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Carriage of hazardous and noxious liquid substance in bulk on existing offshore support vessels after 31 December 2020

Summary

The updated and amended requirements for transport of chemicals in bulk takes effect from 1 January 2021. The new requirements are retroactive and applicable for all ships and may have impact on existing offshore support vessels (OSVs) carrying chemicals in bulk. Therefore, the ship owners need to consider the best approach for their OSVs to still be fit for their purpose. This circular gives detailed information on the Norwegian Maritime Authority's (NMA) approach to handle the impact on existing OSVs and highlights the challenges that may occur. Further, it gives guidance on measures to be considered by the shipowner and an illustration of the different options, see Annex V.

Application and purpose

This guidance applies to existing offshore support vessels[1] (OSVs) certified in accordance with IMO[2] Res. A.673(16)[3], hereinafter referred to as "the Resolution", to transport and handle limited amounts of hazardous and noxious liquid substance in bulk.

Circular RSV 23-2020 guides and informs the industry with respect to possible consequences for existing OSVs as and when

- new carriage requirements for Noxious Liquid Substances (NLS) enter into force on 1 January 2021, and
- the OSV Chemical Code[4], hereinafter referred to as "the Code", is incorporated in the Norwegian legislation.

[1] OSVs of which the keels were laid, or which were at a similar stage of construction on or after 19 April 1990 and before 1 January 2021.
[2] International Maritime Organization
[3] Guidelines for the transport and handling of limited amounts of hazardous and noxious liquid substances in bulk on offshore support vessels, Resolution A.673(16), as amended
[4] Code for the transport and handling of hazardous and noxious liquid substances in bulk on offshore support vessels, Resolution A.1122(30)

The new carriage requirements for NLS and the Code introduce the following three main challenges:

1. NLS, which due to safety reasons are assigned new carriage requirements.
2. New requirements for the training of personnel involved in NLS bulk operations.
3. The carriage of chemicals in bulk on domestic voyages not covered by the Resolution.

Circular RSV 23-2020 also provides guidance on technical requirements of the Code where, in the NMA's opinion, there exists a need for accepting alternative solutions relevant for most of the existing OSVs.

This is a general guideline. The scope and effect of the upcoming amendments will vary from ship to ship. Hence, these guidelines should not be understood to describe all or every aspect of the challenges facing the industry.

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1 Regulations

The Environmental Safety Regulations[5] and the Dangerous Goods Regulations[6] apply when carrying NLS, including chemicals, in bulk. These regulations require ships to comply with MARPOL[7] Annex II or SOLAS[8] Chapter VII Part B, both of which make the IBC Code[9] mandatory. As an alternative to the IBC Code, an OSV carrying limited amounts of hazardous and noxious liquid substances may comply with the appropriate IMO guideline.

The NMA has established appropriate measures by making the Resolution applicable to OSVs constructed prior to 1 January 2021 and the Code applicable to OSVs constructed on or after 1 January 2021[10].

[5] Regulations of 30 May 2012 No. 488 on environmental safety for ships and mobile offshore units
[6] Regulations of 1 July 2014 No. 944 on dangerous goods on Norwegian ships
[7] International Convention for the Prevention of Pollution from Ships
[8] International Convention for the Safety of Life at Sea
[9] International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk
[10] Cf. Environmental Safety Regulations section 7 and the Dangerous Goods Regulations section 6

The scope of the Resolution is limited both in relation to the quantity as well as the hazards of the substances carried. The carriage of chemicals with more severe hazards, such as toxicity, is not within the scope of the Resolution. The scope of the Code is broader and has carriage requirements for all NLS, including dangerous chemicals. By implementing the Code in the Norwegian legislation, OSVs which comply with the provisions of the Code may also carry the more hazardous cargoes in bulk.

The industry should note that existing OSVs which comply with the requirements of the Code, except for the stability provisions in chapter 2 of the Code, and subject to the satisfaction of the NMA, may carry more hazardous cargoes than what the Resolution permits.[11]

The carriage requirements for individual NLS are listed in Chapter 17 or 18 of the IBC Code and the latest edition of the MEPC.2/Circular (Provisional categorization of liquid substances in accordance with MARPOL Annex II and the IBC Code). The carriage requirements apply to every ship that carry NLS, irrespective whether a ship shall comply with the IBC Code, the Code or the Resolution.

2 Background

2.1 New carriage requirements

Comparing with the present situation, amendments to the IBC Code[12] which enter into force on 1 January 2021, generally impose stricter carriage requirements for NLS. The more stringent requirements mean that measures to prevent environmental pollution are augmented with measures aimed at safeguarding life, health and material values. Many of the products that today are assigned with pollution hazard (P) only will also be assigned with a safety hazard (S). Some of these will also be categorised as toxic products.

