TRANSPETRO

PORT INFORMATION

Marine Terminals of GUANABARA BAY

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BR

Summary

Introduction

This publication contains port information on the Guanabara Bay Marine Terminals (TABG) for shipowners, masters and crew of the ships destined to the Terminal. It has been developed by Petrobras Transporte S.A. (Transpetro), the Terminal operator.

The pieces of information comprised in this document come from reliable sources and are correct to the best of their extent. Transpetro must not be held accountable for errors or omissions in this publication since the present document is intended only to supple- ment – as opposed to substituting or altering – official legislation, instructions, guidelines or publications, either national or international. Therefore, any information herein which either thoroughly or partly contradicts any official document or publication shall be dis- regarded.

Ship operations at the Guanabara Bay Marine Terminals must comply with the recom- mendations by the International Safety Guide for Oil Tankers Terminals (Isgott), the International Maritime Organization (IMO) conventions and with the Terminal's operating standards.

The Terminal reserves the right to alter any of its operational characteristics presented herein without prior notice. Should any mistaken or diverging information be found in this document, which may need correction, please contact one of the addresses below:

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Definições

BP (Bollard-Pull) – Longitudinal static traction of a vessel.

CFTV – Television Closed Circuit.

COW – Crude Oil Washing.

Squat Effect – Increased draft and trim variation of a ship because of an increase in speed when navigating in restricted waters

ESD – Emergency Shut Down.

FSRU – Floating Storage and Regasification Unit

GIAONT – Group for the Operational Inspection and Monitoring of Ships and Terminals. A team consisting of highly experienced safety surveyors.

LNG – Liquefied Natural Gas.

IMO – International Maritime Organization.

ISGOTT – International Safety Guide for Oil Tankers and Terminals

ISPS Code – International Ship and Port Facility Security Code

Spring Tides – Condition in which the tide reaches its maximum amplitude at certain times of the year

NOR – Notice Of Readiness

FPSO – Port Facility Security Officer

PP – Main Pier

PS – Secundary Pier

SIGTTO – The Society of International Gas Tanker and Terminal Operators Ltd

TABG – Guanabara Bay Marine Terminals

DWT – Deadweight Tonnage

UN-MC/CEOCB – A Petrobras department that trades the bunker stored at Transpetro's Terminals

UTC – Universal Time Center

VTS – Vessel Traffic Service

QHSE – Quality, Health, Safety and Environment

Reference Charts and Documents

Information on the Terminal can be obtained in the publications listed below:

CARTAS NÁUTICAS

Area	Chart Number		
	Brazil (DHN)	US Hydrographic Office	British Admiralty
Port area and anchorage	1.501 e 1.506	24,161	541
Port access and channels	1.511	24,162	541
Terminal and approach area	1.512 e 1.513	24,162	–
Mouth	1.535	–	–

OUTRAS PUBLICAÇÕES

Area	Publisher or Source		
	Brasil (DHN)	US Hydrographic Office	British Admiralty
Maritime Authority's Rules and Regulations – Normam	1, 2, 3, 4, 7, 8, 9, 12,13, 15 and 17	–	–
Rules and Procedures Port Captaincy – NPCP – RJ	NPCP – RJ 2022	–	–

Area	Publisher or Source		
	Brasil (DHN)	US Hydrographic Office	British Admiralty
Navigational Support – Bearings	east coast	–	–
List of lighthouses – Brazil	east coast	List of lights and radio signals	Admiralty list of lights and radio signals
Tide Tables	Brazilian Ports	Tide tables	Admiralty tide tables

Documents and Information Exchange

A version of the Port Information will be delivered to the ship on her first visit to the ter- minal or port upon presentation of a receipt signed by the ship/shore representatives for internal control of documentation. This control is a GIAONT surveyor duty.

The items listed below must be provided by the Terminal or the ship, as indicated in the table below.

Information	Prepared by:			Delivered to:			Comments
	Terminal	Ship	Both	Terminal	Ship	Both	
Before Arrival (Item 7.1.3)							
Estimated Time of Arrival (ETA) and information about the vessel		X		Via agency			According to Appendix E
Before Bunker/ Cargo Transfer							
Details of onboard cargo, slop and ballast		X		X			According to Appendix F
Essential Operational Information	X				X		According to CHART
Ship/Shore Safety Checklist			X			X	ISGOTT 6

Information	Prepared by:			Delivered			Comments
	Terminal	Ship	Both	Terminal	Ship	Both	
Pre-COW Operation							
Specific checklist		X				X	'Manual COW' Checklist
During COW Operation							
Specific checklist			X			X	'Manual COW' Checklist
During Cargo or Bunker Transfer							
Repeat Ship/Shore Safety Checklist and the Essential Operational Information (to be finalized locally)			X			X	ISGOTT 6
After Bunker/Cargo Transfer, Before Departure							
Information required for unberthing			X			X	Quantity of onboard bunker and water
After Unberthing, upon Leaving the Port							
Information on relevant departure data		X		X			Time of disembarkation of the pilot and departure

Escription of the Port and Anchorage Area

5.1 GENERAL DESCRIPTION

The access to the Port of Rio de Janeiro offers well-defined spots and its mouth may be easily reached from any direction. Ilha Redonda, Ilha Comprida and Ilha Rasa are islands serving as unmistakable spots, especially Ilha Rasa with its lighthouse at the following coordinates: latitude 23º 03' 8 S and longitude 43º 08' 7 W, height of focal plane of 101 m, and made of a cylindrical brick tower in the center of a three-meter high white-washed building, with the following characteristics: Lp Alt BBE 15 sec 51/45 M with 315 Khz continuous Racon with indication I H.

The Sugarloaf Mountain (Pão de Açúcar) rises from a small cape to the west to an altitude of 395 m, differing from other similar hills by the slant of its peak to the east.

About 1.3 nautical miles to the west is the Corcovado Peak, with an altitude of 740 m, on which the Christ the Redeemer statue is erected.

The Ponta de Santa Cruz lighthouse, located at latitude 22º 56' 2 S and longitude 043º 08' 1 W, has ISO characteristics E 2s 26 m 8 M.

The main channel is dredged to a depth of 17 m and is 200 m wide and may only be used by vessels with draft up to 15.85 m. It is restricted to daytime operations because it is short of adequate beacon. The port may also be reached through the

secondary channel at any time of day or night. Its depth ranges from 13 m to 14 m, and may only be used by vessels with draft up to 11.50 m.

These two channels converge at the mouth abeam Ponta de Santa Cruz, stretching all the way to the TABG located within Guanabara Bay.

The TABG facilities may be reached by choosing one of the port access channels until passing through the mouth and then proceeding in a general N direction toward the cen- tral span of the Rio–Niterói Bridge.

5.2 LOCATION

5.2.1 Coordinates

The Terminal facilities are located at the following coordinates:

> Main Pier (PP): Latitude 22º 49' 10" S and longitude 043º 09' 08'' W.

> Secondary Pier (PS): Latitude 22º 48' 15" S and longitude 043º 09' 03'' W.

> Ilha Redonda Pier (IR): Latitude 22º 48' 07" S and longitude 043º 07' 13'' W.

> Ilha d' Água Barge Pier (PB): Latitude 22º 48' 38" S and longitude 043º 09' 42'' W.

> LNG Pier (PG): Latitude 22º 46' 48" S and longitude: 043º 07' 59" W

> Ilha Comprida (ICOMP): Latitude: 22º 48' 35" S and longitude: 043º 07' 40" W.

5.2.2 General geographic location

TABg is located inside guanabara Bay, in the state of Rio de Janeiro, Brazil.

5.3 TERMINAL ACCESS

5.3.1 General description

The TABG access channel signaling is described in sub-item 5.3.3. Landmarks, geographic features and hazards regarding the Terminal access are listed in sub-item 5.1.

5.3.2 Anchorage Areas

The Guanabara Bay is exceptionally sheltered from most of the winds in the region. There are several areas where anchoring is prohibited due to existing submarine pipelines or cables, and it is also prohibited to anchor nearby the TABG. Under no circumstance may ships drop anchor between the alignment of Ilha d'Água with Ilha Redonda and nearby the internal berths PP-2 and PS-2 because of undersea cables and pipelines.

Recommended anchorage areas may be found in Chart DHN-1.501, which must be used according to the ship's draft and port availability, since they are not for the exclusive use of the Terminal. The main anchorage areas are described in the table below:

Recommended or Designated Anchorage Areas

Name	Latitude & Longitude	Anchorage Area Radius	Minimum Depth	Remarks
Anchorage Area for the visit of port health inspectors and other authorities	w = 22° 52' 75" S l = 043° 08' 54" W	0.22 miles	13.3 m	Clearance of vessels by the sanitary and port authorities may be carried out after mooring
Waiting anchorage	w = 22° 48' 48" S l = 043° 08' 30" W	0.23 miles	13.7 m	Ships restricted by draft must verify the availability of the site before maneuvering

5.3.3 Beacon

The Port of Rio de Janeiro has the following beacons from the main access channel to the port:

- > Dredged channel buoy: Iso B 2s
- Santa Cruz Lighthouse: Iso E 2s 26 m 18 M
- Ilha Laje Lighthouse: Iso V 2s 17 m 11 M
- Sandstone Formation buoy: Lp (2) B 5s
- Ilha de Villegagnon light: Lp B 6s 7m 5 M

> Ilha Fiscal light: Lp E 6s 8 m 8 M
> Parcel das Feiticeiras light: Lp (2) B 10s 9 m 7 M
> Ponta da Armação Lighthouse: Lp B 10s 21 m 19 M
> Central span of the Rio–Niterói Bridge: Racon G (_ _ .)
> Passagem Rock buoy: R 9 m 5 M

Those proceeding to the secondary pier shall also find the following beacons:

> Manuéis de Dentro light: Lp V 3s 11m 5 M

In addition to those beacons previously described, those headed for Ilha Redonda and Ilha Comprida may rely on the following:

> Xaréu light: Lp (2) B 6s 11 m 7 M
> Pedra da Sardinha light: Lp (2) B 10s 7 m 5 M
> Cocóis light: Lp E 3s 6 m 5 M
> Ilha da Pita light: Lp E 2s 15 m 6 M, which can be used as a reference aligning it with the light from the north dolphin of the Ilha Redonda pier, with the following charac- teristics: R E 13 m 5 M
> Buoys of the channel and maneuvering basin of Ilha Redonda: n1 Lp E 3S, n2 Lp E 3S, n3 Lp E 3S, n4 Lp E 3S, n5 Lp E 3S
> Buoys of the channel and maneuvering basin of Ilha Comprida: n1 Lp E 3s, n2 Lp V 3s, n3 Lp E 3s, n4 Lp V 3s, , n5 Lp E 3s.

Those headed for the LNG pier must consider the previous information up to the Xaréu light, and may rely on the following beacons:

> Buoys of the channel and maneuvering basin:
  a) Buoy BL-1 indicates port side signal at the following position: Lat 22°47,46' S e Long 043°08,27' W BL1 Lp V 3S
  b) Buoy BL-2 indicates the east cardinal point at the following position: Lat 22°47,00' S and Long 043°08,05' W, shows the limit of the 10m isobate and the occurrence of rocks east of Viraponga Island. BL2 GrLp 3 B 5S
  c) Two yellow buoys BL-1 indicating special signals to limit the maneuvering basin.

  The exact position of these buoys is based in the new bathymetry, as established at item 7 and shall limit the north and east part of the area.

  Other characteristics: Lp A 5S
  d) Two quick-flashing yellow lights, one at the north and the other at the south of the Terminal, at its extreme dolphins.

Additional information is available in Chart 12.000 from the DHN.

5.3.4 Limits of the port and clearance of the NOR

The official limit of the port is the mouth entrance, which lies abeam Ponta de Santa Cruz, located at latitude 22º 56' 12" S and longitude 043º 08' 06'' W, where there is a lighthouse with the same name. The Official Time of Arrival is established by the time the said mouth is crossed. Local time is three hours earlier than Greenwich Mean Time. Daylight saving time is usually adopted from October to February, when the time differ- ence becomes two hours earlier than Greenwich. The ship must confirm the local time when arriving at the port.

If the ship receives instructions to wait for further orders outside the mouth, the notifica- tion must be issued during anchoring time.

As far as laytime is concerned, the Notice of Readiness shall be considered valid from the moment the last mooring line has been made fast. If the ship is not approved in the safety inspection, the time of clearance of the NOR shall be the time the ship corrects the indicated noncompliant items.

5.3.5 Port control or VTS

There is no maritime traffic control in the Port of Rio de Janeiro, only ship entrance, departure and maneuver inspections. Whether on arrival or alongside an operational point, the ship must contact Marine Station PWZ-88 and report arrival data, berthing/unberthing prospects, laytime, estimated time of departure, as applicable. More detailed information may be found in sub-item 8.1.

5.3.6 Pilotage

All foreign and national ships carrying hazardous or inflammable cargo maneuvering within the port must use the services of a harbor pilot. Brazilian plataform supply vessels (PSV) with dynamic positioning system that maneuver in the terminal facilities do not need pilot and tugs assistance.

This service must be carried out starting from the pilot embarkation point, shown in the navigation or the waiting anchor- age charts, 2 miles north of Ilha Rasa. The parties offering this service are described in sub-item 8.3. A pilot request may be sent by the ship's agent 24 hours in advance, at which time the ETA shall be informed at the boarding position. For ships intending to use the main channel, the pilot boards at latitude 22º 59' 8 S and longitude 043º 08' 6 W, near Ponta do Leme. If the

ship intends to use the secondary channel, the pilot shall come aboard at latitude 22º 59' 8 S and longitude 043º 06' 6 W.

Berthing shall be scheduled by the Terminal (reported by the TABG shift supervisor). In case berthing is not allowed at any given time, the pilot must anchor the ship and wait for instructions.

The ship's captain must always be responsible for scheduling the pilotage service for unberthing before departure, which may be scheduled by the Terminal by previous agreement or at the request of either the ship's captain or his appointed representative, based on the estimated time of the end of the operation provided by the ship according to the cargo release time. Pilotage service must be requested at least 3h30 before undock the pier.

After berthing, mooring conditions must be considered satisfactory by the captain, pilot and GIAONT GIAONT Safety Inspectors, according to the Terminal's minimum safety recommendations, set forth in items 6.3 and 7.3.1 and Appendixes B, C, D and E.

5.3.7 Tugboats and port services

Petrobras has a contract with a firm which provides tug maneuver support services, and the terminal oversees these maneuvers at its piers.

Considering that the recommended number of tugboats is suitable for wind conditions up to 20 knots, if there is a need to use additional tugboats, at the discretion of the captain and pilot, they may be contracted in the market by the ship's agents, and additional costs shall be incurred by the ship's owner or operator.

Participation of tugboats in maneuvers at the Terminal's piers shall not be authorized unless they have been previously inspected and approved by the GIAONT. Agents must always consult with the Terminal's GIAONT about the approved tugboats directory before ordering their services. Failure to follow these recommendations shall subject ships and their owners/operators to compensation for the losses caused by operational delays due to removal of unapproved tugboat from maneuvers, including all additional costs from rescheduling of pilotage, demurrage of the ship at fault or that of other ves- sels, refinery shutdown and any other consequences thereof.

The number of tugboats for maneuvering is calculated according to vessel size, type and place of maneuver, ETA (as reported by the ship) and berthing schedule at the Terminal (as reported by the shift supervisor).

When unberthing, the tugboats shall be ordered considering the estimated time of the end of the operation as reported by the ship.

The basic rules under normal environmental conditions for the number of tugboats to be used are described in sub-item 6.3.

Communications between tugboats and ship during maneuvers are established via VHF radio, channel 13. The tugboats must have at least another radio set which may remain tuned to channel 16 at all times.

After the maneuver has been completed, the tugboats must remain standing by on channel 13 and 16 in order to respond to any call from the ship or the Terminal. In case of radio set failure on the ship or tugboat during the maneuver, the vessels must use the following whistle signals:

Call:

> 4 long whistle blasts followed by 1 or 2 short ones – the number of short blasts estab- lishes whether 1 or 2 tugboats have been requested, respectively.

Before passing the tow line:

> 2 short whistle blasts – prepare to push forward or take the bow line.
> 3 short whistle blasts – prepare to push backward or take the stern line.

After passing the tow line:

> 1 long whistle blast – pull starboard.
> 2 short whistle blasts – pull port.
> 3 short whistle blasts – stop pulling.

Maneuvering alongside:

> 1 short whistle blast – pull.
> 2 short whistle blasts – push.

Other whistle signals are also used for supporting vessels:

Call:

> 2 long whistle blasts followed by a short one – to call the harbor pilot's boat.
> 1 long whistle blast followed by a short one – to call the motorboat.

Note: All the orders received by the tugboat must be acknowledged by a short whistle blast or by response confirming the order via VHF on the maneuvering channel.

Motorboats for crew transportation:

> The Terminal does not have motorboats to carry crewmembers. This service must be ordered by the ship's agent by renting the market's available motorboats at the Port of Rio de Janeiro.

Pilotage motorboat:

> The harbor pilots use their own motorboats in Rio de Janeiro.

Vessels for provision delivery:

> Like the motorboats for crewmember transportation, this service must also be ordered by the ship's agent.

> The provisioning of the ship must be preceded by express authorization by the Terminal. When authorized, provisioning must only take place during daylight hours and on the outside board of the ship. Only chandlers previously approved by the Terminal and in accordance with the ISPS Code may be authorized, which, before approaching the ship, must guarantee that the loading/unloading equipment is in good working order and the safety procedures have been followed. Chandlers must also use the necessary personal protective equipment. The delivery of materials on Redonda Island, Comprida Island and LNG jetty can only be authorized with the operation stopped or with terminal Safety Inspector permission.

Mooring:

> The mooring service at the Terminal shall be arranged by the ship's agent three hours in advance, after requesting a pilot for the ship.

TABG has a company under exclusive contract and only employees of this company can do ship's berthing/unberthing tasks in the terminal piers.

5.3.8 Navigation hazards

The channel that goes from the anchorage area to the TABG facilities has the following hazards and geographic features:

Sandstone formation at the mouth:

> Located to the port side of ships heading to the port, there is an isolated hazard marked by a light and luminous buoy. The light is characterized by Lp ISO V, 2s, 17m and 11M. The sandstone-signaling buoy, located above this isolated hazard, at lati- tude 22º 55.9' S and longitude 043º 08.5' W, characterized by Lp B (2) 5s, must always be passed port side by those heading to the mouth.

Ferry boats

> Just past Ilha de Villegagnon there is traffic of ferry boats and hydrofoil ferries crossing the channel connecting Niterói to Ilha de Paquetá and Ilha do Governador as well as to Rio de Janeiro downtown. Navigators must have special caution when crossing this area.

Isolated hazards

> The access channel from the anchorage area to the maneuvering basin is not total- ly signaled, but the existing signaling is sufficient for safe navigation. The only haz- ards to those heading toward the Terminal, besides the Sandstone Layer at the entrance of the mouth, are the sandstone formations of Barroso, Obus de Dentro, Jaguarão and Barreira, located between latitudes 22º 49' 48" S and 22º 50' 42" S and longitudes 043º 09' 12'' W and 043º 09' 30'' W, and the passage under the Rio-Niterói Bridge, which must be performed with the assis- tance of tugboats.

> Ships headed for the PS-2 must cross the way point formed by the intersection of the imaginary line between the South dolphin and Manuéis de Dentro light, with two tugboats connected to the ship, engines shut, and being pushed forward at minimum speed due to possibility of accidents involving ships nearing the maneuvering basin at excessive speed.

> There are additional hazards for vessels heading toward Ilha Redonda and Ilha Comprida: Sardinha and Cocóis rocks, both marked with lights, the former charac- terized by Lp(2) B, 10 s, 7 m, 5M and the latter, by Lp E, 3s, 6 m, 5M.

> Ships heading to the LNG pier must be attentive to the following additional hazards:·

  · Cação Sandstone;

  · Elefante Rock;

  · Viraponga Island;

  · Nhanquetá Island;

> There is also a shallow area with an 8-meter isobath and a rocky bottom located approximately at latitude 22 46' 30" S and longitude 043 08' 01" W which must be kept starboard when berthing via North. Special attention must be paid when turning ship larboard, as well as drifting NW, especially during flood tide.

- The Port of Rio de Janeiro shall not pose any greater navigation difficulties as long as all the recommendations on the itinerary have been followed.
- Ship maximum allowed speed within the access channel in order to berth at any TABG pier is 5 knots.

5.3.9 Restrictions

The limits recommended for maneuvers at the Terminal's piers are:

- Wind: Up to 20 knots;
- Current: Up to 1.3 knots;
- Pier approach speed: To all its berths the perpendicular speed must not exceed 10 cm/s.
- Pier maximum approach angle: 5º (five degrees)

Maneuvers that exceed the limits described above shall subject the ship and the Terminal to the risk of damages and can only be carried out under conditions of extreme necessity and upon authorization by the Terminal or in urgent/emergency situations, at the discretion of the ship's captain.

Special attention must be paid to the observations contained in charts DHN 1.501, 1.512 and 1.513, under the topics entitled: flammable products and submarine pipes.

5.4 MANEUVERING AREAS

The maneuvering basin near:

- PP-1 – It is approximately 0.3 mile long in the E–W direction and is limited in the N–S direction by the navigation channel itself; the depth is limited in the NW by a 20 m isobath and maximum of 22.5 m.
- PP-2 – It is more restricted, limited to 0.11 mile in the W–E direction and limited by the navigation channel in the N–S direction. The depth varies from 13 m to 17 m. It is not recommended to turn ships west of the pier's main axis.
- PS-1 – It is approximately 0.18 mile in the N–S direction, without restriction in the W–E direction for ships with draft up to 12 m. The basin has been dredged to 13 m in front of the pier. The pier permits berthing maneuvers by both sides of the ship, preferably against the tide.

- PS-2 – It is very limited, with a length of approximately 0.1 mile in the N–S direction and 0.05 mile in the E–W direction, with depths up to 12 m, limited to the north by an isobath of 5 m. Maneuvers may only be carried out during ebb tide and berthing must be starboard side.
- IR – It has approximately 400 m in diameter in front of the pier. The depth is around

8.50 m. It is not recommended to turn ships longer than 150 m without daylight.

- Ilha Comprida (ICOMP): It is approximately 420 m in diameter in front of the pier.

The depth is around 8,50 m.

- PG1 – It does not have a defined limit; serving as a reference point are the bound- aries of the anchorage area in which LNG ships' anchoring maneuvers must never take place. However, the boundaries of the bay must be considered, which is approximately 0.35 mile in the N-E direction.
- PG2 – It is more restricted, limited to about 0.1 mile in the NW direction and stretching counterclockwise to the S. A shallow bottom restriction to the NW must be observed and as well as the isolated hazard recommendations in item 5.3.8. The maximum draft of 12 m is that of the navigation channel itself, with depths up to 13 m. It is not recommended to turn ships west of the pier's main axis.
- PB (barge pier) – It has a diameter of approximately 150 m stretching to NE. The basin is limited from N to W by a 4-meter isobath. Caution must be taken not to advance to SE of the end of the pier due to the shallow depth of 2 m.

5.4.1 Navigation and berthing support

The Terminal has docking radar equipment to measure the approach speed and approach angle of vessels at the berths PP, PS, IR, ICOMP and PG. This system allows recording for future analysis of the maneuvers taken place at the Terminal. The Terminal provides signaling placed at access gangways to help berthing.

The Terminal operator will assist the ship during berthing in order to put it in the best possible position, always seeking a position which best fits the connection of the arms to be used in the operation.

The GIAONT surveyor also supervises the maneuvers and may assist captains in making decisions if requested, since the group is composed of former merchant

marine captains and Deck Officers with extensive experience in maneuvers in this Terminal.

5.4.2 Draft limit

At the TABG the draft of berthed ships shall be limited as the figures shown in the table in sub-item 6.2. In addition to the forecasts in the table, there are limitations regarding the time of berthing and unberthing due to maneuvering basin restrictions as described below:

Berth	DWT (T)	Draft (m)	Maneuvering Restrictions			
			Berthing		Unberthing	
			Day	Night	Day	Night
PP-1	Up to 135,000	Up to 15.85	(1)	(1)	(1)	(2) (3)
PP-2	Up to 35,000	Up to 11.50	(1)	(1)	(1)	(1)
	35.000 to 90.000	Up to 12,80	(1)	(1)	(1)	(2)
	90.000 to 135.000	Up to 12.80	(4)	(9)	(1)	(2) (4)
PS-1	Up to 55,000	Up to 12.00	(1)	(1)	(1)	(2)
PS-2	Up to 10,500	Up to 8.50	(1)	(9)	(1)	(9)
	10,500 to 35,000	Up to 8.50	(4)	(9)	(4)	(9)
IR	Up to 10,000	Up to 7,00	(1)	(9)	(1)	(6)
	10,000 to 25,000	Up to 7,00	(7)	(9)	(7)	(9)
	From 25.000 to 38,000	Up to 7,00	(7) (8)	(9)	(7) (8)	(9)
ICOMP	Até 50.000	Up to 7,00	(7)	(7)	(7)	(7)
PG-2	120,000	Up to 12.00	(1)	(9)	(1)	(9)
PG-1	107,000	Up to 12.00	(1)	(9)	(1)	(9)

(1) No restrictions;

(2) Nighttime unberthing for departure depends on maximum draft of 11.50 m (37 feet), due to port access channel limitation;

(3) Nighttime unberthing for anchoring, only for ships with maximum draft of 15 m, depending on space in the Number 8 South anchorage;

(4) Only during ebb tide and berthing starboard side;

(5) Starboard berthing maneuvers allowed;

(6) Port side berthing maneuvers allowed;

(7) Maneuvers with a maximum LOA of 180 m and draft 7,00m plus half tide;(daylight)

(8) Maneuvers for unloaded ships up to 18,000 DWT at the moment of berthing allowed; and

(9) Maneuvers prohibited.

