

## **RESERVOIR POTENTIAL IN THE MIDDLE JURASSIC SHAUNAVON MEMBERS, WEST OF THE MAIN OIL FIELD TREND, SOUTHWESTERN SASKATCHEWAN**

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### **Abstract**

Since the early 1950's with the discovery of oil in the Delta field, the Middle Jurassic Shaunavon Formation has been a known oil producer in southwestern Saskatchewan. The Shaunavon Formation is divided into two members: the mixed clastic and carbonate sediments in the upper member, and; the tight homogenous carbonate deposits of the lower member. Despite recent exploration within the lower member, the majority of production is still from the mixed carbonate clastic reservoirs within the upper member. Total cumulative production from the Upper Shaunavon Member is  $63.2 \times 10^6 \text{m}^3$  (398 MMBbl), while the Lower Shaunavon Member has produced  $2.0 \times 10^6 \text{m}^3$  (12.3MMBbl). The Lower Shaunavon Member has seen significant increases in production since 2007 with  $1.6 \times 10^6 \text{m}^3$  (9.8MMBbl) of oil being produced from 331 wells. During this same time period there have been over 829 wells that have produced  $4.2 \times 10^6 \text{m}^3$  (26.6 MMBbl) from the Upper Shaunavon Member. The renewed interest in drilling and the increases in oil production from the two members is largely due to the introduction of multi-stage fracturing techniques in horizontal wells.

Although to date most companies have focused on drilling and producing oil from the Shaunavon Formation in well-known pools on-trend, this presentation will bring awareness to the reservoir potential within both members to the west of the main oilfield trend. Shaunavon Formation wells have been drilled, sometimes cored and analyzed, to the west of the main oilfield trend since the 1960's. Many of these wells have up to several metres of oil staining visible in core, however, possibly due to technological limitations in completion techniques or a lack of infrastructure the majority of these wells have never been produced. Extensive mapping throughout the study area will show that up to five of the Shaunavon Formation reservoirs that are present within known pools along the main oil field trend also extend a fair distance westward toward the Saskatchewan-Alberta border. Isopach maps along with cross-sections will show the distribution and thickness of these potential reservoirs within the Upper Shaunavon Member west of the main oil field trend. Furthermore, some recently identified reservoir potential within the Lower Shaunavon Member to the west of the main oil field trend will be introduced by utilizing descriptions, photos and analysis of core from the lower member. The object of this presentation is to potentially expand the main oil producing areas of the Shaunavon Formation in southwestern Saskatchewan.