

## DRILLING PROGNOSIS & MUD PROGRAM

OPERATOR: Texas International Petroleum Corporation

LEASE AND WELL NO: Penn-Federal #1 (Morrow)

LOCATION: 1980' FNL & 1980' FWL of Section 31, T20S & R30E, Eddy County, New Mexico.

SURFACE CASING: 17-1/2" surface hole is to be drilled to an approximate depth of 450' using a fresh water gel-lime spud mud. A caliper survey will be run to determine volume of cement required. 13-3/8" OD casing will be set at approximately 450'.

INTERMEDIATE CASING: 11" hole is to be drilled below the surface casing to approximately 4,000' using saturated salt water. Lost circulation is anticipated while drilling through the Capitan Reef. The hole will of necessity be dry-drilled to casing point, if lost circulation is severe. A caliper survey will be run to determine volume of cement required. Cementing of the 8-5/8" casing back to surface will be accomplished through stage cementing procedures utilizing a packoff stage collar.

PRODUCTION CASING: 7-7/8" hole is to be drilled from below the 8-5/8" to total depth using fresh water with flo-sal and 2-4% potassium chloride. Before drilling the Strawn zone, brine will be used and subsequently retained through the Morrow interval. Cementing of the 5-1/2" oil string will be accomplished after evaluating open hole logs and caliper.

MUD PROGRAM SUMMARY: Surface: Fresh water gel-lime spud mud.

Intermediate: Saturated salt water.

Oil String: Fresh water, 2% KCL with flo-sal, followed by brine of sufficient weight to control encountered hole conditions. The following products will be used with the above program: Bentonite, lime, potassium chloride, caustic soda, starch, salt gel, formaldehyde, barite (possibly), asbestos and inert lost circulation materials.