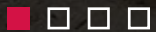
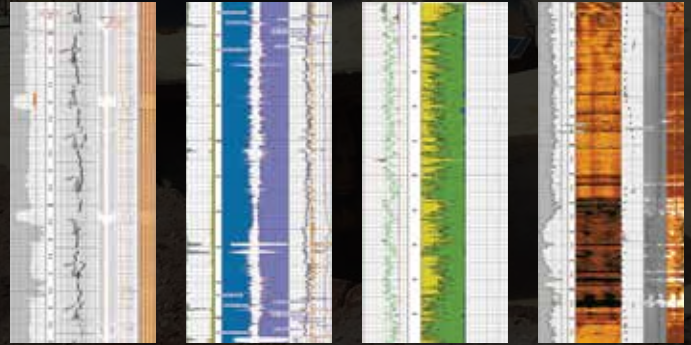




WIRELINE SERVICES

## Slimline Logging Service

Reducing exploration costs and improving geologic certainty for the extraction of minerals and unconventional hydrocarbon resources

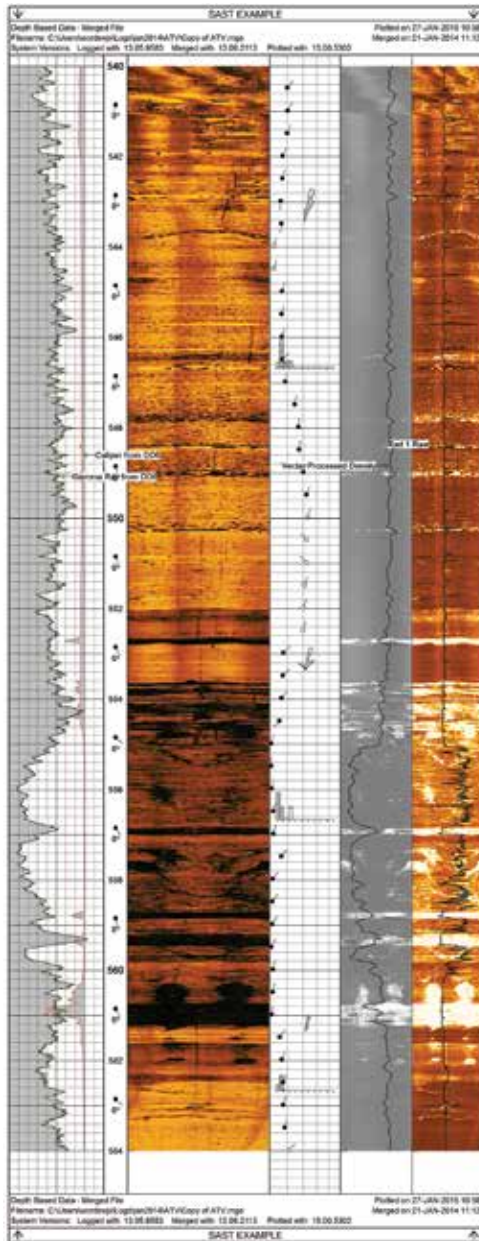




## Reduce your exploration costs while improving your geologic certainty.

You make big decisions—with significant cost ramifications—based on your exploration data. To feel confident making these decisions, you need to have complete trust in the accuracy and comprehensiveness of your data. Our Slimline logging services deliver the reliable, high-quality data that gives you that confidence.

With more than 45 years of experience in providing Slimline logging services around the world, Weatherford offers unparalleled service and data quality. Using tools that are light enough for one person to handle, we extract precise geologic information from deep beneath the earth's surface and through the narrowest of apertures. We then help you make decisions that are critical to the cost-effective extraction of minerals and unconventional hydrocarbon resources.



## A cost-effective alternative to core-sample analysis

Core-sample analysis is effective, but obtaining a core sample and transporting it to a lab can be expensive and time consuming. Slimline logging tools can yield high-quality data in a fraction of the time. Whether you use them to supplement or replace core-sample analysis, Slimline logging tools can save on drilling and coring costs and improve your long-term bottom line without compromising data quality.