Through the different regulation in the Resolution, the amendments to the IBC Code apply to existing OSVs. That is to say that all OSV shall comply with the new carriage requirements, as applicable, on or after 1 January 2021.

Many of the existing OSVs have been constructed in accordance with waivers involving the vessel's arrangements that may be used in accordance with the Resolution.[13] The condition for these waivers was that "pollution hazard only substances with a flash point exceeding 60°C" were permitted for carriage in a specific tank and the associated arrangements. Additionally, the Resolution does not allow for the carriage of toxic products.

Further, carriage requirements for "offshore contaminated bulk liquid P" and "offshore contaminated bulk liquid S" are included in the Chapter 17 of the IBC Code. These requirements apply to all OSVs that carry backload bulk liquids, cf. Chapter 16 of the Code. Additionally, Norway has initiated a tripartite agreement with a third entry for offshore contaminated bulk liquid that has been treated to remove or prevent breakout of H_2S[14].

When OSVs provide transport services in other states than those included in the mentioned tripartite agreement, backloads which have been treated to remove or prevent breakout of H_2S, shall fulfil the carriage requirements for "Offshore contaminated bulk liquid S"[15].

[11] Cf. 1.1.4 of the OSV Chemical Code
[12] Cf. Resolution MEPC.318(74) – Amendments to the IBC Code, Resolution MEPC.315(74) – Amendments to MARPOL Annex II and Resolution MSC.460(101) - Amendments to the IBC Code
[13] Cf. Section 3.1.10, 3.2.4, 3.4.6 and 5.1 of the Resolution
[14] Cf. Point 3 in Annex II of this Circular
[15] Cf. paragraph 16.4.4.2.1 of the Code, MEPC.318(74) and MSC.460(101)

2.2 The Code

In 2011, the IMO recognised the need for a revision of the Resolution. The revision resulted in the Code for the transport of chemicals on OSVs. The Code considers the carriage of chemicals with broader and more severe hazards than what is the case today.

2.3 Carriage of chemicals not covered by the Resolution in bulk on domestic voyages to offshore installations

During the work with developing the Code in IMO, the NMA recognised an urgent need for exemptions from national regulations for carriage of toxic products and products assigned with ship type 2 in the IBC Code. Therefore, awaiting the new international requirements, exemptions have been granted to OSVs that are designed in accordance with the Resolution on the condition that they comply with some additional safety measures.

3 Guidance

3.1 New carriage requirements

The consequences due to the revised carriage requirements for existing OSVs will vary. However, ship owners which take no action will most likely face less capacity and flexibility of their ship due to:

- Many of the NLS cargoes that are frequently carried on OSVs will be assigned with a safety hazard (S).
- Some of the NLS cargoes will be assigned as toxic products, which implies that section 15.12 or parts of section 15.12 of the IBC Code shall be met.
- New carriage requirements for "offshore contaminated bulk liquid"

Existing vessels certified in accordance with the Resolution may continue to carry the products which fall under the scope of the Resolution and for which the vessel complies with the new carriage requirements, as applicable.

The products listed in Appendix I of the Resolution may be carried as set out in Annex I of this RSV. Please note that some of the products have changed product name. Offshore contaminated bulk liquid may be carried as set out in Annex II.

3.2 New requirements for personnel training

Irrespective of a ship's date of construction, the NMA's approach is that all personnel involved in NLS bulk cargo operations shall have the knowledge necessary to safely perform the required activities. Therefore, it should be expected that personnel on existing OSVs will have equal requirements for training as personnel on board an OSV certified to comply with the Code.

However, presently there are no specific provisions adopted under the auspices of the IMO for such training for the crew on an OSV. The training most relevant is directly referring to the training for the crew on a chemical tanker. Consequently, the NMA is yet to conclude on the level of training required and the application for such training to existing OSVs. However, the NMA is in a dialogue with the industry to establish more detailed guidelines for the prospective training. The results of this work will be presented on a later occasion. It can be expected that transitional provisions will be established for all OSVs. Further, such relevant training requirements will most likely enter into force after the Code is implemented in the Norwegian legislation.

3.3 Exemptions for carriage of chemicals not covered by the Resolution in bulk on domestic voyages

By implementing the Code in the Norwegian legislation, the special reasons on which applicable exemptions were based are no longer present. That means that when our acceptance expires, the existing OSVs engaged in the carriage of toxic products and ship type 2 products may only continue to carry these products if they are certified to comply with the requirements of the Code for such products.

3.4 Transitional period

The NMA recognises that time is constrained for the work needed to convert an existing OSV to comply with the requirements of the Code and the revised carriage requirements in the amendments to the IBC Code. Hence, the NMA will accept a transitional period for OSVs on voyages on the Norwegian Continental Shelf until the 31 December 2021. For further guidance please see Annex IV - *Guidance on the timing of replacement of OSVs existing Certificate of Fitness (CoF) by a revised CoF as a consequence of the entry into force of amendments to chapters 17 and 18 of the IBC Code.* The NMA is cooperating with other coastal states around the North Sea with the purpose of finding a common approach. However, at the time of adopting RSV 23-2020, this work is still in progress.