The maximum trim allowed for berthed vessels during operations is 3 m, within the maximum drafts permitted for each of the berths. Other points which may limit the maximum draft for berthing at the Terminal are in the access channel and are described in charts and other information in item 3.

5.4.3 Maximum dimensions

As a general rule there is no limit on length (except at PS-2, LNG pier, IR and Barge Pier) or on beam at the piers, if the measurements usually found in ships and the maximum speed permitted for the berths of the TABG are respected. Exceptions must be communicated in advance so that the necessary restrictions can be calculated, particularly for berthing maneuvers.

5.5 ENVIRONMENTAL FACTORS

The TABG region has high relative humidity, varying between 50% to 60% in the evenings and remaining around 81% for the most part of the year.

The atmospheric pressure varies around 1.015 mb with good weather and local temper- ature ranges from 13°C to 25°C in the months of June and July, and between 30°C and 42°C in the months of December and January. The water temperatures in general vary seasonally and spatially. At the surface, the average water temperature is 24.2 +/- 2.6 °C, with range from 17 to 31 °C.

5.5.1 Prevailing winds

Local winds are quite regular. At night and early morning there is a NE to NW breeze until around noon, when it becomes still, after which winds from the S and SE start to blow until late afternoon, when moderate winds about 20 knots may occur.

The most frequent winds in the region of the Guanabara Bay are the NE (21%), S (17%) and N (14%). The S wind when associated with the arrival of cold fronts can reach 20Knots. An average of 13 front systems pass through the Guanabara Bay in the win- ter, with an average interval of 6 days, and there are an average of 46 cold fronts per year. Winds during cold fronts are faster than 20 knots towards S SW. Cold fronts last an average of 12 to 24 h.

On average, wind speed during the year is 10 knots, but gusts of over 30 knots can occur in the hottest months from December to March, normally from the SW and NW. The strongest winds are more common between June and September and are associated with front systems and cold fronts.

For the Main Pier (PP), Secondary Pier (PS) and Ilha Redonda Pier (IR) and Ilha Comprida Píer, the Terminal adopts a limit of 25 knots for the interruption of the operation, depending on the wind direction and whether or not there is a ship at the opposite berth, whichever the case may be; and 30 knots or 15 m/s as the limit for decoupling the loading arms and retrieval of the gangway. The assessment of the situation shall be made by the pier operator together with the GIAONT and the ship's captain.

For the LNG Pier (PG), the Terminal adopts a limit of 30 knots to stop the discharge pressure of LNG and CNG, and an assessment must be carried out by the pier operator and the GIAONT of wind conditions for any possible interruption, decoupling of load- ing arms and retrieval of the gangway.

* Unberthing, if necessary, shall be carried out safely and mutually agreed by the Terminal and vessel.

5.5.2 Waves and breakers

Because the Terminal is sheltered within the Guanabara Bay, it does not experience sig- nificant variations of waves or breakers. The waves at the terminal are influenced by the winds. On average, their height is less than 0.5 m, but during cold fronts they can reach 1 meter.

5.5.3 Rainfall

Average annual rainfall is 1075.8 mm, with a monthly average of 105 mm. The rainy period runs from November to March. There is no historical record of hail or snow in the region.

5.5.4 Thunderstorms

Thunderstorms are more frequent in spring and summer, in the late afternoon and early evening, accompanied by strong rain and gusty winds. The elements which contribute to their occurrence are cold fronts and high temperatures during the months November thru March.

5.5.5 Visibility

Visibility is generally good, but mists may occur early in the morning in the fall and winter. During summer there is sometimes a dry fog which may affect visibility, but it bursts quickly in the sun heat.

5.5.6 Tides and other currents

Marine currents pattern in Guanabara Bay are especially determined by the tidal range variation, the sea floor topological profile, and, to a lesser extent, the prevailing winds. The tidal currents are very efficient in renewing the water in the bay (around 10% of its volume) and vary from 1.6 m/s at its entrance (region of greater flow constriction) to 0.20 m/s further inside the bay. Its flood tide currents are faster than the ebb tides and the currents during spring tides are 3 to 4 times faster than during neap tides.

The currents are irregular but normally follow the tide direction. During flood tide the current flows approximately from S to N at the PP, PS, IR, ICOMP and LNG Pier. The current in this direction varies from 0.1 to 1.3 knots.

During ebb tide the current roughly takes a course contrary to that of the flood tide. The variation for this direction is from 0.1 to 1.5 knots.

Strong winds from the Northeast, South and Southwest influence the direction of the currents, which then follow the wind direction. There is no outstanding tidal current in the region.

5.5.7 Variation in sea level

The usual average tide amplitude in the Terminal is 1.10 m (4 feet), but during spring tides there may be greater variation, up to 1.60 m (5.2 feet).

The maximum drafts for berthing at the TABG were calculated according to the lowest tide. See also the draft limits in the table in sub-item 5.4.2.

5.5.8 Available Measurements

The Terminal has real-time information on the intensity and direction of winds and currents. When ships approach to berth, this information may be provided to the ship by the Terminal operator by VHF.

6

Terminal Description

6.1 GENERAL DESCRIPTION

The TABG consists of three separate piers: Main Pier, Secondary Pier and LNG Pier, each with two berths named respectively PP-1 / PP-2; PS-1 / PS-2; and PG-1 / PG-2. There is also two piers with a single berth on Ilha Redonda named IR and on Ilha Comprida named ICOMP, and a wharf on Ilha d'Água with 5 operating points named 1 to 5. Strategically located near the cities of Rio de Janeiro, Niterói, São Gonçalo and Duque de Caxias, the TABG is operated by Petrobras Transporte S.A. – Transpetro.

The Terminal operates with tankers, in general carrying chemical gases, liquefied petroleum gas, liquefied natural gas (LNG), crude oil and by-products, along with products oxygenated with alcohol and MTBE.

The administrative installations, operational control center, support and maintenance facilities, storage tanks, emergency response and environmental protection center, with their respective materials and equipment, are located on Ilha d'Água and Ilha Redonda.

All berths are interconnected by submarine and land pipelines to Ilha d'Água Terminal, Campos Elíseos Terminal and the Duque de Caxias Refinery (Reduc).

6.2 BERTH TECHNICAL INFORMATION

The table below presents the characteristics of the berths of the Guanabara Bay Marine Terminal – Port of Rio de Janeiro.

Berth	Type	Length* (m)*	Draft (m)***	Tide		Max. Free Board** (m)		LOA*** (máx.)	DWT (máx.)	Minimum length of the parallel side	Products Handled
				High	Low						
PP-1	Island	310	15.85	1.60	- 0.10	17.80		279,5	135.000	21.3	Petroleum, and by-products, alcohol and MTBE
PP-2	Island	310	12.80****	1.60	- 0.10	17.80		259	135.000	21.8	
PS-1	Island	300	12.00	1.60	- 0.10	17.80		186,4	55.000	40.0	
PS-2	Island	300	8.50	1.60	- 0.10	17.80		175	35.000	48.0	
IR	T-head	200	7.00	1.60	- 0.10	19.0		216	38.000	46.0	LPG and chemical gases
ICOMP	T-head	230	7.00	1.60	-0.10	20		180	50.000	44.00	
PB	L	80 and 115	5.80	1.60	- 0.10	–		115	5.000	–	Bunker
						Arm heights** (max.)	(mim.)				
PG-1	Island	365	12,00	1.60	- 0.10	25.95	14.25	315	120,000	50.0	LNG
PG-2	Island	365	12,00	1.60	- 0.10	23.90	15.68	300	107,000	80,0	LNG e CNG

* Refer to Item 5.4.2 – Draft Limit;

* *Working envelope of loading arms in relation to sea level (connected to the manifolds);

*** Draft 7,00m plus half tide and LOA 180m.

**** Calado 12,00 m mais 0,8 m de maré

6.3 BERTHING AND MOORING ARRANGEMENTS

The table below presents the tugboats, maximum approach speed and angle, mooring hooks/bollards and number of lines needed to moor ships.

Berth	Tugboats Number & BP				Approach (maximum)		Mooring Points		Mooring Lines		
	Berthing		Berthing								
	Nº	BP	Nº	BP	Speed (cm/seg)	Angle (°)	Bollards	Hooks Stern Lines	Bow and	Breast Lines	Spring Lines
PP-1	3/4	50	3/4	50	10	5º	–	12	4-3 *	3	2
PP-2	3/4	50	3/4	50	10	5º	–	12	3	3	2
PS-1	3/4	50	3/4	50	10	5º	–	20	–	6–4**	2
PS-2	2/3	50	2/3	50	10	5º	–	14	–	4	2
IR	3/3	35	2/3	45	10	5º	–	14	3	2	2-1 ***
IComP	3/3	35	2/3	45	10	5º	–	22	3	2	2-1***
PB	0/2	10	0/2	10	10	5º	12	–	2	1	2
PG-1	3#	40	3#	40	12	3º	–	28	2##	4	2
PG-2	3#	40	3#	40	12	3º	–	24	2##	4	2

The number of tugboats must correspond to a minimum of 120t of BP with at least 3 being Azimutal push/pull type or mobile Kort nozzle. A firefighting vessel should also be deployed during LNG carrier traffic in the Guanabara Bay.

For LNG Q-FLEX ships, it is required 3 (BOW and STERN) lines, with a total of 18 lines.

* For ships larger than 60,000 DWT, 4 synthetic fiber or 3 steel bow and stern lines are recommended;

** For ships above 35,000 DWT, 6 synthetic fiber or 5 steel breast lines are recommended (fore and aft);

*** In special cases, when ship length is larger than 200 m, 2 spring lines are recommended (fore and aft).

6.4 BERTH FEATURES FOR LOADING, UNLOADING AND BUNKERING

Main Pier Arms

Berth	Arm	Maker	Product	Diameter	Flow rate (m^3/h)	Pressure (kgf/cm^2)	Temperature (°C)	Anti-surge
PP-1	1	FMC	Petroleum	16"	3,150	10	60	Yes
	2	FMC	Petroleum	16"	3,150	10	60	Yes
	3	FMC	Dark	12"	1,350	10	100	Yes
	4	FMC	Light	10"	1,600	10	40	Yes
	5	FMC	Dark	12"	1,350	10	100	Yes
	6	FMC	Light	10"	1,600	10	40	Yes
PP2	1	FMC	Petroleum	16"	3,150	10	60	Yes
	2	FMC	Petroleum	16"	3,150	10	60	Yes
	3	FMC	Dark	12"	1,350	10	100	Yes
	4	FMC	Light	10"	1,600	10	40	Yes
	5	FMC	Dark	12"	1,350	10	100	Yes
	6	FMC	Light	10"	1,600	10	40	Yes

Working envelope of the Main Pier arms

- **Swivel = varies according to the connection scheme (consult the operating manual)**
- **Reach = 10 meters**
- **Maximum height = 17.80 meters**

Secondary Pier Arms

Berth	Arm	Maker	Product	Diameter	Flow rate (m^3/h)	Pressure (kgf/cm^2)	Temperature (°C)	Anti-surge
PP-1	1	FMC	Dark	12"	1,350	10	100	Yes
	2	FMC	Light	10"	1,600	10	40	Yes
	3	FMC	Light	10"	1,600	10	40	Yes
	4	FMC	Dark	12"	1,350	10	100	Yes
	5	FMC	Light	10"	1,600	10	40	Yes
PP2	1	FMC	Dark	12"	1,350	10	100	Yes
	2	FMC	Light	10"	1,600	10	40	Yes
	3	FMC	Light	10"	1,600	10	40	Yes
	4	FMC	Dark	12"	1,350	10	100	Yes
	5	FMC	Light	10"	1,600	10	40	Yes

Working envelope of the Secondary Pier arms

- Reach = 10 meters
- Swivel = varies according to the connection scheme (consult the operating manual)
- Maximum height = 17.80 meters

NOTE: ships must consider the initial positioning of the arms as a reference because it determines the most suitable radial envelope. Should any ship motion send the arms out of their working envelope, the Terminal shall take measures in order to maintain operational safety.

Ilha Redonda Pier Arms

Arm	Maker	Product	Diameter	Flow rate (m^3/h)	Pressure (kgf/cm^2)	Temperature (ºC)
BC-401	Emco Wheaton	GLP	10"	1.330	4,5	-48
BC-402	Emco Wheaton	Propane Butadiene	6"	500	15,0	+40

Working envelope of the Ilha Redonda Pier arms

- Swivel = 1,50 meters
- Maximum height = 13,92 meters
- Range = 11,50 m.

Ilha Comprida Arms

Arm	Maker	Product	Diameter	Flow rate (m^3/h)	Pressure (kgf/cm^2)	Temperature (ºC)
BC-6413451	FMC	LPG	10"	450(Pressurized) 2000(Refrigerated)	16,32	-45°/+40
BC-6413452	FMC	LPG	12"	450(Pressurized) 2586(Refrigerated)	16,32	-45°/+40

Working envelope of the Ilha Comprida Pier arms:

- Swivel = 1,60 m
- Maximum height = 14,20 m.
- Range = 11,50 m.

Barge Pier Arms

Arm	Maker	Product	Diameter	Flow rate (m^3/h)	Pressure (kgf/cm^2)	Temperature (°C)
1	E.W. Brasil	Diesel	04"	450	10	40
2	E.W. Brasil	M.F.	06"	450	10	80
3	E.W. Brasil	Diesel	04"	450	10	40
4	E.W. Brasil	M.F.	06"	450	10	80
5	E.W. Brasil	Diesel	04"	450	10	40

LNG Pier Arms

Berth	Arm	Maker	Product	Diameter	Flow rate (m^3/h)	Pressure (kgf/cm^2)	Temperature (°C)
PG-1	BC-001	Emco Wheaton	LNG	16"	5,000	5,0	-162
	BC-002	Emco Wheaton	LNG	16"	10,000**	0,13	-140
	BC-003	Emco Wheaton	LNG	16"	5,000	5,0	-162
PG-2	BC-004	Emco Wheaton	LNG	16"	5,000	5,0	-162
	BC-005	Emco Wheaton	LNG	16"	10,000**	0,2	-140
	BC-006	Emco Wheaton	LNG	16"	5,000	5,0	-162
	BC-007	Emco Wheaton	CNG	12"	*	58 to 100	5 to 50
	BC-008	Emco Wheaton	CNG	12"	*	58 to 100	5 to 50

* 25 MMm^3/d (20 C e 1atm) passing through a single arm in operation.

** Return flow of LNG vapor phase.

Working envelope of the LNG Pier arms

> LNG Arms of Berth PG-1:
Swivel = 3.5 meters / Maximum height = 25.95 meters

> LNG Arms of Berth PG-2:
Swivel = 3.5 meters / Maximum height = 23.90 meters

> CNG Arms of Berth PG-2:
Swivel = 3.5 meters / Maximum height = 24.50 meters

6.5 MANAGEMENT AND CONTROL

There is a room on each pier where operators prepare documentations, manage the communications and monitor the berthing and positioning of the ship as well as all other operations at the pier.

The Control Room of the Main, Secondary and Barge piers is located in the administrative building on the island Ilha d'Água. From this place an operator is responsible for controlling all the operations through the supervisory system.

The Control Room of Ilha Redonda Pier and Ilha Comprida Pier is located respectively in the administrative buildings on the island Ilha Redonda. From this place an operator is responsible for controlling the operations, besides preparing the documentation and managing the communications, as well as monitoring the berthing and positioning of the ship through the supervisory system.

The LNG Pier Control Room is located in the pier's operational building, where an operator is responsible for controlling all pier operations through the supervisory system, preparing the documentation, managing the communications and monitoring the berthing and positioning of the ship.

The primary means of communication between ship and Terminal after berthing is the UHF radio provided by the Terminal. The band differs according to the pier:

> Main Pier – Band 5A

> Secondary Pier – Band 4A

> Ilha Redonda Pier – Band 3A

> Ilha Comprida Pier – Band 1B

> LNG Pier – Band 11A .

The secondary means is VHF at the maritime frequency previously arranged and registered.

All maneuvers in the Terminal's berths are filmed by CCTV system, and all the radio conversations are recorded.

6.6 MAIN RISKS

The main risks regarding laytime of ships at the TABG berths are:

> When unprotected due to the absence of a ship in the pier's inner (west) berth, the ship moored in the outer (east) berth is rendered vulnerable by strong west-to-east currents, being subject to the risk of drifting off the fenders on the main pier (PP), secundary(PS) and LNG pier.

> Drifting may also occur at the outer berth due to strong southeast winds, regardless of the presence of a ship moored in the inner (west) berth.

In order to minimize the above mentioned risks, the ship crew must keep mooring lines under tension during the whole course of the operation.


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PROCEDURES

During laytime at the port, a number of actions are carried out to enable safe operation and minimize risks. Below are some necessary rules to ensure high-level organization and safety during operations.

7.1 BEFORE ARRIVAL

7.1.1 The Terminal reserves the right to refuse berthing or operation to any ship considered inadequate, that does not satisfy safety or berthing conditions and might cause any circumstance that puts the Terminal at risk. Terminal safety includes personnel, equipment and the environment.

7.1.2 Onboard repairs and ship cargo tank washing should be carried out preferably in the anchorage area or during voyage. To carry out these services on berthed ships, a prior authorization from the Terminal is required. In case there are any plans for washing tanks holding crude oil, the Terminal must be informed at the time of reporting the ETA and the ship must follow all the Isgott COW procedures.

7.13 Ships headed for the TABG facilities must indicate their ETA 72, 48 and 24 hours in advance, directly to the respective agent, by telex or telephone, or by PPR (Rio de Janeiro's Official Coastal Radio Station). The alteration or confirmation of

the ship's arrival must be communicated at least 12 hours beforehand. The ETA must always be reported using the UTC.

7.1.4 Any discharge of dirty ballast water, oil residue or oil itself into the sea is strictly prohibited. The Terminal firmly requests that all ship captains intending to operate in this Terminal observe the ocean pollution prevention rules Marpol/73 and amendments. Ships at fault with these rules shall incur heavy fines and indemnification in relation to the damages caused to people, property and the environment.

7.1.5 In accordance with the Solas 74/78 Convention and amendments, berthed ships must have an Inert Gas System (IGS) and their cargo tanks must be fully pressurized with inert gas with an O^2 concentration below 8% prior to loading start; this level must be maintained during the entire operation.

7.1.6 In order to optimize the LNG transfer, it is recommended that carrier arrives at terminal with vapor pressure in tanks not exceeding 80 mbar.

7.2 ARRIVAL

7.2.1 The port authorities are notified by the ship's agent of the arrival and estimated time of mooring. In general, the authorities board the ship after berthing.

7.2.2 Upon advance order, the Terminal may supply ships with any type of fuel, such as bunker C, MGO, MDO, MF, with different viscosities, at international prices, during the operation (except at Ilha Redonda, Ilha Comprida and the LNG pier).

Bunker orders must be placed no later than 72 hours before ship arrival via an agent at:

Petrobras Bunkering
Tel.:(21) 2166-7393
A.O.H.: (21) 97210-6272
Fax: (21) 2166-9221
E-mail: bunker@petrobras.com.br

7.2.3 Marine lubricants orders must be placed no later than three days before arrival (foreign ships) and five days (national ships) at:

BR-GVMAR – Gerência de Vendas de Lubrificantes Marítimos
Rua General Canabarro, 500 / 14º andar – Ala A – Maracanã 20271-900 –
Rio de Janeiro – RJ
Tel.: (21) 3876-4265 (national ships) / (21) 3876-2515 (foreign ships)
Fax: (21) 2569-4223
E-mail: marbrax@br-petrobras.com.br (national ships) eduardov@br-petrobras.com.br (foreign ships)

7.2.4 Upon advance order along a local agent, water supply by barge, which shall be inspected by the GIAONT, may also be provided.

7.2.5 The Terminal may call the ship via marine radio channel 16 to obtain any information listed in Appendix H to this document.

7.2.6 Below is a list of the port's important telephone numbers:

Emergency	
Fire Department	193
Police	190
Ambulance	192
Civil Defense	199
Useful Numbers (country code/area code 55 21)	
Center for Valorization of Life 2590-2121	2590-2121
Police Tip Line	2253-1177
Forensic Medicine Institute	3399-3853 / 2242-1832
Intoxication	2573-3244
State Civil Police	2240-1060
Federal Police (DEPOM)	2291-2142
Salvaero (Air Rescue)	2220-0515
Salvamar (Sea Rescue)	2253-6572
Lost and Found (8 am to 5 pm)	2563-1159
International Airport (24 hours)	3398-5050 / 0800-999099
Santos Dumont Airport	0800-244646
Alcoholics Anonymous	2253-9283 / 2233-4813 / 2240-6738
Harbor Master	2104-5480 / 2233-8412
INEA (State Institute of the Environment) 10 am to 4:30 pm	2334-9444 / 2334-5862
Sanitary Inspection (8 am to 5 pm)	2503-2280 / 2503-2281

Sanitary Inspection (5 pm to 6 am on working days)	2242-3105
IBAMA (National Environmental Agency)	0800-618080 / 3077-4290
Narcotics Anonymous	2533-5015
Riotur – Rio de Janeiro City Tourist Board (9 am to 6 pm)	2542-8080
Rodoviária Novo Rio (Bus Station)	2291-5151
ANP (National Agency of Petroleum, Natural Gas and Biofuels)	3804-0900
Rio de Janeiro City Hall	2503-2812

7.3 BERTHING

7.3.1 Automated Identification System (AIS)

The TABG relies on a ship maneuver monitoring system based on the Automated Identification System (AIS).

The AIS must be on when the ship is navigating, anchored and during berthing or unberthing.

In the case of terminals where there might be flammable vapors, the ISGOTT recommends that the equipment must be kept inoperative or alternatively grounded during loading/unloading operations so as to safeguard the data to be manually entered.

After berthing, the equipment must be turned off or grounded. After disconnection and before unberthing, this equipment must be turned on again so the Terminal may proceed monitoring the vessel.

7.3.2 Mooring System

The mooring lines must be watched at all times so as to keep the ship securely moored. All lines must be maintained under adequate tension during the operation. Except for the Barges Pier, the Terminal monitors all mooring lines tension. The ships must also keep the winch brakes set. Use of automatic tension winches is not permitted.

All mooring lines must be of the same type, size and material (fiber or wire). Use of mixed lines is not permitted.

Mixed lines are those in which the cables that carry out the same function are of different type, size and/or material.

Two cables must never be overlapped at the same winch.

The mooring lines must be arranged as symmetrically as possible in relation to the center of the ship.

The breast lines must be arranged as perpendicular as possible to the ship's longitudinal axis and passed as much as possible forward and aft.

The spring lines must be arranged as parallel as possible to the ship's longitudinal axis.

If fiber ends are used on wire lines, it is advisable that these ends should be of the same type, with a size 25% larger than the minimum breaking strength of the wire lines, as well as of the same material and length.

The horizontal angle of the bow and stern lines in relation to a breast line perpendicular to the ship's longitudinal axis may not exceed 45°.

7.3.3 Ship/Terminal Access

The piers at the TABG have telescope ladders for easy access to the berthed ships.

Crewmembers who may disembark to use the Terminal's facilities, in addition to following all the ISPS Code procedures, must wear closed shoes, long pants and sleeved shirts and may only have access to the demarcated area, where there will be a guard to take them to the motorboat boarding spot. The gangway on the other side of the ship, the one opposite to the berth side, must always be kept on deck while the ship remains berthed, for the safe- ty of the Terminal and the ship. That gangway may only be used in case of emergency.

7.3.4 Berthing Pre-communication

To optimize the process of ship assistance, which includes the deployment of a GIAONT inspector and other measures, the ship must contact the Terminal via VHF channel 16 as soon as it starts maneuvering towards the berth. The Terminal recommends that maneuvers heading to PS-2 be started at least 30 minutes before the tide changes from flood to ebb.

7.4 BEFORE CARGO TRANSFER

7.4.1 Any Terminal representative, whether an operator, PFSO, guard or GIAONT inspector, may board the ship at any time or remain onboard during her entire laytime to visually inspect the operations, on the deck or throughout the ship, and check if the ship continues to meet the conditions established in the Initial Chart and is compliant with applicable legislation, such as the ISPS Code.

