



PETROBRAS TRANSPORTE S. A.
TRANSPETRO

PORT INFORMATION

Marine Terminals of **GUANABARA BAY**

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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 supplement – 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 disregarded.

Ship operations at the Guanabara Bay Marine Terminals must comply with the recommendations 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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DEFINITION

2

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

CFTV – Television Closed Circuit.

COW – Crude Oil Washing.

Squat Effect – Increased draft 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 – Secondary 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

TABG

BAÍA DA GUANABARA TERMINAL

REFERENCE CHARTS AND DOCUMENTS

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

3.1 Charts

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

3.2 Other Publications

Area	Publisher or Source		
	Brazil (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	09/00, 58/01, 62/01, 24/02, 37/02, and 106/03	—	—

continue

Area	Publisher or Source		
	Brazil (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 terminal 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 Appendixes A, B & C, where applicable

continue

Information	Prepared by:			Delivered to:			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 Appendix A
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

DESCRIPTION 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 23° 03' 8 S and longitude 43° 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 22° 56' 2 S and longitude 043° 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 11.60 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 central 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 22° 49' 10" S and longitude 043° 09' 08" W.
- Secondary Pier { PS}: Latitude 22° 48' 15" S and longitude 043° 09' 03" W.
- Ilha Redonda Pier { IR}: Latitude 22° 48' 07" S and longitude 043° 07' 13" W.
- Ilha d'Água Barge Pier { PB}: Latitude 22° 48' 38" S and longitude 043° 09' 42" W.
- LNG Pier { PG}: Latitude 22° 46' 48" S and longitude: 043° 07' 59" W
- Ilha Comprida { ICOMP}: Latitude: 22° 48' 35" S and longitude: 043° 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	$\varphi = 22^{\circ} 52' 75'' \text{ S}$ $\lambda = 043^{\circ} 08' 54'' \text{ W}$	0.22 miles	13.3 m	Clearance of vessels by the sanitary and port authorities may be carried out after mooring
Waiting anchorage	$\varphi = 22^{\circ} 48' 48'' \text{ S}$ $\lambda = 043^{\circ} 08' 30'' \text{ W}$	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 characteristics: 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 22° 56' 12" S and longitude 043° 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 difference 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 notification 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. This service must be carried out starting from the pilot embarkation point, shown in the navigation or the waiting anchorage 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 22° 59' 8 S and longitude 043° 08' 6 W, near Ponta do Leme. If the ship intends to use the secondary channel, the pilot shall come aboard at latitude 22° 59' 8 S and longitude 043° 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 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 vessels, 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 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 establishes 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 Ilha Redonda may never be authorized during an operation.

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.

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 latitude 22° 55.9' S and longitude 043° 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 totally signaled, but the existing signaling is sufficient for safe navigation. The only hazards 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 22° 49' 48" S and 22° 50' 42" S and longitudes 043° 09' 12" W and 043° 09' 30" W, and the passage under the Rio-Niterói Bridge, which must be performed with the assistance of tugboats. (texto com mesmo significado consta em parágrafo na pg 22)
- 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 a history 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 characterized 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: 5° (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.
- 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 boundaries 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 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 11.60	(1)	(1)	(1)	(1)
	35.000 to 90.000	Up to 12,00	(1)	(1)	(1)	(2)
	90.000 to 105.000	Up to 12.00	(1)	(4)	(1)	(2) (4)
	90.000 to 105.000	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)	(1)	(1)	(1)
	10,500 to 35,000	Up to 8.50	(4)	(4)	(4)	(4)
IR	Up to 10,000	Up to 8.50	(1)	(5)	(1)	(6)
	10,000 to 25,000	Up to 8.50	(7)	(9)	(7)	(9)
	From 25.000 to 38,000	Up to 8.50	(7) (8)	(9)	(7) (8)	(9)
ICOMP	Até 50.000	Up to 8,50	(1)	(5)	(1)	(6)
PG-1	120,000	Up to 12.00	(1)	(9)	(1)	(9)
PG-2	107,000	Up to 12.00	(1)	(9)	(1)	(9)

- (1) No restrictions;
- (2) Nighttime unberthing for departure depends on maximum draft of 11.30 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 200 m;
- (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 temperature 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 20 knots. An average of 13 front systems pass through the Guanabara Bay in the winter, 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 Pier, 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 25 knots and stress on the mooring cables above 60 tons 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 loading 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 significant 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.

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*	Draft	Tide		Max. Free Board	LOA (max.)	DWT (max.)	Minimum length of the parallel side	Products Handled	
				High	Low						
		(m)	(m)	(m)	(m)	(m)					
PP-1	Island	310	15.85	1.60	- 0.10	17.80	—	135,000	21.3	Petroleum, and by-products, alcohol and MTBE	
PP-2	Island	310	12.80	1.60	- 0.10	17.80	—	105,000	21.8		
PS-1	Island	300	12.00	1.60	- 0.10	17.80	—	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	8.50	1.60	- 0.10	19.0	215	38,000	46.0	LPG and chemical gases	
ICOMP	T-head	210	8,50	1,60	-0,10	20	210	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 and CNG

* Refer to Item 5.4.2 – Draft Limit

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

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		Unberthing		Speed (cm/seg)	Angle	Bollards	Hooks	Bow and Stern Lines	Breast Lines	Spring Lines
	#	BP	#	BP							
PP-1	3/4	35	3/4	35	10	5°	—	12	4-3 *	3	2
PP-2	3/4	35	3/4	35	10	5°	—	12	3	3	2
PS-1	3/4	35	3/4	35	10	5°	—	20	—	6-4**	2
PS-2	2/3	35	2/3	35	10	5°	—	14	—	4	2
IR	3/3	35	3/3	15	10	5°	—	14	3	2	2-1 ***
ICOMP	3/3	35	2/3	35	10	5	-	22	3	2	2-1***
PB	0/1	10	0/1	10	10	5°	12	—	2	1	2
PG-1	4#	40	4#	40	12	3°	—	28	2 ##	4	2
PG-2	4#	40	4#	40	12	3°	—	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	80	Yes
	2	FMC	Petroleum	16"	3,150	10	80	Yes
	3	FMC	Dark	12"	1,350	10	80	Yes
	4	FMC	Light	10"	1,600	10	40	Yes
	5	FMC	Dark	12"	1,350	10	40	Yes
	6	FMC	Light	10"	1,600	10	80	Yes
PP-2	1	FMC	Petroleum	16"	3,150	10	80	Yes
	2	FMC	Petroleum	16"	3,150	10	40	Yes
	3	FMC	Dark	12"	1,350	10	40	Yes
	4	FMC	Light	10"	1,600	10	80	Yes
	5	FMC	Dark	12"	1,350	10	80	Yes
	6	FMC	Light	10"	1,600	10	80	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
PS-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
PS-2	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	Pressure (kgf/cm ²)	Temperature (°C)
BC-401	Emco Wheaton	LPG	10"	1330 t/h	4,5	-48
BC-402	Emco Wheaton	Propane Butadiene	6"	500 t/h	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 (m ³ /h)	Pressure (kgf/cm ²)	Temperature (°C)
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 (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)	Temperatura Temperature
PG-1	BC-001	Emco Wheaton	LNG	16"	5,000	3,5	-162
	BC-002	Emco Wheaton	LNG	16"	10,000**	0,13	-140
	BC-003	Emco Wheaton	LNG	16"	5,000	3,5	-162
PG-2	BC-004	Emco Wheaton	LNG	16"	5,000	1,6	-162
	BC-005	Emco Wheaton	LNG	16"	10,000**	0,2	-140
	BC-006	Emco Wheaton	LNG	16"	5,000	1,6	-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

* 14 MMm³/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), secondary (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.



PROCEDURES

7

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.

7.1.3 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 O₂ 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) 2534-3292

A.O.H.: (21) 9972-6103

Fax: (21) 2534-3976 / 2262-8134

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	3870-5320 / 2233-8412
INEA (State Institute of the Environment) 10 am to 4:30 pm	2234-7910
Sanitary Inspection (8 am to 5 pm)	2503-2280 / 2503-2281
Sanitary Inspection (5 pm to 6 am on working days)	2254-2100
IBAMA (National Environmental Agency)	0800-618080
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 safety 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 ebb to flood.

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 connection not outside the drain pan and cause excessive strain on the vessel's manifold. The connection 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 Appendixes A, B and C) is verified and filled out by a GIAONT inspector during the initial clearance of the ship. After this safety inspection, 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 authorities;
- 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 expenses 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 tug-boats with the stern towards the pier oil boom may cause their damage and the shutdown of all operations. In this case, the costs relating to the shutdown and repairing of the barriers 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/cm²) 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 Appendix A of ISGOTT, shall be conducted 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 Unberthing and Leaving the Port

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 16, 9 or 11.

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) 2467-9931

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 Harbour Master (*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:

Rio Pilots – Empresa de Praticagem do Estado do Rio de Janeiro S/C Ltda.

Avenida Rio Branco, 4 / salas 1501/02/03 – Centro

ZIP Code: 20090-000 – Rio de Janeiro – RJ – Brazil

Telephones: (55 21) 2516-1336 / 2233-4562

Fax: (55 21) 2233-9738

Site: www.riopilots.com.br

E-mail: assessoria@riopilots.com.br / sindipraticos@riopilots.com.br

Sindipilots – Serviços de Praticagem Ltda.

Avenida Rio Branco, 45 / 25º andar – Centro

ZIP Code: 20090-003 – Rio de Janeiro – RJ

Tel./Fax: (21) 2516-2340 / 2263-8222

Fax: (21) 2283-3362

E-mail: sindipilots@nsinet.com.br

New Pilots – Praticagem do Rio de Janeiro

Av. Infante Dom Henrique, s/nº, sala 24

Tel.: (21) 3826-3790 / 2285-2593

Fax: (21) 2205-1615

E-mail: contato@newpilotsrj.com.br

Site: www.newpilots.com.br

RJ Pilot – Práticos do Rio de Janeiro Ltda.

Av. Rio Branco, 25 / 20º andar - Centro

20090-003 – Rio de Janeiro – RJ

Tel.: (21) 2233-4032/2233-4020

Fax: (21) 2283-1352

E-mail: financeiro@praticosdoriodejaneiro.com.br

Site: www.rjpilots.com.br

Rio Jan Práticos Ltda.

Avenida Rio Branco, 04 - Sala 1402 – Centro

20090-003 – Rio de Janeiro – RJ

Tel.: (21) 3553-6626

Fax: (21) 3553-6626/3553-6623

E-mail: faturamento@riojan.com.br

Práticos do Rio Ltda.

Avenida Gen. Guedes Fontoura, 1000 - Cob 01 – Barra da Tijuca

22621-245 – Rio de Janeiro – RJ

Tel.: (21) 2516-1336/2233-1562

Fax: (21) 2233-9738

E-mail: faturamento@riojan.com.br

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	BHP	Year
Camorim	Trovão	2	16,33	1.430	1961
Camorim	Furacão	2	16,60	1.430	1961
Camorim	Tufão	3	23,03	1.470	2003
Camorim	Ciclone	3	43	3.540	2004
Camorim	Tornado	3	43	3.540	2002
Camorim	Tempestade	3	43	3.300	2004
Camorim	Ventania	2	35,52	3.310	2004
Camorim	Tormenta	3	44,4	3.150	2005
Camorim	Diamante	2	60,02	3.730	2008
Camorim	Brilhante	2	60,0	3.729	2008
Camorim	C Perola	2	49,12	2.500	2010
Camorim	C Opala	2	49,39	2.500	2010
Saveiros	Lynx	2	33	2.170	1984
Saveiros	Perseus	1	33	2.170	1982
Saveiros	Plutão	2	45	3.446	2003
Saveiros	Mirzan	2	29	1.830	1987
Saveiros	Turiação	1	27	1.980	1991
Saveiros	Tirreno	3	30	3.150	1987
Saveiros	São Paulo	2	45	3.446	2004
Saveiros	Aral	2	30	3.000	1973
Sulnorte	Pirajá	3	20	1.850	1984
Sulnorte	Atalaia	3	17	1.200	1986
Sulnorte	Palmares	2	31	2.440	1995
Sulnorte	Cariri	2	38	2.800	1991
Tranship	Atrevido	3	21	1.410	1995
Tranship	Atirado	2	20	1.280	2001
Tranship	Assanhado	3	32	2.160	1997
Tranship	Abusado	3	32	2.160	1998
Tranship	Ouriçado	2	20	1.200	2003
Tranship	Peregrino	3	45	3.540	2002
Tranship	Valente	3	30	1.800	2004
Tranship	Fiel	3	30	1.800	2004
Tranship	Fiel	3	30	1.800	2004

TABG has a exclusive contract with Camorim. For tugs from other company, check with Agency if the tugs are approved

8.4.2 Other relevant maritime services in the port

Divers

Company	Telephone (55 21)	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
Engpron	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
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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 Suzano Petroquímica.

8.6 Other Main Users

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

EMERGENCY PLANNING AND REPOSE

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]	VHF/UHF Radio
Harbour Master [Capitania dos Portos]	24 hours	Captaincy	2516-2341	2104-5319	VHF 16
Main Pier	24 hours	PP	2467-9914	2467-9914	UHF 5A
Secondary Pier	24 hours	PS	2467-9937	2467-9904	UHF 4A
D'água Island	24 hours	P4	2467-9912	2467-9994	UHF 1A
Redonda Island	24 hours	Redonda island	2467-9513	2467-9529	UHF 3A
Comprida Island	24 h	Comprida Island	3227-1817	2467-9529	UHF 1B
LNG Pier	24 h	PG	2467-9406	2467-9529	UHF 11A
GIAONT OFFICIALT	24h	GIAONT official or	2467-9907	—	VHF 16
Coordination	8 am to 4 pm	2467-9966	—	—	—
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	2253-6572	—	—
Civil Defense	24 hours	—	199	2576-8446	—
INEA (State Institute of Environment)	10 am to 4:30 pm	—	2234-7910	—	—
IBAMA (National Environmental Agency)	24 hours	—	0800-618080	2506-1820	—

9.2 Environmentally Sensitive Areas

Appendix L contains a map of environmentally sensitive areas in the Port of Rio de Janeiro.

