

## 阿尔伯达盆地北极之光项目区块油砂层沉积样式

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## Depositional patterns of oil sand layer in Northern Lights block, Alberta Basin, Canada

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摘要

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摘要 在大量钻井地质成果及岩心数据研究的基础上,对北极之光油砂项目区块McMurray组的层序及沉积环境进行了划分及对比。结合测井数据,分析了McMurray组沉积相及岩石组合特征。北极之光项目区块中,McMurray组是最重要的油砂发育层,其包含连续的河流、三角洲平原和潮控的河口湾沉积。将McMurray组划分为3段:上部-滨岸及浅海沉积、中部-河口湾及潮间带沉积、下部-陆相河流沉积。确定并讨论了每个层序的地质属性、地质时代、层序地层格架和沉积样式。根据测井数据,将其一步划分为9个亚相,部分亚相又细分成若干微相。并对其沉积模式进行了总结,提出下段河道砂体及中段河口湾及潮汐通道沉积的砂体为McMurray组主要的油砂储集层。该认识不仅为北极之光项目的可行性提供了依据,而且可对我国在加拿大阿尔伯达盆地的油砂勘探开发工作有重要的参考作用和指导意义。

关键词: [油砂](#) [层序](#) [沉积相](#) [沉积样式](#) [McMurray组](#) [阿尔伯达盆地](#)

Abstract: Based on a lot of well and core data, McMurray Formation sequences and sedimentary environments were identified and correlated in Northern Lights oil sand block. With integrated logging data, this study analyzed the sedimentary facies and rock assemblages of the McMurray Formation. In this block, the McMurray Formation, the most important oil sand layer, consists of continuous fluvial, delta plain and tidal estuary bay deposits. The McMurray Formation was divided into three members. The lower member is longshore and shallow water deposits, the middle member is estuary bay and intertidal zone deposits and the upper member is continental fluvial deposits. The geologic characteristics, geologic time, sequence framework and depositional patterns of each sequence were confirmed. These sedimentary facies were subdivided into 9 subfacies, some of which were further subdivided into microfacies according to the logging data. Their depositional patterns were also established. The channel sands in the lower member and the estuarine and tidal channel deposits in the middle member are the main oil reservoirs of the McMurray Formation. The study not only can provide the basis for the feasibility research of the Northern Lights Project, but also can guide exploration and development of oil sands in Alberta Basin.

Keywords: [oil sand](#) [sequence](#) [sedimentary facies](#) [depositional pattern](#) [McMurray Formation](#) [Alberta Basin](#)

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