



LNG Carrier Master's Marine Services Manual

LNG Carrier Masters's Marine Services Manual

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	Mobile +31 (0)6 1243 5062	
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LNGC on Jetty 2		2011
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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	

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1. Introduction

1.1 Statement of purpose.

This manual brings together relevant ship/shore and general Rotterdam Port information for Liquefied Natural Gas (LNG) shipping 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 Master 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. Masters 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. Masters are also obliged to make sure they are in compliance with all health, immigration, notification and customs requirements. The PIG Section 4 gives an overview of some of the requirements.

1.3 References.

Hydro meteo informatiebundel nr 4 hmb2012;

IMO "Ship/Shore Safety Check List";

ISPS Compliant;

2010 Rotterdam Port management Bye-laws.

Port Bye-laws 2010 (version March 2018) ;

Safety and Admission policy for LNG Carriers Nijl haven (Jetty 1 & 2) and Yukon haven (Jetty 3);

Safety assessment for the revised routing system in the approaches to Rotterdam II, MARIN , February 26, 2007;

SIGTTO "Liquefied Gas Handling Principles on Ships and Terminals";

SIGTTO "Ship/shore Questionnaire for Compatibility Study of Liquefied Gas Ships with Loading / Unloading jetties", completed with Gate shore data.

1.4 Definitions

Allowed Laytime – as defined in appendix B;

Allowed Unloading Time – as defined in appendix B;

ASD – Azimuth Stern Drive;

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 of that LNG Carrier at the Pilot Boarding Station;

ETD – Estimated Time of Departure;

Gate – Gate terminal B.V.;

GMDSS – Global Maritime Distress Safety System;

GGD – Municipal Health Services of Rotterdam;

GMT – Greenwich Mean Time;

HCC – Harbour Coordination Center;

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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;

IMO – International Maritime Organization;

IOPP – International Oil Pollution Prevention Certificate;

ISGOTT – International Safety Guide for Oil Tankers and Terminals;

ISPS – International Ship and Port Facility Security Code;

LNGC – LNG carrier or ship capable of transporting LNG;

MARPOL (Marine Pollution) – International Convention for the Prevention of Pollution From Ships;

MOT – Maasvlakte Oil Terminal (adjacent to Gate LNG Terminal);

MMSM – this 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;

NoR – Notice of Readiness;

N₂ – Nitrogen Gas;

OCIMF – Oil Companies International Marine Forum;

Operator – Gate LNG Terminal;

P & I – Protection and Indemnity Insurance;

PBS – Pilot Boarding Station;

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;

Ship's Representative – Ship's Master or his appointed designee;

Ship's Agent – Agency nominated by and acting on behalf of the vessel;

SIGTTO – Society of International Gas Tanker and Terminal Operators;

SOLAS – Safety of Life at Sea Convention;

SOPEP – Shipboard Oil Pollution Emergency Plan;

Terminal – the Gate LNG terminal;

Terminal's Representative – Marine Supervisor or his representative;

VT&O – Vessel Traffic & Operations;

VTS – Vessel Traffic Service;

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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 469 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:

<https://www.portofrotterdam.com/en>

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 Safety and Admission policy for LNG carriers.

2.3.1 Nijl haven for Jetty 1 & 2.

This document describes the nautical admission policy for LNG carriers (LNGC's) in the Port of Rotterdam according to the insights to date. See attached as Appendix D1.

In addition to these policies, the Port also:

- Requires a LNGC to moor Bow in, Port side alongside heading NW (337°);

- Have inspections on board moored vessels ensuring that vessels meet (inter)national safety, security and environmental standards;

- Pilot boarding may be suspended when wave heights reach 2 to 2.7 m;

- Have a dedicated anchorage area for LNGC's (see Section 2.20).

All Masters are responsible for verifying and complying with the current Admission Policy for LNGC's prior to arrival at the Port.

2.3.2 Yukon haven for jetty 3.

This document describes the nautical admission policy for LNG carriers (LNGC's) in the Port of Rotterdam according to the insights to date. See attached as Appendix D2.

In addition to these policies, the Port also:

- In general requires a LNGC to moor Bow out, Port side alongside heading South (172°).

- Mooring bow in is allowed provided that a quick departure can be realized;

- Have inspections on board moored vessels ensuring that vessels meet (inter)national safety, security and environmental standards;

- Pilot boarding may be suspended when wave heights reach 2 to 2.7 m;

- Have a dedicated anchorage area for LNGC's (see Section 2.20);

All Masters are responsible for verifying and complying with the current Admission Policy for LNGC's prior to arrival at the Port.

2.4 Port Metocean Environmental Data.

For general information regarding existing weather, tides, current, sea conditions, fog, ice, etc. the appropriate Traffic Center sector can be contacted via VHF channel 11. Online hydrometeo information can be found at the website:

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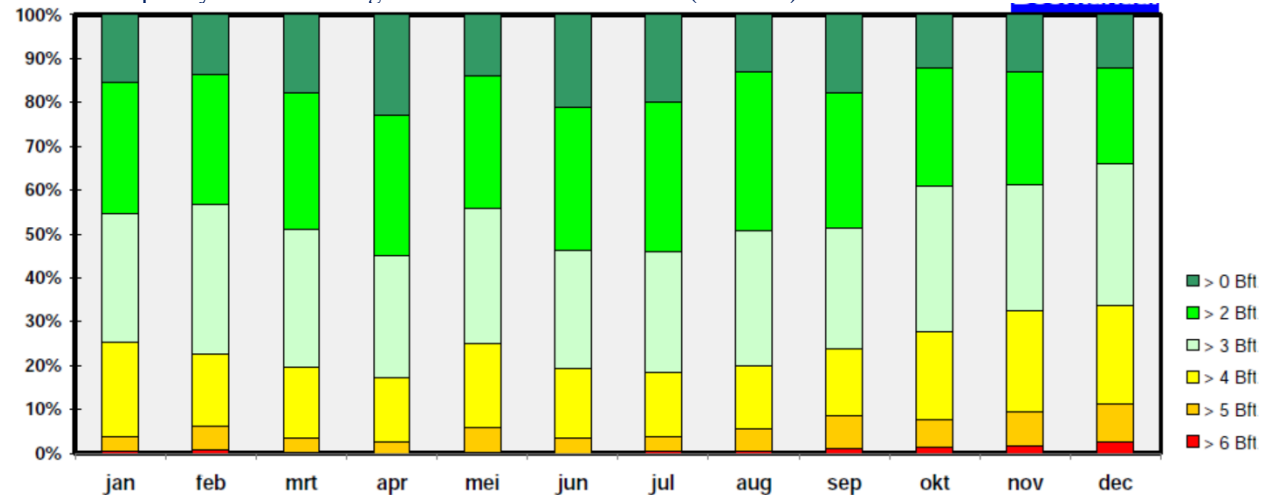
<https://www.portofrotterdam.com/en/shipping/operational-information/maps/hydrometeo-data>

2.4.1 Wind – Measured at Gate terminal.

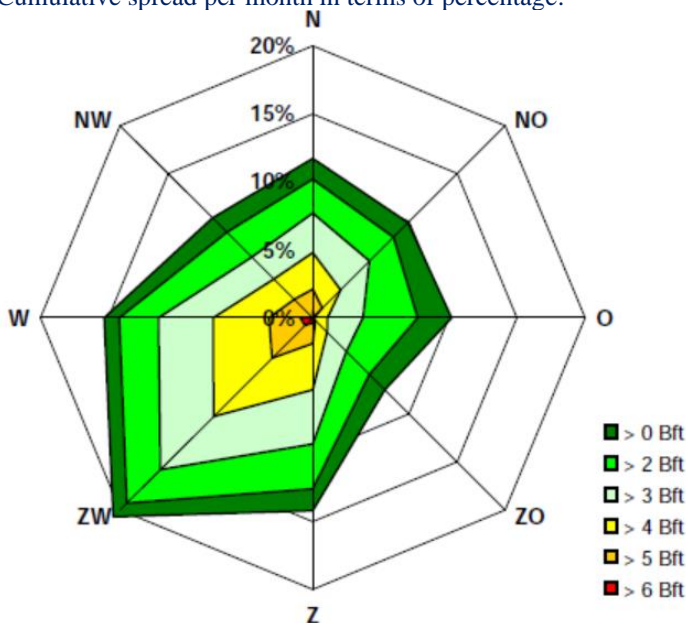
Prevailing wind from the W-SW at Beaufort Force 3 – 5 (3.4 – 10.7 m/s)

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

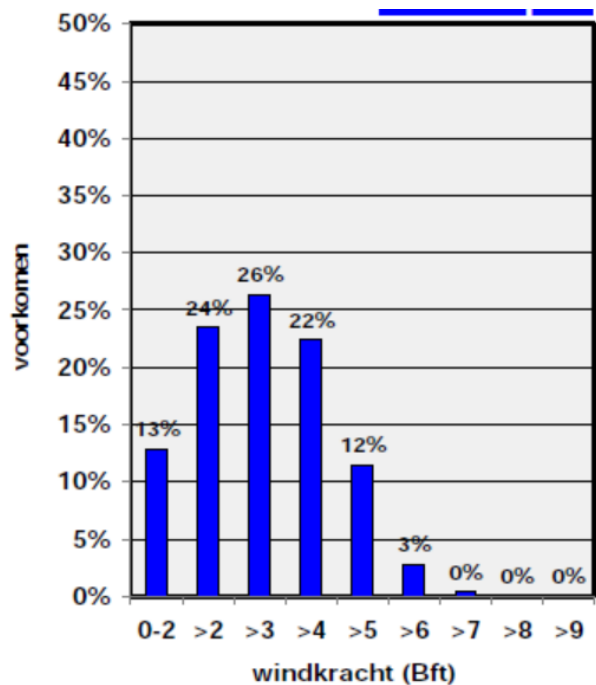
Relative frequency of wind force greater than Beaufort Force 7 (17.1 m/s): 0%



Cumulative spread per month in terms of percentage.



Cumulative spread per direction in terms of percentage.



2.4.2 Tides.

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

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	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)

2.4.3 Currents.

The currents in the Nijlhaven (along our jetties 1 & 2) are as follows.

1.34 m/s = 2.6 kn (springtide flood);

0.49 m/s = 0.95 kn (springtide ebb).

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.

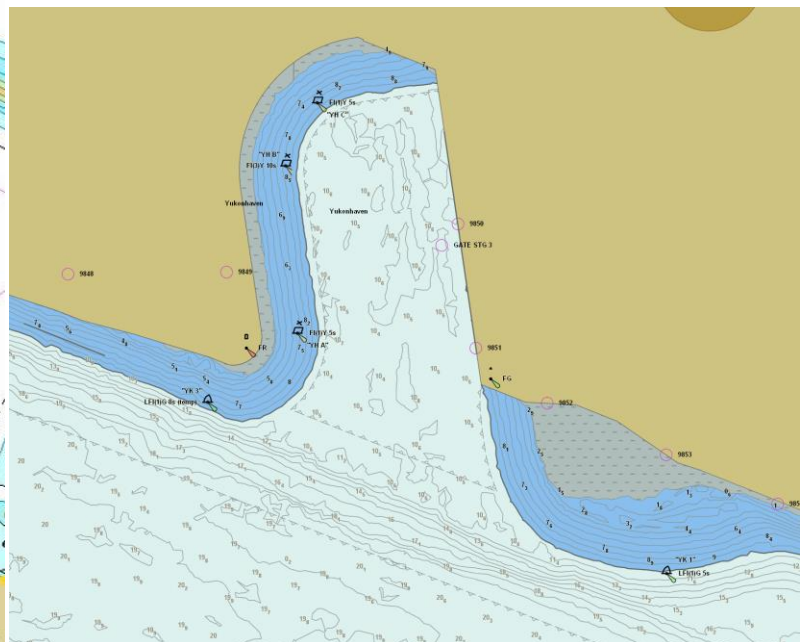
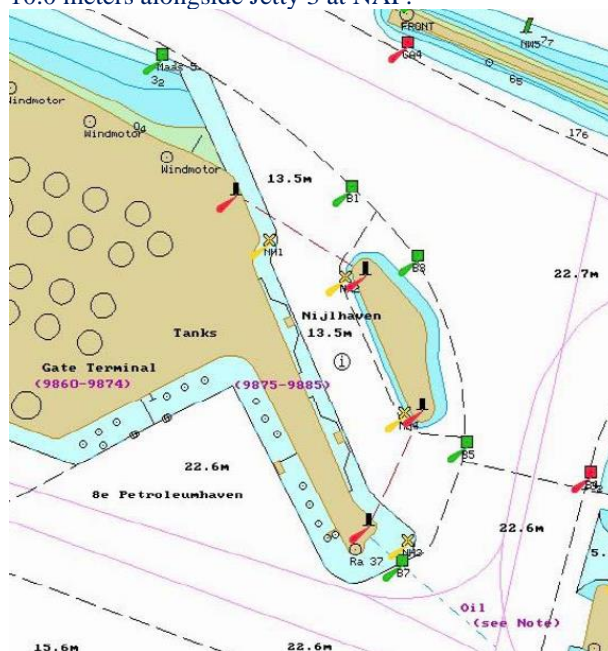
2.4.4 Water Density.

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.

2.4.5 Water Depth.

13.5 meters minimum alongside the Jetties 1 & 2 at LAT (=NAP -1.0)

10.0 meters alongside Jetty 3 at NAP.



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2.4.6 Wave Data.

Operational Conditions:

The frequency of exceedance of the different wave heights in the LNG channel for jetties 1 & 2 is calculated with a wave model and the following table gives a result of these calculations:

Source: Wave Climate LNG terminal Maasvlakte, Sept 15, 2006.

Swell	Exceedance probability swell jetty 1 (1990-2005)			Exceedance probability swell jetty 2 (1990-2005)		
	P (all year)	P (winter)	P (summer)	P (all year)	P (winter)	P (summer)
H=0.2 m	5.35%	8.5%	2.15%	4.22%	6.84%	1.57%
H=0.4 m	1.60%	2.64%	0.54%	1.15%	1.93%	0.37%
H=0.6 m	0.62%	1.09%	0.15%	0.41%	0.73%	0.08%
H=0.8 m	0.24%	0.44%	0.03%	0.13%	0.25%	0.01%
H=1.0 m	0.10%	0.18%	0.01%	0.04%	0.07%	-
H=1.2 m	0.03%	0.06%	-	0.02%	0.03%	-
H=1.4 m	0.01%	0.03%	-	0.00%	0.01%	-
H=1.6 m	0.003%	0.006%	-	-	-	-

The wave direction of the swell entering the LNG channel varies between the main direction of the channel to approximately 25 degrees to the north.

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.

2.4.7 General Weather.

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

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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

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 (when visibility drops below 1 km.)

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.

Ice.

Navigation from sea to Rotterdam is open at all times.

2.5 Port adverse weather conditions.

The weather standards prescribed Nautical admission Policy which prevent an LNGC from proceeding to/from the Gate Terminal are listed below.

Wind:	6 on the Beaufort Scale (13.8 m/s);
Visibility at sea without a Deep Sea* pilot:	2000 m for Jetty 1 & 2. For Jetty 3 no restriction;
Visibility at sea with a Deep Sea* pilot:	2000 m for Jetty 1 & 2. For Jetty 3 no restriction;
Visibility in Port:	2000 m for Jetty 1 & 2. For Jetty 3 no restriction;
Deep Sea pilot will board at Brixham or Cherbourg. These same criteria will also govern whether the LNGC can leave the berth. The Harbour Master may also order changes as needed.	

2.6 Port Tug Requirements / Towage.

Tugs will be required to satisfy the Port's LNG admission Policy. (See paragraph 2.3 and appendix D1 & D2 of this document).

Ordering a tug can be done through the LNGC's agent, through the pilot or through the Port's Vessel Traffic & Operations.

The VT&O contact information is:

Phone: +31 10 252 24 00

Email: hccvl@portofrotterdam.com

VHF: Channel 19

Tugs must pick up the LNGC at the harbour entrance. Recommended speed for being tied to a tug is 4 to 6 knots depending on the location of the tie. On VTS sector channel you can arrange a working channel with the tug, which will normally be VHF channel 6 or 8. The pilots work on different channels with the tugs.

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2.7 Port Pilots / Pilotage.

Ordering a Pilot.

When the ETA-48 hour notice is made; indicate the need for pilots.

