附件 3

第 MSC.551(108)号决议
(2024 年 5 月 23 日通过)

《国际使用气体或其他低闪点燃料船舶安全规则》(《国际气体燃料规则》)修正案

海上安全委员会，

忆及《国际海事组织公约》关于本委员会职能的第 28(b)条，

注意到以第 MSC.391(95)号决议通过的《国际使用气体或其它低闪点燃料船舶安全规则》(《国际气体燃料规则》)，根据《1974 年国际海上人命安全公约》(“本公约”)第 II-1 和 II-2 章已成为强制性规则，

还注意到关于《国际气体燃料规则》修正程序的本公约第 VIII(b)条和第 II-1/2.28 条，

在其第 108 届会议上，**审议了**按本公约第 VIII(b)(i)条提出和分发的《国际气体燃料规则》修正案，

1 按本公约第 VIII(b)(iv)条，**通过**《国际气体燃料规则》的修正案，其文本载于本决议附件；

2 按本公约第 VIII(b)(vi)(2)(bb)条，**决定**该修正案应于 2025 年 7 月 1 日被视为获得接受，除非在此日期之前，有三分之一以上的本公约缔约国政府或拥有商船合计吨位数不少于世界商船总吨数 50%的缔约国政府已通知秘书长其反对该修正案；

3 **提请**本公约各缔约国政府注意，按本公约第 VIII(b)(vii)(2)条，该修正案在按上述第 2 段获得接受后，应于 2026 年 1 月 1 日生效；

4 **要求**秘书长，按本公约第 VIII(b)(v)条，将本决议及其附件中所载修正案文本的核正无误副本送交本公约所有缔约国政府；

5 **还要求**秘书长将本决议及其附件的副本分发给非本公约缔约国政府的本组织各会员。

附件

《国际使用气体或其他低闪点燃料船舶安全规则》(《国际气体燃料规则》)修正案

A部分

2 总则

2.2 定义

1 现有第 2.2.42 段后新增以下第 2.2.43 段：

“2.2.43 *2026 年 1 月 1 日或以后建造的船舶*系指：

.1 2026 年 1 月 1 日以后签订建造合同的船舶；或

.2 如果没有建造合同，2026 年 7 月 1 日或以后安放龙骨或处于类似建造阶段的船舶；或

.3 2030 年 1 月 1 日或以后交付的船舶。”

4 一般要求

4.2 风险评估

2 第 4.2.2 段由以下替换：

“4.2.2 对于 A-1 部分所适用的船舶，4.2.1 中所要求的风险评估仅需要在第 5.10.5、5.12.3、6.4.1.1、6.4.15.4.7.2、8.3.1.1、8.4.2、13.4.1、13.7 和 15.8.1.10 段以及附件第 4.4 或 6.8 段明确要求时进行。”

A-1 部分

对使用天然气作为燃料的船舶的特殊要求

5 船舶设计和布置

5.3 一般规定

3 第 5.3.3.3 段由以下替换：

“5.3.3.3 对于独立舱，保护距离须测量至液舱壳板(燃料围护系统主屏蔽)。对于薄膜舱，该距离须测量至液舱绝热周围的舱壁。”

4 第 5.3.4.4 段由以下替换：

“5.3.4.4 对于独立舱，保护距离须测量至液舱壳板(燃料围护系统主屏蔽)。对于薄膜舱，该距离须测量至液舱绝热周围的舱壁。”

5.12 空气闸规定

5 第 5.12.1 段由以下替换：

“5.12.1 对于 2026 年 1 月 1 日或以后建造的船舶，空气闸是一个气密舱壁围闭的处所，具有两个气密门，其间距至少为 1.5 m，但不大于 2.5 m。除《国际载重线公约》另有要求，通往危险区域的空气闸的门槛高度不得小于 300 mm。门须为自闭式，且无任何门挡装置。”

