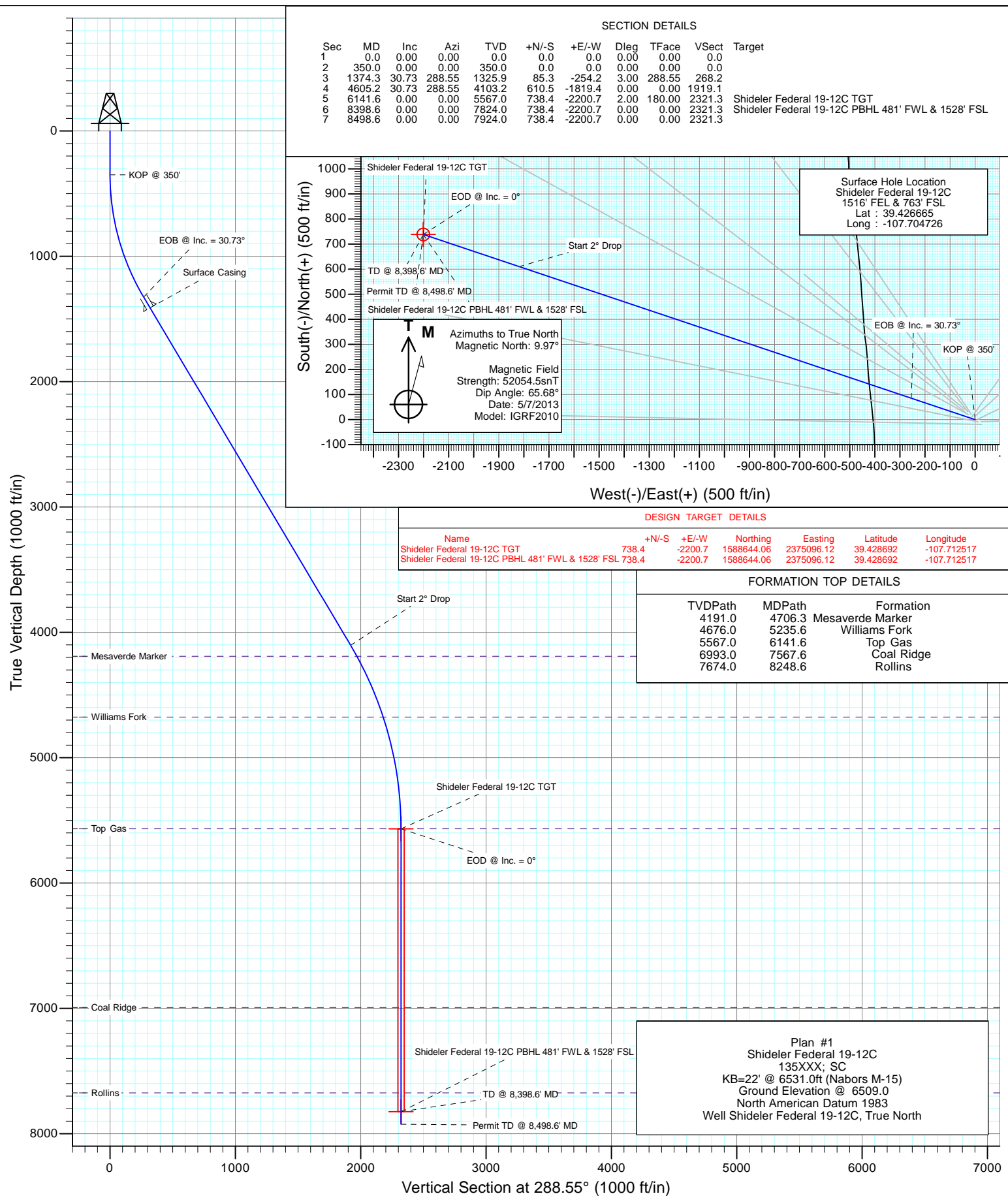
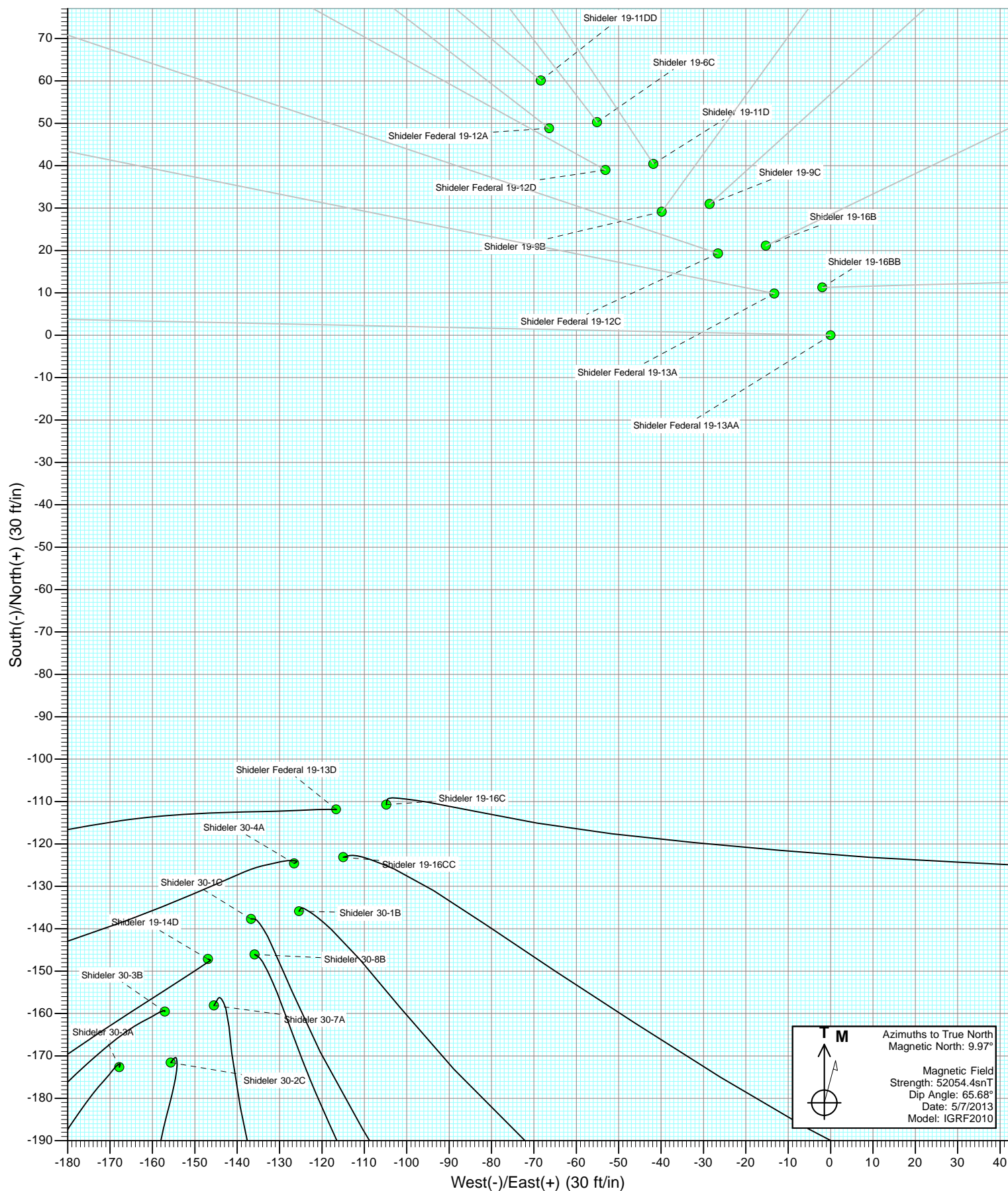
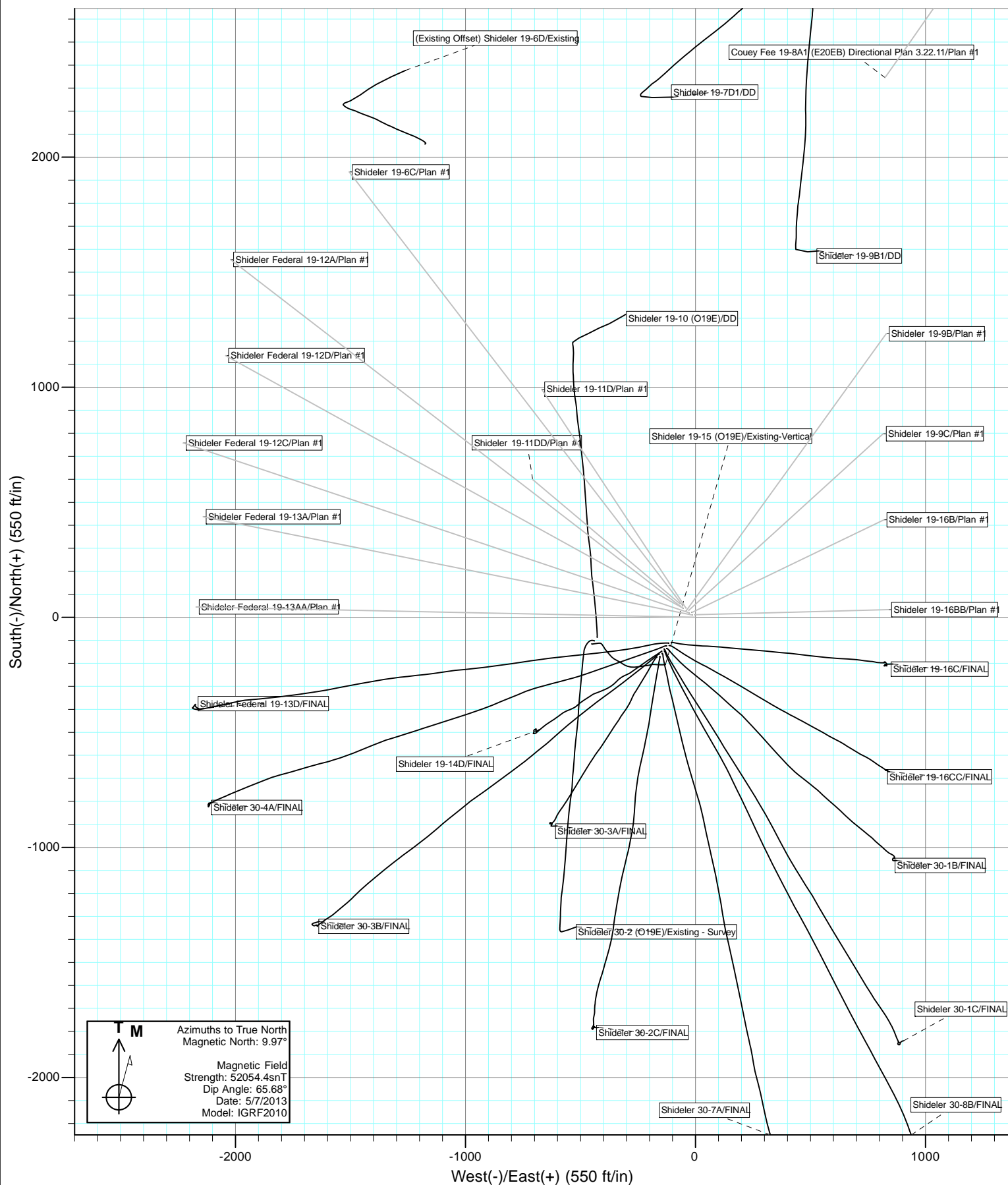




Project: Mamm Creek  
Site: O19EB Pad (2nd Occupation)  
Well: Shideler Federal 19-12C  
Wellbore: OH  
Design: Plan #1

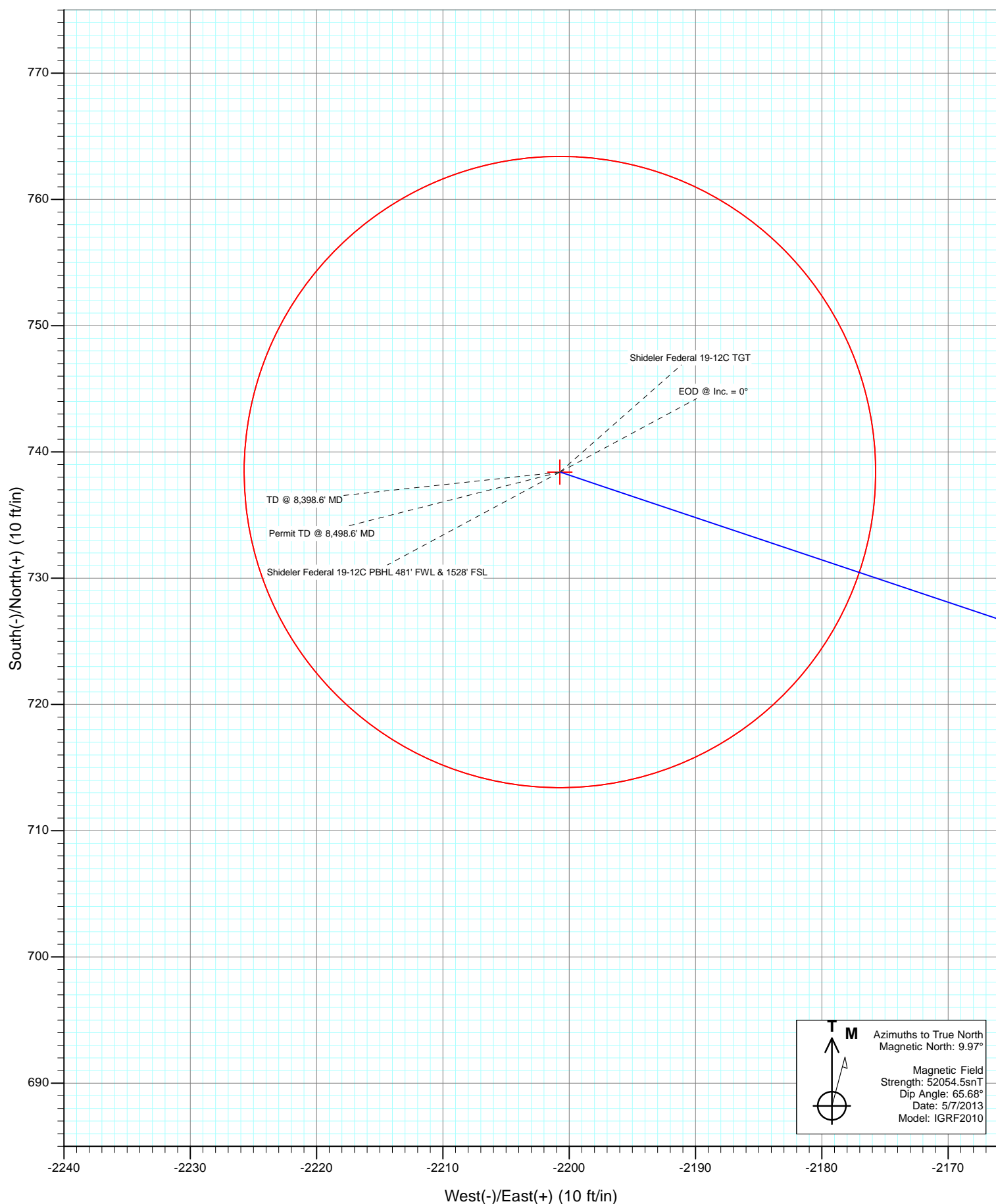








Project: Mamm Creek  
Site: O19EB Pad (2nd Occupation)  
Well: Shideler Federal 19-12C  
Wellbore: OH  
Design: Plan #1



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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 19-12C					
Well Position	+N/-S	0.0 ft	Northing:	1,587,852.46 ft	Latitude:	39.426665
	+E/-W	0.0 ft	Easting:	2,377,278.28 ft	Longitude:	-107.704726
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	288.55

