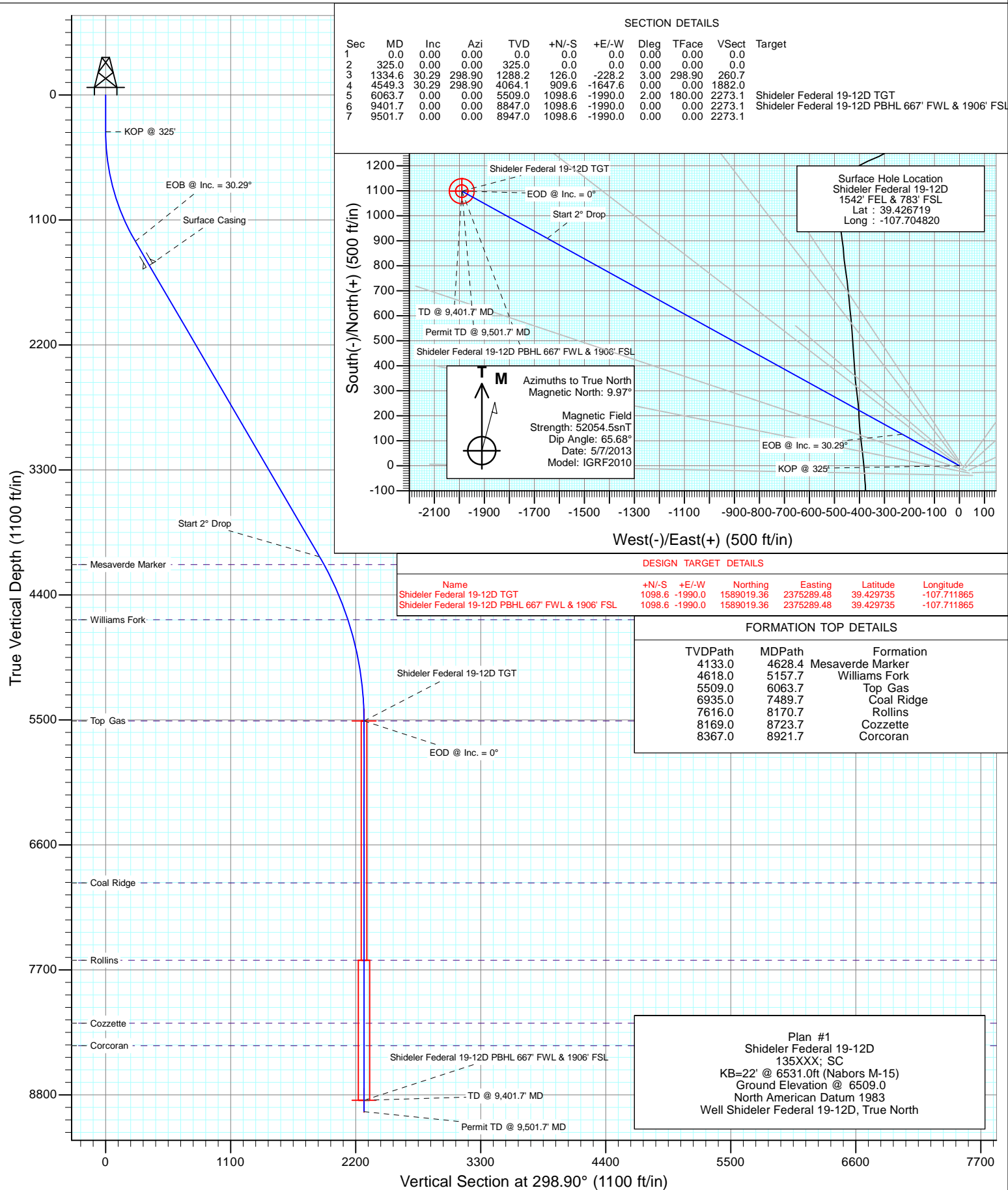
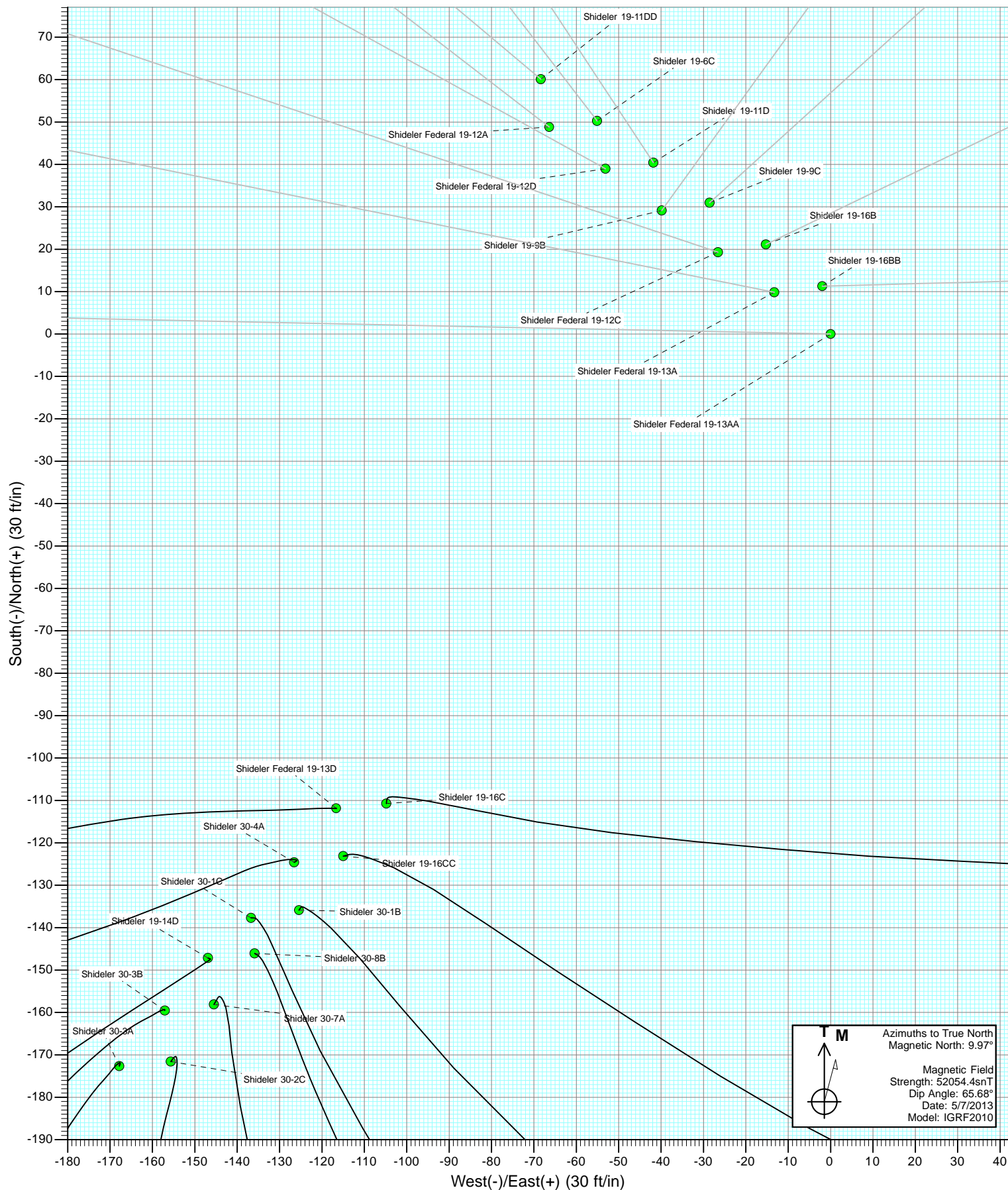
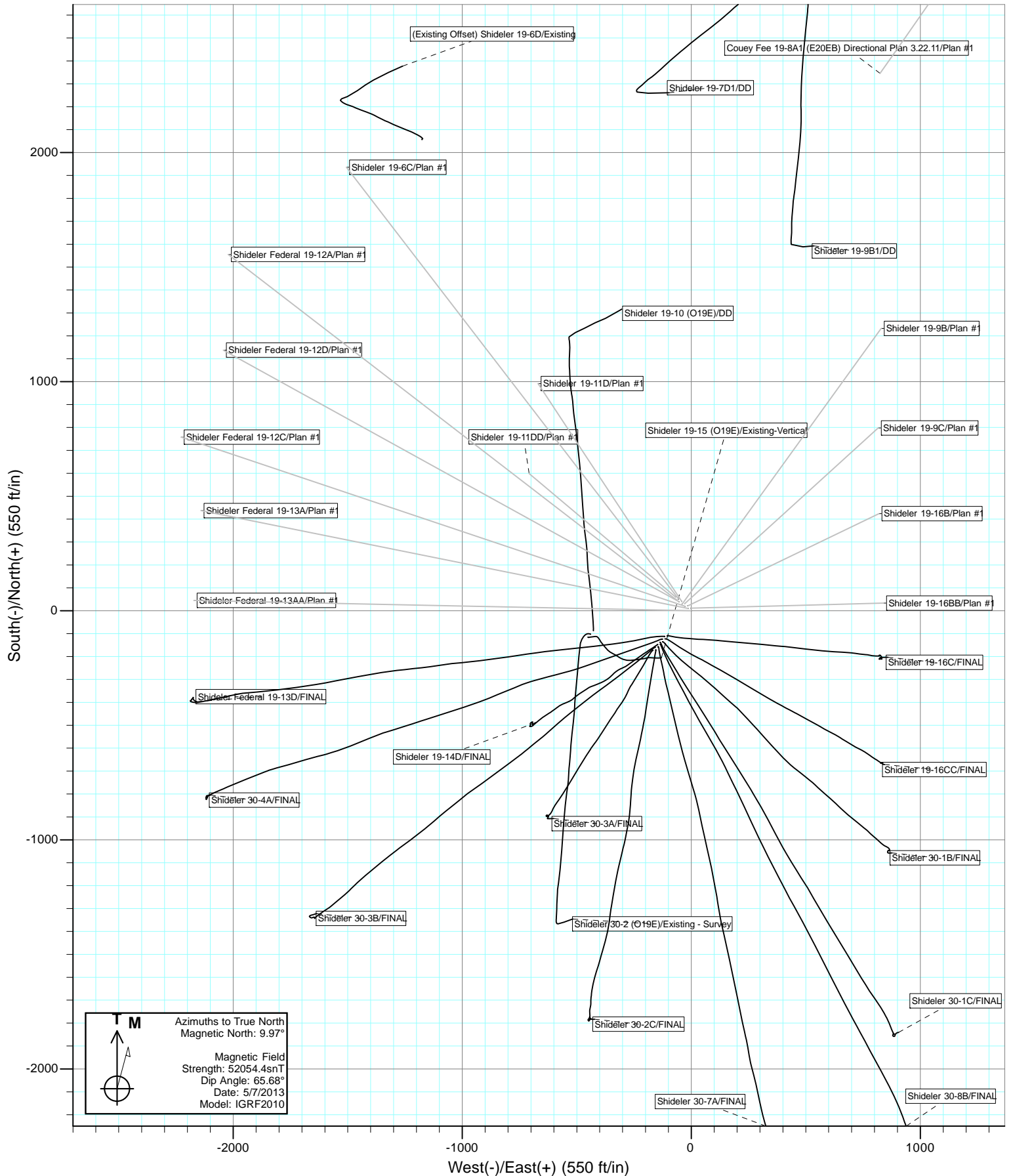




Project: Mamm Creek
Site: O19EB Pad (2nd Occupation)
Well: Shideler Federal 19-12D
Wellbore: OH
Design: Plan #1

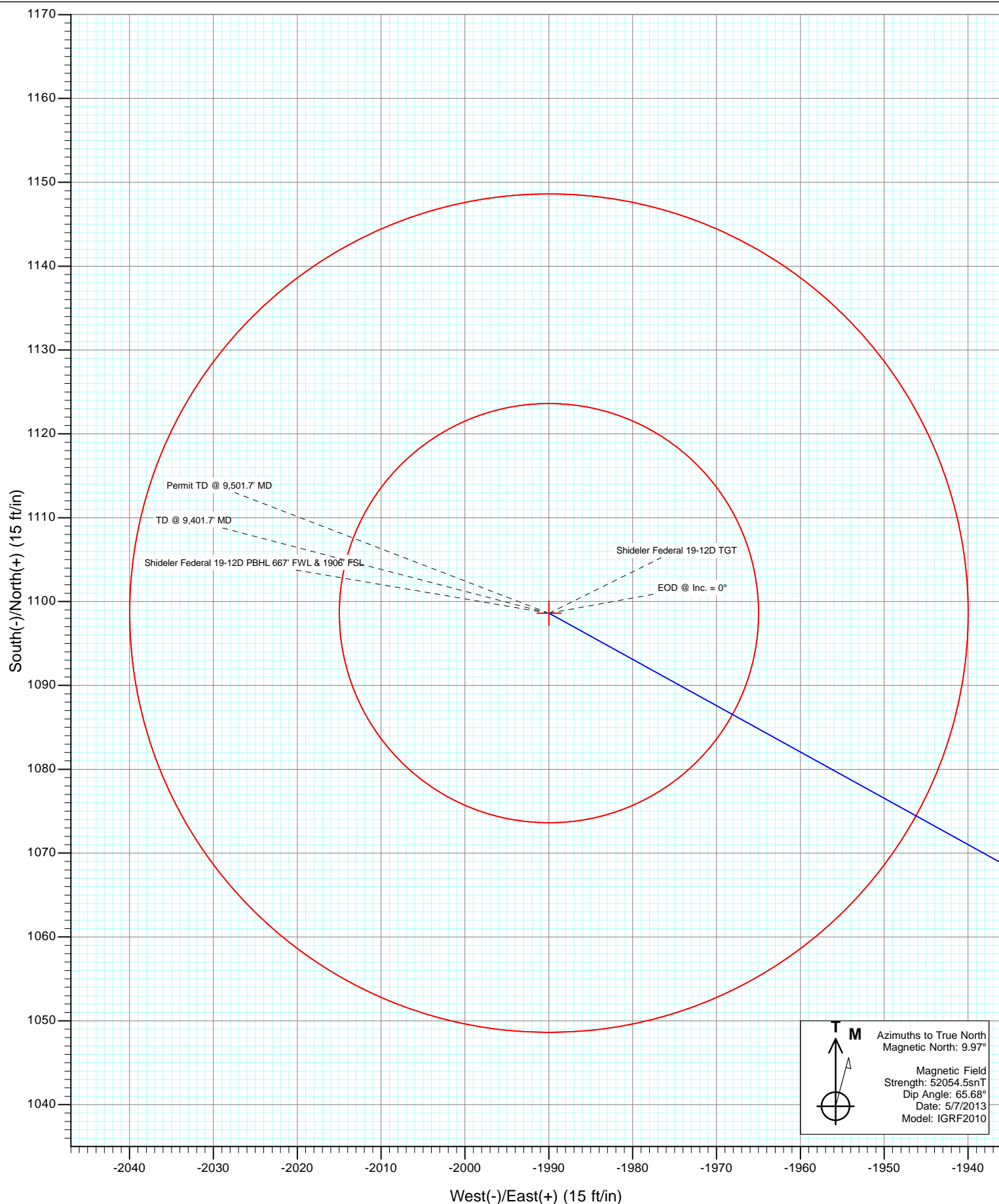








Project: Mamm Creek
Site: O19EB Pad (2nd Occupation)
Well: Shideler Federal 19-12D
Wellbore: OH
Design: Plan #1



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Project:	Mamm Creek	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site:	O19EB Pad (2nd Occupation)	North Reference:	True
Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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

Site		O19EB Pad (2nd Occupation)			
Site Position:		Northing:	1,587,894.27 ft	Latitude:	39.426777
From:	Lat/Long	Easting:	2,377,237.48 ft	Longitude:	-107.704874
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.39 °

Well	Shideler Federal 19-12D					
Well Position	+N/-S	0.0 ft	Northing:	1,587,872.77 ft	Latitude:	39.426719
	+E/-W	0.0 ft	Easting:	2,377,252.21 ft	Longitude:	-107.704820
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,509.0 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/7/2013	9.97	65.68	52,054

