

Interval Summary 3

Chi Operating, Inc.

9-5/8" Intermediate Casing, 1,900 - 11,900 ft MD - 8-3/4" Open Hole

Drilling Fluid System	Fresh/Native, Brine/Native, Duo-Vis/My-Lo-Jel/Dualflo
Key Products	Lime, Drilling Paper, Duo-Vis, My-Lo-Jel, DMS, Greencide, Polypac, Dualflo
Solids Control	Reserve Pit, Adjustable Linear Shaker, Centrifuge
Potential Problems	Seepage Losses, Lost Returns, Hole Cleaning, Abnormal Pressures, Sensitive Shales

Interval Drilling Fluid Properties

Depth Interval (ft)	Mud Weight (ppg)	Plastic Viscosity (cp)	Yield Point (lb/100ft ²)	API Fluid Loss (ml/30min)	LSRV CPS	Total Solids (%)
1,900 - 9,000	8.4 - 8.8			NC		<1.5
9,000 - 9,900	10.0			NC		<1.5
9,900 - 11,000	10.0 - 10.2	4 - 6	6 - 8	8 - 10		<4.0
11,000 - 11,900	10.0 - 10.4	8 - 12	10 - 14	<8	20,000+	4 - 5.0

- Drill out below 9-5/8" intermediate casing with fresh water, circulating a portion of the reserve pit.
- Maintain 9.0 - 10.0 pH control with Lime.
- Drilling Paper additions should be sufficient to control minor seepage losses.
- Use M-I Gel pill sweeps to ensure a clean hole.
- There is a possibility some gas or water flows may be encountered. These flows may contain H₂S gas, we suggest adding 10.0 lb/gal brine for needed fluid weight to control any intrusions by gas or water.
- At 9,000', displace hole with 10.0 ppg brine, circulating through the steel pits to monitor flow
- At 9,900', we recommend mudding up with a Duo Vis/Polypac/My-Lo-Jel type drilling fluid.
- Maintain 10 - 10.2 lb/gal mud weight, 34 - 38 sec/qt viscosity and 8 - 10cc's fluid loss after mud up.
- Pressures from the Strawn may require setting of 7" casing prior to drilling deeper.
- Prior to the Morrow, adjust LSRV to 20,000+ cps and lower fluid loss to 6 cc's or less.
- Abnormal pressures may be encountered from the Lower Wolfcamp, Strawn and Atoka) Sections that may require a drilling fluid weight increase above 10.4 ppg, adjust mud weight using M-I Bar for well control.

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