

# High-Resolution Digital Microscopy

High-quality digital imaging while drilling

## APPLICATIONS

- Formation evaluation using either the EcoFlex\* multifactor cuttings evaluation-while-drilling service (conventionals) or LithoFlex\* multifactor shale-cuttings evaluation-while-drilling service (unconventionals)
- Identification and estimation of lithologies
- Grain-size distribution evaluation
- Rock texture evaluation

## BENEFITS

- Increases accuracy of rock texture, shape, and color descriptions
- Enables remote lithological analysis of cuttings with automatic archival of digital cuttings images

## FEATURES

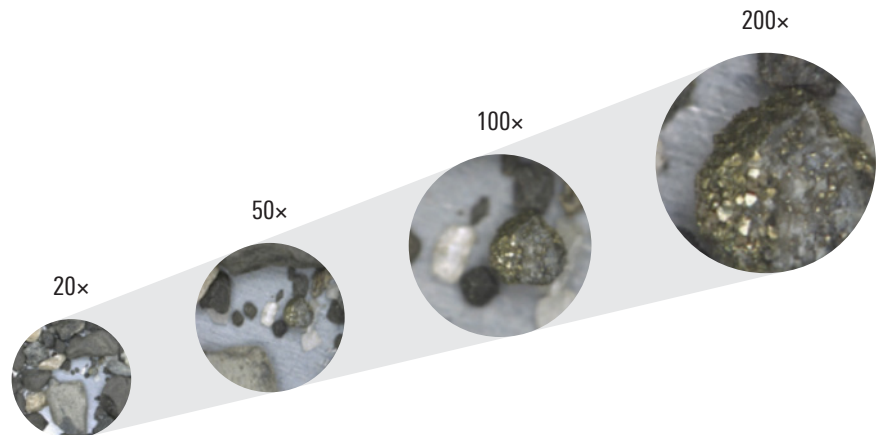
- Automatic color calibration
- Three charge-coupled device cells for enhanced color reproduction
- High-performance zoom (20× to 200×)
- Enhanced depth of field
- Pictures recorded in JPEG format and automatically archived

High-resolution digital microscopy (HRDM) captures high-quality digital images of cuttings and magnifies them by up to 200 times for improved characterization. The images also offer improved color resolution illumination and depth-of-field resolution, making the color, texture, and shape of drilled lithologies easier to identify.

Fast image acquisition helps wellsite geologists more accurately describe cuttings and quickly determine the cuttings best suited for further analysis with X-ray diffraction, X-ray fluorescence, or total organic carbon (TOC) quantification. The resulting digital images are automatically archived, making the cuttings readily accessible for review at any time onsite as well as offsite by geologists, petrophysicists, and basin modelers.

