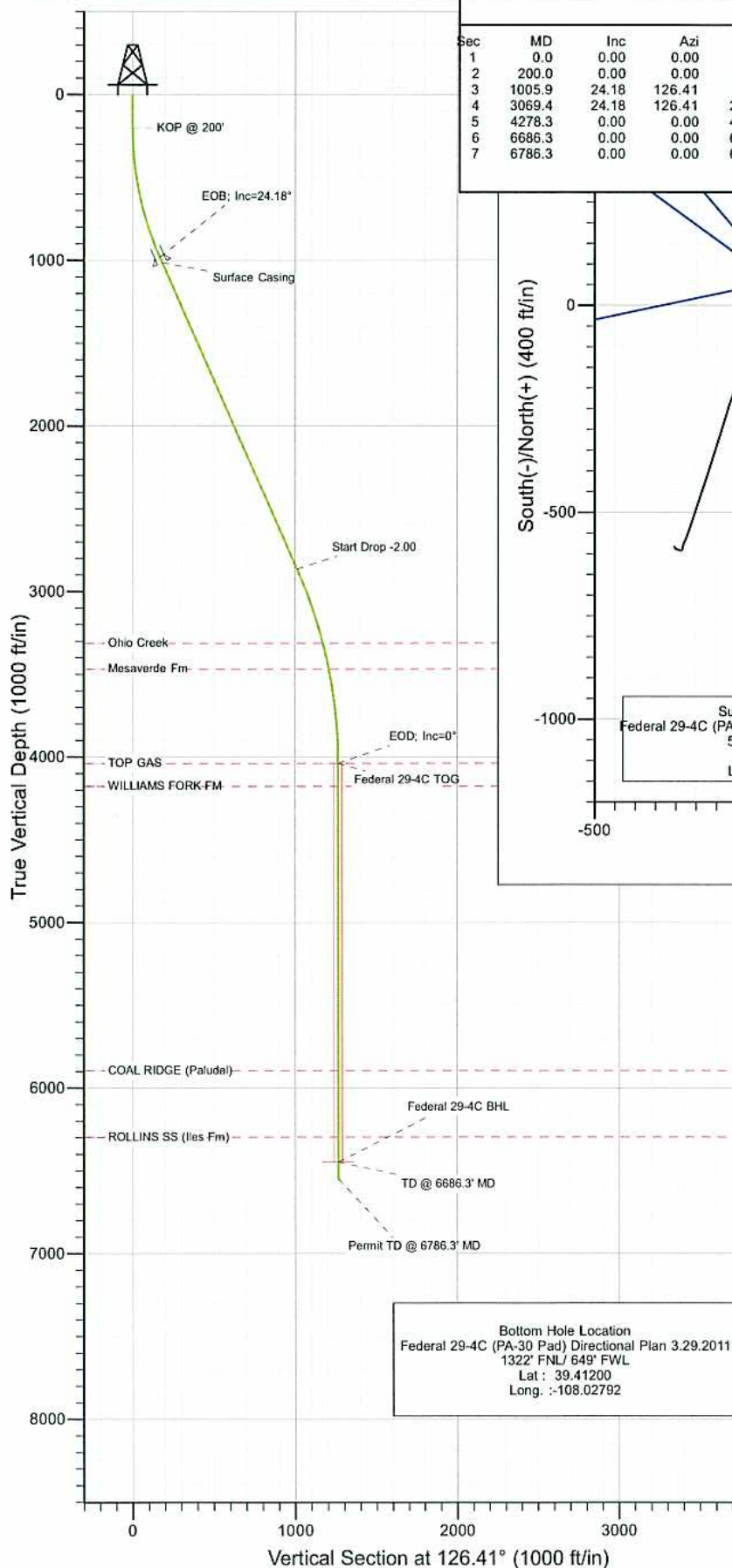
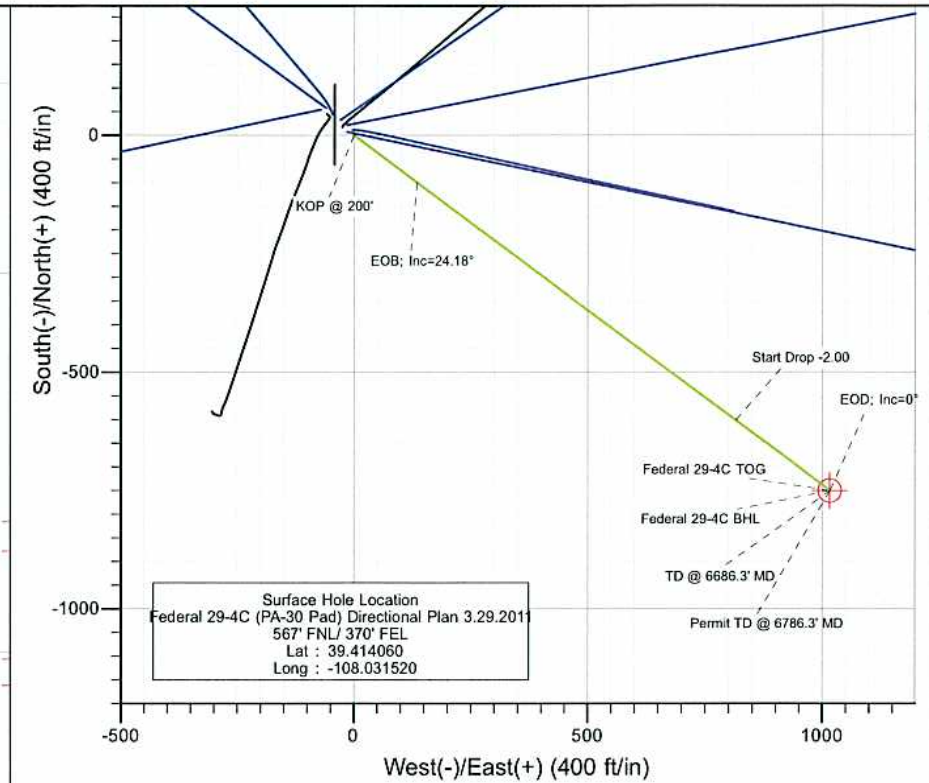