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	298.90

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	
325.0	0.00	0.00	325.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,334.6	30.29	298.90	1,288.2	126.0	-228.2	3.00	3.00	0.00	298.90	
4,549.3	30.29	298.90	4,064.1	909.6	-1,647.6	0.00	0.00	0.00	0.00	
6,063.7	0.00	0.00	5,509.0	1,098.6	-1,990.0	2.00	-2.00	0.00	180.00	Shideler Federal 19-1
9,401.7	0.00	0.00	8,847.0	1,098.6	-1,990.0	0.00	0.00	0.00	0.00	Shideler Federal 19-1
9,501.7	0.00	0.00	8,947.0	1,098.6	-1,990.0	0.00	0.00	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Project:	Mamm Creek	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site:	O19EB Pad (2nd Occupation)	North Reference:	True
Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
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	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
325.0	0.00	0.00	325.0	0.0	0.0	0.0	0.00	0.00	KOP @ 325'
400.0	2.25	298.90	400.0	0.7	-1.3	1.5	3.00	3.00	
500.0	5.25	298.90	499.8	3.9	-7.0	8.0	3.00	3.00	
600.0	8.25	298.90	599.1	9.6	-17.3	19.8	3.00	3.00	
700.0	11.25	298.90	697.6	17.7	-32.1	36.7	3.00	3.00	
800.0	14.25	298.90	795.1	28.4	-51.4	58.8	3.00	3.00	
900.0	17.25	298.90	891.4	41.5	-75.2	85.9	3.00	3.00	
1,000.0	20.25	298.90	986.0	57.1	-103.3	118.0	3.00	3.00	
1,100.0	23.25	298.90	1,078.9	75.0	-135.8	155.1	3.00	3.00	
1,200.0	26.25	298.90	1,169.7	95.2	-172.4	197.0	3.00	3.00	
1,300.0	29.25	298.90	1,258.2	117.7	-213.2	243.5	3.00	3.00	
1,334.6	30.29	298.90	1,288.2	126.0	-228.2	260.7	3.00	3.00	EOB @ Inc. = 30.29°
1,400.0	30.29	298.90	1,344.7	141.9	-257.1	293.7	0.00	0.00	
1,500.0	30.29	298.90	1,431.1	166.3	-301.3	344.1	0.00	0.00	
1,579.8	30.29	298.90	1,500.0	185.8	-336.5	384.4	0.00	0.00	Surface Casing
1,600.0	30.29	298.90	1,517.4	190.7	-345.4	394.5	0.00	0.00	
1,700.0	30.29	298.90	1,603.8	215.1	-389.6	445.0	0.00	0.00	
1,800.0	30.29	298.90	1,690.1	239.4	-433.7	495.4	0.00	0.00	
1,900.0	30.29	298.90	1,776.5	263.8	-477.9	545.9	0.00	0.00	
2,000.0	30.29	298.90	1,862.8	288.2	-522.0	596.3	0.00	0.00	
2,100.0	30.29	298.90	1,949.2	312.6	-566.2	646.7	0.00	0.00	
2,200.0	30.29	298.90	2,035.5	336.9	-610.3	697.2	0.00	0.00	
2,300.0	30.29	298.90	2,121.9	361.3	-654.5	747.6	0.00	0.00	
2,400.0	30.29	298.90	2,208.2	385.7	-698.6	798.0	0.00	0.00	
2,500.0	30.29	298.90	2,294.6	410.1	-742.8	848.5	0.00	0.00	
2,600.0	30.29	298.90	2,380.9	434.4	-786.9	898.9	0.00	0.00	
2,700.0	30.29	298.90	2,467.3	458.8	-831.1	949.3	0.00	0.00	
2,800.0	30.29	298.90	2,553.6	483.2	-875.2	999.8	0.00	0.00	
2,900.0	30.29	298.90	2,640.0	507.6	-919.4	1,050.2	0.00	0.00	
3,000.0	30.29	298.90	2,726.3	532.0	-963.6	1,100.6	0.00	0.00	
3,100.0	30.29	298.90	2,812.7	556.3	-1,007.7	1,151.1	0.00	0.00	
3,200.0	30.29	298.90	2,899.0	580.7	-1,051.9	1,201.5	0.00	0.00	
3,300.0	30.29	298.90	2,985.4	605.1	-1,096.0	1,251.9	0.00	0.00	
3,400.0	30.29	298.90	3,071.7	629.5	-1,140.2	1,302.4	0.00	0.00	
3,500.0	30.29	298.90	3,158.0	653.8	-1,184.3	1,352.8	0.00	0.00	
3,600.0	30.29	298.90	3,244.4	678.2	-1,228.5	1,403.3	0.00	0.00	
3,700.0	30.29	298.90	3,330.7	702.6	-1,272.6	1,453.7	0.00	0.00	
3,800.0	30.29	298.90	3,417.1	727.0	-1,316.8	1,504.1	0.00	0.00	
3,900.0	30.29	298.90	3,503.4	751.3	-1,360.9	1,554.6	0.00	0.00	
4,000.0	30.29	298.90	3,589.8	775.7	-1,405.1	1,605.0	0.00	0.00	
4,100.0	30.29	298.90	3,676.1	800.1	-1,449.2	1,655.4	0.00	0.00	
4,200.0	30.29	298.90	3,762.5	824.5	-1,493.4	1,705.9	0.00	0.00	
4,300.0	30.29	298.90	3,848.8	848.8	-1,537.6	1,756.3	0.00	0.00	
4,400.0	30.29	298.90	3,935.2	873.2	-1,581.7	1,806.7	0.00	0.00	
4,500.0	30.29	298.90	4,021.5	897.6	-1,625.9	1,857.2	0.00	0.00	
4,549.3	30.29	298.90	4,064.1	909.6	-1,647.6	1,882.0	0.00	0.00	Start 2° Drop
4,600.0	29.27	298.90	4,108.1	921.8	-1,669.7	1,907.2	2.00	-2.00	
4,628.4	28.71	298.90	4,133.0	928.4	-1,681.7	1,921.0	2.00	-2.00	Mesaverde Marker

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Project:	Mamm Creek	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site:	O19EB Pad (2nd Occupation)	North Reference:	True
Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
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	27.27	298.90	4,196.2	944.7	-1,711.1	1,954.6	2.00	-2.00	
4,800.0	25.27	298.90	4,285.8	966.1	-1,749.9	1,998.9	2.00	-2.00	
4,900.0	23.27	298.90	4,377.0	985.9	-1,785.9	2,040.0	2.00	-2.00	
5,000.0	21.27	298.90	4,469.5	1,004.3	-1,819.1	2,077.9	2.00	-2.00	
5,100.0	19.27	298.90	4,563.3	1,021.0	-1,849.4	2,112.5	2.00	-2.00	
5,157.7	18.12	298.90	4,618.0	1,029.9	-1,865.6	2,131.0	2.00	-2.00	Williams Fork
5,200.0	17.27	298.90	4,658.3	1,036.2	-1,876.8	2,143.9	2.00	-2.00	
5,300.0	15.27	298.90	4,754.3	1,049.7	-1,901.4	2,171.9	2.00	-2.00	
5,400.0	13.27	298.90	4,851.2	1,061.6	-1,923.0	2,196.5	2.00	-2.00	
5,500.0	11.27	298.90	4,948.9	1,071.9	-1,941.6	2,217.8	2.00	-2.00	
5,600.0	9.27	298.90	5,047.3	1,080.5	-1,957.2	2,235.6	2.00	-2.00	
5,700.0	7.27	298.90	5,146.2	1,087.5	-1,969.8	2,250.0	2.00	-2.00	
5,800.0	5.27	298.90	5,245.6	1,092.8	-1,979.4	2,261.0	2.00	-2.00	
5,900.0	3.27	298.90	5,345.3	1,096.4	-1,985.9	2,268.4	2.00	-2.00	
6,000.0	1.27	298.90	5,445.3	1,098.3	-1,989.4	2,272.4	2.00	-2.00	
6,063.7	0.00	0.00	5,509.0	1,098.6	-1,990.0	2,273.1	2.00	-2.00	EOD @ Inc. = 0° - Top Gas
6,100.0	0.00	0.00	5,545.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
6,200.0	0.00	0.00	5,645.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
6,300.0	0.00	0.00	5,745.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
6,400.0	0.00	0.00	5,845.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
6,500.0	0.00	0.00	5,945.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
6,600.0	0.00	0.00	6,045.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
6,700.0	0.00	0.00	6,145.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
6,800.0	0.00	0.00	6,245.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
6,900.0	0.00	0.00	6,345.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
7,000.0	0.00	0.00	6,445.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
7,100.0	0.00	0.00	6,545.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
7,200.0	0.00	0.00	6,645.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
7,300.0	0.00	0.00	6,745.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
7,400.0	0.00	0.00	6,845.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
7,489.7	0.00	0.00	6,935.0	1,098.6	-1,990.0	2,273.1	0.00	0.00	Coal Ridge
7,500.0	0.00	0.00	6,945.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
7,600.0	0.00	0.00	7,045.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
7,700.0	0.00	0.00	7,145.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
7,800.0	0.00	0.00	7,245.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
7,900.0	0.00	0.00	7,345.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
8,000.0	0.00	0.00	7,445.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
8,100.0	0.00	0.00	7,545.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
8,170.7	0.00	0.00	7,616.0	1,098.6	-1,990.0	2,273.1	0.00	0.00	Rollins
8,200.0	0.00	0.00	7,645.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
8,300.0	0.00	0.00	7,745.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
8,400.0	0.00	0.00	7,845.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
8,500.0	0.00	0.00	7,945.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
8,600.0	0.00	0.00	8,045.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
8,700.0	0.00	0.00	8,145.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
8,723.7	0.00	0.00	8,169.0	1,098.6	-1,990.0	2,273.1	0.00	0.00	Cozzette
8,800.0	0.00	0.00	8,245.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
8,900.0	0.00	0.00	8,345.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
8,921.7	0.00	0.00	8,367.0	1,098.6	-1,990.0	2,273.1	0.00	0.00	Corcoran
9,000.0	0.00	0.00	8,445.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
9,100.0	0.00	0.00	8,545.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
9,200.0	0.00	0.00	8,645.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	

Cathedral Energy Services

Planning Report

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Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Project:	Mamm Creek	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site:	O19EB Pad (2nd Occupation)	North Reference:	True
Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
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
9,300.0	0.00	0.00	8,745.3	1,098.6	-1,990.0	2,273.1	0.00	0.00	
9,401.7	0.00	0.00	8,847.0	1,098.6	-1,990.0	2,273.1	0.00	0.00	TD @ 9,401.7' MD
9,501.7	0.00	0.00	8,947.0	1,098.6	-1,990.0	2,273.1	0.00	0.00	Permit TD @ 9,501.7' MD

Targets									
Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	
- Shape									Latitude Longitude
Shideler Federal 19-12D	- plan hits target center	0.00	0.00	8,847.0	1,098.6	-1,990.0	1,589,019.36	2,375,289.48	39.429735 -107.711865
	- Circle (radius 50.0)								
Shideler Federal 19-12D	- plan hits target center	0.00	0.00	5,509.0	1,098.6	-1,990.0	1,589,019.36	2,375,289.48	39.429735 -107.711865
	- Circle (radius 25.0)								

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,579.8	1,500.0	Surface Casing			

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,628.4	4,133.0	Mesaverde Marker			
5,157.7	4,618.0	Williams Fork			
6,063.7	5,509.0	Top Gas			
7,489.7	6,935.0	Coal Ridge			
8,170.7	7,616.0	Rollins			
8,723.7	8,169.0	Cozzette			
8,921.7	8,367.0	Corcoran			

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
325.0	325.0	0.0	0.0	KOP @ 325'
1,334.6	1,288.2	126.0	-228.2	EOB @ Inc. = 30.29°
4,549.3	4,064.1	909.6	-1,647.6	Start 2° Drop
6,063.7	5,509.0	1,098.6	-1,990.0	EOD @ Inc. = 0°
9,401.7	8,847.0	1,098.6	-1,990.0	TD @ 9,401.7' MD
9,501.7	8,947.0	1,098.6	-1,990.0	Permit TD @ 9,501.7' MD

EnCana Oil & Gas (USA) Inc

Mamm Creek

O19EB Pad (2nd Occupation)

Shideler Federal 19-12D

OH

Plan #1

Anticollision Report

09 May, 2013

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference	Plan #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
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 500.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date	5/8/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	9,501.7	Plan #1 (OH)	MWD	Geolink MWD

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
O19E Pad						
Shideler 19-10 (O19E) - DD - DD	1,700.0	1,683.6	39.7	27.7	3.307	SF
Shideler 19-10 (O19E) - DD - DD	1,733.2	1,713.6	37.1	26.5	3.511	CC, ES
Shideler 19-15 (O19E) - Existing-Vertical - Existing-Vertic	1,277.4	1,263.2	306.4	298.9	41.177	CC, ES
Shideler 19-15 (O19E) - Existing-Vertical - Existing-Vertic	1,500.0	1,440.5	333.4	323.8	34.625	SF
Shideler 30-2 (O19E) - Existing - Survey - Existing - Surv	0.0	25.9	411.8			
Shideler 30-2 (O19E) - Existing - Survey - Existing - Surv	100.0	125.5	411.8	411.5	1,223.788	ES
Shideler 30-2 (O19E) - Existing - Survey - Existing - Surv	1,400.0	1,266.5	491.9	483.3	57.291	SF
O19EB Pad (1st Occupation)						
(Existing Offset) Shideler 19-6D - Existing - Existing						Out of range
Shideler 19-14D - OH - FINAL	203.7	203.7	208.3	207.7	328.377	CC, ES
Shideler 19-14D - OH - FINAL	1,500.0	1,417.7	441.0	431.8	48.056	SF
Shideler 19-16C - OH - FINAL	411.7	413.6	155.4	154.0	111.614	CC, ES
Shideler 19-16C - OH - FINAL	800.0	781.3	201.3	197.9	59.257	SF
Shideler 19-16CC - OH - FINAL	362.1	362.8	172.0	170.8	143.734	CC
Shideler 19-16CC - OH - FINAL	400.0	399.9	172.1	170.8	128.956	ES
Shideler 19-16CC - OH - FINAL	800.0	762.1	225.4	222.1	68.922	SF
Shideler 30-1B - OH - FINAL	308.9	308.9	188.1	187.1	187.774	CC, ES
Shideler 30-1B - OH - FINAL	900.0	833.9	281.0	277.2	74.556	SF
Shideler 30-1C - OH - FINAL	236.7	236.7	195.1	194.3	260.257	CC, ES
Shideler 30-1C - OH - FINAL	1,000.0	872.2	371.0	366.6	84.422	SF
Shideler 30-2C - OH - FINAL	236.7	236.7	232.6	231.9	309.982	CC, ES
Shideler 30-2C - OH - FINAL	1,200.0	1,014.8	496.7	490.8	84.519	SF
Shideler 30-3A - OH - FINAL	222.1	222.1	239.9	239.2	343.250	CC, ES
Shideler 30-3A - OH - FINAL	1,300.0	1,194.3	461.0	453.7	63.684	SF
Shideler 30-3B - OH - FINAL	212.6	212.6	223.9	223.2	336.431	CC, ES
Shideler 30-3B - OH - FINAL	1,300.0	1,138.9	480.6	472.4	58.580	SF
Shideler 30-4A - OH - FINAL	207.5	207.5	178.6	177.9	275.643	CC, ES
Shideler 30-4A - OH - FINAL	1,600.0	1,486.7	484.1	470.1	34.639	SF
Shideler 30-7A - OH - FINAL	260.0	260.0	215.4	214.5	258.673	CC, ES
Shideler 30-7A - OH - FINAL	1,200.0	992.7	491.2	485.4	85.368	SF
Shideler 30-8B - OH - FINAL	0.0	0.0	202.7			
Shideler 30-8B - OH - FINAL	200.0	199.0	202.9	202.2	327.103	ES
Shideler 30-8B - OH - FINAL	1,000.0	862.9	385.0	380.7	88.473	SF
Shideler Federal 19-13D - OH - FINAL	0.0	0.0	163.6			
Shideler Federal 19-13D - OH - FINAL	200.0	199.7	163.7	163.1	263.667	ES
Shideler Federal 19-13D - OH - FINAL	1,800.0	1,714.6	473.6	454.8	25.173	SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
O19EB Pad (2nd Occupation)						
Shideler 19-11D - OH - Plan #1	300.0	300.0	11.4	10.4	11.740	CC, ES
Shideler 19-11D - OH - Plan #1	400.0	400.0	12.6	11.3	9.556	SF
Shideler 19-11DD - OH - Plan #1	200.0	200.0	26.1	25.4	41.931	CC, ES
Shideler 19-11DD - OH - Plan #1	1,100.0	1,089.6	37.0	30.6	5.777	SF
Shideler 19-16B - OH - Plan #1	300.0	300.0	41.8	40.9	43.125	CC, ES
Shideler 19-16B - OH - Plan #1	500.0	495.9	56.8	55.1	33.839	SF
Shideler 19-16BB - OH - Plan #1	300.0	300.0	58.1	57.2	59.915	CC, ES
Shideler 19-16BB - OH - Plan #1	500.0	496.8	68.4	66.7	41.179	SF
Shideler 19-6C - OH - Plan #1	400.8	400.6	11.1	9.8	8.424	CC, ES
Shideler 19-6C - OH - Plan #1	500.0	499.2	12.1	10.5	7.159	SF
Shideler 19-9B - OH - Plan #1	300.0	300.0	16.5	15.6	17.026	CC, ES
Shideler 19-9B - OH - Plan #1	400.0	399.9	18.2	16.8	13.714	SF
Shideler 19-9C - OH - Plan #1	200.0	200.0	25.9	25.2	41.604	CC, ES
Shideler 19-9C - OH - Plan #1	400.0	397.9	33.6	32.2	25.008	SF
Shideler Federal 19-12A - OH - Plan #1	200.0	200.0	16.5	15.9	26.591	CC, ES
Shideler Federal 19-12A - OH - Plan #1	8,358.2	8,447.5	418.0	336.2	5.113	SF
Shideler Federal 19-12C - OH - Plan #1	300.0	300.0	33.0	32.1	34.055	CC, ES
Shideler Federal 19-12C - OH - Plan #1	8,457.7	8,477.6	422.2	330.7	4.617	SF
Shideler Federal 19-13A - OH - Plan #1	645.9	653.4	40.6	38.2	16.843	CC
Shideler Federal 19-13A - OH - Plan #1	700.0	708.1	41.0	38.2	14.841	ES
Shideler Federal 19-13A - OH - Plan #1	1,300.0	1,307.0	94.2	83.0	8.407	SF
Shideler Federal 19-13AA - OH - Plan #1	566.2	574.0	54.9	52.7	25.598	CC, ES
Shideler Federal 19-13AA - OH - Plan #1	1,900.0	1,881.5	293.0	271.3	13.524	SF

