



# **PORT QASIM AUTHORITY**

## **STANDARD OPERATING PROCEDURES FOR OPERATING CONVENTIONAL LNG CARRIERS**

PQA Notice SOP/Conv 001/16 Dated 30th April, 2016

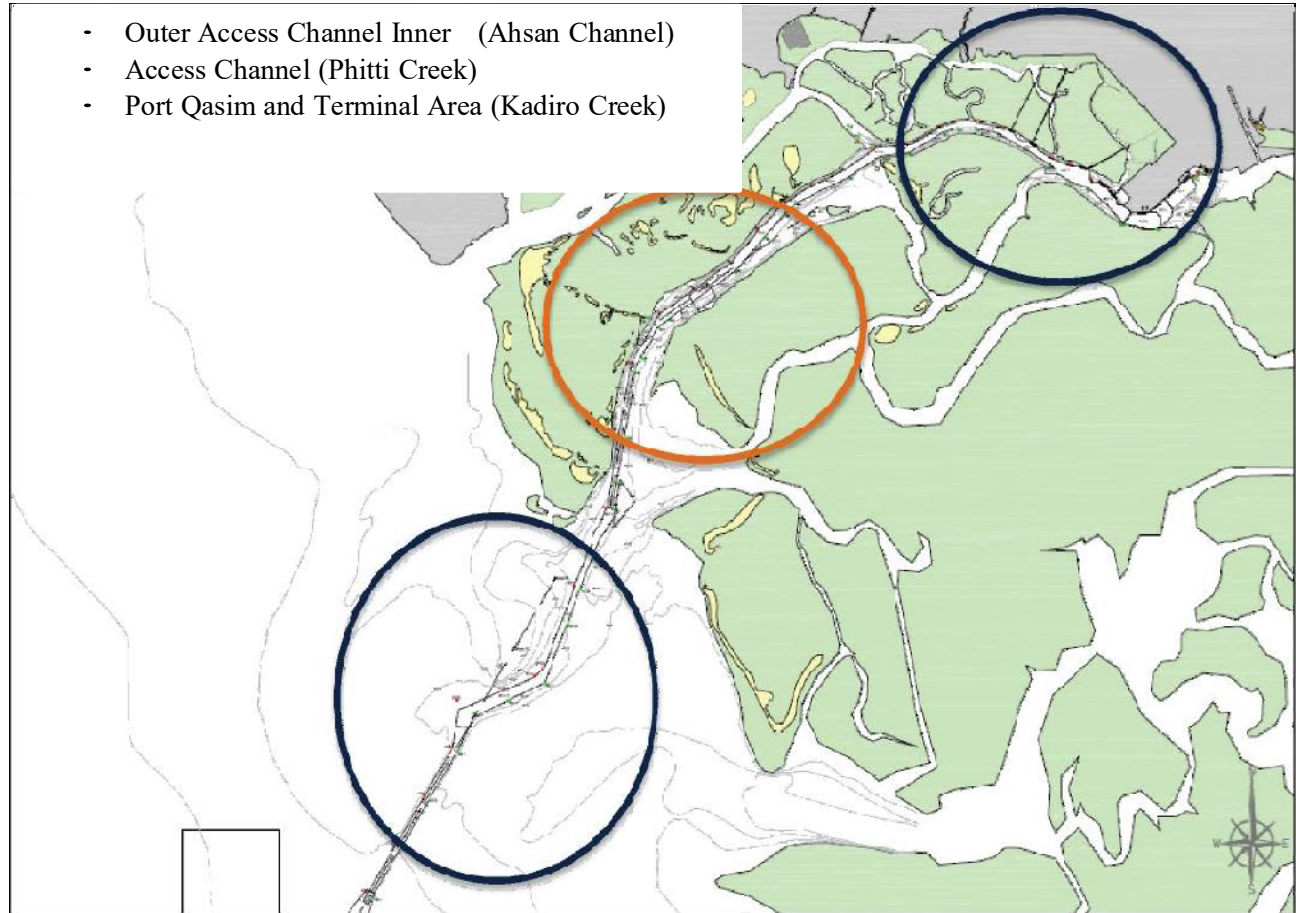
(Amended 2018)

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**The following Standard Operating Procedures (SOPs) have been developed for the operation of Conventional Liquefied Natural Gas (LNG) vessels within the limits of Port Qasim and its approaches. These SOPs are to be read in conjunction with the existing Port Qasim Regulations 1981, PQA Act 1973 and current Notice to Mariners.**

These SOPs have been developed for Conventional LNG carriers calling at Port Qasim. In order to remain compliant with the Pakistan LNG Policy 2011, the LNG carriers with dimensions given in the current Notice to Mariners will be allowed to enter the Port without any dispensation.

In cases where the LNG carriers exceed the given parameters in the current Notice to Mariners, Port Qasim Authority has been authorized to grant dispensations for such vessels from time to time depending on the environmental conditions and the prevailing policy of the PQA at the time, to enter the channel and berth at the LNG Terminals located within the Port. For LNG carriers having dimensions exceeding the limits laid down in the current Notice to Mariners, the application for grant of Dispensation may be filed by the vessel's agents prior to fixing the arrival of the vessel at Port Qasim.



Note:-

PQA carries out regular dredging to maintain minimum depth of 13m within the width of Port Navigation Channel parameters defined in the nautical chart (PAK 20 / BA 59)

1. 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. Copies of both these documents are attached to this document as Appendix 1 & 2. 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:
2. 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
  - The quantity (in mt and in cum) 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
3. 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.
  4. 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.
  5. 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.
  6. 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. **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
    - Harbor Master Office: +92-21-99272172
    - Office Hour Phone: +92 21 – 9927 2111-20 Ext. 4294
    - Dock Master Office: + 92-21-99272111-20 Ext. 4295
    - Operation Room Officer(ORO): + 92-21-99272174 & +922199272111Ext. 4269

- PORT FACILITY SECURITY OFFICER' (PFSO)
  - PFSO: Security Officer
  - Title: Director Security
  - Address: PQA, Bin Qasim Karachi
  - Telephone: +92 21 99 272 163 (Office),  
+92 21 99272111 Ext 4627  
Fax: +92 21 3473 0108  
[Email: 95@gmail](mailto:95@gmail)

8. 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 pump .....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

9. Through the vessel's Agents, the Masters are obliged to immediately report to the Harbor 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.

