

PORT INFORMATION BOOK

TEPAR – PARANAGUÁ TERMINAL



CONTROL OF REVISIONS

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1. INTRODUCTION

This Port Information was prepared by Petrobras Transporte S.A. – TRANSPETRO, operator of the Paranaguá Waterway Terminal - TEPAR, in the port of Paranaguá, and provides essential information for ships operating in this Terminal.

This document is internally distributed to those involved in the terminal operations, to the local authorities, port authority, as well as to other interested parties in Portuguese and English.

The information contained herein is complementary to, does not replace or alter any national or international legislation, instructions, guidelines or official publications.

Therefore, the official publications in force must be taken into account first.

The Terminal reserves the right to change any operational characteristics presented herein without prior notice.

Any questions, or information, please contact:

Petrobras Transporte S.A. – TRANSPETRO

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Paranaguá Waterway Terminal - TEPAR

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The latest version of this Port Information can be obtained from the following address:

<https://transpetro.com.br/transpetro-institucional/nossas-atividades/dutos-e-terminais/informacoes-portuarias.htm>

2. DEFINITIONS

Port Authority – It is the Port Administration in the area of the Organized Port and that performs its function in an integrated and harmonious way, together with all the segments that operate there.

Maritime Authority – Captain of the Ports of Paraná , which, within the maritime space of the State of Paraná, which encompasses the areas of the Organized Ports of Paranaguá and Antonina, is responsible for the Captaincy of the Ports of Paraná, headquartered in Paranaguá.

APPA – Administration of the Ports of Paranaguá and Antonina.

BP – "Bollard Pull" - Longitudinal static traction of vessel.

DHN – Directorate of Hydrography and Navigation.

SQUAT effect - Increased draft of a ship as a result of increased displacement speed, especially in restricted waters.

IMO – International Maritime Organization.

IAT – Instituto Água e Terra – environmental agency, operating in the state of Paraná, and is currently linked to the Secretariat for Sustainable Development and Tourism of this state.

ISGOTT – “International Safety Guide for Oil Tankers and Terminals”.

Quadrature Tide (Drought) - Sequence of low tide and high tide of the surface of the water, with the smallest amplitudes of variation, occurring in the times of waning quarter Moon and first quarter Moon.

Sizigia Tide - Sequence of low tide and high tide of the surface of the water, with the largest amplitudes of variation, occurring in the epochs of Full Moon and New Moon.

NOR – “Notice of readiness”.

OCIMF – Oil Companies International Marine Forum.

ERP – Emergency Response Plan.

TEPAR – Paranaguá Terminal.

DWT – Deadweight tons.

UTC – “Universal time coordinated”

3. REFERENCE DOCUMENTS

Information about the Terminal can be found in the publications listed below. Appendix “A” schematically illustrates Charts, including cribs and approaches.

Cards

Area	Chart Number		
	Brazil (DHN)	US Hydrographic Office	British Admiralty
<i>Proximities of Barra de Paranaguá</i>	1820	-	-
<i>Bar of Paranaguá</i>	1821	-	-
<i>Ports of Paranaguá and Antonina</i>	1822	-	-

Other Publications

Type/Subject	Editor or Font		
	Brazil (DHN)	US Hydrographic Office	British Admiralty
<i>Standards and Procedures of the Port Authority</i>	NPCP	-	-
<i>Support for navigation on the South Coast</i>	Script - South Coast	-	-

4. EXCHANGE OF INFORMATION

The following items shall be provided by the Terminal or the Vessel as indicated in the table. The terminal makes use of a spreadsheet, provided to ships through the agency, information necessary for the operation.

Information	Prepared by:			Delivered to:			Feedback
	Terminal	Ship	Both	Terminal	Ship	Both	
Before Arrival							
Estimated Arrival (ETA) and vessel information		X		X			According to ISGOTT
Essential information about the Terminal	X				X		According to ISGOTT
Prior to Cargo or Bunker Transfer							
Cargo/slop/ballast details on board			X			X	According to ISGOTT
Information essential to the operation.			X			X	According to ISGOTT
Ship/Shore Safety Checklist			X			X	According to ISGOTT
During Cargo or Bunker Transfer							
Repeat Ship/Shore Safety Checklist			X			X	According to ISGOTT
After Cargo or Bunker Transfer, Before Departure							
Information required for unberthing the Vessel			X			X	Quantity of fuels and water on board.
After Unberthing, at the exit of the port							
Information relating to the output data of the Porto		X		X			Time of landing of the pilot and departure from the port, through the maritime agent.

5. PORT DESCRIPTION

5.1 General Description

The Port of Paranaguá is the largest port in southern Brazil, acting mainly in the export of grains, also important in the transport of customs cargo to Paraguay (in both directions), according to the treaty of that country with Brazil. The largest bulk port in Latin America has several restructuring and expansion projects, and today it has 16 berths at the Commercial Pier, 4 berths at a liquid pier, 2 berths at a fertilizer pier, and 2 berths at Antonina.

In relation to the location of the Port of Paranaguá, its position on the outline of the Brazilian coast places it strategically, with minimum distances to access large production centers. Considering the export data, it appears that the area of coverage of the Port of Paranaguá is more than 800 thousand square kilometers, currently moving cargo from all over the State of Paraná (PR), States of Santa Catarina (SC), Mato Grosso (MT), Mato Grosso do Sul (MS), Rondônia (RO), São Paulo (SP), Rio Grande do Sul (RS), and Bolivia, Argentina and Paraguay.



At the Flammable Wharf, separated from the Commercial Wharf by a safe distance, we have the so-called Public Pier, for shared use with other Port Operators.

At the Public Pier (FLAMMABLE), the Paranaguá Waterway Terminal - TEPAR, operates in two different berths, PP1 (EXTERNAL), and PP2 (INTERNAL).

Another smaller pier (SECONDARY), is operated exclusively by TRANSPETRO, in the loading of Barges, for the supply of ships in the Port, and supply of tugs. We also have a Floating Pier, for emergency vessels, attached to the Public Pier.

These two piers are located one to the east and the other to the west of a central walkway that gives them access, from which also originates a third pier, called pier Cattalini, which extends towards NW. But this is not part of the facilities of the Public Pier of APPA, therefore it is not operated by TRANSPETRO, nor object of the port information, here treated.

5.2 LOCATION

5.2.1 Coordinates

The Terminal facilities are located at the following coordinates: latitude 25°30'12" S and longitude 048°32'06" W.

5.2.2 General Geographical Location

The Paranaguá Waterway Terminal – TEPAR, is located at NW of the city of Paranaguá, next to the south bank of the dredged channel that gives access to the port, about 13 miles from the entrance of the bar. It is located in the state of Paraná, on the southern coast of Brazil, between the island of Bom Abrigo and the islands of Arvoredo.

5.3 Approach and Access to the Terminal

5.3.1 General Description

At the entrance to the Galheta Channel bar, the intensity of the tidal current reaches around 4.0 knots, during spring tides, with a direction sometimes transverse to the channel axis.

The height of the spring tide range reaches average values of 2.20 meters, above the Brazilian Navy Reduction Level, and around 1.00 meters in neap tides, in the Paranaguá Bay area.

Inside the Port, during spring tides, intensities of flood and ebb currents of around 1.3 to 2.4 knots are observed, and of around 1.4 knots of intensity in the quadratures.

Access to the port of Paranaguá is normally via the Galheta channel, 12 miles long, 200 meters wide, marked by light buoys and dredged to a depth of 12.5 meters. The critical points of this channel are located between pairs of buoys 3-4 and 7-8, where there are strong transverse currents.

During transit in the navigation channel, for the ship that demands the port, after passing the pair of buoys No. 07 and 08, the speed at the bottom may vary between 14.0 and 8.0 knots. This speed may be changed if it does not compromise navigation safety. The Commander and Embarked Pilot will evaluate this condition during the maneuver.

Vessels in tow will only be able to access the Galheta Channel with express authorization from the Maritime Authority and the Port Authority, who must be informed if any emergency situation

occurs. Authorization for entry of vessels in tow will only be given with a specific Action Plan, after delivery of an operational risk analysis to be prepared by the interested party, with pilotage in the risk analysis being mandatory. The ETA (Emergency Towing Arrangement) of the towing device must be communicated by the agent at least 72 hours in advance.

The Galheta Channel should only be invested with Pilot on board.

It is not permitted for ships to cross or overtake between the pairs of luminous buoys from No. 1 A and 2 A to No. 05 and 06. In other sections of the Navigation Channel, ships with drafts compatible with the depths recorded in the Nautical Charts may cross or overtake by another ship transiting the canal.

Ships in ballast must guarantee minimum drafts that provide effective steerability and adequate stability of the vessel, with sufficient speed to safely navigate the Galheta Channel (entry and exit). The thrusters must preferably be immersed when transiting through the channels (external and internal). In the event of winds in the bar, ships in ballast must adapt their drafts as requested by the Pilotage, to guarantee the safe embarkation/disembarkation of the Pilot.

Maximum speed in the access channel to the port of Paranaguá is 14 knots and between pairs of buoys 9-10 and 13-14, it must be reduced to 12 knots, with a tolerance of 1 knot in speed being accepted. In adverse weather conditions and sea conditions, at the discretion of the Pilot, aiming for navigational safety, ships may travel at speeds higher than the established speed.

During the entire navigation through the Galheta channel, the ship must remain with its bow manned, with at least one crew member carrying communication equipment, being in contact with the bridge and with the anchor ready to let go in case of emergency.

Maneuvers near the pier, which is, mooring, unberthing, changing berths and/or changing sides, in any tidal situation, will be subject to the water depth below the keel. The schedule for maneuvers at the pier will be programmed by APPA's Port Operations Directorate, based on information provided by the Pilotage and Maritime Agency appointed, with the necessary advance notice, and after the schedules have been implemented, APPA will make them available in the APPAWeb system.

When maneuvering ships near public and private berths, during mooring or undocking and hauling, shore cranes and gantries must be as far away as possible from the end of the ships in order to provide an adequate and safe area for maneuvering the cables handled by the team. Cargo, containers and any other materials/equipment that may interfere during mooring activities and other maneuvers may also not be stored on the pier. Only the personnel necessary for the mooring task are authorized to remain on site.

Ships of any “Flag”, depending on their external presentation or with suspected irregularities, moored or at anchor, regardless of communication, may be inspected, randomly, by Naval Inspectors appointed by the respective Maritime Authorities (“Port State Control or Flag State Control ”). Vessels moored and held to comply with requirements before departure will be moved, as soon as conditions permit, to the appropriate anchorage.

5.3.2 Anchorages

The ordering and use of anchoring areas and their restrictions are established under the coordination of the Port Authority of Paraná – MARITIME AUTHORITY, in official documents under the responsibility of the Port Authority, which must be published on their websites and also disclosed to navigators in documents nautical images made by the Navy Hydrography Center (CHM).

