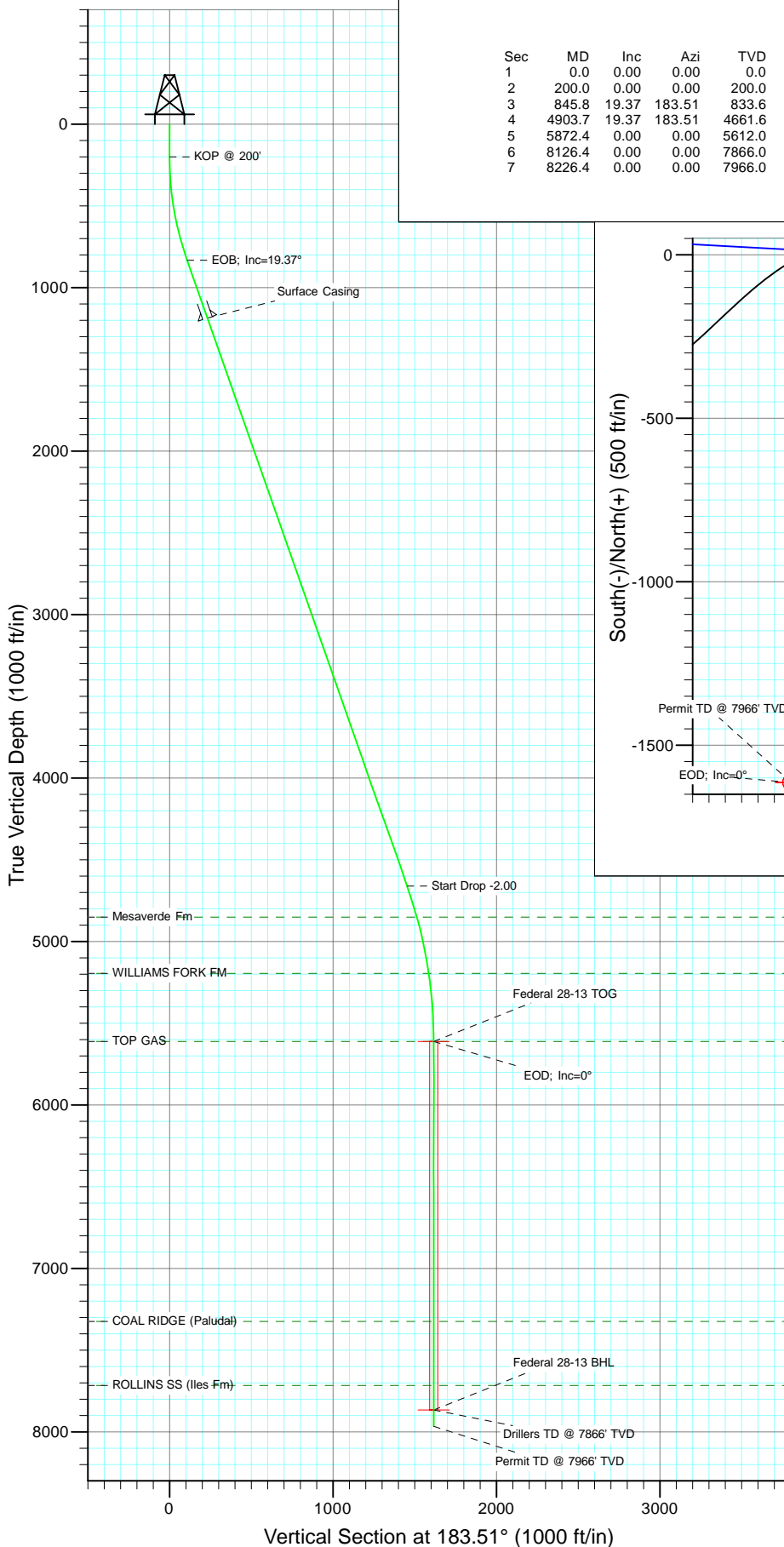


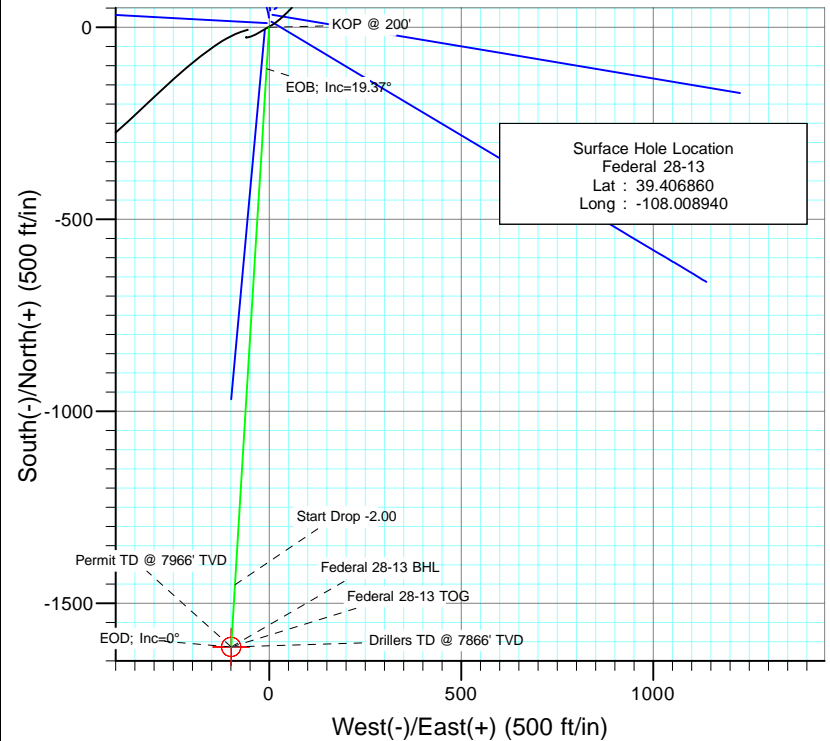


Project: S. Piceance
Site: PL 28 Pad (S28-T7S-R95W)
Well: Federal 28-13
Wellbore: DD
Design: Plan #1