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

**a. 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

**b.    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

11. 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 which is about 3 miles SW of the Fairway Buoy.
12. Pilot allocation will be generally two Pilots for the transit (in/out and berthing/unberthing). A third pilot will normally embark/disembark the vessel while she approaches/depart the harbor area to safely berth/unberth 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.
13. As shown in the picture on top of this document, 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.
14. LNG vessels shall make inbound and outbound transits of the Channel escorted by crafts carrying armed guards, for inbound transit one of the two escort tugs subject to weather condition will be fast at the astern, the decision as to when and where to make the tug fast will be made after consultation with the Pilots and the Master of the escort tug
15. The following procedures for entering and navigating the three legs of the channel have been developed and are to be complied with:
  - a. The LNG carrier to enter the Ahsan channel as per PIANC Guidelines – vertical requirements to water level corresponding to swell height / vessel draught / depth / vessel speed as per annex 3.

- b. Vessel may utilize Civil/Nautical Twilight for berthing/unberthing and for entering/leaving PQA navigational Channel, subject to favorable environmental conditions.
  - c. The LNG carrier is allowed to enter the channel all around the year including during south west Monsoon (15<sup>th</sup> May – 15<sup>th</sup> September) under controlled and closely monitored conditions.
  - d. The water density of the PQA channel varies with the location and environment ranging between 1.023 to 1.027.
  - e. After boarding of the Pilots and prior to commencing the passage in Ahsan channel, during bad weather the height of the swell/wave will be determined through the experience of the pilots as well as 4 beacons in the Ahsan Channel. The Pakistan Hydrographic Agency web site and other websites are also used for information. A wave rider buoy will also be used when available.
16. LNG vessels will generally not be handled in weather conditions where mean wind speed is in excess of 25 knots. Initiating of transit is prohibited if the visibility is less than 2 mile. The vessel operators will liaise directly with the Terminal regarding assessment of a suitable weather forecast to determine information regarding the period/window that allows for the LNGC transits and periods alongside the terminal.
17. The Terminal Operation limits given as follows:

Description	Nautical Manoeuvres	Maximum Wind Speed (Knots)	
Berthing FSRU/LNGC	Tugs have full control on vessel/ vessel berthing	20	
Stopping LNG transfer and disconnect arms.	2 Tugs make fast Engines /crew on standby	25	Consolidate cargo tanks if required
LNGC Departure from FSRU/berth	4 Tugs fast. Pilot onboard	30	Depart berth and anchor

18. Under normal circumstances, during the transit of LNG carriers through the channel, no passing shall take place between an LNG vessel and any vessel other than authorised crafts involved in port services and security duties. However, if an LNG vessel or any other vessel breaks down in the channel during transit through the Channel area, then



controlled passing of the vessels may be permitted by the PQA under such circumstances provided the disabled vessel is safely anchored at one of the designated locations that would allow sufficient distance between the disabled anchored vessel and the vessels underway passing speed not to exceed 7.5 knots. In any case, two escort tugs will remain in attendance with the LNG carriers at all times. The designated areas for controlled passing are:

- a. Between Beacon # 8A and Buoy # 12
  - b. Between Buoy # 14 and Buoy # B2
  - c. Between Buoy # B 13 and Buoy # P5
  - d. Between Buoy # P5 and Buoy # P9
  - e. Between Buoy # P11 and Buoy # K1
  - f. Turning basins at IOCB and QICT
19. 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 of the locations identified in the above clause, being the contingency anchorages or waiting in channel with tugs in attendance.
  20. LNG vessels to have Electronic Chart Display and Information System (ECDIS).
  21. 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.
  22. On transiting from Phitti Creek to Kadiro Creek the speed will be maintained between 10 to 6 knots through water 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.
  23. By the time the LNG carrier arrives near the Turning basin located within the Gharo Creek, there will be Slack Flood tide running that would be suitable to swing the vessel for bringing her in the required port/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.

24. 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 weak ebb tide on arrival at the turning basin. Otherwise, the vessel to be anchored at the turning basin waiting for the Flood tide.
25. Whether the LNG vessel is swung to port or starboard is at the discretion of the ship's Pilot and Master.
26. The Pilot will normally carry reliable PPU to assist with the safe pilotage and berthing/un-berthing operations.
27. While the FSRU is in operation alongside the Terminal jetty, a Tug with firefighting capabilities will remain stand-by at all times with a 30 minutes response time.
28. 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 will be available within the time specified for the second tug to be in attendance.
29. For vessels passing by the LNG Delivery vessels at the Terminal berth alongside the FSRU, the distance and speed of the passing vessels will be as per the following results of the revised Artelia Mooring and Hydraulic Study received from the EETPL Terminal:

		1/3,400m JISIU full (18 lines) / Offflex LNGC ballast (18 lines)									
		Max. differential motion in meters (peak to peak value) (between 2 moored vessels)								Wind load (velocity)	Remarks
Passing by distance (from towline, see illustration)		0m	20m	40m	60m	80m	100m	120m	140m		
Passing by Speed (Ground Speed)	6 knots	0.9	0.6	0.5	0.4	0.4	0.4			25 kt from SW	Max tension in lines above criteria for passing by vessel at less than 30m from toe line towards channel
	8 knots	2.3	1.7	1	1	0.9	0.8	0.8	0.8		
Passing by Speed (Ground Speed)	6 knots	0.8	0.6	0.5	0.4	0.4	0.4	-	-	15 kt from NL	Max tension in lines above criteria for passing by vessel at less than 20m from toe line towards channel
	8 knots	2	1.5	0.9	0.9	0.8	0.8	0.8	0.8		

30. The LNGC outbound transit through Ahsan channel bends will not be undertaken in strong Ebb current (falling no more than 0.7 meter/hour). On departure two tugs will be released in the vicinity of Turning Basin and the remaining two tugs will escort the vessels.

