

XTO ENERGY INC.

Penrose 02-08H

APD Data

February 10, 2015

Surface Location: 932' FSL x 892' FWL, Sec 8, T32N, R06W

County: La Plata

State: Colorado

OBJECTIVE: Fruitland Coal

Est KB ELEV: 6327' (12' AGL)

APPROX GR ELEV: 6389

1. MUD PROGRAM:

	Surface	Intermediate	Lower Lateral	Upper Lateral
INTERVAL	0' to 225'	225' to 2980'	2491 to TD	2431 to TD
HOLE SIZE	13.5"	8.75"	6.125"	6.125"
MUD TYPE	FW/Spud Mud	FW/Polymer	FW/ Polymer	FW/ Polymer
WEIGHT	8.6-9.0	8.4-9.2	8.4-8.6	8.4-8.6
VISCOSITY	28-32	28-36	28-36	28-36
WATER LOSS	NC	NC	NC	NC

Remarks: Use fibrous materials as needed to control seepage and lost circulation. Pump high viscosity sweeps as needed for hole cleaning.

2. CASING PROGRAM:

Surface Casing: 9.625" casing to be set at ± 225' in a 13-1/2" hole filled with 9.20 ppg mud

Interval	Length	Wt	Gr	Cplg	Coll Rating (psi)	Burst Rating (psi)	Jt Str (M-lbs)	ID (in)	Drift (in)	SF Coll ¹	SF Burst ²	SF Ten ³
0'-225'	225'	36.0#	J-55	ST&C	2020	3520	394	8.921	8.765	18.76	32.7	48.6

Intermediate Casing: 7" casing to be set at ±2980' MD, 2858' TVD in 8.75" hole filled with 9.20 ppg mud.

Bottomhole Location: 1322' FSL x 708' FWL, Sec 8, T32N, R06W

Interval	Length	Wt	Gr	Cplg	Coll Rating (psi)	Burst Rating (psi)	Jt Str (M-lbs)	ID (in)	Drift (in)	SF Coll ¹	SF Burst ²	SF Ten ³
0'-2980'	2980'	23.0#	J-55	ST&C	3270	4360	284	6.276	6.151	2.39	3.19	4.23

Lower Lateral Production Casing: 4.5" casing to be set at ±6170' MD, 2732' TVD in 6.125" hole filled with 8.4 ppg mud.

Bottomhole Location: 660' FNL x 660' FWL, Sec 8, T32N, R06W

Interval	Length	Wt	Gr	Cplg	Coll Rating (psi)	Burst Rating (psi)	Jt Str (M-lbs)	ID (in)	Drift (in)	SF Coll ¹	SF Burst ²	SF Ten ³
2603'-6170'	3567'	10.5	J-55	ST&C	4010	4790	132	4.052	3.927	3.36	4.01	3.52

Upper Lateral Production Casing: 4.5" casing to be set at ±6155' MD, 2708' TVD in 6.125" hole filled with 8.4 ppg mud.

Bottomhole Location: 660' FNL x 700' FWL, Sec 8, T32N, R06W

Interval	Length	Wt	Gr	Cplg	Coll Rating (psi)	Burst Rating (psi)	Jt Str (M-lbs)	ID (in)	Drift (in)	SF Coll ¹	SF Burst ²	SF Ten ³
2545'-6155'	3610'	10.5	J-55	ST&C	4010	4790	132	4.052	3.927	3.39	4.05	3.48

¹Collapse SF is based on evacuated casing and hydrostatic at TVD.

²Burst SF is based on evacuated annulus and hydrostatic at TVD.

³Tensile SF is based on hanging air weight of casing in a vertical hole at measured depth.

3. **WELLHEAD:**

- A. Casing Head: Larkin Fig 92 (or equivalent), 9" nominal, 2,000 psig WP (4,000 psig test) with 8-5/8" 8rnd thread on bottom and 11-3/4" 8rnd thread on top.
- B. Tubing Head: Larkin Fig 612 (or equivalent), 6.456" nominal, 2,000 psig WP (4,000 psig test), 5-1/2" 8rnd female thread on bottom (or slip-on, weld-on), 8-5/8" 8rnd thread on top.

