



**REPUBLIC OF  
THE MARSHALL ISLANDS**  
**MARITIME ADMINISTRATOR**

**Marine Notice**

**No. 2-011-51**

**Rev. Mar/2017**

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**TO: ALL SHIPOWNERS, OPERATORS, MASTERS AND OFFICERS OF  
MERCHANT SHIPS, AND RECOGNIZED ORGANIZATIONS**

**SUBJECT: International Code of Safety for Ships Using Gases or Other Low-Flashpoint  
Fuels (IGF Code)**

- References:**
- (a) **SOLAS**, *International Convention for the Safety of Life at Sea, Consolidated Edition 2014*, as amended
  - (b) **IGF Code**, *International Code of Safety for Ships Using Gases or Other Low-Flashpoint Fuels*, as amended
  - (c) **STCW Convention**, *International Convention on Standards of Training, Certification, and Watchkeeping for Seafarers*, 2011 Edition, as amended
  - (d) **STCW Code**, *Seafarers' Training, Certification, and Watchkeeping Code*, 2011 Edition, as amended
  - (e) **IMO Resolution [MSC.392\(95\)](#)**, *Amendments to the International Convention for the Safety of Life at Sea, 1974, as amended (Chapters II-1, II-2 and Appendix)*, adopted 11 June 2015
  - (f) **IMO Resolution [MSC.396\(95\)](#)**, *Amendments to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1978, as amended*, adopted 11 June 2015
  - (g) **IMO Resolution [MSC.397\(95\)](#)**, *Amendments to Part A of the Seafarers' Training, Certification and Watchkeeping (STCW) Code*, adopted 11 June 2015
  - (h) **RMI Requirements for Seafarer Certification ([MI-118](#))**
  - (i) **RMI Marine Notice [7-041-1](#)**, *Entering Enclosed Spaces Aboard Ships – Safety Precautions*
  - (j) **RMI Marine Notice [7-038-2](#)**, *Minimum Safe Manning Requirements for Vessels*

**PURPOSE**

This Notice details the Republic of the Marshall Islands (RMI) Maritime Administrator's (the "Administrator") requirements for operating ships using gases or other low-flashpoint fuels. This revision updates the original issue of Nov/2016 to include clarifying footnotes for §2.3 and §5.4, as well as updating the footnotes for §5.1.3 and §5.8.

## **BACKGROUND**

On 11 June 2015, at its 95<sup>th</sup> meeting, the Maritime Safety Committee (MSC) of the International Maritime Organization (IMO) adopted the International Code of Safety for Ships Using Gases or Other Low-Flashpoint Fuels (IGF Code or the “Code”), which entered into force on 01 January 2017. This Code establishes goals, functional requirements, and regulations for the design and operation of ships using gases or other low-flashpoint fuels. IMO Resolution [MSC.392\(95\)](#) amended the International Convention for the Safety of Life at Sea (SOLAS) Chapters II-1, II-2, and the Appendix, thereby making the IGF Code mandatory under SOLAS.

## **APPLICABILITY**

Unless expressly provided otherwise, this Notice applies to ships to which Part G of SOLAS Chapter II-1 applies; specifically ships using low-flashpoint fuels:

- for which the building contract is placed on or after 01 January 2017;
- 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 01 July 2017; or
- the delivery of which is on or after 01 January 2021.

Except for gas carriers:

- a ship, irrespective of the date of construction, including one constructed before 01 January 2009, which converts to using low-flashpoint fuels on or after 01 January 2017 shall be treated as a ship using low-flashpoint fuels on the date on which such conversion commenced; and
- a ship using low-flashpoint fuels irrespective of the date of construction, including one constructed before 01 January 2009, which, on or after 01 January 2017, undertakes to use low-flashpoint fuels different from those which it was originally approved to use before 01 January 2017 shall be treated as a ship using low-flashpoint fuels on the date on which such undertaking commenced.

In accordance with SOLAS Regulation II-1/56.4, the IGF Code shall not apply to gas carriers, as defined in SOLAS regulation VII/11.2:<sup>1</sup>

- using their cargoes as fuel and complying with the requirements of the International Code for the Construction and Equipment of Ships Carrying Liquid Gases in Bulk (IGC Code); or

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<sup>1</sup> Gas carrier means a cargo ship constructed or adapted and used for the carriage in bulk of any liquefied gas or other product listed in chapter 19 of the International Gas Carrier Code.

