

Well: State 8-60 16-2H
Zone of Interest: Niobrara Shale

1.0) Summary of Operations

Drill 12-1/4" surface hole to section TD at 1100'.

Set 9-5/8" 40# J-55 casing and cement with Lead and Tail cement (see details below). Cement will be circulated to surface.

Install 11" x 5,000 psi BOP and test as required

Drill 8-3/4" hole to KOP.

Kick off and drill 8-3/4" curve at 10 deg/100' to end of build.

Drill 7-7/8" open hole to well TD

Acquire shuttle logs: Triple combo and image logs in open hole

Set 4-1/2" x 5-1/2" casing and cement as shown below.

Suspend well and move drilling rig out in preparation for well completion

2.0 CASING AND CEMENTING PROGRAM

The proposed casing program will be as follows:

| <u>Purpose</u> | <u>Interval</u> | | <u>Hole Size</u> | <u>Casing Size</u> | <u>Weight</u> | <u>Grade</u> | <u>Thread</u> | <u>Condition</u> |
|----------------|-----------------|-----------|------------------|--------------------|---------------|--------------|---------------|------------------|
| | <u>From</u> | <u>To</u> | <u>(")</u> | <u>(")</u> | <u>Lbs/Ft</u> | | | |
| Surface | 0 | 1100 | 12 1/4 | 9 5/8 | 40 | J-55 | LTC | New |
| Production | 0 | 5756 | 8 3/4 | 5 1/2 | 17 | P-110 | LTC | New |
| | 5756 | 10495 | 8 3/4 | 4 1/2 | 11.6 | P-110 | LTC | New |

Casing design subject to revision based on geologic conditions encountered.

Casing Safety Factors:

| Interval | Casing | Burst | Collapse | Axial |
|------------|--------|-------|----------|-------|
| Surface | 9 5/8 | 2.03 | 2.03 | 4.78 |
| Production | 4 1/2 | 1.32 | 2.26 | 1.63 |

Centralizer Program

| | | | |
|----------------------------------|-------|--|-------|
| Casing | 9 5/8 | | 4 1/2 |
| # of Bow-type spring centralizer | 9 | | 27 |

Cement Program

| Surface Casing | Slurry Volume | | | Weight | Yield | Mix H2O | TOC |
|----------------|---------------|--------|---------|--------|-----------|---------|-----|
| | % Excess | (BBLs) | (Sacks) | (PPG) | (cuft/sk) | (GPS) | |
| Lead Slurry | 100% | 92 | 175 | 11.50 | 2.95 | 17.88 | 0 |
| Tail Slurry | 100% | 36 | 177 | 15.80 | 1.15 | 4.96 | 825 |

| | Lead | Tail |
|--------------------------------------|--|--|
| Surface Casing with TOC at surface | Rockies LT 0.2 % Versaset (Additive Material) 0.2 % D-AIR 3000 (Additive Material) 0.125 lbm/sk Poly-E-Flake (Additive Material) 0.25 lbm/sk Kwik Seal (Additive Material) | Premium Cement, 94 lbm/sk Premium Cement (Cement) 1 % Calcium Chloride, Pellet (Accelerator) 0.125 lbm/sk Poly-E-Flake (Lost Circulation Additive) |
| Cement must be circulated to surface | | |

| Production Casing Cement | Slurry Volume | | | Weight | Yield | Mix H2O | TOC |
|--------------------------|---------------|--------|---------|--------|-----------|---------|-------|
| | % Excess | (BBLs) | (Sacks) | (PPG) | (cuft/sk) | (GPS) | |
| Lead Slurry | 30% | 169 | 432 | 12.00 | 2.20 | 12.30 | 2361' |
| Tail Slurry | 30% | 297 | 1143 | 14.60 | 1.46 | 6.10 | |

| | Lead | Tail |
|--------------------------|--|---|
| Production Casing Cement | Poz Type I-II 50/50 1 % Bentonite (Light Weight Additive) 3 lbm/sk Silicalite Compacted (Additive Material) 3 % Microbond HT (Additive Material) 0.2 % Halad(R)-322 (Low Fluid Loss Control) 0.4 % Halad(R)-344 (Low Fluid Loss Control) 0.3 % HR-5 (Retarder) | 50/50 Poz Premium 2 % Bentonite (Light Weight Additive) 5 lbm/sk Silicalite Compacted (Light Weight Additive) 0.5 % Versaset (Thixotropic Additive) 0.5 % Econolite (Cement Material) 0.6 % HR-7 (Retarder) 0.5 % D-AIR 3000 (Defoamer) 0.125 lbm/sk Poly-E-Flake (Lost Circulation Additive) 0.25 lbm/sk Kwik Seal (Lost Circulation Additive) |

The cement must achieve a compressive strength of at least 500 psi at the shoe prior to casing test and drilling out the shoe track. WOC time shall be recorded in the driller's log.

MUD PROGRAM

| <u>Purpose</u> | <u>Interval</u> | | <u>Hole Size</u> | <u>Mud Type</u> | <u>Mud Weight</u> | <u>Viscosity</u> | <u>Fluid Loss</u> | <u>pH</u> |
|----------------|-----------------|-----------|------------------|-----------------|-------------------|------------------|-------------------|-----------|
| | <u>From</u> | <u>To</u> | <u>(")</u> | <u>(")</u> | <u>Lbs/Ft</u> | | | |
| Surface | 0' | 1100' | 12 1/4 | WBM | 8.4 – 8.8 | 28 – 32 | N/C | 9 |
| Production | 1100' | 6657' | 8 3/4 | WBM | 8.5 – 9.5 | 35 – 46 | 4 – 6 | 9 |
| | 6657' | 10495' | 7 7/8 | WBM | 9.0 - 10.0 | 36 – 46 | 4 – 6 | 9 |

WBM = Water Based Mud