

PORT INFORMATION MADRE DE DEUS Waterway Terminal 2ª edição

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4	Update of the minimum depth in the channel according to LH and calculation of the resulting CMR	12/20/2021	Luiz Filipe	Jorge Rego

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INTRODUCTION

This Port Information is prepared by Petrobras Transportes SA (TRANSPETRO) which operates the Madre de Deus Waterway Terminal (Almirante Alves Câmara Terminal – TEMADRE) in the Madre de Deus port in Bahia.

It presents essential information for ships operating at the terminal, is distributed to interested parties in the Port, National and Local Authorities and in the various branches of the company.

Port Information is available in Portuguese and English versions.

The information contained in this publication is intended to supplement, never replace or alter any type of legislation, instructions, guidance, or official, national, or international publications. Therefore, any information contained in this Port Information that contradicts any item of the aforementioned documents must be disregarded.

The Terminal reserves the right to change any operational information presented here, after joint analysis and studies between the relevant bodies.

TRANSPETRO will analyze any suggestions, recommendations or corrections to the matters addressed here, with a view to improving the information. If incorrect information is found which needs to be updated, please contact:

Madre de Deus Waterway Terminal Management

Rua Milton Bahia Ribeiro, s/n, Madre de Deus – Bahia - CEP 42.600-000 Tel.: 55 71 3877-7019 · 55 71 3877-7222 · 55 71 3877-7267 55 71 99918-3944 · Fax: 55 71 3642-3206

Petrobras Transportes S/A - TRANSPETRO

Av. Presidente Vargas, nº 328, Centro, CEP 20.091-060, Rio de Janeiro – RJ Communication Advisory Services Telephones 55 21 3211-9039 and 55 21 3211-9000.

The most recent version of this Port Information can be obtained by requesting it to the following address: tamd.operacao@transpetro.com.br

DEFINITIONS

Tidal range - Vertical distance between a consecutive high tide and low tide;

BP - "Bollard Pull" - Vessel longitudinal static traction;

GIAONT – Operational Inspection and Monitoring Group for Ships and Terminals, which includes OPERATIONAL SAFETY INSPECTORS;

IMO - International Maritime Organization;

ISGOTT - International Safety Guide for Oil Tankers and Terminals;

Springtide – Condition in which the tidal range reaches its maximum value (very high and very lowtide);

Quadrature Tide – Condition in which the tidal range reaches its minimum value (lowest high tide and highest low tide);

NPCP-BA - Rules and Procedures of the Port Authority

VTS - Vessel Traffic Service;

UTC – Universal Time Coordinated – Universal Time Coordinated – also known as Greenwich Mean Time (GMT).

PORT INFORMATION



CHARTS AND REFERENCE DOCUMENTS

Information about the Terminal can be obtained from the following publications.



3.1 NAUTICAL CHARTS

Table 1 - Applicable Nautical Charts

	Chart number						
Area	Brazil (DHN)	US Hydrographic Office	British Admiralty	Others			
Proximity to the port of Salvador	1101		NZ 541				
Salvador port	1102						
Aratu Bay and surroundings	1103						
Todos os Santos Bay (Northeast part)	1104						
Madre de Deus Port	1105						
Todos os Santos Bay (Northern part)	1106						
Todos os Santos Bay (West part)	1107						
Todos os Santos Bay (S. Roque Port and nearby)	1108						
Todos os Santos Bay	1110		NZ 545				

3.2 OTHER PUBLICATIONS - BRAZIL

Table 2 - Other applicable publications

Type/Subject	Post Number Brazil
Rules and Procedures of the Port Authority	NPCP-BA
Support for navigation on the East Coast	DH1–II



DOCUMENTS AND INFORMATION EXCHANGE

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

Table 3 - Documents and information exchange by operation stage

	Elaborated by:		Delivered to:		to:	Comments	
Information	Terminal	Ship	Both	Terminal	Ship	Both	
PRIOR TO ARRIVAL							
Estimate Time of Arrival (ETA) and information about the vessel		х		х			According to ANNEX E
Essential information about the Terminal	Х				Х		According to ANNEXES B, C and D
Before the Transfer of Cargo or Bunker							
Details on cargo / "slop" / ballast on board		x		х			According to ANNEX F

Before the Transfer of Cargo or Bunker							
Information essential to the operation (complete on site)	х				х		According to ANNEX F
Ship/Terminal Safety Checklist			х			х	According to ISGOTT.
DURANTE A	TRAN	SFERÊI	NCIA D	A CAR	GA OU	DO BL	INKER
Repeat Safety Checklist			Х			Х	According to ISGOTT
APÓS A TRANSFER	ÊNCIA	DA CA	RGA O	U DO E	BUNKE	R, ANT	ES DA SAÍDA
Information necessary to untie the ship			х			х	Quantity of fuel and water on board as per final release
APÓS A DESATRACAÇÃO, NA SAÍDA DO PORTO							
Information related to the port departure data		x			x		Pilot disembarkation and departure time from the port

General Description

5.1 TODOS OS SANTOS BAY

The Todos os Santos Bay is one of the largest in Brazil. Its bar is located between the point of Santo Antônio to the E and the island of Itaparica to the W, with a width of 5 miles; it extends for 22 miles in the N – S direction and has a maximum width of 18 miles in the E – W direction. Its eastern margin is occupied by the city of Salvador, capital of the state of Bahia; the northeast bank is low, and the north and west banks are mountainous. In the interior of the bay there are numerous islands and on the banks several rivers flow, the most important being the Paraguaçu river.

The contours of the bay gradually rise and are very jagged especially to the east and north providing well sheltered anchorages.

It is represented on charts 1101 to 1108, and 1110 of the Board of Hydrography and Navigation (DHN) of the Brazilian Navy.

In the Todos os Santos Bay are located the public ports of Salvador and Aratu; the Aratu Naval Base; the Private Use Terminals of USIBA, Dow Química, TPC, TRBA and the Madre de Deus Waterway Terminal – TEMADRE.

The Maré, Frade, Vacas, Madre de Deus, Itaparica, Bom Jesus dos Passos, Maria Guarda Islands and some smaller islands are located to the north of the bay. The ilha do Frade is located between 5 and 8 miles north-northeast from the northern tip of the ilha de Itaparica.

In the extreme northeast of ilha do Frade is Ponta do Cavalo. About 0.5 mile north of Ponta do Cavalo is the ilha de Madre de Deus, separated from the mainland by a shallow and narrow channel called Furo do Suape.

In Ponta Mirim, on the southern edge of the ilha de Madre de Deus , are the facilities of the Madre de Deus Waterway Terminal – TEMADRE.

5.2 ANCHORAGES

See DHN nautical charts (Directorate of Hydrography and Navigation of the Brazilian Navy) numbers 1101, 1102, and 1110.

In an emergency and for a short period of time, the ship may anchor in the evolution basin as per the warning contained in letter 1105 from DHN.

5.3 MADRE DE DEUS TERMINAL

The Terminal facilities are located in the Madre de Deus port, on the island of the same name, approximately 16.5 miles from the entrance to the Todos os Santos Bay (BTS). Bordered on the north by ilha de Maria Guarda, on the south by Ilha do Frade, on the east by Ilha da Maré and on the west by Ilha das Vacas.

The Terminal pier allows the mooring of five ships. All berths have luminous beacons and are classified as main and secondary. The main posts are identified by the letters PP followed by numbering and are: PP-1, PP-2, PP-3 and PP-4. The secondary posts are identified by the letters PS followed by numbering and are: PS-1 and PS-2.

Figure 1 - Top view of the position of the piers



5.4 TERMINAL ACCESS

Access to the Terminal is carried out by a channel dredged to 12.8 meters at the point of minimum depth, with tide at level 0, with about 06 nautical miles in length and minimum width of 200 m, signaling its beginning at the Lat position. 12°49.02'S - Long. 038°33.91'W and end in the turning basin in front of the port facilities.

Ships may demand the facilities of the Terminal, provided that the conditions contained in these instructions are met.

5.5 BANKING OF THE ACCESS CHANNEL AND EVOLUTION BA-SIN

The signaling of the Access Channel and Evolution Basin to the Terminal consists of the following buoys:

- a. a) Articulated buoys numbered from 1 to 17, in red (SB) and green (PS);
- b) Special articulated yellow buoys, numbered 1 to 3, indicating the auxiliary side channel with a depth of 10.5 meters;
- c) Special articulated yellow buoys numbered from 4 to 5, indicating the western limit of the evolution basin;

- Articulated buoy of the Bom Jesus lowland;
- e) Lighthouse at the Baixio de Madre de Deus; and
- f) Lighthouse at Baixio do Capeta.

The access channel has a minimum depth of 12.8 m, on its banks between beacons 7/8 and 10/11.

The table below summarizes the entire set of buoys in the TEMADRE area.

