

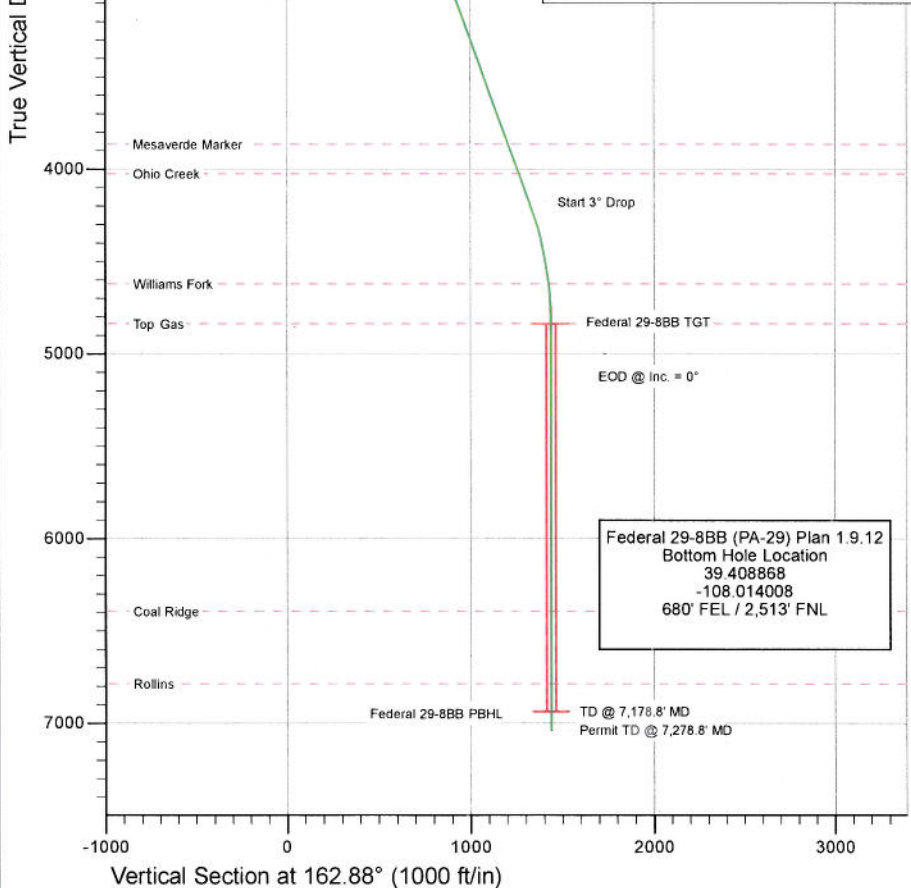
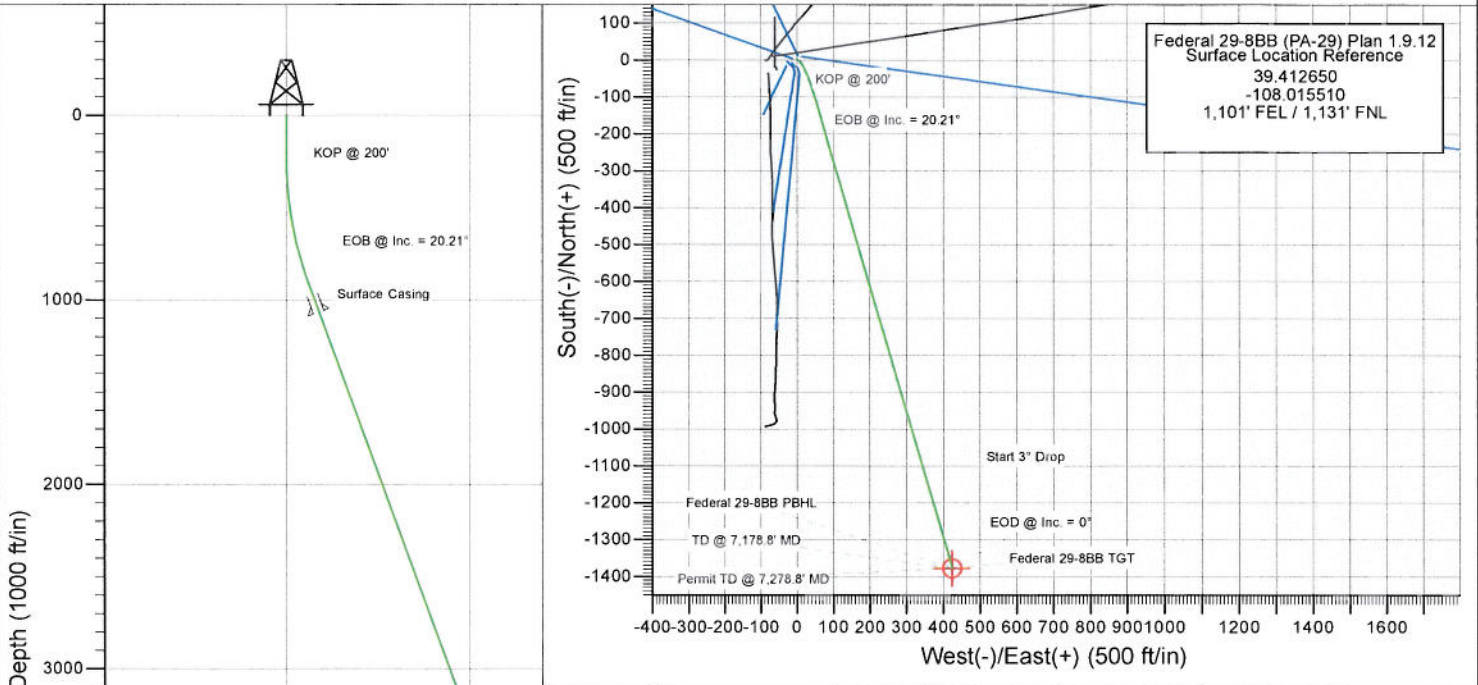