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	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	845.8	19.37	183.51	833.6	-108.0	-6.6	3.00	183.51	108.2	
4	4903.7	19.37	183.51	4661.6	-1451.6	-89.0	0.00	0.00	1454.3	
5	5872.4	0.00	0.00	5612.0	-1613.5	-98.9	2.00	180.00	1616.6	Federal 28-13 TOG
6	8126.4	0.00	0.00	7866.0	-1613.5	-98.9	0.00	0.00	1616.6	Federal 28-13 BHL
7	8226.4	0.00	0.00	7966.0	-1613.5	-98.9	0.00	0.00	1616.6	



FORMATION TOP DETAILS

TVDPath	MDPath	Formation
4851.0	5102.1	Mesaverde Fm
5195.0	5453.9	WILLIAMS FORK FM
5612.0	5872.4	TOP GAS
7324.0	7584.4	COAL RIDGE (Paludal)
7716.0	7976.4	ROLLINS SS (Iles Fm)



Azimuths to True North
Magnetic North: 10.45°

Magnetic Field
Strength: 52321.9snT
Dip Angle: 65.70°
Date: 6/11/2010
Model: IGRF200510

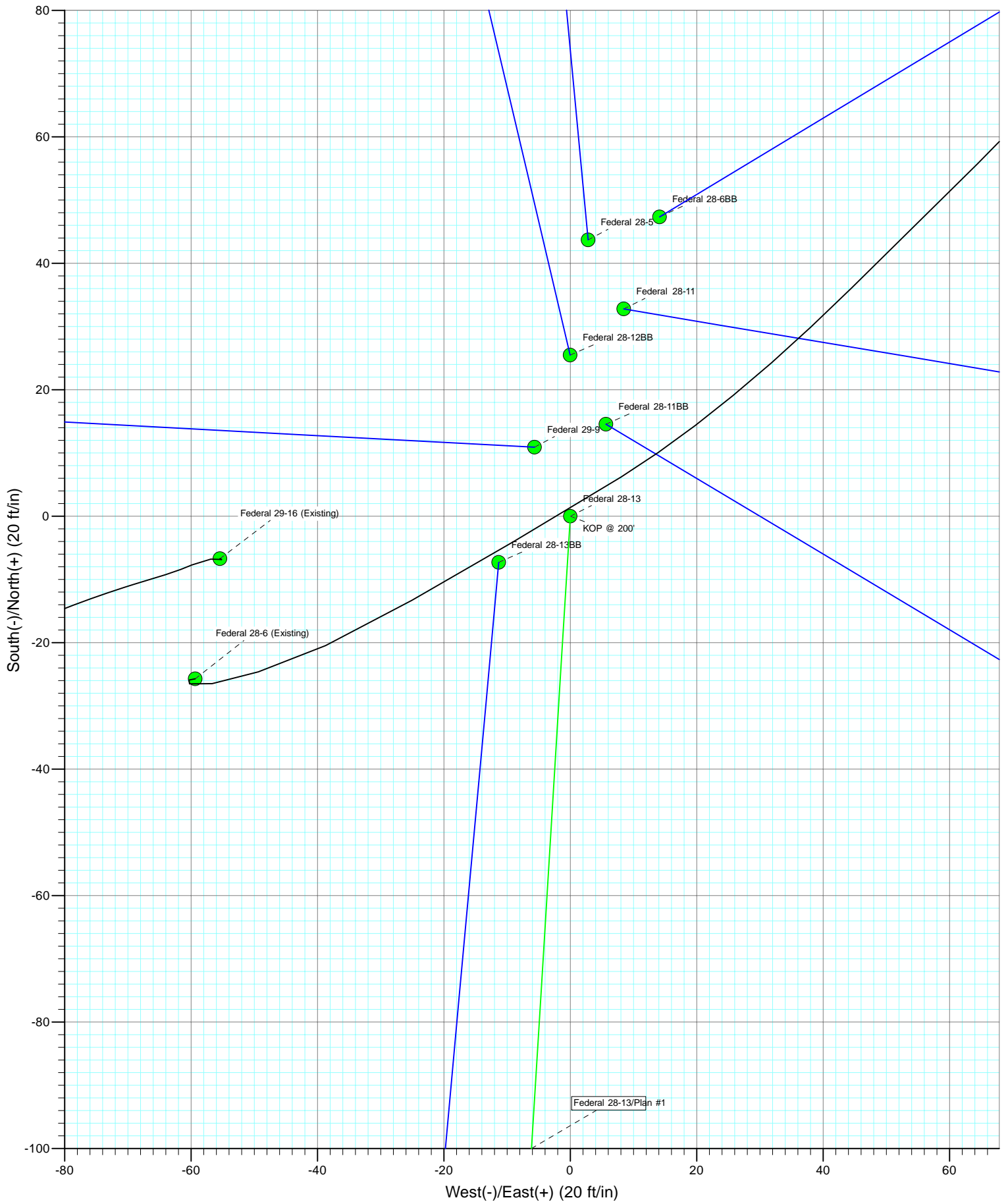
Plan #1
Federal 28-13
Job #10xxx : KR

WELL @ 7186.0ft (Original Well Elev)
North American Datum 1983
Well Federal 28-13, True North