7.4.2 The electrical insulation between the Terminal and the ship is through a flange insulator installed on the loading arms to ensure the safety of the connection in conformity with the recommendations by the Isgott.

7.4.3 Connection of loading hoses/arms

During berthing, the Terminal operator will remain on the loading arm manifolds to guide the pilot in the correct positioning of the ship according to the loading arm(s) to be used.

The ship must connect reduction pieces to match the diameter of the manifold and enable coupling of the loading arms being the conection not outside the drain pan and cause excessive strain on the vessel's manifold. The conection of the loading arms can only begin after confirming the vapour valve of the turning gear is closed.

After coupling of the loading arms, they are tested for leaks using the static pressure of the Terminal's column or nitrogen at Ilha Redonda, Ilha Comprida and the LNG Pier.

An onboard representative will follow the entire operation from a place near the ship's manifold.

7.4.4 The onboard measurements shall be performed by the ship's crew and inspected by the Terminal representatives and other inspectors. The material used must be duly grounded and the measurement accessories must be blast proof.

7.4.5 The operation shall only start after the initial chart has been filled out by the shore and onboard representatives and after clearance of the safety inspection by the GIAONT, whichever occurs last.

7.4.6 The Ship-Shore Checklist (ISGOTT 6º edition) is verified and filled out by a GIAONT inspector during the initial clearance of the ship. After this safety inspec-

tion, if there are any pending nonconformities which may not be resolved by the crew, the ship shall not be authorized to start the operation and may or may not be asked to unberth. The ship shall be held liable of any implications and costs incurred from nonconformities and the Notice of Readiness shall be canceled, if already issued.

7.4.7 Boiler tube cleaning and boiler adjustments are prohibited at berth since sparks may escape from the stack and jeopardize both the ship and the Terminal facilities. Failure to comply with this rule shall incur one or more of the following penalties:

> Interruption of the operations and immediate communication to the relevant authori- ties;
> Fine imposed by the relevant authorities;
> Mandatory unberthing from the pier;
> Communication of the infraction to the ship owner with issuance of a Letter of Protest; and
> Ship at failure shall be liable to any contractual fines, lost time and any other expens- es in relation to this infraction.

7.4.8 It is strictly prohibited for unapproved and unauthorized small crafts to berth alongside or stand nearby berthed ships. Only Terminal service vessels and other authorized craft may stay nearby or alongside berthed ships, as long as these satisfy all safety conditions. Infraction of this rule shall be communicated to the relevant authority and shall incur the immediate interruption of operations and the mandatory unberthing of the ship from the pier.

7.4.9 Berthed ships may not operate their propellers while connected to the arms. Only the turning gear may be used after the Terminal operator has been duly notified. In this case, the propeller must be used slowly so as to ensure complete safety. Ships shall be held accountable for any damages resulting from these procedures.

The above instruction must also be observed during maneuvers since the use of tugboats among ship hull and the walkways may damage the pier oil boom and walkways and the shutdown of all operations. In this case, the costs relating to the shutdown and repairing of the barriers and walkways shall be incurred by the ship owner/operator at failure.

7.5 Cargo Transfer

7.5.1 The Terminal controls the variables of the internal pressure, flow and temperature by means of a centralized supervision system. The quantities handled and operating flow rates must be checked hourly by the ship and reported to the Terminal, when requested, so they can be compared with the limits set by the Terminal's procedures. Any change in the operating conditions must be communicated in advance and documented by the parties. Closing any valves which may cause counter-pressure in the system is expressly prohibited.

7.5.2 Ships that operate with LPG and chemical gases at Ilha Redonda and Ilha Comprida may not use booster pumps in operations involving pumping in series with the Terminal's pumps. The tanks of refrigerated ships must have pressure compatible with that of the storage facilities of the Terminal (50g/cm^2) to avoid pressure increase in the Terminal's tanks due to product expansion.

7.5.3 The ballast pipelines and tanks must be kept apart from the other onboard systems. The ballast to be discharged into the sea must be completely free of oil, oily residue or any other substance capable of causing pollution.

7.5.4 The Transpetro schedule, which works together with the Petrobras logistics, makes tanks available at the Terminal to receive the slop from ships. When a ship needs to discharge slop in Rio de Janeiro, she must report, through her agent, the quantity to be discharged and its composition so an evaluation of the stocks at the Terminal can be made and the subsequent authorization for the discharge may be granted in case there is room in the onshore tanks.

7.5.5 Normally, tank cleaning is not allowed at berth. However, COW operations may be allowed, depending on prior authorization so these operations may be carried out within the scheduled ship's laytime in the port and a GIAONT inspector may be available to ensure that the operations are performed safely and in accordance with the ISGOTT recommendations.

7.5.6 Repair or maintenance work of any sort which involves risk of sparks or other means of ignition while the ship is berthed at the Terminal's piers is not permitted. In extreme cases, all of the safety rules must be observed and followed. Repairs which might affect the pier's facilities or may cause any restriction to the ship during laytime must be authorized in advance by the Terminal.

7.5.7 Intermediate inspections, according to Part 8 and 9 of ISGOTT 6th, shall

be con- ducted by GIAONT during the ship's operations, preferably every six hours, according to the availability and priorities of the ongoing operations.

7.5.8 The loading or unloading of a ship must be interrupted in any situation that presents danger to the ship or the Terminal.

7.5.9 On LNG Pier operations, the internal drainages (Gas Burning), prior to loading arms disconnection, should be directed to the FRSU ships.

The operations may be suspended temporarily during rainstorms, thunderstorms and/or strong winds, at the discretion of the ship's captain or by request of the Terminal.

The wind limits adopted by the Terminal for interruption and decoupling are described in item 5.5 (Environmental Conditions).

The operation will be interrupted immediately in the event of failure to comply with any of the rules and standards on safety universally adopted in seaborne transport of petroleum, and the party at failure shall be liable to the respective costs, upon issuance of the proper protest.

The ship's captain has the right to interrupt the operation by notifying the pier operators in advance, if he has reason to believe that the onshore activities do not ensure safety.

If an emergency situation occurs while the ship is berthed, the actions shown in the pier's Emergency Response Flowchart (Appendix 1) must be taken. The contacts for each type of emergency are described in the management's Emergency Plan and the main telephone numbers may be found in sub-item 9.

7.6 CARGO MEASUREMENT AND DOCUMENTATION

7.6.1 After the operation has been finished, the drainage of the loading arms used therein shall initiate. The operators shall arrange for this drainage to be disposed in the pier's closed system. The ship representative shall be in charge of the drainage of the onboard segment.

7.6.2 The final onboard measurements shall be made by the ship personnel and monitored by the Terminal representatives and other inspectors. The utilized material must be duly grounded and the measurement devices must be blast proof.

The final clearance of the ship shall occur after checking the product quantities handled and the completion of the laytime documentation.

7.7 DESATRACAÇÃO E SAÍDA DO PORTO

7.7.1 During unberthing and departure maneuvers, the limits of the channel, the hazards listed in sub-item 5.3 and related items must be observed

7.7.2 The port's pilot normally disembarks at the same point of embarkation described in sub-item 5.3.5, where a motorboat shall be waiting.

7.8 COMPLIANCE WITH THE ISPS CODE

The Marine terminals of Guanabara Bay has implemented safety measures to protect ships and port facilities, as required by the International Maritime Organization (IMO), by adopting the International Ship and Port Facility (ISPS) Code.

If necessary, these protection measures may be initiated by the ship through the Terminal's port security supervisor (PFSO – Port Facility Security Officer) or via VHF radio, channels 16, 9 or 11.

Should there be a need, these protection measures can be initiated by the ship, through the Terminal's port security supervisor (PFSO) or via VHF radio, call channels 16or by the UHF radio provided by terminal.

The Guanabara Bay Marine Terminals normally operates at security level 1.

For more information, the Terminal's port facility security officer, as qualified in accordance with the requirements by the IMO, may be contacted at:

Tel.: (21) 3211-2595

8

Port / Anchorage Organization

8.1 PORT CONTROL OR VTS

All ships navigating within Guanabara Bay must at all times be tuned to the international call signal (prefix) VHF channel 16 and inform about their motion in the port area, providing the following data to station PWZ-88, via VHF:

Arrival	Departure	Inside Guanabara Bay
Ship Name	Ship Name	Ship Name
Flag	Flag	Flag
Indication (prefix)	Indication (prefix)	Indication (prefix)
Type of ship	Type of ship	Current position
Cargo	Cargo	Next position
Last port	Next port	Cargo aboard
Place of berthing or anchoring	ETA	–
Estimated time of departure	Speed	–

Before the ship leaves the port, the exit pass shall be obtained from the port authorities by the ship's agent.

8.2 MARITIME AUTHORITY

8.2.1 The maritime authority to which the Terminal is subordinated is the Rio de Janeiro's Harbormaster (Capitania dos Portos do Rio de Janeiro).

8.2.2 The Rio de Janeiro's Harbour Master determines that the port authorities may visit the ships both on arrival and after berthing, depending on availability and at the discretion of the relevant authorities. When the visit is made in the anchorage area, anchorage #1 must be used and its maximum time is up to 6 hours.

The ship's agency is responsible for the information about the vessel.

8.2.3 The official limits of the port are described in sub-item 5.3.3.

The Capitania dos Portos is the maritime authority within the limits of the Port of Rio de Janeiro and is responsible for determining the actions and for citing those accountable for any incident which might occur within the port's limits.

8.3 PILOTAGE

8.3.1 Pilotage is mandatory for all ship maneuvers, starting from the embarkation

8.3.2 The pilotage organizations that operate in the Port of Rio de Janeiro may be freely chosen by the user. They are:

PRATICAGEM RIO DE JANEIRO
Av. Rio Branco, 1 – Sala: 1308 – Centro – Rio de Janeiro - RJ –
Zip Code: 20090-907
Tel.: (21) 2516-1416 / 3553-0525
Site: www.praticagem-rj.com.br E-mail: atalaiario@praticagem-rj.org.b

NEW PILOTS LTDA
Av. Rio Branco, 1 – sala 811 – Centro – Rio de Janeiro – RJ
Zip Code: 20090-907
Tel.: (21) 3514-7860
Site: www.newpilots.com.br
E-mail: secretaria@newpilotsrj.com.br

RJ PILOTS
Av. Rio Branco, 04 Salas, 305/306 – Centro – Rio de Janeiro – RJ
CEP: 20090-000
Tel.: (21) 2233-4020 / Fax: (21) 22831352
Site: www.rjpilots.com.br
E-mail: financeiro@praticosdoriodejaneiro.com.br

SINDIPILOTS – SERVIÇOS DE PRATICAGEM LTDA
Av. Rio Branco, 45 – 25º andar – Centro – Rio de Janeiro- RJ –
Zip Code: 20090-908
Tel. / Fax: (21) 2516 2340 / 2233 3362 / 2263 822

RIO JAN PRÁTICOS LTDA.
Avenida Rio Branco, 04 - Sala 1402 – Centro – Rio de Janeiro – RJ –
Zip Code: 20090-003
Tel.: (21) 3553-6626 / Fax: (21) 3553-6623
E-mail: faturamento@riojan.com.br

PRÁTICOS DO RIO LTDA.
Avenida Gen. Guedes Fontoura, 1000 - Cob 01 – Barra da Tijuca –
Rio de Janeiro – RJ
CEP: 22621-245
Zip Code.: (21) 2516-1336/2233-1562
E-mail: faturamento@riojan.com.br

PRATICAGEM TREINAMAR
Av. Atlântica , 822/801 - Copacabana – Rio de Janeiro – RJ
Zip Code: 22010-000
Tel.: (21) 3281-1210 Fax: (21) 3281-121

8.3.3 Pilotage service shall be requested by the ship's agent in all situations. In cases of emergency, the pilot shall board the ship as early as possible, according to availability.

8.4 TUGBOATS AND OTHER MARITIME SERVICES

8.4.1 List of available tugboats in the anchorage area and/or Terminal

Operator	Name	Propellers	Bollard-Pull	Year
Camorim	trovão	2	16,33	1961
Camorim	Ciclone	3	43	2004
Camorim	tempestade	3	43	2004
Camorim	tormenta	3	44,4	2005
Camorim	diamante	2	60,02	2008
Camorim	brilhante	2	6543	2008
Camorim	C Perola	2	49,12	2010
Camorim	C opala	2	50,03	2009
Camorim	starnav orion	2	63	2010
Camorim	starnav Pegasus	2	63,96	2010
Camorim	starnav sirius	2	61,40	2010
Camorim	starnav aris	2	67,63	2014
Camorim	C vendaval	3	50	2006
Camorim	C Neblina	3	80,04	2009
Camorim	Starnav Antares	2	71,03	2009
Camorim	Starnav Aldebaran	2	62,88	2013
Camorim	Starnav Cetus	2	70,39	2018
Camorim	C Cristal	2	60,20	2010
Camorim	Starnav Sagitarius	2	63,12	2012
Camorim	Starnav Alya	2	83,30	2019

TABG has a tug company under exclusive contract.For tugs from other company,- the Agent must check if tugs are approved by GIAONT

8.4.2 Other relevant maritime services in the port

Divers

Company	Telephone	Contact Person	Capacity for immediate mobilization
Ponta Leste	2436-4506 / 2436-4600	Engº Antônio Carlos	2 teams
Oceânica	2290-1288/2564-4231	Mr. Ivan	1 team
Engepron	2490-1835/9954-8355	Mr. Ari	1 team
Dratec	2233-4726/2233-8742	Office	1 team
Pison	2773-3087	Mr. Isaías	1 team

Maritime Transport

Company	Numbers (55 21)	Contact Person	Capacity for immediate mobilization
Antônio Carlos	2620-6363 / 9769-3824	Mr. Marcos / Rogério	2 conventional motorboats 3 speedboats
Ponta do Mar	2621-8270/ 9719-7338	Mr. Paulo	5 conventional boats 2 speedboats
Chamon	2719-0062/9603-18785	Mr. Ricardo	5 conventional boats 1 barge
Martin Leme	2717-3611/9919-5408	Mr. Luís Paes	2 barges 1 tugboat
Transvigo	2253-3115/9945-8815	Mr. Adilson	2 conventional motorboats 3 speedboats

Ferry Boats

Camorim	2233-3346/9408-8541	Mr. Nunes	3 barges 5 tugboats

Supporting motorboats:

Supporting motorboats for the supply of maintenance items and food or trash removal shall be ordered by the ship's agent and must obtain prior clearance from the GIAONT. Any craft, which has not been inspected, shall not be authorized to berth anywhere in the Terminal or alongside operating ships.

8.5 OTHER OIL/GAS TERMINALS

There is a pier for LPG/chemicals gases named Braskem.

8.6 OTHER MAIN USERS

The Transpetro's Terminal is for exclusive use; it does not compete with the port's business.

9

Emergency Planning and Reponse

9.1 EMERGENCY CONTACTS

The table below indicates essential contacts, with telephone and fax numbers, as well as radio channels/frequencies.

Organization	Working Schedule	Identification Acronym	Telephone (55 21)	Fax (55 21)	Rádio VHF/UHF
Harbormaster (Capitania dos Portos)	24 hours	Captaincy	2516-2341	2104-5319	VHF 16
Main Pier	24 hours	PP	3211-2869	2467-9914	UHF 5A
Secondary Pier	24 hours	PS	3211-2862	2467-9904	UHF 4A
D´água Island	24 hours	P4	3211-2857	2467-9994	UHF 1A
Redonda Island	24 hours	Redonda island	3211-2574	2467-9529	UHF 3A
Comprida Island	24 hours	Comprida Island	3211-2509	2467-9529	UHF 1B
LNG Pier	24 hours	PG	3211-2811	2467-9529	UHF 11A
GIAONT (Safety Inspector)	24 hours	GIAONT official or	3211-2886	-	VHF 16
Coordination	8 am to 4 pm	GIAONT	3211-2886	-	-
Federal Police	24 hours	DEPOM	2240-2949	-	VHF 16
State Police	24 hours	-	190	-	-
Fire Department	24 hours	-	193	-	-
Salvamar (Sea Rescue)	24 hours	Salvamar	2104-6056	-	-

Civil Defense	24 hours	-	199	2576-8446	-
INEA (State Institute of Environment)	10 am to 4:30 pm	-	2332-4604	-	-
IBAMA (National Environmental Agency)	24 hours	-	0800-618080	2506-1820	-

9.2 ENVIRONMENTALLY SENSITIVE AREAS

Responsible parties for dealing with possible emergencies involving craft approaching to and at the Terminal:

9.3 GENERAL DESCRIPTION OF THE EMERGENCY RESPONSE STRUCTURE

Responsible parties for dealing with possible emergencies involving craft approaching to and at the Terminal:

Incidents within the TABG Port/Terminal Area

Type of Incident	Organization Responsible	Other Organizations Involved			
Collision in the channel	Harbormaster	Civil Defense	Transpetro	–	–
Vessel aground	Harbormastert	Civil Defense	Transpetro	–	–
Collision at the Berth	Harbormaster	Transpetro	Civil Defense	–	–
Sinking Vessel	Harbormaster	Civil Defense	Fire Department	Transpetro	–
Onboard Fire	Ship	Transpetro	Fire Department	Civil Defense	Harbormaster
Fire at the berth	Transpetro	Fire Department	Civil Defense	Harbormaster	–
Pollution	Transpetro or ship	Port Authority	INEA	IBAMA	–

9.4 EMERGENCY PLANS

9.4.1 The Emergency Plan is the TABG's plan to respond to emergencies in all its facilities. It is available in every operational area, on bulletin boards located at the entrances to the operational and maintenance areas and administrative buildings.

The local personnel in charge of the QHSE (Quality, Health, Safety, Environment) shall be responsible for the update of the Emergency Plan.

9.4.2 Berthed ships must carry:

A pollution prevention kit – composed of sawdust, rags, shovels, buckets, transfer pumps, etc. – must be kept ready to use in case of an oil spill. Supplementary precautions shall be taken to prevent oil pollution in the sea water.

The TABG has an Emergency Response Center (Centro de Resposta a Emergências - CRE), equipped with modern equipment and featuring a number of fast responses to be deployed in case of an accidental pollution. Intensive training sessions and drills are conducted to qualify the Terminal employees to act according to the emergency plan. The CRE is situated at a strategic point and permits rapid response to emergencies. Its warehouse has containment barriers, oil collectors and other crucial equipments and working materials. The working, supporting, tanker and collection vessels are berthed at the dry cargo loading dock in state of readiness at all times in Ilha D'Água Terminal.

Two platforms are installed on PP and PS with 200 m of containment barriers each, located at strategic points for immediate deployment in case of sea pollution during ship operations. Two vessels, each with 150 m of containment barriers, are near the berthed vessels for immediate response. Two other smaller and faster crafts are located nearby for inspections and help deploy the containment barriers.

9.4.3 TABG has a working arrangement with a medical assistance firm that has an ambulance equipped to respond to emergencies at the Terminal. Ample medical and hospital resources, if requested, may be provided by local private hospitals. In case of a health emergency (serious illness or accident), the ship's captain may request Terminal assistance via VHF radio or telephone. Expenses incurring from these assis- tances shall be met by the ship.

9.5 PUBLIC EMERGENCY RESPONSE RESOURCES

At the Port of Rio de Janeiro, once the Emergency Plan has been activated, Transpetro – through the TABG and other operational units – has the resources which may be used to mitigate sea pollution situations. For other emergencies, public organizations offer the relevant resources. There are other companies which also have emergency response resources and should be contacted through the local agent.

9.5.1 Local Emergency Resources

The Fire Department, the Rio de Janeiro's Civil Defense, the police (civil, military, and federal) and hospitals have their respective resources to respond to emergencies and may be deployed according to the table of sub-item 9.1.

9.5.2 Mutual Assistance Plans

The institutions listed below participate in the Guanabara Bay Emergency Plan (*Plano de Emergência da Baía de Guanabara* – PEBG) and its respective resources are avail- able as previously agreed in the referred plan.

Official Entities
INEA (State Institute of Environment) State Civil Defense
City Civil Defense
Capitania dos Portos do Estado do Rio de Janeiro – State of Rio de Janeiro's

Harbormaster
Companhia Municipal de Limpeza Urbana (Comlurb) – City Sanitation Company
Town Halls of the Municipalities located around the Guanabara Bay

Navy Fuel Depot
Directorate of Ports and Coasts (DPC)
Civil Defense of the municipalities of Duque de Caxias, Magé and São Gonçalo
City Sanitation Company of the municipalities of Duque de Caxias, Magé and São Gonçalo

Participating Companies
Petrobras/Transpetro /TABG Petrobras/Transpetro/Fronape Exxon Química Ltda.
Shell
Manguinhos Refinery Metalnave S.A. Hidroclean
Esso
Petrobras Distribuidora S.A. Texaco

Petroflex Ethyl Sermapi
Navegação São Miguel
Companhia Docas do Rio de Janeiro
Ipiranga
Control (Commerce and Transport)

9.6 RESPONSE TO OIL AND CHEMICAL PRODUCT SPILLS

The Local Emergency Plan aims to structure emergency response actions in a way that operation continuity may be preserved while safeguarding the integrity of the TABG and third parties and protecting the environment and human health.

9.6.1 Response Capacity of the Terminal

The Terminal, through the Emergency Response Center (CRE), is prepared to fight Level 1 oil spills.

The CRE is equipped with containment barriers, workboats, motorboats and oil collec- tion equipment, besides trained personnel who are on call 24 hours a day at the Terminal's facilities.

The list of equipment available is very large, but the most important items are listed below:

- 2 workboats
- 2 Egmopol oil collecting boats
- 17 km of floating containment booms
- 16 km of sorbent containment booms
- 3 Skimrolls (Disk-shaped oil collecting devices)

9.6.2 Response Capacity of the Environmental Entity

The Rio de Janeiro State Environmental Entity does not have the resources to fight oil spills in the sea.

9.6.3 Resources Available Under the Mutual Aid Plans of Other Terminals

In Guanabara Bay, the companies which take part in the Guanabara Bay Emergency Plan (PEBG) also provide resources to fight oil spills. These resources range from fighting and logistic equipment to field personnel.

9.6.4 Level 2 Response

In the event of a Level 2 spill, Transpetro has a working arrangement with the Environmental Defense Centers (CDA) located at the Duque de Caxias Refinery and Ilha de Mocanguê. These centers have the necessary equipment and personnel to fight spills this size.

The CDA is equipped with oil-collecting boats, ferryboats, chemical surfactants, biore- mediation agents and up to 20 thousand linear meters of oil containment and absorption barriers which may be quickly deployed to respond to emergencies. On average, each CDA is operated by 20 trained professionals who, if needed, may coordinate up to 1,000 people in a single operation.

9.6.5 Level 3 Response

In the event of a Level 3 spill, Transpetro has a working arrangement with the other Environmental Defense Centers located along the Brazilian coast. These centers may provide a much larger quantity of necessary equipment and personnel to fight spills this size.

9.7 RESPONSE TO OTHER LARGE-SCALE EMERGENCIES

The Emergency Plan of the TABG lists the actions and parties responsible for responding to each type of emergency event which may occur in its unit, pipelines, or crafts and may involve third parties. For events which have not been foreseen in this document, Transpetro/Petrobras shall provide all the national and international resources within theirreach.