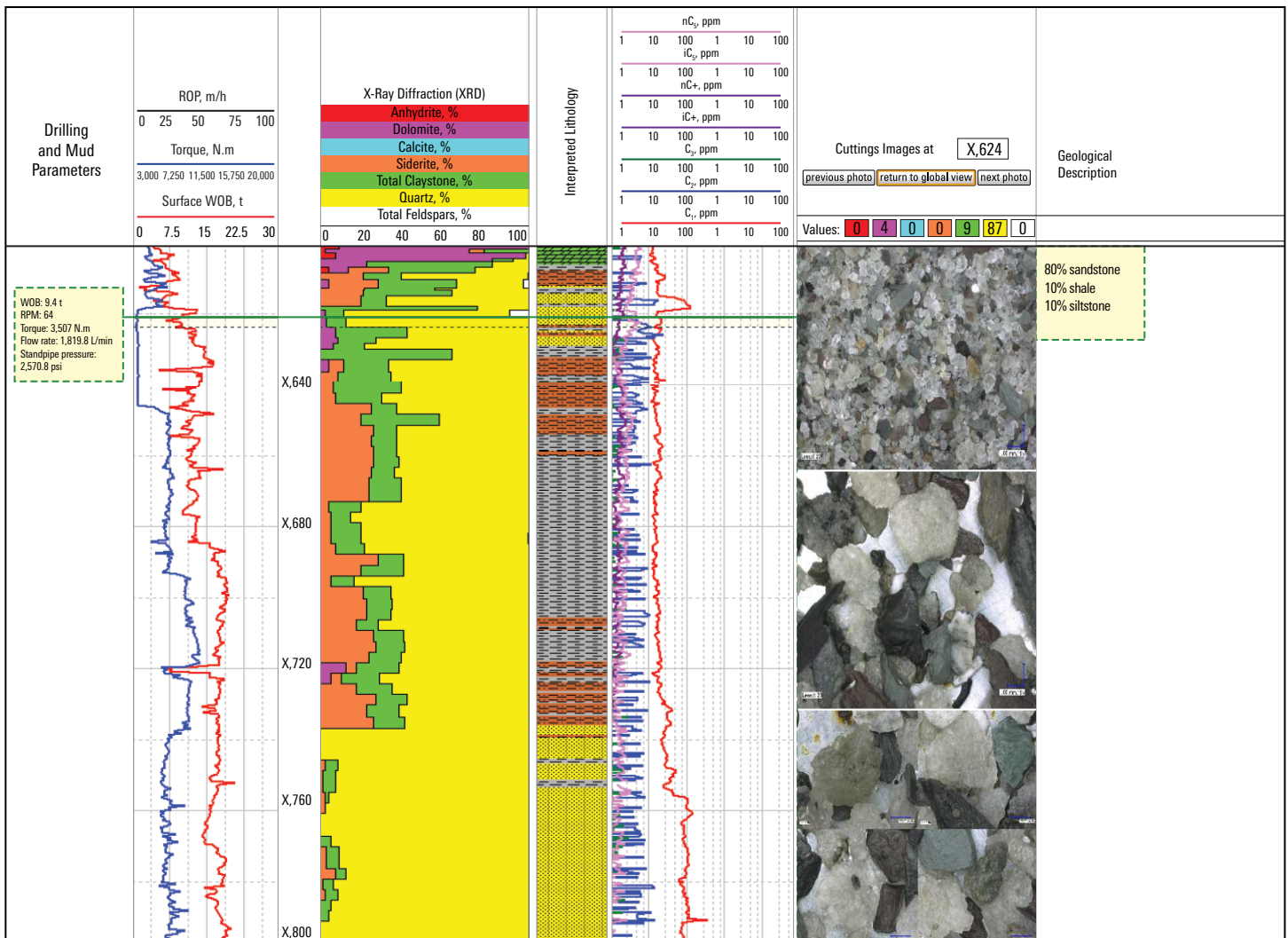
## Methodology

Samples are collected at the shakers, the cuttings are washed to remove drilling fluid, and any residual fluid is drained from the sample tray. While still wet but void of surrounding water, the cuttings are photographed, ensuring a representative rock color is captured without interference from reflection. Three pictures are taken at each depth—two at 20×, and one at 50×. Additional pictures can be taken at a higher magnification if requested. An automatic white balance feature avoids artifact effects.



*Magnification ranging from 20× to 200× and an enhanced image processing system enable fast and precise cuttings descriptions.*

# High-Resolution Digital Microscopy



High-resolution digital microscopy captures magnified images of cuttings, and those images are displayed alongside mineralogical analysis and lithology of the same cuttings to complement the logs.

## HRDM Specifications

Camera resolution	2,000,000 geometric pixels 6,000,000 color pixels
Picture size	1,600 × 1,200 pixels
Image format	JPEG
Zoom magnification	20× to 200×
White balance	Automatic calibration
Halogen lamp	Yellow light, 12 V, 100 W
Halogen life time	1,000 h
Footprint (H × L × W)	16.5 × 16.5 × 7 in [42 × 42 × 18 cm]

[slb.com/mudlogging](http://slb.com/mudlogging)