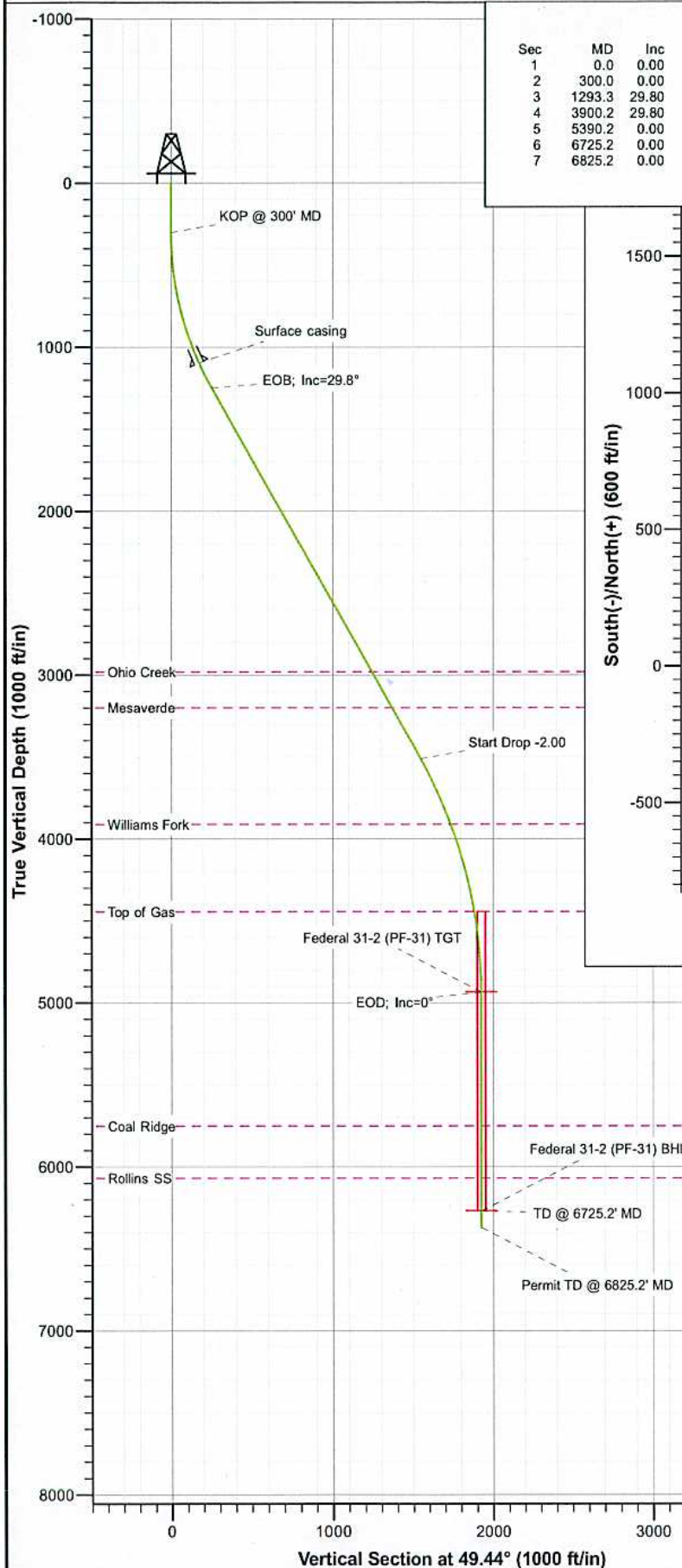
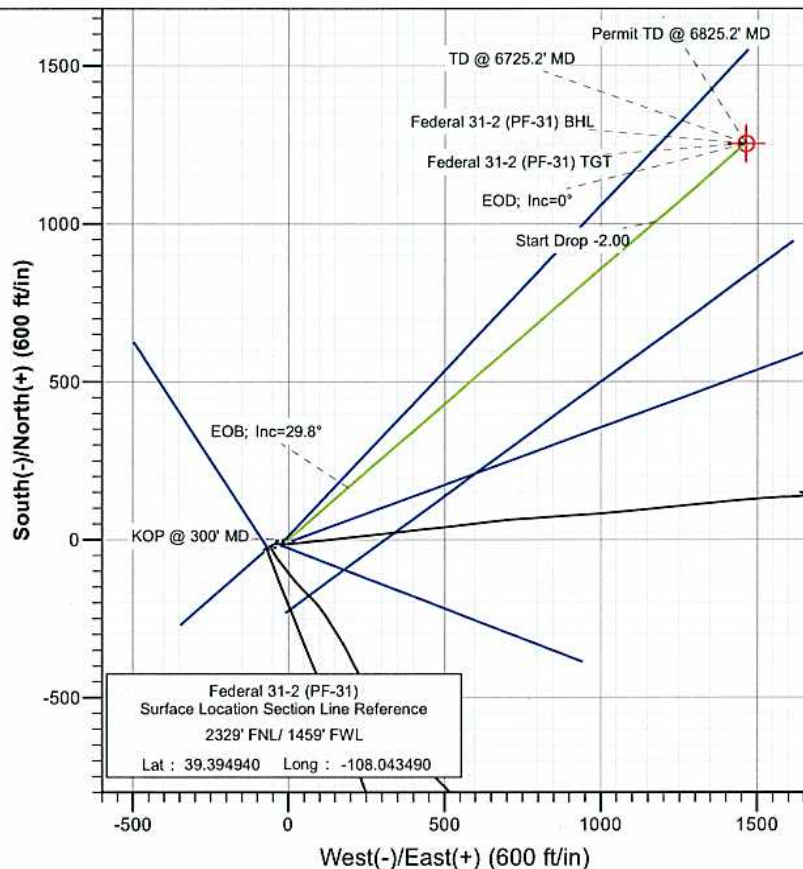