The table below gives the telephone numbers of all the Environmental Defense Centers with which Transpetro has working arrangements:

Environmental Defense Centers

Location	24 h Support
Amazônia	(55 92) 3616-4128
Maranhão	(55 98) 3217-3300
Rio Grande do Norte	(55 84) 3235-5555
Bahia	(55 71) 3642-3344
Centro-Oeste (Midwest Region)	(55 62) 3206-8743
Bacia de Campos	(55 22) 2773- 6411
Rio de Janeiro	(55 21) 2677- 2002
São Paulo	(55 11) 6460-5812
Sul (South Region)	(55 47) 3341-3590

10

CONTACT

10.1 TERMINAL

D´Água Island

Place	Contact	Telephone (55 21)	VHF/UHF Channels	
			Call	Conversation
Main Pier	Operator	3211-2869	16	10-14-17
Secondary Pier	Operator	3211-2862	16	10-14-17
Barge Pier	Operator	3211-2876	16	10-14-17
D´Água Island Control Room	Operator	3211-2858	16	10-14-17
Shift Supervisor	Supervisor	3211-2857	16	10-14-17
Safety (HSE)	Safety Officer	3211-2825	–	Shore radio 16
Facilities Security	Security Inspector	3211-2522	–	Shore radio 16

Redonda Island

Place	Contact	Telephone (55 21)	VHF/UHF Channels	
			Call	Conversation
Pier	Operator	3211 2569	16	10-14-17
Redonda Island Control Room	Operator	3211 2554 3211 2555	16	10-14-17
Sala de Controle Ilha Comprida	Operator	3211 2554 3211 2555	16	10-14-17
Shift Supervisor	Supervisor	3211 2574	–	Shore radio03
Safety (HSE))	Safety Officer	3211 2571	–	Shore radio 16
Facilities Security	Security Inspector	3211 2580	–	Shore 06
LNG Pier	Operator	3211 2811 3211 2816	16	10-14-17

10.2 PORT SERVICES

Redonda Island

Organization	Contact	Telephone (55 21)	Fax (55 21)	E-mail	VHF/UHF Channels	
					Call	Conversation
Harbormaster	Officer on duty	2197-2554 2233-8412	2104-5319	www.cprj.com.br	16	Todos
Pilotage	Agent	3553-0525	2516-0054	atalaiario@praticagem-rj.org	16	12
Tugboats	Agency	According to Sub-item 10.3	Sub-item 10.3	–	16	13

10.3 SELECTED SHIPPING AGENTS AND SUPPLIERS

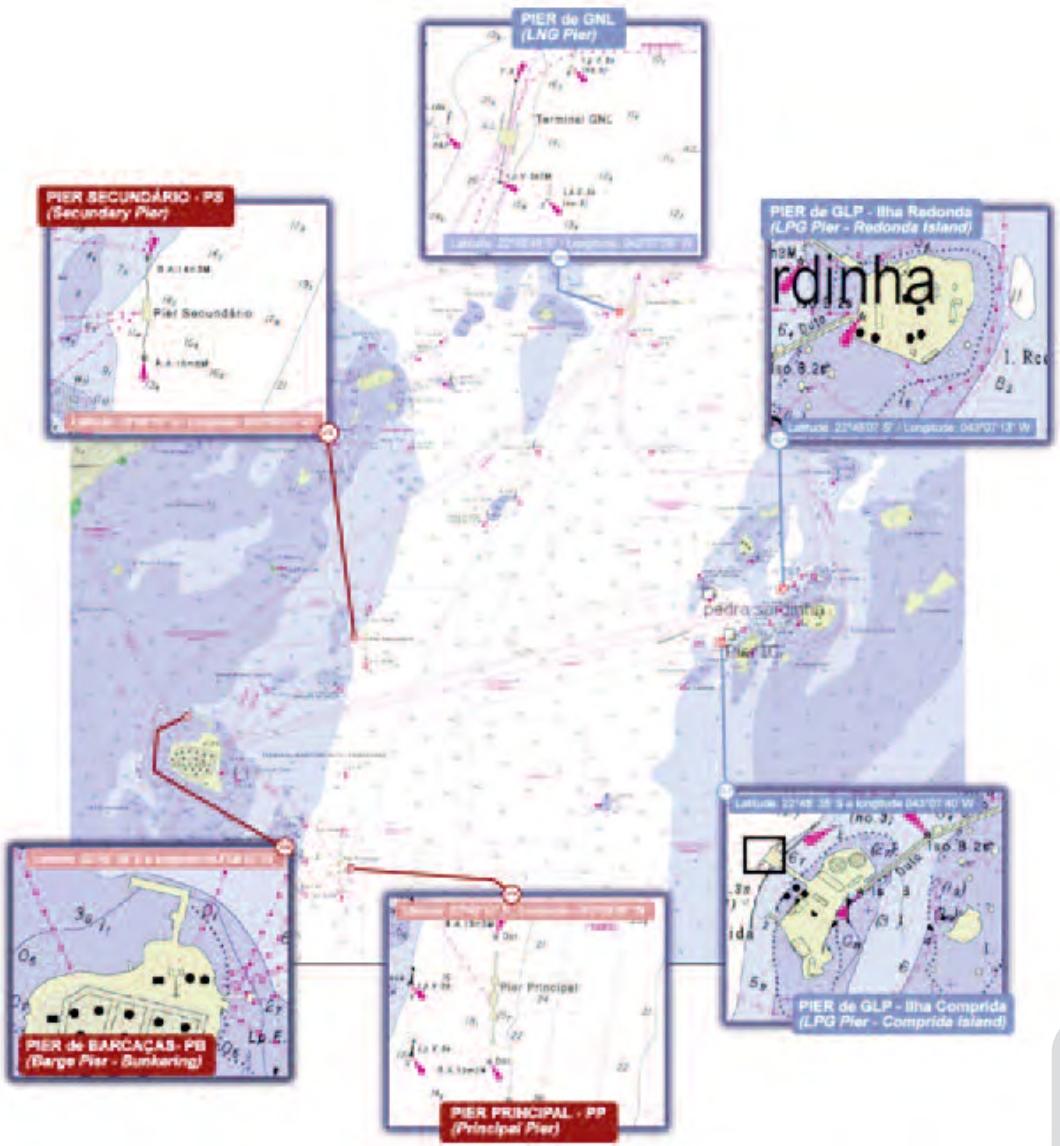
Company	Business	Telephone (55 21)	E-mail	VHF/UHF Channels	
				Call	Conversation
Lachmann	Agent	3849-5700	control@lachmann.com.br	16	All
Pennant	Agent	2123-1500	agency@pennant.com.br	16	All
Triaina	Agent	2518-1201	triainario@triaina.com.br	16	All
ISS Marine	Agent	3622-5756	issrio@iss.shipping.com	–	–
Oceanus	Agent	2213-8761	tramp.rio@oceanus.com.br	–	–
Wilson Sons	Agent	2223-9950	operj@wilsonsons.com.br	16	13
Buarque	Agent	2221-2210	buarque@buarque.com.br	–	–
GAC	Agent	2233-8099	shipping.brazil@gac.com	16	All

10.4 LOCAL AUTHORITIES, STATE AND NATIONAL AGENCIES

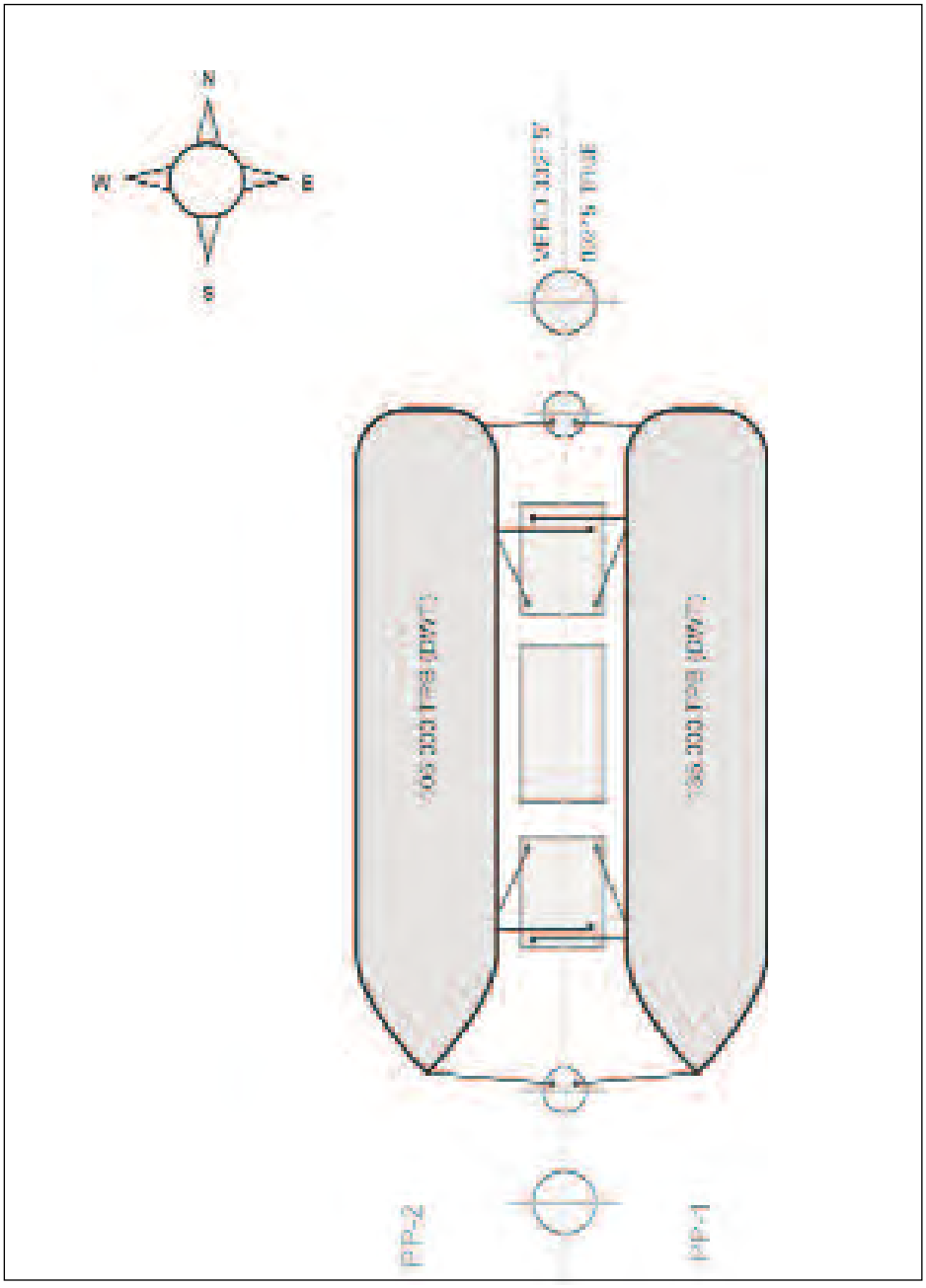
Organization	Working Schedule	Identification Acronym	Telephone (55 21)	Fax (55 21)	VHF/UHF Radio
Federal Police	24 hours	DEPOM	2240-1060	–	16
State Police	24 hours	–	190	–	–
Fire Department	24 hours	–	193	–	–
Salvamar (Sea Rescue)	24 hours	Salvamar	2104-6056	–	–
Civil Defense	24 hours	–	199	2576-8446	–
INEA	10 am to 4:30 pm	–	2234-7910	–	–
Ibama (National Environmental Agency	24 hours	–	0800-618080	2506-1820	–

TABG

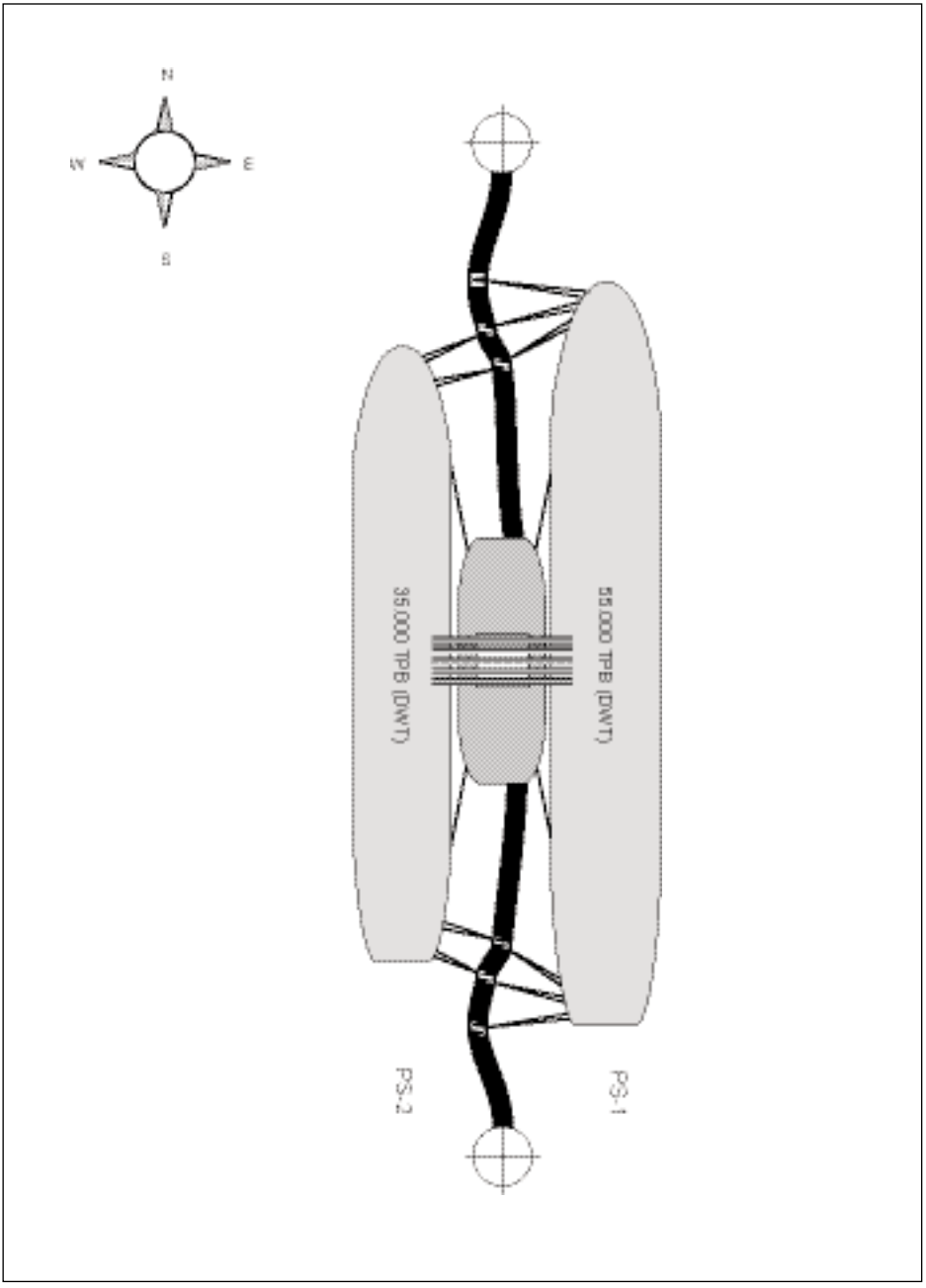
A - TABG berths location



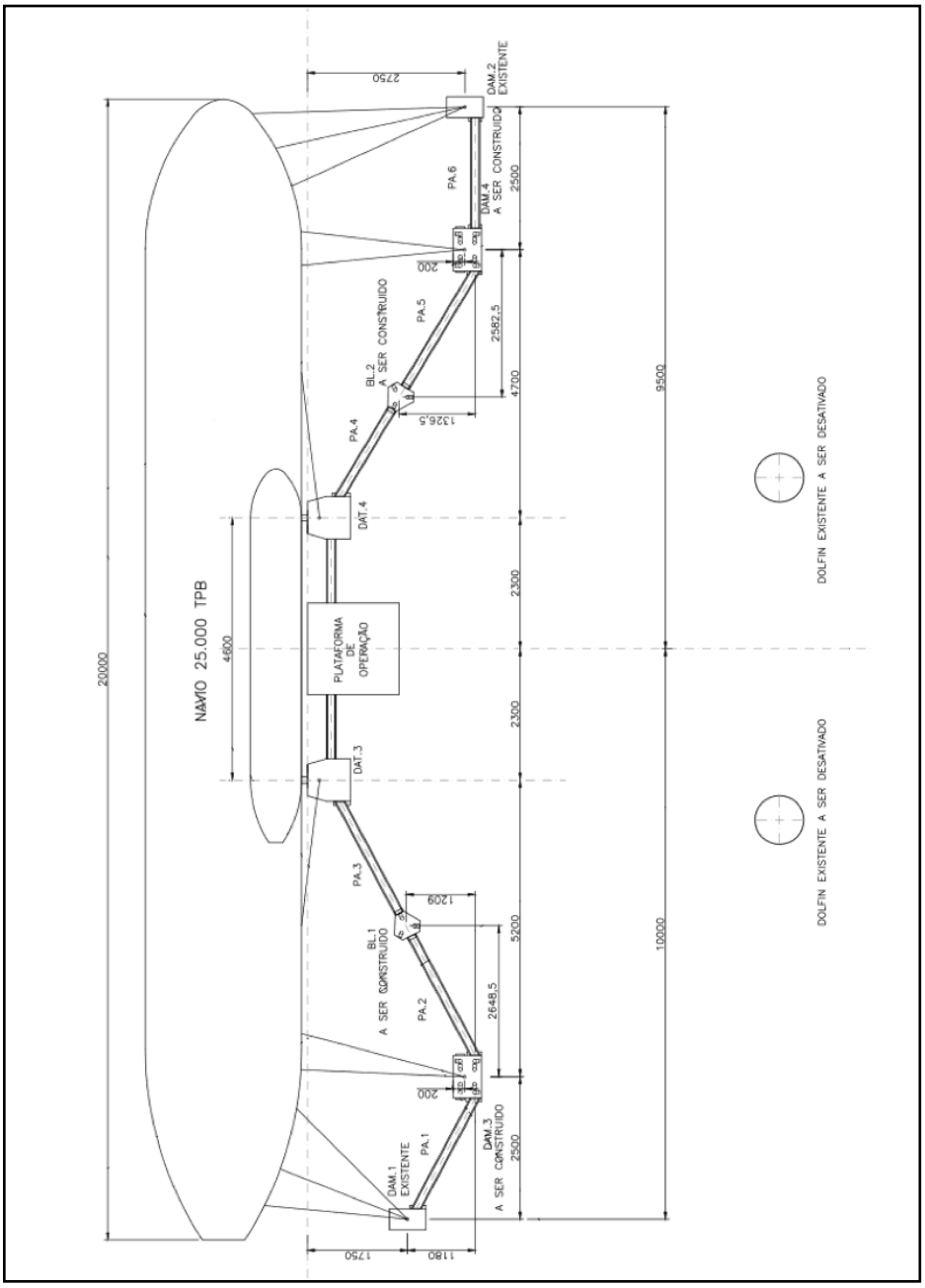
B – Main Pier Mooring Arrangement



C– Secondary Pier Mooring Arrangement

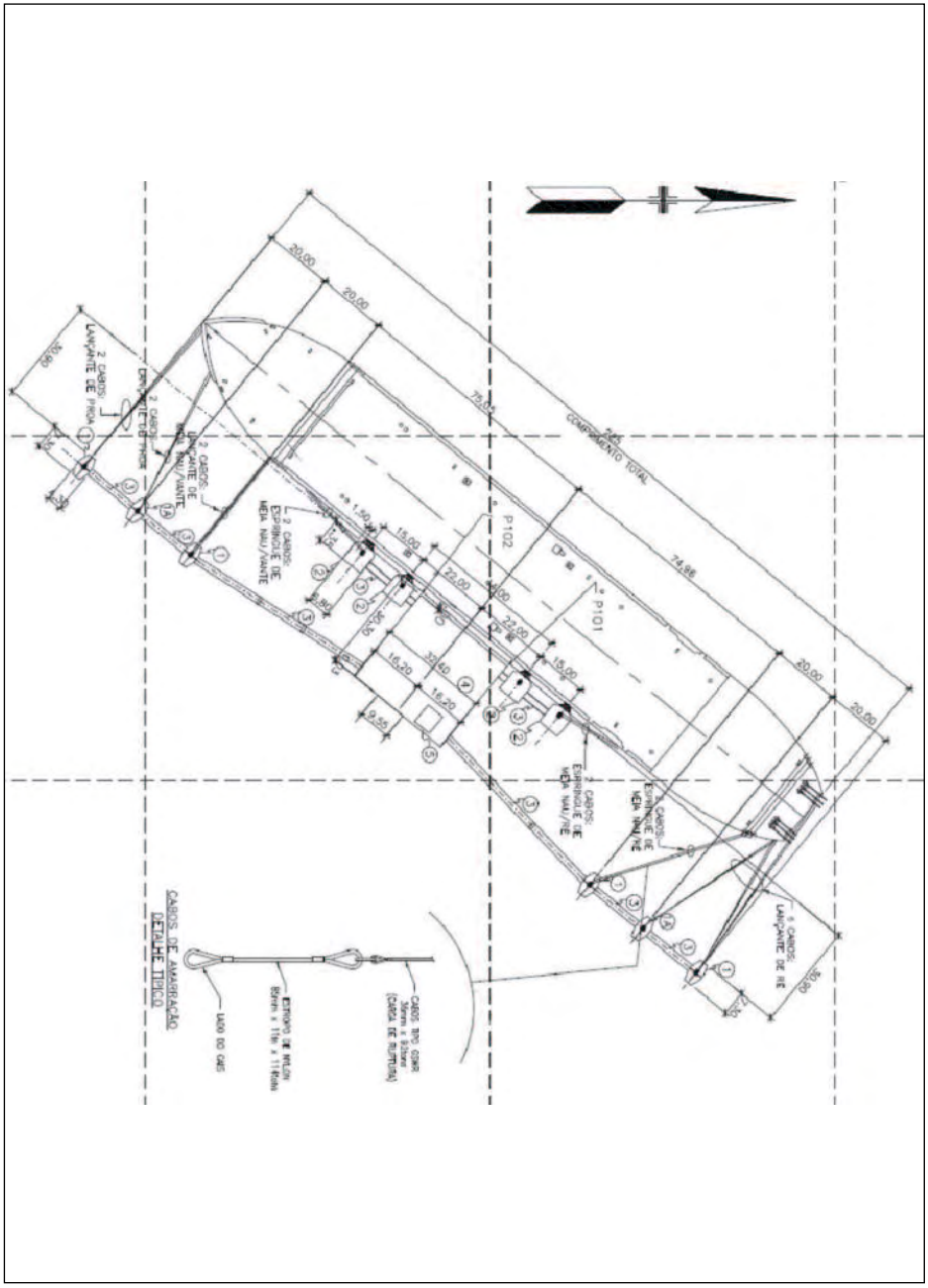


D – Ilha Redonda Pier Mooring Arrangement*



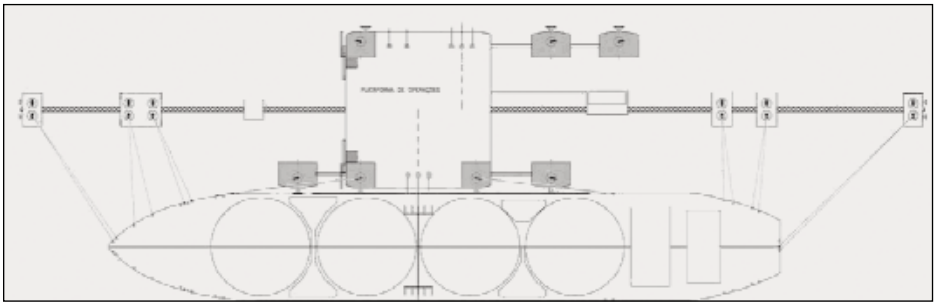
* Mooring arrangement of redonda island was changed due to dolphins replacement.

E – Esquema de amarração da Ilha Comprida

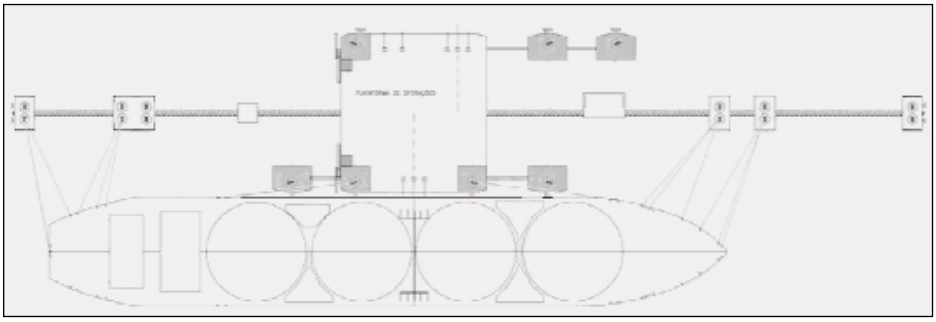


F – LNG Pier Mooring Arrangement

general arrangement east Berth starboard side mooring



general arrangement west Berth port side mooring



* For LNG Q-FLEX ships, it is required 3 (BOW and STERN) lines, with a total of 18 lines.

