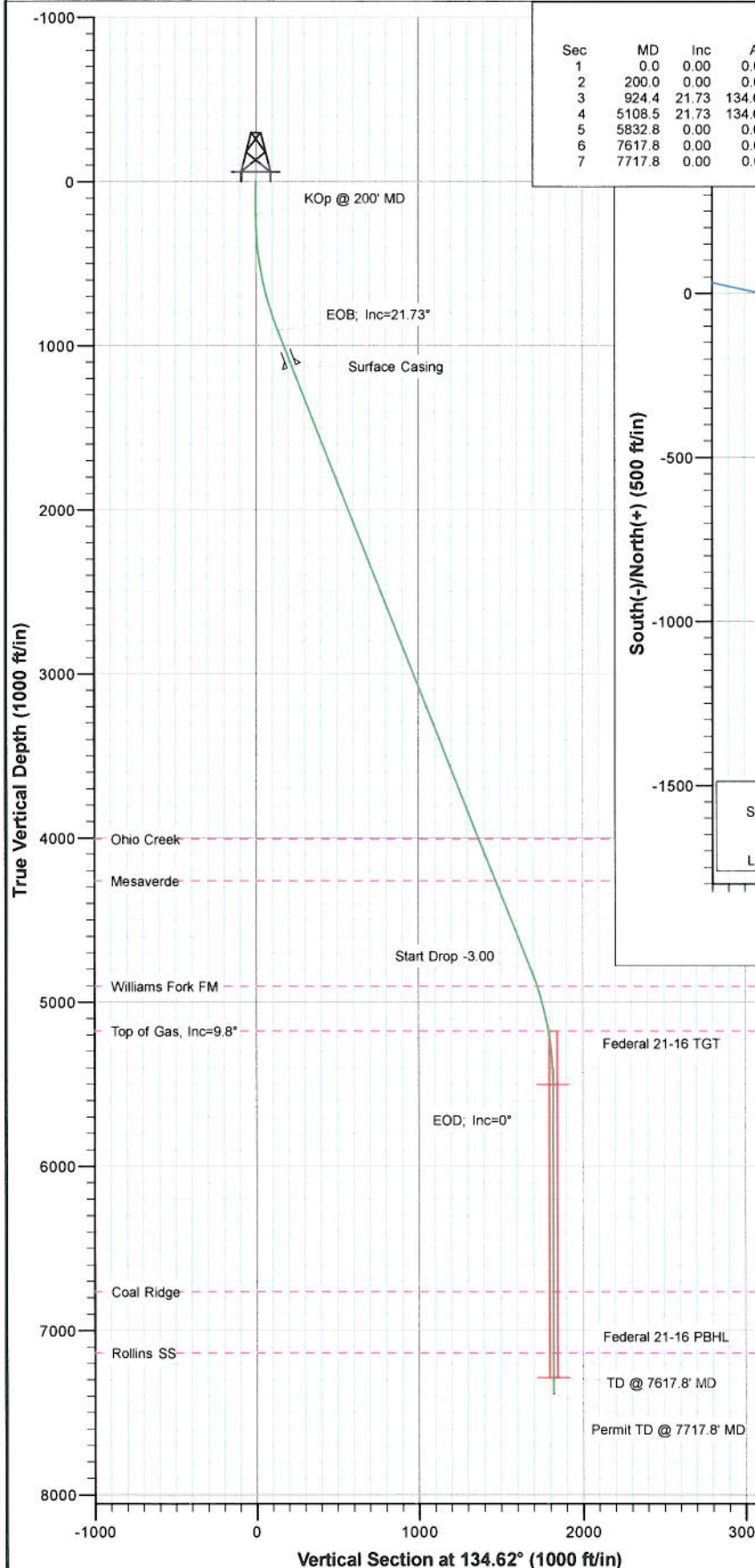
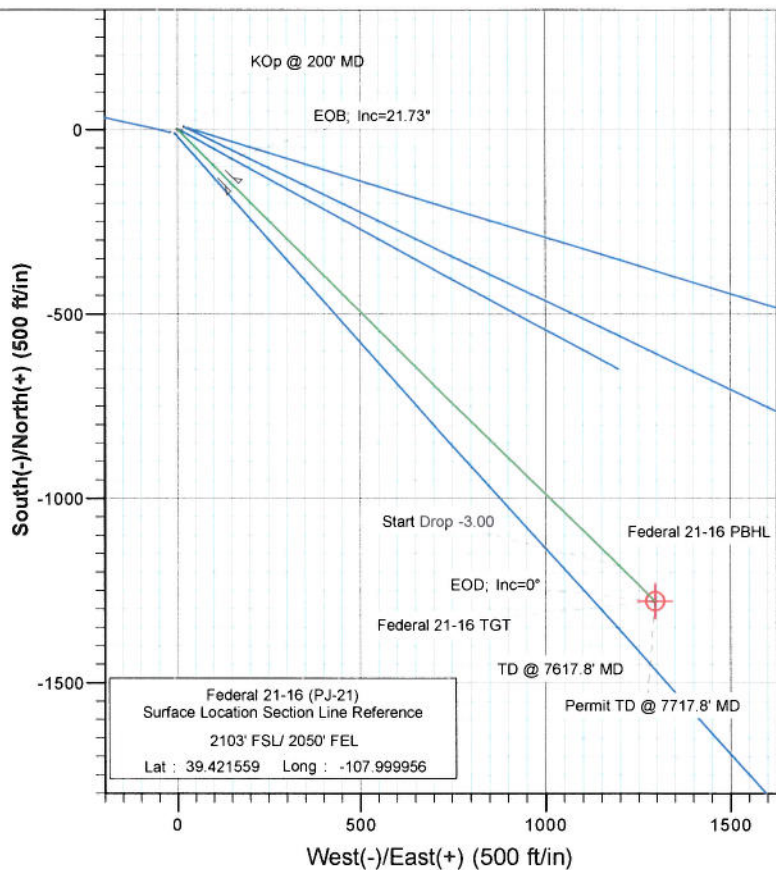




