



TERMINAL REGULATIONS

PGPCL LNG IMPORT TERMINAL AT PORT QASIM, PAKISTAN



Document No. PGPC/REG/TRG/001, Rev-2



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1. AMENDMENT SUMMARY

Details must include revision number, description and indication of which pages and paragraphs have been revised, date of revision approval, approvers title and signature.

Rev	Description	Date
1	Incorporated PLTL comments (Letter No. PLTL-2017/Technical/PGPC/1199 dated 28 Sep 2017 and email dated 19 Oct 2017).	08 Nov 2017
2	Incorporated PQA comments vide letter PQA/PSP/219/2018 pt Dated 22 nd Mar 2018	5 Apr 2018



2. REFERENCED DOCUMENTS

1.	Society of International Gas Tanker and Terminal Operators (SIGTTO)
2.	International Maritime Organization (IMO)
3.	National Fire Protection Association (NFPA),
4.	Oil Companies International Mooring Form (OCIMF)
5.	International Group of Liquefied Natural Gas Importers (GIIGNL)
6.	International Ship and Port facility Security (ISPS)
7.	British Admiralty Chart 59 (published 2013)
8.	PQA SOP for LNG Operations, dated 11 April 2015



3. INTRODUCTION

3.1 PURPOSE AND OBJECTIVE

LNG unloading and regasification operations at the PGPCL Terminal for customer PLTL have been compiled in accordance with the recommendations of Society of International Gas Tanker and Terminal Operators (SIGTTO), the International Maritime Organization (IMO), National Fire Protection Association (NFPA), Oil Companies International Mooring Form (OCIMF), International Group of Liquefied Natural Gas Importers (GIIGNL), International Ship and Port facility Security (ISPS) conventions and with the Terminal's operating standards.

This manual has been prepared for the benefit of Terminal Users, Transporters, vessel Masters, PQA Authority and ship's agents. This manual provides important information on the LNG marine terminal and its approach channel as follows: -

1. Provides general information about the terminal location, capabilities, cargo handling, and vessel berth & unberth criteria and all of the operations practices.
2. Provides the terminal user and LNG carrier captain/Master with supplementary information necessary for conducting the SSI & Vessel Compatibility study and references to "LNG Carrier Approval Procedure" by PGPCL.
3. Provides the technical information about the terminal, its mooring arrangements and cargo transfer systems.
4. Interprets the condition of use of the terminal at all instant.
5. Provides all safety instructions/procedures, accident preventions and all emergency procedures.
6. Provides details of exclusion zone, security protocol standards as per ISPS.

Required Compliance:

PGPCL Terminal users, employees, transporters, shipping agents, vessel Masters, crew members and third party service providers to the FSRU's and LNGC shall all comply with the provisions of this manual and its appendices.



3.2 PORT INFORMATION / LOCATION

Port Qasim Authority was established through an act of parliament on June 29, 1973. PQA is the 2nd deep sea industrial-cum-commercial port operating under landlord concept. The Port is situated in Indus delta region at a distance of 28 nautical miles in the south-east of Karachi. PQA is the most eco-friendly port and is geographically located on the trade route of Arabian Gulf. The port currently caters for more than 40% of seaborne trade requirements of the country.

The Port is under the administrative control of Ministry of Maritime Affairs, Government of Pakistan. Chairman is the chief executive of the port. All policy decisions are vested in PQA Board comprising seven members headed by Chairman, PQA. The Board is blend of public and private sector participation.

PQA is primarily a service oriented organization. The port provides shore based facilities and services to international shipping lines and other concerned agencies in the form of adequate water depth in the channel, berths/terminals, cargo handling equipment, go-downs, storage areas and providing facilities for safe day and night transit of vessels.

Day and night access to Port through a 45 km long channel marked by channel buoys up to 13 meter draught vessels.

The total area of the port comprises 3,520 acres (14.2km²) with an adjacent 13,000 acres (52km²) industrial estate wherein many industrial zones operate. In addition to the Pakistan Steel Mills (PSM) and KESC Bin Qasim Power Plant, around 80% of the Pakistan's automotive industry is located at Port Qasim. The port also provides direct water front access to two major near by industrial areas, Export Processing Zone (Landhi) and Korangi Industrial Area. Approximately 60% of country's export and import is originated from the sea areas. Port Qasim is managed by Port Qasim Authority, a semi-autonomous government body.

In the 1970s, as apart of Pakistani Prime Minister Zulfikar Ali Bhutto's program for economic reforms and establishment of heavy industries, the country's first steel mill (Pakistan Steel Mills) was established near the southern city of Karachi. A purpose-built specialised port facility was also decided to be established for bulk handling of the massive imports of raw materials for steel production. In addition to the future economic demands and strategic needs, this port was also meant to relieve congestion at Karachi Port, the only established seaport of the country. Port Qasim was named as Port Muhammad bin Qasim (also known as Port Qasim), after the Muslim General Muhammad Bin Qasim who conquered Daybul and the coastal areas of Sindh around 712CE.

Port Qasim is located, adjacent to the Bin Qasim town, in the southern part of Malir district, Karachi division, in Sindh. It is located in an old channel of the Indus River at a distance of



22miles (35km) east of Karachi city center. The geographic position of the Port Qasim places it in close proximity to major shipping routes. The approach to the port is a long a 24nm (45km) long Navigation Channel which provides safe navigation for vessels upto approximately 100,000 tonnes deadweight (DWT).

Location of the Port Qasim makes it very well connected to the transportation infrastructure of the country. It is at distance of only 9miles (15km) from the national highway, providing direct access to the inter land through road. A further 8.5 miles (14km) of railway track inside the terminal links it to the national railway network through railway tracks. Jinnah International Airport is also near, ata distance of 13.5 miles(22km).

Port Qasim islocated on the north west edge of the Indus Delta system. The system is characterized by long and narrow creeks, mud flats and the Indus River Delta-Arabian Sea mangroves, one of the largest mangrove forest ecosystems found in an arid climate. In 1972, eight species of mangrove trees were recorded from Pakistan however, only four continue to thrive. Several species of reptiles, birds, and terrestrial mammals in habit the project area, where very suitable habit are found. These are constantly under threat due to increased shipping and industrial activities in the area.

Pakistan Gas Port Consortium Limited, the Second LNG receiving facility in Pakistan ,islocated inside Chara Creek Mazhar Point in Port Qasim. The coordinates of the Jetty facility are **Latitude: 24°46'24.08"NandLongitude: 67°17'13.44"E.**



Figure 1 - PGPC LNG Terminal at Mazhar Point, Port Qasim



3.3 PORT LAYOUT

The port area stretches from the start of the navigation channel, which leads from the open sea to the port terminals. The channel has two main sections: the outer channel and the inner channel. The PGPCL terminal is located in Chara Creek, Mazhar Point.

The seaward end of the outer channel is defined by a fairway lighted buoy, which marks the channel entrance, and stretches to Phitti Creek, which is the entrance to the inner navigation channel. The outer channel leads from the entrance through shallow flats or bar. This section of the outer channel is known as the Ahsan Channel. The inner channel is a continuation of the outer channel via Phitti Creek and Kadiro Creek.

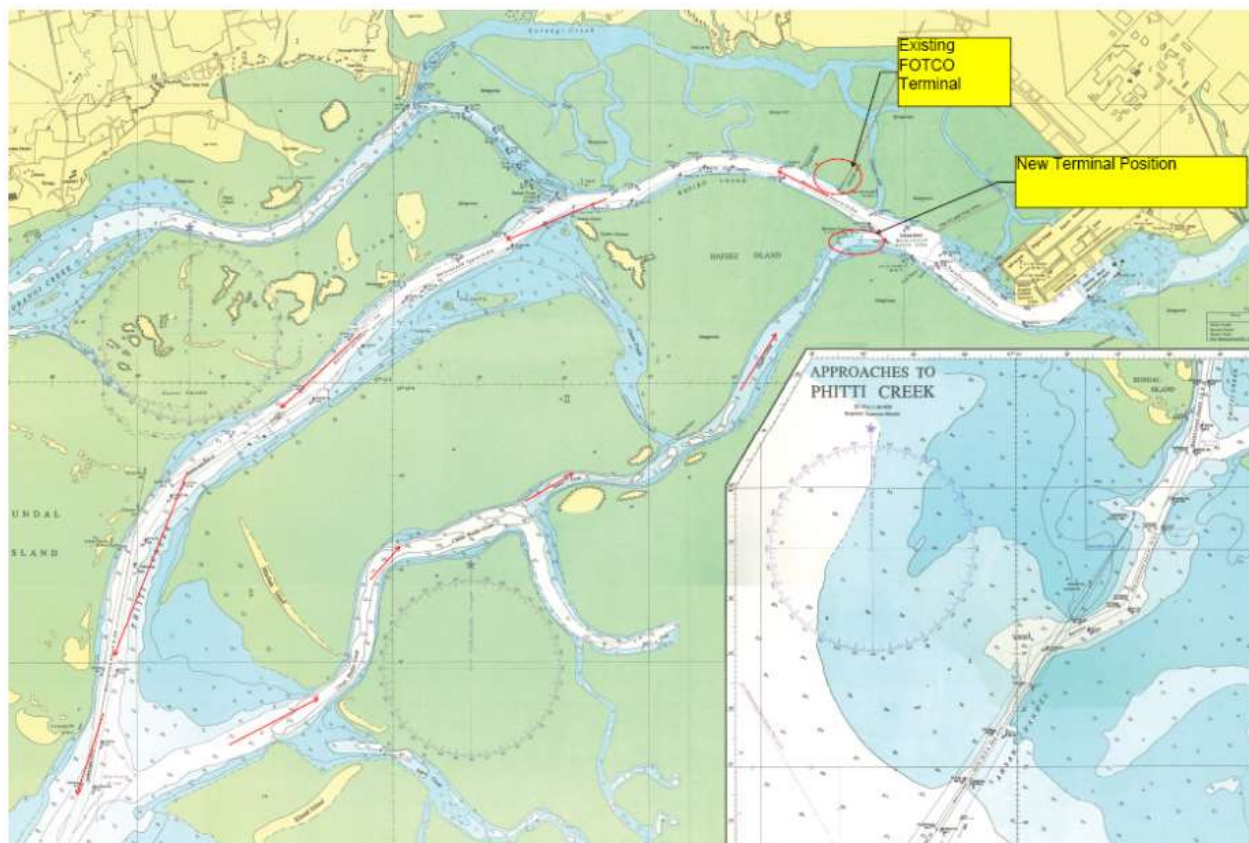


Figure 2 - Port & Jetty Aerial Map

Ahsan Channel

This waterway comprises the entire outer channel from the fairway lighted buoy to buoy-pair B1-B2 at the entrance to Phitti Creek. According to British Admiralty Chart 59 (published 2013) this stretch has a depth of 15.3 m. In this stretch, a depth of 15.3 meters is dredged by the Port Qasim Authority.



The minimum width of the Ahsan Channel is 200m from buoy-pair NO1-NO2 to buoy-pair NO7-NO8 and from buoy-pair NO12A-NO13 to buoy-pair B1-B2. The Ahsan Channel bend is located between buoys NO7-NO8 and NO12-NO13, where the channel width increases to 565m.

PhittiCreek

This water way comprises the beginning of the inner channel, from the beginning of Phitti Creek (buoy- pairB1-B2) to the start of Kadiro Creek near Hasan Point (buoy-pair K4-K5). According to British Admiralty Chart 59 (2013) this stretch has a dredged depth of 14.0m.

The minimum width of the Phitti Creek channel is 200m from buoy-pair B1-B2 to buoy-pair B11-B12. From here onwards the widthof the channel increases to between 280m and 312m, except in the vicinity of buoy P11 where it narrowst o225m.

Kadiro Creek

This water way comprises the last part of the inner channel, from the start of Kadiro Creek (marked by buoy-pair K4-K5) to the Port Qasim terminal area. According to British Admiralty Chart 59 (2013) the depth is 14.0m.

The minimum width of the channel is 200m on the Kadiro Bend, from buoy-pair K4-K5 to buoy-pair G2-G3. From here onwards the channel widens to provide access to the turning basin.



Figure 3 - Kadiro Creek Channel



4. TERMINAL FACILITIES DESCRIPTION

4.1 LOCATION

Port Qasim Authority is the 2nd deep sea industrial-cum-commercial port. The Port is situated in Indus delta region at a distance of 28 nautical miles in the south-east of Karachi. PQA is an eco-friendly port and is geographically located on the trade route of Arabian Gulf. The port currently caters for more than 40% of seaborne trade requirements of the country.

The terminal is situated at Mazhar Point(Hafeez Island) in Chara Creek, south west region of Port Bin Qasim.

Terminal coordinates:

Latitude	24°46'24.08"N
Longitude:	67°17'13.44"E

Time Zone: GMT +5, Karachi Pakistan

The terminal is approximately 700 meters center to center from the main navigation channel. An approach channel with minimum depth of -14 meters for the LNG carrier will be available from the existing Kadiro Creek (navigation channel) up to the location of the FSRU Jetty.

The Terminal is designed to moor FSRU and LNGCs in double banking arrangement. The facility consists of steel piled and concrete capped jetty which encompasses berthing and mooring facilities for a 170,000 m³ Floating Storage and Regasification Unit (FSRU) and LNGCs upto Qmax size. The re-gasification capacity of the FSRU is 750 MMcfd (Peak Capacity).

The terminal jetty fendering and mooring arrangements are designed to moor the FSRU by using the vessels existing mooring system fitted with conventional mooring wires with tails in accordance with OCIMF guidelines. The design of the berth permits two (2) vessels to be moored in a double-banked configuration while conducting LNG STS transfer operations with the outboard LNGC discharging into the FSRU and the FSRU conducting regasification of LNG and delivering high pressure natural gas into a purpose built high pressure gas marine unloading arm.

A 30 inch diameter, approx. 14 KM long pipeline for transportation of RLNG will be laid from the jetty upto the on-shore delivery point. The pipeline will be comprised of underground, subsea, open environment trestle mounted and buried section.



4.2 BERTHING CAPACITY

The berth draft is(-) 13.5 meters and the mooring, breasting and building platforms facilities are designed to accommodate two suitably equipped tankers i.e. FSRU and LNG carrier.

FSRU shall be moored alongside Jetty. Following are the design parameters of FSRU:

CargoCapacity (m ³):	170,150
DWT(ton):	84,200 MT
LengthOverall(m):	292.5
Beam(m):	43.4
Depth(m):	26.6
Draught(m):	11.9

Table 1 - FSRU Design Parameters

The berth is designed to accommodate LNG Cargo with a maximum capacity of 270,000m³, 12.2 meter draft, 375 meter length and DWT of 130,000 Tons, moored alongside FSRU.

4.3 LAYOUT

The berth consists of a working platform, buiding platform, two breasting dolphins, three mooring dolphins, two fenders and associated equipment and structures. One breasting dolphin and two mooring dolphins are installed at south-west region of working platform and one breasting dolphin, one building platform dolphin and one mooring dolphin are also installed at north-east side of working platform. The two fenders are laid out in a row in front of the breasting dolphins. The working platform, building platform, breasting dolphins and mooring dolphins are all interconnected by a series of steel structured cat walks.

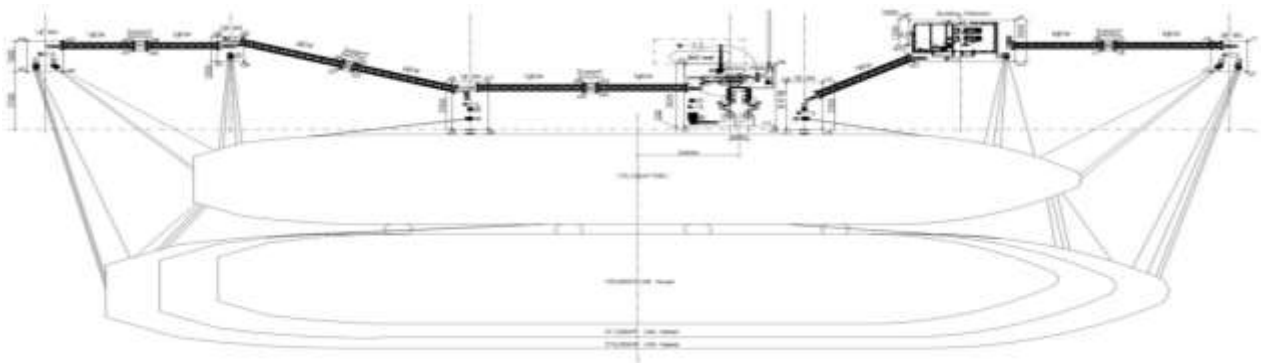


Figure 4 - Jetty Layout Plan



The two breasting dolphins, one building platform dolphin and three mooring dolphins have been laid out in accordance with the recommendations of Society of International Gas Tanker and Terminal Operators (SIGTTO) for vessel upto 130,000 Tons DWT.

Application of these recommendations and standards results in a layout with a breasting dolphin spacing of 110 meters or 55 meters each side of the centerline of berth.

The mooring dolphins are set back 27.5 meters behind the berth face. The provision of two dolphins at both the bow and stern of the vessel allows for the full range of vessel lengths to be berthed and also allows for off centerline mooring to permit vessel manifolds to be aligned with the appropriate unloading arms.

4.3.1 WORKING PLATFORM

The working platform is approximately 30 meters wide by 30 meters long.

The working platform is cemented concrete structure platform supported by vertical tubular steel pilings. It is set back from the fender line and protected from vessel impact forces by two fenders installed in front of breasting dolphins.

The working platform supports two 12" ANSI 600 marine loading arms, a gas unloading manifold system, pig launcher and various operational and fire-fighting equipment. An access gangway and a jib crane is also fitted in the working platform.

4.3.2 BUILDING PLATFORM

The building platform is 20 meters wide by 36 meters long and is 76 meters away from the working platform.

The building platform is also cemented concrete structure platform supported by vertical tubular steel pilings. One of the dolphins is installed here to moor vessel's forward breast lines. The building platform is also equipped with two numbers of sea water fire suction vertical turbine type diesel engines driven pump and a fire system in order to rescue fire incident.

2 story Control Building at the building platform is also equipped with the security monitoring system, jetty automation system, cargo handling and communication system with the FSRU and connecting pipeline Tie-in point.



4.3.3 MOORING & BREASTING DOLPHINS

The two extreme-end mooring dolphins MD1 and MD3 both have QRH-3 to moor head & stern lines of FSRU and QRH-4 to moor head & stern lines of LNGC. MD2 and building platform both have one QRH-4 to moor breast lines of FSRU.

BD1 and BD2 both have one QRH-2 to moor spring lines of FSRU.

The dolphins are equipped with quick release hooks of capacity 150 tonnes SWL and an electric capstan with line pull capacity of 1 tone and speed of 25m/min in mooring.

Mooring arrangement diagram – See **Figure-5**.

4.3.4 FENDER STRUCTURE

One fender, having energy absorption capacity of 3840kN-m, shall be installed on each breasting dolphins. Each breasting dolphin is supported by 18 piles.

4.4 TERMINAL COMMUNICATION

PLC control system is built on the Jetty. The PLC has safety instrument control system, process control functions, ESD emergency vent function, F&G monitoring function, to realize process parameters testing, monitoring, emergency relief, F&G alarm function.

The equipment of public address system consists of host computer, intercommunication station (outdoor type and desktop type) and loudspeakers. The host computer shall be installed in the control room. There shall be intercommunication stations on the jetty and in the control room.

The data of the platform control room communicates with the SSCG Pipeline Tie-In via new radio transceiver. The new radio station of the platform and SSCG match with the radio station built in the SSCG control room.

The Ship to Shore Link (SSL) will collect hard-wire signals including PT, TT, gas detector & flame detector, hot phone and ESD buttons and etc. from jetty to FSRU via Pyle 2 (electrical umbilical cable). Total two lines of Pyle cable and one line of single-mode fiber optical cable shall be transmitted to FSRU for control of ESDs, MLAs and Quick Release Hooks.



4.5 TERMINAL EMERGENCY SYSTEM

4.5.1 EMERGENCY SHUT DOWN

ESL for RLNG transfer operations will be installed to offer a reliable link enabling rapid and controlled shutdown in emergency situations.

The ESL comprises shore-side and ship-side sub-systems. These both possess a 'safe area' control unit, linked by fixed cable to hazardous area closures/control boxes. The hazardous area enclosures are then connected together by a flexible umbilical cable that allows the two sub-systems to communicate.

The safe area control units are also connected into the ship/shore Emergency Shut down (ESD) systems to ensure the correct and safe shut down of equipment in the event of an emergency. The ESL has an option allowing use in cases where either side of the transfer operation is equipped with the ESL system.

Features:

- It is intrinsically safe, explosion proof compliance.
- Compliant with SIGTTO recommendations.
- Electrically isolates shore and ship
- Also have self-test facility.
- Audible alarm indication
- Loss of communication indicators

4.5.2 DEPRESSURIZATION SYSTEM

Depressurization system consists of one line on the jetty connected to a vent mast installed with outlet approx. 5 meter above jetty deck, and one line onboard the FSRU connected to the FSRU's existing vent mast. In general the system consists of a hydraulic actuated relief valve that will open automatically in the event of a confirmed fire on FSRU or Jetty, and a pressure safety valve which is dimensioned for thermal expansion only, with set pressure 100 barg.

ESD valves that are connected to the vessels ESD system divide the segments for depressurization on the jetty and on the FSRU. The ESD shut off valves at FSRU side and jetty, limit to close automatically by FSRU ESD system in event of confirmed fire.



The philosophy of where to route HP gas after ESD shut down changes in respect to different gas send out configurations.

4.5.3 FIRE FIGHTING SYSTEM

Terminal's firefighting system is developed by considering following NFPA standards:

- NFPA 15 standard for water spray fix system for fire protection
- NFPA 14 standard for installation of stand pipe and hose system
- NFPA 20 standards for installation of stationary pumps for fire protection
- NFPA 59A standards for the production, storage and handling of LNG
- NFPA 10 standard for portable fire extinguishers

Fire protection for the jetty is achieved by means of a system comprising, fire pumps, fire monitors, hydrants, fire water connection for FSRU, and fire extinguishers. Depending on the type of emergency or specific requirements, this equipment may be jointly or individually operated.

Firefighting control room is located adjacent to jetty control room within the Control Building to control the firefighting system including monitors and fire engines.

Whenever a fire is detected on the terminal it will be annunciated on the Fire Alarm Panel in the control room. After acknowledging the fire alarm and having determined the location and extend of the fire the fire control operator will proceed to the Fire Control Panel to control the fire following the shift engineer's or shift supervisors instruction.

4.5.4 QUICK RELEASE HOOKS

The terminal facility is fitted with mooring and breasting dolphins on the jetty on which the quick release hooks (QRH) are fitted. The quick release mooring system provides a quick and easy method for mooring rope release. In the case of normal un-berthing or any emergency, the system may release the mooring rope quickly through 4 methods including local manual operation, local electric operation, remote operation by release control device in control building and monitoring computer virtual release control software in order to enable quick un-berthing.

When the loads added on the rope exceed the determined threshold, the warning light and siren will issue audible and visual signals. The equipment explosion-proof grade is ExdIIAT1 and the ingress protection grade is IP56. All QRH assemblies, including the capstans, shall be



electrically insulated from the dolphin structure. This isolation shall provide an electrical resistance of more than 1 mega ohm.

The quick release mooring system shall be controlled and monitored from jetty control room, and tension monitoring shall be available in FSRU through fiber optical.

Mooring Dolphin 1 (MD1)

- QRH-4(4 X 150TonSWL)– for Q-Flex Stern Lines
- QRH-3(3 X 150TonSWL)– for FSRU Stern lines

Mooring Dolphin 2 (MD2)

- QRH-4(4 X 150TonSWL)–for FSRU Aft Breast Lines

Building Platform

- QRH-4(4X 150TonSWL)–for FSRU Forward Breast Lines

Mooring Dolphin 3 (MD3)

- QRH-4(4X 150TonSWL)–for Q-Flex Head Lines
- QRH-3(3X 150TonSWL)–for FSRU Forward Lines

Breasting Dolphin 1 (BD1)

- QRH-2(2 X 150TonSWL)–for FSRU Aft spring Lines

Breasting Dolphin 2 (BD2)

- QRH-2(2 X 150TonSWL)–for FSRU Forward spring Lines

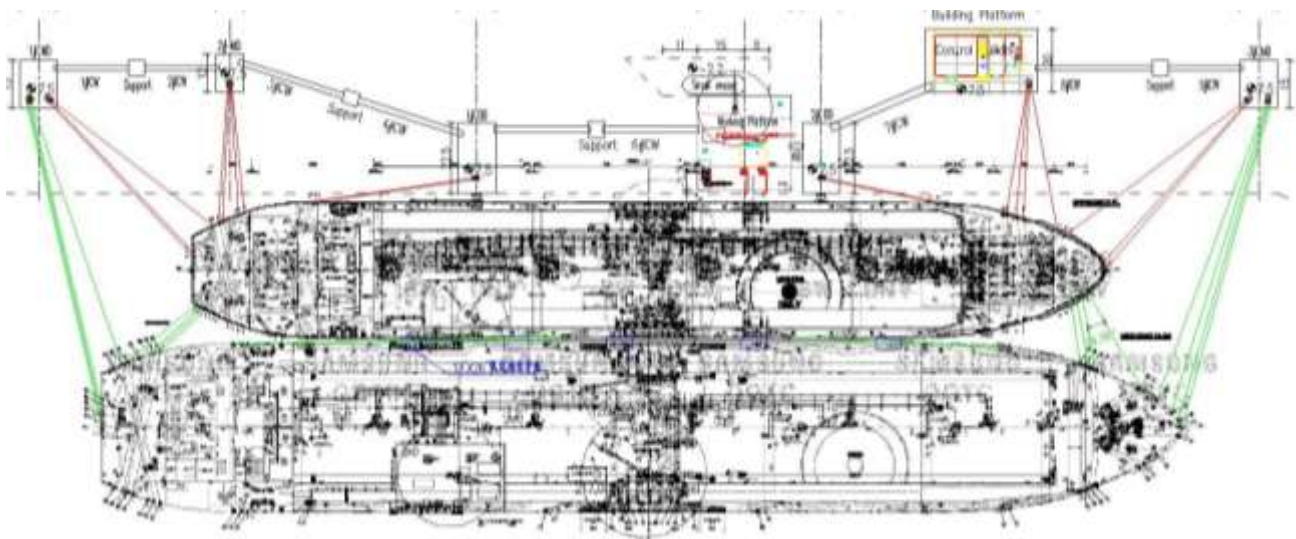


Figure 5–Terminal Mooring Layout



4.6 TERMINAL SECURITY

The terminal security plan and security measures in accordance with “International Ship and Port Security” (ISPS) is attached as **Annexure “A”**.