G - Loading Arms Connecting Lay Out

H – Information from Vessel Terminal

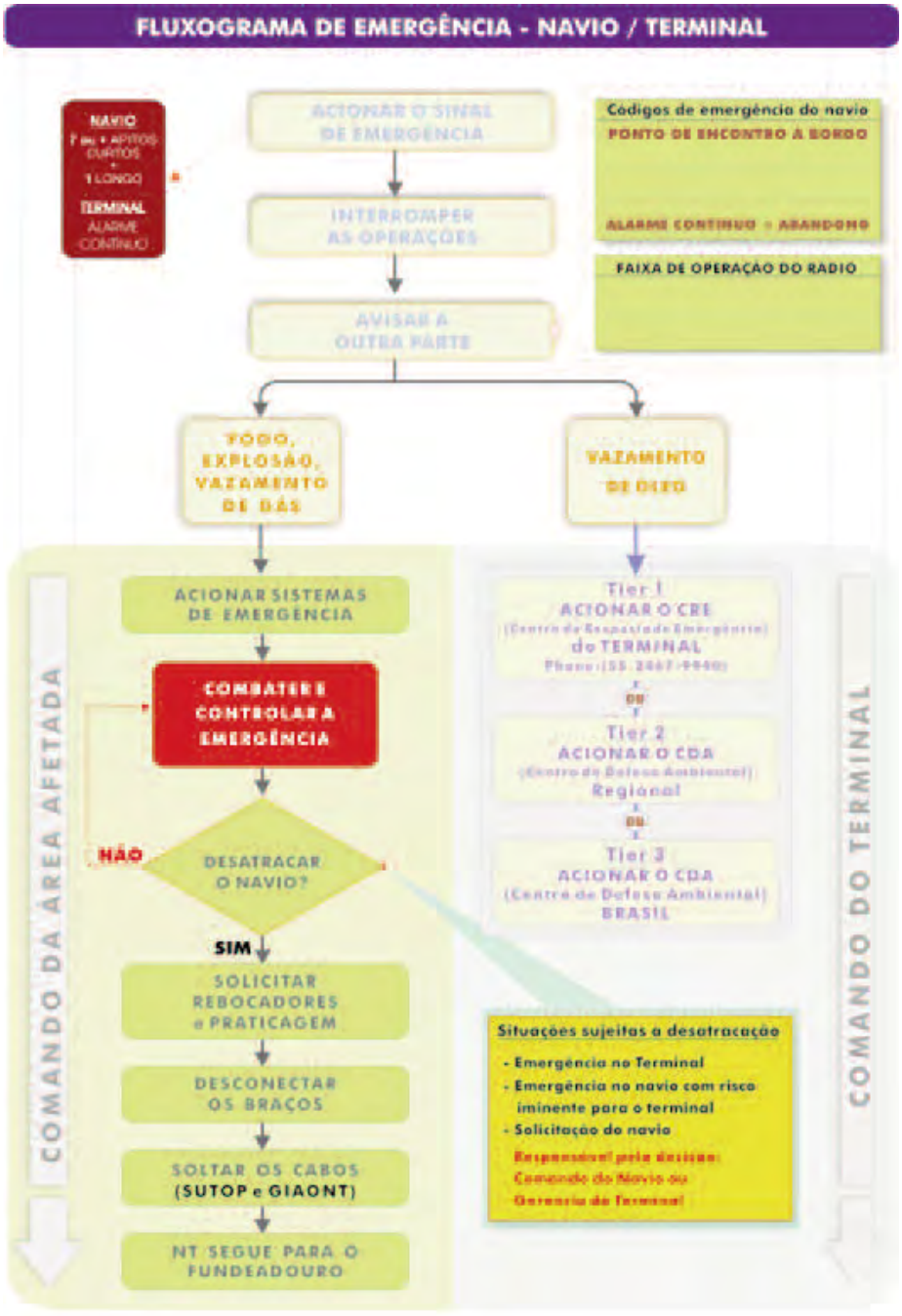
Port & Terminal Facilities:		
Requested Information on the Vessel:		
Vessel: Flag: Master: Owners:	Estimated Time of Arrival (ETA): Last Port of Call: Destination: Agents:	
Is the ship equipped with inert gas system? Oxygen rate :		
Length overall (LOA): Length between perpendiculars: Breadth:	Draft on arrival: Maximum draft during cargo transfer: Sailing Draft:	
Number of engines: Number of propellers:	Thrust: Bow (number & horse power): Stern (number & horse power):	
Tugs: Minimum required:	Minimum bollard pull:	
Number & diameter of manifold connections: Cargo: Ballast: Bunker:	Distances: From Bow to Manifold: Manifold to ship side: Manifold to main deck:	
Loading schedule (where applicable)		
Cargo Nomination: Product & quantity: m^3 I Product & quantity: m^3 I Product & quantity: m^3		
Deballast to the Sea: Quantity: m^3 I Estimated time frame:		
Discharge of Slops/Dirty Ballast to Shore: Quantity: m^3 I Estimated time frame:		
Ship/Shore Interfaces:		
Type of ship/shore link: Distance between cargo manifold and vapor loading arm Fiber optical connection? ESD Back-up Pneumatic Connection? Distance between pneumatic Connection and center of vapor loading arm:		
Discharge Schedule (where applicable)		
Product & quantity:	Product & quantity:	Product & quantity:
Ballasting:	Quantity:	Estimated time frame:
Requested Bunkering		
Product & quantity:	Product & quantity:	
IFurther information (if any):		
Duty officer:	Position:	

I – Pre-Cargo Transfer Information Exchange

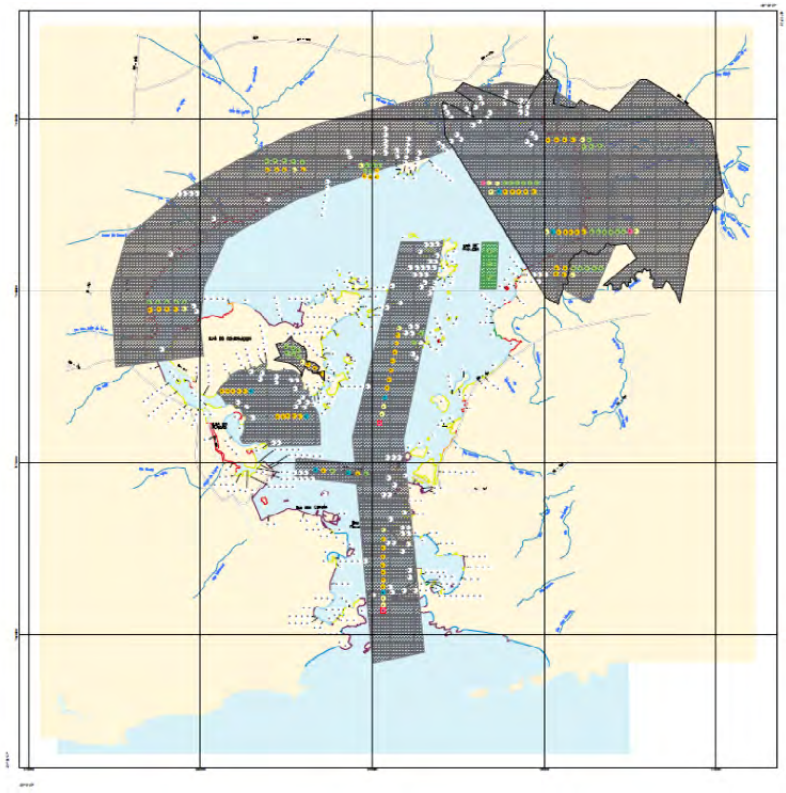
Ship/Shore Information Exchange			
Ship's name:		Berth:	
Voyage number:		Mooring date:	
Chartered Features			
Nº of cargo pumps:			
Volume capacity at 98%:			m^3
Guaranteed discharge pressure (discharge operations):			kgf/cm^2
Ballasting/deballasting capabilities while loading/discharging:			
Voyage Information			
Type of Charter Party (VCP, TCP, COA, etc)			
Type of voyage (Coastal or Ocean Passage)			
Origen / last port of call / destination:			
Has the ship requested bunkers?			
Ship/shore means of communication:			
Information on the scheduled cargo transfer:			
Product:	Quantity:	Temperature:	API:
Slop			
Quantity:	Temperature:	API:	
Flow point:	Origen: Contaminants:		
Ballast			
Dirty ballast Quantity:	I Temperature:	Segregated ballast Quantity:	
Operating Information			
For discharges	Any especial Operations? (COW, Inertization , etc.). Estimated duration of the special operation: Time necessary to stop the pumps:		
For Loading	Notice required for topping off: Loading rate required for topping off: Total amount of ballast to be discharged: Maximum allowed discharge rate: Any restriction regarding electrostatics? Any restriction regarding the use of automatic shutdown valves?		
Required loading/discharge operating conditions by product			
Tanker	Pressure: Flow rate: Temperature (max): Temperature (min):	Terminal Pressure: Flow rate: Temperature (max): Temperature (min):	

Loading/discharge sequence by product
Amount of cargo to loaded / discharged: Importing / exporting tanks: Ship / shore pipelines: Loading arms / hoses to be used: estimate of the start / finish of the scheduled operation: Further notice concerning safety measures and the operation :
Complementary operating and safety information

J – Ship/Shore – Emergency Flowchart



L – Map of oil Spillage Environmental Sensitivity – Guanabara Bay



Map Subtitles

Classification of Coast Habitats (increasing order of sensitivity to oil spills)

- 2.Smooth rocky land or subtract with medium declivity, exposed
- 3.Dissipation beaches, with fine to medium sand, sheltered
- 4.Beaches with thick sand, intermediate beaches, with fine to medium sand, exposed
- 5.Sand and gravel beaches, superficial abrasion platform irregular or covered with vegetation
- 6.Gravel beaches, deposits of talus, rock walls, platforms or terrace covered with lateritic concretions
- 7.Plateau with exposed sandy tide, low tide land exposed
- 8.Smooth rock slope sheltered, non-smooth rock slope sheltered, rock walls
- 9.Sandy/muddy tide plateau sheltered, muddy low tide land sheltered
- 10.Swampish lands, flooded lands, swamps, river and lagoon banks, marshy, mangroves

Biological Resources

- Birds
- Limnological Birds
- Coast marine birds
- Birds of prey
- Aquatic continental birds – flamingoes, neotropic cormorants, roseate spoolbills, etc.
- Terrestrial non-passerine birds
- Terrestrial passerine birds
- Bivalves
- Crabs
- Other invertebrates
- Other terrestrial mammals
- Shrimps
- Gastropods
- Dolphins
- Terrestrial mammals – rodents
- Fish
- Alligators
- Other Crustaceans
- Other mollusks
- Whales
- Turtles
- Area for concentration of multiple biological specie groups
- Protected species

Social-economical resources

- Industrial facilities/shipyards
- Pier
- Tow for launching ships
- Slope for ships
- Dike, dam or weir
- Road to access the coast
- Warehouse of equipment concentration area
- Port
- Fishermen village
- Residences/ Summer houses
- Trade
- Nautical Sports
- Military Facilities
- Ship anchorage area
- Location for depositing residues
- Marina
- Recreational beach
- Artisanal fishing
- Helicopter landing point
- Oil refinery
- Oil pipeline
- Historical Location
- Sports fishing
- Oil terminal
- Hotel
- Multiple group of social-economical resources
- Area of environment preservation

LISTA DE SEGURANÇA OPERACIONAL NAVIO/TERMINAL – VERIFICAÇÕES ANTES DA CHEGADA

ISGOTT CHECKS PRE-ARRIVAL SHIP/SHORE SAFETY CHECKLIST

Data e hora *Date and time*		**Terminal** *Terminal*	
Porto e Berço *Port and berth*		**Produto** *Product to be transfer*	
Navio Tanque *Tanker*			

PARTE 1A. NAVIO: VERIFICAÇÕES ANTES DA CHEGADA

PART 1A. TANKER: CHECKS PRE-ARRIVAL

Item	**Verificação** Check	**Condição** Status	**Observações** Remarks
1	Foram trocadas informações com o terminal antes da chegada. *Pre-arrival information is exchanged (6.5, 21.2).*	☐ Sim, Yes	
2	Há uma conexão internacional contra incêndio navio/terminal disponível. *International shore fire connection is available (5.5, 19.4.3.1).*	☐ Sim, Yes	
3	Os mangotes de transferência são de construção adequada. *Transfer hoses are of suitable construction (18.2).*	☐ Sim, Yes	
4	As informações do terminal (Port Information) foram lidas e compreendidas. *Terminal information booklet reviewed (15.2.2).*	☐ Sim, Yes	
5	Foram trocadas informações com o terminal antes da atracação. *Pre-berthing information is exchanged (21.3, 22.3).*	☐ Sim, Yes	
6	As PVs Valves, PV Breakers, Vent Post, Master Rises, Alarmes de Pressão e de Nível Alto dos tanques de carga, estão operacionais. *Pressure/vacuum valves and/or high velocity vents are operational (11.1.8).*	☐ Sim, Yes	
7	Os analisadores de oxigênio, fixos e portáteis estão operacionais, disponíveis e nas quantidades exigidas. *Fixed and portable oxygen analysers are operational (2.4).*	☐ Sim, Yes	

PARTE 1B. NAVIO: VERIFICAÇÕES ANTES DA CHEGADA SE HOUVER UM SISTEMA DE GÁS INERTE *PART 1B. TANKER: CHECKS PRE-ARRIVAL IF USING AN INERT GAS SYSTEM*			
Item	**Verificação** Check	**Condição** Status	**Observações** Remarks
8	Os registradores do analisador fixo do teor de oxigênio e de pressão do sistema de gás inerte estão funcionando. *Inert gas system pressure and oxygen recorders are operational (11.1.5.2, 11.1.11)*	☐ Sim,Yes	
9	O sistema de gás inerte e equipamentos associados estão operacionais. *Inert gas system and associated equipment are operational (11.1.5.2, 11.1.11)*	☐ Sim,Yes	
10	A atmosfera de todos os tanques de carga está com o teor de oxigênio menor do que 8 % por volume. *Cargo tank atmospheres' oxygen content is less than 8% (11.1.3)*	☐ Sim,Yes	
11	Todos os tanques de carga estão com pressão atmosférica positiva. *Cargo tank atmospheres are at positive pressure (11.1.3)*	☐ Sim,Yes	

PARTE 2. TERMINAL: VERIFICAÇÕES ANTES DA CHEGADA *PART 2. TERMINAL: CHECKS PRE-ARRIVAL*			
Item	**Verificação** Check	**Condição** Status	**Observações** Remarks
12	Foram trocadas informações antes da chegada? *Pre-arrival information is exchanged (6.5,21.2)*	☐ Sim,Yes	
13	Há uma conexão internacional contra incêndio navio/terminal disponível. *International shore fire connection is available (5.5, 19.4.3.1, 19.4.3.5)*	☐ Sim,Yes	
14	O equipamento de transferência é de construção adequada. *Transfer equipment is of suitable construction (18.1, 18.2)*	☐ Sim,Yes	
15	O Manual de Informações (Port Information) do terminal foi enviado ao navio. *Terminal information booklet transmitted to tanker (15.2.2)*	☐ Sim,Yes	
16	Foram trocadas informações antes da atracação. *Pre-berthing information is exchanged (21.3,22.3)*	☐ Sim,Yes	

LISTA DE SEGURANÇA OPERACIONAL NAVIO/TERMINAL – VERIFICAÇÕES APÓS A ATRACAÇÃO
ISGOTT CHECKS AFTER MOORING SHIP/SHORE SAFETY CHECKLIST

PARTE 3. NAVIO: VERIFICAÇÕES APÓS A ATRACAÇÃO *PART 3. TANKER: CHECKS AFTER MOORING*			
Item	**Verificação** Check	**Condição** Status	**Observações** Remarks
17	As defensas estão em boas condições e adequadamente posicionadas. *Fendering is effective (22.4.1)*	☐ Sim,Yes	
18	A amarração do navio é eficaz. *Mooring arrangement is effective (22.2,22.4.3)*	☐ Sim,Yes	
19	O acesso do terminal para o navio e do navio para o terminal é seguro. *Access to and from the tanker is safe (16.4)*	☐ Sim,Yes	
20	Os embornais e as bandejas de contenção estão efetivamente bujonados e as bandejas coletoras de bordo estão em posição e vazias. *Scuppers and savealls are plugged (23.7.4,23.7.5)*	☐ Sim,Yes	
21	As válvulas de costado e de fundo estão bem fechadas e travadas. *Cargo system sea connections and overboard discharges are secured (23.7.3)*	☐ Sim,Yes	
22	Os transceptores de frequência muito alta e ultra alta estão configurados para o modo de baixa potência. *Very high frequency and ultra high frequency transceivers are set to low power mode (4.11.6,4.13.2.2)*	☐ Sim,Yes	
23	Todos os acessos à superestrutura, portas externas e vigias, nas acomodações, paióis e espaços de máquinas são controlados. *External openings in superstructures are controlled (23.1)*	☐ Sim,Yes	
24	A ventilação da casa de bomba é eficaz. *Pumproom ventilation is effective (10.12.2)*	☐ Sim,Yes	
25	As antenas dos rádios transmissores de alta e média frequência estão isoladas. *Medium frequency/high frequency radio antennae are isolated (4.11.4, 4.13.2.1)*	☐ Sim,Yes	
26	Está sendo mantida pressão positiva no interior das acomodações. *Accommodation spaces are at positive pressure (23.2)*	☐ Sim,Yes	
27	Os planos de emergência contra incêndio do navio estão prontamente disponíveis. *Fire control plans are readily available (9.11.2.5)*	☐ Sim,Yes	

PARTE 4. TERMINAL: VERIFICAÇÕES APÓS A ATRACAÇÃO *PART 4. TERMINAL: CHECKS AFTER MOORING*			
Item	**Verificação** Check	**Condição** Status	**Observações** Remarks
28	As defensas estão em boas condições e adequadamente posicionadas. *Fendering is effective (22.4.1)*	☐ Sim,Yes	
29	O navio está amarrado de acordo com o plano de amarração do terminal. *Tanker is moored according to the terminal mooring plan (22.2, 22.4.3)*	☐ Sim,Yes	
30	O acesso do terminal para o navio e do navio para o terminal é seguro? *Access to and from the terminal is safe (16.4)*	☐ Sim,Yes	
31	Os arranjos e tanques de contenção de vazamentos são seguros. *Spill containment and sumps are secure (18.4.2, 18.4.3, 23.7.4, 23.7.5)*	☐ Sim,Yes	

LISTA DE SEGURANÇA OPERACIONAL NAVIO/TERMINAL – REUNIÃO DE LIBERAÇÃO INICIAL

ISGOTT CHECKS PRE-TRANSFER SHIP/SHORE SAFETY CHECKLIST

PARTE 5A. NAVIO E TERMINAL: REUNIÃO DE LIBERAÇÃO INICIAL *PART 5A. TANKER AND TERMINAL: PRE-TRANSFER CONFERENCE*				
Item	**Verificação** Check	**Condição Navio** Tanker Status	**Condição Terminal** Terminal Status	**Observações** Remarks
32	O navio está pronto para se movimentar por seus próprios meios enquanto estiver atracado no terminal. *Tanker is ready to move at agreed notice period (9.11, 21.7.1.1, 22.5.4)*	☐ Sim,Yes	☐ Sim,Yes	
33	Foram estabelecidos meios de comunicação entre o navio e o terminal. *Effective tanker and terminal communications are established (21.1.1, 21.1.2)*	☐ Sim,Yes	☐ Sim,Yes	
34	Os equipamentos de transferência de carga estão em condições seguras (isolado, drenado e despressurizado). *Transfer equipment is in safe condition (isolated, drained and de-pressurised) (18.4.1)*	☐ Sim,Yes	☐ Sim,Yes	
35	Os serviços de vigilância e supervisão da operação a bordo e no terminal são adequados. *Operation supervision and watchkeeping is adequate (7.9, 23.11)*	☐ Sim,Yes	☐ Sim,Yes	

36	Há pessoal suficiente para combate a emergências. *There are sufficient personnel to deal with an emergency (9.11.2.2, 23.11)*	☐ Sim,Yes	☐ Sim,Yes	
37	As restrições para fumantes e as áreas para fumantes estão identificadas. *Smoking restrictions and designated smoking areas are established (4.10, 23.10)*	☐ Sim,Yes	☐ Sim,Yes	
38	Foram estabelecidas restrições quanto ao uso de luzes desprotegidas e estão sendo cumpridas. *Naked light restrictions are established (4.10.1)*	☐ Sim,Yes	☐ Sim,Yes	
39	Foram estabelecidos controles para uso de dispositivos elétricos e eletrônicos nas áreas perigosas. *Control of electrical and electronic devices is agreed (4.11, 4.12)*	☐ Sim,Yes	☐ Sim,Yes	
40	Foram estabelecidas rotas de fuga de emergência a bordo e no terminal. *Means of emergency escape from both tanker and terminal are established (20.5)*	☐ Sim,Yes	☐ Sim,Yes	
41	Os equipamentos de combate a incêndios estão prontos para serem utilizados. *Firefighting equipment is ready for use (5, 19.4,23.8)*	☐ Sim,Yes	☐ Sim,Yes	
42	O material de limpeza de derrames de óleo está pronto para ser usado. *Oil spill clean-up material is available (20.4)*	☐ Sim,Yes	☐ Sim,Yes	
43	Os manifoldes estão com conexões apropriadas e seguras. *Manifolds are properly connected (23.6.1)*	☐ Sim,Yes	☐ Sim,Yes	
44	Protocolos para medição e amostragem foram acordados. *Sampling and gauging protocols are agreed (23.5.3.2, 23.7.7.5)*	☐ Sim,Yes	☐ Sim,Yes	
45	Foram estabelecidos procedimentos para operações de carga, abastecimento e lastro. *Procedures for cargo, bunkers and ballast handling operations are agreed (21.4, 21.5,21.6)*	☐ Sim,Yes	☐ Sim,Yes	
46	Controles necessários para gerenciamento da transferência de carga foram acordados. *Cargo transfer management controls are agreed (12.1)*	☐ Sim,Yes	☐ Sim,Yes	
47	Exigências para limpeza de tanques, incluindo operações de COW, foram acordadas. *Cargo tank cleaning requirements, including crude oil washing, are agreed (12.3, 12.5,21.4.1) - See also parts 7B/7C as applicable*	☐ Sim,Yes	☐ Sim,Yes	Ver também partes 7B/7C, se aplicáveis *See also parts 7B/7C as aplicable*

48	Meios para desgaseificação de tanque de carga foram acordados. *Cargo tank gas freeing arrangements agreed (12.4)*	☐ Sim,Yes	☐ Sim,Yes	Ver também parte 7C *See also part 7C*
49	Exigências para manuseio dos resíduos de carga e de combustíveis foram acordadas. *Cargo and bunker slop handling requirements agreed (12.1, 21.2, 21.4)*	☐ Sim,Yes	☐ Sim,Yes	Ver também parte 7C *See also part 7C*
50	Rotinas para verificações regulares da operação de transferência da carga foram acordadas. *Routine for regular checks on cargo transferred are agreed (23.7.2)*	☐ Sim,Yes	☐ Sim,Yes	
51	Procedimentos para alarmes e parada de emergência foram acordados. *Emergency signals and shutdown procedures are agreed (12.1.6.3, 18.5, 21.1.2)*	☐ Sim,Yes	☐ Sim,Yes	
52	As Folhas de Informação de Segurança de Produtos Químicos (FISPQ) estão disponíveis. *Safety data sheets are available (1.4.4, 20.1, 21.4)*	☐ Sim,Yes	☐ Sim,Yes	
53	Os perigos referentes aos produtos que serão transferidos foram discutidos. *Hazardous properties of the products to be transferred are discussed (1.2, 1.4)*	☐ Sim,Yes	☐ Sim,Yes	
54	O Isolamento Elétrico entre o navio e o terminal é eficaz. *Electrical insulation of the tanker/terminal interface is effective (12.9.5, 17.4, 18.2.14)*	☐ Sim,Yes	☐ Sim,Yes	
55	Procedimentos associados ao sistema de alívio de pressão de tanques e de operação com sistema fechado foram acordados. *Tank venting system and closed operation procedures are agreed (11.3.3.1, 21.4, 21.5, 23.3.3)*	☐ Sim,Yes	☐ Sim,Yes	
56	Parâmetros para operação com retorno de vapor foram acordados. *Vapour return line operational parameters are agreed (11.5, 18.3, 23.7.7)*	☐ Sim,Yes	☐ Sim,Yes	
57	Foram estabelecidas medidas para evitar retorno de carga. *Measures to avoid back-filling are agreed (12.1.13.7)*	☐ Sim,Yes	☐ Sim,Yes	
58	A condição das conexões de carga e abastecimento fora de uso é satisfatória. *Status of unused cargo and bunker connections is satisfactory (23.7.1, 23.7.6)*	☐ Sim,Yes	☐ Sim,Yes	
59	Os rádios portáteis VHF e UHF são intrinsecamente seguros. *Portable very high frequency and ultra high frequency radios are intrinsically safe (4.12.4, 21.1.1)*	☐ Sim,Yes	☐ Sim,Yes	
60	Procedimentos para recebimento de nitrogênio do terminal para os tanques de carga foram acordados. *Procedures for receiving nitrogen from terminal to cargo tank are agreed (12.1.14.8)*	☐ Sim,Yes	☐ Sim,Yes	

ADICIONAL PARA NAVIOS QUÍMICOS VERIFICAÇÕES ANTES DA OPERAÇÃO
ADDITIONAL FOR CHEMICAL TANKERS CHECKS PRE-TRANSFER

PARTE 5B. NAVIO E TERMINAL: LÍQUIDOS QUÍMICOS A GRANEL. VERIFICAÇÕES ANTES DA OPERAÇÃO
PART 5B. TANKER AND TERMINAL: BULK LIQUID CHEMICALS. CHECKS PRE-TRANSFER

