

# PETROJARL CIDADE DE RIO DAS OSTRAS





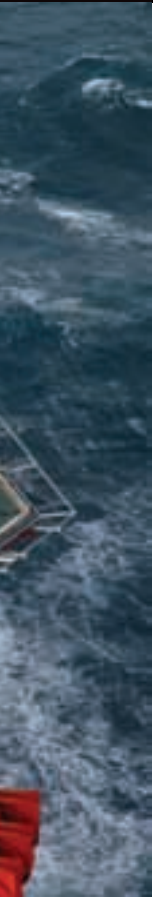
## PETROJARL CIDADE DE RIO DAS OSTRAS

THE PETROJARL CIDADE DE RIO DAS OSTRAS OPERATES FOR PETROBRAS IN THE ARUANÃ FIELD OFF THE SOUTHEASTERN COAST OF BRAZIL AT APPROXIMATELY 940 M WATER DEPTH.

THE ARUANÃ FIELD IS IN THE CAMPOS BASIN 124 KM EAST OF MACAE. THE ARUANÃ FIELD CONSISTS OF CRUDE OIL WITH AN API GRADE BETWEEN 23.86 and 27.



Petrojarl Cidade De Rio Das Ostras  
Location of the Field



## MAIN PARTICULARS

Type: Floating Production, Storage and Offloading vessel (FPSO)

Length overall (including helideck)	197.38 m
Length (between perpendiculars)	174.00 m
Breadth, hull	32.20 m
Breadth (including riser balcony and caissons)	39.73 m
Depth to main deck, mid	16.10 m
Maximum summer draught (from below keel)	12.09 m

## LAYOUT

The FPSO is arranged from fwd to aft in the following sequential order:

- Offloading area (on the bow)
- Process module
- Utility module
- Wartsila generator room
- Switchboard modules
- Accommodation area
- Helicopter deck

The port side midship has the riser balcony designed to handle two production wells.

## CLASSIFICATION

The Petrojarl Cidade De Rio Das Ostras complies with the following class and notations:

- DNV 1A1, Ship-shaped Oil Production and Storage Unit, HELDK-SH, CRANE, ECO, POSMOOR.





## CARGO CAPACITY

- The FPSO is equipped with 6 cargo center tanks with a capacity of 34 044 m<sup>3</sup> (214,103 bbls). The cargo tanks are equipped with heating coils.
- Discharging of the oil to shuttle tanker is done by cargo pumps placed in the pump room.

## CARGO PUMPS

- 2 steam turbine centrifugal pumps with a capacity of 1000 m<sup>3</sup>/h each (151,000 bbls/d).
- 1 electric centrifugal pump capacity of 850 m<sup>3</sup>/h (128,296 bbls/d).
- 1 steam piston pump capacity of 650 m<sup>3</sup>/h (98,108 bbls/d).

## ACCOMMODATION

- The FPSO is designed to accommodate 60 persons with normal operational manning approx. 45 persons.
- The Main Control Room (including the Process Control Room and Cargo/ Ballast Control Room) is located on the 1st deck. The Office facilities are also located on the 1st deck.

## OFFLOADING SYSTEM

- The produced oil is shipped to shore by shuttle tankers.
- The crude is transferred to the shuttle tankers via a flexible hose located on the bow of the FPSO. The hose is approx. 230 meters long and stored on a hydraulic powered reel.
- The distance between the FPSO and the Shuttle tanker will be approx. 135 meters.
- Offloading rate will be approx. 1000 m<sup>3</sup>/h (151,000 bbls/d).



## PRODUCTION DESIGN CAPACITIES

The process system is of flexible design and has typically experienced the following throughputs:

Crude	4,080 Sm <sup>3</sup> /d (approx. 25,000 bbl/d)
Gas	282,000 Sm <sup>3</sup> /d
Produced Water	1900 m <sup>3</sup> /d (12,000 bbl/d) maximum downstream

## WELL CONNECTIONS

Well streams are pumped to the FPSO by two ESPs (electrical submerged pump) which are installed in well completion tubing. The process consists of two separation trains: One with capacity of approx. 2,100 m<sup>3</sup>/d (12,800 bbls/d) and the other with 1900 m<sup>3</sup>/d (11,600 bbls/d). Both trains have a three-phase separation (oil/water/gas).

A pigging unit is installed to allow pigging of both satellite production wells through the service risers.

## CRANES

Two main Liebherr cranes are installed on the starboard side. Each crane has a maximum capacity of 30 tons.

## STATION-KEEPING

The FPSO is moored with 12 mooring lines – 6 fwd and 6 aft. Each mooring line, consisting of 300 m 105 mm bottom chain, 900-1100 m polyester rope and 150 m 95 mm top chain, is connected to the seabed by Torpedo anchors. The FPSO is moored with a heading of 212° in a water depth of 805 m.

## UTILITIES

The majority of the utility systems are placed above the main deck. The emergency generator is located in the accommodation area. The instrument and service air compressors are located in the engine room.

### ELECTRIC POWER

- Three Wartsila dual fuel 32DF6 generators, 2.0 MW each
- MAK diesel generator, 900 KW
- Volvo diesel emergency diesel generator, 699 KW
- Siemens shaft generator, 800 KW

### STEAM

- Two 25 ton/h at 18 bar diesel in engine room
- 25 ton/h at 18 bar diesel and gas on deck port side

### INSTRUMENT & SERVICE AIR

Two water cooled instrument air compressors and one service/instrument air compressor, 690 m<sup>3</sup>/h each.

### FIRE WATER

Fire water is delivered from two independent fire pumps located one on starboard and one on port side above main deck each with a capacity of 1060 m<sup>3</sup>/h (160,000 bbls/d) at 15 bar.

### MAIN PROPULSION

Main Engine MAN 9340 KW connected to fixed single propeller.



## COMPANY BACKGROUND

Teekay Petrojarl is the largest operator of Floating Production, Storage and Off-loading (FPSO) vessels in the North Sea. With a combined production capacity of 350,000 barrels of oil per day and a crude storage capacity of more than one million barrels, we have a long, proven track record in safely operating FPSO vessels in one of the harshest environments in the world.

Teekay Petrojarl owns and operates five FPSOs of which two are on each of the Norwegian and UK Continental shelves and one offshore Brazil. The company currently has another FPSO under construction in Singapore for the production of oil for Petrobras in 2012. All production units are under contracts producing for oil and gas companies. Our operating fleet also includes two shuttle tankers, one storage tanker and a 40% ownership in the FPSO Ikdam, operating offshore Tunisia.

With our head office in Trondheim Norway and operations offices in Aberdeen and Macaé, Brazil as well as a site office in Singapore, our 700 employees offshore and onshore possesses a unique blend of operational, engineering and professional expertise.

