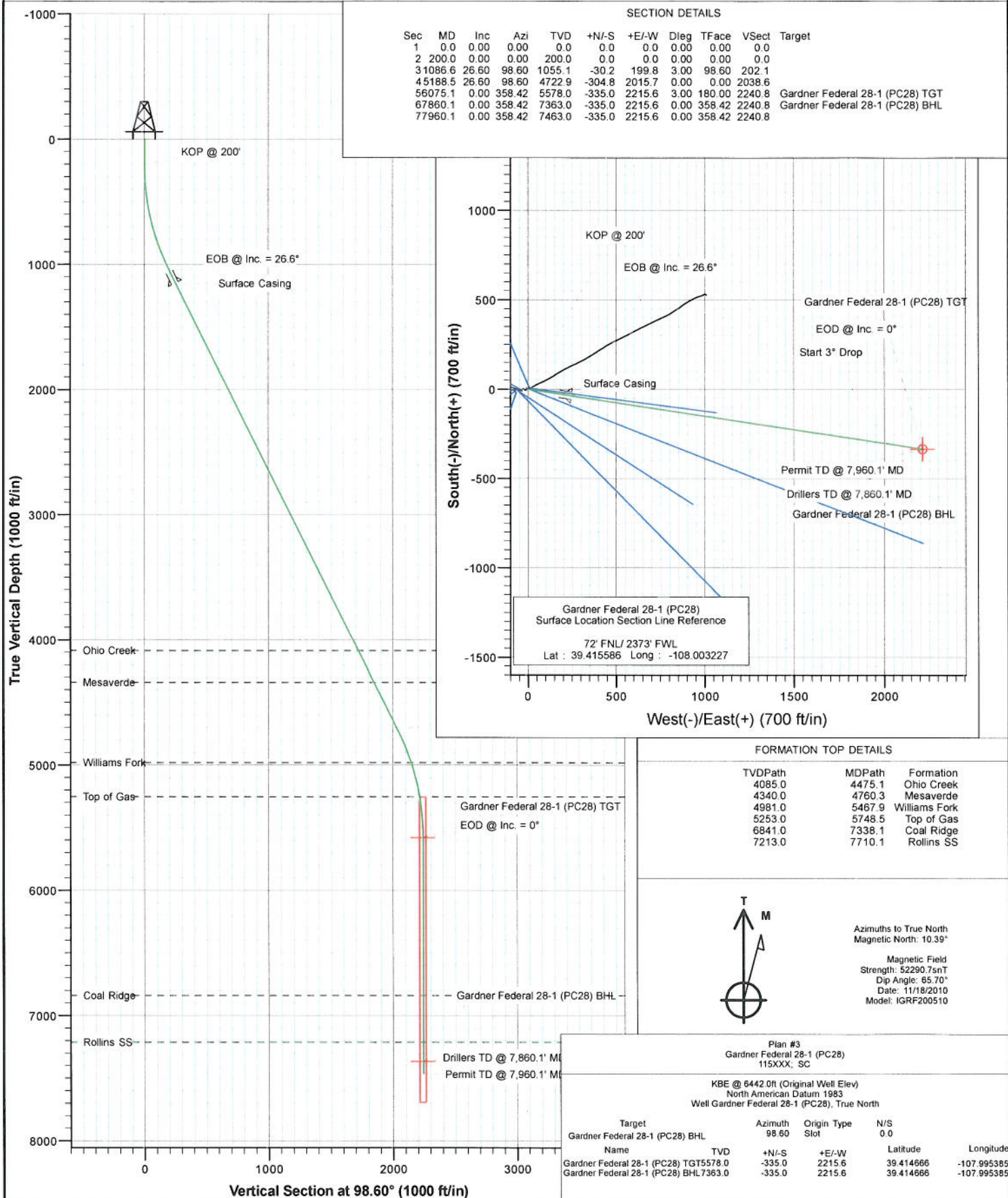




Project: S. Piceance (Parachute)
 Site: NENW Sec28-T7S-R95W (PC-28)
 Well: Gardner Federal 28-1 (PC28)
 Wellbore: DD
 Plan: Plan #3



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Gardner Federal 28-1 (PC28)
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 6442.0ft (Original Well Elev)
Project:	S. Piceance (Parachute)	MD Reference:	KBE @ 6442.0ft (Original Well Elev)
Site:	NENW Sec28-T7S-R95W (PC28)	North Reference:	True
Well:	Gardner Federal 28-1 (PC28)	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #3		