31. In case where an emergency departure from the berth is necessary, at least 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.
32. On departure of LNG Carrier from the Terminal during 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.
33. 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.
34. 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:

  - a. LNG Vessels will advise their ETAs 48/24/12 and 6 hours prior to arrival at the Fairway Buoy.
  - b. The ship scheduler 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.
  - c. 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;

36. Additional parameters may be placed on operations at individual terminals as circumstances dictate.
37. In event of any Safety and Environment emergency, PQA contingency plans and SOPS will be referred and implemented.
38. 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.
39. 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:

- (a) Fire in the terminal
  - (b) Major Emergency requiring evacuation of terminal
  - (c) Fire On Board
  - (d) Medical Emergency On-Board
  - (e) Emergency Escape Route
  - (f) Lightening
  - (g) Safety Clothing: All ship’s personnel working on deck must wear the appropriate Personal Protective Equipment
40. Emergency (remote) Mooring Hooks Release:

The Terminal Operator is responsible for the operation of the mooring hooks. Under normal circumstances, only manual (local) activation of the hook releases is permitted and this operation is to be conducted by the mooring crew of Terminal Operator. In emergency situations, the mooring hooks may be remotely released by the Terminal. 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 Harbor Authorities, or PQA Operation Room Officer (ORO).
- The Harbor 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 to.

41. Emergency Contact Numbers (From Ship to Shore) Hot line between Ship and shore:
- a. Operations Room Officer: +92 21 99272174
  - b. Jetty Control Room: +92 21 34730114 & +92 21 34243230
  - c. Fire Station : +92 21 99272145
  - d. Medical Centre: +92 21 99272111-30 (Ext 4275)
  - e. Security (Main Gate): +92 21 99272111-30

# **PORT QASIM AUTHORITY**

## **Condition of Use for LNG CARRIERS**

### **Annex 1**

to Standard Operating Procedures for LNG Carriers in Port Qasim

### **CONDITIONS OF USE**

(Amended April 2018)

All facilities and assistance of any kind whatsoever provided by the Port Qasim Authority (PQA) or its Representative/s to LNG carriers visiting Port Qasim for any purpose whatsoever are subject to the following Conditions of Use (Conditions). 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.

For the purpose of these Conditions, the following definitions or interpretations shall apply:

## **1. Interpretations and Definitions**

- 1.1 “Port” - means Port Muhammad Bin Qasim, Karachi, Pakistan.
- 1.2 “Port Facilities” means all the infrastructure, equipment and installations at the Port which includes, but is not limited to, channels, channel markings, buoys, jetties, berths lines, gangways and bunkering facilities or the unloading facilities at the LNG Terminals in Port Qasim.
- 1.3 “Port Services” means any service rendered by the PQA or by the PQA Representative/s which included, but is not limited to, mooring or unmooring or raising or lowering of the loading lines or loading or discharging or otherwise, but excluding towage services which are covered in attached Annex 2 – Marine Service Certificate.
- 1.4 “Terminal” – means the dedicated LNG Terminal as defined in the respective Implementations Agreements between PQA and LNG Terminal developers/ operators.
- 1.5 “FSRU” - means vessel built as a floating storage and re-gasification unit or LNG Carrier converted to FSRU.
- 1.6 “LNG Carrier” – means LNG Carriers or vessel.
- 1.7 Reference to LNG Carrier(s) includes FSRU(s)

## **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 [which means the standards and practices from time to time in force applicable to the ownership, design, equipment, operation or maintenance of LNG Carriers established by the rules of one of the 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) or any successor body of the same and any other internationally recognized agency or organization with whose standards and practices it is customary for international operators of such vessels or terminals to comply, including holding a recent OCIMF Ship Inspection Reporting system (SIRE) report with no adverse observations.]

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 Should a LNG Carrier 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. Master's Responsibility**

The Master of an LNG Carrier calling at the Port or Terminal is solely responsible on behalf of its owners, operators or charterers for the safe navigation and operation of their LNG Carrier. 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 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.



#### **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).

#### **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**

- 9.1 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 injury or death of personnel, 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.
- 9.2 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, injury or death suffered by the Master, Officers or Crew.
- 9.3 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.
- 9.4 The Master and the Owner shall hold harmless and indemnify the PQA against any claim, cost or expense arising from:
  - 9.4.1 any loss suffered by the PQA with respect to damage to the Port Facilities, Injury or Loss of Life of 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;
  - 9.4.2 any loss suffered by third parties with respect to damage to their property, loss of life 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;

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

9.4.4 any Loss or Damage to the Ship while in Port, including consequential losses and all claims, damages and costs arising therefrom, regardless of any act, omission, fault or neglect on the part of the PQA, and

9.4.5 any Personnel Injury. Loss of Life 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 therefrom, 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

13.1 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.

13.2 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.

13.3 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 Conditions 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. Pollution**

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.

#### **16. 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.

**17. 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, 1940 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.

**18. 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.

Name of the Ship

Name of the Master \_\_\_\_\_

Ships Stamp

Signature of the Master \_\_\_\_\_

Dated \_\_\_\_\_

# **PORT QASIM AUTHORITY**

## **Marine Service Certificate**

**for**

### **LNG CARRIERS**

**Dated 11<sup>th</sup> April 2015**

**Annex 2**

to Standard Operating Procedures for LNG Carriers in Port Qasim

(Amended April 2018)

## MARINE SERVICES CERTIFICATE

### Towage pilot transfer and pilotage (Marine Services)

#### Towage and Pilot Transfer

All towage and Pilot transfer services to be provided by PQA Crafts, SMIT Lamnalco / Seamax Marine Services on behalf of Port Qasim Authority within their jurisdiction are subject to the United Kingdom Standard Towage Conditions (1986 edition and following amendments) UKSTC.

#### Pilotage

At all times the master of the vessel remains responsible for the safety and proper navigation of the vessel. The pilot and Port Qasim Authorities shall be without any responsibility or liability whatsoever, for damage arising directly or indirectly from the advice and actions from the pilot regarding the pilot's services rendered to the vessel regardless of any gross negligence or willful misconduct of the pilot and/or Port Qasim Authorities. Furthermore and in addition to this, the pilotage conditions as published in the Port Qasim Port Regulations shall apply.

Prior to commencement of any Marine Services, Master shall agree fully to above conditions and to the Port Qasim Port Regulations by signing this form.

