

LNG Operating Regulations Including LNG Bunkering

GOTHENBURG ENERGY PORT

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INTRODUCTION

GENERAL

This publication specifies the Port of Gothenburg's regulations regarding LNG cargo handling and LNG bunkering in the Port of Gothenburg and adjacent anchorage areas.

These regulations are valid in combination with Port of Gothenburg general harbour regulations.

DEFINITIONS

Hazardous area – zones 0, 1 and 2 in which an explosive gas mixture is expected to occur during normal handling in accordance with IEC 60079-10 and IEC 60092-502.

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.

Security Zone (No movement 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 may result in limit access for personnel and/or public. The security zone will always be larger than the safety zone.

IGF Code – IMO International Code of Safety for Gas-Fuelled Ships and other low-flashpoint fuels.

IGC – the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk.

ISO 20519:2017 – Ships and marine technology – Specification for bunkering of liquefied natural gas fuelled vessels.

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GENERAL

All regulations remain unaltered whether the LNG bunker vessel or LNG vessel is empty or not, if it is partially or fully loaded, or approaching or leaving the port.

LNG vessel traffic in the port is subject to the Port Bye-laws, Port Regulations and National Regulations.

2.1 GENERAL

All bunkering operations in the Port of Gothenburg harbour area are subject to the Port Bye-laws and Port Regulations. In order to perform ship to ship bunkering the following conditions must be met:

- The bunker vessel must have accreditation from Port of Gothenburg (see 2.1.1).
- The receiving vessel must comply with the IGF code.
- The terminal must have a Port of Gothenburg-approved safety management system and routines for allowing bunker operations alongside terminal berths with or without simultaneous cargo operations (see 2.1.3).
- All bunkering operations must be approved by Port of Gothenburg.

2.1.1. Bunker vessel criteria

The bunker vessel shall:

- be built according to IGC code.
- be inspected according to the Green Bunkering concept.
- hold proof of adequate training and certification according to STCW and the standard ISO 20519:2017.

2.1.2 Receiving vessel criteria

The receiving vessel must fully comply with the IGF code and also have a safe bunkering procedure, which is carried out according to the approved ISM manual onboard.

The receiving vessel should comply with the standard ISO 20519:2017 or similar.

2.1.3 Terminal criteria

The terminal must have safe bunkering procedures which are carried out according to the approved safety manual.

2.2 APPLICABLE REGULATIONS AND STANDARDS

- National Regulations.
- IMO IGF-code.
- ISO 20519:2017.
- Port Bye-laws.
- General harbour regulations for Port of Gothenburg.
- Operating regulations for Energy Port Gothenburg.

2.3 HAZARDOUS, SAFETY AND SECURITY ZONES

Hazardous area classification is compulsory for the bunkering station according to SRVFS 2004:7 and its standard IEC 60079-10 and for ships as per standard IEC 60092-502.

Additional to the hazardous areas a safety zone must be established around the bunkering station prior to all LNG bunkering operations.

The safety zone is an area 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.

Prior to determination of a specific safety zone at a terminal, vapour dispersion data should be calculated for the largest credible leak, based on a risk assessment.

The safety zone should never be smaller than the hazardous area distances stated for the receiving vessel, bunker barge, terminal facility or truck.

Safety zone distances in Port of Gothenburg as stated below:

TYPE OF VESSEL	SEA SIDE	BUNKER STATION	TERMINAL
LNG /LPG /Tanker	25 metres	25 metres	25 metres
Container / Bulk	25 metres	25 metres	25 metres
Ro/Ro	25 metres	25 metres	25 metres
Ferries	25 metres	25 metres	25 metres

The vertical safety zone is usually 25 metres above or below the stated hazardous area.

A security zone or No movement zone 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 may result in limit access for personnel and/or public. The security zone will always be larger than the safety zone. Prior the operation starts the security zone has to be communicated to all parties it may concern such as adjacent terminals, other vessels and the Port Authority.

2.4 SAFETY ZONE WHILE MOORED DURING LNG SHIP TO SHIP BUNKERING OPERATION

The safety zone at the sea side is set to 25 metres. LNG bunkering must be stopped if a vessel or craft comes closer than the safety zone.

Additionally for Lo/Lo vessels, if any container interferes with the safety zone, the entire container bay must be included in the safety zone.

2.5 WEATHER CONDITION REQUIREMENTS

No ship to ship bunkering is allowed in Port of Gothenburg when wind force exceeds 20 m/s. Current wind speed can be obtained from VTS Gothenburg on VHF channel 13.