Cathedral Energy Services

Anticollision Report

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Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19E Pad - Shideler 19-10 (O19E) - DD - DD													Offset Site Error:	0.0 ft
Survey Program: 154--MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total	Separation	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)	Uncertainty Axis	Factor		
0.0	0.0	26.0	26.0	0.0	0.0	-108.65	-126.3	-374.1	394.9					
100.0	100.0	125.8	125.8	0.1	0.2	-108.63	-126.1	-374.2	394.9	394.6	0.34	1,175.866		
200.0	200.0	226.1	226.1	0.3	0.4	-108.57	-125.7	-374.4	394.9	394.2	0.68	579.873		
300.0	300.0	326.5	326.5	0.5	0.5	-108.46	-125.0	-374.5	394.8	393.8	1.03	382.961		
400.0	400.0	431.9	431.8	0.7	0.7	-47.25	-122.7	-374.4	393.0	391.6	1.40	281.348		
500.0	499.8	535.0	534.8	0.9	0.9	-47.27	-116.6	-374.3	386.6	384.9	1.79	216.226		
600.0	599.1	639.5	638.6	1.1	1.2	-47.20	-105.1	-374.9	375.8	373.6	2.25	167.005		
700.0	697.6	743.2	741.0	1.4	1.5	-47.01	-88.2	-375.5	359.8	356.9	2.81	127.925		
800.0	795.1	842.4	837.9	1.8	1.9	-46.72	-67.4	-376.8	339.6	336.1	3.47	97.732		
900.0	891.4	941.0	933.4	2.3	2.3	-46.41	-43.0	-378.8	315.5	311.3	4.24	74.430		
1,000.0	986.0	1,038.3	1,027.0	3.0	2.8	-46.38	-16.7	-380.9	287.6	282.5	5.09	56.485		
1,100.0	1,078.9	1,133.0	1,117.9	3.7	3.3	-46.89	10.1	-383.1	256.0	250.0	6.03	42.436		
1,200.0	1,169.7	1,226.3	1,206.9	4.5	3.8	-48.11	37.7	-385.8	221.2	214.2	7.07	31.288		
1,300.0	1,258.2	1,318.0	1,294.3	5.4	4.3	-50.64	65.4	-388.9	183.6	175.3	8.25	22.260		
1,400.0	1,344.7	1,409.5	1,381.2	6.3	4.8	-54.45	93.8	-392.2	143.8	134.2	9.58	15.009		
1,500.0	1,431.1	1,500.1	1,467.4	7.3	5.3	-60.81	121.5	-395.6	105.0	93.9	11.04	9.505		
1,600.0	1,517.4	1,593.2	1,556.0	8.2	5.8	-74.81	149.9	-398.3	68.0	55.5	12.55	5.419		
1,700.0	1,603.8	1,683.6	1,641.7	9.2	6.3	-110.05	178.7	-399.8	39.7	27.7	11.99	3.307 SF		
1,733.2	1,632.4	1,713.6	1,670.2	9.5	6.5	-129.13	188.2	-400.4	37.1	26.5	10.57	3.511 CC, ES		
1,800.0	1,690.1	1,774.7	1,728.0	10.2	6.9	-164.41	208.0	-401.8	46.4	37.9	8.48	5.465		
1,900.0	1,776.5	1,866.0	1,813.9	11.1	7.4	169.25	238.8	-404.3	78.6	68.6	10.01	7.850		
2,000.0	1,862.8	1,957.7	1,900.0	12.1	8.0	158.47	269.9	-407.4	116.6	104.1	12.52	9.311		
2,100.0	1,949.2	2,050.0	1,986.8	13.1	8.5	153.05	301.2	-411.3	155.8	141.3	14.43	10.792		
2,200.0	2,035.5	2,138.2	2,069.8	14.0	9.1	150.00	330.9	-414.9	195.7	179.7	15.98	12.248		
2,300.0	2,121.9	2,226.7	2,153.2	15.0	9.6	148.04	360.4	-416.8	237.7	220.4	17.37	13.686		
2,400.0	2,208.2	2,318.0	2,239.3	16.0	10.2	146.62	390.7	-418.7	280.0	261.3	18.72	14.955		
2,500.0	2,294.6	2,409.5	2,325.1	17.0	10.8	145.32	422.4	-421.1	322.0	301.9	20.09	16.026		
2,600.0	2,380.9	2,499.3	2,409.3	17.9	11.3	144.32	453.6	-423.4	364.1	342.7	21.41	17.010		
2,700.0	2,467.3	2,589.7	2,494.2	18.9	11.9	143.60	484.5	-425.5	406.4	383.7	22.67	17.930		
2,800.0	2,553.6	2,680.1	2,579.4	19.9	12.4	143.11	514.8	-427.6	448.7	424.9	23.88	18.791		
2,900.0	2,640.0	2,770.8	2,665.0	20.9	12.9	142.76	544.7	-429.7	491.1	466.1	25.06	19.595		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19E Pad - Shideler 19-15 (O19E) - Existing-Vertical - Existing-Vertical												Offset Site Error:	0.0 ft
Survey Program: 100-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	26.5	26.5	0.0	0.0	-111.28	-154.8	-397.4	426.5				
100.0	100.0	127.8	127.8	0.1	0.2	-111.30	-154.8	-397.1	426.2	425.9	0.33	1,272.657	
200.0	200.0	228.8	228.8	0.3	0.4	-111.37	-155.1	-396.5	425.8	425.1	0.69	620.951	
300.0	300.0	332.4	332.4	0.5	0.6	-111.45	-155.2	-395.2	424.6	423.6	1.04	407.612	
400.0	400.0	435.2	435.2	0.7	0.7	-50.62	-154.9	-393.3	421.9	420.5	1.40	302.084	
500.0	499.8	538.8	538.7	0.9	0.9	-51.58	-154.4	-390.6	415.2	413.4	1.77	235.116	
600.0	599.1	641.6	641.5	1.1	1.1	-53.31	-153.8	-386.8	404.3	402.1	2.17	186.509	
700.0	697.6	740.9	740.7	1.4	1.3	-55.80	-152.9	-382.5	390.1	387.4	2.62	148.680	
800.0	795.1	837.6	837.3	1.8	1.5	-59.24	-152.6	-377.9	373.7	370.5	3.16	118.113	
900.0	891.4	934.0	933.5	2.3	1.7	-63.71	-152.2	-373.2	355.8	352.0	3.82	93.137	
1,000.0	986.0	1,027.8	1,027.2	3.0	1.9	-69.26	-151.7	-368.3	337.6	333.0	4.61	73.220	
1,100.0	1,078.9	1,117.9	1,117.1	3.7	2.0	-75.90	-151.7	-363.2	321.3	315.8	5.54	57.971	
1,200.0	1,169.7	1,200.0	1,199.1	4.5	2.2	-83.06	-152.3	-358.5	309.7	303.1	6.58	47.081	
1,277.4	1,238.4	1,263.2	1,262.2	5.2	2.3	-89.12	-153.8	-355.3	306.4	298.9	7.44	41.177	CC, ES
1,300.0	1,258.2	1,280.2	1,279.2	5.4	2.3	-90.81	-154.4	-354.5	306.7	299.0	7.68	39.923	
1,400.0	1,344.7	1,358.4	1,357.2	6.3	2.5	-98.68	-158.3	-351.5	315.1	306.3	8.73	36.105	
1,500.0	1,431.1	1,440.5	1,439.1	7.3	2.6	-106.52	-163.2	-349.0	333.4	323.8	9.63	34.625	SF
1,600.0	1,517.4	1,525.2	1,523.6	8.2	2.8	-113.87	-168.0	-346.2	359.2	348.9	10.36	34.662	
1,700.0	1,603.8	1,609.5	1,607.8	9.2	3.0	-120.36	-172.5	-343.3	390.9	380.0	10.95	35.717	
1,800.0	1,690.1	1,692.7	1,690.8	10.2	3.1	-125.95	-176.9	-340.3	427.4	416.0	11.41	37.461	
1,900.0	1,776.5	1,777.4	1,775.4	11.1	3.3	-130.91	-181.1	-337.0	467.5	455.7	11.78	39.697	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
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Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19E Pad - Shideler 30-2 (O19E) - Existing - Survey - Existing - Survey													Offset Site Error:	0.0 ft
Survey Program: 164-MWD2													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	25.9	25.9	0.0	0.0	-110.10	-141.5	-386.7	411.8					
100.0	100.0	125.5	125.5	0.1	0.2	-110.08	-141.4	-386.8	411.8	411.5	0.34	1,223.788 ES		
200.0	200.0	221.2	221.2	0.3	0.4	-110.01	-141.0	-387.3	412.2	411.5	0.67	612.727		
300.0	300.0	308.9	308.8	0.5	0.5	-109.79	-140.3	-389.9	414.7	413.7	1.00	413.741		
400.0	400.0	395.0	394.8	0.7	0.7	-48.34	-139.3	-395.7	419.7	418.3	1.33	314.445		
500.0	499.8	485.2	484.5	0.9	0.9	-48.65	-140.5	-403.5	423.9	422.2	1.68	252.151		
600.0	599.1	575.9	574.8	1.1	1.1	-49.97	-146.1	-411.8	427.0	425.0	2.05	208.198		
700.0	697.6	666.8	664.6	1.4	1.4	-52.32	-156.1	-420.2	429.3	426.8	2.49	172.691		
800.0	795.1	764.2	760.6	1.8	1.7	-55.98	-171.2	-427.7	430.2	427.2	3.03	141.880		
900.0	891.4	856.2	850.5	2.3	2.0	-60.60	-189.9	-432.2	430.7	426.9	3.71	116.099		
1,000.0	986.0	937.4	929.2	3.0	2.3	-65.47	-209.9	-434.7	433.5	429.0	4.49	96.500		
1,100.0	1,078.9	1,022.4	1,011.1	3.7	2.7	-70.99	-232.5	-437.2	440.7	435.3	5.40	81.584		
1,200.0	1,169.7	1,108.0	1,093.6	4.5	3.1	-76.71	-255.2	-439.5	452.2	445.8	6.41	70.511		
1,300.0	1,258.2	1,191.3	1,174.0	5.4	3.4	-82.29	-276.9	-441.3	468.9	461.4	7.50	62.493		
1,400.0	1,344.7	1,266.5	1,246.6	6.3	3.8	-87.58	-296.4	-442.7	491.9	483.3	8.59	57.291 SF		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (1st Occupation) - Shideler 19-14D - OH - FINAL												Offset Site Error:	0.0 ft
Survey Program: 172-MWD, 1613-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Total Uncertainty Axis	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			
0.0	0.0	0.0	0.0	0.0	0.0	-153.26	-186.1	-93.8	208.4				
100.0	100.0	100.1	100.1	0.1	0.2	-153.30	-186.2	-93.6	208.4	208.1	0.29	722.365	
200.0	200.0	200.0	200.0	0.3	0.3	-153.41	-186.3	-93.2	208.4	207.7	0.62	335.249	
203.7	203.7	203.7	203.7	0.3	0.3	-153.42	-186.3	-93.2	208.3	207.7	0.63	328.377	CC, ES
300.0	300.0	296.5	296.5	0.5	0.5	-153.35	-186.8	-93.8	209.0	208.1	0.96	216.717	
400.0	400.0	386.0	385.9	0.7	0.6	-92.03	-188.8	-96.7	212.6	211.3	1.30	163.850	
500.0	499.8	478.0	477.6	0.9	0.8	-92.29	-193.1	-103.4	220.4	218.7	1.67	132.286	
600.0	599.1	574.6	573.4	1.1	1.1	-93.27	-199.5	-113.4	231.5	229.4	2.10	110.031	
700.0	697.6	673.0	671.0	1.4	1.3	-95.27	-206.6	-124.1	243.9	241.3	2.63	92.829	
800.0	795.1	770.3	767.5	1.8	1.6	-98.11	-213.9	-134.8	257.7	254.4	3.24	79.423	
900.0	891.4	867.6	863.9	2.3	1.9	-101.63	-221.1	-145.5	273.2	269.3	3.96	69.050	
1,000.0	986.0	962.7	958.1	3.0	2.2	-105.50	-228.2	-156.1	291.5	286.7	4.75	61.331	
1,100.0	1,078.9	1,056.2	1,050.7	3.7	2.4	-109.56	-235.5	-166.7	313.2	307.6	5.61	55.791	
1,200.0	1,169.7	1,148.2	1,141.8	4.5	2.7	-113.61	-242.8	-177.3	339.2	332.7	6.52	51.995	
1,300.0	1,258.2	1,239.0	1,231.7	5.4	3.0	-117.56	-250.0	-187.7	369.5	362.1	7.46	49.552	
1,400.0	1,344.7	1,327.5	1,319.3	6.3	3.2	-121.77	-257.1	-197.8	404.2	395.9	8.35	48.418	
1,500.0	1,431.1	1,417.7	1,408.7	7.3	3.5	-125.78	-264.1	-207.8	441.0	431.8	9.18	48.056	SF
1,600.0	1,517.4	1,506.7	1,497.0	8.2	3.7	-129.22	-270.6	-217.3	479.2	469.3	9.94	48.196	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (1st Occupation) - Shideler 19-16C - OH - FINAL												Offset Site Error:	0.0 ft
Survey Program: 173-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	-160.95	-149.7	-51.7	158.4				
100.0	100.0	100.8	100.8	0.1	0.2	-160.93	-149.5	-51.7	158.1	157.8	0.29	544.899	
200.0	200.0	201.4	201.4	0.3	0.3	-160.88	-148.7	-51.6	157.4	156.8	0.62	251.930	
300.0	300.0	301.6	301.6	0.5	0.5	-161.33	-148.1	-50.0	156.3	155.4	0.97	160.513	
400.0	400.0	402.1	401.8	0.7	0.7	-103.22	-148.9	-43.3	155.4	154.1	1.34	115.561	
411.7	411.6	413.6	413.3	0.7	0.7	-103.81	-149.1	-42.2	155.4	154.0	1.39	111.614	CC, ES
500.0	499.8	499.6	498.6	0.9	0.9	-109.67	-151.0	-31.9	156.9	155.1	1.79	87.706	
600.0	599.1	596.2	594.0	1.1	1.2	-118.66	-154.0	-16.6	163.6	161.3	2.31	70.816	
700.0	697.6	690.2	686.2	1.4	1.6	-128.62	-156.5	1.2	177.8	174.9	2.87	61.854	
800.0	795.1	781.3	775.2	1.8	1.9	-138.08	-158.6	20.4	201.3	197.9	3.40	59.257	SF
900.0	891.4	869.6	861.4	2.3	2.3	-146.10	-160.3	39.7	234.2	230.3	3.85	60.831	
1,000.0	986.0	954.0	943.6	3.0	2.7	-152.52	-161.8	58.8	275.7	271.5	4.23	65.105	
1,100.0	1,078.9	1,038.9	1,026.2	3.7	3.0	-157.82	-163.1	78.4	324.5	320.0	4.56	71.203	
1,200.0	1,169.7	1,120.7	1,105.9	4.5	3.4	-161.88	-163.9	96.7	379.0	374.2	4.83	78.500	
1,300.0	1,258.2	1,198.1	1,181.4	5.4	3.7	-164.88	-164.9	113.6	438.8	433.7	5.07	86.537	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (1st Occupation) - Shideler 19-16CC - OH - FINAL												Offset Site Error:	0.0 ft
Survey Program: 202-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	-159.11	-162.1	-61.9	173.5				
100.0	100.0	100.4	100.4	0.1	0.2	-159.17	-162.0	-61.7	173.4	173.1	0.29	593.005	
200.0	200.0	200.9	200.9	0.3	0.3	-159.34	-161.9	-61.0	173.0	172.4	0.62	277.624	
300.0	300.0	301.3	301.2	0.5	0.5	-159.78	-161.7	-59.5	172.3	171.3	0.97	177.146	
362.1	362.1	362.8	362.7	0.6	0.6	-99.65	-162.0	-57.4	172.0	170.8	1.20	143.734 CC	
400.0	400.0	399.9	399.8	0.7	0.7	-100.53	-162.6	-55.5	172.1	170.8	1.33	128.956 ES	
500.0	499.8	496.2	495.8	0.9	0.9	-105.04	-165.6	-48.3	174.5	172.8	1.74	100.458	
600.0	599.1	588.3	587.1	1.1	1.1	-111.59	-171.4	-38.3	182.6	180.4	2.21	82.720	
700.0	697.6	677.2	674.7	1.4	1.4	-119.19	-179.8	-25.5	199.0	196.3	2.73	72.837	
800.0	795.1	762.1	757.6	1.8	1.8	-126.76	-190.0	-10.3	225.4	222.1	3.27	68.922 SF	
900.0	891.4	846.0	838.9	2.3	2.1	-133.70	-201.2	6.9	261.5	257.7	3.78	69.122	
1,000.0	986.0	926.5	916.7	3.0	2.5	-139.42	-212.4	24.5	306.2	301.9	4.26	71.897	
1,100.0	1,078.9	1,009.6	996.8	3.7	2.9	-144.41	-223.7	43.4	357.8	353.1	4.70	76.194	
1,200.0	1,169.7	1,087.1	1,071.6	4.5	3.3	-148.28	-233.3	61.3	414.9	409.8	5.10	81.276	
1,300.0	1,258.2	1,157.3	1,139.3	5.4	3.6	-151.14	-241.9	77.9	477.7	472.2	5.51	86.679	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (1st Occupation) - Shideler 30-1B - OH - FINAL													Offset Site Error:	0.0 ft
Survey Program: 202-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	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)				
0.0	0.0	0.0	0.0	0.0	0.0	-157.53	-174.8	-72.3	189.2					
100.0	100.0	100.5	100.5	0.1	0.2	-157.54	-174.7	-72.2	189.1	188.8	0.29	646.381		
200.0	200.0	201.0	201.0	0.3	0.3	-157.57	-174.4	-72.0	188.7	188.1	0.62	302.679		
300.0	300.0	300.4	300.4	0.5	0.5	-157.69	-174.1	-71.4	188.2	187.2	0.97	193.700		
308.9	308.9	308.9	308.9	0.5	0.5	-96.64	-174.1	-71.3	188.1	187.1	1.00	187.774 CC, ES		
400.0	400.0	397.8	397.7	0.7	0.7	-97.93	-175.7	-68.8	188.9	187.5	1.32	142.847		
500.0	499.8	492.2	491.9	0.9	0.8	-101.47	-179.9	-63.8	192.5	190.8	1.70	112.964		
600.0	599.1	582.4	581.5	1.1	1.1	-106.71	-187.6	-56.8	201.8	199.7	2.15	93.991		
700.0	697.6	669.7	667.6	1.4	1.3	-112.97	-198.6	-47.6	218.9	216.3	2.65	82.503		
800.0	795.1	754.0	750.0	1.8	1.7	-119.50	-212.1	-35.8	245.2	242.0	3.20	76.620		
900.0	891.4	833.9	827.1	2.3	2.0	-125.64	-226.7	-21.4	281.0	277.2	3.77	74.556 SF		
1,000.0	986.0	911.6	901.6	3.0	2.4	-131.15	-241.8	-4.9	325.8	321.5	4.32	75.405		
1,100.0	1,078.9	985.4	972.0	3.7	2.8	-135.62	-256.6	11.8	378.3	373.5	4.86	77.885		
1,200.0	1,169.7	1,055.2	1,038.2	4.5	3.2	-139.13	-270.9	28.4	437.8	432.4	5.39	81.230		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (1st Occupation) - Shideler 30-1C - OH - FINAL												Offset Site Error:	0.0 ft
Survey Program: 111-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	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)			
0.0	0.0	0.0	0.0	0.0	0.0	-154.67	-176.7	-83.6	195.5				
100.0	100.0	100.2	100.2	0.1	0.1	-154.69	-176.6	-83.5	195.4	195.1	0.28	707.134	
200.0	200.0	200.7	200.7	0.3	0.3	-154.85	-176.7	-82.9	195.2	194.5	0.62	313.483	
236.7	236.7	236.7	236.7	0.4	0.4	-154.97	-176.8	-82.5	195.1	194.3	0.75	260.257 CC, ES	
300.0	300.0	296.1	296.1	0.5	0.5	-155.37	-177.9	-81.5	195.7	194.7	0.96	202.849	
400.0	400.0	386.0	385.8	0.7	0.7	-95.93	-183.2	-78.6	200.0	198.7	1.31	152.313	
500.0	499.8	478.0	477.1	0.9	0.9	-99.52	-193.5	-74.1	209.6	207.9	1.70	123.050	
600.0	599.1	569.0	566.6	1.1	1.2	-104.64	-208.0	-67.3	225.6	223.4	2.17	104.079	
700.0	697.6	652.4	647.9	1.4	1.5	-110.19	-224.5	-58.3	248.6	246.0	2.68	92.734	
800.0	795.1	732.2	724.8	1.8	1.9	-115.67	-242.7	-47.4	280.1	276.9	3.23	86.673	
900.0	891.4	805.6	794.6	2.3	2.4	-120.36	-262.0	-35.7	321.0	317.2	3.80	84.425	
1,000.0	986.0	872.2	857.1	3.0	2.8	-124.05	-281.6	-23.7	371.0	366.6	4.39	84.422 SF	
1,100.0	1,078.9	938.0	917.9	3.7	3.2	-127.16	-303.1	-10.6	429.5	424.5	5.02	85.552	