Vessel: \_\_\_\_\_(Name)

Master: \_\_\_\_\_(Name)

\_\_\_\_\_(Signature)

On termination of the Marine Services, the master and the pilot shall complete and sign this Form. Certifying the details of the services rendered as requested by Master of the vessel.

\_\_\_\_\_ Inward

\_\_\_\_\_outward

Name of vessel:	_____	Date:	_____
L.O.A	_____	Forward draft:	_____
G.R.T	_____	Aft draft:	_____
N.R.T	_____	Deepest actual draft:	_____
Time pilot embarked:	_____	Time pilot disembarked:	_____
Passing fairway water:	_____	Berth No:	_____
Ships agent:	_____	Port clearance No:	_____

Assisted / towed / Transferred / stood by:

From: \_\_\_\_\_ to: \_\_\_\_\_ by: \_\_\_\_\_ Pilotboat(s)

From: \_\_\_\_\_ to: \_\_\_\_\_ by: \_\_\_\_\_ tugboat(s)

From: \_\_\_\_\_ to: \_\_\_\_\_ by: \_\_\_\_\_ tugboat(s)

From: \_\_\_\_\_ to: \_\_\_\_\_ by: \_\_\_\_\_ tugboat(s)

Master \_\_\_\_\_(Name) Pilot \_\_\_\_\_(Name)

\_\_\_\_\_(Signature)

\_\_\_\_\_(Signature)

The above named services have been provided by Port Qasim Authorities, SMIT Lamnalco / Seamax Marine Services



# ANNEX - 3

## PIANC GUIDELINES - Vertical Requirements

DEPTH 13 m  
 SPEED 10 knots  
 Draught 12 m  
 Bottom Type Soft/Sand

OUTER CHANNEL (AHSAN CHANNEL)

Hs (m)	Squat (m)	Swell (m)	Heel (List 1°)	Channel Bottom (m)	Depth (m)	UKC (m)	Water Level (m)
0.4	1.4	0.4	0.44	0.5	14.7	2.7	1.7
0.8	1.4	0.7	0.44	0.5	15.0	3.0	2.0
1.2	1.4	1.2	0.44	0.5	15.6	3.6	2.6
1.6	1.4	1.7	0.44	0.5	16.1	4.1	3.1
2.0	1.4	2.2	0.44	0.5	16.5	4.5	3.5
2.4	1.4	2.6	0.44	0.5	17.0	5.0	4.0
2.8	1.4	3.1	0.44	0.5	17.5	5.5	4.5
3.0	1.4	3.4	0.44	0.5	17.7	5.7	4.7

INNER CHANNEL	
Vw (kt)	10
Squat Factor	1.1
Squat + Depth (m)	13.4
Heel (m)	0.4
Channel Bottom (m)	0.4
Depth	14.3
Water Level	1.3

DEPTH 13 m  
 SPEED 10 knots  
 Draught 11.5 m  
 Bottom Type Soft/Sand

OUTER CHANNEL (AHSAN CHANNEL)

Hs (m)	Squat (m)	Swell (m)	Heel (List 1°)	Channel Bottom (m)	Depth (m)	UKC (m)	Water Level (m)
0.4	1.4	0.3	0.44	0.5	14.2	2.7	1.2
0.8	1.4	0.6	0.44	0.5	14.4	2.9	1.4
1.2	1.4	1.2	0.44	0.5	15.0	3.5	2.0
1.6	1.4	1.6	0.44	0.5	15.4	3.9	2.4
2.0	1.4	2.1	0.44	0.5	15.9	4.4	2.9
2.4	1.4	2.5	0.44	0.5	16.3	4.8	3.3
2.8	1.4	3.0	0.44	0.5	16.8	5.3	3.8
3.0	1.4	3.2	0.44	0.5	17.0	5.5	4.0

INNER CHANNEL	
Vw (kt)	10
Squat Factor	1.1
Squat + Depth (m)	12.7
Heel (m)	0.4
Channel Bottom (m)	0.4
Depth	13.5
Water Level	0.5

DEPTH 13 m  
 SPEED 10 knots  
 Draught 10.8 m  
 Bottom Type Soft/Sand

OUTER CHANNEL (AHSAN CHANNEL)

Hs (m)	Squat (m)	Swell (m)	Heel (List 1°)	Channel Bottom (m)	Depth (m)	UKC (m)	Water Level (m)
0.4	1.3	0.3	0.44	0.5	13.4	2.6	0.4
0.8	1.3	0.6	0.44	0.5	13.6	2.8	0.6
1.2	1.3	1.1	0.44	0.5	14.1	3.3	1.1
1.6	1.3	1.5	0.44	0.5	14.5	3.7	1.5
2.0	1.3	1.9	0.44	0.5	15.0	4.2	2.0
2.4	1.3	2.4	0.44	0.5	15.4	4.6	2.4
2.8	1.3	2.8	0.44	0.5	15.8	5.0	2.8
3.0	1.3	3.0	0.44	0.5	16.1	5.3	3.1

INNER CHANNEL	
Vw (kt)	10
Squat Factor	1.1
Squat + Depth (m)	12.1
Heel (m)	0.4
Channel Bottom (m)	0.4
Depth	12.9
Water Level	-0.1

Wave Exceedance				
Hs (m)	March -15 May	Monsoon (15May - 15Sep)	15 Sep-Nov	Dec-Feb
0.4	95.00%	100.00%	77.90%	49.70%
0.8	50.80%	99.10%	26.70%	9.10%
1.2	13.70%	89.30%	4.60%	1.70%
1.6	2.20%	66.90%	0.40%	0.40%
2	0.10%	37.50%	0.00%	0.00%
2.4	0.00%	13.10%	0.00%	0.00%
2.8	0.00%	2.30%	0.00%	0.00%