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	Harbour Master	Civil Defense	Transpetro	–	–
Vessel aground	Harbour Master	Civil Defense	Transpetro	–	–
Collision at the Berth	Harbour Master	Transpetro	Civil Defense	–	–
Sinking Vessel	Harbour Master	Civil Defense	Fire Department	Transpetro	–
Onboard Fire	Ship	Transpetro	Fire Department	Civil Defense	Harbour Master
Fire at the berth	Transpetro	Fire Department	Civil Defense	Harbour Master	–
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 assistances 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 available 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 collection 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 Egmpol 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, bioremediation 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 their reach.

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
Alpina Briggs – Company in Charge	08007039133

CONTACTS

10.1 Terminal

D'Água Island

Place	Contact	Telephone [55 21]	Fax [55 21]	VHF/UHF Channels	
				Call	Conversation
Main Pier	Operator	2467-9914	2467-9914	16	09
Secondary Pier	Operator	2467-9904	2467-9904	16	09
Barge Pier	Operator	2467-9965	2467-9965	16	09
D'Água Island Control Room	Operator	2467-9550	2467-9994	16	09
Shift Supervisor	Supervisor	2467-9912	2467-9994	16	09
Safety (HSE)	Safety Officer	2467-9940	2467-9975	–	Shore 02
Facilities Security	Security Inspector	2467-9934	2467-9947	–	Shore 02

Redonda Island

Place	Contact	Telephone (55 21)	Fax (55 21)	VHF/UHF Channels	
				Call	Conversation
Pier	Operator	2467-9110	–	16	09
Redonda Island Control Room	Operator	2467-9513	2467-9529	16	09
Sala de Controle Ilha Comprida	Operador	3227-1817	2467-9529	16	09
Shift Supervisor	Supervisor	3396-6140	2467-9529	–	Shore03
Safety (HSE))	Safety Officer	2467-9535	2467-9541	–	Shore03
Facilities Security	Security Inspector	2467-9540	2467-9947	–	Shore 02
LNG Pier	Operator	(21) 2467-9406	(21) 2467-9529	16	09

10.2 Port Services

Organization	Contact	Telephone (55 21)	Fax (55 21)	E-mail	VHF/UHF Channels	
					Call	Conversation
Harbour Master	Officer on duty	2104-5320	2104-5319	www.cprj.com.br	16	All
Pilotage	Agent	2516-1628	2516-0054	atalaia@riopilots.com.br	16	12
Tugboats	Agency	According to Sub-item 10.3	Sub-item 10.3	–	16	13

10.3 Selected Shipping Agents and Suppliers

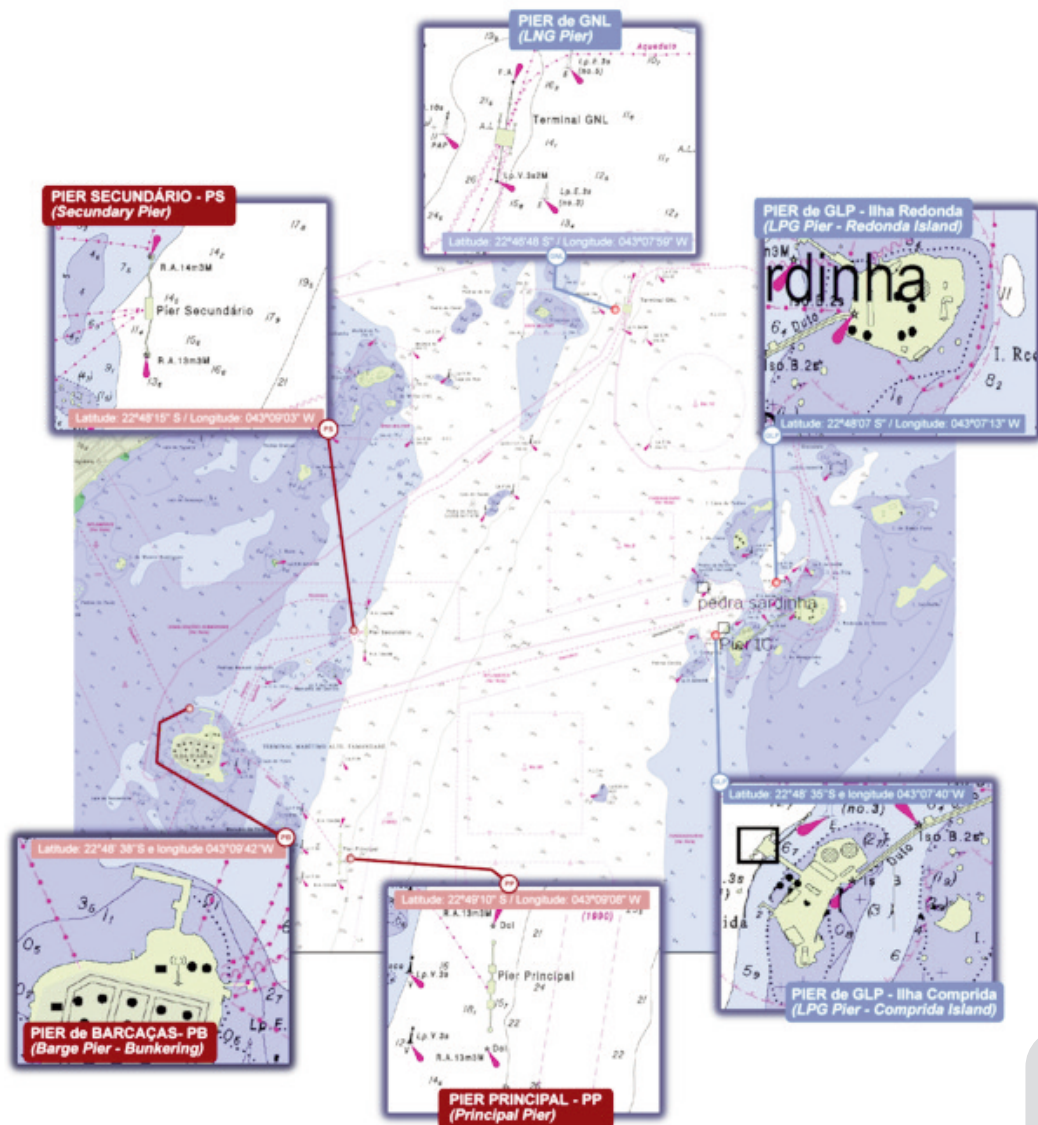
Company	Business	Telephone (55 21)	Fax (55 21)	E-mail	VHF/UHF Channels	
					Call	Conversation
Pennant	Agente	2123 1500	2263 7821	orlando.kemp@pennant.com.br	16	Todos
Triaina	Agente	2518-1201	2276-2611	triainario@triaina.com.br	16	Todos
ISS Marine	Agente	2518-5756	2518-6778	issrio@iss.shipping.com	–	–
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	–	–

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	2253-6572	–	–
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	–

