

BUFFALO FIELD, AUSTRALIA:

FPSO Nexan Buffalo External Turret

Scope of Work

SOFEC designed, constructed and supplied an external turret mooring system for a MODEC converted 103,000 dwt FPSO in BHP Petroleum’s Buffalo oil field, located in Western Australia’s sector of the Timor Sea. The selected option to develop the Buffalo field consists of a wellhead platform producing to the nearby leased FPSO vessel. The Buffalo reservoir lies below the shallow portion of the Big Bank, which is surrounded by deeper water ranging from 255 to 350m.

Although the number of risers (6) were small, and the waves moderate (4.6 meters significant), the severely sloped seabed (up to 75 degrees) and high currents (5 knots) presented a unique challenge to both mooring and riser designers. The two anchor legs on the bank have an all-chain double catenary configuration, and terminate in a depth of 28 meters. The four deep water anchor legs are of the single catenary type utilizing both chain and wire rope, and terminate in depths ranging from 280 to 330 meters.



General Description

Client Name:	*Nexen Petroleum Pty. Ltd.
Contract Award:	October 1998
Installation Date:	December 1999
First Oil:	December 1999
Decommissioned:	December 2004
Vessel Size:	106,000 dwt
Storage Capacity:	800,000 bbls
Water Depth:	255m (837ft) @ FPSO
Anchors @	30 - 350m (98 - 1,148 ft)
Fabrication:	Turret - Malaysia
	Vessel - Singapore
	Topsides - Singapore

Design Environmental Criteria (50-year storm)

Maximum Wave Conditions	
Significant Wave Height:	4.6m (15ft)
Wind Velocity:	21.3m/s (41.4 knots)
Current:	2.1m/s (4.1 knots)



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Design Environmental Criteria (Contd.)

Maximum Wave Current	
Significant Wave Height:	4.1m (13.6ft)
Wind Velocity:	21.3m/s (41.4 knots)
Current:	2.6m/s (5 knots)

Mooring System

- 6-leg Symmetric catenary:
- 4-in. ORQ chain
- 3.75-in. 6-strand wire
- 20mt & 40mt drag anchors

Turret

- External Cantilevered Bow

Fluid Swivel Assembly

Product Fluid Swivel:	Single path toroid with dual 8-in. outlets
Gas Lift Swivel:	1 x 6-in. toroid (2,220 psi design)
Hydraulic Swivel:	15 paths
Electrical Swivel:	16 paths
Optical Swivel:	10 paths

Riser System

- 1 x 10-in. Flexible riser (production)
- 1 x 4-in. Flexible riser (gas lift)
- 1 Umbilical (hydraulic / electrical)
- 3 planned for future

Comments

This SOFEC external turret mooring system is ABS classed.

*Transferred ownership from BHP Petroleum Pty. Ltd.