During the transitional period, an existing OSV carrying backloads shall comply with Guidelines for Offshore Marine Operations (GOMO)[16].

The exemptions for carriage of chemicals not covered by the Resolution in bulk on voyages on the Norwegian Continental Shelf will expire 31 December 2021.

3.5 Measures to be considered by the shipowner

The amendments to the IBC Code will have an impact on all existing vessels. All Certificate of Fitness, (CoF) need most likely to be revised, if not replaced by a CoF issued under the provisions of the Code.

A ship owner needs to establish the best approach considering the necessary actions for each individual ship that shall continue to carry NLS in bulk after 31 December 2021. The following may be useful in this process:

- an existing vessel which continues operating under the regime of the Resolution may carry the products listed in Appendix I of the Resolution even though the new carriage requirements falls outside the scope of the Resolution. However, the new carriage requirements for that product shall still be complied with, as set out in Annex I of this circular,
- an existing vessel which will carry other toxic products than those listed in Annex I will need to replace the existing CoF by new CoF issued under the provisions of the Code. A gap analysis may be beneficial in this process,
- all ships that carry backload bulk liquids shall comply with the new carriage requirements for contaminated backloads mentioned above and Chapter 16 of the Code, i.e. Annex II,
- a shortened illustration of the options for a forthcoming certification is found in Annex V,
- apart from the provision set out in Annex I, all carriage requirements assigned to a product shall be complied with when transporting NLS cargo in bulk, and
- personnel on an existing OSV will have training requirements equal to the training requirements for personnel on OSVs certified in accordance with the Code.

For practical information regarding the replacement of an OSVs existing CoF, the authority that has issued the specific certificate shall be contacted ie. when a Recognized Organization has issued a CoF on behalf of NMA, they shall be the first contact point. Otherwise, please contact NMA.

Ship owners with OSVs operating outside the Norwegian Continental Shelf should note that other coastal states may implement the new amendments to chapter 17 and 18 of the IBC Code differently. The NMA recommends that OSVs' ship owners prior to 1 January 2021 ensure that Norway's approach is acceptable to the relevant coastal state.

[16] http://g-omo.info/

3.6 Accepting alternative solutions

The NMA acknowledges the significant impact some of the requirements of the Code will have on the existing OSVs.

When an existing OSV is to comply with the requirements of the Code, each ship owner will have to identify the extent of the structural changes required. In the view of the NMA, the following technical requirements of the Code affect most of the existing designs significantly and may be a subject to an alternative solution.

- Paragraph 4.3.7 – Set point of the P/V valves
- Paragraph 2.6.2 – The extent of damage for vessels carrying not more than 1200m3.
  The main rule is that the whole of Chapter 2 in the Code shall be complied with. However, in lieu of the extent of damage required by paragraph 2.6.2 of the Code, the extent of the damage requirements applicable on the date of construction of an existing OSV may be used.

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Annex I - Carriage of products listed in Appendix I of Resolution on existing OSVs

1 Products with minor changes, unchanged, or less severe carriage requirements

- Oil based mud containing mixtures of products listed in Chapter 17 and 18 of the IBC Code and permitted to be carried under paragraph 1.2 of these Guidelines
- Water based mud containing mixtures of products listed in Chapter 17 and 18 of the IBC Code and permitted to be carried under paragraph 1.2 of these Guidelines
- Acetic acid
- Cesium formate solution
- Ethyl Alcohol
- Triethylene Glycol
- Potassium Chloride Solution
- Potassium Chloride Solutions (less than 26%)
- Sodium chloride solution[17]
- Noxious liquid, NF, (7) n.o.s. (trade name ...., contains ....) ST3, Cat. Y
- Noxious liquid, F, (8) n.o.s. (trade name ….., contains ....) ST3, Cat. Y
- Noxious liquid, NF, (9) n.o.s. (trade name ...., contains ....) ST3, Cat. Z
- Noxious liquid, F, (10) n.o.s. (trade name .., contains ....) ST3, Cat. Z
- Noxious liquid, (11) n.o.s. (trade name ....., contains .....) Cat. Z
- Non-noxious liquid, (12) n.o.s. (trade name ...., contains ....) Cat. OS
- Liquid carbon dioxide[18]
- Liquid nitrogen[18]

2 Offshore related brine, mud and glycol

The following products are assigned with a safety hazard (S). However, experience indicates that the cargo tanks and connected cargo transfer system which are subject to the waiver for "pollution hazard only substances having a flash point exceeding 60°C" in A.673(16) i.e. 3.1.10, 3.2.4 and 3.4.6 may be considered as adequate for these substances. Therefore, the NMA will accept that these products may continue to be carried in such cargo tanks.

