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THE STRATIGRAPHY AND SEDIMENTOLOGY OF THE FERNIE AND MINNES GROUPS, PEACE RIVER ARCH AREA, ALBERTA

By

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The Jurassic in the Peace River Arch area records the structural change in the Western Canada Basin , as a result of the accretion of a series of allochthonous terranes with the western margin of North America. During the Early to Middle Jurassic, the basin was a passive margin characterized by shallow marine deposits sourced from the craton to the east. Development of a western foreland fold and thrust belt and an associated foredeep to the east commenced during the Middle to Late Jurassic. In the Peace River Arch area, this change is marked by a submarine hardground that occurs at the top of the Middle Jurassic section. The Middle Jurassic consists of a series of shallow marine coarsening-upward deposits that clinoform and depositionally thin to the northwest and are absent in the Foothills region of northeast British Columbia. There is no evidence of subaerial exposure of this surface in the Peace River Arch area. This surface is interpreted to mark the transition from an eastern sourced epicratonic margin to a western sourced foredeep. Overlying the Middle Jurassic is a distinct unit that consists of glauconite or bertherine rich argillaceous siltstones. This unit, the Green Beds, has been dated as Oxfordian and is prevalent throughout the Peace River Arch area at the base of the Upper Jurassic section and provides a good regional well log marker. The occurrence of glauconite and bertherine indicates deposition in a shallow marine environment with slow sedimentation rates. The Green Beds represent the first deposits of the foreland clastic wedge. The Upper Jurassic in the Peace River Arch area consists of a series of westward thickening coarsening upward shallow marine deposits of the Passage Beds that grade upwards into the more continental deposits of the Lower Minnes Group. In the Foothills of northeast British Columbia the Minnes Group is divided into the Monteith , Beattie Peaks, Bickford Creek, Gorman Creek and Monarch. The Jurassic - Cretaceous contact is placed within the upper portion of the Monteith and below the transgressive surface at the base of the marine shales of the Beattie Peaks.

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