Stratigraphic Architecture of an Ancient Deep-Marine Channel-Lobe Transition Zone (CLTZ), Kaza-Isaac Transition, Windermere Turbidite System, Cariboo Mountains, B.C.

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Abstract

At the Castle Creek area, deep-marine rocks of the Windermere Supergroup show a km-scale upward change from intercalated, sheet-like, Dm-thick sandstone and mudstones (Upper Kaza Group) to Dm-thick channelized sandstones bounded by mudstone (Isaac Formation), which, respectively, are interpreted to represent proximal basin floor and slope deposits. These two end-member architectures are commonly separated by an intervening interval termed the channel-lobe transition zone, or CLTZ. Although well imaged in modern sea-floor seismic images, little is known about the lithofacies distribution, stratigraphic architecture or evolution of strata that make up the CLTZ. The Kaza-Isaac transition, therefore, provides an ideal opportunity to study the facies and architectural changes through a well-constrained channel to lobe transition.

The CLTZ in this study area is ~200 m-thick and can be traced laterally for >1.5 km. Detailed outcrop analysis demonstrates that it contains a diverse and complex assemblage of stratal elements, including debrites, feeder channels, crevasse splays, scours, proximal distributary channels, distributary channels, bar deposits, terminal splays, and fine-grained sheets. Besides, the CLTZ is directly overlain by the first slope channel-levee complex of the Isaac Formation. In comparison to earlier works on underlying basin- floor strata in the area (e.g. Meyer and Ross, 2007; Rocheleau, 2012; Terlaky, 2014), the elements unique to the transition zone are scours and proximal distributary channels, and these are well developed here.

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