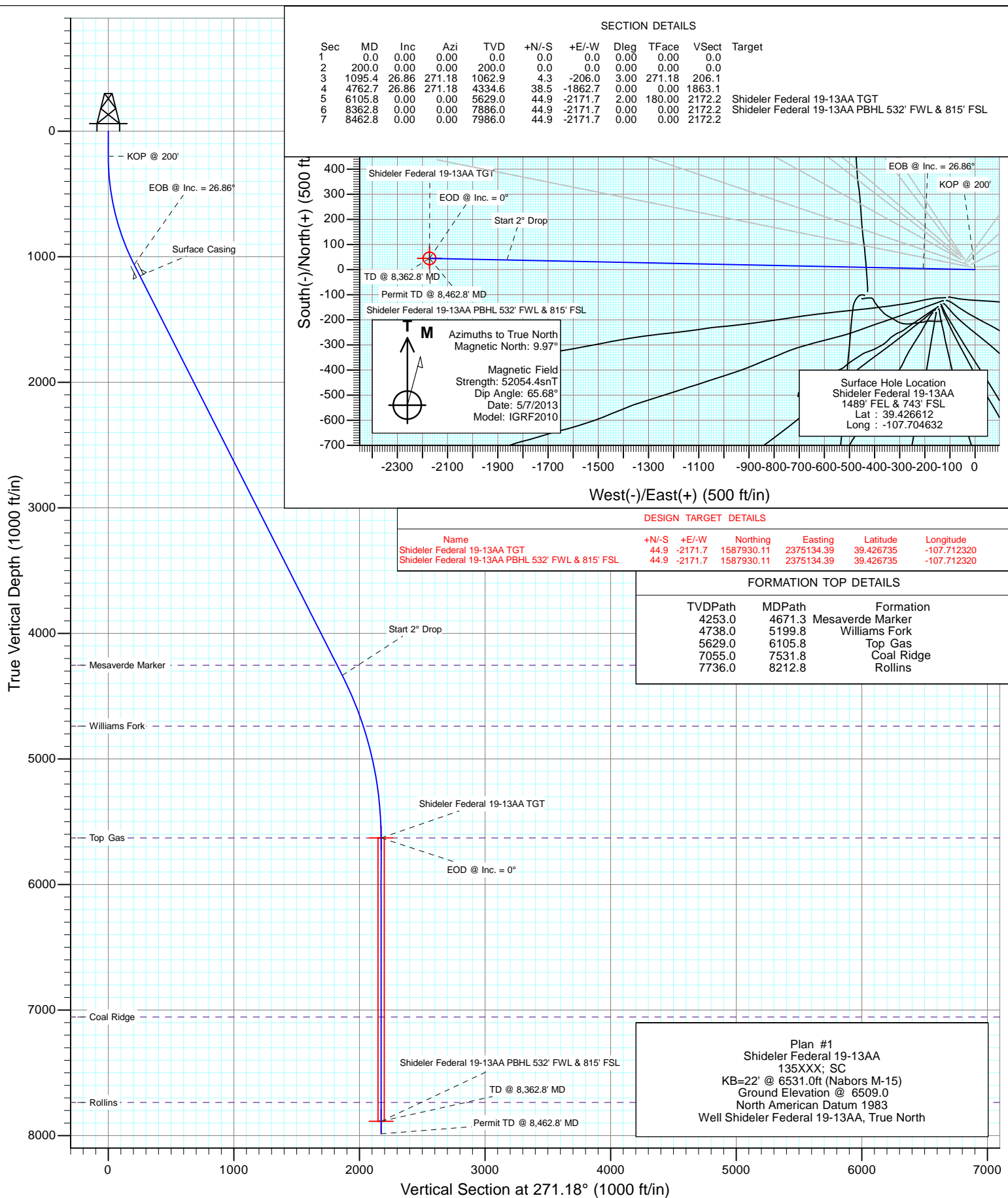
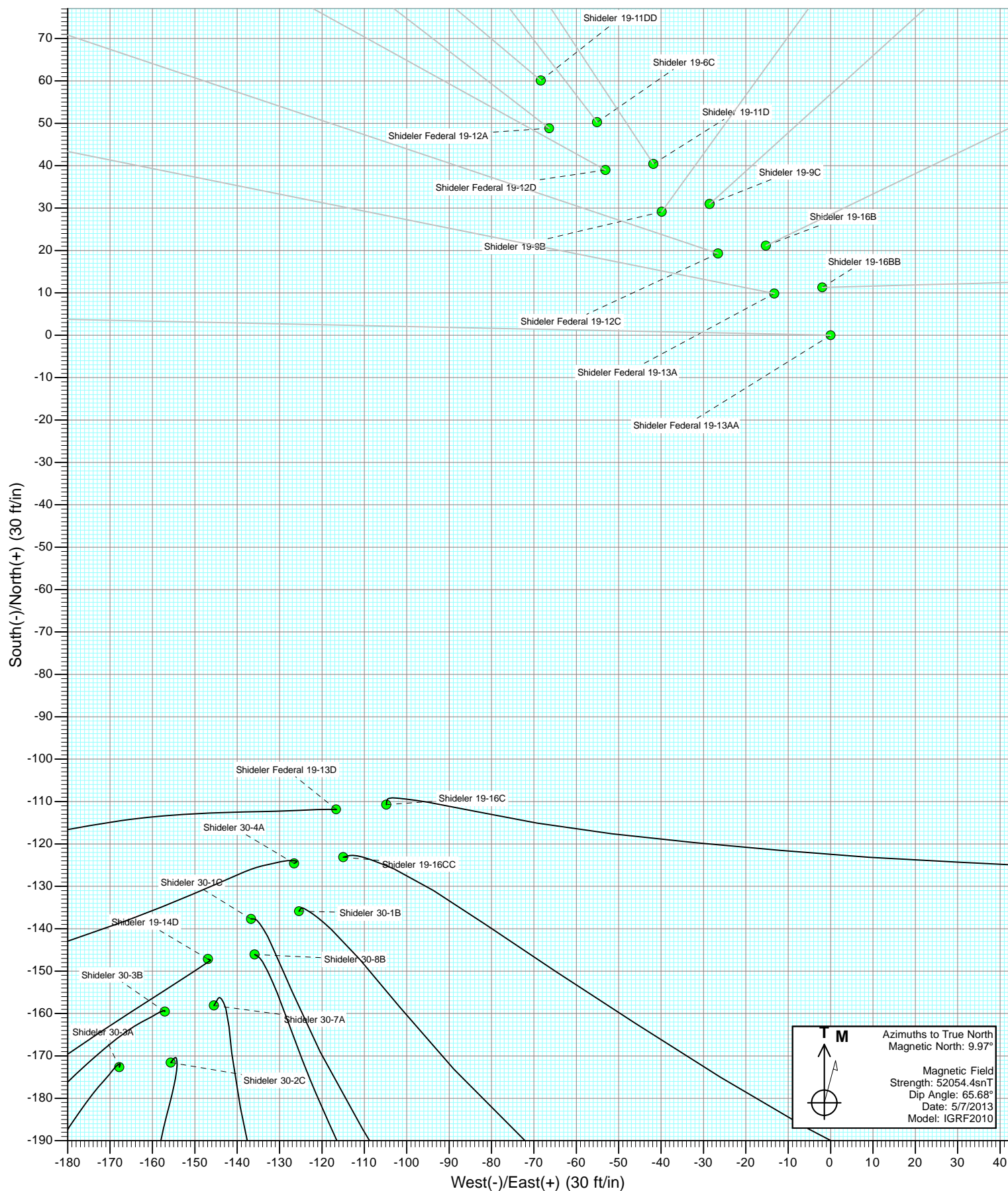
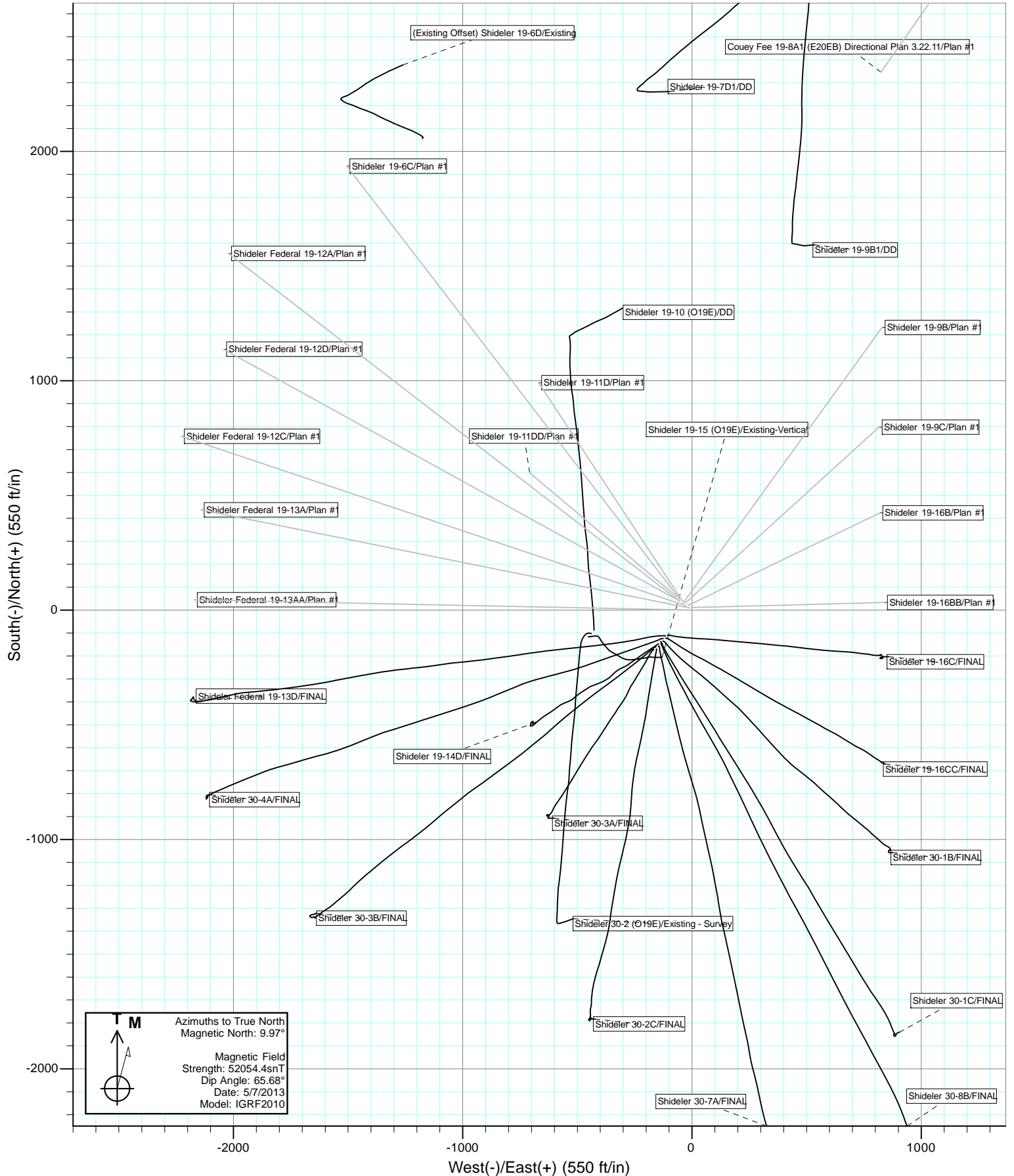




Project: Mamm Creek  
Site: O19EB Pad (2nd Occupation)  
Well: Shideler Federal 19-13AA  
Wellbore: OH  
Design: Plan #1

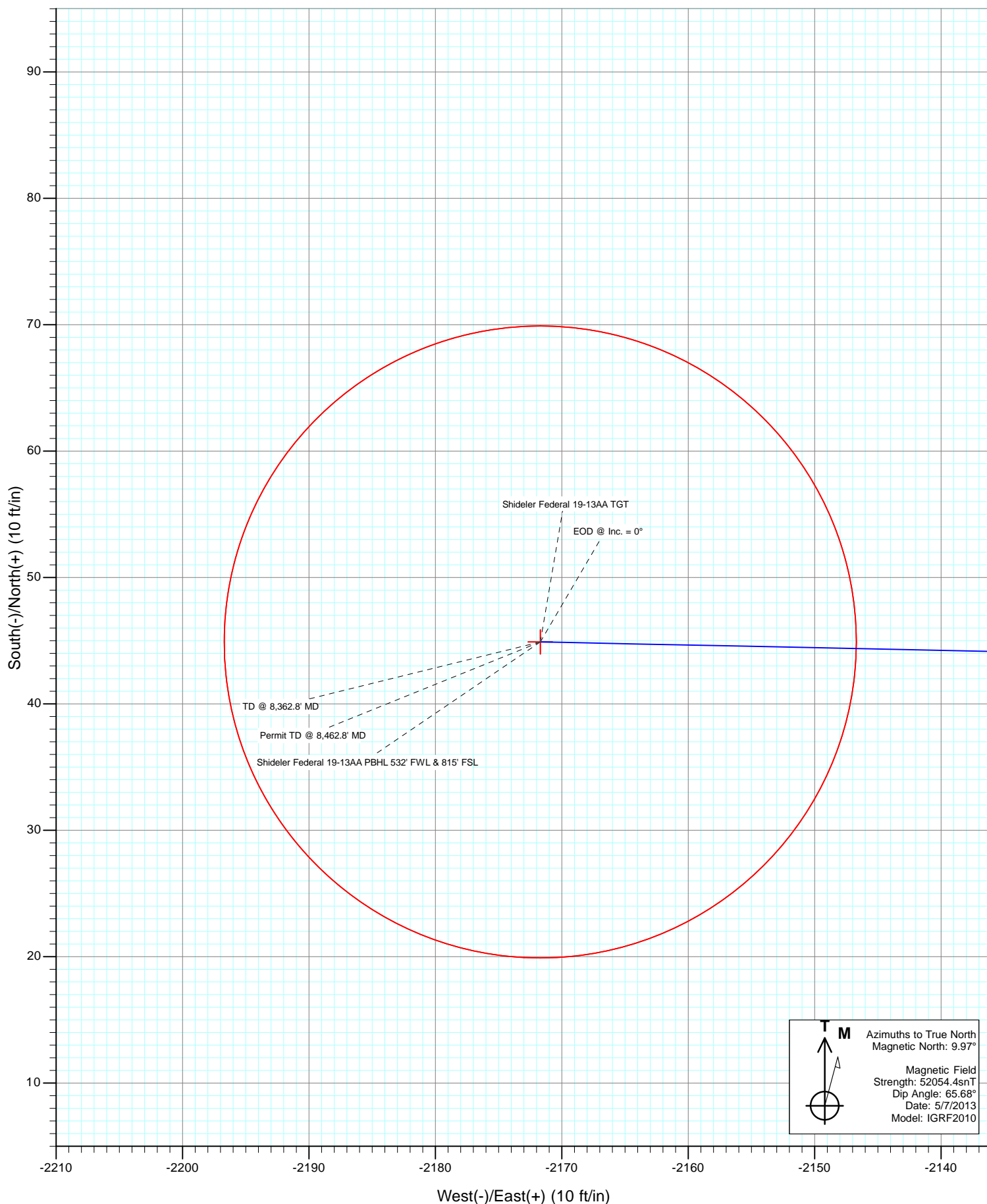








Project: Mamm Creek  
Site: O19EB Pad (2nd Occupation)  
Well: Shideler Federal 19-13AA  
Wellbore: OH  
Design: Plan #1



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Project:</b>	Mamm Creek	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site:</b>	O19EB Pad (2nd Occupation)	<b>North Reference:</b>	True
<b>Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

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

Site		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 19-13AA					
Well Position	+N/-S	0.0 ft	Northing:	1,587,832.52 ft	Latitude:	39.426612
	+E/-W	0.0 ft	Easting:	2,377,304.36 ft	Longitude:	-107.704632
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,509.0 ft

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

<b>Design</b>	Plan #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	271.18

<b>Plan Sections</b>										
<b>Measured Depth</b>	<b>Inclination</b>	<b>Azimuth</b>	<b>Vertical Depth</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Dogleg Rate</b>	<b>Build Rate</b>	<b>Turn Rate</b>	<b>TFO</b>	<b>Target</b>
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(°/100ft)	(°/100ft)	(°/100ft)	(°)	
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,095.4	26.86	271.18	1,062.9	4.3	-206.0	3.00	3.00	0.00	271.18	
4,762.7	26.86	271.18	4,334.6	38.5	-1,862.7	0.00	0.00	0.00	0.00	
6,105.8	0.00	0.00	5,629.0	44.9	-2,171.7	2.00	-2.00	0.00	180.00	Shideler Federal 19-1
8,362.8	0.00	0.00	7,886.0	44.9	-2,171.7	0.00	0.00	0.00	0.00	Shideler Federal 19-1
8,462.8	0.00	0.00	7,986.0	44.9	-2,171.7	0.00	0.00	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Project:</b>	Mamm Creek	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site:</b>	O19EB Pad (2nd Occupation)	<b>North Reference:</b>	True
<b>Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

### Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	KOP @ 200'
300.0	3.00	271.18	300.0	0.1	-2.6	2.6	3.00	3.00	
400.0	6.00	271.18	399.6	0.2	-10.5	10.5	3.00	3.00	
500.0	9.00	271.18	498.8	0.5	-23.5	23.5	3.00	3.00	
600.0	12.00	271.18	597.1	0.9	-41.7	41.7	3.00	3.00	
700.0	15.00	271.18	694.3	1.3	-65.1	65.1	3.00	3.00	
800.0	18.00	271.18	790.2	1.9	-93.5	93.5	3.00	3.00	
900.0	21.00	271.18	884.4	2.6	-126.8	126.9	3.00	3.00	
1,000.0	24.00	271.18	976.8	3.4	-165.1	165.1	3.00	3.00	
1,095.4	26.86	271.18	1,062.9	4.3	-206.0	206.1	3.00	3.00	EOB @ Inc. = 26.86°
1,100.0	26.86	271.18	1,067.1	4.3	-208.1	208.2	0.00	0.00	
1,195.4	26.86	271.18	1,152.2	5.2	-251.2	251.3	0.00	0.00	Surface Casing
1,200.0	26.86	271.18	1,156.3	5.2	-253.3	253.3	0.00	0.00	
1,300.0	26.86	271.18	1,245.5	6.2	-298.5	298.5	0.00	0.00	
1,400.0	26.86	271.18	1,334.7	7.1	-343.6	343.7	0.00	0.00	
1,500.0	26.86	271.18	1,423.9	8.0	-388.8	388.9	0.00	0.00	
1,600.0	26.86	271.18	1,513.1	9.0	-434.0	434.1	0.00	0.00	
1,700.0	26.86	271.18	1,602.3	9.9	-479.1	479.3	0.00	0.00	
1,800.0	26.86	271.18	1,691.5	10.8	-524.3	524.4	0.00	0.00	
1,900.0	26.86	271.18	1,780.7	11.8	-569.5	569.6	0.00	0.00	
2,000.0	26.86	271.18	1,870.0	12.7	-614.7	614.8	0.00	0.00	
2,100.0	26.86	271.18	1,959.2	13.6	-659.8	660.0	0.00	0.00	
2,200.0	26.86	271.18	2,048.4	14.6	-705.0	705.2	0.00	0.00	
2,300.0	26.86	271.18	2,137.6	15.5	-750.2	750.3	0.00	0.00	
2,400.0	26.86	271.18	2,226.8	16.4	-795.4	795.5	0.00	0.00	
2,500.0	26.86	271.18	2,316.0	17.4	-840.5	840.7	0.00	0.00	
2,600.0	26.86	271.18	2,405.2	18.3	-885.7	885.9	0.00	0.00	
2,700.0	26.86	271.18	2,494.4	19.2	-930.9	931.1	0.00	0.00	
2,800.0	26.86	271.18	2,583.6	20.2	-976.0	976.3	0.00	0.00	
2,900.0	26.86	271.18	2,672.9	21.1	-1,021.2	1,021.4	0.00	0.00	
3,000.0	26.86	271.18	2,762.1	22.0	-1,066.4	1,066.6	0.00	0.00	
3,100.0	26.86	271.18	2,851.3	23.0	-1,111.6	1,111.8	0.00	0.00	
3,200.0	26.86	271.18	2,940.5	23.9	-1,156.7	1,157.0	0.00	0.00	
3,300.0	26.86	271.18	3,029.7	24.9	-1,201.9	1,202.2	0.00	0.00	
3,400.0	26.86	271.18	3,118.9	25.8	-1,247.1	1,247.4	0.00	0.00	
3,500.0	26.86	271.18	3,208.1	26.7	-1,292.3	1,292.5	0.00	0.00	
3,600.0	26.86	271.18	3,297.3	27.7	-1,337.4	1,337.7	0.00	0.00	
3,700.0	26.86	271.18	3,386.5	28.6	-1,382.6	1,382.9	0.00	0.00	
3,800.0	26.86	271.18	3,475.8	29.5	-1,427.8	1,428.1	0.00	0.00	
3,900.0	26.86	271.18	3,565.0	30.5	-1,472.9	1,473.3	0.00	0.00	
4,000.0	26.86	271.18	3,654.2	31.4	-1,518.1	1,518.4	0.00	0.00	
4,100.0	26.86	271.18	3,743.4	32.3	-1,563.3	1,563.6	0.00	0.00	
4,200.0	26.86	271.18	3,832.6	33.3	-1,608.5	1,608.8	0.00	0.00	
4,300.0	26.86	271.18	3,921.8	34.2	-1,653.6	1,654.0	0.00	0.00	
4,400.0	26.86	271.18	4,011.0	35.1	-1,698.8	1,699.2	0.00	0.00	
4,500.0	26.86	271.18	4,100.2	36.1	-1,744.0	1,744.4	0.00	0.00	
4,600.0	26.86	271.18	4,189.4	37.0	-1,789.2	1,789.5	0.00	0.00	
4,671.3	26.86	271.18	4,253.0	37.7	-1,821.3	1,821.7	0.00	0.00	Mesaverde Marker
4,700.0	26.86	271.18	4,278.6	37.9	-1,834.3	1,834.7	0.00	0.00	
4,762.7	26.86	271.18	4,334.6	38.5	-1,862.7	1,863.1	0.00	0.00	Start 2° Drop

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Project:</b>	Mamm Creek	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site:</b>	O19EB Pad (2nd Occupation)	<b>North Reference:</b>	True
<b>Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
4,800.0	26.12	271.18	4,368.0	38.9	-1,879.3	1,879.7	2.00	-2.00	
4,900.0	24.12	271.18	4,458.5	39.7	-1,921.7	1,922.1	2.00	-2.00	
5,000.0	22.12	271.18	4,550.5	40.5	-1,961.0	1,961.4	2.00	-2.00	
5,100.0	20.12	271.18	4,643.8	41.3	-1,997.0	1,997.4	2.00	-2.00	
5,199.8	18.12	271.18	4,738.0	42.0	-2,029.6	2,030.1	2.00	-2.00	Williams Fork
5,200.0	18.12	271.18	4,738.2	42.0	-2,029.7	2,030.2	2.00	-2.00	
5,300.0	16.12	271.18	4,833.8	42.6	-2,059.1	2,059.6	2.00	-2.00	
5,400.0	14.12	271.18	4,930.3	43.1	-2,085.2	2,085.7	2.00	-2.00	
5,500.0	12.12	271.18	5,027.7	43.6	-2,107.9	2,108.4	2.00	-2.00	
5,600.0	10.12	271.18	5,125.8	44.0	-2,127.2	2,127.6	2.00	-2.00	
5,700.0	8.12	271.18	5,224.6	44.3	-2,143.0	2,143.5	2.00	-2.00	
5,800.0	6.12	271.18	5,323.8	44.6	-2,155.4	2,155.9	2.00	-2.00	
5,900.0	4.12	271.18	5,423.4	44.7	-2,164.3	2,164.8	2.00	-2.00	
6,000.0	2.12	271.18	5,523.2	44.9	-2,169.7	2,170.2	2.00	-2.00	
6,105.8	0.00	0.00	5,629.0	44.9	-2,171.7	2,172.2	2.00	-2.00	EOD @ Inc. = 0° - Top Gas
6,200.0	0.00	0.00	5,723.2	44.9	-2,171.7	2,172.2	0.00	0.00	
6,300.0	0.00	0.00	5,823.2	44.9	-2,171.7	2,172.2	0.00	0.00	
6,400.0	0.00	0.00	5,923.2	44.9	-2,171.7	2,172.2	0.00	0.00	
6,500.0	0.00	0.00	6,023.2	44.9	-2,171.7	2,172.2	0.00	0.00	
6,600.0	0.00	0.00	6,123.2	44.9	-2,171.7	2,172.2	0.00	0.00	
6,700.0	0.00	0.00	6,223.2	44.9	-2,171.7	2,172.2	0.00	0.00	
6,800.0	0.00	0.00	6,323.2	44.9	-2,171.7	2,172.2	0.00	0.00	
6,900.0	0.00	0.00	6,423.2	44.9	-2,171.7	2,172.2	0.00	0.00	
7,000.0	0.00	0.00	6,523.2	44.9	-2,171.7	2,172.2	0.00	0.00	
7,100.0	0.00	0.00	6,623.2	44.9	-2,171.7	2,172.2	0.00	0.00	
7,200.0	0.00	0.00	6,723.2	44.9	-2,171.7	2,172.2	0.00	0.00	
7,300.0	0.00	0.00	6,823.2	44.9	-2,171.7	2,172.2	0.00	0.00	
7,400.0	0.00	0.00	6,923.2	44.9	-2,171.7	2,172.2	0.00	0.00	
7,500.0	0.00	0.00	7,023.2	44.9	-2,171.7	2,172.2	0.00	0.00	
7,531.8	0.00	0.00	7,055.0	44.9	-2,171.7	2,172.2	0.00	0.00	Coal Ridge
7,600.0	0.00	0.00	7,123.2	44.9	-2,171.7	2,172.2	0.00	0.00	
7,700.0	0.00	0.00	7,223.2	44.9	-2,171.7	2,172.2	0.00	0.00	
7,800.0	0.00	0.00	7,323.2	44.9	-2,171.7	2,172.2	0.00	0.00	
7,900.0	0.00	0.00	7,423.2	44.9	-2,171.7	2,172.2	0.00	0.00	
8,000.0	0.00	0.00	7,523.2	44.9	-2,171.7	2,172.2	0.00	0.00	
8,100.0	0.00	0.00	7,623.2	44.9	-2,171.7	2,172.2	0.00	0.00	
8,200.0	0.00	0.00	7,723.2	44.9	-2,171.7	2,172.2	0.00	0.00	
8,212.8	0.00	0.00	7,736.0	44.9	-2,171.7	2,172.2	0.00	0.00	Rollins
8,300.0	0.00	0.00	7,823.2	44.9	-2,171.7	2,172.2	0.00	0.00	
8,362.8	0.00	0.00	7,886.0	44.9	-2,171.7	2,172.2	0.00	0.00	TD @ 8,362.8' MD
8,400.0	0.00	0.00	7,923.2	44.9	-2,171.7	2,172.2	0.00	0.00	
8,462.8	0.00	0.00	7,986.0	44.9	-2,171.7	2,172.2	0.00	0.00	Permit TD @ 8,462.8' MD

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Project:</b>	Mamm Creek	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site:</b>	O19EB Pad (2nd Occupation)	<b>North Reference:</b>	True
<b>Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
Shideler Federal 19-13A	0.00	0.00	5,629.0	44.9	-2,171.7	1,587,930.11	2,375,134.39	39.426735	-107.712320
- plan hits target center									
- Point									
Shideler Federal 19-13A	0.00	0.00	7,886.0	44.9	-2,171.7	1,587,930.11	2,375,134.39	39.426735	-107.712320
- plan hits target center									
- Circle (radius 25.0)									

Casing Points				
Measured Depth	Vertical Depth		Casing Diameter	Hole Diameter
(ft)	(ft)	Name	(in)	(in)
1,195.4	1,152.2	Surface Casing		

Formations					
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction
(ft)	(ft)			(°)	(°)
4,671.3	4,253.0	Mesaverde Marker			
5,199.8	4,738.0	Williams Fork			
6,105.8	5,629.0	Top Gas			
7,531.8	7,055.0	Coal Ridge			
8,212.8	7,736.0	Rollins			

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
200.0	200.0	0.0	0.0	KOP @ 200'
1,095.4	1,062.9	4.3	-206.0	EOB @ Inc. = 26.86°
4,762.7	4,334.6	38.5	-1,862.7	Start 2° Drop
6,105.8	5,629.0	44.9	-2,171.7	EOD @ Inc. = 0°
8,362.8	7,886.0	44.9	-2,171.7	TD @ 8,362.8' MD
8,462.8	7,986.0	44.9	-2,171.7	Permit TD @ 8,462.8' MD



# **EnCana Oil & Gas (USA) Inc**

**Mamm Creek**

**O19EB Pad (2nd Occupation)**

**Shideler Federal 19-13AA**

**OH**

**Plan #1**

## **Anticollision Report**

**09 May, 2013**

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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		

<b>Survey Tool Program</b>	<b>Date</b>	5/8/2013		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	8,462.8	Plan #1 (OH)	MWD	Geolink MWD

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

### Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance		Separation Factor	Warning
			Between Centres (ft)	Between Ellipses (ft)		
O19E Pad						
Shideler 19-10 (O19E) - DD - DD	1,444.1	1,384.9	148.8	139.6	16.226	CC, ES
Shideler 19-10 (O19E) - DD - DD	1,600.0	1,522.7	166.7	155.3	14.596	SF
Shideler 19-15 (O19E) - Existing-Vertical - Existing-Vertic	1,491.9	1,436.7	133.2	122.6	12.558	CC
Shideler 19-15 (O19E) - Existing-Vertical - Existing-Vertic	1,500.0	1,443.9	133.3	122.6	12.440	ES
Shideler 19-15 (O19E) - Existing-Vertical - Existing-Vertic	1,600.0	1,531.9	142.9	131.4	12.357	SF
Shideler 30-2 (O19E) - Existing - Survey - Existing - Surv	1,380.2	1,284.6	323.7	315.3	38.602	CC
Shideler 30-2 (O19E) - Existing - Survey - Existing - Surv	1,400.0	1,300.4	323.8	315.2	37.533	ES
Shideler 30-2 (O19E) - Existing - Survey - Existing - Surv	1,900.0	1,733.1	416.6	401.8	28.110	SF
O19EB Pad (1st Occupation)						
(Existing Offset) Shideler 19-6D - Existing - Existing						Out of range
Shideler 19-14D - OH - FINAL	974.6	937.5	198.4	193.1	37.401	CC
Shideler 19-14D - OH - FINAL	1,000.0	961.6	198.6	193.0	35.515	ES
Shideler 19-14D - OH - FINAL	1,400.0	1,335.3	244.0	234.0	24.474	SF
Shideler 19-16C - OH - FINAL	647.3	644.7	117.8	114.8	39.456	CC, ES
Shideler 19-16C - OH - FINAL	800.0	780.2	136.7	132.7	34.002	SF
Shideler 19-16CC - OH - FINAL	637.9	628.0	141.8	139.0	51.484	CC, ES
Shideler 19-16CC - OH - FINAL	800.0	767.9	159.1	155.2	40.037	SF
Shideler 30-1B - OH - FINAL	629.8	614.7	164.6	162.0	63.345	CC, ES
Shideler 30-1B - OH - FINAL	900.0	841.8	205.4	200.7	44.066	SF
Shideler 30-1C - OH - FINAL	502.7	486.5	187.6	185.8	101.473	CC, ES
Shideler 30-1C - OH - FINAL	900.0	819.2	245.4	240.7	52.307	SF
Shideler 30-2C - OH - FINAL	411.6	396.3	227.5	226.1	164.964	CC, ES
Shideler 30-2C - OH - FINAL	1,400.0	1,228.6	461.2	451.7	48.260	SF
Shideler 30-3A - OH - FINAL	367.2	353.2	239.1	237.9	198.883	CC
Shideler 30-3A - OH - FINAL	400.0	382.6	239.1	237.8	181.208	ES
Shideler 30-3A - OH - FINAL	1,600.0	1,487.0	391.8	379.7	32.249	SF
Shideler 30-3B - OH - FINAL	368.4	355.0	222.8	221.6	184.431	CC
Shideler 30-3B - OH - FINAL	400.0	383.5	222.9	221.5	168.570	ES
Shideler 30-3B - OH - FINAL	1,900.0	1,753.0	483.4	464.4	25.349	SF
Shideler 30-4A - OH - FINAL	322.1	314.0	176.5	175.4	168.930	CC
Shideler 30-4A - OH - FINAL	400.0	386.0	176.7	175.4	132.780	ES
Shideler 30-4A - OH - FINAL	3,200.0	3,108.2	488.9	446.2	11.468	SF
Shideler 30-7A - OH - FINAL	478.6	461.1	207.8	206.1	123.654	CC
Shideler 30-7A - OH - FINAL	500.0	478.0	207.8	206.0	117.416	ES
Shideler 30-7A - OH - FINAL	1,100.0	958.4	331.6	325.3	52.845	SF
Shideler 30-8B - OH - FINAL	455.5	440.9	196.5	194.8	121.081	CC, ES
Shideler 30-8B - OH - FINAL	1,000.0	881.0	300.1	294.6	55.102	SF
Shideler Federal 19-13D - OH - FINAL	366.4	356.4	161.3	160.1	133.266	CC
Shideler Federal 19-13D - OH - FINAL	400.0	386.0	161.4	160.0	121.004	ES
Shideler Federal 19-13D - OH - FINAL	7,700.0	7,652.0	423.1	339.1	5.041	SF