Please note that a suitably marked decontamination shower and eyewash shall be available on deck in a convenient location, as required in 5.1 in Resolution.

- Drilling brines (containing calcium bromide)[17]
- Calcium chloride solution (less than 35%)[17]
- Calcium nitrate/Magnesium nitrate/Potassium chloride solution
- Calcium Nitrate Solution (50% or less)
- Potassium Formate Solutions
- Ethylene Glycol

[17] The product was listed in Appendix I as *Drilling Brines, including: Sodium Chloride Solution, Calcium Bromide Solution, Calcium Chloride Solution*

[18] Liquefied gas, a IGC Code - cargo not subject to the amendment of the IBC Code

3 Ship type 2 products and toxic

Existing OSVs which have a CoF issued under the provisions of the Resolution, may be certified to carry the Ship type 2 products and the toxic products which are currently listed in Appendix I of A.673(16).

The vessel shall comply with the summary of minimum requirements for the product as listed in chapter 17 of the amendments to the IBC Code, with the following modifications;

a) the requirements for ship survival capability and location of cargo tanks for a type 2 ship in the IBC Code, can be replaced by Chapter 2 - Stability and cargo tank location in the Resolution,
b) inerting of cargo tanks which is carrying products with a flashpoint not exceeding 60C° is required, and
c) the requirements described in 15.12.2 in the IBC Code regarding a connection for a vapour-return line to shore may not be fulfilled.

This is applicable for the following Ship type 2 products:

- Drilling brine (containing zinc chloride)[19]
- Xylene[20]

and the following toxic products:

- Ethylene Glycol Monoalkyl Ether[20]
- Formic Acid (85% or less acid)
- Formic Acid (over 85%)[20]
- Hydrochloric acid
- Methyl Alcohol[18]
- Sodium Silicate Solution[21]
- Sulphuric acid
- Toluene[20]

[19] The product was listed in Appendix I as *Drilling Brines (containing zinc salts)*
[20] Product with a low flashpoint
[21] Product could be subject for re-assigned carriage requirements in line with other inorganic substances in solution carried in bulk. Such re-assement may result in less severe carriage reguierments ie. the approach specified in paragraph 10 of the annex to PPR.1/Circ.9

Annex II - Carriage of Offshore contaminated bulk liquid on existing OSVs having a certificate issued under the provisions of the Resolution

1 General:

1.1 All OSVs carrying Offshore contaminated bulk Liquids shall comply with Chapter 16 of the Code and reproduced in Annex III.

1.2 Existing OSVs having a CoF issued under the provisions of the Resolution, may be certified to carry Offshore contaminated bulk Liquid P and Offshore contaminated bulk Liquid Treated (containing less than 0.8% of an H2S Scavenger) (o), provided that they fulfil the requirements for relevant entry.

1.3 OSVs having a CoF issued under the provisions of the Code, may be certified to carry Offshore contaminated bulk Liquid P, Offshore contaminated bulk Liquid Treated (containing less than 0.8% of an H2S Scavenger) (o) and Offshore contaminated bulk Liquid S.

1.4 The vessel shall comply with the summary of minimum requirements for the product as listed in chapter 17 of the amendments to the IBC Code or in the tripartite agreement for Offshore contaminated bulk Liquid Treated (containing less than 0.8% of an H2S Scavenger) (o). However, the requirements for ship survival capability and location of cargo tanks for a type 2 ship in the IBC Code, can be replaced by Chapter 2 - Stability and cargo tank location in the Resolution.

1.5 The master should not accept loading of any contaminated bulk liquid which is not properly documented in accordance with 16.3 in the Code i.e. paragraph 16.4.1.1 of the Code.

1.6 In lieu of the cargo information specified in the section 3 of the Dangerous Goods Regulations, the shipper and/or owner of the contaminated bulk liquids shall provide the master or his or her representative with information as required in 16.3.2 prior to backloading.

1.7 Information concerning the contaminated bulk liquid should be confirmed in writing using the appropriate analysis form i.e. paragraph16.3.2 of the Code.

1.8 The master should ascertain whether the contaminated bulk liquid is within the safe limits of the vessel and tanks, especially with regards to the flashpoint of the specific liquid, before backloading commences i.e. paragraph 16.4.1.2 of the Code.

1.9 The responsibility for ensuring that cargoes are properly prepared for carriage on board the vessel rests with the shipper and/or owner of the cargoes concerned i.e. paragraph 16.4.1.3 of the Code.

2 "Offshore contaminated bulk Liquid P"

2.1 The shipper and/or the owner of a cargo should provide the master with a document which states that this entry can be used by confirming that the following requirements of the Code are fulfilled:

- is pollutant only and do not present any safety hazards or where the pre-backloading tests do not indicate any safety hazards (the backload may contain components with safety hazards, as long as they are so diluted that the final mixture presents no safety hazard);
- has a flashpoint greater than 60°C; or
- does not have the potential to become more hazardous during transport.

