भारत सरकार / GOVERNMENT OF INDIA
पत्तन, पोत परिवहन और जलमार्ग मंत्रालय
MINISTRY OF PORTS, SHIPPING AND WATERWAYS
नौवहन महानिदेशालय, मुंबई
DIRECTORATE GENERAL OF SHIPPING, MUMBAI

Draft DGS (Engineering) Circular on LNG bunkering Guidelines.

Kindly send comments/inputs by 04/04/2025 to : mahesh.korade@gov.in and cc to : cs-dgs@nic.in

File No.	Date:
Subject: LNG Bunkering Guidelines	
References:	**(1) Merchant Shipping Notice No. 06 of 2024-IGF Code and its applicability- Reg**

1. Background

1.1. The Need for LNG Bunkering Legislation

Increasing global focus on reducing greenhouse gas emissions has led to a surge in the adoption of LNG as a cleaner alternative to traditional marine fuels. LNG offers significant advantages in terms of reduced sulphur oxides, nitrogen oxides, and particulate matter emissions. However, the lack of specific regulations governing LNG bunkering activities in India presents potential risks and uncertainties. This proposed legislation seeks to address these gaps by establishing clear guidelines for permitting, safety, environmental protection, workforce training, and enforcement. By creating a standardized framework, the legislation aims to encourage investment in LNG bunkering infrastructure, promote sustainable maritime practices, and safeguard the environment and public safety. The legislation will also stimulate economic growth and create job opportunities within the maritime sector.

This legislative proposal is essential for ensuring the responsible and sustainable integration of LNG as a marine fuel aligning with international environmental goals and fostering a modern, efficient, and environmentally conscious maritime industry.

1.2 The Directorate General of Shipping (DGS), recognizing the need for reducing greenhouse gas (GHG) emissions and improving air quality at Indian ports and at sea, issues this circular for LNG Bunkering aligning with international environmental goals and fostering a modern, efficient, and

environmentally conscious maritime industry

2. Scope

2.1. This circular applies to all ships calling Indian ports, (irrespective of their flag), LNG bunker suppliers and all ports.

2.2. It includes safety and operational guidelines for Liquefied Natural Gas (LNG) bunkering operations.

3. Current State of LNG Bunkering

3.1. LNG bunkering in the India is in its early stages of development. While there are a few ports and facilities that offer LNG bunkering services, the overall infrastructure and regulatory framework are not yet fully established. This lack of standardization and clarity can create uncertainty for ship owners, operators, and investors considering LNG as a marine fuel option.

Several factors contribute to the slow pace of LNG bunkering adoption in India, including the high initial investment costs for bunkering infrastructure, concerns about safety and environmental impacts, and the absence of comprehensive regulations. However, increasing environmental awareness, stricter emission standards, and the growing availability of LNG supply are driving increased interest in LNG bunkering.

To accelerate the adoption of LNG bunkering in India, it is essential to address the existing regulatory gaps and create a supportive environment for investment and innovation. This proposed legislation seeks to provide the necessary framework for fostering a robust and sustainable LNG bunkering industry.

4. Objectives

4.1. The primary goal of this proposed legislation is to establish a comprehensive and consistent regulatory framework for LNG bunkering, promoting safety, environmental protection, and economic growth. The specific objectives include:

(i) Defining clear permitting and licensing requirements for LNG bunkering facilities.

(ii) Establishing robust safety standards and operational procedures.

(iii) Implementing effective environmental protection measures to minimize impacts on air and water quality.

(iv) Developing workforce training and certification programs to ensure qualified personnel.

(v) Creating enforcement and compliance mechanisms to ensure adherence to regulations.

(vi) Promoting the economic benefits of LNG bunkering and job creation.

By achieving these objectives, the legislation will create a predictable and supportive environment for investment in LNG bunkering infrastructure, fostering the adoption of

LNG as a cleaner marine fuel and contributing to a more sustainable maritime industry.

5. Regulatory Framework

This legislation as per attached Annex-I establishes a clear and transparent permitting and licensing process for LNG bunkering facilities. The process includes:

(i) Submission of a detailed application to the Directorate, including information on facility design, safety procedures and emergency response plans.

