



LNG BARGE Master's Marine Services Manual

Emergency Contacts

Contact	External Telephone Number / VHF	Internal
Gate LNG Main Office	+31 (0)181 799 000	1000
Gate LNG Emergency – Main Gate	+31 (0)181 799 001	1001
Gate LNG Security – Main Gate	+31 (0)181 799 035	1035
Gate LNG Control Room	+31 (0) 181 799 020 / VHF 9	1020
Gate LNG SHEQ Advisor	+31 (0)181 799 024	1024
	Mobile +31 (0)6 1243 5062	
Gate LNG PFSO = Marine Supervisor	+31 (0)181 799 023	1023
	Mobile +31 (0)6 1277 5202	
	email peter.jan.capello@gateterminal.com	
Shipping mailbox	email shipping@gateterminal.com	
Gate LNG Shift supervisor Operations	+31 (0)181 799 022	1022
	Mobile +31 (0)6 2352 7519	
Duty Manager	Mobile +31 (0)6 2007 1058	
Immigration	+31 (0)88 964 27 20	
	email rotterdam@dutch-immigration.nl	
Port Security Officer (PFO)	+31 (0)10 252 18 27	
Port – Harbour Coordination Center (HCC)	+31 (0)10 252 10 00/ VHF 14	
HCC (Emergencies, ordering tugs, boatmen)	VHF 11	
HCC (listen out when alongside)	VHF 19	
Port – Vessel Traffic & Operations	+31 (0)10 252 10 00 / VHF 19	
Rotterdam – Rijnmond Seaport Police	+31 (0)88 964 27 20	
Rotterdam Police / Fire / Ambulance	+31 (0)10 252 10 00 / VHF 11	

DISCLAIMER:

For information purposes only, no right can be claimed, no responsibility for errors, subject to change without notice

TABLE OF CONTENTS

1. INTRODUCTION.....	5
1.1. Statement of purpose	5
1.2. Scope of application	5
1.3. References.....	5
1.4. Definitions.....	5
2. PORT OF ROTTERDAM.....	7
2.1. Port Description	7
2.2. Port Location	7
2.3. Port Metocean Environmental Data	7
2.4. Documentation Required by PoR aboard Inland Barges	10
2.5. Emergency / Safety.....	11
2.6. LNGC Maintenance and Repairs.	12
2.7. Stores and bunkering.....	12
2.8. Port Traffic Control – Vessel Traffic Service (VTS):	13
3. TERMINAL INFORMATION	14
3.1. Terminal Description	14
3.2. Terminal Specification Overview	14
3.3. Terminal & Berth Location.....	15
3.4. Terminal Policies	16
3.5. Gate Pre-Arrival Procedures	20
3.6. Mooring / Berthing the Inland Barge.....	21
3.7. Gangway Setting.....	22
3.8. Ship / Shore Communications	22
3.9. Ship / Shore Interface Meeting or Pre-Cargo Operation Meeting.....	22
3.10. Loading Preparation.....	23
3.11. Cargo Arms Connection.....	23
3.12. Cargo Operation	24
3.13. Unscheduled Cargo Operation Stoppage.....	24
3.14. Cargo Completion.....	24
3.15. Un-berthing.....	25
3.16. Gate Terminal loading Sequence of Events.....	25

4. APPENDICES	26
4.1. Appendix A – Adverse Weather Policy:	26
4.2. Appendix B – Inland Barge Contact Information	27
4.3. Appendix C – Safety and Admission Policy for LNG Carriers (Yukon haven, Jetty 3)	28
4.4. Appendix D1 – Notice of Arrival Information	29
4.5. Appendix D2- Notice of Readiness.....	30
4.6. Appendix E – Personal Protection Equipment (PPE).....	31
4.7. Appendix E2 – Cargo Information Notice (also known as Notice of Departure).	32
4.8. Appendix F – Emergency Alarms	33
4.9. Appendix G – Firefighting Equipment / Capabilities.....	34
4.10. Appendix H – Jetty 3 Berth Arrangement Details	35
4.11. Appendix H-1 Jetty 3 typical Mooring plan	37
4.12. Appendix H-2 – Flange Details (10 inch ANSI B16.5)	38
4.13. Appendix H-3 Jetty 3 Cargo Arm Details	39
4.14. Appendix H-4 – Jetty 3 Cargo Arm Operating Envelope.....	40
4.15. Appendix I – Jetty 3 Ship / Shore Communication Details.....	41

1. Introduction

1.1. Statement of purpose

This manual brings together relevant ship/shore and general Rotterdam Port information for Liquefied Natural Gas (LNG) barge activities at the Gate LNG Terminal

1.2. Scope of application

This document does not replace any of the formal Port or Terminal procedure, but merely highlights some key information. For Marine issues the Skipper is advised to contact the Marine Supervisor at Gate Terminal.

The matters addressed in this manual are subject to contracts between Gate and its customers, Rotterdam Port regulations, and regulations issued by international organizations. Skippers using this manual are obliged to make sure they have the latest versions of these regulations at their disposal and may not rely on this manual for the correct version of any applicable laws, regulations or international standards or practices. Skippers are also obliged to make sure they are in compliance with all health, immigration, notification and customs requirements.

1.3. References

- (a) ADN (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)
- (b) Hydro meteo informatiebundel nr 4 hmb2012
- (c) ISPS Compliance
- (d) ISGINTT (International Safety Guide for Inland Navigation Tank-barges and Terminals)
- (e) 2010 Rotterdam Port management Bye-laws
Port Bye-laws 2010 (version March 2018)
- (f) SIGTTO "Liquefied Gas Handling Principles on Ships and Terminals"

1.4. Definitions

- ADN – Accord Européen relative au transport international des marchandises Dangereuses par voie de Navigation
- ASD – Azimuth Stern Drive
- Barge Representative – Barge Skipper or his appointed designee
- BCM – Billion Cubic Meters
- Cold Work – Repairs not involving and with no risk of fire or sparks.
- EBB – Electronic Bulletin Board
- ESD – Emergency Shutdown System
- ETA – the estimated time of arrival at the Gate Terminal.
- ETD – Estimated Time of Departure
- Gate – Gate terminal B.V.
- GGD – Municipal Health Services of Rotterdam
- GMT – Greenwich Mean Time
- HCC – Harbour Coordination Center
- HMRC – Harbour Master's Reporting Center
- HoH – Hook of Holland

- Hot Work – Work involving or may lead to a sources of ignition or temperatures sufficiently high to cause the ignition of a flammable gas mixture. This includes but is not limited to work requiring the use of welding, burning or soldering equipment, blow torches, power-driven tools, portable electrical equipment, sandblasting, or internal combustion engine.
- ISGINTT – International Safety Guide for Inland Navigation Tank-barges and Terminals
- ISPS – International Ship and Port Facility Security Code
- LNGC – LNG carrier or ship capable of transporting LNG
- MOT – Maasvlakte Oil Terminal (adjacent to Gate LNG Terminal)
- BMMSM – this BARGE Master's Marine Service Manual
- mLC – Meters of Liquid Column
- mT – Metric Tonnes
- NA Peil – a bench mark in brass in the centre of Amsterdam, which is currently close to mean sea level at the Dutch coast.
- N2 – Nitrogen Gas
- Operator – Gate LNG Terminal
- PERC – Powered Emergency Release Coupler
- PoR – Port of Rotterdam
- PPE – Personal Protection Equipment
- Reasonable and Prudent Person – a person exercising the degree of skill, diligence, prudence and foresight which would reasonably and ordinarily be exercised by an experienced person complying with all applicable laws and international standards and engaged in the same type of undertaking under the same or similar circumstances and conditions;
- RSP – Reglement Scheepvaartpersoneel op de Rijn
- Terminal – the Gate LNG terminal
- Terminal's Representative – Marine Supervisor or his representative
- VT&O – Vessel Traffic & Operations
- VTS – Vessel Traffic Service

2. Port of Rotterdam

2.1. Port Description

The Port of Rotterdam is the main port of Europe and the fourth largest port in the world. The Port has calls from 30,000 seagoing vessels and 120,000 inland barges carrying over 470 million tons of cargo each year (2018). The Port operates 24 hours a day, 7 days a week and provides facilities for cargo handling, storage, and distribution. Nautical services for pilotage, towage and linesmen are also readily available as are facilities for ship repair, maintenance and storage. The Port has 8 active patrol boats and 2 on standby at all times. 8 Patrol boats have firefighting capabilities. For more information on the Port of Rotterdam, visit the website:

<http://www.portofrotterdam.com/EN/Pages/default.aspx>

2.2. Port Location

The Port of Rotterdam is situated at the entrance of the Nieuwe Waterweg River (Coordinates 52°00.0'N, 004°00.0'E) and extends from its North Sea approach approximately 40 km further inland to the River Merwede (Rhine).

2.3. Port Metocean Environmental Data

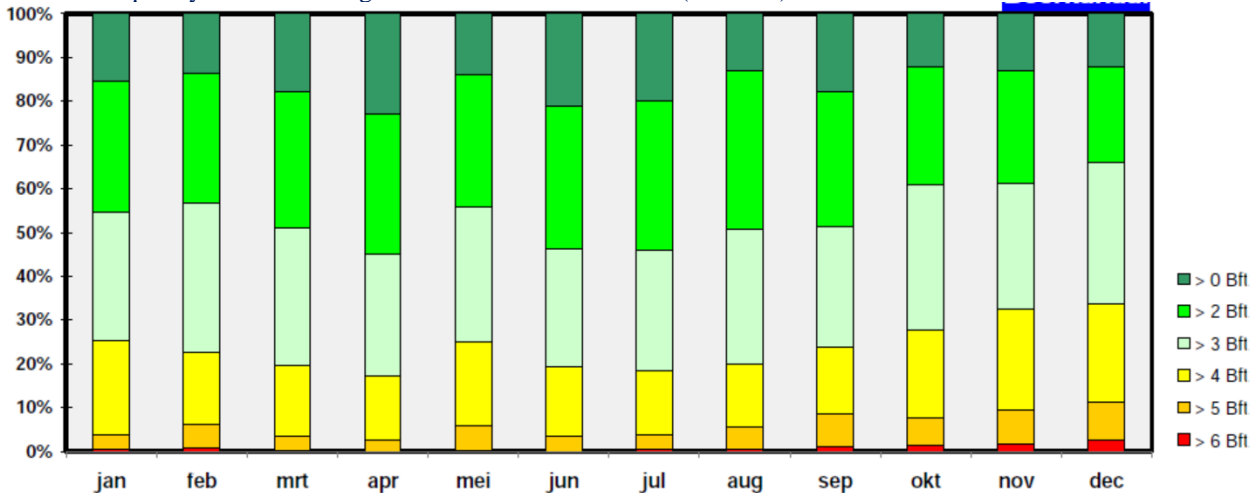
For general information regarding existing weather, tides, current, sea conditions, fog, ice, etc.

