

## **The Offshore Mancos Play in the San Juan Basin: Productive Carrier Beds within the Mancos Total Petroleum System**

**Ronald F. Broadhead<sup>1</sup>**

<sup>1</sup>Emeritus New Mexico Bureau of Geology and Mineral Resources/New Mexico Tech

### **Abstract**

Historically, the Offshore Mancos play of the San Juan Basin has produced oil from noncommercial to marginally commercial reservoirs formed by dark-gray marine shale with thin beds and laminae of fine-grained sandstone of limited permeability. During the last decade drilling with horizontal wells has resulted in substantially increased production. However, placement of the Offshore Mancos play within the Mancos total petroleum system has been poorly understood. Here, the Offshore Mancos play is interpreted as a carrier bed play within the Mancos total petroleum system.

Unconventional reservoirs of the Offshore Mancos play are stratigraphically equivalent to updip conventional reservoirs deposited nearer to the shoreline and are also equivalent to downdip source rocks matured to peak oil generation. Offshore Mancos facies include a proximal facies to the southwest, a medial facies, and a distal facies to the northeast. Oil production has been obtained from the proximal and medial facies.

Mancos shales contain oil generative kerogens that are within the upper oil window near conventional reservoirs in the south and have been matured to peak oil generation downdip of and to the northeast of the Offshore Mancos reservoirs. Uniform API gravities of light sweet produced oils that transcend thermal maturity variations of Mancos shales indicate that oils generated in downdip mature source rocks migrated updip through the carrier bed sandstones of the Offshore play and into the conventional reservoirs. Residual oil saturations are consistent with the concept of migrating oils moving updip through only a small number of interconnected pathways within a carrier bed.

Petroleum Systems in the Rocky Mountain Region    Monday, July 25    2:50 PM