<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	
350.0	0.00	0.00	350.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,374.3	30.73	288.55	1,325.9	85.3	-254.2	3.00	3.00	0.00	288.55	
4,605.2	30.73	288.55	4,103.2	610.5	-1,819.4	0.00	0.00	0.00	0.00	
6,141.6	0.00	0.00	5,567.0	738.4	-2,200.7	2.00	-2.00	0.00	180.00	Shideler Federal 19-1
8,398.6	0.00	0.00	7,824.0	738.4	-2,200.7	0.00	0.00	0.00	0.00	Shideler Federal 19-1
8,498.6	0.00	0.00	7,924.0	738.4	-2,200.7	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 19-12C
<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 19-12C	<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	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
350.0	0.00	0.00	350.0	0.0	0.0	0.0	0.00	0.00	KOP @ 350'
400.0	1.50	288.55	400.0	0.2	-0.6	0.7	3.00	3.00	
500.0	4.50	288.55	499.8	1.9	-5.6	5.9	3.00	3.00	
600.0	7.50	288.55	599.3	5.2	-15.5	16.3	3.00	3.00	
700.0	10.50	288.55	698.0	10.2	-30.3	32.0	3.00	3.00	
800.0	13.50	288.55	795.8	16.8	-50.0	52.8	3.00	3.00	
900.0	16.50	288.55	892.4	25.0	-74.6	78.6	3.00	3.00	
1,000.0	19.50	288.55	987.5	34.8	-103.9	109.5	3.00	3.00	
1,100.0	22.50	288.55	1,080.9	46.2	-137.8	145.4	3.00	3.00	
1,200.0	25.50	288.55	1,172.2	59.2	-176.4	186.0	3.00	3.00	
1,300.0	28.50	288.55	1,261.3	73.6	-219.4	231.4	3.00	3.00	
1,374.3	30.73	288.55	1,325.9	85.3	-254.2	268.2	3.00	3.00	EOB @ Inc. = 30.73°
1,400.0	30.73	288.55	1,348.0	89.5	-266.7	281.3	0.00	0.00	
1,474.3	30.73	288.55	1,411.9	101.6	-302.7	319.3	0.00	0.00	Surface Casing
1,500.0	30.73	288.55	1,433.9	105.7	-315.1	332.4	0.00	0.00	
1,600.0	30.73	288.55	1,519.9	122.0	-363.6	383.5	0.00	0.00	
1,700.0	30.73	288.55	1,605.9	138.2	-412.0	434.6	0.00	0.00	
1,800.0	30.73	288.55	1,691.8	154.5	-460.5	485.7	0.00	0.00	
1,900.0	30.73	288.55	1,777.8	170.7	-508.9	536.8	0.00	0.00	
2,000.0	30.73	288.55	1,863.7	187.0	-557.3	587.9	0.00	0.00	
2,100.0	30.73	288.55	1,949.7	203.3	-605.8	639.0	0.00	0.00	
2,200.0	30.73	288.55	2,035.7	219.5	-654.2	690.1	0.00	0.00	
2,300.0	30.73	288.55	2,121.6	235.8	-702.7	741.2	0.00	0.00	
2,400.0	30.73	288.55	2,207.6	252.0	-751.1	792.3	0.00	0.00	
2,500.0	30.73	288.55	2,293.5	268.3	-799.6	843.4	0.00	0.00	
2,600.0	30.73	288.55	2,379.5	284.5	-848.0	894.5	0.00	0.00	
2,700.0	30.73	288.55	2,465.5	300.8	-896.4	945.6	0.00	0.00	
2,800.0	30.73	288.55	2,551.4	317.0	-944.9	996.7	0.00	0.00	
2,900.0	30.73	288.55	2,637.4	333.3	-993.3	1,047.8	0.00	0.00	
3,000.0	30.73	288.55	2,723.3	349.5	-1,041.8	1,098.9	0.00	0.00	
3,100.0	30.73	288.55	2,809.3	365.8	-1,090.2	1,150.0	0.00	0.00	
3,200.0	30.73	288.55	2,895.3	382.1	-1,138.7	1,201.0	0.00	0.00	
3,300.0	30.73	288.55	2,981.2	398.3	-1,187.1	1,252.1	0.00	0.00	
3,400.0	30.73	288.55	3,067.2	414.6	-1,235.5	1,303.2	0.00	0.00	
3,500.0	30.73	288.55	3,153.1	430.8	-1,284.0	1,354.3	0.00	0.00	
3,600.0	30.73	288.55	3,239.1	447.1	-1,332.4	1,405.4	0.00	0.00	
3,700.0	30.73	288.55	3,325.1	463.3	-1,380.9	1,456.5	0.00	0.00	
3,800.0	30.73	288.55	3,411.0	479.6	-1,429.3	1,507.6	0.00	0.00	
3,900.0	30.73	288.55	3,497.0	495.8	-1,477.8	1,558.7	0.00	0.00	
4,000.0	30.73	288.55	3,582.9	512.1	-1,526.2	1,609.8	0.00	0.00	
4,100.0	30.73	288.55	3,668.9	528.3	-1,574.7	1,660.9	0.00	0.00	
4,200.0	30.73	288.55	3,754.9	544.6	-1,623.1	1,712.0	0.00	0.00	
4,300.0	30.73	288.55	3,840.8	560.9	-1,671.5	1,763.1	0.00	0.00	
4,400.0	30.73	288.55	3,926.8	577.1	-1,720.0	1,814.2	0.00	0.00	
4,500.0	30.73	288.55	4,012.7	593.4	-1,768.4	1,865.3	0.00	0.00	
4,605.2	30.73	288.55	4,103.2	610.5	-1,819.4	1,919.1	0.00	0.00	Start 2° Drop
4,700.0	28.83	288.55	4,185.4	625.4	-1,864.0	1,966.2	2.00	-2.00	
4,706.3	28.71	288.55	4,191.0	626.4	-1,866.9	1,969.2	2.00	-2.00	Mesaverde Marker

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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	26.83	288.55	4,273.9	640.3	-1,908.3	2,012.8	2.00	-2.00	
4,900.0	24.83	288.55	4,363.9	654.1	-1,949.6	2,056.4	2.00	-2.00	
5,000.0	22.83	288.55	4,455.3	667.0	-1,987.9	2,096.8	2.00	-2.00	
5,100.0	20.83	288.55	4,548.2	678.8	-2,023.2	2,134.0	2.00	-2.00	
5,200.0	18.83	288.55	4,642.2	689.6	-2,055.3	2,167.9	2.00	-2.00	
5,235.6	18.12	288.55	4,676.0	693.2	-2,066.0	2,179.2	2.00	-2.00	Williams Fork
5,300.0	16.83	288.55	4,737.4	699.4	-2,084.4	2,198.6	2.00	-2.00	
5,400.0	14.83	288.55	4,833.6	708.0	-2,110.2	2,225.8	2.00	-2.00	
5,500.0	12.83	288.55	4,930.7	715.6	-2,132.9	2,249.7	2.00	-2.00	
5,600.0	10.83	288.55	5,028.6	722.2	-2,152.3	2,270.3	2.00	-2.00	
5,700.0	8.83	288.55	5,127.1	727.6	-2,168.5	2,287.3	2.00	-2.00	
5,800.0	6.83	288.55	5,226.2	731.9	-2,181.4	2,301.0	2.00	-2.00	
5,900.0	4.83	288.55	5,325.6	735.2	-2,191.1	2,311.1	2.00	-2.00	
6,000.0	2.83	288.55	5,425.4	737.3	-2,197.4	2,317.8	2.00	-2.00	
6,100.0	0.83	288.55	5,525.4	738.3	-2,200.4	2,321.0	2.00	-2.00	
6,141.6	0.00	0.00	5,567.0	738.4	-2,200.7	2,321.3	2.00	-2.00	EOD @ Inc. = 0° - Top Gas
6,200.0	0.00	0.00	5,625.4	738.4	-2,200.7	2,321.3	0.00	0.00	
6,300.0	0.00	0.00	5,725.4	738.4	-2,200.7	2,321.3	0.00	0.00	
6,400.0	0.00	0.00	5,825.4	738.4	-2,200.7	2,321.3	0.00	0.00	
6,500.0	0.00	0.00	5,925.4	738.4	-2,200.7	2,321.3	0.00	0.00	
6,600.0	0.00	0.00	6,025.4	738.4	-2,200.7	2,321.3	0.00	0.00	
6,700.0	0.00	0.00	6,125.4	738.4	-2,200.7	2,321.3	0.00	0.00	
6,800.0	0.00	0.00	6,225.4	738.4	-2,200.7	2,321.3	0.00	0.00	
6,900.0	0.00	0.00	6,325.4	738.4	-2,200.7	2,321.3	0.00	0.00	
7,000.0	0.00	0.00	6,425.4	738.4	-2,200.7	2,321.3	0.00	0.00	
7,100.0	0.00	0.00	6,525.4	738.4	-2,200.7	2,321.3	0.00	0.00	
7,200.0	0.00	0.00	6,625.4	738.4	-2,200.7	2,321.3	0.00	0.00	
7,300.0	0.00	0.00	6,725.4	738.4	-2,200.7	2,321.3	0.00	0.00	
7,400.0	0.00	0.00	6,825.4	738.4	-2,200.7	2,321.3	0.00	0.00	
7,500.0	0.00	0.00	6,925.4	738.4	-2,200.7	2,321.3	0.00	0.00	
7,567.6	0.00	0.00	6,993.0	738.4	-2,200.7	2,321.3	0.00	0.00	Coal Ridge
7,600.0	0.00	0.00	7,025.4	738.4	-2,200.7	2,321.3	0.00	0.00	
7,700.0	0.00	0.00	7,125.4	738.4	-2,200.7	2,321.3	0.00	0.00	
7,800.0	0.00	0.00	7,225.4	738.4	-2,200.7	2,321.3	0.00	0.00	
7,900.0	0.00	0.00	7,325.4	738.4	-2,200.7	2,321.3	0.00	0.00	
8,000.0	0.00	0.00	7,425.4	738.4	-2,200.7	2,321.3	0.00	0.00	
8,100.0	0.00	0.00	7,525.4	738.4	-2,200.7	2,321.3	0.00	0.00	
8,200.0	0.00	0.00	7,625.4	738.4	-2,200.7	2,321.3	0.00	0.00	
8,248.6	0.00	0.00	7,674.0	738.4	-2,200.7	2,321.3	0.00	0.00	Rollins
8,300.0	0.00	0.00	7,725.4	738.4	-2,200.7	2,321.3	0.00	0.00	
8,398.6	0.00	0.00	7,824.0	738.4	-2,200.7	2,321.3	0.00	0.00	TD @ 8,398.6' MD
8,400.0	0.00	0.00	7,825.4	738.4	-2,200.7	2,321.3	0.00	0.00	
8,498.6	0.00	0.00	7,924.0	738.4	-2,200.7	2,321.3	0.00	0.00	Permit TD @ 8,498.6' MD

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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 19-12C	0.00	0.00	5,567.0	738.4	-2,200.7	1,588,644.06	2,375,096.12	39.428692	-107.712517
- plan hits target center									
- Point									
Shideler Federal 19-12C	0.00	0.00	7,824.0	738.4	-2,200.7	1,588,644.06	2,375,096.12	39.428692	-107.712517
- plan hits target center									
- Circle (radius 25.0)									

Casing Points					
Measured Depth	Vertical Depth			Casing Diameter	Hole Diameter
(ft)	(ft)	Name		(in)	(in)
1,474.3	1,411.9	Surface Casing			

Formations						
Measured Depth	Vertical Depth				Dip	Dip Direction
(ft)	(ft)	Name	Lithology		(°)	(°)
4,706.3	4,191.0	Mesaverde Marker				
5,235.6	4,676.0	Williams Fork				
6,141.6	5,567.0	Top Gas				
7,567.6	6,993.0	Coal Ridge				
8,248.6	7,674.0	Rollins				

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W	Comment	
(ft)	(ft)	(ft)	(ft)		
350.0	350.0	0.0	0.0	KOP @ 350'	
1,374.3	1,325.9	85.3	-254.2	EOB @ Inc. = 30.73°	
4,605.2	4,103.2	610.5	-1,819.4	Start 2° Drop	
6,141.6	5,567.0	738.4	-2,200.7	EOD @ Inc. = 0°	
8,398.6	7,824.0	738.4	-2,200.7	TD @ 8,398.6' MD	
8,498.6	7,924.0	738.4	-2,200.7	Permit TD @ 8,498.6' MD	



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

**Mamm Creek**

**O19EB Pad (2nd Occupation)**

**Shideler Federal 19-12C**

**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 19-12C
<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 19-12C	<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	8,498.6	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 19-12C
<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 19-12C	<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
<b>Offset Well - Wellbore - Design</b>						
O19E Pad						
Shideler 19-10 (O19E) - DD - DD	1,700.4	1,655.3	55.6	45.2	5.340	CC, ES
Shideler 19-10 (O19E) - DD - DD	1,800.0	1,742.1	73.6	59.7	5.308	SF
Shideler 19-15 (O19E) - Existing-Vertical - Existing-Vertic	1,426.3	1,387.0	253.9	245.0	28.483	CC, ES
Shideler 19-15 (O19E) - Existing-Vertical - Existing-Vertic	1,600.0	1,532.9	271.3	260.5	25.283	SF
Shideler 30-2 (O19E) - Existing - Survey - Existing - Surv	1,185.9	1,112.7	425.9	420.0	72.246	CC
Shideler 30-2 (O19E) - Existing - Survey - Existing - Surv	1,200.0	1,125.0	425.9	419.9	70.578	ES
Shideler 30-2 (O19E) - Existing - Survey - Existing - Surv	1,600.0	1,444.4	478.0	467.4	45.020	SF
O19EB Pad (1st Occupation)						
(Existing Offset) Shideler 19-6D - Existing - Existing						Out of range
Shideler 19-14D - OH - FINAL	208.0	208.0	205.2	204.6	316.125	CC, ES
Shideler 19-14D - OH - FINAL	1,500.0	1,425.2	360.2	350.5	37.238	SF
Shideler 19-16C - OH - FINAL	576.8	579.7	142.0	139.8	64.547	CC, ES
Shideler 19-16C - OH - FINAL	800.0	788.7	162.9	159.4	46.096	SF
Shideler 19-16CC - OH - FINAL	516.3	515.3	163.2	161.4	90.094	CC, ES
Shideler 19-16CC - OH - FINAL	900.0	857.5	220.0	216.0	55.421	SF
Shideler 30-1B - OH - FINAL	424.7	423.3	182.6	181.2	129.181	CC, ES
Shideler 30-1B - OH - FINAL	1,000.0	926.4	280.1	275.5	61.655	SF
Shideler 30-1C - OH - FINAL	246.2	246.2	191.2	190.5	244.392	CC, ES
Shideler 30-1C - OH - FINAL	1,000.0	888.4	328.1	323.5	71.233	SF
Shideler 30-2C - OH - FINAL	239.5	239.5	228.8	228.0	300.748	CC, ES
Shideler 30-2C - OH - FINAL	1,300.0	1,113.6	493.4	486.5	71.108	SF
Shideler 30-3A - OH - FINAL	218.9	218.9	237.6	236.9	345.419	CC, ES
Shideler 30-3A - OH - FINAL	1,500.0	1,383.1	465.7	456.1	48.592	SF
Shideler 30-3B - OH - FINAL	210.9	210.9	221.2	220.5	335.399	CC, ES
Shideler 30-3B - OH - FINAL	1,500.0	1,332.6	497.8	486.7	44.856	SF
Shideler 30-4A - OH - FINAL	200.1	200.1	174.4	173.8	280.457	CC, ES
Shideler 30-4A - OH - FINAL	1,900.0	1,792.3	477.0	457.6	24.540	SF
Shideler 30-7A - OH - FINAL	265.7	265.7	211.2	210.4	247.504	CC, ES
Shideler 30-7A - OH - FINAL	1,300.0	1,069.0	499.1	492.3	72.697	SF
Shideler 30-8B - OH - FINAL	178.9	179.1	198.2	197.6	361.611	CC
Shideler 30-8B - OH - FINAL	200.0	199.6	198.2	197.6	319.302	ES
Shideler 30-8B - OH - FINAL	1,100.0	938.0	395.2	390.0	75.219	SF
Shideler Federal 19-13D - OH - FINAL	154.0	154.0	159.1	158.6	345.349	CC
Shideler Federal 19-13D - OH - FINAL	200.0	199.5	159.1	158.5	256.468	ES
Shideler Federal 19-13D - OH - FINAL	2,400.0	2,298.7	490.5	460.7	16.467	SF