### Slimline Logging Applications

#### Mining

- Base metals
- Coal
- Diamonds
- Gold
- Oil sands
- Phosphate
- Platinum
- Potash
- Silver
- Uranium

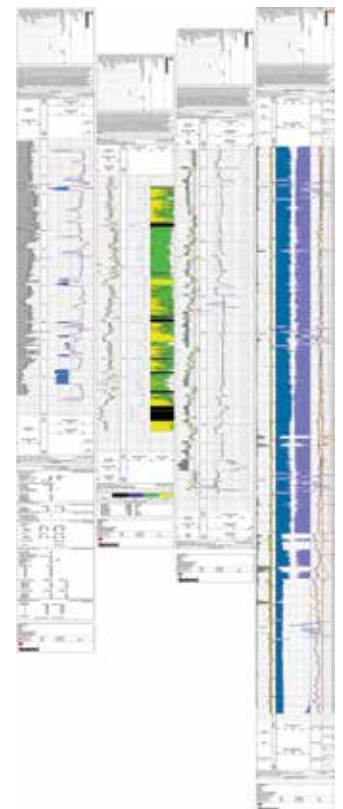
#### Unconventional hydrocarbon resource extraction

- Coalbed methane
- Oil shale
- Shale gas and oil
- Shallow oil and gas
- Tight gas

The fastest and most accurate, cost-effective method for exploring small boreholes

### The Slimline Advantage

- Captures reliable data in small boreholes for specialized analysis
- Replaces coring and/or confirms data from core samples
- Enables easy handling and transport, even to remote locations
- Offers on-site or remote transmission services
- Complies with all safety requirements



## Data Acquisition

We customize all aspects of our Slimline logging services, including equipment and personnel, to suit your needs. Working directly at your job site, our logging experts deploy specialized technologies to acquire a variety of high-quality logs in boreholes as small as 2-1/4 in. for minimal impact. With personnel and materials positioned strategically throughout the world, we can accommodate any type of deadline no matter where you are located.

We manufacture, characterize, and calibrate our Slimline tools to exacting oilfield standards to ensure optimal performance. The light weight and small diameter of the Slimline tools prevent sticking in narrow boreholes. And by reducing, if not eliminating, the need to drill for multiple core samples, our Slimline tools can make your exploration operations faster and less costly.

### Standard Logs

Our Slimline logging services range from standard to highly specialized. These are our standard logs:

- Caliper
- Conductivity
- Density
- Dipmeter
- Gamma ray
- Neutron
- Porosity
- Resistivity
- Sonic
- Structural



**Our Slimline service unit (SLU) vehicle** is the primary on-site hub for logging activities. Compact and highly versatile, the SLU is equipped with logging tools, computers, data-storage devices, and booms or tripods that enable logging in the absence of a drilling rig. To suit different applications and to serve both easily accessible and remote sites, we can adapt the SLU for transport by helicopter. We also offer ready-built heli-lift units and a variety of truck-based units.

# Data Interpretation

At Weatherford, our logging services extend far beyond the acquisition phase. We don't just give you logging data—we help you understand what this data means for your operations. We determine critical details about your formation—such as borehole deviation, geomechanical properties, the boundaries of your zones of interest, and water levels—and convert this data into meaningful information that enables you to make accurate decisions.

Our experienced Slimline personnel collaborate with our Petroleum Consulting team—approximately 300 engineering and geosciences professionals who optimize assets in all types of reservoirs around the world—to interpret virtually all log types using proprietary software applications. Our goal is to give you the most complete and reliable information possible.



## Selected Information Obtained Through Slimline Logging<sup>1</sup>

### Borehole properties

- Deviation
- Diameter
- Temperature
- 3D images

### Coalbed properties<sup>2</sup>

- Coal quality (ash and moisture)
- Presence of dikes and sills
- Density of seams and overburden

### Compression strength<sup>3</sup>

- Foundation
- Overburden

### Concentrations of unstable isotopes

- Potassium
- Thorium
- Uranium

### Geomechanical properties

#### Formation properties

- Dip magnitude and azimuth
- Breakout orientation
- Fault delineation stress

#### Lines of oxidation<sup>4</sup>

#### Shear wave (S-wave) propagation

#### Water levels

#### Zones of interest (base and top)

<sup>1</sup>Applicable to the extraction of coal, minerals, and unconventional hydrocarbons, unless otherwise noted