1,200.0	1,169.7	985.5	961.2	4.5	3.6	-128.48	-319.8	-0.4	495.3	489.5	5.73	86.486	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (1st Occupation) - Shideler 30-2C - OH - FINAL												Offset Site Error:	0.0 ft
Survey Program: 172-MWD, 1616-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	-154.03	-210.5	-102.5	234.2				
100.0	100.0	101.7	101.7	0.1	0.2	-154.05	-210.2	-102.3	233.8	233.5	0.29	802.007	
200.0	200.0	202.0	202.0	0.3	0.3	-154.11	-209.4	-101.6	232.8	232.2	0.63	371.850	
236.7	236.7	236.7	236.7	0.4	0.4	-154.16	-209.4	-101.4	232.6	231.9	0.75	309.982 CC, ES	
300.0	300.0	294.0	294.0	0.5	0.5	-154.31	-210.2	-101.1	233.3	232.3	0.96	243.014	
400.0	400.0	386.0	385.9	0.7	0.6	-93.78	-214.3	-101.5	237.6	236.3	1.30	182.933	
500.0	499.8	470.4	469.8	0.9	0.8	-95.17	-222.1	-103.3	247.5	245.8	1.65	150.234	
600.0	599.1	556.5	555.1	1.1	1.1	-97.49	-234.5	-105.8	263.3	261.2	2.05	128.456	
700.0	697.6	638.6	635.6	1.4	1.4	-100.34	-250.2	-108.3	285.4	282.9	2.51	113.660	
800.0	795.1	717.0	711.7	1.8	1.7	-103.19	-268.9	-111.5	314.6	311.6	3.04	103.522	
900.0	891.4	791.5	783.0	2.3	2.1	-105.79	-290.0	-115.1	351.1	347.4	3.64	96.557	
1,000.0	986.0	863.8	851.3	3.0	2.5	-108.10	-313.5	-119.1	394.6	390.3	4.31	91.643	
1,100.0	1,078.9	938.0	920.7	3.7	3.0	-110.21	-339.1	-123.5	443.4	438.4	5.05	87.759	
1,200.0	1,169.7	1,014.8	992.3	4.5	3.5	-112.22	-366.6	-128.3	496.7	490.8	5.88	84.519 SF	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (1st Occupation) - Shideler 30-3A - OH - FINAL												Offset Site Error:	0.0 ft
Survey Program: 172-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	-151.54	-211.6	-114.7	240.7				
100.0	100.0	101.0	101.0	0.1	0.2	-151.54	-211.4	-114.6	240.5	240.2	0.29	828.863	
200.0	200.0	200.9	200.9	0.3	0.3	-151.50	-210.9	-114.5	240.0	239.3	0.62	384.877	
222.1	222.1	222.1	222.1	0.3	0.3	-151.48	-210.8	-114.5	239.9	239.2	0.70	343.250 CC, ES	
300.0	300.0	294.0	294.0	0.5	0.5	-151.37	-211.4	-115.4	240.9	239.9	0.96	250.927	
400.0	400.0	383.0	382.8	0.7	0.6	-90.24	-214.8	-118.3	245.8	244.5	1.29	190.158	
500.0	499.8	469.1	468.6	0.9	0.8	-90.90	-221.4	-123.5	255.5	253.8	1.64	155.418	
600.0	599.1	557.0	555.5	1.1	1.1	-92.45	-231.9	-130.3	270.2	268.1	2.05	131.927	
700.0	697.6	649.4	646.6	1.4	1.4	-94.83	-245.7	-138.2	288.5	286.0	2.53	113.854	
800.0	795.1	742.0	737.6	1.8	1.7	-97.65	-260.4	-146.9	309.6	306.4	3.11	99.587	
900.0	891.4	833.7	827.5	2.3	2.0	-100.82	-275.9	-155.5	333.6	329.8	3.77	88.464	
1,000.0	986.0	928.9	920.9	3.0	2.4	-104.32	-292.2	-164.5	360.5	355.9	4.53	79.535	
1,100.0	1,078.9	1,021.0	1,011.3	3.7	2.7	-107.67	-307.3	-173.8	390.0	384.7	5.37	72.614	
1,200.0	1,169.7	1,108.5	1,097.2	4.5	3.0	-110.79	-321.8	-182.8	423.4	417.1	6.27	67.468	
1,300.0	1,258.2	1,194.3	1,181.2	5.4	3.4	-113.69	-336.3	-192.1	461.0	453.7	7.24	63.684 SF	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (1st Occupation) - Shideler 30-3B - OH - FINAL												Offset Site Error:	0.0 ft
Survey Program: 160-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	-152.36	-198.5	-104.0	224.1				
100.0	100.0	100.2	100.2	0.1	0.2	-152.35	-198.5	-104.0	224.0	223.7	0.29	780.608	
200.0	200.0	200.7	200.7	0.3	0.3	-152.33	-198.3	-103.9	223.9	223.3	0.62	359.622	
212.6	212.6	212.6	212.6	0.3	0.3	-152.33	-198.3	-104.0	223.9	223.2	0.67	336.431	CC, ES
300.0	300.0	294.0	294.0	0.5	0.5	-152.10	-198.7	-105.2	224.9	223.9	0.96	234.255	
400.0	400.0	386.0	385.8	0.7	0.6	-90.55	-201.0	-109.5	229.4	228.1	1.30	176.207	
500.0	499.8	478.0	477.3	0.9	0.9	-90.74	-206.5	-117.3	238.5	236.9	1.67	142.688	
600.0	599.1	559.1	557.5	1.1	1.1	-91.55	-214.7	-126.5	252.8	250.7	2.08	121.583	
700.0	697.6	647.4	644.0	1.4	1.4	-92.81	-226.3	-139.5	271.9	269.3	2.60	104.766	
800.0	795.1	732.3	726.4	1.8	1.8	-94.05	-239.2	-155.5	295.2	292.0	3.22	91.791	
900.0	891.4	813.8	804.4	2.3	2.3	-95.24	-254.0	-173.9	323.5	319.5	3.96	81.762	
1,000.0	986.0	892.3	878.1	3.0	2.8	-96.19	-270.5	-195.0	356.9	352.1	4.82	74.024	
1,100.0	1,078.9	971.1	950.7	3.7	3.4	-96.96	-289.3	-219.4	395.1	389.3	5.81	67.975	
1,200.0	1,169.7	1,053.5	1,025.7	4.5	4.0	-97.87	-310.4	-246.4	436.7	429.8	6.94	62.922	
1,300.0	1,258.2	1,138.9	1,102.8	5.4	4.7	-98.92	-332.8	-275.4	480.6	472.4	8.20	58.580	SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (1st Occupation) - Shideler 30-4A - OH - FINAL												Offset Site Error:	0.0 ft
Survey Program: 111-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	-155.82	-163.5	-73.4	179.3				
100.0	100.0	100.9	100.9	0.1	0.1	-155.88	-163.4	-73.2	179.0	178.8	0.28	645.640	
200.0	200.0	200.2	200.2	0.3	0.3	-155.94	-163.0	-72.8	178.6	177.9	0.62	287.140	
207.5	207.5	207.5	207.5	0.3	0.3	-155.92	-163.0	-72.8	178.6	177.9	0.65	275.643	CC, ES
300.0	300.0	295.9	295.9	0.5	0.5	-155.26	-162.9	-75.1	179.4	178.4	0.96	186.221	
400.0	400.0	389.7	389.4	0.7	0.7	-92.88	-164.2	-81.4	183.7	182.3	1.32	139.382	
500.0	499.8	478.0	477.2	0.9	0.9	-92.30	-167.9	-90.7	192.4	190.7	1.70	113.384	
600.0	599.1	573.1	571.0	1.1	1.2	-92.22	-173.9	-104.9	205.2	203.0	2.18	94.251	
700.0	697.6	666.7	662.6	1.4	1.5	-92.41	-180.5	-123.0	220.9	218.1	2.77	79.597	
800.0	795.1	754.0	747.1	1.8	1.9	-92.72	-187.6	-143.7	239.8	236.3	3.49	68.784	
900.0	891.4	846.0	834.8	2.3	2.5	-93.15	-196.8	-169.9	262.6	258.2	4.37	60.029	
1,000.0	986.0	932.0	915.3	3.0	3.1	-93.49	-206.7	-198.6	289.2	283.8	5.39	53.609	
1,100.0	1,078.9	1,022.9	999.2	3.7	3.7	-94.11	-218.1	-231.4	318.4	311.9	6.57	48.466	
1,200.0	1,169.7	1,115.0	1,083.8	4.5	4.4	-95.15	-230.3	-265.8	349.3	341.4	7.89	44.282	
1,300.0	1,258.2	1,208.4	1,169.2	5.4	5.1	-96.55	-242.7	-301.4	381.5	372.2	9.34	40.829	
1,400.0	1,344.7	1,299.4	1,252.4	6.3	5.8	-98.73	-254.9	-336.2	415.0	404.1	10.87	38.196	
1,500.0	1,431.1	1,392.1	1,337.1	7.3	6.5	-100.97	-267.4	-371.9	449.4	437.0	12.42	36.184	
1,600.0	1,517.4	1,486.7	1,423.5	8.2	7.2	-102.96	-280.1	-408.0	484.1	470.1	13.98	34.639	SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (1st Occupation) - Shideler 30-7A - OH - FINAL												Offset Site Error:	0.0 ft
Survey Program: 172-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	-154.88	-197.1	-92.4	217.6				
100.0	100.0	102.0	102.0	0.1	0.2	-154.90	-196.7	-92.1	217.2	216.9	0.29	742.031	
200.0	200.0	203.0	203.0	0.3	0.3	-154.94	-195.5	-91.4	215.9	215.2	0.63	343.136	
260.0	260.0	260.0	260.0	0.4	0.4	-155.02	-195.2	-91.0	215.4	214.5	0.83	258.673	CC, ES
300.0	300.0	297.1	297.1	0.5	0.5	-155.18	-195.7	-90.5	215.6	214.7	0.97	223.196	
400.0	400.0	386.9	386.8	0.7	0.6	-95.11	-199.8	-89.1	219.3	218.0	1.30	168.129	
500.0	499.8	478.0	477.4	0.9	0.8	-97.43	-208.4	-88.2	228.3	226.6	1.67	136.527	
600.0	599.1	569.0	567.5	1.1	1.1	-101.10	-221.1	-86.2	242.8	240.7	2.10	115.593	
700.0	697.6	648.4	645.5	1.4	1.4	-105.04	-235.9	-83.1	263.9	261.3	2.57	102.551	
800.0	795.1	727.4	722.1	1.8	1.7	-109.23	-254.2	-79.1	293.2	290.1	3.11	94.287	
900.0	891.4	801.4	793.2	2.3	2.1	-113.01	-274.7	-74.5	331.1	327.4	3.69	89.760	
1,000.0	986.0	871.0	859.1	3.0	2.5	-116.07	-296.5	-70.2	377.1	372.8	4.31	87.419	
1,100.0	1,078.9	938.0	921.7	3.7	2.9	-118.57	-319.8	-65.6	430.7	425.7	4.99	86.234	
1,200.0	1,169.7	992.7	972.2	4.5	3.3	-119.95	-340.5	-61.2	491.2	485.4	5.75	85.368	SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (1st Occupation) - Shideler 30-8B - OH - FINAL													Offset Site Error:	0.0 ft
Survey Program: 142-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	-155.90	-185.0	-82.8	202.7					
100.0	100.0	99.8	99.8	0.1	0.1	-155.97	-185.2	-82.6	202.7	202.5	0.28	715.041		
200.0	200.0	199.0	199.0	0.3	0.3	-156.21	-185.6	-81.8	202.9	202.2	0.62	327.103	ES	
300.0	300.0	294.0	293.9	0.5	0.5	-156.93	-188.1	-80.1	204.6	203.6	0.97	211.883		
400.0	400.0	386.0	385.7	0.7	0.7	-97.40	-194.1	-77.4	209.7	208.4	1.32	159.063		
500.0	499.8	475.5	474.6	0.9	0.9	-100.51	-204.3	-73.7	220.0	218.3	1.70	129.354		
600.0	599.1	563.8	561.6	1.1	1.2	-104.89	-218.2	-68.1	236.4	234.2	2.14	110.496		
700.0	697.6	646.8	642.5	1.4	1.5	-109.76	-234.9	-60.7	260.2	257.5	2.63	98.843		
800.0	795.1	724.7	717.5	1.8	1.9	-114.51	-253.8	-51.9	292.7	289.6	3.17	92.232		
900.0	891.4	796.5	785.7	2.3	2.3	-118.61	-274.1	-42.1	334.5	330.7	3.74	89.311		
1,000.0	986.0	862.9	847.8	3.0	2.7	-121.90	-295.1	-32.0	385.0	380.7	4.35	88.473	SF	
1,100.0	1,078.9	924.9	905.1	3.7	3.2	-124.51	-316.4	-21.1	443.3	438.3	5.01	88.490		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (1st Occupation) - Shideler Federal 19-13D - OH - FINAL													Offset Site Error:	0.0 ft
Survey Program: 111-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	-157.15	-150.8	-63.6	163.6					
100.0	100.0	100.0	100.0	0.1	0.1	-157.17	-150.8	-63.5	163.7	163.4	0.28	592.900		
151.6	151.6	151.6	151.6	0.2	0.2	-157.19	-150.9	-63.5	163.7	163.2	0.45	361.650		
200.0	200.0	199.7	199.7	0.3	0.3	-157.16	-150.9	-63.5	163.7	163.1	0.62	263.667 ES		
300.0	300.0	296.9	296.9	0.5	0.5	-156.38	-150.8	-65.9	164.6	163.6	0.97	170.571		
400.0	400.0	392.1	391.8	0.7	0.7	-93.50	-151.1	-73.0	168.1	166.7	1.33	126.136		
500.0	499.8	487.1	485.9	0.9	0.9	-91.55	-151.4	-85.9	174.7	173.0	1.77	98.466		
600.0	599.1	580.8	577.9	1.1	1.3	-89.91	-152.3	-103.5	184.6	182.3	2.31	79.789		
700.0	697.6	671.6	666.3	1.4	1.7	-89.06	-155.1	-124.1	198.3	195.3	2.95	67.169		
800.0	795.1	762.2	753.4	1.8	2.2	-88.81	-159.9	-148.5	215.9	212.1	3.73	57.934		
900.0	891.4	851.6	838.0	2.3	2.7	-88.76	-166.0	-176.8	237.1	232.4	4.65	50.949		
1,000.0	986.0	943.7	923.4	3.0	3.4	-88.69	-172.4	-210.6	260.9	255.1	5.77	45.200		
1,100.0	1,078.9	1,033.8	1,005.1	3.7	4.1	-88.53	-178.4	-248.2	286.8	279.8	7.05	40.666		
1,200.0	1,169.7	1,127.0	1,088.1	4.5	4.9	-88.64	-184.6	-290.0	314.2	305.7	8.50	36.979		
1,300.0	1,258.2	1,226.7	1,176.4	5.4	5.8	-89.35	-190.3	-335.8	341.4	331.3	10.15	33.640		
1,400.0	1,344.7	1,325.2	1,263.7	6.3	6.7	-90.96	-195.0	-381.2	368.1	356.2	11.89	30.965		
1,500.0	1,431.1	1,422.1	1,350.3	7.3	7.5	-92.82	-199.6	-424.6	394.5	380.9	13.63	28.955		
1,600.0	1,517.4	1,521.8	1,440.1	8.2	8.3	-94.72	-204.4	-467.7	420.8	405.4	15.37	27.369		
1,700.0	1,603.8	1,615.2	1,524.6	9.2	9.1	-96.43	-209.0	-507.1	447.1	430.1	17.06	26.205		
1,800.0	1,690.1	1,714.6	1,614.6	10.2	9.9	-98.02	-213.6	-549.2	473.6	454.8	18.81	25.173 SF		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (2nd Occupation) - Shideler 19-11D - OH - 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	82.65	1.5	11.3	11.4					
100.0	100.0	100.0	100.0	0.1	0.1	82.65	1.5	11.3	11.4	11.1	0.27	41.843		
200.0	200.0	200.0	200.0	0.3	0.3	82.65	1.5	11.3	11.4	10.8	0.62	18.336		
300.0	300.0	300.0	300.0	0.5	0.5	82.65	1.5	11.3	11.4	10.4	0.97	11.740 CC, ES		
400.0	400.0	400.0	400.0	0.7	0.7	147.69	1.5	11.3	12.6	11.3	1.32	9.556 SF		
500.0	499.8	500.3	500.3	0.9	0.8	151.81	3.7	9.8	16.9	15.2	1.68	10.070		
600.0	599.1	600.7	600.3	1.1	1.0	149.32	10.2	5.5	22.8	20.8	2.07	11.061		
700.0	697.6	701.0	699.8	1.4	1.3	144.50	21.2	-1.7	30.7	28.1	2.54	12.062		
800.0	795.1	801.3	798.3	1.8	1.6	139.38	36.5	-11.8	40.6	37.4	3.17	12.817		
900.0	891.4	901.2	895.5	2.3	2.1	134.77	56.0	-24.7	52.7	48.8	3.96	13.300		
1,000.0	986.0	1,000.0	991.1	3.0	2.5	133.49	76.8	-38.4	68.1	63.3	4.82	14.119		
1,100.0	1,078.9	1,098.1	1,086.0	3.7	2.9	135.04	97.4	-52.0	87.0	81.4	5.67	15.362		
1,200.0	1,169.7	1,195.3	1,180.1	4.5	3.4	137.75	117.9	-65.5	109.8	103.3	6.47	16.969		
1,300.0	1,258.2	1,291.3	1,273.0	5.4	3.8	140.75	138.1	-78.8	136.7	129.5	7.23	18.913		
1,400.0	1,344.7	1,386.3	1,364.9	6.3	4.2	143.80	158.0	-92.0	167.1	159.2	7.93	21.082		
1,500.0	1,431.1	1,481.1	1,456.6	7.3	4.7	146.11	178.0	-105.1	198.1	189.5	8.63	22.967		
1,600.0	1,517.4	1,575.9	1,548.4	8.2	5.1	147.80	197.9	-118.3	229.3	220.0	9.33	24.576		
1,700.0	1,603.8	1,670.7	1,640.2	9.2	5.6	149.08	217.8	-131.4	260.7	250.6	10.04	25.960		
1,800.0	1,690.1	1,765.5	1,731.9	10.2	6.0	150.08	237.8	-144.6	292.1	281.4	10.76	27.161		
1,900.0	1,776.5	1,860.3	1,823.7	11.1	6.5	150.89	257.7	-157.8	323.6	312.2	11.47	28.211		
2,000.0	1,862.8	1,955.2	1,915.4	12.1	6.9	151.56	277.7	-170.9	355.2	343.0	12.19	29.136		
2,100.0	1,949.2	2,050.0	2,007.2	13.1	7.4	152.12	297.6	-184.1	386.8	373.9	12.91	29.956		
2,200.0	2,035.5	2,144.8	2,098.9	14.0	7.8	152.59	317.6	-197.2	418.4	404.8	13.63	30.689		
2,300.0	2,121.9	2,239.6	2,190.7	15.0	8.3	153.00	337.5	-210.4	450.0	435.7	14.36	31.347		
2,400.0	2,208.2	2,334.4	2,282.5	16.0	8.7	153.36	357.5	-223.5	481.7	466.6	15.08	31.940		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (2nd Occupation) - Shideler 19-11DD - OH - 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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Total Uncertainty Axis	Separation Factor	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)			
0.0	0.0	0.0	0.0	0.0	0.0	-35.84	21.1	-15.3	26.1				
100.0	100.0	100.0	100.0	0.1	0.1	-35.84	21.1	-15.3	26.1	25.8	0.27	95.689	
200.0	200.0	200.0	200.0	0.3	0.3	-35.84	21.1	-15.3	26.1	25.4	0.62	41.931	CC, ES
300.0	300.0	299.0	299.0	0.5	0.5	-36.56	22.0	-16.3	27.5	26.5	0.97	28.282	
400.0	400.0	397.4	397.1	0.7	0.7	22.96	26.1	-21.2	32.4	31.1	1.32	24.621	
500.0	499.8	495.5	494.5	0.9	0.9	23.18	33.4	-29.9	37.7	36.1	1.67	22.613	
600.0	599.1	594.1	591.8	1.1	1.2	24.74	43.8	-42.2	42.9	40.9	2.04	21.079	
700.0	697.6	694.0	690.3	1.4	1.6	28.63	54.9	-55.4	44.5	42.0	2.45	18.144	
800.0	795.1	793.8	788.5	1.8	1.9	36.11	66.1	-68.6	41.9	38.9	3.00	13.980	
900.0	891.4	893.2	886.4	2.3	2.3	50.14	77.1	-81.8	36.6	32.7	3.89	9.391	
1,000.0	986.0	991.9	983.7	3.0	2.6	75.79	88.1	-94.8	32.3	27.0	5.35	6.046	
1,012.4	997.7	1,004.1	995.7	3.0	2.6	79.86	89.5	-96.5	32.2	26.7	5.54	5.820	
1,100.0	1,078.9	1,089.6	1,079.9	3.7	2.9	109.47	99.0	-107.8	37.0	30.6	6.40	5.777	SF
1,200.0	1,169.7	1,186.2	1,175.0	4.5	3.3	134.14	109.8	-120.6	54.2	47.8	6.39	8.475	
1,300.0	1,258.2	1,281.2	1,268.6	5.4	3.6	147.76	120.4	-133.1	80.8	74.5	6.24	12.949	
1,400.0	1,344.7	1,375.0	1,361.0	6.3	3.9	155.53	130.9	-145.5	113.3	107.1	6.23	18.195	
1,500.0	1,431.1	1,468.6	1,453.1	7.3	4.2	159.97	141.3	-157.9	147.2	140.8	6.38	23.082	
