

Stratigraphy and Sedimentology of the Foremost Formation in Southeastern Alberta and Southwestern Saskatchewan

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The Upper Cretaceous (Campanian) Foremost Formation is part of the basal Belly River (Judith River) clastic wedge and records a marine to nonmarine transition. The Foremost Formation crops out along the Milk River Valley in southeast Alberta and continues into the subsurface of southwest Saskatchewan.

The Foremost Formation is composed primarily of several distinct sandbodies contained in asymmetrical one-sided scours overlain in some areas by coally and carbonaceous deposits. Many of the Foremost Formation sandbodies are encased in marine mudstones and have been interpreted as prograding barriers. This interpretation accounts for the *Maccaronichnus* trace fossil assemblage and the HCS and SCS sedimentary structures but does not account for (1) the regionally extensive depositional discontinuities marked by the abrupt juxtaposition of facies or the eroded mud clasts found at the bases of the sandbodies; (2) the stratigraphic variability of the sandbodies; and (3) the erosional truncation of sandstone deposition and progradation. These features suggest that base level changes were a key control on the depositional style of the Foremost Formation.

The geometry and linearity of the sandstones contained in these asymmetrical scours suggests incised shoreface profiles formed by wave erosion during erosional shoreface retreat in periods of stillstand during an overall base level change. It is explicit in this interpretation that these sandbodies formed under conditions of base level change and are not contemporaneous. This interpretation is consistent with both the physical and biological structures contained in the Foremost Formation.