Along-Strike Variations in the Falher A and Basal Notikewin Members, Fort St. John Group of West-Central Alberta and NE British Columbia: Integrated Ichnological-Sedimentological Models in a Sequence Stratigraphic Framework

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This study applies sedimentological, ichnological and petrophysical analyses of the Albian Falher A Member and basal Notikewin Member, utilizing core and geophysical well logs. The study area trends in a northwest-southeast direction from the Noel Field in B.C., through the Elmworth and Wapiti fields of Alberta. The study assesses the stacked shoreface to coastal plain complexes of the upper Falher and basal Notikewin members, addressing the along-strike variations in facies style to better identify contemporaneous shoreline trends. These refined trends ultimately will be integrated with existing dip-oriented stratigraphic correlations of the interval, to resolve their sequence stratigraphic contexts.

In the study area, the Falher E to A cycles and Notikewin comprise a series of roughly east-west trending and northward prograding shoreface to coastal plain deposits. Assessment of detailed ichnology and sedimentology in the context of lateral (along-strike) facies variability within the same shoreface trends should resolve the contrasting previously published stratigraphic models, by helping to differentiate sharp facies contacts from true allocyclic stratigraphic discontinuities. The along-strike analyses also help to resolve some of the complexities in the upper shoreface and foreshore reservoir conglomerates along the Wapiti – Elmworth - Noel trend(s).

The variable and sporadic bioturbation within facies of the succession lends itself to assessing the relationship between the ichnocoenoses (trace fossil assemblages) and the porosities and permeabilities of the reservoirs, using a generalized statistical approach. Comparison to similar but unburrowed facies should delineate the magnitude of petrophysical degradation or enhancement associated with the various trace fossil suites and bioturbation intensities.