Figure 2 - Schematic of the access channel and evolution basin



Table 4 - Coordinates of the access channel and evolution basin markings to TEMADRE

BANKING OF THE ACCESS CHANNEL AND EVOLUTION BASIN								
Nautical sign	Latitude	Longitude	Characteristics Luminous	Recommen- dation (Browsing Channel)				
MADRE DE DEUS NR.1	12°49,02'S	038°33.91'W	Lp (E) 3s E.1.0- Ecl.2,0	SB side				
MADRE DE DEUS NR.2	12º49.11'S	038°34.19'W	Lp (V) 3s V.1.0- Ecl.2,0	PS side				
MADRE DE DEUS NR.3	12º48.55'S	038°34.14'W	Lp (E) 3s E.0.5- Ecl.2.5	SB side				
MADRE DE DEUS NR.4	12º48.63'S	038°34.32'W	Lp (V) 3s V.0.5- Ecl.2.5	PS side				
MADRE DE DEUS NR.5	12º47.79'S	038°34.52'W	Lp (E) 3s E.0.5- Ecl.2.5	SB side				
MADRE DE DEUS NR.6	12º47.81'S	038°34.68'W	Lp (V) 3s V.0.5- Ecl.2.5	PS side				
MADRE DE DEUS NR.7	12º47.05'S	038°34.91'W	Lp (E) 6s E.0.5- Ecl.5.5	SB side				
MADRE DE DEUS NR.8	12º47.11'S	038°35.01'W	Lp(V) 6s V.0.5- Ecl.5,5	PS side				

MADRE DE DEUS NR.9	12º46.52'S	038°35.29'W	Lp (E) 3s E.0.5- Ecl.2.5	SB side
MADRE DE DEUS NR.10	12º46,18'S	038°35.71'W	Lp(V) 6s V.0.5- Ecl.5,5	PS side
MADRE DE DEUS NR.11	12º46,08'S	038°35.62'W	Lp (E) 3s E.0.5- Ecl.2.5	SB side
MADRE DE DEUS NR.12	12º45.45'S	038°36.70'W	Lp (V) 3s V.0.5- Ecl.2.5	PS side
MADRE DE DEUS NR.13	12º45.36'S	038°36.34'W	Lp (E) 3s E.0.3- Ecl.2.7	SB side
MADRE DE DEUS NR.14	12°45.40'S	038°37.15'W	Lp (V) 3s V.0.5- Ecl.2.5	PS side
MADRE DE DEUS NR.15	12º45.25'S	038°37.04'W	Lp (E) 3s E.0.5- Ecl.2.5	SB side
MADRE DE DEUS NR.16	12º45.38'S	038°37.54'W	Lp (V) 3s V.0.5- Ecl.2.5	PS side
MADRE DE DEUS NR.17	12º45.27'S	038°37.31'W	Lp (E) 3s E.0.3- Ecl.2.7	SB side
BUOY No. 1	12º47.14'S	038°35.06'W	Lp (A) 3s A.0.5- Ecl.2.5	Special buoy
BUOY No. 2	12º46.22'S	038°35.78'W	Lp (A) 3s A.0.5- Ecl.2.5	Special buoy
BUOY No. 3	12º45.86'S	038°36.39'W	Lp (A) 3s A.0.5- Ecl.2.5	Special buoy
BUOY No. 4	12º45.25'S	038°38.20'W	Lp (A) 3s A.0.5- Ecl.2.5	Special buoy
BUOY No. 5	12 45.10'S	038°38.27'W	Lp (A) 3s A.0.5- Ecl.2.5	Special Beacon
Baixio de Bom Jesus	12 45.34 S	038°37.92'W	Lp(v)3s V.0.3 - Ecl.2.7	Special buoy
Baixio do Capeta	12°45.02 S	038°38.05'W	Lp(2)B 5s B.0.5-Ecl.1.0 B.0.5 – Ecl.3.0	Lighthouse
Baixio de Madre de Deus	12º44.86'S	038°37.59'W	Lp(2+1)V 12s V.1.0 Ecl.1.0 V.1.0 - Ecl.3.0 V.1.0 - Ecl.5.0	Lighthouse

5.6 PORT CONTROL OR VTS (VESSEL TRAFFIC SERVICE)

The Madre de Deus Terminal does not have special traffic control and navigation services.

5.7 PRACTICE

Pilotage is mandatory for ships destined for TEMADRE, from the Pilot Waiting Point (PEP), located on the LAT.13° 00.78'S and LONG 038° 33.74'W.

Contact can be established through VHF channels 10 and 16, by e-mail cop.zp12@ praticagemdabahia.org ,br or by telephone (71) 3016-8512/8513/8514, fax (071) 3016-8515. For all situations, the Pilotage service is activated by the ship's agent.

The pilot will embark at the anchorage where the ship is anchored, at the PEP or at the terminals where the ship is berthed.

The ship's Commander is responsible for the maneuvers. In addition, it is mandatory to notify the pilot of any abnormality or difficulties of the ship, such as defects in mooring equipment and equipment, rudder, failure of machinery and/ or boilers or lack of necessary equipment that could lead to danger to navigation, docking and unberthing the ship.

Once berthed, the ships must be in conditions considered satisfactory by the pilot and Terminal operators.

If the Master decides not to comply with the pilot's instructions, in order to preserve the safety of the ship's maneuver, the Port Captain, through the ship's Agent, must be informed in writing. This fact must also be reported to TEMADRE by the ship's Agency.

In case of emergencies, according to availability, the Pilot will be placed on the ship at the first possible time.

Pilotage Services must be requested from the ZP-12 Operations Center at least 03 hours in advance for berthings and 04 hours for unberthing at the Terminal.

5.8 ENVIRONMENTAL FACTORS

5.8.1 Winds

The prevailing winds are E in the months of January, February, March, May, September, November and December, and ESE winds in the months of April, June, July, August and October. South winds usually blow at new moon and full moon, stirring up the bay's waters a lot. In August and September, winds sometimes occur with speeds above 15 knots. In the other months of the year, the wind speed maintains an average of 10 knots.

5.8.2 Waves

There are no records of waves capable of harming the berthing, unberthing and ship operations maneuvers.

5.8.3 Rainfall

The average rainfall in the region varies between 82 mm and 2,414 mm. The annual average oscillates around 2,174mm per year.

The passage of possible cold fronts produces winds from NE to SW, counterclockwise, with fresh gusts, which can reach very strong; continuous showers of nimbus strata and showers with thunderstorms of cumulonimbus; sharp and sudden increase in pressure after prefrontal decline; Drop, possibly sudden, in air temperature.

5.8.4 Visibility

During the winter, intermittent rains occur and visibility can be considered to be regular to good.

It is rare for fog to occur, and occasions of poor visibility.

Sometimes, smoke from the industries of the Aratu Industrial Center may impair visibility, which is also a rare occurrence.

5.8.5 Tides and Currents

The tide in Todos os Santos Bay has semi-diurnal characteristics. In the Terminal access channel, the current reaches a speed of 4 knots. E winds prevail, with influence on maneuvers, mainly of unloaded ships.

At the Terminal, the average sea level is 151cm above the level of reduction on the chart. During the rainy season, the ebb tide current can exceed the mentioned values. See DHN Tide Tables.

5.8.6 Salinity

The average salinity of sea water is 35.5 ppm, with small seasonal variations. The highest mean value found on the Northeast coast, at latitudes from 26° S to 32° S, is 37.2 ppm.

5.8.7 Density

The average density of sea water varies from 1022.0 to 1026.5 kg/m³.

5.8.8 Atmospheric Pressure

The local atmospheric pressure fluctuates around 1.006.8mb in summer and 1,010.6mb in winter.

5.8.9 Air humidity

The relative humidity of the air is high, ranging between 79 and 85%. The average relative humidity is 82% throughout the year.

5.8.10 Temperatures

From November to April, temperatures range from 23°C (73.4°F) to 30°C (86.0°F). In the months of May to October temperatures vary from 22°C (71.6°F) to 27°C (80.6°F).

5.9 NAVIGATION RESTRICTIONS ON THE ACCESS CHANNEL

5.9.1 Maximum browsing speed

During all navigation, a safe speed must be adopted, as provided for in Rule 6, Section I, Part B of the Convention on International Regulations for Preventing Collisions at Sea (RIPEAM). Additionally, the ship must not have a band.

5.9.2 Depth

The minimum depth of the access channel is 12.8 meters, which is found on the banks of the access channel, in the region demarcated by beacons n° 07/08 and 10/11.

5.9.3 Maximum Recommended Draft (CMR)

The CMR for access channel navigation is defined by the formula:

Cmr = (P+M) - (P+M) X FS Where:

Where:

P = Minimum depth of the channel, reduced to the reduction level;

M = Tide height, in meters, at the time of passing through the shallowest point in the channel section between the 7/8 and 10/11 beacons;

FS = Decimal factor of safety. According to an assessment made in accordance with the NPCP-BA, the most restrictive parameter is the nature of the fund, resulting in a safety factor of 10%;

On average, the passage through the shallowest point in the channel takes place 1.5 hours after the pilot's time on board. The table and graph below show the reference values for calculating the CMR for different tidal heights at the time of passing through the channel's minimum depth point.