According to the Nautical Admission Policy for LNG carriers the reporting policy is uniform to deep draught vessels. Reporting your ETA-48 hour notice needs to be done via your local agent. For additional information on ordering a pilot needs to be done via your local agent.

Pilot boarding on arrival.

Normal Pilot boarding by helicopter (preferred) or by tender. Helicopter pilot for small scale vessels is not viable as no room for helicopter landing or winching area markings.

Regardless of using Deep Sea Pilots, the Pilot for entering the harbour of Rotterdam will board the LNG Carrier just before the Precautionary Area which is 7 nautical miles (roughly 13 kilometers) before the Maas Centre Buoy (see Map 1 at chapter 2.20 of this manual). As per May 3 2018 LNG carriers with a length over all equal to or below 180m, Maas Centre Pilot Station can be used. If the LNG Carrier uses Deep Sea Pilotage, that Pilot comes on board at the Pilot Boarding Station at Brixham or Cherbourg and takes over from there.

Normal Pilot boarding by tender may be suspended when wave heights reach 2 to 2.7 m;

LNGC can go to anchor or stem the current until safe conditions return.

Pilot Communication.

At ETA-3 hours is done via VHF channel 01 to "Sector Maasapproach" Communication with the Pilot cutter, -tender or -swath can be accomplished on VHF Channel 02 to "Pilot Maas". For more practical information on Pilotage, please contact your local agent for all practical matters, including all communication rules regarding pilotage.

2.8 Health.

Prior to arrival, the master has to complete and sign a Maritime Declaration of Health. The standard international form has to be used and can be found at website:

<https://www.portofrotterdam.com/en/shipping/port-health-authority>

In case one of the form questions has been answered by "yes", or in the case of other quarantine problems:

Advise the pilot, the ship agent and HCC;

Mail or fax this form to porthealthauthority@portofrotterdam.com or fax this form to 010-252-1600;

Keep the person responsible for medical care on board to answer any questions.

In all cases keep the Maritime Declaration of Health form stand-by.

In case of an epidemic threat the master can be requested to report the health situation on board to Vessel Traffic Operations or VTS centre Hook of Holland.

2.9 Immigration.

Compliance with rules of the Rotterdam-Rijnmond Seaport Police (responsible for immigration) is compulsory at all times. In the circumstances where the provisions of the Aliens Act (regulations pertaining to foreigners) fail to be complied with, the persons to be held responsible may be reported. The use of standard IMO forms is mandatory.

Prior to Arrival the Master must:

forward a Crew and Passenger list (IMO FAL form no. 5 and 6) to your local agent and the contact specified below;

Report the presence of any stowaways.

Prior Departure the Master must duly notify the head of the checkpoint through which his vessel will be passing, of his intent to depart from the Netherlands. This notice must be made:

No more than six and no less than three hours prior to the actual departure of the vessel;

In the event the vessel remains at the relevant location for less than three hours, in sufficient time as to grant the checkpoint official opportunity to carry out the required inspection of persons.

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Checkpoint Contact Information:

Rotterdam-Rijnmond Seaport Police

St Jobsweg 6

3024 EJ ROTTERDAM

Telephone: +31 10 274 74 71

Fax: +31 10 275 01 21

e-Mail: rotterdam@dutch-immigration.nl

www.dutch-immigration.nl (download crew manifest program)

<https://english.defensie.nl/topics/border-controls/crew-member-and-passenger-lists-in-commercial-shipping-and-recreational-boating>

Other relevant Immigration information about the LNGC's can be provide by your local agent.

2.10 Customs.

Documents.

Prior to arrival, the following documents must be available on board:

cargo-statements (Bills of Lading, Cargo manifest, Cert of Origin if available);

Crew's effects declaration (IMO FAL form no. 4);

Vessel's stores declaration (IMO FAL form no. 3).

It is strongly recommended that these papers are at hand before arrival in port.

The cargo for unloading vessels must be cleared by the customs prior arrival and confirmation by customs made available via the customs agent, appointed by the customer and given to the terminal prior to tendering vessel NOR

The cargo for (un)loading vessels must be cleared after (un)loading and a final clearance with the actual (un)loaded figs by customs made available via the customs agent, appointed by the customer and given to the terminal.

Bonded store.

Goods, which are not to be cleared, must be stored in one room, which room can be sealed by Customs. It is recommended to put these goods in that room before entering the harbour. Masters of ships must be careful that these seals are not damaged. If renewal or removal is wanted, this can be applied by Customs.

Prior to departure.

A vessel is not allowed to proceed to sea without having obtained a clearance certificate from Customs (IMO FAL form no. 1).

More information on Customs is available on the Dutch Customs website:

<http://www.douane.nl/english/>

2.11 Documentation Required by PoR aboard LNGC.

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:

IOPP;

SOPEP;

Shipboard marine pollution emergency plan;

Garbage record book;

Oil record book part I and II;

Certificate of Fitness chemical/gas, including product list;

Procedures and arrangements manual;

Cargo record book;

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ISGOTT Ship Shore Safety checklist;
Stowage plan arrival and departure Rotterdam;
Material safety datasheet('s);
Bill of lading;
Shipping document for bulk liquid cargoes.

2.12 Reporting of Incidents.

Masters of vessels staying in the Port of Rotterdam are obliged to report or request permission for a number of issues and events. For more info contact your local agent.

2.13 Emergency / Safety.

Emergency Contacts.

Inform Gate CCR via portophone, hotline or telephone (+31 181 799 020), Shift supervisor via telephone (+31 181 799 022), mobile (+31 623 527 519) or Marine Supervisor (+31 612775202);

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;

Details to be reported: name of ship, 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 11:00am (see appendix G);

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 ship is underway, maintain a listening watch via the appropriate sector channel;

Consult the map VTS sector channels on the website;

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When a ship is alongside, maintain a listening watch via VHF channel 19.

Emergency Procedure in Case Ship 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 ship, 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.

2.14 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:

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.

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 ships that are or have been loaded with dangerous goods;
- Hot work in engine rooms or ballast and other tanks for all other ships;
- Ships located in a Petroleum harbor.

To request such a permit, contact the Harbour Coordination Center.

<https://www.portofrotterdam.com/en/contact>

2.15 Port Security.

General.

All requirements and regulations on Port Security can be found on the following website:

www.portofrotterdam.com/en/shipping/port-security

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At an early stage, the agent and Gate will have contact regarding the security aspects of the planned visit to the Terminal. The agent will take care that an up to date crew list and visitor list is available at the main gate of the Terminal. When a ship reports in front of the unloading quay, or so much earlier as is deemed necessary, the PFSO and SSO liaise again via the VHF to verify the ship's security level and, if necessary, make further agreements or pass on particular details. Upon arrival of the vessel the PFSO and the SSO will meet and have the Declaration of Security filled in as per the MMSM, section 3.4.5, if there is a difference in security level between ship and the Terminal or on request of the PFSO or the SSO.

Security Level.

The current Security level in the Port of Rotterdam can be found on the website:

<https://www.portofrotterdam.com/en/shipping/up-to-date-information>

Reporting to Port Security.

The Rotterdam port area has about 140 port facilities, each with its own Port Facility Security Officer. The Port Security Officer, who is also the Harbour Master, notifies the Port Facility Security Officer as necessary regarding specific details of the security situation of a calling ship. A list of ISPS-compliant port facilities and Port Facility Security Officers can be found on the website:

<https://www.portofrotterdam.com/en/shipping/up-to-date-information>

Embarking and Disembarking Crew and Visitors.

Should be reported to the Port Facility Security Officer of the port facility called at. This is normally done via the vessel's agent and will be verified with the SSO after the vessel is moored.

If the actual security level is 2 or 3, more security checks may be in force before admittance to the terminal is allowed (e.g. pick up and return service from/to the main gate by host/hostess of the visitor, baggage check). If this cannot be realized via the vessel, admittance of these visitors will be refused.

2.16 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 LNGC.

2.17 Dangerous Goods.

LNG Carriers must report this info via their local agent to the Harbour Master on departure from the last port of loading or ultimately on entering Dutch territorial waters. For departure this must be done 3 hours before leaving the port of Rotterdam. For details to be reported please contact your local agent.

2.18 Waste.

At ETA-24 the LNGC must report regardless if waste will be landed at the port of Rotterdam.

Fill out waste report form, can be downloaded from website:

<http://www.portofrotterdam.com/en/Shipping/contact-support/Pages/forms-checklists.aspx>

This is normally done via the local ship's agent as this form is only available in Dutch

For more information please contact your local agent.

Note: The Terminal does not have facilities to handle waste so any needs at the Terminal's berth must be arranged by the Ship's Agent by barge after (un)loading.

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2.19 Port Communication – VHF Channels.

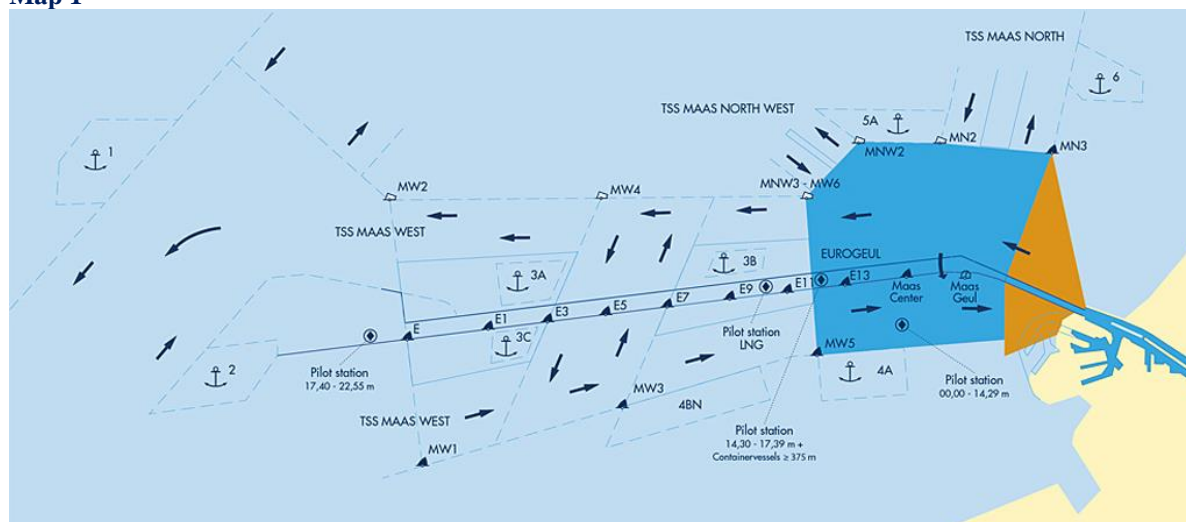
See the website of the port of Rotterdam for an overview of the VHF channels used by patrol vessels, tugs, intra ships and inter ships. <https://www.portofrotterdam.com/en/shipping/contact-the-harbourmaster/notifications/vts-services-and-vhf-communication-procedure-port>

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2.20 Port LNGC Anchorage.

For LNG Carriers, a dedicated Anchor Area has been created and is situated north of the Eurogeul. The Area is called 3B and is shown on Map 1 below. The Depth here is 20.7 meter and the exact location is 52°02'N, 003°36'E; Maas Approach VHF01.

Map 1



Prohibited anchorage.

The Maas Entrance is an area extending from the port entrance Noorderhoofd 3.5 nautical miles seawards and extending 600 meters to the north and south of the leading lights 112° where so indicated by warning signs on the rivers. It is strongly recommended not to anchor in:

- The precautionary area near the Maas Center buoy (see chart above);
- The Eurogeul and Maasgeul channels, including emergency anchorage areas;
- The turning basins of the Eurogeul and Maasgeul channels.

2.21 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 Brienenoord Bridge and 4 nautical miles east of the Spijkenisse Bridge across the Oude Maas River, including all adjacent harbour basins.

2.22 Port / Local Time Zone.

GMT+1 hour. However, from the night of the last Saturday on Sunday in March and in October, the time will be GMT+2 hr.

2.23 Flags and Signals.

When within PoR Limits, from sunrise to sunset, all Vessels shall fly their national flag and the national flag of the Netherlands. In addition, Vessels shall at all times, comply with the International Code of Signals and display flags, shapes and lights as required by the International Regulations for the Prevention of Collision at Sea.

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3. Terminal Information.

3.1 General Description.

The Terminal is located on Maasvlakte 1 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 1 & 2	Jetty 3
Maximum Vessel LOA	350m	180m
Minimum Vessel Length	95m	50m
Maximum Loaded Vessel Draft	12.5m	7.5m
Maximum Vessel Beam	55m	30m
Design water depth	N.A.P. -15.00m	N.A.P. -10.00m
Water depth at berth	N.A.P. -14.5m	N.A.P. -10.00m
Maximum Approach Speed to Fenders	12cm/s, accidental 15cm/s	10cm/s
Maximum Docking Angle	5 degrees	5 degrees
Port's Chart Datum Level	N.A.P. (=L.A.T. + 1.0m)	N.A.P. (=L.A.T. + 1.0m)
Dock Water Density Range	1012-1025 kg/m ³	1012-1025 kg/m ³
LNG density range	440-480 kg/m ³	440-480 kg/m ³
Cargo arms – SVT	Three (un)loading and one vapour return	Three hybrid arms
Cargo arm size	20 Inch	10 Inch
Connectors	16 inch "Quick connect" type hydraulic couplers	10 inch "Quick connect" type hydraulic couplers
Design working pressure	100mLC	100mLC
Usual terminal working pressure	50 to 250mbar	50 to 250mbar
Emergency release	Yes	Yes
Terminal design unloading rate	12,500m ³ /h (Jetty 1) 12,500m ³ /h (Jetty 2)	N/A
Terminal design loading rate	3000m ³ /h	1000m ³ /h
Terminal design transshipment rate	10,000m ³ /h	N/A
Storage tanks	3	3
Tank working capacity	3 x 180,000 m ³	3 x 180,000 m ³
Return vapour temperature	-130° after 1 hours (at full rate) vapour return for unloads	
Docking Aid System	Approach distance/velocity/angle meter system	Approach distance/velocity/angle meter system
Vessel Collision warning system	N/A	Alarm via AIS system
Mooring Line Load Monitoring	Yes	Yes (on QRH's only)

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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.



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3.4 Terminal Policies.

3.4.1 General.

Responsibilities of the Master of an LNGC.

Primary responsibility for the safe conduct of operations on board the vessel rests with the Master. The Master should take care that he and all other persons on board whilst on board as well as ship's 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 Master should take care that all agreements made between Gate and persons on board are carefully observed.

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

LNGC's must be.

Maintained in class with a member of the International Association of Classification Societies which has prior experience in classifying LNG Carriers, and in compliance with all applicable treaties, conventions, laws, and regulations, as well as the requirements of the LNG Carrier 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 SOLAS) 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 Master, Chief Engineer, Chief Mate, and Cargo Engineer (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;

In compliance with all Safety of Life At Sea (SOLAS) requirements, as recommended by OCIMF and/or SIGTTO;

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 valid inspection certificate (no older than 12 months at time of arrival);

Entered (with full Protection and Indemnity coverage) with a P & I Club that is a member of the International Group Agreement of P & I Clubs;

Seagoing vessels for Jetty 1 & 2 equipped with a near mid-ships manifold to OCIMF standards, able to receive standard 16" loading arm couplers and a manifold elevation over still water between 15.0 and 27.4 meter
Seagoing vessels for Jetty 3 equipped with a near mid-ships manifold, able to receive standard 10" loading arm couplers and a manifold elevation over still water between 3.7 and 18.75 meter;

Seagoing vessels equipped with adequate facilities, designed in accordance with OCIMF's and/or SIGTTO's recommendations, for mooring, unmooring, and handling LNG Cargo, i.e;

Mooring lines all fitted on drums/winches with brakes and with soft (nylon) tails; capable to pull 30 to 200 kN pretension in the lines and typical winch brake holding powers between 600 and 900 kN. mooring lines on bollards may be allowed depending the outcome of a mooring study;

Compatible ship/shore communication links (for telecom and data transfer) based on glass-fibre optic system and/or electric (Pyle) 37-pin backup (to North Atlantic pin allocation standard) in compliance with international regulations in order to enable the LNGC to communicate with the Terminal.

Lifeboat Tests.