Project: S. Piceance (Parachute)
 Site: NWSE S21-T7S-R95W (PJ-21)
 Well: Federal 21-16 (PJ-21)
 Wellbore: DD
 Plan: Plan #1



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	924.4	21.73	134.62	907.1	-95.3	96.6	3.00	134.62	135.7		
4	5108.5	21.73	134.62	4793.9	-1183.4	1199.3	0.00	0.00	1684.9		
5	5832.8	0.00	0.00	5501.0	-1278.8	1295.9	3.00	180.00	1820.6	Federal 21-16 TGT	
6	7617.8	0.00	0.00	7286.0	-1278.8	1295.9	0.00	0.00	1820.6	Federal 21-16 PBHL	
7	7717.8	0.00	0.00	7386.0	-1278.8	1295.9	0.00	0.00	1820.6		



FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
4008.0	4262.5	Ohio Creek
4263.0	4537.0	Mesaverde
4904.0	5225.7	Williams Fork FM
5176.0	5506.2	Top of Gas, Inc=9.8°
6764.0	7095.8	Coal Ridge
7136.0	7467.8	Rollins SS



Azimuths to True North
 Magnetic North: 10.40°

Magnetic Field
 Strength: 52247.0nT
 Dip Angle: 65.69°
 Date: 1/19/2011
 Model: IGRF2010

Plan #1 Federal 21-16 (PJ-21)					
WELL @ 6323.0ft (Original Well Elev)					
North American Datum 1983					
Well Federal 21-16 (PJ-21), True North					
Target	Azimuth	Origin Type	N/S		
Federal 21-16 PBHL	134.62	Slot	0.0		
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
Federal 21-16 TGT	5501.0	-1278.8	1295.9	39.418048	-107.995369
Federal 21-16 PBHL	7286.0	-1278.8	1295.9	39.418048	-107.995369

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: S. Piceance (Parachute)
Site: NWSE S21-T7S-R95W (PJ-21)
Well: Federal 21-16 (PJ-21)
Wellbore: DD
Design: Plan #1

Local Co-ordinate Reference: Well Federal 21-16 (PJ-21)
TVD Reference: WELL @ 6323.0ft (Original Well Elev)
MD Reference: WELL @ 6323.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Project S. Piceance (Parachute), Garfield County, CO

Map System: US State Plane 1983
Geo Datum: North American Datum 1983
Map Zone: Colorado Central Zone
System Datum: Mean Sea Level

Site NWSE S21-T7S-R95W (PJ-21)

Site Position: Northing: 1,588,155.39 ft Latitude: 39.421569
From: Lat/Long Easting: 2,293,889.70 ft Longitude: -107.999847
Position Uncertainty: 0.0 ft Slot Radius: 13.200 in Grid Convergence: -1.58 °

Well Federal 21-16 (PJ-21)