4.7 LNG SAFETY ZONES

The size of the safety zone for a specific port is determined by assessing the potential risks and hazards in that port and its approaches. . The safety zone is a way to keep other vessels away from the LNG carrier so as to prevent accidental collisions and intentional attacks.

4.7.1 EXCLUSION ZONE

An exclusion zone is an area within defined limits which is prohibited for certain ships to keep them far enough offshore to give sufficient time to rescue a disabled ship from going ashore and to protect the coastline from any pollution caused by a casualty.

4.7.2 SECURITY ZONE

A security zone is a defined area, which for safety and environmental purposes access is limited to persons, ships or objects authorized by the Naval Marine Guard. Such a zone may be stationary and described by fixed limits, or it may be described as an area around a ship or object in transit.

4.7.3 SAFETY ZONES

A safety zone is a water area, shore area, or water and shore area to which, for safety and environmental purposes, access is limited to authorized persons, vehicles, vessels. It may be stationary and described by fixed limits or it may be described as a zone around a vessel in motion.

4.8 METEROLOGICAL/TIDAL DATA

4.8.1 METEROLOGICAL DATA

<u>Month</u>	<u>February</u>	<u>March to October</u>	<u>November to January</u>
Wind Direction	W. or N.W.	S.W. or W.	N.E.



Velocity (Hourly Mean)	11-6 mph	18-22 mph	7-11 mph
Average	5-7 m/sec	8-10 m/sec	3-5 m/sec
Maximum	28 m/sec (63 mph)	30 m/sec (67 mph)	17 m/sec (38 mph)

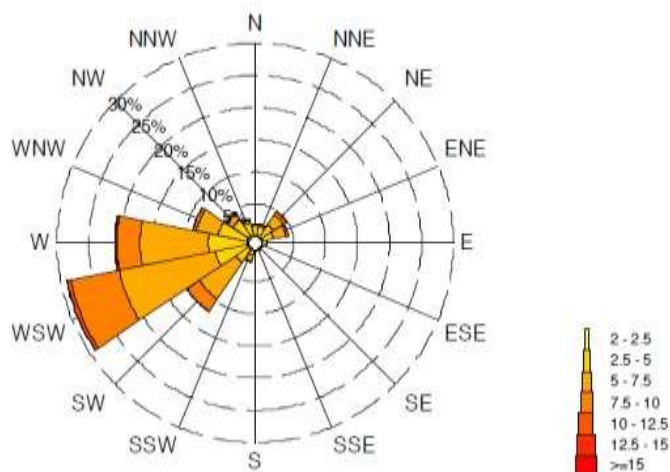


Figure 6 - Wind Rose

Temperature:

A Hydrometeorology condition analysis has been carried out at Port Qasim, and it is about 9km east away of the PGPCL site. And the temperature condition of that area is:

- Maximum: 45°C (113°F)
- Minimum: 3°C (37°F)

Humidity:

- Maximum: 90 %
- Minimum: 45 %

Rainfall:

- Mean Average: 195 mm ~ 8" - Mostly July & August

Maximum Precipitation Rate:

- 75 mm/hr over 15 mins (3" /hr over 15 mins)

NOTE: Refer PQA website for the latest information/data.



4.8.2 TIDES & CURRENTS

Tides:

According to the tide level data of Port Qasim (PIPRI) tide station in the PAKISTAN TIDE TABLES 2014 (Hydrographic Department Pakistan Navy). Tide in the Port Qasim belongs to mixed type. The characteristic tide levels of this Site area are as follows:

- Highest Astronomic Tide: + 4.01 m
- Mean High High Water: + 3.45 m
- Mean Low High Water: + 2.66 m
- Mean High Low Water: + 1.40 m
- Mean Low Low Water: + 0.62 m
- Lowest Astronomical Tide: - 0.57 m
- Storm Surge: + 0.80 m

Note: All elevations refer to Chart Datum – Budal Island.

Currents:

Chara Creek in Vicinity of Berth:

- Maximum Flood Tide Velocity: 1.0 m/sec (303 ft/sec)
- Maximum Ebb Tide Velocity: 1.3 m/sec (4.3 ft/sec)
- Maximum Angle Oblique to Berth Line: 5°



5. PGPCL TERMINAL POLICIES

5.1 TERMINAL SAFETY POLICIES

PGPCL subscribes to all of the safety principles and practices detailed in the latest edition of the SIGTTO.

The safety checklists used at the terminal are the International Ship/Shore Safety Checklist which is attached as Annexure-“C”.

Ship's crew members are expected to comply with all of the provisions of the “Jetty Safety Regulations” when the FSRU's and/or LNGC is at the PGPCL Terminal and when they are passing through the secure area of the Terminal, going to or coming from the FSRU's and/or LNGC.

Non-compliance with these regulations will result in action as from the Terminal Management and/or the Terminal Operation Team.

Furthermore the following is applicable when visiting the terminal

- PPE must be worn (Safety helmet and for working person safety shoes).
- No smoking.
- No matches or lighters.
- Mobile phone to be switched off and no use of non-intrinsically electrical devices.
- Stick to the group and follow strict instructions.
- Don't touch any valves, instrumentation or equipment.
- No use of camera.
- In case of an emergency follow very strict the instructions of the terminal personnel

5.2 VISITORS POLICY

Terminal Security and access is the responsibility of PGPCL Terminal, PGPCL Terminal Security Officer, and Ship's Master or Ship Security Officer 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 a LNGC and or identified crew members or visitors.

Above mentioned issues may be identified via spot checks done by PFSO.

The incident will be discussed with the responsible person(s) after whom 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 prohibited.

- Access to PGPCL Terminal is strictly limited to Terminal personnel, the FSRU and LNGC's Crew and approved visitors or contractors.
- If it is suspected that visitors are under influence and or use of drugs or alcohol, access to the Terminal area will be denied or operation will be ceased until the person(s) are or has been replaced and removed from the Terminal property.
- The LNGC's arrival crew list, including any embarking personnel must be transmitted to PGPCL Terminal via the ship's agent no later than 96 hours 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 both the LNGC owner and the Ship's Master may also be allowed into the Terminal Pier. The list of visiting personnel should be advised to PGPCL Terminal by email at least 48 hours before the arrival of the LNGC. Any changes to this list must be communicated to PGPCL Terminal immediately via the ship's agent.
- 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 PGPCL Terminal facility. No unaccompanied baggage will be permitted into the facility. PGPCL Terminal reserves the right to board the LNGC at any time to ensure that LNGC 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 PGPCL. PGPCL Terminal is never liable for death, injury, damage, loss, fines, costs or other harm incurred by those who set foot on the Terminal's premises.
- PGPCL Terminal reserves the right to refuse entry of personnel, packages vehicles etc. into the Terminal.



- Shore leave for members of the FSRU and/or LNGC's Crew will be granted, subject to Customs & Immigration approval and compliance to Gate policies and procedures.
- LNGC Crew that leaves the LNGC needs to be arranged by the agent:
 - Must have a valid shore pass and photographic ID (seaman's ID or national ID);
 - Must comply fully with PGPCL Terminal's Security Procedures & all Terminal regulations concerning safety;
 - Must have permission from PGPCL Terminal 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 Ships Master;
 - Must walk directly to and from the Security gate upon leaving the FSRU and/or LNGC;
 - Are responsible to make necessary arrangements through their Agent for the collection and drop-off of the Crew at the Terminal's Jetty Security gate by a Terminal approved crew transport operator;
 - 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.
- Access to the Terminal Jetty and / or the Safety Corridor to the Jetty Security gate will not be allowed during cool-down / warm-up, ramp down / ramp up or connection / disconnection of the unloading arms.
- All visitors within the vicinity need to have a visible "Visitor Entrance Pass", received as from the Security Officer at the Main Entrance Gate.
- All visitors need to be registered by name, function, ID or Passport number and reason of visit.
- A visitor needs to follow the shortest route to the place or reason of the visit.
- A visitor to one of the FSRU's/LNGC need to have a "Boarding Permit" as admitted for ISPS.
- For Safety reason all visitors need to turn-off his cell-phone, which will be controlled by the Security Officer or Operation Team Member.



5.3 QHSE POLICY

It is the policy of PGPC, owner and operator of the Terminal, to safeguard in all our activities the health, security and safety of all persons involved in our operations and to protect the natural environment.

This policy is based on the firm conviction that the Health, Safety, Security and Environment (HSSE) objectives have equal status with other primary business objectives and contribute directly to the overall efficiency and the success of the company.

The company will strive to prevent all accidents, incidents, injuries and occupational illness and will make continuous efforts to protect the environment through the active participation of employees and contractors.



6. PORT ENTRY PROCEDURES & INFORMATION

It is the responsibility of Customer Pakistan LNG Terminal Ltd (PLTL) to ensure timely communications with the terminal (PGPCL) and issuance of notices as detailed in this section, to ensure the avoidance of delay in a ship's schedule.

6.1 VESSEL COMPATIBILITY

Prior to a vessel being nominated to call at the PGPCL terminal for the first time, the PLTL required submitting the vessel data sheet to PGPCL & FSRU Master. The vessel owners/customer must provide all of the information requested by PGPCL in order for LNGC to conduct and complete a ship-to-Ship & Shore compatibility review to ensure the compatibility of the vessel with the terminal's berth.

A detailed vessel compatibility review shall be conducted for each vessel involved in the STS Transfer. STS transfer operations shall not be conducted with a vessel that has not undergone such review. This review enables the respective ships' management and the STS Service provider to identify any aspects of the operation that require attention prior to the start of the STS operation. The review shall include:

- Vessel particulars, type of containment and restrictions thereof, VPQ.
- General arrangements of the vessels involved.
- Mooring appliances and deck fittings (type, number and location of mooring lines).
- Hull particulars including parallel mid-bodies and shell loading
- Bridge wing clearance, fore and aft as well as longitudinal offsets.
- Means of securing primary and secondary fenders.
- Vessel draughts, freeboards, manifold heights and key measurements.
- Officer Matrix, Number of crew carried to conduct the STS including the number of officers to maintain a bridge and cargo watch throughout the transfer, without exceeding work hour restrictions. The number of crew shall take into account the FSRU to be conducting simultaneous operations.
- Primary, secondary and emergency communications systems.
- Emergency shutdown systems and the compatibility of the system between the vessels.



- Emergency response and contingency plans.
- Nitrogen availability.
- Hose handling cranes, their SWL, out-reach and certification for personnel transfers, if applicable.
- Manifold design and deck load limit.
- Manifold deluge-water curtain and water bath requirements.
- Gas Form C or Vessel Particular Questionnaire (VPQ).
- Optimoor vessel file.
- Photos of the manifold area including hand rail.
- Photos of bow and stern with emphasis on winches, chocks, fairleads, mooring gear.
- Cargo Transfer Piping Diagram.
- Latest Class Survey Status Report including conditions of class and memoranda.
- Copy of International Oil Pollution Prevention (IOPP) Certificate including supplement (Form A or B).
- Latest Ship Inspection Report SIRE Report (< 6 Months Old) should be uploaded to the OCIMF website.
- Any additional features of the vessels involved which to be considered of importance

6.2 CARGO CONDITION ON ARRIVAL

For vessels delivering cargoes to the PGPCL terminal, which cargoes may be subject to re-gasified and transferred to SSGC pipeline from the terminal, upon the ships' arrival at the terminal. The temperature and saturated vapor pressure of the cargo in each cargo tank should be, respectively:

- No warmer than: – 159 °C.
- Pressure: 100 mbarg, but not above 130 mbarg.



6.3 TERMINAL'S NOTIFICATIONS TO ARRIVING SHIPS

When a ship is fixed for the delivery LNG at PGPCL terminal, as soon as practicable after PGPCL has been advised of the incoming ship's local agent, PGPCL will issue 'Instructions for Arrival' to the ship, via its agent. This notice will instruct the ship regarding its berthing prospects following its arrival at the pilot station, general plans for the cargo transfer, terminal arrangements that have been made for the supervision of visitors to the ship once they have entered the terminal's secure area, requirements for PPE while inside the terminal's secure area, etc.

In the event that circumstances in the terminal, in the port or elsewhere change to the degree that it will affect the ship's berthing prospects following its scheduled arrival, PGPCL will provide updated berthing information to the ship via its local agent.

When the ship arrives at Port Qasim outer anchorage, she will issue a 'Notice of Readiness' to the terminal.



7. STANDARD OPERATING PROCEDURES FOR LNGC

7.1 INTRODUCTION

These SOPs have been developed for LNG carriers calling at Port Qasim. In order to remain compliant with the Pakistan LNG Policy at this time, the LNG carriers (Q-Flex) given below can enter the Port without any waivers from the Government of Pakistan:

- Maximum LOA: 315 Meters
- Maximum Beam: 50 Meters
- Maximum Draft: 12 Meters

In special cases, the Government of Pakistan can grant waiver from compliance to Port Qasim Authority to allow larger ships to enter the channel and berth at the LNG Terminals located within the Port.

Based on recommendations of simulation study carried out at “SiPORT”, the LNG vessels of up to 217,000 m³ cargo capacity having maximum LOA of 315 meters and maximum Beam of 45 meters with arrival laden draft of 12.2 meters was considered. The corresponding wave height in the mouth of the channel entrance (Ahsan channel) are limited to 2 meters to 1.2 meters.

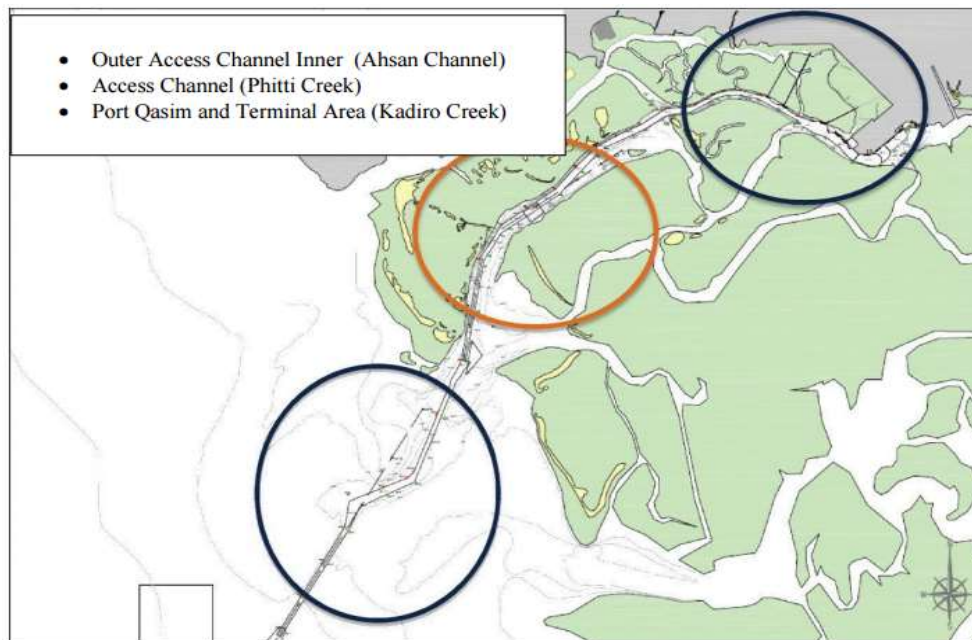


Figure 7 - Approach Channel Layout

Other factors including the existing port regulations, practices and traffic patterns of the port were also considered in the development of these SOPs. These SOPs are to be read in conjunction with the existing Port Qasim Regulations 1981 and PQA act 1973 and are to be incorporated in the comprehensive Operations Manual to be prepared, duly approved by the PQA and issued by each of the LNG Terminals located within the jurisdiction of Port Qasim Authority.

Masters of all ships' using LNG Terminal will be required to sign a copy of the Conditions of Use (COU) and the Marine Services Certificate (MSC) in acknowledgment of the ship's responsibilities and liabilities whilst using the Tug boats, Pilot boats and Terminal etc. prior transiting the Port channel.

For tandem tethered towage the vessels will be equipped with adequate bollards and fairleads with the required capacity and configuration for indirect mode of operation of the escort tugs;

- Upon departure of LNG carriers from the load port the Master shall communicate arrival information to the Port Qasim Control through local Agents according to the following requirements:
 - Name and particulars of the LNG Carrier with arrival draft.
 - Loading port of the LNG Carrier.
 - Time and date when LNG loading was completed.



- Outer Access Channel Inner (Ahsan Channel).
- The quantity and quality of LNG loaded and the portion of such quantity to be unloaded at the terminal in Port Qasim, if less than the full quantity.
- ETA Notice of the LNG Carrier shall be updated (as the case may be) at intervals of 72, 48, 24, 12 & 6 hours prior to vessel's arrival at Port Qasim.
- If the cargo to be unloaded has been acquired or diverted to the Terminal in Port Qasim, after the departure of the LNG Carrier from the load port or after the relevant time specified above, then the ETA Notice shall be submitted as soon as possible after such acquisition or diversion, but in any event taking into account any applicable requirement for the final time by which the arrival of LNG Carrier shall be notified to the Port Qasim Authority.
- When in VHF range of the Port Qasim Control, the LNG Carrier shall contact and maintain a listening watch on the Port Qasim Control VHF Operating Channels.
- Upon arrival at Pilot Station: Notice of Readiness (N/R) The notice of readiness is issued by the Master of the Vessel on behalf of the Shippers, Charters or Owner, when the Vessel has arrived at the Arrival Point, has received all necessary Port Clearances and is ready in all respect to proceed to the berth for unloading operations.
 - Vessel's name and IMO number.
 - Date and Time.
 - All equipment's are in good order.
 - Vessels ready to unload in all points.

7.2 COMMUNICATION INFORMATION

- All communications between the Ship and shore shall be conducted in the English language.
- All pre-arrival information shall be communicated by the Master of the vessel to the Port Qasim Authority through the local shipping agent of the vessel.
- VHF "Operating Channels" Channel 10 or 16 all round the clock. Port Qasim Call Sign: PORT QASIM PORT CONTROL.
- Harbour Master office contact details:

Harbor Master Office:	+92 21 99272172
Office Hour Phone:	+92 21 9927 2111-20 Ext. 4294
Mobile No. :	0092 321 2304011
For local dialling:	0321 2304011



Dock Master Office: 00 92 21 99272111-20 Ext. 4295
Operation Room Officer (ORO): 00 92 21 99272174,
00 92 21 99272111 Ext. 4269

- Port Facility Security officer (PFSO) – PQA

PFSO Name: Syed Sajjad Haider Shah
Title: Director Security
Address: PQA, Bin Qasim Karachi
Telephone: 00 92 21 99 272 163
Office: 00 92 21 99272111 Ext 4627
Mobile: 00 92 305 399 4684
Fax: 00 92 21 3473 0108
Email: sayedsajjadhaydershah@gmail.com

7.3 LNGC REQUIREMENTS

The LNG carriers calling at Port Qasim shall have an International Association of Classification Societies, (IACS) Rating of a minimum Condition Assessment Program (CAP) 2 for vessels 15 years and older.

The following checks and tests shall be carried out successfully on board the LNG Carrier according to the specified intervals and duly recorded one day prior to the estimated time of arrival at the Fairway buoy:

- IMO Water Spray systems: Within three months prior to vessel's arrival.
- Fire pumps: within one week prior to vessel's arrival.
- Inert condition of annular space, primary and secondary space if applicable: At all times.
- Operation of cargo system remote control valves and their position indicators: Within one week prior to vessel's arrival.
- Alarm function of fixed gas detection equipment: within one week prior to vessel's arrival.
- Primary custody transfer and alarm set points: Within one week prior to vessel's arrival.
- Operation of the ESD system: Within 48 hours prior to vessel's arrival.
- LNG vessels to have Electronic Chart Display and Information System (ECDIS).



7.4 ARRIVAL REQUIREMENTS

Through the vessel's Agents, the Masters are obliged to immediately report to the Harbour Master any defects or deficiencies that may affect the safety or the performance of operations to be conducted while the LNG Carrier is within the Port limits/or when the LNG Carrier is at the Terminal.

LNG vessels may arrive at Port Qasim Anchorage at any time of the day or night. If required to wait berthing at the anchorage, the vessels are to drop their anchors at the designated anchorages for LNG vessels at positions shown below:

- PETROLEUM WAITING ANCHORAGE

LAT: 24° 30'.00 N -- LONG: 066° 56'.00 E

LAT: 24° 30'.00 N -- LONG: 066° 58'.00 E

LAT: 24° 28'.00 N -- LONG: 066° 56'.00 E

LAT: 24° 28'.00 N -- LONG: 066° 58'.00 E

- GAS TANKER WAITING ANCHORAGE

LAT: 24° 28'.00 N -- LONG: 066° 56'.00 E

LAT: 24° 28'.00 N -- LONG: 066° 58'.00 E

LAT: 24° 26'.00 N -- LONG: 066° 56'.00 E

LAT: 24° 26'.00 N -- LONG: 066° 58'.00 E

The Master of the LNG ship will tender his Notice of Arrival at the Gas Tanker Anchorage or on boarding of the Pilots – whichever is earlier, for registration with PQA Control. Embarkation of Pilots onboard the LNG carriers will take effect prior to vessel's entry in the Ahsan channel about 2.5 miles SW of the Fairway Buoy. During the South West Monsoon season or in bad weather conditions, the Pilots may board the inbound vessel through Tugboats instead of Pilot Boats.

Pilot allocation will be two Pilots for the transit (in and out). A third berthing pilot will embark on the vessel while she approaches the harbour area to safely berth the vessel alongside. Depending on the duration of the stay of Pilots onboard a due consideration will be given to



their rest period and if necessary they will be relieved accordingly without causing any delays to the vessel.

The Port Qasim navigation channel is divided in three legs. The outermost leg (Ahsan Channel) starts from the entry in the Port near the Fairway Buoy and connects with the Phitti Creek at Buoy # B-1/B-2. Phitti Creek (Inner channel) ends in the Kadiro Creek at Buoy G-1/G-2, which extends into Gharo Creek where the Terminal, Turning Basins and the berthing areas of the Port are located.

LNG vessels shall transit the Channels escorted by a speed boat carrying armed guards and two tugs at speeds up to about 10 knots with the stern tug made fast, the decision as to when and where to make the tugs fast will be made after consultation between the Pilots and the Master. Preferably, one of the escort tugs to be attached on the stern for inbound and outbound transits of the Port.

Based on the results of the navigation simulations with LNG vessels up to 217,000 m³ cargo capacity, the following procedures for entering and navigating the three legs of the channel have been developed and to be complied with:

- The LNG carrier to enter the Ahsan channel about one hour prior to the top of the High Water provided the transit through the channel to the berth can be completed during daylight hours.
- The LNG carrier is allowed to enter the channel all-round the year including the South West Monsoons (approximately 15th May – 15th September) under controlled and closely monitored conditions.
- The water density of the PQA channel varies with the location and environment ranging between 1.023 to 1.027.
- Draft of the vessels have to be controlled to meet the PIANC guidelines for the channel which gives the guidance for under-keel clearance depending on High Water Level linked to the height of waves that can exceed 2 meters during the SW Monsoon season. After boarding of the Pilots and prior to commencing the passage in Ahsan channel, the escort tugs to be in attendance at the astern. For the tugs to render effectively they have to operate during wave heights limited to 2 meters. A second escort Tug will lead ahead of the vessel to keep the channel clear and render any required assistance in case of emergencies.

The draft of the LNG vessel has to be maintained between 11 meters to 12.2 meters at the starting point of Ahsan Channel according to the following scale of wave heights:



- Wave Height 2.0 Meters: Arrival Draft 12.2 meters
- Wave Height 1.2 Meters: Arrival Draft 11.0meters

The speed limit of the vessel at the starting point of the Ahsan Channel is about 10 knots. For Ahsan Channel arrival manoeuvres the wind is to be 20 knots (mean).

7.5 WEATHER LIMITS & NAVIGATION IN CHANNEL

LNG vessels will not be handled in weather conditions that make operations hazardous (typically wind speeds in excess of 25 knots and wave heights constantly above 2.0m). The actual weather conditions to be determined at the time of the manoeuvre. Initiating of transit is prohibited if the visibility is less than 2 mile.

If weather conditions deteriorate in the Channel, where wave exposure is higher (wave conditions greater than Hs 2.0m) such that there is a concern over the safety of tugs, a single escort tug attached to the transom may be deployed with the second tug in passive escort mode. One or more of the following practices shall also be adopted:

- The speed through the water is reduced to 8 knots or less in the outer channel transit; OR
- The planned transit of the outer channels will be undertaken on a stemming tide; OR
- The LNG vessel waits until weather conditions improve.

No passing shall take place between an LNG vessel and any vessel other than controlled craft/s during the transit through the Channel area. However, controlled passing with other vessels may be permitted by the PQA under special circumstances provided the LNG vessel is anchored at the side of the channel at passing bay or at turning basin and is attended by tugs.

Separation between LNG vessels and other vessels in the Channel in the same direction shall be minimum one (1) hour for all type of vessels throughout the transit. The draft of the vessel and the escort tug assistance allows for the option of safely aborting the transit at either IOCB or QICT turning basins, being the contingency anchorages or waiting in channel with tugs in attendance.

During passage through Phitti Creek the limits of environmental conditions, vessel movement and Tugs assistance is expected to remain as above. However, the senior Pilot and Master will make necessary adjustments depending on the actual conditions prevailing in the channel during passage.