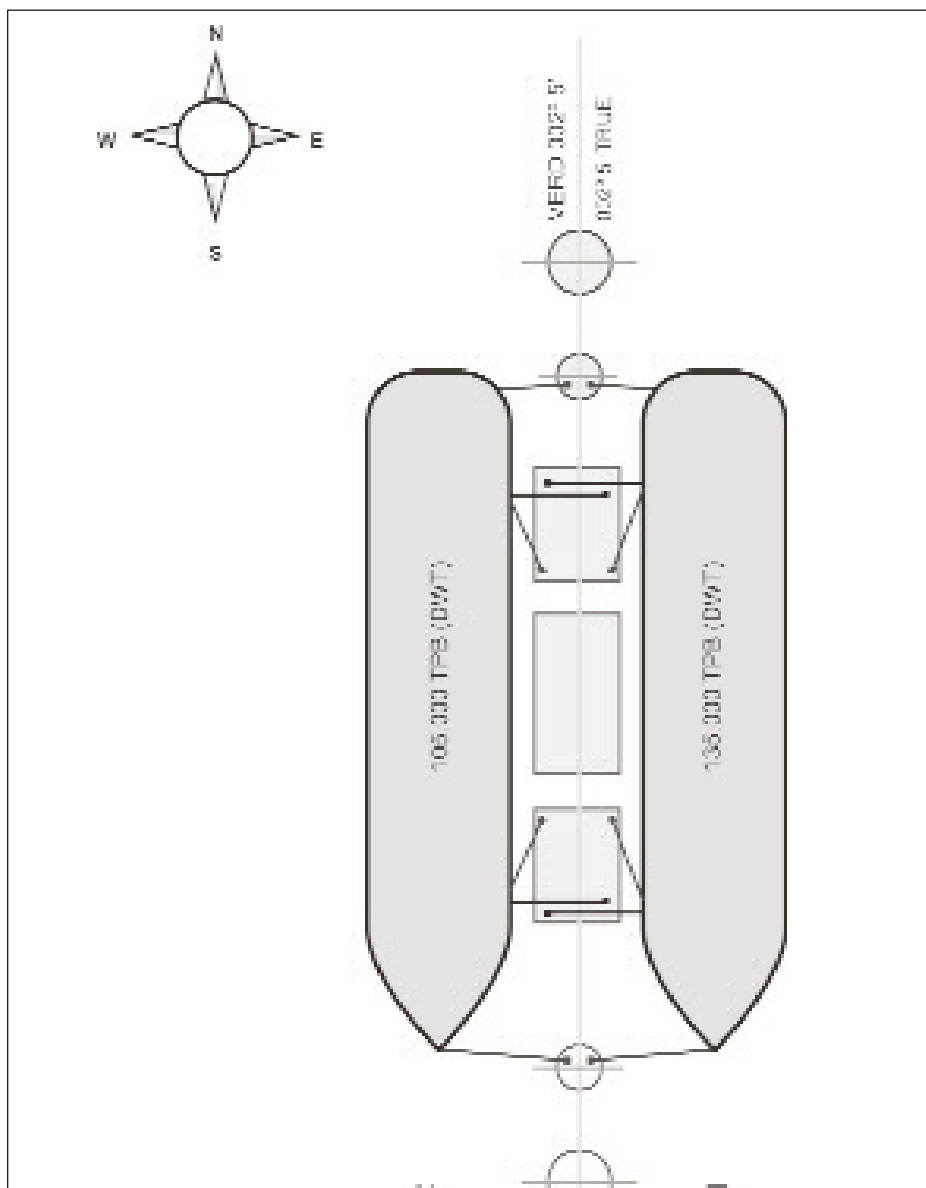
APPENDICES

A – TABG berths location



MARINE TERMINALS OF GUANABARA BAY

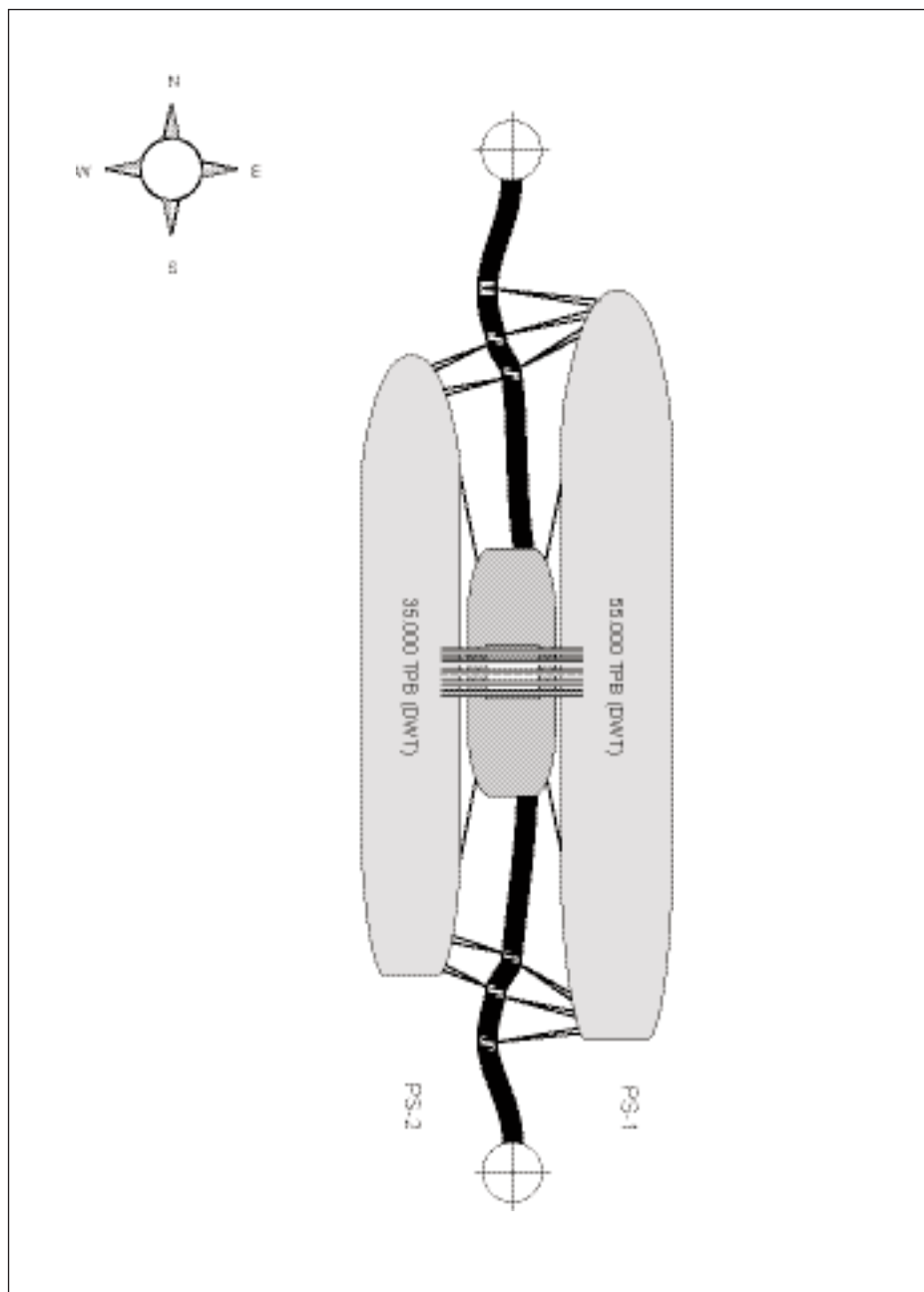
B – Main Pier Mooring Arrangement



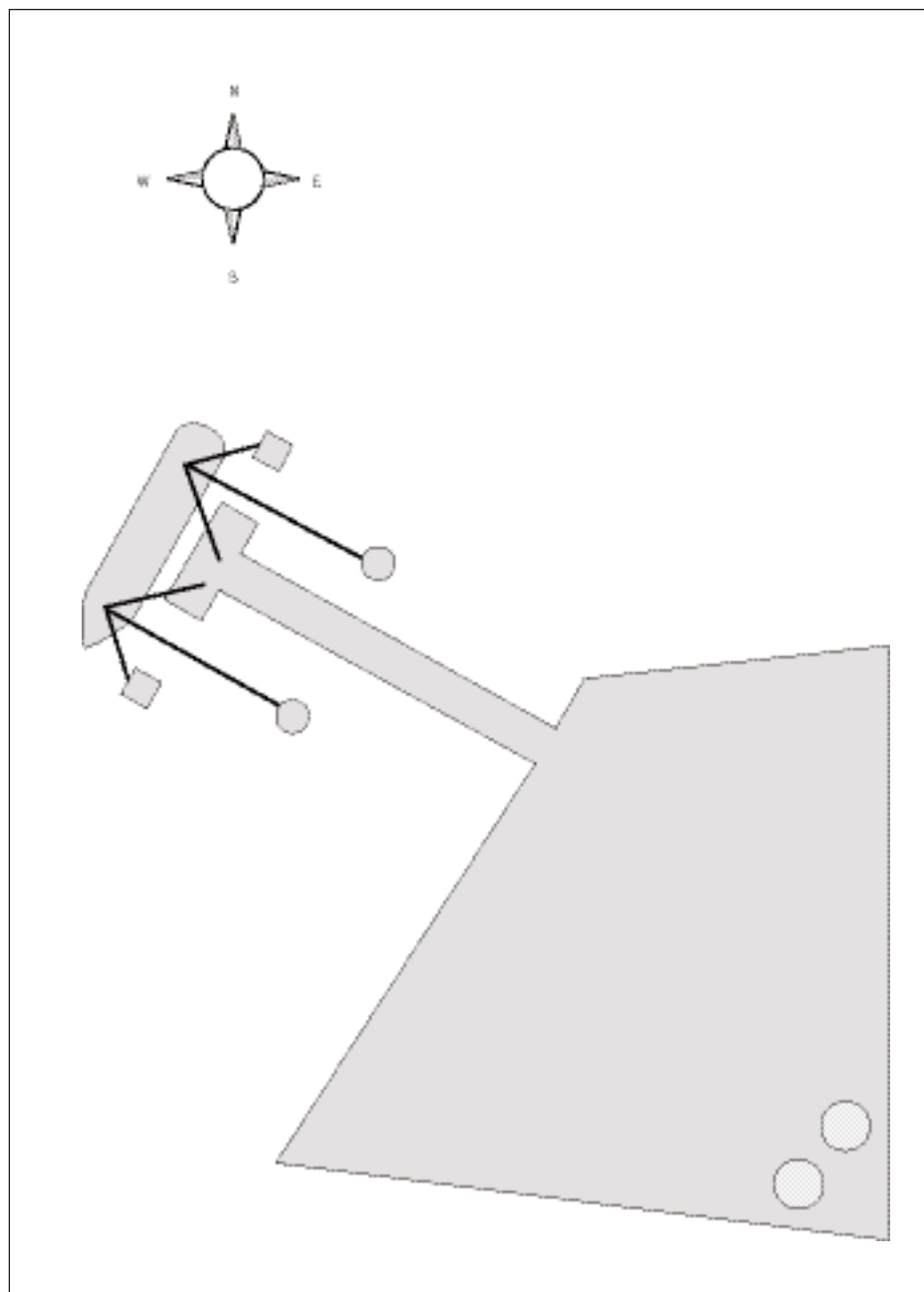
PORT INFORMATION

MARINE TERMINALS OF GUANABARA BAY

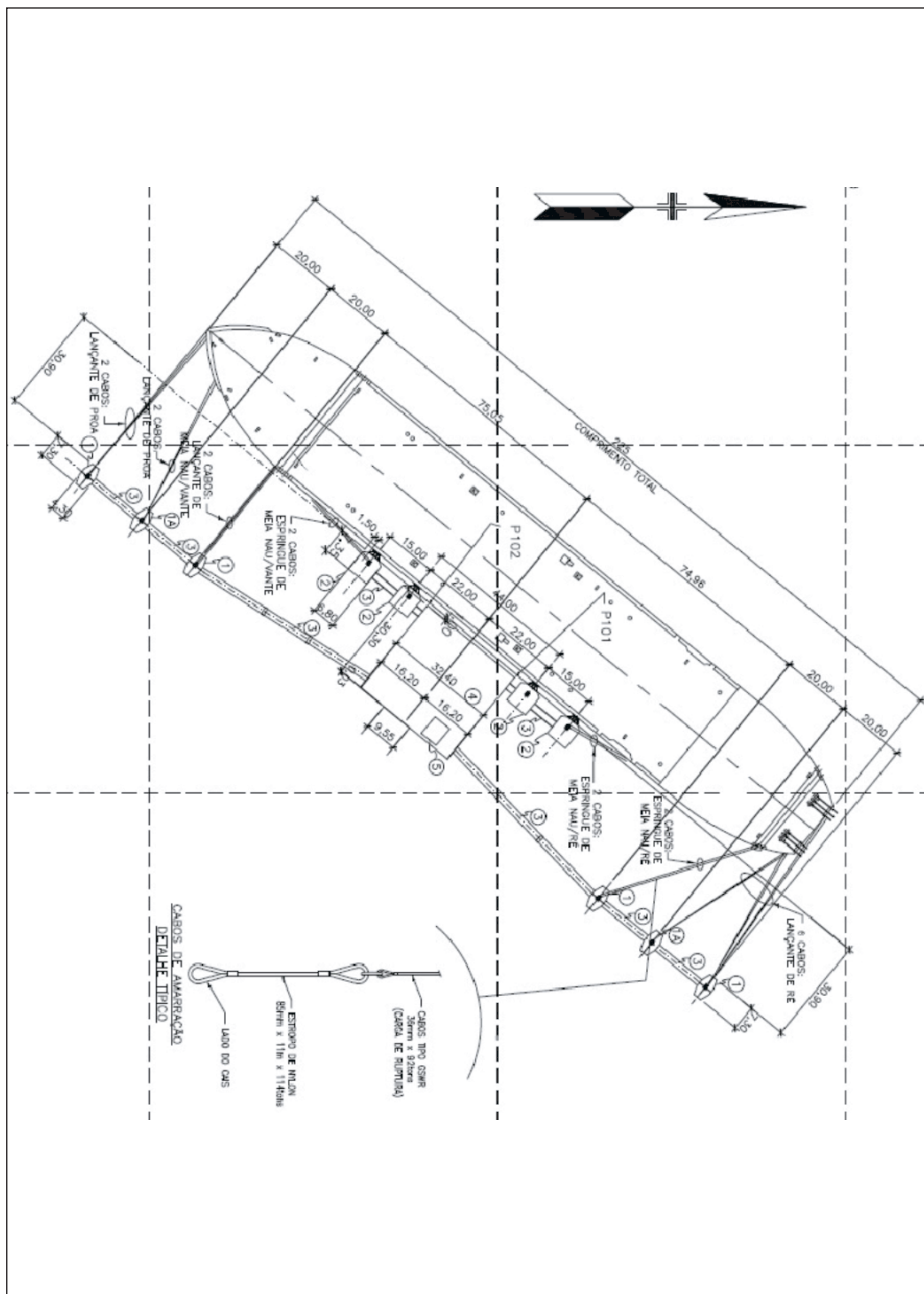
C— Secondary Pier Mooring Arrangement



D – Ilha Redonda Pier Mooring Arrangement



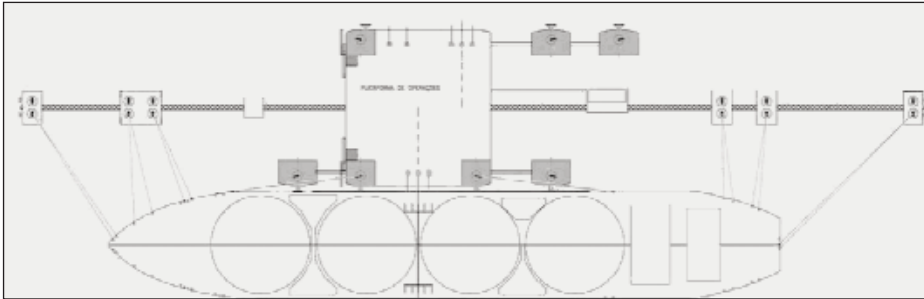
E – Esquema de amarração da Ilha Comprida



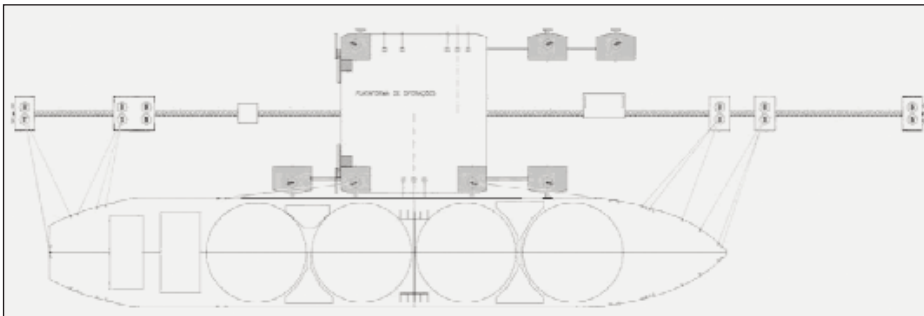
F – LNG Pier Mooring Arrangement

I-MD-4155.52-6611-962-DFP-001=A

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:		Estimated Time of Arrival (ETA):	
Flag:		Last Port of Call:	
Master:		Destination:	
Owners:		Agents:	
Is the ship equipped with inert gas system?			
Oxygen rate :			
Length overall (LOA):		Draft on arrival:	
Length between perpendiculars:		Maximum draft during cargo transfer:	
Breadth:		Sailing Draft:	
Number of engines:		Thrust:	
Number of propellers:		Bow (number & horse power):	
		Stern (number & horse power):	
Tugs:			
Minimum required:		Minimum bollard pull:	
Number & diameter of manifold connections:		Distances:	
Cargo:		From Bow to Manifold:	
Ballast:		Manifold to ship side:	
Bunker:		Manifold to main deck:	
Loading schedule (where applicable)			
Cargo Nomination:			
Product & quantity:	m ³	Product & quantity:	m ³
Deballast to the Sea:			
Quantity:	m ³	Estimated time frame:	
Discharge of Slops/Dirty Ballast to Shore:			
Quantity:	m ³	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:	
Ballasting:		Quantity:	
		Estimated time frame:	
Requested Bunkering			
Product & quantity:		Product & quantity:	
Ifurther information (if any):			
Duty officer:		Position:	

Please send these pieces of information to terminal operations supervisor by fax: 24679994] or
E-mail tabg-operations@petrobras.com.br

