

**Whiting Oil & Gas Corp.  
Terrace 36-32M Drill Plan  
Vertical J-Sand well**

Surface Location: 36-T10N-R59W  
2425' FSL/2525' FEL  
Weld County, Colorado

**DRILLING PROGRAM**

**1. ESTIMATED TOPS OF GEOLOGICAL MARKERS:**

Ground Level 4,892'      Estimated KB 4,905' (12')

<b><u>Formation</u></b>	<b><u>MD</u></b>	<b><u>Lithology</u></b>	<b><u>Hazard</u></b>
Fox Hills	Surface	Sandstone, shale, coals	Water
Pierre	582'	Ss and dark grey shale	None
Niobrara	5,977'	Chalk, limey sh, shale	Oil, gas, fractures
Codell	6,419'	Sandstone	Oil, gas
Mowry	6,508'	Siltstone, shale	None
D Sand	6,651'	Sandstone	Gas
J Sand	6,744'	Sandstone	Gas
Skull Creek	6,828'	Shale	None
TD	6,878'		

**2. PRESSURE CONTROL EQUIPMENT**

**A. Type:** 11" 3000 psi double ram hydraulic BOP.  
11" 3000 psi annular preventer  
3,000 psi Casinghead  
3,000 psi Tubinghead.

**B. Testing Procedure:**

The annular preventer will be pressure tested to 50% of stack rated working pressure for ten (10) minutes or until provisions of test are met, whichever is longer. The BOP, choke manifold, and related equipment will be pressure tested to approved BOP stack working pressure (if isolated from surface casing by a test plug) or to 70% of surface casing internal yield strength (if BOP is not isolated by a test plug). Pressure will be maintained for ten (10) minutes or until the requirements of the test are met, whichever is longer. At a minimum, the Annular and Blow-Out Preventer pressure tests will be performed:

1. When the BOPE is initially installed;
2. Whenever any seal subject to test pressure is broken;
3. Following related repairs; and
4. At thirty (30) day intervals.

Annular will be function tested weekly, and pipe & blind rams activated each trip, but not more than once per day. All BOP drills & tests will be recorded in IADC driller's log.

**C. Choke Manifold Equipment:**

All choke lines will be straight lines whenever possible at turns, tee blocks will be used or will be targeted with running tees, and will be anchored to prevent whip and vibration.

**D. Accumulator:**

Accumulator will have sufficient capacity to open hydraulically-controlled choke line valve (if so equipped), close all rams plus annular preventer, and retain a minimum of 200 psi above precharge on the closing manifold without the use of closing unit pumps. The fluid reservoir capacity will be double accumulator capacity and the fluid level will be maintained at manufacturer's recommendations. Accumulator precharge pressure test will be conducted prior to connecting the closing unit to the BOP stack.

**E. Miscellaneous Information:**

Choke manifold and BOP extension rods with hand wheels will be located outside rig sub-structure. Hydraulic BOP closing unit will be located at least twenty-five (25) feet from the wellhead but readily accessible to the driller. Exact locations and configurations of the hydraulic BOP closing unit will depend upon the particular rig contracted to drill this hole. A flare line will be installed after the choke manifold with the discharge point of the flare line to a separate pit located at least 125 feet away from the wellbore and any existing production facilities.

**3. PROPOSED CASING PROGRAM**

<u>Hole Size</u>	<u>Setting Depth (MD)</u>	<u>Casing Size</u>	<u>Wt./Ft.</u>	<u>Grade</u>	<u>Thread</u>
12-1/4"	400'	9-5/8"	36.0	J-55	LTC
7-7/8"	6,878'	5-1/2"	17.0	N-80	LTC

**4. PROPOSED CEMENTING PROGRAM**

SURFACE: TOC Surface (50% Excess, TOT: 200', TOL: Surface)

Lead: 94 cu-ft; 41 sacks Premium Lite Cement + 0.25 lbs/sack Cello Flake + 8% bwoc Bentonite + 2% bwoc Calcium Chloride + 1% bwoc Sodium Metasilicate + 0.04 lbs/sack Static Free + 0.01 gps FP-13L + 0.102 lbs/sack BJ Fiber + 124.9% Fresh Water