The vessel is not permitted to test its lifeboats without prior authorisation of Gate and the Port. The launching of freefall lifeboats, which may be obstructed by mooring lines, is not permitted.

Standby Tugs.

May be required in certain weather conditions (see Appendix A – Adverse Weather policy) or when maintenance has been approved that will affect the manoeuvrability of the LNGC (as specified in 3.4.3 of this manual). Minimum standard is 60 Ton Bollard pull for Jetty 1 & 2 or 45 Ton Bollard pull for Jetty 3.

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Direct transfer from ship to ship.

For any manipulation of goods which is to take place between the LNGC and another vessel, prior permission from Gate is required. Even if Gate has allowed this transfer, it will take place under the Master's responsibility and for account and risk of the Master and the owner of the LNGC and not for account and risk of Gate.

Utilities.

With prior approval by Gate, the following utilities can be arranged by the Ship's agent for delivery to the berth after cargo (un)loading.

Freshwater.

In general, you will order supplies of potable water before arrival via your agent. Your agent will arrange that the water barge arrives at the right time. No transfer of water to the ship will be allowed while LNG cargo (un)loading is ongoing. Reporting of bunkering fresh water is mandatory upon arrival to the Terminal representative.

Ship's stores/provisions.

Must be arranged through the Ship's Agent with proper notification and approval of Gate.

Bulk Ship's stores/provisions will be loaded from a supply boat aft of the LNGC's accommodation block using the Ship's stores crane;

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

Bunkering.

Must be arranged through the Ship's Agent 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. The LNGC shall provide for the storage of waste material, including hazardous wastes and oil from pollution incidents or the Ship's Agent can arrange for waste disposal by barge.

Barges alongside for fresh water, stores, bunkers, waste etc.

Are allowed:

Only after approval of Gate;

After the LNGC is (un)loaded;

There is sufficient time left before departure. Any delays due to these operations shall be the responsibility of the ship.

Mooring Winches.

All LNGC's equipped with automatic line tension capability will be set to manual while at the berth.

Deck scuppers, drain holes and drip trays.

On the LNGC within the area of any potential pollution must be suitably plugged and any accumulated water drained off. Any water drained from the vessel must be free from all polluting agents.

Line Handlers.

And mooring boats for seagoing vessels must be arranged by the LNGC via its Agent.

3.4.2 LNGC "State of Readiness"

LNGC.

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

The LNGC must maintain sufficient **positive stability** to ensure the safety of the LNGC, the Terminal and the cargo (un)loading process and to be prepared for an emergency unberthing if necessary by:

Managing the LNGC's ballast water to minimize the reduction in draft created by the cargo (un)loading process;

Attempting to maintain zero list while at the Berth;

Maintaining the appropriate trim at the berth taking into account the depth of water available.

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Sufficient Crew.

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

Crew Rest.

All LNGC's crew must be suitably rested and fit for duty in accordance with the obligations ILO Convention N. 180 (Seafarers' Hours of Work and the Manning of Ships Convention) and IMO's STCW Convention, 1978, as amended in 1995.

Engine Readiness.

Unless prior written approval has been given by Gate, boilers, generators, main engines, steering machinery and other equipment essential for manoeuvring must be maintained in standby mode to enable the LNGC 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 LNGC 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 LNGC is prohibited. In the event that the LNGC experiences any incident while alongside which affects the cargo operations or the manoeuvrability of the LNGC, Gate shall be immediately notified. Gate and LNGC shall agree (initially by Hot Line with documentation in Appendix E1) on appropriate actions to mitigate any dangers to both parties and the safety of cargo operations.

All other work required by the LNGC while alongside the berth shall be approved by Gate using the Work Authorization form found in Appendix E1. During the pre-cargo meeting, the vessel will provide the terminal representative a "daily work plan." Both the LNGC and Gate will be required to sign the Work Authorization form. The LNGC must comply with its own "Permit To Work" procedures and a full risk analysis shall be carried out by the LNGC and discussed with Gate before the Terminal Work Authorization form will be issued.

In either of the above scenarios, Gate has the right to require the LNGC to have a standby tug in place to assure safety while the work is being performed.

For PoR policies regarding Maintenance and Repairs contact your local agent.

3.4.4 Fire Prevention and Safety Policies – The following shall be adhered to while the LNGC is at the Berth.

The LNGC's Safety Plan must be posted adjacent to the gangway, along with a cabin plan and up to date crew list, and must be available to Gate in case of an emergency;

Personal Protection Equipment (PPE) - Any LNGC crewmember that leaves the vessel for any reason must comply with Gate's PPE requirements in Appendix F;

The LNGC staff must be familiar with all Gate and MOT Emergency Alarm Signals and policies listed in Appendix G;

The LNGC should be familiar with the existence of the Terminal's firefighting equipment and capabilities which are listed in Appendix H;

The LNGC'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 LNGC's fire main system and led out, ready for immediate use. The LNGC's fire main must be fully pressurized whilst alongside;

The Terminal's International Shore Connection is located at the upper platform on the berth and looks similar to Figure 3. The LNGC must connect to it if vessel's fire main can't be pressurized with vessels firewater pumps.

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Figure 3.



The LNGC's fixed dry-powder (DP) systems.

must also be ready for immediate use. If applicable, hoses shall be led out for those systems used to protect the manifold areas. Portable dry powder fire extinguishers must be available at each side of the cargo manifold. The vessels fixed DP monitors must be configured and positioned correctly.

Windows and portholes.

of the LNGC 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 LNGC's Hazardous Areas must be of an approved type for such areas and satisfactorily maintained.

Naked Lights.

The use is prohibited on board the LNGC and in the Terminal.

Smoking.

In the Terminal is strictly prohibited. Smoking on board the LNGC may only take place in enclosed spaces that are specifically designated by the Master in consultation with the Marine Supervisor or his representative. A maximum of two smoking areas are permitted whilst alongside, these must be declared prior to cargo operations commencing.

Mobile phones.

The use is strictly prohibited in the Hazardous Areas of the Terminal and onboard the LNGC, 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 LNGC with the Master'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.

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3.4.5 Terminal Security.

Terminal Security and access is the joint responsibility of Gate and the LNGC under the International Ship and Port Security (ISPS) Code. Gate's Security Officer (PFSO), and the LNGC's Master or Ship Security Officer (SSO) will review and agree to the security measures each will implement. This will be documented by the signing of the Declaration of Security;

Evidence of any serious breach, repeated deficiencies, or significant lack of understanding or implementation of the requirements of ISPS Code by the LNGC'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, Deputy PFSO and/or SSO. 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 LNGC's Crew and approved visitors or contractors;

The LNGC's arrival crew list, including any embarking personnel must be transmitted by email to Gate prior to the LNGC's arrival. LNGC 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 Master may also be allowed into the Terminal. The list of visiting personnel should be advised to Gate by email before the arrival of the LNGC. Any changes to this list must be communicated to Gate immediately;

The Terminal requires personal photographic identification (seaman's ID or 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 LNGC at any time to ensure that her Security Plan and applicable regulations are being observed;

Persons on board the LNGC being present on the Terminal's premises as well as those who enter the Terminal's premises on request of the Master and/or the persons on board, do so entirely at their own risk, also when this happens with permission of or under escort 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 LNGC's Crew will be granted, subject to Customs & Immigration approval and compliance to Gate policies and procedures;

LNGC's Crew that leave the LNGC and transit the berth:

- Must have a valid photographic ID (seaman's ID or 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 Ship's Master;

- Must walk directly to and from the Security gate upon leaving the LNGC;

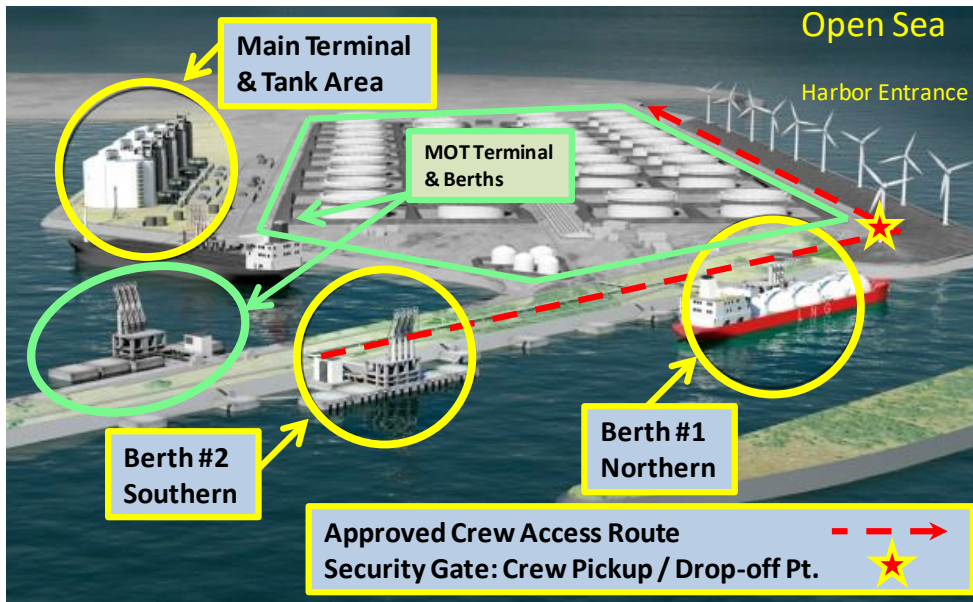
- Are responsible to make necessary arrangements for the collection and drop-off of the Crew at the Terminal's Jetty Security gate;

- Must follow the (PPE Free) Safety Corridor. A painted line is the designated access route for LNGC's Crew to enter or leave the berth from the LNGC (See Figure 1). Only this area may be transited by the LNGC's Crew;

- Access to the Terminal Jetty and / or the Safety Corridor to the Jetty Security gate may not be allowed during cool-down / warm-up, ramp down / ramp up or connection / disconnection of the (un)loading arms.

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Figure 1.



A Ship's Officer with prior Gate permission may transit the catwalk area (Jetty 1, 2 & 3) for the sole purpose of checking the LNGC's arrival or departure draft. The officer must be suitably dressed in PPE and wear a lifejacket;
At no time is LNGC's personnel allowed to enter Gate's or MOT's Main Terminal area.

3.4.6 Other Safety Policies.

Engine Safety.

The cargo arms may not be connected until the LNGC reports to Gate that the master has received confirmation from the engine room staff 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 LNGC.

Cargo Tank Venting.

Under normal operating conditions venting cargo vapours to the atmosphere is not permitted. The LNGC shall take all necessary action to prevent such venting. In the event of an emergency situation that requires venting, cargo (un)loading will be stopped. Gate and PoR shall be notified of the emergency.

Gas freeing.

Of any of the LNGC'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 LNGC is moored alongside the Terminal. Masters 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 (in accordance with GDPR)

Manifold Valves.

Gate requires that each LNGC has a "double block and bleed configuration" at the manifold to increase safety and to facilitate a timely unloading process. Any LNGC not equipped in this manner should notify Gate immediately.

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Other Activities.

No diving, swimming or fishing is allowed from the jetty, LNGC or berth.

Grounding.

The electrical ground cable should not be connected with LNGC 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 or transshipment vessel must be declared compatible and acceptable for Gate terminal. For compatibility purposes we consider the vessels in a transshipment as a regular unloading and loading vessel.

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

The LNGC's crew shall perform pre-arrival checks that (at a minimum) comply with the recommendations of SIGTTO.

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 I4a for Jetty 1 & 2 or Appendix I4b for Jetty 3);

- Manifold flanges inspected and approved for service prior to arrival;

- Scuppers in place;

- 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 as agreed upon during pre-arrival meeting (warm and empty or pre-cooled and inventoried.)

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

3.5.2 LNGC Pre-Arrival Notice Requirements.

Cargo Information Notice.

For each LNG cargo to be (un)loaded via the Terminal, Gate must receive a Cargo Information Notice by email (shipping@gateterminal.com and Peter.Jan.Capello@gateterminal.com) upon departure of the LNGC previous port. The form of the notice can be found in Appendix E2 and includes important information about the condition of the cargo upon departure and the expected characteristics of the LNG cargo upon arrival at the Terminal. If the destination of the LNGC 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.

Notice of Arrival.

The LNGC 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. The notice will include an estimated time of arrival of the LNGC at the Pilot Boarding Station (ETA) as well as other important information. The LNGC must also provide updates at prescribed intervals along the voyage so the Terminal may adequately manage all of its activities and

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commitments. The required form for the initial notice and all updates can be found in Appendix E3. The required update intervals are:

- 72 hours before the then current ETA;
- 48 hours before the then current ETA;
- 24 hours before the then current ETA;
- 12 hours before the then current ETA.

If the destination of the LNGC 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.

Notice of Readiness.

A Notice of Readiness shall be issued to Gate by the LNGC via email (shipping@gateterminal.com and Peter.Jan.Capello@gateterminal.com) (on behalf of Gate's Customer) as soon as the LNGC has reached the Pilot Boarding Station 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 Terminal's (un)loading berth designated by the Terminal and commence (un)loading;
- (c) The form of the notice can be found in Appendix E4 and it will be time-stamped by Gate upon receipt.

3.5.3 Terminal Pre-Arrival Notice Requirements

Acceptance or Rejection of the Notice of Readiness.

Gate will accept or reject the NOR following receipt of the notice from the LNGC by email using the form of notice found in Appendix E5 and Appendix E6.

If the LNGC has tendered the NOR and the Terminal or Master encounters or foresees a problem which will cause a delay to the LNGC in berthing, unloading or departing the Terminal, it must notify the other party immediately by email using the form in Appendix E10.

Terminal Status Notice.

Gate will provide the LNGC with a Terminal Status Notice at least 24 hours prior to the then current ETA. The form of this can be found in Appendix E7 and will be given by e-mail.

3.6 Gate Terminal Cargo Sequence of Events.

Mooring / Berthing;

“All fast” or “Ready to Receive Gangway” Notice by LNGC (Laytime Clock Starts);

Setting of the Gangway;

Satisfaction of Immigration & Customs Requirements;

Installation of ESDS (Emergency Shutdown System) / Communications links;

Ship / Shore Pre cargo operations Meeting or Interface Meeting;

Cargo operations Process;

Start Water Curtain;

Connect cargo Arms;

Arm(s) Purging with N₂ / Leak Test;

Initial Gauging (Opening CTS);

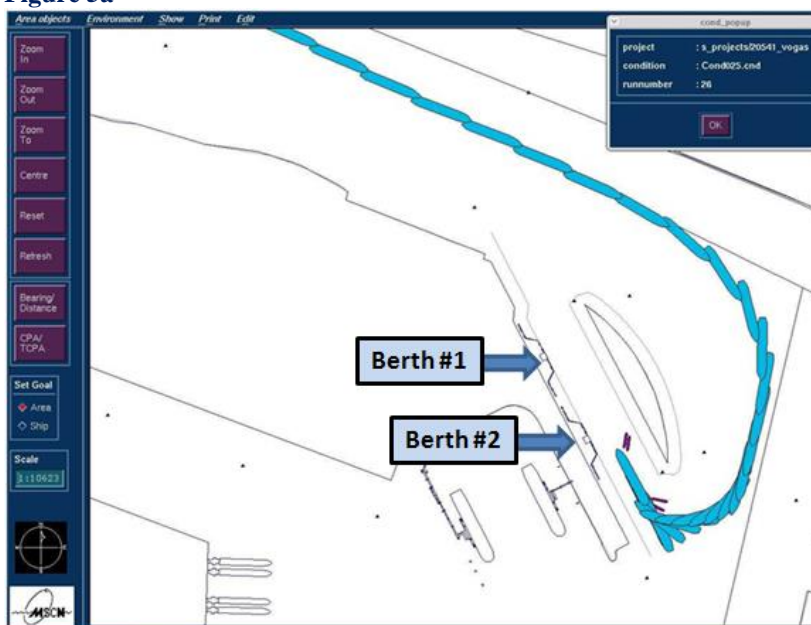
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ESD's test Warm Condition;
 LNGC cargo lines (if needed) & Arm Cooling Down;
 Valve stroking in cold condition
 Start Cargo operations;
 Sampling Onshore;
 Finish Cargo operations;
 Inhibit ESD;
 Drain Liquid Arms;
 Close Vapour Return;
 Final Gauging (Closing CTS);
 Purging the Liquid & Vapour Arms;
 Disconnecting Liquid & Vapour Arms;
 Stop Water Curtain;
 Ship / Shore Post cargo operations Meeting or Closing Meeting;
 Disconnection ESD's / Communication Links;
 "Ready to Retrieve Gangway" Notice Gate (Laytime Clock Stops);
 Removing of Gangway;
 Un-berthing.