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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	Offset	Distance		Separation Factor	Warning
	Measured Depth (ft)	Measured Depth (ft)	Between Centres (ft)	Between Ellipses (ft)		
O19EB Pad (2nd Occupation)						
Shideler 19-11D - OH - Plan #1	519.9	518.3	24.1	22.3	13.755	CC, ES
Shideler 19-11D - OH - Plan #1	700.0	695.5	30.3	27.7	11.720	SF
Shideler 19-11DD - OH - Plan #1	200.0	200.0	58.4	57.8	94.010	CC, ES
Shideler 19-11DD - OH - Plan #1	1,200.0	1,179.5	75.9	68.5	10.236	SF
Shideler 19-16B - OH - Plan #1	300.0	300.0	11.4	10.5	11.795	CC, ES
Shideler 19-16B - OH - Plan #1	400.0	399.3	14.5	13.2	11.015	SF
Shideler 19-16BB - OH - Plan #1	300.0	300.0	25.8	24.9	26.636	CC, ES
Shideler 19-16BB - OH - Plan #1	400.0	400.0	26.5	25.2	20.090	SF
Shideler 19-6C - OH - Plan #1	339.9	339.9	41.9	40.8	37.780	CC, ES
Shideler 19-6C - OH - Plan #1	1,300.0	1,262.6	144.4	135.1	15.567	SF
Shideler 19-9B - OH - Plan #1	456.1	455.6	15.6	14.1	10.136	CC, ES
Shideler 19-9B - OH - Plan #1	500.0	498.9	16.5	14.8	9.707	SF
Shideler 19-9C - OH - Plan #1	200.0	200.0	11.8	11.2	19.027	CC, ES
Shideler 19-9C - OH - Plan #1	300.0	299.6	13.4	12.4	13.808	SF
Shideler Federal 19-12A - OH - Plan #1	200.0	200.0	49.6	48.9	79.778	CC, ES
Shideler Federal 19-12A - OH - Plan #1	3,400.0	3,310.6	489.6	440.8	10.046	SF
Shideler Federal 19-12D - OH - Plan #1	300.0	300.0	33.0	32.1	34.055	CC, ES
Shideler Federal 19-12D - OH - Plan #1	8,498.6	8,478.7	422.2	330.7	4.616	SF
Shideler Federal 19-13A - OH - Plan #1	544.7	545.8	8.1	6.1	4.053	CC, ES
Shideler Federal 19-13A - OH - Plan #1	1,900.0	1,892.7	74.0	51.7	3.321	SF
Shideler Federal 19-13AA - OH - Plan #1	523.4	525.9	22.2	20.2	11.253	CC, ES
Shideler Federal 19-13AA - OH - Plan #1	2,000.0	1,982.4	195.3	171.3	8.113	SF

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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									
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	26.0	26.0	0.0	0.0	-104.90	-106.6	-400.7	414.6						
100.0	100.0	125.8	125.8	0.1	0.2	-104.88	-106.5	-400.8	414.7	414.3	0.34	1,235.263			
200.0	200.0	226.0	226.0	0.3	0.4	-104.82	-106.1	-400.9	414.7	414.0	0.68	609.255			
300.0	300.0	326.3	326.3	0.5	0.5	-104.72	-105.4	-401.1	414.7	413.6	1.03	402.429			
400.0	400.0	431.2	431.1	0.7	0.7	-33.03	-103.0	-400.9	413.4	412.0	1.39	296.385			
500.0	499.8	533.2	533.0	0.8	0.9	-32.72	-97.1	-400.9	407.5	405.8	1.78	229.570			
600.0	599.3	636.0	635.2	1.1	1.2	-32.15	-85.9	-401.5	396.7	394.5	2.21	179.645			
700.0	698.0	738.3	736.1	1.4	1.5	-31.25	-69.5	-402.0	380.3	377.6	2.72	139.969			
800.0	795.8	835.5	831.2	1.8	1.9	-30.01	-49.3	-403.2	359.4	356.1	3.29	109.238			
900.0	892.4	931.9	924.6	2.2	2.3	-28.41	-25.7	-405.2	334.5	330.6	3.92	85.261			
1,000.0	987.5	1,027.5	1,016.7	2.8	2.7	-26.52	0.0	-407.3	305.4	300.8	4.59	66.592			
1,100.0	1,080.9	1,120.4	1,105.8	3.5	3.2	-24.40	26.2	-409.4	272.3	267.0	5.25	51.879			
1,200.0	1,172.2	1,211.4	1,192.7	4.3	3.7	-21.81	52.9	-411.9	235.6	229.8	5.87	40.152			
1,300.0	1,261.3	1,301.0	1,278.1	5.2	4.2	-18.39	80.0	-414.8	195.7	189.3	6.40	30.601			
1,400.0	1,348.0	1,389.4	1,362.1	6.1	4.7	-13.15	107.2	-418.0	152.8	146.1	6.76	22.609			
1,500.0	1,433.9	1,478.3	1,446.6	7.1	5.2	-3.62	134.6	-421.3	110.9	104.0	6.89	16.096			
1,600.0	1,519.9	1,567.3	1,531.5	8.1	5.6	14.97	161.5	-424.3	73.9	66.4	7.50	9.850			
1,700.0	1,605.9	1,654.9	1,614.5	9.1	6.1	52.18	189.3	-425.9	55.6	45.2	10.40	5.349			
1,700.4	1,606.3	1,655.3	1,614.9	9.1	6.2	52.38	189.4	-425.9	55.6	45.2	10.42	5.340 CC, ES			
1,800.0	1,691.8	1,742.1	1,697.2	10.1	6.7	89.31	217.0	-427.6	73.6	59.7	13.86	5.308 SF			
1,900.0	1,777.8	1,829.1	1,779.2	11.1	7.2	108.02	245.9	-429.7	111.9	96.3	15.64	7.159			
2,000.0	1,863.7	1,917.4	1,862.2	12.1	7.7	117.06	275.9	-432.5	155.7	139.0	16.77	9.284			
2,100.0	1,949.7	2,006.7	1,946.1	13.1	8.3	122.10	306.3	-435.9	200.8	183.0	17.82	11.269			
2,200.0	2,035.7	2,095.5	2,029.6	14.1	8.8	125.24	336.2	-439.9	246.1	227.3	18.87	13.045			
2,300.0	2,121.6	2,178.5	2,107.8	15.1	9.3	127.47	364.0	-442.4	292.9	273.0	19.87	14.736			
2,400.0	2,207.6	2,266.5	2,190.8	16.1	9.8	129.33	393.2	-444.2	340.5	319.7	20.89	16.301			
2,500.0	2,293.5	2,353.2	2,272.3	17.1	10.4	130.61	422.4	-446.1	388.5	366.5	21.96	17.691			
2,600.0	2,379.5	2,440.3	2,354.0	18.1	10.9	131.46	452.8	-448.4	436.6	413.6	23.06	18.938			
2,700.0	2,465.5	2,528.0	2,436.2	19.1	11.5	132.19	483.2	-450.6	484.9	460.7	24.15	20.076			

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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				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	26.5	26.5	0.0	0.0	-107.68	-135.1	-424.0	445.0					
100.0	100.0	128.0	128.0	0.1	0.2	-107.69	-135.1	-423.6	444.7	444.3	0.34	1,326.572		
200.0	200.0	229.1	229.1	0.3	0.4	-107.75	-135.4	-423.0	444.2	443.5	0.69	647.167		
300.0	300.0	332.8	332.8	0.5	0.6	-107.82	-135.6	-421.7	443.0	442.0	1.04	424.737		
400.0	400.0	435.8	435.8	0.7	0.7	-36.49	-135.3	-419.8	440.7	439.3	1.40	315.599		
500.0	499.8	539.7	539.6	0.8	0.9	-37.09	-134.8	-417.1	433.8	432.1	1.76	247.109		
600.0	599.3	642.9	642.7	1.1	1.1	-38.28	-134.1	-413.3	421.8	419.7	2.13	198.155		
700.0	698.0	742.5	742.2	1.4	1.3	-40.07	-133.2	-408.9	405.3	402.7	2.53	160.296		
800.0	795.8	839.6	839.3	1.8	1.5	-42.67	-133.0	-404.4	385.1	382.1	2.98	129.183		
900.0	892.4	936.3	935.8	2.2	1.7	-46.19	-132.5	-399.6	361.6	358.1	3.52	102.661		
1,000.0	987.5	1,030.5	1,029.9	2.8	1.9	-50.81	-132.0	-394.7	335.7	331.5	4.19	80.074		
1,100.0	1,080.9	1,121.4	1,120.6	3.5	2.0	-56.83	-132.0	-389.6	308.8	303.7	5.03	61.326		
1,200.0	1,172.2	1,207.9	1,207.0	4.3	2.2	-64.33	-132.7	-384.6	283.3	277.3	6.08	46.619		
1,300.0	1,261.3	1,286.1	1,285.1	5.2	2.4	-72.78	-135.0	-380.8	263.8	256.5	7.28	36.220		
1,400.0	1,348.0	1,365.9	1,364.7	6.1	2.5	-82.58	-139.1	-377.8	254.3	245.7	8.58	29.626		
1,426.3	1,370.6	1,387.0	1,385.7	6.4	2.5	-85.21	-140.3	-377.2	253.9	245.0	8.91	28.483 CC, ES		
1,500.0	1,433.9	1,448.6	1,447.2	7.1	2.7	-92.85	-144.0	-375.3	257.2	247.4	9.77	26.317		
1,600.0	1,519.9	1,532.9	1,531.4	8.1	2.8	-102.87	-148.7	-372.5	271.3	260.5	10.73	25.283 SF		
1,700.0	1,605.9	1,616.8	1,615.0	9.1	3.0	-111.90	-153.2	-369.6	295.0	283.6	11.43	25.814		
1,800.0	1,691.8	1,699.9	1,698.0	10.1	3.1	-119.69	-157.6	-366.6	326.5	314.6	11.91	27.406		
1,900.0	1,777.8	1,784.0	1,781.9	11.1	3.3	-126.42	-161.7	-363.3	363.6	351.4	12.24	29.718		
2,000.0	1,863.7	1,866.4	1,864.2	12.1	3.5	-131.99	-165.7	-359.8	405.0	392.6	12.47	32.488		
2,100.0	1,949.7	1,950.1	1,947.7	13.1	3.6	-136.65	-169.9	-356.6	449.6	437.0	12.64	35.558		
2,200.0	2,035.7	2,033.9	2,031.4	14.1	3.8	-140.58	-173.9	-353.3	496.2	483.4	12.79	38.786		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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							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	-106.42	-121.8	-413.2	430.8						
100.0	100.0	125.4	125.4	0.1	0.2	-106.40	-121.7	-413.4	430.9	430.6	0.34	1,280.975			
200.0	200.0	220.8	220.8	0.3	0.4	-106.34	-121.4	-413.8	431.3	430.6	0.67	641.562			
300.0	300.0	307.6	307.6	0.5	0.5	-106.15	-120.6	-416.4	433.9	432.9	1.00	432.756			
400.0	400.0	392.9	392.7	0.7	0.7	-34.36	-119.6	-422.1	439.4	438.1	1.33	330.833			
500.0	499.8	483.6	483.0	0.8	0.9	-34.51	-120.8	-429.9	443.7	442.1	1.66	266.512			
600.0	599.3	575.6	574.5	1.1	1.1	-35.56	-126.4	-438.3	445.7	443.7	2.01	221.441			
700.0	698.0	668.3	666.2	1.4	1.4	-37.58	-136.6	-446.9	445.5	443.0	2.41	185.137			
800.0	795.8	768.9	765.2	1.8	1.7	-40.89	-152.4	-454.6	442.1	439.2	2.89	152.799			
900.0	892.4	862.0	856.2	2.2	2.0	-45.15	-171.6	-458.9	436.2	432.7	3.49	125.004			
1,000.0	987.5	948.0	939.4	2.8	2.4	-50.07	-193.0	-461.6	430.6	426.4	4.20	102.460			
1,100.0	1,080.9	1,036.7	1,024.9	3.5	2.7	-55.80	-216.7	-464.2	427.0	422.0	5.05	84.499			
1,185.9	1,159.5	1,112.7	1,098.2	4.2	3.1	-61.07	-236.8	-466.2	425.9	420.0	5.90	72.246 CC			
1,200.0	1,172.2	1,125.0	1,110.0	4.3	3.1	-61.95	-240.0	-466.4	425.9	419.9	6.03	70.578 ES			
1,300.0	1,261.3	1,211.0	1,193.1	5.2	3.5	-68.29	-262.3	-468.2	428.5	421.4	7.13	60.066			
1,400.0	1,348.0	1,285.9	1,265.4	6.1	3.9	-74.01	-281.9	-469.7	436.9	428.6	8.29	52.694			
1,500.0	1,433.9	1,362.2	1,338.7	7.1	4.3	-79.88	-302.8	-471.9	454.1	444.6	9.46	47.984			
1,600.0	1,519.9	1,444.4	1,417.8	8.1	4.7	-85.87	-325.1	-473.9	478.0	467.4	10.62	45.020 SF			

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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 19-14D - OH - FINAL												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 172-MWD, 1613-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	-144.14	-166.5	-120.3	205.4				
100.0	100.0	100.2	100.2	0.1	0.2	-144.18	-166.5	-120.2	205.4	205.1	0.29	711.513	
200.0	200.0	200.2	200.2	0.3	0.3	-144.29	-166.6	-119.8	205.2	204.6	0.62	330.163	
208.0	208.0	208.0	208.0	0.3	0.3	-144.30	-166.7	-119.8	205.2	204.6	0.65	316.125 CC, ES	
300.0	300.0	296.3	296.3	0.5	0.5	-144.25	-167.1	-120.3	206.0	205.0	0.96	213.627	
400.0	400.0	386.0	385.9	0.7	0.6	-72.54	-169.1	-123.2	209.5	208.2	1.30	161.726	
500.0	499.8	478.0	477.6	0.8	0.8	-72.80	-173.4	-129.9	216.1	214.4	1.65	131.061	
600.0	599.3	573.4	572.3	1.1	1.1	-73.90	-179.8	-139.8	224.5	222.4	2.05	109.296	
700.0	698.0	672.4	670.4	1.4	1.3	-76.15	-186.9	-150.6	232.5	230.0	2.54	91.519	
800.0	795.8	770.3	767.4	1.8	1.6	-79.42	-194.2	-161.3	240.2	237.1	3.13	76.816	
900.0	892.4	868.3	864.6	2.2	1.9	-83.61	-201.5	-172.1	248.2	244.3	3.83	64.740	
1,000.0	987.5	964.4	959.8	2.8	2.2	-88.47	-208.7	-182.9	257.5	252.9	4.66	55.276	
1,100.0	1,080.9	1,059.1	1,053.6	3.5	2.4	-93.82	-216.0	-193.6	269.5	263.9	5.59	48.184	
1,200.0	1,172.2	1,152.5	1,146.1	4.3	2.7	-99.43	-223.5	-204.3	285.2	278.6	6.61	43.151	
1,300.0	1,261.3	1,244.7	1,237.4	5.2	3.0	-105.09	-230.8	-214.9	305.4	297.7	7.67	39.803	
1,400.0	1,348.0	1,334.7	1,326.5	6.1	3.2	-110.71	-238.0	-225.1	330.8	322.1	8.72	37.939	
1,500.0	1,433.9	1,425.2	1,416.2	7.1	3.5	-116.33	-245.0	-235.2	360.2	350.5	9.67	37.238 SF	
1,600.0	1,519.9	1,514.7	1,504.9	8.1	3.8	-121.18	-251.5	-244.6	392.3	381.8	10.53	37.265	
1,700.0	1,605.9	1,602.8	1,592.3	9.1	4.0	-125.34	-258.0	-253.5	427.0	415.7	11.30	37.782	
1,800.0	1,691.8	1,702.8	1,691.4	10.1	4.3	-129.22	-264.9	-265.0	462.7	450.7	12.05	38.386	
1,900.0	1,777.8	1,796.0	1,783.5	11.1	4.6	-132.11	-270.7	-277.9	498.3	485.5	12.79	38.951	



