Stratigraphic and Sedimentologic Attributes of the Late Devonian Duperow Formation, Southeastern Saskatchewan, Canada

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Abstract
The Late Devonian Duperow Formation was deposited in the Williston Basin and preserved in subsurface southern Saskatchewan, North Dakota and Montana. In the latter two regions, unlike Saskatchewan, the formation contains significant hydrocarbon-producing intervals. The purposes of this project are subsurface stratigraphic and sedimentologic mapping of the formation in southeastern Saskatchewan and to possibly identify potential reservoir intervals equivalent to those in the states to the south.

The Duperow Formation in SE Saskatchewan consists of three members: Saskatoon, Wymark and Seward, in ascending order. The Saskatoon Member (17-37 m) consists of stromatoporoid floatstone, bioclastic wackestone/mudstone and subordinate dolomustone and anhydrite. Bioclasts include globular stromatoporoids, corals, brachiopods, bivalves and crinoids. The Wymark Member (77-145 m) is also dominated by stromatoporoid floatstone and bioclastic packstone to mudstone with minor dolomudstone interbedded with anhydrite. Bioclasts include stromatoporid, corals, brachiopoids, gastropoid and crinoids. Thin, discontinuous halite unit (Flat Lake Evaporite) locally caps the Wymark member. The Seward Member (31-78 m) contains burrow-mottled bioclastic rudstone, packstone-mudstone, dolomudstone and rare anhydrite. Bioclasts include gastropods, bivalves, brachiopods and crinoids.

The three members are characterized by shallowing-upward rhythmic sedimentation defined by recurring intervals of bioclastic-rich subtidal to intertidal lithofacies grading upward to a more restricted lime- and dolo-mudstones, and evaporites. The overall depositional setting of the Duperow Formation can be attributed to a broad lagoonal environment (backreef zone of the Leduc reefs). Some dolomitized intervals show an estimated fair to good (~ 8 - 10%) porosity and may include potential reservoirs.