<sup>2</sup>Applicable to coal mining and coalbed methane extraction

<sup>3</sup>Applicable to coal and minerals mining and the extraction of extra-heavy crude in oil sands

<sup>4</sup>Applicable to minerals mining

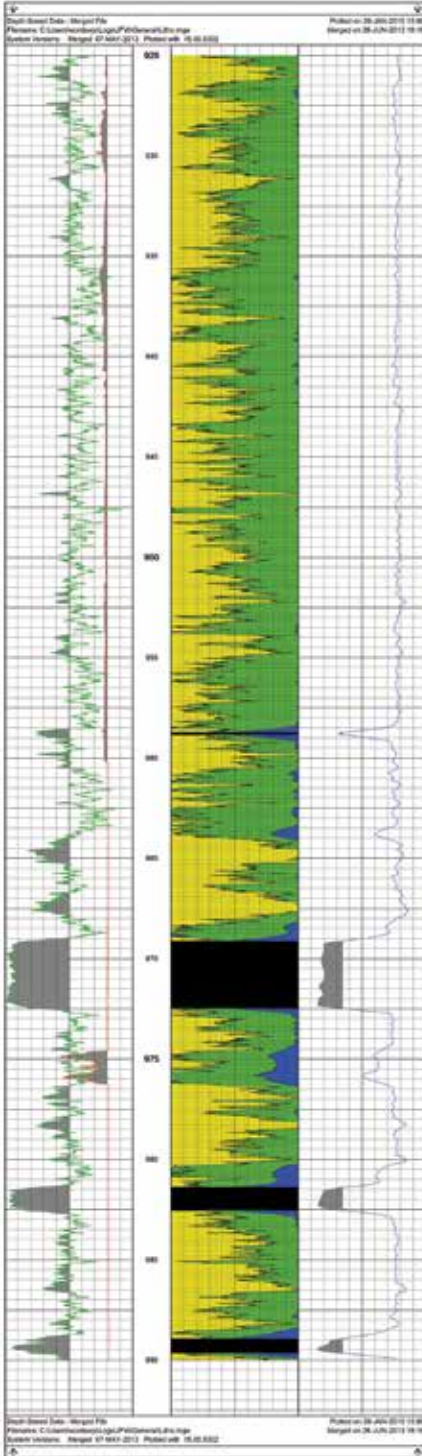
### Training for Slimline Log Interpretation

In addition to our highly specialized Slimline log interpretation services, we offer on-site training for your personnel.

