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QL40-OBI-2G
OBI40-GR-2G

Optical borehole imager

30.06.2023

The QL40-OBI-2G and the OBI40-GR-2G are the new generation of slim hole Optical Borehole Imagers. The new system comprises a completely redesigned optical assembly with new electronics. It implements a high resolution CMOS digital image sensor combined with a fisheye lens. The tool produces an extraordinarily clear, sharp, 360° continuous - unwrapped digital picture of the borehole wall, either in air or clear water. Resolutions up to 1800 pixels over the borehole circumference can be achieved which makes it ideal for lithological, mineralogical and structural analyses.
A built in high precision orientation package incorporating a 3-axis fluxgate magnetometer and 3 accelerometers allows orientation of the images to a global reference and determination of the borehole's azimuth[1] and inclination.

The new QL40-OBI-2G is fully digital and can operate on standard wirelines. It is a bottom sub and can be either combined with other logging tools of the QL (Quick Link) product line to build tool strings or operated as a standalone tool.

The OBI40-GR-2G is a standalone tool version integrating a natural gamma sensor thereby enabling the measurement of gamma radiation emitted naturally from within the formations crossed by a borehole.

Also available with UV measurement see QL40-OBI-UV brochure.

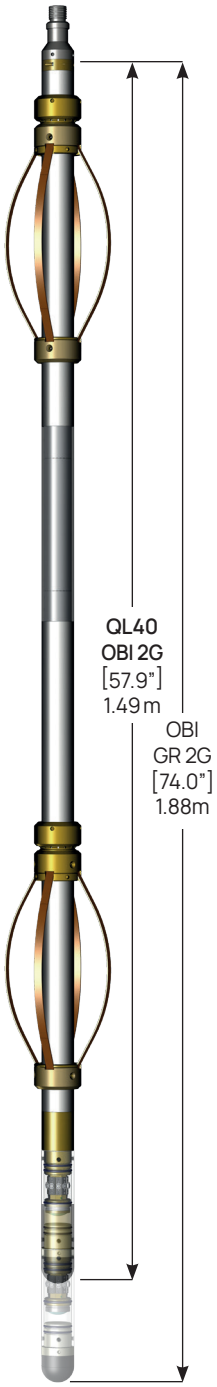
Application

OPEN HOLE

- Detailed and oriented structural information
- Reference for core orientation
- Fracture detection and evaluation
- Breakout analysis
- Lithology characterizations : Detection of thin beds, foliation, grain size, mineralogy, luminance, determination of bedding dip

CASED HOLE

- Casing inspection



Tool

Diameter : 40mm (1.6")
Length (min/max) : 1.49m (58.7") / 1.88m (74.0")
Weight (min/max) : 5.3kg (11.7 lbs) / 6.5kg (14.3 lbs)
Temp : 0 - 70°C (32 - 158°F)
Max. Pressure : 200bar (2900psi)

Optical system

Sensor : 1/3" high sensitivity CMOS digital image sensor
Color resolution : 24 bits RGB true colors
Azimuthal resolutions : 120, 180, 360, 600, 900, 1800 points
Vertical resolution : User defined. Function of depth encoder vertical resolution
Light source : High efficiency white LEDs

Natural gamma sensor

- 0.875" (22.2mm) x 3" (75.6mm) NaI (Ti) scintillation crystal
- Integrated (OBI40 GR) or in line sub (QL40 GR)

Orientation sensor

3 axis fluxgate magnetometer – 3 accelerometers

- Inclination accuracy : +/- 0.5 degree
- Azimuth accuracy : +/- 1.2 degree

Operating conditions

Cable type : Mono, multi-conductor, coax
Compatibility : ScoutPro / Opal (Scout / Bbox / Matrix)
Digital data transmission Telemetry : Variable baudrate telemetry according to cable length/type & surface system
Logging speed : Variable - function of image resolution, borehole diameter, wireline and surface system model.
Centralisation : Required
Borehole fluid : Dry or clear water
Measurement range : In air and in water : 2.3" to 21" (58 to 530mm)

