Big Hat Exploratory Unit Geologic Justification

Yates Petroleum Corporation requests the formation of the Big Hat Exploratory Unit to support the re-entry and deepening of a well in the SW/4 of section 2 T16S R33E. The original well was the Gulf Oil, South Saunders Unit #2, which was drilled to a total depth of 11,500'. The footage location of this well is 1980' FSL and 660' FWL of section 2. The primary target of this re-entry and deepening will be the Atoka-Morrow, but the well will reach TD in the Mississippian limestone at a depth of 13,700'. The proposed unit outline is shown on the geologic structure map by the red outline.

The targeted Atoka-Morrow sands are gas productive channel sands of limited aerial extent. These channel sands were deposited in structurally low areas that developed during Atoka-Morrow time. During late Mississippian time, erosion from uplifted fault blocks located to the northwest supplied sand to this area. The channels developed in the lows between the uplifted blocks (see Morrow structure map). The Morrow structure map shows the structural highs in yellow and the sand channels between these highs in blue. Both seismic and well control were used to construct the Morrow map.

These sand channels are narrow, elongate features, but they can be very prolific. The best Morrow well on the map is the Skelly Oil, Sombrero Unit # 1, located in the NW/4 of section 12 (see cross section A – A'). The Skelly well, shown on the right side of the cross section, has a cumulative production of 66 MBO and 1.7 BCFG from a thin lower Morrow sand. The thicker upper sand tested wet. This well, which is located outside the proposed unit area, was originally drilled in 1957 and abandoned in 1972. The productive Morrow sand in the Skelly well pinches out before the Yates Red Hat well (the next well on the cross section), but the sand should be present in the low west of the Red Hat well.

There has been no significant production inside the proposed unit outline. The best well within the proposed unit area had a cumulative production of 6 MBO and 102 MMCFG. The last well drilled in the proposed unit was by Yates Petroleum Corporation in 1991.

The proposed Yates re-entry is located in a north-south channel system on the east side of a high. There is approximately 230' of relief from the high block to the channel system. A successful first well in the Unit outline will lead to the other channel systems shown on the map being tested.

The proposed Unit outline encompasses a faulted area of upthrown and downthrown blocks. Yates Petroleum Corporation believes there is potential for channel sand development between the upthrown blocks. This re-entry deepening is a high risk project which will cost approximately $921,500 for a completed well. The future wells will cost $1,500,000. The formation of this exploratory unit would aid in the development of potential reservoirs in an area with little exploration success.

BEFORE THE OIL CONSERVATION DIVISION
Santa Fe, New Mexico
Case No. 12870 Exhibit No. 7
Submitted by:
Yates Petroleum Corporation
Hearing Date: May 30, 2002