

## **Luke Federal-State Exploratory Unit Description and Geologic Justification**

Yates Petroleum Corporation is requesting the formation of the Luke Federal-State Exploratory Unit to support the drilling of an exploratory well to be located in the E/2 of Section 9 Township 21 South Range 22 East, in Eddy County, New Mexico. The unit will include the following lands as shown on Exhibit A; Sections 2,3,9 and 10 T21S R22E. **The primary objective of the proposed well will be the oil and gas productive Upper Penn Dolomite at depths between 6000-7000 feet measured depth. Regional subsurface mapping in the area indicates a paleohigh exists over the proposed exploration unit on which Upper Penn carbonate buildups are believed to have formed and later dolomitized creating porosity in the reservoir. A NW/SE trending normal fault on the west side of the unit forms the trap to the west, while off the inferred structure, the Upper Penn dolomite pinches out into limestone forming a lateral seal.** Figure 2 is a structure map on the top of the Upper Penn carbonate interval; the inferred dolomite reservoir is colored in purple on this structure map. The reason for inferring a possible dolomite reservoir is based on the Maralo Indian Basin Unit 1-A well in Section 2 T21S R22E; the well encountered 68' of porous dolomite on the lower part of the structure shown in Figure 1. A thicker dolomite reservoir is predicted to be encountered higher up structure; locations are being permitted in both Section 3 and 9 to test this. Figure 3 is a cross-section over this structure and across the fault illustrating the trapping mechanism for hydrocarbons we believe to exist over the proposed unit.

In addition to potential in the Upper Penn Dolomite, it is believed that the Atoka-Morrow sandstones are potentially productive over the proposed exploration unit. **Both permitted wells will be drilled thru the Morrow to test the potential of the gas sands of the Atoka-Morrow in the area.**