The first anchorage available to ships destined for Paranaguá is the pilot boarding area referred to in item 5.3.5 of these instructions. The location has lat as its reference coordinates. 25° 31' 10" S and long. 048° 15' 50" W and is located between the entrances of the Sueste and Galheta channels, close to buoy 01, has a depth of 13 to 18 meters, the nature of the bottom is sand, being an area sheltered from all winds, at sea open.

AREA 5 is intended for ships that are subject to visits by Port health authorities or others, when the ship's conditions so recommend. Vessels with a length of less than 200 meters may anchor with a draft of up to 11.4 meters and must also anchor in the western part.

Area 5 is delimited by the coordinate points below:

Point	Anchorage Nº 5	
	Latitude	Longitude
Pont 1	25° 29.7924' S	048° 28.3517' W
Pont 2	25° 29.7528' S	048° 27.2699' W
Pont 3	25° 30.1500' S	048° 27.2701' W
Pont 4	25° 30.0805' S	048° 28.3505' W

Area 11, previously known as area 12, is intended for ships at anchor awaiting orders to demand Paranaguá Bay.

The waiting order for ships requesting the Galheta Channel will be subject to the ship's anchoring date/time.

Area 11 is delimited by the coordinate points below, in accordance with the Nautical Chart 1820:

Anchorage Nº 11		
Pont	Latitude	Longitude
Pont 1	25° 47.0650' S	048° 18.9734'W
Pont 2	25° 41.3192' S	048° 12.2143'W
Pont 3	25° 43.2455' S	048° 10.0283'W
Pont 4	25° 49.1014' S	048° 16.7208'W

5.3.3 Port Limits

The official limits of the port, coordinates: latitude 25°29 '45"S and 25°30'12"S and longitude 048° 32' 06"W and 048° 30' 00"W.

5.3.4 Navigation Aids

As mentioned in item 5.3.1, regarding approach and access, the most important precaution for the navigator who approaches the Paranaguá bar is to keep his vessel away from the dangerous banks near the entrance to the Galheta channel. To achieve this, the most important measure is to always try to keep the ship outside the 10 meter isobatic drawn on the charts.

When in the presence of a support vessel, performing beaconing, Naval Police, dredging, underwater and Hydro-Oceanographic services, and others previously authorized by the Port and Maritime Authorities, the bottom speed of ships in transit in navigation channels must be reduced in such a way that it does not compromise the safety of navigation (the Pilot Station must be notified well in advance of such operations). Ships transiting the Port of Paranaguá's evolution basin must navigate with a maximum bottom speed of 10 knots.

5.3.5 General Restrictions

5.3.9.1 Maneuvers at the Terminal pier must be carried out with the mandatory use of tugboats.

5.3.9.2 In the mooring maneuvers in the Internal Berth of the Terminal Pier, a minimum distance of ten (10) meters must be maintained from the ships' bow to the pipeline bridge.

5.3.9.3 The mooring and unmooring, in the Internal Berth, must occur in the period between one hour before the padding of the prelamares and one hour after the beginning of the stream, that is, using the water depth resulting from the increase in the height of the tidal amplitude, the depth of the place and the low intensity of the tidal current (less than 0.4 knots), still observed. The best recommended period, both for approach and mooring and for unmooring, is one hour before high tide.

5.3.9.4 Ships moored by starboard at the Internal Berth of the Terminal Pier may, when authorized by the Port Authority, project the stern beyond the end of the Pier. The ships, when moored in the External Berth, may project the bow or stern beyond the end of the Pier, when moored by port or starboard respectively, as long as authorized by the Port Authority.

5.3.9.5 At the suggestion of Pilotage, in unfavorable weather or sea conditions, the Port Access Bar may be temporarily closed by the Maritime Authority.

5.3.9.6 The conditioning factors for access to the critical area of the Galheta Channel, between the alignment of the pair of light buoys No. 01 and No. 02, to the pair of buoys No. 07 and No. 08, are presented in Appendix E.

5.3.9.7 The laws of Brazil are strict in relation to smuggling. Therefore, Ship Captains should instruct their crewmembers to avoid taking cigarettes, cigars, tobacco, alcoholic beverages, souvenirs, and other imported items ashore. Before arrival, they must be collected from the bonded magazine (seal), which will be under the ship captain's responsibility throughout the stay in the Terminal. In no way will any commercial transaction be allowed, whether between employees, crew or any other persons.

5.3.9.8 Brazilian laws are quite strict with regard to water pollution along the coast. It is forbidden to throw any type of material, debris, garbage, oil or polluting substance into the waters of the port of Paranaguá. Heavy fines will be imposed on offenders by port authorities, in addition to imprisonment provided by law. It is the responsibility of the ship's masters to ensure that no contaminated oil or water will be pumped or spilled on board their ship.

5.3.9.9 During the stay of the ships in the port, anchored or moored, the garbage must be collected in suitable and closed containers, thus being kept until its collection, promoted by the company providing this service. It is forbidden to keep wagons or other garbage containers hanging from the edge, or near the edge, at risk of falling overboard.

5.3.9.10 It is forbidden to throw any type of sewage or discharge directly into the sea during the stay in the port. The removal of chemicals, oils or polluting substances may be made using oil or truck boring, provided that it is carried out by a company authorized by the port authority.

5.3.9.11 Ship masters shall inform the Port Authority and the Port Authority of the occurrence of any spillage of polluting substance in the area of the organized port. Pollution is foreseen as a crime by Law No. 6,938, of August 31, 1981, which provides for the national environmental policy and establishes penalties for both those who pollute and the authority that failed to prevent it.

5.3.9.12 The Brazilian Flag must be hoisted on the top of the forward mast when the ship enters or leaves the port or when in the port, from 8 am to sunset. Vessels calling at Brazilian ports must have this flag in advance, but if this has not been possible, the flag must be obtained through their agent.

5.3.9.13 In accordance with international practice, when approaching the coast, ships must hoist and maintain the QUEBEC flag until clear by port authorities. During the night, that is, from sunset to sunrise, the quarantine signaling will be done by a red light topping the white light. Throughout the stay, tankers must keep the BRAVO flag on top during the day and a red light during the night.

5.3.9.14. Tether clearance tasks are not allowed on ships moored at the Public Flammable Pier, nor any movement with the anchor capable of producing spark.

5.3.9.15. Passengers will be able to go ashore as long as they have their documentation regularized and have their passport. You should ask the agent.

5.3.9.16. As long as they remain moored to the Public Flammable Pier, operating with the TRANSPETRO Terminal, the ships must maintain their main engine in conditions of immediate use, so that they can leave the pier at full force as soon as notified to do so. All the time the ship must be making up for it. At no time should the main engine can be deactivated.

5.3.9.17. There is no visitation to the ship operating in the Terminal. Entry on board is restricted to company employees, port authorities, experts, technicians, etc., whose duties require their presence on board. For crewmembers' relatives, however, there may be authorization from the ship captains, in agreement with the Terminal.

5.3.9.18. Smoking is not permitted on the pier, and on moored ships, except in compartments considered approved for this purpose by the ship and terminal or duly certified for this purpose.

5.3.9.19 The use of explosion-proof electrical lighting on the deck will be allowed during the operation of the ship.

5.3.9.20 Portable flashlights in use must be intrinsically safe, certified for use in environments with risk of explosion.

5.3.9.21 The radio transceivers to be used on deck, during loading and unloading operations, must be shielded, intrinsically safe.

5.3.9.22 All doors and portholes of the compartments habitable to midship shall remain closed during loading and unloading operations. Care must be taken to avoid the entry of gases into these compartments.

5.3.9.23 All doors, portholes and openings in the stern habitable compartments that face the deck must be kept closed. Openings and doors on the operating deck that may give way to gases inside the ship must be kept closed. If the Terminal representative requests, their warnings and suggestions must be heeded, and measures must be taken to prevent the entry of gases into areas of the ship where ignition sources may exist.

5.3.9.24 Fans and pipes must be properly oriented in relation to tank vents and the prevailing wind, so as not to capture flammable vapors.

5.3.9.25 Any atmospheric air intakes that can capture hydrocarbon vapors must be kept closed. All openings within 25 meters (82 feet), vertically or horizontally, of any cargo tank openings or vents shall be kept closed.

5.3.9.26 All unit air conditioners, of the window installation type, will be switched off when the ship is operating with low flash point products.

5.3.9.27 Before mooring the ship, it must be confirmed that all manholes and measurement are closed and locked. During operation, cargo and fuel tank openings will be used as per the tank relief safety system. The same applies to permanent ballast tanks.

5.3.9.28 The measuring nozzles or manholes will be kept closed during the period of operation, except when for the use for which they are intended, that is, in order to carry out the measurements, and to obtain sampling, temperatures or observe the tanks. The measuring nozzles must be protected by clean flame arrester screens, of the approved type, and in perfect condition.

5.3.9.29 The loading flow rate must be controlled, to avoid excess pressure inside the cargo tanks, respecting the design limits of the tanks and other equipment.

5.3.9.30 The fire protector mounted on the relief pole will be used according to the guidelines of the tank venting system.

5.3.9.31 Ships equipped with Inert Gas System (IGS) must prove, through measurement, that the cargo tanks (including ballast tanks) have a maximum of 8% oxygen , by volume, before operations.

5.3.9.32 The inert atmosphere of cargo tanks shall be maintained during operations. If the Inert Gas System fails, changing the quality or volume of the inert gas produced, and presents difficulties in maintaining positive pressure in the cargo tanks, the operation must be immediately interrupted, even before informing the onboard service officer and the Terminal representative. The resumption of operations will only be allowed when the Inert Gas System is in full working condition.

5.3.9.33 The gas freeing of tanks, or their inertization, in ships moored at the Public Flammable Pier is not allowed.

5.3.9.34 Repairs or maintenance work of any nature involving risk of spark or other means of ignition may not be carried out while the ship is moored on the pier, without express authorization from the terminal.

In extreme cases, all safety standards must be observed and met. Repairs involving the facilities of the piers or involving any restriction of the ship during the stay must be previously authorized by the Terminal.

5.3.9.35 When approaching or departure the Tanker, a pilot ladder shall be available for immediate use and of sufficient length to reach the pilot boat. At night, the ladder should be illuminated so that the pilot boat can approach and the pilot can safely boards or disembarks the tanker. A lifebuoy with a heaving line must be available and a rope for small boats must be on the lee.

5.3.9.36 When moored, during the night the opposite side of berthed must be illuminated, as a safety measure.

5.4 Maneuvering Areas – Evolution Basin

It is the area destined to the maneuvers of the ships, with approximate width of 700 meters in all its extension, of the pier of flammables and of the pier of the port of Paranaguá. This maneuvering area is limited to the north by the 10-meter isobathic west of the Palangana Stone, having varying depths.

The transshipment operation is carried out with the vessels moored, using the interconnection alignments of the Terminal berths.

