

The Hole Truth: Upper Mannville Diagenesis

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Summary

The benefit of diagenetic studies is to enhance porosity prediction in exploration and more efficient management of rock-fluid interactions in producing reservoirs.

The Glauconitic, Wilrich, Falher and Notikewan Formations in the Pembina and Edson-Kaybob area exhibit characteristic diagenetic signatures that are dependent on the original composition plus subsequent mechanical and chemical processes.

The diagenetic processes on the upper Mannville sediments can create, obliterate or modify porosity. During the early stages of burial diagenesis there is an initial reduction or destruction of porosity in the clastic succession. Compaction, cementation, recrystallization and replacement are widely acceptable porosity reducing mechanisms.

In the later stages of diagenesis secondary porosity can be produced by dissolution of detrital and authigenic minerals. In other words, effective porosity can be restored and enhanced at depth. Specific examples of each Glauconitic, Wilrich, Falher and Notikewan succession will be presented to gain a better understanding the importance of diagenetic studies to comprehend and correlate geophysical log signatures, pore and permeability systems, and reservoir quality characteristics.

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