Item	Verificação Check	Condição Navio Tanker Status	Condição Terminal Terminal Status	Observações Remarks
61	O certificado do inibidor (se exigido) foi recebido do fabricante. *Inhibition certificate received (if required) from manufacturer*	☐ Sim,Yes	☐ Sim,Yes	
62	O equipamento de proteção individual está identificado e disponível. *Appropriate personal protective equipment identified and available (4.8.1)*	☐ Sim,Yes	☐ Sim,Yes	
63	Foram estabelecidas medidas para evitar contato físico do pessoal com a carga. *Countermeasures against personal contact with cargo are agreed (1.4)*	☐ Sim,Yes	☐ Sim,Yes	
64	Foi estabelecida a vazão com o tempo de fechamento das válvulas automáticas e o sistema de parada de emergência. *Cargo handling rate and relationship with valve closure times and automatic shutdown systems is agreed (16.8, 21.4, 21.5, 21.6)*	☐ Sim,Yes	☐ Sim,Yes	
65	O sistema de medição de nível está operacional e as regulagens de alarme foram testadas. *Cargo system gauge operation and alarm set points are confirmed (12.1.6.6.1)*	☐ Sim,Yes	☐ Sim,Yes	
66	Estão sendo utilizados instrumentos portáteis de detecção de vapor, adequados à carga. *Adequate portable vapour detection instruments are in use (2.4)*	☐ Sim,Yes	☐ Sim,Yes	
67	Foram trocadas informações sobre os meios e procedimentos de combate a incêndios. *Information on firefighting media and procedures is exchanged (5, 19)*	☐ Sim,Yes	☐ Sim,Yes	
68	Os mangotes de carga são compatíveis com o produto que está sendo manuseado. *Transfer hoses confirmed suitable for the product being handled (18.2)*	☐ Sim,Yes	☐ Sim,Yes	
69	Confirme se a carga é manuseada por apenas um sistema instalado de rede permanente. *Confirm cargo handling is only by a permanente installed pipeline system*	☐ Sim,Yes	☐ Sim,Yes	
70	Existem procedimentos para receber nitrogênio do terminal para inertização ou purga. *Procedures are in place to receive nitrogen from the terminal for inerting or purging (12.1.14.8)*	☐ Sim,Yes	☐ Sim,Yes	

ADICIONAL PARA NAVIOS DE GÁS VERIFICAÇÕES ANTES DA OPERAÇÃO
ADDITIONAL FOR GAS TANKERS CHECKS PRE-TRANSFER

PARTE 5C. NAVIO E TERMINAL: GÁS LIQUEFEITO. VERIFICAÇÕES ANTES DA OPERAÇÃO
PART 5C. TANKER AND TERMINAL: LIQUEFIED GAS. CHECKS PRE-TRANSFER

Item	**Verificação** Check	**Condição Navio** Tanker Status	**Condição Terminal** Terminal Status	**Observações** Remarks
71	O certificado do inibidor (se exigido) foi recebido do fabricante? *Inhibition certificate received (if required) from manufacturer*	☐ Sim,Yes	☐ Sim,Yes	
72	O sistema de borrifo de água está operacional. *Water spray system is operational (5.3.1, 19.4.3)*	☐ Sim,Yes	☐ Sim,Yes	
73	O equipamento de proteção individual está identificado e disponível. *Appropriate personal protective equipment is identified and available (4.8.1)*	☐ Sim,Yes	☐ Sim,Yes	
74	As válvulas de controle remoto estão operacionais. *Remote control valves are operational*	☐ Sim,Yes	☐ Sim,Yes	
75	As bombas de carga e os compressores estão operacionais. *Cargo pumps and compressors are operational*	☐ Sim,Yes	☐ Sim,Yes	
76	A máxima pressão de trabalho foi estabelecida entre o navio e o terminal. *Maximum working pressures are agreed between tanker and terminal (21.4, 21.5, 21.6)*	☐ Sim,Yes	☐ Sim,Yes	
77	A planta de reliquefação ou um sistema de controle de vapor está operacional. *Reliquefaction or boil-off control equipment is operational*	☐ Sim,Yes	☐ Sim,Yes	
78	O equipamento de detecção de gases está adequadamente regulado para a carga. *Gas detection equipment is appropriately set for the cargo (2.4)*	☐ Sim,Yes	☐ Sim,Yes	
79	O sistema de medição de nível está operacional e as regulagens de alarme foram confirmadas. *Cargo system gauge operation and alarm set points are confirmed (12.1.6.6.1)*	☐ Sim,Yes	☐ Sim,Yes	
80	O sistema de parada de emergência foi testado e está operacional. *Emergency shutdown systems are tested and operational (18.5)*	☐ Sim,Yes	☐ Sim,Yes	

81	A relação da vazão com o tempo de fechamento das válvulas automáticas e o sistema de parada de emergência foi acordada. *Cargo handling rate and relationship with valve closure times and automatic shutdown systems is agreed (16.8, 21.4, 21.5, 21.6)*			
82	As temperaturas e pressões máximas e mínimas da carga a ser transferida foram acordadas. *Maximum/minimum temperatures/pressures of the cargo to be transferred are agreed (21.4, 21.5, 21.6)*			
83	As regulagens das válvulas de alívio dos tanques de carga foram confirmadas. *Cargo tank relief valve settings are confirmed (12.11, 21.2, 21.4)*			

PARTE 6. NAVIO E TERMINAL: ACORDOS PARA ANTES DO INÍCIO DA OPERAÇÃO

PART 6. TANKER AND TERMINAL: AGREEMENTS PRE-TRANSFER

Parte 5 Part 5	**Acordos** Agreement	**Detalhes** Details	**Rubrica Navio** Tanker Initials	**Rubrica Terminal** Terminal Initials
32	Pronto para manobrar do navio *Tanker manoeuvring readiness*	Período máximo para estar totalmente pronto para manobrar: *Notice period (maximum) for full readiness to manoeuvre:* Período sem máquinas (se permitido): *Period of disablement (if permitted):*		
33	Protocolos de proteção *Security protocols*	Nível de proteção: *Security level:* Exigências locais: *Local requirements:*		
33	Sistemas de comunicação navio/terminal *Effective tanker/terminal Communications*	Sistema primário: *Primary system:* Sistema secundário: *Backup system:*		
35	Supervisão operacional e vigias *Operational supervision and Watchkeeping*	Navio: *Tanker:* Terminal: *Terminal* Operador de píer – inspetor náutico – vigilante de píer: *Loading master - safety inspector - terminal watchman*		
37 38	Áreas para fumantes e restrições a luzes desprotegidas *Dedicated smoking areas and naked lights restrictions*	*Navio: Tanker:* Terminal: *Terminal* Não permitido às proximidades dos berços *Not allowed around berths*		
45	Ventos e correntes máximos, condições de mar, altura da onda e outros fatores ambientais *Maximum wind, current and sea/swell criteria or other environmental factors*	Parar a operação: *Stop cargo transfer:* Desconetar: *Disconnect:* Desatracar: *Unberth:*		

45 46	Limites para manuseio de carga, abastecimento e lastro *Limits for cargo, bunkers and ballast handling*	Vazão máxima: *Maximum transfer rates:* Vazão final: *Topping-off rates:* Pressão máxima no manifolde: *Maximum manifold pressure:* Temperatura da carga: *Cargo temperature:* Outras limitações: *Other limitations*		
45 46	Controle de surto de pressão *Pressure surge control*	Quantidade mínima de tanques alinhados: *Minimum number of cargo tanks open:* Protocolo para troca de tanques: *Tank switching protocols:* Vazão máxima de operação: *Full load rate:* Vazão para top: *Topping-off rate:* Tempo de fechamento das válvulas automáticas: *Closing time of automatic valves:*		
46	Procedimentos de supervisão de transferência da carga *Cargo transfer management Procedures*	Períodos de notificação para ações: *Action notice periods:* Protocolo de parada da transferência: *Transfer stop protocols:*		
50	Rotina para verificações regulares da quantidade de carga movimentada acordadas. *Routine for regular checks on cargo transferred are agreed*	Verificação de rotina da quantidade transferida: *Routine transferred quantity checks:*		
51	Alarme de emergência *Emergency signals*	Navio: *Tanker:* Terminal: *Terminal:*		
55	Sistema de alívio de tanques *Tank venting system*	Procedimentos: *Procedure:*		
55	Operações fechadas *Closed operations*	Exigências: *Requirements:*		
56	Linha de retorno de vapor *Vapour return line*	Parâmetros operacionais: *Operational parameters:* Vazão máxima: *Maximum flow rate:*		
60	Fornecimento de nitrogênio pelo terminal *Nitrogen supply from terminal*	Procedimentos de recebimento: *Procedures to receive:* Pressão máxima: *Maximum pressure:* Vazão: *Flow rate:*		
83	Somente para navios de gás: Regulagem das válvulas de alívo *For gas tanker only: cargo tank relief valve settings*	*Tanque 1: Tank 1:* *Tanque 2: Tank 2:* *Tanque 3: Tank 3:* *Tanque 4: Tank 4;* *Tanque 5: Tank 5:* *Tanque 6: Tank 6:* *Tanque 7: Tank 7:*		
XX	Adicionais e exceções *Exceptions and additions*	Questões especiais que devem ser de conhecimento de ambas as partes: *Special issues that both parties should be aware of:*		

PARTE 7A. GENERALIDADES DO NAVIO: VERIFICAÇÕES ANTES DA OPERAÇÃO

PART 7A. GENERAL TANKER: CHECKS PRE-TRANSFER

Item	Verificação Check	Condição Status	Observações Remarks
84	As bandejas coletoras a bordo estão corretamente posicionadas e vazias. *Portable drip trays are correctly positioned and empty (23.7.5)*	☐ Sim,Yes	
85	Todas as válvulas individuais de fornecimento de gás inerte para os tanques de carga estão seguramente de acordo com o plano de carga. *Individual cargo tank inert gas supply valves are secured for cargo plan (12.1.13.4)*	☐ Sim,Yes	
86	O sistema de gás inerte está fornecendo gás inerte com teor de oxigênio não superior a 5%. *Inert gas system delivering inert gas with oxygen content not more than 5% (11.1.3)*	☐ Sim,Yes	
87	Os alarmes de nível alto dos tanques de carga estão operacionais. *Cargo tank high level alarms are operational (12.1.6.6.1)*	☐ Sim,Yes	
88	Todas as aberturas dos tanques de carga, lastro e de abastecimento estão seguramente fechadas. *All cargo, ballast and bunker tanks openings are secured (23.3)*	☐ Sim,Yes	

PARTE 7B. NAVIO: VERIFICAÇÕES ANTES DA TRANSFERÊNCIA SE PREVISTO OPERAÇÃO COW

PART 7B. TANKER: CHECKS PRE-TRANSFER IF CRUDE OIL WASHING IS PLANNED

Item	Verificação Check	Condição Status	Observações Remarks
89	Uma cópia da lista completa de verificação prévia, preenchida, para operação COW, conforme o Manual COW aprovado do navio foi entregue ao terminal. *The completed pre-arrival crude oil washing checklist, as contained in the approved crude oil washing manual, is copied to terminal (12.5.2, 21.2.3)*	☐ Sim,Yes	
90	As listas de verificação para uso antes, durante e depois da operação COW estão disponíveis e prontas para serem preenchidas, conforme o Manual COW aprovado do navio. *Crude oil washing checklists for use before, during and after crude oil washing are in place ready to complete, as contained in the approved crude oil washing manual (12.5.2, 21.6)*	☐ Sim,Yes	

LISTA DE SEGURANÇA OPERACIONAL NAVIO/TERMINAL – VERIFICAÇÕES APÓS A REUNIÃO DE LIBERAÇÃO INICIAL

ISGOTT CHECKS AFTER PRE-TRANSFER CONFERENCE SHIP/SHORE SAFETY CHECKLIST

PARA NAVIOS QUE FARÃO LIMPEZA DE TANQUES ATRACADO E/OU DESGASEIFICAÇÃO ATRACADO

FOR TANKERS THAT WILL PERFORM TANK CLEANING ALONGSIDE AND/OR GAS FREEING ALONGSIDE

PARTE 7C. NAVIO: VERIFICAÇÕES ANTES DE LIMPEZA E/OU DESGASEIFICAÇÃO DE TANQUES COM O NAVIO ATRACADO

PART 7C. TANKER: CHECKS PRIOR TO TANK CLEANING AND/OR GAS FREEING

Item	Verificação Check	Condição Status	Observações Remarks
91	As operações de limpeza de tanques foram confirmadas. *Permission for tank cleaning operations is confirmed (21.2.3, 21.4, 25.4.3)*	☐ Sim, Yes	
92	As operações de desgaseificação foram confirmadas. *Permission for gas freeing operations is confirmed (12.4.3)*	☐ Sim, Yes	
93	Foram estabelecidos procedimentos para limpeza de tanques. *Tank cleaning procedures are agreed (12.3.2, 21.4, 21.6)*	☐ Sim, Yes	
94	Se for necessária entrada em tanques de carga, foram estabelecidos procedimentos de entrada com o terminal. *If cargo tank entry is required, procedures for entry have been agreed with the terminal (10.5)*	☐ Sim, Yes	
95	Há instalação de recebimento de resíduos e as exigências para transferência foram confirmadas. *Slop reception facilities and requirements are confirmed (12.1, 21.2, 21.4)*	☐ Sim, Yes	

DECLARATION

We the undersigned have checked the items in the applicable parts 1 to 7 as marked and signed below:

	Tanker	Terminal
Part 1A. Tanker: checks pre-arrival		
Part 1B. Tanker: checks pre-arrival if using an inert gas system		
Part 2. Terminal: checks pre-arrival		
Part 3. Tanker: checks after mooring		
Part 4. Terminal: checks after mooring		
Part 5A. Tanker and terminal: pre-transfer conference		
Part 5B. Tanker and terminal: bulk liquid chemicals. Checks pre-transfer		
Part 5C. Tanker and terminal: liquefied gas. Checks pre-transfer		
Part 6. Tanker and terminal: agreements pre-transfer		
Part 7A. General tanker: checks pre-transfer		
Part 7B. Tanker: checks pre-transfer if crude oil washing is planned		
Part 7C. Tanker: checks prior to tank cleaning and/or gas freeing		

In accordance with the guidance in chapter 25 of ISGOTT, we have satisfied ourselves that the entries we have made are correct to the best of our knowledge and that the tanker and terminal are in agreement to undertake the transfer operation.

We have also agreed to carry out the repetitive checks noted in parts 8 and 9 of the ISGOTT SSSCL, which should occur at intervals of not more than ____ hours for the tanker and not more than ____ hours for the terminal.

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

Tanker		Terminal	
Name		**Name**	
Rank		**Position**	
Signature		**Signature**	
Date		**Date**	
Time		**Time**	

LISTA DE SEGURANÇA OPERACIONAL NAVIO/TERMINAL – VERIFICAÇÕES DURANTE A OPERAÇÃO
ISGOTT CHECKS DURING TRANSFER SHIP/SHORE SAFETY CHECKLIST

REVERIFICAÇÕES *REPETITIVE CHECKS*

PARTE 8. NAVIO: REVERIFICAÇÕES DURANTE E DEPOIS DA OPERAÇÃO
PART 8. TANKER: REPETITIVE CHECKS DURING AND AFTER TRANSFER

Item	**Verificação** Check	**Hora** Time	**Hora** Time	**Hora** Time	**Hora** Time	**Hora** Time	**Hora** Time	**Observações** Remarks
Intervalo de tempo: horas Interval time: hrs								
8	Os registros de pressão e teor do gás inerte estão operacionais. *Inert gas system pressure and oxygen recording operational*	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	
9	O sistema de gás inerte e os equipamentos associados estão operacionais. *Inert gas system and all associated equipment are operational*	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	
11	Os tanques de carga estão com pressão positiva. *Cargo tank atmospheres are at positive pressure*	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	
18	A amarração está segura. *Mooring arrangement is effective*	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	
19	O acesso do terminal para o navio e do navio para o terminal estão seguros. *Access to and from the tanker is safe*	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	

20	Os embornais e as bandejas estão bujonados. *Scuppers and savealls are plugged*	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	
23	As aberturas externas da superestrutura são controladas. *External openings in superstructures are controlled*	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	
24	A ventilação da casa de bombas está operacional. *Pumproom ventilation is effective*	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	
28	O navio está pronto para manobrar enquanto estiver atracado. *Tanker is ready to move at agreed notice period*	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	
29	As defensas estão operacionais. *Fendering is effective*	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	
33	As comunicações estão operacionais. *Communications are effective*	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	
35	Supervisão da operação e vigias são adequados. *Supervision and watchkeeping is adequate*	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	
36	Os tripulantes a bordo são suficientes e estão disponíveis para situações de emergência. *Sufficient personnel are available to deal with an emergency*	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	
37	As restrições ao fumo e uso das áreas designadas para fumantes estão sendo cumpridos. *Smoking restrictions and designated smoking areas are complied with*	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	
38	As restrições para luzes desprotegidas estão sendo cumpridas. *Naked light restrictions are complied with*	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	

39	Está sendo controlado o uso de dispositivos e equipamentos elétricos em zonas perigosas. *Control of electrical devices and equipment in hazardous zones is complied with*	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	
40 41 42 51	O plano para resposta a emergências é satisfatório. *Emergency response preparedness is satisfactory*	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	
54	O isolamento elétrico navio/terminal está operacional. *Electrical insulation of the tanker/terminal interface is effective*	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	
55	Foram estabelecidos sistema de alívio de tanques e de operação por sistema fechado. *Tank venting system and closed operation procedures are as agreed*	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	
85	Foram estabelecidos controles para as válvulas individuais de fornecimento de gás inerte para os tanques de carga. *Individual cargo tank inert gas valves settings are as agreed*	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	
86	O sistema de gás inerte continua fornecendo gás inerte com teor de oxigênio não superior a 5%. *Inert gas delivery maintained at not more than 5% oxygen*	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	
87	Os alarmes de nível alto dos tanques de carga estão operacionais. *Cargo tank high level alarms are operational*	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	☐ Sim,Yes	
Rúbricas – Initials								

LACRES A BORDO – *SEALS ON BOARD*	
Separador de água e óleo *Oil water separator*	
ODME – válvula fora de borda *ODME – Overboard valve*	
ODME Monitor de lastro *ODME Monitoring Equipment*	
Esgoto de emergência *Emergency bilge*	
Caixa mar – *Sea chest*	
Tanque séptico - *Sewage*	

N SPECIFIC INFORMATION ON THE LNG PIER

N.1 BERTH·S CAPACITY

East berth (supliers)

Dimensões dos navios suportados:

Minimal:
Total length (LOA): 235 m
Molded breath: 34 m
Molded water depth: 10 m
Deadweight (TPB): 48500 ton
Load capacity: 70,030.0 m
Reference Methane Arctic and Methane Polar LNG Ships

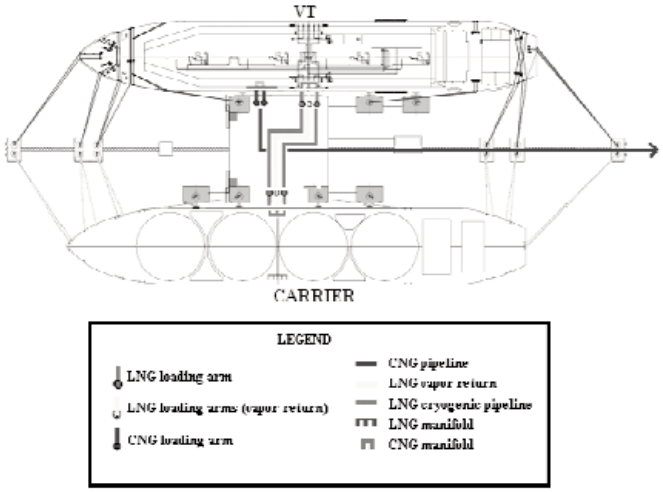
Maximal:
Total length (LOA): 315 m
Molded breath: 12 m
Load capacity: 210,03.00 m
Reference Q-FLEX LNG Ship

West berth (FRSUs)

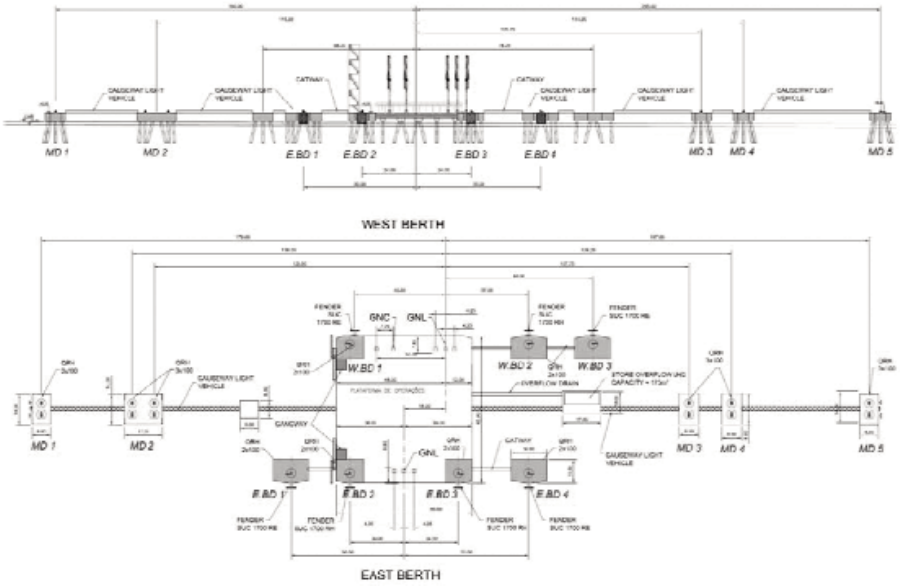
The approximate dimensions are the following:
Total length (LOA): 300 m
Molded breath: 50 m Depth: 26 m
Molded water depth: 12 m
Deadweight (TPB): 80,000 ton
Minimum load capacity: 1253,.000 m

As established in the NPCP-RJ, the maximum aerial dra-ft allowe igation under the Rio-Niteroi bridge is 60 meters

N.2 GENERAL PROCESS LAYOUT



N.3 FENDERS



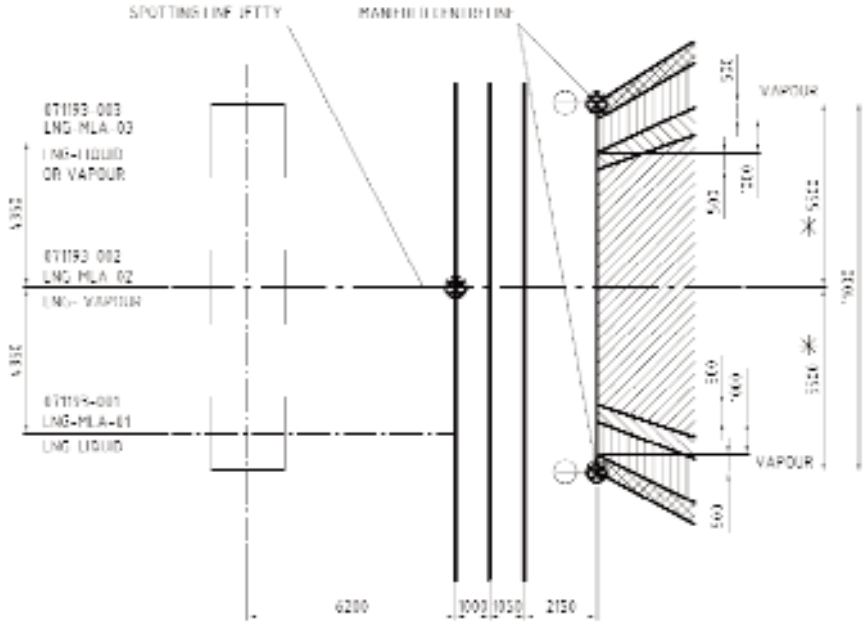
N.4 ARMS ENVELOPE

Guanabara LNG Carrier		
Pre-alarm required	–	Yes
Pre-alarm luffing	(m)	5,7
1st stage alarm (luffing)	(m)	6,2
2nd stage alarm (luffing)	(m)	7,2
Maximum reach (luffing)	(m)	7,7
Bottom limit operating envelope	to(mL)LWL	14,8
Top limit operating envelope to	HH(WmL)	25,95
Maximum slew right surge	–	5,5
Maximum slew left surge	–	5,5
2nd stage alarm slew right	(m)	5,0
2nd stage alarm slew left	(m)	5,0
1st stage alarm slew right	(m)	4,0
1st stage alarm slew left	(m)	4,0
Pre-alarm slew right	(m)	3,5
Pre-alarm slew left	(m)	3,5

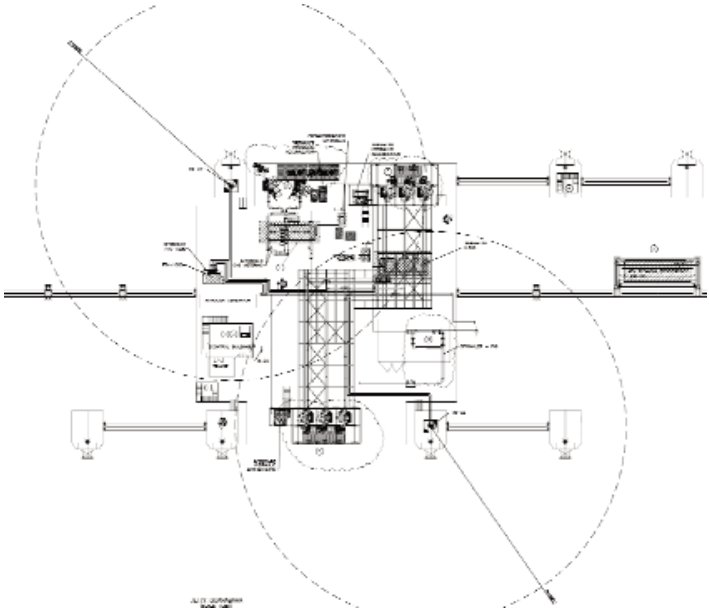
Guanabara LNG VT		
Pre-alarm required	–	Yes
Pre-alarm luffing	(m)	4,9
1st stage alarm (luffing)	(m)	5,4
2nd stage alarm (luffing)	(m)	6,4
Maximum reach (luffing)	(m)	6,9
Bottom limit operating envelope	to(mL)LWL	16,4
Top limit operating envelope to	HH(WmL)	25,8
Maximum slew right surge	–	5,5
Maximum slew left surge	–	5,5
2nd stage alarm slew right	(m)	5,0
2nd stage alarm slew left	(m)	5,0
1st stage alarm slew right	(m)	4,0
1st stage alarm slew left	(m)	4,0
Pre-alarm slew right	(m)	3,5
Pre-alarm slew left	(m)	3,5

Guanabara CNG		
Pre-alarm required	–	Yes
Pre-alarm luffing	(m)	5,1
1ststage alarm (luffing)	(m)	5,6
2nd stage alarm (luffing)	(m)	7,1
Maximum reach (luffing)	(m)	7,6
Bottom limit operating envelope	to(mL)LWL	15,55
Top limit operating envelope to	HH(WmL)	24,5
Maximum slew right surge	–	6,0
Maximum slew left surge	–	6,0
2nd stage alarm slew right	(m)	5,5
2nd stage alarm slew left	(m)	5,5
1ststage alarm slew right	(m)	4,0
1ststage alarm slew left	(m)	4,0
Pre-alarm slew right	(m)	3,5
Pre-alarm slew left	(m)	3,5

N.5 MANIFOULDS



N.6 FIRE FIGHT SYSTEM



N.7 – SHIP SHORE LINK AND COMMMUNICATIONS

Item	Data
Electric multi-pin Pyle	Pyle National SSL-ESD System
Distance electric multi-pin connection to vapour centre	50 metres of 37-way Umbilical Cable
Glass-fibre optic link?	SeaTechnik ship system 50 Metres of Fibre Optic umbilical cable, with shore type 6-way connector
Pneumatic ESD back-up link	Yes
Location pneumatic link connection to vapour center	Not available information
Electrical isolation ship/shore	24V DC supply is galvanically isolated from ground

N.8 – GANGWAY

Gangway and Support Check – West Berth		
Item	Min	Max
Vertical direction	10,90 m	19,40 m
Horizontal direction (port side vessel)	4,71 m	14,49 m
Horizontal direction (bow-stern)	0 m	16,69 m

Gangway and Support Check – East Berth		
Item	Min	Max
Vertical direction	10,27 m	21,80 m
Horizontal direction (port side vessel)	4,06 m	15,95 m
Horizontal direction (bow-stern)	0 m	20,56 m

Ship/Shore Sigtto Questionnaire

FOR COMPATIBILITY STUDY OF LIQUEFIED
GAS SHIPS WITH LOADING /UNLOADING JETTI

Introduction

With the expansion of liquefied gas trades worlwide, increasing number of ships are calling at a wider cross section of terminals.