(ii) Review of the application by DGS

(iii) Public consultation and opportunity for stakeholders to provide comments on the proposed circular.

(iv) Regular inspections and audits to ensure continued compliance with permit conditions.

The permitting and licensing process ensures that LNG bunkering facilities are designed, constructed, operated in a safe and environmentally responsible manner.

Issued with the approval of the competent authority.

sd/-
(Mahesh Korade)
Engineer & Ship Surveyor cum Dy.DG(Tech)

To

1. The Principal Officers, Mercantile Marine Department, Mumbai/Kolkata/Chennai/Kandla/Kochi.
2. The Surveyor-in-Charge, Mercantile Marine Department, Goa/Jamnagar/Port Blair/Visakhapatnam/Tuticorin/Noida/Haldia/Paradip/Mangalore
3. Indian National Shipowner's Association (INSA), Mumbai.
4. Foreign Owner and Ship-Managers Association (FOSMA)
5. The Maritime Association of Ship Owners, Ship Managers and Agents (MASSA)
6. Indian Coastal Conference Shipping Association (ICCSA), Mumbai
7. Institute of Marine Engineers (India)
8. Hindi cell
9. Computer cell

Copy to:

10. PS to DG (S)
11. PS to the Chief Surveyor with the Govt.of India
12. PS to the Nautical Advisor (i/c) to the Govt.of India
13. PS to the Chief Ship Surveyor (i/c)
14. DDG (SD)
15. DDG (Admin).

Appendix - I
DGS (Engg) Circular No. XX Of 2025
LNG Bunkering Guidelines

1. Introduction:

This circular outline the safety and operational guidelines for Liquefied Natural Gas (LNG) bunkering operations within Indian waters, encompassing ship-to-ship, truck-to-ship, and shore-to-ship (pipeline) bunkering methods. It is intended for ship owners, ship managers, bunker suppliers, bunkering receivers, terminal operators, trucking companies, and all other stakeholders involved in LNG bunkering operations. These circular aims to establish a standardized framework that ensures safety, efficiency, and environmental protection during these operations.

1.1 The guidelines in this circular should be read in conjunction with all applicable Indian maritime laws, regulations, port authority guidelines, and regulations set forth by the Petroleum and Natural Gas Regulatory Board (PNGRB) of India.

1.2 This circular is developed in consultation with relevant stakeholders in the Indian maritime industry and regulatory bodies.

1.3 All legislative requirements quoted in this circular should be subject to the authentic provisions of the legislative instrument and its latest amended version.

2. Applicable Standards and Reference documents

Circular refers to the following Standards and reference documents including any amendments, are applicable:

1. IGC Code: International Code of the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk.
2. IGF Code: International Code of Safety for Ships Using Gases or Other Low-Flashpoint Fuels.
3. STCW Code: International Convention on Standards of Training, Certification and Watch keeping for Seafarers sets minimum qualification standards for masters, officers and watch personnel on seagoing merchant ships and large yachts.
4. Class Rules for LNG Bunkering vessels.
5. MSC.1/Circ.1668- Unified Interpretation of Bunkering Manifold Arrangement fitted on LNG Bunkering Ships in IGC Code.
6. ISM Code: International standard for the safe management and operation of ships, and for pollution prevention.
7. ISO 20519: International Standard on the Specification for Bunkering of Liquefied Natural Gas-Fueled Vessels.
8. ISO/TS 18683: Guidelines for safety and risk assessment of LNG fuel bunkering operations.
9. ISO 28460, Installation and equipment for liquefied natural gas – Ship-to-shore interface and port operations.

10. IACS Recommendation 142: LNG Bunkering Guidelines.

11. IAPH Checklist: International Association of Port and Harbour Bunkering Checklist.

12. BIS Standards: Any relevant standards published by the Bureau of Indian Standards (BIS) related to gas handling and safety, including those specific to cryogenic road tankers and pipeline transportation of natural gas.

13. PNGRB Regulations: Regulations and guidelines issued by the Petroleum and Natural Gas Regulatory Board (PNGRB) concerning LNG terminals, pipelines, and transportation.