Project: S. Piceance (Parachute)  
 Site: PA-29 Pad  
 Well: Federal 29-8BB (PA-29) Plan 1.9.12  
 Wellbore: OH  
 Design: Plan #2



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	350.0	4.50	120.00	349.8	-2.9	5.1	3.00	120.00	4.3	
4	924.3	20.21	163.66	909.8	-110.2	52.9	3.00	53.65	120.9	
5	4406.0	20.21	163.66	4177.1	-1264.6	391.3	0.00	0.00	1323.8	
6	5079.8	0.00	0.00	4837.0	-1377.5	424.4	3.00	180.00	1441.4	Federal 29-8BB TGT
7	7178.8	0.00	0.00	6936.0	-1377.5	424.4	0.00	0.00	1441.4	Federal 29-8BB PBHL
8	7278.8	0.00	0.00	7036.0	-1377.5	424.4	0.00	0.00	1441.4	



FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3864.0	4072.4	Mesaverde Marker
4024.0	4242.9	Ohio Creek
4621.0	4863.4	Williams Fork
4837.0	5079.8	Top Gas
6393.0	6635.8	Coal Ridge
6786.0	7028.8	Rollins



Azimuths to True North  
 Magnetic North: 10.20°  
 Magnetic Field  
 Strength: 52137.4snT  
 Dip Angle: 65.65°  
 Date: 6/11/2012  
 Model: IGRF200510

Plan #2  
 Federal 29-8BB (PA-29) Plan 1.9.12  
 125XXX, SC

KBE @ 6213.0ft (Original Well Elev)  
 North American Datum 1983  
 Well Federal 29-8BB (PA-29) Plan 1.9.12, True North

Target	Azimuth	Origin Type	N/S	E/W	From TVD
No Target (Freehand)	162.88	Slot	0.0	0.0	0.0
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
Federal 29-8BB TGT	4837.0	-1377.5	424.4	39.408868	-108.014008
Federal 29-8BB PBHL	6936.0	-1377.5	424.4	39.408868	-108.014008

# Cathedral Energy Services

## Planning Report

**Database:** USA EDM 5000 Multi Users DB  
**Company:** EnCana Oil & Gas (USA) Inc  
**Project:** S. Piceance (Parachute)  
**Site:** PA-29 Pad  
**Well:** Federal 29-8BB (PA-29) Plan 1.9.12  
**Wellbore:** OH  
**Design:** Plan #2

**Local Co-ordinate Reference:** Well Federal 29-8BB (PA-29) Plan 1.9.12  
**TVD Reference:** KBE @ 6213.0ft (Original Well Elev)  
**MD Reference:** KBE @ 6213.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

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

<b>Site</b>	PA-29 Pad				
<b>Site Position:</b>		<b>Northing:</b>	1,585,028.43 ft	<b>Latitude:</b>	39.412645
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,289,373.78 ft	<b>Longitude:</b>	-108.015520
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b>	-1.59 °

