

## **Sedimentological and Stratigraphical Summary of AOSC's MacKay River and Dover Thermal Projects, North-Eastern Alberta, Canada**

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The sedimentology, stratigraphy and reservoir heterogeneity of the McMurray Formation in north-eastern Alberta is complicated. Over the past few years, Athabasca Oil Sands Corp (AOSC) has been exploring the north-western part of the Athabasca Oil Sands Deposit, and has discovered some new clastic plays. In this area, AOSC has launched an extensive delineation campaign over two of its thermal oil sands assets which are planned to be commercially developed. Geological information from these delineation programs is being used to better understand the stratigraphy and sedimentology of the reservoir interval, and to reduce subsurface technical uncertainties. This presentation will highlight the initial geological results of these two thermal projects.

The MacKay River Commercial Project (MRCP) will produce 150,000 bpd in the McMurray Formation. An application for project approval has been submitted to the provincial government. The upper McMurray reservoir is located within a narrow, north-west to south-east trending embayment in which sand was supplied from the marine environment by tidal currents and sculpted into tidal sand bars. The main McMurray reservoir will be exploited by 46 initial SAGD well-pairs, which cover about 2 ¾ sections of land. Reservoir quality, lithology and net pay thickness are extremely uniform along the main reservoir trend. Stratigraphical and sedimentological models were constructed from an integration of geophysical wire-line well-logs, core description, core analysis, seismic data and palynological information. This information has been applied to optimise positioning of future SAGD wells. Well positioning has been further optimised by running detailed structural uncertainty analysis on key stratigraphical surfaces.

The Dover project is not as advanced in development. Eighteen delineation wells have been drilled across 41 sections in 2009. Additional wells are being drilled in 2010. A 3-D seismic survey is being acquired over part of the region. The integration of the geophysical and geological information will be used to build a geomodel. The geomodel will be used for detailed reservoir characterization, in-place volumetric determination, structural modelling and future SAGD well placement.