QL40-GRCCL

Natural gamma ray with casing collar locator

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The QL40-GRCCL is a combination of a natural gamma ray (GR) sensor and casing collar locator (CCL).
The natural gamma ray (GR) sensor measures the quantity of gamma radiations emitted naturally from within the formations crossed by a borehole.
A scintillation Sodium Iodide crystal is used to detect the gamma rays. Gamma rays are produced mainly by isotopes of potassium, thorium, uranium and their decay products. The gamma ray log is widely for the identification of lithology, correlation between boreholes and clay content analyses.
The casing collar locator (CCL) is a magnetic device sensitive to changes of metal thickness at casing or tubing collars. It is always run in steel cased boreholes to detect the position of casing collars. It is mainly used for depth control and depth correlation.
The QL40-GRCCL is supplied as an inline sub. It can be combined with other logging tools of the QL (Quick Link) product line or can be operated as a standalone tool.

Application

NATURAL GAMMA RAY

- Borehole correlations
- Lithology characterization
- Clay content analyses
- Well completion evaluation
- Sedimentary analyses
- Mineral exploration
- Contamination studies

CCL

- Depth control and depth correlation
- Casing shoe location
- Perforations/casing defects detection

Tool

Diameter : 40mm (1.6")
Length : 1.16m (46")
Weight : 6kg (13 lbs)
Temp : 0 - 70°C (32 - 158°F)
Max. Pressure : 200bar (2900psi)

Natural gamma sensor

0.875" (22.2mm) x 3" (75.6mm) NaI (Ti) scintillation crystal

CCL sensor

CCL: 32 x 280 mm coil & magnets assembly

Operating conditions

Cable type : Mono, multi-conductor, coax
Compatibility :
Scout / Opal (ALTlogger / Bbox / Matrix)
Digital data transmission Telemetry :
Variable baudrate telemetry according to cable length/type & surface system
Logging speed : Variable
Centralisation : Not required
Borehole conditions :
GR in open or cased borehole
CCL in steel cased borehole
Dry or fluid-filled boreholes

Principle of measurement

The natural gamma ray (GR) module is equipped with a scintillation Thallium doped Sodium Iodide crystal - NaI(Tl), a material which when struck by gamma rays emits pulses of light. These pulses of light are amplified by a photomultiplier tube and are then converted into electrical pulses. The number of pulses are counted during a sampled time interval at the investigation depth, the result is then digitised and transmitted up the wireline to the surface acquisition system .

The casing collar locator (CCL) consists of a coil mounted between two permanent magnets. As the tool passes a change in metal thickness, such as a collar, the magnetic flux between the permanent magnets becomes distorted. The distortion of the magnetic field induces a low frequency voltage in the coil. This induced voltage is amplified and after digital conversion recorded in conjunction with the gamma ray.

Measurements features

- Total gamma counts in CPS or in API unit
- CCL in mV