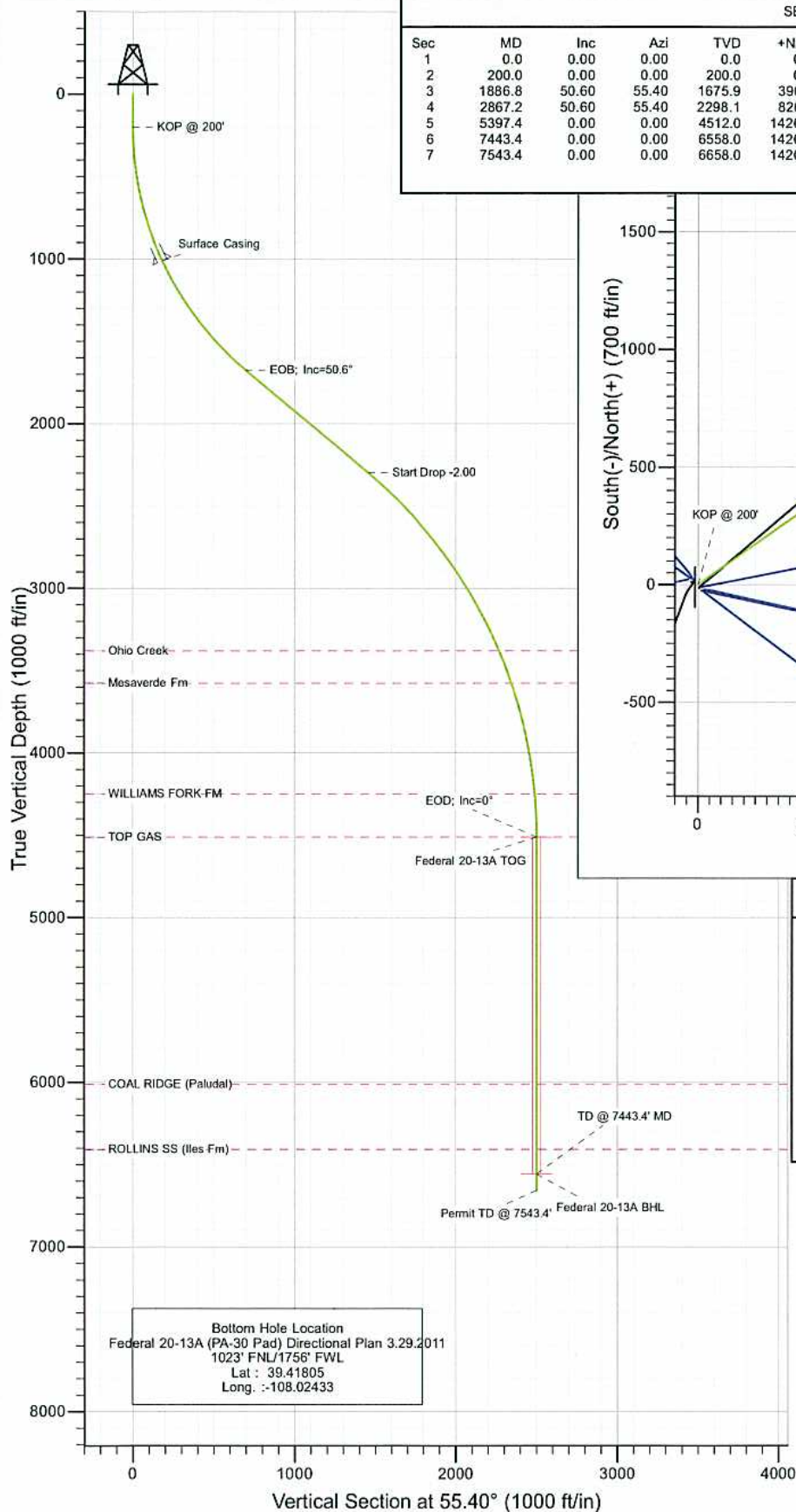
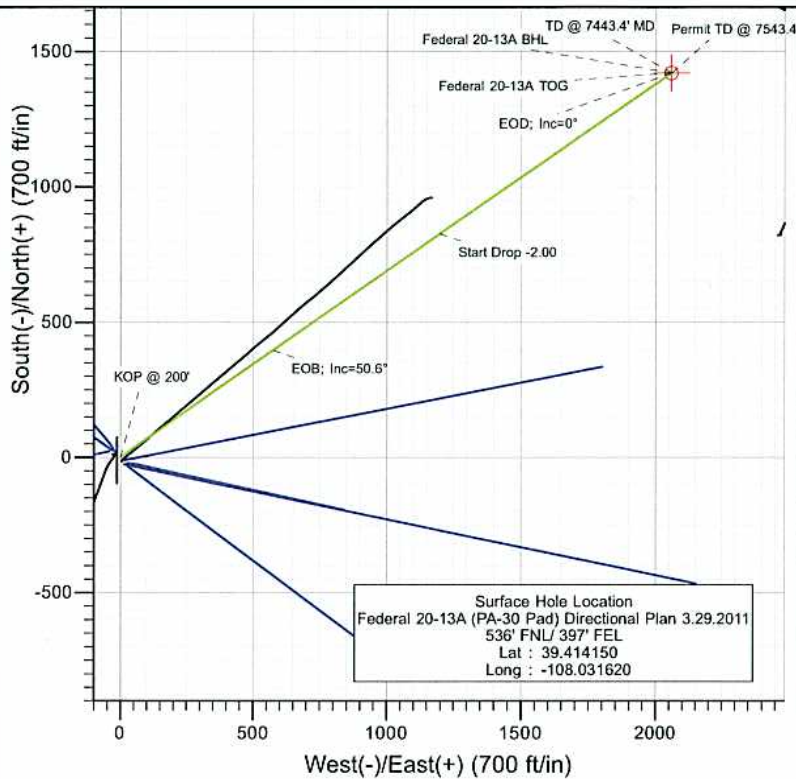




