for a stability instrument:

#### **Chapter 1 – General**

##### **Regulation 3 – Exemptions and waivers**

1 A new paragraph 6 is inserted, as follows:

"6 The Administration may waive the requirements of regulation 28(6) for the following oil tankers if loaded in accordance with the conditions approved by the Administration taking into account the guidelines developed by the Organization\*:

.1 oil tankers which are on a dedicated service, with a limited number of permutations of loading such that all anticipated conditions have been approved in the stability information provided to the master in accordance with regulation 28(5);

.2 oil tankers where stability verification is made remotely by a means approved by the Administration;

.3 oil tankers which are loaded within an approved range of loading conditions; or

.4 oil tankers constructed before 1 January 2016 provided with approved limiting KG/GM curves covering all applicable intact and damage stability requirements.

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\* Refer to operational guidance provided in part 2 of the *Guidelines for verification of damage stability requirements for tankers* (MSC.1/Circ.1461)."

#### **Chapter 4 – Requirements for the cargo area of oil tankers**

##### **Regulation 19 – Double hull and double bottom requirements for oil tanker delivered on or after 6 July 1996**

2 In paragraph 19.2.2, the term "regulation 28.6" is replaced with the term "regulation 28.7"

##### **Regulation 20 – Double hull and double bottom requirements for oil tanker delivered before 6 July 1996**

3 In paragraph 20.1.2 and 20.4, the term "paragraph 28.6" is replaced with the term "paragraph 28.7"

##### **Regulation 28 – Subdivision and damage stability**

4 The existing paragraph 6 is renumbered as paragraph 7.

5 A new paragraph 6 is inserted, as follows:

"6 All oil tankers shall be fitted with a stability instrument, capable of verifying compliance with intact and damage stability requirements approved by the Administration having regard to the performance standards recommended by the Organization\*:



.1 oil tankers constructed before 1 January 2016 shall comply with this regulation at the first scheduled renewal survey of the ship on or after 1 January 2016 but not later than 1 January 2021;

.2 notwithstanding the requirements of subparagraph .1 a stability instrument fitted on an oil tanker constructed before 1 January 2016 need not be replaced provided it is capable of verifying compliance with intact and damage stability, to the satisfaction of the Administration; and

.3 for the purposes of control under regulation 11, the Administration shall issue a document of approval for the stability instrument.

\* Refer to part B, chapter 4, of the International Code on Intact Stability, 2008 (2008 IS Code), as amended; the *Guidelines for the Approval of Stability Instruments* (MSC.1/Circ.1229), annex, section 4, as amended; and the technical standards defined in part 1 of the *Guidelines for verification of damage stability requirements for tankers* (MSC.1/Circ.1461)."

## **Appendix II – Form of IOPP Certificate and Supplements, Form B**

6 The following new paragraphs 5.7.5 and 5.7.6 are inserted:

"5.7.5 The ship is provided with an Approved Stability Instrument in accordance with regulation 28(6).....

5.7.6 The requirements of regulation 28(6) are waived in respect of the ship in accordance with regulation 3.6. Stability is verified by one or more of the following means:

.1 loading only to approved conditions defined in the stability information provided to the master in accordance with regulation 28(5).....

.2 verification is made remotely by a means approved by the Administration:  
.....

.3 loading within an approved range of loading conditions defined in the stability information provided to the master in accordance with regulation 28(5).....

.4 loading in accordance with approved limiting KG/GM curves covering all applicable intact and damage stability requirements defined in the stability information provided to the master in accordance with regulation 28(5) .....

7 In paragraph 5.8.4, the term "paragraph 28.6" is replaced with the term " paragraph 28.7"

### ***Resolution MSC.256(67) of 17 October 2014***

Amendments to MARPOL Annex I regulation 43:

#### **Annex I Regulations for the prevention of pollution by oil**

#### **Chapter 9 Special requirements for the use or carriage of oils in the Antarctic area**

#### **Regulation 43**

*Special requirements for the use or carriage of oils in the Antarctic area*



In the chapeau of paragraph 1, between the words "the carriage in bulk as cargo" and "or carriage", insert:

", use as ballast,"

### **Resolution MSC.265(68) of 15 May 2015**

Amendments to MARPOL Annex I, Making the use of the environment-related provisions of the Polar Code mandatory:

## **ANNEX I REGULATIONS FOR THE PREVENTION OF POLLUTION BY OIL**

### **Chapter 1 General**

#### **Regulation 3 – Exemptions and waivers**

1 In paragraph 1, the words "or section 1.2 of part II-A of the Polar Code" are inserted between "chapters 3 and 4 of this Annex" and "relating to construction".