Project	S. Piceance (Parachute), Garfield County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site	NENW Sec28-T7S-R95W (PC28)				
Site Position:		Northing:	1,585,994.80 ft	Latitude:	39.415560
From:	Lat/Long	Easting:	2,292,840.18 ft	Longitude:	-108.003350
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.58 °

Well	Gardner Federal 28-1 (PC28)					
Well Position	+N/-S	0.0 ft	Northing:	1,586,003.30 ft	Latitude:	39.415586
	+E/-W	0.0 ft	Easting:	2,292,875.17 ft	Longitude:	-108.003227
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,420.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	11/18/2010	10.39	65.70	52,291

Design	Plan #3			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	98.60

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,086.6	26.60	98.60	1,055.1	-30.2	199.8	3.00	3.00	0.00	98.60	
5,188.5	26.60	98.60	4,722.9	-304.8	2,015.7	0.00	0.00	0.00	0.00	
6,075.1	0.00	358.42	5,578.0	-335.0	2,215.6	3.00	-3.00	0.00	180.00	Gardner Federal 28-1
7,860.1	0.00	358.42	7,363.0	-335.0	2,215.6	0.00	0.00	0.00	358.42	Gardner Federal 28-1
7,960.1	0.00	358.42	7,463.0	-335.0	2,215.6	0.00	0.00	0.00	358.42	

Cathedral Energy Services

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Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 6442.0ft (Original Well Elev)
Project:	S. Piceance (Parachute)	MD Reference:	KBE @ 6442.0ft (Original Well Elev)
Site:	NENW Sec28-T7S-R95W (PC28)	North Reference:	True
Well:	Gardner Federal 28-1 (PC28)	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #3		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	KOP @ 200'
300.0	3.00	98.60	300.0	-0.4	2.6	2.6	3.00	3.00	
400.0	6.00	98.60	399.6	-1.6	10.3	10.5	3.00	3.00	
500.0	9.00	98.60	498.8	-3.5	23.2	23.5	3.00	3.00	
600.0	12.00	98.60	597.1	-6.2	41.3	41.7	3.00	3.00	
700.0	15.00	98.60	694.3	-9.7	64.3	65.1	3.00	3.00	
800.0	18.00	98.60	790.2	-14.0	92.4	93.5	3.00	3.00	
900.0	21.00	98.60	884.4	-19.0	125.4	126.9	3.00	3.00	
1,000.0	24.00	98.60	976.8	-24.7	163.3	165.1	3.00	3.00	
1,086.6	26.60	98.60	1,055.1	-30.2	199.8	202.1	3.00	3.00	EOB @ Inc. = 26.6°
1,100.0	26.60	98.60	1,067.1	-31.1	205.8	208.1	0.00	0.00	
1,193.8	26.60	98.60	1,151.0	-37.4	247.3	250.1	0.00	0.00	Surface Casing
1,200.0	26.60	98.60	1,156.5	-37.8	250.1	252.9	0.00	0.00	