[1] Only applicable in non magnetic environment

Principle of measurement

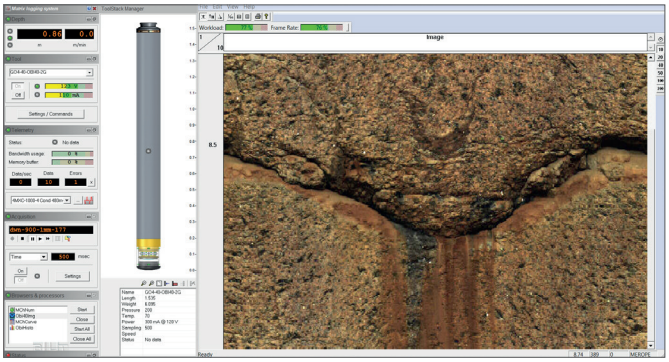
The tool incorporates a 1/3-inch CMOS digital image sensor and matching fisheye optics. The digital image sensor captures the light reflection of the borehole wall through the fisheye lens. The light source is provided by 10 high efficiency LEDs.

The displayed log image is derived from a single annulus extracted from the active pixel array. Azimuthal resolutions available are 120, 180, 360, 600, 900 and 1800 points per recorded circle. By using processed digital images in combination with deviation sensor data, the tool can generate an unwrapped 360° oriented image.

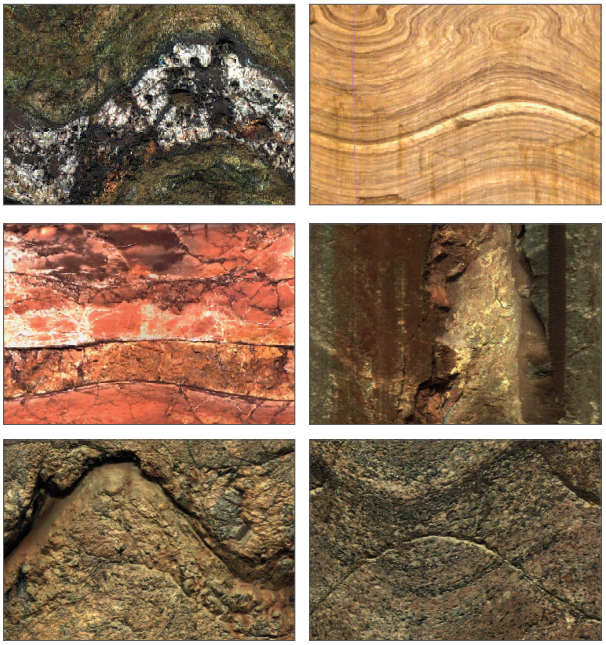
Measurement features

- 360° RGB true color oriented image
- 360° real time image filtering to enhance image contrast in dark environment (NEW)
- Deviation parameters: azimuth, tilt, tool relative bearing, magnetic field, gravity
- 3 accelerometer calibrated components, 3 magnetometer calibrated components
- Temperature of CMOS image sensor
- Natural gamma in cps or API units (optional – OBI40-GR-2G)
- Adustable exposure level while logging (NEW)

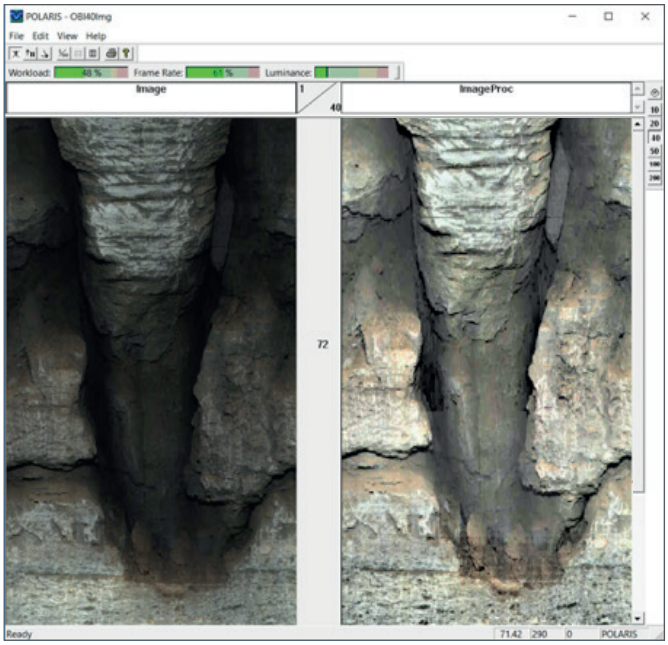
Optical assembly



LoggerSuite application and OBI real time display



OBI images in different geological environments



OBI image browser : cavity - broken zone in dolomitic sandstone
(left, real time OBI image - right, real time filtered OBI image)

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