2.2 The confirmation shall be provided by the Analysis form and the conclusions of the test result, cf. 16.3.2.15 of the Code

3 "Offshore contaminated bulk Liquid Treated (containing less than 0.8% of an H2S Scavenger) (o)"

3.1 The shipper and/or the owner of a cargo should provide the master with a document which states that this entry can be used by confirming that the following requirements of the Code are fulfilled:

- Has been treated to remove or prevent breakout of H2S;
- contains 0.8% or less scavengers and biocides;
- is expected to present pollution hazard and where the initial pre-backloading tests indicate a potential or actual safety hazard;
- the pre-backloading tests do not indicate any safety hazards (the backload may contain components with safety hazards)
- has a flashpoint greater than 60°C;
- has a lower explosive limit (LEL) level of less than 10%; or
- is not expected to become more hazardous during transport;

3.2 The confirmation shall be provided by the Analysis form and the conclusions of the test result, cf. 16.3.2.15 of the Code

Proposed carriage requirements:

Column		*Column*		*Column*	
c (Pollution Category)	X	i (Electrical equipment):		l (Fire protection)	AC
d (Hazards)	P	i' (Temperature classes)	-	n (Emergency equipment)	No
e (Ship Type)	2	i'' (Apparatus group)	-	o (Specific and operational requirements)	15.15, 15.19.6
f (Tank type)	2G	i''' (Flash point)	Yes		
g (Tank vents)	Cont	j (Gauging)	C		
h (Tank environm. control)	No	k (Vapour detection)	No		

Annex III – A copy of Chapter 16 – Backloading of contaminated bulk liquids

To ensure that arrangements and procedures are provided to control potential accumulation of hydrogen sulphide, an explosive atmosphere, and other potential hazards backloaded from the installation.

16.1 Preamble

16.1.1 Backloading of contaminated bulk liquids could present a threat to human health and to the marine environment.

16.1.2 Contaminated backloads should therefore be:

.1 transported and handled in accordance with the provisions of the present Code; and
.2 returned to shore for treatment or disposal.

16.2 General

16.2.1 Unless expressly provided otherwise, this chapter should apply to new and existing vessels.

16.2.2 The provisions of this chapter should apply in conjunction with all other provisions of the present Code.

16.2.3 For the carriage of contaminated backloads, the requirements in chapter 17 of the IBC Code should apply as described in 16.4.4.

16.2.4 Contaminated bulk liquids should not contain traces of hydrogen sulphide (H2S) prior to or during loading of the cargo.

16.2.5 Even if the test carried out before backloading indicates that H2S is not present and that the contaminated bulk liquid has a flashpoint exceeding 60°C, a separation of the chemical components may occur during the voyage, resulting in a release of H2S and a corresponding lowering of the flashpoint to 60°C or less.

16.2.6 H2S detection equipment should be provided on board vessels carrying contaminated backloads prone to H2S formation. It should be noted that scavengers and biocides, when used, may not be 100% effective in controlling the formation of H2S.

16.2.7 Contaminated bulk liquids should not contain radioactive materials which are subject to the applicable requirements for such materials.

16.3 Documentation

16.3.1 In lieu of the cargo information specified in 15.2.3, the shipper and/or owner of the contaminated bulk liquids should provide the master or his or her representative with information as required in 16.3.2 prior to backloading.

16.3.2 Information concerning the contaminated bulk liquid should be confirmed in writing using the appropriate analysis form. An example of the analysis form is set out in appendix 2. The information concerning the contaminated bulk liquid should at least include:

.1 a sample description;
.2 descriptions of the components of the mixture, name, concentration and Material Safety Data Sheet (MSDS), if available;
.3 flashpoint (ºC);
.4 hydrogen sulphide (H2S) level (ppm); (H2S level should be 0 ppm.)
.5 lower explosive limit (LEL) level (%);
.6 oxygen level (%);
.7 pH;

.8 bulk specific gravity (kg/m3);
.9 water content (% volume);
.10 oil content (% volume);
.11 solids content (% volume);
.12 date and time of the analysis;
.13 details of any treatment to remove or prevent the formation of H2S;
.14 any other relevant information; and
.15 conclusions of the test results, including confirmation that the components of the mixtures are compatible.

16.4 Operation

16.4.1 Responsibilities

16.4.1.1 The master should not accept loading of any contaminated bulk liquid which is not properly documented in accordance with 16.3.

16.4.1.2 The master should ascertain whether the contaminated bulk liquid is within the safe limits of the vessel and tanks, especially with regard to the flashpoint of the specific liquid, before backloading commences.

16.4.1.3 The responsibility for ensuring that cargoes are properly prepared for carriage on board the vessel rests with the shipper and/or owner of the cargoes concerned.