Table 5 - CMR reference values, considering the height of the tide at the time of passage at the shallowest point

D (m)	FS	M (m)	CMR (m)
12.8	10%	0.0	11.52
12.8	10%	0.5	11,97
12.8	10%	1.0	12,42
12.8	10%	1.5	12.87
12.8	10%	2,0	13.32
12.8	10%	2.5	13.77
12.8	10%	3.0	14.22

Figure 3 - CMR reference values, considering the height of the tide at the time of passage at the shallowest point



5.9.4 Transit of Vessels on the Channel

Vessels crossing the Terminal access channel is not allowed.

There must be a minimum interval of 1 hour between the ship's unberthing in Madre de Deus and the demand of a ship from the anchorage.

An interval of 2 hours is required between the ascent of 2 ships from Salvador to Madre de Deus.

An interval of 30 minutes is required between the descent of 2 consecutive ships from the Terminal.

The movement in the access channel of vessels contracted by the Terminal to transport bunker must be preceded by communication and prior consent of the Pilotage (via radio) and must also be communicated to the SUPERVISOR/ and SAFETY INSPECTOR / GIAONT.

5.10 SHIPS MANEUVER AREAS

5.10.1 Top funds, banks, crowns and others in the Evolution Basin

Baixio de Madre de Deus: High rock bottom, near the Port of Madre de Deus, with a depth of 5.8 m signaled by a lighthouse in the Lat position. 12°44.86'S 038°37.59'W Lp (2 + 1) V.12 sec.

Baixio do Bom Jesus: High bottom with a minimum depth of 3.2m at about 600m east of the northern end of the island of Bom Jesus. Signaled by a green light buoy (Lp V.3 sec) close to the 10 m isobath in the position Latitude 12°45.34'S – Longitude 038°37.92'W.

The Baixio do Capeta is signaled by a beacon with horizontal black and red stripes (Lp (2) B 5 s) Located 800 meters northeast of the north end of the island of Bom Jesus, in the southeastern part of a series of high depths with 1 .8m (6 ft) deep, existing at the end of a bank that extends to the southeast of Ilha das Vacas, Lat $12^{\circ}45.02'$ S – Long. 038° 38.05' W.

5.10.2 Ships turning

It is the Master's responsibility to observe that the Pilot performs the ship's maneuvers within the limits of the evolution basin. Vessels must use the basin to turn to berth on the port side, in PP-1, PP-2 and PP-4.

5.10.3 Wind Limits:

The wind intensity limit for carrying out the berthing and unberthing maneuvers is 20 knots.

The wind intensity limit for the Terminal operation is 30 knots.

The wind strength limit for disconnection is 35 knots.

6

DETAILED TERMINAL DESCRIPTION

6.1 PHYSICAL DETAILS OF THE CRIBS

The table below shows the characteristics of the terminal's berths:

Table	6 -	Physical	details	of the	cribs
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Pier	Distance between fenders	Cradle Depth (Tide height = 0 m)	Max. length from ship to mooring Day/Night	Displacement max (ton)	TPB (DWT)	Products
PP-1	300 meters	13.0 m	280 m	169,460	160.000	Oil, derivatives and LPG
PP-2	70 meters	13.0 m	280 m	169,460	160.000	Petroleum, derivatives, paraffin.
PP-3	70 meters	10.5 m	187 m	65,000	55,000	Petroleum, derivatives, paraffin
PP-4	80 meters	22.0 m	280 m	169,460	165,000	Oil and dark derivatives
PS-1	35 meters	8.30 m	145 m	10.000	10.000	LPG and Bunker

6.2 CONDITIONS FOR MOTORING AND UNMOORING MANEUVERS

6.2.1 Main Pier 1 and 2 - PP1 and PP2

Table 7 - Conditions for berthing and unberthing maneuvers in PP-1 and PP-2

Maneuver	Side	Tide Amplitude	Draft (meters)	Wind (Knots)	LOA (meters)	DWT	РОВ
	PS	>1.7 m		20	280 (PP1) 280 (PP2) (*)		BM upholstery (POB=BM-02hs) or PM upholstery (POB=PM-3hs)
Mooring		≤ 1.7 m	12.5 m			160.000	Flood (BM-02h ≤ POB ≤ PM-03hs) (**)
	SB	>1.7 m					BM upholstery (POB=BM-03h30m) or PM upholstery (POB=PM-02hs)
		≤ 1.7 m					ebb (PM-02hs ≤ POB ≤ BM-03h30m) (**)
Unmooring	QQ	QQ QQ					Ships with TPB ≤ 45,000 unberth at any time. Vessels with TPB > 45,000 unberth at flood tide (BM-02hs ≤ POB ≤ PM-01h)

- (*) The attraction of ships with LOA ≥ 250 m in PP1 and PP2, simultaneously, must be evaluated and previously authorized by the Terminal. For berthing at PP2, this type of ship may have a negative bow or stern when berthed.
- (**) In order to carry out this maneuver, a period of progression must be followed for the implementation of changes to the operational conditions for berthing at PP1 and PP2, as follows:

- Start mooring operations in Quadrature condition (tidal range ≤ 1.7 m) only during the day and with ships up to 70,000 DWT (Panamax). The other ships and conditions remain using the upholstery conditions (2h before the BM or 3h before the PM when by PS and 3h30' before the BM or 3h before the PM when by BE);
- After a positive assessment of the berthing conditions in the daytime period, informed by the pilotage and the Port Authority to the CPBA, the expansion of the berthing conditions will be authorized to cover the night period, still limited to Panamax ships (<70,000 DWT);
- 3. After a positive assessment of the mooring conditions in the nocturnal quadrature of the Panamax ships, informed by the Pilotage and Port Authority to the CPBA, an extension of the mooring conditions will be authorized to cover the daytime period of the Aframax ships (< 115,000 DWT). Suemax ships continue to use upholstery conditions;</p>
- 4. After a positive assessment of the mooring conditions in the daytime period, informed by the Pilotage and Port Authority to the CPBA, an extension of the mooring conditions to cover the night period will be authorized, still limited to Aframax ships (< 115,000 DWT);</p>
- 3. After a positive assessment of the mooring conditions in the nocturnal quadrature of the Panamax ships, informed by the Pilotage and Port Authority to the CPBA, an extension of the mooring conditions will be authorized to cover the daytime period of the Aframax ships (< 115,000 DWT).
- 6. After a positive assessment of the mooring conditions in the daytime quadrature, informed by the Pilotage and Port Authority to the CPBA, an extension of the mooring conditions will be authorized to cover the night period of Suemax ships (< 160,000 DWT) ending the period of progression of the maneuvers;
- 7. Maneuvers are subject to winds of up to 20 knots; and
- 8. Daytime maneuver The one whose POB is between sunrise minus 02 hours and sunset minus 02 hours (mooring) and sunrise minus 30 minutes and sunset minus 01 hour (unberthing).

6.2.2 Main Pier 3 – PP3

Maneuver	Pier	Side	Draft (meters)	Wind (Knots)	LOA	DWT	РОВ
Mooring	PP3	SB	10.20	20	187	55,000	For maneuvers by SB, ships must demand from Salvador one and a half hours before BM until three hours before PM
Unmooring		SB		20	107	55,000	Ships moored by SB unberth from BM up to 01 h before PM

6.2.3 Píer Principal 4 - PP4

Tabela 9- Condicionantes pe	ara manobras de atracação	o e desatracação no PP-4
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Maneuver	Pier	Side	Period	Draft (meters)	Wind (Knots)	LOA (metros)	DWT	РОВ	
Aooring		PS	>1.7 m			280		BM upholstery (POB=BM-02h30m) or PM upholstery (POB=PM-03h30m)	
~			≤ 1.7 m	14 22 m	20	280 Flood (BM-03 280 PM-03 20 165.000 BM up (DOD	Flood (BM-02h ≤ POB ≤ PM-03h). (*)		
	FF-4	SB	> 1.7 m	14.22 111	20	280	105.000	BM upholstery (POB=BM-03h30m)	
ooring								or PM Upholstery (POB=PM-02 h)	
Σ			≤ 1.7 m			280		Floodwater (PM-2h ≤ POB ≤ BM-3h30m) (*)	
Unmooring		004	PS	QQ	14.22.4	20	280	165.000	Ships that cannot unmoor at any time of the tide – BM-02h ≤ POB ≤ PM-01h Any time (**)
Unmooring	PP4	SB	QQ	14.22 m	20	280	165.000	PM (PM-01h ≤ POB ≤ PM) or BM (BM-01h ≤ POB ≤ BM) upholstery	

(*) In order to carry out this maneuver, a period of progression must be followed for the implementation of changes in the operational conditions for berthing at PP4, as follows:

- Start mooring operations in Quadrature condition (tidal range ≤ 1.7 m) only during the day and with ships up to 70,000 DWT (Panamax). The other ships and conditions remain using the upholstery conditions (2h30' before BM or 3h30' before PM when by PS);
- After a positive assessment of the berthing conditions in the daytime period, informed by the pilotage and the Port Authority to the CPBA, the expansion of the berthing conditions will be authorized to cover the night period, still limited to Panamax ships (<70,000 DWT);
- 3. After a positive assessment of the mooring conditions in the nocturnal quadrature of the Panamax ships, informed by the Pilotage and Port Authority to the CPBA, an extension of the mooring conditions will be authorized to cover the daytime period of the Aframax ships (< 115,000 DWT). Suemax ships continue to use upholstery conditions;</p>
- 4. After a positive assessment of the mooring conditions in the daytime period, informed by the Pilotage and Port Authority to the CPBA, an extension of the mooring conditions to cover the night period will be authorized, still limited to Aframax ships (< 115,000 DWT);</p>
- 3. After a positive assessment of the mooring conditions in the nocturnal quadrature of the Panamax ships, informed by the Pilotage and Port Authority to the CPBA, an extension of the mooring conditions will be authorized to cover the daytime period of the Aframax ships (< 115,000 DWT).
- 6. After a positive assessment of the mooring conditions in the daytime quadrature, informed by the Pilotage and Port Authority to the CPBA, an extension of the mooring conditions will be authorized to cover the night period of Suemax ships (< 160,000 DWT) ending the period of progression of the maneuvers; and

Daytime maneuver - The one whose POB is between sunrise minus 02 hours and sunset minus 02 hours (mooring) and sunrise minus 30 minutes and sunset minus 01 hour (unberthing)

- (**) In order to carry out this maneuver, a period of progression must be followed for the implementation of changes to the operational conditions for unberthing at PP4, as follows:
- Start unberthing operations by PS in any tidal condition only during the day and with ships up to 70,000 DWT (Panamax) other ships (Aframax and Suemax) remain using the flood condition (BM-2H ≤ POB ≤ PM-1H);
- After a positive assessment of the unberthing conditions by PS in any diurnal tide condition, informed by the Pilotage and Port Authority to the CPBA, the extension of the unberthing conditions in any tidal condition will be authorized to cover the night period, still limited to ships Panamax (< 70,000 DWT);
- 3. After a positive assessment of the unberthing conditions by PS in any condition of night tide by Panamax ships, informed by the Pilotage and Maritime Authority to the CPBA, the extension of the unberthing conditions will be authorized to cover the daytime period of Aframax ships (< 115,000 DWT), Suemax ships continue to use the flood condition (BM-02H≤POB≤PM-01H);</p>
- 4. After a positive assessment of the unberthing conditions by PS in any daytime tide condition, informed by the Pilotage and Maritime Authority to the CPBA, the extension of the unberthing conditions to cover the night period will be authorized, still limited to Aframax vessels (< 115,000 DWT);</p>

- After a positive evaluation of the unberthing conditions by PS, in any condition of night tide of the Aframax ships, informed by the Pilotage and Port Authority to the CPBA, the expansion of the unberthing conditions will be authorized to cover the daytime period of the Suemax ships (< 160,000 DWT);
- 6. After a positive assessment of the unberthing conditions by PS, in any daytime tide condition of the Suemas vessels, informed by the Pilotage and Port Authority to the CPBA, the expansion of the unberthing conditions will be authorized to cover the night period of the Suemax vessels (< 160,000 DWT), ending the period of progression of unberthing maneuvers by PS;</p>
- 7. Ships that cannot unmoor at any time of tide must comply with the flood condition: BM-02H \leq POB \leq PM-01H
- 8. Maneuvers are subject to winds of up to 20 knots; and
- 9. Daytime Maneuver is the one in which the POB is between sunrise minus 02 hours and sunset minus 02 hours (mooring) and sunrise minus 30 minutes and sunset minus 01 hour (unberthing).

6.2.4 Secondary Pier 1 – PS1

The mooring of ships up to 110m in length will be in any tidal condition.

The berthing of ships longer than 110m will be at flood tide and only by PS; and

Unberthing will be carried out with any tidal condition.

6.3 TUG BOATS AND PORT SUPPORT SERVICES

The Terminal has a mooring service that includes the supply of two speedboats with diesel engines to assist in the maneuvers for mooring cables in berthing, unberthing and emergency tasks.

Boats for transporting personnel - The Terminal has a specific boat for transporting personnel. In cases where it is necessary to use ladders on board for personnel access, this service can be performed by a support boat.

Pilot's Boat – The Pilot uses the Pilot's own boat.

Boats for delivery of materials and ranch – The Terminal only allows vessels on the side to move materials (garbage, lubricants and others) as long as the flash point of the operated product is above 60 degrees. If it is below this value, only with the operation ´stopped/interrupted or with direct authorization from the General Manager of the Terminal, after carrying out an APR to analyze the risks.

Four (4) azimuth tugs, of at least 40 tbp, belonging to a company hired by the Terminal owner, remain in STAND BY 24 hours a day, moored to the buoy near the piers, waiting for a call on the VHF channel 16 / 11 as needed.

The table below indicates the minimum number of tugboats that must be used in the berthing and unberthing maneuvers:

Berth	Vessel Size	Berthing (A) Unberthing (D)	Minimum number of Tugboats
DC 1	up to 4,000 TPB	A and D	1
P3-1	above 4,000 TPB	A and D	1
DD 1	up to 35,000 TPB	A and D	2
	from 35,001 to 60,000 TPB	A and D	3
PP-2	above 60,000 TPB	A and D	4
	up to 3,000 TPB	A and D	1
PP-3	from 3,000 to 15,000 TPB	A and D	2
	from 15,000 to 55,000 TPB	A and D	2
	up to 35,000 TPB	A and D	3
PP-4	from 35,001 TPB to 60,000 TPB	A and D	4
	above 60,000 TPB	A and D	4

Table	10 - Required	l amount of tugboats
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6.4 MOORING

Every ship destined for TEMADRE must be able to perform the mooring below. The safety of the mooring is the responsibility of the Master of the ship and will be assessed by a qualified safety inspector. TEMADRE may veto or interrupt an operation in which the mooring of the ship is considered unsatisfactory. The tables below summarize the minimum mooring configuration (synthetic ropes and steel) and the positioning of the escape hooks/mooring bollards. Mooring cables must be permanently maintained in order to keep the ship moored at all times. All cables must be kept under adequate tension during operation, with the winches under brake, the use of automatic tension winches is not allowed.

All mooring cables must be of the same type, gauge and material (synthetic or steel), and the use of mixed moorings is not allowed.

Mixed lashings are those in which the cables that perform the same function are of different type, gauge and materials.

The mooring lines must be arranged as symmetrically as possible in relation to the midships.

The beams must be oriented as perpendicularly as possible to the longitudinal axis of the ship and passed as far as possible fore and aft.

Spring lines should be oriented as parallel as possible to the longitudinal axis of the ship.

As established by the OCIMF Mooring Equipment Guidelines, 4th Edition, if synthetic harnesses are used on wire ropes, the harnesses must be of the same type, material and length, with a minimum dry breaking load between 25% and 30% higher to the minimum breaking load of the wire rope.

The horizontal angle of the bow and stern lines in relation to the direction of a beam perpendicular to the longitudinal axis of the ship may not exceed 45°.

6.4.1 Synthetic cables

PIER	TANK		BOW		STERN			
PIER	SHIP	Launcher	Flank	spring	Launcher	Flank	spring	
PP-1	Berthing by PS	4	2	2	4	3	2	
	Berthing by SB	4	3	2	STERN Launcher Flank spring 4 3 2 4 3 2 4 3 2 4 3 2 4 3 2 4 3 2 4 3 2 4 3 2 4 2 2 4 0 2 3 2 2 4 0 2 4 2 2 4 2 2 4 2 2 4 2 2 4 2 2 4 2 2 1 1 1 3 2 2			
PIER PP-1 PP-2 PP-3 PP-4 PS-1								
	Berthing by PS	4	0	2	4	2	2	
	Berthing by SB	4	2	2	4	0	2	
					,			
PP-3	Berthing by SB	3	BOW spring Lau 2 2 2 3 2 1 0 2 1 2 2 1 0 2 1 2 2 2 1 1 1 2 2 2	3	2	2		
						STERN sp Flank sp 3 3 3 3 2 0 2 0 2 0 2 0 1 2 1 2 1 2 1 2		
PP-4	Berthing by SB	4	2	2	4	2	2	
PIERFANK SHIPLauncherFlankspringLauncherPP-1Berthing by PS4224PP-1Berthing by PS4324PP-2Berthing by PS4024PP-2Berthing by SB4024PP-3Berthing by SB4224PP-4Berthing by SB3023PP-4Berthing by SB4224PP-4Berthing by SB4224PP-4Berthing by SB4224PP-4Berthing by SB4224PP-4Berthing by SB4224PS-1Bunker NT1111LPG NT32233	4	2	2					
	Bunker NT	1	1	1	1	1	1	
PP-1 PP-2 PP-3 PP-4 PS-1	LPG NT	3	2	2	3	2	2	

Table 11 - Recommended mooring arrangement - Synthetic ropes

Note: The mooring described in the table above is only suggested and may be changed due to new studies promoted by TRANSPETRO or the analysis of the characteristics of the ships involved.