Type	Target	Azimuth	Origin	Type	N/S	E/W	From	TVD
Target	Federal 28-13 BHL	183.51	Slot	0.0	0.0	0.0		0.0
Name	TVD	+N/-S	+E/-W	Latitude	Longitude			
Federal 28-13 BHL	7866.0	-1613.5	-98.9	39.402430	-108.009290			



Project: S. Piceance
Site: PL 28 Pad (S28-T7S-R95W)
Well: Federal 28-13
Wellbore: DD
Design: Plan #1



Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Federal 28-13
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 7186.0ft (Original Well Elev)
Project:	S. Piceance	MD Reference:	WELL @ 7186.0ft (Original Well Elev)
Site:	PL 28 Pad (S28-T7S-R95W)	North Reference:	True
Well:	Federal 28-13	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Project	S. Piceance, 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		PL 28 Pad (S28-T7S-R95W)			
Site Position:		Northing:	1,582,914.36 ft	Latitude:	39.406980
From:	Lat/Long	Easting:	2,291,178.00 ft	Longitude:	-108.008930
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.58 °

Well	Federal 28-13					
Well Position	+N/-S	0.0 ft	Northing:	1,582,870.74 ft	Latitude:	39.406860
	+E/-W	0.0 ft	Easting:	2,291,173.97 ft	Longitude:	-108.008940
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	7,164.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	6/11/2010	10.45	65.70	52,322