On transiting from Phitti Creek to Kadiro Creek the speed will be maintained between 10 to 6 knots at the discretion of the Senior Pilot in conjunction with the Master taking in to account the prevailing weather conditions. The two escort tugs will follow and assist in swinging and berthing the vessel. In addition, two other LNG Tugs will join to assist with the swinging and berthing the vessel as per the requirements of the Pilots.

By the time the LNG carrier arrives near the Terminal located within the Gharo Creek, there will be strong ebb tide running which would not be suitable to swing the vessel for bringing her in the required starboard side alongside to the FSRU for discharging her cargo in a ship to ship mode. This is also necessary in order to have the vessel heading in outward bound direction, in case she has to depart during an emergency.

The Pilot to make a careful assessment of the prevailing wind, wave, tide and the current condition. If considered safe, the Pilot after consulting with the Master of the ship may decide to swing the vessel in slight ebb tide on arrival at the turning basin without awaiting the floodtide. Otherwise, the vessel to be anchored at the turning basin waiting for the Flood tide.

Whether the LNG vessel is swung to port or starboard is at the discretion of the ship's Pilot and Master. For normal operations a minimum Under Keel Clearance (UKC) of 10% of the vessel's arrival draft shall be retained throughout vessel arrivals and departures in fair weather. During SW monsoons or bad weather when wave heights 2.0 M, then this requirement will increase to 15% when entering the Ahsan Channel. A UKC of 1.2m is the minimum deemed satisfactory for swinging on arrival and departure for LNG vessels with drafts up to 12.2 meters.

A berthing display board (rate, angle, distance off berth) located on wharf shall be provided to be visible from the LNG vessel's bridge in all conditions of daylight and dark. However, since this cannot be arranged on an FSRU for STS operation. The LNG vessel shall carry 10 reliable PPU or other equipment to assist the Pilot in determining the distance of the berth and the speed of the vessel while approaching the FSRU/Berth for mooring.

On departure from the Terminal, two tugs will be released in the vicinity of Turning Basin. The remaining two tugs will escort the vessel outbound.

While the FSRU is in operation alongside the Terminal jetty, a Tug with fire fighting capabilities will remain stand-by at all times with a 30 minutes response time.

An additional tug- Guard tug with full fire-fighting capability will be on station at the Terminal whilst an LNG vessel is at the berth alongside the FSRU Pilots will not be required to remain onboard an LNG vessel whilst alongside the FSRU but must be available within the time specified for the second tug to be in attendance.



7.6 TERMINAL OPERATIONAL RESTRICTIONS

Port Qasim and the LNG Terminal are normally open 24 hours a day, 365 days a year, weather and sea conditions permitting.

The pilot and the master jointly determine if the weather conditions permit a safe entry of the LNGC.

The following table provides operational limits for the Terminal Operations.

Sustained Wind (Knots) Any Direction	ACTION
>25	<ul style="list-style-type: none">• Vessel staff on heightened alert; increased monitoring of weather conditions ;increased monitoring of mooring lines to ensure safety and security of the vessel (s) mooring at all times.• Ensure additional deck watch personnel are available to tend mooring lines.• Master to arrange for stand by tug to come alongside.• Master to consult with terminal regarding possibility of suspending operations, disconnecting and depart berth if conditions persist.• If departure from berth, vessels ensure that safe cargo tank liquid levels maintained. Internal transfers completed to ensure liquid levels are within acceptable sloshing limit.
>35	Actions as above. In addition: <ul style="list-style-type: none">• Master to arrange for additional harbor tug assistance.• In event no tug assistance readily available, suspend cargo transfer operations; cargo hoses to be maintained cold.• Request Pilot to board in order to depart berth if conditions persist.
>45	Actions as above. In addition: <ul style="list-style-type: none">• Suspend all cargo operations and disconnect cargo hoses.• Additional tug assistance deployed alongside.• Pilot to be on-board.• Departure from berth not a consideration at this wind speed.

Table 2 –Wind Speed Operational Restrictions

Before taking any action, the concerned parties (Master of the LNGC, Master of the FSRU, and pilot) have to discuss and agree on that action.

NOTE: If thunder-storm or lightning are imminent, all cargo handling shall be stopped.

In case the wind conditions are exceeding the limits as stated in the table here before, the Pilot, LNGC's Master, FSRU's Master and Terminal Manager jointly decide what action to be taken.



7.7 LNGC DEPARTURE

In case where an emergency departure from the berth is necessary, two tugs and a Pilot will be required to un-berth the LNG carrier. Since the vessel will be undergoing cargo operations, she would be pulled away from the FSRU by the two attending tugs after the activation of ERC (to release cargo discharge hoses) and the quick release of mooring hooks on the mooring dolphins and the FSRU, within a short time. The LNG vessel will be removed from the FSRU berth and held in the Turning Basin (contingency anchorage) to await the arrival of additional tugs and Pilots to safely assist her in holding the vessel or for safe departure from the Turning Basin, as necessary. The LNG carrier and the FSRU shall have a dedicated Pilot cabin available for the Pilot at all times.

Operating parameters covering LNG vessel e.g. draft/daylight hour, operation/environmental conditions etc. will be set at a restricted level in the early stages of an LNG Operations. These parameters will be reviewed during the 'settling in period'(after monsoon) where the working results can be validated against the simulation results in order to mirror or modify the "operational condition requirements" determined during simulation.

Once validation has been completed, then it is expected that LNG vessels will be handled during the hours of darkness subject to suitable weather conditions (simulated first).

On departure of LNG Carrier from the Terminal during SW Monsoons or bad weather conditions, the LNG carrier shall provide good lee for the disembarkation of Pilots off the Fairway Buoy. In case, the Pilots are unable to disembark safely from the LNG carrier outbound, then the Pilots will remain onboard and repatriated from the next available disembarkation point with minimal deviation and delay to the vessel on Owner's account. This arrangement, if found necessary, will be made in close coordination between the PQA, the vessels Agents and the Owners of the LNG Carriers.

Subject to meeting all the other requirements, the entry of the vessel into the PQA channel on her arrival and the departure from the berth will only commence during daylight hours when it is estimated that the vessel transit will also be completed during daylight hours.

7.8 VESSEL SCHEDULING

Priority of shipping will remain as per published Port Regulations 1981. Ship scheduling will be carried out as at present by the PQA ship schedulers and in accordance with the following principles:



- LNG Vessels will advise their ETAs upon departure from load port, and at 96/48/24/12 and 6 hours prior to arrival at the Fairway Buoy.
- The ship scheduler (PLTL) will schedule the berthing of the LNG vessel after vessel's ETA is confirmed by the vessel's local agents requesting berth and embarkation of the pilot. This would however depend on the availability of the time slot in consultation with the port and the required environmental conditions.
- All vessel movements shall be subject to the approval of the PQA. LNG vessels that miss their time slot will be allocated the next available time slot that fits in with other port movements.

Additional parameters may be placed on operations at individual terminals as circumstances dictate. These SOPs will be reviewed on a regular basis as the LNG trade continues to develop and may be varied from time to time as considered necessary.

7.9 PORT EMERGENCY PROCEDURES

The following Terminal information related to "Emergency Signals and Procedures" should be made available to all personnel, on board, involved in the cargo handling or de-ballasting operations at the LNG terminal:

- Fire in the terminal.
- Major Emergency requiring evacuation of terminal.
- Fire On Board.
- Medical Emergency On-Board.
- Emergency Escape Route.
- Lightening.
- Safety Clothing: All ship's personnel working on deck must wear the appropriate PPEs.

For emergency releases, the following procedure must be complied with:

- The Terminal, after receiving clear instructions from the Master shall immediately request verbal confirmation for the emergency release from the Harbour Authorities, or PQA Operation Room Officer (ORO).
- The Harbour Authorities or Port Operation Room Officer (ORO) shall confirm emergency release.
- The sequence of hook release indicated by the Ship's Master/Pilot must be strictly adhered.

Emergency Contact Numbers (From Ship to Shore)



Operations Room Officer : 021-99272174

Jetty Control Room : 021-34730114, 021-34243230

Fire Station : 021 99272145 Dir

Medical Centre : 021 99272111-30 (Ext 4275)

Security 021 99272195

7.10 DEPARTURE

7.10.1 SHIP READINESS

The ship should be able to move at short notice under its own power. After being ready for loading/unloading, vessel will inform the terminal by giving "Notice of Readiness" which shall be a part of the official vessel documents.

7.10.2 NIGHT NAVIGATION RESTRICTIONS

LNG vessels may depart only during the hours of daylight, as defined by the Port Qasim Port Authority pilots. Furthermore, departure of a vessel is always contingent upon the prevailing environmental conditions being within acceptable limits in order to ensure the safe movement of the vessel from the berth to the fair way buoy

7.10.3 PILOTS

Pilots must be ordered not later than six (6) hours before the vessel's intended departure time.

7.10.4 TUGS

4 ASD tugs with a maximum static bollard pull of 80 tons will perform the all manoeuvres during entrance and departure of FSRU or LNGC.

All tugs are controlled by the PQ pilot boarded on the coming vessel. The tugs are defined based on their main dimensions, power, bollard pull and propulsion characteristics.

The communication between tugs and coming vessel are made through VHF and in case of failure of VHF communication or tugs operation different simulation are also performed to handle such circumstances.



A 3D simulation of tugs working with the vessel can be shown below:

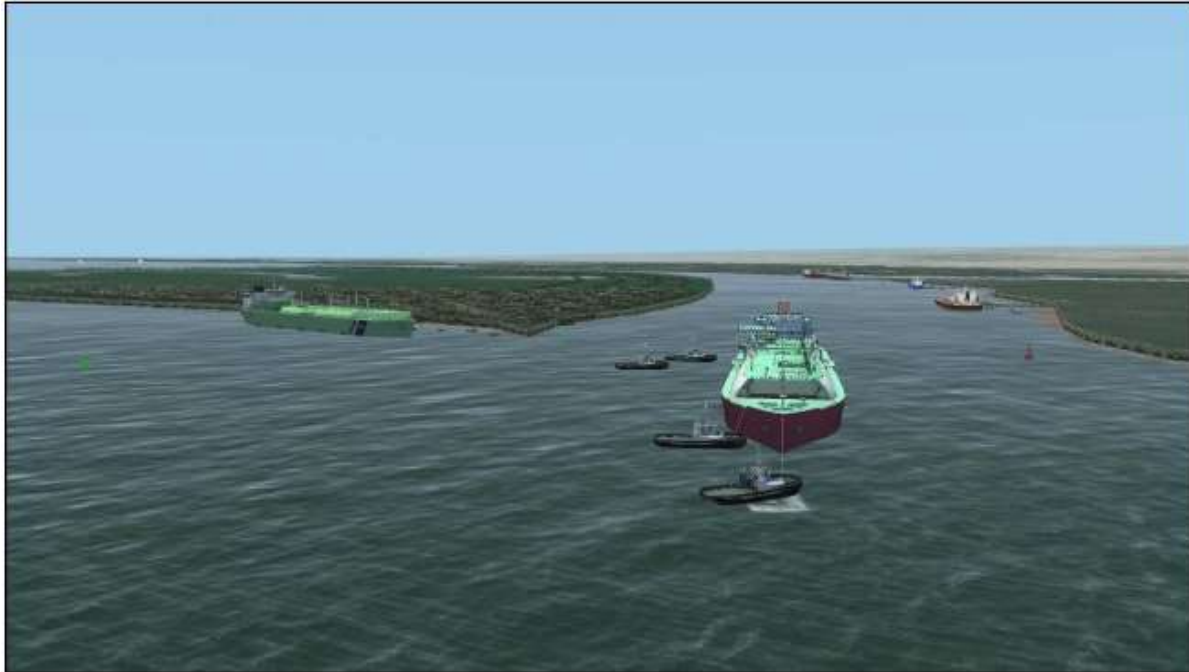


Figure 8 - 3D Visual Model of Tugs

7.10.5 OUTBOUND MANOEUVRING

Outbound manoeuvres consider that the ship is moored bow-out, port side to the FSRU. During this section NE and SW winds does not hinder the manoeuvre, as they are mainly aligned with the vessel, meanwhile W winds tend to separate her from the fenders.

The vessel is moved to the centre of the channel and assisted by the tugs, parallel to the terminal. Once the vessel is under control and centred in the fairway she starts to navigate ahead, gaining speed. Currents in this part of the manoeuvre are mainly aligned with the vessel and have minor impact on the manoeuvre.

The swinging manoeuvre at the turning basin is favoured by the SW and W winds whereas the NE winds opposes the turn, hindering the manoeuvre. Current in the swinging basin forces the vessel towards port side hindering the first part of the swinging manoeuvre. This has to be taken into account when tackling the manoeuvre.

Nevertheless, the vessel finishes the swinging manoeuvre aligned with Kadiro Creek, and with the current aligned, therefore the current effect on the last part of the swinging manoeuvre is minor.



Finally, the vessel increases speed gradually and releasing the tugs on the starboard side, meanwhile bow and stern tugs remain with the vessel until she reaches the fairway buoy. In case vessels are moored at the terminals downstream the FSRU vessel speed should be kept at about 6 knots through the water to reduce passing effects over moored vessels.

EVALUATION:

Kadiro Creek provides access to the swinging basin. It is wide enough for the 20-knot mean wind and the current considered in the simulations.

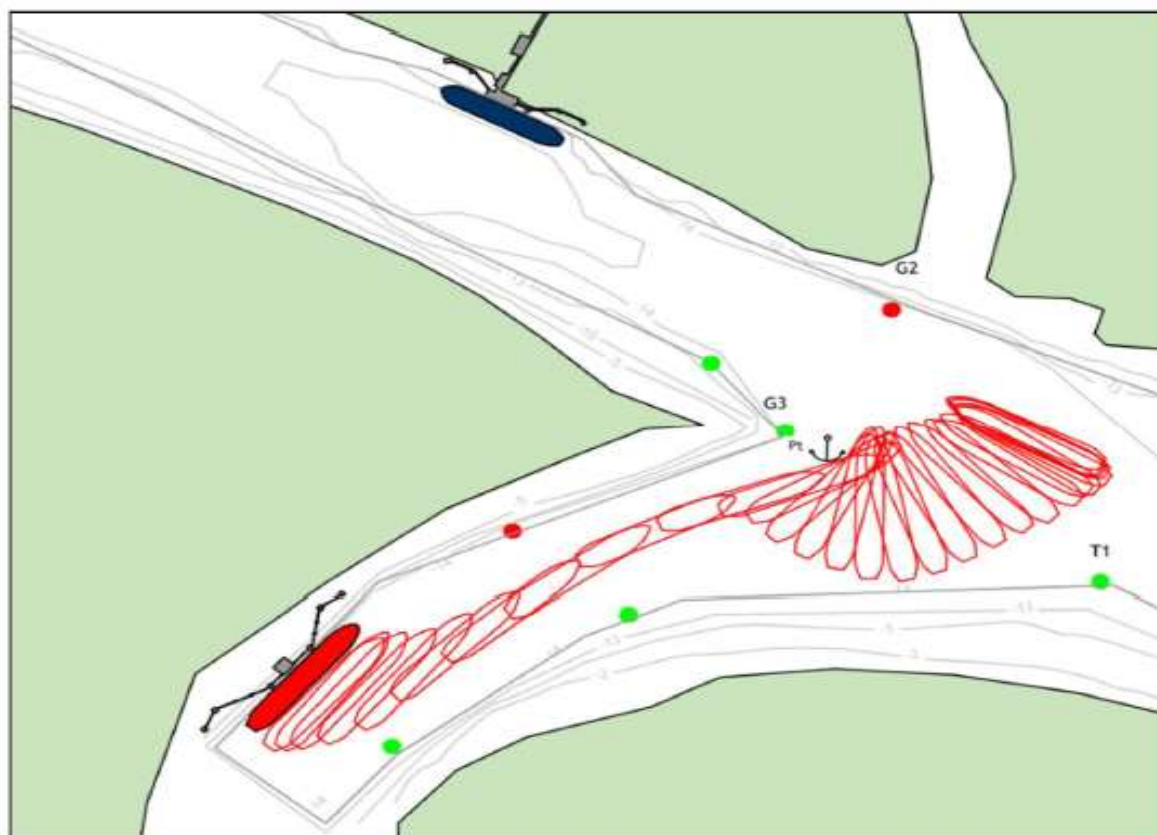


Figure 9 - Safe Manoeuvring Space on Departure Runs

In the departure manoeuvres the effect of the wind increases compared to that of the current due to the ship's smaller draft and the greater area exposed to the wind.

The combined effects lead to a slight increase in the ship's drift. Even though the vessel is moored port side to the quay departures require a swinging manoeuvre. The tugs separate the ship from the quay and it navigates towards the turning basin where she swings to prior to leaving the port by the channel.



The same tug formation, consisting of four ASD tugs, is sufficient to separate the ship from the terminal, take her to the swinging basin and turn her around, keeping the vessel under control.

The departure manoeuvre (consisting on the separation from the FSRU and the swinging manoeuvre) is feasible with the 20-knots mean wind speed and currents up to 2.5 knots, which allows for emergency departures in strong current conditions.

Nevertheless, and according to simulation studies in the area, sailing through Kadiro Creek, Phitti Creek and Ahsan Channel with strong ebb current is not recommended due to the high drift that current can produce at the bends.

Operating Limits:

Based on the results of the manoeuvres and their evaluation, it can be concluded that:

- In terms of wind speed, 20 knots (average value) is considered the limit for entries and departures of a Q-Flex in both Alternatives.
- Entrance manoeuvres with current have proved to be very difficult with 2.5 knots of ebb current, therefore a limit of 1.3 knots of ebb current is considered combined with 20 knots mean wind speed.
- In case of turning with higher current would be required an analysis to assess the maximum wind speed for higher currents would be required.
- Departure manoeuvres (consisting on the separation from the FSRU and the swinging manoeuvre) are feasible with currents up to 2.5 knots combined with 20 knots mean wind speed.
- The same operating limits as the Q-Flex are recommended for manoeuvres with the 170 150 m³ FSRU.



8. EMERGENCY PROCEDURES

8.1 PGPC EMERGENCY RESPONSE PLAN

8.1.1 REGULATORY COMPLIANCE

It is the policy of PGPC to comply with all applicable federal, state and local laws and regulatory requirements through the incorporation of the applicable requirements into PGPC policies and procedures. PGPC management expects all employees and contract personnel to adhere to company procedures and practices.

8.1.2 PURPOSE

The purpose of the ERP is to provide an effective plan that sets forth PGPC's policies and procedures to respond to emergencies within the PGPC terminal, emergencies that could affect the public adjacent to the PGPC terminal and emergencies that could affect the public along the LNG vessel transit route.

8.1.3 SCOPE

The ERP addresses situations and conditions that require activation of PGPC's ERP in order to contain and control emergencies. It provides general guidelines and procedures for responding to emergencies within the terminal.

8.1.4 OBJECTIVE

The objectives of the ERP are to give clear guidelines to PGPC staff and contractors, visitors and emergency responders, and the public in the event of an emergency in order to:

- Be informed of PGPC plans and the Incident Command Structure used during an emergency at the terminal.
- Ensure efficient and effective steps are taken to safely secure the terminal thereby preventing public and personnel injuries, minimizing the impact on the environment and protecting the physical assets.
- Ensure that a formal communication structure is in place with relevant internal and external parties and governmental authorities in order to report and co-ordinate activities to ensure



all parties are properly informed and updated on the steps taken to effectively handle the emergency.

- Conduct tactical direction (applying tactics appropriate to strategy, assigning the right resources and monitoring performance).
- Initiate investigation into incidents with proper consideration of forensic evidence.
- Expedite the return of the asset to normal safe terminal operation.

8.2 EMERGENCY SITUATIONS

The LNGC Master is responsible for the safe operation of their ship (including cargo handling) and the safety of the LNG carriers personnel at all times. The Master will be required to sign a safety letter acknowledging his responsibility in this respect.

The responsible ship's officer delegated the task of controlling cargo operations and other related duties must be qualified and competent to do so and should remain in the cargo control room throughout cargo operations in order to ensure that the ship/FSRU liaison is continuously maintained. In addition to the responsible ships officer, sufficient personnel should be available in order to maintain an efficient deck and cargo watch.

- LNGC Emergency alarm - The LNGC will make an announcement on her PA system. The FSRU will be notified by VHF
- FSRU Emergency alarm – The FSRU will sound an audible alarm and notify the LNGC by radio. The FSRU will also notify the PGPCL and port representatives.

The procedures listed in following Annexures should be used as a supplement to LNGC Company's ERP.



9. SHIP TO SHIP (STS) OPERATIONS

9.1 STANDARD OPERATING PROCEDURES FOR LNG VESSELS

9.1.1 SHIP-SHORE COMPATIBILITY

Prior to a LNGC being nominated to deliver a cargo to Port Qasim, PGPCL, for the first time, the Terminal User/LNGC owners/operators are required to complete and submit to BW the LNGC data requested by PGPCL.

The LNGC owners/operators must provide all of the information requested by PGPCL Terminal in order to conduct and complete ship-to-ship compatibility review to ensure the compatibility of the LNGC with the FSRU.

The Terminal User/LNGC owners/operators must receive written approval from the FSRU Master or Terminal Manager, or his designee, of the LNGC's compatibility with the FSRU prior to the LNGC's arrival. It is recommended that the Terminal User or transporter supply PGPCL Terminal with the LNGC data as early as possible.

9.1.2 ARRIVAL NOTICES

The LNGC Vessel's Master shall give BW/ PGPCL the following notices:

A. First Notice

This shall be sent upon the departure of the LNG Vessel from the Loading Port and shall detail: -

- Time and date that loading was completed.
- The volume (expressed in Cubic Meters) of LNG loaded on board the LNG Vessel.
- The estimated time of arrival (ETA) of the LNG Vessel at the Arrival Location.
- Any operational deficiencies in the LNG Vessel that may affect its performance at the Facility or berth.

B. Second Notice

This shall be sent ninety-six (96) hours prior to the ETA set forth in the First Notice, and shall detail: -



- The ETA.
- The average cargo temperature in each of the ship's cargo tanks.
- The cargo tank vapor space pressure, in millibars Absolute, in each of the ship's cargo tanks.
- If, thereafter, such ETA changes by more than six (6) hours, the Vessel Master shall promptly give notice of the corrected ETA.

C. Third Notice

This shall be sent seventy-two (72) hours prior to the ETA set forth in the Second Notice, confirming or amending such ETA.

D. Fourth Notice

This shall be sent forty-eight (48) hours prior to the ETA set forth in the Third Notice, and shall detail:

- The ETA.
- The average cargo temperature in each of the ship's cargo tanks
- The cargo tank vapor space pressure, in millibars Absolute, in each of the ship's cargo tanks.

E. Fifth Notice

This shall be sent twenty-four (24) hours prior to the ETA set forth in the Fourth Notice (as corrected), confirming or amending such ETA and shall detail:

- The average cargo temperature in each of the ship's cargo tanks
- The cargo tank vapour space pressure, in millibar Absolute, in each of the ship's cargo tanks.
- Additionally in this notice the master will confirm that the ship's deck cargo lines will be cooled and drained back to the cargo tanks, before, but as close as possible to, the time at which the pilot will board the ship for entering Port Qasim.
- If, thereafter, such ETA changes by more than three (3) hours, the Vessel Master shall promptly give notice of the corrected ETA.



F. Sixth Notice

This shall be sent twelve (12) hours prior to the ETA set forth in the Fifth Notice (as corrected), confirming or amending such ETA.

If, thereafter, such ETA changes by more than one (1) hour, the Vessel Master shall promptly give notice of the corrected ETA;

G. Seventh Notice

This shall be sent twelve (6) hours prior to the ETA set forth in the Fifth Notice (as corrected), confirming or amending such ETA.

H. A Notice of Readiness

This shall be given at the time prescribed in the contracted commercial agreement.

9.1.3 CARGO CONDITION ON ARRIVAL

LNGC which deliver LNG cargo to the FSRU, should comply with the following: -

Cargo tanks pressure is required to be as low as possible. 100 mbarg is recommended, but in any case, not above 130 mbarg.

9.1.4 STS OPERATIONAL RESTRICTIONS

The following restriction apply to STS Operations: -

Wind Speed	Limits
Above 25 kts	No handling of LNG vessels. Disconnect cargo hoses and prepare for departure.
Forecasted above 40 kts	LNGC to depart

Table 3 - STS Operation Restrictions

Before taking any action, the concerned parties (Master of the LNGC, Master of the FSRU, and pilot) have to discuss and agree on that action.


NOTE: If thunder-storm or lightning are imminent, all cargo handling shall be stopped.

In case the wind conditions are exceeding the limits as stated in the table here before, the Pilot, LNGC's Master, FSRU's Master and Terminal Manager jointly decide what action to be taken.