<b>Well</b>	Federal 29-8BB (PA-29) Plan 1.9.12					
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>	1,585,030.16 ft	<b>Latitude:</b>	39.412650
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>	2,289,376.66 ft	<b>Longitude:</b>	-108.015510
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b>	ft	<b>Ground Level:</b>	6,192.0 ft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF200510	6/11/2012	10.19	65.65	52,137

<b>Design</b>	Plan #2			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	162.88

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	
350.0	4.50	120.00	349.8	-2.9	5.1	3.00	3.00	0.00	120.00	
924.3	20.21	163.66	909.8	-110.2	52.9	3.00	2.74	7.60	53.65	
4,406.0	20.21	163.66	4,177.1	-1,264.6	391.3	0.00	0.00	0.00	0.00	
5,079.8	0.00	0.00	4,837.0	-1,377.5	424.4	3.00	-3.00	0.00	180.00	Federal 29-8BB TGT
7,178.8	0.00	0.00	6,936.0	-1,377.5	424.4	0.00	0.00	0.00	0.00	Federal 29-8BB PBH1
7,278.8	0.00	0.00	7,036.0	-1,377.5	424.4	0.00	0.00	0.00	0.00	

# Cathedral Energy Services

## Planning Report

**Database:** USA EDM 5000 Multi Users DB  
**Company:** EnCana Oil & Gas (USA) Inc  
**Project:** S. Piceance (Parachute)  
**Site:** PA-29 Pad  
**Well:** Federal 29-8BB (PA-29) Plan 1.9.12  
**Wellbore:** OH  
**Design:** Plan #2

**Local Co-ordinate Reference:** Well Federal 29-8BB (PA-29) Plan 1.9.12  
**TVD Reference:** KBE @ 6213.0ft (Original Well Elev)  
**MD Reference:** KBE @ 6213.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

### 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	120.00	300.0	-1.3	2.3	1.9	3.00	3.00	
350.0	4.50	120.00	349.8	-2.9	5.1	4.3	3.00	3.00	
400.0	5.52	132.65	399.7	-5.6	8.6	7.8	3.00	2.05	
500.0	8.03	146.90	499.0	-14.7	15.9	18.7	3.00	2.51	
600.0	10.79	154.16	597.6	-28.9	23.8	34.7	3.00	2.76	
700.0	13.65	158.45	695.3	-48.4	32.2	55.7	3.00	2.86	
800.0	16.56	161.27	791.9	-72.8	41.1	81.7	3.00	2.91	
900.0	19.50	163.26	886.9	-102.3	50.5	112.7	3.00	2.94	
924.3	20.21	163.66	909.8	-110.2	52.9	120.9	3.00	2.94	EOB @ Inc. = 20.21°
1,000.0	20.21	163.66	980.8	-135.3	60.2	147.1	0.00	0.00	
1,091.2	20.21	163.66	1,066.4	-165.6	69.1	178.6	0.00	0.00	Surface Casing
1,100.0	20.21	163.66	1,074.7	-168.5	70.0	181.6	0.00	0.00	
1,200.0	20.21	163.66	1,168.5	-201.6	79.7	216.2	0.00	0.00	