2.3.1 Wind – Measured at Gate terminal

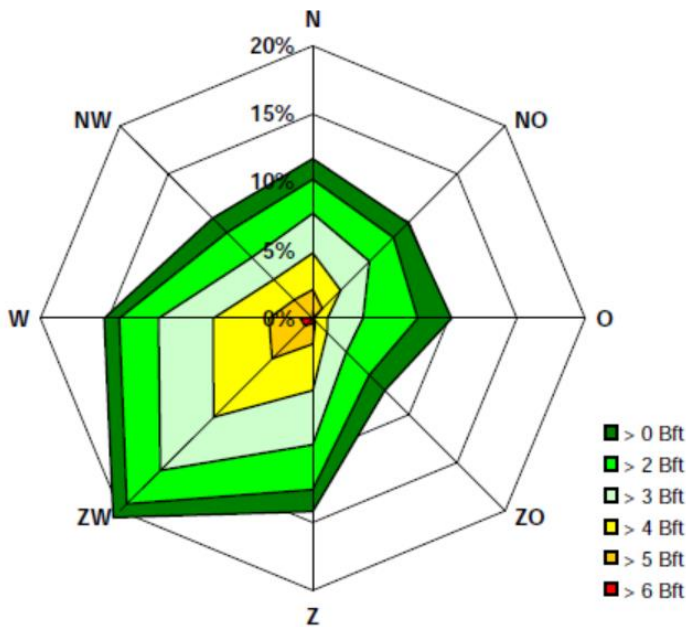
Prevailing wind from the W-SW at Beaufort Force 3 – 5 (3.4 – 10.7 m/s)

Relative frequency of wind force greater than Beaufort Force 6 (13.8 m/s): 3%

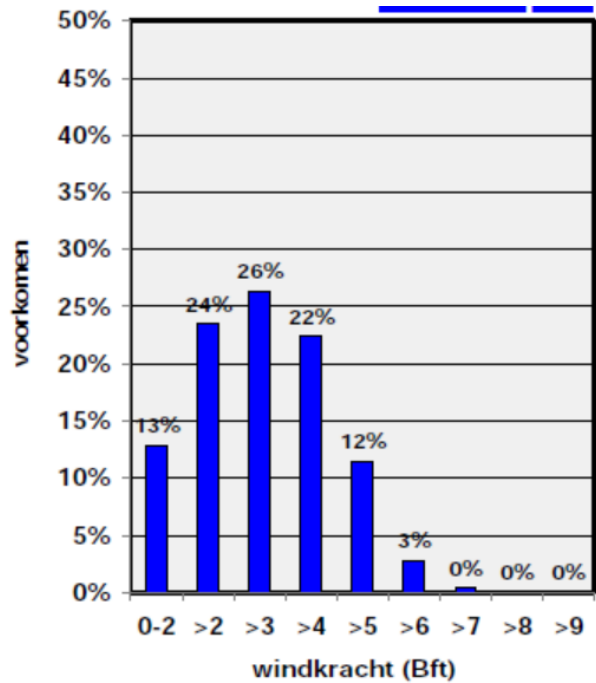
Relative frequency of wind force greater than Beaufort Force 7 (17.1 m/s): 0%



Cumulative spread per month in terms of percentage



Cumulative spread per direction in terms of percentage



2.3.2 Tides

Average water levels at Hook of Holland (Reference is NAP)

	Low	High
Dead tide	-38 cm	75 cm
Mean tide	-39 cm	126 cm
Spring tide	-55 cm	153 cm

Extreme water levels measured:

High water: +288cm (28 Jan 1994)

Low water: -184cm (12 Mar 1996)

2.3.3 Currents

The currents in the Yukonhaven (along our jetty 3) are negligible however passing vessels in the Yangtze channel might cause surge depending on the passing distance, speed and draft.

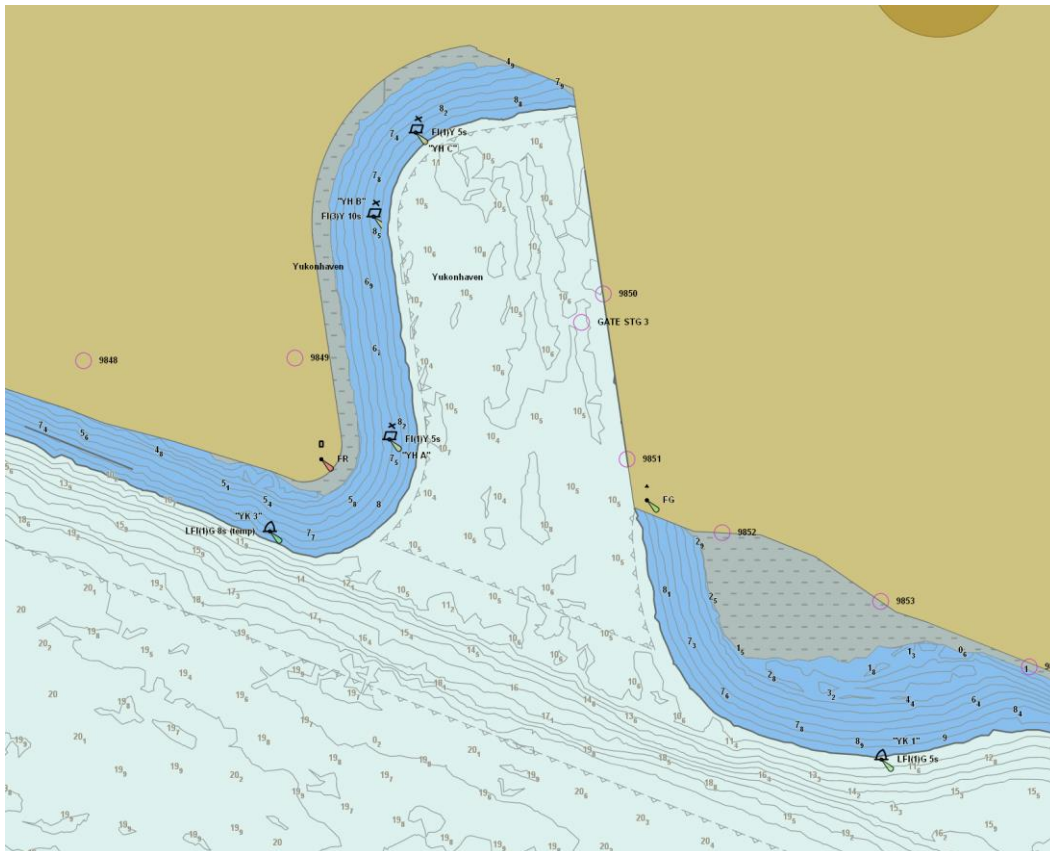
2.3.4 Water Density

General range near Europoort from 1025 kg/m³ at high water to 1012 kg/m³ at low water (depending on seasonal, tidal and other influences). Additional information may be obtained via Harbour Master's Office.

LNG BARGE Master's Marine Services Manual

2.3.5 Water Depth

10.0 meters alongside Jetty 3 at NAP.



2.3.6 Wave Data

Operational Conditions:

The frequency of exceedance of the different wave heights in the LNG channel for the jetties is calculated with a wave model.

For jetty 3, which is situated at a sheltered location, swell is nil.

Only locally developed waves can be present. Maximum wave height is approx. 0.5m for the 7Bft. condition.

2.3.7 General Weather

(1) Air and Water Temperatures

Air temperatures are relatively mild, due to the proximity of the Atlantic Ocean, with an absolute daily maximum summer temperature reaching 35°C and a relatively mild winter climate with an absolute daily minimum temperature reaching -15°C

	Air temperature characteristics			Water surface temperature characteristics		
	Average °C	Average minimum °C	Average maximum °C	Average °C	Average minimum °C	Average maximum °C
Jan	3.4	0.7	5.7	4.7	-0.1	7.2
Feb	3.4	0.3	6.3	4.7	-0.5	7.4
Mar	6.0	2.3	9.5	6.3	3.1	8.9
Apr	8.3	3.7	12.5	9.4	7.2	11.5
May	12.5	7.4	17.0	13.4	11.1	16.1
Jun	15.0	10.3	19.3	16.9	14.9	19.6
Jul	17.2	12.6	21.5	19.0	16.6	22.2
Aug	17.2	12.4	21.8	19.7	17.7	22.0
Sep	14.5	10.2	18.5	17.8	16.0	19.9
Oct	10.8	7.1	14.3	14.3	11.6	16.6
Nov	6.8	3.8	9.4	10.0	8.1	12.0
Dec	4.5	1.9	6.9	4.7	-0.1	7.2

(2) Atmospheric Pressure, Humidity, Rainfall, Wind

The following table provides a summary of the general weather conditions registered in Rotterdam over the period 1971–2000

	Winter	Spring	Summer	Autumn	Year
Barometric pressure in HPa	1015.7	1014.8	1016.3	1015.1	1015.5
Relative humidity in %	88	81	80	86	84
Relative humidity in % at 12:00 UTC	85	71	68	78	76
Rainfall in mm	193.0	158.6	205.2	258.7	815.5
Days of Rainfall	59	56	53	61	229
Wind in m/s	5.7	5.0	4.2	4.8	4.9
Days wind >= 6 Bft (10.8-13.8 m/s)	23	15	6	15	59
Days wind >= 7 Bft (13.9-17.1 m/s)	7	3	0	4	14
Days wind >= 8 Bft (17.2-20.7 m/s)	1	0	-	0	1

(3) Visibility (measured at Hook of Holland)

Visibility is generally good. Rain and fog do from time to time reduce visibility and sometimes obstruct marine traffic

- Frequency of visibility less than 2,000 m is 3.0% of the year
- Frequency of visibility less than 1,500 m is 1.4% of the year
- Frequency of visibility less than 500 m is 0.6% of the year

(4) Ice:

- Navigation from sea to Rotterdam is open at all times

2.4. Documentation Required by PoR aboard Inland Barges

The Port of Rotterdam Authority places importance on complying with rules and regulations. Therefore the vessel could be subject to inspection by inspectors of the Transport and Environmental Safety Department or Port State Control. Because port operations take place around the clock, these inspections take place during day- and nighttime. To ensure a smooth operation, the following documentation and certificates (or certified copies of certificates) need to be available at all times:

For oil/chemical/gas tankers:

- Certificate of Fitness chemical/gas, including product list
- Procedures and arrangements manual
- Cargo record book
- Stowage plan arrival and departure Rotterdam.
- Material safety datasheet('s)
- Bill of lading (Cargo documents)
- Shipping document for bulk liquid cargoes

2.5. Emergency / Safety.

Emergency Contacts

- Incidents and accidents on board: VHF 11 or by telephone (+31-10 252 1000)
- For emergency assistance in the case of an incident or accident on board and to order and to alert the police, fire fighters, ambulances department /ambulance service) or patrol vessel of the Rotterdam Port Authority, you can directly contact Harbour Coordination Centre via VHF 11.
- Inform Shift supervisor via portophone, telephone (+31 181 799 022), mobile (+31 623 527 519) or hotline and/or Marine Supervisor (+31 612775202).
- Details to be reported: name of barge, name and number of berth, nature of calamity.

Emergency Coordination Centre

- In addition to the police department, fire department and the health authorities, the Division Harbour Master is one of the emergency services within the municipal organization for incident response. The emergency coordination center is the Harbour Coordination Center, where the departments of Vessel Traffic & Operations and Transport & Environmental Safety are located together, with direct links to police, fire fighters, and ambulances.