Well Position +N/-S 0.0 ft Northing: 1,588,152.58 ft Latitude: 39.421559
 +E/-W 0.0 ft Easting: 2,293,858.82 ft Longitude: -107.999956
Position Uncertainty 0.0 ft Wellhead Elevation: ft Ground Level: 6,301.0 ft

Wellbore DD

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/19/2011	10.40	65.69	52,247

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	134.62

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	
924.4	21.73	134.62	907.1	-95.3	96.6	3.00	3.00	0.00	134.62	
5,108.5	21.73	134.62	4,793.9	-1,183.4	1,199.3	0.00	0.00	0.00	0.00	
5,832.8	0.00	0.00	5,501.0	-1,278.8	1,295.9	3.00	-3.00	0.00	180.00	Federal 21-16 TGT
7,617.8	0.00	0.00	7,286.0	-1,278.8	1,295.9	0.00	0.00	0.00	0.00	Federal 21-16 PBHL
7,717.8	0.00	0.00	7,386.0	-1,278.8	1,295.9	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: NWSE S21-T7S-R95W (PJ-21)
Well: Federal 21-16 (PJ-21)
Wellbore: DD
Design: Plan #1

Local Co-ordinate Reference: Well Federal 21-16 (PJ-21)
TVD Reference: WELL @ 6323.0ft (Original Well Elev)
MD Reference: WELL @ 6323.0ft (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' MD
300.0	3.00	134.62	300.0	-1.8	1.9	2.6	3.00	3.00	
400.0	6.00	134.62	399.6	-7.3	7.4	10.5	3.00	3.00	
500.0	9.00	134.62	498.8	-16.5	16.7	23.5	3.00	3.00	
600.0	12.00	134.62	597.1	-29.3	29.7	41.7	3.00	3.00	
700.0	15.00	134.62	694.3	-45.7	46.3	65.1	3.00	3.00	
800.0	18.00	134.62	790.2	-65.7	66.5	93.5	3.00	3.00	
900.0	21.00	134.62	884.4	-89.1	90.3	126.9	3.00	3.00	
924.4	21.73	134.62	907.1	-95.3	96.6	135.7	3.00	3.00	EOB; Inc=21.73°
1,000.0	21.73	134.62	977.4	-115.0	116.5	163.7	0.00	0.00	
1,100.0	21.73	134.62	1,070.3	-141.0	142.9	200.8	0.00	0.00	
1,158.0	21.73	134.62	1,124.2	-156.1	158.2	222.2	0.00	0.00	Surface Casing
1,200.0	21.73	134.62	1,163.2	-167.0	169.3	237.8	0.00	0.00	
1,300.0	21.73	134.62	1,256.1	-193.0	195.6	274.8	0.00	0.00	
1,400.0	21.73	134.62	1,349.0	-219.0	222.0	311.8	0.00	0.00	
1,500.0	21.73	134.62	1,441.8	-245.0	248.3	348.9	0.00	0.00	
1,600.0	21.73	134.62	1,534.7	-271.0	274.7	385.9	0.00	0.00	
1,700.0	21.73	134.62	1,627.6	-297.0	301.0	422.9	0.00	0.00	
1,800.0	21.73	134.62	1,720.5	-323.0	327.4	459.9	0.00	0.00	
1,900.0	21.73	134.62	1,813.4	-349.1	353.7	497.0	0.00	0.00	
2,000.0	21.73	134.62	1,906.3	-375.1	380.1	534.0	0.00	0.00	
2,100.0	21.73	134.62	1,999.2	-401.1	406.4	571.0	0.00	0.00	
2,200.0	21.73	134.62	2,092.1	-427.1	432.8	608.0	0.00	0.00	
2,300.0	21.73	134.62	2,185.0	-453.1	459.1	645.1	0.00	0.00	
2,400.0	21.73	134.62	2,277.9	-479.1	485.5	682.1	0.00	0.00	
2,500.0	21.73	134.62	2,370.8	-505.1	511.8	719.1	0.00	0.00	
2,600.0	21.73	134.62	2,463.7	-531.1	538.2	756.1	0.00	0.00	
2,700.0	21.73	134.62	2,556.6	-557.1	564.6	793.1	0.00	0.00	
2,800.0	21.73	134.62	2,649.5	-583.1	590.9	830.2	0.00	0.00	
2,900.0	21.73	134.62	2,742.4	-609.1	617.3	867.2	0.00	0.00	
3,000.0	21.73	134.62	2,835.3	-635.1	643.6	904.2	0.00	0.00	
3,100.0	21.73	134.62	2,928.1	-661.1	670.0	941.2	0.00	0.00	
3,200.0	21.73	134.62	3,021.0	-687.1	696.3	978.3	0.00	0.00	
3,300.0	21.73	134.62	3,113.9	-713.1	722.7	1,015.3	0.00	0.00	
3,400.0	21.73	134.62	3,206.8	-739.1	749.0	1,052.3	0.00	0.00	
3,500.0	21.73	134.62	3,299.7	-765.1	775.4	1,089.3	0.00	0.00	
3,600.0	21.73	134.62	3,392.6	-791.1	801.7	1,126.4	0.00	0.00	
3,700.0	21.73	134.62	3,485.5	-817.2	828.1	1,163.4	0.00	0.00	
3,800.0	21.73	134.62	3,578.4	-843.2	854.4	1,200.4	0.00	0.00	
3,900.0	21.73	134.62	3,671.3	-869.2	880.8	1,237.4	0.00	0.00	
4,000.0	21.73	134.62	3,764.2	-895.2	907.2	1,274.5	0.00	0.00	
4,100.0	21.73	134.62	3,857.1	-921.2	933.5	1,311.5	0.00	0.00	
4,200.0	21.73	134.62	3,950.0	-947.2	959.9	1,348.5	0.00	0.00	
4,262.5	21.73	134.62	4,008.0	-963.4	976.3	1,371.6	0.00	0.00	Ohio Creek
4,300.0	21.73	134.62	4,042.9	-973.2	986.2	1,385.5	0.00	0.00	
4,400.0	21.73	134.62	4,135.8	-999.2	1,012.6	1,422.6	0.00	0.00	
4,500.0	21.73	134.62	4,228.7	-1,025.2	1,038.9	1,459.6	0.00	0.00	
4,537.0	21.73	134.62	4,263.0	-1,034.8	1,048.7	1,473.3	0.00	0.00	Mesaverde
4,600.0	21.73	134.62	4,321.5	-1,051.2	1,065.3	1,496.6	0.00	0.00	
4,700.0	21.73	134.62	4,414.4	-1,077.2	1,091.6	1,533.6	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: NWSE S21-T7S-R95W (PJ-21)
Well: Federal 21-16 (PJ-21)
Wellbore: DD
Design: Plan #1