Project: S. Piceance (Parachute)
 Site: SESE 19-7S-95W (PA-30 Pad)
 Well: Federal 20-13A (PA-30 Pad) Directional Plan 3.29.2011
 Wellbore: DD
 Design: Plan #1



SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSection	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	1886.8	50.60	55.40	1675.9	396.2	574.3	3.00	55.40	697.7	
4	2867.2	50.60	55.40	2298.1	826.4	1198.0	0.00	0.00	1455.4	
5	5397.4	0.00	0.00	4512.0	1420.6	2059.5	2.00	180.00	2502.0	Federal 20-13A TOG
6	7443.4	0.00	0.00	6558.0	1420.6	2059.5	0.00	0.00	2502.0	Federal 20-13A BHL
7	7543.4	0.00	0.00	6658.0	1420.6	2059.5	0.00	0.00	2502.0	



FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
3380.0	4233.7	Ohio Creek
3576.0	4443.9	Mesaverde Fm
4250.0	5135.1	WILLIAMS FORK FM
4512.0	5397.4	TOP GAS
6012.0	6897.4	COAL RIDGE (Paludal)
6408.0	7293.4	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 #1					
Job #10xxx: KR					
WELL @ 5827.0ft (Original Well Elev)					
Target	Azimuth	Origin	N/S	E/W	From TVD
Federal 20-13A BHL	55.40	Slot	0.0	0.0	0.0

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Federal 20-13A (PA-30 Pad) Directional Pla
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5827.0ft (Original Well Elev)
Project:	S. Piceance (Parachute)	MD Reference:	WELL @ 5827.0ft (Original Well Elev)
Site:	SESE 19-7S-95W (PA-30 Pad)	North Reference:	True
Well:	Federal 20-13A (PA-30 Pad) Directional Plan 3.29.2011	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

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 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 20-13A (PA-30 Pad) Directional Plan 3.29.2011

Well Position	+N/-S	0.0 ft	Northing:	1,585,702.71 ft	Latitude:	39.414150
	+E/-W	0.0 ft	Easting:	2,284,841.99 ft	Longitude:	-108.031620
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,805.0 ft

Wellbore DD

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

Design Plan #1

Audit Notes:

Version: Phase: PLAN Tie On Depth: 0.0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	55.40

