

Case Study



Drill Pipe Riser Control System

Client: Weatherford
Location: Brazil

Project Details

Client:
Weatherford Brazil

Location:
Brazil

Equipment:
Drill Pipe Riser (DPR) Control System

Water Depth:
2,500m

Control Method:
Multiplex Electro-Hydraulic

Working Pressures:
Three pressure headers 207, 345 and 690 bar

Technology:
Artemis 2G

Number of Functions:
40 EH plus DH and surface controls

Background

In 2013 Weatherford were awarded a 5-year contract to provide Petrobras with Drill Pipe Riser (DPR) systems for the deep water Pre-Salt fields. Based on the earlier work completed by Proserv for the Early Production Riser (EPR) system Proserv were awarded a total of 9 controls systems for the DPR.

These control systems operate as an Installation and Work Over Controls (IWOCS) for deep water operations in Brazil. As well as supporting the control of the subsea operations including the emergency disconnect, well control, tree and downhole smart functions, the DPR control systems also provide control for the Tubing Hanger Running Tools and Surface Test Trees



Project Description

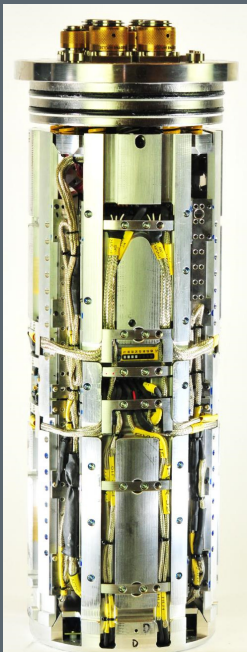
The DPR systems are run as a rental unit with Weatherford supplying operation and maintenance personnel and Proserv supporting operations in Brazil

Weatherford include reeler, umbilical, drill pipe, stress joint, and transition joints within the scope along with the operational and maintenance services from Macaé.



A2G Technology

The DPR control system features Proserv's latest subsea electronics designed to meet the rigorous environmental and operational conditions



- **Flexible;** using in built advanced communication and control configuration and diagnostics
- **Reliable;** field proven technology with Obsolescence Management and a fully backward compatible design
- **Powerful;** with high speed transparent multi-drop communications providing a viable alternative to fibre optic infrastructure
- **Accessible;** webpage interface giving visibility using standard web browser software without the need for specialist software
- **Compliant;** with latest ISO 13628, API and SIS requirements including instrument auto recognition and high power capacity

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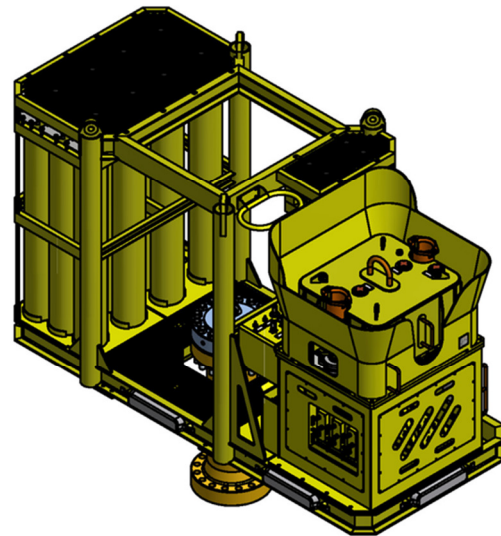
The use of a DPR system enables installation and work over on vertical trees in open water without the use of a drilling riser. Annulus services are provided by a 1.5" 10K HCR core within the umbilical.

Scope of Work

Each of the nine control systems consists of a surface Hydraulic Power Unit and a Control Cabin operating in a Zone 1 Hazardous Area. The Surface Control Unit within the Control Cabin operates logic and interfaces with a Drill Floor operator screen, ESD panel and the HPU

At the end of the Drill Pipe Riser a Subsea Control Module operates up to 40 functions on the subsea tree stack up at three separate pressure levels supplied from the umbilical. An Automatic Disconnect Valve and shutdown functionality ensures safe disconnection should the Floating Drilling Unit lose position or the umbilical become severed.

Dual electronics within the SCM provides redundancy and with an ROV recoverable SCM the system is optimised for work over uptime



Conclusion

The use of production controls standard testing and reliability along with intervention system knowhow provides Weatherford and Petrobras with a Deep Water Installation and Work Over solution

The Benefits

- High reliability and redundancy
- Optimised Uptime
- Three selectable pressure levels for flexibility
- State of the art electronics and connectivity
- Remote connectivity
- Mobile and hazardous area usage