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Core Points Optimized Using Mineralogy and Total Organic Carbon from Litho Scanner Service

Quantified mineralogy and TOC paired with TerraTek HRA services analysis document the complex lithology in an unconventional reservoir, Canadian Arctic

CHALLENGE

Guide selection of core points from three wells in a complex lithology to support comprehensive characterization of the unconventional reservoir.

SOLUTION

Measure elemental concentrations with Litho Scanner* high-definition spectroscopy service to quantify mineralogy and determine total organic carbon (TOC) for optimizing core point selection, as confirmed by rock classification based on data integration from TerraTek HRA* heterogenerous rock analysis services using the Techlog* wellbore software program.

RESULTS

Accurately profiled three wells through a targeted comprehensive sidewall coring program based on data integration montages generated from the real-time logging and analysis data.

Optimizing sidewall coring decisions

To comprehensively characterize an unconventional reservoir in the Canadian Arctic, an operator wanted to collect sidewall cores from three exploration wells. The evaluation of key reservoir attributes was needed to guide where to take the core plugs from the complex lithology.

Quantifying elements for accurately determining TOC

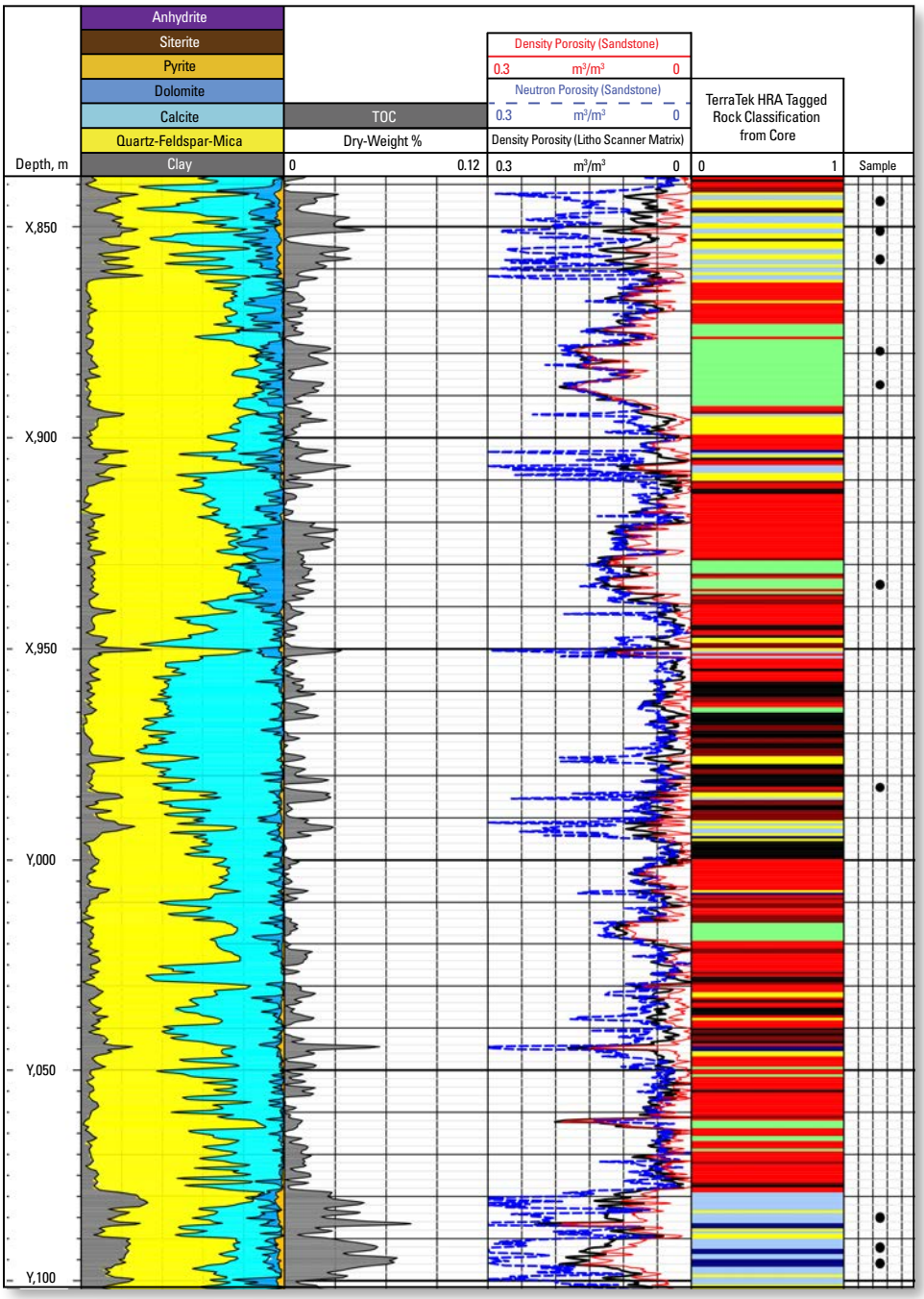
To quantify an expanded set of key elemental weight fractions, Litho Scanner high-definition spectroscopy service uses both inelastic and capture gamma ray spectroscopy. This includes a direct measurement of formation carbon, which is coupled with an assessment of inorganic carbon to deliver a robust, accurate TOC determination that is independent of formation water salinity and does not require core calibration or previous knowledge of the kerogen type or maturity.

Similarly processed in real time, TerraTek HRA heterogeneous rock analysis services were used to evaluate the variability of complementary data from logging with Platform Express* integrated wireline logging tool. TerraTek HRA analysis identified the pattern of rock classes in the well for confirmation of the Litho Scanner service data.

Informed, streamlined sampling in complex lithology

Real-time processed data from Litho Scanner and TerraTek HRA services were integrated in the Techlog wellbore software program to assemble a comprehensive data montage incorporating continuous logs of the TOC, mineralogy, and rock classes. Analysis of all the acquired data supported the informed selection of core points in zones of interest while minimizing rig-time cost in the challenging Arctic environment.

Litho Scanner service employs a sourceless pulsed neutron generator to accurately measure an expanded set of elements compared with conventional spectroscopy tools.



As shown by the core points added to the data montage from Litho Scanner and TerraTek HRA services, the operator was able to precisely and representatively collect samples across the complex lithology.

"The turn-around time from gathering the data, transmitting the data from a remote Frontier basin location, and interpreting the data resulting in a TOC estimation was less than 24 hours, thus allowing real-time operational decisions to be made. Calibration of the Litho Scanner TOC estimation with actual rock-calculated TOCs confirmed accurate corroboration."

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