Local Co-ordinate Reference: Well Federal 21-16 (PJ-21)
TVD Reference: WELL @ 6323.0ft (Original Well Elev)
MD Reference: WELL @ 6323.0ft (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
4,800.0	21.73	134.62	4,507.3	-1,103.2	1,118.0	1,570.7	0.00	0.00	
4,900.0	21.73	134.62	4,600.2	-1,129.2	1,144.3	1,607.7	0.00	0.00	
5,000.0	21.73	134.62	4,693.1	-1,155.2	1,170.7	1,644.7	0.00	0.00	
5,100.0	21.73	134.62	4,786.0	-1,181.2	1,197.0	1,681.7	0.00	0.00	
5,108.5	21.73	134.62	4,793.9	-1,183.4	1,199.3	1,684.9	0.00	0.00	Start Drop -3.00
5,200.0	18.98	134.62	4,879.7	-1,205.8	1,221.9	1,716.7	3.00	-3.00	
5,225.7	18.22	134.62	4,904.0	-1,211.5	1,227.8	1,724.9	3.00	-3.00	Williams Fork FM
5,300.0	15.98	134.62	4,975.1	-1,226.9	1,243.3	1,746.8	3.00	-3.00	
5,400.0	12.98	134.62	5,071.9	-1,244.5	1,261.1	1,771.8	3.00	-3.00	
5,500.0	9.98	134.62	5,169.9	-1,258.5	1,275.3	1,791.7	3.00	-3.00	
5,506.2	9.80	134.62	5,176.0	-1,259.2	1,276.1	1,792.7	3.00	-3.00	Top of Gas, Inc=9.8°
5,600.0	6.98	134.62	5,268.7	-1,268.8	1,285.8	1,806.4	3.00	-3.00	
5,700.0	3.98	134.62	5,368.3	-1,275.5	1,292.6	1,816.0	3.00	-3.00	
5,800.0	0.98	134.62	5,468.2	-1,278.6	1,295.7	1,820.3	3.00	-3.00	
5,832.8	0.00	0.00	5,501.0	-1,278.8	1,295.9	1,820.6	3.00	-3.00	EOD; Inc=0° - Federal 21-16 TGT
5,900.0	0.00	0.00	5,568.2	-1,278.8	1,295.9	1,820.6	0.00	0.00	
6,000.0	0.00	0.00	5,668.2	-1,278.8	1,295.9	1,820.6	0.00	0.00	
6,100.0	0.00	0.00	5,768.2	-1,278.8	1,295.9	1,820.6	0.00	0.00	
6,200.0	0.00	0.00	5,868.2	-1,278.8	1,295.9	1,820.6	0.00	0.00	
6,300.0	0.00	0.00	5,968.2	-1,278.8	1,295.9	1,820.6	0.00	0.00	
6,400.0	0.00	0.00	6,068.2	-1,278.8	1,295.9	1,820.6	0.00	0.00	
6,500.0	0.00	0.00	6,168.2	-1,278.8	1,295.9	1,820.6	0.00	0.00	
6,600.0	0.00	0.00	6,268.2	-1,278.8	1,295.9	1,820.6	0.00	0.00	
6,700.0	0.00	0.00	6,368.2	-1,278.8	1,295.9	1,820.6	0.00	0.00	
6,800.0	0.00	0.00	6,468.2	-1,278.8	1,295.9	1,820.6	0.00	0.00	
6,900.0	0.00	0.00	6,568.2	-1,278.8	1,295.9	1,820.6	0.00	0.00	
7,000.0	0.00	0.00	6,668.2	-1,278.8	1,295.9	1,820.6	0.00	0.00	
7,095.8	0.00	0.00	6,764.0	-1,278.8	1,295.9	1,820.6	0.00	0.00	Coal Ridge
7,100.0	0.00	0.00	6,768.2	-1,278.8	1,295.9	1,820.6	0.00	0.00	
7,200.0	0.00	0.00	6,868.2	-1,278.8	1,295.9	1,820.6	0.00	0.00	
7,300.0	0.00	0.00	6,968.2	-1,278.8	1,295.9	1,820.6	0.00	0.00	
7,400.0	0.00	0.00	7,068.2	-1,278.8	1,295.9	1,820.6	0.00	0.00	
7,467.8	0.00	0.00	7,136.0	-1,278.8	1,295.9	1,820.6	0.00	0.00	Rollins SS
7,500.0	0.00	0.00	7,168.2	-1,278.8	1,295.9	1,820.6	0.00	0.00	
7,600.0	0.00	0.00	7,268.2	-1,278.8	1,295.9	1,820.6	0.00	0.00	
7,617.8	0.00	0.00	7,286.0	-1,278.8	1,295.9	1,820.6	0.00	0.00	TD @ 7617.8' MD - Federal 21-16 PBHL
7,700.0	0.00	0.00	7,368.2	-1,278.8	1,295.9	1,820.6	0.00	0.00	
7,717.8	0.00	0.00	7,386.0	-1,278.8	1,295.9	1,820.6	0.00	0.00	Permit TD @ 7717.8' 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 21-16 TGT	0.00	0.00	5,501.0	-1,278.8	1,295.9	1,586,838.64	2,295,119.03	39.418048	-107.995369
- plan hits target center									
- Circle (radius 25.0)									
Federal 21-16 PBHL	0.00	0.00	7,286.0	-1,278.8	1,295.9	1,586,838.64	2,295,119.03	39.418048	-107.995369
- plan hits target center									
- Circle (radius 25.0)									