6.4.2 Steel cables

PIER	TANK		BOW		STERN			
PIER	SHIP	Launcher	Flank	spring	Launcher	Flank	spring	
PP-1	Berthing by PS	3	2	2	3	3	2	
	Berthing by SB	3	2	2	3	2	2	
PP-2	Berthing by PS	3	0	2	3	2	2	
FF-2	Berthing by SB	3	2	2	3	0	2	
PP-2 PP-3	Berthing by SB	3	0	2	2	1	2	
PP-4	Berthing by SB	3	2	2	3	2	2	
	Berthing by PS	3	2	2	3	2	2	

Table 12 - Recommended mooring arrangement - Steel cables

Note: The mooring described in the table above is only suggested and may be changed due to new studies promoted by TRANSPETRO or the analysis of the characteristics of the ships involved.

6.4.3 Positioning of escape cats and mooring bollards

PIER	DOLPHIN	ESCAPE HEADS / CATS	NUMBER OF CABLES	MAXIMUM LOADS
	3	02 x 02 Cats 01 x 03 Cats 01 bollard	04 06 02	80 tones each 80 tones each
PP-1	4	01 x 03 Cats 02 x 02 Cats 01 bollard	06 04 02	80 tones each
	10	01 x 04 Cats 01 bollard	08	80 tones each
	17	01 x 03 Cats 01 x 02 Cats	06 04	80 tones each 110 tones each
	5	01 x 04 Cats (PP2)	08	80 tones each
ר חח	5	01 x 04 Cats (PP3) 01 x 03 Cats	08 06	80 tones each 60 tones each
PP-2	6	01 x 03 Cats (PP2)	06	80 tones each
	6	03 x 0 2 Cats (PP3)	12	60 tones each
and	7	01 x 03 Cats (PP2) 01 x 03 Cats (PP2) 01 bollard	06 06	80 tones each 60 tones each
PP-2 and PP-3	7	02 x 02 Cats (PP3) 01 bollard	08	60 tones each
	8	01 x 03 Cats (PP2 / PP3) 01 x 03 Cats (PP2 / PP3) 01 x 04 Cats (PP2 / PP3)	06 06 08	60 tones each 60 tones each 80 tones each
	11	01 x 03 Cats 01 x 01 Cat with bollard	06 02	40 tones each 80 tones each
	12	01 x 03 Cats	06	100 tones each
4	13	01 X 02 Cats 01 x 01 Cat	04 02	100 tones each 80 tones each
PP-4	14	01 x 02 Cats 01 x 01 Cat	04 02	100 tones each 80 tones each
	15	01 x 03 Cats	06	100 tones each
	16	01 x 3 Cats 01 x 01 Cat	06 02	40 tones each 80 tones each
	1	02 bollards	04	100 tones each
	2	02 bollards	04	100 tones each
PS-1	9	01 bollard	02	100 tones each
	buoy 1	01 Cat	02	40 tones each
	buoy 2	01 Cat	02	40 tones each

Table 13 - Positioning escape hatches and mooring bollards

6.5 CRADLE CHARACTERISTICS FOR LOADING, UNLOADING AND SUPPLY

The tables below indicate the products handled, available arms, flange details, temperature limits, flow rates and maximum loading/unloading pressures.

Note:

The information presented below is for informational purposes only and is based on historical maximum values. It is necessary to define the operational conditions (arms, onboard outlets, number of lines, number of pumps, pressure, flow and temperature) during the initial release of the ship.

The positioning of the loading arms is shown in Appendix C (Distribution of loading arms in each berth).

Bunker supply operations with hoses are not shown in these tables.

Pier	PP-4				
Number	05	04	03	02	01
TAG	BC-0242	BC-0243-C	BC-0243-B	BC-0243-A	BC-0241
Diameter	8"	16"	16"	16"	8"
Product	MF	Dark	Dark	Dark	MGO
Design Pressure (kgf/cm²)	19.0	19.0	19.0	19.0	19.0
Maximum Operating Pressure (kgf/cm²)	10.0	10.0	10.0	10.0	10.0
Minimum Temperature (°C)	50.0	20.0	20.0	20.0	20.0
Maximum Temperature (°C)	90.0	90.0	90.0	90.0	30.0
Maximum Expected Flow (m³/h)	300	2,500	2,500	2,500	250

Table 14 - References PP-4 operations

Table 15 - References PP-1 operations

Pier	PP-1						
Number	-	01	02	03	04	05	06
TAG	BC-0213	BC-0212-C	BC-0212-B	BC-0212-A	BC-0211-B	BC-0211-A	BC-0211-C
Diameter	12"	16"	16"	16"	16"	16"	8"
Product	LPG	Dark	Dark	Light	Light	Light	MF
Design Pressure (kgf/cm²)	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Maximum Operating Pressure (kgf/cm²)	12.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Temperature (°C)	-45,0	29.0	29.0	29.0	29.0	29.0	29.0
Maximum Temperature (°C)	+ 38,0	80.0	80.0	80.0	80.0	80.0	80.0
Maximum Expected Flow (m³/h)	2,500	3.200	3.200	3.200	3.200	3.200	500
Table 16 - References PP-2 operations

Pier	PP-2					
Number	01	02	03	04	05	06
TAG	BC-0222-C	BC-0222-B	BC-0222-A	BC-0221-B	BC-0221-A	BC-0221-C
Diameter	16"	16"	16"	16"	16"	8"
Product	Light	Light	Light	Dark	Dark	MF
Design Pressure (kgf/cm²)	19.0	19.0	19.0	19.0	19.0	19.0
Maximum Operating Pressure (kgf/cm ²)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Temperature (°C)	29.0	29.0	29.0	29.0	29.0	29.0
Maximum Temperature (°C)	80.0	80.0	80.0	80.0	80.0	80.0
Maximum Expected Flow (m ³ /h)	3.200	3.200	3.200	3.200	3.200	500

Table 17 - References PP-3 operations

Pier	PP-3				
Number	01	02	03	04	05
TAG	BG0232-B	BC-0232-A	BC-0231-B	BC-0231-A	BC-0231-C
Diameter	12"	12"	12"	12"	8"
Product	Dark	Light	Light	Light	MF
Design Pressure (kgf/cm²)	19.0	19.0	19.0	19.0	19.0
Maximum Operating Pressure (kgf/cm²)	10.0	10.0	10.0	10.0	10.0
Minimum Temperature (°C)	29.0	29.0	29.0	29.0	29.0
Maximum Temperature (°C)	80.0	80.0	80.0	80.0	80.0
Maximum Expected Flow (m³/h)	3.200	3.200	3.200	3.200	500

Table 18 - References PS-1 operations

Pier	PS-1		
Number	-	02	01
TAG	BC-0208	BC-0232-A	B00231-B
Diameter	10"	8"	8"
Product	LPG	MGO	MF
Design Pressure (kgf/cm²)	40.0	19.0	19.0
Maximum Operating Pressure (kgf/cm²)	27.0	10.0	10.0
Minimum Temperature (°C)	- 45.0	29.0	29.0
Maximum Temperature (°C)	+ 38,0	80.0	80.0
Maximum Expected Flow (m³/h)	1,200	500	500

PORT INFORMATION

7

MANAGEMENT AND CONTROL OF MOORING AND STAY

The maneuvers for berthing and unberthing of ships at the Madre de Deus Terminal must always be carried out with the participation of a trained Pilot and using tugboats in quantity and with the minimum traction capacity specified in this document.

The ship's turning maneuvers, whenever necessary, must take place within the limits of the evolution basin, and turning in front of the piers is prohibited.

All maneuvers are monitored and recorded by the shift supervisor through mobile closed-circuit television cameras.

During berthing/unberthing, an operational safety inspection professional (SAFETY INSPECTOR - GIAONT) and an operator are kept on the pier, positioned to assess the maneuver and guide the vessel's positioning in relation to the loading arms. A team of lashers is available to place the lanyards on the bollards and escape cats.

At each pier there is an operator responsible for operational monitoring, for exchanging information with the ship, communications, preparation of documentation and monitoring of the ship's berthing and position. This operator has a VHF radio (channels 9 and 13) for simultaneous communication with the ship and the control room.

PORT INFORMATION



Main Risks to Mooring and Stay

The climatic conditions of the access channel, evolution basin and berthing piers are normally quite favorable and safe for navigation, maneuvering and stay.