3.7 Mooring / Berthing the LNGC.

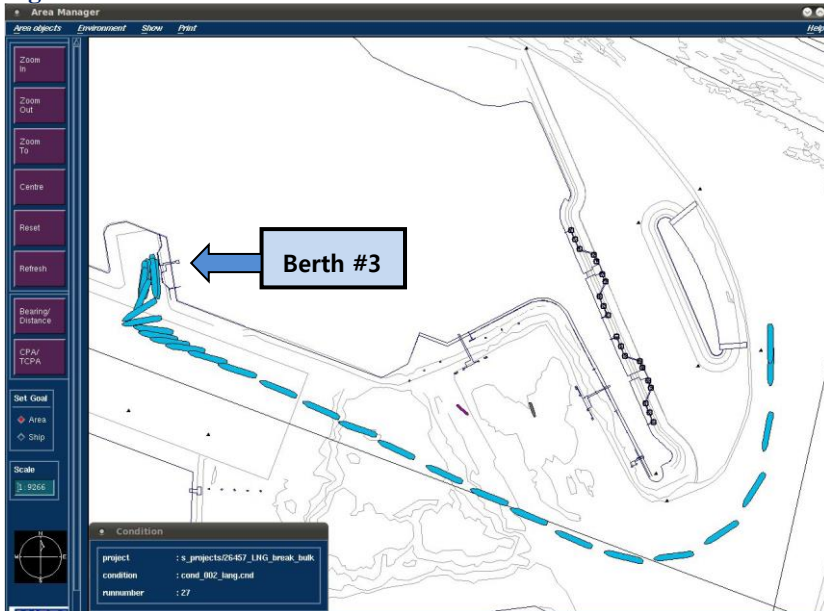
Arriving LNG vessels proceed from the port entrance to the turning basin where they will be turned (as shown in Figure 5a & 5b) and then pushed alongside the appropriate berth (as directed by Gate) by the attending tugs.

Figure 5a



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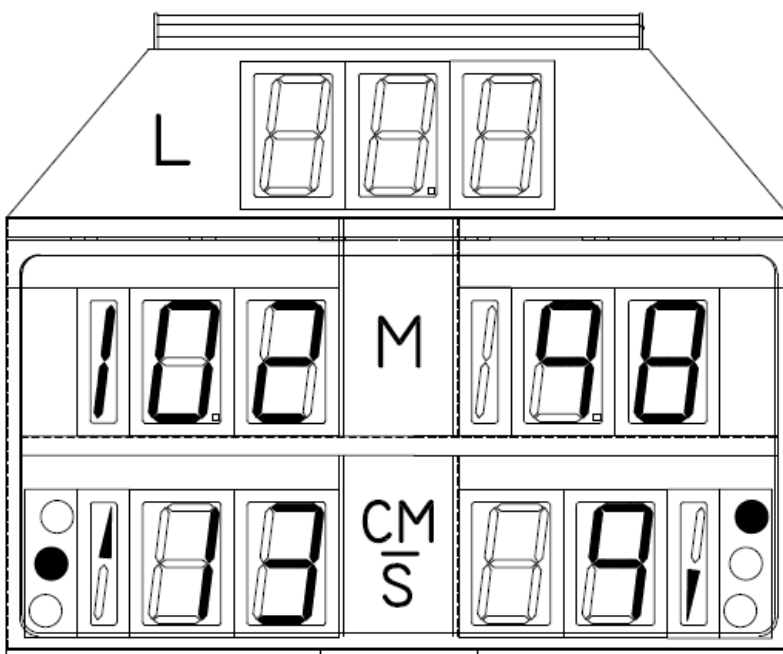
Figure 5b



The berth and cargo transfer systems are designed for LNG carriers to moor port side alongside, with the vessel's bow facing the sea. This is the required mooring pattern for all vessels moored at the Terminal.

To assist vessels with their approach, the Terminal's berth is equipped with an approach angle/distance/velocity indicator board to aid in vessel alignment to the fenders of the berth. (see Figure 6) The maximum approach speed allowed for Jetty 1 & 2 is 12 cm/s (For Jetty 3 the maximum approach speed allowed is 10cm/s) and the maximum permitted angle between the LNGC's side and the berth fender is five (5) degrees. Other mooring criteria are shown in Gate's Adverse Weather Policy (Appendix A).

Figure 6



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Jetty 1 & 2.

Are designed to accommodate LNGC's from 95-350 m in length and from 5,000 to 267,000 m³ in size. The maximum vessel displacement is 210,000 mT.

The berth is equipped with four (4) breasting dolphins and six (6) mooring dolphins with all details and drawings shown in Appendix Ia and I2a. All dolphins are equipped with double, triple or quadruple quick release hooks and have the ability to accommodate up to 6 spring-lines and 14 breast-lines.

Breasting Dolphins.

Each breasting dolphin is fitted with a double or triple quick-release hook assembly. Each hook in the assembly is rated at 125t SWL. Every breasting dolphin is equipped with a motorized capstan.

Mooring Dolphins.

The four outer mooring dolphins are each fitted with a quadruple quick-release hook assembly. Each hook in the assembly is rated at 125t SWL. The two inner mooring dolphins are each fitted with a triple quick-release hook assembly. Each hook in the assembly is rated at 125t SWL. Every mooring dolphin is equipped with a motorized capstan.

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).

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).

The Terminal and the LNG carrier shall agree on a mooring configuration and mooring plan prior to arrival which meets OCIMF guidelines. Synthetic tails of a suitable length and minimum-braking load consistent with OCIMF guidelines shall be used on all steel mooring wires and/or HMPE mooring lines. This plan shall be sent to the Pilots with a copy to the linesmen organisation (de "Eendracht").

LNGC's with a length over 115 meter should use the quick release hooks.

LNGC's.

Mooring crews/line handlers and boats are arranged by the ship's Agent to handle mooring lines during berthing and un-berthing operations. The mooring boat crew will take the LNGC's mooring lines from the ship allowing mooring lines to be lifted by the electrically powered capstans that are fitted on the mooring dolphins to assist in hauling the mooring lines towards the mooring hooks.

The responsibility for the safe mooring and the tending of mooring lines lies with the Master. To assist the Master in tending the lines, Gate can provide the Master with data displaying line-tension reading on all quick release hooks and can also provide local weather data. However, in accordance with the ship/shore safety checklist, Gate can intervene on this issue if considered necessary. 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 LNGC in a satisfactory position within the safe working envelope of the unloading arms (Appendix I6a and I6b). At the Terminal, a system is in place to automatically monitor the details of mooring tension.

Fire wires are not needed to be prepared. Both Port authorities and Gate terminal adopted the OCIMF recommendations on ETOPS (October 2009)

3.8 Gangway Setting.

Jetty 1 & 2.

The Terminal gangway will be the designated access between the Terminal and the LNGC. For small scale vessels on Jetty 1 a smaller terminal gangway is available. For other small scale vessels a portable ship's gangway can be used as alternative. All personnel transiting to/from the LNGC shall use this access unless the Terminal and LNGC have come to another agreement. See Appendix I1 and I3.

As soon as berthing has been completed, the LNGC must notify Gate of her "all-fast" time and be ready to receive the Terminal gangway. The Terminal will operate the gangway and land it in the pre-designated area. A non-slip surface must be

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provided by the vessel at the base of the gangway. The LNGC is required to assist the Terminal in the safe and proper positioning of the gangway.

Jetty 3.

There is no terminal gangway. LNGC's have to use their gangway to arrange a safe access to/from the terminal. The gangway will be inspected by the Terminal and the LNGC when it is in position and landed. The Terminal and LNGC will have to agree that the access provided enables the safe transfer of personnel between the Terminal and the LNGC. The LNGC is required to ensure proper lighting of the gangway area and her main deck. The Terminal will provide lighting on the Terminal side.

3.9 Ship / Shore Communications.

Primary ship / shore communications will be provided by means of a glass-fiber optic link or an electric (Pyle National 37 pin) multi-pin back-up depending on the LNGC's systems. Only the primary or back-up link will be connected, not both. This link provides both phone and ESD capabilities. This link will be set immediately after the gangway is landed and deemed a safe access to the LNGC. Terminal staff will hand over the shore cable, the vessel's crew will 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 Gate. Gate will require the ESD system to be inhibited during arm connection / disconnection operations.

For Jetty 3 a Universal Safety Link is available.

Technical details of the Communications/ESD Link may be found in Appendix Ja for Jetty 1 & 2 or Appendix Jb for Jetty 3.

The link will allow the following:

Hot line between the Terminal and LNGC	Bi-directional
ESD LNGC- Terminal	Bi-directional
ESD Terminal - LNGC	Bi-directional
Mooring Load Monitor	Omni directional

All vessels will also be provided with an Intrinsically Safe, portable UHF radio. This radio is for use as communication back up and also direct communication to the Terminal jetty operation staff, however the primary communication should continue to be the Hot Line.

When an LNGC is alongside the berth, it should also maintain a listening watch via VHF PoR channel 19.

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

LNGC's Communication Systems.

The use of LNGC's GMDSS (Global Maritime Distress Safety System) installation for transmitting, except the GMDSS satellite communications and VHF radio on one (1) watt power, is not authorized while the cargo arms are connected. The LNGC's main transmitting aerials must be disconnected and earthed.

The LNGC's radars shall be switched off while the cargo arms are connected.

Additionally, the LNGC's 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.

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

The procedures set forth in this MMSM have been established to facilitate a safe, pre-planned cargo operation and must be adhered to. The Terminal's Loading master or his representative and the Ship's Master or his designee will hold a pre-Cargo Operation meeting on board to discuss all items listed in Appendix K – (The Pre-Cargo Operations Meeting Checklist). The forms referenced in Appendix K must be discussed, completed and agreed to, signified by signing prior to cargo (un)loading.

The Ship Shore Safety Checklist from ISGOTT. Follow-up safety checks will be conducted at agreed intervals throughout the (un)loading period and the checklist will be signed accordingly sample as attached in;

Safety Declaration;

LNG Cargo Operations Agreement;

ISPS Declaration of Security;

Statement of compliance.

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Before the arms are connected, Gate's Loading master or his representative will board the LNGC accompanied by a representative of Gate's customer for Custody Transfer, mostly a surveyor.

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

3.11 Cargo Preparation.

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

Unloading or transshipment of the LNGC via Jetty 1 and 2 will be carried out using three standard 20 inch liquid cargo arms with 16 inch 150 lbs ANSI B16.5 flanges and one 20 inch vapour return arm with 16 inch 150 lbs ANSI B16.5 flanges. If the number of liquid cargo arms or vapour arms available is different, the LNGC will be notified and agreement will be made at the pre-cargo operations meeting. Flowrates as indicated in paragraph 3.2

For loading a LNGC via Jetty 1 and 2 normally 1 liquid and 1 vapour arm will be connected. Loading rate can be up to 3000 m³/h depending on the shared BOG handling capacity from vessel and terminal.

For loading a LNGC via Jetty 3, 1 or 2 10 inch liquid arms with 10 inch 150 lbs ANSI B16.5 flanges and 1 10 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 LNGC is required to:

Handle LNG densities of 440 up to 480 kg/ m³ at a maximum unloading rate of 12,500 m³/h for Jetty 1 & 2 against an LNG head of approximately 100 meters liquid column at the inlet flange of the cargo arms, corrected for the installation of the strainers listed below. For a transshipment this max flowrate is 10,000m³/h

Have in-line Strainers with an ASTM 20 Mesh (nominal aperture of 0.84mm) under normal operating conditions or ASTM 60 Mesh (nominal aperture of 0.25mm) for the first 2 cargo's after drydock 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"

Have a minimum manifold discharge pressure of 85 mLC in order to maintain reasonable unloading rates, and thus limited berth times.

Having the ability to receive warm vapours from shore at start of unloading process and arrive at the Terminal with LNG saturation pressures of 70-150 mbarg.

Have a manifold configuration that is based on LNGC manifolds that complies with OCIMF guidelines. Other type of flange manifold require reducers from manifold flanges dimension to "ANSI 150 DIA 16 inch – smooth or raised face" (vessel supplied).

The LNGC's 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 1 and 2 have a special hydraulic clamp system for a 16 inch diameter flange which requires the LNGC to have smooth or raised finish flanges, (see Appendix I4a).

The arms at Jetty 3 have a special hydraulic clamp system for a 10 inch diameter flange which requires the LNGC to have a raised face flange (See Appendix I4b). 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 I6a & I6b).

In the event where during (un)loading the LNGC 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, Third edition 3.01, GIIGNL 2011 (section 2.1 "General formula for calculating the LNG energy transferred").

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3.12 Caro Arms Connection.

Connecting the arms.

Gate is responsible for connecting the arms and the LNGC's staff may be requested to assist as appropriate. The Terminal will provide the gaskets for connecting the arms as required. The LNGC 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 LNGC by a qualified/certified person appointed by the Master. The person so appointed shall maintain communications with the Terminal and the Master.

Gate Personnel.

Gate personnel will be present for the berthing, connection, OCT, cool down, CCT and disconnection of the LNGC.

Cargo Equipment Condition.

The Master is required to ensure that all the LNGC'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.

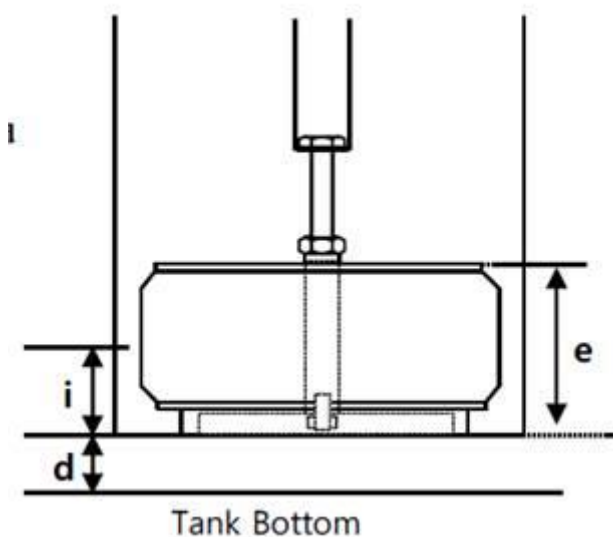
Cargo Measurement.

The LNGC is required to conduct initial (OCT) and final gauging (CCT) of the cargo tanks prior to the start of and after completion of cargo operation. The Master shall ensure that the cargo gauging is done in compliance with the LNGC's Custody Transfer Measurement System (CTMS) Manual. A loading master and a surveyor will witness the Cargo Gauging.

If the cargo tank(s) contain a heel, secondary level gauges must be buoyant in order to compare with primary level gauges.

This means that there must be sufficient liquid in all cargo tanks that none of the floats are grounded, **unless agreed otherwise.**

Float level gauge is located inside of guide pipe and the pipe is fixed from the top. In cryogenic condition, the guide pipe will be contracted and the end of the pipe will have more gap between tank bottom and the end of the pipe (distance "d") than when it is in ambient temperature (during recalibration). So the float won't be able to go further below.



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3.13 Cargo Operation.

Gate Personnel.

One operator will be in attendance at the berth LNGC during cargo operation covering the berth manifold and interim ship safety walks.

Open Vapour Line.

Return vapour shall be sent to/from the LNGC by the Terminal using gas from its LNG storage tanks. During unloading the LNGC shall control the return vapour pressure it requires, 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 (unloading) LNGC or the (loading) terminal/LNGC 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. The LNGC shall adjust cool-down line pressure/flow at the Terminals direction. The LNGC's control of LNG flow and pressure during LNG arm cool-down shall be mutually agreed during the Pre-Cargo Meeting. Gate will monitor the cool-down and ask the LNGC to increase or decrease the LNG pressure as required. Arm cool-down takes approximately 45-60 minutes shore side. The LNGC is responsible for ensuring effective cooling down of its pipeline system in a timely manner so as not to delay cargo operations.

(Un)loading Commencement.