Project: S. Piceance (Parachute)  
 Site: SESE 19-7S-95W (PA-30 Pad)  
 Well: Federal 29-4C (PA-30 Pad) Directional Plan 3.29.2011  
 Wellbore: DD  
 Design: Plan #2



SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	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	1005.9	24.18	126.41	982.2	-99.4	134.8	3.00	126.41	167.5	
4	3069.4	24.18	126.41	2864.7	-601.1	814.9	0.00	0.00	1012.6	
5	4278.3	0.00	0.00	4038.0	-750.3	1017.1	2.00	180.00	1263.9	Federal 29-4C TOG
6	6686.3	0.00	0.00	6446.0	-750.3	1017.1	0.00	0.00	1263.9	Federal 29-4C BHL
7	6786.3	0.00	0.00	6546.0	-750.3	1017.1	0.00	0.00	1263.9	



FORMATION TOP DETAILS		
TVDPPath	MDPath	Formation
3312.0	3544.3	Ohio Creek
3467.0	3703.4	Mesaverde Fm
4038.0	4278.3	TOP GAS
4176.0	4416.3	WILLIAMS FORK FM
5894.0	6134.3	COAL RIDGE (Paludal)
6296.0	6536.3	ROLLINS SS (Iles Fm)



Azimuths to True North  
 Magnetic North: 10.38°

Magnetic Field  
 Strength: 52223.6snT  
 Dip Angle: 65.67°  
 Date: 3/29/2011  
 Model: IGRF2010

DESIGN DETAILS: Plan #2

Job #10xxx: KR  
 WELL @ 5827.0ft (Original Well Elev)

Target	Azimuth	Origin	N/S	E/W	From TVD
Federal 29-4C BHL	126.41	Slot	0.0	0.0	0.0

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Federal 29-4C (PA-30 Pad) Directional Plan
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	WELL @ 5827.0ft (Original Well Elev)
<b>Project:</b>	S. Piceance (Parachute)	<b>MD Reference:</b>	WELL @ 5827.0ft (Original Well Elev)
<b>Site:</b>	SESE 19-7S-95W (PA-30 Pad)	<b>North Reference:</b>	True
<b>Well:</b>	Federal 29-4C (PA-30 Pad) Directional Plan 3.29.2011	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	Plan #2		

