

3D Outcrop Modelling, Facies, and Ichnofacies Interpretations of the Lower Cretaceous Falher Member

*Acikelli, A.¹, Gingras, M. ¹, Zonneveld, J.P. ¹
¹Ichnology Research Group, Department of Earth & Atmospheric Sciences, University of Alberta,
Edmonton, Alberta, Canada, T6G2E3*

Abstract

The Albian age Spirit River Formation is a prolific gas reservoir of Alberta and British Columbia Deep Basins. The Falher Member is the main gas-producing member of Spirit River Formation which consists of genetically related parasequences or set of parasequences (i.e., A through H, Cassas and Walker, 1997). Sandstones and conglomerate are economically important lithosomes in the Falher Member. Both lithosomes may be present as reservoir with porosity and permeability characteristics that permit the production of oil or gas. Additionally, conglomerate units slow drilling rates substantially and rapidly wear bits. This study uses photogrammetric models of these lithosomes to understand the depositional affinities of these lithosomes and their distributions.

The photogrammetric model was built from a Falher dataset collected at Mount Spieker, British Columbia region. 3D digital outcrop models were constructed using georeferenced drone images. Dip-strike orientations, paleocurrent directions, and vertical section measurements are recorded from the 3D model and the outcrop with detailed sedimentological descriptions including description of lithologies, grain sizes, bedding contacts, ichnofossil distributions and sedimentary structures. Proposed depositional model indicates a case of wave-dominated delta asymmetry.