

Flat Pebble Conglomerates in Lowstand Shoreface Successions of the Doig Formation, Tommy Lakes Field, Northeastern British Columbia

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The Middle Triassic Doig Formation consists primarily of shale, siltstone and very fine-grained silty sandstone. In some areas of northeastern British Columbia the Doig also contains significant amounts of well sorted, fine-grained sandstone, bioclastic sandstone and sandy bioclastic grainstone ("coquina"). Within the Tommy Lakes area, the Doig Formation unconformably overlies the Montney Formation and is erosionally overlain by the Halfway Formation.

In the study area, the Doig Formation is characterized by an anomalously thick laterally restricted body of sandy bioclastic grainstone, siliciclastic sand and flat pebble conglomerate with an abrupt (erosional) base. The conglomerate clasts are composed primarily of bioclastic grainstone. Hiatal surfaces characterized by sand-filled fractures occur at several levels within this succession. The main body is narrow (2-4 km wide, ~15 km long), oriented northwest-southeast and ranges between 20 and >45 meters thick. This body is connected to the east to a thin (4-8 m) package of bioclastic sandstone and bioclastic grainstone.

The basal contact of this package is interpreted as a lowstand surface of erosion reflecting subaerial exposure subsequent to a local drop in sea-level. Bioclast-rich lowstand shoreface sediment was subjected to early cementation, at or near the sediment-water interface, and subsequent erosion and reworking of this beachrock. The resultant flat-pebble conglomerate was cemented and possibly desiccated. Erosion of the conglomerate resulted in hiatal surfaces associated with sand-filled fractures. At least four cycles of deposition, cementation and erosional reworking occur within these beds reflecting a complex relative sea-level history in the Middle Triassic of northeastern British Columbia.