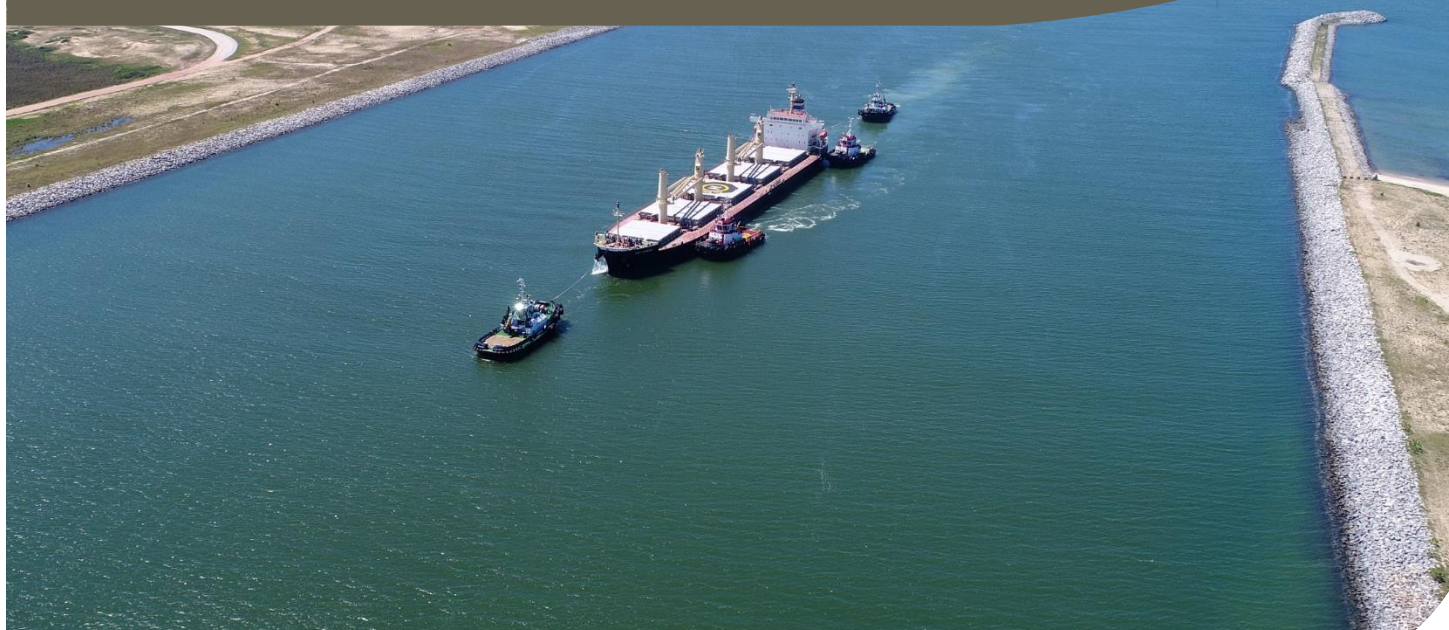


Operating Parameters of Port of Açú Complex

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1 - INTRODUCTION:

PORTO DO AÇU OPERAÇÕES S.A. ("Port Administration"), manager of the Port of Açú and its Industrial Complex, in support of the development of its maritime and port operations;

Considering the content of Law 12,815 of June 5, 2013 (Law of Ports) regarding the competence of the Port Administration, under the coordination of the Maritime Authority, to establish and disclose the maximum draft of ships (item 18, I, d), and establish and disclose maximum dimensions of ships (item 18, I, e);

The operating parameters and requirements contained in this document can be updated, cancelled, or revised at any time based on letters and notices from the Maritime Authority or Port Administration, being later incorporated when a new version is issued.

All maneuvers that exceed the authorized parameters and requirements automatically fall under the classification of "special maneuver", which requires a specific request and approval procedure with the administrator of the respective Terminal, Pilotage and Maritime Authority, under the responsibility of the stakeholder, in addition to the approval of the Port Administration.

