



OBI40, OBI40 GR QL40, OBI optical borehole imager

The optical borehole imager generates a continuous true color image of the borehole wall via an optical imaging system using a downhole CCD camera that records the image of the borehole wall in a prism. A built in high precision orientation package incorporating a 3-axis magnetometer and 3-axis accelerometer allows orientation of the images to a global reference and determination of the borehole's azimuth and inclination.

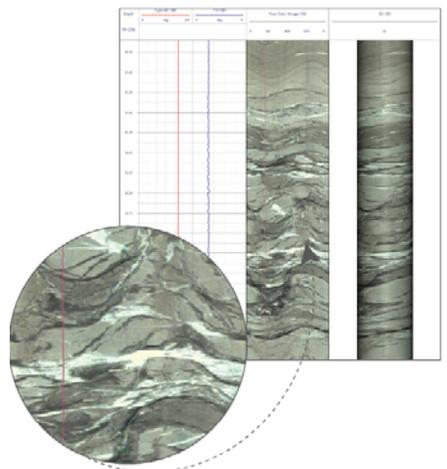
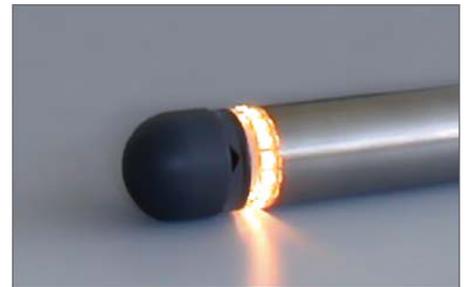
Resolutions up to 0.5 mm vertical and 720 pixels azimuthal can be achieved. The tool is fully downhole digital and runs on standard wirelines.

The QL40 OBI can be combined with other logging tools of the QL (Quick Link) product line to build tool strings. It can also be operated as a stand alone tool.

The OBI40.GR has an integrated natural gamma sensor.

An optical televiewer image can complement and even replace a coring survey and its associated problems of core recovery and orientation.

Optical and acoustic televiewers are complementary tools especially when the purpose of the survey is structural analysis.



Application

- Detailed and oriented structural information.
- Reference for core orientation.
- Fracture detection and evaluation.
- Breakout analysis.
- Detection of thin beds.
- Determination of bedding dip.
- Lithology characterisation.
- Casing inspection



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Principle of measurement

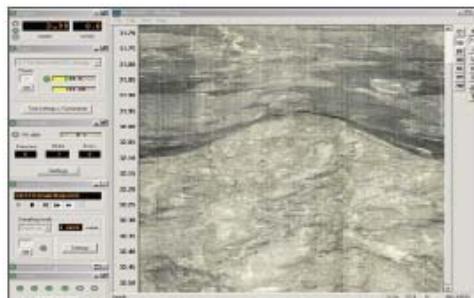
The tool incorporates a high resolution, high sensitivity CCD digital camera with matching Pentax optics. The CCD camera, located above a conical mirror, captures the reflection of the borehole wall. The light source is provided by a light ring assembly located in the optical head. The camera CCD sensor consists of an array of light sensors, each representing one pixel of the complete image. Due to manufacturing limitations individual sensors have a slightly different response and calibration factor. To produce a coherent image the camera processing system checks all the pixels and compensates for variations (white balance). The displayed log image is derived from a single annulus extracted from the total pixel array. Azimuthal resolutions available are 720, 360, 180 and 90 points per recorded circle. By using processed camera data in combination with deviation sensor data, the tool can generate an unwrapped 360° oriented image.

Measurements / Features

- 360° RGB orientated optical image
- Borehole azimuth and dip
- Tool internal temperature
- Relative bearing
- Magnetic field
- Gravity

Operating Conditions

- Dry or water filled hole
- Centralization necessary
- Compatible with ALTLogger & Matrix
- Digital data transmission up to 500 Kbit per second depending on wireline
- Real time automatic telemetry tuning according to the cable length/type
- Measurement range: 2" to 21" borehole depending on mud conditions



Technical Specifications

- Diameter : 40mm (1,575")
- Length approx: 1.2 m (47")
- Weight approx: 5 kgs.
- Max temp : 50°C
- Max pressure : 200 bar (2900 pal)

Optical sensor

- Downhole DSP based digital CCD camera.
- Optics : plain polycarbonate conic prism system.
- Azimuthal resolution: user selected 90/180/360 or 720 pixels /360°
- Vertical resolution: user definable, depth (function of optical encoder resolution) or time sampling rate.
- Color resolution: 24 bit RGB value true color calibration system with light color compensation.
- White balance: automatic or user adjustable.
- Aperture & Shutter: automatic or user adjustable.
- Special functions: User configurable real time digital edge enhancing

Orientation sensor

- APS 544 - 3-axis magnetometer – 3-axis accelerometer
- Inclination accuracy : +/- 0.5 degree
- Azimuth accuracy : +/- 1.2 degree