The commencement of cargo (un)loading shall be mutually agreed between Gate and LNGC. The party who is pumping shall notify the other party 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. Each arm at Jetty 1 and 2 has a maximum rate capability of 6000 m³/h (3 arms =12,500 m³/h on Jetty 1 & 12,500 m³/h on Jetty 2. At no time should this rate be exceeded. The maximum bulk rate will be stipulated by Gate during the Pre-Cargo Meeting.

At Jetty 3, the maximum loading rate is 1000m³/h.

Cargo operation.

The LNGC and Gate will monitor the (un)loading rate, temperatures and pressures throughout the cargo operation. The LNGC is to notify Gate hourly of the:

- quantity aboard the LNGC;
- the rate;
- the estimated time for completion of the operation.

Shore Sampling.

Gate will take samples of the LNG and analyze them with its on-line gas chromatograph (located at the Jetty).

(Un)loading Completion.

Cargo unloading shall stop at the agreed heel to remain onboard the LNGC. Cargo loading shall stop at the agreed volume received by the LNGC. (ship's stop)

The LNGC shall notify Gate one hour prior to commencing a reduction of the cargo (un)loading rate. The LNGC or Gate notifies the other party of the time it stops a pump and the pump number.

In the event that the LNGC is to heel out (i.e. for passage to dry dock or other reasons) the terminal shall be notified at least 96 hours in advance of this requirement detailing the additional time required to accommodate the activity. This amount shall be agreed by Gate and LNGC during the Pre-Cargo Meeting, taking into account the remaining capacity in the shore storage tanks and the Terminal berth schedule.

3.14 Unscheduled Cargo Operation Stoppage.

If conditions require that cargo (un)loading be stopped, Gate and LNGC 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 LNGC.

Gate reserves the right to delay or stop the cargo operation due to operational requirements of the Terminal.

(Un)loading Limits - Gate and LNGC will monitor the weather and the LNGC's motion throughout the cargo operation.

If the weather or the LNGC's motion endangers the Terminal and/or the LNGC, either side shall stop the cargo operation.

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Gate's full Adverse Weather Policy is shown in Appendix A.

In any event, Gate reserves the right to require the LNGC to have a standby tug with sufficient power in place should Gate believe, in its best judgment, the current or expected weather conditions justify the presence of a tug to increase the safety of the Terminal and the LNGC.

If conditions affect the safety or efficiency of the cargo (un)loading by either side, it shall be communicated immediately to the other.

3.15 Cargo Completion.

Draining & Purging cargo arms.

Once the vessel's staff confirms cargo operations are completed and manifold valves are confirmed closed, Gate 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.

pressurize and drain inboard part of the arms to shore side till empty,

pressurize and drain outboard part of the arms to ships side till empty,

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.

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

Terminal / LNGC Post Cargo Operations Meeting.

A post Cargo Operations meeting will be held on board immediately after the cargo operation and all items in Appendix L shall be discussed and any issues documented. The Loading master and the Master's designated person in charge shall attend this meeting.

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

3.16 Un-berthing.

The Master is bound to leave the berth and dedicated LNG basin (the "Nijlhaven"/"Yukon haven") as soon as possible after termination of cargo operation. Gate has the right to demand that the LNGC be removed from her berth when Gate deems this necessary for reasons of safety, compliance with safety regulations and/or directions from the harbor authorities or other authorities, upon the end of the Allowed Unloading Time (see Appendix B) or for any other valid reason.

If the LNGC does not leave the berth timely, then Gate may take all safe and necessary steps to effect the removal of the LNGC from the Terminal's berth and dedicated LNG basin. Gate will notify the Master of the remedies it plans in the event that a LNGC fails to leave berth timely using the form in Appendix E9. Gate will use reasonable endeavours to notify the Master in the event it is required to cancel the next berthing slots due to the fact that the LNGC fails to leave the berth in a timely manner, using the form in Appendix E8.

Upon completion of the Post-Cargo Operations Meeting, Gate will give notice to the LNGC that it is "ready to retrieve the Gangway" and will disconnect the communication links.

Prior to the commencement of un-berthing, the Master and Pilot shall exchange information that allows for the safe passage of the LNGC from the Berth to the pilot station. This shall include any necessary discussions with Gate or PoR regarding passage restrictions due to other LNGC's located at another Gate berth or any incoming LNG traffic. Bridge Team Management practices shall be utilized to enhance the safe navigation of the LNGC.

Tugs shall be made fast prior to Stand By Engines and the testing of the main engines ahead and astern. The mooring lines shall not release until the above has been verified. The Master and Pilot shall ensure that Gate is aware of the order for releasing mooring lines.

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Unberthing Limits.

In order to protect the Berth and LNGC the following maximum unberthing limits have been set:
(See Appendix D1 or D2) Appendices.

3.17 Appendix A – Adverse Weather Policy.

ACTIVITY at LNG Jetty	WIND (m/s)	SEA (Meter)	ACTION
Berthing: NW - W wind & wave S – SW wind & wave Un-berthing: NW – W wind S – SW wind Note: Limits depend on available tug capacity	> 13.8 > 13.8 > 13.8 > 13.8	> 2.7 > 2.7 n.a. n.a.	Berthing suspended Berthing suspended Departure suspended Departure suspended Forecasted wind speeds during expected period alongside > 13.7 m/s, then all berthing operations suspended.
(Un)loading LNG alongside Jetty 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), and ship's master on necessity to take follow-up measures.	≥ 21 ≥ 17 ≥ 20 > 21 > 17	SWELL 1.0 m 1.0 m 1.0 m 1.0 m	(Swell measured at jetty) Put dedicated tug on active stand-by Discuss Forecast to STOP (un)loading. STOP (un)loading Disconnect cargo arms <u>Forecasted.</u> Discuss situation with traffic controller, pilot, and ship's Master or Inland Barge's Skipper. If prognosis is for further deterioration, then: <ol style="list-style-type: none"> (1) Disconnect cargo arms (2) Remove gangway (3) Pilot on Board (not for Inland Barge) (4) Tug to support mooring integrity. <u>Actual</u> Discuss situation with PoR Traffic Controller, Pilot, and ship's Master; issues to consider: - <ul style="list-style-type: none"> additional moorings ship stability unberthing ship
OTHER CRITERIA Electrical Storms In the vicinity or at the Terminal Rolling/Listing Rolling Listing			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 Ship Master & Vessel Traffic Controller. STOP cargo operations at 3°. Ship to close all cargo valves and take corrective action

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3.18 Appendix B – Allowed Laytime & Allowed Unloading Time for LNGC's.

Size carrier (m ³)		Allowed Unloading Time (hrs)	Allowed Laytime (hrs)
From	To		
65000	70000	24	20
70000	80000	25	21
80000	90000	26	22
90000	100000	27	23
100000	145000	28	24
145000	155000	29	25
155000	165000	30	26
165000	175000	31	27
175000	185000	32	28
185000	195000	33	29
195000	205000	34	30
205000	215000	35	31
215000	225000	36	32
225000	235000	37	33
235000	245000	38	34
245000	255000	39	35
255000	265000	40	36
265000	275000	41	37

Allowed Laytime.

Starts at the LNG Carrier's notice of LNG Carrier in final position and ready to receive gangway.

Actual Laytime.

Stops when the last flange of the Terminal liquid cargo arms and vapour return line is disconnected from the LNG Carrier manifold presentation flanges and Gate's notice of ready to retrieve gangway.

Allowed Unloading Time.

Starts with acceptance of the NOR.

Actual Unloading Time.

Stops upon the LNG Carrier departing from the Terminal's dedicated LNG Channel.

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3.19 Appendix C – LNG Carrier 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			
Local Agent			
P&I Club			

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3.20 Appendix D1 –Admission Policy for LNG Carriers Arriving, Departing & Shifting

Arriving LNGC from sea, inwards

An arriving LNGC with a length above 180 meter is using as much as possible the Eurogeul

Windlimit is 13.8m/s

Minimum visibility is 2000m (entire trajet)

Pilotstation for LNGC with L>180m is situated in the Eurogeul near buoy E9 (preferred heli pilot)

Smaller LNGC's with L<180m use the standard pilot station close to the MC-buoy

LNGC's with L>180m are boarded by 2 pilots

VTS will assist and control the surrounding traffic (crossing traffic with small CPA's will be avoided)

The vessel's agent will order the arriving LNGC's with L.180m at least 48hr in advance

Departing LNGC to sea, outwards

1 A departing LNGC with a length above 180 meter is using as much as possible the Eurogeul

2 Windlimit is 13.8m/s

3 Minimum visibility is 2000m (entire trajet)

If the visibility is between 1000 – 2000m, LNGC's with a L<125m are discussed regarding the current circumstances.

If anywhere in the piloted route the visibility is below 1000m, departure is delayed.

4 LNGC's with L>180m are boarded by 2 pilots

5 VTS will assist and control the surrounding traffic (crossing traffic with small CPA's will be avoided)

6 LNGC with L>180, pilot will disembark "west of MC buoy", where no crossing traffic is.

If the destination is "North" the pilots will disembark at the regular station close to the MG buoy.

LNGC with L<180m, pilot will disembark at the regular station close to the MG buoy.

Shifting LNGC, see departing LNGC, except point 1 and 6.

Arriving LNGC for Jetty 1& 2 (Nijlhaven)

1 Tidal windows:

LNGC with L<120m have NO tidal window (unless they need to pass a LNGC berthed at Jetty 2)

Other LNGC's have a tidal window based on "Operational Current model" via below link:

<https://www.portofrotterdam.com/weather-tide/desktop/>

- Click in the upper graph "Configure Chart" and select BKNIJLH/PTSR10S15

- Select on the Left Y-axis "Knots"

- Max allowed current is 0.4kn in any direction)

- Pilots calculate 20 minutes sailing time from "lower leading lights" to the actual turning point at the beginning of the tidal window and 40 minutes sailing time from "lower leading lights" to the actual turning point at the closing of the tidal window.

- if the "Operational Current Model is not available, then the "astronomical tidal windows are being used

Passing "Lower Leading Light: HW + 00:30 till HW + 01:30 and HW + 04:30 till next HW – 02:30

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2 Use of tugs

- LNGC with $L > 250\text{m}$: 4 tugs each with a minimum 60T Bollard pull
 - LNGC with $L > 180\text{m}$ and $L < 250\text{m}$: Pilot determines nr of tugs (minimum of 2 tugs each 60T Bollard pull)
 - LNGC with $L < 180\text{m}$: Pilot determines nr of tugs (Minimum 1 tug with 45T Bollard pull)
- If the LNGC has additional maneuvering equipment e.g. azipods, the pilot can deviate from this rule.

3 Additional agreements:

- It is not allowed to enter the Nijlhaven via the northern entrance

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- It is not allowed to pass the southern jetty (Jetty No.2) if this jetty is occupied.
An exception is made for LNGC's with $L < 120\text{m}$ if they use the tidal window regime for LNGC's with $L > 120\text{m}$ stated at bulletpoint 1.
- Maximum length allowed is 345m
- Maximum swell while alongside is 1m

Departing LNGC from Jetty 1& 2 (Nijlhaven)

Tidal windows: None

Use of tugs

- LNGC with $L > 250\text{m}$: Pilot determines nr of tugs (minimum of 2 tugs with a minimum 60T Bollard pull)
- LNGC with $L > 180\text{m}$ and $L < 250\text{m}$: Pilot determines nr of tugs (minimum of 1 tug each 60T Bollard pull)
- LNGC with $L < 180\text{m}$: Pilot determines nr of tugs (Minimum 1 tug with 45T Bollard pull)

If the LNGC has additional maneuvering equipment e.g. azipods, the pilot can deviate from this rule.

Additional agreements:

- For LNGC's with $L > 120\text{m}$ it is not allowed to pass the northern or southern jetty (Jetty No.1 or 2) if this jetty is occupied.
- If the northern jetty (Jetty 1) is occupied, then a LNGC from jetty 2 can depart via the south side (stern departure)

3.21 Appendix D2 – Safety and Admission Policy for LNG Carriers (Yukon haven, Jetty 3)

Arriving LNGC for Jetty 3

Tidal windows: None

Use of tugs:

- Pilot determines nr of tugs

Additional agreements:

Max length = 180m

Vessel with $L < 115\text{m}$ are allowed to use the bolders and the Quick Release Hooks

Departing LNGC from Jetty 3

Tidal windows: None

Use of tugs:

- Pilot determines nr of tugs

Additional agreements: None

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3.22 Appendix E – Forms Section.

3.23 Appendix E1 – Work Authorization Form.

Gate LNG Work Authorization

From the Master of M.V. /S.S. _____ Date _____

To: Gate Terminal

I wish to carry out the following repairs/maintenance while alongside your Berth. Repairs/maintenance will/will not* involve hot work, will/will not* immobilize the Ship and will take approximately _____ hours.

If subsequently it is determined that the repairs/maintenance work is likely to extend beyond the time stated above, the Master must notify the Terminal Leader and request an extension to the agreed time.

Description of repair/maintenance:

* Delete as necessary

The Master will comply with his company’s own Permit To Work procedures and has reviewed the Permit To Work that he has requested with the Terminal. A full risk analysis has been carried out by the Master and discussed with the Terminal. It is understood the Master is entirely responsible for ensuring that the repairs/maintenance are carried out safely.

For Ship	For Gate Terminal
Name:	Name:
Rank:	Position:
Signature	Signature
Date: Time:	Date: Time:

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

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

Info description			Name, Number, Value
Name Capacity User			
LNG Carrier Name & IMO number/ Inland Barge name & ENI number			
Cargo ID#			
Last Port			
Last port Departure Time and Date			
Estimated Time of Arrival (ETA) at the Pilot Boarding Station/ 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)			

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3.25 Appendix E3 – 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 LNG Carrier			
Call Sign			
IMO / ENI No.			
Country of Registry			
Name of Master			
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			
Date of International Oil Pollution Prevention Certificate (IOPP)			
Confirm that Passage Plan has been prepared for the voyage and covers the period berth to berth.			
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 (un)load			
Sailing displacement			
Anticipated berthing displacement			
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 (un)loading rate			
Anticipated (un)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 Inmarsat No's:	Voice No. Voice No. Fax No. Telex No.		
Ship GSM : Mobile Phone No			
Ship Email:			
MMSI No.			

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3.26 Appendix E4 – 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 LNG Carrier _____, owned by _____ under my command, has arrived at the Pilot Boarding Station 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 proceed to the berth designated by Gate and commence unloading her cargo of LNG.

The pressure of each tank of the LNG Carrier 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

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3.27 Appendix E5 – Acceptance of the Notice of Readiness.

Dear Sirs,

We accept the Notice of Readiness and in the table below we give you the details to berth.

Name Capacity User	Cargo ID #	IMO number LNG Carrier	Berthing priority and time	Berth number	Allowed (Un)loading Time	Allowed Laytime

Yours Faithfully

<Date>, <Time>

For and on behalf of Gate

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3.28 Appendix E6 – Rejection of the Notice of Readiness.

Dear Sirs,

The Notice of Readiness tendered at <date>, <time> is rejected. The reason for the rejection is mentioned in the table below:

Name Capacity User	Cargo ID #	IMO Number LNG Carrier	Reason for rejection

Yours Faithfully

<Date>

For and on behalf of Gate

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3.29 Appendix E7 – Terminal Status Notice.

Dear Sirs,

We herewith send you the Terminal Status Notice for the <LNG Carrier name>, <LNG Carrier IMO nr>

Name Capacity User	
Cargo ID	
Details relating to any restrictions at the Terminal, which will impact upon the (un)loading of the Cargo	
Timing and rate of (un)loading	
Any non-availability of jetty equipment	
Weather forecast at Unloading Port	

Yours Faithfully

<Date>

For and on behalf of Gate

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3.30 Appendix E8 – Notification of need to cancel subsequent Berthing Slot (due to LNG Carrier failing to leave berth in a timely manner)

Dear Sirs,

We herewith notify you that, due to the fact that your LNG Carrier with IMO number <IMO number> failed to leave the berth in a timely manner, we may be required to cancel the next Berthing Slot, which starts at [date, time].

Yours Faithfully

<Date>

For and on behalf of Gate

3.31 Appendix E9 – Gate Remedies for LNG Carrier Delays

Dear Sirs,

Your LNG Carrier with IMO number <IMO number>, failed to leave berth in time and exceeds the Allowed Unloading Time. We plan to undertake the following actions:

-
-
-
-

The reasons for these actions are.....