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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													Offset Site Error:	0.0 ft
Survey Program: 173-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	-148.96	-130.0	-78.2	151.8					
100.0	100.0	100.7	100.7	0.1	0.2	-148.92	-129.8	-78.2	151.5	151.2	0.29	522.286		
200.0	200.0	201.2	201.2	0.3	0.3	-148.81	-129.0	-78.1	150.8	150.2	0.62	241.475		
300.0	300.0	302.6	302.6	0.5	0.5	-149.20	-128.4	-76.6	149.5	148.6	0.98	153.091		
400.0	400.0	405.0	404.7	0.7	0.7	-80.55	-129.3	-69.6	146.8	145.4	1.35	109.095		
500.0	499.8	504.3	503.3	0.8	0.9	-87.29	-131.5	-57.8	143.2	141.5	1.79	80.219		
576.8	576.3	579.7	577.7	1.0	1.2	-95.04	-133.8	-46.0	142.0	139.8	2.20	64.547 CC, ES		
600.0	599.3	602.2	599.9	1.1	1.2	-97.71	-134.5	-42.1	142.2	139.9	2.33	61.087		
700.0	698.0	697.2	693.1	1.4	1.6	-110.39	-137.0	-23.9	147.4	144.5	2.95	50.011		
800.0	795.8	788.7	782.5	1.8	2.0	-123.13	-139.1	-4.6	162.9	159.4	3.53	46.096 SF		
900.0	892.4	877.3	868.9	2.2	2.3	-134.19	-140.8	14.9	189.9	185.8	4.03	47.159		
1,000.0	987.5	962.1	951.5	2.8	2.7	-142.96	-142.3	34.1	227.4	223.0	4.42	51.409		
1,100.0	1,080.9	1,047.2	1,034.3	3.5	3.1	-149.97	-143.5	53.7	273.6	268.9	4.74	57.686		
1,200.0	1,172.2	1,128.9	1,113.9	4.3	3.4	-155.14	-144.3	72.0	326.3	321.3	5.01	65.142		
1,300.0	1,261.3	1,206.4	1,189.5	5.2	3.7	-158.89	-145.4	88.8	384.9	379.6	5.26	73.191		
1,400.0	1,348.0	1,279.1	1,260.5	6.1	4.0	-161.87	-146.5	104.7	448.6	443.1	5.49	81.747		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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 19-16CC - OH - FINAL													Offset Site Error:	0.0 ft
Survey Program: 202-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							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	-148.17	-142.4	-88.4	167.6					
100.0	100.0	100.5	100.5	0.1	0.2	-148.22	-142.4	-88.2	167.5	167.2	0.29	572.326		
200.0	200.0	201.1	201.1	0.3	0.3	-148.37	-142.2	-87.6	167.0	166.4	0.62	267.787		
300.0	300.0	302.0	301.9	0.5	0.5	-148.78	-142.0	-86.1	166.1	165.1	0.97	170.443		
400.0	400.0	401.8	401.7	0.7	0.7	-78.97	-143.0	-81.9	164.7	163.4	1.34	123.353		
500.0	499.8	499.8	499.3	0.8	0.9	-83.58	-146.1	-74.5	163.2	161.5	1.74	94.083		
516.3	516.1	515.3	514.7	0.9	0.9	-84.62	-146.9	-73.0	163.2	161.4	1.81	90.094	CC, ES	
600.0	599.3	593.8	592.6	1.1	1.1	-91.07	-152.2	-64.1	164.9	162.6	2.22	74.325		
700.0	698.0	684.8	682.2	1.4	1.4	-100.57	-161.0	-50.9	173.1	170.3	2.79	62.091		
800.0	795.8	772.2	767.4	1.8	1.8	-110.68	-171.6	-34.9	191.2	187.8	3.39	56.340		
900.0	892.4	857.5	850.1	2.2	2.2	-120.05	-183.1	-17.2	220.0	216.0	3.97	55.421	SF	
1,000.0	987.5	939.5	929.2	2.8	2.6	-127.82	-194.5	0.9	258.8	254.3	4.49	57.598		
1,100.0	1,080.9	1,023.9	1,010.7	3.5	3.0	-134.51	-205.8	20.1	305.7	300.7	4.97	61.487		
1,200.0	1,172.2	1,101.2	1,085.2	4.3	3.3	-139.50	-215.3	38.0	359.0	353.6	5.42	66.192		
1,300.0	1,261.3	1,172.5	1,153.9	5.2	3.7	-143.20	-224.1	55.0	418.9	413.1	5.88	71.255		
1,400.0	1,348.0	1,239.6	1,218.4	6.1	4.1	-146.37	-232.6	71.4	484.6	478.3	6.30	76.923		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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	-147.50	-155.2	-98.9	184.0					
100.0	100.0	100.5	100.5	0.1	0.2	-147.50	-155.1	-98.8	183.9	183.6	0.29	628.392		
200.0	200.0	201.0	201.0	0.3	0.3	-147.51	-154.7	-98.6	183.5	182.8	0.62	294.225		
300.0	300.0	300.8	300.8	0.5	0.5	-147.61	-154.4	-98.0	182.9	181.9	0.97	188.055		
400.0	400.0	399.4	399.4	0.7	0.7	-77.34	-156.0	-95.3	182.7	181.4	1.32	138.060		
424.7	424.7	423.3	423.2	0.7	0.7	-77.99	-156.8	-94.2	182.6	181.2	1.41	129.181	CC, ES	
500.0	499.8	495.3	495.0	0.8	0.9	-80.94	-160.5	-90.2	183.1	181.4	1.70	107.544		
600.0	599.3	587.5	586.5	1.1	1.1	-86.85	-168.5	-82.9	186.7	184.6	2.15	86.771		
700.0	698.0	677.2	674.9	1.4	1.4	-94.51	-180.0	-73.2	196.3	193.6	2.69	72.989		
800.0	795.8	763.3	759.0	1.8	1.7	-102.93	-194.1	-60.8	214.3	211.0	3.29	65.078		
900.0	892.4	846.0	838.8	2.2	2.1	-111.21	-209.4	-45.5	242.2	238.3	3.93	61.694		
1,000.0	987.5	926.4	915.8	2.8	2.5	-118.67	-225.1	-28.2	280.1	275.5	4.54	61.655	SF	
1,100.0	1,080.9	1,002.1	987.8	3.5	2.9	-124.64	-240.3	-10.9	326.9	321.8	5.14	63.614		
1,200.0	1,172.2	1,073.9	1,055.9	4.3	3.3	-129.36	-255.1	6.5	381.8	376.0	5.73	66.635		
1,300.0	1,261.3	1,142.8	1,121.1	5.2	3.8	-133.07	-269.3	23.8	443.2	436.9	6.33	69.962		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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						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	-144.94	-157.0	-110.2	191.8				
100.0	100.0	100.2	100.2	0.1	0.1	-144.96	-157.0	-110.1	191.7	191.5	0.28	693.707	
200.0	200.0	201.0	201.0	0.3	0.3	-145.11	-157.0	-109.5	191.4	190.8	0.62	307.174	
246.2	246.2	246.2	246.2	0.4	0.4	-145.27	-157.2	-109.0	191.2	190.5	0.78	244.392 CC, ES	
300.0	300.0	297.3	297.2	0.5	0.5	-145.67	-158.2	-108.1	191.6	190.7	0.97	198.362	
400.0	400.0	389.5	389.3	0.7	0.7	-75.99	-163.8	-105.0	194.7	193.4	1.32	147.325	
500.0	499.8	481.9	480.9	0.8	0.9	-79.87	-174.3	-100.4	201.0	199.3	1.72	117.059	
600.0	599.3	572.6	570.1	1.1	1.2	-85.64	-189.0	-93.5	211.3	209.1	2.19	96.412	
700.0	698.0	661.0	656.2	1.4	1.6	-92.66	-206.6	-83.8	227.2	224.5	2.74	82.899	
800.0	795.8	743.6	735.7	1.8	2.0	-99.70	-225.9	-72.2	251.0	247.7	3.34	75.226	
900.0	892.4	819.3	807.6	2.2	2.4	-105.92	-246.2	-59.9	284.6	280.6	3.96	71.889	
1,000.0	987.5	888.4	872.2	2.8	2.9	-110.96	-267.0	-47.1	328.1	323.5	4.61	71.233 SF	
1,100.0	1,080.9	950.9	929.7	3.5	3.3	-114.76	-287.8	-34.4	381.0	375.7	5.29	71.978	
1,200.0	1,172.2	1,007.4	981.0	4.3	3.8	-117.42	-308.2	-22.0	442.0	435.9	6.05	73.064	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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 30-2C - OH - FINAL													Offset Site Error: 0.0 ft	
Survey Program: 172-MWD, 1616-MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							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	-145.93	-190.9	-129.1	230.4					
100.0	100.0	101.7	101.7	0.1	0.2	-145.93	-190.6	-128.9	230.1	229.8	0.29	788.218		
200.0	200.0	202.0	202.0	0.3	0.3	-145.96	-189.8	-128.2	229.0	228.4	0.63	365.404		
239.5	239.5	239.5	239.5	0.4	0.4	-146.01	-189.7	-127.9	228.8	228.0	0.76	300.748 CC, ES		
300.0	300.0	295.6	295.6	0.5	0.5	-146.18	-190.5	-127.7	229.4	228.4	0.96	238.185		
400.0	400.0	386.0	385.9	0.7	0.6	-75.29	-194.6	-128.0	233.2	231.9	1.30	179.667		
500.0	499.8	478.0	477.4	0.8	0.8	-76.94	-203.4	-130.1	241.1	239.5	1.65	145.846		
600.0	599.3	559.7	558.2	1.1	1.1	-79.47	-215.3	-132.5	253.0	251.0	2.04	124.140		
700.0	698.0	643.2	640.0	1.4	1.4	-82.93	-231.5	-135.0	269.7	267.2	2.49	108.205		
800.0	795.8	723.5	717.9	1.8	1.7	-86.59	-251.0	-138.3	292.5	289.5	3.02	96.812		
900.0	892.4	800.4	791.4	2.2	2.2	-90.16	-273.1	-142.1	321.9	318.3	3.63	88.701		
1,000.0	987.5	877.0	863.6	2.8	2.6	-93.57	-298.3	-146.4	358.0	353.6	4.32	82.812		
1,100.0	1,080.9	956.7	938.2	3.5	3.1	-96.87	-326.1	-151.3	399.0	393.9	5.11	78.110		
1,200.0	1,172.2	1,034.9	1,011.0	4.3	3.6	-99.82	-354.3	-156.0	444.2	438.3	5.98	74.292		
1,300.0	1,261.3	1,113.6	1,084.0	5.2	4.1	-102.53	-383.1	-160.6	493.4	486.5	6.94	71.108 SF		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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 30-3A - OH - FINAL												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 172-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	-143.65	-192.0	-141.2	238.3				
100.0	100.0	100.9	100.9	0.1	0.2	-143.64	-191.8	-141.2	238.1	237.8	0.29	820.733	
200.0	200.0	200.7	200.7	0.3	0.3	-143.59	-191.2	-141.0	237.6	237.0	0.62	381.222	
218.9	218.9	218.9	218.9	0.3	0.3	-143.57	-191.1	-141.1	237.6	236.9	0.69	345.419	CC, ES
300.0	300.0	294.0	294.0	0.5	0.5	-143.48	-191.7	-141.9	238.6	237.6	0.96	248.553	
400.0	400.0	382.8	382.6	0.7	0.6	-72.01	-195.1	-144.8	243.4	242.1	1.29	188.672	
500.0	499.8	469.3	468.8	0.8	0.8	-72.70	-201.7	-150.1	251.6	249.9	1.63	154.352	
600.0	599.3	558.2	556.7	1.1	1.1	-74.46	-212.4	-156.9	263.0	261.0	2.01	130.668	
700.0	698.0	651.4	648.5	1.4	1.4	-77.22	-226.3	-165.0	276.6	274.1	2.47	111.904	
800.0	795.8	745.2	740.7	1.8	1.7	-80.58	-241.2	-173.7	291.4	288.4	3.02	96.424	
900.0	892.4	838.4	832.2	2.2	2.0	-84.48	-257.1	-182.4	308.0	304.3	3.68	83.746	
1,000.0	987.5	934.9	926.8	2.8	2.4	-88.88	-273.5	-191.7	326.3	321.8	4.46	73.232	
1,100.0	1,080.9	1,028.4	1,018.5	3.5	2.7	-93.25	-288.8	-201.1	346.6	341.3	5.34	64.885	
1,200.0	1,172.2	1,117.8	1,106.2	4.3	3.1	-97.50	-303.6	-210.3	370.3	364.0	6.32	58.553	
1,300.0	1,261.3	1,206.0	1,192.6	5.2	3.4	-101.61	-318.6	-219.9	398.2	390.9	7.39	53.865	
1,400.0	1,348.0	1,293.9	1,278.7	6.1	3.8	-105.88	-333.7	-229.3	430.5	422.0	8.51	50.604	
1,500.0	1,433.9	1,383.1	1,366.1	7.1	4.1	-110.53	-348.6	-238.3	465.7	456.1	9.58	48.592	SF

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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	-143.88	-178.8	-130.5	221.4					
100.0	100.0	100.2	100.2	0.1	0.2	-143.87	-178.8	-130.5	221.3	221.1	0.29	771.366		
200.0	200.0	200.6	200.6	0.3	0.3	-143.85	-178.6	-130.5	221.2	220.6	0.62	355.405		
210.9	210.9	210.9	210.9	0.3	0.3	-143.84	-178.6	-130.5	221.2	220.5	0.66	335.399	CC, ES	
300.0	300.0	294.0	294.0	0.5	0.5	-143.65	-179.0	-131.7	222.3	221.4	0.96	231.562		
400.0	400.0	384.2	384.1	0.7	0.6	-71.75	-181.3	-135.9	226.9	225.6	1.30	175.221		
500.0	499.8	472.0	471.4	0.8	0.8	-71.89	-186.3	-143.2	234.9	233.3	1.64	143.102		
600.0	599.3	558.7	557.1	1.1	1.1	-72.95	-195.0	-153.0	246.4	244.4	2.03	121.541		
700.0	698.0	646.9	643.5	1.4	1.4	-74.58	-206.5	-165.9	261.4	258.9	2.50	104.704		
800.0	795.8	732.5	726.6	1.8	1.8	-76.31	-219.6	-182.1	279.5	276.4	3.07	91.167		
900.0	892.4	814.9	805.5	2.2	2.3	-78.12	-234.6	-200.8	301.4	297.7	3.76	80.237		
1,000.0	987.5	895.0	880.6	2.8	2.8	-79.78	-251.5	-222.4	327.8	323.2	4.59	71.477		
1,100.0	1,080.9	976.5	955.6	3.5	3.4	-81.37	-271.0	-247.7	358.3	352.8	5.57	64.370		
1,200.0	1,172.2	1,062.4	1,033.7	4.3	4.1	-83.19	-293.1	-276.0	391.4	384.6	6.72	58.246		
1,300.0	1,261.3	1,151.7	1,114.3	5.2	4.8	-85.19	-316.5	-306.3	425.9	417.8	8.05	52.905		
1,400.0	1,348.0	1,242.9	1,196.4	6.1	5.5	-87.60	-340.3	-338.0	461.3	451.7	9.54	48.352		
1,500.0	1,433.9	1,332.6	1,277.1	7.1	6.2	-90.47	-363.6	-369.6	497.8	486.7	11.10	44.856	SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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 30-4A - 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				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	-145.20	-143.9	-100.0	175.2				
100.0	100.0	101.0	101.0	0.1	0.1	-145.25	-143.7	-99.7	174.9	174.7	0.28	630.273	
200.0	200.0	200.0	200.0	0.3	0.3	-145.28	-143.4	-99.3	174.4	173.8	0.62	280.599	
200.1	200.1	200.1	200.1	0.3	0.3	-145.28	-143.4	-99.3	174.4	173.8	0.62	280.457 CC, ES	
300.0	300.0	294.0	294.0	0.5	0.5	-144.67	-143.2	-101.5	175.7	174.7	0.96	182.991	
400.0	400.0	388.0	387.7	0.7	0.7	-71.95	-144.5	-107.8	180.5	179.2	1.31	137.856	
500.0	499.8	478.0	477.2	0.8	0.9	-71.44	-148.3	-117.2	188.5	186.8	1.67	112.758	
600.0	599.3	569.0	567.0	1.1	1.1	-71.61	-153.9	-130.7	199.1	197.0	2.10	95.000	
700.0	698.0	661.0	657.0	1.4	1.5	-72.17	-160.4	-148.3	211.4	208.8	2.62	80.640	
800.0	795.8	754.0	747.1	1.8	1.9	-73.05	-168.0	-170.2	225.7	222.5	3.28	68.902	
900.0	892.4	846.0	834.8	2.2	2.5	-74.12	-177.1	-196.5	243.0	238.9	4.09	59.478	
1,000.0	987.5	929.6	913.0	2.8	3.0	-75.11	-186.7	-224.2	262.9	257.9	5.02	52.343	
1,100.0	1,080.9	1,022.0	998.4	3.5	3.7	-76.54	-198.3	-257.6	284.6	278.4	6.16	46.204	
1,200.0	1,172.2	1,116.2	1,084.8	4.3	4.4	-78.47	-210.8	-292.8	306.7	299.2	7.48	40.996	
1,300.0	1,261.3	1,211.9	1,172.4	5.2	5.1	-80.87	-223.5	-329.3	329.0	320.0	8.99	36.582	
1,400.0	1,348.0	1,305.6	1,258.1	6.1	5.8	-83.75	-236.0	-365.2	351.8	341.1	10.64	33.055	
1,500.0	1,433.9	1,400.8	1,345.0	7.1	6.6	-87.00	-248.9	-401.7	375.8	363.4	12.36	30.395	
1,600.0	1,519.9	1,497.2	1,433.2	8.1	7.3	-89.93	-261.8	-438.5	400.6	386.5	14.09	28.419	
1,700.0	1,605.9	1,590.9	1,518.4	9.1	8.1	-92.29	-274.3	-475.4	426.5	410.7	15.84	26.930	
1,800.0	1,691.8	1,692.8	1,610.5	10.1	8.9	-94.27	-286.3	-517.4	451.8	434.2	17.65	25.598	
1,900.0	1,777.8	1,792.3	1,700.4	11.1	9.7	-95.98	-297.3	-558.4	477.0	457.6	19.44	24.540 SF	



