

Greenfield development Subsea controls on the Arran field



Client:

Shell

Location:

Arran Field, North Sea

Equipment:

Subsea control system

Background

Arran is a three-field development with a combined step-out of 56 km. The system consists of five wells tied back to the Shearwater platform: one at Columbus (owned by an additional partner), two at Arran South and two at Arran North.

Shell required a subsea control system with high data capacity to support effective well monitoring. The incumbent OEM and all other control system providers recommended expensive fibre optics for primary communications throughout the entire development, as this was the only way their systems could handle the required data speeds. Proserv was able to offer a sophisticated, cost-effective alternative.

Solution

Proserv's high speed copper powerline technology delivers data speeds normally only achieved by fibre optic. Delivering up to ten times the performance of our competitors, our technology allowed us to remove much of the fibre optics from the field design. This significantly reduced Shell's CAPEX on the Arran development.

Proserv's controls specialists assisted in the engineering design of the control system for the Arran field, from concept to final delivery to Shell, proactively collaborating with the operator to find cost-effective solutions that would increase system performance.

Project Description

Proserv installed a complete subsea control system for the Arran development. Fibre optic communications connected the host platform to the field, after which a mix of copper and fibre optics was used. The system also had the

capability to communicate completely on copper should any issue arise with the fibre to allow continuous production at all well sites.

The Shell engineering team relied on Proserv's controls experience to help finalise the system design, which also included the design of umbilical quads, hydraulic and chemical lines, fibre optic connectors and the subsea water cut meter. Proserv designed the communications interface for seamless integration.

Scope

Proserv designed a subsea control system that was compliant with industry standards and Shell's technical design and engineering practice standards. Major components supplied were:

- Production master control station
- Six production subsea control modules (1 spare)
- Five Proserv communication hubs (1 spare)
- Hydraulic power unit
- Subsea accumulator module
- Three subsea distribution units and equipment



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Project execution was from our subsea controls centre of excellence in Great Yarmouth, Artemis House, with design and engineering expertise and support provided by our subsea research and development team in Trondheim, Norway.

Conclusion

This is the first direct experience Shell has had with Proserv for the supply of subsea controls on a greenfield project. Proserv delivered the system on time and within budget, reinforcing the case for Shell and other major operators to work with Proserv on their future developments.

Benefits

- Commissioning on time to achieve first gas
- Designed for future expansion, the system can accommodate four or more wells at each field and will never go obsolete
- The Proserv A2G SEM is the fastest multi-drop powerline communications system on the market, offering up to ten times the performance of our closest competitor
- Proserv delivered the longest step-out to date for both fibre optic and powerline communications
- Proserv's copper communications technology reduces the requirement for fibre optic connectors, thereby saving costs and optimising performance

"Proserv have successfully delivered the Arran project deliverable equipment to schedule and budget. Shell have found the Proserv team to be professional and efficient in carrying out their work. Always available and proactive when responding to the challenges that came up during the project. A pleasure to work with."

- Shell