2 - PORT OF AÇU TERMINALS:

2.1 - TERMINAL 1:

1. T-ORE
2. T-OIL

2.2 - TERMINAL 2:

1. T-MULT
2. INTERMOOR
3. NOV
4. FLEXIBRAS
5. B-PORT
6. TECMA
7. DOME
8. MOLHE SUL
9. GNA
10. ALISEO

T-ORE – EAST / WEST

Vessel maximum measurements:

- LOA: 300.00 m
- Beam: 50.00 m
- Draft: 18.50 m
- DWT: 236.158

of Tugs: 4 (2 = 80T BP + 2 = 70T BP).

5 for special maneuvers during daylight.

Daylight maneuvers:

- A) Arrival (in ballast) – POB 30 min before the sunrise until 1h before the sunset.
- B) Departure (loaded) – POB 30 min before the sunrise until 1h30min before the sunset.
- C) 1 Pilot

D) Meteorological and Hydrological limits:

- Daylight Arrival/Departure (vessels with present draft up to 18.5 m)

Wind 20 kts / Current 1.0 kt / Waves 1.60 m

- DAYLIGHT SPECIAL MANEUVERS:

Wind 20 kts, limited to 25 kts / Current 1.0 kt, limited to 1.3 kt / Waves 1.60 m, limited to 2 m – not allowed when two or more than those numbers are simultaneously over the limits.

5 Tugs (2 = 80T BP + 3 = 70T BP)

Night maneuvers:

- A) 1 Pilot (in ballast)
- B) 2 Pilots (loaded)

C) Meteorological and Hydrological limits:

- Arrival (in ballast): Wind 20 kts / Current 1.0 kt / Waves 1.60 m
- Departure (loaded): Wind 15 kts / Current 0.7 kt / Waves 1.0 m

Fairway passage through buoys 21 and 25:

- The Maritime Authority authorized the one-way-traffic of ships with a draft of up to 11 m, using the space between buoys 21 and 25 to access or exit the Terminal's turning basin.

T-OIL - NORTH / CENTRAL / SOUTH

Vessel maximum measurements:

- **LOA:** 340.00 m
- **Beam:** 61.00 m
- **Draft:** up to 21.0 m – without considering the tide
up to 21.7m – considering 0.7 m of tide
16.0 m – VLCC partially loaded

of Tugs: loaded vessels = 5 (2 = 80T BP + 3 = 70T BP)
Suezmax in ballast = 4 (2 = 80T BP + 2 = 70T BP)
VLCC partially loaded = 5 (2 = 80T BP + 3 = 70T BP)

Vessel maximum measurements (for the SOUTH berth):

- **LOA:** 300.0 m
- **Beam:** 50.0 m
- **Draft:** 17.2 m

of Tugs: loaded vessels = 5 (2 = 80T BP + 3 = 70T BP)
vessels in ballast = 4 (2 = 80T BP + 2 = 70T BP)

Daylight maneuvers (not VLCC):

(Arrival/Departure with draft up to 17.2 m, loaded or in ballast, from/to the berth or STS)

- A) Arrival (in ballast) – POB 30 min before the sunrise until 1h before the sunset.
- B) Departure (loaded) – POB 30 min before the sunrise until 1h30min before the sunset.
- C) 1 Pilot (in ballast for Arrival/Departure from/to the berth and STS Departures).
- D) 2 Pilots (loaded for STS Arrival/Departure and Departure from the berth).

E) Meteorological and Hydrological limits:

Wind 20 kts / Current 1.0 kt / Waves 1.60 m / Satisfactory visibility for maneuvers from/to the berth and 2 NM for STS.

DAYLIGHT SPECIAL MANEUVERS:

Wind 20 kts, limited to 25 kts / Current 1.0 kt, limited to 1.3 kt / Waves 1.60 m, limited to 2 m – not allowed when two or more than those numbers are simultaneously over the limits. 5 Tugs (2 = 80T BP + 3 = 70T BP)

Daylight maneuvers for VLCC (NORTH and CENTRAL berths):

(Arrival/Departure with draft up to 21.00 m, without the tide; and 21.70 m, with the tide)

