



Technical Webinar – May 18

Sequence Stratigraphy of the Viking Formation in Central Alberta

Speaker: Dr. Sarah K. Schultz

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Date: Wednesday, May 18, 2022 | 11:00am – 12:00pm (MST)

Location: *Virtual*

Abstract:

The late Albian Viking Formation was deposited in a foreland basin depositional setting in the Western Canadian Sedimentary Basin. The Viking Formation is currently defined on the basis of lithostratigraphic and allostratigraphic nomenclature but have not been mapped using a sequence stratigraphic approach. The current study of central Alberta utilizes the Depositional Sequence IV nomenclature, which includes the recognition and correlation of falling-stage, lowstand, transgressive and highstand systems tracts.

Two hundred and ten cores that intersect the Viking Formation were logged and these data were used to develop a facies model for the various sequences of Viking deposition. Four depositional sequences are identified and the architecture of deposits in each sequence are discussed. The structural reactivation of basement structures during the deposition of the Viking Formation is incorporated into the model in order to correlate genetically related units through structurally complex areas.

The Viking Formation is mapped at two hierarchal levels that are independent of the scale of study. Low-frequency genetic stratigraphic sequences and high-frequency genetic stratigraphic sequences are both documented in the study area, with the higher-frequency expressions forming the overall stacking patterns of the lower-frequency expressions. By mapping at such a resolution, it was possible to discern two unique stratigraphic architectures preserved in the Viking: i) over-thickened units related to tectonic activity; and ii) coeval deposition of transgressive and regressive units.

Biography:

Sarah completed her B.Sc. Specialization Geology degree at the University of Alberta in 2014 and obtained her Ph.D. from Simon Fraser University in 2021. The results from this thesis have been published in 3 journals and presented at 12 conferences and luncheon events. Sarah currently works at the Alberta Geological Survey on the Subsurface Geology and Geohazards team as a clastic stratigrapher.