

Stratal architecture of the Upper Triassic Baldonnel Formation, a shallow marine mixed siliciclastic-carbonate succession, Williston Lake, British Columbia

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ABSTRACT

The Baldonnel Formation (upper Triassic) houses the youngest (and largest) carbonate hydrocarbon reservoirs in northeastern British Columbia. Despite strong economic interest, published data on the Baldonnel Formation remain scarce. Limitations of existing reservoir models are due to a reliance on well logs and limited core resources from relatively widely spaced wells. Field work in the Williston Lake area has provided the requisite information for developing detailed sedimentologic models for the Baldonnel Formation and has clarified its complex relationships with bounding stratal units (Charlie Lake, Ludington and Pardonet Formations). Analysis of closely spaced exposures along Williston Lake and calibration with outcrop gamma data allow for enhanced characterization of Baldonnel mixed siliciclastic-carbonate reservoirs through analysis of lateral and vertical lithologic variability, geometry of potential reservoir units and facies heterogeneity.

Skeletal grainstones/packstones (composed largely of echinoderm elements, bivalves and articulate brachiopods) are the primary reservoir facies in the Baldonnel Formation. In outcrop these lithologies occur in shoreface, patch reef/bioherm and tidal channel facies associations. Numerous stratal surfaces, characterized by evidence of erosion of subjacent sediment occur within the Baldonnel Formation. They are typically characterized by dessication cracks and sharp-walled, granule-filled burrows (*Glossifungites* ichnofacies), as well as chert-pebble and phosphate-granule lags. These surfaces commonly define the base of individual shallowing upwards packages and are interpreted as parasequence boundaries. They are correlative throughout the study area and preliminary correlations indicate that similar surfaces subdivide the Baldonnel Formation in the subsurface of the Western Canada Sedimentary Basin.