

Impact of the Prairie Evaporite Dissolution Collapse on McMurray Stratigraphy and Depositional Patterns, Shell Albian Sands Lease 13, Northeast Alberta

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Abstract

Throughout most of the Athabasca Oil Sands region, bitumen bearing sandstones associated with the Cretaceous McMurray Formation unconformably overlie Devonian carbonates and evaporates that have undergone extensive dissolution and collapse. Recent work indicates the dissolution and collapse took place beneath a relatively intact section of strata (Waterways Formation) and occurred in a progression of discrete phases that were active before, during, and after deposition of McMurray sediments (Stokes, 2014). The focus of this study is on how subsidence related to dissolution and collapse of the Devonian Prairie Evaporite affected the stratigraphy and depositional patterns within the Cretaceous McMurray Formation. Understanding the relationship has a bearing on resource evaluation and mining through improvement in geologic models used to delineate ore and waste zones, as well as identifying focus areas for geo-hazard risk management.

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