9.2FSRU BW INTEGRITY

9.2.1FSRU BW INTEGRITY PARTICULARS

 BW INTEGRITY	
PORT OF REGISTRY:	Singapore
FLAG:	Singapore
CALL SIGN:	9V5308
IMO NUMBER:	9724946
OFFICIAL NUMBER:	400903
MANAGEMENT:	BW FLEET MANAGEMENT AS
E-Mail ADDRESS:	integrity@bwfleet.com
INM.-FBB ID NO.: VOICE, FAX	+47 8522 6684, +870783403342
INMARSAT – C ID NO.1 & NO.2:	456600882 & 456600883
MMSI:	563005900
BUILD YEAR:	2017
BUILD YARD:	Samsung Heavy Ind. CO., LTD. Korea
PLACE OF BUILD:	Geoje Shipyard, Korea
CLASS:	DNV-GL
CLASSIFICATION DESIGNATION:	+1A1, Tanker for liquefied gas ship type 2G (Membrane tank, Maximum pressure 70kPaG, Minimum temperature -163 C and specific Gravity 500kg/m3, NAUTICUS (Newbuilding) E0, BIS, TMON, COAT-PSPC(B), NAUT-0C, GAS FUELLED, COMF- V(3)C(3), CSA-2, CLEAN, Recyclable, REGAS-2
TYPE OF VESSEL:	LNG FSRU/ LNG Carrier
LIGHTSHIP:	33120.90 t
GROSS REGISTERED TONNAGE:	106793
NET REGISTERED TONNAGE:	33219
SUEZ GROSS / NET TONNAGE:	110840.54 / 100791.91
SHIPS CRANE:	1 x port provision crane SWL 5 ton



	1 x stb provision crane SWL 10 ton 2 x hose handling crane SWL 5 ton 1 x Regas Service crane SWL 10 ton
LOA:	292.57 m
LBP:	281.00 m
BREADTH MOULDED:	43.40 m
DEPTH MOULDED:	26.60 m
SUMMER DRAFT:	12,3 m
SUMMER DEADWEIGHT:	87190.5 mt
MAX HEIGHT FROM KEEL:	58,86 m
MAIN ENGINE:	Diesel Electric
TYPE OF PROPELLER:	5 – Blade, Fixed Pitch Propeller
BOW THRUSTER:	NA
SERVICE SPEED:	19.5 kts
CARGO CAPACITY:	170,212.8 m3 at 100%, 167,659.6 M3 at 98.5%
FUEL CAPACITY:	HFO: 4759.9cbm, MDO 1364.2 cbm
BALLAST:	58393.8 cbm
FRESH WATER:	502.6 cbm
LUBRICATING OIL:	445.9 cbm

Table 4 – Detailed Particulars of FSRU

9.2.2FSRU BW INTEGRITY CONTACT

BW LNG Operation Department:

Torstein Valvik DID: (+47) 6721 1734 | MOB: (+47) 4803 2356

Riju Cherian, Phone: DID (+47) 6721 1684, MOB (+47) 4625 7666

Department Email: fsruops@bwgas.com

Fax: (+47) 6721 1602



9.3 MOORING / UNMOORING OPERATIONS

9.3.1 FSRU MOORING ARRANGEMENT TO SHORE

Jetty mooring system between FSRU and jetty:

- 18 jetty lines (7 breast lines front, 4 spring lines, 7 breast lines aft).
- 6 jetty connection points.
- All lines assumed 44 mm wire ropes with 11 m /22 m soft tails.



Figure 10: FSRU Mooring Arrangement

FSRU is equipped with double quick release hooks (QRH) with safe work load 150 ton.

The LNG carriers will arrive on Starboard side of FSRU.

9.3.2 LNGS MOORING TO FSRU

All mooring operations shall be conducted in compliance with the approved Optimoor mooring plan which will be required to be performed by the visiting vessel to the Terminals satisfaction prior to arrival.

All Optimoor studies will be conducted based on an OCIMF criteria and the max safe wind sweep speed that can be achieved.

9.3.3 POSITIONING & RUNNING

- An FSRU crew member will be positioned at the Vapour manifold and will liaise with a LNGC crew member to ensure correct fore and aft alignment for the transfer connections. The information will be communicated with the Pilot / Master to take action as they deem necessary.



- The vessels crew will position themselves where best suited, and complete their last checks.
- Traditionally it will be the springs run first, however the order of receiving the mooring lines is to be confirmed by Master with the Pilot, before the vessel closes the jetty.
- Heaving Line should be available at each end. With an eye splice at each end. A removable “Monkey’s Fist” can be attached using a cow hitch at one end. This will allow the FSRU to attach messenger lines that will heave across the mooring lines.
- No mooring lines will be run until the LNGC is alongside the FSRU and held in position by the tugs whilst the mooring lines are connected.
- All moorings are to be passed from the LNGC to the FSRU by messenger line, one at a time in the sequence as agreed between Master and Pilot.
- The Mooring Team should only use the internationally recognized signals for mooring. Moorings are not hauled tight until all lines are on hooks and FSRU personnel clear.
- The SWL of the mooring hooks is 150 tonnes, per hook. Only 1 mooring line can be made fast to any individual quick release hook. Care to be taken to ensure none of the mooring lines are crossed.

9.3.4 CONDUCTING UNMOORING OPERATIONS

- No mooring line should be released until instructed by the Master / pilot.
- The line should then be slacked sufficiently to allow the safe release of the FSRU QRH.
- The mooring crew shall stand clear of the mooring rope at all times.
- Care should be taken to avoid fowling of the fenders with the mooring line when heaving in.
- If any member of the mooring crew encounters a problem or is instructed to deviate from the mooring plan then he should stop what he is doing and report the situation to the mooring supervisor immediately.

9.3.5 LNGC EMERGENCY RELEASE OF LINES

In the event of a required emergency release, all lines will be released independently to the Pilots/Captains requirements, any line being released shall be done so in a manner that allows for the controlled recovery of the lines and minimizes the risk of fowling on fenders or on the vessels own rudder or propeller.



9.3.6 MANOEUVRING ALONGSIDE

The move with tug assistance can be supported by a LNG vessel main engine astern manoeuvre. Any engine movement shall be carefully applied to avoid any unintended propeller effects such as transverse thrust.

The tug will be used to generate movement and to control the speed and bring the LNG vessel to a halt.

The LNG vessel will be manoeuvred until its manifolds are in alignment with the shore manifold/FSRU manifold.

At no time during the manoeuvre should the speed exceed 1knot.

The final positioning should be approximately 40metres from berth/FSRU to allow a safe working area for the tugs. Once the LNG vessel is in a position parallel to the Berth/FSRU it can start its final positioning. If the LNG vessel has difficulty maintaining this position then the berthing will be aborted.

9.3.7 FINAL POSITIONING

The LNG vessel will not be placed alongside until it has completely stopped moving and is under control.

For the final Positioning alongside one of the main considerations is the amount of available room for the tugs, for the vessels moving alongside the stern tug due to lack of available sea room will move abeam of the LNG vessel to assist in controlling the closing speed.

The LNG vessel shall not be brought alongside at a speed greater than 0.1m/s, it shall also remain parallel to the Berth/FSRU during the closing.

9.3.8 VESSEL POSITION DURING CARGO TRANSFER OPERATIONS

Both vessel, FSRU and LNGC are expected to maintain their respective positions alongside, by prudent tending of the mooring lines, with careful regard to the spring lines.

Mooring line tension for the LNGC lines can be given from the FSRU control room, alarms are set at 40mt, which can be adjusted to suit the situation.



Regular checks on the moorings shall be made by both vessels, including a check on the vessels position relative to the reference, either ashore or on the FSRU. Any movement of the vessel shall be reported to the CCR and the situation assessed and monitored.

The following describes the maximum movement allowable before operations should be suspended and the vessels repositioned.

- FSRU movement relative to shore – +/- 1.0m maximum
- LNGC movement relative to FSRU - +/- 2.0m maximum

The vessel drift system (sec 0) system on the MIB equipment will also give a “pre-alarm” if the first pin is broken should the vessels move excessively.

9.4 CARGO OPERATIONS

9.4.1 TRANSFER OF PERSONNEL

For the pre- and post-cargo operations meetings only FSRU personnel who are essential for the safe coordination of operations will be transferred to the LNGC via ship-to-ship Gangway or Billy Pugh.

If the gangway or Billy Pugh is not suitable for use due to weather or vessel compatibility issues, then service boats will be utilized.



Figure 11 - Billy Pugh



9.4.2 ENVIRONMENTAL CONDITIONS

The Billy Pugh personnel transfer carrier is normally stable in high winds of up to 25kts Limiting factor is usually crane operability or control of Load. If there are any expected issues then transfer can be delayed.

Sig.wave Height(m)	Max. wave height (m)	FSRU Staff
Up to 2	Up to 3.7	✓
2.5	4.6	✓*
2.5+	4.6+	X

Table 5–FSRU Personnel Transfer Restrictions

✓	Low risk of high landing or take-off velocity,
✓*	Increasing risk of high landing or take-off velocity. Consideration of hook speed and consideration of all other factors is recommended to ensure controlled landing and take-off. Dry run to gauge risk (without personnel) also recommended.
X	High risk of high landing or take-off velocity. Not suitable for routine operations unless a specific hazard analysis can demonstrate otherwise

Table 6–FSRU Personnel Transfer Risk Levels

9.4.3 PERSONNEL

The FSRU responsible officer with suitable training must be present on site at all times for the duration of the passenger transfer phase and ensure that;

- A Fully trained member of the crew is operating the crane.
- The passenger list is confirmed.
- Reception facilities are prepared on the vessels.
- The order of transfer and numbers of personnel transferred are agreed between the vessels



- Vessels personnel are stationed at the landing/loading area, transit area and reception.
- Passengers have been assessed for fitness for transfer.
- Sufficient barriers are in place to prevent unauthorized access to the lifting/landing area.

9.4.4 FSRU RESPONSIBILITIES

- Ensure BW's operating procedures are followed, and the STS operation is in compliance with all local regulatory requirements.
- Attend pre-STs planning meeting.
- Ensure that all transfer checklists are completed.
- Ensure completion of declaration of inspection and Ship-to-ship check lists.
- Oversee placement of primary and secondary fenders.
- Conduct pre transfer conference with the visiting vessels.
- Discuss current and expected weather conditions anticipated for the duration of the operation.
- Liaise with Harbour Pilot (if required) and agree mooring arrangement.
- Coordinate on site risk assessment with vessel master(s) and Harbour authorities.
- Assist Pilot, if utilised, as necessary ensuring that the approach and manoeuvre of the ship to be lightered follows agreed passage planning.
- Assist with communications and coordination of mooring.
- Monitor the connection of liquid and vapour transfer hoses/quick disconnect system.
- Monitor cargo transfer and discharge rates.
- Monitor weather and sea/swell conditions throughout operation.
- Monitor mooring arrangement.
- Monitor communications throughout operation.
- Monitor the draining of the cargo and vapour transfer hoses.
- Monitor the disconnection of liquid and vapour hoses.
- Assist the Pilot as necessary with the planned unmooring sequence.



9.4.5 ADDITIONAL SAFETY PRECAUTIONS & MONITORING MEASURES

To highlight pertinent areas from the SIGTTO checklist.

- Both vessels shall have their nitrogen plant in operational condition at all times during the cargo transfer operation to afford a supply of compressed nitrogen, as may be required for purging cryogenic systems.
- Both vessels shall take measures to minimize the amount of vapour generated during the STS transfer. This is to be realised through proper cargo temperature management and adequate piping cool down before the STS operation, and reduced transfer rates during cargo operations. Where possible, both ships shall consume generated vapour within their capacities.
- Both vessels shall have all cargo safety and monitoring systems in operational condition during the transfer operations.
- Both vessels shall conduct checks on main deck, manifold and compressor rooms hourly
- Both vessels shall have crew conduct routine and frequent deck rounds to monitor the condition of the moorings as they lead through the chocks and apply grease, if necessary, to minimize the risk of chafing. The frequency of deck rounds shall be increased if deemed necessary.
- During cargo transfer, the hull protection water curtain and if required by owners, additional under manifold water spray system shall be in use at the cargo manifolds on both vessels.
- All VHF Radios should be set on 1W, all MF/HF radios should be grounded.
- The Automated Identification System (AIS) to be operated on lowest power setting possible for the entire operation.
- Smoking regulations are to be strictly enforced. Warning notices shall be displayed and smoking designated rooms must be clearly marked.
- Faulty circuits indicated by an Earth indicator light must be traced and isolated immediately to avoid the risk of arcing.
- Soot blowing shall be performed prior to arrival. Ships must not perform this task during the STS operation.
- Cargo transfers will be stopped in the event of a LNG leak on either vessel and not resumed until the vapour has dispersed, the leak identified, repaired or isolated.



- All access doors to the accommodation shall be kept closed during the STS operation. The master shall designate those doors which shall be used to enter and leave the accommodation. Additionally air conditioning shall be switched to re-circulation mode.
- Un-authorized craft shall not be allowed alongside during the STS operations.
- Bunkering and vessels stores shall not be brought aboard during STS operations.
- Fire fighting equipment shall be set out and prepared for use in the vicinity of the cargo manifold during cargo transfer operations.
- Impressed current cathodic protection must be shut down 24 hours prior to arrival.

9.4.6 LNGC SAFETY INSPECTION & SECURITY

A FSRU Cargo Officer with a LNGC Cargo Officer or shall, referring to the Ship to Ship Safety Checklist, conduct an inspection of the LNGC cargo system and safety measures aboard the LNGC prior to the pre-transfer conference.

The Ship – Ship Safety Checklist shall be completed by the FSRU Cargo Officer, LNGC Cargo Officer and Terminal Manager at the pre-discharge meeting.

The Port Facility Security Officer and the Ship Security Officer shall confirm and exchange a Declaration of Security (DOS) in accordance with the Port Facility Security Plan.

BW/SONKER has established a security zone of 30m around the LNG carrier when cargo is transferred.

9.4.7 PRE-TRANSFER CONFERENCE

The FSRU Chief Officer shall conduct a pre-transfer conference on board the LNGC prior to commencing LNG transfer operations. The pre-transfer conference shall be attended by at least the LNGC Chief Officer, the FSRU Chief Officer, and the Terminal manager.

The purpose of the pre-transfer conference is to ensure that persons in charge of cargo operations aboard both vessels, understand and are in agreement regarding how the LNG transfer operation will proceed and the terminal to ensure safe cargo transfer practices are followed so as not to endanger the terminal or the FSRU send out.

The pre-transfer meeting shall include, as a minimum, discussion of the following:

- Safety issues pertinent to the discharge.



- Potential weather considerations.
- Communications, including primary and secondary means.
- Custody Transfer Procedure and all meter readings shall be confirmed.
- Cargo Specification including temperatures and pressures.
- Ordered flow rates, nominations and potential changes.
- Maximum flow rates.
- Minimum and maximum tank vapour pressure (both vessels).
- Maximum LNG transfer pressure.
- Ramp-up considerations including rates.
- Ramp-down considerations including rates.
- Identification of measures to be taken in the event of an incident.
- Ship – Shore Safety Checklist.
- Any scheduled maintenance or repair work to be carried out on the LNGC or jetty.
- Notice required for Main Engines (60mins).
- Schedule of persons in charge.
- Port Security requirements for the crew members.
- Garbage collection services.

The ERC arrangement and breakaway procedure shall also be discussed as below. Criteria for an emergency breakaway may comprise of the following: -

- Unexpected deterioration in wind, wave, or swell conditions.
- Primary fender failure.
- Mooring system failure.
- Cargo hose failure.
- Cargo containment failure.
- Vapour release.
- Any other shipboard emergency or failure which presents a risk to either ship involved in the operation.



All aspects of the STS are to be discussed and an “STS transfer checklist” is to be completed.

Permission to proceed with connections shall be granted by mutual agreement between the FSRU Master, LNGC Master and Terminal Manager.

9.5 LNG TRANSFER SYSTEM

The hose handling and connection will take place when the vessels are alongside and be coordinated by the manifold crew of the FSRU.

Personnel will transfer from the FSRU to the LNGC to assist and direct the operation of the LNGC crew, the crane operation will be undertaken by the crew of the FSRU, under the supervision of the LNGC officers and crew.

There will be a number of items of equipment that will need to be transferred from the FSRU to the LNGC, all of these are within the load limits of the normal manifold cranes.

The details of any preparation needed on-board the LNGC before arrival will be detailed below and the cooperation of the LNGC prior to arrival is appreciated in making the connection process as smooth as possible.

The LNGC crew will not be required to operate any of the ERC equipment as this is located on the FSRU.

9.5.1 EQUIPMENT

The following section contains details of the equipment that will be deployed or used during the hose handling operations.

The figure below shows an overview of system components that will be deployed from each manifold. The actual configuration on both vessels will be: -

- **Liquid lines:**
 - Single Liquid to liquid hose on 3 liquid lines with with 16”-10” reducer, double liquid line on 1 liquid line with 16”-10” Y piece reducer, OR
 - Single Liquid to liquid hose on all 4 liquid lines with 16” - 10” reducers
- **Vapour line:**
 - Double vapour line with 16”-10” Y piece reducer

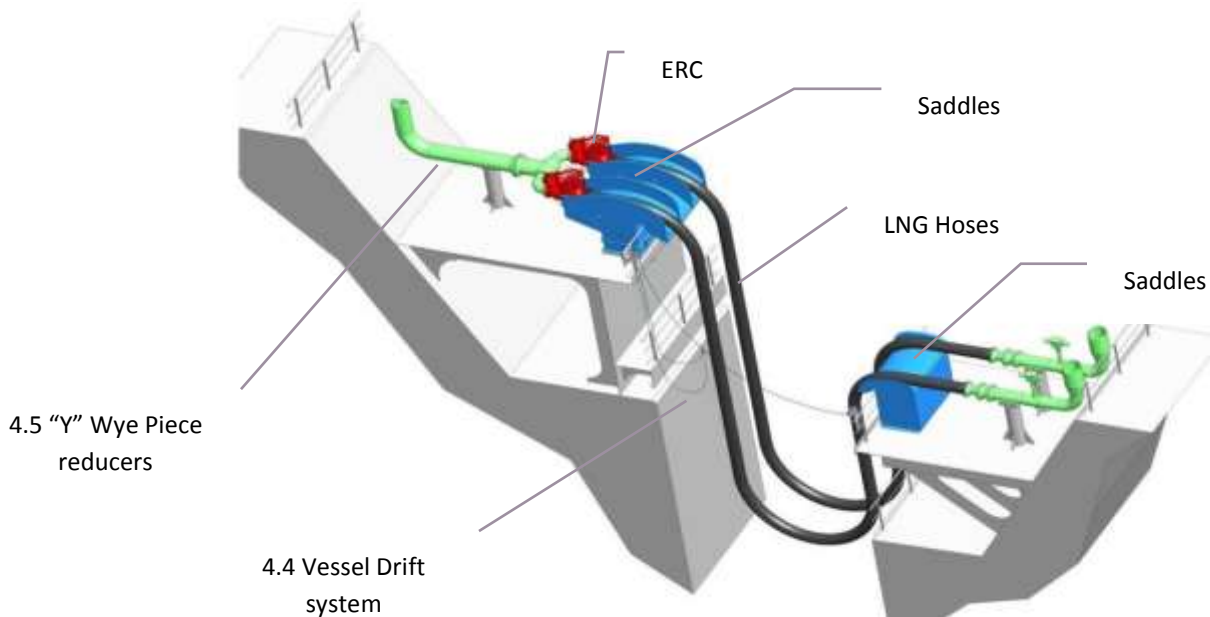


Figure 12: STS transfer system

9.5.2 SADDLES

The saddles provided are made from stainless steel and provide support for the flexible hose connected to the vessels manifold.

They are covered with a Teflon sheet to provide protection to the hose and saddle.

Once in position, they are filled with water, either fresh or seawater, which serves to counter weight them against the hose weight.



Figure 13–FSRU Saddles



Further nylon ratchet straps are used to securely hold them down against the manifold structure.

9.5.3 HOSES

The flexible hoses are manufactured by Guttling of Holland and have been proven through extensive use in the LNG STS business for a considerable number of years. They have numerous different Class certification, and comply with EN standards for this application.

These are composite hoses, made up of numerous layers of material, supported internally and externally by stainless steel wires, this provides a flexible but resilient hose, with the outer fabric being a protective layer against abrasion and other contacts.

Whilst the stainless steel wire provides some support to the hose shape, it is not fully supportive and as such, care should be taken when handling the hoses to avoid crushing the hose.

Hose buns should be used for lifting the hoses, and wide nylon straps used for positioning them on the manifolds.

Hoses will be pressure tested annually and certificates kept by the FSRU, which should be available on request.

The hoses have a working pressure of 10bar.



Figure 14: FSRU Hose standby position



Figure 15: Hose on side of FSRU

The hoses will be prepared on the side of the FSRU, they will be blanked and filled with low pressure nitrogen. They will be suspended from the side of the FSRU manifold by nylon strops and should be in positions ready to be picked up by the crane of either vessel.

The FSRU crew will assess the weather conditions and vessel movements alongside as to whether to use the LNGC crane or FSRU crane to connect the hoses.

9.5.4ERC

The purpose of the ERC is to provide an emergency release of the hose in the event of an emergency situation.

The ERC in this situation will be located on the FSRU and as such the LNGC has little interaction with them. It provides a double ball valve dry break system.

The vessels ESD systems will be linked with an electrical ESD cable (FSRU provides) to allow an ESD1 shutdown, with a “Vessel Drift System” between the vessels providing the ESD2 emergency breakaway component.

9.5.5VESSEL DRIFT SYSTEM

The vessel drift system serves the function of protecting the operation against vessels breaking out of their moorings and the hoses not being released.

There are 3 stages in the system: -

- (i) Vessel drifting out of position activates the first stage alarm



- (ii) If the vessel continues to drift then the second stage will activate the ESD1 system
- (iii) Should the vessels continue to move out of position, then the third stage will operate the ESD2 and release the ERC automatically.

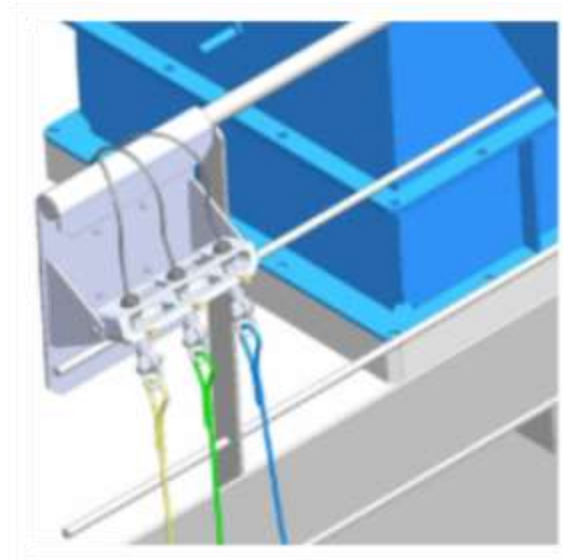


Figure 16: FSRU SWPS system

The LNGC will be asked to place a tension unit on the ships rail opposite the FSRU unit. This will tighten the ESD and Vessel Breakaway cables to the required tension.

This portable and removable unit simply fits on the ships rails and uses a ratchet style drum to tension the link between the vessels.

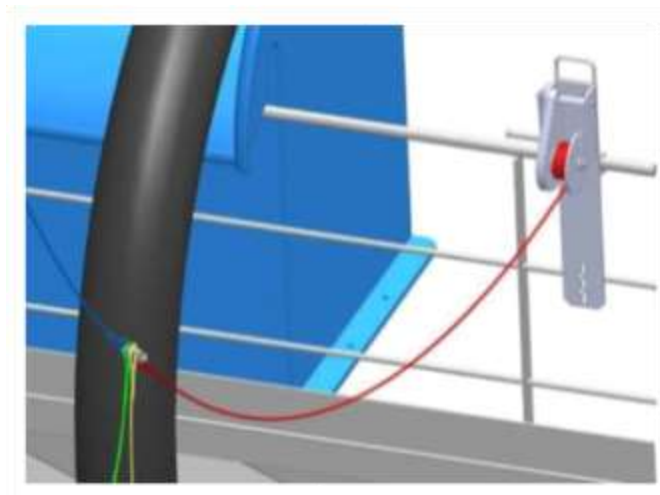


Figure 17: LNGC SWPS connection



9.5.6 GASKETS

Compressed fibre gaskets will be used on the connections, the 16" connection for the Y reducer is for ships supply.

10" gaskets for the hose connection will be supplied by the FSRU.

An insulation Gasket and set will be placed on the FSRU end of the hose string.

The bolts shall be torqued to the following values

Flange	Torque value for
16"	(Depending on ship supplied gasket)
10"	230Nm / 170ft-lb

Table 7 - STS - Torque Values for Gaskets

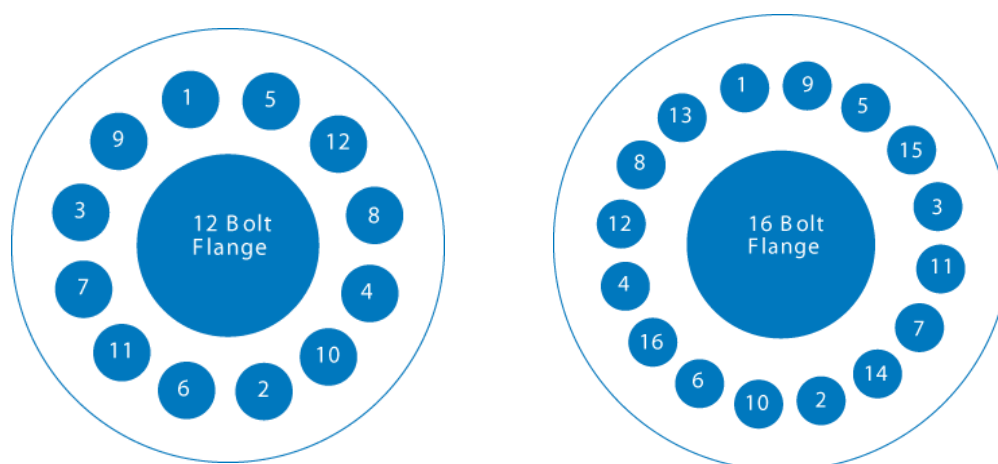


Figure 18 - Bolt tightening sequence



9.5.7 WATER CURTAIN / WATER POOL

The underneath of the manifold is always protected by a water curtain, however should the ship owner decide to do so, the underneath of the manifold can be protected by a water pool.

9.5.8 ANCILLARY EQUIPMENT

The FSRU will provide most of the items to be used for the connection of the hoses and other transfer equipment.

All equipment passed between the vessels will be slung with nylon or stainless steel wire slings.

There will be a set of slings or strops used to position the hoses when connecting and disconnecting and these will be supplied by the FSRU and placed around suitable strong points on the manifolds, typically the base of the manifold support.

An air hose shall be supplied for the air tools used in connection and disconnection

The ship should create or use a AIR spray connection for the removal of the ice on completion of operations, this is preferable to the use of water for de-icing.

Seawater fire hoses should be rigged forward and aft of the manifold for spraying water on to the lower bight of the hose string between the vessels to warm the remaining liquid up to facilitate the gas freeing.

9.5.9 RIGGING EQUIPMENT ON LNGC

If possible the LNGC should make available a length of plastic matting, similar to the switch board matting, of around 5m length, this will be placed under the manifolds as they are connected and used to catch and prevent bolts or dropped fasteners from falling into the drip tray.

9.5.10 REDUCERS

Liquid and vapour lines will have reducers fitted in accordance with Section 0.

