QL40-DLL3

Dual spaced focused resistivity

The QL40-DLL3 tool provides a dual spacing focused resistivity measurement with two different depths of investigation, Shallow LL3-S and Deep LL3-D resistivity in Ohm.m.
It is characterised by an excellent vertical resolution in comparison with the traditional Normal Resistivity tool which makes it ideal for bed-boundary and thickness analysis.
The QL40-DLL3 can be operated as a stand-alone probe with an isolation bridle and bottom plug or can be stacked with other QL40 probes.

Application

- Bed boundary analysis
- Facies changes
- Quantitative geological formation properties
- Identification of hydrostratigraphic units
- Aquifer thickness
- Water quality
- Identification of hydrocarbon intervals
- Detection of ore body zones
- Identification of fractures and permeable zones

Accessories

Isolation bridles

QL40 IS 1 (mono-MS1)
QL40 IS 2 (mono-GO1)
QL40 IS 4 (4 conductor-GO4)

Calibration box *(P.N. 17 202 134/TB002)*

TOOL

Diameter	43mm (1.7") with neoprene insulator
Length	2.75m (108.2")
Weight	14kg (30.9 lbs)
Temp	0 - 70°C (32 - 158°F)
Max. Pressure	200bar (2900psi)

Resistivity sensor

. Measuring electrode (A_0): 5cm
. Max. Injection Power: 5.5 W
. Two pairs of guard electrodes: A_1 (61cm) – A_2 (32cm), A'_1 (61cm) – A'_2 (32cm)
. Voltage reference: fish electrode at the top of the isolating bridle
. Resistivity range: 1 to 50,000 Ohm.m
. Accuracy: 1% between 10 and 1,000 Ohm.m
. Accuracy: < 5% between 1,000 and 10,000 Ohm.m
. Accuracy: below 15% between 10,000 and 50,000 Ohm.m

OPERATING CONDITIONS

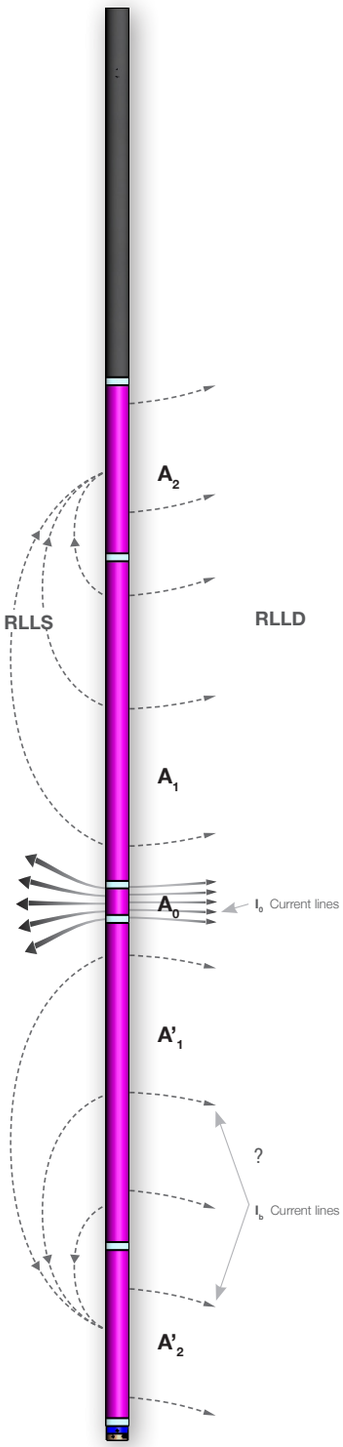
Cable type	Mono, multi-conductor, coax Isolating bridle required
Compatibility	Scout Pro / Opal (Scout / Bbox / Matrix)
Digital data transmission Telemetry	Variable baudrate telemetry according to cable length/type & surface system
Logging speed	5-6m/min recommended
Centralisation	Not required
Borehole conditions	Fluid-filled boreholes Open boreholes

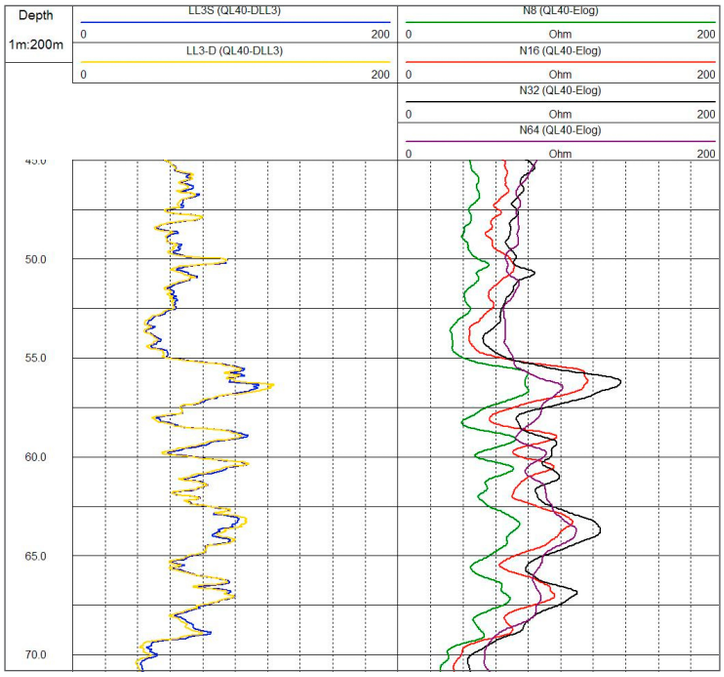
Principle of measurement

A measure current I_0 is injected into the formation from a central source electrode A_0 mounted between two pairs of guard electrodes A_1-A_2-A_1,-A_2, and returns to the cable armor beyond the insulated section of the cable.
The internal electronics keeps the potential of the guard electrodes equal to the potential of the measure electrode A_0. An equipotential surface is thus created constraining the current to flow perpendicularly as a thin disk having the same thickness as the central electrode A_0. Potential V_0 due to this current flow is measured on the central electrode with respect to a voltage reference that may be either the bridle electrode, (also called “the fish”), or the surface mud stake. The ratio of the potential V_0 to current I_0 allows derivation of the formation resistivity in Ohm.m for both the shallow and deep depths of investigation.

Measurements features

. Dual spacing focused resistivity LL3-S & LL3-D in [Ohm.m]
. Potential value of measure and guard electrodes in [V]
. Current value of measure and guard electrodes in [mA]





Vertical resolution comparison QL40-DLL3 (left track) vs QL40-Elog (right track)