NeoScope Sourceless Service Saves USD 500,000 in Offshore Exploration Well

Sourceless technology eliminates the need for chemical sources

**CHALLENGE**
Evaluate an HPHT offshore exploration well in an area where challenging drilling conditions increase the risk of abandoning a chemical source.

**SOLUTION**
Use NeoScope* sourceless formation-evaluation-while-drilling service.

**RESULTS**
Drilled and evaluated the well with high-quality petrophysical measurements close to the bit, saving approximately USD 500,000; acquired measurements in real-time and recorded modes.

NeoScope service provides a complete, sourceless petrophysical description of the formation in the shortest multifunction LWD collar available.

**Exploration in complex offshore reservoir**
The increasing demand for hydrocarbon resources and decreasing supply of easily accessed reservoir deposits are pushing operators to focus on developing more complex reservoirs. An operator was drilling an exploration well in an offshore high-pressure, high-temperature sedimentary basin made up of tight carbonates. The basin has an active history of tectonic stresses that increases the uncertainties and complicated drilling safety and logging operations. The operator needed an integrated solution to drill and evaluate the well and avoid transporting and using chemical nuclear sources.

**LWD without chemical nuclear source**
After consulting with Schlumberger, the operator selected the NeoScope* sourceless formation-evaluation-while-drilling service that reduces risk by eliminating the need for chemical sources. The industry’s only pulsed neutron generator (PNG) based LWD technology, NeoScope service provides a comprehensive suite of petrophysical measurements, including gamma ray, resistivity, neutron porosity, sourceless neutron-gamma density (SNGD), sigma, and spectroscopy.

The NeoScope service provided an integrated interpretation solution that significantly improved reservoir characterization. SNGD was used to compute a density-corrected matrix porosity that provided an accurate saturation profile. By reducing uncertainties in interpretation, hydrocarbon zones were confirmed and matrix properties were estimated, helping to identify the zones with high-production potential.

**PNG-Based Formation Evaluation**
- Sourceless porosity
- Sourceless neutron-gamma density
- Spectroscopy and sigma

**Formation Evaluation**
- 2-MHz and 400-kHz resistivity
- Natural gamma ray
- Dual-ultrasonic caliper

**Drilling Optimization**
- Multi-axis shocks and vibration
- Static and dynamic annular pressure while drilling
- Leakoff test buffering

**Well Placement**
- Azimuthal gamma ray image
- Inclination at the bit
- Real-time formation evaluation
CASE STUDY: Sourceless technology eliminates the need for chemical sources

Less rathole, reduced openhole logging costs
By acquiring the complete dataset in real time while drilling, the operator saved the costs associated with additional openhole logging. The well was drilled efficiently with less rathole and closer-to-the-bit measurements, saving the operator approximately USD 500,000. Sourceless formation evaluation LWD eliminated the risk of leaving a chemical source in hole without sacrificing the acquisition of petrophysical data in the challenging environment of this exploration well.

Contact your local Schlumberger representative to learn more.

NeoScope service provides SNGD (RHON), sourceless neutron porosity (BPHI), and spectroscopy, as shown in the log.

Note: Japan Oil, Gas and Metals National Corporation (JOGMEC), formerly Japan National Oil Corporation (JNOC), and Schlumberger collaborated on a research project to develop LWD technology that reduces the need for traditional chemical sources. Designed around the pulsed neutron generator (PNG), NeoScope service uses technology that resulted from this collaboration. The PNG and the comprehensive suite of measurements in a single collar are key components of the NeoScope service that deliver game-changing LWD technology.