The main risks associated with the maneuvers and stay of ships in TEMADRE's berths are:

When berthed at PP-1, motivated by strong currents during ebb tides, the stern opening of berthed ships may occur. This is more critical when there is a large tidal range (greater than 2.6m). When moored by PS, it will be MANDATORY to place at least 01 Beam at the stern in Dolfin 17.

When berthing at PP-4, due to strong currents and winds, berthing may occur at a speed higher than the operational limit of the fenders, causing damage to the terminal and ship facilities.

The risk mentioned above can be repeated in PP-1, under the same weather conditions and with similar damages.

The risks described above require greater attention from the crew and ship's pilots in relation to the toils and mooring lines.

PORT INFORMATION

Procedures

During the stay of the vessels in the port, various actions are performed to enable a safe operation and manage the risks so as to minimize them. In all phases, as described in the sub-items below, measures are taken in order to facilitate operations and plan them properly.

9.1 PRIOR TO ARRIVAL

When docking, after the safety inspection carried out by the Operations Safety Inspector (GIAONT), based on the ISGOTT 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.

Onboard repairs and washing of the ship's cargo tanks should preferably be carried out in the anchorage area. To carry out these services with the ship berthed, prior authorization from the terminal will be required, after the ship's manager has issued the request in accordance with the MUTUAL OPERATION PROCEDURE (PMO).

Ships destined for TEMADRE's facilities must indicate their estimated arrival date (ETA) 72 and 48 hours in advance, directly to the respective Agent. Change or

confirmation of the arrival of the ship must be communicated a minimum of 24 hours in advance. In the ETA information it must be specified whether the mentioned time is local (LT = Local time) or ULT (Universal Local Time).

9.2 ARRIVAL

The port authorities are engaged by the agents of the ships due to the arrival and plan for mooring.

Requests for bunker supply must be forwarded to UN-Bunker, through its Agent.

Information from the terminal to the ship and vice versa are described in ANNEXES "D" and "E", respectively.

In general, the visit is carried out after anchoring in Todos Santos Bay before the ship docks.

9.3 SHIP / TERMINAL ACCESS

TEMADRE piers do not have telescopic ladders to access berthed ships. Aluminum boards with handrails are available that can be moved by the ship's loading machines.

All ships must provide means of safe access for the embarkation and disembarkation of personnel, and always keep their boards and ladders ready to be lowered. If a board is used, there must be space for free walking and it must be fitted with a safety net. Life buoys with guide lines must be available in the vicinity of the means of access. The ship's gangway or gangway ladder should be used when necessary.

The circulation of crew members through the terminal facilities is prohibited, except on the ship/access gate/ship route. In these situations, the crew must use the transportation offered by the terminal.

9.4 BEFORE TRANSFER OF CARGO

9.4.1 Electrical Grounding

Charging arms are electrically grounded individually. The electrical grounding of the ship may also be carried out through a ground cable, connected to the terminal structure.

9.4.2 Connections and Reductions

The resources required for connection are agreed upon in the first contact between the ship and the terminal.

The ship must arrange the outlets and install load reductions and connections in order to enable the coupling of the loading arms. The ground personnel make the connections and disconnections of the arms, hoses and ground cables, assisting by the on-board personnel, who handle the winches and loading poles, when necessary. After connecting the loading arms, they are tested for tightness, using the static pressure of the terminal column for this purpose. A board representative will monitor the entire operation, and must be near the cargo outlet of the ship. All connected arms must be supported on a support, especially those connected to reductions.

9.4.3 Safety inspection

The start of the operation only takes place after filling out the initial letter, by the shore and onboard representatives. Ship / Land Safety Checklist (ANNEX A of the "ISGOTT") is verified and completed by the SAFETY INSPECTOR (GIAONT) during the initial release of the ship.

9.4.4 Communication Media

Communications are carried out with the ships via VHF radios on a previously agreed and registered maritime frequency. A secondary means, via terrestrial UHF radio, is set to fail in the main system.

9.4.5 Operational Control

TEMADRE has two distinct control rooms. The main one ("Operations Room") is located in the Mirim park's tanking area, immediately after the access lane to the berthing piers and is responsible for all operations carried out on the pier, except when loading/unloading ships of LPG. In the case of operations with propane vessels, the operations are carried out in the "Control Room" of Parque Maria Quitéria (LPG park), 1500 meters away from Parque do Mirim. In these rooms are the operators responsible for controlling all terminal operations, through the supervisory system.

9.4.6 Tank Inspection

Whenever possible, inspection of a ship should be done without entering the tanks. If the cargo requires internal inspection of the tank, all safety precautions inherent in entering confined spaces must be taken. In this case, the ship must arrive with the tanks degassed and in "free for man" condition. If TEMADRE or the Inspectorate rejects the inspected tanks, the delay will be charged to the ship.

9.4.7 Calculation of quantities

On-board measurements shall be carried out by the ship's personnel and accompanied by terminal representatives and other inspectors. The material used must be properly grounded and the measurement accessories must be explosion-proof.

9.4.8 Ballast Dumping

The Terminal has two tanks to receive slop discharges, dirty ballast and on-board effluents. Each tank has a capacity of 6,500 m³. The maximum receiving flow is 500 m³/h. The ship must schedule the discharges in advance because, to accept them, the Terminal needs to make space available in the tanks. The Terminal reserves the right to refuse ballast and effluent discharge that has not been previously programmed. It is mandatory to measure the amount of waste to be discharged and its characteristics. Under no circumstances is it allowed to unload dirty ballast from petrochemical ships whose tanks have carried toxic products.

9.4.9 Ramonage

It is prohibited to carry out branching or cleaning the boiler piping with the ship berthed. Care must be taken to prevent sparks from escaping the chimney. Failure to comply with this regulation will result in one or more of the following sanctions: immediate interruption of operations; fine from the competent authorities; compulsory unberthing of the ship from the pier; communication of the infraction to the shipowners; liability of the ship for fines, loss of time and all other related expenses arising from this fact.

9.4.10 Small boat access

The prohibition on the presence of unauthorized small boats on the side or in the vicinity of berthed ships should be strictly observed. Only service vessels at the terminal or authorized ones may be in the vicinity or alongside, as long as they meet all safety conditions. The transgression of this rule must be reported to the competent authority.

9.4.11 Protection against product return and overflow

The terminal does not have check valves to prevent the outflow of product to the ship when the shore manifold is aligned. During discharges, the ship is responsible for monitoring possible unwanted receipts and the level of the tanks in order to avoid overflows.

Propeller Maintenance: Berthed ships will not be able to move their propeller(s) while they remain connected to the loading arms. A turnstile may be used, after due notice to the terminal operator, but the propeller must be moved so slowly that absolute safety is achieved. Vessels shall be liable for any damages resulting from such procedures.

Moving the Half Nau Crane: Its use will not be allowed while the load arms are connected.

9.5 CARO TRANSFER

9.5.1 Pressure monitoring

During the transfer of cargo, it is registered by the onboard and onshore representatives in the ship's manifold every hour. The terminal controls the internal pressure and flow variables, which are verified in real time through the supervisory system available in the control rooms.

9.5.2 Operating Flow

Operation flow rates, measured on the ship and at the terminal, and the total volume moved are compared hourly and compared between the parties, having, according to the system used, a limit parameter for operational control. Any change in the conditions of operation must be communicated and documented between the parties. It is expressly prohibited to close the valves during the operations, which cause back pressure in the system.

9.5.3 Operations with LPG

The ship must meet all the conditions pertaining to oil product ships. In addition, it will be necessary to inform in advance the needs for reduction of flow or pressure and to closely monitor the loading temperature. The Terminal has a particle filter and resources for effective drainage of LPG-free water, minimizing the possibility of problems during operations. It also has a vapor return line that can be used in onboard tank gasification operations.

9.5.4 Slop and Ballast Discharge

The slop, ballast and deballast nets and tanks of ships must be used only for this purpose, being isolated from the other nets on board. The water ballast to be discharged into the sea must be completely free of oil, any oily residue or other substance capable of causing pollution of sea water. TRANSPETRO's programming, which interacts with PETROBRAS' logistics, provides terminal tanks for receiving slop from ships. When the ship needs to unload slop in Madre de Deus,

it must inform, via Agent, the quantity to be unloaded and its origin. The system used by the terminal for unloading slop is the same used for unloading other products, using lines prepared for this purpose.

9.5.5 Tank Cleaning

The COW operation is accepted, depending on prior authorization of the schedule for the purpose of the ship's stay in the port and of the GIAONT for the purpose of operational safety. A specific standard form for this operation must be filled in, as per NT-11-00005 of the Baseline.

9.5.6 Repairs on board and on the pier

Repairs or maintenance work of any nature, involving or likely to involve, risk of sparks or other means of ignition may not be carried out while the ship is berthed at the terminal's piers. In extreme cases, all safety standards should be observed and met. Repairs involving the pier facilities or implying any restriction of the ship during the laytime must be previously authorized by the terminal, after formally requested by the ship's representative in accordance with the Mutual Operating Procedure (PMO).