Emergency Scenarios

- If there is a major calamity, the sirens will be activated
- If only a limited area is affected, the public will be informed either by police patrol cars or Port of Rotterdam Authority patrol boats using public address systems
- On the first Monday of every month, the sirens are tested at 11 o'clock
- Should the siren be activated as the result of a technical defect, VHF channel 11 will advise all concerned

Emergency Procedures In Case of Alarm

- Go inside and stay there until further notice
- Close all windows and doors
- Close all air inlets and outlets
- Shut down the air conditioning
- Try to select accommodation that is central, out of the wind, as high as possible, but without ventilation
- Keep wet cloths ready to cover your nose and mouth if necessary
- Do not smoke and avoid exertion so as to limit the use of oxygen
- Render help to others and offer shelter
- Extinguish open fires & boilers, including pilot lights
- Inform other people

- When a barge is underway, maintain a listening watch via the appropriate sector channel.
- Consult the map VTS sector channels on the website
- When a barge is alongside, maintain a listening watch via VHF channel 19

Emergency Procedure in Case Barge has to be evacuated

- Shut down all engines
- Take only the utmost necessities (personal medicines, protective or warm clothing, valuables, passports, money, toilet articles, domestic animals and if possible a portable radio);
- Lock the doors
- The municipality will provide public transport if possible, as will be announced by the patrol cars or boats
- Reception centers will be established for displaced persons
- Sick and disabled people will be transported by ambulance or wheelchair taxis if necessary

Emergency - Spills

- The Port Bye-laws state that all spills have to be reported to Harbour Coordination Centre: VHF 11. Failure to comply with these Bye-laws is punishable by law.
- Details to be reported: name of barge, name of berth, activity or incident.

Emergency - Collisions / Groundings

- On losing anchors or chain, running aground, anchored in port, sunk by collision or in any way out of control or in situations that may endanger the safety of shipping, Harbour Coordination Centre: VHF 11
- Details to be reported: name of ship, position, nature of situation.

2.6. LNGC Maintenance and Repairs.

All maintenance and repairs are prohibited alongside our jetties unless permission is received from both Gate Terminal as the Port Authority

Two types of repairs are distinguished:

- (1) **Cold work** - repairs not involving and with no risk of fire or sparks.

These repairs require a PoR permit from the Harbour Master's Reporting Center if:

- the vessel is temporarily immobilized
- the repairs are performed on a tanker that is or has been loaded with dangerous goods

- (2) **Hot work** - repairs involving or with a risk of fire or sparks

Before starting these repairs, a permit from the Harbour Coordination Center is compulsory

- for all tankers.
- all vessels that are or have been loaded with dangerous goods
- hot work in engine rooms or ballast and other tanks for all other ships
- vessels located in a Petroleum harbour: see berths for the list of Petroleum harbours

2.7. Stores and bunkering.

Stores and Bunkers Over Land - This is not allowed at this Terminal, except for small items which can be carried in one hand
Stores and Bunkers by Barge - Is only allowed:

- after cargo transfer is completed and
- if there is sufficient time left before departure (depending on the planning of the Terminal). Time needed for these operations are on account of the Barge.

2.8. Port Traffic Control – Vessel Traffic Service (VTS):

VTS Area: the Rotterdam VTS area extends for 38 nautical miles seawards of the port entrance to 2 nautical miles east of the Van Brienoord Bridge and 4 nautical miles east of the Spijkenisse Bridge across the Oude Maas River, including all adjacent harbour basins.

3. Terminal Information

3.1. Terminal Description

The Terminal is located on Maasvlakte 2 in the Port of Rotterdam in the Netherlands. The Terminal has an initial throughput capacity of 12 billion m³ (BCM) per annum and will consist of three storage tanks, two conventional ship berths in the Nijlhaven, one small scale berth in the Yukonhaven and a regasification plant. Each tank has a working storage capacity of 180,000 m³ with a total working storage capacity of 540,000 m³. Each storage tank is of full containment design which consists of a metal inner tank, a thick layer of insulation and a concrete outer tank. The conventional ship berths (Jetty 1 & 2) are designed to accommodate LNG carriers between approximately 6,500 and 267,000 m³. The small scale ship berth (Jetty 3) is designed for inland barges and seagoing LNG carriers until 20,000 m³ (40,000m³ in the future). The terminal is designed to unload, load and do transshipments from one jetty to another with or without transfer to shoretanks.

3.2. Terminal Specification Overview

Berth	Jetty 3
Maximum Vessel LOA	180m
Minimum Vessel Length	50m
Maximum Loaded Vessel Draft	7.5m
Maximum Vessel Beam	30m
Design water depth	N.A.P. -10.00m
Water depth at berth	N.A.P. -10.00m
Maximum Approach Speed to Fenders	10cm/s
Maximum Docking Angle	5 degrees
Port's Chart Datum Level	N.A.P. (=L.A.T. + 1.0m)
Dock Water Density Range	1012-1025 kg/m ³
LNG density range	430-480 kg/m ³
Cargo arms – SVT	Three hybrid arms
Cargo arm size	10 Inch
Connectors	10 inch "Quick connect" type hydraulic couplers
Design working pressure	100mLC
Usual terminal working pressure	50 to 250mbar
Emergency release	Yes
Terminal design unloading rate	N/A
Terminal design loading rate	1000m ³ /h
Storage tanks	3
Tank working capacity	3 x 180,000 m ³
Return vapour temperature	
Docking Aid System	Approach distance/velocity/angle meter system
Vessel Collision warning system	Alarm via AIS system
Mooring Line Load Monitoring	Yes (on QRH's only)

3.3. Terminal & Berth Location

The Terminal and berths are located on a 42 hectare site directly to the south of Maasvlakte Oil Terminal (MOT) in Rotterdam, close to the port entrance on the North Sea coast as shown in Figure 1. The coordinates for the Terminal berths are 51°-58.1'N, 004°-04.7'E

Figure 1



The berths physical location is depicted in Figure 2. This location provides easy access for LNG Carriers with all necessary auxiliary and handling facilities available nearby.

Figure 2



3.4. Terminal Policies

3.4.1 General

Responsibilities of the Skipper of an inland barge

Primary responsibility for the safe conduct of operations on board the barge rests with the Skipper. The Skipper should take care that he and all other persons on board whilst on board as well as barge personnel whilst on the premises of the Terminal carefully follow all rules, regulations, formalities, measures and directions given and/or to be given by or on behalf of the authorities and/or Gate.

The Skipper should take care that all agreements made between Gate and persons on board are carefully observed.

All operations on board relative to the inland barge and/or the cargo are to be executed under surveillance of the Skipper, also if such operations are carried out by personnel of Gate.

Inland Barges must be:

- Maintained in class with a member of the International Association of Classification Societies which has prior experience in classifying Inland Barges, and in compliance with all applicable treaties, conventions, laws, and regulations, as well as the requirements of the Inland Barge registry country and of any relevant governmental authority in the Netherlands, which relate to “seaworthiness”, design, safety, navigation, operation, pollution and similar technical and operational matters;
- Staffed with a competent crew, including all key officers and a sufficient number (in accordance with minimum safe manning certificate issued by ship’s flag state and comply with ADN/RSP) of other crew members fluent in both written and spoken Dutch and/or English to be able to coordinate with personnel at the Terminal, and a Skipper, Chief Mate (and such other officers having responsibilities associated with the handling of cargo) who are all appropriately licensed fully conversant with, and experienced in, LNG operations;
- Constructed, safely manned, operated and maintained in compliance with all relevant laws, regulations and standards applicable to it and as would be exercised by a Reasonable and Prudent Person;
- Issued with a EBIS and/or BIRE report (no older than 12 months at time of arrival)
- Inland Barges for Jetty 3 equipped with a near mid-ships manifold, able and strong enough to receive standard 10” loading arm couplers and a manifold elevation over NAP between 1.7 and 22.00 meter.
- Inland barges equipped with adequate facilities , designed in accordance with ADN regulations and ISGINTT guidelines.
- Compatible ship/shore communication links (for telecom and data transfer) based on glass-fibre optic system and/or electric (Pyle 37-pin, SIGTTO 5-pin and/or standard ADN 2-pin) backup (to North Atlantic pin allocation standard) in compliance with international regulations in order to enable the Inland Barge to communicate with the Terminal.

Direct transfer from ship to ship – For any manipulation of goods which is to take place between the Inland Barge and another vessel, prior permission from Gate is required. Even if Gate has allowed this transfer, it will take place under the Skipper’s responsibility and for account and risk of the Skipper and the owner of the Inland Barge and not for account and risk of Gate.

Freshwater - In general, you will order supplies of potable water before arrival. The skipper arrange that the water barge arrives at the right time. No transfer of water to the ship will be allowed while LNG cargo operation is ongoing. Reporting of bunkering fresh water is mandatory upon arrival to the Terminal representative.

Ship’s stores/provisions - must be arranged through the Skipper with proper notification and approval of Gate.

- Small items of stores/provisions which can be carried in one hand may be taken from the Berth via the gangway only after permission from Gate is given.

Bunkering – Not allowed but in special case by case occasions must be arranged through the Skipper with proper notification and approval of Gate and will be delivered by barge.

Water pollution – Unless officially approved, it is forbidden to allow the discharge of substances, in any way or for any reason at the Terminal or into the water.

Waste Management - There are no disposal facilities available at the Terminal.

Barges alongside for fresh water, stores, bunkers, waste etc- not allowed but in case by case situations:

- Only after approval of Gate,
- After the Inland Barge is loaded,
- There is sufficient time left before departure. Any delays due to these operations shall be the responsibility of the ship.

Mooring Winches – All Inland Barges equipped with automatic line tension capability will be set to manual while at the berth.

3.4.2 Inland Barge “State of Readiness”

The Skipper is required to maintain a **general state of readiness**, therefore:

The Inland Barge must maintain sufficient **positive stability** to ensure the safety of the Inland Barge, the Terminal and the cargo operation and to be prepared for an emergency unberthing if necessary by:

- Attempting to maintain zero list while at the Berth;
- Maintaining the appropriate trim at the berth taking into account the depth of water available.

Sufficient Crew must be retained aboard the Inland Barge to ensure the safety of cargo operations and to face any emergency that may occur including, departure from the berth.

Crew Rest - All Inland Barge crew must be suitably rested and fit for duty in accordance with the obligations RSP and “Arbeidstijdenwet / Arbeidstijdenbesluit vervoer” are applicable.

Engine Readiness - Unless prior written approval has been given by Gate, generators, main engines, steering machinery and other equipment essential for manoeuvring must be maintained in standby mode to enable the Inland Barge to use her own engines and steering system at short notice in the event of an emergency un-berthing.

3.4.3 Maintenance and Repairs by Inland Barge at berth

Any repair or maintenance work (either Hot Work or Cold Work) which would impair the safety of the cargo operations (above deck) or the manoeuvrability of the Inland Barge is prohibited. In the event that the Inland Barge experiences any incident while alongside which affects the cargo operations or the manoeuvrability of the Inland Barge, Gate shall be immediately notified. Gate and Inland Barge shall agree on appropriate actions to mitigate any dangers to both parties and the safety of cargo operations.

3.4.4 Fire Prevention and Safety Policies

The following shall be adhered to while the Inland Barge is at the Berth

- Personal Protection Equipment (PPE) - Any Inland Barge crewmember that leaves the vessel for any reason must comply with Gate’s PPE requirements in Appendix E with the exception for off-signers
- The Inland Barge staff must be familiar with all Gate and MOT Emergency Alarm Signals and policies listed in Appendix F.
- The Inland Barge should be familiar with the existence of the Terminal’s firefighting equipment and capabilities which are listed in Appendix G.
- The Inland Barge’s water spray system (deluge) must be on standby at all times, & capable of being pressurized at short notice. All fire hoses fitted with dual jet/fog nozzles in the area of the cargo tanks and manifold area are to be connected to the Inland Barge’s fire main system and led out, ready for immediate use. The Inland Barge’s fire main system must be in line of the ADN regulations.