5.4.1 Navigation and Mooring Aids

A terminal representative will follow and will assist the ship during mooring to position it in order to allow the connection of the loading arms and cargo hoses.

5.4.2 Drafts

At the outer berth of the main pier, known as PP-1, the maximum draft allowed for the ship is 11.60 meters (38 feet). In PP-2, or internal berth, the maximum draft, of 11.60 meters (38 feet).

5.4.3 Dimensions - LOA

What limits the access of ships to the main pier is the length (LOA), 190 meters for PP1 and 190 meters for PP2, and the draft as described in 5.4.2.

5.5 Environmental Factors

There are no weather stations in the area. The winds, in general, have a regular cycle during the year, obeying the regime of the coastal winds. The relative humidity of the air is about 80%.

Temperatures during the year range from a low of 15°C in June/ July to a high of 30°C in January/ February.

Meteorological information can be obtained from the Navy Hydrography Center website (www.dhn.mar.mil.br/chm/meteo/prev/meteoro/boletim.htm)

5.5.1 Predominant Winds

The prevailing wind in the region is SW. From January to March, winds blow from NE and SW; from April to July, from W and SW; from July to September, from S and SE; and from October to December, from E, NE and SW. The intensity of the winds varies from weak to moderate.

5.5.2 Waves and Vacancies

The wave regime at the entrance to the bar depends on the local wind regime. The greatest restriction for the boarding of pilots refers to the condition of the sea, which in the Galheta channel, with wind above 6 on the Beaufort Scale makes it difficult for the pilots' speedboats to pass through.

5.5.3 Rainfall

The highest rainfall in the region occurs at dusk and sometimes lasts through the night, these precipitations are more frequent in the spring and summer seasons. There is, historically, no incidence of snow in the region.

5.5.4 Lightning Storms

Lightning storms are more frequent in the spring and summer seasons, in the afternoon and early evening. The elements that contribute to its incidence are the cold fronts and the high temperatures during the day.

5.5.5 Visibility

In general, it is good during the summer, and can be more than 4 miles. It can decay with autumn and spring fogs, as well as strong occasional clusters.

5.5.6 Tides and Currents

The tides of the bay of Paranaguá are semi-diurnal, presenting inequalities with additional influence caused by meteorological effects, both in the port and in the bar. There is a difference of approximately one hour between the tide in the port and the bar, occurring later in the bar. The tidal boards draw attention to this fact, stating that there may be exceptions to the rules contained in those boards with regard to tidal forecasts on the southern coast of Brazil.

Currently, APPA and the Center for Sea Studies are developing studies of current and tides, in simultaneous measurements in the Galheta channel and in the port to reach the values of direction and intensity of the current at the critical points of the channel, as well as the depth at any time, above the level of reduction established by DHN. It is important to know the height of the tide at any location and at any time because this parameter directly influences the maximum draft to be established by the Port Administration.

With regard to the bay of Paranaguá, the following aspects are highlighted:

In the bar of the Galheta channel, the current reaches about 4 knots at the spring tides;

The average height of spring tides is 1.80 meters, and in quadrature tides, 0.80 meters;

In Porto, during spring tides, flood and ebb currents reach 1.3 to 2.4 knots, and at square tides, about 1.0 knot of intensity;

The average density of water in the brackish bay of Paranaguá is 1,015 g/cm³ and 1,025 g/cm³.

6. TERMINAL DESCRIPTION

6.1 General Description

Founded on February 1, 1977, by Petrobras, it has a physical area of 182,841 m², and the entire area is used for operational purposes, comprised in a perimeter of about 1,800 m, operating uninterruptedly, during the 24 hours of the day.

TRANSPETRO operates petroleum products, LPG, Naphtha, Diesel Oil, Fuel Oil, Gasoline, and others, in the loading and unloading of ships, regulating the fuel market in the states of Paraná, Santa Catarina and southern São Paulo, served by the Presidente Getúlio Vargas refinery.

The Terminal is interconnected with the Araucaria Refinery through a 12-inch and 97.6 km pipeline, which operates in both directions. In the tank park, approximately 165,000 m³ of petroleum products can be stored, and in the pressurized LPG storage park, composed of three spheres, the operational capacity is 7,638 m³.

6.2 Physical Details

Berth nr.	Type	Berth length (meters)	Depth (meters)	Terminal: TEPAR		Breadth (maximum) Meters	LOA (meters)	Cargoes handled	Port of Paranagua	
				Tide (meters)					SDWT (maximum) Tons	Remarks
				Ebb tide	Low tide					
PP-1	Pier" L"	190	11,60	1,8	0,8	40,00	190	Gasoline, Diesel oil, Kerosene, Methanol, MTBE, Alcohol, Naphtha, fuel oil; Bunker, GLP	110.000	-
PP-2	Pier" L"	190	11,60	1,8	0,8	35,00	190	Gasoline, Diesel oil, Kerosene, Methanol, MTBE, Alcohol, Naphtha, fuel oil; Bunker, GLP	80.000	-
PS	Pier" L"	100	5,8	1,8	0,8	-	-	Bunker	-	-

Note: The Secondary Pier is used only for barge loading and tug supply operations.

6.3 Mooring and Mooring

The maneuvers occur during the 24 hours of the day, observing for the mooring and unmooring maneuvers the drafts allowed during the low intensity flowing tides (at most 0.4 knots).

The mooring service is activated by pilotage, which is carried out under the guidance of the pilot on board the ship. The pilot will also indicate the VHF channel for communication with the riggers and terminal personnel for the correct positioning and mooring of the ship.

In the port of Paranaguá there are also support boats for maneuvers, which are requested by the pilot for companies providing this service.

Mooring and unmooring maneuvers are monitored by cameras installed on the pier.

Berth Nr.	Requires Pilot for Berthing	Maximum Deadweight	N° & BP (Bollard – Pull) of Tugs				Approaching (maximum)		Mooring Points		Mooring Lines		
			Berthing		Unberthing		Speed (cm/s)	Angle (°)	Bits	Mooring Hooks	Minimum Quantity		
			N°	BP	N°	BP					Heading Line	Breast Line	Spring Line
PP-1	Yes	110.000	2 a 3	58	2 a 3	58	20	10º	5	X	4	See note 3	2
PP-2	Yes	80.000	2	53	2	53	20	10º	5	X	4	See note 3	2
PS	No	Barge/Tug	N/A	N/A	N/A	N/A	20	N/A	2	X	2	N/A	N/A

Note1: For ships above the gross tonnage of 2,000 DWT, the use of pilotage services is mandatory.

The pilotage will be optional for ships with a gross tonnage of less than 2,000 DWT, provided they are commanded by a Brazilian Deck Officer or similar category.

Note2: The recommended number of tugboats is defined in the rules and procedures by the Port Authority (NPCP) and will depend on the deadweight of the ships and the static towing force of the tugboats. At the discretion of APPA / PILOTAGE, the recommended number may be changed, in view of the characteristics of the ship to be towed and the risks of mooring.

Note3: If the positioning and mooring arrangement of the ship in relation to the pier bollards are favorable, it is recommended to place breasting lines, especially if strong wind forecasts are confirmed.

Note4: Add a spring against west wind and ebb tide on the External (PP1), and Internal (PP2) piers.

6.4 Berth Characteristics for Loading, Unloading and Supply

At the pier for ships, there are two berths, an external and an internal one (PP1 and PP2), equipped for loading and unloading oil products, such as gasoline, diesel, naphtha, LPG , and crude oil such as "*marine fuel (VLFSO)*" and fuel oil.(see Appendices C and D).

The PP-1 (outer berth) is 196 meters long and depth compatible to accommodate ships with a maximum draft of 11.60 meters (38 feet) and LOA of up to 190 meters.

The PP-2 (inner berth) is 186 meters long and depth compatible to accommodate ships with a maximum draft of 11.60 meters (38 feet) and LOA of 190 meters.

On the main pier there are five mooring bollards for each berth, 46 meters away from each other.

The PP-1 has three arms that serve the ships moored in the outer berth, two of them 10" in diameter that operate with light products and another 12" that operates with dark products.

The pier also has 8" hoses, which can operate with ships moored in the external berth or inside, with up to 600 m³/h per hose line. For LPG operations, a set of 6" hoses discharges in the liquid phase, with a flow rate limited by the pressure of 15.0 Kgf/cm².

The secondary pier is 100 meters in length and depth compatible to accommodate barges with a maximum draft of 19 feet, which are loaded with MGO (Marine Gas Oil) and MF (Marine Fuel), which supply ships operating in the port of Paranaguá.

The pier is equipped with a firefighting system, and the terminal has containment barriers arranged to launch in the fight against pollution at sea.

Appendix C presents the simplified scheme of arms, hoses and lines for loading and unloading products.

Appendix D presents the typical flow rates for loading and unloading, by type of product operated at the Terminal. The flows can be changed according to the combination of lines, hoses and arms of the terminal and the capacity of the ship.

6.5 Management and Control

In the Terminal "Control Room", there is the Terminal Supervisor who is responsible for controlling all Terminal operations through the supervisory system. At the pier, another room with an Operation Technician, carries out all the work necessary to carry out the operations, and also takes care of the communication and from the mooring, position of the ship, and, throughout the operation until the unmooring.

The communications are carried out with the ships through VHF radios (channel 9), in maritime frequency previously agreed and registered. A secondary medium, through UHF radio (terrestrial channel 3), provided by the terminal is used in case of failure in the main system.

6.6 Main Risks

The main hazards associated with ships staying in TEPAR berths are:

- Removal of the external (PP-1) and internal (PP-2) berths, due to the occurrence of sudden windstorms more frequent in the spring and summer seasons, in the afternoon and early evening.
- When unprotected by the absence of a ship in the other berth, the ship that is moored is more vulnerable to the winds, at the risk of removal. For operation of a single moored ship, greater attention of the crew is required with respect to mooring lines.
- Occurrence of storms with more frequent lightning in the spring and summer seasons, in the afternoon and early evening. The elements that contribute to its incidence are the cold fronts and the high temperatures during the day.

7. PROCEDURES

7.1 Before Arrival

Ships destined for the APPA Flammable Wharf shall inform the ETA through the agent at least 24 hours in advance, so that they can be included in the schedule. The ETA information shall specify whether the mentioned time is local or UTC. Local time is three hours behind the Greenwich meridian. Pay attention to the possible use of "daylight saving time", passing the time zone to less than two hours in relation to Greenwich.

The NOR (Ready to Operate Notification) shall be issued by the vessel at the port's customary berth, when the vessel is in all respects ready to operate.

The berthing schedule at the Paranaguá Terminal is regulated by APPA.

Ships destined for the Paranaguá Terminal must have the Free Practice Granted (Ship Release by Port Health and Port Authorities). The ships can be visited in the anchorage area by Health, Customs and Maritime Police agents. The ship's agent shall make arrangements for this purpose.

