

Applying reservoir characterization and core analysis to expand the Upper Shaunavon Member play west of the main oil field trend in southwestern Saskatchewan

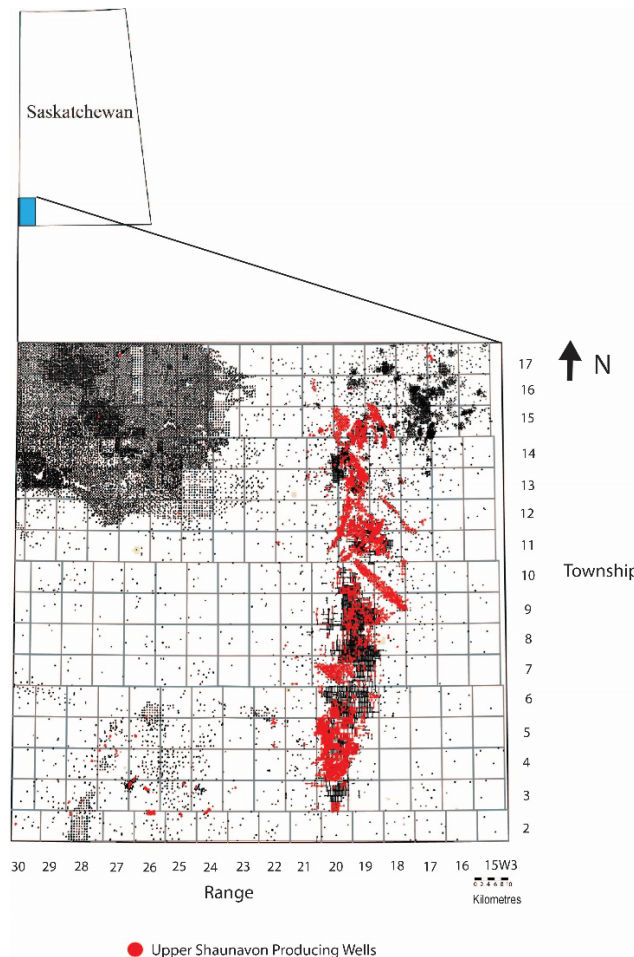
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Summary

The Middle Jurassic Upper Shaunavon Member has been a prolific hydrocarbon producer for decades. The mixed carbonate-clastic reservoirs within the Upper Shaunavon Member are typically produced conventionally from vertical wells and as of September 2023, have produced approximately 73.1 million cubic metres (approximately 459.8 million barrels) of oil throughout Saskatchewan.

Upper Shaunavon oil production along the main trend encompasses an area from Township 3, Range 17 west of the Third Meridian(W3) north to Township 16, Range 21W3 (Figure 1).



The presence of oil to the west of the main trend has been well documented since the 1960's, however due to restraints in completion and drilling techniques, many of these wells were never produced. The purpose of this study is to highlight the strongly similar reservoir conditions between producing wells within the main oil field and non-producing wells west of the main trend. Based on findings from detailed reservoir mapping, reservoir characterization and core analysis there is a strong potential to expand Upper Shaunavon Member oil production to the west of the current producing area.

Results

The presence of oil shows in core, combined with comprehensive facies analysis and reservoir mapping indicate that known producing Upper Shaunavon Member oil reservoirs extend far to the west for the entire length of the main oil field trend. Comparison of core analysis between producing oil wells and non-producing wells west of the play reveal very similar reservoir conditions (e.g., porosity, water saturations, oil saturations).

Conclusions

Detailed reservoir mapping, core analysis and hydrocarbon distribution illustrate the strong potential to expand Upper Shaunavon Member oil production far beyond the current boundaries, particularly to the west of the main oil field trend.

Acknowledgements

I would like to thank Holly Shoulak and Arden Marsh for their assistance with facies analysis, reservoir mapping throughout the length of this multiyear project.