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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						
O19EB Pad (2nd Occupation)						
Shideler 19-11D - OH - Plan #1	528.3	523.9	46.1	44.2	23.624	CC, ES
Shideler 19-11D - OH - Plan #1	700.0	689.1	58.7	55.7	19.408	SF
Shideler 19-11DD - OH - Plan #1	316.4	312.3	90.4	89.4	87.963	CC, ES
Shideler 19-11DD - OH - Plan #1	1,100.0	1,068.3	140.8	133.6	19.671	SF
Shideler 19-16B - OH - Plan #1	397.0	396.3	22.2	20.8	16.233	CC
Shideler 19-16B - OH - Plan #1	400.0	399.3	22.2	20.8	16.093	ES, SF
Shideler 19-16BB - OH - Plan #1	291.9	291.9	11.2	10.3	11.841	CC
Shideler 19-16BB - OH - Plan #1	300.0	300.0	11.3	10.3	11.498	ES
Shideler 19-16BB - OH - Plan #1	400.0	399.6	14.0	12.6	10.304	SF
Shideler 19-6C - OH - Plan #1	527.8	520.7	64.4	62.4	33.573	CC, ES
Shideler 19-6C - OH - Plan #1	900.0	872.7	109.3	104.5	22.603	SF
Shideler 19-9B - OH - Plan #1	487.5	484.6	38.3	36.5	21.521	CC, ES
Shideler 19-9B - OH - Plan #1	600.0	591.1	49.1	46.7	20.847	SF
Shideler 19-9C - OH - Plan #1	381.7	380.3	39.0	37.6	29.252	CC, ES
Shideler 19-9C - OH - Plan #1	500.0	493.8	47.5	45.6	25.390	SF
Shideler Federal 19-12A - OH - Plan #1	200.0	200.0	82.4	81.8	132.608	CC, ES
Shideler Federal 19-12A - OH - Plan #1	2,100.0	1,982.0	472.9	448.8	19.651	SF
Shideler Federal 19-12C - OH - Plan #1	525.9	523.4	22.2	20.2	11.253	CC, ES
Shideler Federal 19-12C - OH - Plan #1	2,000.0	1,988.8	195.8	171.7	8.112	SF
Shideler Federal 19-12D - OH - Plan #1	574.0	566.2	54.9	52.7	25.598	CC
Shideler Federal 19-12D - OH - Plan #1	600.0	591.4	55.0	52.7	24.003	ES
Shideler Federal 19-12D - OH - Plan #1	1,800.0	1,752.6	266.0	246.3	13.497	SF
Shideler Federal 19-13A - OH - Plan #1	450.5	449.2	13.6	12.0	8.467	CC
Shideler Federal 19-13A - OH - Plan #1	500.0	498.4	13.8	11.9	7.399	ES
Shideler Federal 19-13A - OH - Plan #1	8,462.8	8,472.3	393.5	306.6	4.528	SF

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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							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	-101.55	-87.3	-427.2	436.1					
100.0	100.0	125.7	125.7	0.1	0.2	-101.53	-87.2	-427.3	436.1	435.8	0.34	1,299.658		
200.0	200.0	225.8	225.8	0.3	0.4	-101.48	-86.8	-427.5	436.2	435.5	0.68	641.091		
300.0	300.0	326.1	326.1	0.5	0.5	-12.66	-86.1	-427.6	433.6	432.6	1.03	420.772		
400.0	399.6	430.1	430.1	0.7	0.7	-12.65	-83.8	-427.5	425.4	424.0	1.39	305.624		
500.0	498.8	530.4	530.2	1.0	0.9	-12.35	-78.0	-427.4	411.5	409.7	1.76	233.154		
600.0	597.1	630.3	629.5	1.4	1.2	-11.49	-67.4	-428.0	392.3	390.1	2.17	180.431		
700.0	694.3	729.6	727.6	1.8	1.5	-9.88	-51.8	-428.5	367.3	364.7	2.63	139.567		
800.0	790.2	822.6	818.7	2.4	1.8	-7.48	-32.9	-429.5	337.9	334.8	3.11	108.537		
900.0	884.4	913.9	907.3	3.0	2.2	-3.99	-11.0	-431.3	304.8	301.2	3.61	84.460		
1,000.0	976.8	1,004.0	994.0	3.8	2.6	0.90	12.8	-433.3	268.5	264.4	4.11	65.336		
1,100.0	1,067.1	1,091.2	1,077.8	4.6	3.1	7.62	37.1	-435.2	230.0	225.3	4.67	49.227		
1,200.0	1,156.3	1,176.4	1,159.4	5.5	3.5	16.71	61.8	-437.4	194.0	188.4	5.54	34.982		
1,300.0	1,245.5	1,261.8	1,240.8	6.4	4.0	28.94	87.4	-440.0	166.1	159.3	6.84	24.290		
1,400.0	1,334.7	1,347.5	1,322.4	7.2	4.4	44.01	113.4	-443.0	150.5	142.0	8.45	17.814		
1,444.1	1,374.1	1,384.9	1,357.9	7.6	4.6	51.15	125.1	-444.4	148.8	139.6	9.17	16.226	CC, ES	
1,500.0	1,423.9	1,434.2	1,404.7	8.1	4.9	60.54	140.4	-446.2	151.3	141.2	10.04	15.062		
1,600.0	1,513.1	1,522.7	1,489.0	9.0	5.4	75.96	167.2	-449.6	166.7	155.3	11.42	14.596	SF	
1,700.0	1,602.3	1,604.9	1,567.2	9.9	5.9	87.97	192.6	-451.6	194.6	182.0	12.64	15.403		
1,800.0	1,691.5	1,691.6	1,649.3	10.7	6.4	97.79	220.2	-453.1	231.4	217.6	13.78	16.788		
1,900.0	1,780.7	1,773.8	1,727.1	11.6	6.9	104.64	246.7	-454.8	273.3	258.4	14.85	18.396		
2,000.0	1,870.0	1,858.1	1,806.4	12.5	7.4	109.73	275.1	-457.1	318.8	303.0	15.89	20.069		
2,100.0	1,959.2	1,944.7	1,887.8	13.4	7.9	113.60	304.5	-460.0	366.1	349.1	16.91	21.653		
2,200.0	2,048.4	2,032.8	1,970.7	14.2	8.4	116.59	334.4	-463.6	413.9	396.0	17.92	23.097		
2,300.0	2,137.6	2,117.7	2,050.5	15.1	9.0	118.87	363.0	-467.3	462.1	443.2	18.91	24.437		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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	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	26.6	26.6	0.0	0.0	-104.42	-115.8	-450.5	465.2				
100.0	100.0	128.1	128.1	0.1	0.2	-104.43	-115.8	-450.2	464.9	464.5	0.34	1,385.440	
200.0	200.0	229.4	229.4	0.3	0.4	-104.49	-116.1	-449.6	464.4	463.7	0.69	675.697	
300.0	300.0	333.1	333.1	0.5	0.6	-15.85	-116.3	-448.3	460.7	459.6	1.04	441.958	
400.0	399.6	435.7	435.7	0.7	0.7	-16.23	-116.0	-446.4	451.3	449.9	1.40	323.144	
500.0	498.8	538.7	538.6	1.0	0.9	-16.89	-115.5	-443.7	436.1	434.3	1.75	248.501	
600.0	597.1	640.4	640.3	1.4	1.1	-17.90	-114.8	-439.9	415.0	412.9	2.12	195.779	
700.0	694.3	738.2	738.0	1.8	1.3	-19.30	-113.9	-435.7	388.5	386.1	2.50	155.628	
800.0	790.2	833.0	832.7	2.4	1.5	-21.33	-113.7	-431.3	357.4	354.5	2.91	122.967	
900.0	884.4	926.7	926.2	3.0	1.7	-24.17	-113.3	-426.7	321.8	318.5	3.39	95.048	
1,000.0	976.8	1,017.7	1,017.2	3.8	1.8	-28.20	-112.8	-421.9	282.3	278.3	3.99	70.667	
1,100.0	1,067.1	1,105.5	1,104.8	4.6	2.0	-34.14	-112.7	-417.0	239.7	234.9	4.84	49.531	
1,200.0	1,156.3	1,190.9	1,190.0	5.5	2.2	-41.83	-113.2	-412.1	198.3	192.4	5.97	33.205	
1,300.0	1,245.5	1,272.7	1,271.7	6.4	2.3	-52.35	-115.1	-408.0	163.4	156.0	7.43	21.999	
1,400.0	1,334.7	1,356.9	1,355.8	7.2	2.5	-66.93	-119.3	-404.7	140.4	131.3	9.16	15.329	
1,491.9	1,416.6	1,436.7	1,435.4	8.0	2.6	-83.07	-124.0	-402.2	133.2	122.6	10.61	12.558 CC	
1,500.0	1,423.9	1,443.9	1,442.5	8.1	2.7	-84.56	-124.4	-402.0	133.3	122.6	10.71	12.440 ES	
1,600.0	1,513.1	1,531.9	1,530.3	9.0	2.8	-102.17	-129.4	-399.1	142.9	131.4	11.57	12.357 SF	
1,700.0	1,602.3	1,619.5	1,617.8	9.9	3.0	-116.86	-134.0	-396.0	166.6	154.8	11.74	14.188	
1,800.0	1,691.5	1,706.8	1,704.9	10.7	3.2	-127.91	-138.6	-392.9	199.4	187.8	11.60	17.194	
1,900.0	1,780.7	1,793.8	1,791.7	11.6	3.3	-136.07	-142.9	-389.4	237.9	226.5	11.40	20.866	
2,000.0	1,870.0	1,881.1	1,878.8	12.5	3.5	-142.13	-147.1	-385.8	279.7	268.4	11.24	24.872	
2,100.0	1,959.2	1,968.9	1,966.5	13.4	3.7	-146.63	-151.5	-382.4	323.4	312.2	11.18	28.937	
2,200.0	2,048.4	2,056.1	2,053.5	14.2	3.9	-150.12	-155.6	-379.0	368.3	357.2	11.18	32.960	
2,300.0	2,137.6	2,143.3	2,140.5	15.1	4.0	-152.87	-159.8	-375.6	414.2	403.0	11.23	36.871	
2,400.0	2,226.8	2,230.3	2,227.4	16.0	4.2	-155.07	-164.0	-372.2	460.7	449.3	11.34	40.608	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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				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	25.9	25.9	0.0	0.0	-103.12	-102.5	-439.8	451.6					
100.0	100.0	125.3	125.3	0.1	0.2	-103.10	-102.4	-439.9	451.7	451.3	0.34	1,343.161		
200.0	200.0	220.3	220.3	0.3	0.4	-103.05	-102.1	-440.4	452.1	451.4	0.67	672.741		
300.0	300.0	306.5	306.4	0.5	0.5	-14.14	-101.3	-442.9	452.2	451.2	1.00	453.109		
400.0	399.6	391.2	391.0	0.7	0.7	-14.07	-100.3	-448.5	450.7	449.4	1.32	340.340		
500.0	498.8	482.5	481.9	1.0	0.9	-14.39	-101.4	-456.3	446.7	445.1	1.66	268.869		
600.0	597.1	575.5	574.3	1.4	1.1	-15.46	-107.1	-464.8	439.4	437.4	2.01	218.948		
700.0	694.3	669.2	667.0	1.8	1.4	-17.40	-117.4	-473.5	428.7	426.3	2.39	179.408		
800.0	790.2	770.6	766.9	2.4	1.7	-20.60	-133.4	-481.2	413.6	410.8	2.86	144.621		
900.0	884.4	867.2	861.2	3.0	2.0	-25.07	-153.5	-485.6	394.4	390.9	3.45	114.235		
1,000.0	976.8	954.0	945.2	3.8	2.4	-30.46	-175.3	-488.3	373.8	369.6	4.18	89.517		
1,100.0	1,067.1	1,041.0	1,029.0	4.6	2.8	-36.95	-198.5	-490.9	353.8	348.7	5.09	69.476		
1,200.0	1,156.3	1,130.1	1,115.0	5.5	3.2	-44.04	-222.0	-493.1	337.2	331.0	6.19	54.460		
1,300.0	1,245.5	1,219.3	1,201.0	6.4	3.6	-51.59	-245.2	-494.9	326.7	319.3	7.40	44.139		
1,380.2	1,317.1	1,284.6	1,264.1	7.1	3.9	-57.32	-262.2	-496.2	323.7	315.3	8.38	38.602 CC		
1,400.0	1,334.7	1,300.4	1,279.3	7.2	4.0	-58.70	-266.5	-496.6	323.8	315.2	8.63	37.533 ES		
1,500.0	1,423.9	1,387.0	1,362.5	8.1	4.4	-66.22	-290.2	-499.1	329.8	319.9	9.91	33.267		
1,600.0	1,513.1	1,474.2	1,446.4	9.0	4.8	-73.54	-313.9	-501.1	342.5	331.3	11.20	30.587		
1,700.0	1,602.3	1,559.7	1,528.7	9.9	5.2	-80.20	-337.2	-503.1	361.9	349.5	12.44	29.082		
1,800.0	1,691.5	1,645.9	1,611.5	10.7	5.7	-86.28	-360.9	-505.4	387.1	373.4	13.66	28.345		
1,900.0	1,780.7	1,733.1	1,695.3	11.6	6.1	-91.80	-384.8	-507.3	416.6	401.8	14.82	28.110 SF		
2,000.0	1,870.0	1,821.0	1,779.9	12.5	6.5	-96.76	-408.8	-508.9	449.8	433.9	15.94	28.216		
2,100.0	1,959.2	1,913.1	1,868.8	13.4	7.0	-101.40	-432.8	-509.9	485.1	468.1	17.02	28.510		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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			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	-135.05	-147.2	-146.9	207.9					
100.0	100.0	100.3	100.3	0.1	0.2	-135.09	-147.2	-146.7	207.9	207.6	0.29	719.726		
200.0	200.0	200.3	200.3	0.3	0.3	-135.19	-147.3	-146.3	207.7	207.1	0.62	333.946		
300.0	300.0	296.0	296.0	0.5	0.5	-46.89	-147.8	-146.9	206.6	205.7	0.97	213.488		
400.0	399.6	386.0	385.9	0.7	0.6	-48.15	-149.8	-149.8	205.2	203.9	1.32	154.900		
475.1	474.2	454.7	454.4	0.9	0.8	-49.56	-152.8	-154.4	204.8	203.2	1.63	125.745		
500.0	498.8	478.0	477.6	1.0	0.8	-50.12	-154.1	-156.5	205.0	203.3	1.73	118.447		
600.0	597.1	572.9	571.7	1.4	1.1	-52.92	-160.4	-166.3	205.4	203.1	2.22	92.648		
700.0	694.3	671.6	669.6	1.8	1.3	-57.00	-167.6	-177.0	204.1	201.3	2.82	72.414		
800.0	790.2	769.1	766.3	2.4	1.6	-62.35	-174.8	-187.7	201.7	198.2	3.57	56.564		
900.0	884.4	866.4	862.6	3.0	1.9	-69.09	-182.0	-198.5	199.3	194.8	4.49	44.362		
974.6	953.6	937.5	933.1	3.6	2.1	-74.89	-187.4	-206.4	198.4	193.1	5.31	37.401 CC		
1,000.0	976.8	961.6	957.0	3.8	2.2	-77.01	-189.2	-209.1	198.6	193.0	5.59	35.515 ES		
1,100.0	1,067.1	1,055.3	1,049.8	4.6	2.4	-85.89	-196.4	-219.7	201.8	195.0	6.82	29.605		
1,200.0	1,156.3	1,148.4	1,142.0	5.5	2.7	-94.88	-203.9	-230.4	210.8	202.8	7.99	26.379		
1,300.0	1,245.5	1,242.0	1,234.7	6.4	3.0	-103.08	-211.3	-241.2	225.1	216.1	9.05	24.880		
1,400.0	1,334.7	1,335.3	1,327.0	7.2	3.3	-110.26	-218.8	-251.7	244.0	234.0	9.97	24.474 SF		
1,500.0	1,423.9	1,429.2	1,420.1	8.1	3.5	-116.54	-226.0	-262.2	266.1	255.4	10.76	24.744		
1,600.0	1,513.1	1,522.0	1,512.2	9.0	3.8	-121.93	-232.8	-271.9	291.0	279.6	11.43	25.472		
1,700.0	1,602.3	1,614.0	1,603.5	9.9	4.0	-126.54	-239.5	-281.1	318.5	306.4	12.01	26.515		
1,800.0	1,691.5	1,718.6	1,707.1	10.7	4.4	-130.72	-246.6	-293.7	346.0	333.4	12.58	27.514		
1,900.0	1,780.7	1,813.6	1,800.9	11.6	4.7	-133.80	-252.5	-306.9	373.1	359.9	13.13	28.404		
2,000.0	1,870.0	1,901.8	1,887.9	12.5	5.0	-136.12	-259.3	-319.5	401.8	388.1	13.71	29.306		
2,100.0	1,959.2	1,987.9	1,973.0	13.4	5.2	-138.08	-267.1	-330.7	432.8	418.5	14.26	30.340		
2,200.0	2,048.4	2,071.0	2,055.3	14.2	5.5	-139.94	-274.5	-339.3	466.2	451.4	14.74	31.621		