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	
1,886.8	50.60	55.40	1,675.9	396.2	574.3	3.00	3.00	0.00	55.40	
2,867.2	50.60	55.40	2,298.1	826.4	1,198.0	0.00	0.00	0.00	0.00	
5,397.4	0.00	0.00	4,512.0	1,420.6	2,059.5	2.00	-2.00	0.00	180.00	Federal 20-13A TOG
7,443.4	0.00	0.00	6,558.0	1,420.6	2,059.5	0.00	0.00	0.00	0.00	Federal 20-13A BHL
7,543.4	0.00	0.00	6,658.0	1,420.6	2,059.5	0.00	0.00	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Federal 20-13A (PA-30 Pad) Directional Pla
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5827.0ft (Original Well Elev)
Project:	S. Piceance (Parachute)	MD Reference:	WELL @ 5827.0ft (Original Well Elev)
Site:	SESE 19-7S-95W (PA-30 Pad)	North Reference:	True
Well:	Federal 20-13A (PA-30 Pad) Directional Plan 3.29.201	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	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	KOP @ 200'
300.0	3.00	55.40	300.0	1.5	2.2	2.6	3.00	3.00	
400.0	6.00	55.40	399.6	5.9	8.6	10.5	3.00	3.00	
500.0	9.00	55.40	498.8	13.4	19.4	23.5	3.00	3.00	
600.0	12.00	55.40	597.1	23.7	34.4	41.7	3.00	3.00	
700.0	15.00	55.40	694.3	37.0	53.6	65.1	3.00	3.00	
800.0	18.00	55.40	790.2	53.1	76.9	93.5	3.00	3.00	
900.0	21.00	55.40	884.4	72.0	104.4	126.9	3.00	3.00	
1,000.0	24.00	55.40	976.8	93.8	135.9	165.1	3.00	3.00	
1,038.0	25.14	55.40	1,011.4	102.7	148.9	180.9	3.00	3.00	Surface Casing
1,100.0	27.00	55.40	1,067.1	118.2	171.4	208.2	3.00	3.00	
1,200.0	30.00	55.40	1,154.9	145.3	210.6	255.9	3.00	3.00	
1,300.0	33.00	55.40	1,240.2	174.9	253.6	308.1	3.00	3.00	
1,400.0	36.00	55.40	1,322.6	207.1	300.3	364.8	3.00	3.00	
1,500.0	39.00	55.40	1,401.9	241.7	350.4	425.6	3.00	3.00	
1,600.0	42.00	55.40	1,477.9	278.5	403.8	490.6	3.00	3.00	
1,700.0	45.00	55.40	1,550.5	317.6	460.5	559.4	3.00	3.00	
1,800.0	48.00	55.40	1,619.3	358.8	520.2	631.9	3.00	3.00	
1,886.8	50.60	55.40	1,675.9	396.2	574.3	697.7	3.00	3.00	EOB; Inc=50.6°
1,900.0	50.60	55.40	1,684.3	402.0	582.7	707.9	0.00	0.00	
2,000.0	50.60	55.40	1,747.7	445.8	646.3	785.2	0.00	0.00	
2,100.0	50.60	55.40	1,811.2	489.7	710.0	862.5	0.00	0.00	
2,200.0	50.60	55.40	1,874.7	533.6	773.6	939.8	0.00	0.00	
2,300.0	50.60	55.40	1,938.1	577.5	837.2	1,017.0	0.00	0.00	
2,400.0	50.60	55.40	2,001.6	621.3	900.8	1,094.3	0.00	0.00	
2,500.0	50.60	55.40	2,065.1	665.2	964.4	1,171.6	0.00	0.00	
2,600.0	50.60	55.40	2,128.5	709.1	1,028.0	1,248.9	0.00	0.00	
2,700.0	50.60	55.40	2,192.0	753.0	1,091.6	1,326.1	0.00	0.00	
2,800.0	50.60	55.40	2,255.5	796.9	1,155.2	1,403.4	0.00	0.00	
2,867.2	50.60	55.40	2,298.2	826.4	1,198.0	1,455.4	0.00	0.00	Start Drop -2.00
2,900.0	49.95	55.40	2,319.1	840.7	1,218.8	1,480.6	2.00	-2.00	
3,000.0	47.95	55.40	2,384.8	883.5	1,280.8	1,556.0	2.00	-2.00	
3,100.0	45.95	55.40	2,453.0	925.0	1,341.0	1,629.1	2.00	-2.00	
3,200.0	43.95	55.40	2,523.8	965.1	1,399.1	1,699.7	2.00	-2.00	
3,300.0	41.95	55.40	2,597.0	1,003.8	1,455.2	1,767.8	2.00	-2.00	
3,400.0	39.95	55.40	2,672.5	1,041.0	1,509.2	1,833.4	2.00	-2.00	
3,500.0	37.95	55.40	2,750.3	1,076.7	1,560.9	1,896.2	2.00	-2.00	
3,600.0	35.95	55.40	2,830.2	1,110.8	1,610.4	1,956.3	2.00	-2.00	
3,700.0	33.95	55.40	2,912.2	1,143.3	1,657.5	2,013.6	2.00	-2.00	
3,800.0	31.95	55.40	2,996.1	1,174.2	1,702.3	2,068.0	2.00	-2.00	
3,900.0	29.95	55.40	3,081.8	1,203.4	1,744.6	2,119.4	2.00	-2.00	
4,000.0	27.95	55.40	3,169.3	1,230.9	1,784.5	2,167.8	2.00	-2.00	
4,100.0	25.95	55.40	3,258.5	1,256.6	1,821.8	2,213.1	2.00	-2.00	
4,200.0	23.95	55.40	3,349.1	1,280.6	1,856.5	2,255.3	2.00	-2.00	
4,233.7	23.27	55.40	3,380.0	1,288.2	1,867.6	2,268.8	2.00	-2.00	Ohio Creek
4,300.0	21.95	55.40	3,441.2	1,302.7	1,888.6	2,294.3	2.00	-2.00	
4,400.0	19.95	55.40	3,534.6	1,323.0	1,918.0	2,330.1	2.00	-2.00	
4,443.9	19.07	55.40	3,576.0	1,331.3	1,930.1	2,344.7	2.00	-2.00	Mesaverde Fm
4,500.0	17.95	55.40	3,629.2	1,341.4	1,944.8	2,362.5	2.00	-2.00	
4,600.0	15.95	55.40	3,724.8	1,358.0	1,968.8	2,391.7	2.00	-2.00	

