

## Deeply-Rooted Bathymetric Control on the Deposition of the Falher F Conglomerate Trend, Wapiti Field, Deep Basin, Alberta

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### Abstract

Core, wireline logs, 3-D seismic and production data were integrated to study the Lower Cretaceous Falher F unit of Alberta. We subdivided the Falher F into four prograding parasequences labeled F1 to F4. F1, F2 and F4 consist of shallowing-upward successions typical of prograding, sandy shorelines with minor amounts of pebbles. The F3 parasequence, however, contains an anomalously thick (12m) succession of prograding, upper-shoreface and foreshore conglomerate. The conglomerate within the F3 parasequence forms a NE-SW trending linear body that terminated abruptly to the northeast. This conglomerate has produced over  $9.0 \times 10^9 \text{m}^3$  (320 Bcf) of natural gas within the study area since 1979.

Detailed mapping using log, core, and 3-D seismic data indicates that the conglomerate was deposited along a linear bathymetric feature which resulted from differential compaction of the northern edge of the underlying Upper Devonian Gold Creek (Smokey) reef trend (Leduc, Nisku, and Wabumun Formations). Furthermore, the northeastern termination of the conglomerate trend is coincident with a NW-SE striking structural feature that influenced the development of accommodation space.

Transgressive and regressive models have been invoked previously to explain the development of linear shallow-marine conglomerate bodies in the Falher and other Cretaceous units of the Alberta Basin. Our results suggest that the Falher F conglomerate formed during regression.