XRF (X-Ray Fluorescence)

Field rentals and lab analysis

X-ray fluorescence (XRF) is a rapid technique for measuring elemental composition of drill cuttings and cores. The analyzer exposes the sample to X-rays, causing elements in the rock to emit characteristic fluorescent X-rays which are used to quantify the major, minor, and trace elements.

One-Geo XRF is a complete package build for the speeds and conditions of the modern drilling industry, in the field and in the lab.

Field: 20 minutes/sample. Lab: 500 samples/day.

Applications

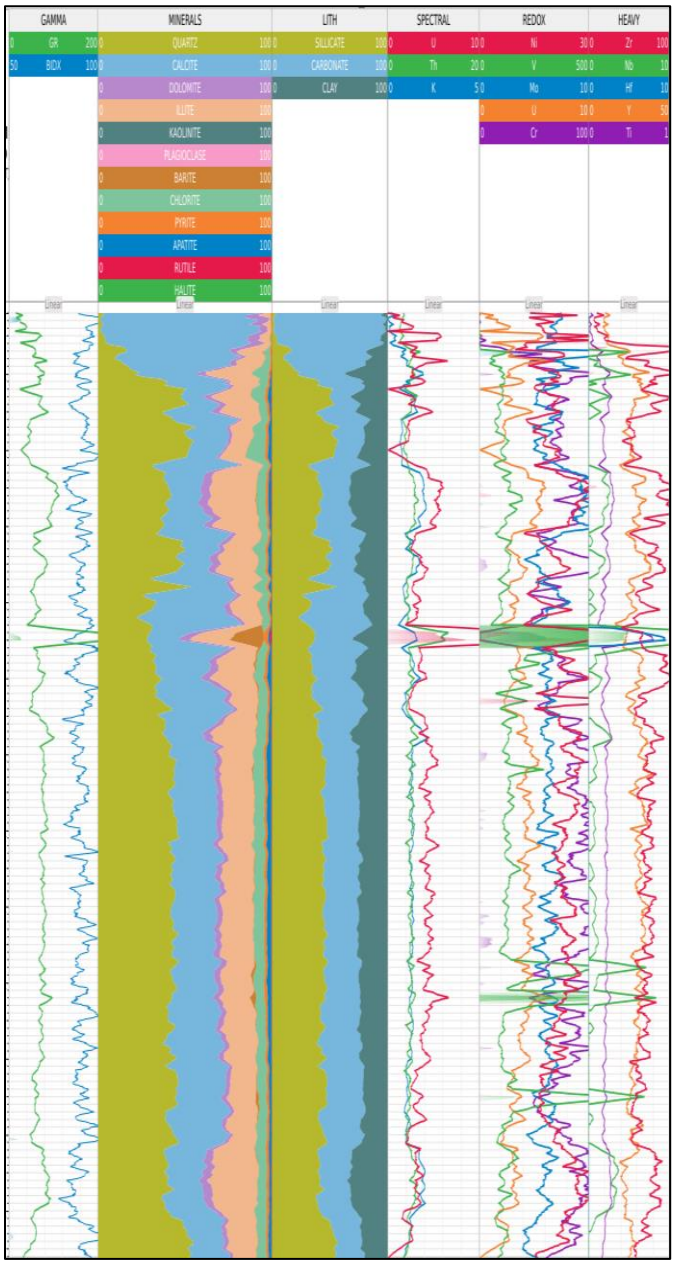
- **Reservoir Characterization:** Lithology classification - siliceous, carbonate, clay-rich, and mixed lithologies, mineralogical fingerprinting, heterogeneity mapping, and brittleness/completion quality indicators. Quantitative lithology profiling from cuttings, reducing reliance on wellsite descriptions
- **Source Rock Evaluation:** Identification of organic-rich intervals and redox conditions using elemental proxies such as V, Ni, Mo, and U. Source rock screening and ranking
- **Chemostratigraphy & Correlation:** High-resolution correlation between wells, including log-poor, structurally complex, or geochemically subtle intervals. Correlation where conventional gamma ray signatures are ambiguous
- **Depositional Environment & Provenance:** Interpretation of facies, sediment source, basin evolution, diagenesis, and paleoenvironmental conditions
- **Geosteering & Drilling Operations:** Rapid wellsite lithology identification, target zone verification, and real-time drilling support from cuttings-based geochemical data
- **Completions & Reservoir Quality:** fracability, and stimulation design indicators
- **Continuous Geochemical Profiling:** High-resolution dataset, correlate core to cuttings
- **Integrated Formation Evaluation:** Combined interpretation with mud gas, mass spectrometry, petrophysical, geological, and geomechanical datasets
- **Automated Field Deployment:** Remote monitoring, self-diagnostics, visual/email/text alerts, and AI-assisted interpretation for efficient wellsite operation
- **Broad Geological Applicability:** Suitable for conventional, unconventional, geothermal, helium, hydrogen, CCUS, and other subsurface projects across virtually any rock type, basin, reservoir, or geologic age