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Federal 20-13A (PA-30 Pad) Directional Pla
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5827.0ft (Original Well Elev)
Project:	S. Piceance (Parachute)	MD Reference:	WELL @ 5827.0ft (Original Well Elev)
Site:	SESE 19-7S-95W (PA-30 Pad)	North Reference:	True
Well:	Federal 20-13A (PA-30 Pad) Directional Plan 3.29.201	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	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
4,700.0	13.95	55.40	3,821.4	1,372.6	1,990.0	2,417.5	2.00	-2.00	
4,800.0	11.95	55.40	3,918.9	1,385.4	2,008.4	2,439.9	2.00	-2.00	
4,900.0	9.95	55.40	4,017.1	1,396.1	2,024.1	2,458.9	2.00	-2.00	
5,000.0	7.95	55.40	4,115.8	1,405.0	2,036.9	2,474.4	2.00	-2.00	
5,100.0	5.95	55.40	4,215.1	1,411.8	2,046.8	2,486.5	2.00	-2.00	
5,135.1	5.25	55.40	4,250.0	1,413.8	2,049.6	2,489.9	2.00	-2.00	WILLIAMS FORK FM
5,200.0	3.95	55.40	4,314.7	1,416.7	2,053.9	2,495.2	2.00	-2.00	
5,300.0	1.95	55.40	4,414.6	1,419.7	2,058.2	2,500.3	2.00	-2.00	
5,397.4	0.00	0.00	4,512.0	1,420.6	2,059.5	2,502.0	2.00	-2.00	EOD; Inc=0° - TOP GAS - Federal 20-13A TOG
5,400.0	0.00	0.00	4,514.6	1,420.6	2,059.5	2,502.0	0.00	0.00	
5,500.0	0.00	0.00	4,614.6	1,420.6	2,059.5	2,502.0	0.00	0.00	
5,600.0	0.00	0.00	4,714.6	1,420.6	2,059.5	2,502.0	0.00	0.00	
5,700.0	0.00	0.00	4,814.6	1,420.6	2,059.5	2,502.0	0.00	0.00	
5,800.0	0.00	0.00	4,914.6	1,420.6	2,059.5	2,502.0	0.00	0.00	
5,900.0	0.00	0.00	5,014.6	1,420.6	2,059.5	2,502.0	0.00	0.00	
6,000.0	0.00	0.00	5,114.6	1,420.6	2,059.5	2,502.0	0.00	0.00	
6,100.0	0.00	0.00	5,214.6	1,420.6	2,059.5	2,502.0	0.00	0.00	
6,200.0	0.00	0.00	5,314.6	1,420.6	2,059.5	2,502.0	0.00	0.00	
6,300.0	0.00	0.00	5,414.6	1,420.6	2,059.5	2,502.0	0.00	0.00	
6,400.0	0.00	0.00	5,514.6	1,420.6	2,059.5	2,502.0	0.00	0.00	
6,500.0	0.00	0.00	5,614.6	1,420.6	2,059.5	2,502.0	0.00	0.00	
6,600.0	0.00	0.00	5,714.6	1,420.6	2,059.5	2,502.0	0.00	0.00	
6,700.0	0.00	0.00	5,814.6	1,420.6	2,059.5	2,502.0	0.00	0.00	
6,800.0	0.00	0.00	5,914.6	1,420.6	2,059.5	2,502.0	0.00	0.00	
6,897.4	0.00	0.00	6,012.0	1,420.6	2,059.5	2,502.0	0.00	0.00	COAL RIDGE (Paludal)
6,900.0	0.00	0.00	6,014.6	1,420.6	2,059.5	2,502.0	0.00	0.00	
7,000.0	0.00	0.00	6,114.6	1,420.6	2,059.5	2,502.0	0.00	0.00	
7,100.0	0.00	0.00	6,214.6	1,420.6	2,059.5	2,502.0	0.00	0.00	
7,200.0	0.00	0.00	6,314.6	1,420.6	2,059.5	2,502.0	0.00	0.00	
7,293.4	0.00	0.00	6,408.0	1,420.6	2,059.5	2,502.0	0.00	0.00	ROLLINS SS (Iles Fm)
7,300.0	0.00	0.00	6,414.6	1,420.6	2,059.5	2,502.0	0.00	0.00	
7,400.0	0.00	0.00	6,514.6	1,420.6	2,059.5	2,502.0	0.00	0.00	
7,443.4	0.00	0.00	6,558.0	1,420.6	2,059.5	2,502.0	0.00	0.00	TD @ 7443.4' MD - Federal 20-13A BHL
7,500.0	0.00	0.00	6,614.6	1,420.6	2,059.5	2,502.0	0.00	0.00	
7,543.4	0.00	0.00	6,658.0	1,420.6	2,059.5	2,502.0	0.00	0.00	Permit TD @ 7543.4'