- All **windows and portholes** of the Inland Barge must remain closed. All external doors except those designated for personnel access must remain closed. Those doors designated for personnel access must be closed immediately after use.
- **Air conditioning intakes** must be set to ensure that the atmospheric pressure inside the accommodation is always greater than that of the external atmosphere. Air conditioning systems must not be set to 100% recirculation, as this will cause the pressure of the internal atmosphere to fall to less than that of the external atmosphere, due to the extraction fans operating in sanitary spaces and galleys.
If at any time it is suspected that gas is being drawn into the accommodation, central air conditioning and mechanical ventilation systems should be stopped and the intakes covered or closed.
- **Portable and fixed electric and electronic equipment** used in the Inland Barge's Hazardous Areas must be of an approved type for such areas and satisfactorily maintained.
- The use of **Naked Lights** is prohibited on board the Inland Barge and in the Terminal.
- **Smoking** in the Terminal is strictly prohibited. On board of Inland Barges smoking is prohibited unless a designated location has at least 2 doors between this room and the deck area.
- The use of **mobile phones** is strictly prohibited in the Hazardous Areas of the Terminal and onboard the Inland Barge, unless of an Ex-approved type. Non-approved types must be switched off. Mobile phones are only to be used in the accommodation area of the Inland Barge with the Skipper's permission;
- **Matches, lighters and any other sources of ignition, including portable electronic equipment** (iPod's, cameras, MP3 players, etc.) are not permitted in the Terminal.

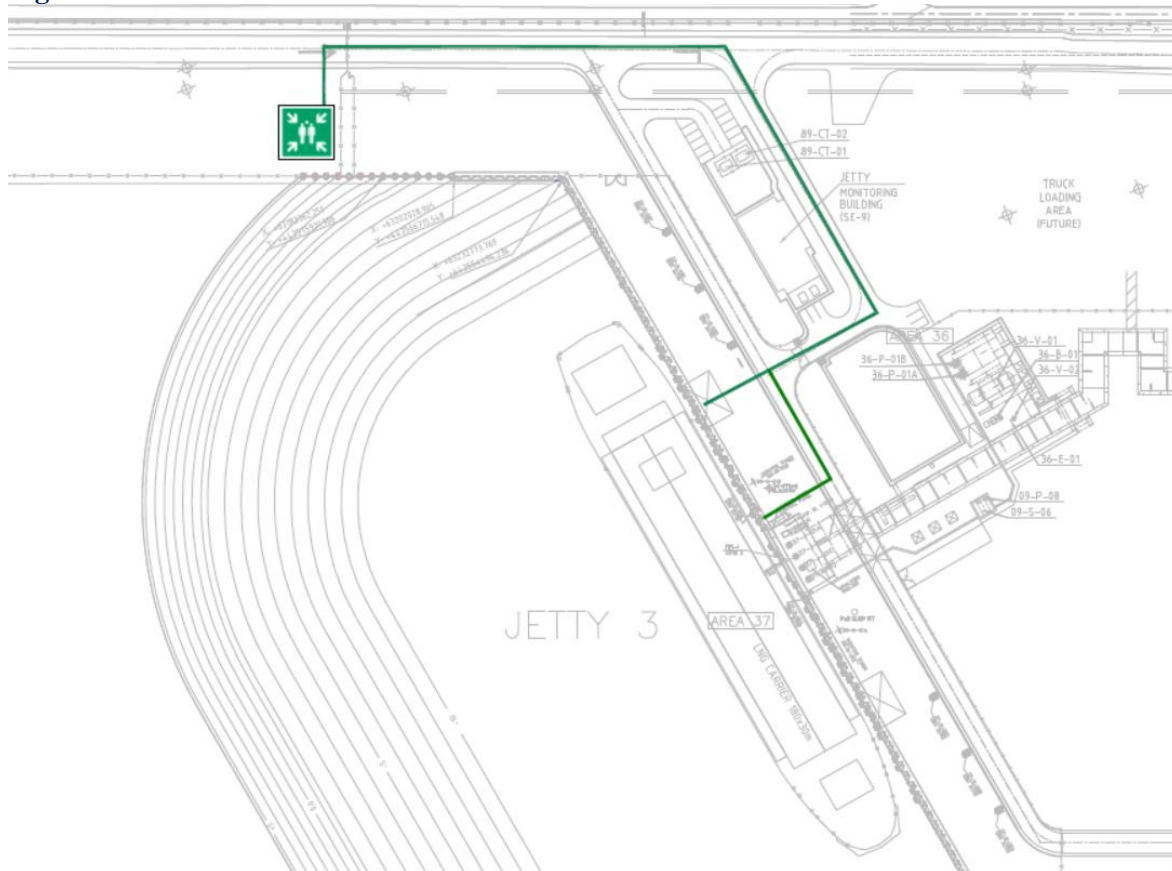
3.4.5 Terminal Security

- Terminal Security and access is the joint responsibility of Gate and the Inland Barge under the International Ship and Port Security (ISPS) Code.
- Evidence of any serious breach, repeated deficiencies, or significant lack of understanding or implementation of the requirements of ISPS Code by the Inland Barge's Crew may result in cessation of cargo operations and rejection of an LNG Tanker and or identified crew members or visitors. Above mentioned issues may be identified via spot checks done by PFSO and/or Deputy PFSO. The incident will be discussed with the responsible person(s) after which a Letter Of Protest can be issued. In addition, all visitors and ship's crew are advised that the taking of pictures/video of the Terminal is strictly forbidden.
- Access to the Terminal is strictly limited to Terminal personnel, the Inland Barge's Crew and approved visitors or contractors.
- The Inland Barge's arrival crew list, including any embarking personnel must be transmitted by email to Gate prior to the Inland Barge's arrival. Inland Barge owner, management personnel, government officers, vendors (unless not specifically approved), and other visitors with a valid reason for entry and who have been pre-approved by the Skipper may also be allowed into the Terminal. The list of visiting personnel should be advised to Gate by email before the arrival of the Inland Barge. Any changes to this list must be communicated to Gate immediately.
- The Terminal requires personal photographic identification (national ID documents) and reserves the right to search all visitors, vehicles and packages entering and leaving Gate's facility. No unaccompanied baggage will be permitted into the facility. Gate reserves the right to board the Inland Barge at any time to ensure that her Security Plan and applicable regulations are being observed.
- Persons on board the Inland Barge being present on the Terminal's premises as well as those who enter the Terminal's premises on request of the Skipper, do so entirely at their own risk, also when this happens with permission by Gate. Gate is never liable for death, injury, damage, loss, fines, costs or other harm incurred by those who set foot on the Terminal's premises.
- Gate reserves the right to refuse entry of personnel, packages vehicles etc. into the Terminal.
- Shore leave for members of the Inland Barge's Crew will be granted in compliance to Gate policies and procedures.

LNG BARGE Master's Marine Services Manual

- Inland Barge Crew that leave the Inland Barge and transit the berth:
 - Must have a valid photographic ID (national ID);
 - Must comply fully with Gate's Security Procedures & all Terminal regulations concerning safety;
 - Must have permission from Gate Security Personnel to transit from the Jetty to the Security gate;
 - May be subject to drugs and alcohol testing at the security gate, failure to participate in sample or positive detection will result in access restriction and notification to the Skipper ;
 - Must walk directly to and from the Security gate upon leaving the Inland Barge;
 - Are responsible to make necessary arrangements for the collection and drop-off of the Crew at the Terminal's Jetty Security gate;
 - Must follow the (PPE Free) Safety Corridor. A painted line is the designated access route for Inland Barge's Crew to enter or leave the berth from the Inland Barge (See Figure 4). Only this area may be transited by the Inland Barge's Crew;
 - Access to the Terminal Jetty and / or the Safety Corridor to the Jetty Security gate will not be allowed during cool-down / warm-up, ramp down / ramp up or connection / disconnection of the cargo arms.
 - At no time is Inland Barge's personnel allowed to enter Gate's or MOT's Main Terminal area.

Figure 4



3.4.6 Other Safety Policies

- **Engine Safety** - the cargo arms may not be connected until the Inland Barge reports to Gate that her main engine(s) is/are off and the turning gear (if present) is engaged. Similarly, main engine warm up may not commence until all cargo arms are clear of the Inland Barge.
- **Cargo Tank Venting** - Under normal operating conditions venting cargo vapors to the atmosphere is not permitted. The Inland Barge shall take all necessary action to prevent such venting. In the event of an emergency situation that requires venting, cargo operation will be stopped. Gate and PoR shall be notified of the emergency.
- **Gas freeing** of any of the Inland Barge's cargo tanks and fuel oil tanks to the atmosphere is prohibited alongside the Berth or in the PoR area.
- **Alcohol and Drugs** - The use of alcohol and drugs are strictly prohibited while the Inland Barge is moored alongside the Terminal. Skippers are advised that operations will cease, if the actions of a person or persons involved in operations are not under proper control as a result of the use of alcohol and/or drugs. Operations will not resume until the matter has been reported to and fully investigated by relevant authorities and the staff of Gate considers it safe to do so. Delay or cancellation in a vessel's departure could result.
 - Access to any part of the Terminal or jetties for a person or persons suspected affected by alcohol and/or drugs will be denied. Gate may carry out testing to determine whether personnel are under the influence of alcohol or drugs while at the Terminal.
- **Manifold Valves** - Gate requires that each Inland Barge has a "double block and bleed configuration" at the manifold to increase safety and to facilitate a timely unloading process. Any Inland Barge not equipped in this manner should notify Gate immediately.
- **Other Activities** - No diving, swimming or fishing is allowed from the jetty, Inland Barge or berth.
- **Grounding** - The electrical ground cable should not be connected with Inland Barge as the cargo arms of LNG receiving terminal are mounted with insulating flanges (SIGTTO).

3.5. Gate Pre-Arrival Procedures

3.5.1 LNG Pre-Arrival Checks

Before a vessel can be nominated, a compatibility study needs to be completed and the loading, unloading vessel must be declared compatible and acceptable for Gate terminal.

Before every first call for vessel a pre-arrival meeting might be scheduled in order to prepare and align all parties involved regarding e.g. arrival conditions, BOG handling, operational tank pressures and loading plan.

The Inland Barge's crew shall perform pre-arrival checks that (at a minimum) comply with the recommendations of ISGINTT, flagstate, company policy etc. Records shall be maintained and made available to the Terminal and PoR when required.

Confirmation of completion of pre-arrival checks and any deficiencies shall be reported to the terminal in the Pre-Arrival Information notice. Any defects which may affect the safety of navigation, berthing or cargo operations must also be reported to the PoR as applicable.

The Pre-Arrival checks will include but not be limited to:

- Cargo Readiness - All necessary preparations for handing cargo need to be completed prior to docking at the Terminal. As a minimum this includes:
 - Having the proper size manifold presentation flange (Appendix H2 for Jetty 3);
 - Manifold flanges inspected and approved for service prior to arrival;
 - Scuppers in place (where applicable);
 - Fire prevention precautions in place;
 - Mooring lines and associated equipment inspected and ready for use;
 - If equipped with a double block and bleed configuration at the manifold: arrive with deck lines warm and empty or pre-cooled and inventoried.

- Necessary documentation is completed and available for review once moored.