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	183.51

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	
845.8	19.37	183.51	833.6	-108.0	-6.6	3.00	3.00	0.00	183.51	
4,903.7	19.37	183.51	4,661.6	-1,451.6	-89.0	0.00	0.00	0.00	0.00	
5,872.4	0.00	0.00	5,612.0	-1,613.5	-98.9	2.00	-2.00	0.00	180.00	Federal 28-13 TOG
8,126.4	0.00	0.00	7,866.0	-1,613.5	-98.9	0.00	0.00	0.00	0.00	Federal 28-13 BHL
8,226.4	0.00	0.00	7,966.0	-1,613.5	-98.9	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 28-13
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 7186.0ft (Original Well Elev)
Project:	S. Piceance	MD Reference:	WELL @ 7186.0ft (Original Well Elev)
Site:	PL 28 Pad (S28-T7S-R95W)	North Reference:	True
Well:	Federal 28-13	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	183.51	300.0	-2.6	-0.2	2.6	3.00	3.00	
400.0	6.00	183.51	399.6	-10.4	-0.6	10.5	3.00	3.00	
500.0	9.00	183.51	498.8	-23.5	-1.4	23.5	3.00	3.00	
600.0	12.00	183.51	597.1	-41.7	-2.6	41.7	3.00	3.00	
700.0	15.00	183.51	694.3	-65.0	-4.0	65.1	3.00	3.00	
800.0	18.00	183.51	790.2	-93.3	-5.7	93.5	3.00	3.00	
845.8	19.37	183.51	833.6	-108.0	-6.6	108.2	3.00	3.00	EOB; Inc=19.37°
900.0	19.37	183.51	884.7	-125.9	-7.7	126.1	0.00	0.00	
1,000.0	19.37	183.51	979.0	-159.0	-9.7	159.3	0.00	0.00	
1,100.0	19.37	183.51	1,073.4	-192.1	-11.8	192.5	0.00	0.00	
1,200.0	19.37	183.51	1,167.7	-225.2	-13.8	225.7	0.00	0.00	
1,220.0	19.37	183.51	1,186.6	-231.9	-14.2	232.3	0.00	0.00	Surface Casing
1,300.0	19.37	183.51	1,262.0	-258.3	-15.8	258.8	0.00	0.00	
1,400.0	19.37	183.51	1,356.4	-291.5	-17.9	292.0	0.00	0.00	
1,500.0	19.37	183.51	1,450.7	-324.6	-19.9	325.2	0.00	0.00	
1,600.0	19.37	183.51	1,545.1	-357.7	-21.9	358.4	0.00	0.00	
1,700.0	19.37	183.51	1,639.4	-390.8	-24.0	391.5	0.00	0.00	
1,800.0	19.37	183.51	1,733.7	-423.9	-26.0	424.7	0.00	0.00	
1,900.0	19.37	183.51	1,828.1	-457.0	-28.0	457.9	0.00	0.00	
2,000.0	19.37	183.51	1,922.4	-490.1	-30.0	491.1	0.00	0.00	
2,100.0	19.37	183.51	2,016.7	-523.2	-32.1	524.2	0.00	0.00	
2,200.0	19.37	183.51	2,111.1	-556.4	-34.1	557.4	0.00	0.00	
2,300.0	19.37	183.51	2,205.4	-589.5	-36.1	590.6	0.00	0.00	
2,400.0	19.37	183.51	2,299.7	-622.6	-38.2	623.7	0.00	0.00	
2,500.0	19.37	183.51	2,394.1	-655.7	-40.2	656.9	0.00	0.00	
2,600.0	19.37	183.51	2,488.4	-688.8	-42.2	690.1	0.00	0.00	
2,700.0	19.37	183.51	2,582.8	-721.9	-44.2	723.3	0.00	0.00	
2,800.0	19.37	183.51	2,677.1	-755.0	-46.3	756.4	0.00	0.00	
2,900.0	19.37	183.51	2,771.4	-788.1	-48.3	789.6	0.00	0.00	
3,000.0	19.37	183.51	2,865.8	-821.3	-50.3	822.8	0.00	0.00	
3,100.0	19.37	183.51	2,960.1	-854.4	-52.4	856.0	0.00	0.00	
3,200.0	19.37	183.51	3,054.4	-887.5	-54.4	889.1	0.00	0.00	
3,300.0	19.37	183.51	3,148.8	-920.6	-56.4	922.3	0.00	0.00	
3,400.0	19.37	183.51	3,243.1	-953.7	-58.5	955.5	0.00	0.00	
3,500.0	19.37	183.51	3,337.5	-986.8	-60.5	988.7	0.00	0.00	
3,600.0	19.37	183.51	3,431.8	-1,019.9	-62.5	1,021.8	0.00	0.00	
3,700.0	19.37	183.51	3,526.1	-1,053.0	-64.5	1,055.0	0.00	0.00	
3,800.0	19.37	183.51	3,620.5	-1,086.2	-66.6	1,088.2	0.00	0.00	
3,900.0	19.37	183.51	3,714.8	-1,119.3	-68.6	1,121.4	0.00	0.00	
4,000.0	19.37	183.51	3,809.1	-1,152.4	-70.6	1,154.5	0.00	0.00	
4,100.0	19.37	183.51	3,903.5	-1,185.5	-72.7	1,187.7	0.00	0.00	
4,200.0	19.37	183.51	3,997.8	-1,218.6	-74.7	1,220.9	0.00	0.00	
4,300.0	19.37	183.51	4,092.1	-1,251.7	-76.7	1,254.1	0.00	0.00	
4,400.0	19.37	183.51	4,186.5	-1,284.8	-78.8	1,287.2	0.00	0.00	
4,500.0	19.37	183.51	4,280.8	-1,317.9	-80.8	1,320.4	0.00	0.00	
4,600.0	19.37	183.51	4,375.2	-1,351.1	-82.8	1,353.6	0.00	0.00	
4,700.0	19.37	183.51	4,469.5	-1,384.2	-84.8	1,386.8	0.00	0.00	
4,800.0	19.37	183.51	4,563.8	-1,417.3	-86.9	1,419.9	0.00	0.00	
4,900.0	19.37	183.51	4,658.2	-1,450.4	-88.9	1,453.1	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Federal 28-13
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 7186.0ft (Original Well Elev)
Project:	S. Piceance	MD Reference:	WELL @ 7186.0ft (Original Well Elev)
Site:	PL 28 Pad (S28-T7S-R95W)	North Reference:	True
Well:	Federal 28-13	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
4,903.7	19.37	183.51	4,661.6	-1,451.6	-89.0	1,454.3	0.00	0.00	Start Drop -2.00
5,000.0	17.45	183.51	4,753.0	-1,482.0	-90.8	1,484.8	2.00	-2.00	
5,100.0	15.45	183.51	4,848.9	-1,510.2	-92.6	1,513.1	2.00	-2.00	
5,102.1	15.40	183.51	4,851.0	-1,510.8	-92.6	1,513.6	2.00	-2.00	Mesaverde Fm
5,200.0	13.45	183.51	4,945.8	-1,535.1	-94.1	1,538.0	2.00	-2.00	
5,300.0	11.45	183.51	5,043.4	-1,556.6	-95.4	1,559.6	2.00	-2.00	
5,400.0	9.45	183.51	5,141.7	-1,574.7	-96.5	1,577.7	2.00	-2.00	
5,453.9	8.37	183.51	5,195.0	-1,583.1	-97.0	1,586.1	2.00	-2.00	WILLIAMS FORK FM
5,500.0	7.45	183.51	5,240.7	-1,589.4	-97.4	1,592.4	2.00	-2.00	
5,600.0	5.45	183.51	5,340.0	-1,600.6	-98.1	1,603.6	2.00	-2.00	
5,700.0	3.45	183.51	5,439.7	-1,608.4	-98.6	1,611.4	2.00	-2.00	
5,800.0	1.45	183.51	5,539.6	-1,612.6	-98.8	1,615.6	2.00	-2.00	
5,872.4	0.00	0.00	5,612.0	-1,613.5	-98.9	1,616.6	2.00	-2.00	EOD; Inc=0° - TOP GAS - Federal 28-13 TOG
5,900.0	0.00	0.00	5,639.6	-1,613.5	-98.9	1,616.6	0.00	0.00	
6,000.0	0.00	0.00	5,739.6	-1,613.5	-98.9	1,616.6	0.00	0.00	
6,100.0	0.00	0.00	5,839.6	-1,613.5	-98.9	1,616.6	0.00	0.00	
6,200.0	0.00	0.00	5,939.6	-1,613.5	-98.9	1,616.6	0.00	0.00	
6,300.0	0.00	0.00	6,039.6	-1,613.5	-98.9	1,616.6	0.00	0.00	
6,400.0	0.00	0.00	6,139.6	-1,613.5	-98.9	1,616.6	0.00	0.00	
6,500.0	0.00	0.00	6,239.6	-1,613.5	-98.9	1,616.6	0.00	0.00	
6,600.0	0.00	0.00	6,339.6	-1,613.5	-98.9	1,616.6	0.00	0.00	
6,700.0	0.00	0.00	6,439.6	-1,613.5	-98.9	1,616.6	0.00	0.00	
6,800.0	0.00	0.00	6,539.6	-1,613.5	-98.9	1,616.6	0.00	0.00	
6,900.0	0.00	0.00	6,639.6	-1,613.5	-98.9	1,616.6	0.00	0.00	
7,000.0	0.00	0.00	6,739.6	-1,613.5	-98.9	1,616.6	0.00	0.00	
7,100.0	0.00	0.00	6,839.6	-1,613.5	-98.9	1,616.6	0.00	0.00	
7,200.0	0.00	0.00	6,939.6	-1,613.5	-98.9	1,616.6	0.00	0.00	
7,300.0	0.00	0.00	7,039.6	-1,613.5	-98.9	1,616.6	0.00	0.00	
7,400.0	0.00	0.00	7,139.6	-1,613.5	-98.9	1,616.6	0.00	0.00	
7,500.0	0.00	0.00	7,239.6	-1,613.5	-98.9	1,616.6	0.00	0.00	
7,584.4	0.00	0.00	7,324.0	-1,613.5	-98.9	1,616.6	0.00	0.00	COAL RIDGE (Paludal)
7,600.0	0.00	0.00	7,339.6	-1,613.5	-98.9	1,616.6	0.00	0.00	
7,700.0	0.00	0.00	7,439.6	-1,613.5	-98.9	1,616.6	0.00	0.00	
7,800.0	0.00	0.00	7,539.6	-1,613.5	-98.9	1,616.6	0.00	0.00	
7,900.0	0.00	0.00	7,639.6	-1,613.5	-98.9	1,616.6	0.00	0.00	
7,976.4	0.00	0.00	7,716.0	-1,613.5	-98.9	1,616.6	0.00	0.00	ROLLINS SS (Iles Fm)
8,000.0	0.00	0.00	7,739.6	-1,613.5	-98.9	1,616.6	0.00	0.00	
8,100.0	0.00	0.00	7,839.6	-1,613.5	-98.9	1,616.6	0.00	0.00	
8,126.4	0.00	0.00	7,866.0	-1,613.5	-98.9	1,616.6	0.00	0.00	Drillers TD @ 7866' TVD - Federal 28-13 BHL
8,200.0	0.00	0.00	7,939.6	-1,613.5	-98.9	1,616.6	0.00	0.00	
8,226.4	0.00	0.00	7,966.0	-1,613.5	-98.9	1,616.6	0.00	0.00	Permit TD @ 7966' TVD

