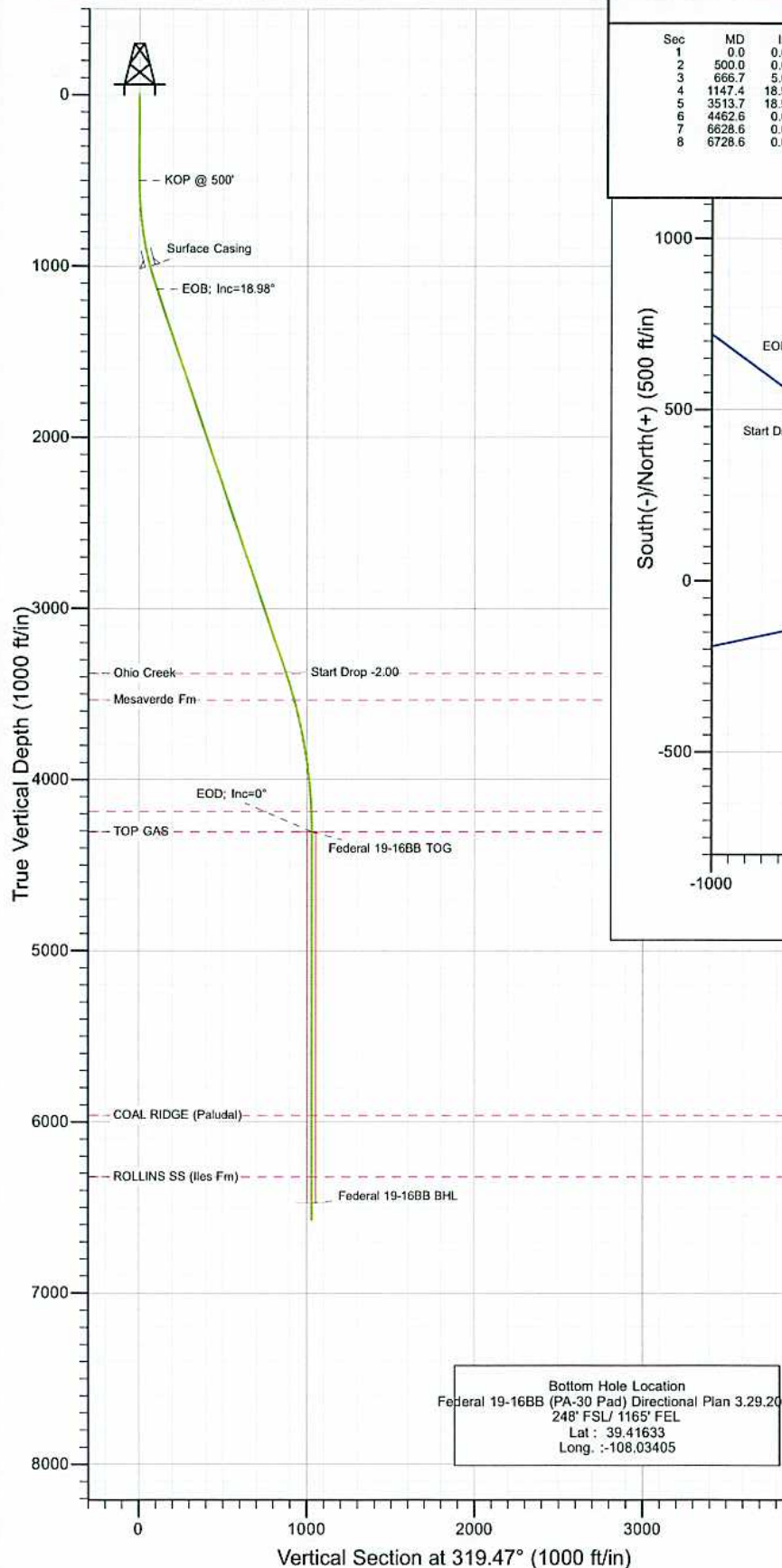
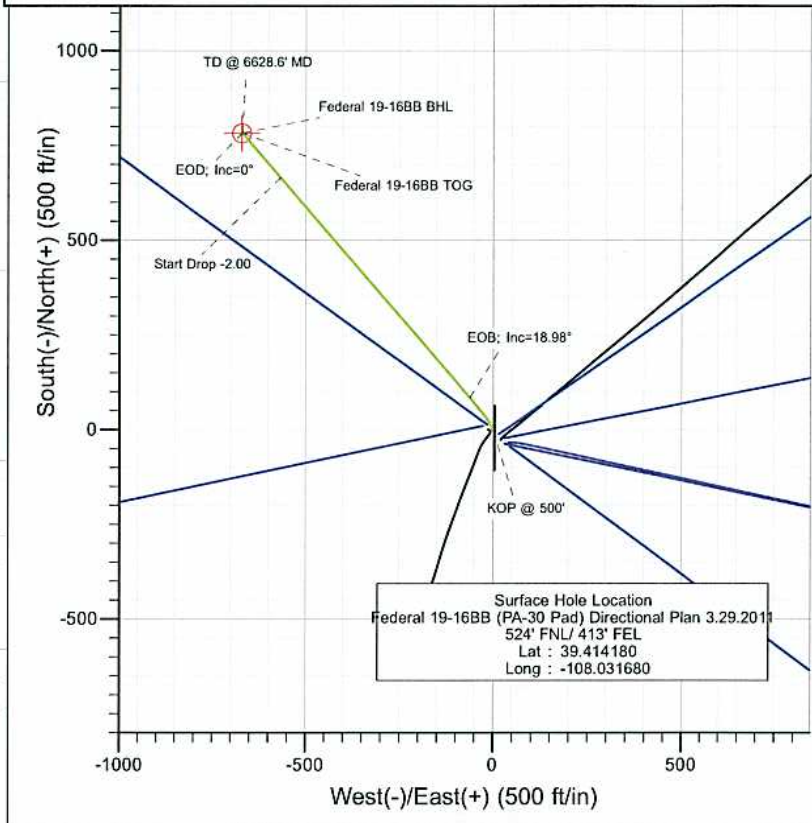