- A) Arrival (in ballast) – POB 30 min before the sunrise until 1h before the sunset.
- B) Departure (loaded) – POB 30 min before the sunrise until 2h30min before the sunset.
- C) 2 Pilots.
- D) Arrival of VLCC in ballast with draft up to 16 m or partially loaded:
 - Central berth preferably.
 - North berth with one vessel only, no STS.
 - Maneuvers are allowed from the sunrise to 1h30min before the sunset.
- E) Departure of loaded VLCC:
 - From Central berth, North berth with one vessel only, no STS.
 - Maneuvers are allowed from the sunrise to 2h30min before the sunset.
- F) VLCC moored portside:
 - Only at Central berth.
 - North berth empty, no vessels.
- G) Meteorological and Hydrological limits:
 - For arrival of VLCC in ballast, and for departure of loaded VLCC
Wind 20 kts / Current 0.8 kt / Waves 1.60 m
 - For arrival of VLCC partially loaded
Wind 15 kts / Current 0.5 kt / Waves 1.30 m – 10s

Night maneuvers (SUEZMAX):

(STS Departure in ballast, Arrival to the berth in ballast, and Departure from the berth loaded or in ballast)

- A) 2 Pilots (STS Departure in ballast and loaded from the berth)
- B) 1 Pilot (Arrival and Departure in ballast to/from the berth)
- C) Meteorological and Hydrological limits:
 - STS Departure in ballast = Wind 15 kts / Current 1.0 kt / Waves 1.5 m / Visibility 2 NM
 - Arrival/Departure in ballast to/from berth = Wind 20 kts / Current 1.0 kt / Waves 1.5 m
 - Loaded Departure from the berth = Wind 15 kts / Current 0.7 kt / Waves 1.0 m / Visibility 2 NM

Fairway passage using the interval between T1 buoys:

- A) The Maritime Authority authorized the one-way-traffic of SUEZMAX ships with a draft of up to 11 m, using the space between buoys 21 and 25 to access or exit the Terminal's turning basin.
- B) The Maritime Authority authorized the one-way-traffic of VLCC ships in ballast, entering the access channel before Buoy 17. The POB must guarantee the execution of maneuvers during the day.

Special maneuver for arrival of the partially loaded VLCC HUNTER Ship

- A) From the following conditions of the item "Daylight maneuvers for VLCC (NORTH and CENTRAL berths)" of this Terminal. Maximum draft of 16.40 m and use of 6 azimuthal tugs, 5 Tugs (2 = 80T BP + 3 = 70T BP + 1 = 55T BP).

T-MULT

Vessel maximum measurements:

- **LOA:** 250.00 m
- **Beam:** 40.00 m
- **Draft:** 12.5 m – without considering the tide
13.1 m – considering 0.6 m of tide

of Tugs: 2 = 45 T BP (draft < 10 m)

3 = 45 T BP (draft ≥ 10 m)

Simultaneous moored vessels at the Terminal

A) 2 vessels: total LOA = 300.00 m

B) 3 vessels: total LOA = 280.00 m

Daylight maneuvers:

A) 1 Pilot (when mandatory, according to NORMAM 12)

B) Meteorological and Hydrological limits:

Wind 20 kts, gust 25 kts / Current 0.8 kt / Waves 1.60 m / Visibility 2 NM / Neither fog nor heavy rain.

Night maneuvers:

A) 1 Pilot (when mandatory, according to NORMAM 12)

B) Meteorological and Hydrological limits:

Wind 20 kts, gust 25 kts / Current 0.8 kt / Waves 1.60 m / Visibility 2 NM / Neither fog nor heavy rain.

- **Supply Vessel***

Wind 15 kts, gust 20 kts / Current 0.8 kt / Wave 1.30 m / Visibility 2 NM / Neither fog nor heavy rain.

* The rule applied for Supply Vessels may vary according to their dimensions and restrictions of maneuverability. That makes necessary a confirmation from the Pilotage Service and the Maritime Authority.

INTERMOOR

Vessel maximum measurements:

- LOA: 183.00 m
- Beam: 33.00 m
- Draft: 8.90 m
- DWT: 29.146 T

of Tugs: not applicable for Offshore Supply Vessels without restrictions of maneuverability.

The proposed type of vessel is applicable in the condition of shared use of the berthing infrastructure with the NOV Terminal, as authorized by ANTAQ Resolution No. 4.003/2015.