3.5.2 Inland Barge Pre-Arrival Notice Requirements:

(1) Cargo Information Notice

For each LNG cargo to be loaded via the Terminal, Gate must receive a email (shipping@gateterminal.com and Peter.Jan.Capello@gateterminal.com) upon departure of the Inland Barge previous port with cargo information. The form of the notice can be found in Appendix E2 and includes important information about the condition of the cargo and cargotanks upon departure and the expected arrival conditions.

If the destination of the Inland Barge after departure from the previous port was changed to Gate terminal, the Cargo Information Notice will be delivered to Gate as soon as possible after such acquisition or diversion.

(2) Notice of Arrival

The Inland Barge is required to provide Gate with a Notice of Arrival by email (shipping@gateterminal.com and Peter.Jan.Capello@gateterminal.com) immediately upon departure from the last port. For Inland Barges the ETA should be given for arrival at Gate terminal. The Inland Barge must also provide updates at prescribed intervals along the voyage so the Terminal may adequately manage all of its activities and commitments. The required form for the initial notice and all updates can be found in Appendix D1. The required update intervals are:

- (a) 12 hours before the then current ETA;
- (b) 6 hours before the then current ETA.

If the destination of the Inland Barge after departure from the previous port was changed to Gate terminal, the Notice of Arrival will be delivered to Gate as soon as possible after such acquisition or diversion and all updates still possible will be delivered on schedule.

(3) Notice of Readiness

A Notice of Readiness shall be issued to Gate by the Inland Barge via email (shipping@gateterminal.com & Peter.Jan.Capello@gateterminal.com) on behalf of Gate's customer minimum 2 hours prior the Inland Barge is moored at Gate terminal Jetty 3 and:

- a) Has cleared the necessary formalities with the Port Authority, Harbour Master and all other relevant authorities and has complied with all necessary customs notification requirements;
- b) Is ready in all respects to proceed to the loading berth at Jetty 3 and commence loading
- c) The form of the notice can be found in Appendix D2 and it will be time-stamped by Gate upon receipt

3.6. **Mooring / Berthing the Inland Barge.**

The berth and cargo transfer systems are designed for LNG carriers/Inland Barges to moor port side alongside, with the vessel's bow facing the sea. This is the preferred mooring pattern for all vessels moored at the Terminal. The maximum approach speed allowed for Jetty 3 is 10cm/s) and the maximum permitted angle between the vessel's side and the berth fender is five (5) degrees. Other mooring criteria are shown in Gate's Adverse Weather Policy (Appendix A).

Jetty 3.

Is designed as a quayside to accommodate small scale LNGC's from 50 – 180m in length and until 20,000m³ in size (210 meter and/or 40,000m³ in the future) and Inland Barges until 135m in length and 10,000m³ in size.

She is equipped with 6 triple quick release hook assemblies for headlines, breast-lines and stern-lines and 2 double quick release hook assemblies for spring lines, see Appendix Ib and I2b.

Each hook assembly is equipped with a motorized capstan and each hook in the assembly is rated at 75t SWL.

Additional there are 20 bollards at 11.15m spacing positioned on the quayside plus 14 bollards recessed into the front of the quay at 2 elevations (NAP+1.7m and NAP+3.2m).

Inland barges and vessels with a length below 115m may use the bollards for their mooring plan.

Inland Barges: Mooring is done by the crew on board the Inland Barge without assistance of line handlers.

The Skipper of the Inland Barge will ensure that all mooring lines used are clean and will not pollute the waters surrounding the Terminal or PoR.

The responsibility for the safe mooring and the tending of mooring lines lies with the Skipper. It is emphasized that care must be given to ensuring that the mooring loads are evenly distributed over the mooring pattern and that no lines are allowed to become slack or over-tight.

Checks are to be made to ensure that tending of the moorings is maintaining the Inland Barge in a satisfactory position within the safe working envelope of the cargo arms (Appendix H3).

3.7. Gangway Setting

On Jetty 3 there is no terminal gangway. Inland barges have to use their gangway to arrange a safe access to/from the terminal. Inland barges may use the vertical ladders located at the waterfront of the jetty.

The gangway will be inspected by the Terminal and the Inland Barge when it is in position and landed. The Terminal and Inland Barge will have to agree that the access provided enables the safe transfer of personnel between the Terminal and the Inland Barge. The Inland Barge is required to ensure proper lighting of the gangway area and her main deck. The Terminal will provide lighting on the Terminal side.

3.8. Ship / Shore Communications

For Jetty 3 a Universal Safety Link is available.

Primary ship / shore communications will be provided by means of a glass-fiber optic link (2 pin or 6 pin) or an electric (SIGTTO 5 pin or Pyle National 37 pin or ADN 2 pin) back-up depending on the Inland Barge's systems. Only the primary or back-up link will be connected, not both. Depending on the selected connection, this link can provide both phone and ESD capabilities. This link will be set immediately after the gangway is landed and deemed a safe access to the Inland Barge. Terminal staff will connect the shore cable, the vessel's crew is not permitted to connect or disconnect the shore cable. It will remain operative until the gangway is about to be removed for un-berthing. The vessel must ensure that the onboard ESD connection is in good condition and clear of any obstructions.

The ESD system shall only be "inhibited" on agreement with the terminal; The terminal will require the ESD system to be inhibited during arm connection / disconnection operations.

Technical details of the Communications/ESD Link may be found in Appendix I for Jetty 3.

The link can allow the following:

Hot line between the Terminal and Inland Barge	Bi-directional
ESD Inland Barge- Terminal	Bi-directional
ESD Terminal – Inland Barge	Bi-directional

All vessels will also be provided with an Intrinsically Safe, portable UHF radio. This radio is for use as communication direct communication to the Terminal jetty operation staff.

The Language that will be used for all communications between the Terminal and Inland barge will be Dutch or English.

Inland barge Communication Systems

The Inland Barge's radars shall be switched off as long as the cargo arms are connected.

Additionally, the Inland Barge AIS unit should also be either switched off at the Terminal or set to a power setting of equal to or less than 1 watt.

3.9. Ship / Shore Interface Meeting or Pre-Cargo Operation Meeting

The procedures set forth in this Barge MMSM have been established to facilitate a safe, pre-planned cargo operation and must be adhered to. The Terminal's Representative and the Inland Barge's Skipper or his designee will hold a pre-Cargo Operation

meeting on board to discuss the loading. The forms referenced here under must be discussed, completed and agreed to, signified by signing prior to cargo loading.

- ADN Checklist.
- VOW Checklist

Before the arms are connected, Gate's Representative will board the Inland Barge and can be accompanied by a representative of Gate's customer for Custody Transfer, mostly a surveyor (if nominated)

The quantity that will be transferred will be based for Custody Transfer on the Inland Barge tanks gauging system. To verify the composition of LNG during cargo transfer, an on-line chromatograph is installed at the Jetty.

3.10. Loading Preparation

As per ISGINTT recommendations, grounding cables are not used as the Terminal cargo arms have insulating flanges.

- For loading an Inland Barge via Jetty 3, 1x10 inch liquid arm with 10 inch 150 lbs ANSI B16.5 flanges and 1x10 inch vapour arm with 10 inch 150 lbs ANSI B16.5 vapour arm will be connected. Loading rate can be up to 1000m³/h
- The Inland Barge is required to:
 - Have in-line Strainers with an ASTM 20 Mesh (nominal aperture of 0.84mm) or ASTM 60 Mesh (nominal aperture of 0.25mm) for each liquid line unless otherwise agreed by Gate. Manifold strainers must be in accordance with the SIGTTO "Recommendations for the installations of Cargo Strainers on LNG Carriers"
- The Inland Barge manifold water curtain shall be started and flow confirmed before the Terminal maneuvers the cargo arms aboard. The water curtain shall remain running continuously until completion of cargo operations & after the final arm has been confirmed gas free and disconnected.
- The arms at Jetty 3 have a special hydraulic clamp system for a 10 inch diameter flange which requires the Inland Barge to have a raised face flange (See Appendix H3). All arms are equipped with a "dry-break" emergency release PERC system that will automatically disconnect (ESD 2 - Emergency Shutdown) when the arm is approaching an over-extension (see Appendix H3).
- In the event where during loading the Inland Barge will consume gas from her cargo tanks, the burnt gas shall be measured and accounted for in accordance with the GIIGNL LNG Custody Transfer Handbook, Fifth edition 5.0, GIIGNL 2017 (section 2.1 "General formula for calculating the LNG energy transferred").

3.11. Cargo Arms Connection

Connecting the arms - Gate is responsible for connecting the arms and the Inland Barge staff may be requested to assist as appropriate. The Terminal will provide the gaskets for connecting the arms as required. The Inland Barge shall ensure that her lines and valves allow for safe connection.

Control and Supervision - At all times the cargo operations must be supervised onboard the Inland Barge by a qualified/certified person appointed by the Skipper. The person so appointed shall maintain communications with the Terminal and the Skipper.

Terminal Personnel - One Operator will be present for the berthing, connection, cool down and disconnection of the Inland Barge.

Cargo Equipment Condition - The Skipper is required to ensure that all the Inland Barge's equipment used in or essential to the safe and efficient cargo operation is properly manned and maintained throughout the cargo operation. Any deficiency that impacts the safety or efficiency of the cargo operation must be immediately reported to Gate.

Cargo Measurement - The Inland Barge is required to conduct initial and final gauging of the cargo tanks prior to the start of and after completion of cargo operation. If the cargotank(s) contain a heel, secondary level gauges must be buoyant in order to compare with primary level gauges, unless agreed otherwise. The Skipper shall ensure that the cargo gauging is done in compliance with the Inland Barge's Custody Transfer Measurement System (CTMS) Manual. Gate and a Representative of Gate's customer can witness the Cargo Gauging and an Independent Marine Surveyor (if present) will certify the results.

3.12. Cargo Operation

Terminal Personnel - One operator will be in attendance at the berth/Inland Barge during cargo operation covering the berth manifold.

Open Vapour Line - Return vapour shall be sent to/from the Inland Barge by the Terminal using gas from its LNG storage tanks. During loading the terminal shall control the return vapour. The vessel must ensure that all vapour flow meter readings are recorded prior to and after vapour transfers with the terminal.

Arm Cool-Down - The terminal shall cool-down the arms at a rate of max 3°Celsius/min by supplying LNG at approximately 2.0 – 3.0 barg to the arm at a reduced flow of approx 50 m³/hr (or less if requested by the inland barge). Inland Barge shall adjust cool-down line pressure/flow at the Terminals direction. The Inland Barge's control of LNG flow and pressure during LNG arm cool-down shall be mutually agreed during the Pre-Cargo Meeting. The terminal will monitor the cool-down and ask the Inland Barge to increase or decrease the LNG pressure as required. Arm cool-down takes approximately 45-60 minutes shore side. The Inland Barge is responsible for ensuring effective cooling down of its pipeline system in a timely manner so as not to delay cargo operations.

Loading Commencement - The commencement of cargo loading shall be mutually agreed between the terminal and Inland Barge. The terminal notifies the Inland Barge of the time it starts the first and subsequent pumps. Additional pumps shall only be started after both have verified its ability to handle the increased rate. At Jetty 3, the maximum loading rate is 1000m³/h. At no time should this rate be exceeded. The maximum bulk rate will be stipulated by Gate during the Pre-Cargo Meeting.

Cargo operation - The Inland Barge and terminal will monitor the loading rate, temperatures and pressures throughout the cargo operation.