Reducers shall be fitted as normal practice, using SHIP SUPPLIED 16" gaskets, and FSRU supplied 10" gaskets.



Figure 19: FSRU - Y Piece reducer

9.5.11 HOSE LIFTING

The following guidelines will be applicable to which ever method is used to rig the hoses.



Figure 20: FSRU - Lifting with hose bun

The Hosebun® should be positioned about 30cm from the end of the flange, clear of the metal ferrule, where a nylon stop also looped around the metal ferrule. See Figure 20: FSRU - Lifting with hose bun for approximate position of hose bun. The hose bun should be held in position with a small piece of rope to stop it slipping down the hose when loose.

The hose should be lifted vertically and laid over the saddle of the LNGC, where a 25mm polypropylene rope will be placed around the hose about 2m from the end with a Timber hitch (see Figure 21: Timber hitch), or nylon strop and rope, secure on the manifold with a number of turns round the base of the manifold, this will stop the hose from falling down when the crane is slacked back, allowing the rope to be slacked should the flange of the hose to be positioned relative to the manifold face.

The polypropylene rope with care can be slacked and adjusted to allow the flanges to meet correctly.

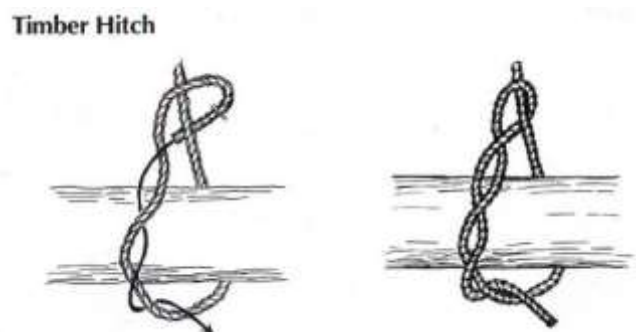


Figure 21: Timber hitch

Scaffolding spanner spike should be used to guide the flanges into position, NEVER USE FINGERS to position the flange faces. The flange face on the hose is a floating flange and can be rotated and manoeuvred into alignment with the ships flange easily.

Once the flanges are together, with a minimum of four bolts in the flange, the ships crane can then be disconnected and swung clear.

9.5.12 HOSE & MANIFOLD PRESSURE TEST AND INERTING

Once the cargo hoses are connected, both the manifolds and hoses shall be purged of oxygen using dry nitrogen supplied by the STBL. The pressure is to be raised to 5.0 bar in the liquid lines and 1.0 bar in the vapour line. The pressure is to be maintained while a leak test is carried out on the manifolds and hoses. Once the leak test is complete the pressure is to be released to atmosphere from the LNGC and the atmosphere tested. Purging is considered complete once the O₂ is <5% Vol. All hoses shall be depressurised to 0.5-1.0 bar after the test.

9.5.13 EMERGENCY SHUTDOWN SYSTEM (ESDS)

Each ship involved in the STS must have an Emergency shutdown system to enable a rapid and controlled means of stopping cargo in the event of an emergency.

Modified arrangements may be required for ships engaged in a ship-to-ship cargo transfer in order that both ESD systems are compatible. This will be addressed in compatibility study should the vessels have not conducted an STS previously together

Where feasible, a controlled manual shut down system shall be preferred.



9.5.14 LINKED EMERGENCY SHUTDOWN SYSTEM

The method of shutting down cargo in an emergency must be discussed and agreed by both ships prior to commencement of the cargo transfer.

Vapour management and the actions surrounding an emergency shut-down must also be agreed.

The primary ESD link consists of an electric ESD, this also allows for communications via the electrical cable, using a Pyle National connection.

If the vessel is equipped with a modern Seatechnic Ship/shore communication system, then the visiting LNGC should be ship – ship SLAVE

The LNGC must have her pin configuration set as follows to be compatible with the FSRU.

PIN	Function
5/6	Hotphone
13 / 14	ESD SHORE TO SHIP
15 / 16	ESD SHIP TO SHORE

Table 8 - LNGC Pin Configuration

The back-up to the Electrical system will be the Pneumatic ESD link, the FSRU will have a pneumatic hose ready on the main deck should it be required.

- Set point - 5.0 bar
- Trip – 3.5 bar

9.5.15 HOSE DISCONNECTION

The ESD Electric Cable may be disconnected prior to disconnection of cargo hoses.

Derigging the equipment will only be carried out once the hoses are proved gas free to an acceptable limit with a gas analyser, measuring hydrocarbon in inert atmosphere of less than 2% volume.

Gas freeing can take a considerable time, depending on how successful the purging was completed. Water sprayed onto the hose will facilitate this.

Care should be taken to clear the deck of the ice to a safe corner or area, so that crew members do not slip on the ice when working around the hoses.



A piece of rubber matting should be available underneath the manifolds to catch nuts and bolts when released. And prevent them dropping into the drip tray.

9.6 CUSTODY TRANSFER MEASUREMENT

Gauging will be performed after the warm ESD tests. At the same time the gas flow meters to engine room and GCU, shall be recorded. Upon completion of cargo transfer, after liquid draining, closing CTMS will be carried out and counters taken again.

The certified Custody Transfer Management System (CTMS) on board the shuttle tanker, shall be used for measuring volume of LNG being transferred between the shuttle tanker and FSRU in compliance with international LNG industry standards, guidelines, recommendations and best practice, including;

- [GIIGNL's LNG CUSTODY TRANSFER HANDBOOK 4th Edition Ver.4.00](#)
- [SIGTTO – LNG Ship to Ship Transfer](#)

The certified CTMS fitted on the FSRU will only be used for its internal LNG inventory management and to verify the quantities of LNG loaded from the LNG shuttle tanker.

9.6.1 TRIM

Vessels shall limit their trim to less than 3.0m throughout the operation, including periods of stripping.

Any trim to forward shall be avoided as far as practical.

9.6.2 TESTING OF ESD SYSTEM

Prior to arrival at the STS location, the ESD system must be thoroughly tested as required by the IGC code. All methods of activation should be tested and the timing of the ESD closure shall be noted. The closing times and sequencing of the ESD valves should be more than 15 and less than 30 seconds ensuring pressure surges do not occur.

The FSRU ESD valves are timed to close within 30 seconds. The LNGC should set its valves to close within 25 seconds.

Prior to commencement of the cargo transfer, the linked ESD system must be tested in accordance with the IGC code. The ESD is to be tested once hoses are connected and



purged. It is important that the ESD v/v's are not operated before purging has been completed.

The Electric cable will be connected on the STBL and then on the SS.

The LNGC will check that it has a healthy ESD signal and then open it's ESD v/v's.

9.6.3 VAPOUR MANAGEMENT

The FSRU will return vapour to the LNGC as required to allow control of the LNGC tank pressures.

In case of high pressures both vessels will utilise re-liquefaction equipment (if installed) or other gas consumption methods i.e. boilers using steam dump to the main condenser on steam driven ships or gas combustion units (GCU) on Dual Fuel Diesel Ships.

The design of the FSRU and LNGC cargo containment system impose pressure limits for the operation of the boil off gas system. The design and operating limits for the FSRU containment are in the table below. The operating limits of the LNGC are likely to be lower than the values in the table below. Caution should be taken in the event of returning vapour to the LNGC under normal or abnormal circumstances.

Action	mBarg/kPa(g)
Cargo tank pressure relief valve open	700/70
Vent valve open	680/68
High High pressure alarm	670/67
Vent Valve close	660/66
High pressure alarm	650/65
FO Back up reset	50/5
Low pressure alarm	30/3
FO Back up order	
Low Low pressure alarm	21/2.1
Very Low pressure alarm	3/3
Cargo tank vacuum relief valve open	-10/-1

Table 9 - Design & Operating Limits of FSRU



The basis of operation and operating parameters shall be discussed during the pre-transfer meeting.

Natural gas vapour shall not be released to the atmosphere during normal conditions throughout the cargo transfer. During the LNG transfer the FSRU and LNGC will control their tank pressures utilising the installed equipment.

The amount of boil off gas generated will depend upon a number of factors including: transfer rate, saturated vapour pressure of LNGC cargo, amount and temperature of heel aboard the FSRU along with FSRU tank and insulation temperatures.

Vapour will be returned to the LNGC as required for vapour balancing purposes. This is dependent upon commercial agreement. The saturated vapour pressure prior to and during the transfer should be as low as possible to reduce vapour generation; this will require careful cargo management by the LNGC during its laden passage. The LNGC should arrive with tank pressures as low as reasonably practicable. In order to have optimal transfer rates the cargo condition should have a maximum saturated vapour pressure of 1,120 mbar abs (112 kPa abs, 12kPa), It is imperative that all parties concerned fully understand the vapour management process. The LNGC is to keep the FSRU and terminal informed of cargo pressures and temperatures as part of the pre-arrival communication.

The transfer must commence at a reduced rate and tank pressures monitored continuously. If a rapid pressure rise should occur, the loading rate shall be reduced, or stopped until pressures are within safe limits.

Close communications between the ships are imperative to effectively manage the tank pressures, vapour volumes, and gas burning.

9.6.4 CARGO TRANSFER

Vapour generation shall be closely monitored and controlled during cargo transfer, with the vapour line open between the LNGC and FSRU to facilitate vapour balancing. The FSRU is equipped with a re-condenser to handle this additional BOG generation.

During the transfer an hourly exchange of information is to take place. This is to include (but not limited to) transfer rates, cargo ROB quantities, mooring line status etc.

Ramping up and down rates shall be discussed at the pre-transfer meeting. However the ramping up can be slowed down if either party feels uncomfortable with the situation. Normal ramp up is expected to take 1 hour.

The possibility of rollover shall be taken into consideration prior to the transfer.



Starting cargo transfer and subsequent increases shall be authorised by the FSRU to ensure that tank pressures are managed in a safe manner.

MIB 10" system	
Per hose	2,250m ³ /Hr
Total system Max transfer rate	10,000m ³ /Hr

Table 10 - LNG Transfer Rate

If required stripping pumps shall be started in ample time if the discharging ship intends to heel-out her cargo tanks. This will ensure cargo consolidation can be completed if the main cargo pump loses suction due to liquid movement. Prior agreement is necessary from PGPCl for stripping operations.

9.7 EMERGENCY RESPONSE

The LNGC Master is responsible for the safe operation of their ship (including cargo handling) and the safety of the LNG carrier's personnel at all times. The Master will be required to sign a safety letter acknowledging his responsibility in this respect.

The responsible ship's officer delegated the task of controlling cargo operations and other related duties must be qualified and competent to do so and should remain in the cargo control room throughout cargo operations in order to ensure that the ship/FSRU liaison is continuously maintained. In addition to the responsible ships officer, sufficient personnel should be available in order to maintain an efficient deck and cargo watch.

- LNGC Emergency alarm - The LNGC will make an announcement on her PA system. The FSRU will be notified by VHF.
- FSRU Emergency alarm – The FSRU will sound an audible alarm and notify the LNGC by radio. The FSRU will also notify the PGPCl and port representatives.

The following procedures should be used as a supplement to LNGC Company's ERP.

9.7.1 INCIDENTS ON-BOARD THE LNGC

The LNGC is considered a self-contained unit, fully equipped to deal with major fires and other incidents board and capable of providing the initial response to most Incidents.



The type of incident that can occur on board a carrier berthed alongside the FSRU can in some instances have a significant impact on the integrity of the FSRU and the safety of its personnel.

Incidents with the potential to develop into a major event are:

- Fire/explosion.
- Pollution through cargo and/or bunker fuel spills.
- Uncontrolled release of cargo vapour.

Other examples of incidents, which will require a response to minimize the outcome or to avoid escalation into a significant event, are:

- Mechanical failure (affecting cargo operations).
- Man overboard.
- Accident (medical emergency).
- Failing of the carrier's moorings.

The following section deals with the specific immediate actions to be taken by the principal parties in the event of incidents. Subsequent actions to be taken will depend on how the particular incident develops and how well it is managed.

9.7.2 FIRE / EXPLSION ON LNGC

Action by LNG Carrier with Emergency:

- Initiate emergency shutdown procedures; ensure all manifold(s) and tank valves are closed.
- Mobilise on board fire-fighting response.
- Establish communications with FSRU Control Room and advise nature and location of incident.
- Prepare to disconnect hoses.

Action by FSRU:

- Initiate emergency shut down; stop cargo operations.
- Implement Emergency Response Procedure.



- Start log of events.
- Contact Port Control and request assistance.
- Tug (upon arrival) to start fire pump; and assist as directed.
- Establish line of communications with LNGC.
- Coordinate with Port for marine resources and support.

Action by Tugs & Pilot:

- Tug to start fire pump and assist as directed by FSRU/Harbour Master.
- Remaining tugs to mobilise and assist as directed.
- Prepare to remove the LNGC from the FSRU under direction of pilot and agreement of Harbour Master.

9.7.3 SPILL FROM LNGC

Action by LNGC:

- Initiate emergency shutdown procedures: ensure all manifold and tank valves are closed.
- Isolate source of pollution and take whatever steps necessary to stop or minimize further pollution.
- Impose total smoking ban on board.
- Mobilize on board pollution response plan.
- Initiate clean up on board.
- Establish communications with FSRU CCR.

Actions by FSRU:

- Initiate emergency shutdown of cargo operation.
- Secure all sources of ignition.
- Verify source/type of pollutant.
- Initiate Oil Spill Response Procedure and Emergency Response
- Notify Port Authority
- Liaise with appropriate authority to deploy the boom if necessary across entire berth.



- Liaise with appropriate authority to deploy adsorbent materials into the water.
- Commence log of events.

Actions by Tugs:

- Tug prepares to stand by to assist and stands off upwind until nature and type of spill has been established.
- Confirm to Harbour Master and FSRU Control Room when standing by.
- Other tugs to prepare for standby to assist.

9.7.4 UNCONTROLLED RELEASE OF LNG FROM LNGC OR FSRU

Actions by LNGC:

- Initiate emergency shut down.
- Secure all sources of ignition and impose a total smoking ban.
- Mobilize ship emergency response plan.
- Establish communications with FSRU and advise nature and location of spill.

Actions by FSRU:

- Initiate emergency shut down on LNG (if applicable)
- Secure all sources of ignition.
- Operate fire monitors if applicable.
- Initiate Emergency Response Plan (if applicable).
- Advise port authorities.

Actions by Tugs / Pilot:

- Stand-by tug to activate fire fighting and deluge systems and stand well clear and await instruction from FSRU.
- Secure all ignition sources and impose total smoking ban. Remaining tugs to mobilise and stand offshore as in above.



9.7.5 MAN OVERBOARD FROM INCIDENT

General:

The response to this type of incident will depend on the particular circumstances of the case.

In the event of a man overboard situation within the FSRU limits all movements are to be suspended whilst search and rescue activities take place. Extreme caution is required by the search vessels, particularly during hours of darkness, when approaching or entering the search area.

Actions to be taken by the LNGC:

- Deploy lifebuoy into the water.
- Raise the alarm by sounding three long blasts on the ship's whistle
- Request FSRU CCR to stop loading if the person in the water is within 100 meters of the vessel and advise circumstances.
- Place lookout and constantly monitor position of person in the water.
- Request FSRU Control to mobilise rescue from the Harbour Master.
- Direct searchlights and personnel to last known position of person in the water.

Action to be taken by FSRU:

- Stop loading if requested.
- Request Harbour Master to assist and liaise with, ship using VHF.
- Place medical services on standby.

Action to be taken by Tug(s) and Pilot:

- Stand-by tug to respond as directed by Harbour Master.
- Remaining tugs to be mobilised as required.

9.7.6 LNGC RELATED INCIDENTS

The response to the type of incident described above will depend on a large extent to the nature, location and severity of the event. Swift action will in the majority of cases prevent an escalation and reducing the impact.



Where marine craft are required to approach or to go alongside the LNGC concerned they must only do so after FSRU CCR has confirmed that cargo transfer has been stopped.

Action to be taken by LNG carrier:

- Advise FSRU the nature and location of the incident and action being taken by LNGC and assistance required from FSRU and Harbour Master.
- Initiate emergency shut down if required (e.g. mooring failure).

Action to be taken by FSRU:

- Initiate emergency shut down if required.
- Establish communications with standby tug and alert remaining tugs if required necessary (e.g. mooring failure).
- Establish line of communication with LNGC.
- Start a log of events.

Action to be taken by Tugs & Pilot:

- Stand-by tug to respond as directed by Harbour Master after discussion with FSRU and LNGC Masters.
- Remaining tugs to be mobilized, if required.

9.7.7 FSRU RELATED INCIDENTS

Action required by LNGC moored alongside the FSRU will depend upon the nature, location and proximity of the incident to the jetty,

Action to be taken by FSRU:

- Initiate Emergency Response Plan.
- Shut down all cargo operations on LNGC, if required.
- Advise LNGC of the nature of the incident and keep them informed of status.
- Advise Port Control and request all tug standby and Pilot to standby to assist as directed.

Action to be taken action to be taken by LNG Carrier berthed alongside:

- Mobilize crew, stand-by to disconnect hoses and prepare to vacate the vessel.



- Mobilize on board emergency response if incident is on jetty.
- Maintain radio contact with FSRU.

Action to be taken by tugs and pilot:

- Standby tugs to provide immediate fire-fighting support as required and as directed by Harbour Master.
- Additional tugs, if required, to be directed to the scene by Harbour Master.
- Pilot to standby and establish communication with Harbour Master and FSRU.

9.7.8 EMERGENCY ELSEWHERE IN THE PORT

Actions by the LNGC, FSRU and Terminal:

If an emergency is detected at another terminal within the Port Qasim, the LNGC's Master should immediately have the ship's main engines and steering gear brought to a state of instant readiness.

Thereafter the Terminal Management will consult with the FSRU's Master in monitoring the emergency to assess the likely threat to which the LNGC may become exposed.

Actions taken to ensure the safety of the ship's crew, terminal personnel, the ship and the cargo may include stopping cargo transfer, disconnecting the cargo arms and taking the vessel off the berth and sending her to sea.

Any decision to take the vessel out of the port must be coordinated with Port Qasim and the Port Qasim Port Authority pilots.

9.7.9 EMERGENCY SHUTDOWN PROCEDURE

Cargo Transfer Operations will normally be stopped by the control room at the LNGC or FSRU on request or at the end of the operation sequence.

In case of an emergency stop is required by shore, control room or pier operator will inform to the FSRU Control Room.

9.7.10 ENVIRONMENTAL PROTECTION



All terminal personnel have an obligation to take necessary and prudent action to prevent, contain, mitigate and report environmental incidents or potential incidents that may result in harm to the environment.

The terminal operating company in response to a reported pollution incident or potential pollution incident, will call their approved pollution response contractor.



ANNEXURE – A

TERMINAL SECURITY



1. SECURITY PLAN

This Security Plan has been formulated under the code of “International Ship and Port Security” (ISPS Code) and “American Society of Industrial Security” (ASIS) based on the overall security assessment of Gas Port LNG Terminal.

1.1 PORT SECURITY POLICY

“We are committed to protect and secure the Gas Port facility, FSRU and the LNG carrier ships alongside the Terminal against terrorism, sabotage, armed robbery, seizure, pilferage of RLNG, smuggling of narcotics and weapons of mass destruction by compliance of the ISPS code.”

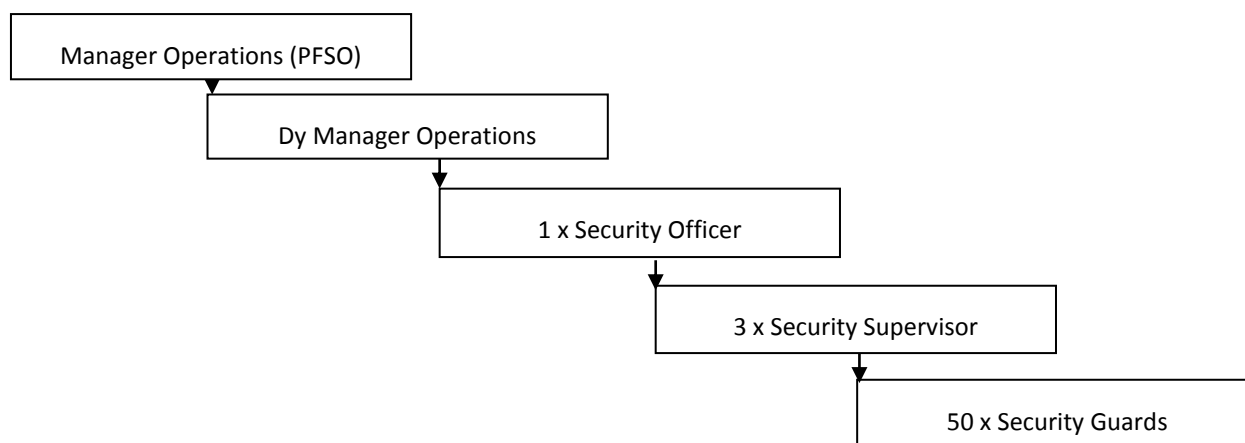
1.2 PORT FACILITY SECURITY OFFICE

The Manager Operations (or any other person appointed from time to time) has been designated as the Port Facility Security Officer (PFSO) for the Gas Port LNG Terminal, who is responsible for establishing, implementing and maintaining this security system in letter and spirit and in complete compliance to the ISPS Code requirement.

1.3 DEPUTY PORT FACILITY SECURITY OFFICER

The Deputy Manager Operations / Manager Security (or any other person appointed from time to time) has been designated as the Deputy Port Facility Security Officer (Dy PFSO) for the Gas Port LNG Terminal, who is responsible to assist the PFSO for establishing, implementing and maintaining this security system.

1.4 SECURITY ORGANIZATION AND RESPONSIBILITIES





1.5 RESOURCES

Following resources will be deployed to put into effect the security system.

a. Security staff

- | | |
|---------------------------|------|
| (1) Security Officer | -1 |
| (2) Security Supervisors | - 3 |
| (3) Armed Security Guards | - 50 |

b. Equipment

- (1) 2 X security patrolling boats.
- (2) 2 X transportation boats.
- (3) 2 X security Vehicle / Motor Cycle for patrolling on Trestle and all along the buried pipeline up to SSGC delivery point.

1.6 RESPONSIBILITIES OF SECURITY STAFF

Gas Port LNG Terminal will employ trained personnel for performing security duties. The armed security guards will be employed through a professional and licensed security company. Detailed duties are given at Annexure-C.

Deployment of security staff will be made as per SOP and any emergency requirement under orders of PFSO.

2. RESTRICTED AREAS

The entire Gas Port LNG Terminal within its boundaries is restricted area.

2.1 DEPLOYMENT OF SECURITY STAFF/ EQUIPMENT

The Terminal Site and the pipeline are divided into four main areas as follows:

- a. FSRU and Jetty platforms.
- b. 4 KM of pipeline on FOTCO Trestle.
- c. 7.8 KM buried pipeline from FOTCO P-1 area up to SSGC delivery point.
- d. Control room at SSGC delivery point.



2.2 THE PORT SECURITY COMMITTEE

The following officers are to form the Port Security Committee:

- a. President: (PFSO)
- b. Members:
 - (1) Manager Security (Dy PFSO).
 - (2) Admin Officer.
 - (3) Security Supervisors.

3. SECURITY THREAT EVALUATION AND RISK ASSESSMENT

3.1 POSSIBLE THREATS

Following scenarios are considered as high priority and likely to emerge:

- a. A terrorist attacked on incoming LNG tanker.
- b. A terrorist attack on the LNG port facility FSRU/LNG tanker alongside.
- c. Damage / destruction of pipeline by explosive device.
- d. Theft of gas.
- e. Seizure of ship and / or taking hostage personnel onboard by miscreants.
- f. Using ship to cause a security incident / threat.
- g. Using ship itself as a weapon to cause damage or destruction.
- h. Unauthorized access.
- i. Smuggling men and material into / out of the country.

3.2 PROBABLE THREATS SPECIFIC TO GAS PORT LNG TERMINAL

3.2.1 THREATS SCENARIO NO. 1: A TERRORIST ATTACKED ON INCOMING LNG TANKER

The most vulnerable of target would be the LNG tanker when in the navigation Chanel. It can be attacked by terrorist by using a small boat laden with explosives.

Consequences

This can incur maximum devastation and result in total destruction of the tanker, with numerous loss of life or injuries and a major national economic impact.

Mitigating and Control Measure Threats No. 1



- a. The tanker is to be escorted by tug boats with armed security guards on board, capable of long range vigilance and interception.
- b. All incoming and outgoing port traffic is to be stopped until the tanker is safely alongside the FSRU.

Note: The same SOP is being presently followed for LNG tankers arriving at ENGRO LNG Terminal.

3.2.2 THREAT SCENARIO NO. 2: A TERRORIST ATTACK ON LNG PORT FACILITY WITH FSRU / LNG TANKER ALONGSIDE

It is also a most vulnerable target as the LNG facility /FSRU, with the LNG tanker alongside, can be the target of attack from seaward side by terrorist using a small fishing boat laden with explosive.

Consequences

This can incur maximum devastation and can result in total destruction of the facility, with numerous loss of life or injuries and a heavy economic loss for the country.

Mitigating and Control Measure Threats No. 2

- a. Deployment of armed security guards at the facility.
- b. Patrolling of exclusion zone by security boat with armed guards capable of long range vigilance and interception.
- c. Enforcing a security zone / parameter of two hundred meters in radius of the facility.
- d. Naval marine assistant for the security zone enforcement.

3.2.3 THREAT SCENARIO NO. 3: DAMAGE / DESTRUCTION OF PIPELINE BY EXPLOSIVE DEVICE

The total length of pipeline is 13.3 Kms, out of which 1.5 Km is under the sea, 4 Km is mounted on FOTCO Trestle and the remaining 7.8 Km is buried. The 4 Km pipeline on the trestle can be approached from the sea water channel or the mangrove plantation areas and damaged by explosive device.



Consequences

It can result in an explosion and vapour gas fire, which will disrupt the RLNG supply and will provide an optic terror effect through media footages. The pipeline can be repaired / replaced in short period of time.