1,600.0	1,517.4	1,562.2	1,545.3	8.2	4.6	162.76	151.7	-170.3	181.5	174.9	6.61	27.458	
1,700.0	1,603.8	1,655.8	1,637.5	9.2	4.9	164.65	162.2	-182.7	216.2	209.3	6.89	31.359	
1,800.0	1,690.1	1,749.4	1,729.7	10.2	5.2	166.03	172.6	-195.1	250.9	243.7	7.20	34.841	
1,900.0	1,776.5	1,843.0	1,821.9	11.1	5.6	167.07	183.0	-207.5	285.8	278.3	7.53	37.963	
2,000.0	1,862.8	1,936.6	1,914.1	12.1	5.9	167.88	193.5	-219.9	320.8	312.9	7.87	40.775	
2,100.0	1,949.2	2,030.2	2,006.3	13.1	6.2	168.53	203.9	-232.3	355.8	347.5	8.21	43.318	
2,200.0	2,035.5	2,123.8	2,098.5	14.0	6.5	169.07	214.3	-244.7	390.8	382.2	8.56	45.630	
2,300.0	2,121.9	2,217.4	2,190.7	15.0	6.9	169.52	224.8	-257.1	425.8	416.9	8.92	47.739	
2,400.0	2,208.2	2,311.1	2,282.9	16.0	7.2	169.90	235.2	-269.4	460.9	451.6	9.28	49.670	
2,500.0	2,294.6	2,404.7	2,375.1	17.0	7.5	170.23	245.6	-281.8	496.0	486.3	9.64	51.446	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (2nd Occupation) - Shideler 19-16B - OH - 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	115.24	-17.8	37.9	41.8				
100.0	100.0	100.0	100.0	0.1	0.1	115.24	-17.8	37.9	41.8	41.6	0.27	153.702	
200.0	200.0	200.0	200.0	0.3	0.3	115.24	-17.8	37.9	41.8	41.2	0.62	67.353	
300.0	300.0	300.0	300.0	0.5	0.5	115.24	-17.8	37.9	41.8	40.9	0.97	43.125 CC, ES	
400.0	400.0	398.5	398.4	0.7	0.7	173.93	-16.7	40.1	45.0	43.7	1.32	34.085	
500.0	499.8	495.9	495.5	0.9	0.9	168.82	-13.5	46.9	56.8	55.1	1.68	33.839 SF	
600.0	599.1	591.0	589.9	1.1	1.1	163.99	-8.2	57.8	77.7	75.7	2.05	37.909	
700.0	697.6	682.7	680.2	1.4	1.4	160.43	-1.2	72.3	107.5	105.1	2.44	44.115	
800.0	795.1	775.1	770.6	1.8	1.8	158.24	7.0	89.3	144.4	141.6	2.84	50.786	
900.0	891.4	866.1	859.6	2.3	2.1	157.34	15.1	106.0	185.9	182.6	3.27	56.899	
1,000.0	986.0	954.9	946.6	3.0	2.5	157.05	23.0	122.4	231.7	228.0	3.70	62.548	
1,100.0	1,078.9	1,041.5	1,031.3	3.7	2.8	157.05	30.7	138.4	281.7	277.6	4.15	67.829	
1,200.0	1,169.7	1,125.4	1,113.5	4.5	3.1	157.18	38.1	153.8	336.0	331.3	4.61	72.812	
1,300.0	1,258.2	1,206.5	1,192.8	5.4	3.4	157.33	45.4	168.8	394.2	389.1	5.08	77.534	
1,400.0	1,344.7	1,285.2	1,269.9	6.3	3.8	157.99	52.4	183.3	455.6	450.0	5.58	81.641	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (2nd Occupation) - Shideler 19-16BB - OH - 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	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	118.43	-27.7	51.1	58.1					
100.0	100.0	100.0	100.0	0.1	0.1	118.43	-27.7	51.1	58.1	57.9	0.27	213.542		
200.0	200.0	200.0	200.0	0.3	0.3	118.43	-27.7	51.1	58.1	57.5	0.62	93.575		
300.0	300.0	300.0	300.0	0.5	0.5	118.43	-27.7	51.1	58.1	57.2	0.97	59.915 CC, ES		
400.0	400.0	400.0	400.0	0.7	0.7	179.54	-27.7	51.1	59.6	58.3	1.32	45.203		
500.0	499.8	496.8	496.7	0.9	0.8	178.55	-27.6	53.6	68.4	66.7	1.66	41.179 SF		
600.0	599.1	591.6	591.3	1.1	1.0	176.37	-27.4	60.7	86.7	84.7	2.00	43.390		
700.0	697.6	683.2	682.2	1.4	1.3	174.13	-27.1	72.1	114.5	112.2	2.33	49.084		
800.0	795.1	771.0	768.7	1.8	1.5	172.24	-26.7	87.0	151.4	148.7	2.66	56.887		
900.0	891.4	861.1	857.1	2.3	1.8	170.94	-26.3	104.1	194.7	191.7	2.99	65.045		
1,000.0	986.0	948.8	943.2	3.0	2.1	170.21	-25.9	120.7	242.7	239.4	3.32	73.077		
1,100.0	1,078.9	1,033.9	1,026.8	3.7	2.4	169.78	-25.5	136.8	295.1	291.5	3.64	81.004		
1,200.0	1,169.7	1,116.2	1,107.7	4.5	2.7	169.52	-25.0	152.4	351.9	347.9	3.96	88.848		
1,300.0	1,258.2	1,195.5	1,185.5	5.4	3.0	169.34	-24.7	167.4	412.8	408.5	4.27	96.609		
1,400.0	1,344.7	1,272.3	1,260.8	6.3	3.3	169.48	-24.3	182.0	476.9	472.3	4.62	103.301		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (2nd Occupation) - Shideler 19-6C - OH - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total	Separation	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)	Uncertainty Axis	Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-9.93	11.3	-2.0	11.5					
100.0	100.0	100.0	100.0	0.1	0.1	-9.93	11.3	-2.0	11.5	11.2	0.27	42.102		
200.0	200.0	200.0	200.0	0.3	0.3	-9.93	11.3	-2.0	11.5	10.8	0.62	18.449		
300.0	300.0	300.0	300.0	0.5	0.5	-9.93	11.3	-2.0	11.5	10.5	0.97	11.813		
400.0	400.0	399.7	399.7	0.7	0.7	55.50	11.8	-2.4	11.1	9.8	1.32	8.444		
400.8	400.8	400.6	400.6	0.7	0.7	55.58	11.8	-2.4	11.1	9.8	1.32	8.424 CC, ES		
500.0	499.8	499.2	499.1	0.9	0.8	67.94	15.9	-5.5	12.1	10.5	1.70	7.159 SF		
600.0	599.1	598.7	598.0	1.1	1.1	81.22	24.1	-11.8	15.6	13.4	2.17	7.195		
700.0	697.6	698.0	696.1	1.4	1.4	90.57	36.4	-21.3	21.6	18.8	2.78	7.778		
800.0	795.1	797.2	793.1	1.8	1.7	96.11	52.6	-33.8	30.0	26.5	3.55	8.453		
900.0	891.4	896.1	888.7	2.3	2.2	99.24	72.8	-49.3	40.7	36.2	4.50	9.037		
1,000.0	986.0	994.8	982.6	3.0	2.8	100.98	96.8	-67.7	53.5	47.8	5.63	9.493		
1,100.0	1,078.9	1,093.1	1,074.5	3.7	3.4	101.91	124.4	-89.0	68.2	61.3	6.94	9.833		
1,200.0	1,169.7	1,191.1	1,164.1	4.5	4.1	102.36	155.7	-113.1	85.0	76.5	8.43	10.082		
1,300.0	1,258.2	1,288.6	1,251.3	5.4	5.0	102.51	190.5	-139.8	103.6	93.5	10.09	10.263		
1,400.0	1,344.7	1,385.7	1,335.7	6.3	5.9	102.35	228.5	-169.0	123.8	111.9	11.89	10.414		
1,500.0	1,431.1	1,482.5	1,417.3	7.3	6.8	100.54	269.7	-200.7	144.9	131.1	13.77	10.523		
1,600.0	1,517.4	1,580.0	1,498.4	8.2	7.8	98.49	312.6	-233.7	166.4	150.7	15.66	10.626		
1,700.0	1,603.8	1,677.5	1,579.5	9.2	8.8	96.91	355.4	-266.7	188.1	170.6	17.55	10.720		
1,800.0	1,690.1	1,775.0	1,660.6	10.2	9.8	95.65	398.3	-299.7	209.9	190.5	19.43	10.804		
1,900.0	1,776.5	1,872.5	1,741.8	11.1	10.8	94.63	441.2	-332.6	231.8	210.5	21.31	10.878		
2,000.0	1,862.8	1,970.0	1,822.9	12.1	11.8	93.79	484.0	-365.6	253.8	230.6	23.19	10.943		
2,100.0	1,949.2	2,067.4	1,904.0	13.1	12.8	93.08	526.9	-398.6	275.8	250.7	25.07	11.001		
2,200.0	2,035.5	2,164.9	1,985.1	14.0	13.8	92.48	569.8	-431.6	297.8	270.9	26.95	11.053		
2,300.0	2,121.9	2,262.4	2,066.2	15.0	14.8	91.96	612.7	-464.5	319.9	291.1	28.82	11.100		
2,400.0	2,208.2	2,359.9	2,147.4	16.0	15.8	91.50	655.5	-497.5	342.0	311.3	30.70	11.141		
2,500.0	2,294.6	2,457.4	2,228.5	17.0	16.8	91.11	698.4	-530.5	364.1	331.5	32.57	11.179		
2,600.0	2,380.9	2,554.9	2,309.6	17.9	17.8	90.75	741.3	-563.5	386.2	351.8	34.44	11.213		
2,700.0	2,467.3	2,652.4	2,390.7	18.9	18.8	90.44	784.1	-596.4	408.3	372.0	36.32	11.244		
2,800.0	2,553.6	2,749.9	2,471.9	19.9	19.8	90.16	827.0	-629.4	430.5	392.3	38.19	11.273		
2,900.0	2,640.0	2,847.4	2,553.0	20.9	20.9	89.90	869.9	-662.4	452.6	412.6	40.06	11.299		
3,000.0	2,726.3	2,944.9	2,634.1	21.8	21.9	89.67	912.7	-695.3	474.8	432.9	41.93	11.323		
3,100.0	2,812.7	3,042.4	2,715.2	22.8	22.9	89.46	955.6	-728.3	497.0	453.2	43.81	11.345		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (2nd Occupation) - Shideler 19-9B - OH - 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	126.53	-9.8	13.3	16.5				
100.0	100.0	100.0	100.0	0.1	0.1	126.53	-9.8	13.3	16.5	16.2	0.27	60.682	
200.0	200.0	200.0	200.0	0.3	0.3	126.53	-9.8	13.3	16.5	15.9	0.62	26.591	
300.0	300.0	300.0	300.0	0.5	0.5	126.53	-9.8	13.3	16.5	15.6	0.97	17.026	CC, ES
400.0	400.0	399.9	399.8	0.7	0.7	178.74	-7.7	14.8	18.2	16.8	1.32	13.714	SF
500.0	499.8	499.0	498.6	0.9	0.9	162.36	-1.4	19.3	26.9	25.2	1.70	15.818	
600.0	599.1	596.3	595.1	1.1	1.1	151.53	8.8	26.7	44.2	42.1	2.12	20.888	
700.0	697.6	691.2	688.4	1.4	1.5	145.76	22.5	36.6	69.5	67.0	2.59	26.882	
800.0	795.1	782.8	777.7	1.8	1.9	142.49	39.4	48.8	102.4	99.2	3.13	32.729	
900.0	891.4	870.6	862.2	2.3	2.3	140.37	58.8	62.8	142.1	138.4	3.74	37.996	
1,000.0	986.0	954.2	941.5	3.0	2.8	138.79	80.1	78.2	188.4	184.0	4.42	42.659	
1,100.0	1,078.9	1,039.1	1,021.2	3.7	3.3	137.71	103.6	95.2	239.8	234.6	5.17	46.419	
1,200.0	1,169.7	1,122.7	1,099.8	4.5	3.8	137.26	126.8	111.9	294.5	288.6	5.96	49.391	
1,300.0	1,258.2	1,203.9	1,176.1	5.4	4.3	137.10	149.3	128.2	352.5	345.7	6.80	51.826	
1,400.0	1,344.7	1,283.1	1,250.6	6.3	4.8	137.97	171.3	144.1	413.1	405.4	7.67	53.825	
1,500.0	1,431.1	1,362.2	1,324.9	7.3	5.3	139.04	193.2	159.9	474.0	465.4	8.56	55.355	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (2nd Occupation) - Shideler 19-9C - OH - 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	108.07	-8.0	24.6	25.9				
100.0	100.0	100.0	100.0	0.1	0.1	108.07	-8.0	24.6	25.9	25.6	0.27	94.943	
200.0	200.0	200.0	200.0	0.3	0.3	108.07	-8.0	24.6	25.9	25.2	0.62	41.604 CC, ES	
300.0	300.0	299.2	299.2	0.5	0.5	103.35	-6.3	26.5	27.2	26.3	0.98	27.906	
400.0	400.0	397.9	397.5	0.7	0.7	154.17	-1.1	32.2	33.6	32.2	1.34	25.008 SF	
500.0	499.8	495.0	493.8	0.9	1.0	146.63	7.3	41.4	48.9	47.2	1.73	28.329	
600.0	599.1	589.6	586.9	1.1	1.3	142.73	18.6	53.9	72.8	70.7	2.14	34.023	
700.0	697.6	680.8	675.8	1.4	1.7	140.77	32.4	69.2	104.6	102.1	2.59	40.357	
800.0	795.1	773.4	765.4	1.8	2.1	140.16	48.0	86.3	142.3	139.2	3.10	45.914	
900.0	891.4	864.3	853.4	2.3	2.6	140.53	63.3	103.2	183.6	180.0	3.65	50.339	
1,000.0	986.0	953.4	939.7	3.0	3.0	141.26	78.3	119.7	228.8	224.5	4.24	54.009	
1,100.0	1,078.9	1,040.3	1,023.8	3.7	3.4	142.09	92.9	135.8	277.6	272.8	4.85	57.193	
1,200.0	1,169.7	1,124.9	1,105.7	4.5	3.8	142.90	107.1	151.4	330.3	324.8	5.50	60.059	
1,300.0	1,258.2	1,206.8	1,185.0	5.4	4.2	143.62	120.9	166.6	386.8	380.6	6.17	62.701	
1,400.0	1,344.7	1,286.5	1,262.1	6.3	4.5	144.99	134.3	181.4	446.2	439.4	6.86	65.040	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (2nd Occupation) - Shideler Federal 19-12A - OH - Plan #1													Offset Site Error: 0.0 ft			
Survey Program: O-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	-53.47	9.8	-13.3	16.5							
100.0	100.0	100.0	100.0	0.1	0.1	-53.47	9.8	-13.3	16.5	16.2	0.27	60.682				
200.0	200.0	200.0	200.0	0.3	0.3	-53.47	9.8	-13.3	16.5	15.9	0.62	26.591	CC, ES			
300.0	300.0	299.1	299.0	0.5	0.5	-53.33	11.4	-15.3	19.1	18.1	0.98	19.603				
400.0	400.0	397.7	397.4	0.7	0.7	8.48	16.1	-21.4	25.4	24.1	1.32	19.327				
500.0	499.8	496.0	494.8	0.9	1.0	10.24	23.8	-31.4	31.9	30.2	1.66	19.198				
600.0	599.1	594.0	591.2	1.1	1.3	12.55	34.5	-45.4	38.4	36.4	2.01	19.100				
700.0	697.6	691.6	686.2	1.4	1.8	15.15	48.2	-63.1	45.0	42.6	2.37	18.952				
800.0	795.1	789.0	779.7	1.8	2.3	17.89	64.8	-84.6	51.6	48.9	2.77	18.647				
900.0	891.4	885.9	871.3	2.3	2.9	20.71	84.2	-109.8	58.5	55.3	3.23	18.084				
1,000.0	986.0	982.6	960.9	3.0	3.6	23.55	106.3	-138.5	65.6	61.8	3.81	17.213				
1,100.0	1,078.9	1,078.9	1,048.2	3.7	4.4	26.36	131.1	-170.7	72.9	68.3	4.54	16.067				
1,200.0	1,169.7	1,174.9	1,133.1	4.5	5.3	29.13	158.4	-206.2	80.5	75.0	5.45	14.756				
1,300.0	1,258.2	1,270.6	1,215.4	5.4	6.2	31.83	188.2	-244.8	88.3	81.8	6.58	13.417				
1,400.0	1,344.7	1,369.7	1,299.1	6.3	7.2	34.78	220.7	-287.0	95.8	87.8	7.97	12.018				
1,500.0	1,431.1	1,469.3	1,383.1	7.3	8.2	37.44	253.3	-329.4	103.3	93.8	9.48	10.887				
1,600.0	1,517.4	1,569.0	1,467.1	8.2	9.2	39.74	286.0	-371.7	110.9	99.8	11.07	10.016				
1,700.0	1,603.8	1,668.6	1,551.2	9.2	10.3	41.74	318.6	-414.1	118.7	106.0	12.71	9.337				
1,800.0	1,690.1	1,768.2	1,635.2	10.2	11.3	43.50	351.3	-456.5	126.6	112.2	14.39	8.798				
1,900.0	1,776.5	1,867.8	1,719.2	11.1	12.3	45.04	383.9	-498.9	134.7	118.6	16.10	8.363				
2,000.0	1,862.8	1,967.4	1,803.3	12.1	13.3	46.41	416.5	-541.2	142.8	125.0	17.83	8.007				
2,100.0	1,949.2	2,067.0	1,887.3	13.1	14.3	47.63	449.2	-583.6	151.0	131.4	19.58	7.711				
2,200.0	2,035.5	2,166.6	1,971.3	14.0	15.4	48.73	481.8	-626.0	159.2	137.9	21.34	7.462				
2,300.0	2,121.9	2,266.3	2,055.4	15.0	16.4	49.72	514.5	-668.4	167.5	144.4	23.11	7.250				
2,400.0	2,208.2	2,365.9	2,139.4	16.0	17.4	50.61	547.1	-710.7	175.9	151.0	24.88	7.068				
2,500.0	2,294.6	2,465.5	2,223.4	17.0	18.4	51.43	579.8	-753.1	184.3	157.6	26.67	6.911				
2,600.0	2,380.9	2,565.1	2,307.5	17.9	19.5	52.17	612.4	-795.5	192.7	164.3	28.45	6.773				
2,700.0	2,467.3	2,664.7	2,391.5	18.9	20.5	52.85	645.1	-837.9	201.2	170.9	30.25	6.651				
2,800.0	2,553.6	2,764.3	2,475.5	19.9	21.5	53.48	677.7	-880.2	209.6	177.6	32.04	6.543				
2,900.0	2,640.0	2,864.0	2,559.6	20.9	22.6	54.05	710.3	-922.6	218.1	184.3	33.84	6.447				
3,000.0	2,726.3	2,963.6	2,643.6	21.8	23.6	54.59	743.0	-965.0	226.7	191.0	35.64	6.361				
3,100.0	2,812.7	3,063.2	2,727.6	22.8	24.6	55.08	775.6	-1,007.4	235.2	197.8	37.44	6.283				
3,200.0	2,899.0	3,162.8	2,811.7	23.8	25.6	55.54	808.3	-1,049.7	243.8	204.5	39.24	6.212				
3,300.0	2,985.4	3,262.4	2,895.7	24.8	26.7	55.97	840.9	-1,092.1	252.3	211.3	41.04	6.148				
3,400.0	3,071.7	3,362.0	2,979.7	25.7	27.7	56.37	873.6	-1,134.5	260.9	218.1	42.85	6.090				
3,500.0	3,158.0	3,461.6	3,063.8	26.7	28.7	56.74	906.2	-1,176.9	269.5	224.9	44.65	6.036				
3,600.0	3,244.4	3,561.3	3,147.8	27.7	29.8	57.10	938.9	-1,219.2	278.1	231.7	46.46	5.987				
3,700.0	3,330.7	3,660.9	3,231.8	28.7	30.8	57.43	971.5	-1,261.6	286.7	238.5	48.26	5.941				
3,800.0	3,417.1	3,760.5	3,315.9	29.6	31.8	57.74	1,004.1	-1,304.0	295.4	245.3	50.07	5.899				
3,900.0	3,503.4	3,860.1	3,399.9	30.6	32.8	58.03	1,036.8	-1,346.4	304.0	252.1	51.87	5.860				
4,000.0	3,589.8	3,959.7	3,483.9	31.6	33.9	58.31	1,069.4	-1,388.8	312.6	259.0	53.68	5.824				
4,100.0	3,676.1	4,059.3	3,568.0	32.6	34.9	58.57	1,102.1	-1,431.1	321.3	265.8	55.49	5.790				
4,200.0	3,762.5	4,158.9	3,652.0	33.6	35.9	58.82	1,134.7	-1,473.5	329.9	272.6	57.30	5.759				
4,300.0	3,848.8	4,258.6	3,736.0	34.5	37.0	59.06	1,167.4	-1,515.9	338.6	279.5	59.10	5.729				
4,400.0	3,935.2	4,358.2	3,820.1	35.5	38.0	59.28	1,200.0	-1,558.3	347.3	286.4	60.91	5.701				
4,500.0	4,021.5	4,457.8	3,904.1	36.5	39.0	59.50	1,232.7	-1,600.6	355.9	293.2	62.72	5.675				
4,600.0	4,108.1	4,563.2	3,993.6	37.4	40.1	59.84	1,266.7	-1,644.8	364.3	299.7	64.60	5.639				
4,700.0	4,196.2	4,671.4	4,087.3	38.3	41.0	60.27	1,299.6	-1,687.5	372.0	305.6	66.42	5.600				
4,800.0	4,285.8	4,779.7	4,183.2	39.1	42.0	60.67	1,330.4	-1,727.5	379.1	311.0	68.13	5.565				
4,900.0	4,377.0	4,888.2	4,281.1	39.9	42.8	61.05	1,358.9	-1,764.5	385.7	316.0	69.71	5.533				
5,000.0	4,469.5	4,996.8	4,380.8	40.6	43.6	61.41	1,385.2	-1,798.7	391.7	320.5	71.17	5.504				
5,100.0	4,563.3	5,105.6	4,482.2	41.2	44.3	61.74	1,409.2	-1,829.9	397.1	324.6	72.50	5.478				

