The Lower Cretaceous of Northeastern British Columbia and the Liard Basin: variable accommodation and shifting sediment sources

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ABSTRACT

Albian to Cenomanian strata from the Peace River area northwards into the Liard Basin detail regional depositional processes that controlled sequence architecture. The northern basin responded significantly to relative sea-level changes and variable sediment supply from Cordilleran sources. Transgressive intervals are interrupted by distinct regressive strata that are either stacked shoreface sequences, storm influenced shelf sandstones or wave-dominated deltaic deposits. Sediment sources feeding Falher and Notikewin sandstone sequences originated in the southwest, prograded to the north, and progressively filled accommodation space created by the Moosebar/Clearwater Sea. In the Liard basin, shelf sands of the Scatter Formation prograded eastwards. The Boulder Creek/Cadotte strata were fed by southwestern sediment sources prograding into the Hulcross/Harmon Sea. The Joli Fou Seaway terminated with the regional lowstand leaving the Viking marker bed, which might reflect a conformable sequence boundary in the Trutch area. This time, however, reflects the switch to an increasing sediment input from northwestern sources. The initiation of clastic influence within the Mowry Sea strata is reflected by stacked upward-coarsening parasequences of shelf sandstones forming the Bougie member, centered in the Trutch area. Later, the wave-dominated shoreface and deltaic deposits of the Sikanni and Goodrich formations were deposited. The Sikanni Formation can be divided into four sequences that are widely correlative along the western margin of the foredeep. The thickest and most proximal facies expression is centered on the Muskwa-Tetsa River region west of Fort Nelson and demonstrates, combined with the apparent continuity of sequence boundaries to the north and south, the localized creation of accommodation space.