1,300.0	26.60	98.60	1,245.9	-44.5	294.3	297.7	0.00	0.00	
1,400.0	26.60	98.60	1,335.3	-51.2	338.6	342.4	0.00	0.00	
1,500.0	26.60	98.60	1,424.7	-57.9	382.9	387.2	0.00	0.00	
1,600.0	26.60	98.60	1,514.2	-64.6	427.1	432.0	0.00	0.00	
1,700.0	26.60	98.60	1,603.6	-71.3	471.4	476.8	0.00	0.00	
1,800.0	26.60	98.60	1,693.0	-78.0	515.7	521.5	0.00	0.00	
1,900.0	26.60	98.60	1,782.4	-84.7	559.9	566.3	0.00	0.00	
2,000.0	26.60	98.60	1,871.8	-91.4	604.2	611.1	0.00	0.00	
2,100.0	26.60	98.60	1,961.3	-98.0	648.5	655.8	0.00	0.00	
2,200.0	26.60	98.60	2,050.7	-104.7	692.7	700.6	0.00	0.00	
2,300.0	26.60	98.60	2,140.1	-111.4	737.0	745.4	0.00	0.00	
2,400.0	26.60	98.60	2,229.5	-118.1	781.3	790.2	0.00	0.00	
2,500.0	26.60	98.60	2,318.9	-124.8	825.6	834.9	0.00	0.00	
2,600.0	26.60	98.60	2,408.3	-131.5	869.8	879.7	0.00	0.00	
2,700.0	26.60	98.60	2,497.8	-138.2	914.1	924.5	0.00	0.00	
2,800.0	26.60	98.60	2,587.2	-144.9	958.4	969.3	0.00	0.00	
2,900.0	26.60	98.60	2,676.6	-151.6	1,002.6	1,014.0	0.00	0.00	
3,000.0	26.60	98.60	2,766.0	-158.3	1,046.9	1,058.8	0.00	0.00	
3,100.0	26.60	98.60	2,855.4	-165.0	1,091.2	1,103.6	0.00	0.00	
3,200.0	26.60	98.60	2,944.8	-171.7	1,135.4	1,148.3	0.00	0.00	
3,300.0	26.60	98.60	3,034.3	-178.4	1,179.7	1,193.1	0.00	0.00	
3,400.0	26.60	98.60	3,123.7	-185.1	1,224.0	1,237.9	0.00	0.00	
3,500.0	26.60	98.60	3,213.1	-191.8	1,268.2	1,282.7	0.00	0.00	
3,600.0	26.60	98.60	3,302.5	-198.4	1,312.5	1,327.4	0.00	0.00	
3,700.0	26.60	98.60	3,391.9	-205.1	1,356.8	1,372.2	0.00	0.00	
3,800.0	26.60	98.60	3,481.3	-211.8	1,401.0	1,417.0	0.00	0.00	
3,900.0	26.60	98.60	3,570.8	-218.5	1,445.3	1,461.7	0.00	0.00	
4,000.0	26.60	98.60	3,660.2	-225.2	1,489.6	1,506.5	0.00	0.00	
4,100.0	26.60	98.60	3,749.6	-231.9	1,533.9	1,551.3	0.00	0.00	
4,200.0	26.60	98.60	3,839.0	-238.6	1,578.1	1,596.1	0.00	0.00	
4,300.0	26.60	98.60	3,928.4	-245.3	1,622.4	1,640.8	0.00	0.00	
4,400.0	26.60	98.60	4,017.8	-252.0	1,666.7	1,685.6	0.00	0.00	
4,475.1	26.60	98.60	4,085.0	-257.0	1,699.9	1,719.2	0.00	0.00	Ohio Creek
4,500.0	26.60	98.60	4,107.3	-258.7	1,710.9	1,730.4	0.00	0.00	
4,600.0	26.60	98.60	4,196.7	-265.4	1,755.2	1,775.2	0.00	0.00	
4,700.0	26.60	98.60	4,286.1	-272.1	1,799.5	1,819.9	0.00	0.00	
4,760.3	26.60	98.60	4,340.0	-276.1	1,826.2	1,846.9	0.00	0.00	Mesaverde

