

Oceaneering Performs First BOP Tethering Operations Offshore Brazil for Petrobras

BOP tethering increases operational efficiencies, enabling the dynamic positioning rig to work through adverse weather conditions, performing services in shallow water depths, and ensuring that wellheads can bear high loads.



Project Overview

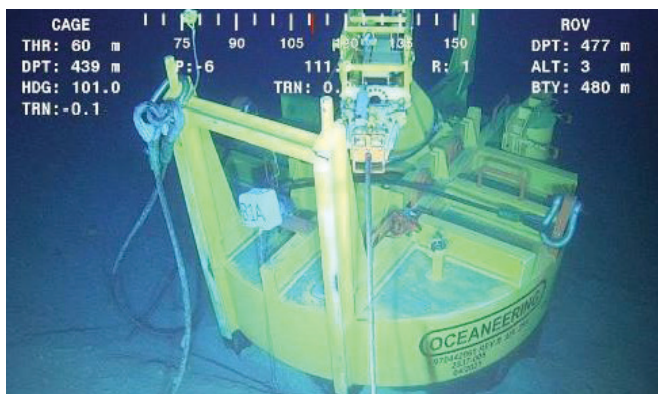
Oceaneering was selected by Petrobras in 2020 to provide BOP tethering services for the operator offshore Brazil. The scope of work includes

data acquisition and real-time riser analysis for dynamic positioning (DP) rig operations for multiple wells in water depths ranging 150-700 m.

The Oceaneering Solution

Oceaneering's Wellhead Load Relief (WLR) system is a compact, high-capacity BOP tethering system that is suitable for template and seabed anchoring. The WLR system mitigates wellhead fatigue, using adjustable tethers to enable efficient reconfiguration, eliminating the requirement for topside intervention during BOP jumps. The system is completely ROV-operated.

The WLR system consists of several tensioners individually tethered to the BOP. Each tensioner combines a hydraulic spooling unit with a hydraulic lock-and-pull mechanism to enable the ROV to pull tethers from slack to full 25-ton tension without any assistance from topside. The integrated load monitoring system ensures that the ROV can monitor and adjust tension force accurately in each WLR and acquire data to evaluate fatigue life and generate dynamic watch circles for DP rigs. The tensioner enables easy interfacing on all types of anchor points, both on templates and seabed, and has a 360-degree rotational range.



Challenges

The project needed to be designed specifically for Petrobras' operations. While Oceaneering has performed BOP tethering successfully in other areas of the world, this operation would be the first time executed in Brazil. The conditions to execute the work scope would be very different from how the operation would be performed overseas.

Oceaneering imported the WLR tensioners and monitoring system for this project while the Suction Anchors were manufactured locally.

The anchors with tensioners integrated being launched by an anchor handling tug supply (AHTS) vessel stern roller, a monitoring system installed at the rig to run an hourly riser analysis and all equipment being connected to the BOP.

Results

The BOP tethering system enables the DP rig to perform operations in adverse weather conditions, allowing drilling and workover activities to continue. This demonstrates the efficiency of using a DP rig instead of an anchored one for drilling and workover operations. Another benefit of this WLR system is that it can be used in older wells that were not designed to suffer high loads. These loads are carried by the tethering system and anchors.

On the first well at the Albacora field, the WLR system increased the operational window of the rig, opening the watch circle from 8 m to 53 m, allowing the feasibility of operations.

The operation successfully demonstrated and achieved the purpose of the project to minimize the loads on the wellhead with a red alert of 15 m minimum in a rig drift off situation.

Project highlights

- » BOP tethering enables the DP rig to work through adverse weather conditions, performing services in shallow water depths, and ensuring that wellheads can bear high loads.
- » The DP rig's operational window was increased due to the WLR system, opening the watch circle from 8 m to 53 m.
- » The tensioner enables easy interfacing on all types of anchor points, both on templates and seabed, and has a 360-degree rotational range.