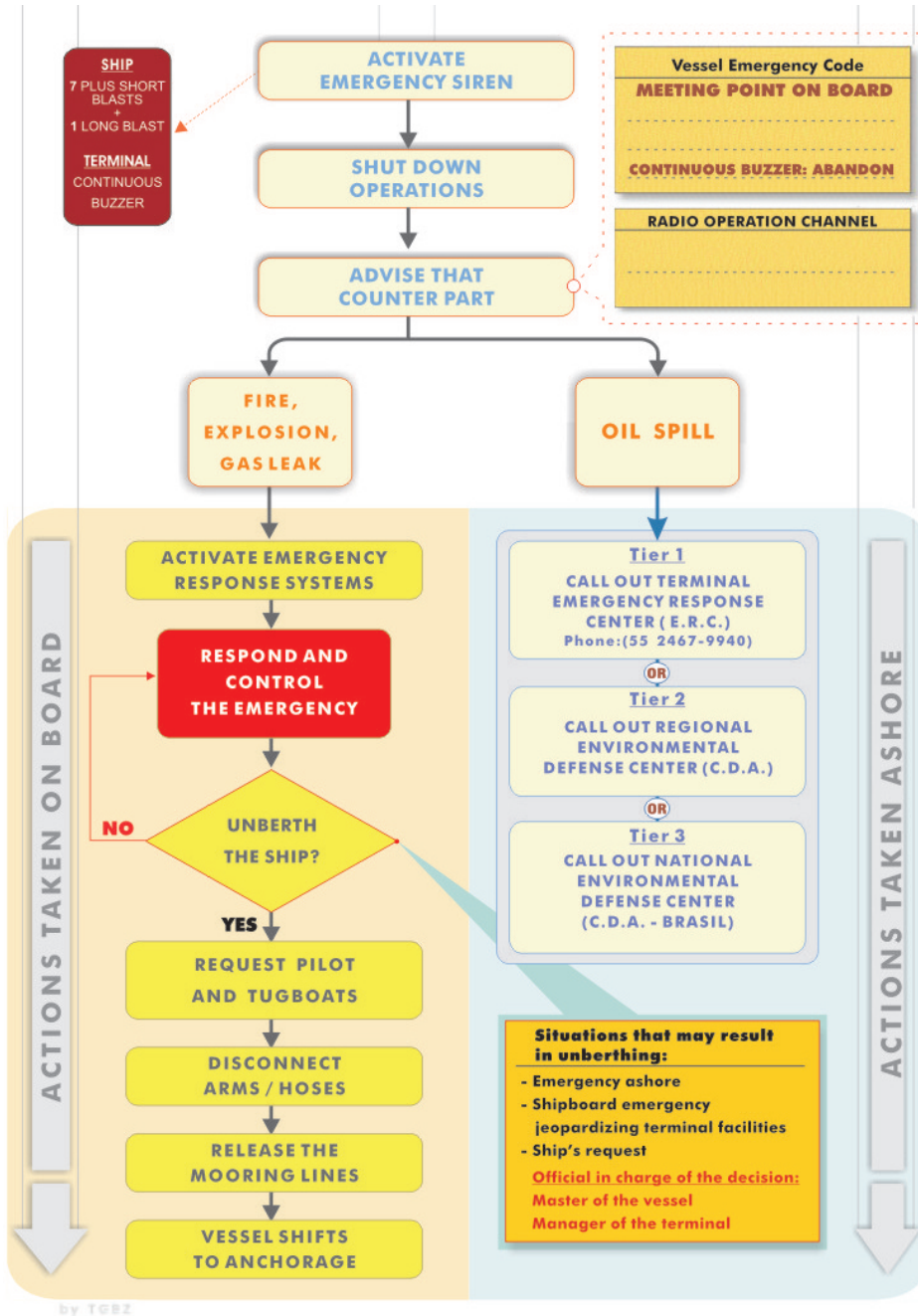
I – Pre-Cargo Transfer Information Exchange

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		Segregated ballast	
Quantity:	Temperature:	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:	Terminal	Pressure:
	Flow rate:		Flow rate:
	Temperature (max):		Temperature (max):
	Temperature (min):		Temperature (min):

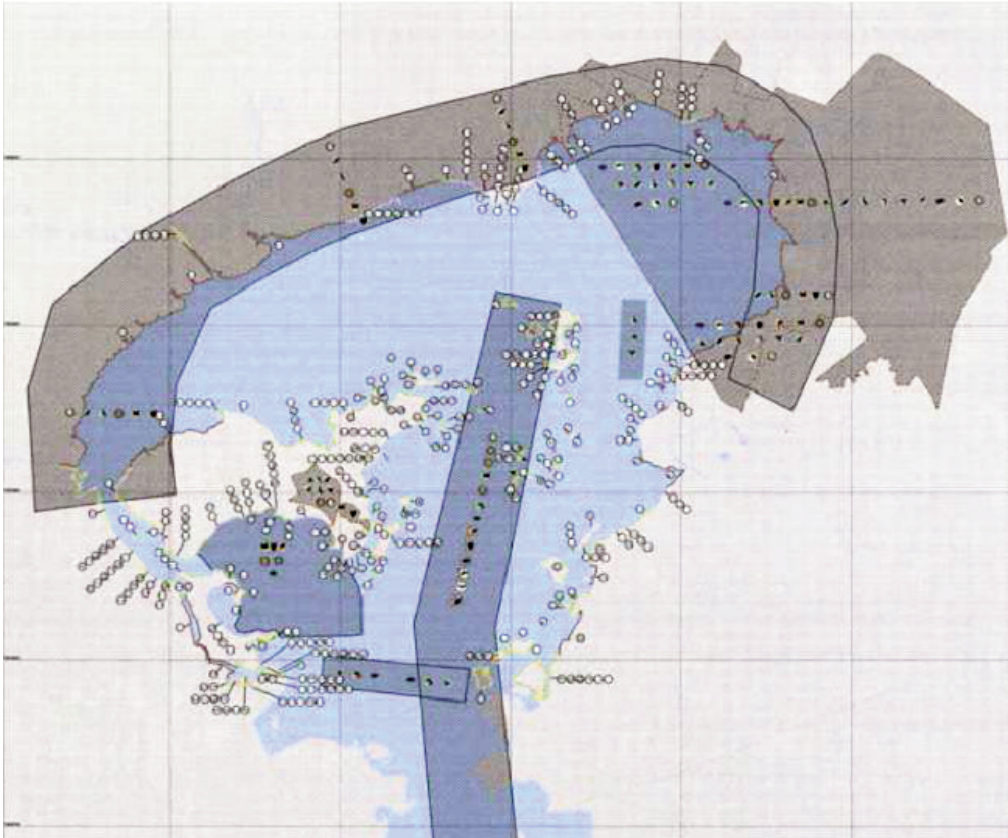
continue

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 substract 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 spoonbills, 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

M – Ship/Shore safety Check-list

Nome do Navio <i>Ship's Name</i>		Viagem <i>Voy</i>	
Terminal <i>Berth</i>		Terminal <i>Porto</i>	
Data <i>Date of Arrival</i>		Hora <i>Time of Arrival</i>	

PARTE “A” – GRANEL LÍQUIDO EM GERAL – INSPEÇÕES FÍSICAS

PART “A” - BULK LIQUID GENERAL – PHYSICAL CHECKS

GRANEL LÍQUIDO -GERAL <i>Bulk Liquid – General</i>	Navio <i>Ship</i>	Terminal <i>Terminal</i>	Código <i>Code</i>	Observações <i>Remarks</i>
1. Existem meios seguros de acesso entre navio e terminal. <i>There is safe access between the ship and shore.</i>			R	
2. O navio está amarrado com segurança. <i>The ship is securely moored.</i>			R	
3. Os sistemas de comunicação navio/terra estão operativos. <i>The agreed ship/shore communication system is operative.</i>			A R	Sistema System:..... Sistema reserva: Back up system:
4. Os cabos de reboque de emergência estão corretamente encapelados e posicionados. <i>Emergency towing-off pennants are correctly rigged and positioned.</i>			R	
5. As mangueiras e o equipamento de combate a incêndio a bordo estão posicionados e prontos para uso imediato. <i>The ship's fire hoses and fire-fighting equipment is positioned and ready for immediate use.</i>		NA	R	
6. O equipamento de combate a incêndio do terminal está posicionado e pronto para uso imediato. <i>The terminal's fire-fighting equipment is positioned and ready for immediate use.</i>	NA		R	
7. Os braços/mangotes, redes e manifolds de carga e combustível do navio estão em boas condições e apropriadamente suportados e adequados para os serviços pretendidos. <i>The ship's cargo and bunker hoses, pipelines and manifolds are in good condition, properly rigged and appropriate for the service intended.</i>		NA		
8. Os braços/mangotes de carga e combustível do terminal estão em boas condições e apropriadamente suportados e adequados para os serviços pretendidos. <i>The terminal's cargo and bunker hoses or arms are in good condition, properly rigged and appropriate for the service intended.</i>	NA			
9. O sistema de transferência de carga está suficientemente isolado e drena-do para permitir a remoção segura dos flanges cegos antes da conexão. <i>The cargo transfer system is sufficiently isolated and drained to allow safe removal of blank flanges prior to connection.</i>				
10. Os embornais e bandejas de contenção estão efetivamente bujonados e as bandejas coletoras de bordo estão em posição e vazias. <i>Scuppers and save alls on board are effectively plugged and drip trays are in position and empty.</i>		NA	R	

PARTE “A” – GRANEL LÍQUIDO EM GERAL – INSPEÇÕES FÍSICAS
PART “A” - BULK LIQUID GENERAL – PHYSICAL CHECKS

11. Embornais removidos temporariamente serão monitorados constantemente. <i>Temporarily removed scupper plugs will be constantly monitored.</i>		NA	R	
12. Barreiras e tanques de contenção de terra são utilizadas corretamente. <i>Shore spill containment and sumps are correctly monitored.</i>	NA		R	
13. As conexões de carga e combustível de bordo que não estão sendo usadas estão devidamente fechadas com flanges cegos e completamente aparafusadas. <i>The ship's unused cargo and bunker connections are properly secured with blank flanges fully bolted.</i>		NA		
14. As conexões de carga e combustível de terra que não estão sendo usadas estão devidamente fechadas com flanges cegos e completamente aparafusadas. <i>The terminal's unused cargo and bunker connections are properly secured with blank flanges fully bolted.</i>	NA			
15. Todas as tampas dos tanques de carga, lastro e combustível estão fechadas. <i>All cargo, ballast and bunker tank lids are closed.</i>		NA		
16. As válvulas de costado e as de fundo, quando não em uso, estão fechadas e visivelmente travadas. <i>Sea and overboard discharge valves, when not in use, are closed and visibly secured.</i>		NA		
17. Todas as portas externas e demais portas e vigias nas acomodações, paióis e espaços de máquinas estão fechadas. Ventilações da praça de máquinas podem estar abertas. <i>All external doors, ports and windows in the accommodation, stores and machinery spaces are closed. Engine room vents may be open.</i>		NA	R	
18. Os planos de emergência contra incêndio do navio estão localizados externamente. <i>The ship's emergency fire control plans are located externally.</i>		NA		Local: Location:

Se o navio possui ou é requerido a possuir Sistema de Gás Inerte, os seguintes pontos devem ser inspecionados fisicamente.

If the ship is fitted, or is required to be fitted, with an Inert Gas System, the following points should be physically checked.

Sistema de Gás Inerte Inert Gas System	Navio Ship	Terminal Terminal	Código Code	Observações Remarks
19. Os registradores do analisador fixo do teor de oxigênio e de pressão do SGI estão funcionando. <i>Fixed IG pressure and oxygen content recorders are working.</i>		NA	R	
20. Todos os tanques de carga estão com pressão atmosférica positiva e com teor de oxigênio menor ou igual a 8 % por volume. <i>All cargo tank atmospheres are at positive pressure with oxygen content of 8 % or less by volume.</i>		NA	P R	
21. O navio está pronto para movimentar-se com seus próprios meios. <i>The ship is ready to move under its own power.</i>		NA	P R	
22. Existe efetivo serviço de vigilância e adequada supervisão a bordo e no terminal. <i>There is an effective deck watch in attendance on board and adequate supervision of operations on the ship and on the terminal.</i>			R	
23. Existe pessoal suficiente a bordo e em terra para enfrentar uma emergência. <i>There are sufficient personnel on board and ashore to deal with an emergency.</i>			R	

PARTE “A” – GRANEL LÍQUIDO EM GERAL – VERIFICAÇÃO VERBAL**PART “A” - BULK LIQUID GENERAL – VERBAL VERIFICATION**

GRANEL LÍQUIDO -GERAL Bulk Liquid – General	Navio Ship	Terminal Terminal	Código Code	Observações Remarks
24. Foram estabelecidos procedimentos para as operações de carga, abastecimento e lastro. <i>The procedures for cargo, bunker and ballast handling have been agreed.</i>			A R	
25. Um sinal de emergência e um procedimento de parada de emergência a ser utilizado pelo navio e terminal foi bem explicado e entendido. <i>The emergency signal and shutdown procedure to be used by the ship and shore have been well explained and understood.</i>			A	
26. As folhas de informação de segurança dos produtos (MSDS) foram fornecidas, quando requerido. <i>Material safety data sheets (MSDS) for the cargo transfer have been exchanged where requested.</i>			P R	
27. Os riscos associados a substância tóxicas presentes na carga sendo manuseada foram devidamente identificados e entendidos. <i>The hazards associated with toxic substances in the cargo being handled have been identified and understood.</i>				Conteúdo de H2S: H2S content : Conteúdo de Benzeno: Benzene content:
28. Existe uma conexão internacional navio/terminal. <i>An International Shore Fire Connection has been provided.</i>				
29. Está sendo usado o sistema estabelecido de “alívio” do tanque. <i>The agreed tank venting system will be used.</i>			A R	Método: Method:
30. Os requisitos para operação com tanques fechados foram acordados. <i>The requirements for closed operations have been agreed.</i>			R	
31. A operação do sistema de válvulas P/V foi verificada. <i>The operation of the P/V system has been verified.</i>		N A		
32. Se a linha de retorno de vapor está conectada, os parâmetros de operação foram acordados. <i>Where a vapour return line is connected, operating parameters have been agreed.</i>			A R	
33. Alarmes independentes de nível alto, se instalados, estão operacionais e foram testados. <i>Independent high level alarms, if fitted, are operational and have been tested.</i>		N A	A R	
34. Existem meios adequados de isolamento elétrico na conexão navio/ terminal. <i>Adequate electrical insulating means are in place in the ship/shore connection.</i>	N A		A R	
35. As linhas de terra possuem válvula de não-retorno, ou procedimentos para evitar retorno de carga foram discutidos. <i>Shore lines are fitted with a non-return valve or procedures to avoid back filling have been discussed.</i>	N A		A R	
36. Locais de fumo estão identificados e os requisitos para fumo estão sendo observados. <i>Smoking rooms have been identified and smoking requirements are being observed.</i>			A R	Locais de fumo designados: Nominated smoking rooms:
37. Os requisitos para chama aberta e luzes desprotegidas estão sendo observados. <i>Naked light regulations are being observed.</i>			A R	
38. Os requisitos para telefones fixos, celulares e pager estão sendo observados. <i>Ship/shore telephones, mobile phones and pager requirements are being observed.</i>			A R	

