

PETROLEUM DEVELOPMENT CORPORATION
MCKAY-SHELL FEDERAL #1
2310' FSL & 990' FWL Sec. 3-19S-32E
Lea County, New Mexico

MUD PROGRAM

- 0- 400 Gel and lime spud mud. No problems anticipated.
- 400- 4600 Brine water at 3000'. Prepare for possible lost circulation in Seven Rivers by bringing Viscosity to 34 sec. with gel and visquick; add 20 sxs each of hulls and fiber, add 1 sack per tour of paper, hulls, and fiber, add 1 sack per tour of paper, hulls, and fiber. If complete returns are lost, drill with fresh water with no circulation. Before pulling drill pipe prior to running casing, if lost circulation has occurred, pump in 300 barrels of viscous mud (70-80 sec.) to flush out any cuttings that may be below the loss zone.
- 4600- T.D. Drill with fresh water and detergent using lime for pH control (or sodium bichromate for corrosion protection). If a commercially productive zone is indicated, water loss will be reduced to below 10 c.c. and maintained to total depth. Otherwise, fresh water drilling will continue to 10,900' at which depth a low solids fresh water mud will be prepared with the following characteristics:
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|------------|------------|-------------|-----------|
| Viscosity: | 32-34 Sec. | Water Loss: | 10 c.c. |
| Weight: | 8.8 - 9.2# | pH | 9.0 - 9.5 |
- After drilling out below intermediate casing, flow-line flow sensor, pit volume totalizers, and pump stroke counter will be installed. Adequate barite, chemicals and gel will be on hand to bring total mud volume to 11.0#/gal. at any depth below 10,000'.

BLOWOUT PREVENTER

A series 1500 double-ram preventer and a series 1500 Hydril preventer with a remote control station will be used. Pipe rams will be checked every tour and blind rams will be checked every trip. Relief line and choke manifolds will be hooked up in a similar manner to the attached diagram.