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (2nd Occupation) - Shideler Federal 19-12A - OH - Plan #1													Offset Site Error:	0.0 ft
Survey Program: O-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total		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)	Uncertainty Axis	Separation Factor		
5,200.0	4,658.3	5,214.5	4,585.1	41.7	44.9	62.05	1,430.9	-1,858.0	401.9	328.2	73.71	5.453		
5,300.0	4,754.3	5,323.4	4,689.3	42.2	45.5	62.35	1,450.2	-1,883.0	406.1	331.3	74.80	5.430		
5,400.0	4,851.2	5,432.5	4,794.8	42.7	45.9	62.63	1,467.1	-1,904.9	409.7	334.0	75.77	5.408		
5,500.0	4,948.9	5,541.6	4,901.3	43.0	46.4	62.89	1,481.5	-1,923.6	412.7	336.1	76.61	5.387		
5,600.0	5,047.3	5,650.7	5,008.7	43.3	46.7	63.13	1,493.4	-1,939.1	415.1	337.7	77.34	5.367		
5,700.0	5,146.2	5,759.8	5,116.7	43.6	47.0	63.36	1,502.8	-1,951.4	416.8	338.9	77.96	5.347		
5,800.0	5,245.6	5,869.0	5,225.3	43.8	47.2	63.58	1,509.7	-1,960.3	417.9	339.5	78.45	5.327		
5,900.0	5,345.3	5,978.1	5,334.2	43.9	47.3	63.78	1,514.1	-1,966.0	418.4	339.5	78.84	5.307		
6,000.0	5,445.3	6,087.2	5,443.2	44.0	47.3	63.97	1,516.0	-1,968.4	418.2	339.1	79.11	5.286		
6,100.0	5,545.3	6,189.3	5,545.3	44.0	47.4	2.95	1,516.0	-1,968.5	418.0	338.7	79.26	5.273		
6,200.0	5,645.3	6,289.3	5,645.3	44.1	47.4	2.95	1,516.0	-1,968.5	418.0	338.6	79.35	5.267		
6,300.0	5,745.3	6,389.3	5,745.3	44.1	47.5	2.95	1,516.0	-1,968.5	418.0	338.5	79.45	5.261		
6,400.0	5,845.3	6,489.3	5,845.3	44.2	47.5	2.95	1,516.0	-1,968.5	418.0	338.4	79.55	5.254		
6,500.0	5,945.3	6,589.3	5,945.3	44.2	47.5	2.95	1,516.0	-1,968.5	418.0	338.3	79.65	5.248		
6,600.0	6,045.3	6,689.3	6,045.3	44.3	47.6	2.95	1,516.0	-1,968.5	418.0	338.2	79.75	5.241		
6,700.0	6,145.3	6,789.3	6,145.3	44.3	47.6	2.95	1,516.0	-1,968.5	418.0	338.1	79.85	5.234		
6,800.0	6,245.3	6,889.3	6,245.3	44.3	47.7	2.95	1,516.0	-1,968.5	418.0	338.0	79.95	5.228		
6,900.0	6,345.3	6,989.3	6,345.3	44.4	47.7	2.95	1,516.0	-1,968.5	418.0	337.9	80.06	5.221		
7,000.0	6,445.3	7,089.3	6,445.3	44.4	47.8	2.95	1,516.0	-1,968.5	418.0	337.8	80.16	5.214		
7,100.0	6,545.3	7,189.3	6,545.3	44.5	47.8	2.95	1,516.0	-1,968.5	418.0	337.7	80.27	5.207		
7,200.0	6,645.3	7,289.3	6,645.3	44.5	47.9	2.95	1,516.0	-1,968.5	418.0	337.6	80.38	5.200		
7,300.0	6,745.3	7,389.3	6,745.3	44.6	47.9	2.95	1,516.0	-1,968.5	418.0	337.5	80.49	5.193		
7,400.0	6,845.3	7,489.3	6,845.3	44.6	47.9	2.95	1,516.0	-1,968.5	418.0	337.4	80.60	5.186		
7,500.0	6,945.3	7,589.3	6,945.3	44.7	48.0	2.95	1,516.0	-1,968.5	418.0	337.2	80.71	5.178		
7,600.0	7,045.3	7,689.3	7,045.3	44.7	48.0	2.95	1,516.0	-1,968.5	418.0	337.1	80.83	5.171		
7,700.0	7,145.3	7,789.3	7,145.3	44.8	48.1	2.95	1,516.0	-1,968.5	418.0	337.0	80.94	5.164		
7,800.0	7,245.3	7,889.3	7,245.3	44.8	48.1	2.95	1,516.0	-1,968.5	418.0	336.9	81.06	5.156		
7,900.0	7,345.3	7,989.3	7,345.3	44.9	48.2	2.95	1,516.0	-1,968.5	418.0	336.8	81.18	5.149		
8,000.0	7,445.3	8,089.3	7,445.3	44.9	48.2	2.95	1,516.0	-1,968.5	418.0	336.7	81.30	5.141		
8,100.0	7,545.3	8,189.3	7,545.3	45.0	48.3	2.95	1,516.0	-1,968.5	418.0	336.5	81.42	5.133		
8,200.0	7,645.3	8,289.3	7,645.3	45.1	48.3	2.95	1,516.0	-1,968.5	418.0	336.4	81.54	5.126		
8,300.0	7,745.3	8,389.3	7,745.3	45.1	48.4	2.95	1,516.0	-1,968.5	418.0	336.3	81.66	5.118		
8,358.2	7,803.5	8,447.5	7,803.5	45.1	48.4	2.95	1,516.0	-1,968.5	418.0	336.2	81.74	5.113 SF		
8,400.0	7,845.3	8,469.0	7,825.0	45.2	48.4	2.95	1,516.0	-1,968.5	418.5	336.7	81.78	5.117		
8,500.0	7,945.3	8,469.0	7,825.0	45.2	48.4	2.95	1,516.0	-1,968.5	434.9	353.1	81.84	5.314		
8,600.0	8,045.3	8,469.0	7,825.0	45.3	48.4	2.95	1,516.0	-1,968.5	472.4	390.5	81.90	5.768		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (2nd Occupation) - Shideler Federal 19-12C - OH - Plan #1													Offset Site Error:	0.0 ft
Survey Program: O-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance		Total		Separation		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)	Uncertainty Axis	Factor		
0.0	0.0	0.0	0.0	0.0	0.0	126.53	-19.7	26.6	33.0					
100.0	100.0	100.0	100.0	0.1	0.1	126.53	-19.7	26.6	33.0	32.8	0.27	121.374		
200.0	200.0	200.0	200.0	0.3	0.3	126.53	-19.7	26.6	33.0	32.4	0.62	53.187		
300.0	300.0	300.0	300.0	0.5	0.5	126.53	-19.7	26.6	33.0	32.1	0.97	34.055 CC, ES		
400.0	400.0	400.8	400.8	0.7	0.7	-172.35	-19.5	25.9	33.9	32.6	1.32	25.653		
500.0	499.8	502.6	502.4	0.9	0.9	-171.06	-17.7	20.8	35.3	33.6	1.67	21.112		
600.0	599.1	604.4	603.6	1.1	1.1	-168.39	-14.3	10.5	36.9	34.9	2.03	18.168		
700.0	697.6	706.1	704.1	1.4	1.4	-164.56	-9.1	-4.8	38.8	36.4	2.42	16.029		
800.0	795.1	808.0	803.6	1.8	1.8	-159.83	-2.3	-25.3	41.2	38.3	2.89	14.247		
900.0	891.4	909.7	901.8	2.3	2.3	-154.51	6.2	-50.7	44.2	40.7	3.52	12.572		
1,000.0	986.0	1,011.5	998.4	3.0	2.9	-148.90	16.4	-81.0	48.0	43.6	4.38	10.964		
1,100.0	1,078.9	1,113.2	1,093.1	3.7	3.6	-143.30	28.2	-116.1	52.7	47.1	5.53	9.523		
1,200.0	1,169.7	1,214.9	1,185.6	4.5	4.4	-137.95	41.6	-155.9	58.3	51.3	7.00	8.335		
1,300.0	1,258.2	1,316.4	1,275.7	5.4	5.3	-132.98	56.5	-200.4	65.0	56.2	8.76	7.417		
1,400.0	1,344.7	1,417.1	1,362.7	6.3	6.3	-128.27	72.6	-248.4	72.2	61.4	10.76	6.710		
1,500.0	1,431.1	1,516.7	1,448.3	7.3	7.3	-124.15	88.8	-296.7	79.6	66.7	12.83	6.204		
1,600.0	1,517.4	1,616.3	1,533.9	8.2	8.3	-120.74	105.0	-344.9	87.3	72.4	14.91	5.855		
1,700.0	1,603.8	1,715.9	1,619.5	9.2	9.3	-117.89	121.1	-393.1	95.3	78.3	17.00	5.606		
1,800.0	1,690.1	1,815.4	1,705.1	10.2	10.2	-115.49	137.3	-441.4	103.5	84.4	19.08	5.425		
1,900.0	1,776.5	1,915.0	1,790.7	11.1	11.2	-113.44	153.5	-489.6	111.8	90.7	21.15	5.288		
2,000.0	1,862.8	2,014.6	1,876.3	12.1	12.2	-111.68	169.7	-537.9	120.3	97.1	23.21	5.183		
2,100.0	1,949.2	2,114.2	1,961.9	13.1	13.2	-110.15	185.9	-586.1	128.9	103.6	25.26	5.101		
2,200.0	2,035.5	2,213.7	2,047.5	14.0	14.2	-108.81	202.1	-634.3	137.5	110.2	27.31	5.036		
2,300.0	2,121.9	2,313.3	2,133.1	15.0	15.2	-107.64	218.3	-682.6	146.2	116.9	29.35	4.983		
2,400.0	2,208.2	2,412.9	2,218.7	16.0	16.2	-106.59	234.4	-730.8	155.0	123.6	31.38	4.940		
2,500.0	2,294.6	2,512.5	2,304.3	17.0	17.2	-105.66	250.6	-779.0	163.8	130.4	33.40	4.904		
2,600.0	2,380.9	2,612.1	2,389.9	17.9	18.2	-104.82	266.8	-827.3	172.7	137.2	35.42	4.875		
2,700.0	2,467.3	2,711.6	2,475.5	18.9	19.2	-104.06	283.0	-875.5	181.5	144.1	37.43	4.850		
2,800.0	2,553.6	2,811.2	2,561.1	19.9	20.2	-103.38	299.2	-923.8	190.5	151.0	39.44	4.829		
2,900.0	2,640.0	2,910.8	2,646.7	20.9	21.2	-102.75	315.4	-972.0	199.4	157.9	41.45	4.810		
3,000.0	2,726.3	3,010.4	2,732.2	21.8	22.2	-102.18	331.6	-1,020.2	208.3	164.9	43.45	4.795		
3,100.0	2,812.7	3,109.9	2,817.8	22.8	23.2	-101.66	347.7	-1,068.5	217.3	171.9	45.45	4.781		
3,200.0	2,899.0	3,209.5	2,903.4	23.8	24.2	-101.17	363.9	-1,116.7	226.3	178.9	47.45	4.770		
3,300.0	2,985.4	3,309.1	2,989.0	24.8	25.2	-100.73	380.1	-1,165.0	235.3	185.9	49.44	4.760		
3,400.0	3,071.7	3,408.7	3,074.6	25.7	26.2	-100.32	396.3	-1,213.2	244.3	192.9	51.43	4.751		
3,500.0	3,158.0	3,508.3	3,160.2	26.7	27.2	-99.93	412.5	-1,261.4	253.4	200.0	53.42	4.743		
3,600.0	3,244.4	3,607.8	3,245.8	27.7	28.2	-99.58	428.7	-1,309.7	262.4	207.0	55.41	4.736		
3,700.0	3,330.7	3,707.4	3,331.4	28.7	29.2	-99.24	444.9	-1,357.9	271.5	214.1	57.40	4.730		
3,800.0	3,417.1	3,807.0	3,417.0	29.6	30.2	-98.93	461.0	-1,406.2	280.5	221.2	59.39	4.724		
3,900.0	3,503.4	3,906.6	3,502.6	30.6	31.2	-98.64	477.2	-1,454.4	289.6	228.2	61.37	4.719		
4,000.0	3,589.8	4,006.1	3,588.2	31.6	32.2	-98.37	493.4	-1,502.6	298.7	235.3	63.35	4.715		
4,100.0	3,676.1	4,105.7	3,673.8	32.6	33.2	-98.11	509.6	-1,550.9	307.8	242.4	65.33	4.711		
4,200.0	3,762.5	4,205.3	3,759.4	33.6	34.2	-97.86	525.8	-1,599.1	316.9	249.5	67.32	4.707		
4,300.0	3,848.8	4,304.9	3,845.0	34.5	35.2	-97.63	542.0	-1,647.3	325.9	256.7	69.30	4.704		
4,400.0	3,935.2	4,404.4	3,930.6	35.5	36.2	-97.42	558.2	-1,695.6	335.0	263.8	71.27	4.701		
4,500.0	4,021.5	4,504.0	4,016.2	36.5	37.2	-97.21	574.3	-1,743.8	344.1	270.9	73.25	4.698		
4,600.0	4,108.1	4,603.6	4,101.8	37.4	38.2	-97.04	590.5	-1,792.1	353.2	278.0	75.22	4.696		
4,700.0	4,196.2	4,703.7	4,188.6	38.3	39.2	-96.73	606.3	-1,839.2	361.8	284.8	77.06	4.696		
4,800.0	4,285.8	4,803.9	4,277.3	39.1	40.0	-96.45	621.2	-1,883.4	369.9	291.2	78.76	4.697		
4,900.0	4,377.0	4,904.3	4,367.8	39.9	40.8	-96.17	635.0	-1,924.8	377.5	297.2	80.33	4.699		
5,000.0	4,469.5	5,004.8	4,459.8	40.6	41.6	-95.90	647.9	-1,963.1	384.5	302.7	81.77	4.702		
5,100.0	4,563.3	5,105.5	4,553.3	41.2	42.2	-95.63	659.8	-1,998.5	390.9	307.8	83.07	4.706		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (2nd Occupation) - Shideler Federal 19-12C - OH - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	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)				
5,200.0	4,658.3	5,206.4	4,648.3	41.7	42.9	-95.37	670.6	-2,030.7	396.7	312.5	84.24	4.710		
5,300.0	4,754.3	5,307.4	4,744.5	42.2	43.4	-95.12	680.4	-2,059.8	402.0	316.7	85.28	4.714		
5,400.0	4,851.2	5,408.5	4,841.8	42.7	43.9	-94.86	689.1	-2,085.7	406.7	320.5	86.19	4.718		
5,500.0	4,948.9	5,509.7	4,940.2	43.0	44.3	-94.61	696.7	-2,108.4	410.7	323.8	86.97	4.723		
5,600.0	5,047.3	5,611.1	5,039.5	43.3	44.6	-94.35	703.2	-2,127.7	414.2	326.6	87.63	4.727		
5,700.0	5,146.2	5,712.6	5,139.5	43.6	44.9	-94.09	708.5	-2,143.8	417.0	328.9	88.16	4.730		
5,800.0	5,245.6	5,814.2	5,240.2	43.8	45.2	-93.83	712.8	-2,156.5	419.2	330.7	88.57	4.733		
5,900.0	5,345.3	5,915.9	5,341.4	43.9	45.3	-93.56	715.9	-2,165.7	420.8	332.0	88.86	4.736		
6,000.0	5,445.3	6,017.6	5,443.0	44.0	45.4	-93.29	717.9	-2,171.6	421.8	332.8	89.04	4.738		
6,100.0	5,545.3	6,119.5	5,544.8	44.0	45.5	-154.14	718.7	-2,174.1	422.2	333.0	89.12	4.737		
6,200.0	5,645.3	6,219.9	5,645.3	44.1	45.5	-154.13	718.7	-2,174.2	422.2	333.0	89.21	4.733		
6,300.0	5,745.3	6,319.9	5,745.3	44.1	45.6	-154.13	718.7	-2,174.2	422.2	332.9	89.29	4.728		
6,400.0	5,845.3	6,419.9	5,845.3	44.2	45.6	-154.13	718.7	-2,174.2	422.2	332.8	89.38	4.723		
6,500.0	5,945.3	6,519.9	5,945.3	44.2	45.7	-154.13	718.7	-2,174.2	422.2	332.7	89.47	4.719		
6,600.0	6,045.3	6,619.9	6,045.3	44.3	45.7	-154.13	718.7	-2,174.2	422.2	332.6	89.56	4.714		
6,700.0	6,145.3	6,719.9	6,145.3	44.3	45.8	-154.13	718.7	-2,174.2	422.2	332.5	89.65	4.709		
6,800.0	6,245.3	6,819.9	6,245.3	44.3	45.8	-154.13	718.7	-2,174.2	422.2	332.4	89.74	4.705		
6,900.0	6,345.3	6,919.9	6,345.3	44.4	45.8	-154.13	718.7	-2,174.2	422.2	332.4	89.83	4.700		
7,000.0	6,445.3	7,019.9	6,445.3	44.4	45.9	-154.13	718.7	-2,174.2	422.2	332.3	89.93	4.695		
7,100.0	6,545.3	7,119.9	6,545.3	44.5	45.9	-154.13	718.7	-2,174.2	422.2	332.2	90.02	4.690		
7,200.0	6,645.3	7,219.9	6,645.3	44.5	46.0	-154.13	718.7	-2,174.2	422.2	332.1	90.12	4.685		
7,300.0	6,745.3	7,319.9	6,745.3	44.6	46.0	-154.13	718.7	-2,174.2	422.2	332.0	90.21	4.680		
7,400.0	6,845.3	7,419.9	6,845.3	44.6	46.1	-154.13	718.7	-2,174.2	422.2	331.9	90.31	4.675		
7,500.0	6,945.3	7,519.9	6,945.3	44.7	46.1	-154.13	718.7	-2,174.2	422.2	331.8	90.41	4.669		
7,600.0	7,045.3	7,619.9	7,045.3	44.7	46.2	-154.13	718.7	-2,174.2	422.2	331.7	90.52	4.664		
7,700.0	7,145.3	7,719.9	7,145.3	44.8	46.2	-154.13	718.7	-2,174.2	422.2	331.6	90.62	4.659		
7,800.0	7,245.3	7,819.9	7,245.3	44.8	46.3	-154.13	718.7	-2,174.2	422.2	331.5	90.72	4.654		
7,900.0	7,345.3	7,919.9	7,345.3	44.9	46.3	-154.13	718.7	-2,174.2	422.2	331.4	90.83	4.648		
8,000.0	7,445.3	8,019.9	7,445.3	44.9	46.4	-154.13	718.7	-2,174.2	422.2	331.2	90.93	4.643		
8,100.0	7,545.3	8,119.9	7,545.3	45.0	46.4	-154.13	718.7	-2,174.2	422.2	331.1	91.04	4.637		
8,200.0	7,645.3	8,219.9	7,645.3	45.1	46.5	-154.13	718.7	-2,174.2	422.2	331.0	91.15	4.632		
8,300.0	7,745.3	8,319.9	7,745.3	45.1	46.6	-154.13	718.7	-2,174.2	422.2	330.9	91.26	4.626		
8,400.0	7,845.3	8,419.9	7,845.3	45.2	46.6	-154.13	718.7	-2,174.2	422.2	330.8	91.37	4.620		
8,457.7	7,902.9	8,477.6	7,902.9	45.2	46.6	-154.13	718.7	-2,174.2	422.2	330.7	91.44	4.617 SF		
8,500.0	7,945.3	8,498.6	7,924.0	45.2	46.6	-154.13	718.7	-2,174.2	422.7	331.2	91.47	4.621		
8,600.0	8,045.3	8,498.6	7,924.0	45.3	46.6	-154.13	718.7	-2,174.2	439.3	347.7	91.53	4.799		
8,700.0	8,145.3	8,498.6	7,924.0	45.3	46.6	-154.13	718.7	-2,174.2	476.6	385.1	91.59	5.204		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (2nd Occupation) - Shideler Federal 19-13A - OH - 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	126.19	-29.1	39.8	49.4					
100.0	100.0	100.0	100.0	0.1	0.1	126.19	-29.1	39.8	49.4	49.1	0.27	181.254		
200.0	200.0	200.0	200.0	0.3	0.3	126.19	-29.1	39.8	49.4	48.7	0.62	79.426		
300.0	300.0	301.2	301.2	0.5	0.5	126.53	-29.0	39.2	48.7	47.8	0.97	50.084		
400.0	400.0	403.4	403.2	0.7	0.7	-169.70	-27.9	33.8	45.4	44.1	1.33	34.142		
500.0	499.8	505.3	504.5	0.9	0.9	-164.46	-25.8	23.1	42.6	40.8	1.71	24.939		
600.0	599.1	606.9	604.8	1.1	1.3	-156.51	-22.6	7.2	40.8	38.7	2.15	18.995		
645.9	644.4	653.4	650.4	1.3	1.4	-152.03	-20.8	-1.8	40.6	38.2	2.41	16.843 CC		
700.0	697.6	708.1	703.7	1.4	1.7	-146.27	-18.4	-13.8	41.0	38.2	2.76	14.841 ES		
800.0	795.1	809.0	801.0	1.8	2.2	-135.05	-13.1	-39.8	43.6	39.9	3.64	11.971		
900.0	891.4	909.4	896.4	2.3	2.8	-124.50	-6.9	-70.7	48.9	44.1	4.80	10.188		
1,000.0	986.0	1,009.4	989.5	3.0	3.5	-115.68	0.2	-106.2	57.0	50.8	6.20	9.202		
1,100.0	1,078.9	1,108.9	1,080.2	3.7	4.3	-108.82	8.3	-146.4	67.6	59.8	7.77	8.695		
1,200.0	1,169.7	1,208.0	1,168.5	4.5	5.2	-103.96	17.1	-190.5	80.1	70.7	9.46	8.469		
1,300.0	1,258.2	1,307.0	1,256.3	5.4	6.0	-102.90	26.1	-235.3	94.2	83.0	11.21	8.407 SF		
1,400.0	1,344.7	1,405.8	1,343.9	6.3	6.9	-104.39	35.1	-280.1	109.3	96.3	12.96	8.430		
1,500.0	1,431.1	1,504.6	1,431.6	7.3	7.8	-105.78	44.1	-324.8	124.5	109.8	14.72	8.458		
1,600.0	1,517.4	1,603.4	1,519.2	8.2	8.7	-106.86	53.1	-369.6	139.7	123.3	16.47	8.483		
1,700.0	1,603.8	1,702.2	1,606.8	9.2	9.5	-107.73	62.1	-414.3	155.0	136.8	18.23	8.506		
1,800.0	1,690.1	1,801.0	1,694.4	10.2	10.4	-108.45	71.1	-459.1	170.3	150.4	19.98	8.526		
1,900.0	1,776.5	1,899.8	1,782.0	11.1	11.3	-109.05	80.0	-503.8	185.7	163.9	21.73	8.544		
2,000.0	1,862.8	1,998.6	1,869.7	12.1	12.2	-109.55	89.0	-548.6	201.0	177.6	23.49	8.560		
2,100.0	1,949.2	2,097.4	1,957.3	13.1	13.1	-109.99	98.0	-593.4	216.4	191.2	25.24	8.574		
2,200.0	2,035.5	2,196.2	2,044.9	14.0	14.0	-110.36	107.0	-638.1	231.8	204.8	26.99	8.587		
2,300.0	2,121.9	2,295.0	2,132.5	15.0	14.9	-110.69	116.0	-682.9	247.2	218.4	28.75	8.599		
2,400.0	2,208.2	2,393.8	2,220.1	16.0	15.8	-110.98	125.0	-727.6	262.6	232.1	30.50	8.609		
2,500.0	2,294.6	2,492.6	2,307.8	17.0	16.6	-111.24	134.0	-772.4	278.0	245.7	32.25	8.619		
2,600.0	2,380.9	2,591.4	2,395.4	17.9	17.5	-111.47	143.0	-817.1	293.4	259.4	34.01	8.628		
2,700.0	2,467.3	2,690.2	2,483.0	18.9	18.4	-111.68	152.0	-861.9	308.8	273.1	35.76	8.636		
2,800.0	2,553.6	2,789.0	2,570.6	19.9	19.3	-111.87	160.9	-906.6	324.2	286.7	37.51	8.643		
2,900.0	2,640.0	2,887.8	2,658.2	20.9	20.2	-112.04	169.9	-951.4	339.7	300.4	39.27	8.650		
3,000.0	2,726.3	2,986.6	2,745.9	21.8	21.1	-112.20	178.9	-996.2	355.1	314.1	41.02	8.656		
3,100.0	2,812.7	3,085.4	2,833.5	22.8	22.0	-112.34	187.9	-1,040.9	370.5	327.7	42.77	8.662		
3,200.0	2,899.0	3,184.2	2,921.1	23.8	22.9	-112.47	196.9	-1,085.7	385.9	341.4	44.53	8.668		
3,300.0	2,985.4	3,283.0	3,008.7	24.8	23.8	-112.60	205.9	-1,130.4	401.4	355.1	46.28	8.673		
3,400.0	3,071.7	3,381.8	3,096.3	25.7	24.7	-112.71	214.9	-1,175.2	416.8	368.8	48.03	8.678		
3,500.0	3,158.0	3,480.6	3,184.0	26.7	25.5	-112.81	223.9	-1,219.9	432.2	382.4	49.78	8.682		
3,600.0	3,244.4	3,579.4	3,271.6	27.7	26.4	-112.91	232.8	-1,264.7	447.7	396.1	51.54	8.686		
3,700.0	3,330.7	3,678.2	3,359.2	28.7	27.3	-113.00	241.8	-1,309.5	463.1	409.8	53.29	8.690		
3,800.0	3,417.1	3,777.0	3,446.8	29.6	28.2	-113.09	250.8	-1,354.2	478.5	423.5	55.04	8.694		
3,900.0	3,503.4	3,875.8	3,534.4	30.6	29.1	-113.17	259.8	-1,399.0	494.0	437.2	56.79	8.697		

