

Stratigraphy Of Viking Sandstones In The Bayhurst Area, Southwest Saskatchewan

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ABSTRACT

The Lower Cretaceous Viking Formation, Albian in age, is studied in the Bayhurst area, southwestern Saskatchewan. The Viking Formation is a predominantly sandstone unit with interbedded shale which is confined above and below by marine shales. Gas fields within the Viking Formation consist of stratigraphic and structural traps within linear sand bodies that are generally oriented northwest – southeast, mimicking the shoreline as it moved landward and seaward with changes in relative sea level. Within the study area the thickness of the Viking ranges from 22 to 30 meters. It thickens to the southwest and gradually thins to the northeast, fining basinward to a silty shale.

This study focuses on the Bayhurst gas field which encompasses Townships 23 to 26 and Ranges 24W3 to 28W3, an area of about 87 square miles. Based on cores and well logs analysis, several depositional environments have been identified including shelf, offshore, shoreface, lagoon and barrier island deposits with barrier sandstone forming the main reservoirs. Sedimentary facies maps together with core and well logs cross-sections illustrate the stratigraphic and reservoir architecture of the Bayhurst Gas Field, characterized by units separated by flooding surfaces, sequence boundaries and ravinement surfaces. These results provide the basis for further correlation with stratigraphic surfaces within the Viking Formation in SW Saskatchewan to place them in a more regional context, and a framework for diagenetic study of the reservoir rocks.