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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	-146.16	-177.4	-118.9	213.6					
100.0	100.0	102.0	102.0	0.1	0.2	-146.16	-177.0	-118.7	213.1	212.8	0.29	726.992		
200.0	200.0	202.9	202.9	0.3	0.3	-146.14	-175.8	-118.0	211.8	211.1	0.63	336.216		
265.7	265.7	265.7	265.7	0.4	0.4	-146.22	-175.6	-117.4	211.2	210.4	0.85	247.504	CC, ES	
300.0	300.0	297.9	297.8	0.5	0.5	-146.38	-176.0	-117.0	211.4	210.4	0.97	218.338		
400.0	400.0	388.5	388.4	0.7	0.6	-75.96	-180.2	-115.6	214.3	213.0	1.31	164.051		
500.0	499.8	478.0	477.4	0.8	0.8	-78.33	-188.7	-114.7	220.7	219.1	1.67	132.429		
600.0	599.3	569.0	567.5	1.1	1.1	-82.37	-201.4	-112.7	230.5	228.4	2.09	110.163		
700.0	698.0	655.0	651.9	1.4	1.4	-87.42	-217.6	-109.4	245.5	242.9	2.59	94.908		
800.0	795.8	736.3	730.8	1.8	1.8	-92.77	-236.9	-105.1	267.6	264.5	3.15	84.958		
900.0	892.4	812.9	804.1	2.2	2.2	-97.80	-258.4	-100.4	298.0	294.2	3.76	79.153		
1,000.0	987.5	885.4	872.7	2.8	2.6	-102.10	-281.7	-95.8	336.8	332.4	4.43	75.947		
1,100.0	1,080.9	952.9	935.5	3.5	3.0	-105.56	-305.6	-91.1	383.6	378.4	5.17	74.240		
1,200.0	1,172.2	1,013.3	991.0	4.3	3.5	-108.10	-329.1	-85.9	437.9	431.9	5.97	73.299		
1,300.0	1,261.3	1,069.0	1,041.3	5.2	3.9	-109.88	-352.2	-80.3	499.1	492.3	6.87	72.697	SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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 30-8B - OH - FINAL		Offset Site Error:		0.0 ft
Survey Program:													142-MWD		Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning			
Measured Depth 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	-146.53	-165.4	-109.3	198.2								
100.0	100.0	100.0	100.0	0.1	0.1	-146.60	-165.5	-109.1	198.2	197.9	0.28	698.786					
178.9	178.9	179.1	179.1	0.3	0.3	-146.77	-165.8	-108.6	198.2	197.6	0.55	361.611	CC				
200.0	200.0	199.6	199.6	0.3	0.3	-146.86	-166.0	-108.4	198.2	197.6	0.62	319.302	ES				
300.0	300.0	295.0	294.9	0.5	0.5	-147.67	-168.5	-106.7	199.5	198.5	0.96	206.792					
400.0	400.0	388.5	388.2	0.7	0.7	-77.90	-174.7	-103.9	203.5	202.1	1.33	153.311					
500.0	499.8	479.7	478.7	0.8	0.9	-81.34	-185.2	-100.0	210.6	208.9	1.72	122.741					
600.0	599.3	569.0	566.6	1.1	1.2	-86.41	-199.5	-94.3	221.7	219.6	2.16	102.490					
700.0	698.0	655.3	650.7	1.4	1.5	-92.50	-217.2	-86.4	238.9	236.2	2.68	89.009					
800.0	795.8	735.6	727.9	1.8	2.0	-98.62	-237.1	-77.0	264.2	260.9	3.27	80.913					
900.0	892.4	810.0	798.5	2.2	2.4	-104.11	-258.5	-66.7	298.8	294.9	3.88	76.944					
1,000.0	987.5	879.8	863.6	2.8	2.9	-108.73	-281.1	-55.7	342.8	338.3	4.55	75.429					
1,100.0	1,080.9	938.0	917.1	3.5	3.3	-111.90	-301.3	-45.2	395.2	390.0	5.25	75.219	SF				
1,200.0	1,172.2	1,001.5	974.7	4.3	3.8	-114.98	-324.9	-32.5	455.2	449.2	6.03	75.444					

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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		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	-145.50	-131.1	-90.1	159.1					
100.0	100.0	100.0	100.0	0.1	0.1	-145.53	-131.2	-90.0	159.1	158.8	0.28	576.251		
154.0	154.0	154.0	154.0	0.2	0.2	-145.55	-131.2	-90.0	159.1	158.6	0.46	345.349 CC		
200.0	200.0	199.5	199.5	0.3	0.3	-145.52	-131.2	-90.1	159.1	158.5	0.62	256.468 ES		
300.0	300.0	295.8	295.7	0.5	0.5	-144.82	-131.1	-92.4	160.5	159.5	0.96	166.611		
400.0	400.0	389.6	389.3	0.7	0.7	-71.59	-131.4	-99.3	164.8	163.5	1.32	124.949		
500.0	499.8	482.9	481.8	0.8	0.9	-69.69	-131.7	-111.8	171.6	169.9	1.73	99.416		
600.0	599.3	575.9	573.2	1.1	1.3	-68.20	-132.5	-129.0	180.4	178.2	2.20	81.820		
700.0	698.0	666.7	661.5	1.4	1.7	-67.64	-135.2	-149.5	191.5	188.7	2.76	69.392		
800.0	795.8	754.0	745.6	1.8	2.1	-67.82	-139.7	-172.7	205.1	201.6	3.42	60.001		
900.0	892.4	846.0	832.7	2.2	2.7	-68.39	-145.9	-201.4	221.0	216.8	4.24	52.090		
1,000.0	987.5	938.0	918.1	2.8	3.3	-68.99	-152.3	-235.0	238.8	233.6	5.25	45.514		
1,100.0	1,080.9	1,032.0	1,003.4	3.5	4.1	-69.52	-158.6	-274.0	257.8	251.4	6.45	40.001		
1,200.0	1,172.2	1,124.0	1,085.4	4.3	4.9	-70.29	-164.7	-315.2	277.3	269.5	7.80	35.574		
1,300.0	1,261.3	1,223.3	1,173.4	5.2	5.8	-71.68	-170.4	-360.8	295.4	286.0	9.40	31.434		
1,400.0	1,348.0	1,323.6	1,262.3	6.1	6.7	-73.82	-175.3	-407.1	311.7	300.5	11.19	27.856		
1,500.0	1,433.9	1,423.1	1,351.2	7.1	7.5	-76.50	-180.0	-451.6	327.3	314.3	13.05	25.089		
1,600.0	1,519.9	1,524.6	1,442.6	8.1	8.4	-79.27	-184.9	-495.4	342.8	327.9	14.95	22.937		
1,700.0	1,605.9	1,620.7	1,529.6	9.1	9.2	-81.83	-189.6	-535.9	358.7	341.9	16.81	21.337		
1,800.0	1,691.8	1,720.3	1,619.7	10.1	10.0	-84.19	-194.2	-578.1	375.0	356.3	18.73	20.025		
1,900.0	1,777.8	1,812.8	1,703.1	11.1	10.8	-86.14	-198.8	-617.9	392.5	371.9	20.56	19.088		
2,000.0	1,863.7	1,911.5	1,792.5	12.1	11.6	-88.21	-204.4	-659.4	410.7	388.3	22.43	18.311		
2,100.0	1,949.7	2,007.4	1,879.5	13.1	12.3	-90.12	-209.8	-699.3	429.3	405.0	24.28	17.682		
2,200.0	2,035.7	2,099.4	1,962.3	14.1	13.1	-91.63	-215.7	-738.9	449.4	423.3	26.09	17.226		
2,300.0	2,121.6	2,198.2	2,051.1	15.1	14.0	-93.09	-222.2	-781.7	470.1	442.1	27.94	16.827		
2,400.0	2,207.6	2,298.7	2,141.9	16.1	14.8	-94.55	-228.5	-824.4	490.5	460.7	29.78	16.467 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 19-12C
<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 19-12C	<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	-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	95.715		
200.0	200.0	200.0	200.0	0.3	0.3	-35.83	21.1	-15.3	26.1	25.4	0.62	41.943		
300.0	300.0	300.0	300.0	0.5	0.5	-35.83	21.1	-15.3	26.1	25.1	0.97	26.855		
400.0	400.0	400.0	400.0	0.7	0.7	36.49	21.1	-15.3	25.5	24.2	1.32	19.351		
500.0	499.8	498.7	498.6	0.8	0.8	44.00	23.3	-16.7	24.1	22.4	1.67	14.420		
519.9	519.7	518.3	518.2	0.9	0.9	46.45	24.2	-17.3	24.1	22.3	1.75	13.755 CC, ES		
600.0	599.3	597.2	596.9	1.1	1.0	58.66	29.6	-20.9	25.1	23.1	2.07	12.143		
700.0	698.0	695.5	694.4	1.4	1.3	75.20	40.2	-27.8	30.3	27.7	2.59	11.720 SF		
800.0	795.8	793.4	790.7	1.8	1.6	87.97	54.8	-37.5	40.4	37.1	3.27	12.338		
900.0	892.4	890.8	885.4	2.2	2.0	96.10	73.5	-49.8	54.9	50.8	4.12	13.329		
1,000.0	987.5	989.0	980.4	2.8	2.4	103.05	94.1	-63.4	72.1	67.0	5.08	14.199		
1,100.0	1,080.9	1,086.4	1,074.7	3.5	2.9	110.15	114.6	-76.9	91.8	85.7	6.10	15.045		
1,200.0	1,172.2	1,182.9	1,168.1	4.3	3.3	116.81	134.9	-90.3	114.7	107.6	7.12	16.108		
1,300.0	1,261.3	1,278.1	1,260.2	5.2	3.7	122.75	154.9	-103.5	141.6	133.5	8.11	17.463		
1,400.0	1,348.0	1,371.9	1,351.0	6.1	4.2	128.05	174.7	-116.5	172.7	163.6	9.03	19.128		
1,500.0	1,433.9	1,465.2	1,441.3	7.1	4.6	132.45	194.3	-129.5	205.8	195.9	9.88	20.826		
1,600.0	1,519.9	1,558.6	1,531.6	8.1	5.1	135.64	213.9	-142.4	239.8	229.0	10.72	22.362		
1,700.0	1,605.9	1,651.9	1,621.9	9.1	5.5	138.04	233.6	-155.4	274.2	262.7	11.55	23.735		
1,800.0	1,691.8	1,745.2	1,712.3	10.1	5.9	139.91	253.2	-168.3	309.0	296.6	12.38	24.956		
1,900.0	1,777.8	1,838.5	1,802.6	11.1	6.4	141.40	272.8	-181.3	344.0	330.8	13.21	26.043		
2,000.0	1,863.7	1,931.9	1,892.9	12.1	6.8	142.61	292.5	-194.2	379.2	365.2	14.04	27.014		
2,100.0	1,949.7	2,025.2	1,983.2	13.1	7.3	143.62	312.1	-207.2	414.5	399.7	14.87	27.885		
2,200.0	2,035.7	2,118.5	2,073.5	14.1	7.7	144.48	331.7	-220.1	450.0	434.3	15.69	28.669		
2,300.0	2,121.6	2,211.8	2,163.8	15.1	8.1	145.21	351.3	-233.1	485.4	468.9	16.52	29.378		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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						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	-45.70	40.8	-41.8	58.4					
100.0	100.0	100.0	100.0	0.1	0.1	-45.70	40.8	-41.8	58.4	58.1	0.27	214.536		
200.0	200.0	200.0	200.0	0.3	0.3	-45.70	40.8	-41.8	58.4	57.8	0.62	94.010 CC, ES		
300.0	300.0	297.7	297.7	0.5	0.5	-45.80	41.7	-42.9	59.8	58.9	0.97	61.756		
400.0	400.0	394.4	394.2	0.7	0.7	25.47	45.6	-47.6	65.6	64.3	1.31	50.045		
500.0	499.8	490.7	489.9	0.8	0.9	26.51	52.7	-55.9	72.2	70.6	1.66	43.613		
600.0	599.3	587.9	585.7	1.1	1.2	28.72	62.8	-67.9	79.0	77.0	2.01	39.226		
700.0	698.0	687.6	684.0	1.4	1.6	32.36	73.9	-81.1	82.7	80.3	2.42	34.232		
800.0	795.8	787.3	782.2	1.8	1.9	37.85	85.0	-94.3	82.5	79.6	2.90	28.394		
900.0	892.4	886.6	880.0	2.2	2.2	45.92	96.1	-107.5	79.3	75.7	3.58	22.132		
1,000.0	987.5	985.2	977.1	2.8	2.6	57.65	107.1	-120.5	74.9	70.3	4.59	16.303		
1,100.0	1,080.9	1,082.9	1,073.3	3.5	2.9	73.83	118.0	-133.4	72.3	66.3	5.98	12.087		
1,104.0	1,084.5	1,086.8	1,077.1	3.5	2.9	74.56	118.4	-134.0	72.2	66.2	6.04	11.962		
1,200.0	1,172.2	1,179.5	1,168.4	4.3	3.2	93.19	128.7	-146.2	75.9	68.5	7.42	10.236 SF		
1,300.0	1,261.3	1,274.5	1,262.0	5.2	3.6	111.71	139.3	-158.8	89.4	81.0	8.39	10.654		
1,400.0	1,348.0	1,367.9	1,354.0	6.1	3.9	126.37	149.7	-171.2	113.1	104.3	8.84	12.800		
1,500.0	1,433.9	1,460.8	1,445.5	7.1	4.2	136.47	160.1	-183.5	142.9	133.9	9.05	15.797		
1,600.0	1,519.9	1,553.7	1,537.0	8.1	4.5	143.09	170.4	-195.8	175.5	166.2	9.25	18.963		
1,700.0	1,605.9	1,646.6	1,628.5	9.1	4.9	147.65	180.8	-208.0	209.6	200.1	9.50	22.054		
1,800.0	1,691.8	1,739.5	1,719.9	10.1	5.2	150.94	191.2	-220.3	244.5	234.7	9.79	24.974		
1,900.0	1,777.8	1,832.3	1,811.4	11.1	5.5	153.42	201.5	-232.6	280.0	269.9	10.11	27.692		
2,000.0	1,863.7	1,925.2	1,902.9	12.1	5.8	155.34	211.9	-244.9	315.8	305.4	10.46	30.204		
2,100.0	1,949.7	2,018.1	1,994.4	13.1	6.2	156.87	222.2	-257.2	351.9	341.1	10.82	32.522		
2,200.0	2,035.7	2,111.0	2,085.9	14.1	6.5	158.12	232.6	-269.5	388.2	377.0	11.20	34.659		
2,300.0	2,121.6	2,203.9	2,177.4	15.1	6.8	159.16	242.9	-281.8	424.6	413.0	11.59	36.631		
2,400.0	2,207.6	2,296.8	2,268.9	16.1	7.1	160.03	253.3	-294.1	461.1	449.1	11.99	38.454		
2,500.0	2,293.5	2,389.7	2,360.3	17.1	7.5	160.78	263.6	-306.4	497.7	485.3	12.40	40.143		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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 19-16B - 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				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	80.82	1.8	11.3	11.4					
100.0	100.0	100.0	100.0	0.1	0.1	80.82	1.8	11.3	11.4	11.2	0.27	42.038		
200.0	200.0	200.0	200.0	0.3	0.3	80.82	1.8	11.3	11.4	10.8	0.62	18.421		
300.0	300.0	300.0	300.0	0.5	0.5	80.82	1.8	11.3	11.4	10.5	0.97	11.795 CC, ES		
400.0	400.0	399.3	399.3	0.7	0.7	150.52	2.9	13.6	14.5	13.2	1.32	11.015 SF		
500.0	499.8	497.6	497.2	0.8	0.9	151.60	6.3	20.5	26.6	24.9	1.67	15.929		
600.0	599.3	593.4	592.3	1.1	1.1	152.99	11.6	31.6	48.0	46.0	2.02	23.714		
700.0	698.0	685.8	683.2	1.4	1.4	153.82	18.7	46.3	78.5	76.1	2.39	32.844		
800.0	795.8	778.2	773.6	1.8	1.8	154.59	26.9	63.3	115.9	113.1	2.77	41.837		
900.0	892.4	868.9	862.4	2.2	2.1	155.55	35.0	80.0	157.8	154.6	3.16	49.874		
1,000.0	987.5	957.5	949.1	2.8	2.5	156.46	42.9	96.3	204.0	200.4	3.57	57.215		
1,100.0	1,080.9	1,043.6	1,033.4	3.5	2.8	157.27	50.5	112.2	254.5	250.6	3.97	64.036		
1,200.0	1,172.2	1,127.0	1,115.1	4.3	3.1	157.95	58.0	127.6	309.3	304.9	4.39	70.443		
1,300.0	1,261.3	1,207.6	1,193.9	5.2	3.4	158.49	65.1	142.4	368.2	363.4	4.81	76.494		
1,400.0	1,348.0	1,285.1	1,269.8	6.1	3.8	159.13	72.0	156.7	430.9	425.7	5.25	82.115		
1,500.0	1,433.9	1,361.8	1,344.9	7.1	4.1	160.16	78.9	170.9	494.8	489.1	5.70	86.739		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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													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	108.05	-8.0	24.6	25.8					
100.0	100.0	100.0	100.0	0.1	0.1	108.05	-8.0	24.6	25.8	25.6	0.27	94.933		
200.0	200.0	200.0	200.0	0.3	0.3	108.05	-8.0	24.6	25.8	25.2	0.62	41.600		
300.0	300.0	300.0	300.0	0.5	0.5	108.05	-8.0	24.6	25.8	24.9	0.97	26.636 CC, ES		
327.8	327.8	327.8	327.8	0.5	0.5	179.50	-8.0	24.6	25.9	24.9	1.07	24.310		
400.0	400.0	400.0	400.0	0.7	0.7	179.51	-8.0	24.6	26.5	25.2	1.32	20.090 SF		
500.0	499.8	498.2	498.2	0.8	0.8	178.16	-7.9	27.1	34.2	32.5	1.66	20.546		
600.0	599.3	594.6	594.2	1.1	1.0	175.89	-7.8	34.5	51.9	49.9	2.00	25.922		
700.0	698.0	687.6	686.5	1.4	1.3	174.17	-7.4	46.2	79.3	77.0	2.33	34.053		
800.0	795.8	776.9	774.4	1.8	1.5	173.01	-7.0	61.6	116.1	113.5	2.65	43.831		
900.0	892.4	867.1	863.0	2.2	1.8	172.40	-6.6	78.7	159.2	156.2	2.97	53.682		
1,000.0	987.5	955.0	949.3	2.8	2.2	172.15	-6.2	95.3	206.9	203.6	3.27	63.212		
1,100.0	1,080.9	1,040.2	1,033.0	3.5	2.5	172.07	-5.7	111.5	259.1	255.5	3.57	72.546		
1,200.0	1,172.2	1,122.7	1,114.0	4.3	2.8	172.05	-5.3	127.1	315.7	311.8	3.86	81.768		
1,300.0	1,261.3	1,202.1	1,192.0	5.2	3.0	172.05	-5.0	142.1	376.4	372.3	4.14	90.926		
1,400.0	1,348.0	1,278.3	1,266.8	6.1	3.3	172.14	-4.6	156.6	441.1	436.7	4.43	99.671		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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 19-6C - OH - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total 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	-42.66	31.0	-28.5	42.1					
100.0	100.0	100.0	100.0	0.1	0.1	-42.66	31.0	-28.5	42.1	41.8	0.27	154.640		
200.0	200.0	200.0	200.0	0.3	0.3	-42.66	31.0	-28.5	42.1	41.5	0.62	67.764		
300.0	300.0	300.0	300.0	0.5	0.5	-42.66	31.0	-28.5	42.1	41.1	0.97	43.388		
339.9	339.9	339.9	339.9	0.6	0.6	28.93	31.0	-28.5	41.9	40.8	1.11	37.780 CC, ES		
400.0	400.0	398.9	398.9	0.7	0.7	29.29	31.5	-28.9	42.2	40.9	1.32	32.008		
500.0	499.8	496.7	496.6	0.8	0.8	33.17	35.4	-32.0	42.8	41.1	1.67	25.701		
600.0	599.3	594.3	593.6	1.1	1.1	40.47	43.3	-38.0	44.7	42.6	2.04	21.934		
700.0	698.0	691.6	689.8	1.4	1.4	50.05	55.1	-47.1	48.7	46.2	2.48	19.601		
800.0	795.8	788.4	784.6	1.8	1.7	60.18	70.7	-59.1	55.8	52.7	3.09	18.036		
900.0	892.4	884.7	877.8	2.2	2.2	69.30	89.9	-73.9	66.5	62.6	3.93	16.945		
1,000.0	987.5	980.4	969.0	2.8	2.7	76.70	112.7	-91.4	81.0	76.0	4.98	16.244		
1,100.0	1,080.9	1,075.3	1,058.0	3.5	3.3	82.36	138.8	-111.5	98.9	92.7	6.24	15.846		
1,200.0	1,172.2	1,169.4	1,144.5	4.3	4.0	86.56	168.2	-134.1	120.2	112.5	7.68	15.649		
1,300.0	1,261.3	1,262.6	1,228.3	5.2	4.7	89.65	200.5	-159.0	144.4	135.1	9.28	15.567 SF		
1,400.0	1,348.0	1,354.9	1,309.2	6.1	5.6	92.06	235.7	-186.0	171.5	160.5	11.01	15.572		
1,500.0	1,433.9	1,446.5	1,387.2	7.1	6.5	93.48	273.7	-215.2	200.9	188.1	12.79	15.709		
1,600.0	1,519.9	1,540.3	1,465.4	8.1	7.4	93.78	314.8	-246.9	231.9	217.3	14.60	15.887		
1,700.0	1,605.9	1,635.4	1,544.5	9.1	8.4	93.97	356.6	-279.0	262.9	246.5	16.42	16.012		
1,800.0	1,691.8	1,730.5	1,623.6	10.1	9.3	94.13	398.4	-311.2	294.0	275.7	18.26	16.105		
1,900.0	1,777.8	1,825.5	1,702.7	11.1	10.3	94.25	440.2	-343.3	325.1	305.0	20.09	16.176		
2,000.0	1,863.7	1,920.6	1,781.8	12.1	11.3	94.35	482.0	-375.5	356.1	334.2	21.94	16.233		
2,100.0	1,949.7	2,015.6	1,860.9	13.1	12.3	94.44	523.8	-407.6	387.2	363.4	23.78	16.279		
2,200.0	2,035.7	2,110.7	1,940.0	14.1	13.2	94.51	565.6	-439.7	418.2	392.6	25.63	16.316		
2,300.0	2,121.6	2,205.7	2,019.0	15.1	14.2	94.57	607.4	-471.9	449.3	421.8	27.49	16.347		
2,400.0	2,207.6	2,300.8	2,098.1	16.1	15.2	94.63	649.2	-504.0	480.4	451.0	29.34	16.374		