Yours Faithfully

<Date>

On and behalf of Gate

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3.32 Appendix E10 – LNG Carrier / Gate Notice of Delay after Tendering the NOR

Dear Sirs,

We herewith notify you that a problem occurred / is foreseen that will cause a delay to the LNG Carrier in berthing/unloading/departing. Please find the details in the table below.

Cargo ID#	IMO number LNG Carrier	NOR tendered at: (hrs:min)	Nature and cause of delay	Estimated delay (in hrs:min)

We propose to discuss the situation soonest.

Yours Faithfully

<Date>

For and on behalf of <Name Master>/Gate

3.33 Appendix E11 - Customer & Supplier info for cargoes

ISO standard required for gauging devices on board of LNGC's: ISO 18132-1; 2006
 ISO standard for taking the samples: ISO 8943; 2007
 Reference temperatures: 25°C for enthalpy and 0°C for volume (so 25/0)

3.34 Appendix F – Personal Protection Equipment (PPE)

Personal Protection Equipment (PPE) - Any LNG Carrier 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.

A visitor for the vessel must wear body covering clothes (no short trousers, skirt or T-shirt) and flat shoes (no high heels)

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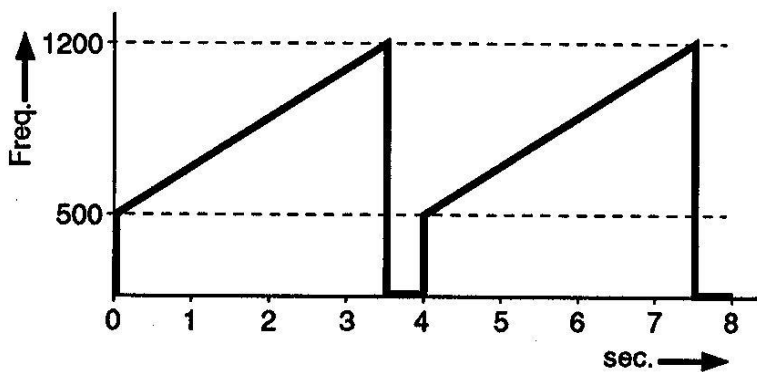
If a crewmember without PPE is noticed outside the PPE free corridor, all shore leaves will be denied, meaning that crewmembers are not allowed to leave the vessel. Further the matter will be discussed with the responsible persons on board, a report will be made and a Letter of Protest will be issued.

- *Full PPE means:
- Safety shoes or –boots;
 - Fire retarding clothes;
 - Safety helmet;
 - Safety glasses;
 - Life vest.

3.35 Appendix G – Emergency Alarms

Alarms for Gate, MOT, Ship, 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

Time that Ship alarms will be tested: ___ a.m. local time each _____

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3.36 Appendix H – Fire-fighting Equipment / Capabilities

For Jetty 1 & 2;

Fire-fighting facilities on the main deck include:

- Two elevated remotely operated monitors near the berthing line (to cover loading arms and LNG Carrier manifold)
- One remotely operated (lower) monitor at rear of the deck covering the deck manifold area
- Water deluge on the front of loading arm risers and front of the column supporting the gangway
- Deluge of the gangway
- Deluge of the KO drum
- An international ship/shore connection to allow the connection of a fire hose from the LNG Carrier
- A 4-way hydrant located at the access bridge

Remote fire-fighting is possible from the Jetty Monitoring Building as well as the Central Control Room.
At the LNG Spillage basin there is a High Expansion Foam system to cover the spilled LNG contained in this basin.

For Jetty 3;

Fire-fighting facilities on the main deck include:

- Two elevated remotely operated monitors near the berthing line (to cover loading arms and LNG Carrier 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 fire-fighting is possible from the Jetty Monitoring Building as well as the Central Control Room.

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3.37 Appendix Ia – Jetty 1 & 2 Berth Arrangement Details

Port Side towards berth	
Berth Heading 337° toward seaward	
Channel Width	200 m
Effective Centre of Fenders below Pier	5.5 m
Pier Height above NAP	7.5 m
Fender face/Berthing line from Jetty face	2.6 m
Permissible Surge Excursion Fwd/Aft	±2.00 m
Permissible Sway Excursion Port/Stbd	5.40 m
Dist of Berth Target to Right of Origin	0.50 m
Dredge Depth Below NAP/ Contractual Depth Below NAP	15m / 14.5m
Wind Speed Specified at 10m Height	Max 30 m/s
Current Specified at Depth	Max 0.45 m/s
Difference between NAP and HHW/LLW	+2.73/-1.52

Dolphin	MD1	MD2	MD3	BD1	BD2			BD3	BD4	MD4	MD5	MD6
Dist to Manifold C/L	175	135	95	52.5	25	2	-14	-30	-60	-105	-145	-185
Dist to Berthing line	45.5	45.5	45.5	5.25	5.25	-	-	5.25	5.25	45.5	45.5	45.5
Height Dolphins above NAP	6	6	6	6	6	-	-	6	6	6	6	6
Height of Fenders C/L above NAP	-	-	-	2	2	1.8	1.8	2	2	-	-	-
Fender dimension	-	-	-	4.2 x 4.2	4.2 x 4.2	1.4 x 6.5	1.4 x 6.5	4.2 x 4.2	4.2 x 4.2	-	-	-
Hooks	4	4	3	2	3	-	-	3	2	3	4	4
Berth limit for Hooks vertical angle	-15 +45	-15 +45	-15 +45	-15 +45	-15 +45	-	-	-15 +45	-15 +45	-15 +45	-15 +45	-15 +45
Inner hooks horizontal angle	100	100	90	120	90	-	-	90	120	90	100	100
End hooks horizontal angle	120	120	120	120	120	-	-	90	120	120	120	120

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3.38 Appendix Ib – 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		

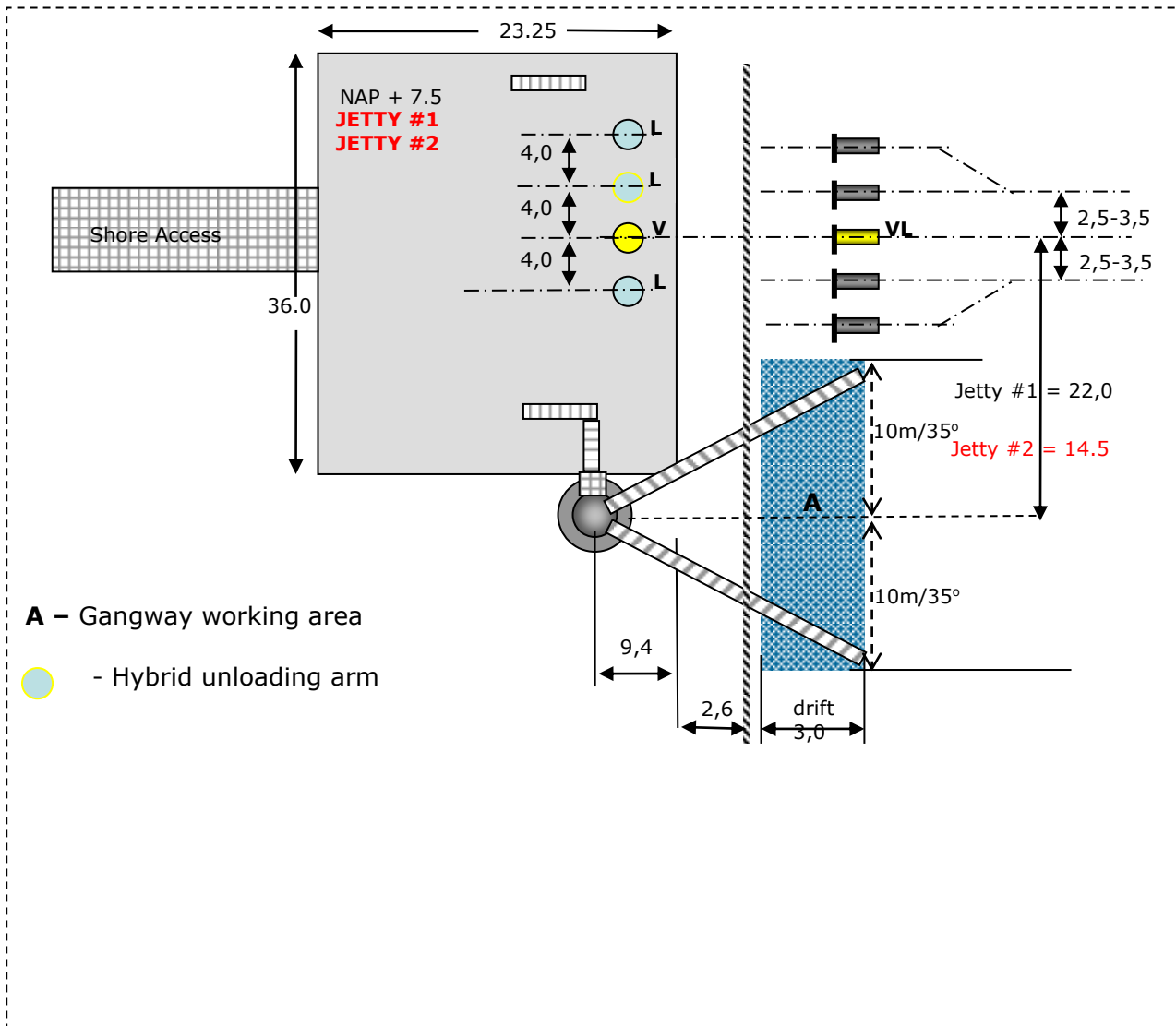
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QRH assembly	37-X-02A	37-X-02B	37-X-02C	37-X-01A	37-X-01B	37-X-02D	37-X-02E	37-X-02F
Dist to Manifold C/L	99.2	79.2	59.2	13.2	-18.8	-64.8	-84.8	-104.8
Dist to Berthing line	21.0	21.0	21.0	2.3	2.3	21.0	21.0	21.0
Height QRH's above NAP	5.0	5.0	5.0	5.0	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

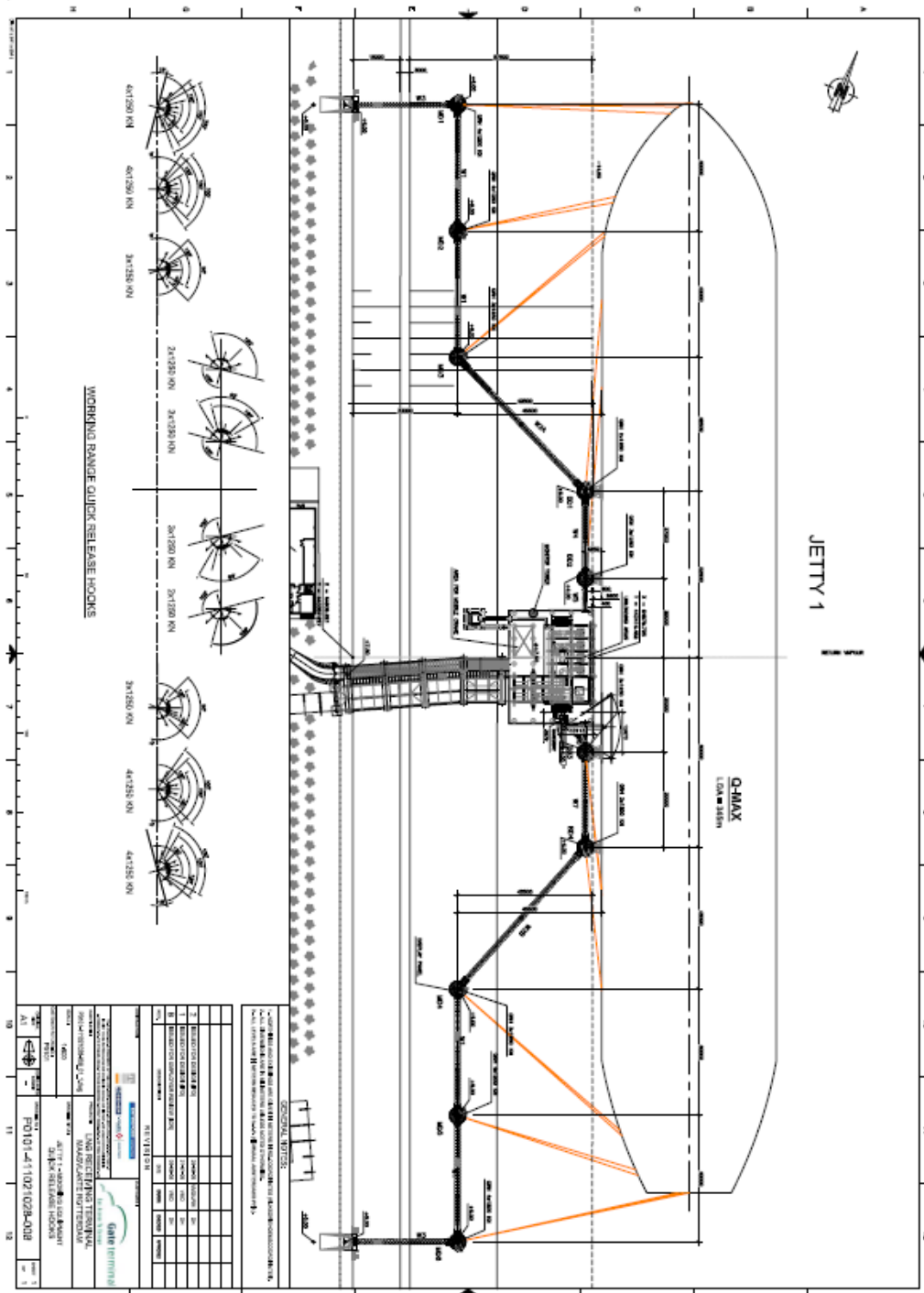
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3.39 Appendix I-1 – Jetty 1 & 2 – Platform Details



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3.40 Appendix I-2a – Jetty 1 & 2 Typical Mooring Plan



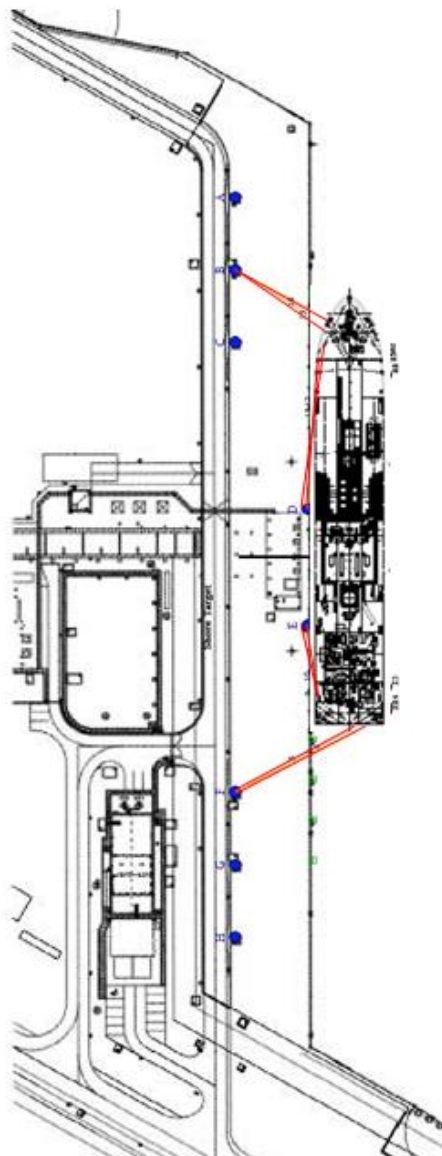
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3.41 Appendix I-2b Jetty 3 typical Mooring plan