PARTE “A” – GRANEL LÍQUIDO EM GERAL – VERIFICAÇÃO VERBAL
PART “A” - BULK LIQUID GENERAL – VERBAL VERIFICATION

39. Lanternas e flashlights são de tipo aprovado. <i>Hand torches (flashlights) are of an approved type.</i>				
40. Transmissores/receptores VHF/UHF fixos e o AIS estão no modo de alimentação correto ou desligados. <i>Fixed VHF/UHF transceivers and AIS equipamento are on the correct power mode or switched off.</i>		N A		
41. Os transceptores portáteis de UHF/VHF são de tipo aprovado. <i>Portable VHF/UHF transceivers are of an approved type.</i>				
42. As antenas do transceptor principal do navio estão aterradas e os radares estão desligados. <i>The ship's main radio transmitter aerials are earthed and radars are switched off.</i>		N A		
43. Os cabos dos equipamentos elétricos portáteis em áreas perigosas estão desconectados. <i>Electric cables to portable electrical equipment within the hazardous area are disconnected from power.</i>				
44. As unidades de ar condicionado que aspiram ar do exterior estão desconectadas. <i>Window type air conditioning units are disconnected.</i>		N A		
45. Está sendo mantida pressão positiva no interior das acomodações, e as aspirações de ar que possam permitir a entrada de gases de carga estão fechadas. <i>Positive pressure is being maintained inside the accommodation, and air conditioning intakes, which may permit the entry of cargo vapours, are closed.</i>		N A		
46. Foram tomadas medidas para garantir ventilação mecânica suficiente na casa de bombas. <i>Measures have been taken to ensure sufficient mechanical ventilation in the pump room.</i>		N A	R	
47. Existe uma saída de emergência prevista. <i>There is provision for an emergency escape.</i>				
48. O critério de máximo vento e ondulação do mar para as operações foi Ccordado. <i>The maximum wind and swell criteria for operations have been agreed.</i>			A	Parar carga com: Stop cargo at: ... Desconectar com: Disconnect at: ... Desatracar com: Unberth at:
49. Medidas de proteção foram acordadas entre o Oficial de Proteção do navio e o Supervisor de Segurança Portuária, se apropriado. <i>Security protocols have been agreed between the Ship Security Officer and the Port Facility Security Officer, if appropriate.</i>			A	
50. Quando apropriado, procedimentos foram acordados para recebimento de nitrogênio fornecido por terra, para inertizar ou purgar tanques de carga, ou para limpeza de linha para o navio. <i>Where appropriate, procedures have been agreed for receiving nitrogen supplied from shore, either for inerting or purging ship's tanks, or for line cleaning into the ship.</i>			A P	

Se o navio possui ou é requerido a possuir Sistema de Gás Inerte, os seguintes itens devem ser verificados.

If the ship is fitted, or is required to be fitted, with an Inert Gas System, the following statements should be addressed.

Sistema de Gás Inerte <i>Inert Gas System</i>	Navio <i>Ship</i>	Terminal <i>Terminal</i>	Código <i>Code</i>	Observações <i>Remarks</i>
51. O SGI está totalmente operacional e em boas condições de funcionamento. <i>The IGS is fully operational and in good working order.</i>		NA	P	
52. Os selos do convés estão em boas condições de funcionamento. <i>Deck seals, or equivalent, are in good working order.</i>		NA	R	
53. Os níveis de líquido nos pressure/vacuum "breakers" estão corretos. <i>Liquid levels in pressure/vacuum breakers are correct.</i>		NA	R	
54. Os analisadores de oxigênio fixos e portáteis estão calibrados e funcionando corretamente. <i>The fixed and portable oxygen analysers have been calibrated and are working properly.</i>		NA	R	
55. Todas as válvulas individuais de gás inerte dos tanques (se instaladas) estão corretamente ajustadas e travadas. <i>All the individual tank IG valves (if fitted) are correctly set and locked.</i>		NA	R	
56. Todas as pessoas envolvidas nas operações de carga estão informadas que no caso de falha da planta de gás inerte, as operações de descarga devem ser interrompidas e o terminal avisado. <i>All personnel in charge of cargo operations are aware that, in the case of failure of the inert gas plant, discharge operations should cease, and terminal be advised.</i>		NA		

Se o navio for equipado com um sistema de Lavagem por Óleo Cru (COW) e tenciona realizar a lavagem, as seguintes questões devem ser respondidas.

If the ship is fitted with a Crude Oil Washing (COW) system, and intends to crude oil wash, the following statements should be addressed.

Sistema de COW <i>Crude Oil Washing</i>	Navio <i>Ship</i>	Terminal <i>Terminal</i>	Código <i>Code</i>	Observações <i>Remarks</i>
57. A Lista de Verificação de Lavagem COW, antes da chegada, conforme o Manual Aprovado, está devidamente preenchida. <i>The Pre-Arrival COW check-list, as contained in the approved COW manual, has been satisfactorily completed.</i>		NA		
58. A lista de Verificação de Lavagem COW para utilização antes, durante e depois da lavagem, conforme o Manual Aprovado, está disponível e sendo utilizada. <i>The COW check-lists for use before, during and after COW, as contained in the approved COW manual, are available and being used.</i>		NA	R	

Se o navio está planejando efetuar a limpeza de tanques enquanto estiver atracado, as seguintes questões devem ser respondidas.

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

Limpeza de Tanque <i>Tank Cleaning</i>	Navio <i>Ship</i>	Terminal <i>Terminal</i>	Código <i>Code</i>	Observações <i>Remarks</i>
59. Foram planejadas operações de limpeza dos tanques enquanto o navio estiver atracado no terminal. <i>Tank cleaning operations are planned during the ship's stay alongside the shore installation.</i>	SIM/ NÃO* YES/ NO*	SIM/ NÃO* YES/ NO*		
60. Se "afirmativo" os procedimentos e permissões para a limpeza de tanques foram acordados. <i>If "yes", the procedures and approvals for tank cleaning have been agreed.</i>				
61. Permissão para as operações de degaseificação foram concedidas. <i>Permission has been granted for gas freeing operations.</i>	SIM/ NÃO* YES/ NO*	SIM/ NÃO* YES/ NO*		

* Deletar SIM ou NÃO, como apropriado

* Delete YES or NO as appropriate

PARTE “D” – GASES LIQUEFEITOS A GRANEL – VERIFICAÇÃO VERBAL
PART “D” - BULK LIQUIFIED GASES – VERBAL VERIFICATION

Sistema de Gás Inerte Inert Gas System	Navio Ship	Terminal Terminal	Código Code	Observações Remarks
1. As folhas de informações de segurança estão disponíveis com as instruções necessárias ao manuseio seguro da carga. <i>Material Safety Data Sheets are available giving the necessary data for the safe handling of the cargo.</i>				
2. Se aplicável, existe um certificado de inibidor do fabricante. <i>A manufacturer's inhibition certificate, where applicable, has been provided.</i>			P	
3. O sistema de borifo de água está pronto para uso imediato. <i>The water spray system is ready for immediate use.</i>				
4. Existem roupas e equipamentos de proteção (incluindo aparelhos autônomos de respiração) em quantidade suficiente, prontos para uso imediato e adequados ao produto operado. <i>There is sufficient protective clothing and equipment [including selfcontained breathing apparatus] is ready for immediate use and is suitable for the product being handled.</i>				
5. Porões e espaços entre anteparas estão adequadamente inertizados ou pressurizados com ar seco, como requerido. <i>Hold and inter-barrier spaces are properly inerted or filled with dry air, as required.</i>		N A		
6. Todas as válvulas de controle remoto estão em boas condições. <i>All remote control valves are in good working order.</i>				
7. As bombas e compressores de carga requeridos para a operação estão em boas condições, e as pressões máximas de trabalho foi acordada entre o navio e o terminal. <i>The required cargo pumps and compressors are in good order, and the maximum working pressures have been agreed between ship and shore.</i>			A	
8. A planta de reliquefação ou o equipamento de controle de evaporação estão em boas condições de funcionamento. <i>Re-liquefaction or boil off control equipment is in good order.</i>				
9. O equipamento de detecção de gás está ajustado para a carga, calibrado, foi testado e está em boas condições de funcionamento. <i>The gas detection equipment has been properly set for the cargo, is calibrated, has been tested and inspected and is in good order.</i>				
10. Os sistemas de medição de carga e alarmes estão ajustados corretamente e em boas condições. <i>Cargo system gauges and alarms are correctly set and in good order.</i>				
11. Os sistemas de parada de emergência foram testados e estão funcionando corretamente. <i>Emergency shutdown systems have been tested and are working properly.</i>				
12. Navio e terminal informaram um ao outro o tempo de fechamento das válvulas de parada de emergência, válvulas automáticas ou equipamentos similares. <i>Ship and shore have informed each other of the closing rate of ESD valves, automatics valves or similar devices.</i>			A	Navio: Ship : Terminal: Shore :
13. Foram trocadas informações entre o navio e o terminal sobre temperaturas/pressões máximas/mínimas da carga a ser transferida. <i>Information has been exchanged between ship and shore on the maximum/minimum temperatures/pressures of the cargo to be handled.</i>			A	

PARTE “D” – GASES LIQUEFEITOS A GRANEL – VERIFICAÇÃO VERBAL
PART “D” - BULK LIQUIFIED GASES – VERBAL VERIFICATION

14. Os tanques de carga estão protegidos contra transbordamento inadvertido enquanto toda e qualquer operação de carga estiver em progresso. <i>Cargo tanks are protected against inadvertent overfilling at all times while any cargo operations are in progress.</i>		NA		
15. O compartimento dos compressores está devidamente ventilado, o compartimento dos motores elétricos devidamente pressurizado e os alarmes funcionando. <i>The compressor room is properly ventilated, the electrical motor room is properly pressurised and the alarm system is working.</i>		NA		
16. As válvulas de alívio dos tanques de carga estão ajustadas corretamente e os ajustes atuais estão claramente afixados e visíveis. (Registrar os ajustes abaixo.) <i>Cargo tank relief valves are set correctly and actual relief valve settings are clearly and visibly displayed. (Record settings below.)</i> <i>Ship and shore have informed each other of the closing rate of ESD valves, automatic valves or similar devices.</i>				

Tanque nº 1
 Tank nr. 1

Tanque nº 4
 Tank no. 4

Tanque nº 7
 Tank no. 7

Tanque nº 2
 Tank no. 2

Tanque nº 5
 Tank no. 5

Tanque nº 8
 Tank no. 8

Tanque nº 3
 Tank no. 3

Tanque nº 6
 Tank no. 6

Tanque nº 9
 Tank no. 9

OBSERVAÇÕES / REMARKS

Significado dos Códigos: A presença das letras “A”, “P” ou “R” na coluna “Código” significa o seguinte:
Coding of Items: The presence of the letters “A”, “P” or “R” in the column entitled “Code” indicates the following:

A { ‘Acordo’ }. Indica um acordo ou procedimento que deve ser identificado na coluna “Observações” do Check-List ou comunicado em outro modelo mutuamente aceitável.

A { ‘Agreement’ }. This indicate an agreement or procedure that should be identified in the “Remarks” column of the Check-List or communicated in some other mutually acceptable form.

P { ‘Permissão’ }. No caso de resposta negativa aos itens com código ‘P’, as operações não devem ser conduzidas sem uma permissão escrita da autoridade competente

P { ‘Permission’ }. In the case of a negative answer to the statements coded “P”, operations should not be conducted without the written permission from the appropriate authority.

R { ‘Re-inspeção’ }. Isso indica itens a serem re-inspecionados em intervalos apropriados, combinado entre as duas partes, em períodos indicados na declaração.

R { ‘Re-check’ }. This indicates items to be re-checked at appropriate intervals, as agreed between both parties, at periods stated in the declaration.

Um tripulante deverá ser mantido nas tomadas de carga durante toda operação.

A crew seaman must stay full time nearby ship’s manifold while operating.

Canal de chamada VHF – 16

Canal de conversa – 9/14

VHF Call’s Channel – 16

Conversation’s channel – 9/14

Telefones/Telephones :

Número dos Lacres / *Seals Numbers*:

Separador de Água e Óleo/*Oil Water Separator*: _____

ODME/*Oil Discharge Monitoring Equipment*: _____

Esgoto de Emergência/*Emergency Bilge*: _____

Tanque Séptico/*Sewage Tank*: _____

Caixa de Mar/*Sea Chest*: _____

Navio liberado às / *The vessel is able at*: _____

<div>_____ NAVIO / VESSEL NOME/CARIMBO NAME/STAMP</div>	<div>_____ INSPETOR DE SEGURANÇA SAFETY INSPECTOR NAME/STAMP</div>	<div>_____ TERMINAL / LOADING MASTER NOME/CARIMBO NAME/STAMP</div>
--	---	---

Part C – For LNG and CNG Operations

SHIP'S NAME		VOY	
BERTH		PORT	
DATE OF ARRIVAL		TIME OF ARRIVAL	

PART "A" - BULK LIQUID GENERAL – PHYSICAL CHECKS

BULK LIQUID – GENERAL	FSRU	LNG CARRIER	TERMINAL	CODE	REMARKS
1. There is safe access between the ship and shore.				R	
2. Are the FSRU and the LNG carrier securely moored?				R	
3. The agreed ship/shore communication system is operative.				AR	System Back up system
4. Emergency towing-off pennants are correctly rigged and positioned.				R	
5. The ship's fire hoses and fire-fighting equipment is positioned and ready for immediate use.				R	
6. The terminal's fire-fighting equipment is positioned and ready for immediate use.				R	
7. The ship's cargo and bunker hoses, pipelines and manifolds are in good condition, properly rigged and appropriate for the service intended.					
8. The terminal's cargo and bunker hoses or arms are in good condition, properly rigged and appropriate for the service intended.					
9. The cargo transfer system is sufficiently isolated and drained to allow safe removal of blank flanges prior to connection.					
10. Scuppers and save alls on board are effectively plugged and drip trays are in position and empty.				R	
11. Temporarily removed scupper plugs will be constantly monitored.				R	
12. Shore spill containment and sumps are correctly monitored.				R	
13. The ship's unused cargo and bunker connections are properly secured with blank flanges fully bolted.					
14. The terminal's unused cargo and bunker connections are properly secured with blank flanges fully bolted.					
15. All cargo, ballast and bunker tank lids are closed.					
16. Sea and overboard discharge valves, when not in use, are closed and visibly secured.					
17. All external doors, ports and windows in the accommodation, stores and machinery spaces are closed. Engine room vents may be open.				R	
18. The ship's emergency fire control plans are located externally.					Location:

PART "B" - BULK LIQUID GENERAL – VERBAL VERIFICATION

BULK LIQUID – GENERAL	FSRU	LNG CARRIER	TERMINAL	CODE	REMARKS
19. The ship is ready to move under its own power? How long time required before move under own power?				P R	
20. There is an effective deck watch in attendance on board and adequate supervision of operations on the ship and on the terminal.				R	
21. There are sufficient personnel on the FSRU, LNG carrier and ashore to deal with an emergency.				R	
22. The procedures for cargo, bunker and ballast handling have been agreed.				A R	
23. The emergency signal and shutdown procedure to be used by the FSRU, LNG carrier and shore have been well explained and understood.				A	
24. The hazards associated with toxic substances in the cargo being handled have been identified and understood.					
25. An International Shore Fire Connection has been provided.					
26. The agreed tank venting system will be used.				A R	Method
27. The requirements for shutdown operations have been agreed.				R	
28. The operation of the P/V system has been verified.					
29. Where a vapor return line is connected, operating				A R	FSRU Tank Pressure: _____mb LNG Carrier Tank Pressure: _____mb parameters have been agreed. FSRU and LNG carrier to enter requested tank pressure.
30. Independent high level alarms, if fitted, are operational and have been tested.				A R	
31. Adequate electrical insulating means are in place in the ship/shore connection.				A R	
32. Shore lines are fitted with a non-return valve or procedures to avoid back filling have been discussed.				P R	
33. Smoking rooms have been identified and smoking requirements are being observed.				A R	Nominated smoking rooms:
34. Naked light regulations are being observed.				A R	
35. Ship/shore telephones, mobile phones and pager requirements are being observed.				A R	
36. Hand torches (flashlights) are of an approved type.					
37. Fixed VHF/UHF transceivers and AIS equipment are on the correct power mode or switched off.					
38. Portable VHF/UHF transceivers are of an approved type.					

BULK LIQUID – GENERAL	FSRU	LNG CARRIER	TERMINAL	CODE	REMARKS
39. The ship's main radio transmitter aerials are earthed and radars are switched off.					
40. Electric cables to portable electrical equipment within the hazardous area are disconnected from power.					
41. Window type air conditioning units are disconnected.					
42. Positive pressure is being maintained inside the accommodation, and air conditioning intakes, which may permit the entry of cargo vapour, are closed.					
43. There is provision for an emergency escape.					
44. The maximum wind and swell criteria for operations have been agreed.				A	Stop cargo at: Disconnect at Unberth at:
45. Security protocols have been agreed between the Ship Security Officer and the Port Facility Security Officer, if appropriate.				A	
46. Where appropriate, procedures have been agreed for receiving nitrogen supplied from shore, either for inerting or purging ship's tanks, or for line cleaning into the ship.				A P	
47. Are the requirements for use of Galley equipment and cooking appliances being observed?					

If the ship is fitted, or is required to be fitted, with an Inert Gas System, the following statements should be addressed.

<i>Inert Gas System</i>	FSRU	LNG CARRIER	TERMINAL	CODE	<i>Remarks</i>
48. The IGS is fully operational and in good working order.				P	
49. The fixed and portable oxygen analyzers have been calibrated and are working properly.				R	

PART "D" - BULK LIQUIFIED GASES – VERBAL VERIFICATION
Bulk Liquefied Gases

	FSRU	LNG CARRIER	TERMINAL	CODE	Remarks
1. Material Safety Data Sheets are available giving the necessary data for the safe handling of the cargo.					
2. The water spray system is ready for immediate use.					
3. There is sufficient protective clothing and equipment (including self-contained breathing apparatus) is ready for immediate use and is suitable for the product being handled.					
4. Hold and inter-barrier spaces are properly inerted or filled with dry air, as required.					
5. All remote control valves are in good working order.					
6. The required cargo pumps and compressors are in good order, and the maximum working pressures have been agreed between ship and shore.				A	
7. Re-liquefaction or boil off control equipment is in good order.					
8. The gas detection equipment has been properly set for the cargo, is calibrated, has been tested and inspected and is in good order.					
9. Cargo system gauges and alarms are correctly set and in good order.					
10. Emergency shutdown systems have been tested and are working properly.					
11. The FSRU, the LNG carrier and Terminal have informed each other of the closing rate of ESD valves, automatics valves or similar devices.				A	FSRU _____ S LNG Carrier _____ S Terminal _____ S
12. Information has been exchanged between FSRU - LNG carrier and the Terminal on the maximum / minimum Tank & Manifold pressure, cargo transfer rates, Ramp Up/Ramp down?				A	See LNG Cargo Handling Agreement.
13. Cargo tanks are protected against inadvertent overfilling at all times while any cargo operations are in progress.					
14. The compressor room is properly ventilated, the electrical motor room is properly pressurized and the alarm system is working.					
15. Cargo tank relief valves are set correctly and actual relief valve settings are clearly and visibly displayed. [Record settings below.]					

	FSRU	CARRIER		FSRU	CARRIER
TANK NR. 1	700 mb		TANK NR. 4	700 mb	
TANK NR. 2	700 mb		TANK NR. 5	700 mb	
TANK NR. 3	700 mb		TANK NR. 6	NA	

REMARKS				
<p><i>Coding of Items: The presence of the letters "A", "P" or "R" in the column entitled "Code" indicates the following:</i></p> <p>A ['Agreement']. This indicates an agreement or procedure that should be identified in the "Remarks" column of the Checklist or communicated in some other mutually acceptable form.</p> <p>P ['Permission']. In the case of a negative answer to the statements coded "P", operations should not be conducted without the written permission from the appropriate authority.</p> <p>R ['Re-check']. This indicates items to be re-checked at appropriate intervals, as agreed between both parties, at periods stated in the declaration.</p>				
<p><i>A crew seaman must stay full time nearby ship's manifold while operating.</i></p> <p>VHF Call's Channel – 16 Conversation's channel – 9/14</p> <p>Telephones :</p>				
<p>Seals Numbers:</p> <p>Oil Water Separator: _____</p> <p>ODME/Oil Discharge Monitoring Equipment: _____</p> <p>Emergency Bilge: _____</p> <p>Sewage Tank: _____</p> <p>Sea Chest: _____</p>				
<table border="0"> <tr> <td style="text-align: center;"> <hr/> LNG CARRIER NAME/STAMP </td> <td style="text-align: center;"> <hr/> LNG FSRU NAME/STAMP </td> <td style="text-align: center;"> <hr/> SAFETY INSPECTO NAME/STAMP </td> <td style="text-align: center;"> <hr/> LOADING MASTER NAME/STAMP </td> </tr> </table>	<hr/> LNG CARRIER NAME/STAMP	<hr/> LNG FSRU NAME/STAMP	<hr/> SAFETY INSPECTO NAME/STAMP	<hr/> LOADING MASTER NAME/STAMP
<hr/> LNG CARRIER NAME/STAMP	<hr/> LNG FSRU NAME/STAMP	<hr/> SAFETY INSPECTO NAME/STAMP	<hr/> LOADING MASTER NAME/STAMP	

DECLARATION

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

We have also made arrangements to carry out repetitive checks as necessary and agreed that those items with code "R" in the Check-List should be rechecked at intervals not exceeding ___ hours.

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

Record of repetitive checks

Date			
Time			
Initials for Ship			
Initial for Shore			

Date			
Time			
Initials for Ship			
Initial for Shore			

Date			
Time			
Initials for Ship			
Initial for Shore			

Date			
Time			
Initials for Ship			
Initial for Shore			

RECEIVED:

<hr/> Vessel Person-in-Charge Name Rank / Stamp	<hr/> Safety Inspector Name / Stamp	<hr/> Loading Master Name / Stamp
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PORT INFORMATION

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MARINE TERMINALS OF GUANABARA BAY

N – Specific Information on the LNG Pier

N.1 – Berth 's Capacity

East berth (supliers)

Minimal:

Total length (LOA): 235 m

Molded breath: 34 m

Molded water depth: 10 m

Deadweight (TPB): 48500 ton

Load capacity: 70,000 m³.

Reference – *Methane Arctic and Methane Polar LNG Ships*

Maximal:

Total length (LOA): 315 m

Molded breath: 12 m

Load capacity: 210,000 m³.

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

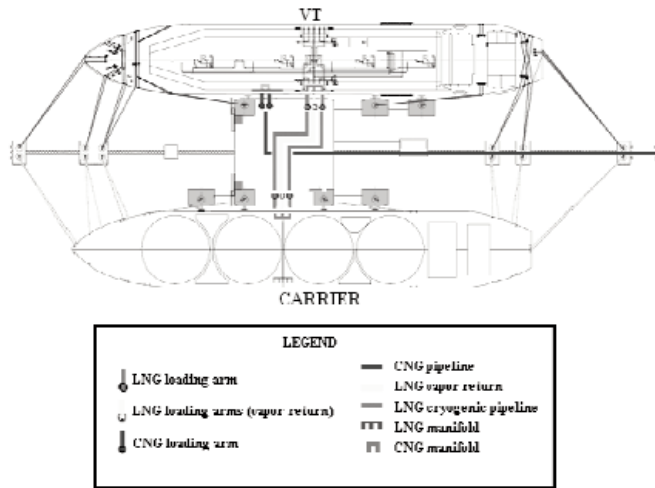
Molded water depth: 12 m

Deadweight (TPB): 80,000 ton

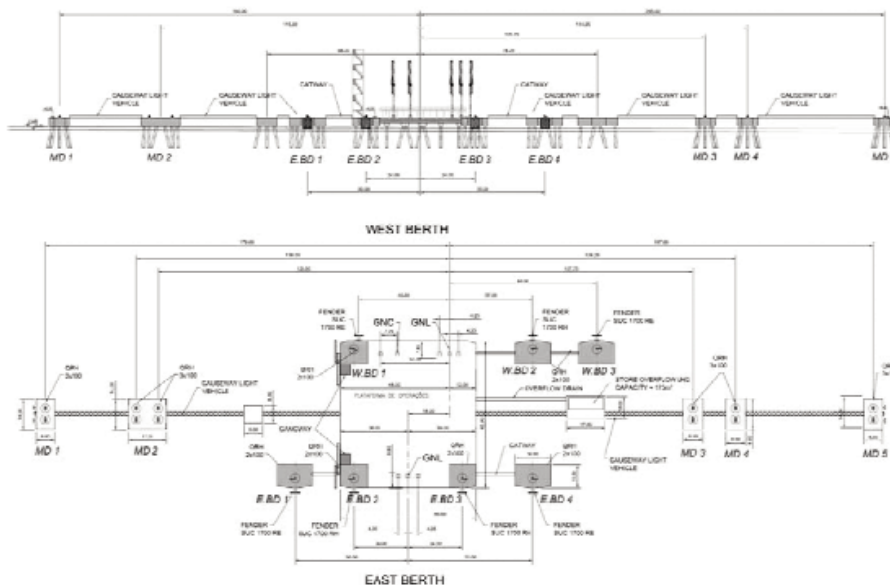
Minimum load capacity: 125,000 m³.

As established in the NPCP-RJ, the maximum aerial draft allowed to navigation under the Rio-Niteroi bridge is 60 meters

