Geologic Justification For The Rock Mesa Exploratory Unit Boundaries

By
L.D. Endsley

October 29, 1992

NMOCD Examiner Hearing
October 29, 1992
Application of Merrion Oil & Gas
Case #10576
Exhibit # 1 of 5

The proposed Rock Mesa Unit is located in the southeast portion of the San Juan Basin, 12-15 miles west of Cuba, along the west flank of the Media nose.

This area is characterized by structural deformation that occurred during the Laramide orogeny, the last major tectonic event that formed the San Juan Basin. Through investigations of many miles of seismic data, a large number of basement faults have been identified. In most cases within the eastern part of the San Juan Basin, these basement faults experienced rejuvenated movement during Laramide time and created a series of shallow listric faults and basin- ward monoclinal folding, as is seen in the Rio Puerco field to the north. In some cases, as along the west flank of the Media nose, these faults cut the entire stratigraphic section. The eastern flank of the San Juan Basin was undergoing a north-eastwardly directed wrenching and the basement was broken in a series of strike-slip faults.

One of these strike-slip faults sets up the proposed Rock Mesa Unit. The displacement along the fault at the Mancos level has created a pronounced flexure of the rocks on the downthrown side of this fault. The rocks underwent vertical displacement as well as lateral deformation in response to the strike-slip nature of the fault.

The displacement along this strike-slip fault diminishes both north and south. It is felt that as the displacement along the fault diminishes, so too will the intensity of the fracturing of the Mancos section. It is with this hypothesis in mind that the north and south boundaries of the proposed unit have been picked. Also, to the north, three Mancos dry holes separate the San Isidro shallow unit from the proposed Rock Mesa Unit. Two of those wells, Section 3, T19N, R3W and Section 27, T20N, R3W cored the prospective Mancos interval and no shows were reported.

The western boundary is felt to be controlled by a narrow area of fracturing localized along the upthrown side of the fault. As the fault blocks moved, this side would have experienced some minor fracturing.

The eastern boundary is controlled by a number of wells that produced oil from the Mancos section some years ago. These wells range in cumulative production less than 500 BO to approximately 20,000 BO. The smaller cumulative production seems to generally be in the eastern most wells. It is felt that the poor production in all wells is due to a lessening of the fracturing associated with the fault. It is for this reason that the eastern boundary of the unit was chosen the way it was.