9.5.7 Safety inspection

Intermediate inspections, as per ANNEX A of "ISGOTT", will be carried out by GIONT during the operation of the vessel every 4 hours.

9.5.8 Emergency Stop

The interruption of the loading or unloading of the ship must be requested, via radio or other means of communication, whenever it occurs in any situation that may pose a danger, whether for the ship or for the terminal. Operations are also expected to be temporarily suspended during storms, thunderstorms and/or high winds. The operator of the terminal is authorized to interrupt / suspend the operation in the case of non-compliance with any of the rules and regulations concerning safety, universally accepted and adopted in the maritime transport of oil. The

master of the ship has the right to stop the operation if he has reason to believe that shore operations are not secure, provided that he informs the pier operators in advance. In any emergency situation, the Madre de Deus terminal interrupts ongoing operations so that all resources are focused on mitigating the accident. Actions and contacts for each type of emergency are described in the management's Emergency Plan and main telephone numbers. CARGO MEASUREMENT AND DOCUMENTATION

After the end of the operation, draining must be started on the loading arms used. Terminal operators will provide drainage of the arms used for the closed system on the pier. The ship's representative must arrange for the drainage of the onboard section.

On-board measurements shall be carried out by the ship's personnel and accompanied by terminal representatives and other inspectors. The material used must be properly grounded and the measuring accessories must be explosion-proof.

Final release of the vessel: it takes place after comparing the quantities handled and complementing the laytime documentation.

9.6 UNMOORING AND DEPARTURE FROM THE PORT

During the unberthing maneuver and departure from the port, the channel limits and hazards reported in the section 5 and its sub-items must be observed.



Port or Anchorage Organization

10.1 MEETING THE ISPS CODE

The Madre de Deus 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 ISPS – International Ship and Port Facility.

In case of need, these protection measures can be activated by the ship through the Port Facility Security Officer of the Terminal (Port Facility Security Officer PFSO) or through the VHF radio, channel 16/13/09

The Terminal normally operates at SECURITY LEVEL 01. For more details, the Terminal's Port Security Supervisor, who is trained in accordance with the requirements required by the IMO, can be contacted.

10.2 MARITIME AUTHORITY AGENT

The Agent of the Maritime Authority to which the Terminal is subordinate is the Captain of the Ports of Bahia. It is the Maritime Authority within the limits of the ports of Salvador, Aratu and Madre de Deus, and it is responsible for determi-

ning the actions and fineing those responsible for any incident within the limits of the port.

This determines that the visit of the tax and health authorities must be carried out before the ship berths at the TEMADRE pier. Eventually, and upon prior formalization, the inspection may be carried out with the ship berthed.

Vessels destined for TEMADRE will be visited by Saúde dos Portos, Customs and the Federal Police. The ship's agent must take the necessary steps in this regard.

Any and all documents related to the dispatch of the ship at the last port must be presented to the Maritime Authorities.

10.3 SUPPORT BOATS

The Terminal has 4 (four) diesel-powered boats with a steel hull to help with berthing, unberthing and emergency tasks. It is mandatory to call the Terminal boats for the maneuvers. The call is made by the SAFETY INSPECTOR / GIAONT.



Emergency Planning and Response

11.1 EMERGENCY CONTACTS

The table below indicates the essential contacts with the telephone number, fax, and radio channels/frequencies.

Table	19 -	Emergency	Contacts
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Organization	Operating Hours	ID acronym	Phone (71)	Fax (71)	Cell phone (71)	VHF/UHF Call
Port authority	24 hours	СРВА	3507-3777 3507-3759		99687- 7934	16
Federal Police	24 hours	_	3319-6000 3338-4550 3252-0060		_	-
ZP-12 Operations Center	24 hours	_	3016-8512 /8513 / 8514	3016.8515	99198- 3779	16
Control Room of Mirim	24 hours	_	3877-7019 / 7222 / 7267		99918- 3944	16/09/13
LPG Park Control Room	24 hours	_	3877-7036 / 7240			16

Organization	Operating Hours	ID acronym	Phone (71)	Fax (71)	Cell phone (71)	VHF/UHF Call
TEMADRE Management	7 am to 4 pm	TA MDEUS	3877-7237			—
Civil defense Madre de Deus	24 hours	_	98214-0912		_	_
CRA (Local Environmental Agency)	24 hours	CRA	0800 711400	3313-3472		
INEMA	24 hours	INEMA	0800 711400	31184-267 3118-4500 3118-4555	_	_

11.2 SENSITIVE AREAS FOR THE ENVIRONMENT

In TEMADRE's Emergency Plan, the areas most sensitive to environmental impact are described, listed by sensitivity maps and showing, according to the selected area, the points that are subject to the greatest impact when this type of event occurs in Todos os Santos Bay.

11.3 GENERAL DESCRIPTION OF THE EMERGENCY RESPONSE ORGANIZATION

Responsibilities for dealing with possible emergencies involving vessels arriving at the Terminal.

NCIDENTS WITHIN THE PORT/TERMINAL AREA								
Type of Incident	Responsible Organization	0	Other Organizations Involved					
Collision in the Channel	Port authority	Civil defense	TRANSPETRO	_				
Vessel beaching	Port authority	Civil defense	TRANSPETRO	_	_			
Collision in the Cradle	Port authority	TRANSPETRO	Civil defense	_				
Sinking of vessel	Port authority	Civil defense	Fire Department	TRANSPETRO	_			
Fire in the Vessel	Ship	TRANSPETRO	Fire Department	Civil defense	Port authority			
Cradle Fire	TRANSPETRO	Fire Department	Civil defense	Port authority	_			
Pollution	TRANSPETRO or Ship	Port authority	CRA	IBAMA				

Table 20 - Responsibility Matrix

11.4 EMERGENCY PLANS

The PEL (Local Emergency Plan) is TEMADRE's plan to combat emergencies in all its facilities. It is available in all the operational areas, on frames located at the entrances of the rooms for operation, maintenance, and administrative buildings. The party responsible for updating it is the local SMS (activity of health, envionment, and safety - HSE).

TEMADRE 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 train the terminal's employees to act in accordance with the PEL (Local Emergency Plan). Located at a strategic point, it allows quick action in combating emergencies. The warehouse is stockpiled with containment barriers,oil collectors and other equipment and materials necessary for the leaks. Work, support, tanker and oil collecting vessels are moored at the pier in a permanent state of readiness.

The Terminal has an emergency ambulance on standby at SUAPE, which can be called in case of need.

11.4.1 Preventive measures on board

Emergency and fire-fighting equipment must be kept ready for use while the ship remains berthed. The operating fire hoses must be extended, one forward and one aft of the load taps.

A pollution control kit (rags, shovels, buckets, squeegees, transfer pumps, etc.) must be kept ready for use in the event of an oil spill. Supplementary precautions must be taken with the goal of avoiding pollution in the sea by oil.

11.5 PUBLIC RESOURCES TO FIGHT EMERGENCIES

In the port of Madre de Deus only TRANSPETRO, through TEMADRE and other operational units, activated through the local emergency plan, have resources that can be used to mitigate sea pollution events. For other emergencies, public organizations offer resources as intended.

11.5.1 Local Emergency Services

The Fire Department, Civil Defense, Military Police and hospital units in Madre de Deus are activated as needed.

11.5.2 Mutual Assistance Plan

There are the plans:

- PAM where the distribution companies in the region and the fire department participate.
- PCD where the companies of the pipeline consortium participate (Contingency plan for the Camaçari-relam-Porto de Aratu pipeline)
- PCRIII where all Petrobras and Transpetro companies from regional 3 (Bahia, Sergipe and Alagoas) participate.

The institutions listed below participate in the PAM (Mutual Aid Plan) and their resources are available as previously agreed in this plan:

- MILITARY FIRE DEPARTMENT
- Transpetro/Temadre
- City Hall of Madre de Deus (Civil Defense)
- Environmental Resource Center CRA
- Petrobras/Landulfo Alves Refinery Mataripe
- Petrobras/UN-Bahia
- Other signatory companies of the Camaçari Pipeline Contingency Plan.

11.6 FIGHTING OIL SPILL

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

11.6.1 Terminal Combat Capability

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

11.6.2 Response Capability of the Environmental Agency

The Environmental Resources Center (CRA) does not have resources to combat oil spills at sea.

11.6.3 Resources available in the Mutual Support Plans of other Terminals

The resources available at other terminals for response to pollution emergencies which have occurred in the vicinity of the Terminal are listed in the PRE.

11.6.4 Tier 2 Combat

Combat significant pollution. For these events, the regional resources of Transpetro / Petrobras are requested. These resources, their readiness, and their form of engagement are described in the PRE.

