

30 - 015 - 34350

Bryan, per your request attached is a detailed mud program. I'll include this with future permits.

Depth	Mud Wt	Viscosity	Fluid Loss	Type Mud
0 - 650'	8.4 - 8.6	30 - 32	May lose circ.	Fresh water. Add paper to control seepage high viscosity sweeps to clean hole.
650' - 2200'	8.4 - 9.9	28 - 29	May lose circ.	Fresh water. Add paper as needed to control seepage and add lime to control pH (9-10). Use high viscosity sweeps to clean hole.
2200' - 8000'	8.4 - 9.9	28 - 29	NC	Fresh water. Paper for seepage. Lime for (9 - 9.5)
8000' - 10000'	8.45 - 8.9	28 - 29	NC	Cut brine. Caustic for pH control.
10000' - 12000'	8.9 - 9.7	29 - 45	NC	XCD Polymer mud system.

Sufficient mud materials will be kept on location at all times in order to combat lost circulation, or unexpected kicks. In order to run DST's, open hole logs, and casing, the viscosity and water loss may have to be adjusted in order to meet these needs. Mud system monitoring equipment with derrick floor indicators and visual/audio alarms shall be installed and operative prior to drilling into the Wolfcamp formation. This equipment will remain in use until production casing is run and cemented.