Cathedral Energy Services

Planning Report

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Company: EnCana Oil & Gas (USA) Inc
Project: S. Piceance (Parachute)
Site: NWSE S21-T7S-R95W (PJ-21)
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Local Co-ordinate Reference: Well Federal 21-16 (PJ-21)
TVD Reference: WELL @ 6323.0ft (Original Well Elev)
MD Reference: WELL @ 6323.0ft (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)
1,158.0	1,124.2	Surface Casing	0.000	0.000

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,262.5	4,008.0	Ohio Creek		0.00	
4,537.0	4,263.0	Mesaverde		0.00	
5,225.7	4,904.0	Williams Fork FM		0.00	
5,506.2	5,176.0	Top of Gas, Inc=9.8°		0.00	
7,095.8	6,764.0	Coal Ridge		0.00	
7,467.8	7,136.0	Rollins SS		0.00	

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' MD
924.4	907.1	-95.3	96.6	EOB; Inc=21.73°
5,108.5	4,793.9	-1,183.4	1,199.3	Start Drop -3.00
5,832.8	5,501.0	-1,278.8	1,295.9	EOD; Inc=0°
7,617.8	7,286.0	-1,278.8	1,295.9	TD @ 7617.8' MD
7,717.8	7,386.0	-1,278.8	1,295.9	Permit TD @ 7717.8' MD