Project: S. Piceance (Parachute)  
 Site: SESE 19-7S-95W (PA-30 Pad)  
 Well: Federal 19-16BB (PA-30 Pad) Directional Plan 3.29.2011  
 Wellbore: DD  
 Design: Plan #1



SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dlog	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.0	
3	666.7	5.00	340.00	666.5	6.8	-2.5	3.00	340.00	6.8	
4	1147.4	18.98	318.90	1135.7	85.8	-61.3	3.00	-28.03	105.1	
5	3513.7	18.98	318.90	3373.3	665.8	-567.2	0.00	0.00	874.6	
6	4462.6	0.00	0.00	4305.0	783.1	-669.6	2.00	180.00	1030.3	Federal 19-16BB TOG
7	6628.6	0.00	0.00	6471.0	783.1	-669.6	0.00	0.00	1030.3	Federal 19-16BB BHL
8	6728.6	0.00	0.00	6571.0	783.1	-669.6	0.00	0.00	1030.3	



FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
3379.0	3519.7	Ohio Creek
3534.0	3682.0	Mesaverde Fm
4186.0	4343.6	WILLIAMS FORK FM
4305.0	4462.6	TOP GAS
5961.0	6118.6	COAL RIDGE (Paludal)
6321.0	6478.6	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

Bottom Hole Location  
 Federal 19-16BB (PA-30 Pad) Directional Plan 3.29.2011  
 248° FSL/ 1165° FEL  
 Lat : 39.41633  
 Long. :-108.03405

DESIGN DETAILS: Plan #1  
 Job #10xxx: KR  
 WELL @ 5827.0ft (Original Well Elev)