Eventually, the visit may occur at the Pier, before the access of other workers, even so, all ships, before calling at the port of Paranaguá, must send a specific message to the National Health Surveillance Agency - ANVISA, to obtain Free Practice attesting to their good health status.

The release for any activity will occur only after the release of ANVISA, which is provided by the ship's agent.

Ships coming from a foreign port, even if they have already called at a national port, will be inspected by Customs, and the agent must make a petition to that effect, providing the necessary details. They will also be subjected to a visit by the Maritime Police, after the Free Practice has been granted, to verify the seafarer's license or passports of all crew members and passengers.

Repairs on board and washing in the ship's cargo tanks should preferably be carried out in the anchoring area. To perform these services with the ship moored, prior authorization from the Terminal will be required.

7.2 Arrival

When berthing, after the safety inspection carried out by the Nautical Inspector, based on the ISGOTT Operational Safety Checklist, if there are pending issues that are not resolved by the crew, the ship will not have authorization from the Terminal to start the operation.

Port authorities are triggered by the ship's agents depending on the arrival and forecast for berthing.

To receive authorization to berth, the ship must, through its agent, pay all port fees and tariffs stipulated by the Port Authority, in the manner established and in force, as well as be aware of the ordinances and rules issued by the Port Authority Council (CAP), which is the normative agency for promotion and deliberation in matters related to the operation of the organized port.

Bunker supply requests must be forwarded to Petrobras, through its agent. The Terminal may supply the ships moored at the pier directly through a pipeline, being pumped through 4" diameter hoses for MGO (Marine Gasoil) and 8" for MF (Marine Fuel) at a flow rate of 100 m³/h and 600 m³/h respectively or through a barge for ships anchored offshore.

Requests for water supply, food, lubricants, parts and other materials for use on the ship are made through the agent, using supplier companies without connection to the terminal.

Below is the list of the most important addresses and phones:

PETROBRAS TRANSPORTE S.A. - TRANSPETRO	AV. Santa Rita s/n – Bairro Rocio - Paranaguá CEP 83221-675 Website: www.transpetro.com.br Email: tepar-sutur@transpetro.com.br Telephone: 55 41 3420-4104 / 55 41 3420-4105
ADMINISTRAÇÃO DOS PORTOS DE PARANAGUÁ E ANTONINA - APPA	AV. Ayrton Senna da Silva, 161 – Bairro Dom Pedro II - Paranaguá CEP 83203-800 Website: www.portosdoparana.pr.gov.br Telephone: 55 41 3420-1143
PARANAGUÁ PILOTS PILOTAGE SERVICES	Rua Benjamin Constant, 339 – Bairro Oceania – Paranaguá CEP 83203-190 Website: www.paranaguapilots.com.br email: plantao@paranaguapilots.com.br Telephone: 55 41 3721-1036 radio: ch16 / ch12
NATIONAL HEALTH SURVEILLANCE AGENCY - ANVISA	Rua Rodrigues Alves, 606 – Centro Histórico – Paranaguá CEP 83203-170 Website: www.gov.br/pt-br/orgaos/agencia-nacional-de-vigilancia-sanitaria e-mail: navios.paranaguá.pr@anvisa.gov.br
PORT AUTHORITY OF PARANÁ - MARITIME AUTHORITY	Rua Benjamin Constant, 707 – Bairro Oceania – Paranaguá CEP 83203-190 Telephone: 55 41 3721 -1500 / 55 41 3721-1542 Website: www.marinha.mil.br email: Maritime.Authority.secom@marinha.mil.br
FEDERAL POLICE	Rua Manoel Bonifácio 309 – Centro – Paranaguá CEP 83203-150 Telephone: 55 41 3038-8563 Website: www.gov.br/pf/pt-br/aceso-a-informacao/institucional/quem-e-quem/superintendencias-e-delegacias/parana e-mail: gab.png.pr@pf.gov.br

7.3 Mooring

7.3.1 Pre Mooring Procedures

The crane or load stick (for a minimum of 5t) must be in good condition, and offer safety to assist in the connection of hoses to the on-board manifold;

Have the windlasses, winches, brakes, jaws, and other equipment in perfect working condition, ensuring the safety of the mooring;

Have ready towing ropes, messengers, guide ropes and shinning in the bow and stern;

All mooring equipment used at the Terminal follows the guidelines of the Mooring Equipment Guidelines – MEG of OCIMF.

7.3.2 Mooring Work

Mooring tasks will always be performed under the pilot's guidance (see Appendix B). The Terminal, however, verifies the directives defined in item 6.3.

7.3.3 Mooring Cables

Under no circumstances should the mooring lines be soft or undermined. If this occurs, the ship may move along the pier or move away from the berth. In this case, the operation must be interrupted for safety reasons, and the hoses and arms will be disconnected.

The mooring lines must be of the same material, fiber or wire. It is not allowed to use "mixed" moorings, that is, cables that perform the same function cannot be manufactured from different materials. They must be of the same type, gauge and material.

7.3.4 Vessel Mooring System

Ships that berth to operate at the Terminal's flammable quay shall adopt the following criteria for mooring:

1. – The mooring lines must be arranged as symmetrically as possible in relation to the middle of the ship.
2. – The crossbars, when used, must be oriented as perpendicularly as possible to the longitudinal axis of the ship and passed as far forward and aft as possible.
3. – The springs should be oriented as parallel as possible to the longitudinal axis of the ship.
4. – If fiber harnesses are used in the wire cables, the harnesses must be of the same type, with a gauge of 25% more with reference to the minimum breaking load of the wire cable, according to OCIMF/ ISGOTT, of the same material and of the same length.

5. – The mooring lines must be arranged in such a way that those who perform the same functions are of the same length counted from the winch on board (or bollard) to the berth bollard.

The schemes shown in Appendix B indicate the mooring for the most unfavorable conditions as they represent the acceptable limit conditions.

The horizontal angle of the bow and stern launchers in relation to the direction of a crossing perpendicular to the longitudinal axis of the ship shall not exceed 45 °.

For launchers, the number of mooring lines has to be increased due to the deficiency that such a provision provides regarding the restriction of the ship's movements.

7.3.5 Sequence for Mooring Work

Approach the oil pier with the necessary drift for the ship to be ruled.

Pass the towing cables through the stern central horn to the tugboat that will assist in mooring, as instructed by the pilot.

Launch a line to the support boat, allowing the mooring lines to be launched to the pier, according to the pilot's guidelines.

Sequentially, the remaining spies to be plated on the bollards pointed out by the pilot will be passed.

At a minimum, the scheme presented in Appendix B must be observed to tie the ship, that is, four bow and stern launchers and two springes crossed by fore - ahead of the midship and two springes crossed by fore - aft, adding a springe opposing west wind and ebb tide on the External – PP1 and Internal – PP2 piers.

If possible, also use crossing cables, according to wind forecasts.

7.3.6 Ship / Shore Access

The piers of the APPA Flammable Wharf do not have stairs to access the ship, but there are suitable places to use the ship's ladder (gangway with or without board). Crew members who disembark using the Terminal facilities will have to be dressed in closed leather shoes, long pants and sleeve shirts.

7.4 Prior to Cargo Transfer

The Terminal has insulating joints on both the loading arms and hoses.

The connections and disconnections of hoses in the loading and unloading sockets of the ship, as well as the loading arms, are made by the Terminal team, with the aid of the ship's crane in the use of hoses.

The draining of the arms and hoses are done with the aid of pumps on the pier.

The ship must arrange the diameter of the cargo outlets in order to allow the connection of the loading arms and hoses.

A ship's representative must accompany the entire operation and must be close to the ship's cargo outlet.

The Terminal Operation Technician will perform visual inspection on the deck and around the vessel, upon initial release and at regular periods during operation.

The on-board measurements will be carried out by the ship's personnel and accompanied by the Terminal representatives and other inspectors. The material used must be properly certified, grounded and the measuring accessories must be explosion-proof.

The start of the operation will only occur after the initial letter has been completed, by the onshore and shore representatives and the ISGOTT Ship/Shore Safety Checklist in its latest edition which is verified and completed by the Terminal Nautical Inspector in conjunction with a Ship Representative during the initial release.

It is forbidden to carry out branching or cleaning of boiler piping with the ship moored. Care must be taken that sparks do not escape through the chimney. Failure to comply with this regulation may result in:

- Immediate interruption of operations;
- Fine of the competent authorities;
- Compulsory unberthing of the ship from the pier;
- Communication of the infringement to shipowners;
- Accountability of the ship for fines, loss of time and all other related expenses arising from this fact.

The permanence of unauthorized vessels on the side or in the vicinity of moored ships is prohibited. Only vessels previously authorized by the terminal may be in the vicinity or alongside, as long as they meet all safety conditions, and outside the ship's operating period. The violation of this standard will cause the immediate interruption of the operation, and will be communicated to the competent authority.

The moored ships will not be able to move their propeller(s) while they remain connected to the Terminal.

7.5 Cargo Transfer

The operations are done through ducts designated for each type of product and prepared by the Terminal Operation Technician, after the connections have been strictly checked.

Ships' ballast and de-ballast lines and tanks must be destined only for this purpose, being isolated from other on-board lines. The water ballast to be discharged to the sea must be completely free of oil, without any oily residue or other substance capable of causing pollution of seawater.

The Terminal has a line and tank for receiving SLOP. The ship must request in advance the schedule and agency to check the availability of space.

SLOP discharges are made by 8" hoses at a maximum flow rate of 600 m³/h and a maximum pressure of 7 kgf/cm².

The cargo outlets of the ship that are not operating must be properly flanged.

The operations will be started only after the authorizations, duly understood between the Vessel and the Terminal.

The monitoring of the pressures in the ship's manifold during operations will be recorded by the on-board and terminal representatives every full hour.

The volumes handled will be shared every full hour, and compared, in order to ensure the safety that the receiving side is aligned with the consignor, as agreed in the initial letter.

It is expressly forbidden to block or restrict valves during operation.

The maximum pressure and flow established in the Initial Letter, according to both parties, must be maintained throughout the transfer, adopting as a limit, the lowest operational capacity.

The ship must maintain a crew member observing the load taking and mooring cables, throughout the operation, in conditions to establish contact with the Terminal team whenever necessary.

The fire fighting equipment must be ready for any emergency, as well as the fire lines which must always be pressurized.

The ship's manifold must be equipped with diameter flanges previously agreed with the Terminal.

Flame screens must be kept over the top of the ullage tubes, hatches of the covers (displays) and similar openings.

The loading or unloading of the ship may be interrupted in the event of fire on board, ashore, on another ship that is moored or passing the distance considered dangerous or in any other situation that may pose a risk to the ship or the Terminal.

The operation will be interrupted in wind conditions above 40 knots, and, when there are strong lightning strikes, at the discretion of the Terminal and/or Ship.