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> O19EB Pad (1st Occupation) - Shideler 19-16C - OH - FINAL												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 173-MWD												<b>Offset Well Error:</b>	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	-136.58	-110.7	-104.8	152.5				
100.0	100.0	100.6	100.6	0.1	0.2	-136.52	-110.5	-104.8	152.3	152.0	0.29	525.355	
200.0	200.0	201.1	201.1	0.3	0.3	-136.36	-109.7	-104.7	151.7	151.0	0.62	242.992	
300.0	300.0	303.5	303.5	0.5	0.5	-48.66	-109.1	-103.1	148.4	147.4	0.98	151.268	
400.0	399.6	406.6	406.3	0.7	0.7	-53.74	-110.0	-96.0	139.7	138.3	1.38	101.280	
500.0	498.8	505.1	504.1	1.0	0.9	-63.49	-112.2	-84.2	128.1	126.2	1.90	67.502	
600.0	597.1	600.8	598.5	1.4	1.2	-78.36	-115.1	-69.0	119.2	116.6	2.59	45.946	
647.3	643.2	644.7	641.7	1.6	1.4	-86.82	-116.4	-60.9	117.8	114.8	2.99	39.456 CC, ES	
700.0	694.3	692.5	688.5	1.8	1.6	-96.74	-117.6	-51.4	119.9	116.5	3.38	35.461	
800.0	790.2	780.2	774.2	2.4	1.9	-114.58	-119.6	-32.9	136.7	132.7	4.02	34.002 SF	
900.0	884.4	864.6	856.5	3.0	2.3	-128.65	-121.3	-14.5	169.5	165.1	4.45	38.074	
1,000.0	976.8	944.8	934.7	3.8	2.6	-138.64	-122.7	3.6	214.8	210.0	4.77	45.035	
1,100.0	1,067.1	1,023.7	1,011.4	4.6	3.0	-145.89	-123.9	21.8	269.1	264.1	5.03	53.507	
1,200.0	1,156.3	1,102.5	1,088.2	5.5	3.3	-152.00	-124.7	39.6	327.6	322.4	5.19	63.114	
1,300.0	1,245.5	1,181.0	1,164.8	6.4	3.6	-156.24	-125.7	56.8	387.4	382.0	5.37	72.146	
1,400.0	1,334.7	1,257.4	1,239.3	7.2	3.9	-159.28	-126.8	73.3	448.2	442.6	5.57	80.462	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> O19EB Pad (1st Occupation) - Shideler 19-16CC - OH - FINAL												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 202-MWD												<b>Offset Well Error:</b>	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	-136.96	-123.1	-115.0	168.5				
100.0	100.0	100.6	100.6	0.1	0.2	-137.00	-123.1	-114.8	168.3	168.0	0.29	574.211	
200.0	200.0	201.2	201.2	0.3	0.3	-137.12	-122.9	-114.1	167.7	167.1	0.62	268.571	
300.0	300.0	302.6	302.6	0.5	0.5	-49.40	-122.7	-112.6	164.8	163.9	0.98	168.055	
400.0	399.6	402.8	402.7	0.7	0.7	-53.10	-123.7	-108.4	158.0	156.6	1.37	115.418	
500.0	498.8	500.5	500.0	1.0	0.9	-60.24	-126.8	-101.0	149.1	147.2	1.84	80.817	
600.0	597.1	593.6	592.4	1.4	1.1	-71.09	-132.9	-90.7	142.5	140.0	2.47	57.749	
637.9	634.1	628.0	626.4	1.5	1.2	-76.07	-135.9	-86.1	141.8	139.0	2.75	51.484	CC, ES
700.0	694.3	683.0	680.4	1.8	1.4	-84.82	-141.5	-77.7	144.1	140.8	3.22	44.738	
800.0	790.2	767.9	763.2	2.4	1.8	-99.04	-151.8	-62.3	159.1	155.2	3.97	40.037	SF
900.0	884.4	850.1	842.9	3.0	2.1	-111.47	-162.8	-45.3	189.0	184.4	4.63	40.836	
1,000.0	976.8	928.7	918.8	3.8	2.5	-121.05	-173.7	-28.1	231.3	226.1	5.19	44.565	
1,100.0	1,067.1	1,007.8	995.1	4.6	2.9	-128.63	-184.5	-10.1	282.9	277.2	5.69	49.698	
1,200.0	1,156.3	1,083.4	1,068.0	5.5	3.3	-135.37	-193.9	7.3	339.6	333.6	6.04	56.209	
1,300.0	1,245.5	1,156.1	1,138.1	6.4	3.6	-140.28	-202.8	24.5	399.4	393.0	6.37	62.681	
1,400.0	1,334.7	1,227.8	1,207.1	7.2	4.0	-144.01	-211.8	42.0	461.4	454.7	6.69	68.971	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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							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	-137.29	-135.9	-125.4	184.9					
100.0	100.0	100.5	100.5	0.1	0.2	-137.28	-135.8	-125.3	184.8	184.5	0.29	631.465		
200.0	200.0	201.0	201.0	0.3	0.3	-137.27	-135.4	-125.1	184.4	183.8	0.62	295.671		
300.0	300.0	301.2	301.2	0.5	0.5	-49.19	-135.1	-124.5	182.0	181.0	0.98	186.271		
400.0	399.6	400.3	400.2	0.7	0.7	-52.25	-136.8	-121.8	176.5	175.2	1.36	130.040		
500.0	498.8	496.1	495.8	1.0	0.9	-58.05	-141.2	-116.7	169.6	167.8	1.81	93.746		
600.0	597.1	587.9	586.9	1.4	1.1	-66.69	-149.2	-109.4	164.9	162.6	2.39	69.086		
629.8	626.2	614.7	613.5	1.5	1.2	-69.78	-152.3	-106.8	164.6	162.0	2.60	63.345 CC, ES		
700.0	694.3	676.6	674.4	1.8	1.4	-77.70	-160.6	-99.8	166.8	163.7	3.10	53.776		
800.0	790.2	761.2	757.0	2.4	1.7	-89.56	-174.4	-87.7	179.5	175.6	3.89	46.194		
900.0	884.4	841.8	834.7	3.0	2.1	-100.74	-189.3	-72.9	205.4	200.7	4.66	44.066 SF		
1,000.0	976.8	918.9	908.6	3.8	2.5	-110.15	-204.3	-56.5	244.1	238.7	5.38	45.393		
1,100.0	1,067.1	991.6	977.9	4.6	2.9	-117.40	-218.9	-39.9	293.4	287.3	6.06	48.449		
1,200.0	1,156.3	1,062.0	1,044.6	5.5	3.3	-124.28	-233.3	-23.0	349.9	343.3	6.57	53.272		
1,300.0	1,245.5	1,132.8	1,111.6	6.4	3.7	-129.67	-247.9	-5.3	410.4	403.4	7.02	58.427		
1,400.0	1,334.7	1,203.0	1,177.9	7.2	4.1	-133.86	-262.5	12.6	473.5	466.0	7.45	63.551		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> O19EB Pad (1st Occupation) - Shideler 30-1C - OH - FINAL												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 111-MWD												<b>Offset Well Error:</b>	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	-135.20	-137.7	-136.7	194.0				
100.0	100.0	100.3	100.3	0.1	0.1	-135.22	-137.7	-136.6	194.0	193.7	0.28	701.670	
200.0	200.0	201.3	201.3	0.3	0.3	-135.35	-137.7	-136.0	193.6	192.9	0.62	310.313	
300.0	300.0	298.4	298.4	0.5	0.5	-47.69	-139.0	-134.6	191.7	190.7	0.97	196.608	
400.0	399.6	391.5	391.2	0.7	0.7	-51.25	-144.7	-131.5	189.0	187.6	1.36	138.986	
500.0	498.8	484.1	483.1	1.0	0.9	-57.32	-155.3	-126.8	187.6	185.8	1.83	102.355	
502.7	501.4	486.5	485.5	1.0	0.9	-57.51	-155.7	-126.7	187.6	185.8	1.85	101.473	CC, ES
600.0	597.1	574.7	572.2	1.4	1.2	-65.63	-170.1	-119.9	189.6	187.2	2.44	77.821	
700.0	694.3	661.0	656.2	1.8	1.6	-75.27	-187.3	-110.3	197.7	194.6	3.14	62.894	
800.0	790.2	744.1	736.2	2.4	2.0	-85.19	-206.7	-98.7	215.6	211.7	3.91	55.086	
900.0	884.4	819.2	807.5	3.0	2.4	-93.64	-226.9	-86.4	245.4	240.7	4.69	52.307	SF
1,000.0	976.8	888.0	871.8	3.8	2.9	-100.33	-247.6	-73.8	287.0	281.5	5.48	52.330	
1,100.0	1,067.1	950.4	929.3	4.6	3.3	-105.33	-268.4	-61.1	339.0	332.7	6.31	53.734	
1,200.0	1,156.3	1,008.7	982.1	5.5	3.8	-110.68	-289.4	-48.3	398.9	391.9	7.02	56.839	
1,300.0	1,245.5	1,069.0	1,036.0	6.4	4.3	-115.15	-312.5	-34.1	463.9	456.3	7.68	60.387	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> O19EB Pad (1st Occupation) - Shideler 30-2C - OH - FINAL												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 172-MWD, 1616-MWD												<b>Offset Well Error:</b>	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	-137.78	-171.6	-155.6	231.6				
100.0	100.0	101.7	101.7	0.1	0.2	-137.78	-171.3	-155.4	231.3	231.0	0.29	791.985	
200.0	200.0	202.0	202.0	0.3	0.3	-137.77	-170.5	-154.8	230.2	229.6	0.63	367.125	
300.0	300.0	296.1	296.1	0.5	0.5	-49.67	-171.2	-154.2	228.8	227.8	0.97	236.164	
400.0	399.6	386.0	385.9	0.7	0.6	-51.67	-175.3	-154.6	227.6	226.2	1.33	170.904	
411.6	411.2	396.3	396.2	0.7	0.7	-51.98	-176.1	-154.7	227.5	226.1	1.38	164.964	CC, ES
500.0	498.8	478.0	477.4	1.0	0.8	-55.02	-184.1	-156.6	228.6	226.8	1.75	130.335	
600.0	597.1	561.3	559.8	1.4	1.1	-59.29	-196.3	-159.1	232.5	230.2	2.25	103.492	
700.0	694.3	645.6	642.4	1.8	1.4	-64.63	-212.8	-161.7	240.6	237.7	2.84	84.669	
800.0	790.2	727.3	721.5	2.4	1.8	-70.26	-232.7	-165.1	254.7	251.2	3.54	71.993	
900.0	884.4	806.1	796.8	3.0	2.2	-75.76	-255.5	-169.0	275.9	271.5	4.34	63.603	
1,000.0	976.8	885.7	871.8	3.8	2.7	-81.05	-282.0	-173.4	304.2	299.0	5.25	57.942	
1,100.0	1,067.1	967.8	948.5	4.6	3.2	-86.11	-310.7	-178.5	337.9	331.6	6.28	53.790	
1,200.0	1,156.3	1,049.6	1,024.6	5.5	3.7	-91.54	-340.3	-183.4	376.3	369.0	7.35	51.229	
1,300.0	1,245.5	1,134.9	1,103.8	6.4	4.3	-96.24	-371.6	-188.5	418.2	409.8	8.44	49.570	
1,400.0	1,334.7	1,228.6	1,191.4	7.2	4.8	-100.63	-404.8	-193.5	461.2	451.7	9.56	48.260	SF

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Total	Separation		
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Uncertainty Axis	Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-135.82	-172.7	-167.8	240.8					
100.0	100.0	100.9	100.9	0.1	0.2	-135.80	-172.5	-167.7	240.6	240.3	0.29	829.546		
200.0	200.0	200.6	200.6	0.3	0.3	-135.73	-171.9	-167.6	240.1	239.5	0.62	385.451		
300.0	300.0	294.0	294.0	0.5	0.5	-47.28	-172.4	-168.5	239.3	238.4	0.96	248.153		
367.2	367.0	353.2	353.1	0.6	0.6	-48.06	-174.3	-170.1	239.1	237.9	1.20	198.883 CC		
400.0	399.6	382.6	382.5	0.7	0.6	-48.58	-175.8	-171.4	239.1	237.8	1.32	181.208 ES		
500.0	498.8	469.7	469.1	1.0	0.8	-50.73	-182.4	-176.7	240.4	238.7	1.72	140.048		
600.0	597.1	559.2	557.7	1.4	1.1	-54.03	-193.3	-183.6	243.7	241.5	2.19	111.289		
700.0	694.3	652.7	649.8	1.8	1.4	-58.46	-207.2	-191.7	248.0	245.2	2.77	89.515		
800.0	790.2	746.8	742.2	2.4	1.7	-63.64	-222.2	-200.4	252.9	249.5	3.48	72.676		
900.0	884.4	840.1	833.9	3.0	2.0	-69.56	-238.1	-209.2	259.3	255.0	4.34	59.751		
1,000.0	976.8	936.3	928.1	3.8	2.4	-76.20	-254.4	-218.3	267.7	262.4	5.38	49.789		
1,100.0	1,067.1	1,029.3	1,019.4	4.6	2.7	-82.93	-269.7	-227.7	278.8	272.2	6.56	42.522		
1,200.0	1,156.3	1,119.8	1,108.2	5.5	3.1	-89.62	-284.7	-237.1	294.3	286.6	7.75	37.955		
1,300.0	1,245.5	1,211.0	1,197.5	6.4	3.4	-95.58	-300.2	-247.0	314.4	305.4	8.94	35.177		
1,400.0	1,334.7	1,303.5	1,288.1	7.2	3.8	-100.98	-316.1	-256.8	337.9	327.8	10.08	33.523		
1,500.0	1,423.9	1,396.9	1,379.8	8.1	4.1	-105.85	-331.5	-266.2	363.7	352.6	11.16	32.600		
1,600.0	1,513.1	1,487.0	1,468.4	9.0	4.5	-110.17	-345.9	-273.9	391.8	379.7	12.15	32.249 SF		
1,700.0	1,602.3	1,574.8	1,554.8	9.9	4.8	-113.98	-360.0	-280.3	422.7	409.6	13.09	32.297		
1,800.0	1,691.5	1,665.7	1,643.9	10.7	5.1	-117.24	-375.8	-287.9	455.7	441.7	14.01	32.518		
1,900.0	1,780.7	1,763.1	1,739.3	11.6	5.5	-120.04	-393.2	-298.0	489.3	474.4	14.96	32.719		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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				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	-135.45	-159.5	-157.1	223.9				
100.0	100.0	100.2	100.2	0.1	0.2	-135.44	-159.5	-157.1	223.8	223.6	0.29	780.162	
200.0	200.0	200.5	200.5	0.3	0.3	-135.41	-159.3	-157.1	223.7	223.1	0.62	359.512	
300.0	300.0	294.0	294.0	0.5	0.5	-46.90	-159.7	-158.3	223.1	222.2	0.96	231.344	
368.4	368.2	355.0	354.9	0.6	0.6	-47.52	-161.0	-160.7	222.8	221.6	1.21	184.431 CC	
400.0	399.6	383.5	383.3	0.7	0.6	-47.87	-162.0	-162.4	222.9	221.5	1.32	168.570 ES	
500.0	498.8	471.7	471.1	1.0	0.8	-49.55	-167.0	-169.8	224.1	222.3	1.72	130.191	
600.0	597.1	559.3	557.7	1.4	1.1	-52.15	-175.7	-179.6	227.5	225.3	2.19	103.946	
700.0	694.3	648.4	645.0	1.8	1.4	-55.34	-187.4	-192.7	233.2	230.4	2.77	84.331	
800.0	790.2	735.8	729.8	2.4	1.8	-58.67	-200.8	-209.3	241.2	237.7	3.47	69.444	
900.0	884.4	821.0	811.3	3.0	2.3	-62.08	-216.5	-228.8	252.5	248.2	4.35	58.097	
1,000.0	976.8	905.0	890.0	3.8	2.9	-65.32	-234.5	-251.9	267.7	262.3	5.41	49.504	
1,100.0	1,067.1	992.1	969.8	4.6	3.5	-68.56	-255.6	-279.3	286.5	279.8	6.68	42.888	
1,200.0	1,156.3	1,083.5	1,052.7	5.5	4.2	-72.19	-279.3	-309.6	307.9	299.8	8.10	38.027	
1,300.0	1,245.5	1,178.5	1,138.5	6.4	5.0	-75.32	-304.3	-342.1	331.2	321.6	9.61	34.481	
1,400.0	1,334.7	1,274.9	1,225.3	7.2	5.8	-77.95	-329.3	-375.8	355.2	344.1	11.16	31.825	
1,500.0	1,423.9	1,370.0	1,310.8	8.1	6.5	-80.17	-354.0	-409.4	379.9	367.1	12.73	29.838	
1,600.0	1,513.1	1,464.6	1,395.8	9.0	7.3	-82.15	-378.9	-442.5	405.3	391.0	14.31	28.328	
1,700.0	1,602.3	1,561.5	1,483.1	9.9	8.1	-84.05	-404.5	-475.7	431.3	415.4	15.90	27.125	
1,800.0	1,691.5	1,658.6	1,571.4	10.7	8.8	-85.96	-429.8	-507.4	457.1	439.6	17.50	26.118	
1,900.0	1,780.7	1,753.0	1,657.1	11.6	9.6	-87.64	-454.5	-538.0	483.4	464.4	19.07	25.349 SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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				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	-134.55	-124.6	-126.6	177.6					
100.0	100.0	101.1	101.1	0.1	0.1	-134.58	-124.4	-126.3	177.3	177.0	0.28	638.020		
194.8	194.8	194.8	194.8	0.3	0.3	-134.59	-124.1	-125.9	176.8	176.2	0.60	292.812		
200.0	200.0	199.8	199.8	0.3	0.3	-134.58	-124.1	-125.9	176.8	176.1	0.62	284.460		
300.0	300.0	294.0	294.0	0.5	0.5	-45.81	-123.9	-128.1	176.5	175.5	0.97	182.843		
322.1	322.0	314.0	314.0	0.5	0.5	-45.88	-124.1	-129.1	176.5	175.4	1.04	168.930 CC		
400.0	399.6	386.0	385.7	0.7	0.7	-46.40	-125.2	-134.1	176.7	175.4	1.33	132.780 ES		
500.0	498.8	478.0	477.2	1.0	0.9	-47.82	-129.0	-143.8	178.0	176.3	1.74	102.169		
600.0	597.1	569.0	567.0	1.4	1.1	-49.80	-134.6	-157.3	180.6	178.4	2.23	80.850		
700.0	694.3	661.0	657.0	1.8	1.5	-52.06	-141.1	-174.8	183.7	180.8	2.85	64.503		
800.0	790.2	754.0	747.1	2.4	1.9	-54.58	-148.7	-196.8	187.7	184.0	3.62	51.899		
900.0	884.4	846.0	834.8	3.0	2.5	-57.23	-157.8	-223.0	193.6	189.0	4.57	42.337		
1,000.0	976.8	938.0	920.8	3.8	3.1	-59.92	-168.4	-253.8	201.3	195.6	5.74	35.091		
1,100.0	1,067.1	1,033.0	1,008.5	4.6	3.8	-63.11	-180.5	-288.3	209.7	202.6	7.14	29.390		
1,200.0	1,156.3	1,130.2	1,097.7	5.5	4.5	-66.62	-193.3	-324.7	219.0	210.3	8.68	25.233		
1,300.0	1,245.5	1,228.8	1,187.9	6.4	5.3	-69.71	-206.4	-362.3	229.3	219.0	10.29	22.284		
1,400.0	1,334.7	1,326.7	1,277.3	7.2	6.0	-72.50	-219.6	-399.8	240.5	228.6	11.93	20.152		
1,500.0	1,423.9	1,425.9	1,367.9	8.1	6.8	-75.04	-233.0	-437.9	252.3	238.7	13.61	18.532		
1,600.0	1,513.1	1,524.4	1,458.0	9.0	7.5	-77.39	-246.1	-475.5	264.3	249.0	15.32	17.254		
1,700.0	1,602.3	1,625.6	1,549.8	9.9	8.4	-79.15	-259.4	-516.1	276.8	259.8	17.06	16.228		
1,800.0	1,691.5	1,726.6	1,641.1	10.7	9.2	-80.44	-270.8	-557.9	288.1	269.3	18.79	15.336		
1,900.0	1,780.7	1,828.1	1,732.9	11.6	10.0	-81.65	-281.8	-599.7	299.0	278.5	20.52	14.567		
2,000.0	1,870.0	1,927.6	1,823.1	12.5	10.8	-82.85	-292.3	-640.2	309.6	287.4	22.24	13.921		
2,100.0	1,959.2	2,023.1	1,909.9	13.4	11.6	-83.97	-302.6	-678.9	320.6	296.7	23.94	13.392		
2,200.0	2,048.4	2,112.8	1,990.7	14.2	12.3	-84.80	-314.2	-716.1	334.0	308.4	25.58	13.056		
2,300.0	2,137.6	2,205.0	2,073.5	15.1	13.1	-85.70	-328.7	-753.9	350.1	322.9	27.23	12.860		
2,400.0	2,226.8	2,304.1	2,162.9	16.0	13.9	-86.77	-344.9	-793.3	366.9	338.0	28.93	12.682		
2,500.0	2,316.0	2,403.7	2,253.0	16.9	14.7	-87.82	-360.9	-832.6	383.5	352.9	30.64	12.518		
2,600.0	2,405.2	2,503.1	2,343.4	17.8	15.5	-88.93	-376.6	-870.8	400.0	367.7	32.32	12.375		
2,700.0	2,494.4	2,603.3	2,434.7	18.6	16.3	-89.98	-392.1	-909.3	416.2	382.2	34.05	12.226		
2,800.0	2,583.6	2,706.6	2,527.5	19.5	17.2	-90.54	-407.3	-952.0	431.9	396.1	35.81	12.059		
2,900.0	2,672.9	2,808.6	2,619.0	20.4	18.1	-90.97	-421.4	-994.7	446.5	409.0	37.53	11.896		
3,000.0	2,762.1	2,906.4	2,707.3	21.3	18.9	-91.52	-434.7	-1,034.5	461.1	421.9	39.22	11.756		
3,100.0	2,851.3	3,010.3	2,801.3	22.2	19.7	-92.10	-448.2	-1,076.7	475.1	434.1	40.96	11.600		
3,200.0	2,940.5	3,108.2	2,890.4	23.1	20.5	-92.72	-460.6	-1,115.6	488.9	446.2	42.63	11.468 SF		