1,300.0	20.21	163.66	1,262.4	-234.8	89.4	250.7	0.00	0.00	
1,400.0	20.21	163.66	1,356.2	-268.0	99.1	285.3	0.00	0.00	
1,500.0	20.21	163.66	1,450.0	-301.1	108.8	319.8	0.00	0.00	
1,600.0	20.21	163.66	1,543.9	-334.3	118.6	354.4	0.00	0.00	
1,700.0	20.21	163.66	1,637.7	-367.4	128.3	388.9	0.00	0.00	
1,800.0	20.21	163.66	1,731.6	-400.6	138.0	423.5	0.00	0.00	
1,900.0	20.21	163.66	1,825.4	-433.7	147.7	458.0	0.00	0.00	
2,000.0	20.21	163.66	1,919.3	-466.9	157.4	492.5	0.00	0.00	
2,100.0	20.21	163.66	2,013.1	-500.0	167.2	527.1	0.00	0.00	
2,200.0	20.21	163.66	2,106.9	-533.2	176.9	561.6	0.00	0.00	
2,300.0	20.21	163.66	2,200.8	-566.4	186.6	596.2	0.00	0.00	
2,400.0	20.21	163.66	2,294.6	-599.5	196.3	630.7	0.00	0.00	
2,500.0	20.21	163.66	2,388.5	-632.7	206.0	665.3	0.00	0.00	
2,600.0	20.21	163.66	2,482.3	-665.8	215.8	699.8	0.00	0.00	
2,700.0	20.21	163.66	2,576.1	-699.0	225.5	734.4	0.00	0.00	
2,800.0	20.21	163.66	2,670.0	-732.1	235.2	768.9	0.00	0.00	
2,900.0	20.21	163.66	2,763.8	-765.3	244.9	803.5	0.00	0.00	
3,000.0	20.21	163.66	2,857.7	-798.4	254.6	838.0	0.00	0.00	
3,100.0	20.21	163.66	2,951.5	-831.6	264.4	872.6	0.00	0.00	
3,200.0	20.21	163.66	3,045.3	-864.8	274.1	907.1	0.00	0.00	
3,300.0	20.21	163.66	3,139.2	-897.9	283.8	941.7	0.00	0.00	
3,400.0	20.21	163.66	3,233.0	-931.1	293.5	976.2	0.00	0.00	
3,500.0	20.21	163.66	3,326.9	-964.2	303.2	1,010.8	0.00	0.00	
3,600.0	20.21	163.66	3,420.7	-997.4	313.0	1,045.3	0.00	0.00	
3,700.0	20.21	163.66	3,514.6	-1,030.5	322.7	1,079.9	0.00	0.00	
3,800.0	20.21	163.66	3,608.4	-1,063.7	332.4	1,114.4	0.00	0.00	
3,900.0	20.21	163.66	3,702.2	-1,096.9	342.1	1,149.0	0.00	0.00	
4,000.0	20.21	163.66	3,796.1	-1,130.0	351.8	1,183.5	0.00	0.00	
4,072.4	20.21	163.66	3,864.0	-1,154.0	358.9	1,208.5	0.00	0.00	Mesaverde Marker
4,100.0	20.21	163.66	3,889.9	-1,163.2	361.6	1,218.1	0.00	0.00	
4,200.0	20.21	163.66	3,983.8	-1,196.3	371.3	1,252.6	0.00	0.00	
4,242.9	20.21	163.66	4,024.0	-1,210.5	375.4	1,267.4	0.00	0.00	Ohio Creek
4,300.0	20.21	163.66	4,077.6	-1,229.5	381.0	1,287.2	0.00	0.00	
4,406.0	20.21	163.66	4,177.1	-1,264.6	391.3	1,323.8	0.00	0.00	Start 3" Drop
4,500.0	17.39	163.66	4,266.0	-1,293.7	399.8	1,354.1	3.00	-3.00	
4,600.0	14.39	163.66	4,362.2	-1,320.0	407.5	1,381.4	3.00	-3.00	