Project: S. Piceance (Parachute)  
 Site: SENW S31-T7S-R95W (PF-31 Pad)  
 Well: Federal 31-2 (PF-31)  
 Wellbore: DD  
 Plan: Plan #1



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	300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.0	
3	1293.3	29.80	49.44	1249.1	164.2	191.9	3.00	49.44	252.5	
4	3900.2	29.80	49.44	3511.3	1006.7	1176.1	0.00	0.00	1548.1	
5	5390.2	0.00	0.00	4935.0	1253.0	1463.8	2.00	180.00	1926.9	Federal 31-2 (PF-31) TGT
6	6725.2	0.00	0.00	6270.0	1253.0	1463.8	0.00	0.00	1926.9	Federal 31-2 (PF-31) BHL
7	6825.2	0.00	0.00	6370.0	1253.0	1463.8	0.00	0.00	1926.9	



FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
2981.0	3289.1	Ohio Creek
3200.0	3541.4	Mesaverde
3912.0	4344.1	Williams Fork
4445.0	4897.7	Top of Gas
5753.0	6208.2	Coal Ridge
6070.0	6525.2	Rollins SS



Azimuths to True North  
 Magnetic North: 10.40°

Magnetic Field  
 Strength: 52270.1nT  
 Dip Angle: 65.67°  
 Date: 12/21/2010  
 Model: IGRF200510

Plan #1 Federal 31-2 (PF-31) 105XXX; BH					
KBE @ 5856.0ft (Original Well Elev) North American Datum 1983 Well Federal 31-2 (PF-31), True North					
Target	Federal 31-2 (PF-31) BHL	Azimuth	Origin Type	N/S	E/W
		49.44	Slot	0.0	0.0
Name					
Federal 31-2 (PF-31) TGT	TVD	+N/-S	+E/-W	Latitude	Longitude
Federal 31-2 (PF-31) BHL	6270.0	1253.0	1463.8	39.398380	-108.038310

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Federal 31-2 (PF-31)
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KBE @ 5856.0ft (Original Well Elev)
<b>Project:</b>	S. Piceance (Parachute)	<b>MD Reference:</b>	KBE @ 5856.0ft (Original Well Elev)
<b>Site:</b>	SENW S31-T7S-R95W (PF-31 Pad)	<b>North Reference:</b>	True
<b>Well:</b>	Federal 31-2 (PF-31)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	Plan #1		

<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		

Site		SENW S31-T7S-R95W (PF-31 Pad)			
Site Position:		Northing:	1,578,802.25 ft	Latitude:	39.394940
From:	Lat/Long	Easting:	2,281,293.81 ft	Longitude:	-108.043490
Position Uncertainty:	0.0 ft	Slot Radius:	13.200in	Grid Convergence:	-1.60 °

Well	Federal 31-2 (PF-31)					
Well Position	+N/-S	0.0 ft	Northing:	1,578,802.24 ft	Latitude:	39.394940
	+E/-W	0.0 ft	Easting:	2,281,293.81 ft	Longitude:	-108.043490
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,834.0 ft