Daylight/Night maneuvers: (PSV / PLSV types)

A) 1 Pilot (when mandatory, according to NORMAM 12)

B) Meteorological and Hydrological limits:

Wind 20 kts, gust 25 kts / Current 0.8 kt / Waves 1.60 m / Visibility 2 NM / Neither fog nor heavy rain.

NOV

Vessel maximum measurements:

- LOA: 183.00 m
- Beam: 33.00 m
- Draft: 8.90 m
- DWT: 29.146 T

of Tugs: not applicable for Offshore Supply Vessels without restrictions of maneuverability.

Daylight/Night maneuvers: (PSV / PLSV types)

A) 1 Pilot (when mandatory, according to NORMAM 12)

B) Meteorological and Hydrological limits:

Wind 20 kts, gust 25 kts / Current 0.8 kt / Waves 1.60 m / Visibility 2 NM / Neither fog nor heavy rain.

FLEXIBRAS

Vessel maximum measurements:

- LOA: 183.00 m
- Beam: 30.00 m
- Draft: 9.10 m

of Tugs: not applicable for Offshore Supply Vessels without restrictions of maneuverability.

Vessel maximum measurements (OSV / General Cargo):

Offshore Supply Vessels with azimuthal thrusters, bow or stern thrusters fully operational.

- LOA: from 183.00 m to 207.00 m
- Beam: 33.00 m
- Draft: 9.10 m

of Tugs: not applicable for Offshore Supply Vessels without restrictions of maneuverability.

Daylight/Night maneuvers:

- A) 1 Pilot (when mandatory, according to NORMAM 12)
- B) 2 Pilots (General Cargo vessels)
- C) Meteorological and Hydrological limits:

Wind 20 kts, gust 25 kts / Current 0.8 kt / Waves 1.60 m / Visibility 2 NM / Neither fog nor heavy rain.

BRASIL PORT SOUTH BERTHS

Vessel maximum measurements (OSV):

- LOA: 183.00 m
- Beam: 31.20 m
- Draft: 8.80 m

of Tugs: not applicable for Offshore Supply Vessels without restrictions of maneuverability.

Vessel maximum measurements (Tanker):

- LOA: 171.20 m
- Beam: 27.43 m
- Draft: 8.20 m
- DWT: 24.852

of Tugs: 2 = 45 T BP (arrival) – The third tug can be added at the discretion of the pilot
2 = 45 T BP (departure)

Vessel maximum measurements (Tanker - Robert Maersk Type)

- LOA máximo: 171,00 m
- Boca máxima: 27,43 m
- Calado máximo: 8,20 m

of Tugs: 3 = 45 T BP (arrival)
2 = 45 T BP (departure)

Daylight/Night maneuvers:

- A) Arrival – Tanker - Always daylight maneuvers - Starboard.
- B) Departure – Tanker - Daylight and Night maneuvers.
- C) Tanker maneuvers – 1 pilot
- D) 1 Pilot (when mandatory, according to NORMAM 12)
- E) Meteorological and Hydrological limits:
Wind 20 kts, gust 25 kts / Current 0.8 kt / Waves 1.60 m / Visibility 2 NM / Neither fog nor heavy rain.
- F) Arrival / Departure – POB after sunrise until 1h before the sunset.

BRASIL PORT NORTH BERTHS

Vessel maximum measurements (OSV):

- **LOA:** 183.00 m
- **Beam:** 30.00 m
- **Draft:** 8.40 m

of Tugs: not applicable for Offshore Supply Vessels without restrictions of maneuverability.

Simultaneous moored vessels at the Terminal

- A) 2 vessels: total LOA = 235.00 m
- B) 3 vessels: total LOA = 220.00 m

Daylight/Night maneuvers (PSV / PLSV):

- A) 1 Pilot (when mandatory, according to NORMAM 12)
- B) Meteorological and Hydrological limits:
Wind 20 kts, gust 25 kts / Current 0.8 kt / Waves 1.60 m / Visibility 2 NM / Neither fog nor heavy rain.