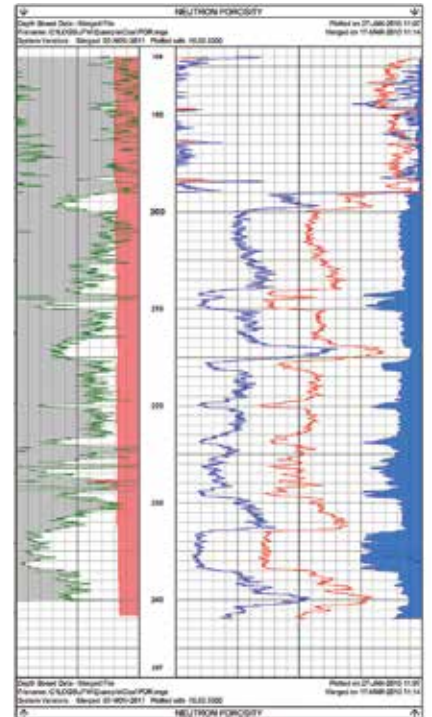
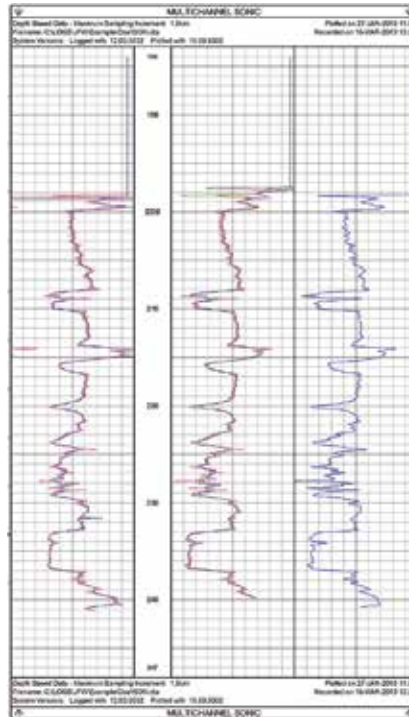
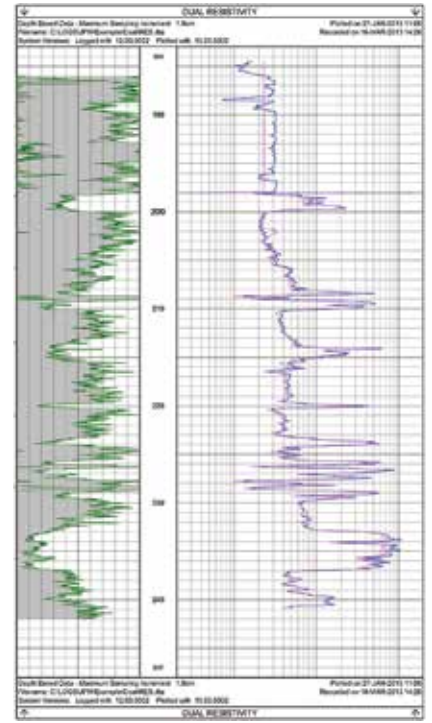
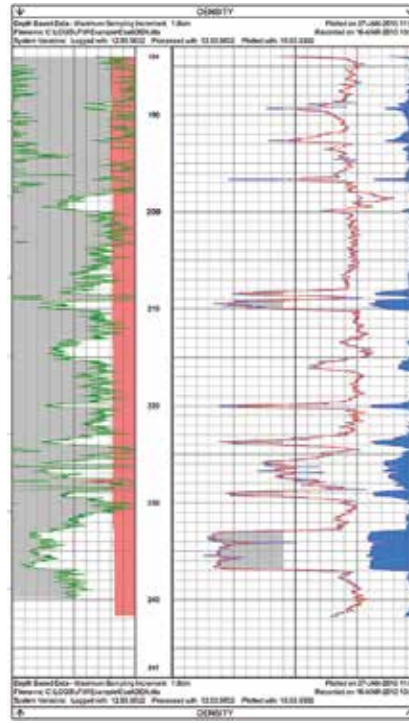
# Data Transmission

Receive your data from wherever you want, whenever you want. We give you the option to view logging data from on-site computers or from remote locations using our unique web-based service.