A developing market for LNG spot cargoes, means that modern contracts may be long or short term.

Although a wealth of operational guidance has been published, in practice many differences still exist.

The safety of berthing/unberthing operations and the safety of ship at berth including cargo transfer, is a direct consequence of:

a) a good understanding of the ship/shore compatibility issues

b) a good knowledge of ship/shore loading and unloading procedures (including, as the case may be, pre- and post- drydocking procedures).

These issues must be addressed properly prior to the ship first call at a liquefied gas jetty.

The ship/shore questionnaire enclosed has been prepared in order to help both ship side and shore side to address these ship/shore compatibility issues. It constitutes a synthesis of already existing procedures in place in Japan, South-East Asia, Middle-East and other countries, mature in the field of exporting and importing LNG cargoes. These procedures are however also valid, although some simplifications might be required, for LPG and other liquefied gases.

Once both ship and shore side have filled the questionnaire it is recommended that both parties meet together ("ship/shore meeting") in order to discuss the

various issues of ship/shore compatibility and cargo transfer procedures.

We thank Mr. Bertrand LANQUETIN from TOTALFINAELF for his contribution to the preparation of this document.

Bibliography:

[1] Tramping with LNG Carriers? – B. Lanquetin TOTALFINAELF and R. Tanudjaja PERTA MINA LG/JTG – GASTECH 93 Paris

[2] Ship Information Questionnaire for Gas Carriers – 2nd Edition 1998 – SIGTTO; OCIMF

[3] Port Information Questionnaire for Liquefied Gas Terminals – SIGTTO, 1st Edition 1998

[4] Port Information for LNG Export and Import Terminals – SIGTTO

[5] The Ship/Shore Interface – Communicatoins Necessary for Matching Ship to Berth, Information Paper No.5 SIGTTO, 2nd Edition 1997

[6] A Guide to Contingency Planning for the Gas Carrier Alongside and Within Port Limits – SIGTTO, OCIMF, ICS 1987

[7] A Guide to Contingency Planning for Marine Terminals Handling Liquefied Gasses in Bulk – SIGTTO, 2nd Edition 2001

TABLE OF CONTENTS

SHIP/SHORE COMPATIBILITY

GENERAL

PORT

Port name: Porto do Rio de Janeiro
Terminal name: Terminal Flexível de GNL da Baía da Guanabara
Lat 22º 46' 48" S **Long** 043º 07' 59" W
Name of terminal operating company: TRANSPETRO - PETROBRAS TRANSPORTE S.A.
Name / title of person to contact regarding terminal information:
Name: Aníbal Augusto Fernandes Junior
Address: Ilha D'Água, s/n - Baía da Guanabara - Rio de Janeiro - RJ, CEP 20531-054
Tel: +55 (21) 2467-9910
Fax: +55 (21) 2467-9907
Tlx:
E-mail: tabg.operations@petrobras.com.br
Name of Port Authority:
Name or title of person to contact regarding port regulations:
Name: Capitania dos Portos do Rio de Janeiro
Address: Rua Alfred Agache, s/nº - Centro - Rio de Janeiro - RJ CEP: 20 021-000
Tel: +55 21 2104-5320 or +55 21 2233-9412
Fax: +55 21 2104-5319 or +55 21 2104-5315
Tlx:
E-mail: secom@cprj.marinha.mil.br

General procedure for port approval (to be attached):
authorities to contact: Capitania dos Portos
documents to be provided: contact Agent
overall duration: contact Agent

SHIP

Ship name:
Owners
Name:
Address:
Tel:
Fax:
Tlx:
E-mail:

Technical managers
Name:
Address:
Tel:
Fax:
Tlx:
E-mail:

Commercial managers
Name:
Address:
Tel:
Fax:
Tlx:
E-mail:

Charterer
Name:
Address:
Tel:
Fax:
Tlx:
E-mail:

SHIP/SHORE COMPATIBILITY

GENERAL

PORT/SHIP Shipping Agents:

Owner's
Name:

Charterer's
Name:

Organization	Contact	Telephone (55 21)	Fax (55 21)	E-mail	VHF/UHF Channels	
					Call	Conversation
Procafon	Agent	2233-9691	2253-1573	movimentação@procafon.com.br eliaspires@procafon.com.br	16	all
Triaina	Agent	2518-1201	2276-2611	trianario@triaina.com.br	16	all
ISS Marine	Agent	2518-5756	2518-6778	igor.borges@iss.shipping.com	--	--
Oceanus	Agent	2213-8761	2516-2748	tramp.rio@oceanus.com.br	--	--
Wilson Sons	Agent	2223-9950	2223-9993	operj@wilsonsons.com.br	16	13
Buarque	Agent	2221-2210	2252-4667	buarque@buarque.com.br	--	--

Utilities:

	FO	GO	LN2	Drinking Water	Clean Water	Return Metering	Cooldown	Gas-Freeing	Inerting	Dirty Oil Reception	Garbage Reception	Chemist	Water Receptoin
Available (Y/N)	N	N	N	Note 0	N	Y	Note 1	N	Note 2	Note 0	Note 0	Note 0	Note 0
Max quantity (unit?)	na	na	na	na	na	10000m³/h	na	na	na	na	na	na	na
Grade	na	na	na	na	na	na	na	na	na	na	na	na	na
Jetty/Barge	na	na	na	B	na	J	J	na	J	B	B	B	B

Note 0 To be contracted by the ship owner.
Note 1 Carrier will be responsable for the cooldown of loading arms (Carrier side)
Note 2 Jetty has his own supply but only for loading arms purging and inerting

SHIP/SHORE COMPATIBILITY

MAIN CHARACTERISTICS

PORT			
	Jetty Name/Number	LNG Jety West	
	Type of Berth	For Regas Units use	
Vessel Limitations			
Maximum Dimensions			
	LOA:	315	m
	Beam:	50	m
	Draught:	12	m
	Air draft (@MHWS):	no restriction	m
	Gross tonnage:	-	t
	Deadweight:	97000	t
	Displacement:	142900	t
	Jetty Name/Number	LNG Jety East	
	Type of Berth	For Carriers use	
Vessel Limitations			
Maximum Dimensions			
	LOA:	300	m
	Beam:	50	m
	Draught:	12	m
	Air draft (@MHWS):	80	m
	Gross tonnage:	-	t
	Deadweight:	97000	t
	Displacement:	142900	t
Normal side of berthing:		Port side	
Tidal Information			
Chart Sounding at Berth		16 m	
Water levels (m):			
	3.16m	Max High Water Level (MHWL)	
	2.67m	Average High Water Level (AHWL)	
	1.39m	Mean Sea Level (MSL)	
	0.27m	Average Low Water Level (ALWL)	
	-0.26m	Max Low Water Level (MLWL)	
	0.00m	Chart Datum (CD)	
Datum Level Used:		Chart Datum	
Dock Water Density:		1,025 kg/m³ Flood	
		1,025 kg/m³ Ebb	
Other			
Approved Port (Facility) Security Plan in Place Y / N			Y
ISO 9000 accreditation Y / N			N
Safety Accreditation e.g. ISRS Y / N			N
Is the terminal part of a public port. Y / N			Y

SHIP	Ship Name/Number	
Nominal size:		cu.m
LOA:		m
LBP:		m
Beam:		m
Depth:		m
Summer draught:		m
Loaded draught:		m
Ballast draught:		m
Air draught:		m
Displacement:		t
Gross tonnage:		t
Deadweight:		t
Cargo Containment Type:		

SHIP/SHORE COMPATIBILITY

PORT INFORMATION

Weather Limitations

Limits for Berthing

Wind Speed/Direction	20 knts / any direction
Wave Height	na
Visibility	na

Limits for Cessation of Cargo Operations

Wind Speed/Direction	30 knts / any direction
Wave Height	na
Visibility	

Limits For Disconnection of Loading arms and/or Hoses

Wind Speed/Direction	35 knts / any direction
Wave Height	na
Visibility	na

Limits for Leaving Berth

Wind Speed/Direction	55 knts / any direction
Wave Height	na
Visibility	na

Limits for Resumption of Cargo

Wind Speed/Direction	25 knts / any direction
Wave Height	na
Visibility	na

Other e.g. Icing, river bore etc.

Action in the Event of Electrical Storms

Stop Cargo	Y / N	na
Disconnect Hoses/Arms	Y / N	na
Night Time Berthing/Unberthing	Y / N	Y

Tidal Rates at Berth

Flood Spring tides speed knts, direction degT	na
Ebb Spring tides speed knts, direction degT	na
Flood Neap tides speed knts, direction degT	na
Ebb Neap tides speed knts, direction degT	na

Tidal Cycle: 6.00 hrs

Can vessel leave berth at any state of tide, regardless of draft? Y / N	Y
Tidal Stream/Current Restrictions Berthing	N
Tidal Stream/Current Restrictions Unberthing	N

Tugs Available

NOME	PROPULSORES	BOLLARD PULL	BHP	ANO
TROVÃO	2	16.33	1430	1981
FURACÃO	2	16.6	1480	1981
TUFÃO	3	23.03	1470	2003
CICLONE	3	43	3940	2004
TORNADO	3	40	3540	2000
TEMPESTADE	3	43	3300	2004
"LYNX"	2	22	2170	1994
"PERSEUS"	1	33	2170	1982
"PLUTÃO"	2	46	3446	2003
"MIRZAM"	2	29	1930	1987
"TURIAÇU"	1	27	1980	1991
"TIRRENO"	2	20	2150	1987
"S. PAULO"	2	46	3446	2004
"ARAL"	2	30	3000	1973
PIRAJA	3	20	1950	1994
ATALAIA	3	17	1200	1988
PALMARES	2	21	2440	1995
CARIRI	2	38	2800	1991
ATREVIDO	3	21	1410	1996
ATIRADO	2	20	1280	2001
ASSANHADO	3	32	2160	1997
ABUSADO	2	22	2160	1998
BURIÇADO	2	20	1200	2003
PEREGRINO	3	48	3940	2002
VALENTE	3	20	1800	2004
FIEL	3	20	1800	2004

Reduction in tugs if thrusters fitted Y / N

Ship's or Tug's Line

Escort tug used Y / N

Stand-by' tug provision Y / N

Maximum Wind speed and Direction Return Period 20 years

Direction	Speed m/s
N	18.9
NE	15.4
E	20.6
SE	16.2
SE	17.4
SW	23.8
W	25.7
NW	19.3

Terminal Storage capacities

	Product	Capacity m3	press/refrig	import rate m3	export rate m3
LNG		125000	refrig	5000/h(min)	na
Ethylene	na	na	na	na	
Propane	na	na	na	na	
Butane	na	na	na	na	
Ammonia	na	na	na	na	
VCM	na	na	na	na	
Butadiene	na	na	na	na	
Propylene	na	na	na	na	

comments, e.g. rates with/without vapour return

Temperatures

	Winter	Summer
Sea Temp	16	24
Min Air Temp	8	25
Max Air Temp	30	40

Average Number of days per year that the port is closed due to	2
Is the terminal subject to sudden local severe weather conditio	N
Details	

SHIP/SHORE COMPATIBILITY

CONFIRMATION LIST BETWEEN SHORE AND SHIP

Items	Shore specification	Ship specification	Remarks
Fender/flat body			
1.Arrangement - Include drawings. Include ship's parallel body dimensions at different intervals. Include fender height, width, height above datum and facing material.	1.Arrangement (Layout, Fender topview,side view) (unit:m)	1.Flat body (under ballast conditions) (unit:m)	
2.Strength	2.Strength (unit:t/sq.m) Max. berthing speed = 10 cm/s Berthing angle = 3 deg East Berth EBD1 & EBD4 (SUC-1700H-RE): Energy Absortion: 1719 kNm Reaction Force: 2311 kN @ 55%compr EBD2 & EBD3 (SUC-1700H-RH): Energy Absortion: 1322 kNm Reaction Force: 1778 kN @ 55%compr Max. berthing speed = 12 cm/s Berthing angle = 3 deg	2.Strength (flat body) (unit:t/sq.m)	to indicate here max. berthing speed (in cm/s),berthing angle and offset (from loading arm center to manifold center)

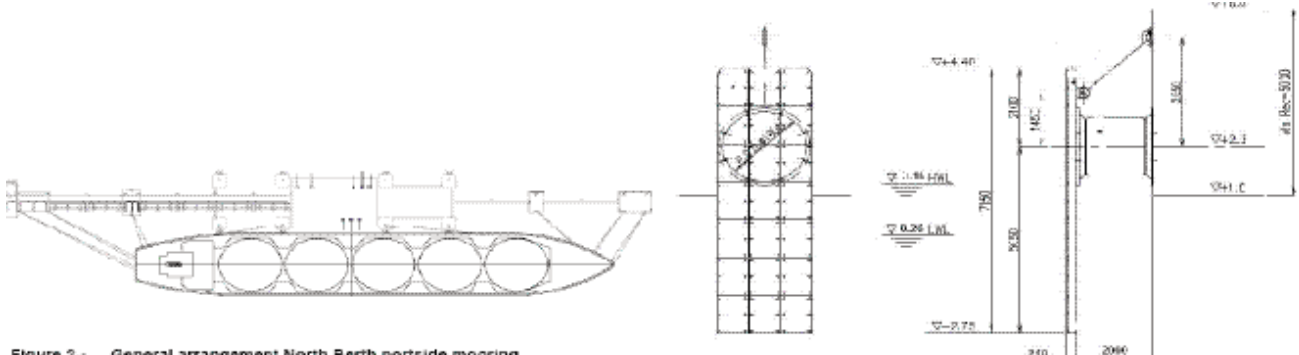


Figure 2.- General arrangement North Berth portside mooring

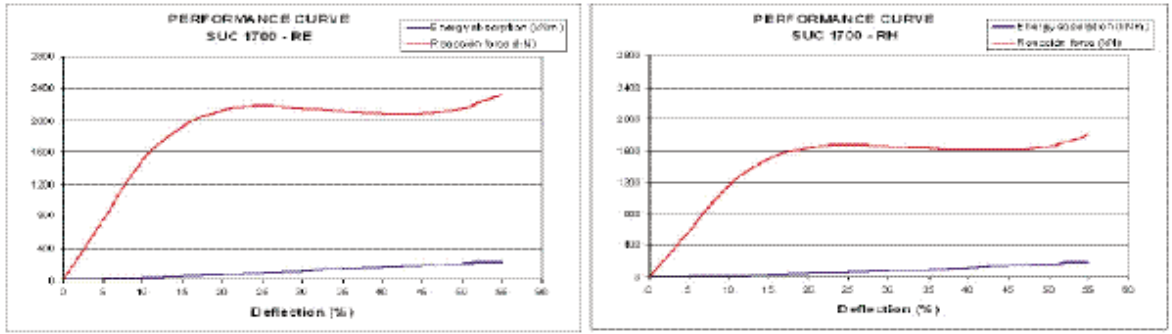
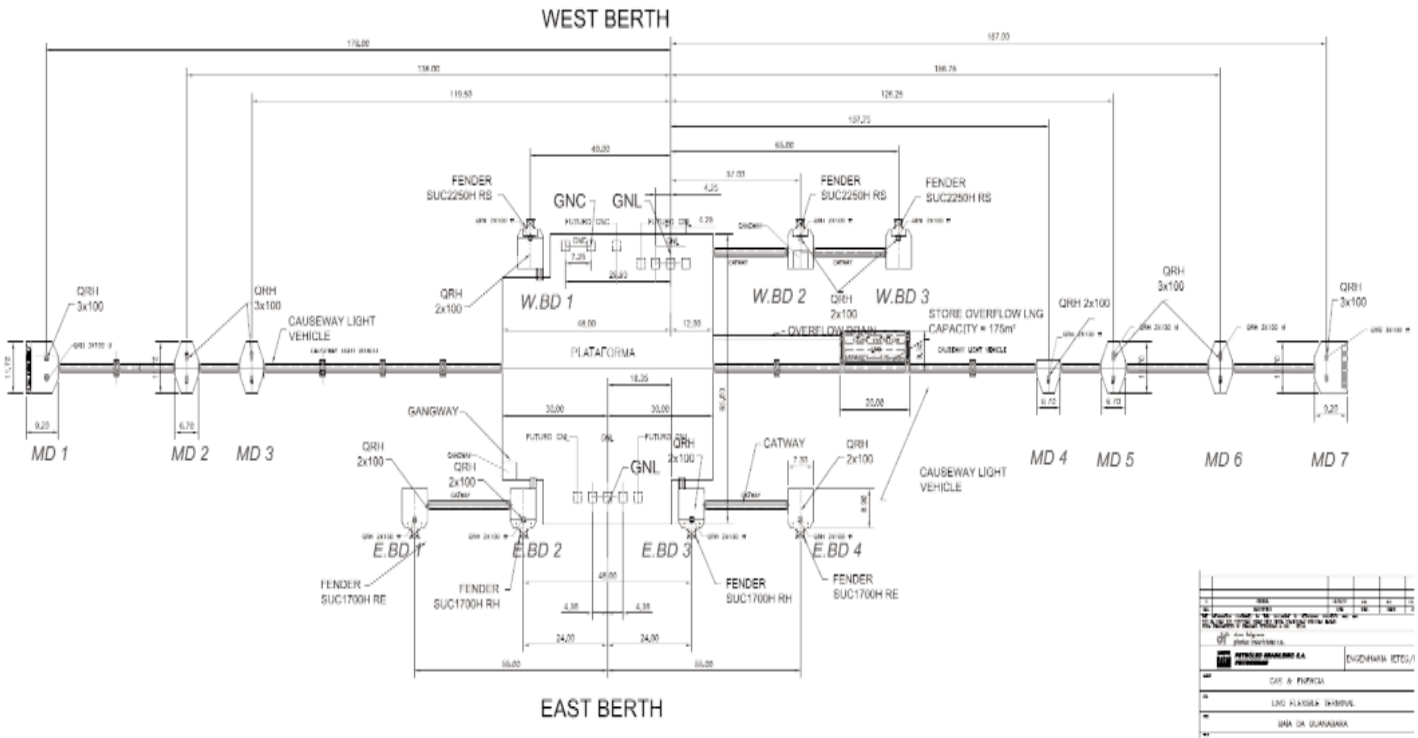


Figure 2.- Deformation curves for SUC 1700H


WEST BERTH
FENDER SUC2250H RS
GNC
GNL
FENDER SUC2250H RS
FENDER SUC2250H RS
QRH 3x100
QRH 3x100
CAUSEWAY LIGHT VEHICLE
QRH 2x100
W.BD 1
W.BD 2
QRH 2x100
W.BD 3
STORE OVERFLOW LNG CAPACITY = 175m³
OVERFLOW DRAIN
QRH 2x100
QRH 3x100
QRH 3x100
PLATAFORMA
GANGWAY
MD 1
MD 2
MD 3
QRH 2x100
QRH 2x100
GNL
CATWAY
QRH 2x100
CAUSEWAY LIGHT VEHICLE
MD 4
MD 5
MD 6
MD 7
E.BD 1
E.BD 2
E.BD 3
E.BD 4
FENDER SUC1700H RE
FENDER SUC1700H RH
FENDER SUC1700H RH
FENDER SUC1700H RE
EAST BERTH

CONFIRMATION LIST BETWEEN SHORE AND SHIP

Items	Shore specification	Ship specification	Remarks
Loading arms and manifold lay-outs			
1. Loading arms/manifold	Loading arm connection and spacing [illegible] [illegible] [illegible] See "Manifold Envelope" Sheet.	Manifold [illegible] [illegible] [illegible] [illegible]	Manifold side view [illegible] [illegible] [illegible] [illegible] [illegible]
2. [illegible] envelope	See "Manifold Envelope" Sheet.	[illegible]	[illegible]
3. [illegible]	No		[illegible]

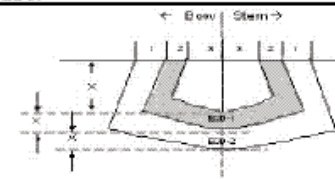
Distances to [illegible] : See "Manifold Envelope" Sheet	
[illegible]	Forward
	Aft
	Seaward
[illegible]	Forward
	Aft
	Seaward
[illegible]	Forward
	Aft
	Seaward
Distance from Ship's Side to Flange Face	
Spacing Between Manifold Centers	
Centre line of manifold above the main deck	

Size of flanges to be fitted (ANSI)	Normally 16in.
Number of [illegible]	LNG only
[illegible]	LNG only

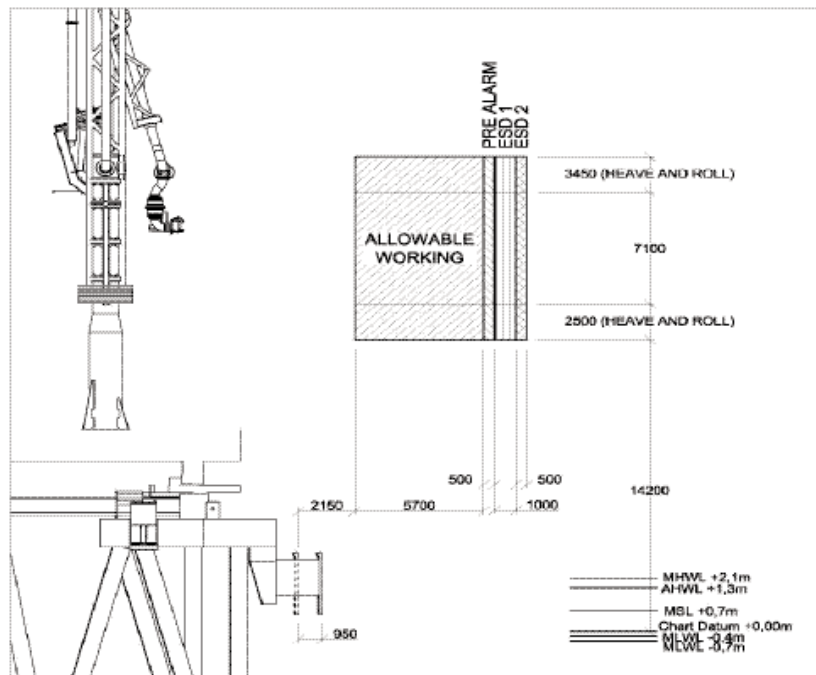
SHIP-SHORE COMPATIBILITY - MANIFOLD ENVELOP