BRASIL PORT SLIPS**Vessel maximum measurements (OSV):**

- **LOA:** 100.00 m
- **Beam:** 20.00 m
- **Draft:** 6.30 m (Slips 1, 2, 3 and 4)
7.20 m (Slip 5)
7.60 m (Slips 6, 7, 8 and 9)

of Tugs: not applicable for Offshore Supply Vessels without restrictions of maneuverability.

Daylight/Night maneuvers (OSV / PLSV):

A) 1 Pilot (when mandatory, according to NORMAM 12)

B) Meteorological and Hydrological limits:

Wind 20 kts, gust 25 kts / Current 0.8 kt / Waves 1.60 m / Visibility 2 NM / Neither fog nor heavy rain.

BRASIL PORT SOUTH DIKE**Vessel maximum measurements (OSV):**

- **LOA:** 100.00 m
- **Beam:** 21.00 m
- **Draft:** 7.00

of Tugs: In regular manoeuvres, arrival and departure, the use of tugs is not required; auxiliary tugs may be used at the discretion of the Pilot or Commander.

Daylight/Night maneuvers (OSV / PLSV):

A) 1 Pilot (when mandatory, according to NORMAM 12)

B) Meteorological and Hydrological limits:

Wind 20 kts, gust 25 kts / Current 0.8 kt / Waves 1.60 m / Visibility 2 NM / Neither fog nor heavy rain.

TECMA BERTH 1

Vessel maximum measurements (MR Tanker):

- **LOA:** 185.00 m
- **Beam:** 33.00 m
- **Draft:** 11.90 m

of Tugs: 02 = 45 T BP (Arrival)

02 = 45 T BP (Departure)

Vessel maximum measurements (Special Maneuver):

- **LOA:** from 185.01 m to 196.00 m
- **Beam:** 36.00 m
- **Draft:** 11.90 m

of Tugs: 03 = 45 T BP (Arrival)

03 = 45 T BP (Departure)

Daylight/Night maneuvers

- A) No time restrictions for OSV.
- B) Arrival/Departure for Tankers after the sunrise until 1h before the sunset.
- C) Night departure for Tankers moored portside.
- D) Special Maneuver only with Berth 2 empty and during daylight.
- E) Arrival/Departure to/from Berth 1 with Berth 2 occupied by one vessel only (not allowed for Special Maneuver).
- F) 1 Pilot (when mandatory, according to NORMAM 12)

G) **Meteorological and Hydrological limits:**

Wind 20 kts, gust 25 kts / Current 0.8 kt / Waves 1.60 m / Visibility 2 NM / Neither fog nor heavy rain.

TECMA BERTH 2

Vessel maximum measurements (OSV):

- **LOA:** 95.00 m
- **Beam:** 20.00 m
- **Draft:** 9.0 m

of Tugs: not applicable for Offshore Supply Vessels without restrictions of maneuverability.

Daylight/Night maneuvers (OSV):

A) 1 Pilot (when mandatory, according to NORMAM 12)

B) **Meteorological and Hydrological limits:**

Wind 20 kts, gust 25 kts / Current 0.8 kt / Waves 1.60 m / Visibility 2 NM / Neither fog nor heavy rain.

DOME

Vessel maximum measurements (OSV):

- **LOA:** 207.00 m
- **Beam:** 33.00 m
- **Draft:** 8.40 m

of Tugs: not applicable for Offshore Supply Vessels without restrictions of maneuverability.

Vessel maximum measurements (PLSV):

- **LOA:** 207.00 m
- **Beam:** 33.43 m
- **Draft:** 10.00 m

of Tugs: 01 or 02 may be requested by the Pilot after analysis of all conditions.

Simultaneous moored vessels at the Terminal:

- A) 2 vessels: total LOA = 400.00 m
- B) 3 vessels: total LOA = 375.00 m
- C) 4 vessels: total LOA = 350,00 m
- D) The above limits are applicable if there is no vessel moored in the Mediterranean at the SpoolBase Dome.

Daylight/Night maneuvers:

- A) 1 Pilot (for authorized OSV, when mandatory, according to NORMAM 12).
- B) 2 Pilots (other vessel types).
- C) No time restrictions for OSV.
- D) Night departure only for vessels moored starboard side.
- E) When there is a Med moored vessel at Spool Base, the maximum measurements changes to: LOA = 183.00 m / Beam = 33.00 m for the Terminal.
- F) Meteorological and Hydrological limits:
Wind 20 kts, gust 25 kts / Current 0.8 kt / Waves 1.60 m / Visibility 2 NM / Neither fog nor heavy rain.