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Federal 28-13
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 7186.0ft (Original Well Elev)
Project:	S. Piceance	MD Reference:	WELL @ 7186.0ft (Original Well Elev)
Site:	PL 28 Pad (S28-T7S-R95W)	North Reference:	True
Well:	Federal 28-13	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
Federal 28-13 TOG	0.00	0.00	5,612.0	-1,613.5	-98.9	1,581,260.55	2,291,030.55	39.402430	-108.009290
- plan hits target center									
- Point									
Federal 28-13 BHL	0.00	0.00	7,866.0	-1,613.5	-98.9	1,581,260.55	2,291,030.55	39.402430	-108.009290
- plan hits target center									
- Circle (radius 25.0)									

Casing Points					
Measured Depth	Vertical Depth			Casing Diameter	Hole Diameter
(ft)	(ft)	Name		(in)	(in)
1,220.0	1,186.6	Surface Casing		0.000	0.000

Formations					
Measured Depth	Vertical Depth			Dip	Dip Direction
(ft)	(ft)	Name	Lithology	(°)	(°)
5,102.1	4,851.0	Mesaverde Fm			
5,453.9	5,195.0	WILLIAMS FORK FM			
5,872.4	5,612.0	TOP GAS			
7,584.4	7,324.0	COAL RIDGE (Paludal)			
7,976.4	7,716.0	ROLLINS SS (Iles Fm)			

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W	Comment	
(ft)	(ft)	(ft)	(ft)		
200.0	200.0	0.0	0.0	KOP @ 200'	
845.8	833.6	-108.0	-6.6	EOB; Inc=19.37°	
4,903.7	4,661.6	-1,451.6	-89.0	Start Drop -2.00	
5,872.4	5,612.0	-1,613.5	-98.9	EOD; Inc=0°	
8,126.4	7,866.0	-1,613.5	-98.9	Drillers TD @ 7866' TVD	
8,226.4	7,966.0	-1,613.5	-98.9	Permit TD @ 7966' TVD	

EnCana Oil & Gas (USA) Inc

S. Piceance

PL 28 Pad (S28-T7S-R95W)