**Project** 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** SESE 19-7S-95W (PA-30 Pad)

<b>Site Position:</b>		<b>Northing:</b>	1,585,669.17 ft	<b>Latitude:</b>	39.414060
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,284,869.32 ft	<b>Longitude:</b>	-108.031520
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b>	-1.60 °

**Well** Federal 29-4C (PA-30 Pad) Directional Plan 3.29.2011

<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>	1,585,669.16 ft	<b>Latitude:</b>	39.414060
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>	2,284,869.32 ft	<b>Longitude:</b>	-108.031520
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b>	ft	<b>Ground Level:</b>	5,805.0 ft

**Wellbore** DD

<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	3/29/2011	10.39	65.67	52,224

**Design** Plan #2

**Audit Notes:**

**Version:** **Phase:** PLAN **Tie On Depth:** 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	126.41

**Plan Sections**

<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	<b>TFO (°)</b>	<b>Target</b>
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	
1,005.9	24.18	126.41	982.2	-99.4	134.8	3.00	3.00	0.00	126.41	
3,069.4	24.18	126.41	2,864.7	-601.1	814.9	0.00	0.00	0.00	0.00	
4,278.3	0.00	0.00	4,038.0	-750.3	1,017.1	2.00	-2.00	0.00	180.00	Federal 29-4C TOG
6,686.3	0.00	0.00	6,446.0	-750.3	1,017.1	0.00	0.00	0.00	0.00	Federal 29-4C BHL
6,786.3	0.00	0.00	6,546.0	-750.3	1,017.1	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:** SESE 19-7S-95W (PA-30 Pad)  
**Well:** Federal 29-4C (PA-30 Pad) Directional Plan 3.29.2011  
**Wellbore:** DD  
**Design:** Plan #2