Terminal operation personnel are authorized to stop/suspend the operation in the event of non-compliance with any of the universally accepted and adopted safety rules and standards in the transportation of oil and oil products by sea.

The master of the ship has the right to stop the operation if he has reason to believe that shore operations do not offer safety.

In an emergency situation, the Terminal will interrupt the ongoing operations so that all resources are aimed at mitigating the accident. The actions and contacts for each type of emergency are described in the ERP (Emergency Response Plan).

7.6 Cargo Measurement and Documentation

After the end of the operation, the drainage of the loading arms/hoses used must be started. Terminal Operation Technicians will provide drainage of the arms/hoses used for the closed system at the pier. The ship's representative must arrange for the drainage of the on-board section.

The final measurements on board will be carried out by the ship's personnel and accompanied by the Terminal representatives and other inspectors. The material used must be properly grounded and the measuring accessories must be explosion-proof. The final release of the ship must take place after comparing the quantities handled and the complement of the stay documentation.

7.7 Unberthing and Departure from Port

It should be announced to the agent the end of the ship, so that the pilot's schedule occurs. After the final release is completed, without terminal employees and with the pilot on board, the ship performs the removal of the ladder and then, according to the pilot's guidance, start the unberthing of the ship.

The pilot, according to the wind and current conditions, continues to determine the mooring of the tugboat, and, removal of the lines that will be collected on board. When the last line of the mooring is released, the drifting of the ship begins, according to the criterion established by the pilot.

7.8 Compliance with ISPs CODE

The Paranaguá Terminal has implemented corporate security protection measures applicable to ships and port facilities, in accordance with the requirements of the International Maritime Organization – IMO, through the adoption of the ISPs – International Ship and Port Facility Security Code.

In case of need, these protection measures can be triggered by the ship through the Port Facility Security Officer (PFSO), through the VHF radio, channel 09.

The Paranaguá Terminal operates normally at maritime security level 1. For more details, the Port Facility Security Officer (PFSO), who is trained in accordance with the requirements of the IMO, may be contacted by telephone:

Tel.: +55 41 3422-4104/ 55 41 3420-4293 / 55 41 3420-4114

8. PORT OR ANCHORAGE ORGANISATION

8.1 Port Control or VTS

Not applicable to TEPAR.

8.2 Maritime Authority

The maritime authority to which the Terminal is subordinate is the Port Authority of Paraná - MARITIME AUTHORITY.

The Port Authority is the Maritime Authority in the maritime space of the State of Paraná, which includes the areas of the Organized Ports of Paranaguá and Antonina.

The Port Captain is responsible for determining the actions and notifying those responsible for any incident within the limits of the port.

8.3 Pilotage

The pilotage service is mandatory for foreign ships and for oil tankers, propane carriers and explosive cargo carriers under the Brazilian flag, of any size and gross tonnage.

The pilot embarks at the location indicated in letter 1821, approaching the port via the Sueste or Galheta channels, taking the ship to the docking location.

The pilot's boarding point is next to buoy nº 1, regardless of the channel to be used, whether Galheta or Sueste. The circular maritime area, with a radius of 1 mile, marked on chart 1821, with a light buoy with 1-second white flashes, is the pilot's waiting area.

The pilot request may be made by the vessel's shipping agent at least three hours in advance, when the time of entry or departure from the ship must be specified. Ships requesting Paranaguá must contact pilotage via VHF channel 16, two hours before reaching the pilot waiting area. The Association of Pilots maintains permanent listening on channel 16 VHF and traffic on channels 12 and 14 VHF.

The biggest restriction for boarding pilots refers to the condition of the sea, which, in the Galheta channel, with winds above grade 6 on the Beaufort scale, makes it difficult for pilot boats to pass.

At the suggestion of the agent responsible for Pilotage, in the event of unfavorable weather conditions or sea conditions, the Maritime Authority Agent, with the knowledge of the Port Authority, may close the access bar to the Organized Port, temporarily.

For the ship to enter the canal, the current maximum draft is 41 feet.

The Ship's Captain is solely responsible for the maneuvers, and is responsible for all information to be provided to the pilot regarding any peculiarities, specific conditions or existing difficulties, such as: deficiencies in machines, boilers, problems or malfunctions in navigation aids, cables of mooring or any element that could pose a danger regarding mooring, laying of cables, loading and unloading of the ship.

The Pilot will only leave the ship after ensuring that the ship is securely moored or anchored, and, when the ship leaves the Organized Port Area, has reached the Pilot Waiting Area established by the Maritime Authority.

Pilots, when they notice any operational restrictions on the ships that are maneuvering, will communicate to the Maritime Authority Agent, informing the Port Authority, with the purpose that they can determine, or not, restrictions for the vessel's transit in the area. This measure will enable the planning of a vessel inspection program. If there are any restrictions, either at the bar or at the time of undocking, the Pilot must consult the Maritime Authority before starting the maneuver.

8.4 Tugs and Other Port Services

8.4.1 Tugs

The use of Tugboats will observe the following guidelines:

a) The use of tugboats is mandatory, in the organized port area, as per NORMAM-08/DPC and Maritime Traffic and Permanence Standard in the Ports of Paranaguá and

Antonina, from the Port Authority, the ship's Commander is responsible for defining the device that will provide adequate security.

b) Mandatory use for the movement of ships, unable to maneuver with their own resources, to or from the anchorage area. In this case, the work must be carried out using a special tug device, suitable for the towed situation without propulsion. If there are conditions to be observed, these must be indicated by Maritime Authority, in response to the interested party's request.

If there are situations that involve a greater risk to safety, recommendations on the use and employment of tugboats must be presented by representatives of the port facilities, who will be duly evaluated by Maritime Authority. If necessary, these situations will be established and disclosed on the Maritime Authority website, the Port Authority and the port facility, as well as the type, method of use of tugboats, the minimum number of tugboats, to deal with the situation considered to be the greatest. risk per maneuver. However, the final decision regarding the method of using tugboats will be made by the Master of the assisted vessel, after consulting the Pilot, as well as the number of tugboats employed, as long as there is no mandatory determination by the Maritime Authority, Port Authority or specific procedure of the Terminal/ Harbor.

The Port Authority, together with the representative of the Maritime Authority, must establish, after hearing the representatives of the local Pilotages, the minimum quantities of tugs to be used in port maneuvers, in order to protect the facilities and the marine environment, in case of eventual claims.

In order to guarantee navigation and environmental safety, when maneuvering ships in the area of the Organized Port of Paranaguá and Antonina, the technical literature (Tug Use in Ports) describes the formulations for sizing the minimum force requirements and towing devices , necessary to satisfactorily move the ship to be maneuvered, under the metoceanographic conditions of the maneuver location. Therefore, the minimum number of tugboats to be used in the various maneuvers must be based on the Gross Tonnage (AB) of the ships and the Longitudinal Static Traction Force ("Bollard Pull") of the tugboats, as defined by ICTM 1969 (International Convention on Tonnage Measurement of Ships, 1969).

Vessels that have auxiliary maneuvering devices such as "Bow and/or Stern Thruster" in perfect working conditions will allow, at the discretion of the ship's Commander and duly accepted by the pilot on board, the reduction (compensation) of the required "Bollard Pull" values. ", depending on the nominal values of the powers of your organic devices, following the practical correspondence rule: subtract from the required "Bollard Pull" the value corresponding to the nominal power of the "Thruster" multiplied by 0.014 ton/kW (Ton /Kilowatt), as recommended in the IMCA (International Marine Contractors Association) publication "Specification for DP Capability Plots". This rule does not apply to maneuvers at the Liquid Bulk Pier – PGL and at

the Commercial Pier of the Port of Paranaguá, which must comply with specific Ordinances from the Port Authority, after consulting the Maritime Authority.

Tow cables and other materials to be used in maneuvers with tugboats must be suitable for the safety requirements for the maneuver. Its supply must be a product of agreement between the contractor, shipowner or agent, and the contractor, tug company.

The ship's Commander will make the final decision regarding the use of appropriate materials and devices for the maneuver, as long as they do not conflict with port regulations.

When maneuvering tugboats, near the bow of ships, it is prohibited to pass the tow cable by lowering it over the bow, to be caught by the tug's crew. The cable must be passed through a line, launched from the forecastle towards the tug's deck, in order to avoid excessive tug/ship approximation, reducing the effects of hydrodynamic interaction between the vessels.

8.4.2 Other Services

Repair requests must be communicated to the ship's agency, which will respond according to local resources.

8.5 Other Liquid Bulk Berths

The Cattalini pier extends towards NW in relation to the Paranaguá Terminal Pier and has the capacity to berth up to two ships simultaneously up to 50,000 dwt.

8.6 Other Operators at the Pier

The two berths of the Public Flammable Pier of APPA are operated by TRANSPETRO, and also by the operators below:

- CATTALINI – Terminais Marítimos Ltda (chemicals, vegetable oils and petroleum products);
- Vopak Union (chemicals and vegetable oil);
- Public Alcohol Terminal (different types of alcohol);
- TERIN (different types of alcohol, petroleum products);
- CBL (petroleum products)

9. EMERGENCY AND COMBAT PLANNING

9.1 Emergency Contacts

The following table indicates the essential contacts with Phone Number, Fax Number and Radio Channels/Frequencies:

Organization	Working hours	Phone	Cellular	VHF/UHF Call	VHF/UHF Conversation
Port Authority	24-hour	(41) 3721-1500 ou (41) 3721-1542	X	16	X
Tugboats	24-hour	X	X	16	13
Pilots (Paraná Pilots)	24-hour	(41) 3721-1000	X	16	13
Pilots (SINPRAPAR)	24-hour	(41) 3423-3693	X	16	13
Terminal Control Room	24-hour	(41) 3420-4104 ou (41) 3420-4105	(41) 99209-8254	16	9
TEPAR's Management	07:30 am to 4:30 pm	(41) 3420-4104	X	16	09
Fire Brigade	24-hour	193	X	X	X
Civil Defense	24-hour	(41) 3423-1202	X	X	X
IBAMA (Paranaguá)	24-hour	(41) 3423-1818	X	X	X
IAP - Paranaguá Regional Office	24-hour	(41) 3422-8233	X	X	X

9.2 Environmentally Sensitive Areas

The Project involving the Paranaguá Terminal – TEPAR and the Araucária Paranaguá Pipeline – OLAPA, is installed in a region of high environmental sensitivity: Paranaguá Bay, Antonina Bay and part of Serra do Mar.

The Emergency Response Plan describes the other areas sensitive to an environmental impact involving the Terminal and the OLAPA System (Paranaguá Araucaria Pipeline).