Mitigating and Control Measure Threats No. 3

- a. Effective monitoring by CCTV.
- b. Deployment of security guards along the pipeline and at delivery point.
- c. Around the clock surveillance by security guards on vehicle and on foot.

3.2.4 THREAT SCENARIO NO. 4: THEFT OF GAS

The theft of gas through pipeline is possible. The vulnerable part of the pipeline is 7.8Km buried section.

Consequences

This can have adverse economic effect on the company.

Mitigating and Control Measure Threats No. 4

- a. Effective monitoring through SCADA system.
- b. Deployment of security guards along the pipeline and at delivery point.
- c. Around the clock surveillance by security guards on vehicle and on foot.

3.2.5 THREAT SCENARIO NO 5: SEIZURE OF SHIP AND / OR HOSTAGE TAKING OF PERSONS ONBOARD.

There are two accesses available to carry out the above task. One is from seaward side and the other is from mangroves forest side. Access from the seaward side is more vulnerable. Hijackers can board the vessel directly from the channel or alternately by climbing up the jetty and forced entry on board by overpowering the security guards.

Consequences

This can result in loss of life or injuries and stoppage of operations and supply of RLNG gas. It will have serious consequences in terms of bargaining powers acquired by the terrorist.

Mitigating and Control Measure Threats No. 5

- a. Strict enforcement of security exclusion zone of 200 meters radius around the facility. Naval marine assistance for enforcement.



- b. Deployment of armed security guards at the facility.
- c. Patrolling of security boat with armed guards.

3.3 RATING CRITERIA FOR POSSIBLE THREAT SCENARIO

PROBABILITY (A)	SCALE
Unlikely - could happen but only rarely	1
Likely-To be expected	2
CONSEQUENCES (B)	SCALE
Catastrophic	3
Significant	2
Moderate	1

Table 11 - Rating Criteria for Possible Threat Scenario

3.4 SELECTING POTENTIAL THREAT SCENARIOS

Possible Threat Scenario	Probability A	Consequence B	Priority A x B
A terrorist attack on incoming LNG tanker	6	9	54
A terrorist attack on LNG Port Facility with/without FSRU/LNG tanker alongside	6	9	54
Seizure of ship and / or hostage taking of person onboard	5	7	35
Damage/Destruction to pipeline by explosive device	5	5	25
Damage/Destruction to equipment at SSGC tie-in point	2	2	4
Theft of GAS	1	1	1

Table 12 - Potential Threat Ratings



3.4.1 THREAT SCENARIO: A TERRORIST ATTACK ON IN COMING LNG TANKER

LOCATION: PQA Navigation Channel

IMPACT	Probability A	Consequence B	Priority A x B
Fatalities	2	3	-
Pollution	2	3	-
Economic	2	3	-
Total	6	9	54

3.4.2 THREAT SCENARIO: A TERRORIST ATTACK ON LNG PORT FACILITY WITH / WITHOUT FSRU /LNG TANKER ALONGSIDE

LOCATION: Port Gas Terminal/FSRU

IMPACT	Probability A	Consequence B	Priority A x B
Fatalities	2	3	-
Pollution	2	3	-
Economic	2	3	-
Total	6	9	54



3.4.3 THREAT SCENARIO: SEIZURE OF SHIP AND / OR HOSTAGE TAKING OF PERSONS ONBOARD

LOCATION: LNG Port Facility

IMPACT	Probability A	Consequence B	Priority A x B
Fatalities	1	3	-
Injury	2	2	-
Disrupt Supply	2	2	-
Total	5	7	35

3.4.4 THREAT SCENARIO: DAMAGE / DESTRUCTION TO PIPELINE BY EXPLOSIVE DEVICE

LOCATION: FOTCO Trestle / PQA

IMPACT	Probability A	Consequence B	Priority A x B
Fire	2	2	-
Disrupt RLNG Supply	2	2	-
Minor Injury	1	1	-
Total	5	5	25



3.4.5 THREAT SCENARIO: DAMAGE/DESTRUCTION TO EQUIPMENT AT SSGC TIE-IN POINT

LOCATION: SSGC Tie-in Point

IMPACT	Probability A	Consequence B	Priority A x B
Disruption of RLNG Supply	2	2	-
Total	2	2	4

3.4.6 THREAT SCENARIO: THEFT OF GAS

LOCATION: Buried Pipeline -PQA region

IMPACT	Probability A	Consequence B	Priority A x B
Economic	1	1	-
Total	1	1	1

4. ACCESS CONTROL MEASURES

4.1 STRUCTURE OF SECURITY SYSTEM

- The security control room of FOTCO will coordinate the overall management of the security system which include CCTV monitoring and communication with the security guards over VHF. It will be manned round the clock with communication facilities connected to FSRU/Jetty, FOTCO control room, FOTCO entry gate, SSGC tie-in point, all other security check posts and all emergency and law enforcement agencies.
- The access for duty personnel and visitors to Gas Port Terminal is through main entry gate of FOTCO via Trestle upto the FOTCO Jetty from where further access is by boats. On arrival at the main entry gate, security check will be conducted as per Annexure-C. After due verification the security staff at main entry gate will contact FOTCO control room for access authorization, the duty officer will confirm the authorization or otherwise. Vehicular traffic will be allowed up to the FOTCO Jetty from



where the duty personnel/visitors will be provided transportation boat up to the FSRU/Jetty boat station.

- c. The FSRU/Jetty boat station will be manned by armed security guards at all times, the arrival and departure of all the personnel, material or goods will be checked and registered before entry to the facility.
- d. Unauthorized access to the FSRU/Jetty from the seaward side and mangrove areas will be restricted by deployment of armed security guards at all accessible points.
- e. Security check posts of suitable height will be made to cover long range surveillance with appropriate equipment. High power Search Lights will be installed on the outer mooring dolphins to scan the seaward and onshore areas which will also deter any potential attempt of unauthorized access to the FSRU/Jetty.
- f. Unauthorized access to the trestle will be controlled through barrier and armed security guards deployed.
- g. Access to the terminal will only be allowed by the duty officer. Any person refusing to identify himself/herself is to be denied access to the facility.
- h. All employees and visitors will be issued relevant passes which will be checked at all access points.

4.2 SECURITY EQUIPMENT AND SYSTEMS

Following security systems will be in place and are to be monitored at all security levels:

- a. Long range armory for security guards.
- b. Binoculars for long range surveillance
- c. Drone camera for aerial surveillance.
- d. Metal detectors
- e. Infra-red and ultra-violet sensors will be placed to detect any fire incident or smoke.
- f. Bio-metric identification system employed at the reception.
- g. Mirror device to check vehicles for any bomb possibility at FOTCO entry.
- h. 24-hour CCTV system with recording facility.

4.3 MEASURES TO PREVENT WEAPONS OR DANGEROUS MATERIAL

Following measures will be implemented to prevent weapons or any other dangerous substances and devices intended for use against personnel, LNG ship, FSRU/Jetty.



- a. All personnel/vehicles entering through FOTCO main gate will be physically checked by security staff. Possession of any such material will result in denial access to the terminal.
- b. All personnel will be re-checked at the boat station of FSRU/Jetty by the security staff.
- c. All packages, parcels and baggage will be thoroughly searched by the security staff before entrance to the facility.
- d. 100% search of manpower keeping in view the security level in place.

4.4 DESCRIPTION OF SECURITY LEVELS

4.4.1 SECURITY LEVEL – 1

This is the baseline level of security for normal conditions. Necessary measures shall be taken at all times to reduce vulnerability and risk from any possible incident.

4.4.2 SECURITY LEVEL- 2

This security level requires enhanced security as a result of an increased risk either due to specific intelligence or increased vulnerability that heightens risk. At this level, additional security measures will be taken to reduce the vulnerability and risk to the facility from an incident.

4.4.3 SECURITY LEVEL-3

This security level requires maximum enhanced security as a result of higher risk of a specific threat or incident. At this level, full measures are employed.

4.4.4 ACCESS CONTROL MEASURES AT SECURITY LEVEL-1

Following measures will be ensured to prevent unauthorized access to the port facility, to ships moored at the FSRU/facility;

- a. All personnel will be checked for identity and any unauthorized/purposeless access will be denied.
- b. All the potential access points of the facility will be manned 24 hours by armed security guards.
- c. The access from the FOTCO trestle will be controlled by a physical barrier and manned 24 hours by armed security guards.
- d. All employees will be issued identity cards. The cards will be color-coded and allow different access to restricted areas to the bearer.
- e. Visitors will be issued visitor passes for entry.
- f. Random search will be carried out of persons, personal effects and vehicles by the security staff.
- g. Foreign visitors will only be allowed if pre-arranged. They are to bring a copy of their passport and a photograph and hand over before visit.



4.4.5 ACCESS CONTROL MEASURE AT SECURITY LEVEL-2

In addition to the security measures at level – 1, following measures should be ensured:

- a. Additional security staff will be assigned to guard access and patrolling of areas by changing the shifts from 3 to 2 shifts.
- b. The access from the FOTCO main entrance will be locked and all personnel and vehicles will be searched.
- c. The access to FSRU/Jetty from the boat station will be blocked and all personnel will be searched.
- d. Additional manpower will be deployed at all vulnerable points.
- e. Any visitor without any valid reason to enter FSRU/Jetty will be denied access.
- f. Security boat will be used to patrol area around the FSRU / Terminal at random intervals.
- g. Coordinate with Port Bin Qasim, Naval Marine and Rangers for enhanced patrolling.

4.4.6 ACCESS CONTROL MEASURES AT SECURITY LEVEL -3

In addition to the security measures at level-1 and level-2 following measure are to be ensured:

- a. Close and block all access to the facility.
- b. Anchoring / placing of security boats approximately 25 meters from the terminal on the either sides, with armed guards to block all possible access from the seaward side. Only allowing those with special permission from PFSO.
- c. PFSO is to permit the law enforcement agency personnel those responding to the security incident.
- d. All vehicular traffic from FOTCO trestle will be suspended accept Gas Port vehicles on duty and law enforcement officers permitted by PFSO.
- e. The patrolling will be increased. Additional guards will be deployed at vulnerable / sensitive points.
- f. All operations and cargo transfer will be suspended except with explicit permission by the Manager Operations.
- g. Inform the ship of the security level and direct her operational activities as decided by the Manager Operations.
- h. Evacuate all persons from the terminal not required for specific duties for operations or security.

5. SECTION 5 – MONITORING PORT FACILITY SECURITY MEASURES

5.1 GENERAL

Monitoring of the Port facility and its nearby approaches on land and water at all times by following means:



- a. By deploying security guards at all specified and vulnerable points.
- b. By using long range binoculars.
- c. Use of high power search lights at night.
- d. Use duty staff and security staff to patrol, monitor and report any abnormality during operations.
- e. Use SCADA System, fire and smoke detection system to detect and react on any incident.
- f. Use of CCTV for monitoring.

5.2 MONITORING PORT FACILITY SECURITY AT LEVEL – 1

- a. The duty staff and security guards will be used to observe general port area, access points and restricted areas.
- b. The duty staff and security guards will be used to monitor areas and movements adjacent to ships alongside at the FSRU / facility.
- c. Use of long rang binoculars.
- d. Use SCADA System, fire and smoke detection system.
- e. Use recording equipment including CCTV to monitor.

5.3 MONITORING PORT FACILITY SECURITY AT LEVEL -2

In addition to the above measures, in level -2 also ensure the following;

- a. Enhanced patrolling in water and on land.
- b. Enhanced CCTV coverage of area.
- c. Assign additional security personnel.

5.4 MONITORING PORT FACILITY SECURITY AT LEVEL – 3

In additions to the measures in level-1 and level-2, following to be ensured:

- a. At night entire terminal will be well lighted for good visibility by the security guards.
- b. Switch on all security equipment capable of recording.
- c. Maximize the length of time for recording.
- d. 100% deployment of guards.
- e. Informing Naval Marine, PQA Security and Sindh Rangers for any support to protect the facility against terrorist attack.



6. EMERGENCY PREPAREDNESS & CONTINGENCY PROCEDURES

6.1 PROCEDURE ON EMERGENCY / ON OCCURRENCE OF AN UNTOWARD INCIDENT

In case of a terrorist attack, the duty officer will follow all the SOPs of Security Level 3 and will immediately inform the Naval Marines as they are the nearest and have the full capability to encounter any terrorist activity.

Following procedure will be followed in case of any emergency / on occurrence of untoward incident.

- a. On observing of any emergency or any incident, the concerned security staff or operations staff will inform the security supervisor/ duty supervisor.
- b. Security Supervisor will take the following actions.
 - (1) Will inform the duty officer.
 - (2) Will alert the whole guard force.
 - (3) Will rush to affected place.
 - (4) Will assess / take over the situation.
 - (5) Will give detailed report to Duty Officer.
 - (6) Duty officer after receipt of detailed report, must take following actions:-
 - (7) Try to deal with the situation. If it is beyond his control, inform the PFSO, Manager Operations, Manager Security and other agencies for necessary assistance/ help as deemed appropriate.
 - (8) Will inform / request for assistant / help from Naval Marine, as they are nearest and can respond to an emergency within 5 minutes.
 - (9) Must lodge FIR with the police if nature of case warrants.
 - (10) On the following working day, must submit detailed report through PFSO for the information of CEO.
 - (11) Inquiry will be conducted to ascertain the cause of the incident within a week under arrangements of PFSO. A complete report will be put up to CEO for his information.

6.2 RADIO & TELECOMMUNICATION SYSTEM

The Control Room is connected with one landline phone, one mobiles phone connection and there is a radio VHF system for internal communication and shore to ship communication. The system provides effective and continuous communication between port facility, vessel alongside and local authorities.

6.3 PORT USERS, EMERGENCY SERVICE & RESPONSE AGENCIES CONTACT LIST

Attached as Annexure-D.



6.4 PROCEDURES FOR EVACUATION IN CASE OF SECURITY THREATS OR BREACHES OF SECURITY

Following procedures will be adopted for evacuation in case of security threats or breaches of security;

- a. All visitors will be immediately evacuated by boat.
- b. All personnel not required for duties will be evacuated by boat.
- c. Routes for evacuation will be marked

6.5 RELEVANT TRANSPORTATION INFRASTRUCTURE

Two security boats and two transportation boats are available at the disposal of the duty officer for duty work and for evacuation.

7.PORT / SHIP INTERFACE

7.1 PORT / SHIP INTERFACE PROCEDURE

- a. Duty officer is to brief the ship's captain about port security level and plan.
- b. Duty officer may ask the ship for showing the security certificate.
- c. Duty officer may inspect any part of the ship after obtaining permission from the captain.
- d. Ship is to inform the port facility if they are at a higher security level than the port. The ship cannot be at a lower security level than the port at any time.

7.2 DECLARATION OF SECURITY PROCEDURE

The PFSO is authorized to agree and execute the DoS with the LNG carriers calling at the Gas Port Terminal. The procedure given in the ISPS Code will be observed for declaration of security (DoS).

- a. DoS is the agreement between the ship and the port facility or between ship to ship to the respective security measures in accordance with their respective approved security plans.
- b. A Declaration of Security (DoS) should be completed when the Contracting Government of the port facility deems it to be necessary or when a ship deems it necessary.
- c. A PFSO may also initiate DoS prior to ship / port interfaces that are identified in the approved PFSP as being of particular concern.
- d. The agreed DoS should be signed and dated by both the port facility and the ship (s), as applicable, to indicate compliance and should include its duration, the relevant security levels and the relevant contact details.
- e. A change in the security level may require that a revised DoS be completed.



8. CARGO SECURITY MEASURES

8.1 SECURITY LEVEL 1

Unloading shall be carried out as usual, in accordance with Terminal's regulations and procedures for unloading.

8.2 SECURITY LEVEL 2

Unloading shall be carried out as usual, in accordance with Terminal's regulation and procedures for unloading taking into consideration following additional measures.

- a. Operation personnel reduced to the minimum.
- b. No maintenance work (hot/cold) shall be carried out; only works supporting the unloading following the issuance of a special permit.
- c. Increased patrolling the restricted area.
- d. Security staff increased.
- e. Increased CCTV monitoring.
- f. Visitor entry to the facility shall be allowed only by PFSO's permission.
- g. Ongoing communication with public authorities for information exchange and likely joint action.

8.3 SECURITY LEVEL 3

At level 3, no access shall be allowed except law enforcement agency personnel. When security is set at level 3:

- a. Suspension of cargo operations.
- b. Vessel shall be disconnect and un berthed immediately
- c. The facility shall be evacuated and only a minimum personnel shall remain.
- d. The involvement of public authorities shall be immediately required to control and monitor.

9. SHIP'S STORE DELIVERY MEASURES

At Gas Port Terminal, no ship's stores are allowed to be delivered, accept on occasions specially requested by the ship in advance and permitted by Manager Operations after necessary custom



clearance and security checks. A thorough security check will be carried out at FOTCO main entry gate and at boat station before allowing any delivery, at all security levels.

10.UNACCOMPANIED BAGGAGE HANDLING MEASURES

At Gas Port Terminal, no unaccompanied baggage will be allowed to be handled under all security levels. Duty staff will refuse to accept any unaccompanied baggage.

11.PORT SECURITY EXERCISES AND DRILLS

Training, drills and exercises will be conducted at regular intervals to familiarize the staff with security duties. Following training / exercises will be conducted at least once a quarter:

- a. Terrorist attack.
- b. Bomb threat, finding a suspicious device or package
- c. Searching the facility for any object or person.
- d. Weapon/ explosive discovered and its disposal.
- e. Evacuation of the facility.
- f. Response to the ships security alarm.
- g. ISPS courses and workshop as arranged by DG P&S from time to time.

In addition security and duty staff will be given regular training on the following subjects:

- a. What to do at their duty station.
- b. Spot unknown / suspicious person within the facility and establish identity.
- h. Reporting of incident/ suspicious person / package.

They will be given basic training by the contracted security agency. They will also to be given training as per the requirement of the company on induction into Gas Port Terminal.

12.DOCUMENTATION / RECORDS

Following documents and records will be maintained by duty officers and security staff:

12.1 SECURITY RECORDS

- a. Security record for all port / ship interface.
- b. Record of Declaration of Security document.
- c. Record of all visitors.
- d. Record of all boats and vehicles.



12.2 SECURITY INCIDENTS

- a. Incident reports by duty officers.
- b. Security reports made by the security / duty staff
- c. Instructions to change the security levels.

12.3 SECURITY DRILLS

Once every quarter

12.4 SECURITY EXERCISES

Once each calendar year with no more than 18 month in between.

12.5 SECURITY TRAINING

Record of all security training carried out.

12.6 AUDITS (INTERNAL & EXTERNAL)

- a. Records of both internal and external audits.
- b. Internal audit should be carried out at least every 12 months.
- c. Reports to be retained for five years.

12.7 PREVIOUS, PROPOSED & APPROVED AMENDMENTS

Records of all assessments to be retained.

13. PORT SECURITY INSPECTIONS AND CONTROL MEASURES

13.1 PROCEDURES FOR RESPONDING TO SECURITY INSTRUCTION BY THE GOVERNMENT

The Gas Port Terminal will immediately respond to any security instructions the government may give at security level 3.

13.2 PROCEDURES FOR THE PERIODIC REVIEW OF THE PLAN AND UPDATING

The Plan will be reviewed annually and changes proposed to the Director ISPS. The Director ISPS shall approve the relevant changes to the Security Plan.



13.3 PROCEDURES FOR AUDITION THE SECURITY PLAN

Personnel conducting internal audits of the security activities specified in the plan or evaluation its implementation shall be independent of the activities being audited unless this is impracticable due to the size and the nature of the port facility.

The plan is to be kept as hard copy and may also be kept in an electronic format. In such a case, it shall be protected by procedures aimed at preventing its unauthorized deletion, destruction or amendment.

The approved security plan is to be kept under lock and key and shall be protected from unauthorized access or disclosure.



JOB DESCRIPTION - PORT FACILITY SECURITY OFFICER

(ACCORDING TO ISPS CODE)

The duties and responsibilities of the Port Facility Security Officer shall include, but are not limited to:

1. Conducting an initial comprehensive security survey of the port facility, taking into account the relevant port facility security assessment.
2. Ensuring the development and maintenance of the port facility security plan.
3. Implementing and exercising the port facility security plan.
4. Undertaking regular security inspections of the port facility to ensure the continuation of appropriate security measures.
5. Recommending incorporating, as appropriate, modifications to the port facility security plan in order to correct deficiencies and to update the plan to take into account relevant changes to the port facility.
6. Enhancing security awareness and vigilance of the port facility personnel.
7. Ensuring adequate training has been provided to personnel responsible for the security of the port facility.
8. Reporting to the relevant authorities and maintaining records of occurrences which threaten the security of the port facility.
9. Coordinating implementation of the port facility security plan with the appropriate Company and ship security officer(s).
10. Coordinating with security services, as appropriate.
11. Ensuring that standards for personnel responsible for security of the port facility are met.
12. Ensuring that security equipment is properly operated, tested, calibrated and maintained, if any.
13. Assisting ship security officers in confirming the identity of those seeking to board the ship when requested.



Deployment of Security Staff

<u>S.NO.</u>	<u>Location</u>	<u>No of Guards</u>	
1.	FSRU/Terminal	18	(6 x 3 shift each)
2.	Trestle / Pipeline	15	(5 x 3 shift each)
3.	SSGC delivery point	6	(2 x 3 shift each)
4.	Vehicle / foot patrolling	11	(3 x 2 shift each
	7.8 KM buried pipeline		5 x Night shift)
Total		50	Guards



JOB RESPONSIBILITIES - SECURITY SUPERVISOR

1. Will arrange for implementation of the Security orders and will ensure following:-
 - a. All entry / exit will be through boat station and main entrance of FOTCO.
 - b. Security checks and necessary search of incoming and outgoing persons and materials on orders.
 - c. Identification of new comers will be properly established / verified.
 - d. Particulars of all visitors must be entered in the 'Visitors Register'.
 - e. The officer being visited must sign the visitor's slip issued to the visitor.
 - f. The visitor must be accompanied by security staff to the person to be visited.
 - g. Remain vigilant within the premises and bring unusual event to the notice.
 - h. Maintain record / documentation.
2. Must Note Down
 - a. Incoming material and tally it with bill/ delivery challan / cash memo.
 - b. Outgoing material and tally it with Gate Pass/ Dispatch Note.
 - c. Incoming and outgoing boats / vehicles.
3. Will ensure that only authorized persons/holders of visitor's card are allowed.
4. Will carry out day/ night patrolling of the area.
5. Fulfill any other task assigned to him by the Security Officer.
6. Will take appropriate action on occurrence of incident pertaining to security.
7. Will ensure that:-
 - a. Security guards are placed at their posts as per duty roster.
 - b. Security guards are properly briefed about their duties.
 - c. Security guards are properly dressed.
 - d. Proper discipline of security guards is maintained.
 - e. All weapons/ equipment on charge of Security Guards are in working condition.



JOB RESPONSIBILITIES - SECURITY GUARDS

1. General Duties

- a. Discharge his duties as per the instructions of Security Supervisor.
- b. Exercise control over the Boat Station, Gate or wherever employed.
- c. Carry out necessary search of incoming and outgoing persons on orders.
- d. Keep a watch and report any unusual event to Security Supervisor.
- e. Note down incoming and outgoing material/ vehicles and persons.
- f. Fulfill any other task assigned to him by the Security Supervisor.

2. Area Search

- a. Will remain vigilant and report about suspicious matters or unusual events
- b. Any unfamiliar object once spotted, must be reported to Security Supervisor.

3. Security Guards at Boat Station

There will always be a guard at the boat station along with Security Supervisor. His duties are as follows:-

- a. Guard the boat station and immediately on arrival, take over all the material on charge.
- b. On taking charge of duty, will go around immediately in the area of responsibility and will inspect all material and boats. On observing any suspicious thing will immediately report to the security Supervisor.
- c. Will check the identity of every incomer and carry out search. He will also inspect all incoming boats as per SOP.
- d. Will not allow any weapon and related material into the premises.
- e. Whatever material is brought from outside will not be allowed into the facility unless checked by the Security Supervisor. Similarly all out going material will not be allowed to leave the boat station unless checked by the Security Supervisor.
- f. Every visitor will be identified before allowing him to enter. The name, address and purpose of visit will be entered in the visitors register.
- g. Original key box will remain locked all the time and no unauthorized person will be given key. Record of keys will be maintained throughout.
- h. Before leaving duty incoming security guard will be handed over charge of complete area of his responsibility.



- i. Incoming guard will take over complete charge of the area of responsibility immediately inform the security supervisor.
- j. Will carry torch and whistle with him at night.

4. Security Guards at Trestle

In addition to general duties, their duties are as follows:-

- a. Security of Trestle, Pipeline between Control Room and P-1
- b. No unauthorized person comes up on Trestle.
- c. Must keep vigilant watch around the Trestle against any sabotage activities.
- d. Must ensure that fitment items of trestle are intact.
- e. Will not allow fishermen to stay close to the Trestle for fishing etc.
- f. Regulate the incoming / outgoing traffic on the Trestle.
- g. Will carry out patrolling on the Trestle if ordered to do so.
- h. Must give report to security supervisor about any unusual incident.
- i. Any other duty assigned by the Security Supervisor / Duty officer.

5. Security Guards at Terminal / Jetty

In addition to General duties, following duties will be performed.

- a. Will not leave his place of duty unless relieved by other guard.
- b. Will ensure Security / safety of Terminal / Jetty and its fitment items.
- c. Will check entry of all personnel on the Terminal / Jetty.
- d. Will also ensure all persons entering the Jetty area wear crash helmets.
- e. Any other duty assigned by the Security Supervisor / duty officer.

6. Security Guards Vehicle / Foot Patrolling

In addition to general duties, the Security Guards will perform the following duties:-

- a. Ensure Security of buried pipeline up to SSGS delivery point.
- b. Will not leave place of duty unless relieved by the incoming Guard.
- c. Ensure that no unauthorized connection is made through the pipeline.



- d. Will immediately inform the security supervisor / duty officer of any unusual digging / encroachment near the buried pipeline.
- e. Will maintain Liaison / Coordination with Security Supervisor / duty officer.
- f. Any other duty assigned by the Security Supervisor.

