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Amos Draw Field, Campbell County, Wyoming

Amos Draw Field produces gas and condensate from a stratigraphic trap in the Cretaceous Muddy Formation. It is the western-most Muddy production of any consequence in the Powder River Basin. The field was discovered by Davis Oil Company in 1981 with the fourth well in a Muddy exploration program designed to look for a large stratigraphic accumulation of hydrocarbons. Production is from the "D" sandstone member of the Muddy Formation. The "D" sandstone is interpreted to be a marine barrier bar complex and is expressed as a series of partially coalesced NE-trending linear sand ridges. Porosities as high as 18% are common; permeabilities are low, typically 1.0 md or less. Production depths average 10,000' and are associated with

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high temperatures and overpressuring. The field currently contains 81 producing wells (as of May, 1985) and is considered to be less than half defined. The reservoir produces retrograde gas condensate. Recycling of the gas for pressure maintenance of the reservoir was considered but deemed non-economic.

The Muddy sandstones in Amos Draw are feldspar rich. The presence of abundant fresh feldspar in the formation and in Muddy outcrops on the western margin of the basin suggests a western sand source. The Muddy "D" zone is overlain by the arkosic and clayfilled "C" sandstone. The "C" sandstone is interpreted to be an estuarine deposit that was deposited in low areas between the "D" sandstone ridges.

The Amos Draw reservoir is both water and acid sensitive, and easily damaged by poor completion techniques. A hydraulic fracture technique, utilizing sand, KCl water, and foamed CO₂ is used, typically resulting in a 3 to 4 fold increase in production.

Both the Niobrara and Mowry Formations, which occur above the Muddy, are capable of production over much of Amos Draw. They are fractured shale reservoirs that are typically considered non-economic except as secondary pays after depletion of the Muddy reservoir.