Cathedral Energy Services

Planning Report

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Project:	S. Piceance (Parachute)	MD Reference:	KBE @ 6442.0ft (Original Well Elev)
Site:	NENW Sec28-T7S-R95W (PC28)	North Reference:	True
Well:	Gardner Federal 28-1 (PC28)	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #3		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
4,800.0	26.60	98.60	4,375.5	-278.8	1,843.7	1,864.7	0.00	0.00	
4,900.0	26.60	98.60	4,464.9	-285.5	1,888.0	1,909.5	0.00	0.00	
5,000.0	26.60	98.60	4,554.4	-292.2	1,932.3	1,954.2	0.00	0.00	
5,100.0	26.60	98.60	4,643.8	-298.8	1,976.5	1,999.0	0.00	0.00	
5,188.5	26.60	98.60	4,722.9	-304.8	2,015.7	2,038.6	0.00	0.00	Start 3° Drop
5,200.0	26.25	98.60	4,733.2	-305.5	2,020.8	2,043.8	3.00	-3.00	
5,300.0	23.25	98.60	4,824.0	-311.8	2,062.2	2,085.6	3.00	-3.00	
5,400.0	20.25	98.60	4,916.9	-317.3	2,098.8	2,122.7	3.00	-3.00	
5,467.9	18.22	98.60	4,981.0	-320.7	2,120.9	2,145.1	3.00	-3.00	Williams Fork
5,500.0	17.25	98.60	5,011.6	-322.1	2,130.6	2,154.8	3.00	-3.00	
5,600.0	14.25	98.60	5,107.8	-326.2	2,157.4	2,182.0	3.00	-3.00	
5,700.0	11.25	98.60	5,205.3	-329.5	2,179.3	2,204.0	3.00	-3.00	
5,748.5	9.80	98.60	5,253.0	-330.8	2,188.0	2,212.9	3.00	-3.00	Top of Gas
5,800.0	8.25	98.60	5,303.8	-332.0	2,196.0	2,221.0	3.00	-3.00	
5,900.0	5.25	98.60	5,403.1	-333.8	2,207.6	2,232.7	3.00	-3.00	
6,000.0	2.25	98.60	5,502.9	-334.8	2,214.1	2,239.3	3.00	-3.00	
6,075.1	0.00	358.42	5,578.0	-335.0	2,215.6	2,240.8	3.00	-3.00	EOD @ Inc. = 0°
6,100.0	0.00	358.42	5,602.9	-335.0	2,215.6	2,240.8	0.00	0.00	
6,200.0	0.00	358.42	5,702.9	-335.0	2,215.6	2,240.8	0.00	0.00	
6,300.0	0.00	358.42	5,802.9	-335.0	2,215.6	2,240.8	0.00	0.00	
6,400.0	0.00	358.42	5,902.9	-335.0	2,215.6	2,240.8	0.00	0.00	
6,500.0	0.00	358.42	6,002.9	-335.0	2,215.6	2,240.8	0.00	0.00	
6,600.0	0.00	358.42	6,102.9	-335.0	2,215.6	2,240.8	0.00	0.00	
6,700.0	0.00	358.42	6,202.9	-335.0	2,215.6	2,240.8	0.00	0.00	
6,800.0	0.00	358.42	6,302.9	-335.0	2,215.6	2,240.8	0.00	0.00	
6,900.0	0.00	358.42	6,402.9	-335.0	2,215.6	2,240.8	0.00	0.00	
7,000.0	0.00	358.42	6,502.9	-335.0	2,215.6	2,240.8	0.00	0.00	
7,100.0	0.00	358.42	6,602.9	-335.0	2,215.6	2,240.8	0.00	0.00	
7,200.0	0.00	358.42	6,702.9	-335.0	2,215.6	2,240.8	0.00	0.00	
7,300.0	0.00	358.42	6,802.9	-335.0	2,215.6	2,240.8	0.00	0.00	
7,338.1	0.00	358.42	6,841.0	-335.0	2,215.6	2,240.8	0.00	0.00	Coal Ridge
7,400.0	0.00	358.42	6,902.9	-335.0	2,215.6	2,240.8	0.00	0.00	
7,500.0	0.00	358.42	7,002.9	-335.0	2,215.6	2,240.8	0.00	0.00	
7,600.0	0.00	358.42	7,102.9	-335.0	2,215.6	2,240.8	0.00	0.00	
7,700.0	0.00	358.42	7,202.9	-335.0	2,215.6	2,240.8	0.00	0.00	
7,710.1	0.00	358.42	7,213.0	-335.0	2,215.6	2,240.8	0.00	0.00	Rollins SS
7,800.0	0.00	358.42	7,302.9	-335.0	2,215.6	2,240.8	0.00	0.00	
7,860.1	0.00	358.42	7,363.0	-335.0	2,215.6	2,240.8	0.00	0.00	Drillers TD @ 7,860.1' MD
7,900.0	0.00	358.42	7,402.9	-335.0	2,215.6	2,240.8	0.00	0.00	
7,960.1	0.00	358.42	7,463.0	-335.0	2,215.6	2,240.8	0.00	0.00	Permit TD @ 7,960.1' MD

Cathedral Energy Services

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Project:	S. Piceance (Parachute)	MD Reference:	KBE @ 6442.0ft (Original Well Elev)
Site:	NENW Sec28-T7S-R95W (PC28)	North Reference:	True
Well:	Gardner Federal 28-1 (PC28)	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #3		

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Gardner Federal 28-1 (P - plan hits target center - Circle (radius 25.0)	0.00	358.43	5,578.0	-335.0	2,215.6	1,585,607.39	2,295,080.68	39.414666	-107.995385
Gardner Federal 28-1 (P - plan hits target center - Circle (radius 25.0)	0.00	358.43	7,363.0	-335.0	2,215.6	1,585,607.39	2,295,080.68	39.414666	-107.995385

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,193.8	1,151.0	Surface Casing	8.625	12.250

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,475.1	4,085.0	Ohio Creek		0.00	
4,760.3	4,340.0	Mesaverde		0.00	
5,467.9	4,981.0	Williams Fork		0.00	
5,748.5	5,253.0	Top of Gas		0.00	
7,338.1	6,841.0	Coal Ridge		0.00	
7,710.1	7,213.0	Rollins SS		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
200.0	200.0	0.0	0.0	KOP @ 200'
1,086.6	1,055.1	-30.2	199.8	EOB @ Inc. = 26.6°
5,188.5	4,722.9	-304.8	2,015.7	Start 3° Drop
6,075.1	5,578.0	-335.0	2,215.6	EOD @ Inc. = 0°
7,860.1	7,363.0	-335.0	2,215.6	Drillers TD @ 7,860.1' MD
7,960.1	7,463.0	-335.0	2,215.6	Permit TD @ 7,960.1' MD