Target	Azimuth	Origin	N/S	E/W	From TVD
Federal 19-16BB BHL	319.47	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 19-16BB (PA-30 Pad) Directional P
<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 19-16BB (PA-30 Pad) Directional Plan 3.29.20	<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	SESE 19-7S-95W (PA-30 Pad)				
Site Position:		Northing:	1,585,669.17 ft	Latitude:	39.414060
From:	Lat/Long	Easting:	2,284,869.32 ft	Longitude:	-108.031520
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.60 °

Well	Federal 19-16BB (PA-30 Pad) Directional Plan 3.29.2011					
Well Position	+N/-S	0.0 ft	Northing:	1,585,714.11 ft	Latitude:	39.414180
	+E/-W	0.0 ft	Easting:	2,284,825.35 ft	Longitude:	-108.031680
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,805.0 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>
	IGRF2010	3/29/2011	10.39	65.67	52,224

<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) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	319.47

<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	
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.00	0.00	
666.7	5.00	340.00	666.5	6.8	-2.5	3.00	3.00	0.00	340.00	
1,147.4	18.98	318.90	1,135.7	85.8	-61.3	3.00	2.91	-4.39	-28.03	
3,513.7	18.98	318.90	3,373.3	665.8	-567.2	0.00	0.00	0.00	0.00	
4,462.6	0.00	0.00	4,305.0	783.1	-669.6	2.00	-2.00	0.00	180.00	Federal 19-16BB TOC
6,628.6	0.00	0.00	6,471.0	783.1	-669.6	0.00	0.00	0.00	0.00	Federal 19-16BB BHL
6,728.6	0.00	0.00	6,571.0	783.1	-669.6	0.00	0.00	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Federal 19-16BB (PA-30 Pad) Directional P
<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 19-16BB (PA-30 Pad) Directional Plan 3.29.20	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	Plan #1		

