

Formation Evaluation for Shale Gas

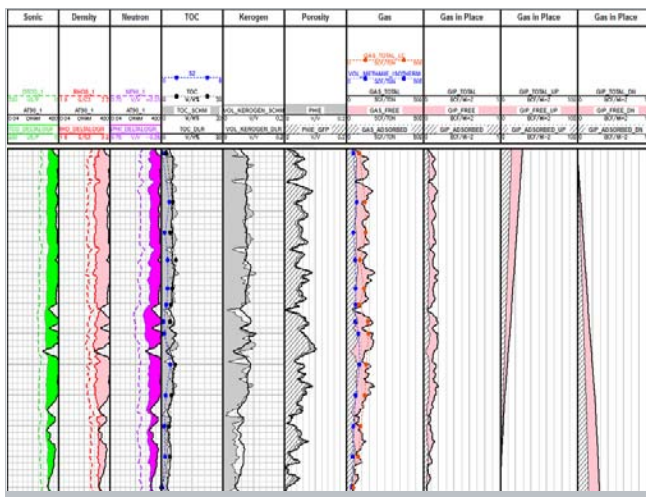
A Paradigm Geoscience Data Service

While companies are aggressively pursuing shale plays around the world, the development and production of these resources require ever increasing insight into the characteristics of the given resource. Each regional shale is unique, so companies must adapt and tune their workflows to include local knowledge about reservoir properties and conditions.

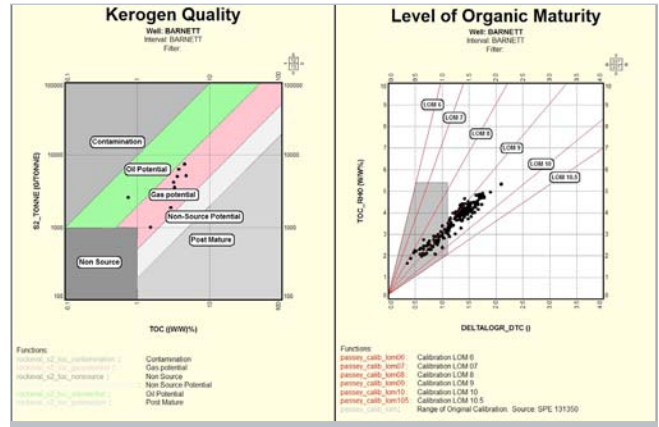
Paradigm® offers a unique service for performing shale gas evaluations. We employ our own software (Geolog®) and petrophysics experts, while following accepted industry practices. This service is equally valuable for clients needing a full range of single well evaluations or a multi-well field study.

Paradigm Formation Evaluation for Shale Gas Analysis

- **Review of Laboratory Tests:** Conduct a comprehensive review and interpretation of all available client laboratory test results to make assessments of Total Organic Content (TOC) from core data. Utilize additional information from Spectroscopy, XRD and Petrographic Thin Sections for validation.
- **Total Organic Content:** Perform interpretation of TOC using industry standard methods, including Delta-LogR (Passey) and Density (Schmoker), and calibrate to Core TOC.
- **Probabilistic Petrophysics:** Use Multimin probabilistic analysis for assessment of dominant minerals, porosity and water saturation. Reconcile volume of kerogen and kerogen porosity using accepted methods and practice.
- **Prediction of Rock Types and Electrofacies:** Use ternary diagrams for assessment of rock classifications and Paradigm Facimage to predict electrofacies from wireline logs.



▲ Log plot of TOC and shale gas calculations

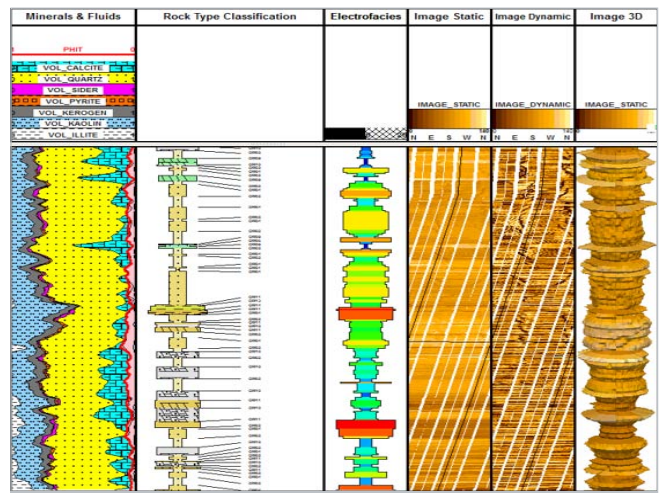


▲ Crossplots for characterization of Kerogen quality and results for TOC by DlogR

- **Brittleness and Fracture Potential:** Calculate Geomechanical properties for use in assessment of formation brittleness and fracture potential.
- **Integration of advanced logging Information:** Integrate more advanced logging tool information, such as Image Logs, NMR, Sonic Waveform, and Tri-axial Resistivity. Include Core Photos to corroborate findings.

Advantages of Paradigm Formation Evaluation Services for Shale Gas

Paradigm Formation Evaluation Services for Shale Gas deliver a comprehensive and reliable evaluation that is easily understood and repeatable by the client.



▲ Log plot of minerals and fluids with rock types and electrofacies. Comparison with image logs.