7. Security Guard at SSGC Delivery Point

- a. Discharge his duties as per the instructions of Security Supervisor.
- b. Exercise control over the Gate.
- c. Will ensure the security and safety of all the equipment installed at SSGC delivery point.
- d. Carry out necessary search of incoming and outgoing persons on orders.
- e. Keep a watch and report any unusual event to Security Supervisor.
- f. Note down incoming and outgoing material/ vehicles and persons.
- g. Not allow anyone to enter without proper permission and authorization from PFSO.
- h. Fulfill any other task assigned to him by the Security Supervisor.



SOP – BOATS / VEHICLES SECURITY CHECK

1. All in / out boats at the boat station and all vehicles at FOTCO entrance will be stopped before entering the facility and security staff on duty will carry out necessary security check against the following :-
 - a. Boats / vehicles are not carrying any unauthorized item including contra band items.
 - b. No staff is permitted to deliver or receive any utility / other items of any kind to / from the members of ship / crew.
 - c. Boat operator or driver will make formal report to Security Supervisor/ Duty officer/OIC, if any employee is indulging in any activity mentioned above.
 - d. No boat operator or driver will refuse search by the security staff.
 - e. All items required to be taken in or out will carry proper (voucher) permission and the security staff on duty will maintain a record to this effect.
2. All boats / vehicles will be checked at boat station and at FOTCO entrance regardless of the rank and position of the driver / owner with the exception of those granted exemption by the CEO / Manager Operations.

3. Special Instructions

Boats and Vehicles of Government Agencies mentioned below will be stopped for identification and these will be allowed. Similarly any Staff of Government agencies travelling in a private boat / vehicle having prior clearance will be allowed after necessary identification. In case a prior instruction about movement of any representative from Government Agency has been passed, those boats / vehicles will not be stopped.

a. Custom	e. Naval Intelligence
b. Immigration FIA	f. PQA
c. FIA	g. Any agency specified by PFSO
d. Sindh Police	h. Sindh Rangers



PORT USERS CONTACT DETAILS

List of important telephones is mentioned as under. In case of emergency, maximum assistance/ advice and help will be sought from under mentioned Executives.

Appointments / Departments		Office Contact
1.	CEO	34720008-9
2.	Manager Operations	34720003-5
3.	Manager (Administration / Security)	34720003-5
4.	Admin Officer	34720003-5
5.	PQA	34730102-4
6.	PSO	34100277-8 34750546-7
7.	PAPCO	34750763-5
8.	OTC	34100277-8
9.	Shell Pakistan	



EMERGENCY SERVICE & RESPONSE AGENCY CONTACT

List of important telephones is mentioned as under. In case of emergency, assistance/ advice and help will be sought from under mentioned agencies.

<u>Naval Marine PQA</u>	9927111
<u>Sindh Rangers</u>	35499843
<u>Dock Security</u>	34730394
<u>Police</u>	37739317 - 37739148
1. DSP Sukkun	99218010
2. DSP Malir	35017958
3. Police Station Shah Latif Town, Zulfiqarabad	34924167
4. SDM Malir	35080988, 37738187
5. Police Station – Sukkun	
<u>Fire Brigade</u>	37737601
1. Fire Brigade PQA	35014396-35015988-35015888
2. Fire Brigade Qaidabad, Malir, Landhi	

Others

- | | |
|---|-------------------|
| 1. Indus Motors | 34750051-48 |
| 2. Edhi Centre Qaidabad | 3205656 |
| 3. Company HQ Coast Guards (Iath Village) | 3406691(Malir) |
| 4. Incharge DT Security | 03009251952 |
| 5. Liaquat National Hospital | 34939612 |
| 6. SOMH | 39218701 |
| 7. Pakistan Steel Hospital | 37574040/37574343 |



PORT EVACUATION PROCEDURES

1. Following Procedures will be adopted for evacuation in case of security threats or breaches of security;

- a. All visitors will be immediately evacuated.
- b. All personnel not required for duties will be evacuated by using Gas Port boats / vehicles.
- c. Any person stranded on the Terminal will be evacuated by boat.

2. Relevant Transportation Infrastructure

The duty personnel are transported from the FOTCO Jetty to the Gas Port Terminal by boats. Two security and two transportation boats are available at the disposal of the duty officer for duty work and transportation of stores and provision of food. The same boats will be used for evacuation.



ACTION ON BOMB ALERT / WARNING CALL

- a. Nobody should touch the bomb on its discovery and proceed to safe places.
- b. Immediately Report to all concerned authorities, PQA Security, Police, Rangers, Naval Marine and bomb disposal squad.
- c. Report to the bomb disposal squad regarding bomb location.
- d. Area should be cleared immediately and no personnel in the close vicinity.
- e. Firefighting equipment should be made available along with ambulance.
- f. Area should be segregated through sand bags or any other material.
- g. All electric connections to be removed / disconnected by qualified person.
- h. Security guard should be posted to isolate the area.
- i. All boats or vehicles should clear the vicinity.



SOP FOR BOAT PATROL

- a. Boat – I will be detailed for security patrol as per security levels.
- b. The boat will be operated by the jetty staff and carry armed guard.
- c. The boat will carry searchlight and communication equipment.
- d. The boat will patrol the area around the FSRU/Terminal and Trestle or any other area as directed by the duty officer.

The boat patrol will check any unauthorized fishing boat and persons in our jurisdiction and report immediately.



DOS CERTIFICATE

A model DOS certificate is as under:-

DECLARATION OF SECURITY (DOS) BETWEEN SHORE AND SHIP

Name of Ship: _____

Port of Registry: _____

IMO Number: _____

Port Facility: _____

This declaration of security is valid from _____ (date) for the following activities as listed below:

Current Security Level – Ship:

Current Security Level – Port Facility (Gas Port LNG Terminal):

Port Facility – GAS PORT and Ship _____ agree to the following security measures and responsibilities to ensure compliance with the requirements of part a of the international ship and port facility security code.

This affixing of the initials of the SSO and PFSO or his authorised representative in the relevant columns below indicates that the activity will be done in accordance with the vessel and port facility approved plans.



Activity	The Port Facility	The Ship
Ensure the performance of all security duties.		
Monitoring restricted areas to ensure that only authorised personnel have access		
Controlling access to the port facility		
Controlling access to the ship		
Monitoring of the port facility, including berthing areas and areas surrounding the ship		
Monitoring of the ship, including berthing areas and areas surrounding the ship		
Handling of cargo		
Delivery of ship's stores		
Handling unaccompanied baggage		
Controlling the embarkation of persons and their effects		
Ensuring that security communication is readily available between the ship and the port facility		

The signatories to this agreement certify that security measures and arrangements that will be implemented in accordance with the provisions already stipulated in their approved plans.

Signed for or on behalf of the Port Facility (Gas Port LNG Terminal)

Name: _____

Appointment: _____

Date and Time: _____



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Signed for or on behalf of the Vessel

Name: _____

Appointment: _____

Date and Time: _____



IDENTITY CARDS/ VISITORS CARDS

1. All employees of Gas Port will be issued I.D. Cards pursuant to GOP. Instructions on the Subject. The card entitles the bearer entry for business purpose to various areas as follows:-
 - a. **Light Red Card**: Access to all areas is allowed during all security levels. Can take visitors to all areas without prior clearance.
 - b. **Light Grey Card**: Access restricted to administration area. Security level 1 and 2. May escort registered visitors in these areas.
 - c. **Light Green Card**: Access restricted to Operating Centre, berth, pipeline route – may escort registered visitors in these areas. (All Security Levels).
 - d. **White Visitor Pass**. Each visitor must have this pass to enter areas and must be accompanied by a bona-fide card holder.
 - e. Concerned officials of PQA will also be issued passes for entry into the Terminal area.
2. Those personnel who have service contracts with Gas Port Terminal will be issued WHITE passes by the HR&A department on recommendation of the concerned department.

3. **SOP Identity Cards / Visitors Passes**

Following SOP will be laid down to cover various aspects of issuance, withdrawal, loss of identity / visitors cards:-

a. **Issue of identity Cards**

- (1) All employees of Gas Port will be issued with Identity Cards by HR department on the recommendation of respective heads of Departments. A centralized record of each card issued will be maintained on a separate register. Following information / Documents will be supplied by each employee:-
 - a. 2 X Photographs.
 - b. Complete Bio-Data as per ID card requirement.
 - c. Police verification.
- (2) Identity cards/ Visitor's pass will bear the signature of Manager HR& Admin.
- (3) Identity Cards will be issued only to the Individuals after obtaining signature on the register maintained in admin office for this purpose.
- (4) Identity Card will be checked periodically and all employees are required to produce / present to the Security Supervisor / Security Officer on demand.



b. Maintenance of Record

- (1) PFSO is responsible to maintain record of all cards.
- (2) No Card will be issued to an individual who is not authorized.

c. Action on loss of Identity cards

In case of loss, following action will be taken:-

- (1) Individual will immediately submit report to his department which in turn will inform HR Department without loss of time.
- (2) Respective department will carry out the preliminary investigation and a report in writing will be sent to PFSO for the information of CEO.
- (3) An inquiry will be ordered under arrangements HR department. Recommendations will be submitted to CEO for final disposal.
- (4) Individuals responsible for loss of Identity Cards may be asked to deposit a sum of Rs. 200 with Company in addition to administrative action as deemed appropriate.

d. Issue of Visitor's Passes

The passes will be issued to visitors of Gas Port Terminal under arrangements of Security Supervisor, both at Boat station and at FOTCO entrance. A sufficient quantity of these passes will be maintained. Security Supervisor will ensure that these are withdrawn from the visitor before they leave Gas Port premises. In addition, following procedure will be followed to conduct visitors who visit Gas Port Terminal:-

- (1) Reception at the boat station/ FOTCO entrance by the Security Staff.
- (2) Complete particulars including the purpose of the visit will be noted down in the Visitor's Register.
- (3) Concerned department / management staff / executive will be informed on telephone.
- (4) Concerned Officer / Staff will come to the main gate to receive and see off his visitor / guest. In case no staff/ officers are available, one of the security guards at the Main entrance / gate will accompany and guide the visitor up to the concerned office / department.

e. Visit to Terminal

In principle same procedure will be used as mentioned in para'd' except that the guard will not accompany but officer/ shift in charge will be informed before allowing the visitor to proceed to Terminal.



PAKISTAN GASPORT
LNG IMPORT
TERMINAL

TERMINAL REGULATIONS

REVISION: 2
DATE: 05 APR 2018

ANNEXURE – B

CONDITION OF USE



The LNG Facility, all Port Facilities, Port Services and other assistance of any kind whatsoever provided to a vessel calling at the LNG Terminal are provided subject to all laws, rules, regulations and codes applicable in the Port Qasim and to these conditions of use including towage and tug assistance ("Conditions of Use"). These conditions are applicable regardless of whether or not any or all charges/costs are paid or are actually or impliedly due from or on account of any visiting vessels of any flag. Without prejudice to the generality of the foregoing, the following shall be deemed to have been specifically accepted by any vessel visiting Port Qasim regardless of whether such acceptance is specific, in writing or otherwise.

1. For the purpose of these Conditions of Use, the following definitions shall apply:

"Lessee" means a person entity who holds the lease of a property.

"FSRU Interests" means BW GAS Limited and its affiliated companies operating at the Port, including their respective directors, officers, agents, employees, servants and sub-contractors of any tier.

"LNG Facility" means the Floating Storage and Regasification Unit (FSRU) owned by and located within the Port.

"LNG Terminal" means the location at Mazhar Point Port Qasim, Karachi in Pakistan.

"Port" means Port Muhammad Bin Qasim.

"Port Facilities" mean all infrastructure, facilities, equipment, installations, anchorages and approaches at the Port and the LNG Facility which are owned, controlled or operated by the Terminal Interests, whether fixed or movable, including but not limited to channels, channel markings, mooring facilities, buoys, jetties, berths, pipelines, hoses, lines, gangways, water craft, bunkering and unloading and loading facilities.

"Port Management" means the Port Qasim Authority responsible for the navigation or berthing in, to or from the Port.

"Port Services" means any right of approach or access granted in respect of the Vessel or any service tendered by PQA or provided by the Port Management or Terminal Interests to the Vessel, including pilotage, mooring or unmooring or other navigational services, whether for consideration or free of charge but excluding towage and tug assistance which are governed by the Conditions of Tug Hire and Towage Conditions.

"Terminal Interests" means the LNG Terminal at Mazhar Point and their respective affiliated companies operating at the Port, including their respective directors, officers, agents, employees, servants and sub-contractors of any tier.



"Vessel Interests" means the Vessel, the Master and Lessor of the Vessel, and the Lessor's affiliated companies operating at the Port, including their respective directors, officers, agents, employees, servants and subcontractors of any tier, the Lessee of the Vessel and the Lessee's affiliated companies operating at the Port, including their respective directors, officers, agents, employees, servants and subcontractors of any tier.

"LNG Carrier" means LNG Carriers or vessel.

2. Acceptance of LNG Carrier

2.1 All LNG Carriers calling at Port or any of the LNG Terminals are subject to acceptance by PQA and must be in compliance with International Standards. The Vessel Interests warrant that the Vessel is suitable and is capable of operating with the physical limitations of the LNG Facility or the Port Facilities, berth dimensions, unloading arm and shore gangway envelopes and mooring equipment as advised from time-to-time by Terminal Interests or Port Management in accordance with following international standards:

- International Association of Classification Societies (IACS) member Classification Society with no outstanding Surveys & Condition of Class or as may otherwise be acceptable to PQA.
- The conventions, rules, guidelines and regulations laid down by the International Maritime Organization (IMO), the Oil Companies International Marine Forum (OCIMF).
- International Group of Liquefied Natural Gas Importers (GIIGNL).
- Society of International Gas Carriers and Terminal Operators (SIGTTO)

2.2 PQA's decision whether to allow a LNG Carrier to berth at the Terminal may also depend upon any of the prevailing or forecasted environmental conditions, as well as the size, trim, and handling qualities of the LNG Carrier.

2.3 LNG Carrier should be rejected by PQA for any reason PQA will supply the LNG Carrier's Master or the Ship's Agent with written reasons for the rejection. PQA overridingly reserves the right at all times to direct a LNG Carrier to leave the Port or the Terminal if the Harbor Master determines that the continued presence of the LNG Carrier poses a risk or danger to the Port safety or the environment. In such circumstances, where possible, the LNG Carrier's Master will first be consulted.

3. LNG Carrier & Its Master's Responsibility

The Master of the LNG Carrier calling at Port Qasim shall at all times and in all circumstances remain solely responsible on behalf of owners, operators or charterers for the safe and proper operation and navigation of the Vessel and management of its cargo and equipment.



Nothing contained in the Port or Terminal Regulations relieves a Master of his responsibilities including taking precautions to prevent:

- Fire / LNG release
- Tank over pressurization or vacuum
- Grounding and damage to Port Facility
- Environmental pollution

The Terminal (in whatsoever capacity they may be acting) shall not be responsible for any loss, damage or delay to the Vessel, actual or consequential, which is related in any manner to, or arises out of, any Port Services provided to the Vessel, use of the LNG Facility or Port Facilities or any assistance, advice or instruction whatsoever given or tendered, in writing or otherwise provided to the Vessel regardless of any act, omission, fault, neglect, negligence, breach of duty (statutory or otherwise) or other wrongful act on the behalf of the Terminal Interests or Port Management, including without limitation, pilot's neglect, error or mistake. For the avoidance of doubt, this condition includes but is not limited to delay to or suspension of loading or unloading or a refusal to load or unload all or part of a nominated shipment, or a requirement to vacate the jetty arising from the Marine Operations Manual. In determining fault hereunder where a casualty, loss, damage or delay involves the provision of Port Services, the Vessel Interests are deemed solely responsible for the acts or omissions of harbor / berthing pilots occurring in connection with pilotage services (regardless of any agreement to the contrary between the Vessel Interests and any such party).

The Master remains at all times fully responsible for the LNG Carrier and for its complement, including crew and any supernumeraries. The PQA (including its servants, agents and contractors) shall, in any way, not be responsible for the availability or provision of support services contracted by or on behalf of the LNG Carrier with parties other than PQA and not included in the Port Charges.

The Terminal Interests shall not in any event be responsible or liable to the Vessel Interests for the consequences of war, riots, civil commotions, acts of terrorism or sabotage, strike, lockouts, disputes, stoppages or labour disturbances (whether Terminal Interests or Port Management are a party thereto or not) or anything done in contemplation or furtherance thereof or delays of any description, howsoever caused or arising, including by the negligence of the Terminal Interests or Port Management.

The Vessel Interests must themselves ensure that the Master, officers and crew of the Vessel are trained

and qualified in accordance with the relevant provisions of the International Convention on Standards of Training, Certification and Watch keeping for Seafarers 1995, where applicable. In all



cases, the training qualifications and experience of the Master, officers and crew of the Vessel shall be appropriate for the safe conduct of the entry to, maneuvering at and exit from the Port, the loading or unloading operations being conducted at the Port and the nature of the cargo being handled.

The Vessel Interests themselves must ensure that they have and retain on board sufficient personnel with a good working knowledge of the English language to, at all times, enable operations to be carried out efficiently and safely and to maintain quick, reliable ship/shore communications on operating matters and in emergency situations.

The Vessel Interests shall, in all circumstances, defend, hold harmless and indemnify the Terminal Interests against any and all losses, claims, costs and expenses Terminal Interests may incur or have incurred arising from:

- (i) Any damage to the LNG Facility or Port Facilities or property loss, injury or death suffered by its personnel which is related to the use of the Port, LNG Facility, Port Facilities or Port Services by the Vessel and which involves the fault, wholly or partially, of the Master, officers, crew or management of the Vessel, including negligent navigation.
- (ii) Any loss suffered by third parties with respect to damage to their property or property loss, injury or death suffered by their personnel which is related to the use of the Port, LNG Facility, Port Facilities or Port Services by the Vessel and which involves the fault, wholly or partially, of the Master, officers, crew or management of the Vessel, including negligent navigation.
- (iii) Any hazard under condition 9 hereof and involving the fault or neglect, wholly or partially, of the Master, officers, crew or management of the Vessel, including negligent navigation.
- (iv) Any pollution emanating from the Vessel and involving the fault, wholly or partially, of the Master, officers, crew or management of the Vessel, including negligent navigation.
- (v) Any loss or damage to the Vessel or the Vessel's cargo, including consequential losses and all claims, damages and costs arising there from, regardless of any act, omission, breach of duty (statutory or otherwise), fault or neglect on the part of the Terminal Interests.
- (vi) Any injury to or death of personnel or any property loss, in any case suffered by the Master, officers or crew of the Vessel, or any personnel of the Vessel Interests including consequential losses and all claims, damages and costs arising there from, regardless of any act, omission, breach of duty (statutory or otherwise), fault or neglect on the part of the Terminal Interests.



If the Vessel, the Vessel's cargo or any object on the Vessel sinks or grounds or otherwise suffers a casualty so as to become, or is likely to become, in the opinion of the Terminal Interests, an obstruction, wreck or danger affecting or interfering with the normal operations of the Port or any of the LNG Facility or Port Facilities or an obstruction, threat, or danger to navigation, operations, safety, health, environment or security at the Port or the LNG Facility or any of the Port Facilities (in any such case, a "hazard"), the Vessel Interests shall, at the option of the Port Management, take immediate action to clear, remove or rectify the hazard and in so doing (without limitation of its obligations) shall act in such manner as may be required by the Port Management in compliance with applicable law or order by local or governmental authority and as the Port Management, in so complying, may direct and, pending such removal, at the expense of the Vessel Interests shall mark, light and watch the same. The Terminal Interests may at their sole discretion make reasonable efforts to assist the Vessel Interests to fulfill their responsibility without, however, being obliged to incur any expenses in connection therewith. If the Vessel Interests do not promptly take reasonable measures to clear, remove or rectify the hazard, the Port Management or the Terminal Interests may effect such clearance, removal or rectification at the expense of the Vessel Interests, provided that:

- (i) The actual cost of such measures (and any damage to the property of the Terminal Interests or Port Management incurred during their execution) shall be excluded from the aggregate limit of liability prescribed in condition 16.
- (ii) Any consequential damages resulting from the failure of the Vessel Interests promptly to effect reasonable measures with regard to the clearance, removal or rectification of the hazard shall be recoverable to the extent permitted under applicable law; and.
- (iii) If consequential damages referred to in condition 3(ii) are recoverable, they shall be subject to the aggregate limit of liability prescribed in condition 16.

Terminal Interests reserve the right to suspend operations and require the removal of the Vessel from the Port where:

- (i) There is any infringement or breach of the Marine Operations Manual.
- (ii) In the reasonable opinion of the Terminal Interests or Port Management, the condition of the Vessel or the conduct of the Vessel's operations gives rise to concern over the safety of the Vessel, Vessel Interests and those of Terminal Interests, the Port or the environment; or
- (iii) The operational performance (appropriate to the type of Vessel and operation) fails to utilize satisfactorily the available LNG Facility or Port Facilities, and thereby in the reasonable opinion



of Terminal Interests, constitutes an unacceptable constraint on the operation of the LNG Facility or Port Facilities.

Any liability incurred by the Vessel Interests by operation of these Conditions of Use shall be joint and several. Terminal Interests and Port Management reserves the right to detain the Vessel until security has been given for the estimated amount of any loss, claim, cost or expense incurred. Estimated amounts shall be drawn up by an approved Lloyds Surveyor or other competent person nominated by the Terminal Interests with the costs for such appointment met by the Vessel Interests.

4. Agency

PQA and its personnel do not perform any LNG Carrier agency functions. The LNG Carrier's owner or the LNG Carrier Operator must arrange for a Ship's Agent or any other local agency services. It is recognized that a representative of the agency may need to board or be onboard the LNG Carrier.

5. Government Officials

It is recognized that Pakistan government officials may need to attend onboard the LNG Carrier within Port or the premises of the Terminal and that these may include:

- Customs Officer, Immigration Officer.
- Maritime Authorities' representative / Coast Guard

The LNG Carrier or the Ship's Agent should advise the PQA and the Terminal when such need arises.

6. Anti-Pollution

It is the responsibility of the LNG Carrier's Master to prevent pollution and to ensure that the LNG Carrier complies with all applicable laws and regulations in relation to cargo, bunkers, bilge water, sewage, dirty ballast, plastics, garbage, or any other materials that may cause pollution of the sea or atmosphere. The LNG Carrier must have in place a Shipboard Oil Pollution Emergency Plan (SOPEP) approved by its flag state and have records to substantiate that the personnel onboard have received training and are proficient in responding to emergency situations.

Any fines imposed by any administration or government for pollution arising from or caused by the LNG Carrier or for which the LNG Carrier is liable for under any applicable law, shall be for the account of and remain with the LNG Carrier (including its owner, operator, manager or Master).

In the event of any escape or discharge of oil or oily mixture or other pollution of any kind from the Vessel within the Port, or elsewhere if such discharge interferes with the normal operations of the Port, the Vessel Interests shall take immediate action to clean up such discharge and if the Vessel Interests, in the opinion of the Terminal Interests, fail to do so as soon as reasonably practicable, the Terminal Interests shall be entitled to take such steps as they consider reasonably necessary to clean



up the resulting pollution of any kind. The cost of steps taken to clean up such pollution of any kind shall be recoverable in accordance with condition 3 hereof.

Without limitation to the liability of the Vessel Interests, the Master shall immediately report to the Port Management and Terminal Interests any accident, incident, claim, damage, loss or unsafe condition or circumstance arising at the Port. Any such report shall be made in writing and signed by the Master. The Port Management and Terminal Interests shall be entitled to inspect and investigate any such report without prejudice to the foregoing.

The LNG Carrier shall be entered with the International Tanker Owners Pollution Federation Limited (ITOPF). For any oil pollution caused by the LNG Carrier, its Master, or crew, the LNG Carrier and its owners shall protect, defend, indemnify, and hold harmless PQA from and against any loss, damage, liability, suit, claim, or expense arising there from.

7. PQA Hours of Operation

Subject to the prevailing and expected sea and weather conditions, and at the full discretion of the Harbor Master or representative of Port Qasim Authority, all movements of LNG Carriers in the navigation channel and the Terminal is restricted to daylight hours only.

8. Marine Terminal Closure

Port Qasim Authority may direct the suspension of the Port or Terminal operations due to adverse prevailing or expected sea or weather conditions or otherwise based upon the decision by the Harbor Master with consultation of the Terminal Manager. The Terminal will keep the LNG Carrier informed about the times during which the Port or Terminal operations are to remain suspended. LNG Carriers required to leave the Port or Terminal during periods of Terminal closure must maintain contact with the Port and the Terminal via VHF so as to be ready and available when the Terminal becomes operational again. The PQA (including its servants, agents and contractors) shall not be in any way be liable for any financial losses as a result of delay, suspension or refusal to permit cargo operations under this clause .

9. Port Services

All movements in the navigation channel and the Terminal inclusive of berthing, mooring, and unmooring operations are to be conducted with the PQA Authority's approved Pilot(s) on-board. Notwithstanding the presence of a Pilot, the Master always remains in command of the LNG Carrier and is responsible for its safe navigation and operation. Whilst the PQA shall exercise reasonable care, skill and diligence to ensure the proper rendering of Port Services and provision of Port Facilities to the Ship, the PQA shall not be responsible for any loss or damage to the Ship actual or consequential which is related to the use of the Port Services and Facilities by the Ship



regardless of any act omission fault or neglect on the part of the PQA.

The PQA shall not be responsible for the acts, omissions and neglect of its servants or agents relating to any loss or damage to the Ship or any loss or injury suffered by the Master, Officers or Crew.

The PQA shall not be responsible to the ship for any loss related to strikes or other labor disturbances whether the PQA, its Servants or Agents are parties thereto or not.