N.2 – General process layout



N.3 – Fenders



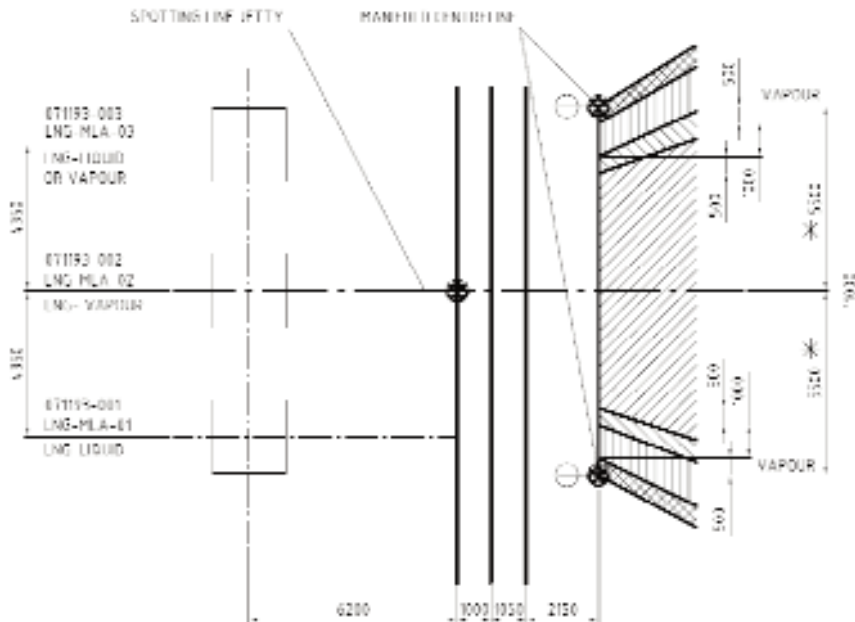
N.4 – Arms Envelope

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

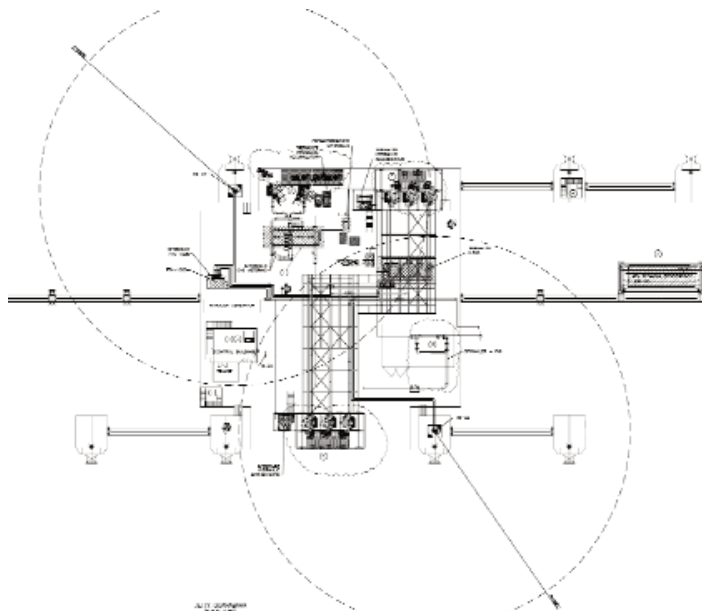
Guanabara LNG VT		
Pre-alarm required		Yes
Pre-alarm luffing	(m)	4,9
1 st stage alarm (luffing)	(m)	5,4
2 nd stage alarm (luffing)	(m)	6,4
Maximum reach (luffing)	(m)	6,9
Bottom limit operating envelope to LLWL	(m)	16,4
Top limit operating envelope to HHWL	(m)	25,8
Maximum slew right surge		5,5
Maximum slew left surge		5,5
2 nd stage alarm slew right	(m)	5,0
2 nd stage alarm slew left	(m)	5,0
1 st stage alarm slew right	(m)	4,0
1 st 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
1 st stage alarm (luffing)	(m)	5,6
2 nd stage alarm (luffing)	(m)	7,1
Maximum reach (luffing)	(m)	7,6
Bottom limit operating envelope to LLWL	(m)	15,55
Top limit operating envelope to HHWL	(m)	24,5
Maximum slew right surge		6,0
Maximum slew left surge		6,0
2 nd stage alarm slew right	(m)	5,5
2 nd stage alarm slew left	(m)	5,5
1 st stage alarm slew right	(m)	4,0
1 st stage 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 Communications

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 JETTIE

Introduction

With the expansion of liquefied gas trades worldwide, 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 PERTAMINA 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 – Communications 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 Gases in Bulk – SIGTTO, 2nd Edition 2001

Table of contents

General

Port name, ship name, general procedure to grant port approval
Shipping agents, utilities

Main characteristic

Port, ship

Confirmation between shore and ship

Fender/flat body (arrangement, strength)

Loading arms and manifold lay-outs (loading arm/manifold, arms envelopes)

Arms/cargo pumps/compressors (loading arms, LN2 arm, F.O. arm, D.O. arm, fresh water hose)

Mooring line/winch (QRH/winch number, strength, tail rope, lay-out, design weather criteria for mooring forces calculation)

Gangway/support (position of gangway, gangway support, gangway working area, weight of gangway on support)

Service platform

Safety items (ESD, tension monitoring, approach meter, bonding cable, fire fighting)

Communications (communication link, telephone sets, ship/shore link not provided)

Procedures between shore and ship

(Loading/unloading operations manual, post docking procedures, emergency procedures, port information book, contingency plan)

SHIP/SHORE COMPATIBILITY	
PORT Port name: Porto do Rio de Janeiro Terminal name: Terminal Flexível de GNL da Baía da Guanabara Lat: 22° 46' 48" S Long 043° 07' 59" W Name of terminal operating company: TRANSPETRO - PETROBRAS TRANSPORTE S.A. Name / title of person to contact regarding terminal information: Antônio Augusto Fernandes Junior Name: Ilha D'Água, s/n - Baía da Guanabara - Rio de Janeiro - RJ Address: CEP 20531-054 Tel: +55 (21) 2467-8910 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: Capitania dos Portos do Rio de Janeiro Name: Rua Alfred Agache, s/nº - Centro - Rio de Janeiro - RJ Address: CEP: 201 021-000 Tel: +55 21 2104-5320 or +55 21 2223-9412 Fax: +55 21 2104-5319 or +55 21 2104-5315 Tlx: E-mail: secport@cpri.mmr.mil.br	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> SHIP Ship name: Owners: Name: Address: Tel: Fax: Tlx: E-mail: </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> Technical managers: Name: Address: Tel: Fax: Tlx: E-mail: </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> Commercial managers: Name: Address: Tel: Fax: Tlx: E-mail: </div> <div style="border: 1px solid black; padding: 5px;"> Charterer: Name: Address: Tel: Fax: Tlx: E-mail: </div>
General procedure for port approval (to be attached): authorities to contact: Capitania dos Portos documents to be provided: contact Agent overall duration: contact Agent	

PORT INFORMATION

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SHIP/SHORE COMPATIBILITY

GENERAL

PORT/SHIP

Shipping Agents:

Charterer's

Owner's

Name:

Name:

Organization	Contact	Telephone (55 21)	Fax (55 21)	Email	VHF/UHF Channels
Procafon	Agent	2 233-9691	2 253-1573	movimentax@procafon.com.br elux@procafon.com.br	Call 16 Conversation all
Trilina	Agent	2519-1201	2 276-2611	trina@trilina.com.br	all
KSS Martins	Agent	2518-5766	2518-6778	igor.borges@kss.shipping.com	--
Oceonius	Agent	2 213-8761	2516-2748	tramp@oceonius.com.br	--
Wilson Sons	Agent	2 223-9590	2 223-9593	oper@wilsonsons.com.br	13
Buarque	Agent	2 221-2210	2 252-4667	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 Reception
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	10000m³h	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 responsible for the cooldown of loading arms (Carrier side)

Note 2 Jetty has his own supply but only for loading arms purging and inerting

MARINE TERMINALS OF GUANABARA BAY

SHIP/SHORE COMPATIBILITY			
MAIN CHARACTERISTICS			
PORT	Jetty Name/Number	LNG Jetty West For Regas Units use	SHIP Ship Name/Number
Vessel Limitations Maximum Dimensions	Type of Berth		Nominal size:
	LOA:	315 m	LOA:
	Beam:	50 m	Beam:
	Draught:	12 m	Depth:
	Air draft (BMMHWS):	no restriction	Summer draught:
	Gross tonnage:	-	Loaded draught:
Vessel Limitations Maximum Dimensions	Deadweight:	97000 t	Ballast draught:
	Displacement:	142900 t	Air draught:
			Displacement:
			Gross tonnage:
Vessel Limitations Maximum Dimensions	Jetty Name/Number	LNG Jetty East For Carriers use	Deadweight:
	Type of Berth		Cargo Containment Type:
	LOA:	300 m	
	Beam:	50 m	
	Draught:	12 m	
	Air draft (BMMHWS):	80 m	
Vessel Limitations Maximum Dimensions	Gross tonnage:	-	
	Deadweight:	97000 t	
	Displacement:	142900 t	
Normal side of berthing: Port side			
Tidal Information			
Chart Sounding at Berth			
Water levels (m):			
3,57m			
Max High Water Level (MHWL)			
1,37m			
Average High Water Level (AHWL)			
0,68m			
Mean Sea Level (MSL)			
0,13m			
Average Low Water Level (ALWL)			
0,11m			
Max Low Water Level (MLWL)			
0,00m			
Chart Datum (CD)			
Datum Level Used:			
Chart Datum			
Dock Water Density:			
1,025 kg/m ³ Flood			
1,025 kg/m ³ Ebb			
Other			
Approved Port (Facility) Security Plan in Place			
Y / N			
ISO 9000 accreditation			
Y / N			
Safety Accreditation e.g. ISRS			
Y / N			
Is the terminal part of a public port.			
Y / N			

PORT INFORMATION

PORT INFORMATION				SHIP-SIDE COMPATIBILITY			
Weather Limitations				Use Available			
Limits for Berthing				NONE			
Wave Height	20 knts / any direction	na		180°-360°	2	1450	1450
Wind Speed/Direction	na	na		000°-360°	2	1450	1450
Limits for Disconnection of Cargo Cranes/Lifts				NONE			
Wave Height	30 knts / any direction	na		000°-360°	2	1450	1450
Wind Speed/Direction	na	na		000°-360°	2	1450	1450
Limits for Disconnection of Loading Arms and/or Hoists				NONE			
Wave Height	35 knts / any direction	na		000°-360°	2	1450	1450
Wind Speed/Direction	na	na		000°-360°	2	1450	1450
Limits for Lashing Berth				NONE			
Wave Height	55 knts / any direction	na		000°-360°	2	1450	1450
Wind Speed/Direction	na	na		000°-360°	2	1450	1450
Limits for Reconnection of Cargo				NONE			
Wave Height	25 knts / any direction	na		000°-360°	2	1450	1450
Wind Speed/Direction	na	na		000°-360°	2	1450	1450
Other & n. limit, over bare etc.				NONE			
Action in the Event of Electrical Storms				NONE			
Stop Cargo	Y / N	na		000°-360°	2	1450	1450
Disconnect Hoists/Lifts	Y / N	na		000°-360°	2	1450	1450
Night Time Berthing/Unberthing				NONE			
Y / N	Y	na		000°-360°	2	1450	1450
Tides Rates at Berth				NONE			
Flood Spring tides speed knts, direction deg	na	na		000°-360°	2	1450	1450
Ebb Spring tides speed knts, direction deg	na	na		000°-360°	2	1450	1450
Flood Neap tides speed knts, direction deg	na	na		000°-360°	2	1450	1450
Ebb Neap tides speed knts, direction deg	na	na		000°-360°	2	1450	1450
Tidal Cycle				NONE			
Can vessel leave berth at any state of tide regardless of draft? Y / N	na	na		000°-360°	2	1450	1450
Tidal Stream/Current Restrictions Berthing	na	na		000°-360°	2	1450	1450
Tidal Stream/Current Restrictions Unberthing	na	na		000°-360°	2	1450	1450

Maximum Wind speed and Direction status Period 20 years		Direction	Speed m/s
N	NE	18.9	
	E	15.4	
	SE	15.2	
	S	17.3	
SW	SW	18.9	
	W	15.4	
	WN	15.2	
	N	17.3	

Temperatures at berth		Winter	Summer
Sea Temp	15	24	
Air Temp	15	25	
Air Temp	30	40	

Average number of days per year that the port is closed due to ice is 0. The terminal is subject to southern local severe weather conditions.

Terminal Storage Capacities		Product	Capacity m3	Processing	Import data m3	Export data m3
RIS	Product	na	na	na	na	na
	Product	na	na	na	na	na
	Product	na	na	na	na	na
	Product	na	na	na	na	na
RIS	Product	na	na	na	na	na
	Product	na	na	na	na	na
	Product	na	na	na	na	na
	Product	na	na	na	na	na

Comments, e.g. risks with/without vapour return

MARINE TERMINALS OF GUANABARA BAY

SHIP/SHORE COMPATIBILITY			
CONFIRMATION LIST BETWEEN SHORE AND SHIP			
Items	Shore specification	Ship specification	Remarks
Fender/flat body			
1 Arrangement- Include drawings, ship's parallel body dimensions at different intervals. Include fender height, width, height above datum and facing material	1 Arrangement (Layout, Fender cover, 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 Absorption: 1778 kNm Reaction Force: 2311 kN @ 55% compr EBD2 & EBD3 (SUC-1700H-RH): Energy Absorption: 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 naithold center)

Figure 2.- Deformation curves for SUC 1700H



PORT INFORMATION

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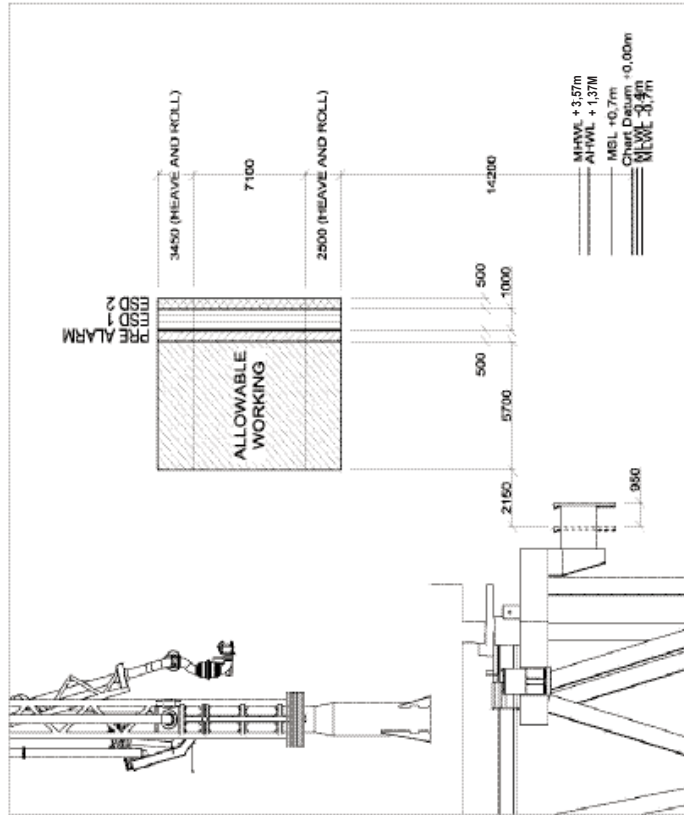
MARINE TERMINALS OF GUANABARA BAY

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



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SHIP/SHORE COMPATIBILITY			
CONFIRMATION LIST BETWEEN SHORE AND SHIP			
Items	Shore specification	Ship specification	Remarks
Arms/ cargo pumps / compressors			
1. Loading arm Number	Liquid: 5000 cu.m/ho/arm Vapour: 15000 cu.m/ho/arm BOG recirculation Vapour: 2 sets (head max flow rate de la BOG recirculation) Type: Hydraulic, double ball valve 168 °C up to +50 °C (Design)	1. Pump spec. (1) Cargo pump: cu.m/pump m head (2) Slop pump: cu.m/coupling ball side m (3) Pressure at hand mt side m	Give here characteristics of support pipes if applicable : load: kg/cm cm foot plate size : maximum Welding : Indicate slop pump type centrifugal/positive disp Indicate if PERCS, backaway couplings or OODC To attach ship's curves Rat pressure of liquid line vs. loading rate Rat pressure of liquid line vs. unloading rate To attach ship's curve Vapour flow vs. supply pressure To attach block flow diagram of terminal with line-up (If OODC is used shore side, to attach spool piece spec.)
(2) Number			
(3) Size			
(4) IERS			
(5) Minimum Temperature			
(6) Flange spec : a. Flange b. Bolt & nut size Number Material c. Packing	The OODC needs: a. Liquid: ANSI 150 B16 FF Vapour: ANSI 150 B16 FF b. Not necessary (OODC doesn't requires spool piece) Not Necessary Not Necessary c. Gaskets are part of the OODC	2. Compressor spec. (1) Number (2) Capacity (3) Pressure 3. Flange spec: a. Liquid: ANSI Vapour: ANSI b. c.	