Tail: 112 cu-ft; 95 sacks Class G Cement + 2% bwoc Calcium Chloride + 0.25 lbs/sack Cello Flake + 0.052 lbs/sack BJ Fiber + 0.01 gps FP-13L + 0.04 lbs/sack Static Free + 44.1% Fresh Water

<u>Cement Properties</u>	<u>Slurry No. 1</u>	<u>Slurry No. 2</u>
Slurry Weight (ppg)	12.00	15.80
Slurry Yield (cf/sack)	2.29	1.17

PRODUCTION: TOC Surface (35% Excess, TOT: 5,750' TVD, TOL: 4,250')

Lead: 351 cu-ft; 136 sacks Halliburton Light Type I-II Fluid Weight 11.60 lbm/gal, 4 % Bentonite (Light Weight Additive) Slurry Yield: 2.58 ft<sup>3</sup>/sk, 0.7 % HR-7 (Retarder) Total Mixing Fluid: 15.09 Gal/sk, 3 lbm/sk Silicalite Compacted (Light Weight Additive) Top of Fluid: 4,250', 0.125 lbm/sk Poly-E-Flake (Lost Circulation Additive)

Tail: 275 cu-ft; 184 sacks 50/50 Poz Premium Fluid Weight 13.50 lbm/gal, 1 % Bentonite (Light Weight Additive) Slurry Yield: 1.49 ft<sup>3</sup>/sk, 0.2 % Halad(R)-322 (Low Fluid Loss Control) Total Mixing Fluid: 7.12 Gal/sk, 0.2 % Halad(R)-344 (Low Fluid Loss Control) Top of

Fluid: 5,750 ft, 0.3 % HR-5 (Retarder) Calculated Fill: 1,128 ft, 3 % Microbond HT (Expander) Volume: 49 bbl, 3 lbm/sk Silicalite Compacted (Light Weight Additive) Calculated Sacks: 184 sks, 0.125 lbm/sk Poly-E-Flake (Lost Circulation Additive)

<u>Cement Properties</u>	<u>Lead Slurry</u>	<u>Tail Slurry</u>
Slurry Weight (ppg)	11.60	13.50
Slurry Yield (cf/sack)	2.58	1.49

## 5. MUD PROGRAM

<u>Depth (MD)</u>	<u>Mud System</u>	<u>MW</u>	<u>PV</u>	<u>YP</u>	<u>FL</u>
0 - 400'	Water, Gel/Lime Sweeps	8.3 – 8.5	0 - 6	0 - 4	NC
400' – 6,878'	Water, Gel/Lime Sweeps	8.4 – 8.5	0 - 6	0 - 4	NC

## 6. Testing, Logging and Core Programs

Cores: 400' + of core is planned beginning at the top of the Niobrara.  
90' of core is planned in the D Sand.

DST: None planned

Surveys: Deviation surveys every 500' to TD in both surface and production holes.

Mud Logger:

Samples: 30' samples surface to 5,973'  
10' samples 5,973' to TD

Open Hole Logging Program:	Triple Combo	TD to Surface Casing
	Sonic Scanner	6,161' to 5,973'
	FMI	6,161' to 5,973'

## 7. ANTICIPATED ABNORMAL PRESSURES OR TEMPERATURES:

No abnormal pressures are anticipated. No H<sub>2</sub>S gas is anticipated.

Anticipated bottom hole pressure is 2,978 psi (0.433 psi/ft) at 6,878' TVD in the Skull Creek and the maximum anticipated surface pressure equals approximately 1,465 psi (anticipated bottom hole pressure minus the pressure of a partially evacuated hole calculated at 0.22 psi/foot of hole).

## 8. ANTICIPATED STARTING DATE AND DURATION:

Dirt work startup: October 2010

Spud: October 2010

Duration: 12 – 16 days