Angle(deg)

	LNG-MLA-01 (L)		LNG-MLA-02 (V)		LNG-MLA-03 (L)	
	left	right	left	right	left	right
pre alarm	18.6	18.6	18.6	18.6	18.6	18.6
ESD1	21.0	21.0	21.0	21.0	21.0	21.0
ESD2	25.7	25.7	25.7	25.7	25.7	25.7



LNG-MLA-01 / LNG-MLA-02 / LNG-MLA-03



SHIP/SHORE COMPATIBILITY

CONFIRMATION LIST BETWEEN SHORE AND SHIP

Items	Shore specification	Ship specification	Remarks
Arms/ cargo pumps / compressors			
1.Loading arm Number		1.Pump spec.	Give here characteristics of
(1)Flow rate	**Liquid: 5000 cu.m/hr/arm** **Vapour: 15000 cu.m/hr/arm**	(1)Cargo pump: cu.m/pump m head	support jacks if applicable : load: kp/sq.cm
(2)Number	**Liquid: 2 sets (hold max flow rate do to BOG restriction)** **Vapour: 1 sets**	sets	foot plate size: mm/mm
(3)Size	**16 inches**	(2)Spray pump: cu.m/pump m head	Min/Max Ht
(4)ERS	**Type: hidraulic, double ball valve**	sets	Indicate cargo pump type centrifugal/positive displ Indicate if PERCS, breakaway couplings or QC/DC
(5) Minimum Temperature	-168 °C up to +60 °C (Design)	(3)Pressure at hand rail: m	To attach ship's curves: Rail pressure of liquid line vs. loading rate , Rail pressure of liquid line vs. unloading rate.
		2.Compressors spec.	To attach ship's curve:
		(1)Number: sets	Vapour flow vs. supply
		(2)Capacity: cu.m/hr/set	pressure
		(3)Pressure: kPa A.	To attach block flow diagram
(6)Flange spec :	The QCDC needs:	3.Flange spec.	of terminal with line-up
a.Flange	a.Liquid: ANSI 150 lbs FF Vapour:ANSI 150 lbs FF	a.Liquid: ANSI Vapour:ANSI	
b.Bolt & nut size	b. Not necessary (QCDC doesn't requires spool piece)	b.	(if QC/DC is used shore side, to attach spool piece spec.)
Number	Not Necessary		
Material	Not Necessary		
c.Packing	c. Gaskets are part of the QCDC	c.	(who provide?,indicate inner gasket and outer gasket if applicable)

What is the maximum acceptable saturated vapour pressure/temperature on arrival (Discharge Port) 0,12 barg/-159,4°C @ (send out=zero , maximum transfer flow rate=10000 cu meter/hour)

SHIP/SHORE COMPATIBILITY

CONFIRMATION LIST BETWEEN SHORE AND SHIP

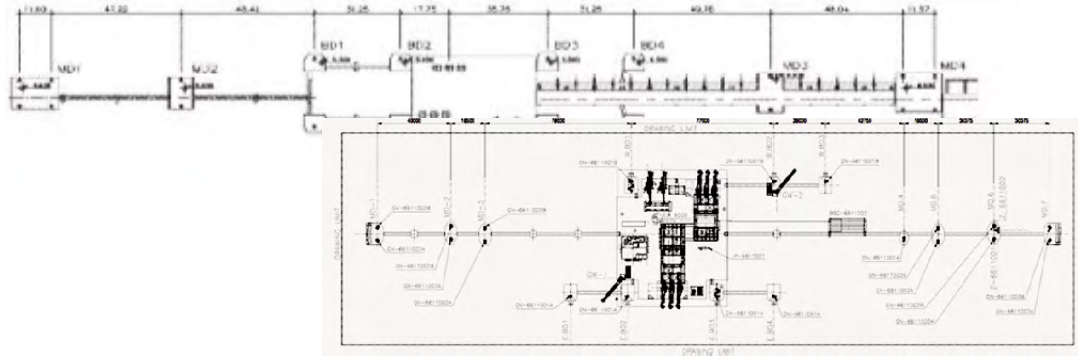
Items	Shore specification	Ship specification	Remarks
Arms/cargo pumps/ compressors (cont'd)		There is no arm on the ship	
1.Loading arm (cont'd)			
Loading strainer characteristics		mesh	To attach drawing
Discharge strainer characteristics		mesh	To attach drawing
2.LNG-MLA-01 arm	LNG-Liquid		
(1)Flowrate	5000 or 45000 m3/h		Indicate availability of LNG hose on ship and hose characteristics. Indicate availability of suitable reducers on ship.
(2)Size	16"		
(3)Flange spec.:	16" Hydraulic QC/DC		
a.Flange	ANSI 150 lbs FF		
b.Bolt and nut			
Number			
Material bolt			
Material nut			
Size			
Packing			
(4)Rated pressure	5/15 bar g (Oper/Design)		
Separate from vapour line?			
Max outreach from feedeline	na		
3.LNG-MLA-02 arm	LNG-Vapour		
(1)Flowrate	15000 m3/h		Indicate availability of suitable reducers ship & shore.
(2)Size	16"		
(3)Flange spec.:	16" Hydraulic QC/DC		
a.Flange	ANSI 150 lbs FF		
b.Bolt and nut			
Number			
Material bolt			
Material nut			
Size			
Packing			
(4)Rated pressure	5/15 bar g (Oper/Design)		
4.LNG-MLA-03 arm	LNG-Liquid or LNG-Vapour		Indicate availibility of suitable reducers ship & shore.
(1)Flowrate	5000 or 15000 m3/h		
(2)Size	16"		
(3)Flange spec.:	16" Hydraulic QC/DC		
a.Flange	ANSI 150 lbs FF		
b.Bolt and nut			
Number			
Material bolt			
Material nut			
Size			
c.Packing			
(4)Rated pressure	5/15 bar g (Oper/Design)		
5.Fresh water hose	Not available		
(1)Flowrate	na		
(2)Flange spec.	na		
(3)Rated pressure	na		
(4) Coupling Type	na		
6. Fire connection	Not available		
(1)Coupling type/size	na		

Are insulating flanges used ? Y/I — No

SHIP/SHORE COMPATIBILITY

CONFIRMATION LIST BETWEEN SHORE AND SHIP

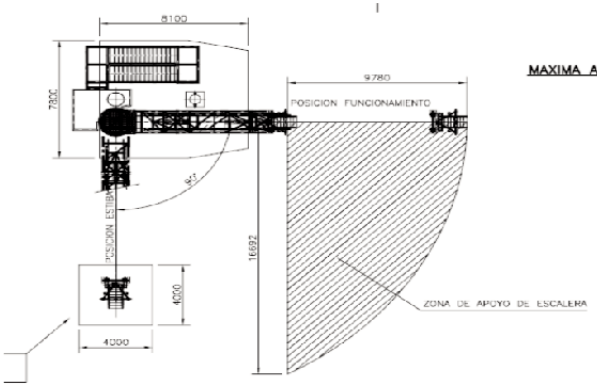
Items	Shore specification	Ship specification	Remarks
Mooring line / winch			
1.QRH/winch number	1.QRH Y MD No1 3x1 (Hooks x Sets) MD No2 3x1 MD No3 3x1 East BD No1 2x1 East BD No2 2x1 East BD No3 2x1 East BD No4 2x1 MD No4 3x1 MD No5 3x1 MD No6 3x1 MD No7 3x1	1.Winch (1)Windlass tx m/Min x sets tx m/Min x sets (2)Winch tx m/Min x sets tx m/Min x sets tx m/Min x sets No. of drums No. of wires (P) side No. of wires (S) side Brake capacity t/drum No. of hawser drums	Indicate if QRH is operated locally or remotely. Indicate if QRH is used Indicate load limits for each hook
2.Strength	2. 1600 kN SWL for all hooks	2.Wire strength (1)Wire IWRC (or other) Dia. x Length m (2)SWL t	If not wire mooring line, indicate material and construction
3.Tail rope	11 m pennants required	Tail rope characteristics To be attached	
4.Lay out	Attached Recommended total No. of mooring lines= 18 as follow: H=3 (MD1) / B=3 (MD2) / S=2 (EBD1) / S/B2 (EBD4)/ B=3 (MD5) / S/T= 3 (MD6)		Indicate height above datum Indicate distance from spotting line Indicate setback from berth face Indicate mooring line type
5.Design weather criteria for mooring forces calculation	Wind: speed = 60 knots any direction Current speed = 2 knots direction = 10d or 170d Waves: Hs =0,5m direct.= 170d		
6. Any specific data which may be needed for in depth mooring analysis	None		e.g. Optimoor data



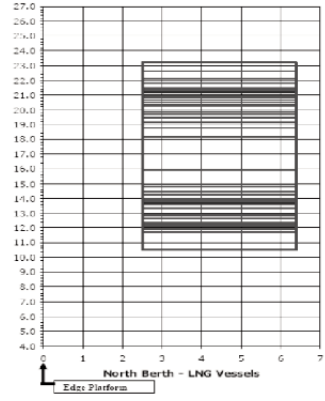
SHIP/SHORE COMPABILITY

CONFIRMATION LIST BETWEEN SHORE AND SHIP

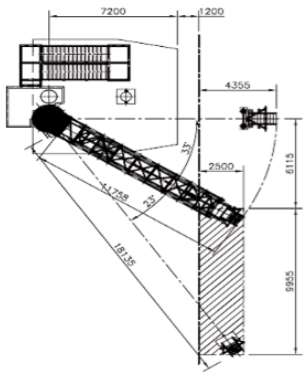
Items	Shore specification	Ship specification	Remarks
Gangway/support			
1.Position of gangway	1.Position 27,5 m aft from vapour line (south direction) 13,7 m from uncompressed berthing line	1.Position (units:m)	To insert sketch or attach drawing if necessary. Repeat if more than one gangway. Indicate type of gangway arrangement. Indicate max and min height above datum. Distance gangway centreline to vapour return arm.
2.Gangway support	**2.Detail of gangway extremity**	2.Detail of gangway landing area or gangway support	To insert sketch or attach drawing if necessary. Indicate gangway width.
3.Gangway working area	**3.Working area (top view,side view)**	3.Sketch (elevation,side view) Indicate (P) or (S) side	To insert sketch or attach drawing if necessary. Indicate working range at ship's rail and slew allowance forward and aft.
4.Weight of gangway on support	4.Weight Longitudinal: 6,887 kg Transverse: 6,503 kg Vertical: 10,235 kg		
5. Is the gangway electrically insulated to prevent static discharge? Y / N			



MAXIMA AR

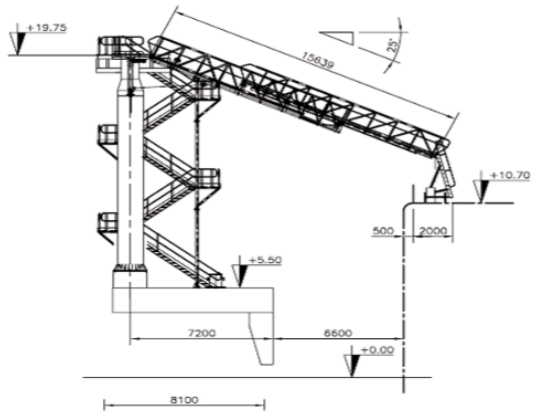


PLANTA MINIMA DERIVA, +16.50

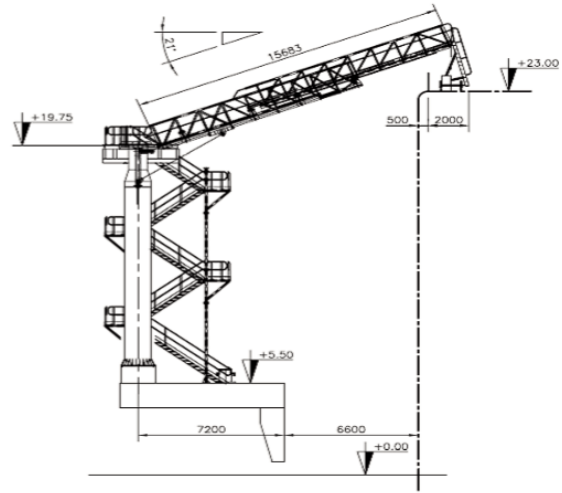


DETALLE DADO DE HORMIGON

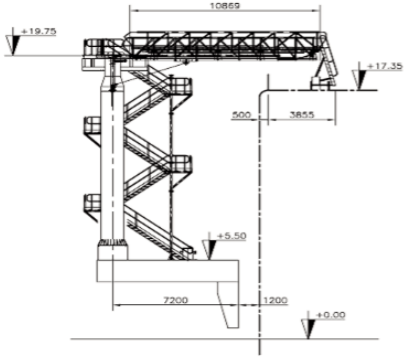
MAXIMA DERIVA, MINIMO FRANCOBORDO



MAXIMA DERIVA, MAXIMO FRANCOBORDO



MINIMA DERIVA, +17.35



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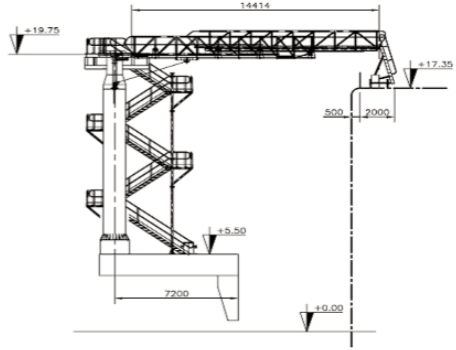
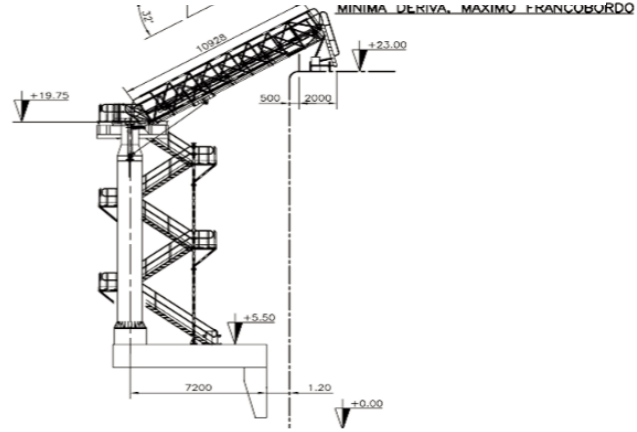


MINIMA DERIVA, MAXIMO FRANCOBORDO



SHIP/SHORE COMPATIBILITY

CONFIRMATION LIST BETWEEN SHORE AND SHIP

Items	Shore specification	Ship specification	Remarks
service platform			
	Insert here lay out	Insert here lay out of ship's spare parts and provisions crane(s)	Crane(s) capacity and speed: (units:t and m/min)
Is storing allowed during cargo operations? Y / N		N	
Is storing allowed during cargo sampling etc.? Y / N		N	
Any restrictions on soft/hard store over the jetty		Y	
Are barges allowed alongside? Y / N		N	
Are crew changes permitted? Y / N		Y	
Is the immobilisation of engines for routine maintenance permitted? Y / N			N
Is the survey and maintenance of radar and communications equipment permitted? Y / N			Y
Are taxis allowed in the terminal? Y / N			na
Details of crew access to shore		To be defined	
Requirements for visitors to vessel.		To be defined	
Languages spoken by terminal operations staff		Portuguese / English	

SHIP/SHORE COMPATIBILITY

CONFIRMATION LIST BETWEEN SHIP AND SHORE

Items	Shore specification	Ship specification	Remarks
Safety items			
1.ESD			To attach ESD diagram
(1)ESD link			
a.Optical fiber	a. Yes	a.	
Manufacturer	Seatechnik		
Connector type	Female, 6-core connector		
Conn. box position	At 16.2 m from upper arm (yacht)		
Cable length	50 m		
b.Pneumatic link	b. Yes	b.	
Manufacturer	Seatechnik		
Connector type	Male		Male/female
Connector position	At 12.0 m from upper arm (yacht)		
Air pressure set			
Air pressure trip			
Cable length	50 m		
c.Electric link	c. Yes	c.	To attach plug pin arrangement
SIGTTO link?			Y/N
Manufacturer	Seatechnik		
Connector type	Pyle National 37 way connector male		
Connector position	At 13.8 m from upper arm (yacht)		
Cable length	50 m		
d.Other	d. No	d.	
Manufacturer			
Connector type			
Connector position			
Cable length			
(2)ESD activation			To attach cause & effect diagram if necessary
a.ESD 1	Activated by	Activated by	Arms envelope drawing to show alarms levels and ESD trips
	1. Second stage arm displacement	1.	
	2. Ship ESD	2.	
	3. MT ESD	3.	
	4. Low N2 pressure at Jetty	4.	
	5. Fire, gas & spill detection	5.	
	6. ESD 1 push button, jetty platform	6.	
	7. ESD 1 push button, Jetty Control Room	7.	
	8. High differential temperature over limit (up and downs)	8.	
	9. High rate of temperature change over limit (up and downs)	9.	
	10. High temperature over LNG limit (during commissioning)	10.	
	11. High pressure over LNG limit (during commissioning)	11.	
	12. Low pressure over LNG limit (during commissioning - up trips only)	12.	
b.ESD 2	Activated by		
	1. Third stage arm displacement switch		
	2. ESD 2 push button, Jetty Control Room		
(3)ESD valves	Closure time: 8 seconds	Closure time:	For valves No. and valves identification, refer to line-up diagram
(4)In case hydraulic link is not provided	Portable VHF/UHF radio or		Specify procedure
Is there pressure surge protection during ESD? Y/N		N	
Details			

SHIP/SHORE COMPATIBILITY

CONFIRMATION LIST BETWEEN SHORE AND SHIP

Items	Shore specification	Ship specification	Remarks
Safety items (cont'd)			
2.Tension monitoring system 2.1 in case ship/shore link is provided (1)Optical fiber Same as ESD? a.Manufacturer b.Computer type c.Connector type d.Conn. box position e.Cable length	**Yes - Harbor Marine** N N		Information displayed,tension alarms: Tension, enviromental, alarms Y/N
(2)Other 1 a.Manufacturer b.Computer type c.Connector type d.Connector position e.Cable length	WiFi (Radio) Harbor Marine		In case of electric link,to check if protection against over-currents is adequate (e.g. Zener barrier ,etc.)
(3)Other 2 a.Manufacturer b.Computer type c.Connector type d.Connector position e.Cable length	Pager		Tension, alarms
2.2 in case ship/shore link is not provided			specify appropriate procedure for mooring watching

SHIP/SHORE COMPATIBILITY

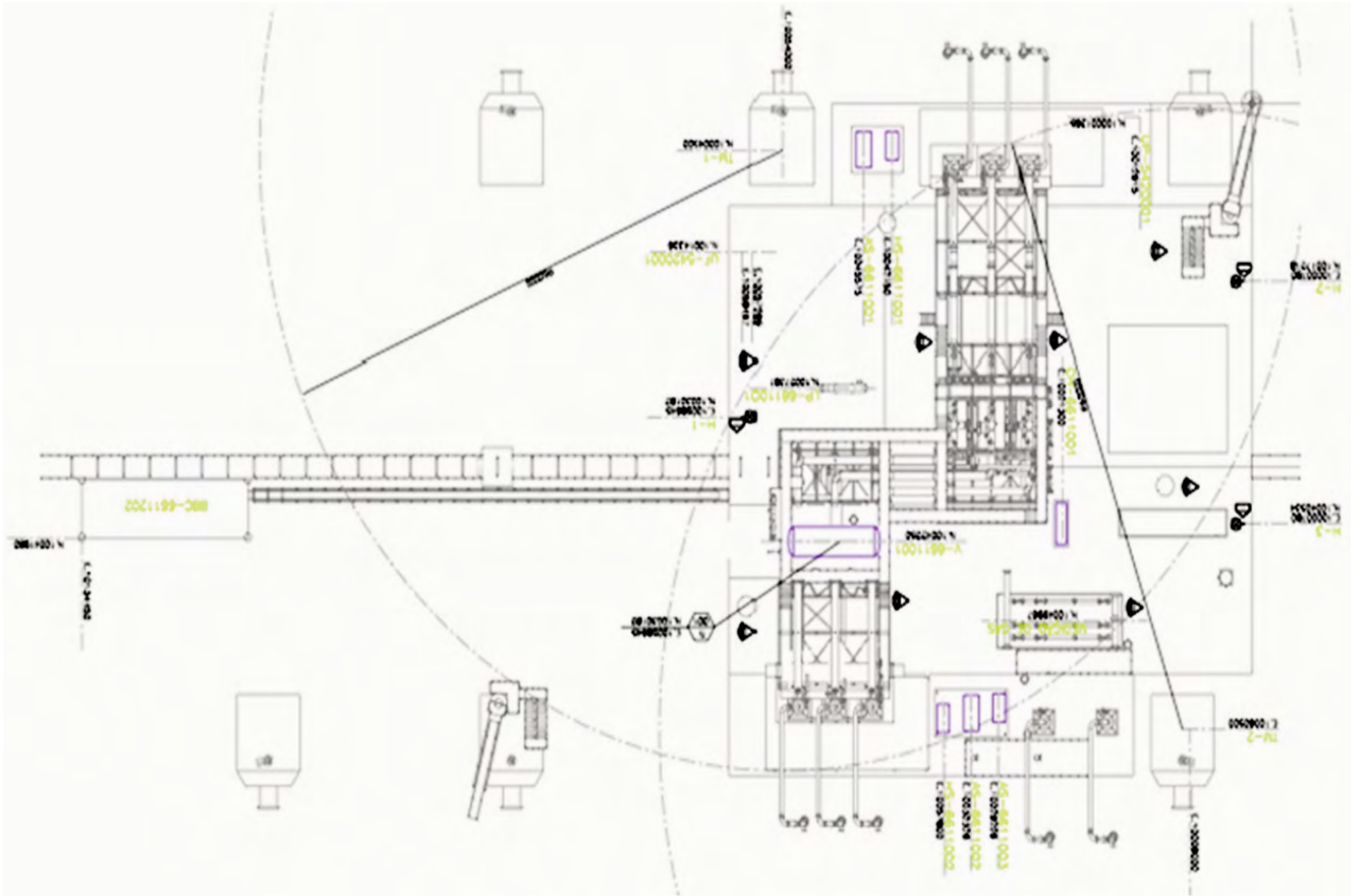
CONFIRMATION LIST BETWEEN SHORE AND SHIP

Items	Shore specification	Ship specification	Remarks
Safety items (cont'd)			
3.Approach radar	Yes		
(1)Position	Sensors located on inner breasting dolphins. A large display unit on the jetty and hand held monitor	ship lateral dimensions: (unit:m)	
(2)Manufacturer	Harbour & Marine		
(3)Specification	Distance measured from uncompressed fenders Velocity and angle: calculated		Indicate nature of information approach speed ? distance off?
(4)Operational?	Yes		
4.Bonding cable			
Is bonding cable used ?	N		
(1)Position			
a.Cable 1			
b.Cable 2			
(2)Connector type	(unit:mm)	(unit:mm)	
(3)Cable			
a.Size			
b.Length			
(4)Bolt & nut			
What is the maximum speed of approach during berthing ?		12cm/s	
What is the usual angle of approach during berthing ?		3 degrees	

SHIP/SHORE COMPATIBILITY

CONFIRMATION LIST BETWEEN SHORE AND SHIP

Items	Shore specification	Ship specification	Remarks
Safety items (cont'd)			
5.Fire fighting	1.Platform: **Two elevated monitors** **Two water hydrants** **Dry powder extinguishers** **Foam extinguishers**	1.Exposed deck in cargo system 2.Manifold 3.Cargo tank domes 4.Front of accomodation space 5.Side plating	Indicate for each location: D/P=dry powder S/W=sea water W/S=water spray W/C=water curtain F/E=foam extinguisher
6. Alarms	**Gas, criogenic & fire alarms** **High mooring loads** **Over extension of loading arms**		to describe audible and visual alarms because they all differ from terminals to terminals



TERMINAL AQUAVIÁRIO DA BAIA DA GUANABARA
GUANABARA BAY MARINE TERMINAL

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TRANSPETRO