<b>Wellbore</b>	DD				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF200510	12/21/2010	10.40	65.67	52,270

<b>Design</b>	Plan #1			
<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)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	49.44

<b>Plan Sections</b>										
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	
300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,293.3	29.80	49.44	1,249.1	164.2	191.9	3.00	3.00	0.00	49.44	
3,900.2	29.80	49.44	3,511.3	1,006.7	1,176.1	0.00	0.00	0.00	0.00	
5,390.2	0.00	0.00	4,935.0	1,253.0	1,463.8	2.00	-2.00	0.00	180.00	Federal 31-2 (PF-31)
6,725.2	0.00	0.00	6,270.0	1,253.0	1,463.8	0.00	0.00	0.00	0.00	Federal 31-2 (PF-31)
6,825.2	0.00	0.00	6,370.0	1,253.0	1,463.8	0.00	0.00	0.00	0.00	



# Cathedral Energy Services

## Planning Report

Database: EDM 5000.1 US Multi Users DB  
 Company: EnCana Oil & Gas (USA) Inc  
 Project: S. Piceance (Parachute)  
 Site: SENW S31-T7S-R95W (PF-31 Pad)  
 Well: Federal 31-2 (PF-31)  
 Wellbore: DD  
 Design: Plan #1

Local Co-ordinate Reference: Well Federal 31-2 (PF-31)  
 TVD Reference: KBE @ 5856.0ft (Original Well Elev)  
 MD Reference: KBE @ 5856.0ft (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	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	KOP @ 300' MD
400.0	3.00	49.44	400.0	1.7	2.0	2.6	3.00	3.00	
500.0	6.00	49.44	499.6	6.8	7.9	10.5	3.00	3.00	
600.0	9.00	49.44	598.8	15.3	17.9	23.5	3.00	3.00	
700.0	12.00	49.44	697.1	27.1	31.7	41.7	3.00	3.00	
800.0	15.00	49.44	794.3	42.3	49.4	65.1	3.00	3.00	
900.0	18.00	49.44	890.2	60.8	71.0	93.5	3.00	3.00	
1,000.0	21.00	49.44	984.4	82.5	96.4	126.9	3.00	3.00	
1,100.0	24.00	49.44	1,076.8	107.4	125.4	165.1	3.00	3.00	
1,120.0	24.60	49.44	1,095.0	112.7	131.7	173.3	3.00	3.00	Surface casing
1,200.0	27.00	49.44	1,167.1	135.4	158.1	208.2	3.00	3.00	
1,293.3	29.80	49.44	1,249.1	164.2	191.9	252.5	3.00	3.00	EOB; Inc=29.8°
1,300.0	29.80	49.44	1,254.9	166.4	194.4	255.9	0.00	0.00	
1,400.0	29.80	49.44	1,341.7	198.7	232.1	305.6	0.00	0.00	
1,500.0	29.80	49.44	1,428.5	231.0	269.9	355.3	0.00	0.00	