16.4.2 Carriage requirements

16.4.2.1 Contaminated bulk liquids should be carried in accordance with the applicable minimum carriage requirements for contaminated bulk liquids specified in chapter 17 of the IBC Code or the latest edition of the MEPC.2/Circular.

16.4.2.2 In addition to the provisions in 16.4.2.1, H2S and LEL gas detection is required for carriage of contaminated bulk liquid as follows:

.1 fixed vapour detection instruments with audible and visual alarms to indicate H2S and LEL levels exceeding 5 ppm and 10%, respectively, installed in the venting system of the relevant tanks; and

.2 portable instruments for all personnel on the working deck.

16.4.3 H2S precaution

16.4.3.1 Contaminated bulk liquid should be discharged from the vessel as soon as possible, preferably at the first port of call.

16.4.3.2 The need to clean the dirty tanks should be reviewed on each voyage to minimize the risk of biological activity and H2S build up from any residue.

16.4.3.3 Prior to backloading to a dirty tank, the potential for biological activity resulting in H2S in the dead volume and sludge should be considered. The offshore analysis of the previous contaminated bulk liquid should be compared with analyses of a sample representative for the liquid when unloading.

16.4.3.4 If H2S or flammable vapour is detected during loading of contaminated bulk liquids the transfer should be stopped immediately.

16.4.3.5 Vessel-specific procedures for measures to be taken when H2S is detected during loading, transport, discharge and cleaning of contaminated bulk liquids should be included in the vessel's safety management system.

16.4.4 Contaminated backloads

16.4.4.1 Based on the information contained in 16.3.2, the entry for "offshore contaminated bulk liquid P" in chapter 17 of the IBC Code should be used for backloads that:

.1 are pollutant only and do not present any safety hazards (Safety hazards are defined in paragraph 21.3.1 of the IBC Code) or where the pre-backloading tests do not indicate any safety hazards (the backload may contain components with safety hazards, as long as they are so diluted that the final mixture presents no safety hazard);
.2 have a flashpoint greater than 60°C; or
.3 do not have the potential to become more hazardous during transport.

16.4.4.2 Based on the information contained in 16.3.2, the entry for "offshore contaminated bulk liquid S" in chapter 17 of the IBC Code should be used for backloads that:

.1 have been treated to remove or prevent breakout of H2S;
.2 are expected to present both pollution and safety hazards or where the initial pre-backloading tests indicate a potential or actual safety hazard;
.3 may contain substances with a flashpoint not exceeding 60°C;
.4 have the potential to become more hazardous during transport; or
.5 are to be backloaded to a dirty tank the content of which has not been analysed.

APPENDIX 2 - GUIDELINES FOR TESTING PRIOR TO BACKLOADING

An example of an analysis form may be found in Guidelines for Offshore Marine Operations (GOMO), developed by a group of organizations, and other industry standards and best practices.

1 General

1.1 The results of these tests will allow the master, through confirmation with the attached checklist, to establish if the backload is acceptable for carriage on board the vessel. Acceptance is based on the reported analytical data and the measured physical properties, the known nature of the chemical composition and the previous cargo carried in the vessel's tanks. A generic risk assessment should be available on board the vessel and updated when new information and circumstances become apparent. Offshore installation crew should be aware that in certain circumstances the master of the vessel may require advice from the vessel's onshore technical advisers and that a response from onshore may take time to receive.
1.2 Recognizing the relatively complex nature of the cargo, the material intended for backloading should be subject to a series of test to provide an indicative overview of the constituent composition and reactive properties of the material.
1.3 The tests carried out prior to backloading should reflect the conditions in the vessels tanks, that is to say there will be no agitation and no forced ventilation unless specifically required or requested.
1.4 If there is any doubt regarding the result of the test, the test should be repeated and reviewed.

2 Testing prior to backloading

2.1 Flashpoint

The minimum acceptable flashpoint of 60°C (Pensky-Martens closed cup method or equivalent) is applicable to wet bulk waste. Sampling should be set up to detect the worst case situation, particularly where there is potential for crude oil or condensate contamination where the oil will rise to the surface of the tank. Base oils typically have flashpoints in the range of 70 to 100°C. If the only oil component in a bulk waste is base oil then the flashpoint cannot be lower than that of the base oil itself. If the flashpoint is relatively low (60 to 70°C) an explanation should be provided before the analysis form is presented to the vessel's master. Prior to sampling, the material should be left without agitation for at least 30 min and then surface sampled.

2.2 Lower Explosive Limit (LEL)

The LEL gas detector will confirm potential flashpoint issues. The noxious gas test is modified to simulate the unvented vessel's tanks. The sample is placed in a closed container with a sampling port on top and left to equilibrate for 30 min. A tube is then connected from the port to the gas analyser and the sample is analysed. The flashpoint and LEL results should be consistent with each other. LEL gas meters are normally set so that the alarm goes off in the range of 10 to 20% LEL methane equivalent. Any number above 25% would be considered high. Other gases potentially present can have a different LEL range than methane.