### 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	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	KOP @ 500'
600.0	3.00	340.00	600.0	2.5	-0.9	2.5	3.00	3.00	
666.7	5.00	340.00	666.5	6.8	-2.5	6.8	3.00	3.00	
700.0	5.90	335.42	699.6	9.8	-3.7	9.8	3.00	2.70	
800.0	8.73	327.53	798.8	20.8	-9.9	22.3	3.00	2.83	
900.0	11.65	323.52	897.2	35.4	-20.0	39.9	3.00	2.92	
1,000.0	14.60	321.11	994.6	53.3	-33.9	62.6	3.00	2.95	
1,006.0	14.78	321.00	1,000.4	54.5	-34.9	64.1	3.00	2.96	Surface Casing
1,100.0	17.57	319.50	1,090.7	74.6	-51.6	90.2	3.00	2.97	
1,147.4	18.98	318.90	1,135.7	85.8	-61.3	105.1	3.00	2.97	EOB; Inc=18.98°
1,200.0	18.98	318.90	1,185.4	98.7	-72.6	122.2	0.00	0.00	
1,300.0	18.98	318.90	1,280.0	123.2	-94.0	154.7	0.00	0.00	
1,400.0	18.98	318.90	1,374.6	147.7	-115.3	187.3	0.00	0.00	
1,500.0	18.98	318.90	1,469.1	172.3	-136.7	219.8	0.00	0.00	
1,600.0	18.98	318.90	1,563.7	196.8	-158.1	252.3	0.00	0.00	
1,700.0	18.98	318.90	1,658.2	221.3	-179.5	284.8	0.00	0.00	
1,800.0	18.98	318.90	1,752.8	245.8	-200.9	317.3	0.00	0.00	
1,900.0	18.98	318.90	1,847.4	270.3	-222.2	349.9	0.00	0.00	
2,000.0	18.98	318.90	1,941.9	294.8	-243.6	382.4	0.00	0.00	
2,100.0	18.98	318.90	2,036.5	319.3	-265.0	414.9	0.00	0.00	
2,200.0	18.98	318.90	2,131.1	343.8	-286.4	447.4	0.00	0.00	
2,300.0	18.98	318.90	2,225.6	368.3	-307.7	479.9	0.00	0.00	
2,400.0	18.98	318.90	2,320.2	392.8	-329.1	512.5	0.00	0.00	
2,500.0	18.98	318.90	2,414.8	417.3	-350.5	545.0	0.00	0.00	
2,600.0	18.98	318.90	2,509.3	441.8	-371.9	577.5	0.00	0.00	
2,700.0	18.98	318.90	2,603.9	466.4	-393.3	610.0	0.00	0.00	
2,800.0	18.98	318.90	2,698.5	490.9	-414.6	642.5	0.00	0.00	
2,900.0	18.98	318.90	2,793.0	515.4	-436.0	675.1	0.00	0.00	
3,000.0	18.98	318.90	2,887.6	539.9	-457.4	707.6	0.00	0.00	
3,100.0	18.98	318.90	2,982.1	564.4	-478.8	740.1	0.00	0.00	
3,200.0	18.98	318.90	3,076.7	588.9	-500.1	772.6	0.00	0.00	
3,300.0	18.98	318.90	3,171.3	613.4	-521.5	805.1	0.00	0.00	
3,400.0	18.98	318.90	3,265.8	637.9	-542.9	837.7	0.00	0.00	
3,500.0	18.98	318.90	3,360.4	662.4	-564.3	870.2	0.00	0.00	
3,513.7	18.98	318.90	3,373.4	665.8	-567.2	874.6	0.00	0.00	Start Drop -2.00
3,519.7	18.86	318.90	3,379.0	667.2	-568.5	876.6	2.01	-2.01	Ohio Creek
3,600.0	17.25	318.90	3,455.4	686.0	-584.8	901.5	2.00	-2.00	
3,682.0	15.61	318.90	3,534.0	703.5	-600.1	924.7	2.00	-2.00	Mesaverde Fm
3,700.0	15.25	318.90	3,551.4	707.1	-603.2	929.4	2.00	-2.00	
3,800.0	13.25	318.90	3,648.3	725.6	-619.4	954.1	2.00	-2.00	
3,900.0	11.25	318.90	3,746.0	741.6	-633.4	975.3	2.00	-2.00	
4,000.0	9.25	318.90	3,844.4	755.0	-645.1	993.1	2.00	-2.00	
4,100.0	7.25	318.90	3,943.4	765.9	-654.5	1,007.4	2.00	-2.00	
4,200.0	5.25	318.90	4,042.8	774.1	-661.7	1,018.3	2.00	-2.00	
4,300.0	3.25	318.90	4,142.5	779.6	-666.5	1,025.7	2.00	-2.00	
4,343.6	2.38	318.90	4,186.0	781.3	-667.9	1,027.9	2.00	-2.00	WILLIAMS FORK FM
4,400.0	1.25	318.90	4,242.4	782.6	-669.1	1,029.7	2.00	-2.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Federal 19-16BB (PA-30 Pad) Directional P
<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 19-16BB (PA-30 Pad) Directional Plan 3.29.20	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	Plan #1		