14. PESO Regulations: Regulations and guidelines issued by Petroleum and Explosives Safety Organization (PESO) concerning safety aspects of hazardous substances.

15. Other equivalent standards: Subject to prior agreement and approval by the Directorate General of Shipping (DGS), India, and PNGRB.

16. International Safety Guide for Oil Tankers & Terminals (ISGOTT): a) A Guide to Contingency Planning for Marine Terminals Handling Liquefied Gases in Bulk, b) Risk Based Approach for the Evaluation of firefighting Equipment on Liquefied Gas Jetties, c) "LNG Operations in Port Areas", essential best practices for the industry, d) ESD arrangements and linked ship/shore systems for liquefied gas carriers.

17. IS 15656, ''Hazard identification and risk analysis – Code of practice'', 2006 – For Quantitative Risk Assessment (QRA).

18. Federal Energy Regulatory Commission (FERC) NFPA 59A, Standard for the production, storage, and handling of liquefied natural gas (LNG).

19. ISO TR 17177: Petroleum and natural gas industries — Guidelines for the marine interfaces of hybrid LNG terminals.

20. SIGTTO: Guidance for the Prevention of Rollover in LNG Ships.

21. SIGTTO: Guidelines for the Alleviation of Excessive Surge Pressures on ESD for Liquefied Gas Transfer Systems.

22. SIGTTO: Recommendations for Liquefied Gas Carrier Manifolds.

23. SIGTTO: ESD Systems.

24. SGMF: FP07_01_LNG as a marine fuel, Safety and Operational Guidelines – Bunkering, published by the Society for Gas as Marine Fuel.

25. SGMF: FP02-01_Recommendations of Controlled Zones during LNG bunkering.

26. SGMF: FP08-01_Simultaneous Operations (SIMOPs) during LNG Bunkering.

27. SGMF: FP04-02_Bunkering of Ships with LNG Competency and Assessment Guidelines.

28. SGMF: TGN06-05_Recommendations for linked emergency shutdown (ESD) arrangements LNG Bunkering.

29. OISD Standards: Standards published by Oil Industry Safety Directorate, Government of India.

30. Singapore MPA: Technical Reference 56 for LNG Bunkering

31. Guidance on LNG Bunkering to Port Authorities and Administration by EMSA dated 31.01.2018

3. **Definitions**

A. LNG: Liquefied Natural Gas.

B. Bunkering Operation: The transfer of LNG fuel to a receiving vessel, whether from a bunker supply vessel, a Truck, or Terminal.

C. LNG Bunker Supplier (LBS): The entity responsible for supplying LNG to the receiving vessel, regardless of the mode of delivery.

D. LNG Bunker Receiver (LBR): The vessel receiving LNG fuel.

E. Truck-to-Ship Bunkering: The transfer of LNG from a road tanker (truck) to a receiving vessel.

F. Terminal-to-Ship Bunkering: The transfer of LNG from a shore-based terminal via pipeline to a receiving vessel.

G. Ship to Ship Bunkering: The transfer of LNG from LNG Bunker Vessel to a receiving vessel

H. Safety Zone: an area that must be established around the LNG bunkering station/facilities to control ignition sources and ensure that only essential personnel and activities are allowed in the area that could be exposed to flammable gas in case of accidental release of or other incident involving LNG or natural gas during bunkering

I. Security Zone: an area that must be defined and established around the LNG bunkering area to monitor and control external activities e.g. ship movements or vehicles that can lead to incidents that threaten the operation. The security zone should be accessible during the LNG bunkering operation only by authorized personnel. The security zone will always be larger than the safety zone

J. Approved: Approved by the Directorate General of Shipping (DGS), relevant port authority in India, and, where applicable, PNGRB and PESO.