9.3 General Description of the Emergency Response Organization

The responsibilities for dealing with possible emergencies involving vessels arriving at the Terminal are:

Incident Type	Responsible Organization	Other Involved Organizations				
Monohull Collision	Maritime Authority	Terminal	P&I	Ship Agent	Civil Defense	ANP
Boat Grounding	Maritime Authority	Terminal	P&I	Ship Agent	Civil Defense	ANP
Boat Grounding	Maritime Authority	Terminal	P&I	Ship Agent	Civil Defense	Fire Departmente
Vessel Fire	Maritime Authority	Terminal	Fire Departmente	Agent	P&I	Fire Departmente
Monohull Fire	Maritime Authority	Fire Departmente	SUPRG	Agent	Maritime Authority	Fire Departmente
Pollution	Maritime Authority	Terminal	P&I	IMA-SC	IBAMA	ANP

9.4 Emergency Plans

The ERP (Emergency Response Plan) is TEPAR's plan to combat emergencies in all its facilities. The responsible for its update is the local HSE (Health, Safety and Environment activity).

Emergency and combat equipment shall be kept ready for use and at hand for as long as the ship remains moored. Firefighting hoses shall be extended, one forward and one aft, unless firefighting monitors can replace this requirement. In the event of a fire, it is necessary that the ship has a universal flange so that the Terminal can assist it in fighting. If the fire is not extinguished, the ship must be immediately removed from the berth (untied and towed). The main pier has three shelters for firefighting equipment, with a constantly pressurized water network. Two portable dry chemical load extinguishers shall be in place next to the cargo manifold on board.

Steel cables for emergency towing must be left pending up to the height of the water, by the fore and aft wing of the opposite edge to the mooring and passed on the bollards, leaving the hands of the cables at the height of the water throughout the operation.

TEPAR keeps ready for use, an emergency kit containing some equipment and tools intended to combat small emergencies involving ships moored at the Pier (international connection for fire-fighting flange, shovels, buckets, squeegees, wooden wedges and sledgehammers, etc...).

TEPAR has an Emergency Response Center (CRE) which is equipped with modern equipment and various facilities for use in accidental pollution. Periodically, intensive training is carried out, which enables Terminal employees to act in accordance with the PRE (Emergency Response Plan). Work vessels, support vessels, tankers and collecting vessels are moored at the floating pier near APPA's Flammable Wharf in a state of readiness.

The Terminal has an ambulance equipped for first aid care. A nursing technician works in an administrative regime, a time that concentrates a greater number of people due to maintenance and works services. The most serious cases or outside the administrative hours will be forwarded to the accredited hospitals.

9.5 Public Emergency Response Resources

TRANSPETRO, through TEPAR and other operational units, will implement, if necessary, its Emergency Response Plan.

TRANSPETRO has resources that can be used to mitigate sea pollution events involving the Terminal or its ships.

For these and other emergencies, public organizations offer the resources for which they are intended.

9.5.1 Local Emergency Services

The fire department, civil defense, environmental agencies and other authorities involved, have the resources for which they are intended and are triggered according to the table in section 9.1.

9.5.2 Mutual Aid Plans

In the event of an emergency involving marine pollution in the Bay of Paranaguá and Antonina, it will be the responsibility of the Captaincy (in case of the involvement of ships) to develop measures with APPA, environmental agencies and the others involved, when applicable, aiming at the immediate combat of the emergency.

9.6 Combating Oil Spill

The sub-items below describe the resources available to combat pollution in the areas adjacent to the Terminal.

9.6.1 Terminal Combat Capacity

The resources available at the Terminal to combat oil spill situations are listed in the pre, which is available in all administrative, operational and maintenance areas of the TEPAR.

9.6.2 Combat Capacity of the Environment Agency

When environmental accidents occur, the IAP (Environmental Institute of Paraná) acts in conjunction with the Civil Defense, Fire Department, Highway Police, Forest Police Battalion and other public and non-governmental institutions, whenever it needs specialized support.

9.6.3 Resources available from Mutual Support Plans of other Terminals

The resources available at other TRANSPETRO terminals to respond to pollution emergencies occurring in the vicinity of the Terminal are listed in the pre.

9.6.4 Level 2 Emergency Combat

Emergency that goes beyond the limits of the Terminal and whose internal resources are not sufficient for its control, requiring the activation of the Regional Contingency Plan.

These resources, their readiness and form of activation are described in the Emergency Response Plan.

9.6.5 Level 3 Emergency Combat

Organization designated to combat major pollution.

Accidental hypothesis that goes beyond the limits of the Terminal and its effects are expected to reach people, areas or facilities outside the Terminal area.

For its combat, the resources provided for in the Consolidated Contingency Plan will be necessary.

9.7 Combating a Major Incident

The PRE of TEPAR lists the actions and those responsible for each type of event planned, which may occur within its unit, pipeline range or vessels and involves third parties. For events that are not provided for in this document, TRANSPETRO will make available all national or international resources that are within its reach.

10. CONTACTS

The tables below indicate the Organization, Position Telephone, Fax, E-mail, Channel/Radio Frequencies.

10.1 Terminal

Local	Contract	Telephone	VHF Channels	
Site Berth P-1 and P-2	Operator	(41) 3420-4268	13/16	13/16
Secondary Pier	Operator	(41) 3420-4269	13/16	13/16
Control Room	Operator	(41) 3420-4105	13/16	13/16
Shift Supervisor	Supervisor	(41) 3420-4104	13/16	13/16

10.2 Local Authorities, State and National Agencies

The table in section 9.1 lists these authorities and their respective contacts.

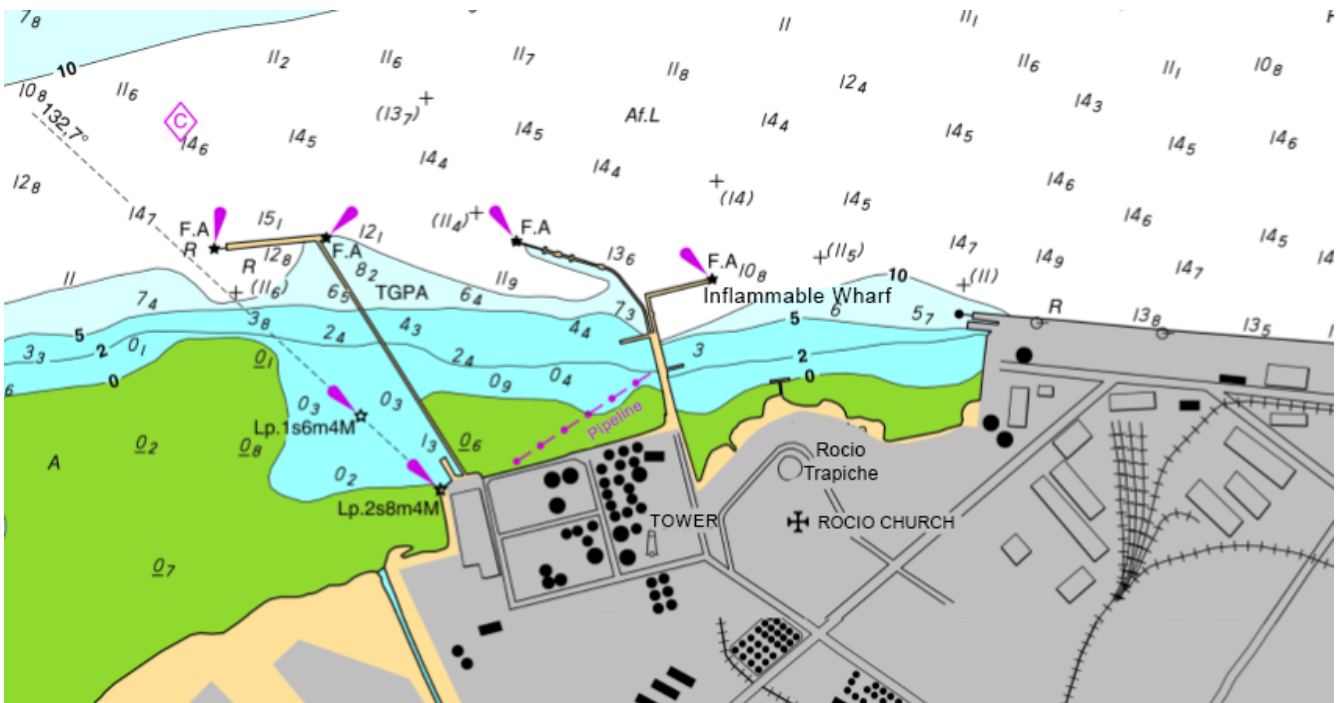
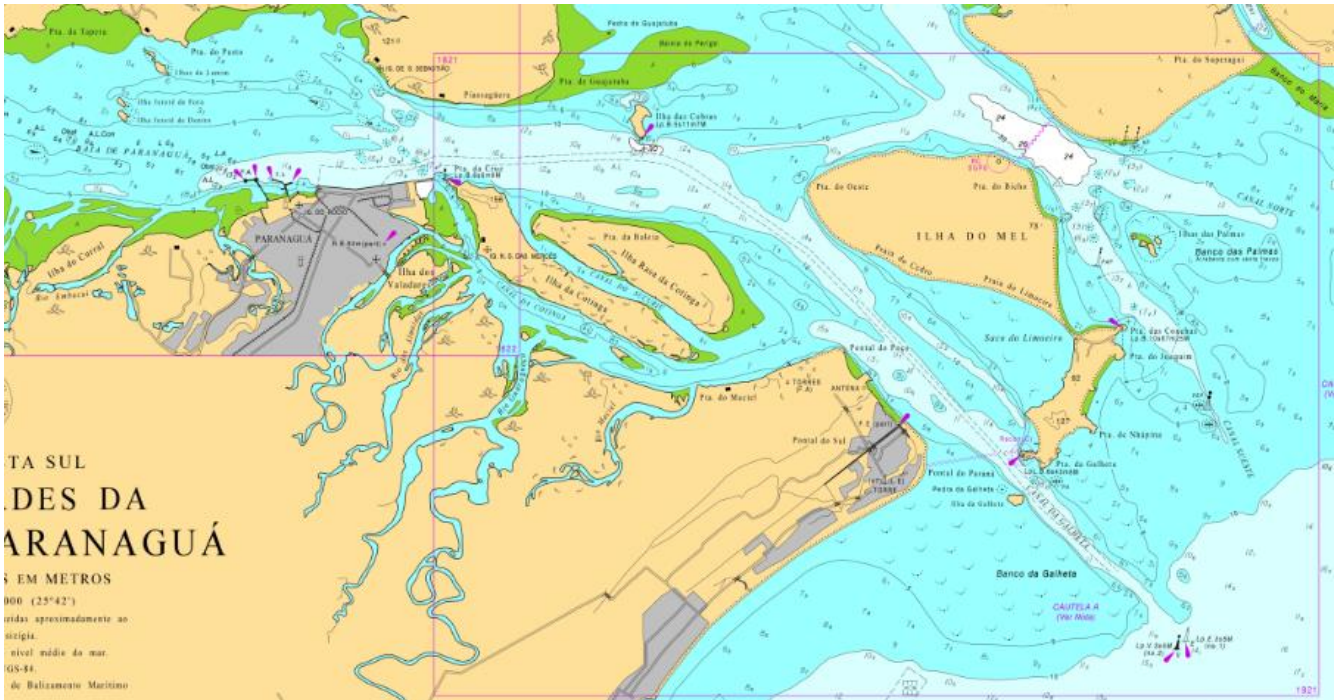
10.3 Emergency Response Organizations