Federal 28-13

DD

Plan #1

Anticollision Report

26 July, 2010

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Federal 28-13
Project:	S. Piceance	TVD Reference:	WELL @ 7186.0ft (Original Well Elev)
Reference Site:	PL 28 Pad (S28-T7S-R95W)	MD Reference:	WELL @ 7186.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Federal 28-13	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference	Plan #1		
Filter type:	GLOBAL FILTER APPLIED: All wellpaths within 200'+ 100/1000 of reference		
Interpolation Method:	MD Interval 100.0ft	Error Model:	Systematic Ellipse
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 100.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program		Date	7/26/2010		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	8,226.4	Plan #1 (DD)	MWD	Geolink MWD	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
PL 28 Pad (S28-T7S-R95W)						
Federal 28-11 - DD - Plan #1	200.0	200.0	33.9	33.2	54.494	CC, ES
Federal 28-11 - DD - Plan #1	400.0	398.7	45.8	44.4	33.395	SF
Federal 28-11BB - DD - Plan #1	200.0	200.0	15.6	15.0	25.150	CC, ES
Federal 28-11BB - DD - Plan #1	400.0	399.7	24.9	23.5	17.927	SF
Federal 28-12BB - DD - Plan #1	200.0	200.0	25.5	24.9	41.034	CC, ES
Federal 28-12BB - DD - Plan #1	300.0	298.5	30.6	29.7	31.654	SF
Federal 28-13BB - DD - Plan #1	374.5	374.2	10.8	9.6	8.514	CC, ES
Federal 28-13BB - DD - Plan #1	400.0	399.6	11.1	9.7	8.113	SF
Federal 28-5 - DD - Plan #1	200.0	200.0	43.8	43.2	70.506	CC, ES
Federal 28-5 - DD - Plan #1	400.0	393.5	64.3	63.0	49.280	SF
Federal 28-6 (Existing) - DD - Schlumberger Surveys	561.3	564.1	33.6	31.3	14.939	CC, ES
Federal 28-6 (Existing) - DD - Schlumberger Surveys	600.0	600.6	36.1	33.7	14.831	SF
Federal 28-6BB - DD - Plan #1	200.0	200.0	49.4	48.8	79.527	CC, ES
Federal 28-6BB - DD - Plan #1	400.0	394.6	67.3	65.9	50.529	SF
Federal 29-16 (Existing) - DD - Schlumberger surveys	171.8	171.8	55.5	54.9	106.021	CC
Federal 29-16 (Existing) - DD - Schlumberger surveys	300.0	299.2	55.8	54.8	57.042	ES
Federal 29-16 (Existing) - DD - Schlumberger surveys	600.0	594.4	70.1	67.8	30.225	SF
Federal 29-9 - DD - Plan #1	200.0	200.0	12.3	11.7	19.793	CC, ES
Federal 29-9 - DD - Plan #1	300.0	299.5	15.9	14.9	16.253	SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Federal 28-13
Project:	S. Piceance	TVD Reference:	WELL @ 7186.0ft (Original Well Elev)
Reference Site:	PL 28 Pad (S28-T7S-R95W)	MD Reference:	WELL @ 7186.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Federal 28-13	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design PL 28 Pad (S28-T7S-R95W) - Federal 28-11 - DD - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	14.50	32.8	8.5	33.9					
100.0	100.0	100.0	100.0	0.1	0.1	14.50	32.8	8.5	33.9	33.6	0.27	124.358		
200.0	200.0	200.0	200.0	0.3	0.3	14.50	32.8	8.5	33.9	33.2	0.62	54.494 CC, ES		
300.0	300.0	299.7	299.7	0.5	0.5	-165.72	32.4	11.0	36.7	35.7	0.98	37.541		
400.0	399.6	398.7	398.4	0.7	0.7	-158.40	31.1	18.7	45.8	44.4	1.37	33.395 SF		
500.0	498.8	496.3	495.1	1.0	1.0	-151.14	29.0	31.1	61.8	60.0	1.83	33.783		
600.0	597.1	591.8	589.0	1.4	1.3	-145.59	26.2	48.0	85.0	82.6	2.37	35.778		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Federal 28-13
Project:	S. Piceance	TVD Reference:	WELL @ 7186.0ft (Original Well Elev)
Reference Site:	PL 28 Pad (S28-T7S-R95W)	MD Reference:	WELL @ 7186.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Federal 28-13	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design PL 28 Pad (S28-T7S-R95W) - Federal 28-11BB - DD - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance					Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis			
0.0	0.0	0.0	0.0	0.0	0.0	21.20	14.6	5.7	15.6					
100.0	100.0	100.0	100.0	0.1	0.1	21.20	14.6	5.7	15.6	15.4	0.27	57.394		
200.0	200.0	200.0	200.0	0.3	0.3	21.20	14.6	5.7	15.6	15.0	0.62	25.150 CC, ES		
300.0	300.0	300.1	300.0	0.5	0.5	-156.51	13.2	7.9	17.8	16.8	0.98	18.138		
400.0	399.6	399.7	399.3	0.7	0.7	-145.53	9.2	14.6	24.9	23.5	1.39	17.927 SF		
500.0	498.8	498.4	497.2	1.0	1.0	-136.86	2.6	25.6	37.6	35.7	1.89	19.908		
600.0	597.1	595.9	593.1	1.4	1.3	-131.37	-6.4	40.7	56.0	53.5	2.51	22.298		
700.0	694.3	691.7	686.3	1.8	1.8	-127.90	-17.7	59.7	79.7	76.4	3.26	24.432		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Federal 28-13
Project:	S. Piceance	TVD Reference:	WELL @ 7186.0ft (Original Well Elev)
Reference Site:	PL 28 Pad (S28-T7S-R95W)	MD Reference:	WELL @ 7186.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Federal 28-13	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design PL 28 Pad (S28-T7S-R95W) - Federal 28-12BB - DD - Plan #1												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	
