geoconvention
Virtual Event
September 13 - 15
2021

All Models Are Wrong but Some Are Useful: Understanding the Inputs for X-Ray Fluorescence

Cory Twemlow, Qiang Tu, Jason Tucker and Nikolas Minions
AGAT Laboratories

Abstract Summary

Over the past decade there has been an increase in the acquisition of large datasets that can be used to extrapolate and model complex petrophysical rock properties. X-ray florescence (XRF) has been at the forefront of acquiring such large scale, high quality geochemical datasets due to the rapid, reliable and cost effective nature. Used for analyzing core and cuttings, XRF data can be extremely useful when determining sequences, formation and stratigraphic boundaries and chemostratigraphy. From XRF datasets, geologists are able to determine depositional proxies and regional correlations within stratigraphic sequences.

This presentation will review current XRF practices and highlight the need to understand the methodologies and inputs that go into building calibrations and mineral and mechanical models. It is well understood that unique XRF calibrations are required to properly evaluate specific stratigraphic unit, however, few discussions have been brought forward to show how the models are derived. Proper XRF interpretations rely on robust measurement of elemental concentrations and the application of a meaningful algorithms to create mineral and petrophysical models. We will dive behind the scenes at the development and efficacy of not only building proper calibrations, but most importantly how mineral, reservoir and mechanical models are compiled. We'll take a deeper look into the inputs and parameters that are currently being used and their impacts on the overall models.

A case study from the Montney Formation will be shown for specific examples of general concepts and workflows.