2.3 Hydrogen sulphide (H2S)

2.3.1 H2S most commonly arises from the activity of sulphate reducing bacteria (SRB). SRB will become active provided there is a "food" source and low oxygen conditions. This would be typical of stagnant oil-contaminated fluid stored for a long time. H2S is an extremely poisonous gas which is heavier than air. The maximum exposure limit is 10 ppm over an 8 hour period. Offshore sensors and routine offshore analysis methods will detect if H2S is a potential problem in backloads. In the event of a positive test another sample should be collected to confirm the result. If this second result is positive further work may be required to determine the source of the H2S. The sample should be taken from below the surface of the unagitated tank. Most oil will be in the top layer and will give a worst case oil content.
2.3.2 As a precaution, treatment of the material may be required. The SRB organisms thrive in a pH range of 5.5 to 8.0. The lower the pH the greater the breakout of H2S. The backload can be treated on the installation to prevent breakout of H2S in the vessel tanks. Biocides kill the bacteria but do not remove dissolved H2S. H2S scavengers will remove dissolved H2S but do not stop biological activity. Caustic soda will raise the pH and prevent H2S gas breakout. In the event that H2S is detected, tests should be carried out offshore to determine the best treatment prior to backloading. After treatment a final H2S test should be carried out to confirm zero H2S and noted on the analysis form before the hose is connected to the vessel for backloading.

2.4 pH

The pH of seawater is typically 8.3. Oil mud is alkaline and could raise the pH slightly. Cement contaminant is highly alkaline. In general alkaline pH (above 7) protects from corrosion. Highly alkaline materials can be caustic and require care in handling. Cement and sodium silicate can lead to high pH value. Low pH (less than 4) is highly acidic and an explanation should be provided on the analysis form. Acids such as citric acid or acidic chemicals such as hydrochloric acid can lead to low pH. It should be noted that pH less than 9 means that H2S will already have broken out as a gas.

2.5 Retort analysis (solids, water, oil volume %)

This should match the estimated composition (volume %) on the analysis form. It should be noted that it may be difficult to get representative samples if the liquid tends to separate. Some divergence is expected, for example if oil is noted as 5%, the range could be 3 to 10%. If separation is likely a range is preferred, for example 5 to 10%. The solids component can form a residue in the vessel tank and be a potential location for SRB activity and H2S.

2.6 Specific gravity (SG)

The specific gravity of common water-based fluids cover the range of 1.03 (seawater), sodium chloride (1.2), and calcium chloride (1.33). Rarely used brines such as caesium formate can reach an SG of 2.2. Oil mud is typically 1.1 to 1.5, but can exceed 2.0. Mixtures will have intermediate values, most tending towards 1.03 as seawater is the major component. It should be noted that if mixtures separate the top half can have a different density than the bottom half.

Annex IV - Guidance on the timing of replacement of OSVs existing Certificate of Fitness (CoF) by a revised CoF

This guidance is based on MSC-MEPC.5/Circ. 7 – Guidance on the timing of replacement of existing certificates by revised certificates because of the entry into force of amendments to chapters 17 and 18 of the IBC Code.

