

OTC 18546

Dalia Oil Offloading Export System

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Abstract

Dalia oil is exported from the FPSO via two 18½” internal diameter flexible lines to an offloading buoy, anchored 1942 metres to the East. Following the usual tender process, APL (Advanced Production Loading), designed and fabricated, whilst taking into consideration previous industry experience, the Dalia buoy based on the BTL (Bottom Turret Loading) concept. With a weight of 650 tonnes and outline dimensions of 30 metres x 19 metres x 7.5 metres, the entire buoy body swivels around the central turret with no external yoke, while the bearings, riser lines and fluid transfer system are protected from tanker collision.

The buoy will be able to offload to VLCC (Very Large Crude Carrier) tankers (330,000 tonnes/2 million barrels) at a rate of 40,000 barrels per hour, with crude oil transfer expected to last approximately 25 hours.

Moored in the field in July 2006 by six lines connected to six suction anchors, the buoy is also linked to the FPSO control room via fibres optics for information transmission (inbuilt into one of the offloading lines). In the event the offloading buoy is not available, tankers can offload directly from the FPSO in tandem mode.

Dalia Overview (Figures 1 to 3)

For more details refer to Dalia paper OTC 18538.

Figure 1 - the general field lay out shows the export system, whilst Figure 2 shows the buoy installed in the field with the FPSO Dalia in the background. The buoy was successfully installed and connected to its six mooring lines on the 20th July 2006. Technip subcontracted APL for the detail design, the model testing campaign (see Figure 3), the qualification program of all new components and manufacture of the buoy hull in the Sonamet yard in Lobito.

The APL central turret with the fluid swivel was built in Norway by Nymo and then assembled in Angola.

The two flexible Oil Offloading Lines connecting the FPSO and the buoy are floating in mid-water in a “camel wave”

configuration. The tanker, when under oil loading, is moored approximately 100 metres from the buoy and can weather vane as required under tug assistance. This is a well proven operation offshore Angola and a standard 1,000,000 barrels export parcel takes around 25 hours in normal conditions. The system is also capable of receiving larger tankers up to VLCC.

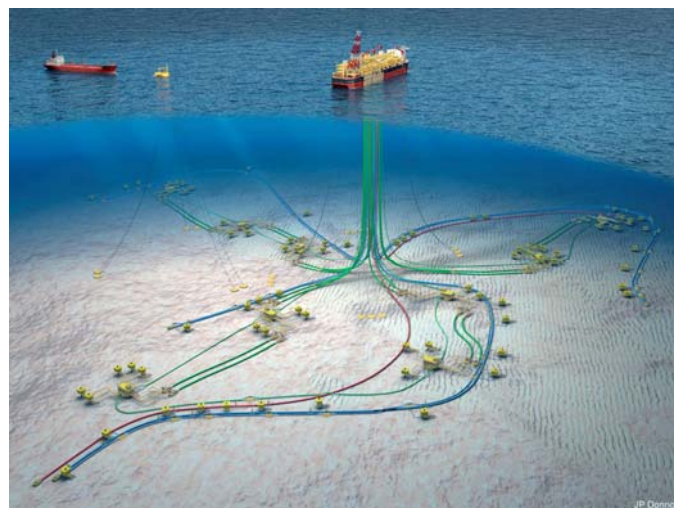


Figure 1 – Dalia Development Layout

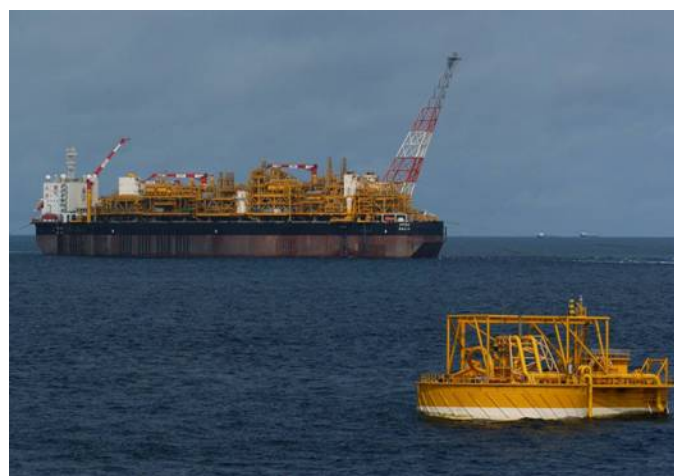


Figure 2 – Dalia FPSO and Buoy in the Field