**Local Co-ordinate Reference:** Well Federal 29-4C (PA-30 Pad) Directional Plan  
**TVD Reference:** WELL @ 5827.0ft (Original Well Elev)  
**MD Reference:** WELL @ 5827.0ft (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	126.41	300.0	-1.6	2.1	2.6	3.00	3.00	
400.0	6.00	126.41	399.6	-6.2	8.4	10.5	3.00	3.00	
500.0	9.00	126.41	498.8	-14.0	18.9	23.5	3.00	3.00	
600.0	12.00	126.41	597.1	-24.8	33.6	41.7	3.00	3.00	
700.0	15.00	126.41	694.3	-38.6	52.4	65.1	3.00	3.00	
800.0	18.00	126.41	790.2	-55.5	75.2	93.5	3.00	3.00	
900.0	21.00	126.41	884.4	-75.3	102.1	126.9	3.00	3.00	
1,000.0	24.00	126.41	976.8	-98.0	132.9	165.1	3.00	3.00	
1,005.9	24.18	126.41	982.2	-99.4	134.8	167.5	3.00	3.00	EOB; Inc=24.18°
1,040.0	24.18	126.41	1,013.3	-107.7	146.1	181.5	0.00	0.00	Surface Casing
1,100.0	24.18	126.41	1,068.0	-122.3	165.8	206.1	0.00	0.00	
1,200.0	24.18	126.41	1,159.3	-146.6	198.8	247.0	0.00	0.00	
1,300.0	24.18	126.41	1,250.5	-170.9	231.7	288.0	0.00	0.00	
1,400.0	24.18	126.41	1,341.7	-195.3	264.7	328.9	0.00	0.00	
1,500.0	24.18	126.41	1,433.0	-219.6	297.7	369.9	0.00	0.00	
1,600.0	24.18	126.41	1,524.2	-243.9	330.6	410.8	0.00	0.00	
1,700.0	24.18	126.41	1,615.4	-268.2	363.6	451.8	0.00	0.00	
1,800.0	24.18	126.41	1,706.6	-292.5	396.5	492.7	0.00	0.00	
1,900.0	24.18	126.41	1,797.9	-316.8	429.5	533.7	0.00	0.00	
2,000.0	24.18	126.41	1,889.1	-341.1	462.5	574.7	0.00	0.00	
2,100.0	24.18	126.41	1,980.3	-365.4	495.4	615.6	0.00	0.00	
2,200.0	24.18	126.41	2,071.6	-389.8	528.4	656.6	0.00	0.00	
2,300.0	24.18	126.41	2,162.8	-414.1	561.3	697.5	0.00	0.00	
2,400.0	24.18	126.41	2,254.0	-438.4	594.3	738.5	0.00	0.00	
2,500.0	24.18	126.41	2,345.2	-462.7	627.2	779.4	0.00	0.00	
2,600.0	24.18	126.41	2,436.5	-487.0	660.2	820.4	0.00	0.00	
2,700.0	24.18	126.41	2,527.7	-511.3	693.2	861.3	0.00	0.00	
2,800.0	24.18	126.41	2,618.9	-535.6	726.1	902.3	0.00	0.00	
2,900.0	24.18	126.41	2,710.2	-559.9	759.1	943.3	0.00	0.00	
3,000.0	24.18	126.41	2,801.4	-584.2	792.0	984.2	0.00	0.00	
3,069.4	24.18	126.41	2,864.7	-601.1	814.9	1,012.6	0.00	0.00	Start Drop -2.00
3,100.0	23.57	126.41	2,892.7	-608.5	824.9	1,025.0	2.00	-2.00	
3,200.0	21.57	126.41	2,985.0	-631.2	855.8	1,063.4	2.00	-2.00	
3,300.0	19.57	126.41	3,078.6	-652.1	884.0	1,098.5	2.00	-2.00	
3,400.0	17.57	126.41	3,173.4	-671.0	909.6	1,130.4	2.00	-2.00	
3,500.0	15.57	126.41	3,269.3	-687.9	932.6	1,158.9	2.00	-2.00	
3,544.3	14.68	126.41	3,312.0	-694.8	941.9	1,170.4	2.00	-2.00	Ohio Creek
3,600.0	13.57	126.41	3,366.1	-702.8	952.8	1,184.0	2.00	-2.00	
3,700.0	11.57	126.41	3,463.7	-715.8	970.3	1,205.8	2.00	-2.00	
3,703.4	11.50	126.41	3,467.0	-716.2	970.9	1,206.4	2.00	-2.00	Mesaverde Fm
3,800.0	9.57	126.41	3,562.0	-726.6	985.1	1,224.1	2.00	-2.00	
3,900.0	7.57	126.41	3,660.8	-735.5	997.1	1,239.0	2.00	-2.00	
4,000.0	5.57	126.41	3,760.2	-742.3	1,006.3	1,250.4	2.00	-2.00	
4,100.0	3.57	126.41	3,859.9	-747.0	1,012.7	1,258.4	2.00	-2.00	
4,200.0	1.57	126.41	3,959.8	-749.7	1,016.3	1,262.9	2.00	-2.00	
4,278.3	0.00	0.00	4,038.0	-750.3	1,017.1	1,263.9	2.00	-2.00	EOD; Inc=0° - TOP GAS - Federal 29-4C TOG
4,300.0	0.00	0.00	4,059.7	-750.3	1,017.1	1,263.9	0.00	0.00	
4,400.0	0.00	0.00	4,159.7	-750.3	1,017.1	1,263.9	0.00	0.00	
4,416.3	0.00	0.00	4,176.0	-750.3	1,017.1	1,263.9	0.00	0.00	WILLIAMS FORK FM

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Federal 29-4C (PA-30 Pad) Directional Plan
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	WELL @ 5827.0ft (Original Well Elev)
<b>Project:</b>	S. Piceance (Parachute)	<b>MD Reference:</b>	WELL @ 5827.0ft (Original Well Elev)
<b>Site:</b>	SESE 19-7S-95W (PA-30 Pad)	<b>North Reference:</b>	True
<b>Well:</b>	Federal 29-4C (PA-30 Pad) Directional Plan 3.29.2011	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	Plan #2		

