

Drill pipe riser (DPR) control system

Client:
Leading oilfield services company

Location:
Brazil

Equipment:
Drill pipe riser control system

Depth:
2,500 m

Background

Our client was awarded a five-year contract to provide Petrobras with drill pipe riser (DPR) control systems for deepwater pre-salt fields. These control systems were to operate as an intervention workover control system (IWOCs) for deepwater operations in Brazil. As well as supporting the control of all the subsea operations, including emergency disconnect, well control, tree and downhole smart functions, the system needed to provide control for the tubing hanger running tools and surface test trees.

The client was therefore looking for a high function, highly technical, bespoke system that required significant engineering competence and collaboration to effectively develop, all while ensuring the highest standards in reliability and quality, given the critical safety operations it needed to perform.

The bespoke aspects of the DPR system ruled out an OEM solution and, because a DPR is such a safety critical system, our client needed to engage an established, industry-recognised controls expert. Based on our previous track record with the client, combined with our market-leading capabilities in the subsea field, Proserv was awarded the contract to supply nine control systems for the DPR project.

Project Description

The DPR systems were run as a rental unit with the client supplying all operations and maintenance personnel. As part of the work scope, Proserv was responsible for supporting these project personnel by providing on-site assistance and technical expertise.

The use of a DPR system enables installation and workover

on vertical trees in open water without the use of a drilling riser. Annulus services were provided by a 1.5" 10K high collapse resistant core within the umbilical.

Overall project execution, along with engineering and build of the control systems was carried out at Proserv's subsea controls centre of excellence in Great Yarmouth, with the accompanying hydraulic power units (HPUs) delivered from our manufacturing facility in Malaysia.

Scope of Work

Each of the nine control systems consisted of a surface HPU and control cabin for operation in a Zone 1 hazardous area. The surface control unit within the control cabin interfaced with a drill floor operator screen, emergency shut-down (ESD) panel and the HPU.

The Proserv DPR subsea control module (SCM) operated up to 40 functions on the subsea tree stack up at three separate pressure levels supplied from the umbilical. An automatic disconnect valve and shut-down functionality ensured safe disconnection should the floating drilling unit lose position or the umbilical become severed. Proserv's specialist dual electronics within the SCM provided redundancy and, with an ROV recoverable SCM, the system was optimised for workover up-time.

The Benefits

Working together with the client, Proserv engineered, manufactured and delivered a bespoke, highly technical controls system for mission-critical deepwater operations.

- Safe operations with high reliability and redundancy
- Mobile and hazardous area usage
- Three selectable pressure levels for flexibility
- State-of-the-art electronics and remote connectivity
- Optimised uptime