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



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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						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	-137.38	-158.1	-145.5	214.8				
100.0	100.0	102.0	102.0	0.1	0.2	-137.35	-157.7	-145.2	214.4	214.1	0.29	731.201	
200.0	200.0	202.9	202.8	0.3	0.3	-137.28	-156.5	-144.5	213.1	212.5	0.63	338.275	
300.0	300.0	298.5	298.5	0.5	0.5	-49.25	-156.8	-143.6	210.9	209.9	0.97	216.777	
400.0	399.6	389.7	389.5	0.7	0.6	-51.86	-161.0	-142.2	208.4	207.1	1.34	155.367	
478.6	477.6	461.1	460.7	0.9	0.8	-55.09	-167.5	-141.5	207.8	206.1	1.68	123.654 CC	
500.0	498.8	478.0	477.4	1.0	0.8	-56.01	-169.4	-141.3	207.8	206.0	1.77	117.416 ES	
600.0	597.1	569.0	567.5	1.4	1.1	-62.12	-182.1	-139.3	209.4	207.1	2.31	90.609	
700.0	694.3	661.0	657.8	1.8	1.4	-70.01	-199.6	-135.7	216.1	213.1	2.98	72.610	
800.0	790.2	738.5	732.9	2.4	1.8	-77.34	-218.1	-131.6	230.6	226.9	3.71	62.199	
900.0	884.4	815.9	807.0	3.0	2.2	-84.59	-240.0	-126.7	254.7	250.2	4.51	56.516	
1,000.0	976.8	889.6	876.6	3.8	2.6	-90.77	-263.8	-122.1	288.6	283.3	5.36	53.826	
1,100.0	1,067.1	958.4	940.6	4.6	3.1	-95.77	-288.4	-117.2	331.6	325.3	6.27	52.845 SF	
1,200.0	1,156.3	1,021.6	998.5	5.5	3.5	-100.93	-313.1	-111.6	382.5	375.3	7.13	53.616	
1,300.0	1,245.5	1,083.3	1,054.1	6.4	4.0	-105.12	-339.1	-105.3	439.5	431.5	7.97	55.130	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> O19EB Pad (1st Occupation) - Shideler 30-8B - OH - FINAL												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 142-MWD												<b>Offset Well Error:</b>	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	-137.07	-146.1	-135.9	199.5				
100.0	100.0	100.2	100.2	0.1	0.1	-137.14	-146.2	-135.7	199.4	199.2	0.28	702.553	
200.0	200.0	200.1	200.1	0.3	0.3	-137.39	-146.7	-134.9	199.3	198.6	0.62	320.600	
300.0	300.0	296.3	296.2	0.5	0.5	-50.01	-149.3	-133.2	198.4	197.4	0.98	203.104	
400.0	399.6	390.3	390.0	0.7	0.7	-53.50	-155.5	-130.4	196.8	195.5	1.37	143.781	
455.5	454.7	440.9	440.2	0.9	0.8	-56.32	-160.9	-128.4	196.5	194.8	1.62	121.081	CC, ES
500.0	498.8	481.8	480.7	1.0	0.9	-59.08	-166.2	-126.5	196.7	194.9	1.84	107.096	
600.0	597.1	572.1	569.6	1.4	1.2	-66.63	-180.7	-120.6	199.9	197.4	2.41	82.810	
700.0	694.3	657.1	652.4	1.8	1.5	-75.21	-198.3	-112.8	209.5	206.4	3.09	67.741	
800.0	790.2	737.0	729.3	2.4	2.0	-83.80	-218.2	-103.4	228.6	224.7	3.84	59.462	
900.0	884.4	811.3	799.7	3.0	2.4	-91.38	-239.6	-93.1	258.9	254.2	4.63	55.944	
1,000.0	976.8	881.0	864.6	3.8	2.9	-97.60	-262.2	-82.1	300.1	294.6	5.45	55.102	SF
1,100.0	1,067.1	938.0	917.1	4.6	3.3	-101.79	-282.0	-71.7	350.8	344.5	6.31	55.609	
1,200.0	1,156.3	1,004.3	977.2	5.5	3.8	-107.76	-306.7	-58.5	409.0	402.0	7.06	57.959	
1,300.0	1,245.5	1,060.3	1,027.1	6.4	4.3	-111.85	-329.0	-46.5	472.8	465.0	7.78	60.788	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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					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	-133.79	-111.8	-116.7	161.6					
100.0	100.0	100.1	100.1	0.1	0.1	-133.81	-111.9	-116.6	161.6	161.3	0.28	585.095		
154.8	154.8	154.8	154.8	0.2	0.2	-133.83	-111.9	-116.6	161.6	161.1	0.46	348.570		
200.0	200.0	199.3	199.3	0.3	0.3	-133.81	-111.9	-116.6	161.6	161.0	0.62	260.610		
300.0	300.0	294.0	294.0	0.5	0.5	-45.04	-111.8	-118.9	161.5	160.5	0.97	167.304		
304.4	304.4	298.8	298.8	0.5	0.5	-45.05	-111.8	-119.1	161.5	160.5	0.98	164.327		
366.4	366.2	356.4	356.3	0.6	0.6	-45.20	-112.0	-122.8	161.3	160.1	1.21	133.266 CC		
400.0	399.6	386.0	385.7	0.7	0.7	-45.28	-112.1	-125.5	161.4	160.0	1.33	121.004 ES		
500.0	498.8	478.0	476.9	1.0	0.9	-45.39	-112.4	-137.5	161.9	160.2	1.77	91.484		
600.0	597.1	574.2	571.5	1.4	1.3	-45.59	-113.2	-155.2	162.9	160.6	2.30	70.804		
700.0	694.3	666.3	661.2	1.8	1.6	-46.52	-115.9	-176.0	164.7	161.8	2.92	56.493		
800.0	790.2	758.6	750.0	2.4	2.1	-48.14	-120.7	-200.5	167.7	164.0	3.67	45.718		
900.0	884.4	850.4	836.9	3.0	2.7	-50.02	-126.9	-229.5	172.0	167.4	4.59	37.465		
1,000.0	976.8	944.8	924.3	3.8	3.4	-51.82	-133.5	-264.2	176.9	171.2	5.73	30.903		
1,100.0	1,067.1	1,038.8	1,009.5	4.6	4.2	-53.39	-139.7	-303.5	182.1	175.0	7.05	25.810		
1,200.0	1,156.3	1,136.6	1,096.6	5.5	5.0	-54.80	-146.2	-347.5	188.1	179.6	8.49	22.152		
1,300.0	1,245.5	1,237.8	1,186.3	6.4	5.9	-55.71	-151.9	-394.1	194.0	184.0	9.98	19.439		
1,400.0	1,334.7	1,339.9	1,276.8	7.2	6.8	-56.44	-156.7	-441.0	199.2	187.7	11.48	17.349		
1,500.0	1,423.9	1,441.0	1,367.2	8.1	7.7	-57.52	-161.6	-486.0	203.6	190.5	13.03	15.625		
1,600.0	1,513.1	1,543.0	1,459.2	9.0	8.5	-59.00	-166.4	-529.8	207.0	192.3	14.65	14.125		
1,700.0	1,602.3	1,642.5	1,549.4	9.9	9.3	-60.64	-171.4	-571.7	210.4	194.0	16.33	12.881		
1,800.0	1,691.5	1,742.1	1,639.4	10.7	10.2	-62.02	-175.9	-614.0	213.6	195.6	18.02	11.855		
1,900.0	1,780.7	1,840.4	1,728.0	11.6	11.0	-63.35	-181.1	-656.2	217.9	198.2	19.71	11.058		
2,000.0	1,870.0	1,941.2	1,819.4	12.5	11.8	-65.02	-186.8	-698.3	222.2	200.7	21.48	10.340		
2,100.0	1,959.2	2,038.2	1,907.3	13.4	12.6	-66.54	-192.4	-738.9	226.7	203.4	23.26	9.746		
2,200.0	2,048.4	2,136.4	1,995.6	14.2	13.4	-67.70	-198.9	-781.5	232.8	207.8	25.01	9.309		
2,300.0	2,137.6	2,237.9	2,087.0	15.1	14.3	-68.92	-205.5	-825.2	238.8	212.0	26.80	8.909		
2,400.0	2,226.8	2,339.2	2,178.5	16.0	15.1	-70.22	-211.5	-868.1	244.1	215.5	28.63	8.526		
2,500.0	2,316.0	2,440.8	2,270.5	16.9	16.0	-71.45	-216.9	-911.0	248.8	218.4	30.46	8.170		
2,600.0	2,405.2	2,541.8	2,361.9	17.8	16.8	-72.61	-221.7	-953.5	253.1	220.8	32.29	7.838		
2,700.0	2,494.4	2,642.8	2,453.4	18.6	17.6	-73.61	-225.7	-996.3	256.8	222.7	34.10	7.530		
2,800.0	2,583.6	2,740.3	2,541.6	19.5	18.4	-74.61	-229.8	-1,037.4	260.8	224.9	35.89	7.267		
2,900.0	2,672.9	2,836.9	2,629.2	20.4	19.2	-75.73	-235.4	-1,077.9	266.3	228.6	37.69	7.065		
3,000.0	2,762.1	2,938.1	2,720.9	21.3	20.0	-76.86	-241.5	-1,120.3	272.1	232.6	39.54	6.883		
3,100.0	2,851.3	3,041.2	2,814.8	22.2	20.8	-78.14	-246.8	-1,162.4	277.0	235.6	41.40	6.690		
3,200.0	2,940.5	3,141.0	2,906.1	23.1	21.6	-79.52	-251.4	-1,202.4	281.2	238.0	43.26	6.501		
3,300.0	3,029.7	3,242.4	2,998.8	23.9	22.4	-80.77	-256.1	-1,243.4	285.6	240.5	45.12	6.331		
3,400.0	3,118.9	3,336.7	3,084.5	24.8	23.2	-81.70	-260.3	-1,282.5	290.4	243.5	46.89	6.192		
3,500.0	3,208.1	3,436.3	3,174.5	25.7	24.0	-82.46	-266.2	-1,324.8	296.6	247.9	48.68	6.094		
3,600.0	3,297.3	3,532.0	3,261.1	26.6	24.8	-83.26	-272.2	-1,365.1	303.3	252.9	50.43	6.014		
3,700.0	3,386.5	3,632.9	3,352.1	27.5	25.6	-84.00	-279.1	-1,407.9	310.6	258.4	52.23	5.947		
3,800.0	3,475.8	3,726.4	3,436.8	28.3	26.4	-84.77	-286.3	-1,447.0	318.8	264.9	53.94	5.910		
3,900.0	3,565.0	3,829.6	3,530.5	29.2	27.2	-85.73	-294.6	-1,489.5	327.3	271.6	55.75	5.871		
4,000.0	3,654.2	3,929.1	3,620.9	30.1	28.0	-86.63	-302.0	-1,530.2	335.3	277.8	57.52	5.829		
4,100.0	3,743.4	4,026.5	3,709.0	31.0	28.9	-87.27	-309.8	-1,571.3	343.9	284.6	59.27	5.802		
4,200.0	3,832.6	4,128.4	3,801.0	31.9	29.7	-87.91	-317.8	-1,614.1	352.5	291.5	61.04	5.776		
4,300.0	3,921.8	4,231.4	3,894.4	32.8	30.5	-88.59	-324.9	-1,657.1	360.2	297.4	62.80	5.735		
4,400.0	4,011.0	4,332.7	3,986.5	33.6	31.3	-89.34	-331.3	-1,698.7	367.2	302.7	64.56	5.688		
4,500.0	4,100.2	4,433.2	4,077.3	34.5	32.2	-89.80	-337.2	-1,741.5	374.0	307.7	66.33	5.639		
4,600.0	4,189.4	4,535.6	4,169.5	35.4	33.0	-90.19	-342.9	-1,785.5	380.4	312.4	68.07	5.589		
4,700.0	4,278.6	4,637.4	4,261.6	36.3	33.9	-90.67	-347.9	-1,828.6	386.2	316.4	69.83	5.531		
4,800.0	4,368.0	4,740.1	4,354.4	37.2	34.7	-91.10	-352.2	-1,872.3	391.4	319.8	71.56	5.469		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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		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		
4,900.0	4,458.5	4,840.7	4,446.8	37.9	35.5	-91.67	-356.1	-1,912.0	396.1	323.0	73.11	5.418	
5,000.0	4,550.5	4,940.4	4,539.6	38.7	36.1	-92.20	-359.4	-1,948.2	400.3	325.8	74.52	5.372	
5,100.0	4,643.8	5,032.8	4,626.6	39.3	36.7	-92.69	-363.6	-1,978.8	405.6	329.9	75.76	5.355	
5,200.0	4,738.2	5,125.7	4,715.0	39.9	37.2	-93.12	-369.5	-2,007.1	412.8	335.9	76.88	5.369	
5,300.0	4,833.8	5,228.6	4,813.2	40.4	37.8	-93.29	-376.7	-2,036.8	420.4	342.4	77.96	5.392	
5,400.0	4,930.3	5,333.3	4,914.1	40.9	38.3	-93.35	-382.2	-2,064.3	426.1	347.2	78.93	5.398	
5,500.0	5,027.7	5,435.0	5,012.9	41.3	38.7	-93.31	-387.0	-2,088.2	431.3	351.5	79.76	5.407	
5,600.0	5,125.8	5,537.5	5,113.2	41.6	39.1	-93.25	-391.0	-2,108.8	435.6	355.1	80.46	5.414	
5,700.0	5,224.6	5,637.2	5,211.4	41.9	39.4	-93.17	-394.6	-2,125.7	439.5	358.4	81.04	5.422	
5,800.0	5,323.8	5,736.9	5,309.9	42.1	39.7	-92.94	-398.2	-2,140.2	443.3	361.7	81.52	5.437	
5,900.0	5,423.4	5,850.7	5,422.8	42.3	39.9	-92.52	-400.1	-2,153.8	445.0	363.1	81.92	5.432	
6,000.0	5,523.2	5,951.9	5,523.6	42.4	40.1	-91.96	-400.3	-2,163.7	445.2	363.0	82.18	5.418	
6,100.0	5,623.2	6,055.7	5,627.1	42.4	40.3	-91.14	-400.1	-2,172.1	445.0	362.6	82.34	5.404	
