

Reservoir Geology and Secondary Recovery at Kleinholz Field, Kimball County, Nebraska

Louis C. Bortz and Steven M. Goolsby
Advantage Resources, Inc., Denver, CO.

The discovery of Kleinholz field in Kimball County, Nebraska, established the Wolfcampian Wykert Sandstone as an important producing reservoir in the northern Denver Basin. Cumulative production from both primary and secondary recovery in the field is 6.7 million barrels of oil. The Wykert Sandstone has reservoir characteristics that are unlike those of most other producing zones in the Denver Basin. Sandstone deposition was controlled by glacial-eustatic sea level fluctuations during the Permian. During eustatic low stands, the basin was subaerially exposed and dune complexes migrated into the Kleinholz field area. These dune complexes were then reworked by marine processes during subsequent sea level rises. This depositional pattern influenced the distribution of the producing facies, and had a major impact on the reservoir and petrophysical properties of the Wykert Sandstone. Examination of these reservoir characteristics at Kleinholz Field indicates that there is a high probability that additional Wykert Sandstone fields will be discovered in the Nebraska panhandle.