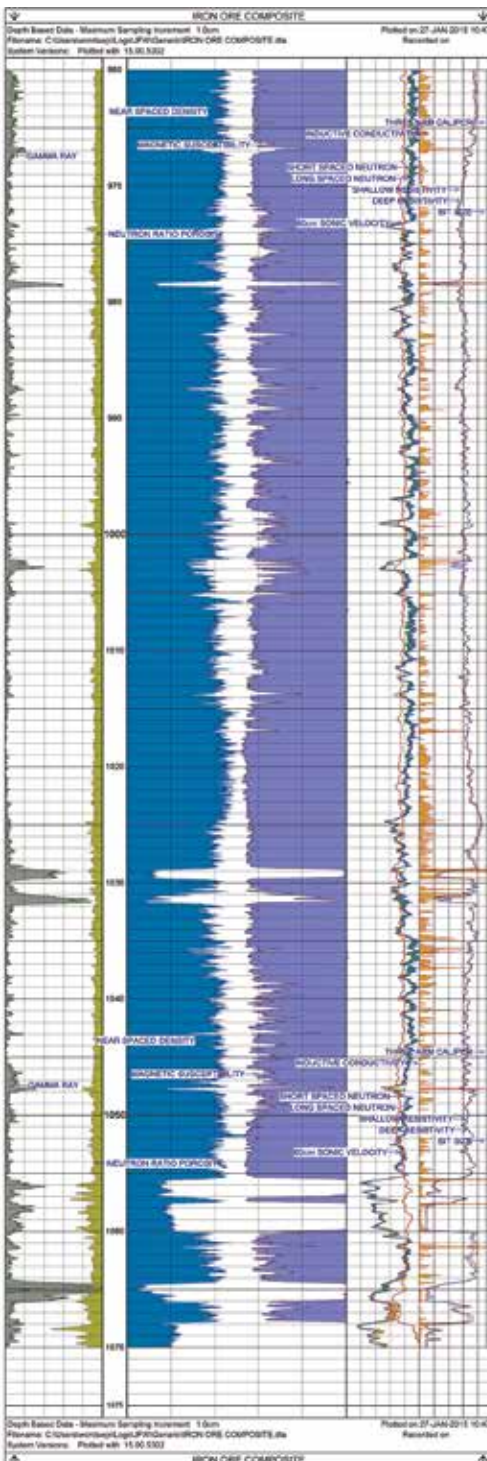
## Automated Lithology Analysis



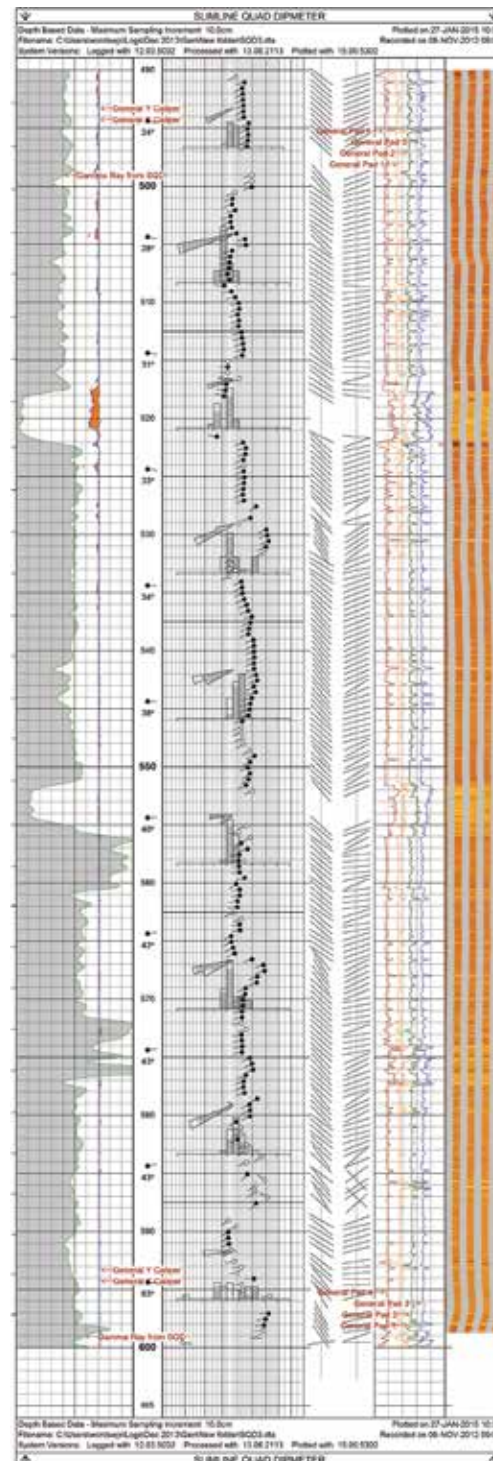
## Coal Lithology



## Ore Logging



## Structure Logging



## Remote Viewing Service

We provide our clients with remote access to their logging data through our secure website, **previewdata.com**. This site lets users print, download, and archive password-protected information, as well as create Log ASCII Standard (LAS) and Log Information Standard (LIS) files—capabilities that are unmatched by any other service provider.

### Previewdata offers you important benefits:

- Assists with operational decision making
- Enables you to re-evaluate data to accommodate dynamic conditions
- Permits select third parties to use post-acquisition data for environmental research, land reclamation initiatives, or other similar activities (at client discretion)

To learn more about how our versatile Slimline logging services can help you enhance your exploration of mineral and unconventional hydrocarbon resources, contact [slimline@weatherford.com](mailto:slimline@weatherford.com) or visit [weatherford.com/slimline](http://weatherford.com/slimline).



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