Shore Sampling – The terminal will take samples of the LNG and analyze them with its on-line gas chromatograph (located at the Jetty).

Loading Completion - Cargo loading shall stop at the agreed volume received by the Inland Barge (ship's stop).

The Inland Barge shall notify the terminal one hour prior to commencing a reduction of the cargo loading rate. The terminal notifies the Inland Barge of the time it stops a pump.

3.13. Unscheduled Cargo Operation Stoppage.

- If conditions require that cargo operation be stopped, terminal and Inland Barge should endeavour to notify the other party beforehand. If this is not practical, they shall stop cargo operation and communicate the situation to the other as soon as it is practical.
- Cargo operations must be stopped if there is a failure in communication between the terminal and the Inland Barge.
- The terminal reserves the right to delay or stop the cargo operation due to operational requirements of the Terminal.
- Cargo operation Limits - Gate and Inland Barge will monitor the weather and the Inland Barge's motion throughout the cargo operation. If the weather or the Inland Barge's motion endangers the Terminal or the Inland Barge, either side shall stop the cargo operation.
 - The terminal's full Adverse Weather Policy is shown in Appendix A.
- If conditions affect the safety or efficiency of the cargo operation by either side, it shall be communicated immediately to the other.

3.14. Cargo Completion

Draining & Purging cargo arms – Once the vessel's staff confirms cargo operations are completed and manifold valves are confirmed closed, the terminal will be responsible to drain and purge the arms. Complete draining and purging operation will be in close communication and cooperation between ship and shore to prevent unsafe situations.

Once all arms are drained and confirmed to be free of liquid, purge all arms to below 2% methane content in a nitrogen environment, depressurize all arms and start disconnection.

Cargo Arms Disconnection – The terminal is responsible for disconnecting the cargo arms and the Inland Barge's staff may be requested to assist as appropriate. The Inland Barge shall ensure that her lines and valves allow for a safe disconnection. The Terminal and Inland Barge's staff will blind their respective connections after the arms are disconnected.

THE SAFETY OF THE TERMINAL AND INLAND BARGE SHALL BE OF PARAMOUNT IMPORTANCE THROUGHOUT THE INLAND BARGE'S STAY AT THE BERTH.

3.15. Un-berthing

The Skipper is bound to leave the berth and dedicated LNG basin (the "Yukon haven") as soon as possible after termination of cargo operation. The terminal has the right to demand that the Inland Barge be removed from her berth when she deems this necessary for reasons of safety, compliance with safety regulations and/or directions from the harbor authorities or other authorities.

Upon completion of the Post-Cargo Operations Meeting, the terminal will give notice to the Inland Barge that it is ready to disconnect the communication links.

The Skipper will ask permission from the terminal before unberthing and inform PoR via the appropriate VHF channel.

3.16. Gate Terminal loading Sequence of Events

- (1) Mooring / Berthing
- (2) Setting of the Gangway
- (3) Installation of ESD's (Emergency Shutdown System) / Communications links
- (4) Ship / Shore Pre cargo operations Meeting
- (5) Loading Process
 - (a) Start Water Curtain
 - (b) Connect cargo Arms
 - (c) Arm(s) Purging with N2 / Leak Test
 - (d) Initial Gauging (Opening CTS)
 - (e) ESD's test Warm Condition
 - (f) Inland Barge cargo lines (if needed) & Arm Cooling Down
 - (g) Start Cargo operations
 - (h) Sampling Onshore
 - (i) Finish Cargo operations
 - (j) Inhibit ESD
 - (k) Drain Liquid Arms
 - (l) Close Vapour Return
 - (m) Final Gauging (Closing CTS)
 - (n) Purging the Liquid Arms
 - (o) Disconnecting Liquid Arms
 - (p) Purging Vapour Return Arm
 - (q) Disconnecting Vapour Arm
 - (r) Stop Water Curtain
- (6) Disconnection ESD's / Communication Links
- (7) Removing of Gangway
- (8) Un-berthing

4. Appendices

4.1. Appendix A – Adverse Weather Policy:

ACTIVITY at LNG Jetty	WIND (m/s)	SEA (Meter)	ACTION
<p>Berthing: NW - W wind & wave S – SW wind & wave</p> <p>Un-berthing: NW – W wind S – SW wind</p> <p>This is applicable for seagoing vessels only, but can have impact for inland barges</p>	<p>> 13.8 > 13.8</p> <p>> 13.8 > 13.8</p>	<p>> 2.7 > 2.7</p> <p>n.a. n.a.</p>	<p>Berthing suspended (not for inland barges) Berthing suspended (not for inland barges)</p> <p>Departure suspended (not for inland barges) Departure suspended (not for inland barges)</p> <p>Forecasted wind speeds during expected period alongside > 13.7 m/s, then all berthing operations suspended.</p>
<p>Loading LNG alongside Jetty</p> <p>Notes: When mooring loads exceed set alarm levels, and lines cannot be balanced to remove peaks, then cargo operations will stop. If trends in vessel motions indicate ESD 1 limits will be approached, cargo operations will stop. Either action will lead to discussion between Vessel Traffic Controller (PoR), LNG terminal (Gate), Barge's Skipper on necessity to take follow-up measures.</p>	<p>≥ 21 ≥ 17 ≥ 20 > 21 > 17</p>	<p>SWELL 1.0 m 1.0 m 1.0 m 1.0 m</p>	<p>(Swell measured at jetty) Discuss Forecast to STOP cargo operation. STOP cargo operation Disconnect cargo arms <u>Forecasted</u>. Discuss situation with traffic controller and Inland Barge's Skipper. If prognosis is for further deterioration, then: (1) Disconnect cargo arms (2) Remove gangway <u>Actual</u> Discuss situation with PoR Traffic Controller and Inland Barge's Skipper; issues to consider: -</p> <ul style="list-style-type: none"> • additional moorings • ship stability • unberthing Barge
<p>OTHER CRITERIA Electrical Storms In the vicinity or at the Terminal</p> <p>Rolling/Listing Rolling</p> <p>Listing</p>			<p>Applicable to LNG Jetty STOP cargo operations, close all ship tank valves and vents until storm has cleared the Terminal and poses no further threat. STOP cargo operations if vessel rolls 2°, i.e. 1° either side of the upright position, or earlier if discretion dictates. Weather forecast & ships stability to be discussed between Skipper & Vessel Traffic Controller. STOP cargo operations at 3°. Ship to close all cargo valves and take corrective action</p>

4.2. Appendix B – Inland Barge Contact Information

Cargo number	ETA		ETD
Please include International Dialing and prefix number with each contact number			
Organization	Telephone	Fax	Email
Vessel			
Owner			
Vessel's Manager			
Duty Manager			
Charterer			

4.3. Appendix C – Safety and Admission Policy for LNG Carriers (Yukon haven, Jetty 3)

Manoeuvre	Arrival Yukonhaven
UKC Policy	0,50 m static
Size restriction	Vessels max L.o.a. 180 m.
Tidal restriction	N/A
Wind restriction	Max 13,8 m/s (Max 6 Bft)
Visibility restriction	LNG Carriers: 2000 meters at sea, 2000 meters in port
Speed restriction	N/A
Passing requirements	N/A
Tug use	N/A
Berthing requirements	Standard mooring bow out. Mooring with bow in is allowed provided that a quick departure can be realized. Vessels with a length of less than 115 meters can secure their mooring lines on bollards (versus Quick Release Hooks)
Free text option	N/A

Manoeuvre	Departure Yukonhaven
UKC Policy	0,50 m static
Size restriction	Vessels max L.o.a. 180 m.
Tidal restriction	N/A
Wind restriction	Max 13,8 m/s (Max 6 Bft)
Visibility restriction	LNG Carriers: 2000 meters at sea, 2000 meters in port
Speed restriction	N/A
Passing requirements	N/A
Tug use	N/A
Unberthing requirements	N/A
Free text option	N/A

4.4. Appendix D1 – Notice of Arrival Information

Send to shipping@gateterminal.com and Peter.Jan.Capello@gateterminal.com

Pre-arrival information questionnaire		
Question	LNG Carrier	Comments
Name of Inland Barge		
Call Sign		
ENI No.		
Country of Registry		
Name of Master / Skipper		
Name of Owner / Operator (Transporter)		
Total Number of persons onboard		
ETA		
Current position, direction and speed		Optional
LNG consumed since last port		Optional
Last Port of Call		
Confirm that the primary and secondary cargo measurement systems are functioning		
Confirm that all cargo monitoring systems are operational and that void space atmosphere monitoring systems are functioning.		
Anticipated quantity to load		
Distance of manifold vapour connection to stern, bow, and bridge		
Confirm that all moorings are on powered reels but will not be left on 'auto' once vessel is moored		
Anticipated cargo loading rate		
Anticipated loading Time		
Ship's deficiencies that would affect port performance including the need for repairs		
Requirements for nitrogen, fuel, water, stores garbage removal that will be taken from third parties		
Cargo density in KG/M ³		
Cargo Temperature		
Anticipated Saturated Vapour Pressure on arrival		
Ship GSM : Mobile Phone No		
Ship Email:		
MMSI No.		

4.5. Appendix D2- Notice of Readiness.

Send to shipping@gateterminal.com and Peter.Jan.Capello@gateterminal.com

Capacity User	Unloading port:
	Gate LNG Terminal

Dear Sirs,

This is to inform you that the Inland Barge _____, owned by _____ under my command, has arrived at hours, has cleared the necessary formalities with the Port Authority, Harbour Master and all other relevant authorities, has complied with all necessary customs notification requirements and is ready in all respects to commence loading her cargo of LNG.

The pressure of each tank of the Inland Barge is at the moment:

Tank nrs	1	2	3	4	5
Pressure measured at CTS					

Yours Faithfully,

<Date>, <time>
Master

Observations:

Notice accepted by	at Gate Terminal on the
Mr.	Date:
Signature	at ____hour, ____ min

4.6. Appendix E – Personal Protection Equipment (PPE)

Personal Protection Equipment (PPE) - Any Inland barge crewmember that leaves the vessel for any reason must comply with Gate's PPE requirements

Depending on the reason for leaving the vessel we have different policies:

A crewmember leaving the vessel (e.g. for checking the draft fore and aft) needs to wear full PPE*

A crewmember leaving the vessel and is heading for the main gate with the intention to pass the main gate, a PPE free corridor is created which must be followed.

The corridor is clearly marked by colored lines and is heading directly from the jetties to the main gate.

If a crewmember without PPE is noticed outside the PPE free corridor, all shore leaves will be denied, meaning that crewmembers are not allowed to leave the vessel. Further, the matter will be discussed with the responsible persons on board.

*Full PPE means:

- Safety shoes or –boots
- Fire retarding clothes covering body full arm & leg length
- Safety helmet
- Safety glasses
- Life vest

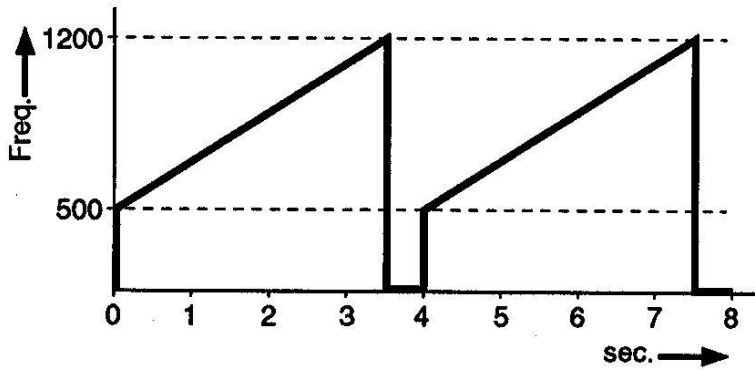
4.7. Appendix E2 – Cargo Information Notice (also known as Notice of Departure).