# **PORT QASIM AUTHORITY**

## **STANDARD OPERATING PROCEDURES FOR OPERATING QFLEX LNG CARRIERS**

PQA Notice SOP/QFLEX 01/ 15 Dated 15th, November, 2015

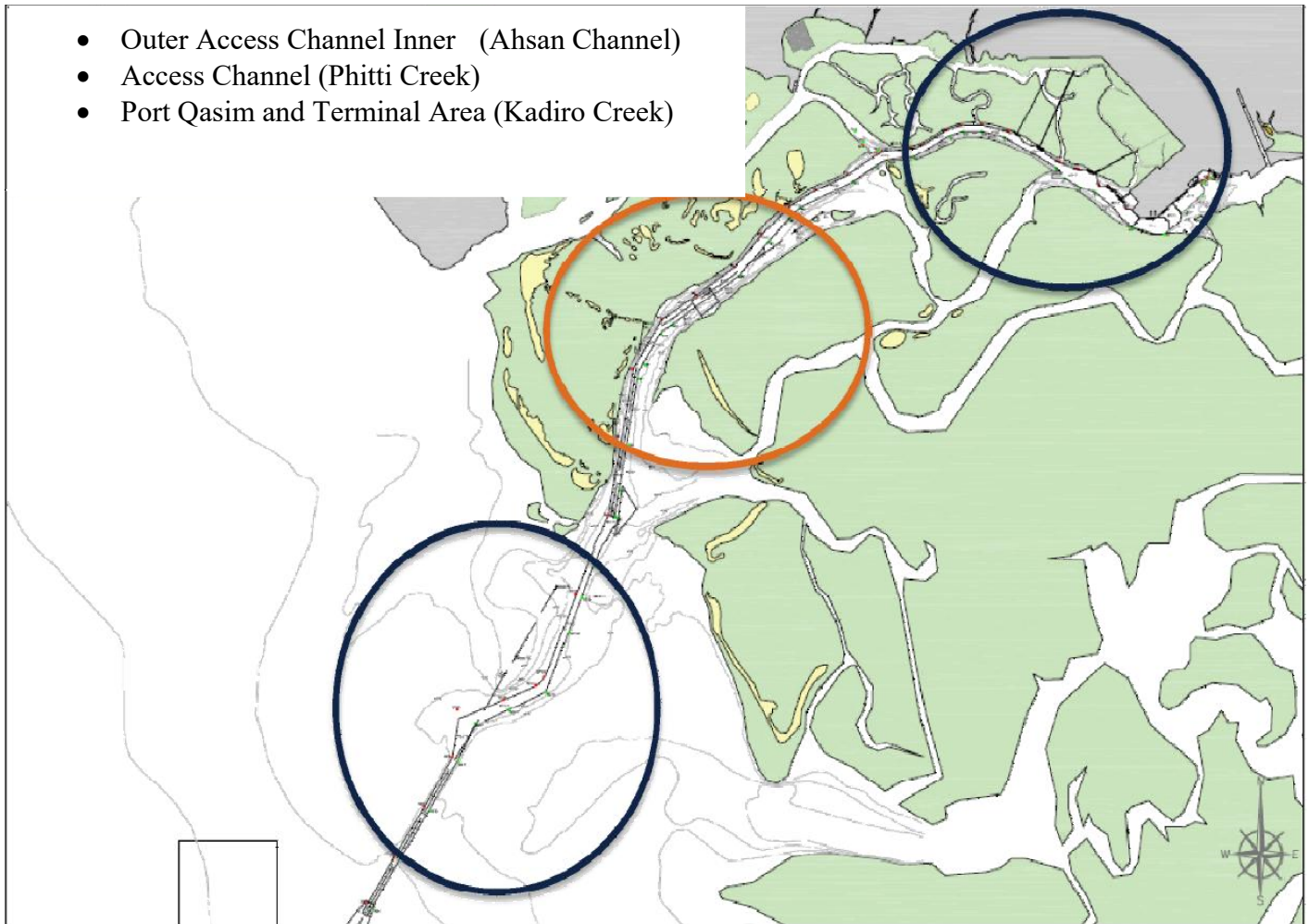
(Amended April 2018)

**The following Standard Operating Procedures (SOPs) have been developed for the operation of QFLEX Liquefied Natural Gas (LNG) vessels within the limits of Port Qasim and its approaches. These SOPs are to be read in conjunction with the existing Port Qasim Regulations 1981, PQA Act 1973 and current Notice to Mariners.**

These SOPs have been developed for QFLEX LNG carriers calling at Port Qasim during Non-Monsoon period (Sept 15<sup>th</sup> to May 15<sup>th</sup>). In order to remain compliant with the Pakistan LNG Policy 2011, the LNG carriers with dimensions given in the current Notice to Mariners will be allowed to enter the Port.

In cases where the LNG carriers exceed the given parameters in the current Notice to Mariners, Port Qasim Authority has been authorized to grant dispensations for such vessels from time to time depending on the environmental conditions and the prevailing policy of the PQA at the time, to enter the channel and berth at the LNG Terminals located within the Port. For LNG carriers having dimensions exceeding the limits laid down in the current Notice to Mariners, the application for grant of Dispensation may be filed by the vessel's agents prior to fixing the arrival of the vessel at Port Qasim.

The LNG carriers complying with the dimensions as laid out in current NTM with arrival laden drafts varying from 10.8 meters to 11.50 meters can be considered. The LNG carrier to enter the Ahsan Channel as per PIANC Guidelines – Vertical requirements to water level corresponding to swell height/vessel draught/depth/vessel speed as per annex 3.



Note:-

PQA carries out regular dredging to maintain minimum depth of 13m within the width of Port Navigation Channel parameters defined in the nautical chart (PAK 20 / BA 59)

1. 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. Copies of both these documents are attached to this document as Appendix 1 & 2. 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;
2. 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
  - The quantity (in mt and in cum) 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
3. 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.
  4. 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.
  5. 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.
  6. 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. **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
- Harbor Master Office: +92-21-99272172
- Office Hour Phone: +92 21 – 9927 2111-20 Ext. 4294
- Dock Master Office: + 92-21- 99272111-20 Ext. 4295
- Operation Room Officer(ORO): + 92-21-99272174 & +922199272111Ext. 4269

- PORT FACILITY SECURITY OFFICER' (PFSO)
  - PFSO: Security Officer
  - Title: Director Security
  - Address: PQA, Bin Qasim Karachi
  - Telephone: +92 21 99 272 163 (Office),  
+92 21 99272111 Ext 4627
  - Fax: +92 21 3473 0108
  - [Email: 95@gmail](mailto:95@gmail)

8. 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 pump .....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

9. Through the vessel's Agents, the Masters are obliged to immediately report to the Harbor 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.

