**Sedimentary Facies Architecture and Paleogeography of the Upper Devonian-Lower Mississippian Bakken Formation of Subsurface Saskatchewan**

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The Upper Devonian - Lower Mississippian Bakken Formation is one of the most productive oil-bearing units in Saskatchewan. Recent Bakken discoveries in northeastern Montana and North Dakota have resulted in much-increased attention paid by the petroleum industry to this formation throughout the Williston Basin. For this study, seventy cores from the Bakken Formation in southeastern Saskatchewan were slabbed and described in detail, representing a total length of 1371 m. The Bakken Formation is subdivided into three members: the Lower and Upper members, which comprise shelfal black shales, and the sandy-silty Middle Member. Integration of ichnological data with conventional sedimentologic analysis reveals a complex depositional history for the Bakken Formation involving sea-level changes and the establishment of open-marine and brackish marginal-marine depositional settings in southeastern Saskatchewan. The lower part of the Bakken Formation is interpreted as having been deposited in a transgressive to highstand systems tract under open-marine conditions. Subsequent sea-level fall was followed by transgression and deposition of brackish marginal-marine sediments of the middle part of the Bakken. As the transgression continued, open-marine conditions were re-established over the entire area and the sediments of the upper part of the unit were deposited. Eleven sedimentary facies have been defined. Preliminary isopach maps show a series of northwest-southeast trending facies belts with proximal deposits reaching maximum thicknesses in the northeast and more distal deposits being increasingly thick toward the southwest. Isopach maps of the brackish marginal-marine facies, however, reflect a much more complex distribution pattern, revealing an irregular, embayed shoreline. Better comprehension of the sedimentologic conditions that prevailed during deposition of the Bakken Formation is expected to improve predictions regarding the distribution of the most oil-prospective facies, thereby impacting petroleum-industry activity in both exploration and production.