What is the maximum acceptable saturated vapour pressure/temperature on arrival (Discharge Port)

(who provide? indicate inner gauge and outer gauge? if applicable)

0.12 barg (159.4° C) (send out zero , maximum transfer flow rates (0000 cu meter/hour)

MARINE TERMINALS OF GUANABARA BAY

SHIP/SHORE COMPATIBILITY

CONFIRMATION LIST BETWEEN SHORE AND SHIP

Item	Shore specification	Ship specification	Remarks
Arms/ cargo pumps/ compressors (cont'd)		There is no arm on this ship	
1>Loading arm (cont'd) Loading strainer characteristics Discharge strainer characteristics		mesh mesh	To attach drawing To attach drawing
2>LNG-MLA-01 arm (1)Flowrate (2)Size (3)Flange spec: a.Flange b.Bolt and nut Number Material/bolt Material/nut Size Packing (4)Rated pressure Separate from vapour line? Max outreach from bow/sternline	LNG-Liquid 5000 or 45000 m ³ /h 16" 16" Hydraulic Q.C.D.C ANSI 150 lbs FF 545 bar g (Oper/Design) na		Indicate availability of LNG hose on ship and hose characteristics. Indicate availability of suitable reducers on ship.
3>LNG-MLA-02 arm (1)Flowrate (2)Size (3)Flange spec: a.Flange b.Bolt and nut Number Material/bolt Material/nut Size Packing (4)Rated pressure	LNG-Vapour 15000 m ³ /h 16" 16" Hydraulic Q.C.D.C ANSI 150 lbs FF 545 bar g (Oper/Design)		Indicate availability of suitable reducers ship & shore.
4>LNG-MLA-03 arm (1)Flowrate (2)Size (3)Flange spec: a.Flange b.Bolt and nut Number Material/bolt Material/nut Size Packing (4)Rated pressure	LNG-Liquid or LNG-Vapour 5000 or 15000 m ³ /h 16" 16" Hydraulic Q.C.D.C ANSI 150 lbs FF 545 bar g (Oper/Design)		Indicate availability of suitable reducers ship & shore.
5. Fresh water hose (1)Flowrate (2)Flange spec. (3)Rated pressure (4)Coupling Type	Not available na na na		
6. Fire connection (1)Coupling type/size	Not available na		

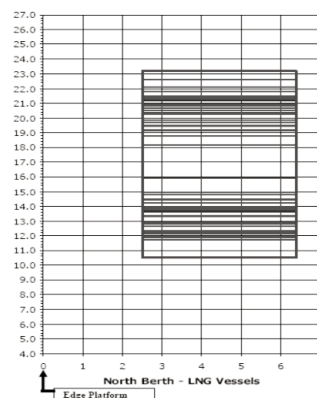
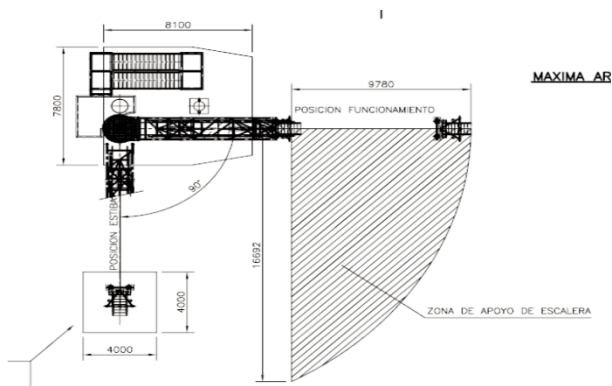
Are insulating flanges used ? Y/N

No

SHIP/ShORE COMPABILITY

CONFIRMATION LIST BETWEEN SHORE AND SHIP

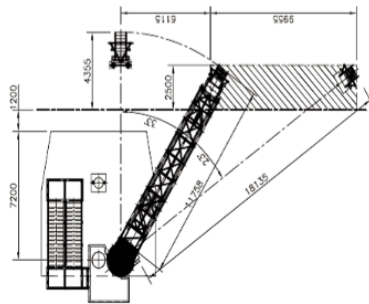
Items	Shore specification	Ship specification	Remarks
Gangway/support			
1. Position of gangway	1. Position 27,5 m aft from vapour line (south direction) 13,7 m from uncompressed berthing line	1. Position (units m)	To insert sketch or attach drawing if necessary. Repeat if more than one gangway. Indicate 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: 8.503 kg Vertical: 10.235 kg		
5. Is the gangway electrically insulated to prevent static discharge? Y / N			



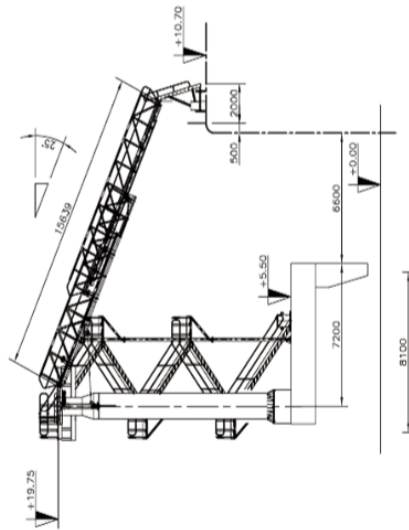
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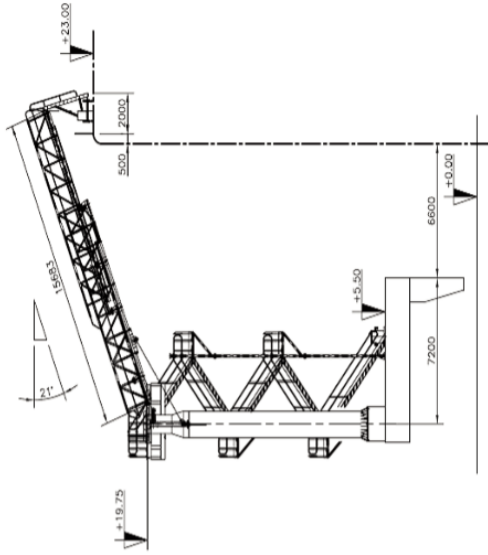
PLANTA MINIMA DERIVA +16.50



MAXIMA DERIVA MINIMO FRANCOBORDO

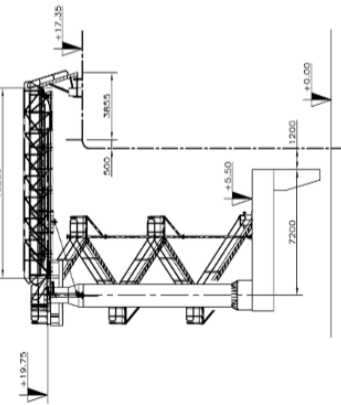


MAXIMA DERIVA MAXIMO FRANCOBORDO

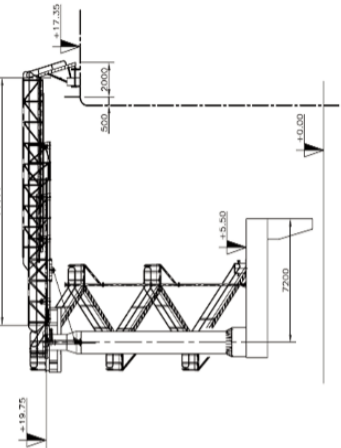


DETALLE DADO DE HOERMIGON

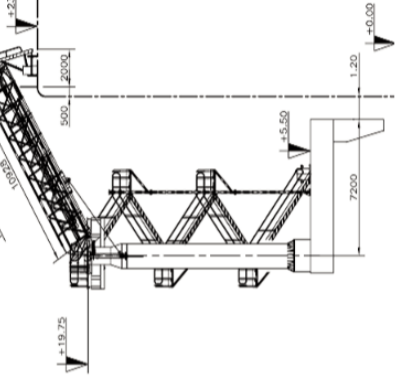
MINIMA DERIVA +17.35



MAXIMA DERIVA +17.35



MINIMA DERIVA MAXIMO FRANCOBORDO



MARINE TERMINALS OF GUANABARA BAY

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:1 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 jelly	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		
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	

PORT INFORMATION

1. TRA. YAHU! 200-5. JHS

COMPARISON LIST BETWEEN SHIP AND SHORE

[illegible]

Table 1. *Salmonella* serotypes and phages isolated from the 1990-1991 salmonellosis outbreak in the Netherlands

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

PORT INFORMATION

SHIP/ShORE COMPATIBILITY

CONFIRMATION LIST BETWEEN SHORE AND SHIP

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

What is the maximum speed of approach during berthing?

What is the usual angle of approach during berthing?

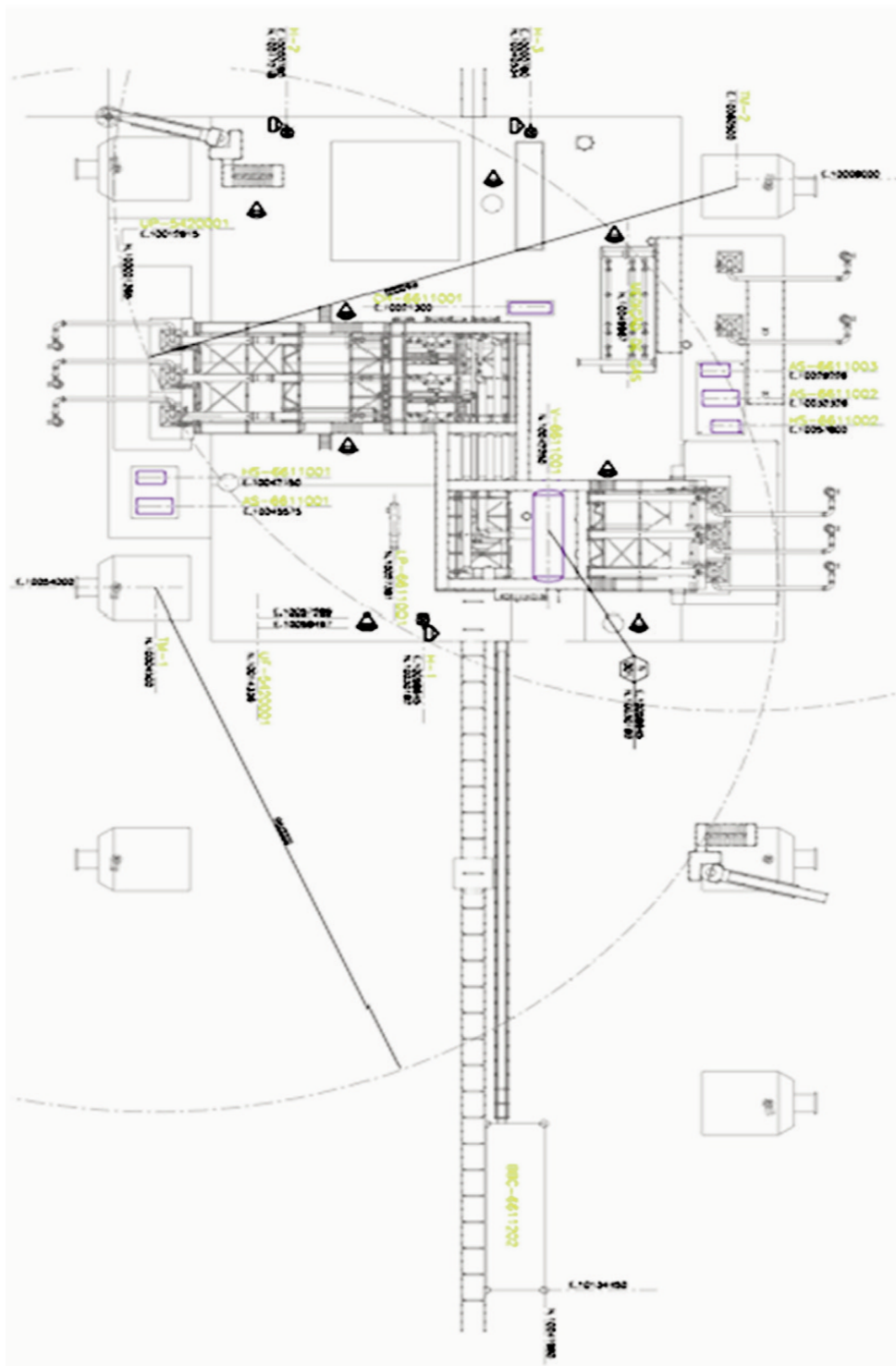
12 cm/s

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 accommodation space 5. Side plating	Indicate for each location: D/P=dry powder SW=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



MARINE TERMINALS OF GUANABARA BAY