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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 19-9B - OH - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				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	-53.46	9.8	-13.3	16.5					
100.0	100.0	100.0	100.0	0.1	0.1	-53.46	9.8	-13.3	16.5	16.3	0.27	60.692		
200.0	200.0	200.0	200.0	0.3	0.3	-53.46	9.8	-13.3	16.5	15.9	0.62	26.595		
300.0	300.0	300.0	300.0	0.5	0.5	-53.46	9.8	-13.3	16.5	15.6	0.97	17.029		
400.0	400.0	399.9	399.8	0.7	0.7	28.01	12.0	-11.7	16.2	14.9	1.33	12.211		
456.1	456.0	455.6	455.4	0.8	0.8	45.65	15.0	-9.6	15.6	14.1	1.54	10.136 CC, ES		
500.0	499.8	498.9	498.6	0.8	0.9	65.49	18.2	-7.2	16.5	14.8	1.70	9.707 SF		
600.0	599.3	596.1	594.9	1.1	1.1	104.14	28.4	0.1	28.3	26.2	2.08	13.624		
700.0	698.0	690.5	687.8	1.4	1.5	120.86	42.1	10.0	52.4	49.9	2.51	20.918		
800.0	795.8	781.3	776.2	1.8	1.8	127.94	58.7	22.0	85.7	82.7	3.00	28.579		
900.0	892.4	867.9	859.5	2.2	2.3	131.34	77.8	35.8	126.7	123.1	3.55	35.683		
1,000.0	987.5	949.7	937.2	2.8	2.7	133.03	98.6	50.8	174.7	170.5	4.16	42.026		
1,100.0	1,080.9	1,032.4	1,015.0	3.5	3.2	134.11	121.4	67.3	228.2	223.4	4.83	47.257		
1,200.0	1,172.2	1,114.1	1,091.8	4.3	3.7	135.05	144.1	83.7	285.2	279.6	5.55	51.371		
1,300.0	1,261.3	1,193.2	1,166.1	5.2	4.2	135.81	166.0	99.5	345.4	339.1	6.32	54.692		
1,400.0	1,348.0	1,269.6	1,237.9	6.1	4.7	136.80	187.2	114.8	408.9	401.8	7.11	57.476		
1,500.0	1,433.9	1,345.2	1,308.9	7.1	5.2	138.61	208.1	129.9	473.5	465.6	7.93	59.737		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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							
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	-9.63	11.7	-2.0	11.8				
100.0	100.0	100.0	100.0	0.1	0.1	-9.63	11.7	-2.0	11.8	11.5	0.27	43.420	
200.0	200.0	200.0	200.0	0.3	0.3	-9.63	11.7	-2.0	11.8	11.2	0.62	19.027 CC, ES	
300.0	300.0	299.6	299.5	0.5	0.5	-0.24	13.4	-0.1	13.4	12.4	0.97	13.808 SF	
400.0	400.0	398.6	398.2	0.7	0.7	90.18	18.6	5.7	19.5	18.2	1.33	14.657	
500.0	499.8	496.0	494.8	0.8	1.0	109.98	27.0	15.0	32.9	31.2	1.68	19.584	
600.0	599.3	590.8	588.0	1.1	1.3	122.22	38.4	27.5	55.5	53.5	2.05	27.075	
700.0	698.0	682.9	677.8	1.4	1.7	129.03	52.5	43.0	87.0	84.6	2.46	35.342	
800.0	795.8	774.0	766.0	1.8	2.1	133.32	67.8	59.9	124.8	121.9	2.92	42.679	
900.0	892.4	864.3	853.4	2.2	2.6	136.52	83.0	76.6	166.5	163.1	3.43	48.586	
1,000.0	987.5	952.6	938.9	2.8	3.0	139.02	97.8	93.0	212.3	208.3	3.97	53.526	
1,100.0	1,080.9	1,038.6	1,022.2	3.5	3.4	141.00	112.3	108.9	262.1	257.5	4.53	57.808	
1,200.0	1,172.2	1,122.1	1,103.0	4.3	3.8	142.59	126.3	124.4	315.8	310.7	5.12	61.626	
1,300.0	1,261.3	1,202.8	1,181.2	5.2	4.1	143.84	139.9	139.3	373.5	367.8	5.74	65.090	
1,400.0	1,348.0	1,280.7	1,256.5	6.1	4.5	145.15	153.0	153.7	434.9	428.5	6.37	68.276	
1,500.0	1,433.9	1,357.6	1,331.1	7.1	4.9	147.01	165.9	168.0	497.6	490.6	7.01	70.991	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-53.47	29.5	-39.8	49.6					
100.0	100.0	100.0	100.0	0.1	0.1	-53.47	29.5	-39.8	49.6	49.3	0.27	182.057		
200.0	200.0	200.0	200.0	0.3	0.3	-53.47	29.5	-39.8	49.6	48.9	0.62	79.778	CC, ES	
300.0	300.0	297.4	297.3	0.5	0.5	-53.42	31.0	-41.8	52.1	51.1	0.97	53.554		
400.0	400.0	394.3	394.0	0.7	0.7	18.32	35.5	-47.7	59.1	57.8	1.31	45.139		
500.0	499.8	490.8	489.7	0.8	1.0	19.74	43.0	-57.3	66.9	65.2	1.65	40.434		
600.0	599.3	586.9	584.3	1.1	1.3	22.10	53.3	-70.8	74.8	72.8	2.00	37.335		
700.0	698.0	682.5	677.4	1.4	1.7	25.08	66.5	-87.9	83.1	80.8	2.38	34.964		
800.0	795.8	777.7	768.9	1.8	2.2	28.45	82.4	-108.5	91.9	89.1	2.81	32.765		
900.0	892.4	872.3	858.5	2.2	2.8	32.04	101.0	-132.6	101.4	98.1	3.34	30.386		
1,000.0	987.5	966.4	946.0	2.8	3.5	35.71	122.1	-160.0	111.8	107.7	4.03	27.739		
1,100.0	1,080.9	1,060.1	1,031.3	3.5	4.2	39.35	145.7	-190.7	123.1	118.1	4.93	24.970		
1,200.0	1,172.2	1,153.2	1,114.1	4.3	5.1	42.88	171.7	-224.4	135.4	129.3	6.07	22.316		
1,300.0	1,261.3	1,245.7	1,194.2	5.2	5.9	46.25	199.9	-261.0	148.9	141.4	7.46	19.962		
1,400.0	1,348.0	1,341.6	1,275.4	6.1	6.9	49.75	231.1	-301.6	163.0	153.8	9.13	17.843		
1,500.0	1,433.9	1,440.1	1,358.4	7.1	7.9	53.27	263.4	-343.5	177.1	166.1	10.99	16.123		
1,600.0	1,519.9	1,538.5	1,441.5	8.1	8.9	56.27	295.7	-385.3	191.8	178.9	12.90	14.872		
1,700.0	1,605.9	1,637.0	1,524.5	9.1	9.9	58.83	327.9	-427.2	207.0	192.1	14.85	13.938		
1,800.0	1,691.8	1,735.4	1,607.6	10.1	10.9	61.05	360.2	-469.1	222.5	205.6	16.82	13.224		
1,900.0	1,777.8	1,833.9	1,690.6	11.1	11.9	62.98	392.5	-511.0	238.2	219.4	18.81	12.666		
2,000.0	1,863.7	1,932.3	1,773.7	12.1	13.0	64.66	424.7	-552.9	254.3	233.4	20.80	12.221		
2,100.0	1,949.7	2,030.8	1,856.7	13.1	14.0	66.15	457.0	-594.7	270.5	247.7	22.80	11.860		
2,200.0	2,035.7	2,129.2	1,939.8	14.1	15.0	67.47	489.2	-636.6	286.8	262.0	24.80	11.563		
2,300.0	2,121.6	2,227.7	2,022.8	15.1	16.0	68.64	521.5	-678.5	303.3	276.5	26.81	11.315		
2,400.0	2,207.6	2,326.1	2,105.9	16.1	17.0	69.70	553.8	-720.4	319.9	291.1	28.81	11.105		
2,500.0	2,293.5	2,424.6	2,188.9	17.1	18.0	70.65	586.0	-762.3	336.6	305.8	30.81	10.927		
2,600.0	2,379.5	2,523.0	2,272.0	18.1	19.0	71.51	618.3	-804.1	353.4	320.6	32.80	10.773		
2,700.0	2,465.5	2,621.5	2,355.0	19.1	20.1	72.29	650.6	-846.0	370.2	335.4	34.80	10.639		
2,800.0	2,551.4	2,719.9	2,438.1	20.1	21.1	73.01	682.8	-887.9	387.2	350.4	36.80	10.522		
2,900.0	2,637.4	2,818.4	2,521.1	21.1	22.1	73.66	715.1	-929.8	404.1	365.3	38.79	10.418		
3,000.0	2,723.3	2,916.8	2,604.2	22.1	23.1	74.27	747.3	-971.7	421.1	380.4	40.78	10.327		
3,100.0	2,809.3	3,015.3	2,687.2	23.1	24.1	74.82	779.6	-1,013.5	438.2	395.4	42.77	10.245		
3,200.0	2,895.3	3,113.7	2,770.3	24.1	25.1	75.34	811.9	-1,055.4	455.3	410.5	44.76	10.172		
3,300.0	2,981.2	3,212.2	2,853.3	25.1	26.1	75.81	844.1	-1,097.3	472.4	425.7	46.75	10.106		
3,400.0	3,067.2	3,310.6	2,936.4	26.1	27.2	76.26	876.4	-1,139.2	489.6	440.8	48.73	10.046	SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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	-53.47	19.7	-26.6	33.0							
100.0	100.0	100.0	100.0	0.1	0.1	-53.47	19.7	-26.6	33.0	32.8	0.27	121.374				
200.0	200.0	200.0	200.0	0.3	0.3	-53.47	19.7	-26.6	33.0	32.4	0.62	53.187				
300.0	300.0	300.0	300.0	0.5	0.5	-53.47	19.7	-26.6	33.0	32.1	0.97	34.055 CC, ES				
400.0	400.0	398.7	398.7	0.7	0.7	18.00	20.4	-27.8	33.9	32.5	1.32	25.708				
500.0	499.8	496.9	496.7	0.8	0.9	19.20	23.4	-33.3	35.3	33.6	1.66	21.198				
600.0	599.3	595.1	594.2	1.1	1.1	21.72	28.9	-43.2	36.8	34.8	2.02	18.260				
700.0	698.0	693.2	690.9	1.4	1.4	25.34	36.8	-57.5	38.7	36.3	2.40	16.124				
800.0	795.8	791.1	786.5	1.8	1.8	29.81	47.0	-76.1	41.0	38.2	2.86	14.354				
900.0	892.4	889.0	880.8	2.2	2.3	34.85	59.6	-98.9	43.9	40.4	3.45	12.703				
1,000.0	987.5	986.8	973.6	2.8	2.9	40.16	74.5	-125.9	47.5	43.2	4.27	11.118				
1,100.0	1,080.9	1,084.4	1,064.6	3.5	3.5	45.47	91.7	-157.0	51.9	46.6	5.37	9.682				
1,200.0	1,172.2	1,182.0	1,153.5	4.3	4.3	50.54	111.1	-192.1	57.3	50.6	6.76	8.484				
1,300.0	1,261.3	1,279.4	1,240.2	5.2	5.2	55.24	132.6	-231.0	63.7	55.2	8.44	7.544				
1,400.0	1,348.0	1,377.8	1,325.5	6.1	6.1	59.75	156.2	-273.8	70.8	60.4	10.37	6.823				
1,500.0	1,433.9	1,477.3	1,411.5	7.1	7.0	64.03	180.5	-317.8	78.1	65.6	12.43	6.279				
1,600.0	1,519.9	1,576.9	1,497.5	8.1	8.0	67.57	204.7	-361.8	85.8	71.2	14.52	5.908				
1,700.0	1,605.9	1,676.5	1,583.5	9.1	9.0	70.51	229.0	-405.7	93.7	77.1	16.60	5.644				
1,800.0	1,691.8	1,776.1	1,669.4	10.1	9.9	72.99	253.3	-449.7	101.9	83.2	18.68	5.452				
1,900.0	1,777.8	1,875.6	1,755.4	11.1	10.9	75.11	277.6	-493.7	110.2	89.4	20.75	5.309				
2,000.0	1,863.7	1,975.2	1,841.4	12.1	11.9	76.92	301.8	-537.6	118.6	95.8	22.82	5.199				
2,100.0	1,949.7	2,074.8	1,927.4	13.1	12.8	78.49	326.1	-581.6	127.2	102.3	24.87	5.113				
2,200.0	2,035.7	2,174.4	2,013.4	14.1	13.8	79.86	350.4	-625.6	135.8	108.9	26.92	5.045				
2,300.0	2,121.6	2,274.0	2,099.4	15.1	14.8	81.07	374.6	-669.5	144.5	115.5	28.95	4.991				
2,400.0	2,207.6	2,373.5	2,185.3	16.1	15.7	82.14	398.9	-713.5	153.3	122.3	30.99	4.946				
2,500.0	2,293.5	2,473.1	2,271.3	17.1	16.7	83.09	423.2	-757.5	162.1	129.1	33.01	4.909				
2,600.0	2,379.5	2,572.7	2,357.3	18.1	17.7	83.95	447.5	-801.4	170.9	135.9	35.03	4.879				
2,700.0	2,465.5	2,672.3	2,443.3	19.1	18.6	84.72	471.7	-845.4	179.8	142.7	37.04	4.853				
2,800.0	2,551.4	2,771.8	2,529.3	20.1	19.6	85.42	496.0	-889.4	188.7	149.6	39.06	4.831				
2,900.0	2,637.4	2,871.4	2,615.3	21.1	20.6	86.06	520.3	-933.3	197.6	156.6	41.06	4.813				
3,000.0	2,723.3	2,971.0	2,701.3	22.1	21.6	86.64	544.6	-977.3	206.6	163.5	43.06	4.797				
3,100.0	2,809.3	3,070.6	2,787.2	23.1	22.5	87.17	568.8	-1,021.3	215.6	170.5	45.06	4.783				
3,200.0	2,895.3	3,170.1	2,873.2	24.1	23.5	87.66	593.1	-1,065.2	224.5	177.5	47.06	4.771				
3,300.0	2,981.2	3,269.7	2,959.2	25.1	24.5	88.11	617.4	-1,109.2	233.5	184.5	49.06	4.761				
3,400.0	3,067.2	3,369.3	3,045.2	26.1	25.4	88.53	641.6	-1,153.2	242.6	191.5	51.05	4.752				
3,500.0	3,153.1	3,468.9	3,131.2	27.1	26.4	88.92	665.9	-1,197.1	251.6	198.6	53.04	4.743				
3,600.0	3,239.1	3,568.5	3,217.2	28.1	27.4	89.28	690.2	-1,241.1	260.6	205.6	55.03	4.736				
3,700.0	3,325.1	3,668.0	3,303.1	29.1	28.4	89.62	714.5	-1,285.1	269.7	212.7	57.02	4.730				
3,800.0	3,411.0	3,767.6	3,389.1	30.1	29.3	89.93	738.7	-1,329.0	278.7	219.7	59.00	4.724				
3,900.0	3,497.0	3,867.2	3,475.1	31.1	30.3	90.23	763.0	-1,373.0	287.8	226.8	60.99	4.719				
4,000.0	3,582.9	3,966.8	3,561.1	32.1	31.3	90.51	787.3	-1,417.0	296.9	233.9	62.97	4.715				
4,100.0	3,668.9	4,066.3	3,647.1	33.1	32.2	90.77	811.6	-1,460.9	306.0	241.0	64.95	4.711				
4,200.0	3,754.9	4,165.9	3,733.1	34.2	33.2	91.02	835.8	-1,504.9	315.1	248.1	66.93	4.707				
4,300.0	3,840.8	4,265.5	3,819.1	35.2	34.2	91.25	860.1	-1,548.9	324.2	255.2	68.91	4.704				
4,400.0	3,926.8	4,365.1	3,905.0	36.2	35.2	91.47	884.4	-1,592.8	333.3	262.4	70.89	4.701				
4,500.0	4,012.7	4,464.7	3,991.0	37.2	36.1	91.68	908.7	-1,636.8	342.4	269.5	72.87	4.698				
4,600.0	4,098.7	4,564.5	4,077.2	38.2	37.1	91.88	933.0	-1,680.8	351.5	276.6	74.85	4.696				
4,700.0	4,185.4	4,665.6	4,165.7	39.1	38.0	92.35	956.6	-1,723.7	360.2	283.5	76.72	4.695				
4,800.0	4,273.9	4,766.7	4,255.8	40.0	38.9	92.80	978.8	-1,763.8	368.5	290.0	78.46	4.697				
4,900.0	4,363.9	4,867.8	4,347.5	40.8	39.6	93.24	999.4	-1,801.1	376.2	296.1	80.05	4.699				
5,000.0	4,455.3	4,968.9	4,440.7	41.5	40.4	93.65	1,018.4	-1,835.6	383.3	301.8	81.52	4.702				
5,100.0	4,548.2	5,070.1	4,535.1	42.2	41.0	94.05	1,035.8	-1,867.2	389.8	307.0	82.85	4.705				