6,200.0	5,723.2	6,158.5	5,729.6	42.5	40.4	-179.10	-398.6	-2,178.7	443.6	361.2	82.45	5.380	
6,300.0	5,823.2	6,257.2	5,828.2	42.5	40.5	-178.49	-397.2	-2,183.3	442.3	359.8	82.54	5.359	
6,400.0	5,923.2	6,358.9	5,929.8	42.6	40.6	-178.14	-395.9	-2,186.0	441.1	358.5	82.62	5.339	
6,500.0	6,023.2	6,458.4	6,029.4	42.6	40.6	-178.04	-394.4	-2,186.7	439.6	356.9	82.71	5.315	
6,600.0	6,123.2	6,553.1	6,124.1	42.7	40.7	-177.99	-393.6	-2,187.1	438.7	355.9	82.80	5.299	
6,700.0	6,223.2	6,654.0	6,225.0	42.7	40.7	-177.95	-393.3	-2,187.4	438.5	355.6	82.89	5.290	
6,800.0	6,323.2	6,759.0	6,329.9	42.7	40.8	-178.06	-392.3	-2,186.5	437.5	354.5	82.98	5.272	
6,900.0	6,423.2	6,860.3	6,431.2	42.8	40.8	-178.34	-390.5	-2,184.3	435.7	352.6	83.08	5.244	
7,000.0	6,523.2	6,959.0	6,529.9	42.8	40.8	-178.62	-389.0	-2,182.2	434.1	350.9	83.18	5.219	
7,100.0	6,623.2	7,058.7	6,629.5	42.9	40.9	-178.73	-387.4	-2,181.3	432.5	349.2	83.30	5.192	
7,200.0	6,723.2	7,157.9	6,728.7	42.9	40.9	-178.67	-386.2	-2,181.7	431.2	347.8	83.39	5.171	
7,300.0	6,823.2	7,260.5	6,831.3	43.0	40.9	-178.91	-384.7	-2,179.9	429.7	346.2	83.48	5.147	
7,400.0	6,923.2	7,359.2	6,929.9	43.1	40.9	-179.28	-382.8	-2,177.0	427.8	344.2	83.58	5.119	
7,500.0	7,023.2	7,459.9	7,030.6	43.1	40.9	-179.65	-381.3	-2,174.3	426.3	342.6	83.68	5.094	
7,600.0	7,123.2	7,562.8	7,133.5	43.2	41.0	-179.73	-379.2	-2,173.7	424.2	340.4	83.81	5.062	
7,694.7	7,218.0	7,647.3	7,218.0	43.2	41.1	-179.58	-378.1	-2,174.8	423.0	339.1	83.92	5.041	
7,700.0	7,223.2	7,652.0	7,222.6	43.2	41.1	-179.57	-378.1	-2,174.9	423.1	339.1	83.93	5.041 SF	
7,800.0	7,323.2	7,741.9	7,312.5	43.3	41.1	-179.40	-379.3	-2,176.1	424.4	340.4	84.03	5.051	
7,900.0	7,423.2	7,838.8	7,409.4	43.3	41.2	-179.39	-382.2	-2,176.2	427.3	343.2	84.13	5.079	
8,000.0	7,523.2	7,939.7	7,510.2	43.4	41.2	-179.56	-385.4	-2,175.0	430.5	346.2	84.23	5.111	
8,100.0	7,623.2	8,040.3	7,610.8	43.4	41.3	-179.83	-388.3	-2,173.0	433.4	349.1	84.33	5.139	
8,200.0	7,723.2	8,140.9	7,711.3	43.5	41.3	179.85	-391.2	-2,170.6	436.2	351.8	84.43	5.166	
8,300.0	7,823.2	8,242.8	7,813.1	43.5	41.3	179.43	-393.7	-2,167.3	438.8	354.2	84.52	5.191	
8,400.0	7,923.2	8,346.1	7,916.3	43.6	41.3	178.84	-395.7	-2,162.8	440.7	356.1	84.60	5.210	
8,462.8	7,986.0	8,408.0	7,978.1	43.6	41.3	178.44	-396.5	-2,159.6	441.7	357.0	84.64	5.218	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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	-45.96	40.4	-41.8	58.2				
100.0	100.0	100.0	100.0	0.1	0.1	-45.96	40.4	-41.8	58.2	57.9	0.27	213.604	
200.0	200.0	200.0	200.0	0.3	0.3	-45.96	40.4	-41.8	58.2	57.5	0.62	93.602	
300.0	300.0	300.0	300.0	0.5	0.5	44.71	40.4	-41.8	56.3	55.3	0.97	57.759	
400.0	399.6	399.6	399.6	0.7	0.7	51.03	40.4	-41.8	51.0	49.6	1.35	37.738	
500.0	498.8	496.5	496.4	1.0	0.8	63.62	42.5	-43.1	46.4	44.6	1.80	25.840	
528.3	526.7	523.9	523.8	1.1	0.9	68.35	43.8	-44.0	46.1	44.2	1.95	23.624	CC, ES
600.0	597.1	593.1	592.7	1.4	1.0	81.40	48.6	-47.2	48.2	45.9	2.36	20.410	
700.0	694.3	689.1	688.0	1.8	1.3	97.98	58.7	-53.8	58.7	55.7	3.03	19.408	SF
800.0	790.2	784.2	781.6	2.4	1.6	109.26	72.6	-63.0	77.4	73.6	3.77	20.514	
900.0	884.4	878.1	873.1	3.0	2.0	115.91	90.1	-74.6	102.5	97.9	4.62	22.184	
1,000.0	976.8	972.8	964.7	3.8	2.4	120.51	110.0	-87.7	132.3	126.7	5.55	23.822	
1,100.0	1,067.1	1,066.3	1,055.2	4.6	2.8	124.64	129.7	-100.7	165.5	159.0	6.51	25.421	
1,200.0	1,156.3	1,159.1	1,145.0	5.5	3.2	128.52	149.2	-113.6	200.9	193.5	7.44	27.009	
1,300.0	1,245.5	1,251.8	1,234.8	6.4	3.6	131.24	168.7	-126.4	236.9	228.5	8.36	28.328	
1,400.0	1,334.7	1,344.6	1,324.6	7.2	4.1	133.25	188.2	-139.3	273.2	264.0	9.29	29.426	
1,500.0	1,423.9	1,437.4	1,414.4	8.1	4.5	134.79	207.8	-152.2	309.8	299.6	10.21	30.351	
1,600.0	1,513.1	1,530.2	1,504.2	9.0	4.9	136.00	227.3	-165.1	346.5	335.4	11.13	31.136	
1,700.0	1,602.3	1,623.0	1,594.0	9.9	5.4	136.99	246.8	-177.9	383.3	371.2	12.05	31.810	
1,800.0	1,691.5	1,715.8	1,683.8	10.7	5.8	137.80	266.3	-190.8	420.2	407.2	12.97	32.394	
1,900.0	1,780.7	1,808.6	1,773.6	11.6	6.2	138.48	285.8	-203.7	457.1	443.2	13.89	32.904	
2,000.0	1,870.0	1,901.4	1,863.4	12.5	6.7	139.06	305.3	-216.6	494.1	479.3	14.82	33.353	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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				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	-48.68	60.1	-68.4	91.0					
100.0	100.0	100.0	100.0	0.1	0.1	-48.68	60.1	-68.4	91.0	90.7	0.27	334.293		
200.0	200.0	200.0	200.0	0.3	0.3	-48.68	60.1	-68.4	91.0	90.4	0.62	146.488		
300.0	300.0	296.6	296.6	0.5	0.5	41.15	61.0	-69.4	90.4	89.5	0.97	93.445		
316.4	316.4	312.3	312.2	0.5	0.5	41.50	61.4	-69.9	90.4	89.4	1.03	87.963 CC, ES		
400.0	399.6	391.9	391.7	0.7	0.7	44.10	64.8	-73.9	90.9	89.6	1.33	68.246		
500.0	498.8	487.1	486.2	1.0	0.9	48.79	71.7	-82.1	93.0	91.3	1.75	53.299		
600.0	597.1	583.0	580.9	1.4	1.2	54.90	81.5	-93.8	97.4	95.1	2.26	43.150		
700.0	694.3	681.9	678.4	1.8	1.5	62.83	92.6	-106.9	101.6	98.7	2.93	34.627		
800.0	790.2	780.2	775.1	2.4	1.9	72.52	103.5	-119.9	106.0	102.2	3.82	27.775		
900.0	884.4	877.5	871.0	3.0	2.2	83.58	114.4	-132.8	112.7	107.8	4.89	23.043		
1,000.0	976.8	973.6	965.7	3.8	2.5	95.17	125.1	-145.5	123.7	117.7	6.05	20.448		
1,100.0	1,067.1	1,068.3	1,058.9	4.6	2.9	106.24	135.6	-158.1	140.8	133.6	7.16	19.671 SF		
1,200.0	1,156.3	1,162.3	1,151.5	5.5	3.2	115.85	146.1	-170.5	163.5	155.4	8.07	20.258		
1,300.0	1,245.5	1,256.2	1,244.0	6.4	3.5	123.10	156.6	-182.9	189.7	180.8	8.84	21.451		
1,400.0	1,334.7	1,350.2	1,336.5	7.2	3.8	128.60	167.1	-195.4	218.1	208.6	9.53	22.883		
1,500.0	1,423.9	1,444.1	1,429.0	8.1	4.2	132.85	177.5	-207.8	248.0	237.9	10.17	24.378		
1,600.0	1,513.1	1,538.0	1,521.6	9.0	4.5	136.19	188.0	-220.2	278.9	268.2	10.79	25.849		
1,700.0	1,602.3	1,632.0	1,614.1	9.9	4.8	138.87	198.5	-232.7	310.6	299.2	11.39	27.256		
1,800.0	1,691.5	1,725.9	1,706.6	10.7	5.1	141.05	209.0	-245.1	342.7	330.7	11.99	28.583		
1,900.0	1,780.7	1,819.9	1,799.2	11.6	5.5	142.87	219.4	-257.5	375.2	362.6	12.58	29.824		
2,000.0	1,870.0	1,913.8	1,891.7	12.5	5.8	144.40	229.9	-270.0	408.0	394.8	13.17	30.981		
2,100.0	1,959.2	2,007.8	1,984.2	13.4	6.1	145.70	240.4	-282.4	441.0	427.2	13.76	32.056		
2,200.0	2,048.4	2,101.7	2,076.8	14.2	6.5	146.83	250.8	-294.8	474.2	459.9	14.35	33.057		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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					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	-35.83	21.1	-15.3	26.1					
100.0	100.0	100.0	100.0	0.1	0.1	-35.83	21.1	-15.3	26.1	25.8	0.27	95.702		
200.0	200.0	200.0	200.0	0.3	0.3	-35.83	21.1	-15.3	26.1	25.4	0.62	41.937		
300.0	300.0	300.0	300.0	0.5	0.5	57.90	21.1	-15.3	24.6	23.6	0.98	25.168		
397.0	396.6	396.3	396.3	0.7	0.7	81.21	22.2	-13.1	22.2	20.8	1.37	16.233 CC		
400.0	399.6	399.3	399.3	0.7	0.7	82.36	22.2	-12.9	22.2	20.8	1.38	16.093 ES, SF		
500.0	498.8	496.4	496.0	1.0	0.9	122.52	25.5	-6.2	30.6	28.8	1.79	17.068		
600.0	597.1	589.8	588.7	1.4	1.1	144.35	30.7	4.5	55.6	53.5	2.12	26.232		
700.0	694.3	678.5	676.1	1.8	1.4	153.33	37.4	18.4	92.7	90.3	2.45	37.902		
800.0	790.2	766.5	762.1	2.4	1.7	157.76	45.2	34.6	138.0	135.2	2.78	49.596		
900.0	884.4	852.6	846.5	3.0	2.1	160.35	52.8	50.5	188.1	185.0	3.12	60.228		
1,000.0	976.8	936.1	928.2	3.8	2.4	162.03	60.3	65.8	242.7	239.3	3.47	70.038		
1,100.0	1,067.1	1,016.6	1,006.9	4.6	2.7	163.23	67.4	80.7	301.7	297.8	3.81	79.201		
1,200.0	1,156.3	1,095.6	1,084.3	5.5	3.0	164.58	74.5	95.2	362.5	358.4	4.17	87.007		
1,300.0	1,245.5	1,174.7	1,161.7	6.4	3.3	165.54	81.5	109.8	423.5	419.0	4.53	93.566		
1,400.0	1,334.7	1,253.8	1,239.2	7.2	3.6	166.27	88.5	124.4	484.6	479.7	4.89	99.156		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> O19EB Pad (2nd Occupation) - Shideler 19-16BB - OH - Plan #1													<b>Offset Site Error:</b>	0.0 ft
Survey Program: 0-MWD													<b>Offset Well Error:</b>	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	-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		
291.9	291.9	291.9	291.9	0.5	0.5	90.00	11.3	-2.0	11.2	10.3	0.95	11.841 CC		
300.0	300.0	300.0	300.0	0.5	0.5	92.07	11.3	-2.0	11.3	10.3	0.98	11.498 ES		
400.0	399.6	399.6	399.6	0.7	0.7	126.12	11.3	-2.0	14.0	12.6	1.35	10.304 SF		
500.0	498.8	497.6	497.5	1.0	0.8	154.00	11.4	0.5	26.4	24.7	1.69	15.609		
600.0	597.1	592.4	592.1	1.4	1.0	166.04	11.5	7.7	50.8	48.8	2.01	25.295		
700.0	694.3	682.8	681.7	1.8	1.3	171.05	11.8	18.9	85.6	83.2	2.32	36.920		
800.0	790.2	767.9	765.7	2.4	1.5	173.48	12.2	33.3	129.6	126.9	2.61	49.609		
900.0	884.4	854.2	850.3	3.0	1.8	174.88	12.6	49.7	180.0	177.1	2.90	62.097		
1,000.0	976.8	937.6	932.3	3.8	2.1	175.72	13.0	65.5	235.0	231.8	3.18	74.021		
1,100.0	1,067.1	1,018.1	1,011.3	4.6	2.4	176.28	13.4	80.7	294.3	290.9	3.44	85.560		
1,200.0	1,156.3	1,097.1	1,088.9	5.5	2.7	176.78	13.8	95.7	355.5	351.8	3.74	95.024		
1,300.0	1,245.5	1,176.2	1,166.5	6.4	2.9	177.13	14.2	110.7	416.7	412.7	4.04	103.086		
1,400.0	1,334.7	1,255.2	1,244.1	7.2	3.2	177.39	14.6	125.6	478.0	473.6	4.34	110.037		