MOLHE SUL (South Breakwater)**Vessel maximum measurements (OSV):**

- **LOA:** 230.00 m
- **Beam:** 34.00 m
- **Draft:** 9.07 m (not considering the tide)
9.67 m (considering 0.60 of tide)

of Tugs: not applicable for Offshore Supply Vessels without restrictions of maneuverability.

Vessel maximum measurements (Other vessel types):

- **LOA:** 230.00 m
- **Beam:** 34.00 m
- **Draft:** 9.07 m (not considering the tide)
9.67 m (considering 0.60 of tide)

of Tugs: 03 = 60 T BP + 01 = 70 T BP

Daylight/Night maneuvers:

- A) 1 Pilot (for authorized OSV, when mandatory, according to NORMAM 12).
- B) 2 Pilots (other vessel types).
- C) Night maneuvers only for OSV.
- D) Meteorological and Hydrological limits:

Wind 20 kts, gust 25 kts / Current 0.8 kt / Waves 1.60 m / Visibility 2 NM / Neither fog nor heavy rain.

GNA

Vessel maximum measurements (LNG):

- **LOA:** 300.00 m
- **Beam:** 52.00 m
- **Draft:** 11.70 m

of Tugs: 02 = T BP + 02 = 70 T BP

Loaded - Arrival: 02 = 80 T BP + 03 = 70 T BP

Departure - In ballast: 02 = 80 T BP + 03 = 70 T BP

Daylight maneuvers:

A) 2 Pilots.

B) Daylight only.

C) Meteorological and Hydrological limits:

Wind 18 kts

Corrente 0.5 kt (arrival – loaded) / 0.8 kt (departure – in ballast)

Waves 1.8 m

ALISEO BERTH B1 AND B2

Vessel maximum measurements (OSV / PLSV):

- **LOA:** 158.00 m
- **Beam:** 32.00 m
- **Draft:** 8.50 m
- **DWT:** 13.700

of Tugs: 01 = 45T BP

Daylight/Night maneuvers:

- A) 1 Pilot (when mandatory, according to NORMAM 12)
- B) Meteorological and Hydrological limits:
Wind 15 kts, gust 20 kts / Corrente 0.8 / Waves 1.6 m / Visibility 2 NM

Distance from the ferry to berthing at B2

- A) For distance from the ferry to the PLSV berthing line in B2: 64 m for wind > 12 kts and 50 m for wind ≤ 12 kts.

Operation of PSV type vessels

- A) Maneuvers of PSV type vessels, as long as do not exceed the operational limits established for the Terminal.

ALISEO BERTH B5

Vessel maximum measurements (OSV / FERRY):

- **LOA:** 105.00 m
- **Beam:** 30.00 m
- **Draft:** 4.30 m
- **DWT:** 5.000

of Tugs: Arrival: 03 = 40T BP

Departure: 2 = 40T BP

Arrival and Departure with at least 1 tug with the possibility of a cable passed through the bow.

Daylight maneuvers:

A) 1 Pilot (when mandatory, according to NORMAM 12)

Consider the berthing and unberthing maneuvers of ferry as a special maneuver.

B) Meteorological and Hydrological limits:

Wind 15 kts / Visibility 2 NM

Distance from the ferry to berthing at B2

A) For distance from the ferry to the PLSV berthing line in B2: 64 m for wind > 12 kts and 50 m for wind ≤ 12 kts.

Smaller Ferry of Vessel maximum measurements

A) Smaller Ferry of Vessel maximum measurements is able to berthing during day and night periods, always observing the metoceanographic limits of the Terminal, with the need to use auxiliary tugs for the maneuver being the responsibility of the convoy vessel commanders, whether at the inbound or outbound of Terminal 2, as applied in other Terminals at Porto do Açú.

Operation of PSV type vessels

A) Maneuvers of PSV type vessels, as long as do not exceed the operational limits established for the Terminal.