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Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Federal 19-12D
Project:	Mamm Creek	TVD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design O19EB Pad (2nd Occupation) - Shideler Federal 19-13AA - OH - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total		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)	Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	126.27	-39.0	53.1	65.9					
100.0	100.0	100.0	100.0	0.1	0.1	126.27	-39.0	53.1	65.9	65.6	0.27	241.935		
200.0	200.0	200.0	200.0	0.3	0.3	126.27	-39.0	53.1	65.9	65.3	0.62	106.017		
300.0	300.0	302.8	302.8	0.5	0.5	127.71	-38.9	50.3	63.7	62.7	0.98	64.660		
400.0	400.0	405.1	404.7	0.7	0.7	-166.65	-38.7	42.1	58.8	57.5	1.36	43.423		
500.0	499.8	507.0	505.7	0.9	1.0	-159.01	-38.5	28.5	55.6	53.8	1.79	31.102		
566.2	565.5	574.0	571.6	1.0	1.3	-152.38	-38.2	16.6	54.9	52.7	2.14	25.598 CC, ES		
600.0	599.1	608.2	605.1	1.1	1.4	-148.62	-38.1	9.7	55.1	52.7	2.34	23.493		
700.0	697.6	708.8	702.8	1.4	1.9	-136.95	-37.6	-14.2	58.4	55.3	3.10	18.818		
800.0	795.1	808.6	798.3	1.8	2.4	-125.96	-37.0	-43.0	66.0	61.9	4.08	16.164		
900.0	891.4	907.6	891.5	2.3	3.1	-116.94	-36.3	-76.4	77.8	72.6	5.26	14.799		
1,000.0	986.0	1,005.7	982.0	3.0	3.8	-110.09	-35.5	-114.3	93.3	86.7	6.59	14.147		
1,100.0	1,078.9	1,102.9	1,069.7	3.7	4.7	-105.06	-34.6	-156.3	111.9	103.8	8.08	13.853		
1,200.0	1,169.7	1,200.7	1,156.9	4.5	5.5	-102.56	-33.7	-200.5	132.6	122.9	9.65	13.739		
1,300.0	1,258.2	1,298.2	1,243.9	5.4	6.3	-102.48	-32.8	-244.5	154.4	143.1	11.32	13.636		
1,400.0	1,344.7	1,395.5	1,330.6	6.3	7.2	-104.01	-31.9	-288.5	177.2	164.2	13.05	13.584		
1,500.0	1,431.1	1,492.7	1,417.4	7.3	8.0	-105.45	-31.0	-332.4	200.2	185.5	14.77	13.554		
1,600.0	1,517.4	1,589.9	1,504.1	8.2	8.9	-106.60	-30.1	-376.3	223.3	206.8	16.50	13.537		
1,700.0	1,603.8	1,687.1	1,590.8	9.2	9.7	-107.53	-29.2	-420.2	246.5	228.3	18.22	13.528		
1,800.0	1,690.1	1,784.3	1,677.5	10.2	10.6	-108.31	-28.3	-464.1	269.7	249.8	19.94	13.525		
1,900.0	1,776.5	1,881.5	1,764.2	11.1	11.4	-108.96	-27.4	-508.0	293.0	271.3	21.66	13.524 SF		
2,000.0	1,862.8	1,978.7	1,850.9	12.1	12.3	-109.51	-26.5	-551.9	316.3	292.9	23.38	13.526		
2,100.0	1,949.2	2,075.9	1,937.7	13.1	13.2	-109.99	-25.6	-595.8	339.6	314.5	25.10	13.529		
2,200.0	2,035.5	2,173.1	2,024.4	14.0	14.0	-110.41	-24.6	-639.8	363.0	336.1	26.82	13.532		
2,300.0	2,121.9	2,270.3	2,111.1	15.0	14.9	-110.77	-23.7	-683.7	386.3	357.8	28.54	13.536		
2,400.0	2,208.2	2,367.5	2,197.8	16.0	15.7	-111.10	-22.8	-727.6	409.7	379.4	30.26	13.540		
2,500.0	2,294.6	2,464.7	2,284.5	17.0	16.6	-111.39	-21.9	-771.5	433.1	401.1	31.97	13.544		
2,600.0	2,380.9	2,561.9	2,371.3	17.9	17.4	-111.65	-21.0	-815.4	456.5	422.8	33.69	13.548		
2,700.0	2,467.3	2,659.1	2,458.0	18.9	18.3	-111.88	-20.1	-859.3	479.9	444.4	35.41	13.552		