10. LNG vessels may arrive at Port Qasim Anchorage at any time of the day or night. If required to await berthing at the anchorage, the vessels may 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

11. 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 which is about 3 miles SW of the Fairway Buoy.
12. Pilot allocation will be generally two Pilots for the transit (in and out). A third berthing pilot will embark on the vessel while she approaches the harbor 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.
13. As shown in the picture on top of this document, 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.
14. LNG vessels shall make inbound and outbound transits of the Channel escorted by speed boats carrying armed guards as per latest agreed security review and two tugs with the stern tug made fast before entry in the channel and on departure from the terminal prior commencement of the transit. Limits for tugs rendering assistance (Stern tug) is as follows:
  - Giving line: Observed wave/swell 2.0 m and speed of the LNGC at 5-6 knots through the water
  - Rendering assistance: LNG Speed through the water below 10 knots and

Observed wave/swell below 1.5 m

15. The following procedures for entering and navigating the three legs of the channel have been developed and are to be complied with:
  - a. The LNG carrier to enter the Ahsan channel about three (3) to four (4) hours prior to the top of the High Water (Even earlier during neap tide) provided the transit through the channel to the berth can be completed during daylight hours.
  - b. The LNG carrier is allowed to enter the channel only during the period of (15<sup>th</sup> September – 15<sup>th</sup> May) under controlled and closely monitored conditions.
  - c. The water density of the PQA channel varies with the location and environment ranging between 1.023 to 1.027.
  - d. After boarding of the Pilots and prior to commencing the passage in Ahsan channel, the height of the swell/wave will be determined through the experience of the pilots as well as 4 beacons in the Ahsan Channel that have measurement (ruler type) on them to facilitate estimations. The Pakistan Hydrographic Agency web site and other websites is also used for information. A wave rider buoy will also be used when available. For Ahsan Channel arrival maneuvers, the maximum mean speed of the wind is to be 20 knots.
  - e. Transit strategy during inbound transit through the Ahsan channel bends:
    - Maximum speeds through water (10 knots)
    - Ahsan channel - first bend 9-10 knots through the water
    - The aft tethered tug line tight during Ahsan bends and thereafter the line can be tight or slack at Master / Pilot desecrations
    - Ahsan channel - second bend 6.0-7.5 knots through the water
16. Initiating of transit is prohibited if the visibility is less than 2 mile. The vessel operators will liaise directly with the Terminal regarding assessment of a suitable weather forecast to determine information regarding the period/window that allows for the QFLEX-LNGC transits and periods alongside the terminal.
17. The Terminal Operation limits given as follows:



Description	Nautical Manoeuvres	Maximum Wind Speed (Knots)	
Berthing FSRU/LNGC	Tugs have full control on vessel/ vessel berthing	20	
Stopping LNG transfer and disconnect arms.	2 Tugs make fast Engines /crew on standby	25	Consolidate cargo tanks if required
LNGC Departure from FSRU/berth	4 Tugs fast. Pilot onboard	30	Depart berth and anchor

18. Under normal circumstances, during the transit of LNG carriers through the channel, no passing shall take place between an LNG vessel and any vessel other than authorised crafts involved in port services and security duties. However, if an LNG vessel or any other vessel breaks down in the channel during transit through the Channel area, then controlled passing of the vessels may be permitted by the PQA under such circumstances provided the disabled vessel is safely anchored at one of the designated locations that would allow sufficient distance between the disabled anchored vessel and the vessels underway passing speed not to exceed 7.5 knots. In any case, two escort tugs will remain in attendance with the LNG carriers at all times. The designated areas for controlled passing are:
- Between Beacon # 8A and Buoy # 12
  - Between Buoy # 14 and Buoy # B2
  - Between Buoy # B 13 and Buoy # P5
  - Between Buoy # P5 and Buoy # P9
  - Between Buoy # P11 and Buoy # K1
  - Turning basins at IOCB and QICT
19. 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 of the locations identified in the above clause, being the contingency anchorages or waiting in channel with tugs in attendance.
20. LNG vessels to have Electronic Chart Display and Information System (ECDIS).
21. 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.

22. On transiting from Phitti Creek to Kadiro Creek the speed will be maintained between 10 to 6 knots through water 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.
23. By the time the LNG carrier arrives near the Terminal located within the Gharo Creek, there will be Slack Flood tide running that would 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.
24. 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 weak ebb tide on arrival at the turning basin. Otherwise, the vessel to be anchored at the turning basin waiting for the Flood tide.
25. Whether the LNG vessel is swung to port or starboard is at the discretion of the ship's Pilot and Master.
26. The Pilot will carry reliable PPU to assist with the safe pilotage and berthing/un-berthing operations.
27. The departure of a QFLEX vessel from the Terminal will normally be scheduled between one (1) to two (2) hours before Low Water and two (2) hours before High Water. The outbound transit through Ahsan channel bends will not be undertaken in strong Ebb current (falling no more than 0.7 meter/hour). , two tugs will be released in the vicinity of Turning Basin.

28. During the outbound transit from the Terminal, the maximum swell height will not exceed 1.5 meters and the wind speed will be prevailing at 20 knots mean, gusting up to 26 knots. The maximum speed through the water is not to exceed 10 knots.
29. While the FSRU is in operation alongside the Terminal jetty, a Tug with firefighting capabilities will remain stand-by at all times with a 30 minutes response time.
30. 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 will be available within the time specified for the second tug to be in attendance.
31. For vessels passing by the LNG Delivery vessels at the Terminal berth alongside the FSRU, the distance and speed of the passing vessels will be as per the following results of the revised Artelia Mooring and Hydraulic Study received from the EETPL Terminal:

173,400m <sup>3</sup> FSRU full (18 lines) / Qflex LNGC ballast (18 lines)											
Max. differential motion in meters (peak to peak value)(between 2 moored vessels)										Wind load (velocity)	Remarks
Passing by distance (from towline, see illustration)	0m	20m	40m	60m	80m	100m	120m	140m			
Passing by Speed (Ground Speed)	6 knots	0.9	0.6	0.5	0.4	0.4	0.4	-	-	25 kt from SW	-
	8 knots	2.3	1.7	1	1	0.9	0.8	0.8	0.8		Max tension in lines above criteria for passing by vessel at less than 30m from toe line towards channel
	6 knots	0.8	0.6	0.5	0.4	0.4	0.4	-	-	15 kt from NE	-
	8 knots	2	1.5	0.9	0.9	0.8	0.8	0.8	0.8		Max tension in lines above criteria for passing by vessel at less than 20m from toe line towards channel

32. In case where an emergency departure from the berth is necessary, at least 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.