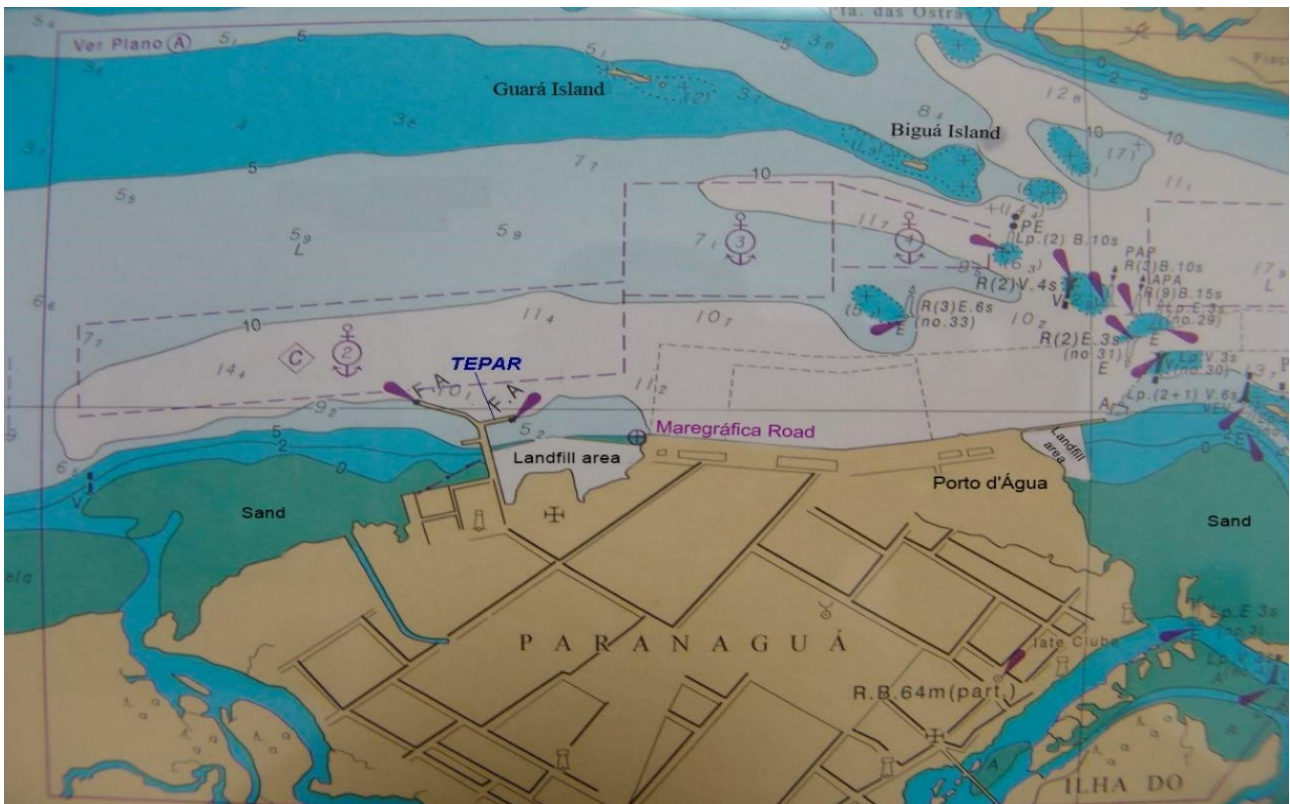
Emergency response organizations available in port are listed in section 9.1.

APPENDICES

APPENDIX A

Letters and photos including berths and approaches

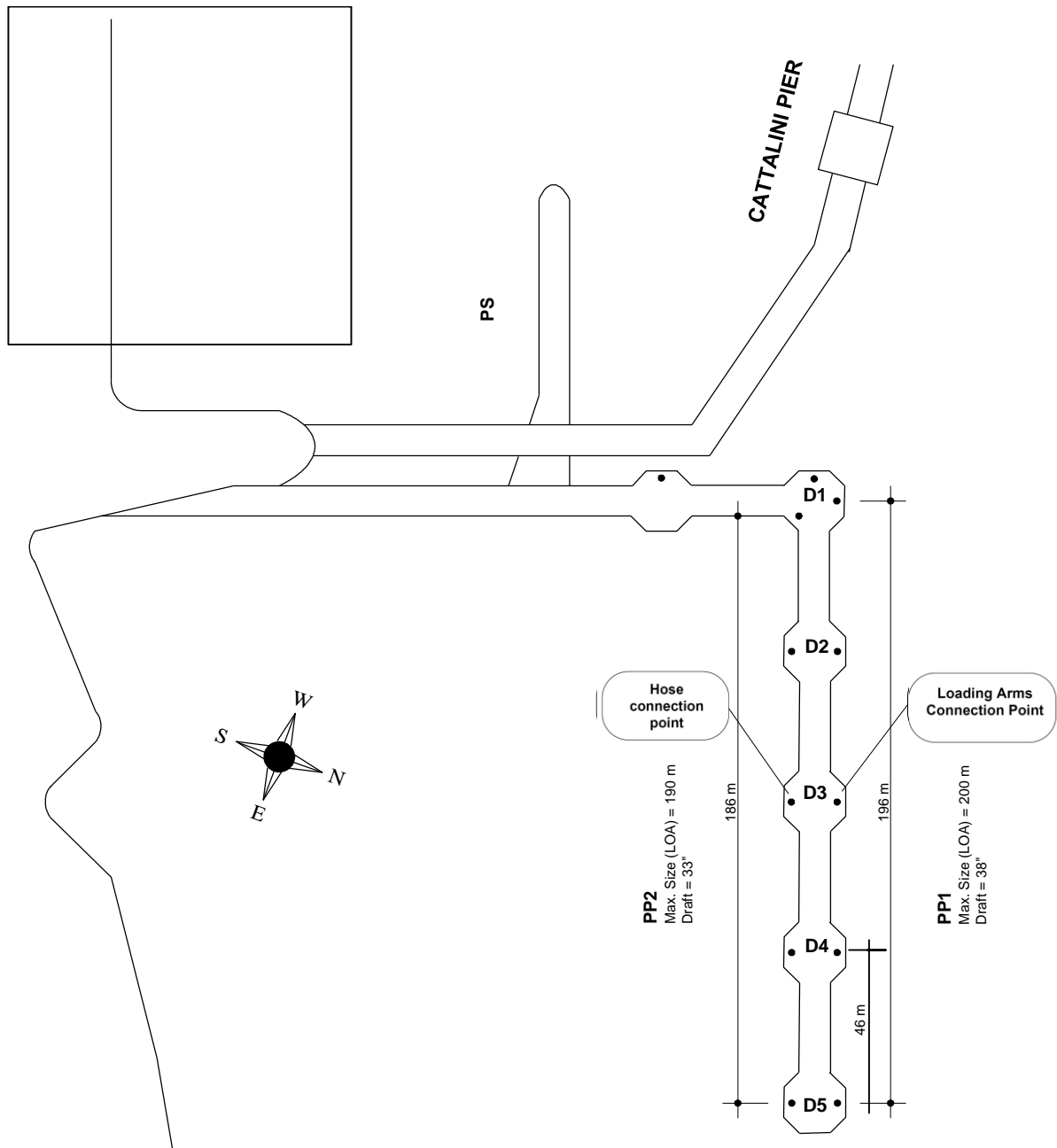






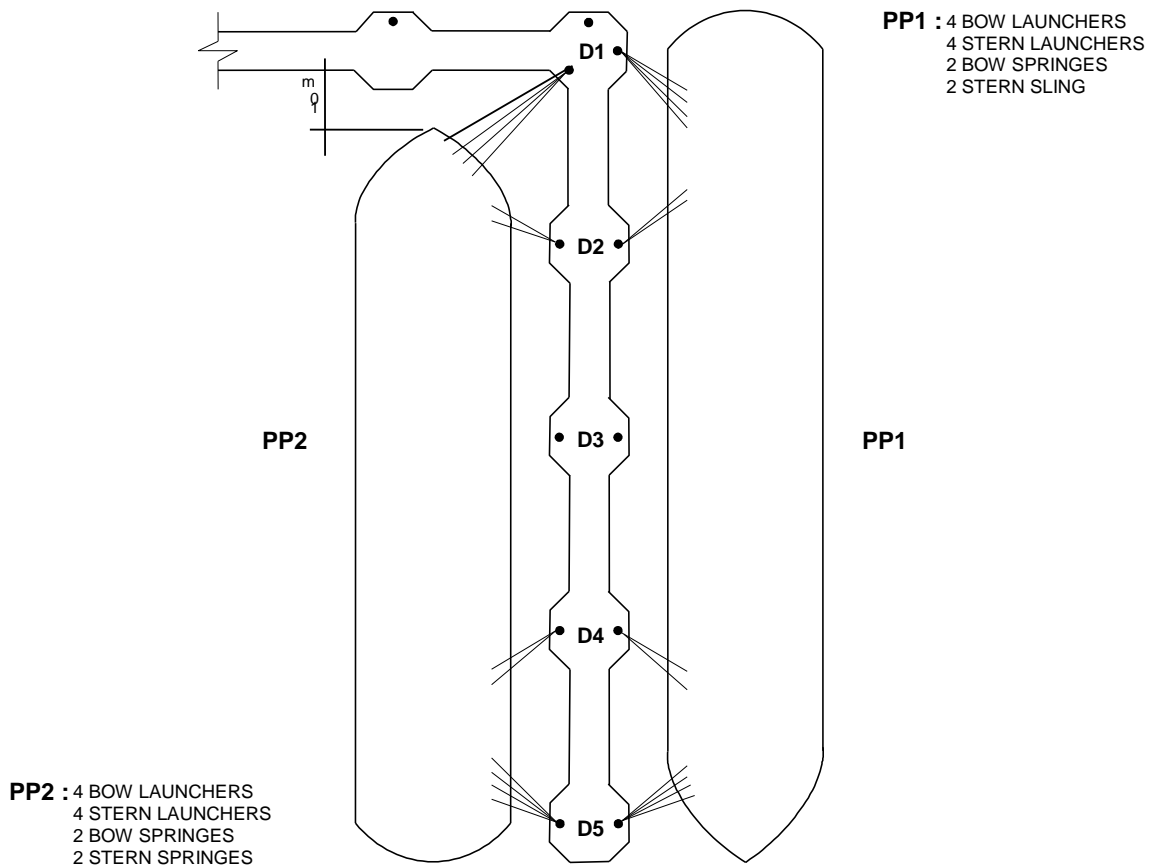
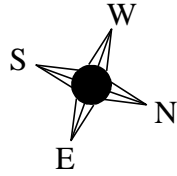
APPENDIX B