0.0	0.0	0.0	0.0	0.0	0.0	0.00	25.5	0.0	25.5				
100.0	100.0	100.0	100.0	0.1	0.1	0.00	25.5	0.0	25.5	25.2	0.27	93.642	
200.0	200.0	200.0	200.0	0.3	0.3	0.00	25.5	0.0	25.5	24.9	0.62	41.034 CC, ES	
300.0	300.0	298.5	298.4	0.5	0.5	175.68	28.0	-0.6	30.6	29.7	0.97	31.654 SF	
400.0	399.6	396.1	395.8	0.7	0.7	174.38	35.0	-2.3	45.7	44.4	1.31	34.862	
500.0	498.8	493.8	493.1	1.0	0.9	173.98	43.2	-4.2	67.0	65.4	1.65	40.612	
600.0	597.1	590.2	589.2	1.4	1.1	174.08	51.3	-6.1	93.4	91.4	1.98	47.086	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Federal 28-13
Project:	S. Piceance	TVD Reference:	WELL @ 7186.0ft (Original Well Elev)
Reference Site:	PL 28 Pad (S28-T7S-R95W)	MD Reference:	WELL @ 7186.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Federal 28-13	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design PL 28 Pad (S28-T7S-R95W) - Federal 28-13BB - DD - Plan #1												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	
0.0	0.0	0.0	0.0	0.0	0.0	-122.82	-7.3	-11.3	13.4				
100.0	100.0	100.0	100.0	0.1	0.1	-122.82	-7.3	-11.3	13.4	13.2	0.27	49.395	
200.0	200.0	200.0	200.0	0.3	0.3	-122.82	-7.3	-11.3	13.4	12.8	0.62	21.645	
300.0	300.0	300.0	300.0	0.5	0.5	63.76	-7.3	-11.3	12.1	11.1	0.98	12.368	
374.5	374.2	374.2	374.2	0.7	0.6	89.98	-7.3	-11.3	10.8	9.6	1.27	8.514 CC, ES	
400.0	399.6	399.6	399.6	0.7	0.7	102.90	-7.3	-11.3	11.1	9.7	1.37	8.113 SF	
500.0	498.8	499.5	499.4	1.0	0.8	139.78	-9.9	-11.5	17.0	15.2	1.74	9.766	
600.0	597.1	599.9	599.5	1.4	1.0	154.45	-17.7	-12.3	26.0	23.9	2.08	12.460	
700.0	694.3	700.8	699.6	1.8	1.3	161.10	-30.8	-13.4	35.8	33.4	2.44	14.694	
800.0	790.2	802.3	799.4	2.3	1.6	164.65	-49.3	-15.1	45.9	43.1	2.79	16.420	
900.0	884.7	901.8	896.6	2.9	2.0	167.11	-70.5	-17.1	57.4	54.3	3.15	18.228	
1,000.0	979.0	1,001.1	993.5	3.5	2.4	168.86	-91.6	-19.0	69.6	66.1	3.51	19.818	
1,100.0	1,073.4	1,100.3	1,090.5	4.1	2.8	170.09	-112.7	-20.9	81.7	77.9	3.87	21.133	
1,200.0	1,167.7	1,199.6	1,187.4	4.7	3.2	170.99	-133.8	-22.8	94.0	89.7	4.23	22.237	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Federal 28-13
Project:	S. Piceance	TVD Reference:	WELL @ 7186.0ft (Original Well Elev)
Reference Site:	PL 28 Pad (S28-T7S-R95W)	MD Reference:	WELL @ 7186.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Federal 28-13	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design PL 28 Pad (S28-T7S-R95W) - Federal 28-5 - DD - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance					Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis			
0.0	0.0	0.0	0.0	0.0	0.0	3.70	43.7	2.8	43.8					
100.0	100.0	100.0	100.0	0.1	0.1	3.70	43.7	2.8	43.8	43.5	0.27	160.897		
200.0	200.0	200.0	200.0	0.3	0.3	3.70	43.7	2.8	43.8	43.2	0.62	70.506 CC, ES		
300.0	300.0	297.5	297.5	0.5	0.5	179.72	46.2	2.6	48.9	48.0	0.97	50.700		
400.0	399.6	393.5	393.2	0.7	0.7	178.76	53.5	1.9	64.3	63.0	1.30	49.280 SF		
500.0	498.8	486.5	485.5	1.0	1.0	177.88	65.1	0.8	89.6	87.9	1.63	54.804		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Federal 28-13
Project:	S. Piceance	TVD Reference:	WELL @ 7186.0ft (Original Well Elev)
Reference Site:	PL 28 Pad (S28-T7S-R95W)	MD Reference:	WELL @ 7186.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Federal 28-13	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design													PL 28 Pad (S28-T7S-R95W) - Federal 28-6 (Existing) - DD - Schlumberger Surveys		Offset Site Error:		0.0 ft	
Survey Program: 141-MWD													Offset Well Error:		0.0 ft			
Reference		Offset		Semi Major Axis			Distance							Warning				
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Total Uncertainty	Separation						
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	Axis	Factor						
0.0	0.0	0.0	0.0	0.0	0.0	-113.42	-25.7	-59.3	64.7									
100.0	100.0	99.4	99.4	0.1	0.1	-113.33	-25.8	-59.8	65.2	64.9	0.28	230.540						
200.0	200.0	200.1	200.1	0.3	0.3	-113.39	-26.2	-60.6	66.0	65.4	0.62	106.149						
300.0	300.0	303.0	302.9	0.5	0.5	64.08	-26.7	-58.1	62.8	61.8	0.98	63.820						
400.0	399.6	405.2	404.8	0.7	0.7	70.93	-25.0	-50.6	52.3	50.9	1.38	37.958						
500.0	498.8	504.8	503.7	1.0	1.0	91.93	-20.6	-39.1	38.1	36.3	1.86	20.511						
561.3	559.1	564.1	562.1	1.2	1.2	118.78	-16.3	-30.5	33.6	31.3	2.25	14.939	CC, ES					
600.0	597.1	600.6	598.0	1.4	1.3	138.76	-12.9	-24.4	36.1	33.7	2.44	14.831	SF					
700.0	694.3	692.9	688.3	1.8	1.6	172.38	-3.4	-7.9	62.0	59.2	2.74	22.622						