33. On departure of LNG Carrier from the Terminal during 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.
34. 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.
35. 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:

  - a. LNG Vessels will advise their ETAs 48/24/12 and 6 hours prior to arrival at the Fairway Buoy.
  - b. The ship scheduler 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.
  - c. 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;
36. Additional parameters may be placed on operations at individual terminals as circumstances dictate.
37. In event of any Safety and Environment emergency, PQA contingency plans and SOPS will be referred and implemented.
38. 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.

39. 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:

- (a) Fire in the terminal
- (b) Major Emergency requiring evacuation of terminal
- (c) Fire On Board
- (d) Medical Emergency On-Board
- (e) Emergency Escape Route
- (f) Lightening
- (g) Safety Clothing: All ship’s personnel working on deck must wear the appropriate Personal Protective Equipment

40. Emergency (remote) Mooring Hooks Release:

The Terminal Operator is responsible for the operation of the mooring hooks. Under normal circumstances, only manual (local) activation of the hook releases is permitted and this operation is to be conducted by the mooring crew of Terminal Operator. In emergency situations, the mooring hooks may be remotely released by the Terminal. 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 Harbor Authorities, or PQA Operation Room Officer (ORO).
- The Harbor 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 to.

41. Emergency Contact Numbers (From Ship to Shore) Hot line between Ship and shore:

- a. Operations Room Officer: +92 21 99272174
- b. Jetty Control Room: +92 21 34730114 & +92 21 34243230
- c. Fire Station : +92 21 99272145
- d. Medical Centre: +92 21 99272111-30 (Ext 4275)
- e. Security (Main Gate): +92 21 99272111-30

# **PORT QASIM AUTHORITY**

## **Condition of Use for LNG CARRIERS**

### **Annex 1**

to Standard Operating Procedures for LNG Carriers in Port Qasim

### **CONDITIONS OF USE**

(Amended April 2018)

All facilities and assistance of any kind whatsoever provided by the Port Qasim Authority (PQA) or its Representative/s to LNG carriers visiting Port Qasim for any purpose whatsoever are subject to the following Conditions of Use (Conditions). 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.

For the purpose of these Conditions, the following definitions or interpretations shall apply:

## **1. Interpretations and Definitions**

- 1.1 “Port” - means Port Muhammad Bin Qasim, Karachi, Pakistan.
- 1.2 “Port Facilities” means all the infrastructure, equipment and installations at the Port which includes, but is not limited to, channels, channel markings, buoys, jetties, berths lines, gangways and bunkering facilities or the unloading facilities at the LNG Terminals in Port Qasim.
- 1.3 “Port Services” means any service rendered by the PQA or by the PQA Representative/s which included, but is not limited to, mooring or unmooring or raising or lowering of the loading lines or loading or discharging or otherwise, but excluding towage services which are covered in attached Annex 2 – Marine Service Certificate.
- 1.4 “Terminal” – means the dedicated LNG Terminal as defined in the respective Implementations Agreements between PQA and LNG Terminal developers/operators.
- 1.5 “FSRU” - means vessel built as a floating storage and re-gasification unit or LNG Carrier converted to FSRU.
- 1.6 “LNG Carrier” – means LNG Carriers or vessel.
- 1.7 Reference to LNG Carrier(s) includes FSRU(s)

## **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 [which means the standards and practices from time to time in force applicable to the ownership, design, equipment, operation or maintenance of LNG Carriers

established by the rules of one of the 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) or any successor body of the same and any other internationally recognized agency or organization with whose standards and practices it is customary for international operators of such vessels or terminals to comply, including holding a recent OCIMF Ship Inspection Reporting system (SIRE) report with no adverse observations.]

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 Should a LNG Carrier 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 Master's Responsibility**

The Master of an LNG Carrier calling at the Port or Terminal is solely responsible on behalf of its owners, operators or charterers for the safe navigation and operation of their LNG Carrier. 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 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.



#### **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).

#### **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**

9.1 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 injury or death of personnel, 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.

9.2 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, injury or death suffered by the Master, Officers or Crew.

9.3 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.

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

9.4.1 any loss suffered by the PQA with respect to damage to the Port Facilities, Injury or Loss of Life of 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;

9.4.2 any loss suffered by third parties with respect to damage to their property,

loss of life 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;

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

9.4.4 any Loss or Damage to the Ship while in Port, including consequential losses and all claims, damages and costs arising therefrom, regardless of any act, omission, fault or neglect on the part of the PQA, and

9.4.5 any Personnel Injury. Loss of Life 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 therefrom, 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**

13.1 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.

13.2 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.

13.3 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 Conditions 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. Pollution**

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.

#### **16. 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.

**17. 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, 1940 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.

**18. 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.

Name of the Ship

Name of the Master \_\_\_\_\_

Ships Stamp

Signature of the Master \_\_\_\_\_

Dated \_\_\_\_\_

# **PORT QASIM AUTHORITY**

## **Marine Service Certificate**

**for**

### **LNG CARRIERS**

**Dated 11<sup>th</sup> April 2015**

**Annex 2**

to Standard Operating Procedures for LNG Carriers in Port Qasim

(Amended April 2018)

# MARINE SERVICES CERTIFICATE

## Towage pilot transfer and pilotage (Marine Services)

### Towage and Pilot Transfer

All towage and Pilot transfer services to be provided by PQA Crafts, SMIT Lamnalco / Seamax Marine Services on behalf of Port Qasim Authority within their jurisdiction are subject to the United Kingdom Standard Towage Conditions (1986 edition and following amendments) UKSTC.

