

Production History and Exploration Potential in Western Nebraska

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Much of the Panhandle of western Nebraska is underlain by the Denver Basin. Production in this Basin from the Cretaceous Dakota sandstones was discovered in 1949 in Cheyenne County, Nebraska. These D and J sands have been widely productive across the area and continue to be a major exploration target. Both oil and gas are produced from these beds as well as gas from the younger Niobrara chalky shale. Later, and deeper, exploration discovered production in Permian and Pennsylvanian reservoirs within what has been termed the Alliance Salt Basin. This Basin underlies and preceded the Denver Basin and, along with the Sterling Salt Basin in northeast Colorado, is similar to the classical Permian Basin to the south. At least 14 distinct salt beds have been identified in the Alliance Basin with distribution controlled by both original deposition and later dissolution. . The Paleozoic reservoirs consist of interbedded siltstone, anhydrite, and limestone in a stratigraphic succession much different than the cyclic reservoir beds of this age in the mid-continent. Depositional facies and compaction are a reservoir factor in all horizons. In addition, it is suggested that the distribution and later dissolution of the salt beds have created structures in the younger beds. Patterns of sutures emplaced in the crystalline rocks during Precambrian time have been rejuvenated as block faulting influencing structure in the overlying sediments.