

#### MUD PROGRAM

Surface (0-400'): FW-bentonite-lime, no LCM. Drill through steel pits. No water loss control.

Intermediate (400-2500'): Cut-brine (9.5#/gal). Circulate inner (lined) reserve pit. No LCM "filler" permitted. If hazardous loss occurs, batch in a 50 bbl slug of PHB carrying pill of LCM, continue drilling.

Protective (2500-11000): Drill with fresh water until significant gas flow occurs. Displace with 10%-10.2% pot ash brine at 10,000' or when hazardous gas flows are encountered. If a weighted fluid is required for trip margin, raise viscosity to 32 sec. with prehydrated bentonite. Increase weight slowly, while drilling. Circulate gas off from gas-cut mud through chokes at minimum back pressure, prior to making trips. If possible, continue drilling with brine only. If a fluid weight above 10.2#/gal. is required, do not mix soda ash. Rely on PHB, and barite as required. If no gas is encountered, drill ahead with brine only.

Liner (11000-12000):

1. If 7" casing is set at 11000', drill with a PAL-mix or an XC polymer system, for good hole stability, penetration rates, and Morrow protection. Maintain a 0-solids control with an 80-mesh shaker and a 6-cone desilter.
2. If 7" casing not required, and a brine water system is in use, add starch to lower the fluid loss to 5 cc. below 11300'. If a PHB system is being used, drop the water loss with low viscosity drispac. Maintain weight as low as the open hole will allow for trips.