K. STCW: International Convention on Standards of Training, Certification, and Watchkeeping for Seafarers.

L. Indian Waters: As defined by the relevant Indian maritime legislation.

M. PESO: Petroleum and Explosives Safety Organization.

N. PNGRB: Petroleum and Natural Gas Regulatory Board.

O. SIMOP- Simultaneous Operations during LNG Bunkering

P. PIC- Person in Charge

4. **Application**

This circular applies to all entities and vessels engaged in LNG bunkering operations within Indian waters, including:

A. LNG bunker supply vessels
B. LNG bunker receiving vessels
C. LNG trucking companies involved in truck-to-ship bunkering
D. LNG terminal operators involved in shore-to-ship bunkering

5. LNG Bunkering Operations

5.1. General Requirements

LNG bunkering operations in India must adhere to the guidelines outlined in this circular, as well as all applicable Indian regulations, port requirements, and PNGRB/PESO regulations.

5.1.1 To conduct LNG bunkering operations, the LBS must:

5.1.1.1 Obtain approval from the DGS and port authority and, where applicable, PNGRB and PESO for each bunkering operation, depending on the mode of delivery.

5.1.1.2 Plan and execute the operation according to ISO 20519, ISO 28460 and IACS Rec 142 (ship-to-ship, truck-to-ship, or shore-to-ship), [ISGOTT- International Safety Guide for Oil Tankers & Terminals (ISGOTT): a) A Guide to Contingency Planning for Marine Terminals Handling Liquefied Gases in Bulk, b) Risk Based Approach for the Evaluation of firefighting Equipment on Liquefied Gas Jetties, c) "LNG Operations in Port Areas", essential best practices for the industry, d) ESD arrangements and linked ship/shore systems for liquefied gas carriers.]

A) NFPA 59A- Standard for the production, storage and handling of liquefied natural gas (LNG)

B) IACS Recommendation 142 – LNG Bunkering Guidelines

C) Other best practices (please see the list of references which provide guidance)

5.1.2 Maintain valid certifications as required by the STCW Code, IGC Code, Classification Society/IRS Rules, BIS standards for transport/handling of LNG bunkering.

5.1.3 Bunker Supplier should ensure delivery of LNG bunker valid insurance cover is available for an amount acceptable to the concerned Port Authorities and/or as per Flag administration requirements for accident (personnel, property & transport equipment), marine & environmental pollution damage and clearance of pollution liabilities.

5.1.4 Bunker Supplier should ensure that pressure test of hoses and pipelines have been done according to their manufacturer's specifications at intervals, which are in accordance with their manufacturer's recommendations, but in any case, not exceeding one year. Test facility should be acceptable to DGS.

5.1.5 Bunker supplier should ensure that the valid material safety data sheet is maintained for the each delivery of LNG bunker being supplied.

5.1.6 The person in charge for the bunkering operation as nominated by LBS and Master of the LBR are responsible for the safety of all activities related to the bunkering operation.

5.1.7 All bunkering operations must be agreed upon by both the LBS and LBR in accordance with an approved LNG bunker management plan before commencement.

5.1.8 The person in charge shall be nominated and authorized by the port authority for response to the emergency and co-ordinate between LBS & LBR.

5.2 Licensing Requirements

To demonstrate the ability to systematically plan and safely execute LNG bunkering operations, the LBS shall provide the following documentation for the application of an Operating License (for each delivery method):

I. LBS Vessel Certifications (if applicable - Ship-to-Ship):

A. Valid Certificate of Registry

B. Valid Certificate of Fitness for Carriage of Dangerous Goods

C. Valid Relevant certificates as required by IGC Code and ISM Code.

D. Valid Certificate from Classification Society

II. Trucking Company Certifications (if applicable - Truck-to-Ship):

A. Valid PESO licenses for transport of LNG via road tanker.

B. Valid Certificates of compliance with relevant BIS standards for cryogenic road tankers.

C. Valid Driver training and certification records for handling LNG.

III. Terminal Operator Certifications (if applicable - Shore-to-Ship):

A. Valid PNGRB authorization for operating the LNG terminal and pipeline infrastructure.

B. Valid Certificates of compliance with relevant safety standards for LNG terminals and pipelines.

IV. Reports of Maritime Traffic Impact Assessment (MTIA) and Quantitative Risk Assessment (QRA):

a. The LBS shall submit MTIA and QRA reports, prepared in accordance with ISO/TS 18683 in consultation with port authority and approved by the DGS and where applicable, PNGRB and PESO, for the intended bunkering location and operation. These reports should specifically identify and address all risks to people, property and environment which are associated with each LNG Bunkering mode offered by the LBS.