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

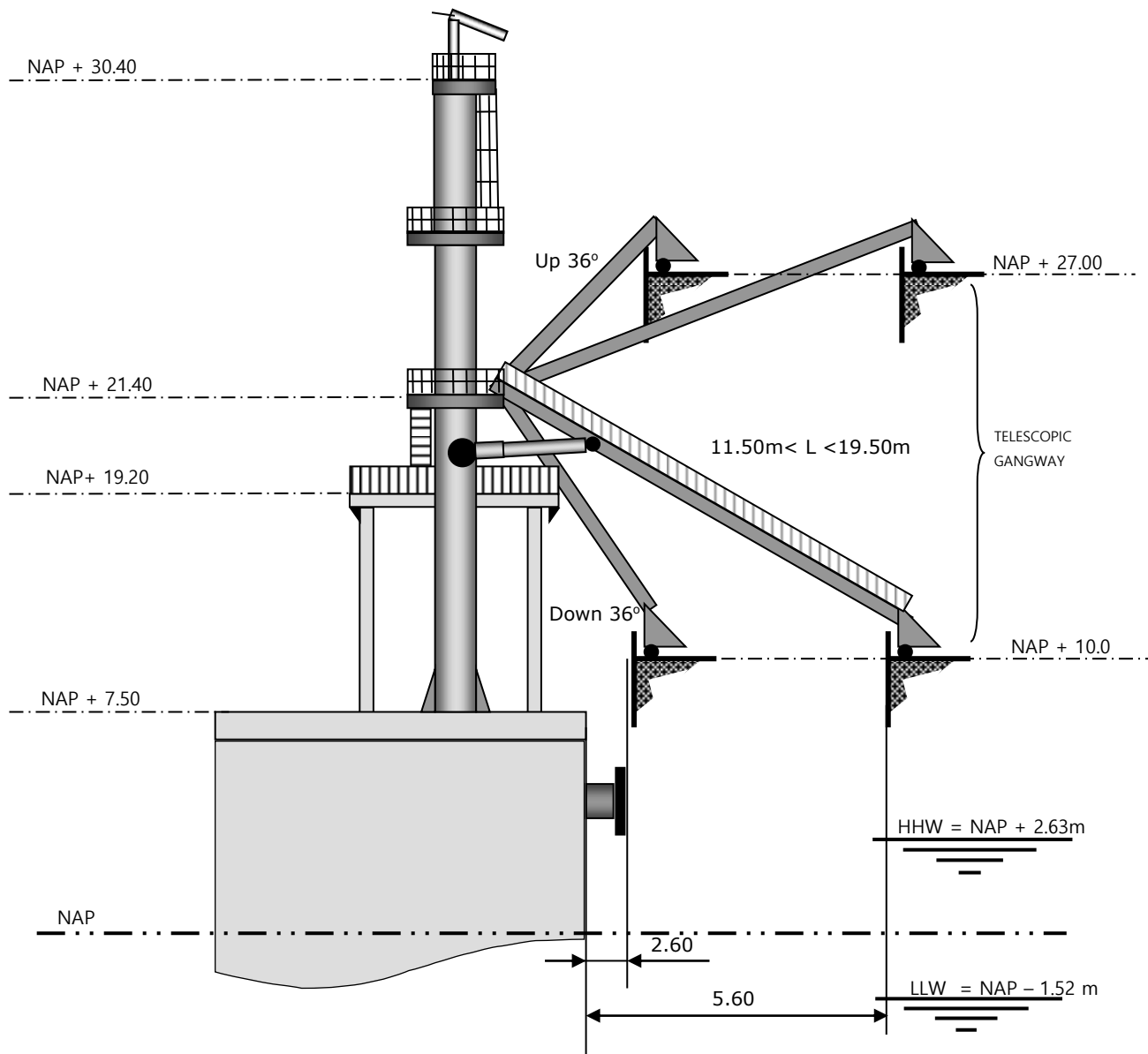


MOORING Plan:
JETTY 3



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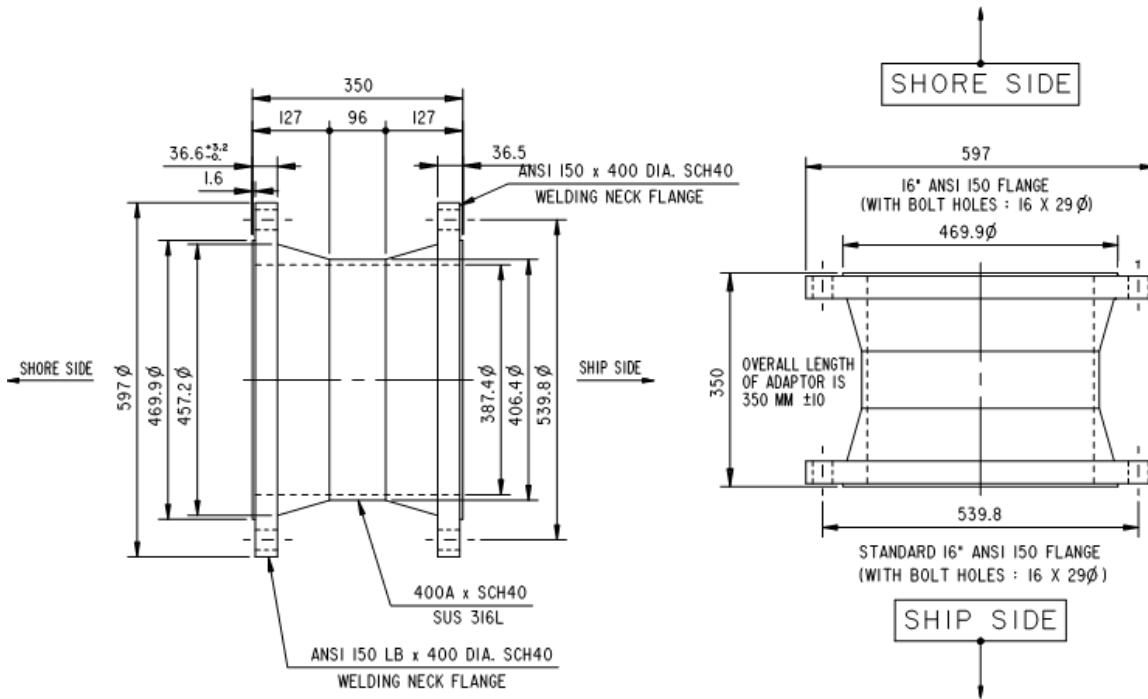
3.42 Appendix I-3 – Jetty 1 & 2 Gangway Details



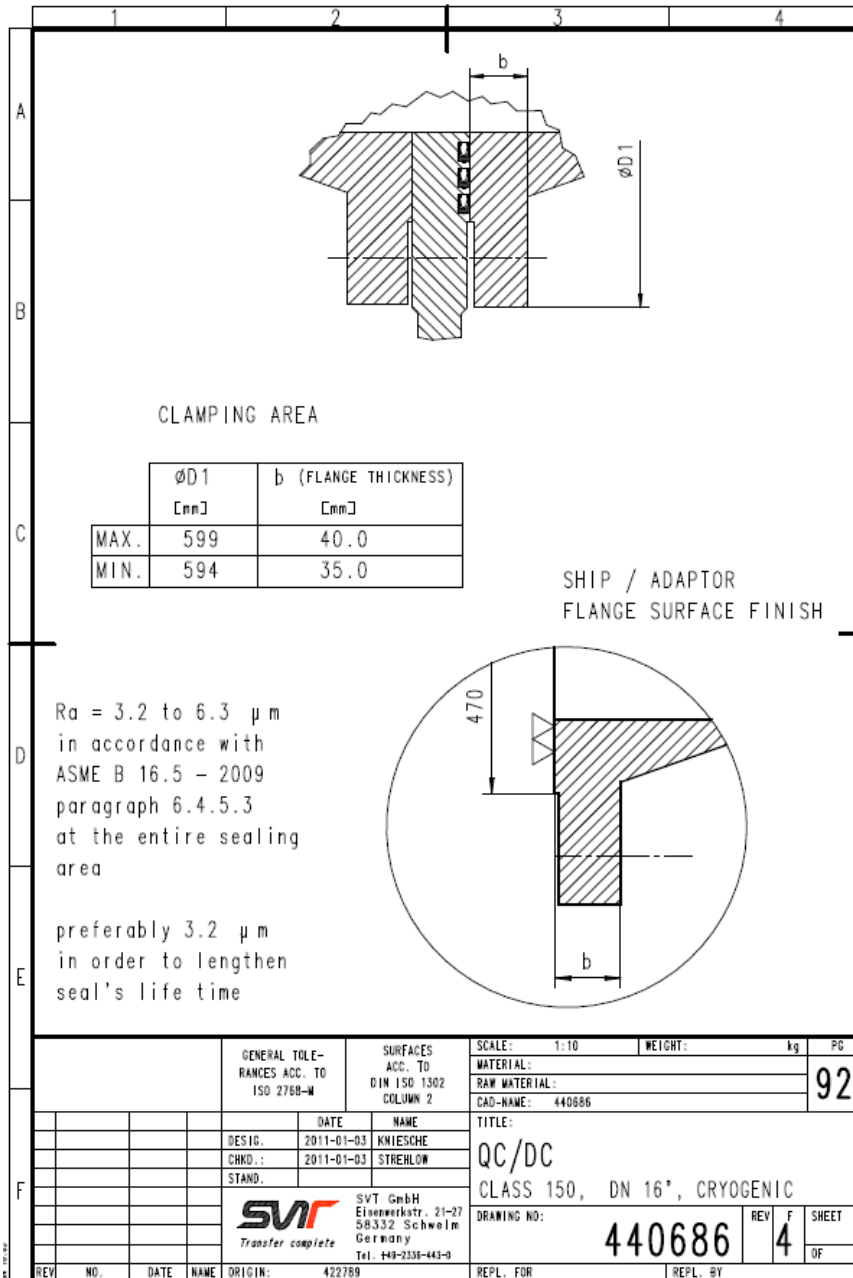
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3.43 Appendix I-4a – Jetty 1 & 2 Manifold Flange Details (16 inch ANSI B16.5)

SHORT DISTANCE PIECE



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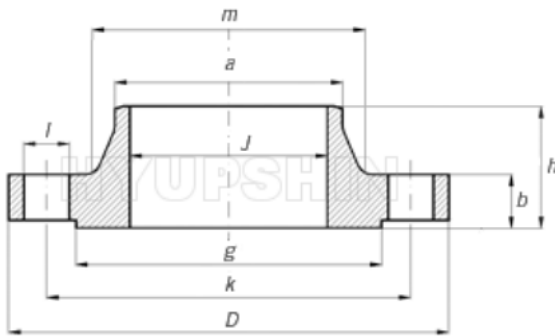


ANSI/ASME B16.5 – 2009 Paragraph 6.4.5.3

Either a serrated concentric or serrated spiral finish having a resultant surface finish from 3.2 to 6.3 μm (125 to 250 $\mu in.$) 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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3.44 Appendix I-4b – Flange Details (10 inch ANSI B16.5)



Welding Neck Flange

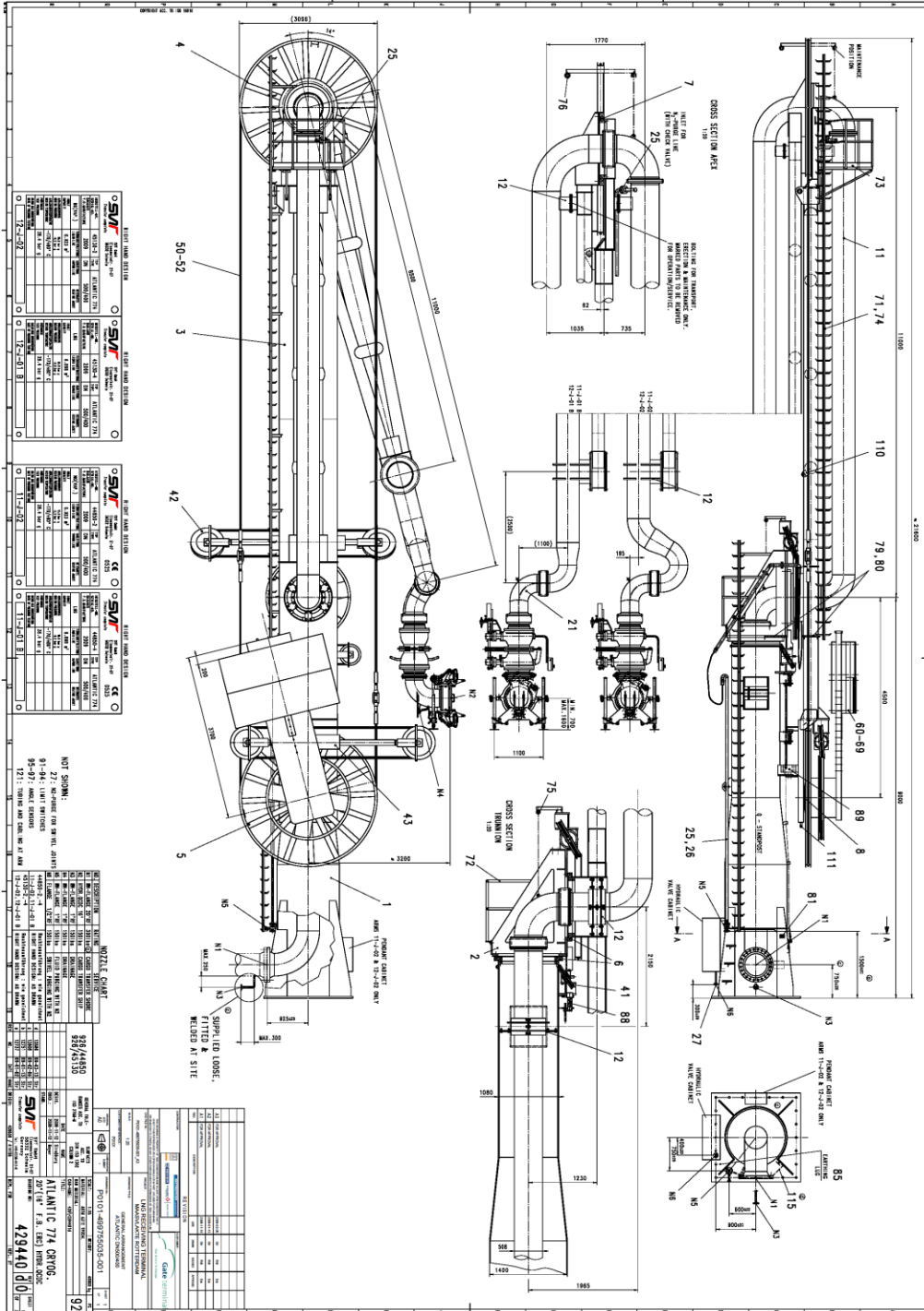
ASTM A182 ANSI B16.5
150 lbs sch 10s / 40s / STD

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

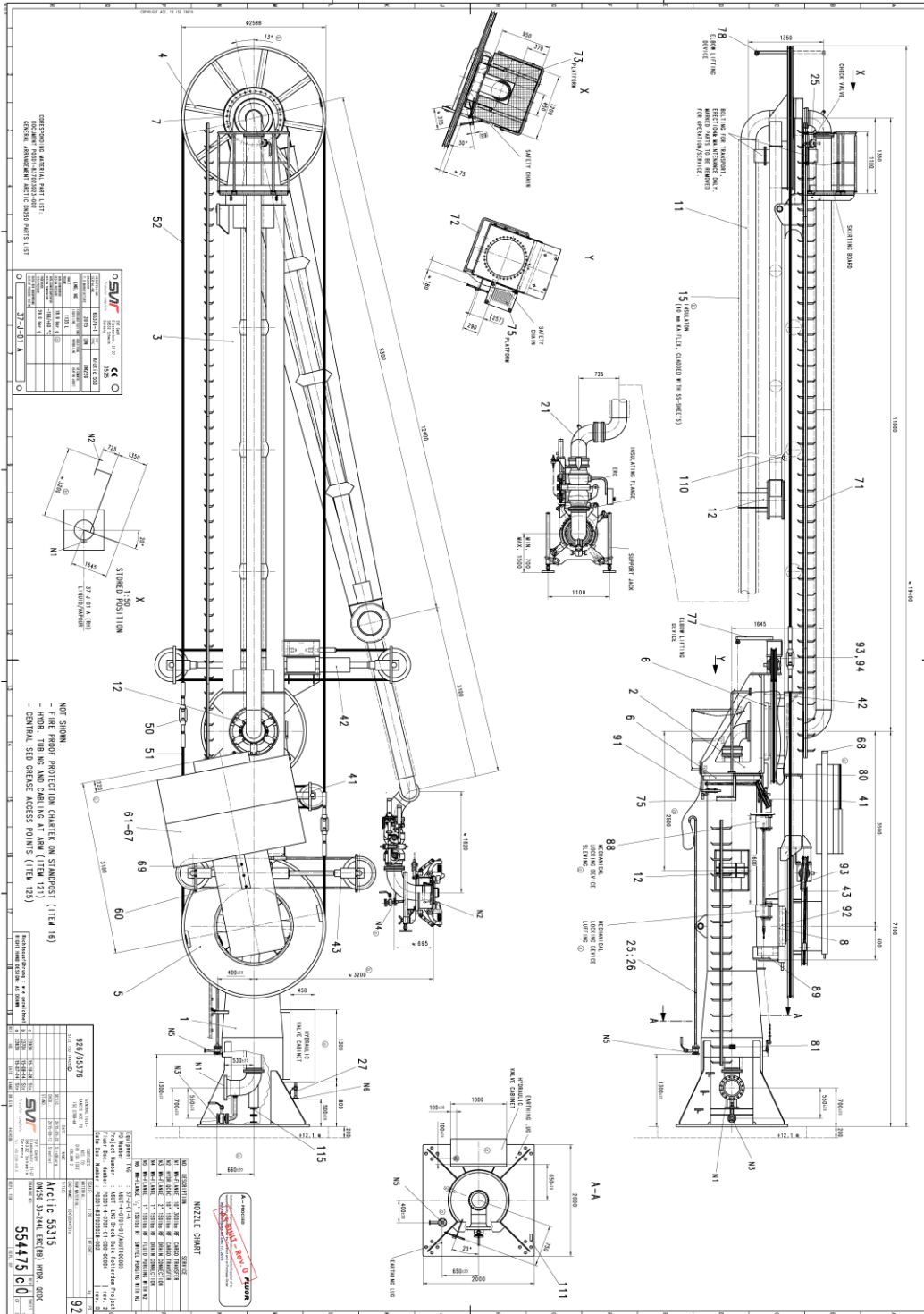
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3.45 Appendix I-5a – Jetty 1 & 2 (Un)loading Arm Details