- using other low-flashpoint gaseous fuels provided that the fuel storage and distribution system design and arrangements for such gaseous fuels comply with the requirements of the IGC Code for gas as cargo.

Bunker vessels supplying liquefied gas fuels are gas carriers and subject to the IGC Code.

## **REQUIREMENTS**

### **1.0 Design**

- 1.1 Ships to which this Notice applies shall be designed in accordance with the applicable requirements of the IGF Code.
- 1.2 The design shall be approved by a recognized ship Classification Society.

### **2.0 Construction**

- 2.1 Ships to which this Notice applies shall be constructed in accordance with the applicable requirements of the IGF Code.
- 2.2 Construction shall be approved and supervised by a recognized ship Classification Society.
- 2.3 Upon completion of construction, a ship Classification Society, acting as a Recognized Organization (RO) for the Administrator, shall issue either a Safety Construction Certificate for Passenger Ships or a Safety Construction Certificate for Cargo Ships, indicating that the ship complies with “part G of chapter II-1 of the Convention using **“LNG”** as fuel.”<sup>2</sup>

### **3.0 Operating Requirements**

- 3.1 Every ship covered by this Notice shall carry a copy of the IGF Code on board (see §18.2.1 of the IGF Code). Electronic versions are acceptable.
- 3.2 Maintenance procedures and information for all gas related installations shall be available on board and shall include all areas and systems that may be subject to gas leaks and their associated hazards. See also §4.0 of this Notice.
- 3.3 Each ship shall be provided with a suitably detailed fuel handling manual, to ensure that trained personnel can safely operate the fuel bunkering, storage, and transfer systems. The contents of this fuel handling manual are more fully described in §5.4 of this Notice.
- 3.4 Each ship shall be provided with suitable emergency procedures, covering all aspects of the fuel handling systems. In addition, emergency procedures shall be in place to provide for the emergency shutdown (ESD) of any equipment that has the potential to become

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<sup>2</sup> Other low flashpoint fuels may be substituted when approved as indicated in the IGF Code.

hazardous under certain abnormal conditions.

#### **4.0 Maintenance Requirements**

- 4.1 All maintenance and repair procedures shall include considerations for tank locations and adjacent spaces, taking into account the safe operation and other hazards that may be relevant to the ship.
- 4.2 An inspection/survey plan for the liquefied gas fuel containment system shall be developed and approved by the Administrator, or by the RO acting on its behalf. The inspection/survey plan shall identify aspects to be examined and/or validated during surveys throughout the life of the liquefied gas fuel containment system. It shall also identify any necessary in-service survey, maintenance, and testing that was assumed when selecting liquefied gas fuel containment system design parameters. All in-service survey, maintenance, and testing of the fuel containment system must be carried out in accordance with that plan.
- 4.3 The procedures and information shall include maintenance of electrical equipment that is installed in explosion hazardous spaces. The inspection and maintenance of electrical installations in explosion hazardous spaces shall be performed in accordance with a recognized standard. For further information, refer to IEC 60079 17:2007 Explosive atmospheres – part 17: Electrical installations inspection and maintenance.

#### **5.0 Bunkering Operations**

- 5.1 Before any bunkering operation commences, the Master of the receiving ship or their designated representative, and the representative of the bunkering source (Persons In Charge (PIC)) shall:
  - .1 agree in writing to the transfer procedure, including cooling down and if necessary, gassing up, the maximum transfer rate at all stages, and volume to be transferred;
  - .2 agree in writing action to be taken in an emergency; and
  - .3 complete and sign the bunkering safety checklist<sup>3</sup>.
- 5.2 In accordance with §6.8.1 of the IGF Code, the storage tanks for liquefied gas shall not be filled to more than a volume equivalent to 98% full at the reference temperature during the bunkering operations.
- 5.3 Upon completion of bunkering operations, the ship PIC shall receive and sign a Bunker Delivery Note for the fuel delivered, containing at least the information specified in the

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<sup>3</sup> The International Organization for Standards (ISO) has issued ISO Standard 20519, *Ships and Marine Technology – Specification for bunkering of gas fueled ships*, that includes a complete *pro forma* bunkering safety checklist (ISO 20519, Annex A).

form in the Appendix to this Notice, completed and signed by the bunkering source PIC.