Info description			Name, Number, Value
Name Capacity User			
Inland Barge name & ENI number			
Cargo ID#			
Last Port			
Last port Departure Time and Date			
Estimated Time of Arrival (ETA) at Gate terminal			
Quantity of LNG loaded in m ³ (total) OR heel (ROB) on board			
Vapour pressure			
Temperature of the liquid			
Quality of the LNG on board			Value
Wobbe Index			
Gross calorific value of LNG			
Density of LNG			
PPM sulfur in LNG			
% of chemical components	Components	Units	Value at Load Port
Methane	CH ₄	% Mol	
Ethane	C ₂ H ₆	% Mol	
Propane	C ₃ H ₈	% Mol	
Iso Butane	i-C ₄ H ₁₀	% Mol	
N-Butane	n- C ₄ H ₁₀	% Mol	
Iso Pentane	i-C ₅ H ₁₂	% Mol	
N-Pentane	n-C ₅ H ₁₂	% Mol	
N-Hexane	n- C ₆ H ₁₄	% Mol	
Nitrogen	N ₂	% Mol	
Oxygen	O ₂	% Mol	
Carbon dioxide	CO ₂	% Mol	
Quantity of LNG to be (un)loaded in m ³ (less fuel & boil off during the voyage)			
Quantity of LNG to be (un)loaded in MWh (less fuel & boil off during the voyage)			
Other remarks (e.g. factors affecting voyage time or unloading rate)			

4.8. Appendix F – Emergency Alarms

Alarms for Gate, MOT, PoR, Etc.

Condition	Description of Signal
Fire & Gas alarm	Audible Alarm slow whoop 3.5sec on, 0.5sec off



Time that Gate alarms will be tested:
 11:00 a.m. local time each first Monday each Month.

Time that MOT alarms will be tested:
 12:00 a.m. local time each first Monday each Month.

Time that Port alarms will be tested:
 12:00 a.m. local time each first Monday each Month.

4.9. Appendix G – Firefighting Equipment / Capabilities

Fire-fighting facilities on the main deck include:

- Two elevated remotely operated monitors near the berthing line (to cover loading arms and Inland Barge manifold)
- Water deluge on the front of loading arm risers
- An international ship/shore connection to allow the connection of a fire hose from the LNG Carrier

Remote firefighting is possible from the Jetty Monitoring Building as well as the Central Control Room.

4.10. Appendix H – Jetty 3 Berth Arrangement Details



Port Side towards berth			
Berth Heading 172° toward seaward			
Channel Width	120 m		
Effective Centre of Fenders below Pier	3 rows cylindrical roll fenders Length 1500mm Outer diameter 1000mm Inner diameter 600mm		
Pier Height above NAP	5.0		
Fender Face/Berthing Line from Jetty face	1.0 m		
Permissible Surge Excursion Fwd/Aft	±3.30 m		
Permissible Sway Excursion Port/Stbd	1.50 m		
Dist of Berth Target to Right of Origin	Arm A+C	Arm A+B	Arm B+C
	0.0 m	-2.50 m	+0.3 m
Dredge Depth Below NAP/ Contractual Depth Below NAP	10.5m / 10.0m		
Wind Speed Specified at 10m Height	Max 30 m/s		
Current Specified at Depth	Negligible alongside Jetty		
Difference between NAP and HHW/LLW	+3.25 m / -2.00 m		

LNG BARGE Master's Marine Services Manual

QRH assembly	37-X-02A	37-X-02B	37-X-02C	37-X-01A	37-X-01B	37-X-02D	37-X-02E	37-X-02F
Dist to Manifold C/L	99.2	79.2	59.2	13.2	-18.8	-64.8	-84.8	-104.8
Dist to Berthing line	21.0	21.0	21.0	2.3	2.3	21.0	21.0	21.0
Height QRH's above NAP	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Hooks	3x75T	3x75T	3x75T	2x75T	2x75T	3x75T	3x75T	3x75T
Berth limit for Hooks vertical angle	+45°	+45°	+45°	+45°	+45°	+45°	+45°	+45°
	-15°	-15°	-15°	-15°	-15°	-15°	-15°	-15°
Inner hooks horizontal angle	-45°/45°	-45°/45°	-45°/45°	-	-	-45°/45°	-45°/45°	-45°/45°
End hooks horizontal angle	-90°/45°	-90°/45°	-90°/45°	-90°/45°	-90°/45°	-90°/45°	-90°/45°	-90°/45°

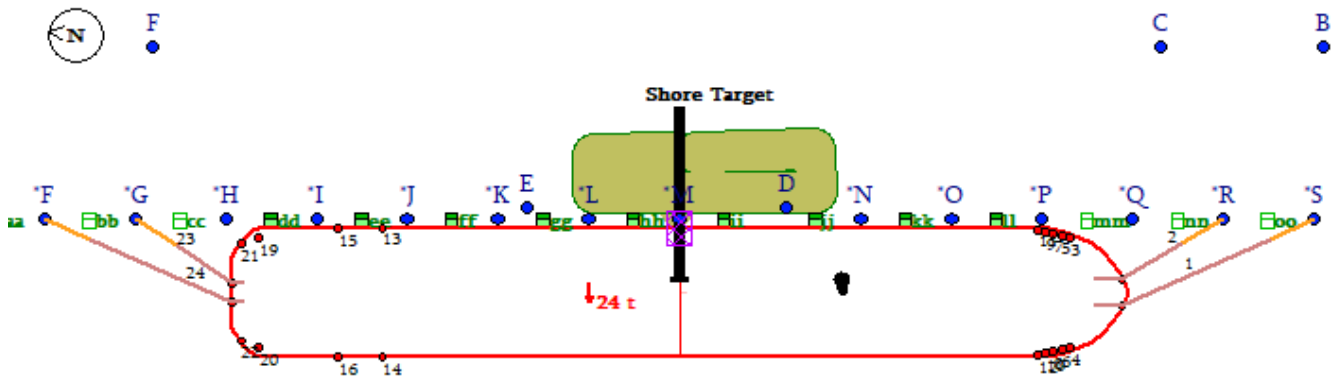
Fender dist to Manifold C/L	83.7	72.55	61.4	50.3	39.1	28	16.8	5,65	-5.5	-16.7	-27.8	-39.0	-50.1	-61.2	-72.4
Height of Fenders C/L above NAP	+3.5	+3.5	+3.5	+3.5	+3.5	+3.5	+3.5	+3.5	+3.5	+3.5	+3.5	+3.5	+3.5	+3.5	+3.5
	+1.5	+1.5	+1.5	+1.5	+1.5	+1.5	+1.5	+1.5	+1.5	+1.5	+1.5	+1.5	+1.5	+1.5	+1.5
	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Fender dimension	1.5 x	1.5 x	1.5 x	1.5 x	1.5 x	1.5 x	1.5 x	1.5 x	1.5 x	1.5 x	1.5 x	1.5 x	1.5 x	1.5 x	1.5 x
	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

4.11. Appendix H-1 Jetty 3 typical Mooring plan

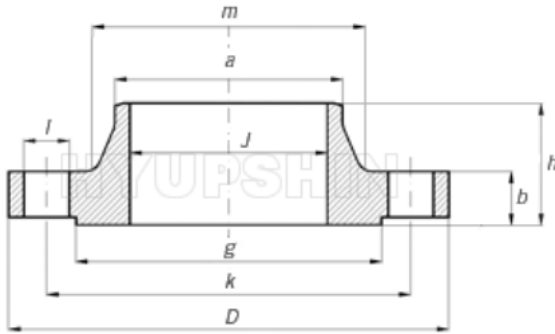
Frontview of Jetty 3 with cylindrical fenders, vertical ladders, bollards and recessed bollards.



Scale |-----| 100 m Static Mode



4.12. Appendix H-2 – Flange Details (10 inch ANSI B16.5)



Welding Neck Flange

ASTM A182 ANSI B16.5
150 lbs sch 10s / 40s / STD

Raised face, smooth finish
(125-250 RMS / 3.2-6.3 μM)

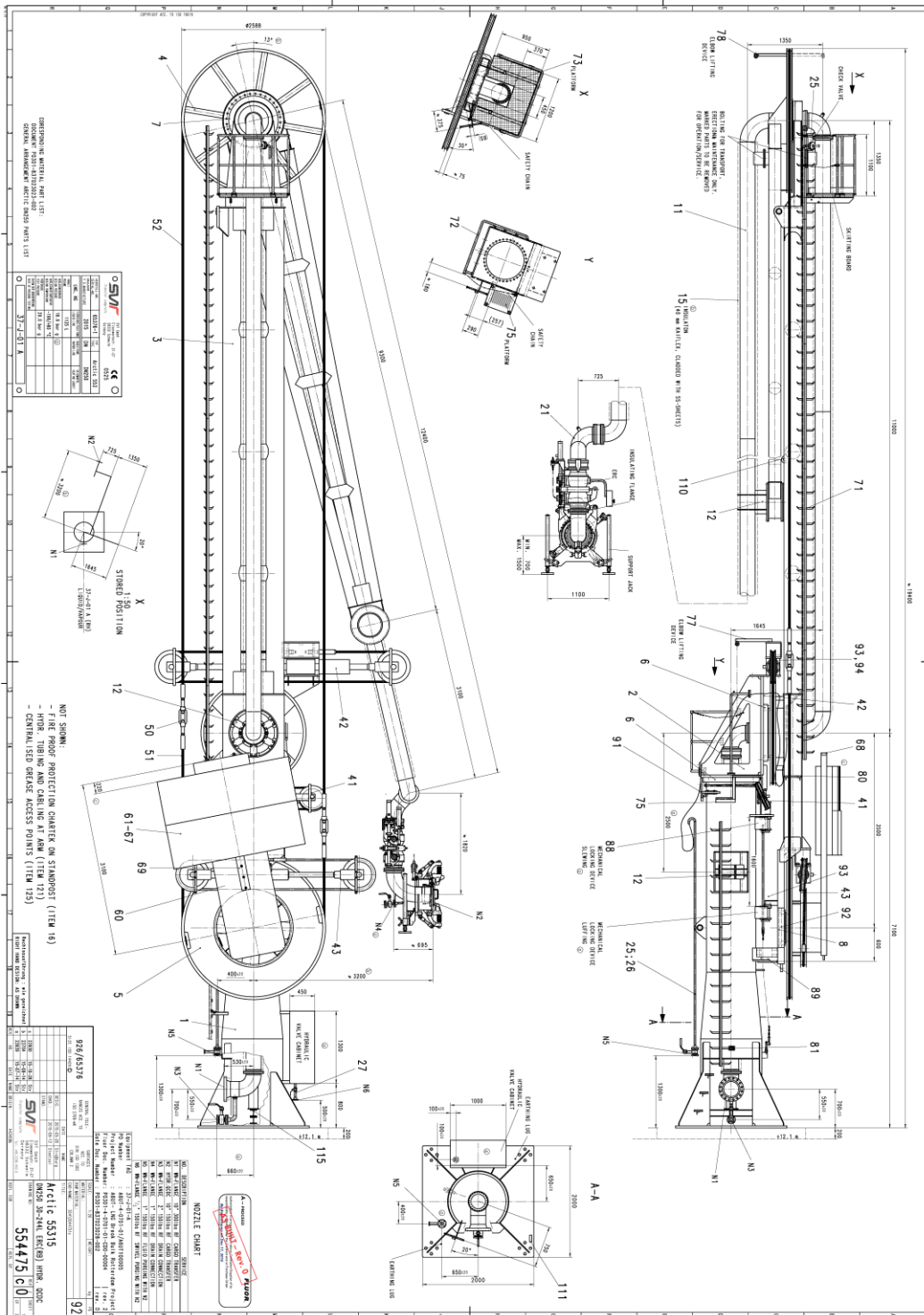
Pipe		Flange				Hub		Raised Face	Drilling Template		
Nom. Size	O.D. mm	D mm	J mm	b mm	h mm	a mm	m mm	g mm	l mm	k mm	No. of Holes
10"	273.0	406.4	254.5	30.2	101.6	273.1	304.8	323.9	25.4	362.0	12

ANSI/ASME B16.5 – 2009 Paragraph 6.4.5.3

Either a serrated concentric or serrated spiral finish having a resultant surface finish from 3.2 to 6.3 μm (125 to 250 $\mu\text{in.}$) average roughness shall be furnished. The cutting tool employed should have an approximate 1.5mm (0.06 in.) or larger radius, and there should be from 1.8 grooves/mm through 2.2 grooves/mm (45 grooves/in. through 55 grooves/in.)

