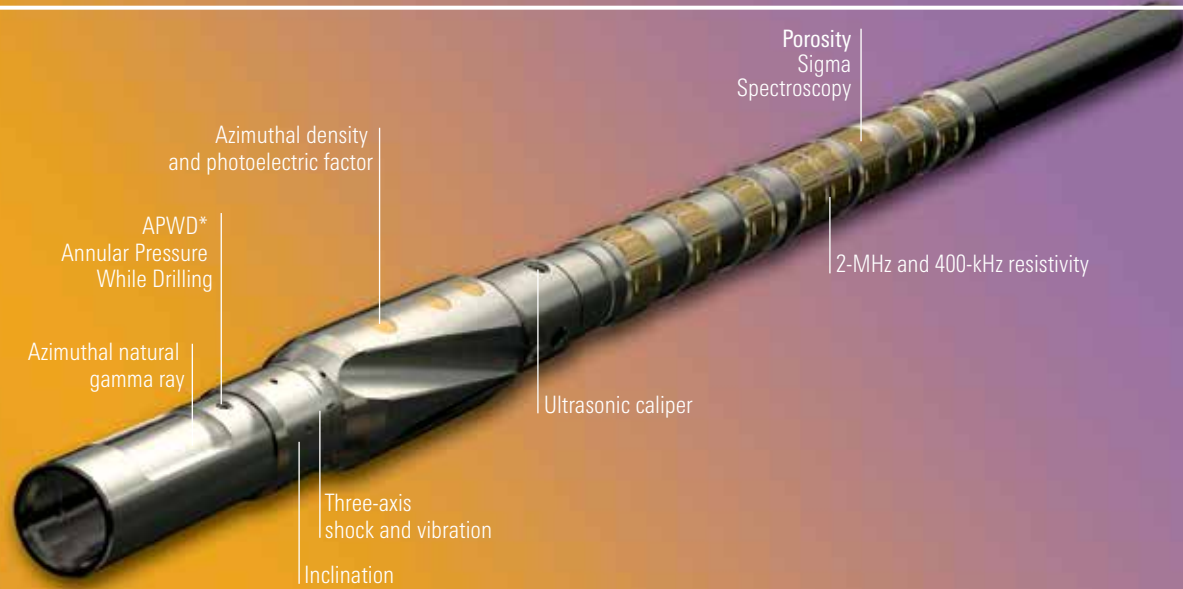


Multifunction LWD service

EcoScope

EcoScope

- Drilling optimization
- Formation evaluation
- Well placement



Multifunction LWD service provides a full suite of measurements for productive drilling to put wells in the best place in less time.

- Increases efficiency and safety by integrating all sensors in one collar
- Saves time by acquiring quality measurements at high penetration rates
- Mitigates risks associated with traditional chemical sources
- Reduces depth uncertainty by using collocated sensors
- Improves confidence in interpretations by introducing new LWD measurements and quality control indicators
- Provides real-time measurements to guide decisions using TeleScope* high-speed telemetry-while-drilling service and new Orion II* data compression platform to increase effective data transmission rate
- Assists well placement by acquiring nuclear measurements close to the bit

The EcoScope* multifunction LWD service† incorporates decades of Schlumberger experience in providing quality measurements for productive drilling. The EcoScope service integrates a full suite of formation evaluation, well placement, and drilling optimization measurements in a single collar to increase operational efficiency, reduce risk, and increase confidence in data interpretation and calculations of production and reserves.

Designed around a pulsed neutron generator (PNG), the EcoScope service uses technology developed by Schlumberger and Japan Oil, Gas and Metals National Corporation. In addition to the suite of resistivity, neutron porosity, and azimuthal gamma ray and density measurements, this service provides the first commercial LWD measurements of elemental capture spectroscopy and sigma. Drilling optimization measurements include APWD annular pressure while drilling, caliper, and shock

SAFER

The PNG used in the EcoScope service allows generation of neutrons on demand. This design eliminates the need for an americium beryllium (AmBe) chemical source, substantially reducing risk during transportation and at the wellsite.

FASTER

The EcoScope service integrates multiple LWD sensors in a single collar. This compact design reduces the amount of rathole that must be drilled to provide comprehensive formation evaluation measurements. Because there is only one collar, flat time associated with making up and breaking down the BHA is reduced. Having fewer connections also enhances BHA reliability.

The EcoScope service's large memory capacity allows recording of 2 data points/ft at ROPs up to 450 ft/h. A high effective data transmission rate, provided by the TeleScope service and its Orion II telemetry platform, ensures that the full suite of EcoScope measurements is available in real time to improve decisions and mitigate risk.

SMARTER

The EcoScope service provides more downhole information from a single collar than any other LWD service.

Dedicated internal diagnostic electronics record information used for preventive maintenance of the EcoScope service, which can significantly extend drilling footage between failures and reduce NPT.

The PNG generates more neutrons with much higher energies compared with a traditional AmBe chemical source. This provides deeper, more precise measurements and also enables the EcoScope service to acquire industry-first nuclear spectroscopy and sigma measurements in addition to the formation evaluation suite of measurements. These nuclear measurements—made close to the bit—further reduce the uncertainty in data interpretation.

The EcoView* integrated petrophysical interpretation system assists in the analysis of the comprehensive EcoScope service data suite and computes an advanced petrophysical interpretation requiring only water salinity as input from the user. EcoView system uses 2D and 3D visualization tools to combine the advanced petrophysical interpretation with the EcoScope multiple borehole images.



FEATURES

- Drilling and formation evaluation sensors located in one collar
- Formation evaluation measurements of elemental capture spectroscopy, sigma, porosity, gamma ray, and resistivity
- Drilling performance measurements of annular pressure, caliper, and shock



- Electrical generation of more neutrons with higher energies than traditional chemical sources
- Built-in diagnostic chips to provide information for preventive maintenance
- EcoView* integrated petrophysical interpretation system for data integration and interpretation

slb.com/scope

[†]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), EcoScope 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 EcoScope service that deliver game-changing LWD technology.