- 5.4 The fuel handling manual required by §3.3 of this Notice shall be part of the vessel's Safety Management System (SMS)<sup>4</sup> and shall include, but not be limited to:
- .1 overall operation of the ship from dry-dock to dry-dock, including procedures for system cool down and warm up, bunker loading and, where appropriate, discharging, sampling, inerting, and gas freeing;
  - .2 bunker temperature and pressure control, alarm, and safety systems;
  - .3 system limitations, cool down rates, and maximum fuel storage tank temperatures prior to bunkering, including minimum fuel temperatures, maximum tank pressures, transfer rates, filling limits, and sloshing limitations;
  - .4 operation of inert gas systems;
  - .5 firefighting and emergency procedures, including the operation and maintenance of firefighting systems, and the use of extinguishing agents;
  - .6 specific fuel properties and special equipment needed for the safe handling of the particular fuel;
  - .7 fixed and portable gas detection operation and maintenance of equipment;
  - .8 emergency shutdown and emergency release systems, where fitted;
  - .9 a pro forma bunkering safety checklist, a copy of which is to be reviewed, completed, and signed during each bunkering operation; and
  - .10 a description of the procedural actions to be taken in an emergency situation, such as leakage, fire or potential fuel stratification resulting in rollover.
- 5.5 Documentation of successful verification shall be indicated by the mutually agreed and executed bunkering safety checklist signed by both PICs.
- 5.6 PICs shall have direct and immediate communication with all personnel involved in the bunkering operation, and such communication shall be maintained between both PICs at all times during the bunkering operations.
- 5.7 Communication devices used in bunkering shall comply with recognized standards for such devices acceptable to the Administrator. The ship shore link (SSL) or equivalent means to a bunkering source provided for automatic ESD communications, shall be compatible with the receiving ship and the delivering facility ESD system.

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<sup>4</sup> This is a safety requirement of the Administrator to ensure that the fuel handling manual is maintained and updated throughout the life of the ship.

- 5.8 Hoses, transfer arms, piping, and fittings provided by the delivering facility used for bunkering shall be electrically continuous, suitably insulated, and shall provide a level of safety compliance with recognized standards<sup>5</sup>.
- 5.9 Warning signs shall be posted at the access points to the bunkering area listing fire safety precautions during fuel transfer.
- 5.10 During the transfer operations, personnel in the bunkering manifold area shall be limited to essential staff only. All staff engaged in duties or working in the vicinity of the operations shall wear appropriate personal protective equipment (PPE). A failure to maintain the required conditions for transfer shall be cause to stop operations, and transfer shall not be resumed until all required conditions are met.

## **6.0 Enclosed Space Entry**

- 6.1 Under normal operational circumstances, personnel shall not enter fuel tanks, fuel storage hold spaces, void spaces, tank connection spaces, or other enclosed spaces where gas or flammable vapors may accumulate. Personnel may enter these enclosed spaces only if the gas content of the atmosphere in such space is determined by means of fixed or portable equipment to ensure oxygen sufficiency and absence of an explosive atmosphere.
- 6.2 Personnel entering any space designated as a hazardous area shall not introduce any potential source of ignition into the space unless it has been certified gas-free and maintained in that condition. See RMI Marine Notice [7-041-1](#) for additional details.

## **7.0 Inerting and Purging of Fuel Systems**

- 7.1 The primary objective in inerting and purging of fuel systems is to prevent the formation of a combustible atmosphere in, near, or around fuel system piping, tanks, equipment, and adjacent spaces.
- 7.2 Procedures for inerting and purging of fuel systems shall ensure that air is not introduced into piping or a tank containing gas atmospheres, and that gas is not introduced into air contained in enclosures or spaces adjacent to fuel systems.

