

Oil and gas plays in western Saskatchewan, Twps 1 to 60, Rges 12 to 30 W3M

*E.C. Dahlberg**, Saskatchewan Oil Ventures Ltd.

Most of the present-day exploration interest in Saskatchewan is focused on the southeast portion of the province, but there are also intriguing possibilities just across the fourth meridian from Alberta; with several plays awaiting geological and geophysical exploration in this comparatively inexpensive, and in many places unexplored oil and gas prone area.

Medium grade oil prospects along and to the east of the Shaunavon trend (which extends from Township 4 to Township 19, within Ranges 15 to 21) involve the Jurassic-aged Shaunavon, and Roseway sands. Net pays range from 2 to 12 metres, with 3 metres as the average. Porosities vary from 10 to 30 per cent, Producing Depths are about 900 to 1200m (S sand) and 1300 to 1500m (R sand) and the Oil Gravities range from 17 to 28 degrees API. Targets are essentially local erosional structural highs related to the Mississippian unconformity.

Light oil and gas plays targetting yet-to-be discovered Viking reservoirs are waiting to the north of the Jurassic trend. The Oil Gravities from the presently producing reservoirs are in the 29° to 36° range; the Net Pays vary from 2 to over 6 metres; Water Saturations range from 35 to 50 per cent; Sand Porosities from .18 to .22, and the average drilling depth to production is around 680 metres. Hydrocarbon reservoir locations are often strongly influenced by salt removal and possible erosion in the deeper Prairie Evaporite.

From Twp 31 to 52, west of Rge 18, heavy oil dominates the production picture. This comes from individual sands in the Cretaceous lower Mannville, Mississippian middle Bakken reservoirs and some scattered Devonian Birdbear and Duperow wells. The oil gravities vary from 11 to 18 degrees API in these units.

Natural Gas is produced from Mannville units in the region from Twp 53 to north of Twp 60 between Rges 20 to 27, and the present drilling density is pretty sparse in this area.

New plays in the deeper, unexplored Paleozoic units include:

1. **Winnipegosis reef development** around the flanks of the Swift Current Platform in the south and the Meadowlake Escarpment paleogeological features in the north.
2. **Birdbear reefs**, and **Duperow porous reservoirs**, the locations of which appear to be influenced by salt dissolution in the underlying Prairie Evaporite which has created local thicks and reversed dip edges.
3. **Bakken sands** isolated and sealed within erosional highs on the Paleozoic Unconformity.

The facts that: (1) This region already produces hydrocarbons. (2) Is still in many places largely unexplored. (3) Is networked by pipelines including the future Alliance. (4) The petroleum-bearing units are relatively shallow, and (5) Deep rights are reverting back to the government for acquisition by new groups, make it highly attractive for future exploration ventures.