6 燃料围护系统

6.4 液化气燃料围护系统规定

6.4.15 舱的类型

6.4.15.3 C 型独立液舱

6.4.15.3.1 设计依据

6 第 6.4.15.3.1.2 段由以下替换：

“6.4.15.3.1.2 设计蒸汽压力不得小于：

$$P_0 = 0.2 + AC(\rho_r)^{1.5} \text{ (MPa)}$$

式中：

$$A = 0.00185 (\sigma_m / \Delta\sigma_A)^2$$

其中：

σ_m = 设计主膜应力；

$\Delta\sigma_A$ = 许用动态膜应力(双振幅，当概率水平为 Q = 10^{-8})并等于：

— 对于铁素体(珠光体)/马氏体和奥氏体钢，55 N/mm^2 ;

— 对于铝合金(5083-O)，25 N/mm^2 ；

C = 液舱的特性尺度，取下列各值中的最大者：

h, 0.75b or 0.45ℓ,

其中：

h = 液舱高度(沿船舶的垂向量取)，m；

b = 液舱宽度(沿船舶的横向量取)，m；

ℓ = 液舱长度(沿船舶的纵向量取)，m；

ρ_r = 设计温度下燃料的相对密度(淡水：ρ_r= 1)。”

6.7 压力释放系统规定

6.7.3 压力释放系统的尺寸确定

6.7.3.1 压力释放阀的尺寸确定

7 第 6.7.3.1.1 段的段首由以下替换：

“6.7.3.1.1 对于 2026 年 1 月 1 日或以后建造的船舶，每个液化气燃料舱的压力释放阀的设计，须使不论任何一个压力释放阀的状态如何，剩余的压力释放阀的容量均符合该系统的综合释放能力要求。综合释放能力须为以下所列之大者，液化气燃料舱中压力升高不超过最大允许调定值的 20%。在完全恢复释放能力之前，不得装载油舱。”

8 第 6.7.3.1.1.2 段由以下替换：

“6.7.3.1.1.2 用下式算得的火灾波及时的蒸气生成量：

$$Q = FGA^{0.82}\ (m^3/s)$$

式中：

Q = 在 273.15K 和 0.1013MPa 的标准状态下所需的最小空气排放率。

F = 用于不同类型液化气燃料舱的火灾波及系数：

F = 1.0，对于甲板上无绝热层的液舱；(…)”

6.9 燃料储存条件的维护规定

6.9.1 液舱压力和温度控制

9 第 6.9.1.1 段的段首由以下替换：

“6.9.1.1 对于 2026 年 1 月 1 日或以后建造的船舶，除设计成在最高设计环境温度条件下能承受燃料的最大蒸气表压力的液化气燃料舱外，液化气燃料液舱的压力和温

度须通过主管机关可接受的方法，诸如下列一种或多种方法，始终保持在设计范围内：”

7 材料和总管路设计

7.3 总管路设计规定

7.3.2 壁厚

10 第 7.3.2.1 段由以下替换：

“7.3.2.1 对于 2026 年 1 月 1 日或以后建造的船舶，最小壁厚须按照下列公式计算：

$$t = (t_0 + b + c) / (1 - |a| /100) \text{ (mm)}$$

式中：

t_0 = 理论厚度

$$t_0 = PD / (2.0Ke + P) \text{ (mm)}$$

其中：

P = 7.3.3 中所述的设计压力(MPa)；

D = 外径(mm)；

K = 7.3.4 中所述的许用应力(N/mm²)；和

e = 有效系数。对于无缝钢管以及由经认可的焊接管制造厂供应的，按经认可标准进行无损探伤后认为等效于无缝钢管的纵向焊或螺旋焊焊接管，取 1.0。在其他情况下，按经认可标准，可根据制造工艺要求有效系数小于 1.0；

b = 弯曲余量(mm)。对 b 值的选取，须使仅受内压的弯曲部分的计算应力不超过许用应力。如未做出此种证明，则 b 值须为：

$$b = D \cdot t_0 / 2.5r \text{ (mm)}$$

其中：

r = 平均弯曲半径(mm)；

c = 腐蚀余量(mm)。如果预计受到腐蚀或浸蚀，则管系的壁厚须比其他设计规定所要求的值有所增加。此余量须与管道的预期寿命相一致；和

a = 壁厚制造负公差(%)，即a 为制造公差 -5%，即|a|等于 5，须在式中输入 1- (5/100)。”

8 加注燃料

8.4 总管规定

11 第 8.4.1 段及相关脚注由以下替换：

“8.4.1 加注总管须设计成能经受加注时的外部载荷。加注站的连接须按以下方式之一布置，以实现干断开操作：

.1 按照至少等同于本组织可接受的标准[1]的干断开/连接耦合；或

.2 一个手动连接耦合器或液压连接耦合器，用于连接加注系统与接收船舶的加注总管配对法兰[2]；或

.3 连接法兰组件的螺栓法兰[2]。

1 参见国际标准化组织的建议，特别是出版物：ISO 21593:2019，船舶与海洋技术—液化天然气加注干式断开/连接耦合的技术要求。

2 参见国际标准化组织的建议，特别是出版物：ISO 20519:2021，船舶与海洋技术—船舶加注液化天然气的技术要求。

12 现有第8.4.1段后新增以下段落及相关脚注：

“8.4.2 当拟使用第8.4.1.2和8.4.1.3段规定的任何一种连接时，这些连接必须与确保实现干断开的操作程序相结合。该布置须经特别考虑，包括在设计阶段进行的加注布置风险评估[2]，并考虑到加注总管连接处的动态载荷达到主管机关可接受的认可标准，船舶的安全操作以及在加注操作期间可能与船舶相关的其他危险。第18.2.3段要求的燃料作业手册须包括所进行的加注布置风险评估的书面文件，以及按本要求给予特别考虑的书面文件。”

“8.4.3 除非安装在加注管线的供油一侧，否则须配备紧急释放耦合器(ERC)/紧急释放系统(ERS)或同等装置，上述装置须符合等同于本组织可接受的标准[2]；在紧急情况下，须能快速地物理断开加注系统的“干断开”。”

2 参见国际标准化组织的建议，特别是出版物：ISO 20519:2021，船舶与海洋技术—船舶加注液化天然气的技术要求。

9 设备燃料供应

9.3 燃料供应冗余规定

13 第 9.3.1 段由以下替换：

“9.3.1 对于2026年1月1日或以后建造的船舶，对于单燃料装置，燃料供应系统须有冗余和分隔布置，使一个系统的泄漏，或其中一个燃料供应重要辅机故障时，不致导致不可接受的动力损失。在发生泄漏或故障的情况下，按照《安全公约》第 II-1/26.3 条，主管机关在对整体安全性予以考虑后，可接受将正常运转的推进能力作部分降低。”

9.4 供气系统安全功能规定

14 第 9.4.7 段由以下替换：

“9.4.7 对于 2026 年 1 月 1 日或以后建造的船舶，如果气体燃料总阀在第 15.2.2 段要求的安全系统启动时自动关闭，则该气体燃料总阀与双挡板和排气阀之间以及双挡板与排气阀和燃料使用设备之间的整个供气管道应自动排气。”

15 第 9.4.8 段由以下替换：

“9.4.8 对于 2026 年 1 月 1 日或以后建造的船舶，在双截止阀和排放阀的上游，每个用气设备的燃气供应管线上须配有一个手动操作的截止阀，以确保用气设备维护期间的安全隔离。”

9.6 气体安全机器处所内用气设备燃料供应规定

16 第 9.6.1.1 段由以下替换：

“9.6.1 气体安全机器处所内的气体燃料管路须被符合下列要求的双套管或通风管完全围闭：

.1 气体燃料管路须为内管包含燃气的双管壁管系。同心管之间的空间须以大于燃气压力的压力用惰性气体加压。须提供指示管道间惰性气体失压的报警装置。或”

9.8 通风导管和外管防止内管燃气泄漏的设计规定

17 第 9.8.1 段由以下替换：

“9.8.1 对于2026年1月1日或以后建造的船舶，燃料系统的外管或导管的设计压力不得小于内管的最大工作压力。或者，外管或导管的设计压力可按第9.8.2段计算。”

18 第 9.8.2 段的段首由以下替换：

“9.8.2 对于2026年1月1日或以后建造的船舶，作为第9.8.1段的替代，外管或导管的设计压力须为以下所列的较高者：”

19 第 9.8.4 段由以下替换：

“9.8.4 对于2026年1月1日或以后建造的船舶，对导管须进行压力试验，证明其可承受燃料管道破断时的预计最大压力。”

11 消防安全

11.3 防火要求

20 第 11.3.1 段由以下替换：

“11.3.1 对于2026年1月1日或以后建造的船舶，就适用《安全公约》第II-2/9条而言，燃料准备室须被视为A类机器处所。”

11.6 化学干粉灭火系统规定

21 第 11.6.2 段由以下替换：

“11.6.2 除国际海事组织文书中其他处所要求的任何其他便携式灭火器外，须在加注站附近和燃料准备室配备一个排量至少5 kg的便携干粉灭火器。对于2026年1月1日以前建造的船舶，须不晚于2026年1月1日或以后的第一次检验在燃料准备室配备便携式干粉灭火器。”

12 爆炸预防

12.5 危险区域分区

22 第 12.5.1 段由以下替换：

“***12.5.1 危险区域 0 区***

对于 2026 年 1 月 1 日或以后建造的船舶，该区包括，但不限于以下区域，燃料舱内部，任何压力释放管路或其他燃料舱透气系统，含有燃料的管路和设备，以及第 2.2.15.2 段界定的屏壁间处所。”

12.5.2 危险区域 1 区

23 第 12.5.2.1 段由以下替换：

“.1 对于 2026 年 1 月 1 日或以后建造的船舶，液舱连接处所和燃料存储货舱处所[2]；

[2] C 型液舱的燃料存储处所通常不视为 1 区。”

15 控制、监测和安全系统

15.4 燃料加注和液化气燃料液舱监测规定

15.4.1 液化气燃料液舱的液位指示器

24 第 15.4.1.3 段由以下替换：

“.3 对于 2026 年 1 月 1 日或以后建造的船舶，液化气燃料液舱的液位表可为下列类型：

.1 间接式装置，即通过用诸如称重或在线流量测量确定燃料量；

.2 不伸入液化气燃料液舱的闭式装置，诸如使用放射性同位素的装置或超声波装置；或

.3 可穿透液化气体燃料罐，但构成封闭系统的一部分并防止气体燃料外泄的闭式装置。此类装置应视为罐体连接装置。如果闭式测量装置不是直接安装在罐体上，则应在尽可能靠近罐体的地方安装一个截止阀。”

B-1 部分

16 制造、工艺和试验

16.3 燃料围护系统金属材料的焊接和无损探伤

16.3.5 产品焊缝试验

25 第 16.3.5.1 段由以下替换：

“16.3.5.1 除薄膜舱外，所有燃料舱和处理用压力容器通常需对每 50 m 左右的对接焊缝进行一次产品焊缝试验，并须能代表各个焊接位置。对次屏壁须作与对主屏壁所要求者相同类型的产品焊缝试验，但经主管机关同意可减少试验次数。除第 16.3.5.2 至 16.3.5.5 段规定的试验外，可要求对燃料舱或次屏壁进行其他试验。”

C-1 部分

18 操作

18.4 加注燃料操作规定

18.4.1 职责

26 第 18.4.1.1.1 段由以下替换：

“18.4.1.1 任何加注燃料作业开始前，接收船的船长或其代表和燃料供应方代表(负责人，PIC)须：

.1 书面同意输送程序，包括冷却和必要时的充气；输送中所有阶段的最大传输速率，最小和最大极限输送压力和温度，加注管线 PRVs 设置和传输量。”

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ANNEX 3

RESOLUTION MSC.551(108)
(adopted on 23 May 2024)

AMENDMENTS TO THE INTERNATIONAL CODE OF SAFETY FOR SHIPS USING GASES OR OTHER LOW-FLASHPOINT FUELS (IGF CODE)

THE MARITIME SAFETY COMMITTEE,

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

NOTING resolution MSC.391(95), by which it adopted the International Code of Safety for Ships using Gases or other Low-flashpoint Fuels (IGF Code), which has become mandatory under chapters II-1 and II-2 of the International Convention for the Safety of Life at Sea, 1974 ("the Convention"),

NOTING ALSO article VIII(b) and regulation II-1/2.28 of the Convention concerning the procedure for amending the IGF Code,

HAVING CONSIDERED, at its 108th session, amendments to the IGF Code proposed and circulated in accordance with article VIII(b)(i) of the Convention:

1 ADOPTS, in accordance with article VIII(b)(iv) of the Convention, amendments to the IGF Code, the text of which is set out in the annex to the present resolution;

2 DETERMINES, in accordance with article VIII(b)(vi)(2)(bb) of the Convention, that the said amendments shall be deemed to have been accepted on 1 July 2025, unless, prior to that date, more than one third of the Contracting Governments to the Convention or Contracting Governments the combined merchant fleets of which constitute not less than 50% of the gross tonnage of the world's merchant fleet have notified the Secretary-General of their objections to the amendments;

3 INVITES Contracting Governments to the Convention to note that, in accordance with article VIII(b)(vii)(2) of the Convention, the amendments shall enter into force on 1 January 2026 upon their acceptance in accordance with paragraph 2 above;

4 REQUESTS the Secretary-General, for the purposes of article VIII(b)(v) of the Convention, to transmit certified copies of the present resolution and the text of the amendments contained in the annex to all Contracting Governments to the Convention;

5 ALSO REQUESTS the Secretary-General to transmit copies of this resolution and its annex to Members of the Organization which are not Contracting Governments to the Convention.

ANNEX

AMENDMENTS TO THE INTERNATIONAL CODE OF SAFETY FOR SHIPS USING GASES OR OTHER LOW-FLASHPOINT FUELS (IGF CODE)

Part A

2 General

2.2 Definitions

1 The following new paragraph 2.2.43 is added after existing paragraph 2.2.42:

"2.2.43 *Ship constructed on or after 1 January 2026* means:

.1 for which the building contract is placed on or after 1 January 2026; 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 July 2026; or

.3 the delivery of which is on or after 1 January 2030."

4 General requirements

4.2 Risk assessment

2 Paragraph 4.2.2 is replaced by the following:

"4.2.2 For ships to which part A-1 applies, the risk assessment required by 4.2.1 need only be conducted where explicitly required by paragraphs 5.10.5, 5.12.3, 6.4.1.1, 6.4.15.4.7.2, 8.3.1.1, 8.4.2, 13.4.1, 13.7 and 15.8.1.10 as well as by paragraphs 4.4 and 6.8 of the annex."

Part A-1
Specific requirements for ships using natural gas as fuel

5 Ship design and arrangement

5.3 Regulation - General

3 Paragraph 5.3.3.3 is replaced by the following:

"5.3.3.3 For independent tanks the protective distance shall be measured to the tank shell (the primary barrier of the fuel containment system). For membrane tanks the distance shall be measured to the bulkheads surrounding the tank insulation."

4 Paragraph 5.3.4.4 is replaced by the following:

"5.3.4.4 For independent tanks the protective distance shall be measured to the tank shell (the primary barrier of the fuel containment system). For membrane tanks the distance shall be measured to the bulkheads surrounding the tank insulation."

5.12 Regulations for airlocks

5 Paragraph 5.12.1 is replaced by the following:

"5.12.1 For ships constructed on or after 1 January 2026, an air lock is a space enclosed by gastight bulkheads with two substantially gastight doors spaced at least 1.5 m and not more than 2.5 m apart. Unless subject to the requirements of the International Convention on Load Line, the sill height of the door leading to the hazardous area shall not be less than 300 mm. The doors shall be self-closing without any holding back arrangements."

6 Fuel containment system

6.4 Regulations for liquefied gas fuel containment

6.4.15 Tank types

6.4.15.3 Type C independent tanks

6.4.15.3.1 Design basis

6 Paragraph 6.4.15.3.1.2 is replaced by the following:

"6.4.15.3.1.2 The design vapour pressure shall not be less than:

$$P_0 = 0.2 + AC(\rho_r)^{1.5} \text{ (MPa)}$$

where:

$A = 0.00185 (\sigma_m / \Delta\sigma_A)^2$

with:

σ_m = design primary membrane stress;

$\Delta\sigma_A$ = allowable dynamic membrane stress (double amplitude at probability level Q = 10^{-8}) and equal to:

- 55 N/mm^2 for ferritic-perlitic, martensitic and austenitic steel;

- 25 N/mm^2 for aluminium alloy (5083-O);

C = a characteristic tank dimension to be taken as the greatest of the following:

h, $0.75b$ or 0.45ℓ,

with:

h = height of tank (dimension in ship's vertical direction) (m);

b = width of tank (dimension in ship's transverse direction) (m);

ℓ = length of tank (dimension in ship's longitudinal direction) (m);

ρ_r = the relative density of the fuel (ρ_r = 1 for fresh water) at the design temperature."

6.7 Regulations for pressure relief system

6.7.3 Sizing of pressure relieving system

6.7.3.1 Sizing of pressure relief valves

7 The chapeau of paragraph 6.7.3.1.1 is replaced by the following:

"6.7.3.1.1 For ships constructed on or after 1 January 2026, the pressure relief system for each liquefied gas fuel tank shall be designed so that, regardless of the state of any one PRV, the capacity of the residual PRVs meets the combined relieving capacity requirements of the system. The combined relieving capacity shall be the greater of the following, with no more than 20% rise in liquefied gas fuel tank pressure above the MARVS. The tank shall not be loaded until the full relieving capacity is restored:"

8 Paragraph 6.7.3.1.1.2 is replaced by the following:

"6.7.3.1.1.2 vapours generated under fire exposure computed using the following formula:

$$Q = FGA^{0.82}\ (m^3/s)$$

where:

Q = minimum required rate of discharge of air at standard conditions of 273.15 Kelvin (K) and 0.1013 MPa.

F = fire exposure factor for different liquefied gas fuel tank types:

F = 1.0 for tanks without insulation located on deck;

…"

6.9 Regulations for the maintaining of fuel storage condition

6.9.1 Control of tank pressure and temperature

9 The chapeau of paragraph 6.9.1.1 is replaced by the following:

"6.9.1.1 For ships constructed on or after 1 January 2026, with the exception of liquefied gas fuel tanks designed to withstand the full gauge vapour pressure of the fuel under conditions of the upper ambient design temperature, liquefied gas fuel tanks' pressure and temperature shall be maintained at all times within their design range by means acceptable to the Administration, e.g. by one or more of the following methods:"

7 Material and general pipe design

7.3 Regulations for general pipe design

7.3.2 Wall thickness

10 Paragraph 7.3.2.1 is replaced by the following:

"7.3.2.1 For ships constructed on or after 1 January 2026, the minimum wall thickness shall be calculated as follows:

$$t = (t_0 + b + c) / (1 - |a|/100) \text{ (mm)}$$

where:

t_0 = theoretical thickness

$t_0 = PD / (2.0Ke + P)$ (mm)

with:

P = design pressure (MPa) referred to in 7.3.3;

D = outside diameter (mm);

K = allowable stress (N/mm²) referred to in 7.3.4; and

e = efficiency factor equal to 1.0 for seamless pipes and for longitudinally or spirally welded pipes, delivered by approved manufacturers of welded pipes, that are considered equivalent to seamless pipes when non-destructive testing on welds is carried out in accordance with recognized standards. In other cases an efficiency factor of less than 1.0, in accordance with recognized standards, may be required depending on the manufacturing process;

b = allowance for bending (mm). The value of b shall be chosen so that the calculated stress in the bend, due to internal pressure only, does not exceed the allowable stress. Where such justification is not given, b shall be:

$$b = D \cdot t_0 / 2.5r \text{ (mm)}$$

with:

r = mean radius of the bend (mm);

c = corrosion allowance (mm). If corrosion or erosion is expected the wall thickness of the piping shall be increased over that required by other design regulations. This allowance shall be consistent with the expected life of the piping; and

a = negative manufacturing tolerance for thickness (%), i.e. where a is the manufacturing tolerance of -5%, $|a|$ is equal to 5 and shall be entered into the formula as 1- (5/100)."