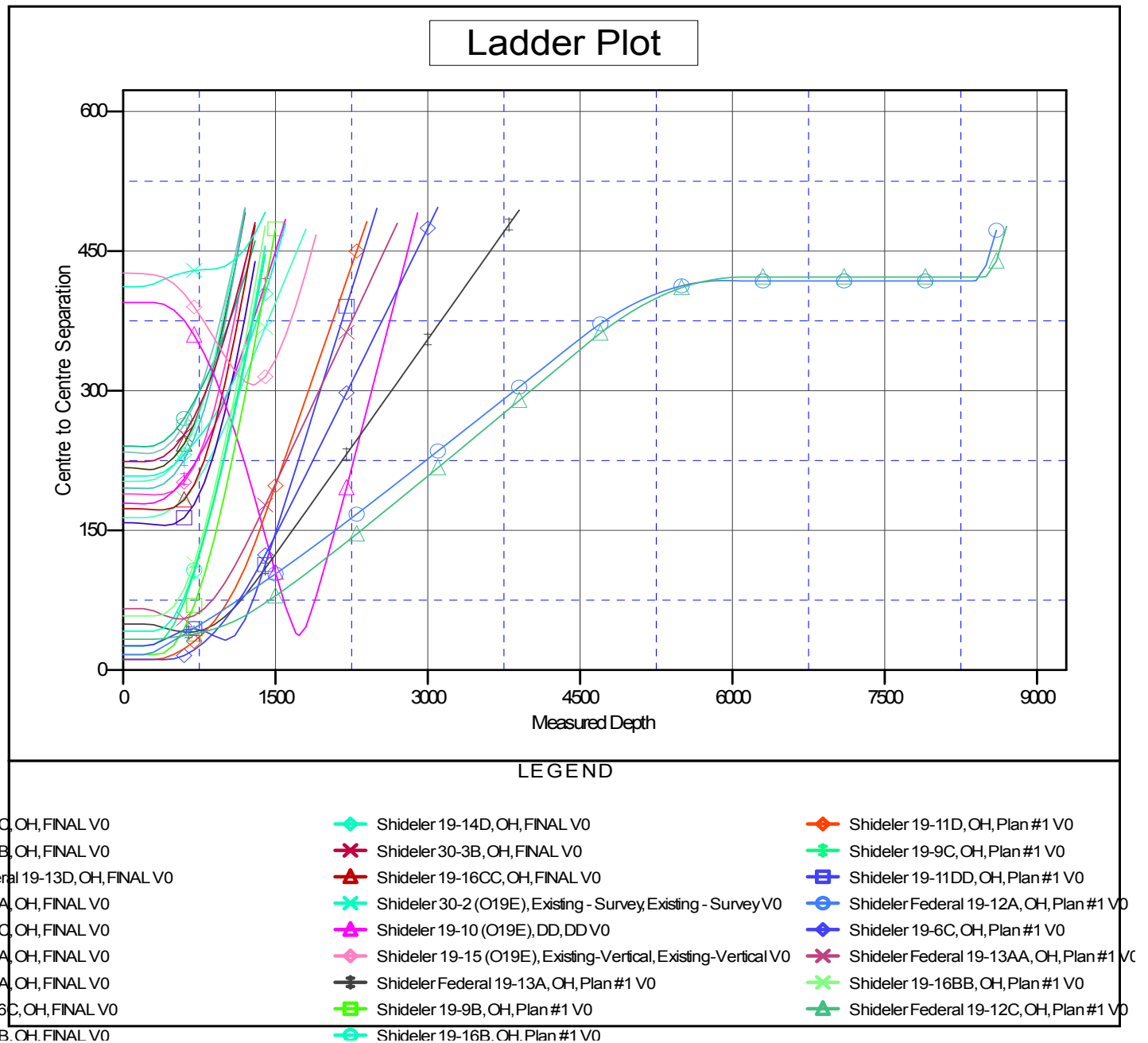
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Reference Site:	O19EB Pad (2nd Occupation)	MD Reference:	KB=22' @ 6531.0ft (Nabors M-15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Shideler Federal 19-12D	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB=22' @ 6531.0ft (Nabors M-15)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Shideler Federal 19-12D
Coordinate System is US State Plane 1983, Colorado Central Zone
Grid Convergence at Surface is: -1.39°



CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation