One Stop Shop: Service Integration Facilitates Multiple Discoveries

Schlumberger delivers an integrated service package that leads the way to new discoveries in the North Sea

CHALLENGE
- Substantially complex project
- No previous exploration experience in North Sea area
- Lack of footprint in a suspected ‘dry’ location

SOLUTION
- Schlumberger integrated package of services supported by an ISPM
- Project manager: single point of contact to simplify client/Schlumberger/third-party relationships
- Greater accountability provided by combining services and management

RESULTS
- Discoveries of oil and gas in a region thought to have little prospectivity
- PA Resources established a footprint in North Sea
- Zero delays on service delivery
- Zero lost time injuries
- Successful exploration with two new discoveries

The operator, PA Resources, intended to explore the Broder Tuck and Lille John prospects, located in the North Sea (250 km west of Esbjerg, Denmark), in cooperation with their partners and the Danish Energy Agency. Requiring equipment, technologies, and services critical to such an operation, and being newcomers to North Sea exploration, the operator chose to request the assistance of Schlumberger Integrated Services (IS).

Schlumberger IS drafted to assist operator’s first North Sea operation

The North Sea is a complex and challenging exploration environment for even the most experienced operator. The outcome of this project would determine the future for PA Resources in this area. However, being first-timers in the region was only the operator’s first challenge; the second being the generally held belief (by the Danish oilfield industry) that the targets had low prospectivity.

PA Resource’s mission to drill and evaluate both prospects in the most efficient and safe manner would entail a project of substantial complexity. The operator recognized the need for process simplification, overheads reduction, efficiency enhancement, and comprehensive contingency plans, whilst achieving their objectives with minimal operational personnel.

“The Schlumberger basket of services accelerated our procurement process and simplified operational logistics”

Graham Goffey
Managing Director
PA Resources
**IS offers process simplification**
A Schlumberger ISPM was allocated to plan, coordinate, and enhance processes by integrating all the services and technology the project would require. These included drilling reservoir evaluation, and well testing services, engineering and operational support, logistics, and third-party management.

The unified Schlumberger drilling portfolio provided seamlessly integrated services from Smith Bits, Smith Services, M-I SWACO drilling fluids, Geoservices mud logging, and Schlumberger directional and measurement-while-drilling segments. This provided a 360-degree vision over the drilling operation, allowing a real-time exchange of information and ideas that enabled optimal adjustment of drilling parameters, delivering more productive drilling.

Consequently, a comprehensively integrated operation with a single interface for all services, people, products, and administrative procedures simplified work processes while maintaining and exceeding quality and safety requirements. Schlumberger also exceeded PA Resources’ expectations by delivering high downhole tool reliability.

**Flawless execution of project objectives brings about new discoveries**
Schlumberger planning, provision, and integration of multiple services, and providers was executed flawlessly.

The ISPM’s concerted efforts to reduce NPT (non-productive time) over the life of the project resulted in only 21 hours of NPT encountered during 186 operational days by Schlumberger IS.

Lessons learned were quickly implemented; testimony to this is the fact that, of those 21 NPT hours, 20 occurred during the first well’s operation, and only one during the second well’s operation. Schlumberger demonstrated an excellent performance with operational efficiency above 99.4%, with zero lost time injuries (LTIs) recorded for the entire life of the project.

The Schlumberger Drilling & Measurement (D&M) group enjoyed particular success; making 20 bottomhole assemblies (BHAs) in various hole sizes from 24-in to 6-in, with zero downhole tool failure. All planned sections were drilled in one single run. PA Resources described the performance as “outstanding”.

Having drilled 6992.5 m, Smith Bits achieved the required dogleg and ROP (rate of penetration) on schedule, as planned.

The M-I SWACO drilling fluids segment built and transferred 22,227 bbl PHB, 12,094 bbl Versavert drilling fluids, and 1,788 bbl wash chemicals. Both the M-I SWACO drilling fluids, and drilling waste management segments upheld zero environmental or unplanned discharge.

The first exploration well was drilled on the Broder Tuck prospect and discovered hydrocarbon in the primary Middle Jurassic target. The discovered hydrocarbon is high-quality gas with condensate of approximately 44° API gravity at a ratio of approximately 80–90 barrels of condensate per million standard cubic feet gas. The second well was drilled on the Lille John prospect. The Lille John well also encountered hydrocarbon pay in an overall Miocene sandstone, at the extraordinarily shallow depth of 930 m below mean sea level. This discovery is confirmed as a light oil of 34–35° API gravity.

The Danish Energy Agency is very pleased with these results, and PA Resources’ Danish partners expressed their satisfaction at the outcome of the program. Having established itself as a successful and viable operator in North Sea operations, PA Resources is consequently satisfied with Schlumberger performance and will not hesitate to use Schlumberger IS provision in future projects.