MOPU and FSO
for Caspian Sea development

Owner Petronas Carigali (Turkmenistan) Sdn. Bhd.
Builder Lamprell
Delivered 2005

Description

On 15 October 2004, Petronas Carigali (Turkmenistan) Sdn. Bhd. awarded Single Buoy Moorings the contract for the turn-key delivery and operational lease for minimum 3 years of a production jack-up (MOPU) and turret-moored FSO for extended well testing of Block I in the Caspian Sea.

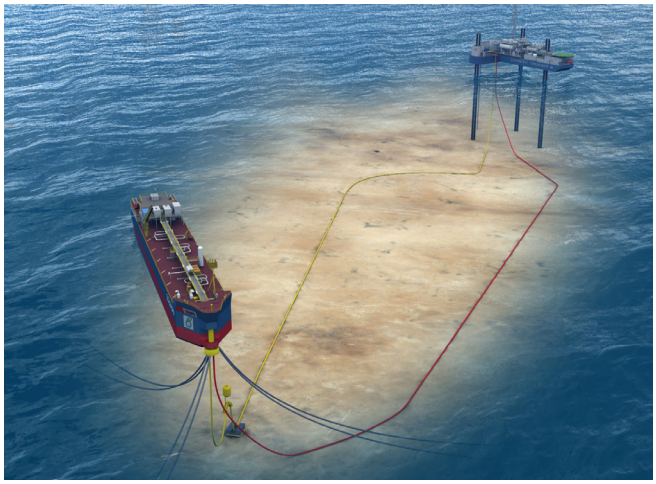
GustoMSC performed the engineering of the MOPU and FSO end 2004 and first half of 2005.
Engineering of the turret was subcontracted to SBM-Imodco and SBM Monaco performed the engineering of the mooring, installation and subsea lines.

MOPU Saparmyrat Turkmenbashi
The MOPU (Mobile Offshore Production Unit) is a cruciform shaped jack-up, assembled from 2 barges, with 3 circular legs and GustoMSC jacking systems which have a holding capacity of 3,000 t each. The MOPU supports a single surface tree at the aft end. Processing facilities consist of HP & LP separators, chemical injection, crude oil heaters, electrostatic treater, HP/LP flare, where special attention is given to the high tendency to form wax at temperatures below 38°C. As there are no gas export facilities, all unused produced gas will be flared.

Power is generated by two main engines (2 x 1,000 kW), dual fuel, to take maximum advantage of the produced gas.

Design particulars

Water depth	54 m
Dimensions (L x W)	100 m x 60 m
Airgap	14 m
Oil production	15,000 bopd
Produced water treatment	4,000 bpd
Produced gas	36 MMscfd
Accommodation capacity	20 persons
Helideck	Sikorsky 76



The Netherlands
Karel Doormanweg 66, 3115 JD, Schiedam
P.O. Box 687, 3100 AR Schiedam
Telephone +31 (0)10 232 0800
Telefax +31 (0)10 232 0801
www.GustoMSC.com

GustoMSC

FSO Oguzhan

Design particulars

Dimensions (length x width x depth)	112m x 16.4m x 9.8m
Incoming oil	Max. 15,000 bopd
Produced water treatment	N/A
Oil storage capacity	60,000 bbls
Offloading rate	700 m3/h
Accommodation capacity	22 persons
Cargo heating	Steam heated coils in tanks
Vessel deadweight	12,800 dwt

The FSO is permanently moored to the seabed by means of an external turret and 6 anchor lines.
Treated and stabilized crude oil is stored in 6 storage tanks and periodically offloaded from the FSO to a shuttle tanker, default in tandem configuration but with the possibility of side-by-side offloading.

The following systems are incorporated:

- Segregated ballast system
- Crude oil washing (2 machines per tank)
- Inert gas system
- Steam generator (to keep the crude above the wax formation temp.)
- Dual fuel power generation (2 x 750 kW)
- Emergency generator (350 kW)
- Oil fiscal metering
- Revolving crane

Construction

In view of the fast-track nature of the job, fabrication in the UAE was selected.
Construction started early 2005. The MOPU barge was fabricated at Lamprell.

The FSO and turret were constructed at M.I.S., while the accommodation modules for MOPU and FSO were designed and fabricated by the CKT/AMB combination.
Pressure vessels were fabricated in the UAE under the responsibility of Hanover UK.
Construction of the legs was done in Antwerp and the GustoMSC jacking systems were fabricated in Holland.

Logistics

Logistics formed a fundamental part of the project.
All constructions were dimensioned such that they could be transported through the Canals to the Caspian Sea, i.e. max. length 115m, width 16.4m and draft 3.0m.

In September 2005, the two MOPU barges and the FSO left Dubai and were transported to the Caspian Sea, where the FSO was moored on location.
The connection of the two MOPU barges and the installation of the legs were carried out at the Bosshelf yard in Baku.

In January 2006, the MOPU was installed on location and hook-up and final testing took place.
On March 8, 2006 first oil was produced.

Data presented in this product sheet is for information only. Unit specific specifications as provided by the Owner shall prevail.