2 A new paragraph 5.2.2 is added as follows:

".2 voyages within Arctic waters; or"

3 The existing paragraphs 5.2.2 to 5.2.6 are renumbered as paragraphs 5.2.3 to 5.2.7 and the subparagraphs are renumbered accordingly. In the renumbered paragraphs 5.2.5 and 5.2.6, the referenced paragraph numbers "5.2.2" and "5.2.2.2" are replaced by "5.2.3" and "5.2.3.2", respectively.

4 The chapeau of the renumbered paragraph 5.2.3 is replaced with the following:

".3 voyages within 50 nautical miles from the nearest land outside special areas or Arctic waters where the tanker is engaged in:"

#### **Regulation 4 – Exceptions**

5 The chapeau is replaced with the following:

"Regulations 15 and 34 of this Annex and paragraph 1.1.1 of part II-A of the Polar Code shall not apply to:"

### **Chapter 3 Requirements for machinery spaces of all ships**

#### **Part B Equipment**

#### **Regulation 14 – Oil filtering equipment**

6 Paragraph 5.1 is replaced with the following:

".1 any ship engaged exclusively on voyages within special areas or Arctic waters, or"



7 In paragraph 5.3.4, between the words "within special areas" and "or has been accepted", the words "or Arctic waters" are inserted.

**Part C**  
**Control of discharge of oil**

**Regulation 15 – Control of discharge of oil**

8 At the end of the title for section A, the words "except in Arctic waters" are added.

9 At the end of the title for section C, the words "and Arctic waters" are added.

**Chapter 4**  
**Requirements for the cargo area of oil tankers**

**Part C**  
**Control of operational discharges of oil**

**Regulation 34 – Control of discharge of oil**

10 At the end of the title for section A, the words "except in Arctic waters" are added.

**Chapter 6**  
**Reception facilities**

**Regulation 38 – Reception facilities**

11 In paragraph 2.5, the words "and paragraph 1.1.1 of part II-A of the Polar Code" are added after the words "regulations 15 and 34 of this Annex".

12 In paragraph 3.5, the words "and paragraph 1.1.1 of part II-A of the Polar Code" are added after the words "regulation 15 of this Annex".

**Chapter 11**  
**International Code for Ships Operating in Polar Waters**

13 A new chapter 11 is added after existing chapter 10 as follows:

**"Chapter 11 – International Code for Ships Operating in Polar Waters**

**Regulation 46 – Definitions**

For the purpose of this Annex,

1 Polar Code means the International Code for Ships Operating in Polar Waters, consisting of an introduction, parts I-A and II-A and parts I-B and II-B, adopted by resolutions MSC.385(94) and MEPC.264(68), as may be amended, provided that:

.1 amendments to the environment-related provisions of the introduction and chapter 1 of part II-A of the Polar Code are adopted, brought into force and take effect in accordance with the provisions of article 16 of the present Convention concerning the amendment procedures applicable to an appendix to an annex; and

.2 amendments to part II-B of the Polar Code are adopted by the Marine Environment Protection Committee in accordance with its Rules of Procedure.



2 *Arctic waters* means those waters which are located north of a line from the latitude 58°00'.0 N and longitude 042°00'.0 W to latitude 64°37'.0 N, longitude 035°27'.0 W and thence by a rhumb line to latitude 67°03'.9 N, longitude 026°33'.4 W and thence by a rhumb line to the latitude 70°49'.56 N and longitude 008°59'.61 W (Sørkapp, Jan Mayen) and by the southern shore of Jan Mayen to 73°31'.6 N and 019°01'.0 E by the Island of Bjørnøya, and thence by a great circle line to the latitude 68°38'.29 N and longitude 043°23'.08 E (Cap Kanin Nos) and hence by the northern shore of the Asian Continent eastward to the Bering Strait and thence from the Bering Strait westward to latitude 60° N as far as Il'pyrskiy and following the 60th North parallel eastward as far as and including Etolin Strait and thence by the northern shore of the North American continent as far south as latitude 60° N and thence eastward along parallel of latitude 60° N, to longitude 056°37'.1 W and thence to the latitude 58°00'.0 N, longitude 042°00'.0 W.

