

DRILLING OPERATION PLAN

Well Name: La Plata 34-7-34#1

Surface Location:

Bottom Hole Location:

232' FSL, 704' FEL Section 33, T-33-N, R-7-W, NMPM
La Plata, CO
742' FSL, 923' FWL Section 34, T-34-N, R-7-W, NMPM
Basin Fruitland Coal
6726' GL, 6741' KB, 15'KB

Formation:

Elevation:

Formation:	Top	Bottom	Contents
San Jose	Surface	1745	aquifer
Ojo Alamo	1745	1815	aquifer
Kirtland	1815	2815	
Fruitland	2815	2965	gas
Basal Coal	2930	2965	gas
Pictured Cliffs	3000	3175	gas
Total Depth	3714 MD		

Formation Depths Are True Vertical Depths Not Measured Depths

Drilling Contractor: Availability

Mud Program:

<u>Interval</u>	<u>Type</u>	<u>Weight</u>	<u>Vis.</u>	<u>Fluid Loss</u>
0' - 400'	Spud	8.4 - 9.0	40 - 50	no control
400' - 3714"	Non-dispersed	8.4 - 9.7	30 - 60	6cc or less

Depths Are True Vertical Depths Not Measured Depths

Logging Program: Triple Combo (Induction and Density Logs at TD)

Directional Program: To be submitted and approved prior to SPUD

Horizontal Program: To be submitted and approved prior to setting Whipstock

Coring Program: None

DST Program: None

Casing Program:

<u>Hole Size</u>	<u>Depth Interval</u>	<u>Csg. Size</u>	<u>Wt.</u>	<u>Grade</u>
12 1/4"	0' - 400'	9 5/8"	36#	J-55 or K-55
8 3/4"	400' - 3714'	7"	26#	J-55 or K-55

Depths Are True Vertical Depths Not Measured Depths.

Tubing Program:

0' - 3060' 2 7/8" 6.50# J-55

Float Equipment:

9 5/8" surface casing – Insert float with saw tooth guide shoe and three centralizers.

7" production casing – Cement guide shoe and self fill insert float collar. Place float one joint above shoe. Five centralizers spaced every other joint above shoe. One turbolizing type centralizer below and two standard through the Ojo Alamo @ 1745' – 1815' TVD. Standard centralizers thereafter spaced every fourth up to base of surface pipe.

Wellhead Equipment: 9 5/8" x 7" x 2 7/8" minimum 2000 psi xmas tree assembly

Cementing:

9 5/8" Surface Casing -

Cement with 230 sacks HALCEM (TM) SYSTEM .125 lbm Poly-E-Flake and 2% calcium chloride (Yield = 1.174 cu. ft./sack; slurry weight = 15.8 PPG). Total cement volume is 270.02 cu. ft. (100% excess calculated on cement volumes). Circulate cement to surface. WOC 12 hrs. Test casing to 750 psi/30 minutes.

7" Production Casing -

Before cementing circulate hole with at least 1 1/2 hole volumes of mud. Precede cement with 30 bbls of fresh water. Lead with 341 sacks (767.59 cu. ft) of Class "G" with .30% D-AIR 5000, 0.50% Fe-2, 5 lbm Gilsonite and .125 lbm Poly-E-Flake. (Yield = 2.251 cu. ft. /sack; slurry weight = 12.5 PPG). Tail with 100 sacks (182 cu. ft.) of Class "G" with .30% Super CBL, .30% D-AIR 5000, 0.50% Fe-2, 5 lbm Gilsonite and .125 lbm Poly-E-Flake. (Yield = 1.82 cu. ft./sack; slurry weight = 13.5 PPG). Total cement volume is 949.59 cu. ft. (75% excess on open hole, calculated on cement volumes).

BOP and Tests:

Surface to Surface Total Depth – None

Surface TD to Total Depth – Annular or Double Ram Type 2000 psi (minimum) double gate BOP stack (Reference Figure #1, #2, #3). Prior to drilling out surface casing, test blind rams and casing to 750 psig for 30 minutes; all pipe rams and choke assembly to 750 psig for 15 minutes each.

From Surface TD to Total Depth - choke manifold (Reference Figure #3).

Pipe rams will be actuated at least once each day and blind rams actuated once each trip to test proper functioning. An upper kelly cock valve with handle and drill string safety valves to fit each drill string will be maintained and available on the rig floor.

Additional information:

- The Fruitland Coal formation will be completed.
- Anticipated pore pressure for the Fruitland Coal is 1000 psi.
- New casing will be utilized.
- Pipe movement (either rotation or reciprocation) will be done if hole conditions permit.

Date: 9/4/2014 Drilling Engineer: Michael J. Hansen