# Cathedral Energy Services

## Planning Report

**Database:** USA EDM 5000 Multi Users DB  
**Company:** EnCana Oil & Gas (USA) Inc  
**Project:** S. Piceance (Parachute)  
**Site:** PA-29 Pad  
**Well:** Federal 29-8BB (PA-29) Plan 1.9.12  
**Wellbore:** OH  
**Design:** Plan #2

**Local Co-ordinate Reference:** Well Federal 29-8BB (PA-29) Plan 1.9.12  
**TVD Reference:** KBE @ 6213.0ft (Original Well Elev)  
**MD Reference:** KBE @ 6213.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

### 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
4,700.0	11.39	163.66	4,459.7	-1,341.4	413.8	1,403.8	3.00	-3.00	
4,800.0	8.39	163.66	4,558.2	-1,357.9	418.6	1,420.9	3.00	-3.00	
4,863.4	6.49	163.66	4,621.0	-1,365.7	420.9	1,429.1	3.00	-3.00	Williams Fork
4,900.0	5.39	163.66	4,657.4	-1,369.4	422.0	1,432.9	3.00	-3.00	
5,000.0	2.39	163.66	4,757.2	-1,375.9	423.9	1,439.7	3.00	-3.00	
5,079.8	0.00	0.00	4,837.0	-1,377.5	424.4	1,441.4	3.00	-3.00	EOD @ Inc. = 0° - Top Gas
5,100.0	0.00	0.00	4,857.2	-1,377.5	424.4	1,441.4	0.00	0.00	
5,200.0	0.00	0.00	4,957.2	-1,377.5	424.4	1,441.4	0.00	0.00	
5,300.0	0.00	0.00	5,057.2	-1,377.5	424.4	1,441.4	0.00	0.00	
5,400.0	0.00	0.00	5,157.2	-1,377.5	424.4	1,441.4	0.00	0.00	
5,500.0	0.00	0.00	5,257.2	-1,377.5	424.4	1,441.4	0.00	0.00	
5,600.0	0.00	0.00	5,357.2	-1,377.5	424.4	1,441.4	0.00	0.00	
5,700.0	0.00	0.00	5,457.2	-1,377.5	424.4	1,441.4	0.00	0.00	
5,800.0	0.00	0.00	5,557.2	-1,377.5	424.4	1,441.4	0.00	0.00	
5,900.0	0.00	0.00	5,657.2	-1,377.5	424.4	1,441.4	0.00	0.00	
6,000.0	0.00	0.00	5,757.2	-1,377.5	424.4	1,441.4	0.00	0.00	
6,100.0	0.00	0.00	5,857.2	-1,377.5	424.4	1,441.4	0.00	0.00	
6,200.0	0.00	0.00	5,957.2	-1,377.5	424.4	1,441.4	0.00	0.00	
6,300.0	0.00	0.00	6,057.2	-1,377.5	424.4	1,441.4	0.00	0.00	
6,400.0	0.00	0.00	6,157.2	-1,377.5	424.4	1,441.4	0.00	0.00	
6,500.0	0.00	0.00	6,257.2	-1,377.5	424.4	1,441.4	0.00	0.00	
6,600.0	0.00	0.00	6,357.2	-1,377.5	424.4	1,441.4	0.00	0.00	
6,635.8	0.00	0.00	6,393.0	-1,377.5	424.4	1,441.4	0.00	0.00	Coal Ridge
6,700.0	0.00	0.00	6,457.2	-1,377.5	424.4	1,441.4	0.00	0.00	
6,800.0	0.00	0.00	6,557.2	-1,377.5	424.4	1,441.4	0.00	0.00	
6,900.0	0.00	0.00	6,657.2	-1,377.5	424.4	1,441.4	0.00	0.00	
7,000.0	0.00	0.00	6,757.2	-1,377.5	424.4	1,441.4	0.00	0.00	
7,028.8	0.00	0.00	6,786.0	-1,377.5	424.4	1,441.4	0.00	0.00	Rollins
7,100.0	0.00	0.00	6,857.2	-1,377.5	424.4	1,441.4	0.00	0.00	
7,178.8	0.00	0.00	6,936.0	-1,377.5	424.4	1,441.4	0.00	0.00	TD @ 7,178.8' MD
7,200.0	0.00	0.00	6,957.2	-1,377.5	424.4	1,441.4	0.00	0.00	
7,278.8	0.00	0.00	7,036.0	-1,377.5	424.4	1,441.4	0.00	0.00	Permit TD @ 7,278.8' MD

### Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Federal 29-8BB PBHL - plan hits target center - Circle (radius 25.0)	0.00	0.00	6,936.0	-1,377.5	424.4	1,583,641.43	2,289,762.75	39.408868	-108.014008
Federal 29-8BB TGT - plan hits target center - Point	0.00	0.00	4,837.0	-1,377.5	424.4	1,583,641.43	2,289,762.75	39.408868	-108.014008

# Cathedral Energy Services

## Planning Report

**Database:** USA EDM 5000 Multi Users DB  
**Company:** EnCana Oil & Gas (USA) Inc  
**Project:** S. Piceance (Parachute)  
**Site:** PA-29 Pad  
**Well:** Federal 29-8BB (PA-29) Plan 1.9.12  
**Wellbore:** OH  
**Design:** Plan #2

**Local Co-ordinate Reference:** Well Federal 29-8BB (PA-29) Plan 1.9.12  
**TVD Reference:** KBE @ 6213.0ft (Original Well Elev)  
**MD Reference:** KBE @ 6213.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,091.2	1,066.4	Surface Casing	0.000	0.000

### Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,072.4	3,864.0	Mesaverde Marker			
4,242.9	4,024.0	Ohio Creek			
4,863.4	4,621.0	Williams Fork			
5,079.8	4,837.0	Top Gas			
6,635.8	6,393.0	Coal Ridge			
7,028.8	6,786.0	Rollins			

### 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'
924.3	909.8	-110.2	52.9	EOB @ Inc. = 20.21°
4,406.0	4,177.1	-1,264.6	391.3	Start 3° Drop
5,079.8	4,837.0	-1,377.5	424.4	EOD @ Inc. = 0°
7,178.8	6,936.0	-1,377.5	424.4	TD @ 7,178.8' MD
7,278.8	7,036.0	-1,377.5	424.4	Permit TD @ 7,278.8' MD