### 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
4,462.6	0.00	0.00	4,305.0	783.1	-669.6	1,030.3	2.00	-2.00	EOD; Inc=0° - TOP GAS - Federal 19-16BB TO
4,500.0	0.00	0.00	4,342.4	783.1	-669.6	1,030.3	0.00	0.00	
4,600.0	0.00	0.00	4,442.4	783.1	-669.6	1,030.3	0.00	0.00	
4,700.0	0.00	0.00	4,542.4	783.1	-669.6	1,030.3	0.00	0.00	
4,800.0	0.00	0.00	4,642.4	783.1	-669.6	1,030.3	0.00	0.00	
4,900.0	0.00	0.00	4,742.4	783.1	-669.6	1,030.3	0.00	0.00	
5,000.0	0.00	0.00	4,842.4	783.1	-669.6	1,030.3	0.00	0.00	
5,100.0	0.00	0.00	4,942.4	783.1	-669.6	1,030.3	0.00	0.00	
5,200.0	0.00	0.00	5,042.4	783.1	-669.6	1,030.3	0.00	0.00	
5,300.0	0.00	0.00	5,142.4	783.1	-669.6	1,030.3	0.00	0.00	
5,400.0	0.00	0.00	5,242.4	783.1	-669.6	1,030.3	0.00	0.00	
5,500.0	0.00	0.00	5,342.4	783.1	-669.6	1,030.3	0.00	0.00	
5,600.0	0.00	0.00	5,442.4	783.1	-669.6	1,030.3	0.00	0.00	
5,700.0	0.00	0.00	5,542.4	783.1	-669.6	1,030.3	0.00	0.00	
5,800.0	0.00	0.00	5,642.4	783.1	-669.6	1,030.3	0.00	0.00	
5,900.0	0.00	0.00	5,742.4	783.1	-669.6	1,030.3	0.00	0.00	
6,000.0	0.00	0.00	5,842.4	783.1	-669.6	1,030.3	0.00	0.00	
6,100.0	0.00	0.00	5,942.4	783.1	-669.6	1,030.3	0.00	0.00	
6,118.6	0.00	0.00	5,961.0	783.1	-669.6	1,030.3	0.00	0.00	COAL RIDGE (Paludal)
6,200.0	0.00	0.00	6,042.4	783.1	-669.6	1,030.3	0.00	0.00	
6,300.0	0.00	0.00	6,142.4	783.1	-669.6	1,030.3	0.00	0.00	
6,400.0	0.00	0.00	6,242.4	783.1	-669.6	1,030.3	0.00	0.00	
6,478.6	0.00	0.00	6,321.0	783.1	-669.6	1,030.3	0.00	0.00	ROLLINS SS (Iles Fm)
6,500.0	0.00	0.00	6,342.4	783.1	-669.6	1,030.3	0.00	0.00	
6,600.0	0.00	0.00	6,442.4	783.1	-669.6	1,030.3	0.00	0.00	
6,628.6	0.00	0.00	6,471.0	783.1	-669.6	1,030.3	0.00	0.00	TD @ 6628.6' MD - Federal 19-16BB BHL
6,700.0	0.00	0.00	6,542.4	783.1	-669.6	1,030.3	0.00	0.00	
6,728.6	0.00	0.00	6,571.0	783.1	-669.6	1,030.3	0.00	0.00	Permit TD @ 6728.6' MD

### 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 19-16BB BHL - plan hits target center - Circle (radius 25.0)	0.00	0.00	6,471.0	783.1	-669.6	1,586,515.59	2,284,177.86	39.416330	-108.034050
Federal 19-16BB TOG - plan hits target center - Point	0.00	0.00	4,305.0	783.1	-669.6	1,586,515.59	2,284,177.86	39.416330	-108.034050

### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,006.0	1,000.4	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 19-16BB (PA-30 Pad) Directional P
<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 19-16BB (PA-30 Pad) Directional Plan 3.29.20	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	Plan #1		

### Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,519.7	3,379.0	Ohio Creek			
3,682.0	3,534.0	Mesaverde Fm			
4,343.6	4,186.0	WILLIAMS FORK FM			
4,462.6	4,305.0	TOP GAS			
6,118.6	5,961.0	COAL RIDGE (Paludal)			
6,478.6	6,321.0	ROLLINS SS (Iles Fm)			

### Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
500.0	500.0	0.0	0.0	KOP @ 500'
1,147.4	1,135.7	85.8	-61.3	EOB; Inc=18.98°
3,513.7	3,373.4	665.8	-567.2	Start Drop -2.00
4,462.6	4,305.0	783.1	-669.6	EOD; Inc=0°
6,628.6	6,471.0	783.1	-669.6	TD @ 6628.6' MD
6,728.6	6,571.0	783.1	-669.6	Permit TD @ 6728.6' MD