b. The QRA should establish the minimum horizontal and vertical extent for the Safety Zones. For this purpose, Gas dispersion analyses are required to be performed considering credible leakage scenarios. The local environmental conditions should be considered when performing such analyses. Consequences due to the leakage scenario (e.g. fire, explosion, overpressure, radiation) should be taken into account when deriving the size and extent of the safety zones.

c. The guidance in IACS Recommendation 142 and ISO/TS 18683 should also be taken in account when planning and executing the QRA. These studies should be performed by personnel who have knowledge of Port Operations including bunkering and the development of Quantitative Risk Assessments for Ports.

V. LNG Bunker Management Plan: The LBS shall submit comprehensive LNG Bunker Management in consultation with port authorities for approval to the DGS, which outlines

procedures and safety measures for the pre-bunkering, bunkering, and post-bunkering phases, in accordance with ISO 18683 and IACS Recommendation 142. The plan should include:

a. Proposed operation of bunker supply vessel, trucks, or terminal, including the intended location and specific procedures for the chosen delivery method. The operational envelope (e.g. limiting wave height conditions, current speed, wind speed etc.) must also be clearly specified. The conditions/scenarios (e. g. Hurricane, Cyclone, Other natural disasters) under which bunkering operation would be stopped/suspended should also be specified.

b. Quantity and Quality of LNG to be bunkered

c. Detailed safety protocols, including risk assessments and emergency response plan.

d. Specific guidelines for LNG transfers, equipment checks, and communication protocols.

e. Compatibility assessment checklist templates to ensure compatibility between the LBS and LBR.

f. Valid Certificates and functional test reports of bunkering equipment, gas detection, alarms system, temperature measuring as applicable based on modes of transport (including truck unloading arms or pipeline connections).

g. Personnel training (familiarization, safety drills including records) including mandatory and certifications.

h. Protocols on use & availability of Cryogenic personnel protective equipment

i. Availability & readiness of Intrinsically safe lighting in vicinity of transfer operations

j. Detailed safety protocols including hazard assessments and emergency response plans, specific to the delivery method

k. Emergency contingency plans to mitigate potential accidents, fire, spillage etc.

l. Mechanism for documenting all bunkering-related operations. Simultaneous Operations in the vicinity (at the Terminal/Anchorage where LNG Bunkering is envisaged)

m. Bunkering of Diesel Oil simultaneously with the LNG Bunkering (if envisaged)

VI. In order to consider for the issuance of the Bunker Supplier Registration Certificate (BSRC) by the DGS, the Company as a minimum shall comply with the following:- a.

a. Shall establish, document, implement and maintain a Quality Management System (QMS) and continually improve its effectiveness in line with latest version of ISO 9001. The QMS certification may be obtained from any of the certification bodies accredited by the National Accreditation Board for Certification Bodies (NABCB).

b. Shall ensure effective systems for the 'custody control' of the bunker from reception, storage to deliver end, including for the transportation systems. In case of any outsourced processes, viz. terminal operations; barge/lorry operation that affects the

product conformity, such outsourced processes shall be identified in the QMS and the Supplier should ensure complete control over such processes.

c. Should establish procedure for the identification, storage, retrieval, retention period and disposition of records and other evidence generated in relation to delivery of bunkers.

5.3 Approval for LNG Bunkering Operations

5.3.1 The LBS shall obtain approval-in-principle from the DGS, relevant port authority, and where applicable, PNGRB and PESO for bunkering operations with each LBS vessel, submitting an updated LNG Bunker Management Plan with LBS vessel information.

5.3.2 Each approval-in-principle is valid for a period not exceeding 12 months. The approval may be cancelled if any condition or requirement in this circular is not met.

5.3.3 To apply for approval of each bunkering operation, the LBS must submit the following documents to the relevant port authority and, where applicable, PNGRB and PESO, at least 72 hours in advance.

5.3.4 Bunkering Compatibility Checklist/Report, demonstrating compatibility between the LBS and LBR vessels.

5.3.5 Joint Bunkering Plan, endorsed by representatives from both the LBS and LBR, ensuring mutual agreement and compliance with safety standards. This plan should include specific procedures for the chosen delivery method (e.g., truck arrival and connection procedures, pipeline connection and purging procedures).

5.3.6 For truck-to-ship bunkering, a detailed traffic management plan showing the route of the LNG trucks, parking arrangements, and safety measures during truck maneuvering at berth/terminal.

5.3.7 For shore-to-ship bunkering, confirmation from the terminal operator that the pipeline is ready for LNG transfer and that all safety systems are operational.

5.4 Operational Requirement.

5.1 Safety Zone: A safety zone must be established around the bunkering and receiving facilities/vessels to control ignition sources. The extent of the zone should be based on the QRA recommendations and agreed upon by the LBS, LBR, the relevant port authority, and, where applicable, PNGRB and PESO. The size and configuration of the safety zone will vary depending on the delivery method and the extent of the hazardous area zones defined by the terminal for the vessels and/or vehicles involved in the operation. If a vessel or truck breaches the safety zone, then the bunkering operation should be immediately stopped.

5.2 Security Zone: LBS and LBR are to maintain a security zone in line with IACS rec 142. Physical barriers and ISPS borders should also be taken into consideration. They are also responsible for monitoring all activities and operations within this vicinity to identify and mitigate any potential risks to the LNG bunkering operation. The security zone should always be larger than the safety

zone. Prior to initiation of the operation the security zone should be communicated to all parties it may concern such as adjacent installations, other vessels and the Port Authority.

5.3 Participation in Vessel Traffic Services (VTS): The bunker supply vessel (if applicable) must participate in the local Vessel Traffic Service (VTS) and maintain continuous VHF watch on the appropriate channels.

5.4 Traffic Management (Truck-to-Ship): For truck-to-ship bunkering, a detailed traffic management plan must be implemented to control the movement of trucks within the port area. This plan should include designated routes, speed limits, parking areas, and escort vehicles.

5.5 Monitoring: For terminal-to-ship bunkering and the ship to ship bunkering, the LBS operator and the relevant LBR crew must continuously monitor the LNG pressure, flow rate, and temperature during the LNG transfer. Emergency shutdown systems must be readily available and tested regularly.

5.6 Bunkering Operation: The LBS must operate in accordance with the LNG Bunker Management Plan and the Joint Bunkering Plan. A pre-bunkering checklist must be completed within 48 hours of the planned operation and kept on both vessels for inspection. This checklist should include verification of truck/pipeline connections, safety equipment, and communication systems.

5.7 The following items should be clearly agreed between the LBS and the LBR. These should also be recorded:

- **5.7.1** Quantity of LNG to be transferred
- **5.7.2** Maximum Pressure during the operation
- **5.7.3** Maximum pumping rate during the operation

5.8 Double banking of LNG bunker vessels alongside receiving vessel should not be permitted.

5.9 LBR should be aware as regards general operating procedures of the LBS.

5.10 All lighting and cables that interfere with the safety zone of the LNG vessel or LNG truck shall be switched off in a way that the lights are totally without any power supply unless the equipment is EX-proof.

5.11 Equipment such as ro-ro ramps, gangways, hydraulic/pneumatic tools/equipment which can cause sparks/heat during movement or malfunction shall not allowed to be used inside the safety zone.

5.12 Passengers and/or Crew should be informed when the LNG bunkering is in progress by means of visual warning signs as well as restriction of access to the areas concerning the LNG bunkering.

5.13 If an emergency arises with the LBS facilities (terminal, ship or truck) involved in the bunkering, not affecting the LBR operation, the LBS will inform the LBR over VHF radio or other agreed communication method.

5.14 If an emergency arises in the LBS facilities, any decision to abandon vessels or leave berth is the master's or harbor master's responsibility.

5.15 Prior to the initiation of each LNG bunkering operation:

5.15.1 the communication between the LBR facility (whether pipeline, ship or truck) and the LBS, the ESD functions should be tested and their functionality should be confirmed as well as recorded.