8 Bunkering

8.4 Regulations for manifold

11 Paragraph 8.4.1 is replaced by the following, together with the associated footnotes:

"8.4.1 The bunkering manifold shall be designed to withstand the external loads during bunkering. The connections at the bunkering station shall be arranged in order to achieve a dry-disconnect operation in one of the followings ways:

.1 a dry-disconnect / connect coupling in accordance with a standard at least equivalent to those acceptable to the Organization;[1] or

.2 a manual connect coupler or hydraulic connect coupler, used to connect the bunker system to the receiving vessel bunkering manifold presentation flange;[2] or

.3 a bolted flange to flange assembly.[2]

1 Refer to the recommendations by the International Organization for Standardization, in particular publication: ISO 21593:2019, Ships and marine technology — Technical requirements for dry-disconnect/connect couplings for bunkering liquefied natural gas.

2 Refer to the recommendations by the International Organization for Standardization, in particular publication: ISO 20519:2021 - Ships and Marine Technology - Specification for Bunkering of Liquefied Natural Gas Fuelled Vessels.

12 The following new paragraphs are added after existing paragraph 8.4.1, together with the associated footnote:

"8.4.2 When intended to use either of the connections specified in paragraphs 8.4.1.2 and 8.4.1.3, these shall be combined with operating procedures that ensure a dry-disconnect is achieved. The arrangement shall be subject to special consideration informed by a bunkering arrangement risk assessment[2] conducted at the design stage and considering dynamic loads at the bunkering manifold connection to a recognized standard acceptable to the Administration, the safe operation of the ship and other hazards that may be relevant to the ship during bunkering operation. The fuel handling manual required by 18.2.3 shall include documentation that the bunkering arrangement risk assessment was conducted, and that special consideration was granted under this requirement."

"8.4.3 An emergency release coupler (ERC) / Emergency Release System (ERS) or equivalent means shall be provided, unless installed on the bunkering supply side of the bunkering line, and the said means shall be in accordance with a standard equivalent to those acceptable to the Organization;[2] it shall enable a quick physical disconnection "dry break-away" of the bunker system in an emergency event."

2 Refer to the recommendations by the International Organization for Standardization, in particular publication: ISO 20519:2021 - Ships and Marine Technology - Specification for Bunkering of Liquefied Natural Gas Fuelled Vessels.

9 Fuel supply to consumers

9.3 Regulations on redundancy of fuel supply

13 Paragraph 9.3.1 is replaced by the following:

"9.3.1 For ships constructed on or after 1 January 2026, for single fuel installations the fuel supply system shall be arranged with redundancy and segregation, so that a leakage in one system, or failure of one of the fuel supply essential auxiliaries, does not lead to an unacceptable loss of power. In the event of a leakage or failure, and in accordance with SOLAS regulation II-1/26.3, the Administration, having regard to overall safety considerations, may accept a partial reduction in propulsion capability from normal operation."

9.4 Regulations on safety functions of gas supply system

14 Paragraph 9.4.7 is replaced by the following:

"9.4.7 For ships constructed on or after 1 January 2026, in cases where the master gas fuel valve is automatically shut down when the safety system as required in 15.2.2 is activated, the complete gas supply pipe between this master gas fuel valve and the double block and bleed valves and between the double block and bleed valves and the consumer shall be automatically vented."

15 Paragraph 9.4.8 is replaced by the following:

"9.4.8 For ships constructed on or after 1 January 2026, there shall be one manually operated shutdown valve in the gas supply line to each gas consumer upstream of the double block and bleed valves to assure safe isolation during maintenance on the gas consumer."

9.6 Regulations for fuel supply to consumers in gas-safe machinery spaces

16 Paragraph 9.6.1.1 is replaced by the following:

"9.6.1 Gas fuel piping in gas-safe machinery spaces shall be completely enclosed by a double pipe or duct fulfilling one of the following conditions:

.1 the gas fuel piping shall be a double wall piping system with the gas fuel contained in the inner pipe. The space between the concentric pipes shall be pressurized with inert gas at a pressure greater than the gas fuel pressure. Suitable alarms shall be provided to indicate a loss of inert gas pressure between the pipes; or"

9.8 Regulations for the design of ventilated duct, outer pipe against inner pipe gas leakage

17 Paragraph 9.8.1 is replaced by the following:

"9.8.1 For ships constructed on or after 1 January 2026, the design pressure of the outer pipe or duct of fuel systems shall not be less than the maximum working pressure of the inner pipe. Alternatively, the design pressure of the outer pipe or duct may be calculated in accordance with 9.8.2."