### Pilotage

At all times the master of the vessel remains responsible for the safety and proper navigation of the vessel. The pilot and Port Qasim Authorities shall be without any responsibility or liability whatsoever, for damage arising directly or indirectly from the advice and actions from the pilot regarding the pilot's services rendered to the vessel regardless of any gross negligence or willful misconduct of the pilot and/or Port Qasim Authorities. Furthermore and in addition to this, the pilotage conditions as published in the Port Qasim Port Regulations shall apply.

Prior to commencement of any Marine Services, Master shall agree fully to above conditions and to the Port Qasim Port Regulations by signing this form.

Vessel: \_\_\_\_\_ (Name)

Master: \_\_\_\_\_ (Name)

\_\_\_\_\_ (Signature)

On termination of the Marine Services, the master and the pilot shall complete and sign this Form. Certifying the details of the services rendered as requested by Master of the vessel.

\_\_\_\_\_ Inward

\_\_\_\_\_ outward

Name of vessel:	_____	Date:	_____
L.O.A	_____	Forward draft:	_____
G.R.T	_____	Aft draft:	_____
N.R.T	_____	Deepest actual draft:	_____
Time pilot embarked:	_____	Time pilot disembarked:	_____
Passing fairway water:	_____	Berth No:	_____
Ships agent:	_____	Port clearance No:	_____

Assisted / towed / Transferred / stood by:

From:	_____	to:	_____	by:	_____	Pilotboat(s)
From:	_____	to:	_____	by:	_____	tugboat (s)
From:	_____	to:	_____	by:	_____	tugboat (s)
From:	_____	to:	_____	by:	_____	tugboat (s)

Master \_\_\_\_\_ (Name) Pilot \_\_\_\_\_ (Name)

\_\_\_\_\_ (Signature) \_\_\_\_\_ (Signature)

The above name services have been provided by Port Qasim Authorities, SMIT Lamnalco / Seamax Marine Services



# ANNEX - 3

## PIANC GUIDELINES - Vertical Requirements

DEPTH 13 m  
 SPEED 10 knots  
 Draught 12 m  
 Bottom Type Soft/Sand

OUTER CHANNEL (AHSAN CHANNEL)

Hs (m)	Squat (m)	Swell (m)	Heel (List 1°)	Channel Bottom (m)	Depth (m)	UKC (m)	Water Level (m)
0.4	1.4	0.4	0.44	0.5	14.7	2.7	1.7
0.8	1.4	0.7	0.44	0.5	15.0	3.0	2.0
1.2	1.4	1.2	0.44	0.5	15.6	3.6	2.6
1.6	1.4	1.7	0.44	0.5	16.1	4.1	3.1
2.0	1.4	2.2	0.44	0.5	16.5	4.5	3.5
2.4	1.4	2.6	0.44	0.5	17.0	5.0	4.0
2.8	1.4	3.1	0.44	0.5	17.5	5.5	4.5
3.0	1.4	3.4	0.44	0.5	17.7	5.7	4.7

INNER CHANNEL	
Vw (kt)	10
Squat Factor	1.1
Squat + Depth (m)	13.4
Heel (m)	0.4
Channel Bottom (m)	0.4
Depth	14.3
Water Level	1.3

DEPTH 13 m  
 SPEED 10 knots  
 Draught 11.5 m  
 Bottom Type Soft/Sand

OUTER CHANNEL (AHSAN CHANNEL)

Hs (m)	Squat (m)	Swell (m)	Heel (List 1°)	Channel Bottom (m)	Depth (m)	UKC (m)	Water Level (m)
0.4	1.4	0.3	0.44	0.5	14.2	2.7	1.2
0.8	1.4	0.6	0.44	0.5	14.4	2.9	1.4
1.2	1.4	1.2	0.44	0.5	15.0	3.5	2.0
1.6	1.4	1.6	0.44	0.5	15.4	3.9	2.4
2.0	1.4	2.1	0.44	0.5	15.9	4.4	2.9
2.4	1.4	2.5	0.44	0.5	16.3	4.8	3.3
2.8	1.4	3.0	0.44	0.5	16.8	5.3	3.8
3.0	1.4	3.2	0.44	0.5	17.0	5.5	4.0

INNER CHANNEL	
Vw (kt)	10
Squat Factor	1.1
Squat + Depth (m)	12.7
Heel (m)	0.4
Channel Bottom (m)	0.4
Depth	13.5
Water Level	0.5

DEPTH 13 m  
 SPEED 10 knots  
 Draught 10.8 m  
 Bottom Type Soft/Sand

OUTER CHANNEL (AHSAN CHANNEL)

Hs (m)	Squat (m)	Swell (m)	Heel (List 1°)	Channel Bottom (m)	Depth (m)	UKC (m)	Water Level (m)
0.4	1.3	0.3	0.44	0.5	13.4	2.6	0.4
0.8	1.3	0.6	0.44	0.5	13.6	2.8	0.6
1.2	1.3	1.1	0.44	0.5	14.1	3.3	1.1
1.6	1.3	1.5	0.44	0.5	14.5	3.7	1.5
2.0	1.3	1.9	0.44	0.5	15.0	4.2	2.0
2.4	1.3	2.4	0.44	0.5	15.4	4.6	2.4
2.8	1.3	2.8	0.44	0.5	15.8	5.0	2.8
3.0	1.3	3.0	0.44	0.5	16.1	5.3	3.1

INNER CHANNEL	
Vw (kt)	10
Squat Factor	1.1
Squat + Depth (m)	12.1
Heel (m)	0.4
Channel Bottom (m)	0.4
Depth	12.9
Water Level	-0.1

Wave Exceedance				
Hs (m)	March -15 May	Monsoon (15May - 15Sep)	15 Sep-Nov	Dec-Feb
0.4	95.00%	100.00%	77.90%	49.70%
0.8	50.80%	99.10%	26.70%	9.10%
1.2	13.70%	89.30%	4.60%	1.70%
1.6	2.20%	66.90%	0.40%	0.40%
2	0.10%	37.50%	0.00%	0.00%
2.4	0.00%	13.10%	0.00%	0.00%
2.8	0.00%	2.30%	0.00%	0.00%