1,600.0	29.80	49.44	1,515.3	263.3	307.6	405.0	0.00	0.00	
1,700.0	29.80	49.44	1,602.0	295.6	345.4	454.6	0.00	0.00	
1,800.0	29.80	49.44	1,688.8	328.0	383.1	504.3	0.00	0.00	
1,900.0	29.80	49.44	1,775.6	360.3	420.9	554.0	0.00	0.00	
2,000.0	29.80	49.44	1,862.4	392.6	458.7	603.7	0.00	0.00	
2,100.0	29.80	49.44	1,949.2	424.9	496.4	653.4	0.00	0.00	
2,200.0	29.80	49.44	2,035.9	457.2	534.2	703.1	0.00	0.00	
2,300.0	29.80	49.44	2,122.7	489.5	571.9	752.8	0.00	0.00	
2,400.0	29.80	49.44	2,209.5	521.9	609.7	802.5	0.00	0.00	
2,500.0	29.80	49.44	2,296.3	554.2	647.4	852.2	0.00	0.00	
2,600.0	29.80	49.44	2,383.0	586.5	685.2	901.9	0.00	0.00	
2,700.0	29.80	49.44	2,469.8	618.8	722.9	951.6	0.00	0.00	
2,800.0	29.80	49.44	2,556.6	651.1	760.7	1,001.3	0.00	0.00	
2,900.0	29.80	49.44	2,643.4	683.4	798.4	1,051.0	0.00	0.00	
3,000.0	29.80	49.44	2,730.1	715.8	836.2	1,100.7	0.00	0.00	
3,100.0	29.80	49.44	2,816.9	748.1	873.9	1,150.4	0.00	0.00	
3,200.0	29.80	49.44	2,903.7	780.4	911.7	1,200.1	0.00	0.00	
3,289.1	29.80	49.44	2,981.0	809.2	945.3	1,244.4	0.00	0.00	Ohio Creek
3,300.0	29.80	49.44	2,990.5	812.7	949.5	1,249.8	0.00	0.00	
3,400.0	29.80	49.44	3,077.3	845.0	987.2	1,299.5	0.00	0.00	
3,500.0	29.80	49.44	3,164.0	877.3	1,025.0	1,349.2	0.00	0.00	
3,541.4	29.80	49.44	3,200.0	890.7	1,040.6	1,369.8	0.00	0.00	Mesaverde
3,600.0	29.80	49.44	3,250.8	909.7	1,062.7	1,398.9	0.00	0.00	
3,700.0	29.80	49.44	3,337.6	942.0	1,100.5	1,448.6	0.00	0.00	
3,800.0	29.80	49.44	3,424.4	974.3	1,138.2	1,498.3	0.00	0.00	
3,900.0	29.80	49.44	3,511.1	1,006.6	1,176.0	1,548.0	0.00	0.00	
3,900.2	29.80	49.44	3,511.3	1,006.7	1,176.1	1,548.1	0.00	0.00	Start Drop -2.00
4,000.0	27.80	49.44	3,598.8	1,037.9	1,212.6	1,596.1	2.00	-2.00	
4,100.0	25.80	49.44	3,688.0	1,067.3	1,246.8	1,641.2	2.00	-2.00	
4,200.0	23.80	49.44	3,778.8	1,094.5	1,278.7	1,683.2	2.00	-2.00	
4,300.0	21.80	49.44	3,871.0	1,119.7	1,308.1	1,721.9	2.00	-2.00	
4,344.1	20.92	49.44	3,912.0	1,130.2	1,320.3	1,738.0	2.00	-2.00	Williams Fork
4,400.0	19.80	49.44	3,964.4	1,142.8	1,335.1	1,757.4	2.00	-2.00	
4,500.0	17.80	49.44	4,059.1	1,163.8	1,359.6	1,789.7	2.00	-2.00	