2.6 SPECIAL PROVISIONS FOR BUNKERING GAS AND PETROLEUM PRODUCTS

LNG and FO/DO manifold on-board and ashore should be separated into independent manifolds and spillage containments for each type of purpose.

- Oil bunkering to LNG-powered vessel is allowed simultaneously with LNG bunkering.
- Oil bunkering to LNG vessel during LNG cargo transfer operation is not allowed.

2.7 LNG BUNKER TRUCK

The truck to ship bunker operation is comparable to a bunker operation between a bunker vessel and receiving ship so the same regulations apply and the same checklist must be filled in.

To operate an LNG bunkering vehicle at Port of Gothenburg, the operator of the vehicle must upon request show an approved ADR training certificate and knowledge of the terminal safety manual regarding the LNG bunkering procedure.

2.8 BUNKERING PROCEDURES AND REQUIREMENTS

The maximum pressure and pump rate during bunkering is based on the terminal's and the receiving vessel's receiving capacity. These figures should be filed in the Bunker Safety Checklist.

If an emergency arises in the terminal, not affecting the vessel's operation, the terminal will inform the vessel, bunker vessel and/or LNG truck over VHF radio or other agreed communication method.

If an emergency arises in the terminal affecting the vessel, bunker vessel and LNG truck operations, any decision to abandon vessels or leave berth is the master's or harbor master's responsibility.

Double banking of LNG bunker vessels alongside receiving vessel is not allowed.

LNG bunker vessels and receiving vessels which intend to load or bunker shall be aware of the general operating regulations for the respective terminal.

All terminal 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. This is not applicable if the equipment is EX-proof.

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

Passengers shall be informed when LNG transfer operations are in progress, by means of warning signs (no smoking, no open lights etc.) and limitation of access to weather decks on the side where the LNG transfer is being carried out.

2.9 LNG BUNKER SAFETY CHECKLIST

At the Port of Gothenburg, a dedicated LNG Bunker Safety Checklist is used to secure the LNG bunkering operation in a step by step process. The ship-specific LNG Bunker Safety Checklist should be filled in in such way that all risks of the receiving vessel's cargo handling including passenger handling have been considered and determined.

3.1 VESSELS

Responsibility for the safe conduct of operations while a ship is receiving bunker cargo by barge, or truck, is shared jointly between the master of the receiving vessel, the bunker vessel and the truck driver.

All parties remain responsible for shutting down the operation in order to prevent incidents and accidents irrespective of the cause of any arising problem.

The master of the vessel is responsible for all operations controlled and supervised from the vessel, the master of the bunker vessel is responsible for all operations controlled and supervised from the bunker vessel.

3.2 TANKER TRUCKS

The tanker truck driver is responsible for all operations controlled from the tanker truck. The tanker truck driver shall monitor the entire bunkering process, from start to finish. Bunkering may not under any circumstances whatsoever be left unattended.

3.3 TERMINAL

The terminal must have a procedure regarding safe bunkering and cargo operations. The terminal representative is responsible for establishing an overall contingency plan in case of an emergency involving LNG.

The terminal representative will ensure that no one from shore violates the set and agreed safety zone at the terminal and sea side. The terminal representative should also ensure that the LNG truck (if applicable) is parked correctly and has not been blocked by any vehicle. The LNG truck shall be parked in a way that immediate departure is available, without maneuvering.

The terminal representative should check that all safety precautions have been made according to terminal regulations.



Ship's name	Bunker vessel name
Berth	Port
Date of arrival	Time of arrival
Terminal	

The presence of the letters 'A' , 'R' or 'P' in the column entitled 'Code' indicates the following:

A ('Agreement')

This indicates an agreement or procedure that should be identified in the 'Remarks' column of the Check-List or communicated in some other mutually acceptable form.

R ('Re-check')

This indicates items to be re-checked at appropriate intervals, as agreed between both parties, at periods stated in the declaration.

P ('Permission')

This indicates that permission is to be granted by Energy Harbour Port Officer.