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 19-12C
<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 19-12C	<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				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
5,200.0	4,642.2	5,171.2	4,630.8	42.8	41.6	94.42	1,051.6	-1,895.8	395.8	311.7	84.04	4.709		
5,300.0	4,737.4	5,272.3	4,727.6	43.4	42.1	94.79	1,065.8	-1,921.4	401.1	316.0	85.10	4.713		
5,400.0	4,833.6	5,373.5	4,825.4	43.8	42.6	95.14	1,078.3	-1,944.1	405.9	319.9	86.04	4.718		
5,500.0	4,930.7	5,474.5	4,924.0	44.3	42.9	95.47	1,089.1	-1,963.7	410.1	323.2	86.84	4.722		
5,600.0	5,028.6	5,575.6	5,023.2	44.6	43.3	95.80	1,098.2	-1,980.2	413.6	326.1	87.52	4.726		
5,700.0	5,127.1	5,676.6	5,123.1	44.9	43.5	96.11	1,105.7	-1,993.7	416.6	328.5	88.07	4.730		
5,800.0	5,226.2	5,777.6	5,223.3	45.1	43.7	96.42	1,111.4	-2,004.0	418.9	330.4	88.50	4.733		
5,900.0	5,325.6	5,878.5	5,323.9	45.3	43.9	96.71	1,115.4	-2,011.3	420.6	331.8	88.82	4.736		
6,000.0	5,425.4	5,979.4	5,424.7	45.4	44.0	97.00	1,117.7	-2,015.4	421.7	332.7	89.01	4.737		
6,100.0	5,525.4	6,080.1	5,525.4	45.5	44.0	97.28	1,118.3	-2,016.5	422.1	333.0	89.11	4.737		
6,200.0	5,625.4	6,180.1	5,625.4	45.5	44.1	25.87	1,118.3	-2,016.5	422.2	333.0	89.19	4.733		
6,300.0	5,725.4	6,280.1	5,725.4	45.6	44.1	25.87	1,118.3	-2,016.5	422.2	332.9	89.28	4.729		
6,400.0	5,825.4	6,380.1	5,825.4	45.6	44.2	25.87	1,118.3	-2,016.5	422.2	332.8	89.36	4.724		
6,500.0	5,925.4	6,480.1	5,925.4	45.7	44.2	25.87	1,118.3	-2,016.5	422.2	332.7	89.45	4.720		
6,600.0	6,025.4	6,580.1	6,025.4	45.7	44.2	25.87	1,118.3	-2,016.5	422.2	332.6	89.54	4.715		
6,700.0	6,125.4	6,680.1	6,125.4	45.7	44.3	25.87	1,118.3	-2,016.5	422.2	332.6	89.63	4.710		
6,800.0	6,225.4	6,780.1	6,225.4	45.8	44.3	25.87	1,118.3	-2,016.5	422.2	332.5	89.72	4.706		
6,900.0	6,325.4	6,880.1	6,325.4	45.8	44.4	25.87	1,118.3	-2,016.5	422.2	332.4	89.81	4.701		
7,000.0	6,425.4	6,980.1	6,425.4	45.9	44.4	25.87	1,118.3	-2,016.5	422.2	332.3	89.91	4.696		
7,100.0	6,525.4	7,080.1	6,525.4	45.9	44.5	25.87	1,118.3	-2,016.5	422.2	332.2	90.00	4.691		
7,200.0	6,625.4	7,180.1	6,625.4	46.0	44.5	25.87	1,118.3	-2,016.5	422.2	332.1	90.10	4.686		
7,300.0	6,725.4	7,280.1	6,725.4	46.0	44.6	25.87	1,118.3	-2,016.5	422.2	332.0	90.20	4.681		
7,400.0	6,825.4	7,380.1	6,825.4	46.1	44.6	25.87	1,118.3	-2,016.5	422.2	331.9	90.29	4.676		
7,500.0	6,925.4	7,480.1	6,925.4	46.1	44.7	25.87	1,118.3	-2,016.5	422.2	331.8	90.39	4.670		
7,600.0	7,025.4	7,580.1	7,025.4	46.2	44.7	25.87	1,118.3	-2,016.5	422.2	331.7	90.50	4.665		
7,700.0	7,125.4	7,680.1	7,125.4	46.2	44.8	25.87	1,118.3	-2,016.5	422.2	331.6	90.60	4.660		
7,800.0	7,225.4	7,780.1	7,225.4	46.3	44.8	25.87	1,118.3	-2,016.5	422.2	331.5	90.70	4.655		
7,900.0	7,325.4	7,880.1	7,325.4	46.3	44.9	25.87	1,118.3	-2,016.5	422.2	331.4	90.81	4.649		
8,000.0	7,425.4	7,980.1	7,425.4	46.4	44.9	25.87	1,118.3	-2,016.5	422.2	331.3	90.91	4.644		
8,100.0	7,525.4	8,080.1	7,525.4	46.4	45.0	25.87	1,118.3	-2,016.5	422.2	331.2	91.02	4.638		
8,200.0	7,625.4	8,180.1	7,625.4	46.5	45.0	25.87	1,118.3	-2,016.5	422.2	331.1	91.13	4.633		
8,300.0	7,725.4	8,280.1	7,725.4	46.5	45.1	25.87	1,118.3	-2,016.5	422.2	330.9	91.24	4.627		
8,400.0	7,825.4	8,380.1	7,825.4	46.6	45.2	25.87	1,118.3	-2,016.5	422.2	330.8	91.35	4.622		
8,498.6	7,924.0	8,478.7	7,924.0	46.6	45.2	25.87	1,118.3	-2,016.5	422.2	330.7	91.46	4.616 SF		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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		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			
0.0	0.0	0.0	0.0	0.0	0.0	125.49	-9.5	13.3	16.3					
100.0	100.0	100.0	100.0	0.1	0.1	125.49	-9.5	13.3	16.3	16.0	0.27	59.886		
200.0	200.0	200.0	200.0	0.3	0.3	125.49	-9.5	13.3	16.3	15.7	0.62	26.242		
300.0	300.0	300.4	300.4	0.5	0.5	126.48	-9.3	12.6	15.7	14.7	0.97	16.164		
400.0	400.0	400.9	400.8	0.7	0.7	-152.04	-8.3	7.4	11.7	10.4	1.33	8.839		
500.0	499.8	501.1	500.4	0.8	0.9	-127.11	-6.2	-2.9	8.5	6.8	1.75	4.894		
544.7	544.3	545.8	544.6	1.0	1.1	-110.48	-5.0	-9.1	8.1	6.1	2.01	4.053 CC, ES		
600.0	599.3	601.1	599.1	1.1	1.2	-89.93	-3.1	-18.3	8.8	6.5	2.32	3.790		
700.0	698.0	700.7	696.5	1.4	1.6	-65.73	1.0	-38.6	12.5	9.6	2.88	4.342		
800.0	795.8	800.0	792.4	1.8	2.1	-55.07	6.0	-63.8	17.8	14.4	3.46	5.148		
900.0	892.4	899.1	886.7	2.2	2.7	-50.50	12.0	-93.8	23.9	19.8	4.16	5.757		
1,000.0	987.5	997.8	978.9	2.8	3.4	-48.65	19.0	-128.4	30.5	25.5	4.99	6.116		
1,100.0	1,080.9	1,096.3	1,068.8	3.5	4.2	-48.15	26.9	-167.6	37.5	31.5	5.99	6.261		
1,200.0	1,172.2	1,194.9	1,156.9	4.3	5.0	-48.54	35.6	-211.1	44.7	37.5	7.17	6.230		
1,300.0	1,261.3	1,294.7	1,245.4	5.2	5.9	-52.37	44.7	-256.3	49.5	40.7	8.82	5.609		
1,400.0	1,348.0	1,394.4	1,333.9	6.1	6.8	-60.15	53.7	-301.5	51.8	40.7	11.11	4.664		
1,500.0	1,433.9	1,494.1	1,422.3	7.1	7.7	-68.57	62.8	-346.6	54.5	40.9	13.59	4.010		
1,600.0	1,519.9	1,593.8	1,510.6	8.1	8.6	-76.06	71.9	-391.8	58.2	42.3	15.99	3.643		
1,700.0	1,605.9	1,693.4	1,599.0	9.1	9.5	-82.56	80.9	-436.9	62.8	44.6	18.23	3.447		
1,800.0	1,691.8	1,793.1	1,687.4	10.1	10.4	-88.12	90.0	-482.1	68.1	47.8	20.33	3.352		
1,900.0	1,777.8	1,892.7	1,775.8	11.1	11.3	-92.84	99.1	-527.2	74.0	51.7	22.28	3.321 SF		
2,000.0	1,863.7	1,992.4	1,864.2	12.1	12.1	-96.85	108.1	-572.3	80.3	56.2	24.12	3.328		
2,100.0	1,949.7	2,092.0	1,952.5	13.1	13.0	-100.26	117.2	-617.5	86.9	61.0	25.87	3.359		
2,200.0	2,035.7	2,191.7	2,040.9	14.1	13.9	-103.18	126.3	-662.6	93.8	66.2	27.55	3.404		
2,300.0	2,121.6	2,291.4	2,129.3	15.1	14.8	-105.70	135.3	-707.8	100.8	71.7	29.17	3.457		
2,400.0	2,207.6	2,391.0	2,217.7	16.1	15.7	-107.89	144.4	-752.9	108.1	77.4	30.75	3.516		
2,500.0	2,293.5	2,490.7	2,306.1	17.1	16.6	-109.80	153.5	-798.1	115.5	83.2	32.30	3.576		
2,600.0	2,379.5	2,590.3	2,394.5	18.1	17.5	-111.47	162.5	-843.2	123.0	89.2	33.82	3.637		
2,700.0	2,465.5	2,690.0	2,482.8	19.1	18.4	-112.96	171.6	-888.4	130.6	95.3	35.32	3.697		
2,800.0	2,551.4	2,789.6	2,571.2	20.1	19.3	-114.28	180.7	-933.5	138.3	101.5	36.81	3.756		
2,900.0	2,637.4	2,889.3	2,659.6	21.1	20.2	-115.46	189.7	-978.7	146.0	107.7	38.28	3.814		
3,000.0	2,723.3	2,989.0	2,748.0	22.1	21.1	-116.52	198.8	-1,023.8	153.8	114.0	39.75	3.869		
3,100.0	2,809.3	3,088.6	2,836.4	23.1	22.0	-117.48	207.9	-1,068.9	161.6	120.4	41.20	3.923		
3,200.0	2,895.3	3,188.3	2,924.7	24.1	22.9	-118.35	216.9	-1,114.1	169.5	126.9	42.65	3.974		
3,300.0	2,981.2	3,287.9	3,013.1	25.1	23.8	-119.14	226.0	-1,159.2	177.4	133.3	44.10	4.023		
3,400.0	3,067.2	3,387.6	3,101.5	26.1	24.7	-119.87	235.1	-1,204.4	185.4	139.8	45.54	4.071		
3,500.0	3,153.1	3,487.2	3,189.9	27.1	25.6	-120.53	244.1	-1,249.5	193.4	146.4	46.98	4.116		
3,600.0	3,239.1	3,586.9	3,278.3	28.1	26.5	-121.14	253.2	-1,294.7	201.4	152.9	48.41	4.159		
3,700.0	3,325.1	3,686.6	3,366.7	29.1	27.4	-121.71	262.3	-1,339.8	209.4	159.5	49.84	4.201		
3,800.0	3,411.0	3,786.2	3,455.0	30.1	28.3	-122.23	271.3	-1,385.0	217.4	166.1	51.27	4.240		
3,900.0	3,497.0	3,885.9	3,543.4	31.1	29.2	-122.72	280.4	-1,430.1	225.5	172.8	52.70	4.278		
4,000.0	3,582.9	3,985.5	3,631.8	32.1	30.1	-123.17	289.5	-1,475.2	233.5	179.4	54.13	4.315		
4,100.0	3,668.9	4,085.2	3,720.2	33.1	31.0	-123.60	298.5	-1,520.4	241.6	186.1	55.55	4.350		
4,200.0	3,754.9	4,184.8	3,808.6	34.2	31.9	-123.99	307.6	-1,565.5	249.7	192.7	56.98	4.383		
4,300.0	3,840.8	4,284.5	3,896.9	35.2	32.8	-124.36	316.7	-1,610.7	257.8	199.4	58.40	4.415		
4,400.0	3,926.8	4,384.2	3,985.3	36.2	33.7	-124.71	325.7	-1,655.8	265.9	206.1	59.82	4.446		
4,500.0	4,012.7	4,483.8	4,073.7	37.2	34.6	-125.04	334.8	-1,701.0	274.1	212.8	61.24	4.475		
4,600.0	4,098.7	4,583.5	4,162.1	38.2	35.5	-125.35	343.9	-1,746.1	282.2	219.5	62.66	4.504		
4,700.0	4,185.4	4,683.2	4,250.5	39.1	36.4	-125.49	352.9	-1,791.3	289.4	225.3	64.18	4.510		
4,800.0	4,273.9	4,778.9	4,335.9	40.0	37.2	-125.30	361.4	-1,833.6	295.3	229.5	65.78	4.489		
4,900.0	4,363.9	4,874.0	4,422.2	40.8	37.9	-125.12	369.3	-1,872.8	300.7	233.4	67.26	4.471		
5,000.0	4,455.3	4,969.1	4,509.7	41.5	38.6	-124.96	376.6	-1,909.2	305.7	237.1	68.63	4.454		