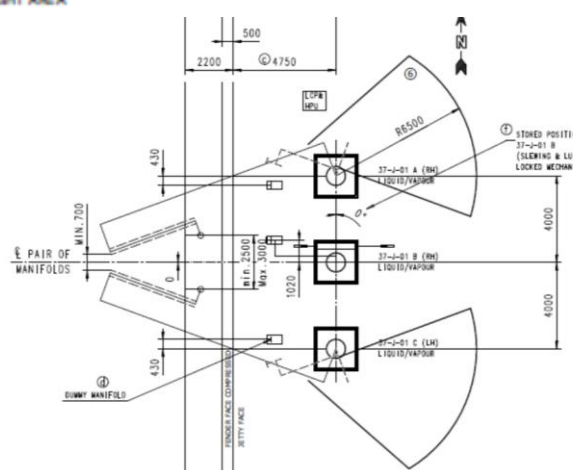
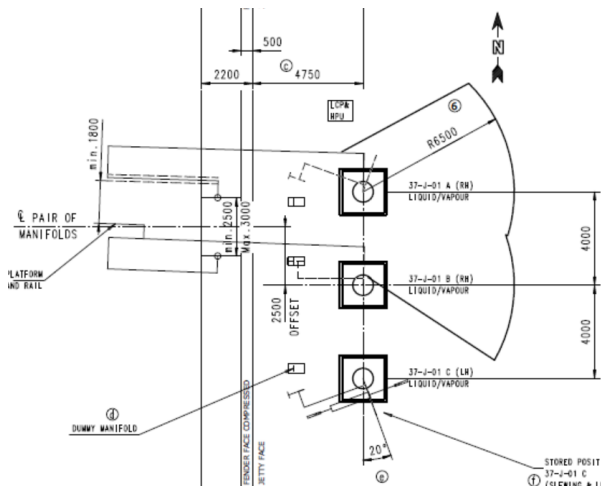
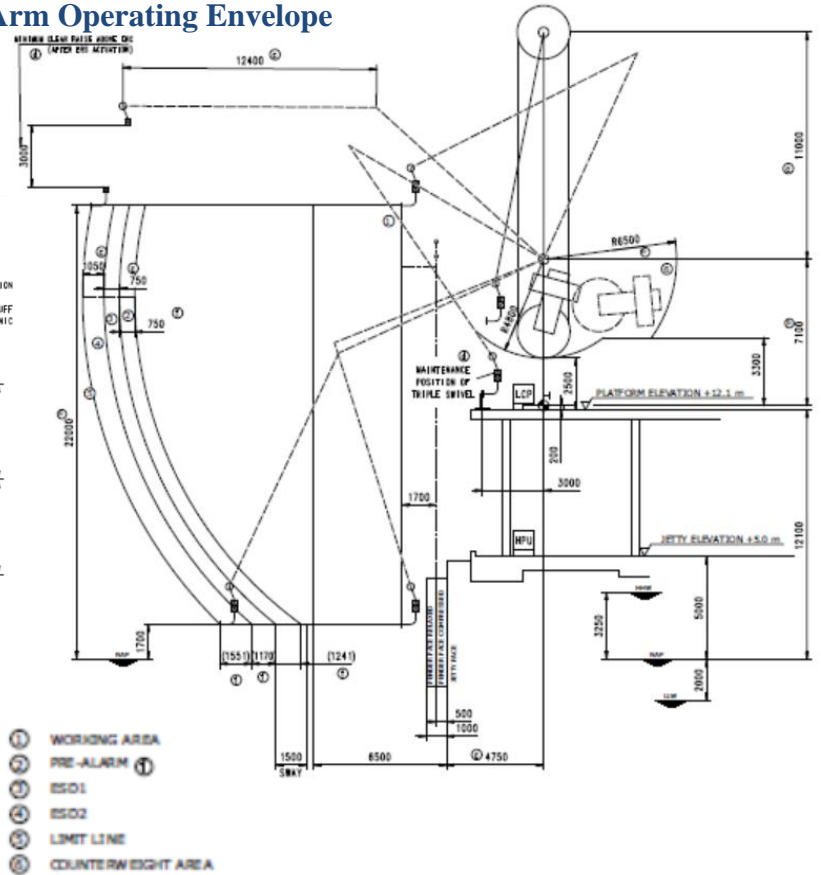
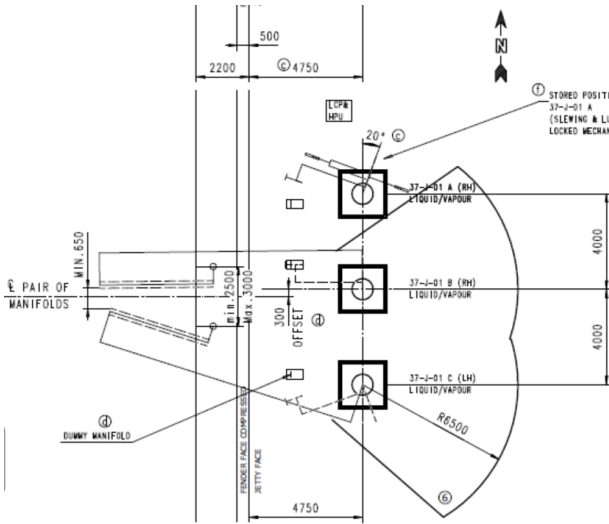
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4.13. Appendix H-3 Jetty 3 Cargo Arm Details



4.14. Appendix H-4 – Jetty 3 Cargo Arm Operating Envelope

Arms 37-J-01-B & C, manifold 300mm South of spotting line



Arms 37-J-01-A & B, manifold 2500mm North of spotting line.

Arms 37-J-01-A & C, manifold at spotting line.

4.15. Appendix I – Jetty 3 Ship / Shore Communication Details

Pyle National Pin and Signal Data

Trelleborg provides both fibre optic and the 37 pin Pyle National electric cable.

Fibre optic cable reel (50 meters) and 6 way shore side connector and receptacle compatible with Furukawa and Seatechnik fibre optic systems.

37 pin Pyle National receptacle with 50 meter cable and compatible plug. **Shore terminal will supply the umbilical cable.**

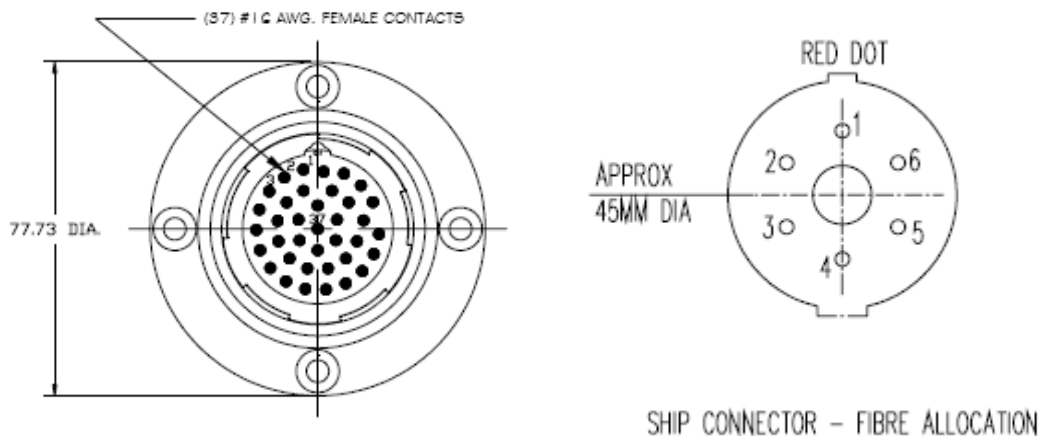
System will conform to EN 1532 standard. **Pyle National Shore PINS:**

- ESD (SHORE-SHIP): 13,14
- ESD (SHIP-SHORE) ESD: 15,16;
- Hotline phone 5,6
- PABX TELEPHONE: 7,8,
- **Public Phone Standard 9-10 ;**

ESDS Link Diagrams -

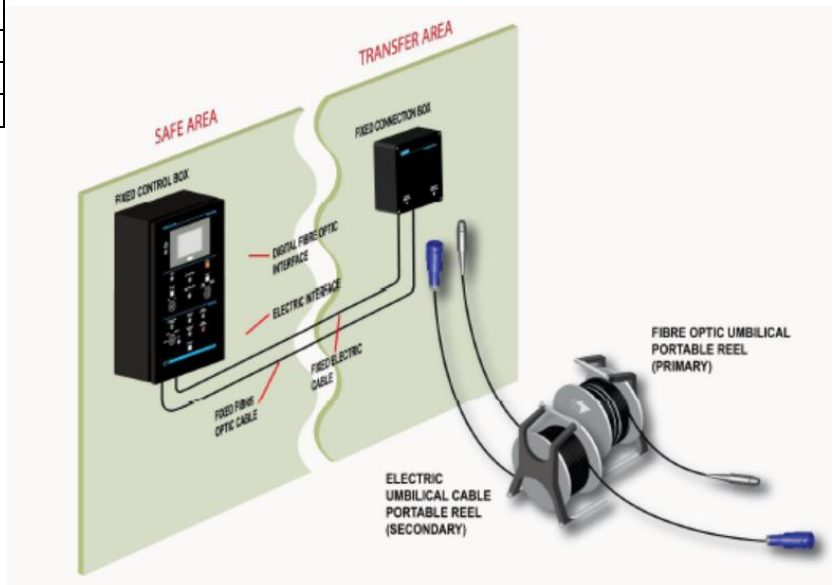
View on receptacle

Type Pyle National Compatible receptacle Contacts numbered in spiral arrangement.



Possible connections via Universal Safety Link (USL)

Electric 37 way cable (50m)
SIGTTO electric 5 way reel (25m)
FO 2 way expanded beam (25m)
FO 6 way (using adapter from 2 way to 6 way)



**ELECTRIC 37 WAY
SSL CABLE REEL
& WEATHER COVER
(WITH 50m
UMBILICAL CABLE)**

