

Estuarine Valley Fill and Interfluvial Strata at a Significant Sequence Boundary, Kiskatinaw and Golata formations, Lower Carboniferous (Upper Viséan), North-western Alberta

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Two long drill cores of the Kiskatinaw and Golata formations (Upper Viséan) from depths of about 2000 m display estuarine valley-fill and interfluvial sediments deposited within a large erosional valley incised into quiet marine Golata shales. The valley was centred within a graben complex in the larger tectonically-active, Carboniferous-Triassic Peace River Embayment. In the Peace River region, these valley-fill sandstones contain about $29 \times 10^9 \text{ m}^3$ (1 TCF) of discovered in-place gas volumes in 115 pools mainly in block-faulted structural traps.

Thick (30 m) valley-fill reservoir-quality sandstones (basal Kiskatinaw Formation) are displayed from lower parts of the core from the Imp Cherry Point 6-26-83-13W6 well. In contrast, lower parts of the core in the Imp Pan Am Aries 6-27-84-13W6 well displays the non-reservoir interfluvial consisting of argillic and vertic soils imprinted on incised marine shales (upper Golata Formation) that are overlain by thin soil-imprinted tidal flat sands (basal Kiskatinaw Formation).

In the middle of both cores is a correlative regionally-extensive carbonaceous siltstone bed that caps the valley-fill and the interfluvial and is interpreted as a gleyed Histosol soil imprinted on a supratidal marsh deposit that represents a final filling and abandonment phase of the estuary. Overlying this bed, towards the tops of the cores, is a regionally-extensive transgressive bioclastic sand shoal and sandy tidal flat bed deposited in an outer estuary to estuary mouth setting. The bioclastic sand unit is overlain by thinly-bedded similar facies that are commonly imprinted by immature Vertisols and Histosols.