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Federal 28-13
Project:	S. Piceance	TVD Reference:	WELL @ 7186.0ft (Original Well Elev)
Reference Site:	PL 28 Pad (S28-T7S-R95W)	MD Reference:	WELL @ 7186.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Federal 28-13	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design PL 28 Pad (S28-T7S-R95W) - Federal 28-6BB - DD - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	16.61	47.4	14.1	49.4					
100.0	100.0	100.0	100.0	0.1	0.1	16.61	47.4	14.1	49.4	49.1	0.27	181.484		
200.0	200.0	200.0	200.0	0.3	0.3	16.61	47.4	14.1	49.4	48.8	0.62	79.527 CC, ES		
300.0	300.0	297.9	297.9	0.5	0.5	-165.68	48.6	16.3	53.9	52.9	0.97	55.525		
400.0	399.6	394.6	394.3	0.7	0.7	-162.99	52.5	22.6	67.3	65.9	1.33	50.529 SF		
500.0	498.8	488.9	487.8	1.0	1.0	-160.26	58.6	32.8	89.6	87.9	1.71	52.328		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Federal 28-13
Project:	S. Piceance	TVD Reference:	WELL @ 7186.0ft (Original Well Elev)
Reference Site:	PL 28 Pad (S28-T7S-R95W)	MD Reference:	WELL @ 7186.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Federal 28-13	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design PL 28 Pad (S28-T7S-R95W) - Federal 29-16 (Existing) - DD - Schlumberger surveys													Offset Site Error:	0.0 ft
Survey Program: 110-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-96.90	-6.7	-55.4	55.8					
100.0	100.0	100.2	100.2	0.1	0.1	-97.03	-6.8	-55.2	55.6	55.3	0.28	201.448		
171.8	171.8	171.8	171.8	0.3	0.3	-97.15	-6.9	-55.0	55.5	54.9	0.52	106.021 CC		
200.0	200.0	199.9	199.9	0.3	0.3	-97.13	-6.9	-55.1	55.5	54.9	0.62	89.319		
300.0	300.0	299.2	299.2	0.5	0.5	82.22	-6.7	-55.8	55.8	54.8	0.98	57.042 ES		
400.0	399.6	398.3	398.3	0.7	0.7	89.92	-6.9	-57.7	57.2	55.8	1.37	41.682		
500.0	498.8	497.1	497.1	1.0	0.8	100.91	-7.9	-60.3	60.9	59.1	1.82	33.417		
600.0	597.1	594.4	594.2	1.4	1.0	112.96	-9.4	-64.7	70.1	67.8	2.32	30.225 SF		
700.0	694.3	691.2	690.8	1.8	1.2	124.03	-11.2	-70.4	85.5	82.7	2.83	30.271		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Federal 28-13
Project:	S. Piceance	TVD Reference:	WELL @ 7186.0ft (Original Well Elev)
Reference Site:	PL 28 Pad (S28-T7S-R95W)	MD Reference:	WELL @ 7186.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Federal 28-13	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design PL 28 Pad (S28-T7S-R95W) - Federal 29-9 - DD - Plan #1												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-27.36	10.9	-5.7	12.3				
100.0	100.0	100.0	100.0	0.1	0.1	-27.36	10.9	-5.7	12.3	12.0	0.27	45.168	
200.0	200.0	200.0	200.0	0.3	0.3	-27.36	10.9	-5.7	12.3	11.7	0.62	19.793 CC, ES	
300.0	300.0	299.5	299.5	0.5	0.5	145.83	11.1	-8.2	15.9	14.9	0.98	16.253 SF	
400.0	399.6	398.3	397.9	0.7	0.7	141.21	11.5	-15.9	26.8	25.4	1.37	19.551	
500.0	498.8	495.4	494.3	1.0	1.0	138.38	12.1	-28.4	44.9	43.1	1.82	24.650	
600.0	597.1	590.3	587.6	1.4	1.3	136.70	13.0	-45.3	70.1	67.7	2.35	29.806	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Federal 28-13
Project:	S. Piceance	TVD Reference:	WELL @ 7186.0ft (Original Well Elev)
Reference Site:	PL 28 Pad (S28-T7S-R95W)	MD Reference:	WELL @ 7186.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Federal 28-13	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 7186.0ft (Original Well Elev)
 Offset Depths are relative to Offset Datum
 Central Meridian is -105.500000 °

Coordinates are relative to: Federal 28-13
 Coordinate System is US State Plane 1983, Colorado Central Zone
 Grid Convergence at Surface is: -1.58°