Background

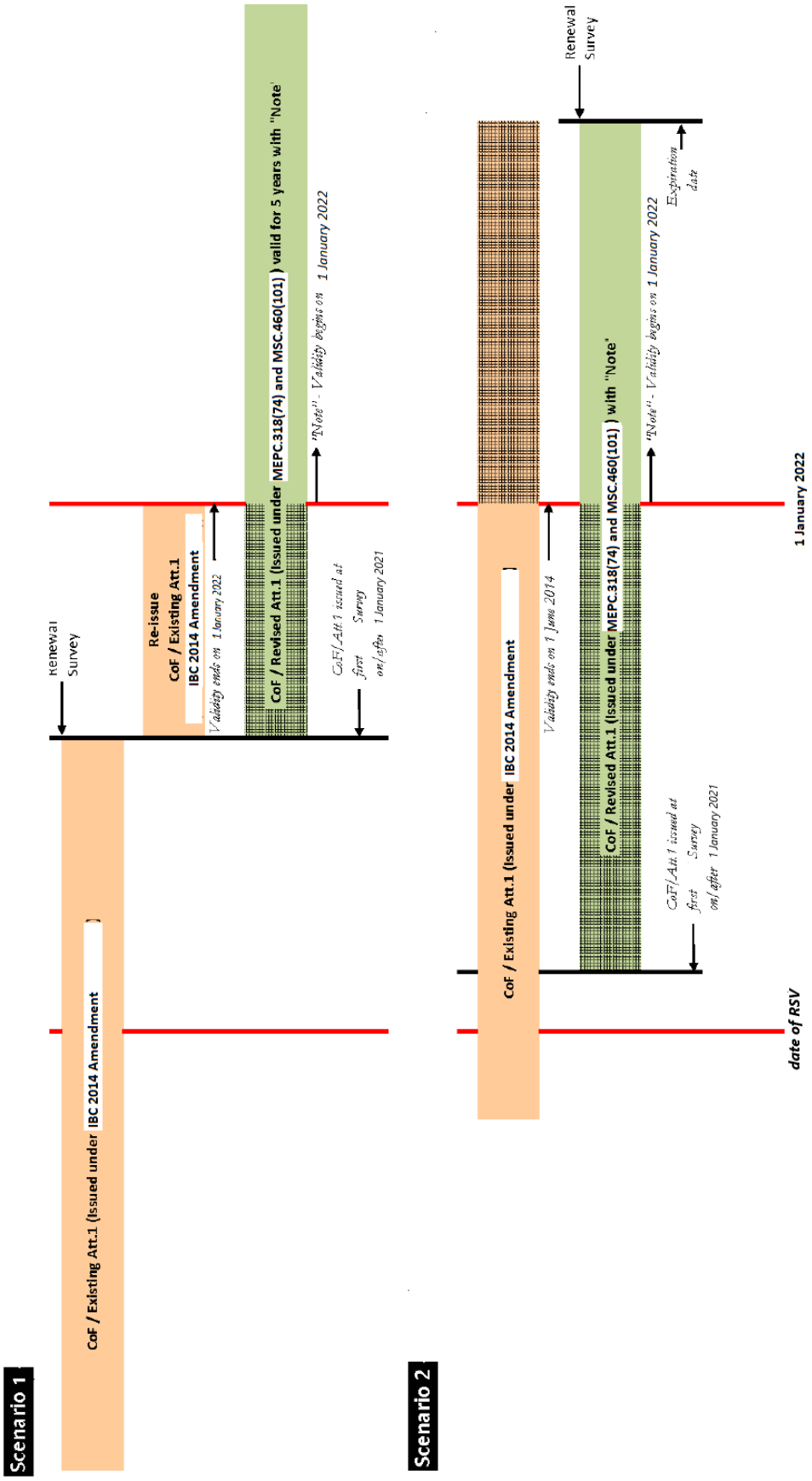
The OSVs carrying limited amounts of hazardous and noxious liquid substances in bulk need the same smooth and practical implementation scheme as a chemical tanker. A revised certificate immediately upon the entry into force of the amendments to the IBC Code may be challenging. Due to the many circumstances, this smooth and practical implementation was delayed. The NMA will therefore agree to that the amendments to the IBC Code for an existing OSV's CoF issued under the provisions of the resolution A.673(16), may apply from 1 January 2022.

Guidance

1. The replacement of an OSV's existing CoF/NLS Certificate[22] issued under the provisions of the Resolution A.673(16) by a revised CoF or a new CoF issued under the provisions of the Code A.1122(30), that is issued before 1 January 2022:
   1.1. the issuance of the revised certificate may be initiated from the date of this Circular, rather than the 1. January 2022;
   1.2. the revised certificate should have the same expiration date as the existing certificate;
   1.3. the revised certificate should be provided with a stamp/text on the front page stating that the revised certificate is effective, and supersedes the existing certificate, on the date of entry into force of the amendments to the IBC Code.
2. As an illustrative example of paragraph 1 above, the attached diagram explains two scenarios:
   2.1. Scenario 1 is an example of a renewal survey carried out between date of RSV 23-2020 and 1 January 2022; and
   2.2. Scenario 2 is an example of an existing certificate that is valid beyond 1 January 2022.

When a cargo is loaded prior to the 1 January 2022 and unloaded after the 1 January, the relevant provisions at the time of loading should be applicable until the cargo has been unloaded.

[22] International Pollution Prevention Certificate for Carriage of Noxious Liquid Substances in Bulk


Scenario 1
CoF / Existing Att.1 (Issued under IBC 2014 Amendment)
Renewal Survey
Re-issue
CoF / Existing Att.1
IBC 2014 Amendment
Validity ends on 1 January 2022
CoF / Revised Att.1 (Issued under MEPC.318(74) and MSC.460(101)) valid for 5 years with "Note"
"Note" - Validity begins on 1 January 2022
CoF/Att.1 issued at first Survey on/after 1 January 2021
Scenario 2
CoF / Existing Att.1 (Issued under IBC 2014 Amendment)
Validity ends on 1 June 2014
Renewal Survey
CoF / Revised Att.1 (Issued under MEPC.318(74) and MSC.460(101)) with "Note"
"Note" - Validity begins on 1 January 2022
Expiration date
CoF/Att.1 issued at first Survey on/after 1 January 2021
1 January 2022
date of RSV

Annex IV - Illustration of different options