An Integrated Approach to Identify and Characterize Bitumen Bearing Reservoir Facies within the Complex Stratigraphic Framework of the Lower Grand Rapids Formation

Tammy M. Willmer[1] and Garrett M. Quinn[1]

[1]Osum Oil Sands Corp., Calgary, Alberta, Canada

Abstract

The Lower Grand Rapids Formation (LGR) is host to exploitable bitumen near Cold Lake, Alberta. The stratigraphic architecture of the LGR is comprised of a series of widely correlatable marine parasequences laterally replaced by fluvial to fluvial-estuarine channel fills. Given the complex stratigraphy it is imperative that multiple high resolution seismic volumes be integrated with all available core and log data to identify and map the reservoir quality, geometry and continuity. Osum Oil Sands Corp.'s Taiga project is the focus of this study (Township 65-66, Range 1-2W4).

The dataset consists of over 70 wells with geophysical well logs; 6 have compressional and shear sonic information and 21 wells have core over the LGR. The 32.5 sq. km. 3D seismic volume is a high resolution, three-component dataset acquired in 2009 with a bandwidth of 200Hz. This frequency content, combined with the shallow target depth of ~375m and relatively unconsolidated low velocity strata, yields a vertical resolution of 3.0m. Outside of the 3D, four 2D lines were used in mapping.