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 20-13A TOG	0.00	0.00	4,512.0	1,420.6	2,059.5	1,587,065.38	2,286,940.30	39.418050	-108.024330
- plan hits target center									
- Point									
Federal 20-13A BHL	0.00	0.00	6,558.0	1,420.6	2,059.5	1,587,065.38	2,286,940.30	39.418050	-108.024330
- plan hits target center									
- Circle (radius 25.0)									

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Federal 20-13A (PA-30 Pad) Directional Pla
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5827.0ft (Original Well Elev)
Project:	S. Piceance (Parachute)	MD Reference:	WELL @ 5827.0ft (Original Well Elev)
Site:	SESE 19-7S-95W (PA-30 Pad)	North Reference:	True
Well:	Federal 20-13A (PA-30 Pad) Directional Plan 3.29.201	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,038.0	1,011.4	Surface Casing	5.500	6.000

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,233.7	3,380.0	Ohio Creek			
4,443.9	3,576.0	Mesaverde Fm			
5,135.1	4,250.0	WILLIAMS FORK FM			
5,397.4	4,512.0	TOP GAS			
6,897.4	6,012.0	COAL RIDGE (Paludal)			
7,293.4	6,408.0	ROLLINS SS (lles 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'
1,886.8	1,675.9	396.2	574.3	EOB; Inc=50.6°
2,867.2	2,298.2	826.4	1,198.0	Start Drop -2.00
5,397.4	4,512.0	1,420.6	2,059.5	EOD; Inc=0°
7,443.4	6,558.0	1,420.6	2,059.5	TD @ 7443.4' MD
7,543.4	6,658.0	1,420.6	2,059.5	Permit TD @ 7543.4'