I. PART A: PRE BUNKER OPERATIONS CHECKLIST

Check	Ship	Bunker vessel	Terminal	Energy Harbour Port Officer	Code	Remarks
1. Energy Harbour Port Officer have granted LNG bunker operation for the specific location.					P	
2. Energy Harbour Port Officer has been notified one hour prior the start of LNG bunker operations.						Time notified: hours VHF Ch. 12
3. The terminal has been notified one hour before the start of the LNG bunker operations.						Time notified: hours
4. Port Authority's regulations are being observed.						LNG Operation Regulations.
5. The Ship Shore Safety Check List of the terminal has been filled in correctly.						
6. Vessels in the direct vicinity of the transfer location are informed of the LNG bunkering.						N/A
7. The ship's class approved bunker plan and operations manual are available.						
8. All certified LNG bunker hoses are in good condition and are appropriate for the service intended.					A	
9. The LNG bunker vessel has obtained the necessary permissions to go alongside receiving ship.					P	VHF Ch.12
10. Personnel involved comply with the work and rest hour requirements of ILO180, STCW or national regulations.						As appropriate.

I. PART B: PLANNED SIMULTANEOUS ACTIVITIES

Check	Ship	Bunker vessel	Terminal	Energy Harbour Port Officer	Code	Remarks
11. The planned simultaneous activities are approved by the ships LNG bunker manual.						
12. Energy Harbour Port Officer have granted simultaneous cargo and bunker operations during the LNG bunkering.					P	No other activity is allowed within the safety zone of 25 m.
13. Safety procedures and mitigation measures as mentioned in the ship's LNG bunker manual for simultaneous cargo or bunker operations are agreed and being observed by all parties involved.					A	No simultaneous operations are allowed within the hazardous area of the LNG-bunkering station. Sign vessel:
14. If cargo handling*) of low flashpoint cargo (below 30°C) is a part of the simultaneous operation plan, a specific check list must be filled in by receiving vessel.						Not permitted in Port of Gothenburg. *) or previous cargo.

Bunker and cargo operations plan

	Oil bunker	Cargo	Misc	
Product				
Volume to be transferred				m ³
Starting rate				m ³ per hour
Max transfer rate				m ³ per hour
Topping of rate				m ³ per hour
Max pressure at manifold				bar

I. PART C: PRE LNG TRANSFER CHECKLIST

Check	Ship	Bunker vessel	Terminal	Energy Harbour Port Officer	Code	Remarks
15. On both ship and LNG bunker vessel the responsible officers / supervisor in charge of the bunker operation are identified and posted.						
16. An effective means of communication between the officers / supervisors at the ship and LNG bunker vessel has been established and tested. The communication language has been agreed upon.					A	VHF/UHF Channel: Language: Primary System: Backup System:
17. An effective deck watch on board of the ship is established.						The deck watch pays particular attention to moorings, fenders and simultaneous activities.
18. On both the ship, bunker vessel an effective LNG bunker watch is established.						The LNG bunker watch pays particular attention to hoses, manifold, and bunker controls.
19. The emergency signals and shutdown procedures are agreed upon.					A	Emergency Stop Signal:
20. Present weather and wave conditions are within the agreed limits.					A R	Wind: Waves:
21. Sufficient fendering is in place. The fenders have been checked and have been found to be in good working order.					A	Metal to metal contact is to be avoided at all times.
22. The LNG bunker vessel and the receiving ship are securely moored using none wire moorings lines.						
23. There is a safe means of access between the ship and the LNG bunker vessel.					A	
24. External doors, portholes and accommodation ventilation inlets are closed as per operation manual.						
25. The gas detection equipment has been properly calibrated for natural gas. It has been tested and found to be in good working order.						
26. Material Safety Data Sheets (MSDS) for the LNG product have been exchanged.						

I. PART C: PRE LNG TRANSFER CHECKLIST

Check	Ship	Bunker vessel	Terminal	Energy Harbour Port Officer	Code	Remarks
27. Smoking rooms have been nominated and smoking restrictions are being observed.						Nominated smoking room on receiving ship: Nominated smoking room on bunker vessel:
28. Naked light regulations as defined in the operations manual are being observed and all terminal lightning and cables shall be switched off in a way of that the lights are totally powerless in the bunker area. (This is not applicable if equipment is EX-proof). Remote electrical cabinets on quay deck has to be totally powerless.						
29. The main radio transmitter aerials are earthed and radars are switched off or are configured as per operations manual.						
30. Fixed VHF/UHF transceivers and AIS are switched off or are configured to the correct power mode as per operations manual.						
31. Sufficient suitable protective clothing and equipment is ready for immediate use.						
32. Fire hoses and fire-fighting equipment on board the ship and LNG bunker vessel are ready for immediate use.						
33. The water sprinkler system has been tested and is ready for immediate use.						
34. All scuppers in the LNG bunker area are open. Spill containment arrangements are of an appropriate volume, in position, and empty.					R	
35. Initial LNG bunker line up has been checked. Unused connections are closed, blanked and fully bolted.						
36. LNG bunker hoses, fixed pipelines and manifolds are in good condition, properly rigged, supported, properly connected, and certified for the LNG transfer.						
37. Re-liquefaction or boil off control equipment is found to be in good working order.						
38. The vapour connections are properly connected and supported.						If applicable.
39. The system and method of electrical insulation has been agreed upon between the ship and LNG bunker vessel. The LNG bunker connection between the ship and the LNG bunker vessel has adequate electrical insulating means in place.					A	
40. A break-away coupling is in place and in good working order.						

