

Title: **Qualification of a DP Based FPSO Offloading Technology for Deepwater Fields**

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Abstract

As the oil and gas industry moves into deeper and deeper waters, the need for an efficient system to offload crude oil from FPSOs to tankers is steadily increasing. Furthermore, oil transportation and trading is becoming even more international and the oil companies tend to seek solutions that allow any of the 2000 conventional oil tankers to offload directly from a FPSO and transport the crude oil directly to the market.

This paper will describe the 10-year development and qualification process for new **DP based FPSO Offloading Technology** particularly suited for the new deepwater fields in West Africa, Brazil, GOM, etc. Particular focus will be given to how the DP Philosophy selected for the Offloading Vessel has been solved as well as how the DP System is able to work with any size tanker.

Traditional Offloading Methods and Technology

Traditionally, offloading of the crude oil from the FPSOs to the tankers is carried out either in tandem configuration or via a remote Single Point Mooring (SPM) buoy solution. Tandem operation is normally carried out by use of specially built Dynamically Positioned (DP) tankers or with conventional tankers along with the use of several tugs to keep the tanker at a safe distance from the FPSO. The remote buoy solution is typically a CALM buoy, moored about 2000 meters from the FPSO, where the tanker will moor and carry out the offloading operation; typically 1 million barrels of oil within about 24 hours.

The New DP Based Offloading System

The new DP based offloading system is an independent self contained DP offloading vessel, fully equipped with power generation, 120 tons thruster capacity, and dynamic positioning capability (DP). The vessel is designed to be able to dock onto any of the existing 2000 conventional tankers from Aframax to VLCC size. When connected to the tanker the DP offloading vessel will be able to maneuver the tanker safely up to the FPSO by use of DP for offloading of the crude oil from the FPSO to the tanker. The vessel will keep the tanker in safe position by use of DP during the typical 24 hour offloading operation. The technical specifications of the DP Offloading Vessel, both functional specifications and Basis of Design are detailed in this paper.

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