## **8.0 Hot Work on or near Fuel Systems**

- 8.1 Hot work in the vicinity of fuel tanks, fuel piping, and insulation systems that may be flammable, contaminated with hydrocarbons, or that may give off toxic fumes as a product of combustion, shall only be undertaken after the area has been secured and proven safe for hot work and all approvals have been obtained.

## **9.0 Training**

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<sup>5</sup> Additionally, ISO Standard 20519 recommends that an insulation flange be installed between the bunker manifold and the supply source to electrically isolate the vessel. (See ISO 20519, Paragraph 5.5.6.)

- 9.1 Seafarers on board ships to which the IGF Code applies shall be adequately qualified, trained, and experienced.
- 9.2 Vessel owners and operators shall ensure that seafarers on board ships using gases or other low-flashpoint fuels shall have completed training to attain the abilities that are appropriate to the capacity to be filled and duties and responsibilities to be taken up, taking into account the provisions given in the STCW Convention and Code, as amended by IMO Resolutions [MSC.396\(95\)](#)<sup>6</sup> and [MSC.397\(95\)](#)<sup>7</sup> respectively.
- 9.3 See also §2.0 of RMI Marine Notice [7-038.2](#), *Minimum Safe Manning Requirements for Vessels*, regarding the qualifications, special training, and certification required as part of minimum safe manning and §5.25 of the RMI *Requirements for Seafarer Certification (MI-118)*.

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<sup>6</sup> IMO Resolution MSC.396(95) amended the STCW Convention by adding new regulation V/3 which sets mandatory minimum requirements for the training and qualifications of masters, officers, ratings and other personnel on ships subject to the IGF Code.

<sup>7</sup> IMO Resolution MSC.397(95) establishes in Chapter V, new Section A-V/3, the minimum standards of competence for seafarers serving on ships subject to the IGF Code.



## APPENDIX

### LNG-BUNKER DELIVERY NOTE\* LNG AS FUEL FOR

SHIP NAME: \_\_\_\_\_ IMO No. \_\_\_\_\_

Date of Delivery: \_\_\_\_\_

#### 1. LNG – Properties

Methane Number **	-	
Lower calorific (heating) value	MJ/kg	
Higher calorific (heating) value	MJ/kg	
Wobbe Indices $W_s / W_i$	MJ/m <sup>3</sup>	
Density	kg/m <sup>3</sup>	
Pressure	MPa (abs)	
LNG temperature delivered	°C	
LNG temperature in storage tank(s)	°C	
Pressure in storage tank(s)	MPa (abs)	

#### 2. LNG – Composition

Methane, CH <sub>4</sub>	% (kg/kg)	
Ethane, C <sub>2</sub> H <sub>6</sub>	% (kg/kg)	
Propane, C <sub>3</sub> H <sub>8</sub>	% (kg/kg)	
Isobutane, i C <sub>4</sub> H <sub>10</sub>	% (kg/kg)	
N-Butane, n C <sub>4</sub> H <sub>10</sub>	% (kg/kg)	
Pentane, C <sub>5</sub> H <sub>12</sub>	% (kg/kg)	
Hexane, C <sub>6</sub> H <sub>14</sub>	% (kg/kg)	
Heptane, C <sub>7</sub> H <sub>16</sub>	% (kg/kg)	
Nitrogen, N <sub>2</sub>	% (kg/kg)	
Sulphur, S	% (kg/kg)	
<b>Negligible &lt; 5ppm</b> hydrogen sulphide, hydrogen, ammonia, chlorine, fluorine, water		

3. Net Total delivered: \_\_\_\_\_ t, \_\_\_\_\_ MJ \_\_\_\_\_ m<sup>3</sup>

Net Liquid delivery: \_\_\_\_\_ GJ

#### 4. Signature(s):

Supplier Company Name, contact details: \_\_\_\_\_

Signature: \_\_\_\_\_ Place/Port \_\_\_\_\_ Date: \_\_\_\_\_

Receiver: \_\_\_\_\_

\* The LNG properties and composition allow the operator to act in accordance with the known properties of the gas and any operational limitations linked to that.

\*\* Preferably above 70 and referring to the used methane number calculation method in DIN EN 16726. This does not necessarily reflect the methane number that goes into the engine.