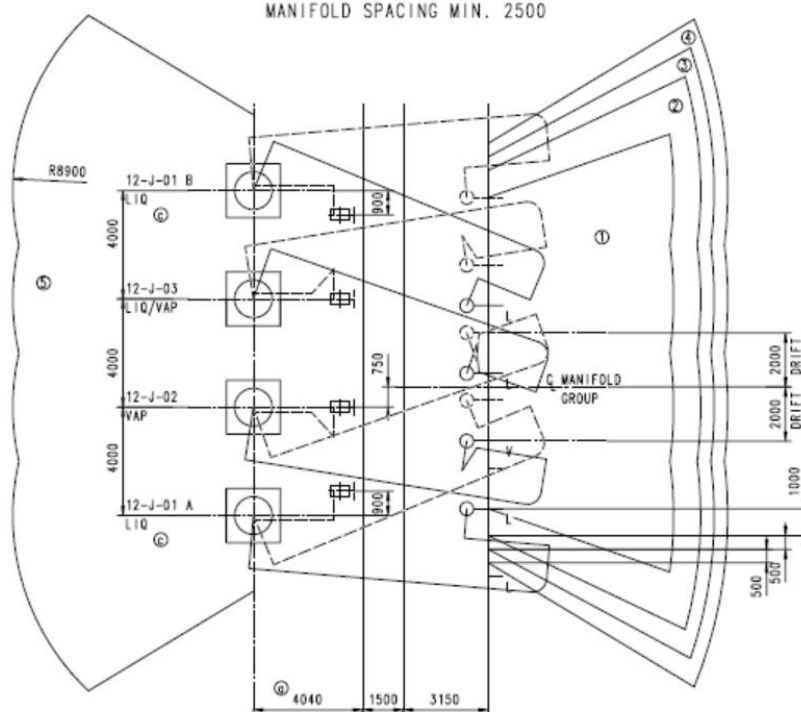
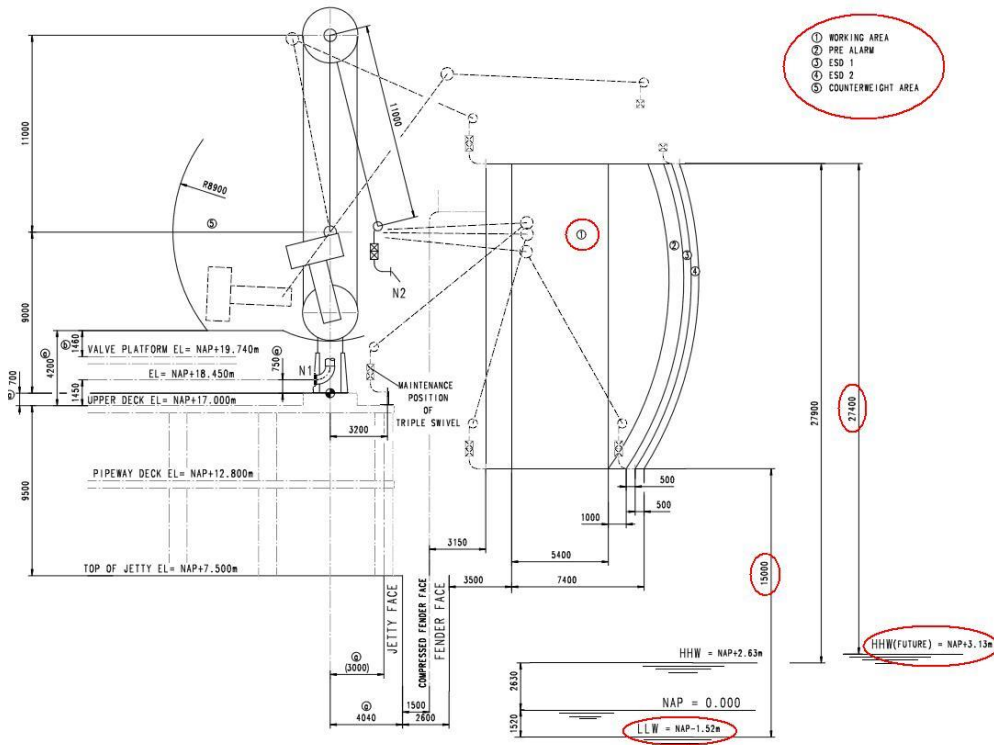
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3.46 Appendix I-5b Jetty 3 (Un)loading Arm Details



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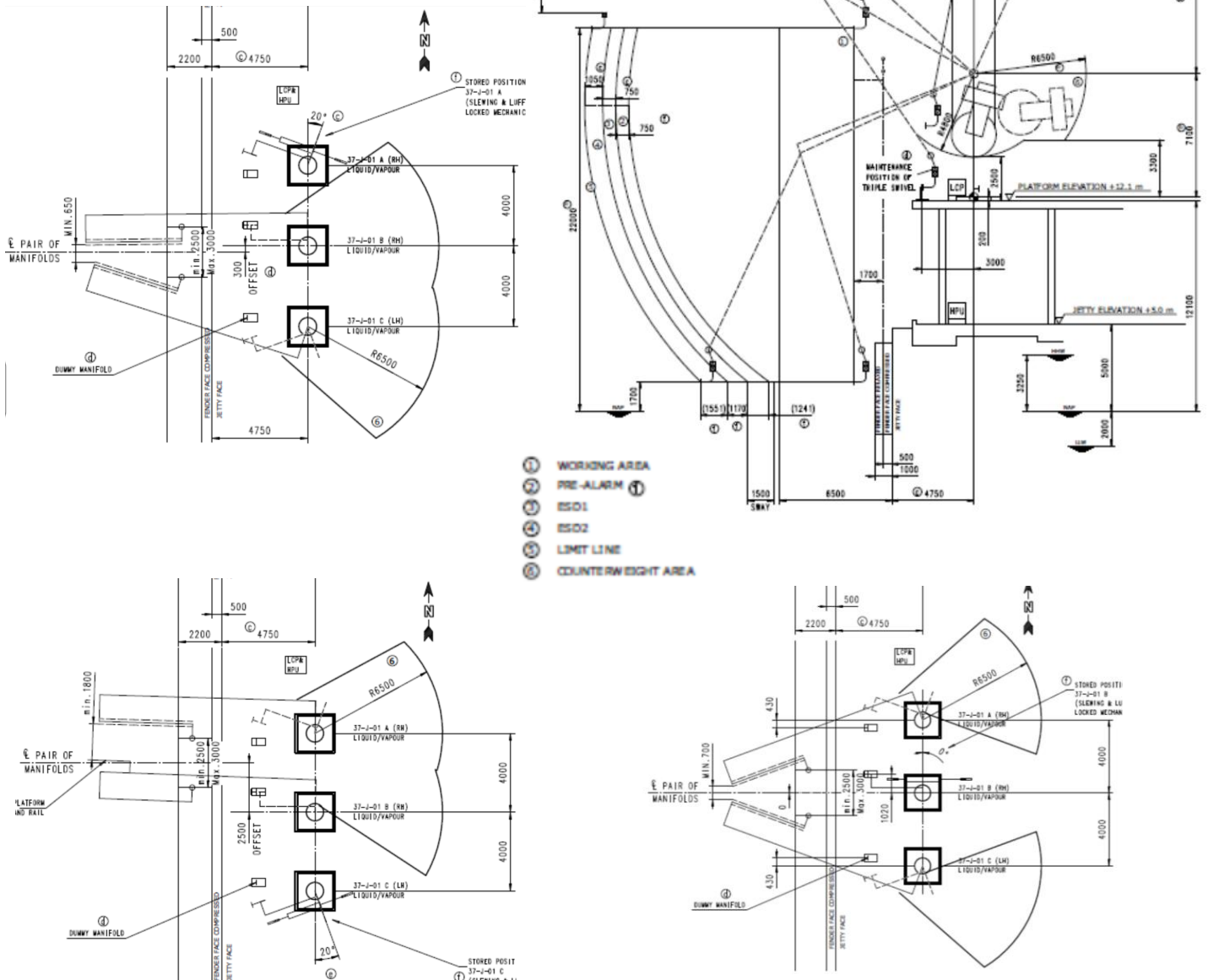
3.47 Appendix I-6a – Jetty 1 & 2 Cargo Arm Operating Envelope



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3.48 Appendix I-6b – 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

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3.49 Appendix Ja – Ship / Shore Communication Details

Pyle National Pin and Signal Data

Seatechnik 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.**

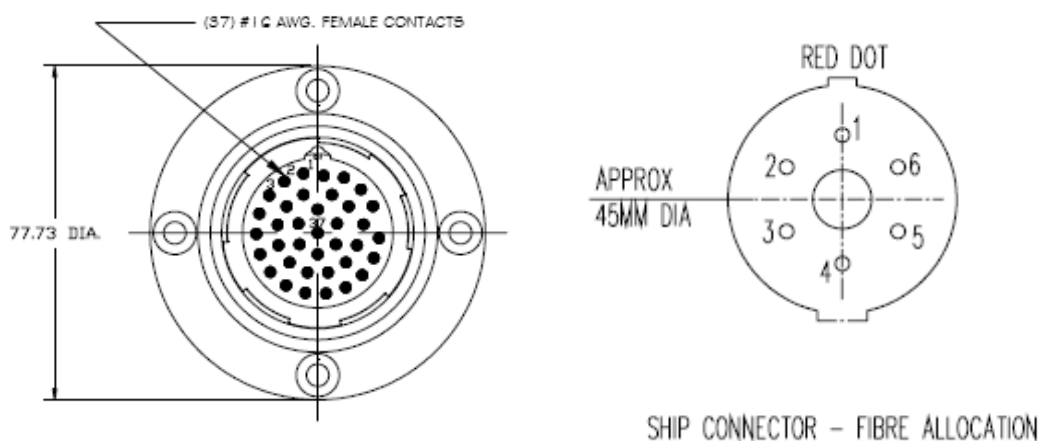
System will conform to EN 1532 standard. **Pyle National Shore PINS:**

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

ESDS Link Diagrams -

View on receptacle

Type Pyle National Compatible receptacle Contacts numbered in spiral arrangement.

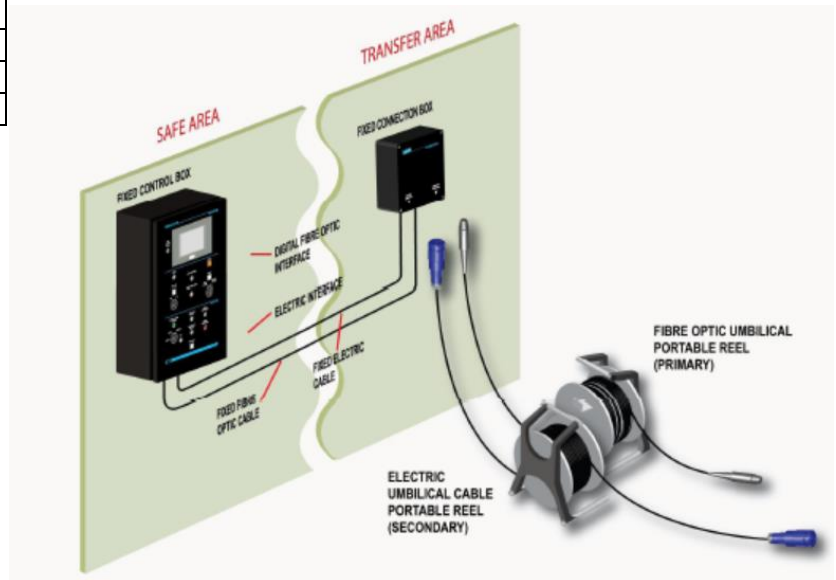


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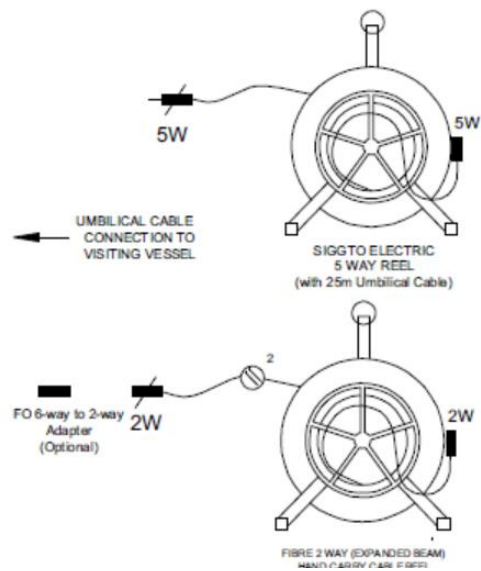
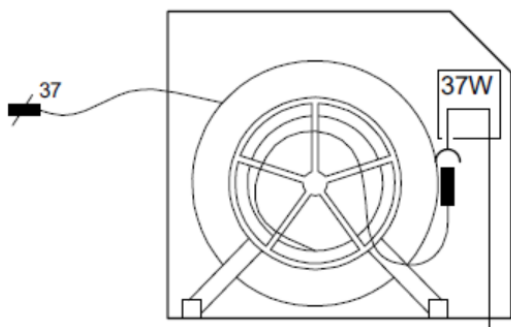
3.50 Appendix Jb Jetty 3 Ship / Shore Communication Details

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)**



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3.51 Appendix K – Pre Cargo Operations Meeting Discussion Checklist.

Document / Discuss:

1. Agree on needed adjustments to Laytime;
2. Issue laptop with operating instructions;
3. Verify communication channels and procedures to use;
4. Discuss alarm settings;
5. Agree on (un)loading rates and any required adjustments;
6. Agree on cargo arm cool-down flow and pressure;
7. Complete and Sign – Ship / Shore Safety Checklist;
8. Complete and Sign – Safety Declaration;
9. Complete and Sign – LNG (Un)loading Agreement;
10. Complete and Sign – ISPS Declaration of Security;
11. Complete and Sign – Statement of compliance;
12. LNGC will provide a “daily work plan” to identify Maintenance and repair issues;
13. Others as identified.

3.52 Appendix L – Post Cargo Operations Meeting Checklist & Issues Documentation.

Document / Discuss:

- Terminal discharge issues that arose
- LNG Carrier discharge issues that arose
- Resources and Cost associated with any “Relocation Orders”
- Agreement on the Certificate of Quality to be issued
- Recommendations for process improvement
- Estimated time before Gate issues “Ready to Retrieve Gangway” order
- Status of any “Authorized Work” being done by the LNG Carrier
- Status of any Crew that is ashore
- Status of incoming LNG Carrier’s that may affect departure
- Any anticipated delays by LNG Carrier to get underway
- Weather, traffic or navigation issues for LNG Carrier departure