

**Technical Luncheon**

## **Sedimentary Facies and Sequence Stratigraphy of the Lower Cretaceous Dina and Cummings, Alberta, Canada**

**Speaker:** Scott Botterill, Alberta Energy Regulator

**Location:** *Calgary Petroleum Club, Devonian Ballroom*

*319 5 Ave SW, Calgary AB T2P 0L5*

*Tuesday, October 20, 2026, | 11:30am – 1:00pm (MST)*

### ABSTRACT

The Lower Cretaceous Aptian–Albian Dina and Cummings units in the Lloydminster area of east-central Alberta were deposited during southward transgression of the Boreal Sea across a long-lived, irregular unconformity (sub-Cretaceous unconformity). Variations in paleotopography and repeated base-level fluctuations produced a stratigraphically complex interval. This complexity has contributed to long-standing challenges in regional correlation and stratigraphic nomenclature. Despite decades of hydrocarbon production, a regional high-resolution sedimentological and sequence stratigraphic framework has not previously been established.

This study establishes a regionally consistent stratigraphic framework for the Dina and Cummings interval using 72 cores and approximately 7,800 wireline logs across 8,800 km<sup>2</sup> of east-central Alberta. Integrated sedimentological, ichnological, and petrophysical analysis identifies seven regionally mappable facies association complexes and seven key discontinuity surfaces that define a hierarchical sequence stratigraphic framework. The results support revision of the formal stratigraphy, including elevation of the Dina and Cummings to formation status and recognition of four new members: the McLaughlin and Rivercourse members of the Dina Formation, and the Lindbergh and Paradise Valley members of the Cummings Formation.

The high-resolution stratigraphic framework demonstrates that reservoir heterogeneity within the Dina and Cummings is governed by a combination of paleotopographic relief, facies architecture, and regionally extensive stratigraphic discontinuities, resulting in significant variability in reservoir quality, continuity, and connectivity across the study area. The resulting framework improves prediction of reservoir distribution, connectivity, and heterogeneity, providing a robust geological foundation for hydrocarbon exploration, development, and reservoir characterization across the region.

### BIOGRAPHY

Scott Botterill is a clastic sedimentologist and stratigrapher with the Alberta Geological Survey, a role he's been in for about 7.5 years. His current work centres on facies characterization and stratigraphic architecture of Mannville Group units across eastern Alberta — including the Athabasca, Cold Lake, and Lloydminster areas — where he integrates core and well log data to build regional depositional models that support regulatory applications, resource evaluation, and reservoir characterization. Before that, he spent 4 years in the oil and gas industry working the Peace River Oil Sands and Garrington areas of west-central Alberta. Scott earned his MSc and PhD at the University of Alberta, both of which focused on clastic sedimentology, ichnology, and sequence stratigraphy. Earlier this year, he developed and taught a CEGA core seminar on the practical application of ichnology to facies analysis.