11.6.5 Tier 3 Combat

Combating great pollution. In these events, national resources from TRANSPETRO and PETROBRAS are requested. These resources, their readiness, and their form of engagement are described in the PRE.

11.7 FIGHTING A MAJOR INCIDENT

TEMADRE's PEL lists the actions and those responsible for each type of event planned, which may occur within its unit, range of pipelines or vessels and involve third parties. For events that are not provided for in this document, TRANSPETRO and PETROBRAS will make available all national or international resources that are within their reach.

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CONTACTS

12.1 TERMINAL

Table 21 - Contacts

Disco	Contract	Phone (71)	Fay (71)	VHF/UHF Channels		
Place	Contact		Fax (71)	Highlight	Conversation	
PP-1 cradle	Operator	3877-7207		16	09	
PP-2/PP-3 Cradle	Operator	3877-7208		16	13	
PP-4 cradle	Operator	3877-7013		16	09	
PS-1 cradle	Operator	3877-7204		16	09	
Control Room for LPG	Operator	3877-7036		16	04	
Shift Supervisor	Supervisor	3877-7220		16	03	
Security (SMS)	Supervisor			16	05	
Vigilance	Inspector	3877-7128		16	08	

12.2 AGENCY - SOUTH CONE

Phone: (71) 32415236 / 32415342 - 974001455 - 974007371 - 974002677 (on duty)

12.3 OTHERS

Captaincy of the Ports of Bahia (71) 3507-3750, 3507-3755, 3507-3867 20@cpba.mar.mil.br

Federal Police - Maritime, Air and Border Police Division (71) 3243-3952, 3319-6085 and 3319-6078

Port Health Service - Sanitary Surveillance (71) 3249-0280, 3312-2886 (general) and 3254-5271 (ANVISA)

Federal Revenue Officer

(71) 3204-1198 (Salvador) and 3507-4900 (Lauro de Freitas)

Salvamar Leste (Salvador) (71) 3363-5333

Eastern Nautical Signaling Service (Aratu Naval Base) (71) 3307-3981 and fax -3307-3970

Luis Eduardo Magalhães International Airport (71) 3204-1010

CRA - Environmental Resources Center (71) 3313-3472

Brazilian Institute of Environment and Renewable Natural Resources (71) 372-1650

Civil Police (Madre de Deus) (71) 98214-0912

State General Hospital (Salvador) (71) 3117-5999

BIBLIOGRAPHY AND CONSULTATION SOURCES

- Nautical Charts 1104 and 1110. Brazilian Navy.
- Rules and Procedures of the Port Authority of Bahia NPCP
- East Coast Tour. Board of Hydrography and Navigation Brazilian Navy.
- Symbols and Abbreviations Used in Brazilian Nautical Charts, 4th edition, n°12.000. Board of Hydrography and Navigation Brazilian Navy.
- List of Lighthouses, 25th edition. Board of Hydrography and Navigation Brazilian Navy.
- Glossary of Technical Terms for Shipbuilding. Directorate of Ports and Coasts Ministry of the Navy.
- Wind direction distribution. Ministry of Agriculture and Supply MA. National Institute of Meteorology INMET. 4th District SEOMA.
- International Safety Guide For Oil Tankers And Terminals ISGOTT. 5th edition, 2008.
- Meteorology report for the Mataripe region. Climate and Environmental Studies System S/C Ltda SECA.
- Maritime Trade Dictionary. Author: Wesley O. Collyer
- Navigating is Easy. Author: Captain of Sea and War Geraldo Luiz Miranda de Barros



ANNEX A - Location of mooring dolphins

PORT INFORMATION

ANNEX B - Mooring points diagram



Note: Depending on the size of the ship, springs can be placed as a beam









PORT INFORMATION





ANNEX C - Distribution of loading arms in each berth

(Pier seen from onboard)



ANNEX D - Basic guidance for berthing maneuvers at TEMADRE





ANNEX E - Essential information from the Vessel to the Terminal

Port	Port and Terminal of:							
Requesting Inf	formation about the Vessel							
Name of ship:	Arrival Estimate (ETA):							
Flag:	Last port:							
Commander's name::	Next port:							
Shipowners:	Agents:							
Does the ship have an inert gas system?								
Oxygen Content:								
Overall length (LOA):	Draft of arrival:							
Length between perpendiculars:	Maximum draft during the transfer:							
Mouth:	Output draft:							
Number of engines:	Transverse propulsion:							
Number of propellers:	Bow (power no.):							
	Stern (number and power):							
Minimum required tugs:								
No. and static traction (bollard-pull):								
Number and size of manifold flanges:	Distances:							
Work:	Head to manifold:							
Ballast:	Sided to the manifold:							
Bunkers:	Height from manifold to main deck:							
Load schedul	le (fill in what only applies)							
Nomination:								
Type and quantity: m ³ Type an	nd quantity: m ³ Type and quantity: m ³							
Discharge of ballast overboard:								
Quantity: m ⁻³	Estimated time:							
Slop / ballast discharge to land:								
Quantity: m ⁻³	Estimated time:							
Discharge sch	hedule (fill in what applies)							
Type and quantity: m ³ Type an	nd quantity: m ⁻³ Type and quantity: m ⁻³							
1	- !							
Ballast: Volume	e: m ³ Time:							
Requested	d supplies (bunkers)							
Type and quantity:	Type and quantity:							
Additional information (if any):								

ANNEX F - Information to be exchanged before cargo transfer

	In	formation b	etween Ship a	nd Termin	al	
Name of ship:			Berth:			
Trip number:			Date of moorin	ıg:		
		Cont	ract data			
Number of pump	ps on board:					
Volumetric capa	Volumetric capacity: 98%					
Guaranteed pres	sure at disch	arge (when it is	a discharge ope	ration):		kgf/cm ²
Ballast capacity si	imultaneous	deballast with lo	bading/unloading	:		
		Travel i	nformation			
Type of charter (\	/CP. TCP COA	etc.):				
Type of trip (cabo	tage/long-h	aul):				
Ports or places of	origin and de	stination;				
Ship requested su	upply?					
Means of commu	inication betw	veen ship and T	erminal:			
		Cargo i	nformation			
Product:	Quantity	/:	Temperature:		A	PI:
			Slop			
Quantity:		Temperature:			A	PI:
Fluidity:		Origin:				
		Contaminants:				
		В	allast	1		
Dirty ballast	1			Segregate	ed Ball	ast
Quantity:	Tempera	ature:		Quantity:		
		Operatio	n information			
For downloads:	Ship will pe	rform special o	peration (COW. I	nertization.	etc.)?	
	Estimated t	time for the spe	ecial operation:			
	l ime requir	red to stop the	pumps:			
For loads:	lime in adv	vance for TOP r	notice:			
	Flow for the	e TOP period:				
	Amount of	ballast to be d	ischarged:			
	Maximum f	low allowed for	r deballast:			
Are there restric	tions on elec	trostatic prop	erties?			
Are there restric	tions on the	use ot selt-clo	sing valves?			
Snip/	i erminal C	onditions to	or loading/un	loading by	/ proc	αυστ
Sub	Pressure:		Terminal	Pressure:		
	FlOW:			FlOW:		
	Mining Mining	emperature:		Minimum	tempe	erature:
	Pinimum te	emperature:		Minimum t	tempe	rature:

continue

Sequence of operations by product

Quantity to be loaded/unloaded:

Origin/destination tanks:

Onboard/ground lines:

Loading arms/hoses used:

Forecast for start and end of the operation:

Additional information about operation and safety

ANNEX G

Name of ship Trip Number: Berth: Date of mooring: Contract data: Number of pumps on board: Volumetric capacity 98%: Guaranteed pressure at discharge: (When it is a discharge operation) Capacity of simultaneous ballast/desalternation with loading/unloading travel information Type of charter (VCP, TCP, COA, etc) Type of trip (Cabotage/Long Haul) Ports or places of origin and destination Ship Requested supply? Means of communication between ship and terminal cargo information Product: Quantity: Temperature: API SLOP: Quantity, Temperature, API, Fluidity, Source, Contaminants.
Ballast:

(Dirty Ballast) Quantity, Temperature.

(Segregated Ballast) Quantity:

Operation information

For downloads:

Ship will do special operation? (COW, Inerting, etc.)

Estimated time for the special operation

Time required to stop the pumps

For Loads:

Time in advance for TOP notice

Flow for the TOP period

Amount of ballast to be unloaded

Maximum flow allowed for deballasting

Are there restrictions on electrostatic properties?

Are there restrictions on the use of self-closing valves?

Ship / Terminal Conditions for loading/unloading by product

Ship - Pressure, Flow, Temperature (Max. and Min.)

Terminal - Pressure, Flow, Temperature (Max. and Min)

Sequence of operations by product

Quantity to be loaded/unloaded

Tanks of Origin / Destination

On-board lines / land

Loading arms / hoses used

Forecast for start and end of operation

Additional information about operation and safety.

Security Decalogue-1.pdf