18 The chapeau of paragraph 9.8.2 is replaced by the following:

"9.8.2 For ships constructed on or after 1 January 2026, alternatively to 9.8.1, the design pressure of the outer pipe or duct shall be taken as the higher of the following:"

19 Paragraph 9.8.4 is replaced by the following:

"9.8.4 For ships constructed on or after 1 January 2026, the duct shall be pressure-tested to show that it can withstand the expected maximum pressure at fuel pipe rupture."

11 Fire safety

11.3 Regulations for fire protection

20 Paragraph 11.3.1 is replaced by the following:

"11.3.1 For ships constructed on or after 1 January 2026, fuel preparation rooms shall, for the purpose of the application of SOLAS regulation II-2/9, be regarded as a machinery space of category A."

11.6 Regulations for dry chemical powder fire-extinguishing system

21 Paragraph 11.6.2 is replaced by the following:

"11.6.2 In addition to any other portable fire extinguishers that may be required elsewhere in IMO instruments, one portable dry powder extinguisher of at least 5 kg capacity shall be located near the bunkering station and in the fuel preparation room. For ships constructed before 1 January 2026, the portable dry powder extinguisher shall be provided in the fuel preparation room not later than the first survey on or after 1 January 2026."

12 Explosion prevention

12.5 Hazardous area zones

22 Paragraph 12.5.1 is replaced by the following:

"***12.5.1 Hazardous area zone 0***

For ships constructed on or after 1 January 2026, this zone includes, but is not limited to, the interiors of fuel tanks, any pipework for pressure relief or other venting systems for fuel tanks, pipes and equipment containing fuel, and interbarrier spaces as defined by paragraph 2.2.15.2."

12.5.2 Hazardous area zone 1

23 Paragraph 12.5.2.1 is replaced by the following:

".1 for ships constructed on or after 1 January 2026, tank connection spaces and fuel storage hold spaces[2]; …

[2] Fuel storage hold spaces for type C tanks are normally not considered as zone 1."

15 Control, monitoring and safety systems

15.4 Regulations for bunkering and liquefied gas fuel tank monitoring

15.4.1 Level indicators for liquefied gas fuel tanks

24 Paragraph 15.4.1.3 is replaced by the following:

".3 For ships constructed on or after 1 January 2026, liquefied gas fuel tank liquid level gauges may be of the following types:

.1 indirect devices which determine the amount of fuel by means such as weighing or in-line flow metering;

.2 closed devices which do not penetrate the liquefied gas fuel tank, such as devices using radioisotopes or ultrasonic devices; or

.3 closed devices which penetrate the liquefied gas fuel tank but which form part of a closed system and keep the gas fuel from being released. Such devices shall be considered as tank connections. If the closed gauging device is not mounted directly onto the tank, it shall be provided with a shutoff valve located as close as possible to the tank."

Part B-1

16 Manufacture, workmanship and testing

16.3 Welding of metallic materials and non-destructive testing for the fuel containment system

16.3.5 Production weld tests

25 Paragraph 16.3.5.1 is replaced by the following:

"16.3.5.1 For all fuel tanks and process pressure vessels except membrane tanks, production weld tests shall generally be performed for approximately each 50 m of butt-weld joints and shall be representative of each welding position. For secondary barriers, the same type production tests as required for primary barriers shall be performed, except that the number of tests may be reduced subject to agreement with the Administration. Tests, other than those specified in 16.3.5.2 to 16.3.5.5, may be required for fuel tanks or secondary barriers."

Part C-1

18 Operation

18.4 Regulations for bunkering operations

18.4.1 Responsibilities

26 Paragraph 18.4.1.1.1 is replaced by the following:

"18.4.1.1 Before any bunkering operation commences, the master of the receiving ship or their representative and the representative of the bunkering source (Persons In Charge, PIC) shall:

.1 agree in writing the transfer procedure, including cooling down and if necessary, gassing up; the maximum transfer rate at all stages; minimum and maximum limiting transfer pressure and temperature; bunkering line PRVs settings; and volume to be transferred;"

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