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> O19EB Pad (2nd Occupation) - Shideler 19-6C - OH - Plan #1												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	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	-47.62	50.3	-55.1	74.6				
100.0	100.0	100.0	100.0	0.1	0.1	-47.62	50.3	-55.1	74.6	74.3	0.27	273.880	
200.0	200.0	200.0	200.0	0.3	0.3	-47.62	50.3	-55.1	74.6	73.9	0.62	120.015	
300.0	300.0	300.0	300.0	0.5	0.5	42.60	50.3	-55.1	72.6	71.6	0.97	74.572	
400.0	399.6	397.9	397.9	0.7	0.7	47.18	50.7	-55.5	67.7	66.3	1.34	50.341	
500.0	498.8	494.1	493.9	1.0	0.8	55.76	54.6	-58.4	64.5	62.8	1.77	36.421	
527.8	526.2	520.7	520.5	1.1	0.9	58.82	56.3	-59.7	64.4	62.4	1.92	33.573 CC, ES	
600.0	597.1	589.8	589.2	1.4	1.1	67.74	62.2	-64.3	65.8	63.5	2.32	28.410	
700.0	694.3	685.0	683.3	1.8	1.3	80.61	73.5	-73.0	73.4	70.4	3.01	24.374	
800.0	790.2	779.4	775.8	2.4	1.7	91.63	88.4	-84.4	88.1	84.2	3.86	22.844	
900.0	884.4	872.7	866.2	3.0	2.1	99.75	106.6	-98.4	109.3	104.5	4.84	22.603 SF	
1,000.0	976.8	964.6	954.1	3.8	2.6	105.26	128.0	-114.9	136.2	130.3	5.95	22.901	
1,100.0	1,067.1	1,055.2	1,039.3	4.6	3.2	108.91	152.3	-133.6	168.0	160.8	7.19	23.380	
1,200.0	1,156.3	1,144.6	1,121.9	5.5	3.8	111.51	179.4	-154.4	203.2	194.7	8.49	23.933	
1,300.0	1,245.5	1,233.2	1,202.0	6.4	4.5	112.37	209.3	-177.4	240.4	230.5	9.87	24.361	
1,400.0	1,334.7	1,320.5	1,279.2	7.2	5.2	112.18	241.5	-202.2	279.3	268.0	11.31	24.692	
1,500.0	1,423.9	1,406.1	1,353.1	8.1	6.1	111.34	275.9	-228.6	320.0	307.2	12.81	24.980	
1,600.0	1,513.1	1,491.4	1,424.7	9.0	6.9	110.10	312.6	-256.9	362.5	348.1	14.35	25.258	
1,700.0	1,602.3	1,581.3	1,499.5	9.9	7.8	108.88	352.1	-287.3	405.6	389.7	15.93	25.465	
1,800.0	1,691.5	1,671.2	1,574.3	10.7	8.7	107.90	391.7	-317.7	448.9	431.4	17.50	25.649	
1,900.0	1,780.7	1,761.1	1,649.1	11.6	9.7	107.08	431.2	-348.1	492.2	473.1	19.07	25.811	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> O19EB Pad (2nd Occupation) - Shideler 19-9B - OH - Plan #1													<b>Offset Site Error:</b> 0.0 ft
Survey Program: 0-MWD													<b>Offset Well Error:</b> 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	-53.81	29.1	-39.8	49.4				
100.0	100.0	100.0	100.0	0.1	0.1	-53.81	29.1	-39.8	49.4	49.1	0.27	181.254	
200.0	200.0	200.0	200.0	0.3	0.3	-53.81	29.1	-39.8	49.4	48.7	0.62	79.426	
300.0	300.0	300.0	300.0	0.5	0.5	36.86	29.1	-39.8	47.2	46.3	0.97	48.545	
400.0	399.6	399.2	399.2	0.7	0.7	46.99	31.2	-38.3	41.7	40.3	1.35	30.831	
487.5	486.4	484.6	484.4	1.0	0.8	68.69	36.4	-34.6	38.3	36.5	1.78	21.521 CC, ES	
500.0	498.8	496.7	496.3	1.0	0.9	72.71	37.3	-33.9	38.4	36.5	1.84	20.848	
600.0	597.1	591.1	590.0	1.4	1.1	104.61	47.1	-26.9	49.1	46.7	2.35	20.847 SF	
700.0	694.3	681.6	679.1	1.8	1.4	124.37	59.9	-17.6	76.9	74.2	2.78	27.655	
800.0	790.2	767.3	762.6	2.4	1.8	134.07	75.3	-6.5	117.0	113.8	3.23	36.276	
900.0	884.4	847.6	840.1	3.0	2.2	138.96	92.3	5.8	166.2	162.4	3.72	44.719	
1,000.0	976.8	922.0	911.1	3.8	2.6	141.48	110.5	19.0	222.9	218.6	4.25	52.405	
1,100.0	1,067.1	993.7	978.6	4.6	3.0	142.90	130.0	33.0	286.0	281.1	4.84	59.099	
1,200.0	1,156.3	1,068.7	1,049.1	5.5	3.5	145.11	150.8	48.0	351.4	346.0	5.42	64.827	
1,300.0	1,245.5	1,143.8	1,119.7	6.4	3.9	146.64	171.6	63.1	417.0	411.0	6.01	69.358	
1,400.0	1,334.7	1,218.8	1,190.2	7.2	4.4	147.75	192.4	78.1	482.8	476.2	6.61	73.008	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> O19EB Pad (2nd Occupation) - Shideler 19-9C - OH - Plan #1													<b>Offset Site Error:</b> 0.0 ft
Survey Program: 0-MWD													<b>Offset Well Error:</b> 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	-42.67	31.0	-28.5	42.1				
100.0	100.0	100.0	100.0	0.1	0.1	-42.67	31.0	-28.5	42.1	41.8	0.27	154.617	
200.0	200.0	200.0	200.0	0.3	0.3	-42.67	31.0	-28.5	42.1	41.5	0.62	67.753	
300.0	300.0	299.8	299.7	0.5	0.5	52.54	32.7	-26.6	40.5	39.5	0.98	41.193	
381.7	381.4	380.3	380.1	0.7	0.7	68.29	36.7	-22.2	39.0	37.6	1.33	29.252 CC, ES	
400.0	399.6	398.2	397.8	0.7	0.7	73.10	37.9	-20.9	39.1	37.7	1.41	27.741	
500.0	498.8	493.8	492.7	1.0	1.0	101.88	46.1	-11.8	47.5	45.6	1.87	25.390 SF	
600.0	597.1	585.6	583.0	1.4	1.3	122.93	57.0	0.2	71.5	69.2	2.27	31.521	
700.0	694.3	672.6	667.8	1.8	1.7	134.30	70.0	14.5	108.5	105.8	2.65	40.857	
800.0	790.2	759.6	752.1	2.4	2.1	140.81	84.7	30.6	153.9	150.9	3.07	50.145	
900.0	884.4	844.8	834.5	3.0	2.5	144.86	99.0	46.4	204.4	200.9	3.51	58.207	
1,000.0	976.8	927.3	914.4	3.8	2.8	147.58	112.9	61.7	259.4	255.5	3.98	65.241	
1,100.0	1,067.1	1,006.9	991.4	4.6	3.2	149.55	126.2	76.5	318.7	314.2	4.46	71.475	
1,200.0	1,156.3	1,085.0	1,067.1	5.5	3.6	151.88	139.4	90.9	380.0	375.1	4.93	77.067	
1,300.0	1,245.5	1,163.2	1,142.8	6.4	4.0	153.57	152.5	105.4	441.7	436.3	5.41	81.708	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design O19EB Pad (2nd Occupation) - Shideler Federal 19-12A - 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					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	-53.68	48.8	-66.4	82.4					
100.0	100.0	100.0	100.0	0.1	0.1	-53.68	48.8	-66.4	82.4	82.1	0.27	302.617		
200.0	200.0	200.0	200.0	0.3	0.3	-53.68	48.8	-66.4	82.4	81.8	0.62	132.608 CC, ES		
300.0	300.0	295.8	295.8	0.5	0.5	36.17	50.3	-68.3	82.8	81.8	0.97	85.705		
400.0	399.6	391.5	391.2	0.7	0.7	39.19	54.7	-74.0	84.1	82.8	1.33	63.400		
500.0	498.8	487.0	485.9	1.0	1.0	43.96	61.9	-83.4	86.8	85.1	1.73	50.150		
600.0	597.1	582.0	579.5	1.4	1.3	50.03	72.0	-96.5	91.6	89.3	2.23	41.081		
700.0	694.3	676.5	671.6	1.8	1.7	56.77	84.9	-113.2	99.1	96.2	2.89	34.333		
800.0	790.2	770.4	761.9	2.4	2.2	63.53	100.4	-133.4	109.9	106.2	3.76	29.254		
900.0	884.4	863.5	850.2	3.0	2.8	69.77	118.4	-156.8	124.4	119.6	4.86	25.575		
1,000.0	976.8	955.8	936.2	3.8	3.4	75.19	138.9	-183.3	142.6	136.4	6.19	23.022		
1,100.0	1,067.1	1,047.2	1,019.7	4.6	4.1	79.72	161.6	-212.8	164.4	156.6	7.72	21.298		
1,200.0	1,156.3	1,137.8	1,100.6	5.5	4.9	83.32	186.5	-245.1	189.8	180.5	9.31	20.384		
1,300.0	1,245.5	1,227.5	1,178.7	6.4	5.8	85.14	213.5	-280.1	218.6	207.7	10.91	20.033		
1,400.0	1,334.7	1,318.5	1,255.9	7.2	6.7	85.79	242.9	-318.3	249.9	237.4	12.52	19.965		
1,500.0	1,423.9	1,413.3	1,335.8	8.1	7.6	86.18	273.9	-358.6	281.7	267.6	14.15	19.907		
1,600.0	1,513.1	1,508.1	1,415.8	9.0	8.6	86.49	305.0	-398.9	313.6	297.8	15.80	19.853		
1,700.0	1,602.3	1,602.9	1,495.7	9.9	9.6	86.74	336.1	-439.3	345.4	328.0	17.44	19.803		
1,800.0	1,691.5	1,697.7	1,575.7	10.7	10.6	86.95	367.1	-479.6	377.3	358.2	19.10	19.759		
1,900.0	1,780.7	1,792.4	1,655.6	11.6	11.5	87.13	398.2	-519.9	409.2	388.4	20.75	19.719		
2,000.0	1,870.0	1,887.2	1,735.6	12.5	12.5	87.28	429.2	-560.2	441.0	418.6	22.41	19.683		
2,100.0	1,959.2	1,982.0	1,815.6	13.4	13.5	87.41	460.3	-600.5	472.9	448.8	24.07	19.651 SF		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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							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	-53.99	19.3	-26.6	32.8							
100.0	100.0	100.0	100.0	0.1	0.1	-53.99	19.3	-26.6	32.8	32.6	0.27	120.564				
200.0	200.0	200.0	200.0	0.3	0.3	-53.99	19.3	-26.6	32.8	32.2	0.62	52.831				
300.0	300.0	300.0	300.0	0.5	0.5	37.65	19.3	-26.6	30.7	29.7	0.97	31.565				
400.0	399.6	399.1	399.1	0.7	0.7	48.00	19.5	-27.2	25.5	24.2	1.35	18.936				
500.0	498.8	497.8	497.6	1.0	0.8	66.35	21.1	-32.0	22.3	20.5	1.81	12.318				
525.9	524.3	523.4	523.1	1.1	0.9	72.09	21.8	-34.0	22.2	20.2	1.97	11.253	CC, ES			
600.0	597.1	596.8	596.1	1.4	1.1	88.53	24.4	-41.7	23.5	21.1	2.43	9.670				
700.0	694.3	696.1	694.2	1.8	1.4	105.85	29.2	-56.2	29.3	26.1	3.15	9.299				
800.0	790.2	795.7	791.6	2.4	1.7	116.08	35.8	-75.6	38.3	34.3	3.94	9.706				
900.0	884.4	895.5	888.1	3.0	2.2	121.50	43.9	-99.9	49.4	44.6	4.86	10.165				
1,000.0	976.8	995.4	983.2	3.8	2.8	124.19	53.7	-129.0	62.2	56.3	5.95	10.464				
1,100.0	1,067.1	1,095.6	1,076.8	4.6	3.5	125.34	65.0	-162.8	76.4	69.2	7.21	10.590				
1,200.0	1,156.3	1,196.1	1,168.7	5.5	4.3	124.44	77.9	-201.3	90.2	81.5	8.71	10.363				
1,300.0	1,245.5	1,296.6	1,258.3	6.4	5.1	120.96	92.4	-244.4	102.6	92.1	10.51	9.757				
1,400.0	1,334.7	1,396.5	1,344.9	7.2	6.1	115.74	108.2	-291.5	114.2	101.6	12.56	9.092				
1,500.0	1,423.9	1,495.2	1,429.8	8.1	7.1	110.85	124.2	-339.3	126.4	111.8	14.61	8.656				
1,600.0	1,513.1	1,593.9	1,514.7	9.0	8.0	106.84	140.3	-387.2	139.4	122.8	16.60	8.400				
1,700.0	1,602.3	1,692.6	1,599.5	9.9	9.0	103.52	156.3	-435.0	153.0	134.4	18.54	8.251				
1,800.0	1,691.5	1,791.3	1,684.4	10.7	10.0	100.75	172.4	-482.8	166.9	146.5	20.44	8.168				
1,900.0	1,780.7	1,890.1	1,769.2	11.6	11.0	98.40	188.4	-530.6	181.2	158.9	22.30	8.127				
2,000.0	1,870.0	1,988.8	1,854.1	12.5	12.0	96.40	204.5	-578.5	195.8	171.7	24.14	8.112	SF			
2,100.0	1,959.2	2,087.5	1,939.0	13.4	13.0	94.68	220.5	-626.3	210.6	184.6	25.95	8.114				
2,200.0	2,048.4	2,186.2	2,023.8	14.2	13.9	93.18	236.6	-674.1	225.5	197.7	27.75	8.127				
2,300.0	2,137.6	2,284.9	2,108.7	15.1	14.9	91.87	252.6	-721.9	240.5	211.0	29.52	8.147				
2,400.0	2,226.8	2,383.7	2,193.5	16.0	15.9	90.72	268.7	-769.8	255.7	224.4	31.29	8.172				
2,500.0	2,316.0	2,482.4	2,278.4	16.9	16.9	89.69	284.7	-817.6	270.9	237.9	33.05	8.199				
2,600.0	2,405.2	2,581.1	2,363.3	17.8	17.9	88.77	300.8	-865.4	286.3	251.5	34.79	8.228				
2,700.0	2,494.4	2,679.8	2,448.1	18.6	18.9	87.95	316.8	-913.2	301.7	265.1	36.53	8.257				
2,800.0	2,583.6	2,778.5	2,533.0	19.5	19.9	87.20	332.9	-961.0	317.1	278.8	38.27	8.287				
2,900.0	2,672.9	2,877.3	2,617.8	20.4	20.9	86.53	348.9	-1,008.9	332.6	292.6	39.99	8.316				
3,000.0	2,762.1	2,976.0	2,702.7	21.3	21.9	85.92	364.9	-1,056.7	348.1	306.4	41.72	8.345				
3,100.0	2,851.3	3,074.7	2,787.6	22.2	22.8	85.35	381.0	-1,104.5	363.7	320.3	43.43	8.374				
3,200.0	2,940.5	3,173.4	2,872.4	23.1	23.8	84.84	397.0	-1,152.3	379.3	334.2	45.15	8.401				
3,300.0	3,029.7	3,272.1	2,957.3	23.9	24.8	84.36	413.1	-1,200.2	394.9	348.1	46.86	8.427				
3,400.0	3,118.9	3,370.9	3,042.1	24.8	25.8	83.92	429.1	-1,248.0	410.6	362.0	48.57	8.453				
3,500.0	3,208.1	3,469.6	3,127.0	25.7	26.8	83.52	445.2	-1,295.8	426.3	376.0	50.28	8.478				
3,600.0	3,297.3	3,568.3	3,211.8	26.6	27.8	83.14	461.2	-1,343.6	442.0	390.0	51.98	8.502				
3,700.0	3,386.5	3,667.0	3,296.7	27.5	28.8	82.79	477.3	-1,391.5	457.7	404.0	53.69	8.525				
3,800.0	3,475.8	3,765.7	3,381.6	28.3	29.8	82.46	493.3	-1,439.3	473.4	418.0	55.39	8.547				
3,900.0	3,565.0	3,864.5	3,466.4	29.2	30.8	82.15	509.4	-1,487.1	489.1	432.1	57.09	8.568				