Specifications

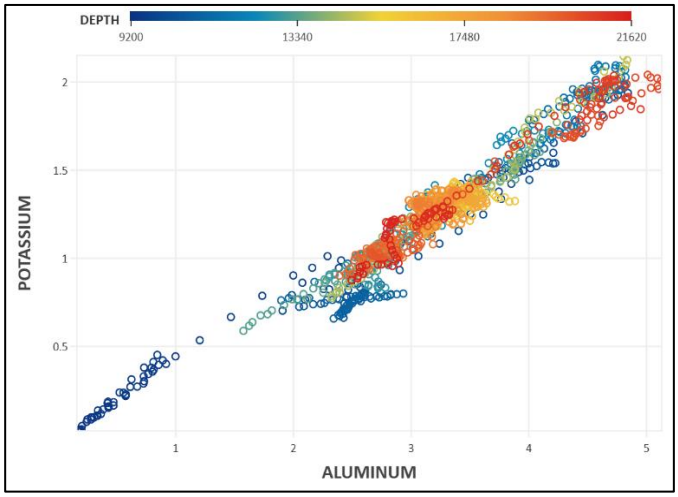
- **Elemental Range:** Mg–U, 40+ elements including Rare Earth Elements (REE)
- **Detector:** Silicon Drift Detector (SDD)
- **X-Ray Tube:** Rhodium anode
- **Connectivity:** USB with supplied laptop
- **Weight:** Approximately 4 lb / 1.8 kg
- **Sample Types:** Solids and liquids
- **Deployment:** Handheld operation or test-stand
- **Rental Package:** Complete “XRF-in-a-box” setup with all required supplies included
- **Training:** Simple workflow designed for minimal user training
- **Support:** Full technical support available throughout deployment

- **Software:** Unified One-Geo interface for 1-Click analysis across supported XRF analyzers
- **Export Formats:** LAS file output and real-time WITS integration
- **Data Delivery:** Onsite and remote data viewing automatically
- **Visualization:** Web-based data visualization and reporting with AI-assisted tools

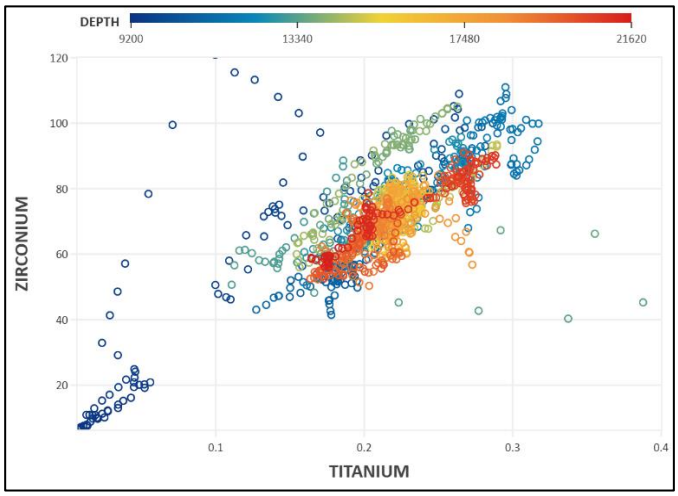
Live-Log Plot - XRF Chemostratigraphy



Cross Plot - Clay Type



Cross Plot - Sediment Source



Ternary Plot - Lithology