### 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
4,500.0	0.00	0.00	4,259.7	-750.3	1,017.1	1,263.9	0.00	0.00	
4,600.0	0.00	0.00	4,359.7	-750.3	1,017.1	1,263.9	0.00	0.00	
4,700.0	0.00	0.00	4,459.7	-750.3	1,017.1	1,263.9	0.00	0.00	
4,800.0	0.00	0.00	4,559.7	-750.3	1,017.1	1,263.9	0.00	0.00	
4,900.0	0.00	0.00	4,659.7	-750.3	1,017.1	1,263.9	0.00	0.00	
5,000.0	0.00	0.00	4,759.7	-750.3	1,017.1	1,263.9	0.00	0.00	
5,100.0	0.00	0.00	4,859.7	-750.3	1,017.1	1,263.9	0.00	0.00	
5,200.0	0.00	0.00	4,959.7	-750.3	1,017.1	1,263.9	0.00	0.00	
5,300.0	0.00	0.00	5,059.7	-750.3	1,017.1	1,263.9	0.00	0.00	
5,400.0	0.00	0.00	5,159.7	-750.3	1,017.1	1,263.9	0.00	0.00	
5,500.0	0.00	0.00	5,259.7	-750.3	1,017.1	1,263.9	0.00	0.00	
5,600.0	0.00	0.00	5,359.7	-750.3	1,017.1	1,263.9	0.00	0.00	
5,700.0	0.00	0.00	5,459.7	-750.3	1,017.1	1,263.9	0.00	0.00	
5,800.0	0.00	0.00	5,559.7	-750.3	1,017.1	1,263.9	0.00	0.00	
5,900.0	0.00	0.00	5,659.7	-750.3	1,017.1	1,263.9	0.00	0.00	
6,000.0	0.00	0.00	5,759.7	-750.3	1,017.1	1,263.9	0.00	0.00	
6,100.0	0.00	0.00	5,859.7	-750.3	1,017.1	1,263.9	0.00	0.00	
6,134.3	0.00	0.00	5,894.0	-750.3	1,017.1	1,263.9	0.00	0.00	COAL RIDGE (Paludal)
6,200.0	0.00	0.00	5,959.7	-750.3	1,017.1	1,263.9	0.00	0.00	
6,300.0	0.00	0.00	6,059.7	-750.3	1,017.1	1,263.9	0.00	0.00	
6,400.0	0.00	0.00	6,159.7	-750.3	1,017.1	1,263.9	0.00	0.00	
6,500.0	0.00	0.00	6,259.7	-750.3	1,017.1	1,263.9	0.00	0.00	
6,536.3	0.00	0.00	6,296.0	-750.3	1,017.1	1,263.9	0.00	0.00	ROLLINS SS (Iles Fm)
6,600.0	0.00	0.00	6,359.7	-750.3	1,017.1	1,263.9	0.00	0.00	
6,686.3	0.00	0.00	6,446.0	-750.3	1,017.1	1,263.9	0.00	0.00	TD @ 6686.3' MD - Federal 29-4C BHL
6,700.0	0.00	0.00	6,459.7	-750.3	1,017.1	1,263.9	0.00	0.00	
6,786.3	0.00	0.00	6,546.0	-750.3	1,017.1	1,263.9	0.00	0.00	

### 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									
Federal 29-4C TOG	0.00	0.00	4,038.0	-750.3	1,017.1	1,584,890.83	2,285,865.16	39.412000	-108.027920
- plan hits target center									
- Point									
Federal 29-4C BHL	0.00	0.00	6,446.0	-750.3	1,017.1	1,584,890.83	2,285,865.16	39.412000	-108.027920
- plan hits target center									
- Circle (radius 25.0)									

### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,040.0	1,013.3	Surface Casing	5.500	6.000



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Federal 29-4C (PA-30 Pad) Directional Plan
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	WELL @ 5827.0ft (Original Well Elev)
<b>Project:</b>	S. Piceance (Parachute)	<b>MD Reference:</b>	WELL @ 5827.0ft (Original Well Elev)
<b>Site:</b>	SESE 19-7S-95W (PA-30 Pad)	<b>North Reference:</b>	True
<b>Well:</b>	Federal 29-4C (PA-30 Pad) Directional Plan 3.29.2011	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	Plan #2		

### Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,544.3	3,312.0	Ohio Creek			
3,703.4	3,467.0	Mesaverde Fm			
4,278.3	4,038.0	TOP GAS			
4,416.3	4,176.0	WILLIAMS FORK FM			
6,134.3	5,894.0	COAL RIDGE (Paludal)			
6,536.3	6,296.0	ROLLINS SS (Iles Fm)			

### 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'
1,005.9	982.2	-99.4	134.8	EOB; Inc=24.18°
3,069.4	2,864.7	-601.1	814.9	Start Drop -2.00
4,278.3	4,038.0	-750.3	1,017.1	EOD; Inc=0°
6,686.3	6,446.0	-750.3	1,017.1	TD @ 6686.3' MD
6,786.3	6,546.0	-750.3	1,017.1	Permit TD @ 6786.3' MD