5.15.2 Functionality of the valves involved in the LNG transfer operation both on the LBS and LBR facilities should be confirmed including manual operation

5.15.3 the availability of emergency services (e.g. ambulance, fire brigade etc.) should be confirmed.

5.15.4 Visual inspection of the transfer manifolds on the LBS and LBR sides to confirm the integrity of equipment, fittings, hoses, piping, valves pertaining to the LNG bunkering.

5.15.5 Confirm the availability of protective measures such as water curtain between the LBS and LBR, drip trays of suitable material and grade at the bunker manifold, cover underneath for the liquefied gas hose for protection of deck plating, QCDC coupling etc.

5.16 Technical requirements for bunkering system are maintained as per IACS rec 142.

5.17 Notifications: The LBS must adhere to the following notification procedures:

5.17.1 Pre-Notification: Notify the relevant port authority and, where applicable, PNGRB and PESO at least 24 hours before commencement, including the time, location, delivery method, and a 24-hour contact number.

5.17.2 Reporting of Bunkering Phases: Report the start and completion of each operation to the port authority via VHF (for ship-to-ship) or other agreed communication channels.

5.17.3 Incident Reporting: Report any incident immediately to the relevant government departments, the port authority, and, where applicable, PNGRB and PESO.

6 Bunker Delivery Note (BDN):

The Bunker Supplier shall be responsible for providing the Bunker Delivery Note (BDN) for each individual consignment of bunker to a ship. BDN should be in-line with IGF code requirements. Copy of every BDN issued to the vessel is retained by the bunker supplier for the period of 3 years.

7 Requirements for Crew Members and Personnel

7.1 Ship to Ship: Crew members assigned duties related to LNG Bunkering operations on LBS shall hold an endorsement in training (Basic) according to STCW Code requirements for Vessels certified in accordance with the IGF Code. Crew Members on the LBR should hold certification as per the STCW Code for Gas Carriers.

7.2 Truck Drivers (Truck-to-Ship): Truck drivers involved in LNG transport must be trained and certified in accordance with PESO regulations and relevant BIS standards. They must be proficient in handling cryogenic materials, operating emergency shutdown systems, and following safety protocols.

7.3 Terminal Operators (Shore-to-Ship): Terminal operators involved in LNG bunkering must be trained and certified in accordance with PNGRB regulations and relevant safety standards. They

must be proficient in operating LNG terminal equipment, monitoring pipeline parameters, and responding to emergencies.

8 Enforcement

The Directorate General of Shipping (DGS), relevant port authorities, PNGRB, and PESO are jointly responsible for enforcing the provisions of this circular as applicable. Vessels, trucking companies, or terminal operators found to be in non-compliance may be subject to penalties, including fines, detention, suspension of licenses, or other actions.

Referring to section 5.10(IV), decisions and requirements for LNG bunkering should be based on a risk analysis carried out in advance of any bunkering operation. The Port authority and/or DGS, PNGRB/ PESO shall consider:

- *Approval of the risk acceptance criteria,*
- *Overall responsibility for the good governance and framework for LNG bunker operations in the port,*
- *Applicability of an accreditation scheme for LNG bunker operators in the ports under their authority,*
- *Acceptability of the location of bunkering facilities, (bunkering may be limited to specific locations within the port/anchorage),*
- *Restrictions on bunkering operations such as simultaneous operations,*
- *Shore side contingency plans, emergency response systems,*
- *General procedures for traffic control and restrictions,*
- *Whether additional requirements should be applied.*

9 Amendments

This circular will be reviewed and updated periodically to reflect changes in technology, regulations, and industry best practices.

9वीं मंज़िल, बीटा बिल्डिंग, आई थिंक टेक्नो कैम्पस, कांजुर गाँव रोड, कांजुरमार्ग (पूर्व) मुंबई- 400042
9th Floor, BETA Building, I-Think Techno Campus, Kanjur Village Road, Kanjurmarg (E), Mumbai-400042
फ़ोन/Tel No.: +91-22-2575 2040/1/2/3 फ़ैक्स/Fax.: +91-22-2575 2029/35 ई-मेल/Email: dgship-dgs@nic.in वेबसाइट/Website: www.dgshipping.gov.in