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Whitney Canyon - Carter Creek Field a synergistic geologic and engineering analysis

Jeffrey D. Hunt and Dwain E. McGarry
Bureau of Land Management
Casper, Wyoming 82601

Abstract

The Bureau of Land Management, Rock Springs District and Wyoming Reservoir Management Team, has completed an extensive analysis of the Mission Canyon Formation in the Whitney Canyon-Carter Creek Field. Whitney Canyon-Carter Creek is one of the largest and most prolific natural gas fields in the Thrust Belt of western Wyoming. Four separate formations in the field have yielded commercial production, but approximately 90% of the production is attributed to the Mission Canyon.

The study was prepared to evaluate potential drainage from Federal leases within the field. A complete reservoir analysis was necessary to determine the volumes drained from each affected lease. All available data were considered. Reservoir performance and petrophysical properties were analyzed in detail. All production was recorded, verified, and analyzed, beginning with initial production from the fields in 1982, through June 1994.

Several log analysis and reservoir engineering techniques were successfully integrated and applied to complex reservoir problems. A variety of analytical techniques and mapping presentations were used to characterize the reservoir properties and performance. The combined application of geology and reservoir engineering defined a functional, coherent model of the Mission Canyon Formation reservoir.

A number of innovative analytical applications were developed that yielded useful insights into reservoir performance and the drainage configurations of all wells in the field. Initial reservoir interpretations were substantiated by production and volumetric analyses. The study illustrates several important concepts that should be considered in future management of the reservoir. The techniques described may be applied or adapted to other fields.