**Characterization of Sand Injectites in the Mississippian-Devonian Lower Bakken Shale, Williston Basin, North Dakota**

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Preliminary investigations, as part of an ongoing study, reveal the presence of sand injectites in the Mississippian-Devonian Lower Bakken Shale. Injectites were observed in 12 cores from the north-central portion of the Williston Basin, North Dakota. The injectites are stratigraphically restricted to the Lower Bakken. Though the size and extent of the injectite network is difficult to determine because of the limited viewing scope of core, heights up to 1 m and widths ranging from 2 mm to 8 cm are observed.

These sand injectites are enigmatic and intriguing for several reasons. First, they occur in wells that trend north-south approximately 30 mi [48 km] east of the Nesson Anticline and in one well at the north end of the anticline. Their occurrence east of the Nesson Anticline is not correlative to any structural or stratigrahpic trend. Second, they consist of primarily fine-grained, with occasional coarse-grained, quartz sand, minor dolomite and phosphatic clasts, and sulfide-enriched (possibly sphalerite) cement. The source of the coarser-grained component is unknown as there is no compositionally similar sedimentary source material in stratigraphic proximity to the Lower Bakken. Third, timing of emplacement is not entirely clear. Many injectites are contorted, which indicates emplacement prior to compaction of the Lower Bakken. Some injectites, however, are not contorted, suggesting post-compaction emplacement. It is possible that injectite emplacement occurred in multiple stages and that later emplacement is related to hydrocarbon generation and expulsion, as indicated by resistivity maps.

From other petroleum basins, it is known that injectites can form highly connected systems that influence and play a significant role in gross permeability, fluid escape, and fluid migration. Although the injectite network in the Lower Bakken is not well understood, its location in specific areas may provide clues to fluid timing and migration. For these reasons, understanding their formation and occurrence is important to expanding knowledge of the Bakken play concept.