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design O19EB Pad (2nd Occupation) - Shideler Federal 19-12D - 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	-53.73	39.0	-53.1	65.9				
100.0	100.0	100.0	100.0	0.1	0.1	-53.73	39.0	-53.1	65.9	65.6	0.27	241.935	
200.0	200.0	200.0	200.0	0.3	0.3	-53.73	39.0	-53.1	65.9	65.3	0.62	106.017	
300.0	300.0	300.0	300.0	0.5	0.5	36.48	39.0	-53.1	63.7	62.8	0.97	65.527	
400.0	399.6	397.5	397.5	0.7	0.7	40.78	39.6	-54.3	59.0	57.7	1.34	44.129	
500.0	498.8	494.4	494.1	1.0	0.8	47.95	42.6	-59.7	55.7	54.0	1.75	31.772	
574.0	571.6	566.2	565.5	1.3	1.0	55.01	46.3	-66.4	54.9	52.7	2.14	25.598 CC	
600.0	597.1	591.4	590.5	1.4	1.1	57.76	47.9	-69.3	55.0	52.7	2.29	24.003 ES	
700.0	694.3	688.4	686.2	1.8	1.4	68.92	55.6	-83.3	57.8	54.8	3.02	19.133	
800.0	790.2	785.3	780.9	2.4	1.8	79.55	65.7	-101.4	64.9	60.9	3.98	16.315	
900.0	884.4	882.2	874.3	3.0	2.3	88.32	78.0	-123.8	76.1	71.0	5.13	14.842	
1,000.0	976.8	978.8	966.1	3.8	2.8	94.88	92.5	-150.1	91.0	84.6	6.44	14.128	
1,100.0	1,067.1	1,075.2	1,056.1	4.6	3.5	99.56	109.3	-180.5	109.1	101.2	7.91	13.802	
1,200.0	1,156.3	1,171.6	1,144.1	5.5	4.2	102.16	128.2	-214.7	129.4	120.0	9.45	13.693	
1,300.0	1,245.5	1,267.7	1,229.9	6.4	5.1	102.21	149.2	-252.7	150.9	139.8	11.10	13.599	
1,400.0	1,334.7	1,363.7	1,313.4	7.2	6.0	100.72	172.1	-294.2	173.5	160.7	12.81	13.550	
1,500.0	1,423.9	1,461.0	1,397.3	8.1	6.9	99.22	195.8	-337.1	196.5	182.0	14.54	13.520	
1,600.0	1,513.1	1,558.2	1,481.3	9.0	7.8	98.03	219.5	-380.0	219.6	203.4	16.26	13.505	
1,700.0	1,602.3	1,655.4	1,565.2	9.9	8.8	97.07	243.2	-423.0	242.8	224.8	17.99	13.498	
1,800.0	1,691.5	1,752.6	1,649.1	10.7	9.7	96.27	266.9	-465.9	266.0	246.3	19.71	13.497 SF	
1,900.0	1,780.7	1,849.8	1,733.1	11.6	10.6	95.60	290.5	-508.8	289.3	267.8	21.43	13.498	
2,000.0	1,870.0	1,947.0	1,817.0	12.5	11.6	95.03	314.2	-551.7	312.6	289.4	23.15	13.501	
2,100.0	1,959.2	2,044.2	1,901.0	13.4	12.5	94.54	337.9	-594.6	335.9	311.0	24.87	13.505	
2,200.0	2,048.4	2,141.4	1,984.9	14.2	13.5	94.12	361.6	-637.6	359.2	332.6	26.59	13.509	
2,300.0	2,137.6	2,238.6	2,068.8	15.1	14.4	93.74	385.3	-680.5	382.6	354.3	28.31	13.514	
2,400.0	2,226.8	2,335.8	2,152.8	16.0	15.4	93.41	409.0	-723.4	405.9	375.9	30.03	13.520	
2,500.0	2,316.0	2,433.0	2,236.7	16.9	16.3	93.12	432.7	-766.3	429.3	397.6	31.74	13.525	
2,600.0	2,405.2	2,530.2	2,320.6	17.8	17.3	92.85	456.4	-809.2	452.7	419.2	33.46	13.530	
2,700.0	2,494.4	2,627.4	2,404.6	18.6	18.2	92.61	480.1	-852.2	476.1	440.9	35.18	13.535	
2,800.0	2,583.6	2,724.6	2,488.5	19.5	19.1	92.40	503.8	-895.1	499.5	462.6	36.89	13.539	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design O19EB Pad (2nd Occupation) - Shideler Federal 19-13A - 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									
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	-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			
300.0	300.0	299.6	299.6	0.5	0.5	40.07	10.0	-13.9	15.0	14.1	0.97	15.443			
400.0	399.6	399.0	398.8	0.7	0.7	50.36	11.0	-19.0	13.7	12.4	1.36	10.124			
450.5	449.8	449.2	448.8	0.9	0.8	57.17	11.9	-23.4	13.6	12.0	1.60	8.467 CC			
500.0	498.8	498.4	497.7	1.0	0.9	64.43	13.0	-29.1	13.8	11.9	1.86	7.399 ES			
600.0	597.1	598.0	596.1	1.4	1.2	78.76	16.1	-44.3	15.4	12.9	2.56	6.043			
700.0	694.3	697.7	693.6	1.8	1.6	90.00	20.1	-64.5	18.8	15.4	3.44	5.469			
800.0	790.2	797.4	789.9	2.4	2.1	97.51	25.2	-89.7	23.6	19.1	4.47	5.263			
900.0	884.4	897.2	884.9	3.0	2.7	102.18	31.2	-119.8	29.5	23.8	5.67	5.192			
1,000.0	976.8	997.1	978.2	3.8	3.4	104.96	38.2	-154.7	36.4	29.3	7.05	5.157			
1,100.0	1,067.1	1,097.0	1,069.5	4.6	4.2	106.56	46.2	-194.4	44.2	35.5	8.61	5.126			
1,200.0	1,156.3	1,196.9	1,158.7	5.5	5.1	104.88	55.1	-238.5	52.0	41.7	10.35	5.028			
1,300.0	1,245.5	1,296.6	1,247.1	6.4	5.9	102.41	64.1	-283.7	59.8	47.7	12.13	4.933			
1,400.0	1,334.7	1,396.2	1,335.5	7.2	6.8	100.51	73.2	-328.8	67.7	53.8	13.91	4.870			
1,500.0	1,423.9	1,495.9	1,423.9	8.1	7.7	99.01	82.3	-374.0	75.7	60.0	15.69	4.826			
1,600.0	1,513.1	1,595.6	1,512.2	9.0	8.6	97.80	91.3	-419.1	83.7	66.2	17.46	4.794			
1,700.0	1,602.3	1,695.2	1,600.6	9.9	9.5	96.80	100.4	-464.3	91.7	72.5	19.23	4.769			
1,800.0	1,691.5	1,794.9	1,689.0	10.7	10.4	95.96	109.5	-509.4	99.8	78.8	21.00	4.751			
1,900.0	1,780.7	1,894.6	1,777.4	11.6	11.3	95.24	118.5	-554.6	107.9	85.1	22.77	4.737			
2,000.0	1,870.0	1,994.2	1,865.8	12.5	12.2	94.63	127.6	-599.7	115.9	91.4	24.54	4.725			
2,100.0	1,959.2	2,093.9	1,954.2	13.4	13.1	94.09	136.7	-644.9	124.0	97.7	26.30	4.716			
2,200.0	2,048.4	2,193.6	2,042.6	14.2	14.0	93.62	145.7	-690.0	132.2	104.1	28.07	4.708			
2,300.0	2,137.6	2,293.2	2,131.0	15.1	14.8	93.21	154.8	-735.2	140.3	110.4	29.83	4.702			
2,400.0	2,226.8	2,392.9	2,219.4	16.0	15.7	92.84	163.9	-780.3	148.4	116.8	31.60	4.696			
2,500.0	2,316.0	2,492.6	2,307.7	16.9	16.6	92.51	172.9	-825.5	156.5	123.2	33.36	4.692			
2,600.0	2,405.2	2,592.2	2,396.1	17.8	17.5	92.21	182.0	-870.6	164.6	129.5	35.12	4.688			
2,700.0	2,494.4	2,691.9	2,484.5	18.6	18.4	91.94	191.1	-915.8	172.8	135.9	36.88	4.685			
2,800.0	2,583.6	2,791.5	2,572.9	19.5	19.3	91.69	200.2	-960.9	180.9	142.3	38.64	4.682			
2,900.0	2,672.9	2,891.2	2,661.3	20.4	20.2	91.47	209.2	-1,006.1	189.1	148.7	40.41	4.679			
3,000.0	2,762.1	2,990.9	2,749.7	21.3	21.1	91.26	218.3	-1,051.2	197.2	155.0	42.17	4.677			
3,100.0	2,851.3	3,090.5	2,838.1	22.2	22.0	91.07	227.4	-1,096.4	205.4	161.4	43.93	4.675			
3,200.0	2,940.5	3,190.2	2,926.5	23.1	22.9	90.89	236.4	-1,141.5	213.5	167.8	45.69	4.673			
3,300.0	3,029.7	3,289.9	3,014.9	23.9	23.8	90.73	245.5	-1,186.7	221.7	174.2	47.45	4.672			
3,400.0	3,118.9	3,389.5	3,103.2	24.8	24.7	90.58	254.6	-1,231.8	229.8	180.6	49.21	4.670			
3,500.0	3,208.1	3,489.2	3,191.6	25.7	25.6	90.44	263.6	-1,277.0	238.0	187.0	50.97	4.669			
3,600.0	3,297.3	3,588.9	3,280.0	26.6	26.5	90.31	272.7	-1,322.1	246.1	193.4	52.72	4.668			
3,700.0	3,386.5	3,688.5	3,368.4	27.5	27.4	90.19	281.8	-1,367.3	254.3	199.8	54.48	4.667			
3,800.0	3,475.8	3,788.2	3,456.8	28.3	28.3	90.07	290.8	-1,412.4	262.4	206.2	56.24	4.666			
3,900.0	3,565.0	3,887.9	3,545.2	29.2	29.2	89.96	299.9	-1,457.6	270.6	212.6	58.00	4.665			
4,000.0	3,654.2	3,987.5	3,633.6	30.1	30.1	89.86	309.0	-1,502.7	278.8	219.0	59.76	4.665			
4,100.0	3,743.4	4,087.2	3,722.0	31.0	31.0	89.76	318.0	-1,547.9	286.9	225.4	61.52	4.664			
4,200.0	3,832.6	4,186.9	3,810.3	31.9	31.9	89.67	327.1	-1,593.0	295.1	231.8	63.28	4.663			
4,300.0	3,921.8	4,286.5	3,898.7	32.8	32.8	89.59	336.2	-1,638.2	303.2	238.2	65.04	4.663			
4,400.0	4,011.0	4,386.2	3,987.1	33.6	33.7	89.51	345.2	-1,683.3	311.4	244.6	66.79	4.662			
4,500.0	4,100.2	4,485.9	4,075.5	34.5	34.6	89.43	354.3	-1,728.5	319.6	251.0	68.55	4.662			
4,600.0	4,189.4	4,585.5	4,163.9	35.4	35.5	89.35	363.4	-1,773.6	327.7	257.4	70.31	4.661			
4,700.0	4,278.6	4,685.2	4,252.3	36.3	36.4	89.28	372.4	-1,818.7	335.9	263.8	72.07	4.661			
4,800.0	4,368.0	4,786.7	4,343.0	37.2	37.3	89.47	381.4	-1,863.5	343.8	270.0	73.80	4.659			
4,900.0	4,458.5	4,888.5	4,435.4	37.9	38.0	89.86	389.8	-1,905.1	351.2	275.8	75.41	4.657			
5,000.0	4,550.5	4,990.3	4,529.4	38.7	38.8	90.22	397.5	-1,943.5	358.0	281.1	76.87	4.657			

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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		
5,100.0	4,643.8	5,092.1	4,624.7	39.3	39.4	90.57	404.5	-1,978.7	364.2	286.0	78.21	4.657		
5,200.0	4,738.2	5,193.9	4,721.2	39.9	40.0	90.90	410.9	-2,010.4	369.9	290.5	79.40	4.658		
5,300.0	4,833.8	5,295.8	4,818.9	40.4	40.5	91.21	416.6	-2,038.9	374.9	294.4	80.46	4.659		
5,400.0	4,930.3	5,397.7	4,917.5	40.9	41.0	91.51	421.7	-2,063.8	379.4	298.0	81.39	4.661		
5,500.0	5,027.7	5,499.5	5,017.0	41.3	41.3	91.80	426.0	-2,085.4	383.2	301.0	82.20	4.662		
5,600.0	5,125.8	5,601.4	5,117.1	41.6	41.7	92.07	429.6	-2,103.4	386.5	303.6	82.87	4.663		
5,700.0	5,224.6	5,703.2	5,217.9	41.9	41.9	92.34	432.5	-2,118.0	389.1	305.7	83.42	4.664		
5,800.0	5,323.8	5,805.0	5,319.0	42.1	42.1	92.59	434.7	-2,129.0	391.1	307.2	83.85	4.664		
5,900.0	5,423.4	5,906.8	5,420.5	42.3	42.2	92.84	436.2	-2,136.5	392.5	308.3	84.16	4.664		
6,000.0	5,523.2	6,008.5	5,522.2	42.4	42.3	93.08	437.0	-2,140.5	393.3	308.9	84.35	4.662		
6,100.0	5,623.2	6,109.6	5,623.2	42.4	42.4	93.27	437.2	-2,141.2	393.5	309.0	84.45	4.659		
6,200.0	5,723.2	6,209.6	5,723.2	42.5	42.4	4.45	437.2	-2,141.2	393.5	308.9	84.53	4.654		
6,300.0	5,823.2	6,309.6	5,823.2	42.5	42.5	4.45	437.2	-2,141.2	393.5	308.8	84.62	4.650		
6,400.0	5,923.2	6,409.6	5,923.2	42.6	42.5	4.45	437.2	-2,141.2	393.5	308.7	84.72	4.645		
6,500.0	6,023.2	6,509.6	6,023.2	42.6	42.6	4.45	437.2	-2,141.2	393.5	308.7	84.81	4.639		
6,600.0	6,123.2	6,609.6	6,123.2	42.7	42.6	4.45	437.2	-2,141.2	393.5	308.6	84.90	4.634		
6,700.0	6,223.2	6,709.6	6,223.2	42.7	42.6	4.45	437.2	-2,141.2	393.5	308.5	85.00	4.629		
6,800.0	6,323.2	6,809.6	6,323.2	42.7	42.7	4.45	437.2	-2,141.2	393.5	308.4	85.09	4.624		
6,900.0	6,423.2	6,909.6	6,423.2	42.8	42.7	4.45	437.2	-2,141.2	393.5	308.3	85.19	4.619		
7,000.0	6,523.2	7,009.6	6,523.2	42.8	42.8	4.45	437.2	-2,141.2	393.5	308.2	85.29	4.613		
7,100.0	6,623.2	7,109.6	6,623.2	42.9	42.8	4.45	437.2	-2,141.2	393.5	308.1	85.39	4.608		
7,200.0	6,723.2	7,209.6	6,723.2	42.9	42.9	4.45	437.2	-2,141.2	393.5	308.0	85.49	4.602		
7,300.0	6,823.2	7,309.6	6,823.2	43.0	42.9	4.45	437.2	-2,141.2	393.5	307.9	85.60	4.597		
7,400.0	6,923.2	7,409.6	6,923.2	43.1	43.0	4.45	437.2	-2,141.2	393.5	307.8	85.70	4.591		
7,500.0	7,023.2	7,509.6	7,023.2	43.1	43.1	4.45	437.2	-2,141.2	393.5	307.7	85.81	4.586		
7,600.0	7,123.2	7,609.6	7,123.2	43.2	43.1	4.45	437.2	-2,141.2	393.5	307.6	85.91	4.580		
7,700.0	7,223.2	7,709.6	7,223.2	43.2	43.2	4.45	437.2	-2,141.2	393.5	307.4	86.02	4.574		
7,800.0	7,323.2	7,809.6	7,323.2	43.3	43.2	4.45	437.2	-2,141.2	393.5	307.3	86.13	4.568		
7,900.0	7,423.2	7,909.6	7,423.2	43.3	43.3	4.45	437.2	-2,141.2	393.5	307.2	86.24	4.562		
8,000.0	7,523.2	8,009.6	7,523.2	43.4	43.3	4.45	437.2	-2,141.2	393.5	307.1	86.35	4.556		
8,100.0	7,623.2	8,109.6	7,623.2	43.4	43.4	4.45	437.2	-2,141.2	393.5	307.0	86.47	4.550		
8,200.0	7,723.2	8,209.6	7,723.2	43.5	43.4	4.45	437.2	-2,141.2	393.5	306.9	86.58	4.544		
8,300.0	7,823.2	8,309.6	7,823.2	43.5	43.5	4.45	437.2	-2,141.2	393.5	306.8	86.70	4.538		
8,400.0	7,923.2	8,409.6	7,923.2	43.6	43.6	4.45	437.2	-2,141.2	393.5	306.7	86.81	4.532		
8,462.8	7,986.0	8,472.3	7,986.0	43.6	43.6	4.45	437.2	-2,141.2	393.5	306.6	86.89	4.528 SF		



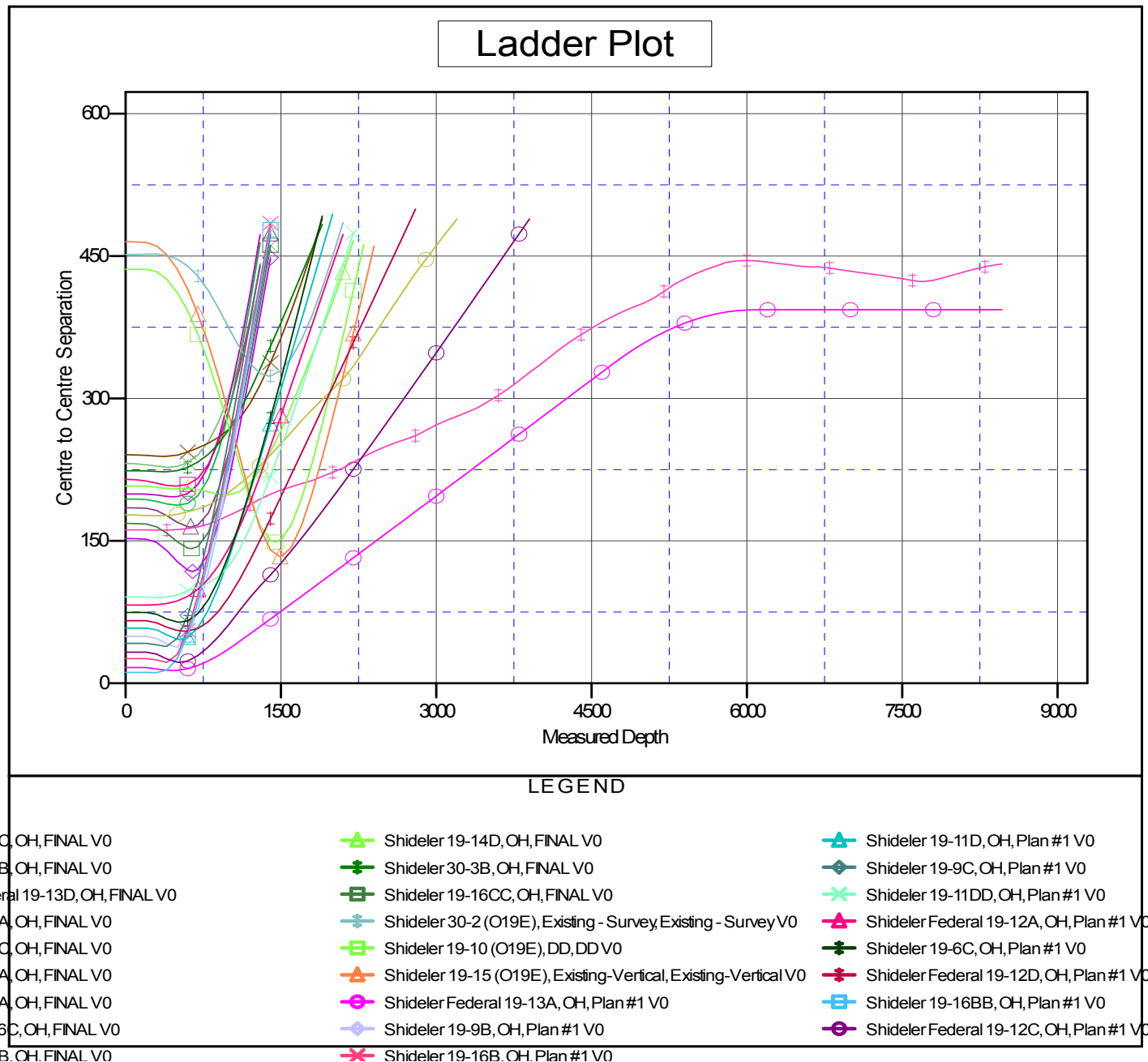
# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-13AA
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Reference Site:</b>	O19EB Pad (2nd Occupation)	<b>MD Reference:</b>	KB=22' @ 6531.0ft (Nabors M-15)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Shideler Federal 19-13AA	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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 19-13AA  
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