**CHALLENGE**
Drill an S-shaped well at high ROP, identify gas/oil contact (GOC), and land the well below GOC in a highly deviated section without the use of a chemical nuclear source for logging.

**SOLUTION**
Use NeoScope* sourceless formation-evaluation-while-drilling service for identification of GOC without a chemical source and Orion II* telemetry platform for faster data transmission.

**RESULTS**
Maintained high ROP, identified GOC in the target sandstone at 5,454 ft MD in real time, and obtained high-quality spectroscopy data for quantitative lithology to set the 7-in liner without a chemical nuclear source.

"We are pleased with the NeoScope service and the correlation of the sourceless neutron-gamma density with density logs from nearby wells. After this success, we would recommend use of this service on future wells where handling of chemical sources is a concern."

—Pearl Oil, Thailand
**Obtain petrophysical data with sourceless LWD technology**

The NeoScope service—the industry’s only pulsed-neutron-generator-based (PNG) LWD technology—reduces risk by eliminating the need for chemical sources. The service also provides the complete petrophysical data needed in the shortest multifunction LWD collar available. The Orion II telemetry platform increases the flow of real-time data LWD and MWD systems to enhance decision making.

Using NeoScope service, the sourceless neutron-gamma-density (SNGD) measurement was obtained by detecting the gamma rays emitted from the formation nuclei through their interactions with neutrons generated by PNG. PNG nuclear logging data was obtained without the risks associated with traditional chemical nuclear logging sources, and spectroscopy and sigma were acquired for formation lithology and salinity.

**Set liner with more data and less risk**

NeoScope service provided Pearl with the data it needed while reducing the risk associated with a chemical nuclear source. More than 15 measurements were sent to surface at more than 1,000 ft/h through the Orion II downhole telemetry platform to identify GOC. The Orion II platform quickly provided the real-time data critical to determining where to set the 7-in liner in the highly deviated section.

The logging interval was from 1,200 to 5,480 ft MD, and GOC in the target sandstone was identified at approximately 5,454 ft MD. The recorded-mode data, including SNGD and spectroscopy measurements, were used for further petrophysical analysis.

Crossplot between neutron porosity and SNGD (left) and between SNGD-corrected matrix porosity and sigma (right).
CASE STUDY: Pearl Oil avoids risk of using chemical source in complex formation while logging at high ROP

Sourceless NeoScope logs (left) and petrophysics integrated analysis (right).
CASE STUDY: Pearl Oil avoids risk of using chemical source in complex formation while logging at high ROP

Sourceless NeoScope integrated analysis includes lithology and reserve estimations.

Contact your local Schlumberger representative to learn more.