3 *Polar waters* means Arctic waters and/or the Antarctic area.

### **Regulation 47 – Application and requirements**

1 This chapter applies to all ships operating in polar waters.

2 Unless expressly provided otherwise, any ship covered by paragraph 1 of this regulation shall comply with the environment-related provisions of the introduction and with chapter 1 of part II-A of the Polar Code, in addition to any other applicable requirements of this Annex.

3 In applying chapter 1 of part II-A of the Polar Code, consideration should be given to the additional guidance in part II-B of the Polar Code."

## **Appendix II Form of IOPP Certificate and Supplements**

### **Appendix**

#### **Supplement to the international Oil Pollution Prevention Certificate (IOPP Certificate) – Form A**

14 A new section 8 is added after existing section 7 as follows:

"8 Compliance with part II-A – chapter 1 of the Polar Code

8.1 The ship is in compliance with additional requirements in the environment-related provisions of the Introduction and section 1.2 of chapter 1 of part II-A of the Polar Code..... "

#### **Supplement to the international Oil Pollution Prevention Certificate (IOPP Certificate) – Form B**

15 A new section 11 is added after existing section 10 as follows:

"11 Compliance with part II-A – chapter 1 of the Polar Code 11.1 The ship is in compliance with additional requirements in the environment related provisions of the introduction and section 1.2 of chapter I of part II-A of the Polar Code."



**Chapter 3  
Requirements for machinery spaces of all ships**

**Part A  
Construction**

**Regulation 12 – Tanks for oil residues (sludge)**

Paragraphs 1 to 4 of regulation 12 are replaced by the following:

"1 Unless indicated otherwise, this regulation applies to every ship of 400 gross tonnage and above except that paragraph 3.5 of this regulation need only be applied as far as is reasonable and practicable to ships delivered on or before 31 December 1979, as defined in regulation 1.28.1.

2 Oil residue (sludge) may be disposed of directly from the oil residue (sludge) tank(s) to reception facilities through the standard discharge connection referred to in regulation 13, or to any other approved means of disposal of oil residue (sludge), such as an incinerator, auxiliary boiler suitable for burning oil residues (sludge) or other acceptable means which shall be annotated in item 3.2 of the Supplement to IOPP Certificate Form A or B.

3 Oil residue (sludge) tank(s) shall be provided and:

.1 shall be of adequate capacity, having regard to the type of machinery and length of voyage, to receive the oil residues (sludge) which cannot be dealt with otherwise in accordance with the requirements of this Annex;

.2 shall be provided with a designated pump that is capable of taking suction from the oil residue (sludge) tank(s) for disposal of oil residue (sludge) by means as described in regulation 12.2;

.3 shall have no discharge connections to the bilge system, oily bilge water holding tank(s), tank top or oily water separators, except that:

.1 the tank(s) may be fitted with drains, with manually operated self-closing valves and arrangements for subsequent visual monitoring of the settled water, that lead to an oily bilge water holding tank or bilge well, or an alternative arrangement, provided such arrangement does not connect directly to the bilge discharge piping system;  
And

.2 the sludge tank discharge piping and bilge-water piping may be connected to a common piping leading to the standard discharge connection referred to in regulation 13; the connection of both systems to the possible common piping leading to the standard discharge connection referred to in regulation 13 shall not allow for the transfer of sludge to the bilge system;

.4 shall not be arranged with any piping that has direct connection overboard, other than the standard discharge connection referred to in regulation 13; and

.5 shall be designed and constructed so as to facilitate their cleaning and the discharge of residues to reception facilities.



4 Ships constructed before 1 January 2017 shall be arranged to comply with paragraph 3.3 of this regulation not later than the first renewal survey carried out on or after 1 January 2017."