I. PART C: PRE LNG TRANSFER CHECKLIST

Check	Ship	Bunker vessel	Terminal	Energy Harbour Port Officer	Code	Remarks
41. All remote control valves and bunker system gauges are well maintained and in good working order.						
42. The ship's bunker tanks are protected against inadvertent overfilling at all times, tank content is monitored at regular intervals and alarms are correctly set.					R	Intervals not exceeding: minutes
43. On both the ship and the LNG bunker vessel the emergency shutdown devices (ESD's), automatic valves or similar devices have been tested, have been found to be in good working order, and are ready for use. The closing rates of the ESD's have been exchanged.					A	Ship: seconds LNG bunker vessel: seconds
44. The LNG specifications have been agreed upon by ship and LNG bunker vessel.					A	E.g. quality, temperature and density of the LNG.
45. Maximum working pressure has been agreed upon by ship and LNG bunker vessel.					A	Max: bar
46. Maximum and minimum pressures in the LNG bunker tanks have been agreed upon by ship and LNG bunker vessel.					A	Max: bar Min: bar
47. Maximum and minimum LNG temperatures have been agreed upon by ship and LNG bunker vessel.					A	Max: °C Min: °C
48. Maximum filling limit of the LNG bunker tanks have been agreed upon by ship and LNG bunker vessel.					A	Max fill: %
49. An overall Contingency Plan is available.						
50. VTS Gothenburg advised on Ch. 13 when: – Commenced pumping – Stopped pumping – Bunkering completed (applicable during offshore bunkering only)						

I. PART D: LNG TRANSFER DATA

Starting temperatures and pressures

	LNG receiving ship					LNG bunker vessel					
LNG tank temperature											°C
LNG tank pressure											bar

DECLARATION

We, the undersigned, have checked the above items in Parts A, B, C and D in accordance with the instructions and have satisfied ourselves that the entries we have made are correct.

We have also made arrangements to carry out repetitive checks as necessary and agreed that those items coded 'R' in the Checklist should be re-checked at intervals not exceeding hours.

If, to our knowledge, the status of any item changes, we will immediately inform the other party.

Ship	LNG bunker vessel	Terminal	Energy Harbour Port Officer
Name	Name	Name	Name
Position	Position	Position	Position
Signature	Signature	Signature	Signature
Date	Date	Date	Date
Time	Time	Time	Time

Record of repetitive checks							
Date							
Time							
Initials for ship							
Initials for bunker vessel							

Guidelines for completing the LNG Bunker Checklist

The joint declaration should not be signed until both parties have checked and accepted their assigned responsibilities and accountabilities. When duly signed, this document is to be kept at least one year on board of the LNG receiving vessel.

II. AFTER LNG TRANSFER CHECKLIST

Check	Ship	Bunker vessel	Terminal	Code	Remarks
51. LNG bunker hoses, fixed pipelines and manifolds have been purged and are ready for disconnection.				A	
52. Remote and manual controlled valves are closed and ready for disconnection.				A	
53. Energy Harbour Port Officer have been notified that LNG bunker operations have been completed on VHF Ch. 12.					Time notified: hours
54. The terminal has been notified that LNG bunker operations have been completed.					Time notified: hours
55. Vessels in the direct vicinity have been informed that LNG bunker operations have been completed.					N/A
56. Near misses and Incidents have been reported to Energy Harbour Port Officer.					Report nr:

DECLARATION

We, the undersigned, have checked the above items in accordance with the instructions and have satisfied ourselves that the entries we have made are correct.

Ship	LNG bunker vessel	Terminal
Name	Name	Name
Position	Position	Position
Signature	Signature	Signature
Date	Date	Date
Time	Time	Time