# Cathedral Energy Services

## Planning Report

Database: EDM 5000.1 US Multi Users DB  
 Company: EnCana Oil & Gas (USA) Inc  
 Project: S. Piceance (Parachute)  
 Site: SENW S31-T7S-R95W (PF-31 Pad)  
 Well: Federal 31-2 (PF-31)  
 Wellbore: DD  
 Design: Plan #1

Local Co-ordinate Reference: Well Federal 31-2 (PF-31)  
 TVD Reference: KBE @ 5856.0ft (Original Well Elev)  
 MD Reference: KBE @ 5856.0ft (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
4,600.0	15.80	49.44	4,154.8	1,182.6	1,381.6	1,818.6	2.00	-2.00	
4,700.0	13.80	49.44	4,251.5	1,199.2	1,401.0	1,844.1	2.00	-2.00	
4,800.0	11.80	49.44	4,349.0	1,213.6	1,417.8	1,866.3	2.00	-2.00	
4,897.7	9.85	49.44	4,445.0	1,225.6	1,431.8	1,884.6	2.00	-2.00	Top of Gas
4,900.0	9.80	49.44	4,447.2	1,225.8	1,432.1	1,885.0	2.00	-2.00	
5,000.0	7.80	49.44	4,546.1	1,235.8	1,443.7	1,900.3	2.00	-2.00	
5,100.0	5.80	49.44	4,645.3	1,243.5	1,452.7	1,912.2	2.00	-2.00	
5,200.0	3.80	49.44	4,745.0	1,248.9	1,459.0	1,920.6	2.00	-2.00	
5,300.0	1.80	49.44	4,844.9	1,252.1	1,462.8	1,925.4	2.00	-2.00	
5,390.2	0.00	0.00	4,935.0	1,253.0	1,463.8	1,926.9	2.00	-2.00	EOD; Inc=0° - Federal 31-2 (PF-31) TGT
5,400.0	0.00	0.00	4,944.8	1,253.0	1,463.8	1,926.9	0.00	0.00	
5,500.0	0.00	0.00	5,044.8	1,253.0	1,463.8	1,926.9	0.00	0.00	
5,600.0	0.00	0.00	5,144.8	1,253.0	1,463.8	1,926.9	0.00	0.00	
5,700.0	0.00	0.00	5,244.8	1,253.0	1,463.8	1,926.9	0.00	0.00	
5,800.0	0.00	0.00	5,344.8	1,253.0	1,463.8	1,926.9	0.00	0.00	
5,900.0	0.00	0.00	5,444.8	1,253.0	1,463.8	1,926.9	0.00	0.00	
6,000.0	0.00	0.00	5,544.8	1,253.0	1,463.8	1,926.9	0.00	0.00	
6,100.0	0.00	0.00	5,644.8	1,253.0	1,463.8	1,926.9	0.00	0.00	
6,200.0	0.00	0.00	5,744.8	1,253.0	1,463.8	1,926.9	0.00	0.00	
6,208.2	0.00	0.00	5,753.0	1,253.0	1,463.8	1,926.9	0.00	0.00	Coal Ridge
6,300.0	0.00	0.00	5,844.8	1,253.0	1,463.8	1,926.9	0.00	0.00	
6,400.0	0.00	0.00	5,944.8	1,253.0	1,463.8	1,926.9	0.00	0.00	
6,500.0	0.00	0.00	6,044.8	1,253.0	1,463.8	1,926.9	0.00	0.00	
6,525.2	0.00	0.00	6,070.0	1,253.0	1,463.8	1,926.9	0.00	0.00	Rollins SS
6,600.0	0.00	0.00	6,144.8	1,253.0	1,463.8	1,926.9	0.00	0.00	
6,700.0	0.00	0.00	6,244.8	1,253.0	1,463.8	1,926.9	0.00	0.00	
6,725.2	0.00	0.00	6,270.0	1,253.0	1,463.8	1,926.9	0.00	0.00	TD @ 6725.2' MD - Federal 31-2 (PF-31) BHL
6,800.0	0.00	0.00	6,344.8	1,253.0	1,463.8	1,926.9	0.00	0.00	
6,825.2	0.00	0.00	6,370.0	1,253.0	1,463.8	1,926.9	0.00	0.00	Permit TD @ 6825.2' 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 31-2 (PF-31) Bf - plan hits target center - Circle (radius 25.0)	0.00	0.00	6,270.0	1,253.0	1,463.8	1,580,013.78	2,282,792.14	39.398380	-108.038310
Federal 31-2 (PF-31) TC - plan hits target center - Circle (radius 25.0)	0.00	0.00	4,935.0	1,253.0	1,463.8	1,580,013.78	2,282,792.14	39.398380	-108.038310

### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,120.0	1,095.0	Surface casing	0.000	0.000



# Cathedral Energy Services

## Planning Report

**Database:** EDM 5000.1 US Multi Users DB  
**Company:** EnCana Oil & Gas (USA) Inc  
**Project:** S. Piceance (Parachute)  
**Site:** SENW S31-T7S-R95W (PF-31 Pad)  
**Well:** Federal 31-2 (PF-31)  
**Wellbore:** DD  
**Design:** Plan #1

**Local Co-ordinate Reference:** Well Federal 31-2 (PF-31)  
**TVD Reference:** KBE @ 5856.0ft (Original Well Elev)  
**MD Reference:** KBE @ 5856.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

### Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,289.1	2,981.0	Ohio Creek		0.00	
3,541.4	3,200.0	Mesaverde		0.00	
4,344.1	3,912.0	Williams Fork		0.00	
4,897.7	4,445.0	Top of Gas		0.00	
6,208.2	5,753.0	Coal Ridge		0.00	
6,525.2	6,070.0	Rollins SS		0.00	

### Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
300.0	300.0	0.0	0.0	KOP @ 300' MD
1,293.3	1,249.1	164.2	191.9	EOB; Inc=29.8°
3,900.2	3,511.3	1,006.7	1,176.1	Start Drop -2.00
5,390.2	4,935.0	1,253.0	1,463.8	EOD; Inc=0°
6,725.2	6,270.0	1,253.0	1,463.8	TD @ 6725.2' MD
6,825.2	6,370.0	1,253.0	1,463.8	Permit TD @ 6825.2' MD