The Master and the Owner shall hold harmless and indemnify the PQA against any claim, cost or expense arising from:

Any loss suffered by the PQA with respect to damage to the Port Facilities or injury to its personnel which is related to the use of the Port by the Ship and which involves the fault, wholly or partially, of the Master, officers or crew, including negligent navigation;

Any loss suffered by third parties with respect to damage to their property or injury to their personnel which is related to the use of the Port by the Ship and which involves the fault, wholly or partially, of the Master, officers or crew, including negligent navigation;

Any loss suffered by the PQA with respect to a hazard under paragraph 12 hereof;

Any loss or damage to the Ship while in Port, including consequential losses and all claims, damages and costs arising there from, regardless of any act, omission, fault or neglect on the part of the PQA, and

Any personnel injury or property loss suffered by the Master: officers or crew: of the Ship while in Port, including consequential losses and all claims, damages and costs arising there from, regardless of any act, omission, fault or neglect on the part of the PQA.

10. Drugs and Alcohol

As part of the prequalification requirements before the LNG Carrier is permitted to call at the Port or Terminal the owners or operators of the LNG Carrier must have in place an effective drug and alcohol abuse policy, a copy of which must be posted onboard. This drug and alcohol abuse policy must meet or exceed the standards specified in the OCIMF 'Guidelines for the Control of Drugs and Alcohol Onboard LNG Carrier'. Whilst the LNG Carrier is within the PQA operational limits, this drug and alcohol abuse policy must be strictly observed and the LNG Carrier's Master must ensure that no restricted drugs (other than those in the medical locker) are onboard and that no alcohol is used or is available for use. Note: the LNG Carrier's crew is reminded that they must have a zero blood alcohol level.



11. Visitors Attending the LNG Carrier

The LNG Carrier (including its owners, operator or Master) shall be responsible for ensuring that all visitors attending within the Port or Terminal premises, including representatives of Users, PQA, independent surveyors and Ship's Agents, fully comply with the Port or Terminal Regulations and other procedures. The PQA personnel that need to attend or remain onboard the LNG Carrier during berthing and off-loading operations shall be provided with food and accommodation of the standard usually provided for the LNG Carrier's senior officers.

12. Removal of Wrecks

If the Ship or any object on board becomes, or is likely to become, an obstruction, threat, or danger to navigation, operations, safety, health., environment or security of the Port (a "hazard"), the Master and the Owner shall, at the option of the Port Management, take immediate action to clear, remove or rectify the hazard as the Port Management may direct, or the Port Management shall be entitled to take such measures as it may deem appropriate to clear, remove or rectify the hazard and the Master and Owner shall be responsible for all costs and expenses associated therewith.

13. Provision of Services

Compliance with laws: All services, facilities and assistance provided by or on behalf of PQA, its servants or contractors their parent companies, subsidiaries, or affiliates, or its or their servants, agents, or contractors whether or not any charge is made by PQA thereof are provided subject to the Port and Terminal Regulations and all applicable laws and regulations for the time being in force.

The PQA Representative on LNG Carrier: The services of the PQA Representative are provided to the LNG Carrier with the express understanding and condition that the PQA Representative becomes for such purposes the agents/servant of the LNG Carrier (including its owners, operator and charterers) and the PQA (including its servants, agents and contractors) shall not in any way be liable for any loss, damage or personal injury (of any nature whatsoever including death) incurred by any person whomsoever, resulting from or in any way contributory to or connected with, the advice or assistance given or for any action taken by the PQA, whether negligent or otherwise.

LNG Carrier Navigation: In all circumstances the Master of the LNG Carrier shall remain solely responsible on behalf of its owners, operators or charterers for the navigation and operation of the LNG Carrier. The PQA (including its servants, agents and contractors) shall in no way whatsoever be responsible or liable for any contribution with respect to any loss, damage, or delay from whatsoever cause arising whether directly or indirectly in consequence of any assistance, advice or instructions whatsoever given or tendered in respect of any vessel whether by way of the provision of navigation facilities (including berthing aids) or otherwise howsoever.



14. Changes to the Condition of Use

By signing these Conditions of Use, the LNG Carrier including its owners, operator and Master are bound by the Conditions of Use then in force and any changes that:

- Were already scheduled to come into force and for which advance notice has been given.
- Arise from the coming into force of new legal or statutory provisions or regulations issued by the Port Qasim Authority or other competent bodies that have, or may have, a direct or indirect influence on the Port or Terminal or its operation; such new provisions or regulations shall be applied fully from the date of their entry into force. Where changes to any part of the Conditions of Use are made no compensation of any sort shall be due.

15. Parties and Related Parties

It is hereby expressly agreed that no servant or agent of PQA shall be under any liability whatsoever for any loss, damage, or delay of whatsoever kind arising or resulting directly or indirectly from any act or neglect or default on its part while acting in the course of or in connection with its employment. Without prejudice to the generality of the foregoing provisions in this Article, every exemption, limitation, condition, and liability herein contained and every right, exemption from liability, defense, and immunity of whatsoever nature applicable to PQA or to which PQA is entitled hereunder shall also be available and shall extend to protect every such servant or agent of PQA acting as aforesaid, and for the purpose of all the foregoing provisions of this clause, PQA is or shall be deemed to be acting as agent or trustee on behalf of and for the benefit of all persons who are or might be its servants or agents from time to time, and all such persons shall to this extent be or be deemed to be parties to this agreement.

No one who is not a party to these Conditions of Use shall have rights under them apart from those terminal Interests and Vessel Interests which are not parties, who shall respectively be entitled to enforce the provisions of these Conditions of Use where Terminal Interests or Vessel Interests are named. However, no consent or other action shall be required from any person who is not a party to these Conditions of Use in respect of any amendment, variation or waiver to or of any provision of these Conditions of Use.

These Conditions of Use may be executed by the parties in separate counterparts and delivered by facsimile transmission or otherwise, each of which when so executed and delivered shall be deemed to be an original, and all such counterparts shall together constitute one and the same instrument. By their facsimile signatures below, the Terminal Interests agree to each of the terms and conditions contained herein. A counterpart signature page bearing original signatures of each of the Terminal Interests is available for inspection at the Vessel Interests' request.



In the event of a conflict or any inconsistency between these Conditions of Use and any other conditions of use applicable at the Port or the Marine Operations Manuals, the provisions of these Conditions of Use shall prevail to the extent of such a conflict or inconsistency.

- These Conditions of Use represent the whole and only agreement between the parties in relation to the subject matter of these Conditions of Use and supersede any previous agreement between the parties in relation to that subject matter.
- Each party acknowledges that in entering into these Conditions of Use it is not relying on any representation, warranty or other statement relating to the subject matter of these Conditions of Use which is not set out in these Conditions of Use.
- No party shall have any liability or remedy in respect of any representation, warranty or other statement (other than those set out in these Conditions of Use) being false, inaccurate or incomplete unless it was made fraudulently.

16. Resolution of Disputes

Any dispute or differences of any kind whatsoever ("the Dispute") arising out of or in connection with Port or Terminal Regulations, including these Conditions of Use, shall (regardless of the nature of the Dispute) be referred to arbitration by arbitrators one to be appointed by each party and an umpire appointed jointly by the arbitrators before entering upon the reference in accordance with Pakistan Arbitration Act, 1640 and any amendment or re-enactment thereof. The venue of the arbitration shall be the city of Karachi, Pakistan and the arbitration proceeding shall be held in English language.

The Vessel Interests shall keep the Vessel fully entered with a P & I Association which is a member of the International Group of P & I Associations and shall pay all premiums, fees, dues and other charges of such P & I Association and comply with all of its rules, terms and warranties. The Vessel Interests will produce annually to the Terminal Interests a copy of such P & I Association's current rules, the certificate of entry, and written evidence that the P & I Association has agreed to cover the Lessor as a member of the Association against the liabilities and responsibilities provided for in these Conditions of Use, including pollution cover to the highest limit available. The Vessel Interests will give the Terminal Interests thirty (30) days' prior written notice of cancellation of the P & I Association's entry as to the Vessel. Until such time as P & I cover or any equivalent replacement is reinstated or procured, and evidence thereof is provided in accordance with this condition 15, the Terminal Interests shall be entitled to refuse entry by the Vessel into the Port. In the event the Vessel Interests fail to provide such notice of cancellation and subsequently enter the Port without P & I cover conforming to the requirements of this condition 15, then as to that particular entry (and any subsequent entry where the same absence of cover applies) the aggregate limit of liability prescribed in condition 16 shall not apply.



Any and all insurance policies obtained or maintained by the Vessel Interests in respect of the Vessel (including but not limited to policies in respect of hull and machinery risks, disbursements, loss of hire, blocking and trapping, increased value and marine, war and excess risks) will at all times either (i) contain a waiver in favor of the Terminal Interests of all rights of subrogation of claims by the Vessel Interests' insurers against the Terminal Interests to the extent such claims have been waived in conditions 2, 4, 5, 8, 9 of these Conditions of Use by the Vessel Interests, or (ii) be supplemented by a separate written instrument indicating that the insurer agrees to waive all such rights of subrogation. The Vessel Interests shall deliver to the Terminal Interests reasonable evidence of such waiver of insurers' rights of subrogation, failing which the Terminal Interests shall be entitled to refuse entry by the Vessel into the Port.

Subject to conditions 3 and 15, the total aggregate liability of the Vessel Interests to the Terminal Interests, however arising, in respect of any one incident or occurrence governed by these Conditions of Use, shall not exceed ONE HUNDRED FIFTY MILLION UNITED STATES DOLLARS (US\$150,000,000) whether or not the liability is asserted in United States Dollars and, to the fullest extent permissible by law, the Vessel Interests, their insurers including their P&I Association hereby waive any rights they may otherwise have under applicable law or any applicable convention to limit their liability at any lower limit.

The total aggregate liability set out in condition above shall not limit, restrict or prejudice any claim or right that Terminal Interests has or may have against the Vessel Interests under general principles of law or equity. For the avoidance of doubt, said limit of liability shall only apply with respect to, and to the extent to, a claim by Terminal Interests against Vessel Interests under these Conditions of Use.

17. Governing Law and Jurisdiction

The Port and Terminal Regulations, including these Conditions of use, shall in all respects be read and construed and shall operate in conformity with the Laws of Pakistan and subject to Resolution of Disputes by arbitration provided herein the courts at Karachi, Pakistan shall have sole jurisdiction for adjudicating any disputes hereunder.

If all or any part of any provision of these Conditions of Use shall be or become illegal, invalid or unenforceable in any respect under the law of any jurisdiction, such illegality, invalidity or unenforceability shall not affect or impair:

- The legality, validity or enforceability in that jurisdiction of the remainder of that provision and/or all other provisions of these Conditions of Use; or
- The legality, validity or enforceability under the law of any other jurisdiction of that provision and/or all other provisions of these Conditions of Use.



These Conditions of Use may not be amended, modified, varied or supplemented except by an instrument in writing signed by authorized representatives of the parties hereto.

- The failure of any party at any time to require performance of any provision of these Conditions of Use shall not affect its rights to require subsequent performance of such provision.
- Waiver by any party of any breach of any provision hereof shall not constitute the waiver of any subsequent breach of such provision.
- Performance of any conditions or obligation to be performed hereunder shall not be deemed to have been waived or postponed except by an instrument in writing signed by an authorized representative of the party which is claimed to have granted such waiver or postponement.
- All notices and other communications for the purposes of these Conditions of Use shall be in the English Language and shall be in writing, which shall include transmission by facsimile, email or other similar electronic method of written transmission mutually agreed between the parties.
- Notices and communications shall be effective upon receipt by the party to which given and shall be directed as follows:

Name of the Ship_____

Name of the Master_____

Ships Stamp Signature of the Master_____

Dated_____



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ANNEXURE – C

SAFETY CHECKLISTS



PAKISTAN GAS PORT CONSORTIUM LIMITED
Port Bin Qasim, Karachi, Pakistan

Date:

The Master
SS/MV
Port:

Dear Sir,

Responsibility for the safe conduct of operations whilst your ship is at this terminal rests jointly with you, as master of the ship, and with the responsible terminal representative. We wish, therefore, before operations start, to seek your full co-operation and understanding on the safety requirements set out in the Ship/Shore Safety Check List which are based on safe practices widely accepted by the oil and the tanker industries.

We expect you, and all under your command, to adhere strictly to these requirements throughout your stay alongside this terminal and we, for our part, will ensure that our personnel do likewise, and co-operate fully with you in the mutual interest of safe and efficient operations.

Before the start of operations, and from time to time thereafter, for our mutual safety, a member of the terminal staff, where appropriate together with a responsible officer, will make a routine inspection of your ship to ensure that elements addressed within the scope of the Ship/Shore Safety Check List are being managed in an acceptable manner. Where corrective action is needed we will not agree to operations commencing or, should they have been started, we will require them to be stopped.

Similarly, if you consider safety is endangered by any action on the part of our staff or by any equipment under our control you should demand immediate cessation of operations.

THERE CAN BE NO COMPROMISE WITH SAFETY.

Please acknowledge receipt of this letter by countersigning and returning the attached copy.

Signed:
Terminal Representative

Terminal Representative on Duty is :
Position or Title :
Contact Details :
UHF/VHF Channel :

Signed:
Master
SS/MV
Date: Time



SHIP/SHORE SAFETY CHECK LIST:

Ship's Name: _____

Berth: _____ Port: _____

Date of Arrival: _____ Time of Arrival: _____

INSTRUCTIONS FOR COMPLETION:

The safety of operations requires that all questions should be answered affirmatively by clearly ticking (✓) the appropriate box. If an affirmative answer is not possible, the reason should be given and agreement reached upon appropriate precautions to be taken between the ship and the terminal. Where any question is considered to be not applicable, then a note to that effect should be inserted in the remarks column.

A box in the columns 'ship' and 'terminal' indicates that checks should be carried out by the party concerned.

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

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

P – ('Permission'). In the case of a negative answer to the statements coded 'P', operations should not be conducted without the written permission from the appropriate authority.

R – ('Re-check'). This indicates items to be re-checked at appropriate intervals, as agreed between both parties, at periods stated in the declaration.



Part 'A' – Bulk Liquid General – Physical Checks

Bulk Liquid – General	Ship	Terminal	Code	Remarks
1. There is safe access between the ship and shore.	<input type="checkbox"/>	<input type="checkbox"/>	R	
2. The ship is securely moored.	<input type="checkbox"/>	<input type="checkbox"/>	R	Stop cargo at: 30 kts wind vel. Disconnect at: 35 kts wind vel Unberth at 40 kts wind vel.
3. The agreed ship/shore communication system is operative.	<input type="checkbox"/>	<input type="checkbox"/>	AR	
4. Emergency towing-off pennants are correctly rigged and positioned.	<input type="checkbox"/>	<input type="checkbox"/>	R	
5. The ship's fire hoses and fire-fighting equipment are positioned and ready for immediate use.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	R	
6. The terminal's fire-fighting equipment are positioned and ready for immediate use.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	R	
7. The ship's cargo and bunker hoses, pipelines and manifolds are in good condition, properly rigged and appropriate for the service intended.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
8. The terminal's cargo and bunker hoses, pipelines and manifolds are in good condition, properly rigged and appropriate for the service intended.	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
9. The cargo transfer system is sufficiently isolated and drained to allow safe removal of blank flanges prior to connection.	<input type="checkbox"/>	<input type="checkbox"/>		
10. Scuppers and save-alls on board are effectively plugged and drip trays are in position and empty.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	R	
11. Temporarily removed scupper plugs will constantly monitored.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	R	
12. Shore spill containment and sumps are correctly managed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	R	
13. The ship's unused cargo and bunker connections are properly secured with blank flanges fully bolted.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
14. The terminal's unused cargo and bunker connections are properly secured with blank flanges fully bolted.	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
15. All cargo, ballast and bunker tank lids are closed.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
16. Sea and overboard discharge valves, when not in use, are closed and visibly secured.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	R	



17. All external doors, ports and windows in the accommodation, stores and machinery spaces are closed. Engine room vents may be open.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
18. The ship's emergency fire control plans are located externally.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		

If the ship is fitted, or is required to be fitted, with an inert gas system (IGS), the following points should be physically checked.

Inert Gas System	Ship	Terminal	Code	Remarks
19. Fixed IGS pressure and oxygen content recorders are working.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	R	
20. All cargo tank atmospheres are at positive pressure with oxygen content of 8% or less by volumes.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	P R	

Part 'B' – Bulk Liquid General – Verbal Verification

Bulk Liquid – General	Ship	Terminal	Code	Remarks
21. The ship is ready to move under its own power.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	P R	
22. There is an effective deck watch in attendance on board and adequate supervision of operations on the ship and in the terminal.	<input type="checkbox"/>	<input type="checkbox"/>	R	
23. There are sufficient personnel on board and ashore to deal with an emergency.	<input type="checkbox"/>	<input type="checkbox"/>	R	
24. The procedures for cargo, bunker and ballast handling have been agreed.	<input type="checkbox"/>	<input type="checkbox"/>	A R	
25. The emergency signal and shutdown procedure to be used by the ship and shore have been explained and understood.	<input type="checkbox"/>	<input type="checkbox"/>	A	
26. Material Safety Data Sheets (MSDS) for the cargo transfer have been exchanged where requested.	<input type="checkbox"/>	<input type="checkbox"/>	P R	
27. The hazards associated with toxic substances in the cargo being handled have been identified and understood.	<input type="checkbox"/>	<input type="checkbox"/>		H ₂ S Content: Benzene Content:
28. An International Shore Fire Connection has been provided.	<input type="checkbox"/>	<input type="checkbox"/>		
29. The agreed tank venting system will be used.	<input type="checkbox"/>	<input type="checkbox"/>	A R	Method:
30. The requirements for closed	<input type="checkbox"/>	<input type="checkbox"/>	R	



operations have been agreed.				
31. The operation of the P/V system has been verified.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
32. Where a vapour return line is connected, operating parameters have been agreed.	<input type="checkbox"/>	<input type="checkbox"/>	A R	
33. Independent high level alarms, if fitted, are operational and have been tested.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	A R	
34. Adequate electrical insulating means are in place in the ship/shore connection.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	A R	
35. Shore lines are fitted with a non-return valve, or procedures to avoid back filling have been discussed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	P R	
36. Smoking rooms have been identified and smoking requirements are being observed.	<input type="checkbox"/>	<input type="checkbox"/>	A R	Nominated smoking rooms:
37. Naked light regulations are being observed.	<input type="checkbox"/>	<input type="checkbox"/>	A R	
38. Ship/shore telephones, mobile phones and pager requirements are being observed.	<input type="checkbox"/>	<input type="checkbox"/>	A R	
39. Hand torches (flashlights) are of an approved type.	<input type="checkbox"/>	<input type="checkbox"/>		
40. Fixed VHF/UHF transceivers and AIS equipment are on the correct power mode or switched off.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
41. Portable VHF/UHF transceivers are of an approved type.	<input type="checkbox"/>	<input type="checkbox"/>		
42. The ship's main radio transmitter aerials are earthed and radars are switched off.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
43. Electric cables to portable electrical equipment within the hazardous area are disconnected from power.	<input type="checkbox"/>	<input type="checkbox"/>		
44. Window type air conditioning units are disconnected.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
45. Positive pressure is being maintained inside the accommodation, and air conditioning intakes, which may permit the entry of cargo vapours, are closed.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
46. Measures have been taken to ensure sufficient mechanical ventilation in the pump room.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	R	
47. There is provision for an emergency escape.	<input type="checkbox"/>	<input type="checkbox"/>		



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48. The maximum wind and swell criteria for operations have been agreed.	<input type="checkbox"/>	<input type="checkbox"/>	A	Stop cargo at: Disconnect at: Unberth at:
49. Security protocols have been agreed between the Ship Security Officer and the Port Facility Security Officer, if appropriate.	<input type="checkbox"/>	<input type="checkbox"/>	A	
50. Where appropriate, procedures have been agreed for receiving nitrogen supplied from shore, either for inerting or purging ship's tanks, or for line clearing into the ship.	<input type="checkbox"/>	<input type="checkbox"/>	A P	

If the ship is fitted, or is required to be fitted, with an inert gas system (IGS) the following statements should be addressed:

Inert Gas System	Ship	Terminal	Code	Remarks
51. The IGS is fully operational and in good working order?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	P	
52. Deck seals, or equivalent, are in good working order.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	R	
53. Liquid levels in pressure/vacuum breakers are correct.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	R	
54. The fixed and portable oxygen analysers have been calibrated and are working properly.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	R	
55. All the individual tank IG valves (if fitted) are correctly set and locked.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	R	
56. All personnel in charge of cargo operations are aware that, in the case of failure of the inert gas plant, discharge operations should cease and the terminal be advised.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		

If the ship is fitted with a crude oil washing (COW) system, and intends to crude oil wash, the following statements should be addressed:

Crude Oil Washing	Ship	Terminal	Code	Remarks
57. The Pre-Arrival COW check-list as contained in the approved COW manual, has been satisfactorily completed.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
58. The COW check-lists for use before, during and after COW, as contained in the approved COW manual, are available and being used.	<input type="checkbox"/>	<input type="checkbox"/>	R	

If the ship is planning to tank clean alongside, the following statements should be addressed:



Tank Cleaning	Ship	Shore	Remarks
59. Tank cleaning operations are planned during the ship's stay alongside the shore installation.	Yes/No*	Yes/No*	
60. If 'yes', the procedures and approvals for tank cleaning have been agreed.			
61. Permission has been granted for gas freeing operations.	Yes/No*	Yes/No*	

* Delete Yes or No as appropriate

PART 'C'—Bulk Liquid Chemicals—Verbal Verification

Bulk Liquid Chemical	Ship	Terminal	Code	Remarks
1. Material Safety Data Sheet are available giving the necessary data for the safe handling of the cargo.				
2. A manufacturer's inhibition certificate, Where applicable, has been provided.			P	
3. Sufficient protective clothing and equipment (including self – contained breathing apparatus) is ready for immediate use and issuitable for the product being handling.				
4. Counter measures against accidental personal contact with the cargo have been agreed			A	
5. The cargo handling rate is compatible with the automatic shutdown system, if in use.				
6. Cargo system gauges and alarms are correctly set and in good order.				
7. Portable vapour detection instruments are readily available for the products being handled.				
8. Information on fire-fighting media and procedures has been exchanged.				
9. Transfer hoses are of suitable material, resistant to the action of the products being handled				
10. Cargo handling is being performed with the permanent installed pipeline system.			P	
11. Where appropriate procedures have been agreed for receiving nitrogen			A P	



supplied from shore, either for Inerting or purging ship's tanks, or for Line cleaning into ship.				
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PART 'D'– BULK LIQUEFIED GASES - VERBAL VERIFICATION

Bulk Liquefied Gases	Ship	Terminal	Code	Remarks
1. Material Safety Data Sheets are available giving the necessary data for the safe handling of the cargo.				
2. A manufacturer's inhibition certificate, where applicable, has been provided.			P	
3. The water spray system is ready for immediate use.				
4. There is sufficient protective equipment (including self-contained breathing apparatus) and protective clothing ready for immediate use.				
5. Hold and inter-barrier spaces are properly inerted or filled with dry air, as required.				
6. All remote control valves are in working order.				
7. The required cargo pumps and compressors are in good order, and the maximum working pressures have been agreed between ship and shore.			A	
8. Re-liquefaction or boil off control equipment is in good order.				
9. The gas detection equipment has been properly set for the cargo, is calibrated has been tested and inspected and is in good order.				
10. Cargo system gauges and alarms are correctly set and in good order.				
11. Emergency shutdown systems have been tested and are working properly.				
12. Ship and shore have informed each other of the closing rate of ESD valves, automatic valves or similar devices.			A	
13. Material Safety Data Sheets are available giving the necessary data for the safe handling of the cargo.			A	



14. A manufacturer's inhibition certificate, where applicable, has been provided.				
15. The water spray system is ready for immediate use.				
16. There is sufficient protective equipment (including self-contained breathing apparatus) and protective clothing ready for immediate use.				

Tank No.1

Tank No.2

Tank No.3

Tank No.4

Tank No.5

Tank No.6

Tank No.7

Tank No.8

Tank No.9

Tank No.10

DECLARATION

We, the undersigned, have checked the above items in Parts A and B, and where appropriate, Part D, in accordance with the instructions and have satisfied ourselves that the entries we have made are correct to the best of our knowledge.

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

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

For Ship	For Shore
Name.....	Name.....
Rank.....	Position or Title.....
Signature.....	Signature.....
Date.....	Date.....



Record of repetitive checks:

Date:							
Time:							
Initials for Ship:							
Initials for Shore:							

Date:							
Time:							
Initials for Ship:							
Initials for Shore:							

Date:							
Time:							
Initials for Ship:							
Initials for Shore:							



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ANNEXURE – D

EMERGENCY CONTACT LIST



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EMERGENCY CONTACT LIST

Sr.	Description / Name	Designation	Organization	Contact Number		
				Mobile	Telephone	Ext
1	Capt (R). PN Zubair Sarwar Janjua	COO	FOTCO	0308-2221722	34720003-5	301
2	Capt (R). PN Zubair Sarwar Janjua	MOTS	FOTCO	0311-8282901	34720003-5	304
3	Danish Murtaza(LNG Focal)	Dy. MOTS	FOTCO	0333-3149707	34720003-5	320
4	Tariq Jahangir Khan	MHRA & Security	FOTCO	0311-8282902	34720003-5	303
5	Capt. Rizwan SK Ghauri	DG Marine Ops	PQA		9204211, 9204284	4553
6	Capt. Syed Kazim Abbas	Harbour Master	PQA		99272172	4294
7	Operation Officer	ORO	PQA		99272179	4269
8	Director Security	PQA Security	PQA		99272163	4627
9	PQA Fire		PQA		99204211	4444-5
10	PQA Environment		PQA		99204211	4202, 4303
11	Edhi Ambulance		Edhi		32312733, 115	
12	Agha Khan Hospital		Hospital		34930051	
13	Liaquat National Hospital		Hospital		111-456-456	
14	Police Station - Bin Qasim		Police		34750851, 34750271	
15	Police Emergency Help line		Police		15	
16	Terminal Incharge		PAPCO		34720140-5	
17	Terminal Incharge		PSO - Zot		34100278, 34100797	
18	Terminal Incharge		PROGAS		34237181	



PAKISTAN GASPORT
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ANNEXURE – E

PQA SOP FOR LNG OPERATIONS



PAKISTAN GASPORT
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