Terminal Pier Configuration



APPENDIX C

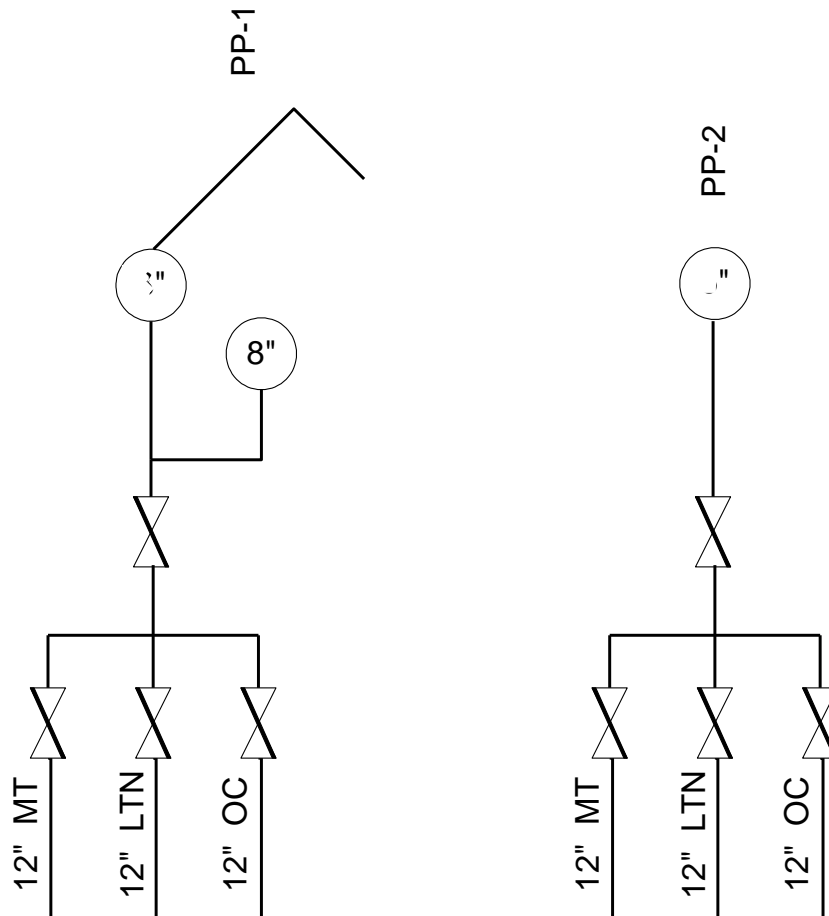
Layout of Mooring in PP1 and PP2



REMARK: The basic mooring scheme can be reinforced due to adverse wind and sea conditions.
Add an ESPRINGUE opposing west wind and ebb tide on the External – PP1 and Internal – PP2 piers.

APPENDIX D

Simplified Scheme of Arms, Hoses and Lines for Loading and Unloading of Crudes



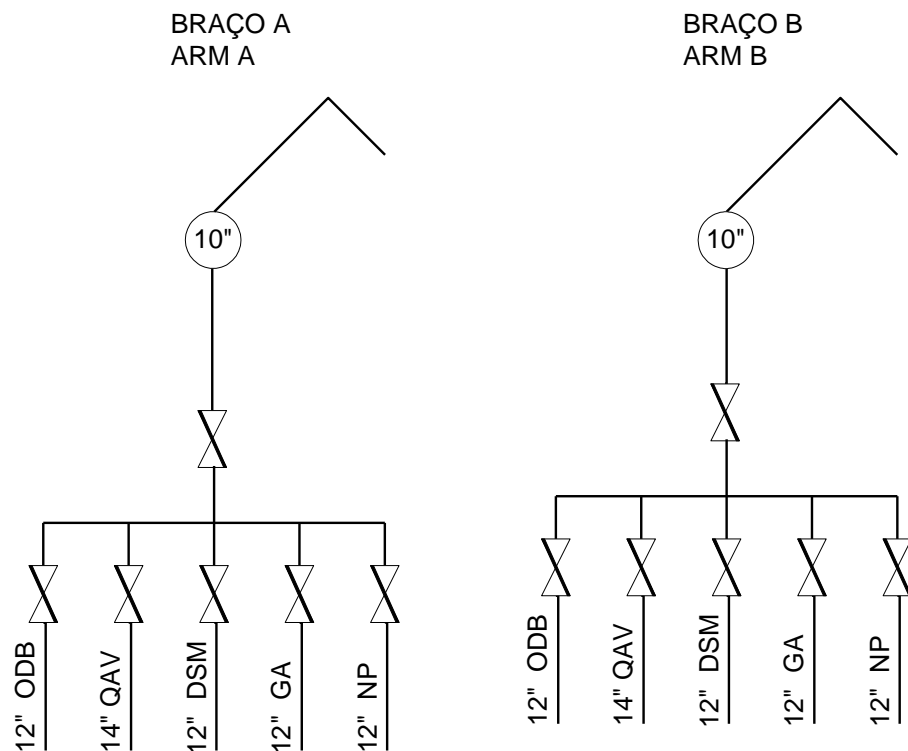
MT - MISTURA
MIX

OC - ÓLEO COMBUSTÍVEL
FUEL OIL

LTN - LASTRO
BALLAST

APPENDIX E

Simplified Arms and Lines Scheme for Loading and Unloading Petroleum Products in PP-1



ODB - ÓLEO DIESEL
DIESEL OIL

QAV - QUEROSENE DE AVIAÇÃO
JET FUEL

DSM - ÓLEO DIESEL
DIESEL OIL

GA - GASOLINA
GOLINE

NP - NAFTA PETROQUÍMICA
PETROCHEMICAL NAPHTA

APPENDIX F

Simplified Scheme of Lines and Hoses for Loading and Unloading Petroleum Products in PP-2



ODB - ÓLEO DIESEL
DIESEL OIL

QAV - QUEROSENE DE AVIAÇÃO
JET FUEL

DSM - ÓLEO DIESEL
DIESEL OIL

GA - GASOLINA
GOLINE

NP - NAFTA PETROQUÍMICA
PETROCHEMICAL NAPHTA

MGO - MARINE GAS OIL

GLP - GAS LIQUEFEITO DE PETRÓLEO
LIQUEFIED PETROLEUM GAS

MTBE - METIL-TERC-BUTIL-ETER

MET - METANOL

APPENDIX G

Typical Load and Discharging Flow Rates

Berth No.	Products	Hose/ Flanges of the Arm	Receive or Ships	Temp.		Flow rate (maximum)	Pressure (maximum)	Remarks
				Min	Max			
PP-1	Petroleum Products: Gasoline Naphtha Diesel Oil	2 X 10" ANSI 150 PSI	Receive and send	20	40	1,000 m ³ /h	10.5 kgf/cm ²	Flow per arm for unloading.
						1,250 m ³ /h	10.5 kgf/cm ²	Flow per arm for load.
	Crude: Fuel Oil	1 x 12" ANSI 150 PSI	Receive and send	20	70	1,000 m ³ /h	10.5 kgf/cm ²	Flow per arm for unloading.
						1,250 m ³ /h	10.5 kgf/cm ²	Flow per arm for load.
	Crude: Fuel Oil	1 x 08" 150 PSI	Receive and send	15	70	650 m ³ /h	10.5 kgf/cm ²	Flow per hose for load.
				15	70	1,000 m ³ /h	10.5 kgf/cm ²	Flow per hose for discharge.
	Ballast	1 x 08" 150 PSI	Receive	15	40	1,000 m ³ /h	10.5 kgf/cm ²	Flow per hose for discharge.
	PP-1	Petroleum Products: Gasoline Naphtha Diesel Oil	4 X 08" 150 PSI	Receive and send	15	40	700 m ³ /h	10.5 kgf/cm ²
15					40	1,000 m ³ /h	10.5 kgf/cm ²	Flow per hose for discharge.
PP-2	LPG	1 X 06" 300 PSI	Receive and send	+5	40	-	15.0 kgf/cm ²	Flow rate limited by the maximum pressure of 15.0 kgf/cm ²
	MF's	1 X 08" 150 PSI	Receive and send	15	70	450 m ³ /h	10.5 kgf/cm ²	Flow per hose for supply.
	MGO	1 X 04" 150 PSI	sends	15	40	100 m ³ /h	10.5 kgf/cm ²	Flow per hose for supply.

Note: Flow Rates Can Be Changed According to The Combination of Lines, Hoses and Terminal Arms and the Capacity of the Ship

APPENDIX H

Conditioning Factors Access to the Critical area of Galheta Channel for Ships with Drafts between 37.0 and 41.0 Feet.

1 – Drafts Greater than 37.0 Feet and Up to 39.0 Feet

1.1 – Daytime Traffic

- No operating restrictions in any tidal amplitude condition;
- Near the padding of the Preamares or after one (1) hour of the Low Seas;
- Vessel speed at the bottom between 8.0 and 14.0 knots;
- Visibility of 2.0 miles; and
- Level 4 of the Beaufort Scale.

1.2 – Night Traffic

- No operating restrictions in any tidal amplitude condition;
- Next to the upholstery of the Preamares;
- Minimum speed of the ship at the bottom of 10.0 knots for Entry and 12.0 knots for Exit;
- Visibility of 4.0 miles;
- Level 4 of the Beaufort Scale; and
- The special buoys (BL – E) must be free from irregularities.

2 – Drafts Greater than 39.0 Feet and Up to 41.0 Feet

2.1 – Daytime Traffic

- No operating restrictions in any tidal amplitude condition;
- Near the upholstery of Preamares;
- Minimum speed of the ship at the bottom of 10.0 knots for Entry and 12.0 knots for Exit;
- Visibility of 2.0 miles; and
- Level 3 of the Beaufort Scale;
- Without the presence of waves or wetlands caused by gusts of wind; and
- Weak to moderate wind.

2.2 – Night Traffic

- No operating restrictions in any tidal amplitude condition;
- Next to the upholstery of the Preamares;
- Minimum speed of the ship at the bottom of 12.0 knots for Entry and 14.0 knots for Exit;
- Visibility of 4.0 miles;
- Level 4 of the Beaufort Scale; and
- The special buoys (BL – E) must be free from irregularities.

Note: In favorable weather and sea conditions, at the discretion of the Pilot on board, previously authorized by the Maritime and Port Authorities, the ship may travel on the Navigation Channels, entering and leaving of the bar, with speeds lower than those stipulated in items 1.1, 1.2, 2.1 and 2.2.