4. **CEMENT PROGRAM (Slurry design may change slightly, but the plan is to circulate cement to surface on both surface and intermediate casing strings):**

- A. Surface: 9.625", 36.0#, J-55, ST&C casing to be set at ± 225' in 13-1/2" hole.

± 188 sx of Type V cement (or equivalent) typically containing accelerator and LCM, mixed at 15.8 ppg, 1.17 ft³/sk, & 5.01 gal wtr/sk.

Total slurry volume is 220 ft³, 100% excess of calculated annular volume to 225'.

- B. Production Casing: 7", 23#/ft, J-55, ST&C casing to be set at ± 2980' MD, 2858' TVD in 8.75" hole.

LEAD:

± 189 sx of Type V (or equivalent) typically containing accelerator, LCM, dispersant, and fluid loss additives at 12.3 ppg, 2.36 ft³/sk, & 12.95 gal wtr/sk.

TAIL:

± 100 sx of Type V or Class G cement typically containing accelerator, LCM, dispersant, and fluid loss additives at 13.5 ppg, 1.81 ft³/sk, & 8.85 gal wtr/sk.

Total estimated slurry volume for the 7" production casing is 627 ft³.

Note: The slurry design may change slightly based upon actual conditions. Final cement volumes will be determined from the caliper logs (if available) plus 40%. It will be attempted to circulate cement to the surface.

C. Production Liners:

Lower Lateral: 4.5", 10.5#/ft, J-55, ST&C casing is to be set at 6170' MD, 2732' TVD in 6.125" hole.

Upper Lateral: 4.5", 10.5#/ft, J-55, ST&C casing is to be set at 6155' MD, 2708' TVD in 6.125" hole

Note: The production liners will be left uncemented using drop-off liners.

5. LOGGING PROGRAM:

A. Mud Logger: If requested by Fort Worth Geology, the mud logger will come on after setting surface casing and will remain on the hole until TD. The mud will be logged in 10' intervals.

B. Open Hole Logs as follows: Run Array Induction/SFL/GR/SP from Intermediate Hole TD (2980') to the bottom of the surface csg. Run Neutron/Lithodensity/Pe/GR/Cal from Intermediate TD (2980') to the bottom of the surface csg. MWD Gamma Ray will be run in the Laterals.

C. Coring and Drill stem Testing: No operations are planned for this site

6. FORMATION TOPS:

Est. KB Elevation: 6401'

FORMATION	Sub-Sea	TVD
Nacimiento Formation	Surface	Surface
Animas Formation		
Ojo Alamo SS	4862	1543
Kirtland Shale	4768	1637
Farmington SS		
Fruitland Formation	4015	2390
Upper Fruitland Coal	3762	2643
Middle Fruitland Coal**	3700	2705
Pictured Cliffs Tongue		
Lower Fruitland Coal*	3677	2728
Pictured Cliffs SS	3587	2818

* *Primary Objective*

** *Secondary Objective*

**** Maximum anticipated BHP should be <1,100 psig *****

7. ANTICIPATED OIL, GAS, & WATER ZONES:

A.

Formation	Expected Fluids	Well Depth TVD
Nacimiento Formation	Water	
Animas Formation	Water	
Ojo Alamo SS	Water	1543
Kirtland Shale	Water	1637
Farmington SS	Water	
Fruitland Formation	Water	2390
Upper Fruitland Coal	Gas	2643
Middle Fruitland Coal	Gas	2705
Pictured Cliffs Tongue	Gas	
Lower Fruitland Coal	Gas	2728
Pictured Cliffs SS	Gas	2818

- A. All anticipated Appreciable Water Zones will be covered by surface casing.
- B. Appropriately weighted mud will be used to isolate potential gas, oil, and water zones until such time as casing can be cemented into place for zonal isolation.
- C. H₂S is not anticipated at this site.

8. COMPANY PERSONNEL:

Name	Title	Office Phone	Cellular Phone
Ross Lubbers	Drilling Manager	303-397-3721	
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Bobby Jackson	Drilling Superintendent	303-397-3720	505-486-4706
Charles Musekamp	Project Geologist	817-885-2800	N/A

JDN
2/10/15