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 19-12C
<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 19-12C	<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				Total		Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Separation Factor		
5,100.0	4,548.2	5,064.1	4,598.4	42.2	39.2	-124.80	383.4	-1,942.8	310.3	240.4	69.89	4.440		
5,200.0	4,642.2	5,159.2	4,688.2	42.8	39.8	-124.66	389.5	-1,973.4	314.4	243.4	71.03	4.427		
5,300.0	4,737.4	5,254.2	4,778.9	43.4	40.3	-124.52	395.1	-2,001.1	318.2	246.1	72.06	4.415		
5,400.0	4,833.6	5,349.3	4,870.5	43.8	40.7	-124.39	400.1	-2,025.9	321.5	248.5	72.98	4.405		
5,500.0	4,930.7	5,444.3	4,962.9	44.3	41.1	-124.27	404.4	-2,047.6	324.3	250.5	73.79	4.395		
5,600.0	5,028.6	5,539.3	5,056.0	44.6	41.5	-124.15	408.2	-2,066.3	326.7	252.2	74.50	4.386		
5,700.0	5,127.1	5,634.4	5,149.7	44.9	41.7	-124.04	411.3	-2,082.0	328.7	253.6	75.09	4.377		
5,800.0	5,226.2	5,729.4	5,243.9	45.1	42.0	-123.93	413.9	-2,094.6	330.2	254.6	75.59	4.368		
5,900.0	5,325.6	5,824.5	5,338.4	45.3	42.1	-123.83	415.8	-2,104.2	331.2	255.3	75.98	4.359		
6,000.0	5,425.4	5,919.5	5,433.3	45.4	42.3	-123.73	417.1	-2,110.7	331.8	255.6	76.28	4.351		
6,100.0	5,525.4	6,014.6	5,528.3	45.5	42.3	-123.63	417.8	-2,114.1	332.0	255.5	76.48	4.341		
6,200.0	5,625.4	6,111.7	5,625.4	45.5	42.4	164.96	417.9	-2,114.6	331.9	255.3	76.60	4.333		
6,300.0	5,725.4	6,211.7	5,725.4	45.6	42.4	164.96	417.9	-2,114.6	331.9	255.2	76.70	4.327		
6,400.0	5,825.4	6,311.7	5,825.4	45.6	42.5	164.96	417.9	-2,114.6	331.9	255.1	76.80	4.322		
6,500.0	5,925.4	6,411.7	5,925.4	45.7	42.5	164.96	417.9	-2,114.6	331.9	255.0	76.90	4.316		
6,600.0	6,025.4	6,511.7	6,025.4	45.7	42.6	164.96	417.9	-2,114.6	331.9	254.9	77.00	4.310		
6,700.0	6,125.4	6,611.7	6,125.4	45.7	42.6	164.96	417.9	-2,114.6	331.9	254.8	77.11	4.305		
6,800.0	6,225.4	6,711.7	6,225.4	45.8	42.6	164.96	417.9	-2,114.6	331.9	254.7	77.21	4.299		
6,900.0	6,325.4	6,811.7	6,325.4	45.8	42.7	164.96	417.9	-2,114.6	331.9	254.6	77.32	4.293		
7,000.0	6,425.4	6,911.7	6,425.4	45.9	42.7	164.96	417.9	-2,114.6	331.9	254.5	77.43	4.287		
7,100.0	6,525.4	7,011.7	6,525.4	45.9	42.8	164.96	417.9	-2,114.6	331.9	254.4	77.54	4.281		
7,200.0	6,625.4	7,111.7	6,625.4	46.0	42.8	164.96	417.9	-2,114.6	331.9	254.3	77.65	4.274		
7,300.0	6,725.4	7,211.7	6,725.4	46.0	42.9	164.96	417.9	-2,114.6	331.9	254.1	77.76	4.268		
7,400.0	6,825.4	7,311.7	6,825.4	46.1	42.9	164.96	417.9	-2,114.6	331.9	254.0	77.87	4.262		
7,500.0	6,925.4	7,411.7	6,925.4	46.1	43.0	164.96	417.9	-2,114.6	331.9	253.9	77.99	4.256		
7,600.0	7,025.4	7,511.7	7,025.4	46.2	43.1	164.96	417.9	-2,114.6	331.9	253.8	78.11	4.249		
7,700.0	7,125.4	7,611.7	7,125.4	46.2	43.1	164.96	417.9	-2,114.6	331.9	253.7	78.22	4.243		
7,800.0	7,225.4	7,711.7	7,225.4	46.3	43.2	164.96	417.9	-2,114.6	331.9	253.6	78.34	4.236		
7,900.0	7,325.4	7,811.7	7,325.4	46.3	43.2	164.96	417.9	-2,114.6	331.9	253.4	78.47	4.230		
8,000.0	7,425.4	7,911.7	7,425.4	46.4	43.3	164.96	417.9	-2,114.6	331.9	253.3	78.59	4.223		
8,100.0	7,525.4	8,011.7	7,525.4	46.4	43.3	164.96	417.9	-2,114.6	331.9	253.2	78.71	4.217		
8,200.0	7,625.4	8,111.7	7,625.4	46.5	43.4	164.96	417.9	-2,114.6	331.9	253.1	78.84	4.210		
8,300.0	7,725.4	8,211.7	7,725.4	46.5	43.4	164.96	417.9	-2,114.6	331.9	252.9	78.96	4.203		
8,400.0	7,825.4	8,311.7	7,825.4	46.6	43.5	164.96	417.9	-2,114.6	331.9	252.8	79.09	4.197		
8,498.6	7,924.0	8,410.3	7,924.0	46.6	43.6	164.96	417.9	-2,114.6	331.9	252.7	79.22	4.190		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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 19-13AA - OH - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total	Separation	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Factor		
0.0	0.0	0.0	0.0	0.0	0.0	126.01	-19.3	26.6	32.8					
100.0	100.0	100.0	100.0	0.1	0.1	126.01	-19.3	26.6	32.8	32.6	0.27	120.564		
200.0	200.0	200.0	200.0	0.3	0.3	126.01	-19.3	26.6	32.8	32.2	0.62	52.831		
300.0	300.0	301.3	301.3	0.5	0.5	128.88	-19.2	23.9	30.7	29.7	0.98	31.282		
400.0	400.0	402.2	401.8	0.7	0.7	-149.12	-19.1	15.9	25.4	24.1	1.36	18.761		
500.0	499.8	502.5	501.2	0.8	1.0	-130.39	-18.8	2.7	22.3	20.5	1.83	12.207		
523.4	523.1	525.9	524.3	0.9	1.1	-125.14	-18.7	-1.2	22.2	20.2	1.97	11.253 CC, ES		
600.0	599.3	602.3	599.4	1.1	1.4	-108.02	-18.4	-15.7	23.6	21.2	2.45	9.644		
700.0	698.0	701.6	695.9	1.4	1.8	-90.73	-17.9	-38.9	29.5	26.3	3.17	9.308		
800.0	795.8	800.0	790.2	1.8	2.4	-80.50	-17.4	-66.9	38.5	34.6	3.96	9.718		
900.0	892.4	898.6	883.1	2.2	3.0	-74.90	-16.7	-99.8	49.6	44.7	4.88	10.158		
1,000.0	987.5	996.2	973.3	2.8	3.7	-71.95	-15.9	-137.0	62.3	56.3	5.96	10.446		
1,100.0	1,080.9	1,093.2	1,061.0	3.5	4.6	-70.47	-15.1	-178.5	76.2	69.0	7.21	10.569		
1,200.0	1,172.2	1,192.2	1,149.3	4.3	5.4	-71.11	-14.1	-223.2	90.0	81.3	8.69	10.357		
1,300.0	1,261.3	1,291.2	1,237.6	5.2	6.3	-74.32	-13.2	-267.9	102.2	91.8	10.47	9.766		
1,400.0	1,348.0	1,390.0	1,325.8	6.1	7.1	-79.34	-12.3	-312.6	113.8	101.3	12.50	9.105		
1,500.0	1,433.9	1,488.8	1,413.9	7.1	8.0	-84.26	-11.4	-357.2	126.0	111.5	14.55	8.665		
1,600.0	1,519.9	1,587.5	1,501.9	8.1	8.9	-88.29	-10.4	-401.8	139.0	122.5	16.54	8.406		
1,700.0	1,605.9	1,686.2	1,590.0	9.1	9.7	-91.63	-9.5	-446.4	152.5	134.1	18.48	8.255		
1,800.0	1,691.8	1,784.9	1,678.1	10.1	10.6	-94.42	-8.6	-491.0	166.5	146.1	20.38	8.171		
1,900.0	1,777.8	1,883.6	1,766.2	11.1	11.5	-96.78	-7.7	-535.6	180.8	158.5	22.24	8.129		
2,000.0	1,863.7	1,982.4	1,854.2	12.1	12.3	-98.79	-6.8	-580.1	195.3	171.3	24.07	8.113 SF		
2,100.0	1,949.7	2,081.1	1,942.3	13.1	13.2	-100.52	-5.8	-624.7	210.1	184.2	25.89	8.115		
2,200.0	2,035.7	2,179.8	2,030.4	14.1	14.1	-102.02	-4.9	-669.3	225.0	197.3	27.68	8.128		
2,300.0	2,121.6	2,278.5	2,118.4	15.1	14.9	-103.34	-4.0	-713.9	240.0	210.6	29.46	8.148		
2,400.0	2,207.6	2,377.2	2,206.5	16.1	15.8	-104.50	-3.1	-758.5	255.2	224.0	31.23	8.172		
2,500.0	2,293.5	2,476.0	2,294.6	17.1	16.7	-105.53	-2.1	-803.1	270.4	237.5	32.98	8.200		
2,600.0	2,379.5	2,574.7	2,382.6	18.1	17.5	-106.45	-1.2	-847.7	285.8	251.0	34.73	8.229		
2,700.0	2,465.5	2,673.4	2,470.7	19.1	18.4	-107.28	-0.3	-892.3	301.2	264.7	36.47	8.258		
2,800.0	2,551.4	2,772.1	2,558.8	20.1	19.3	-108.02	0.6	-936.9	316.6	278.4	38.20	8.288		
2,900.0	2,637.4	2,870.8	2,646.8	21.1	20.2	-108.70	1.5	-981.5	332.1	292.2	39.93	8.317		
3,000.0	2,723.3	2,969.6	2,734.9	22.1	21.0	-109.32	2.5	-1,026.1	347.6	306.0	41.65	8.346		
3,100.0	2,809.3	3,068.3	2,823.0	23.1	21.9	-109.88	3.4	-1,070.7	363.2	319.8	43.37	8.374		
3,200.0	2,895.3	3,167.0	2,911.1	24.1	22.8	-110.40	4.3	-1,115.3	378.8	333.7	45.09	8.401		
3,300.0	2,981.2	3,265.7	2,999.1	25.1	23.6	-110.88	5.2	-1,159.9	394.4	347.6	46.80	8.428		
3,400.0	3,067.2	3,364.4	3,087.2	26.1	24.5	-111.32	6.2	-1,204.5	410.1	361.6	48.51	8.454		
3,500.0	3,153.1	3,463.2	3,175.3	27.1	25.4	-111.72	7.1	-1,249.1	425.8	375.5	50.22	8.478		
3,600.0	3,239.1	3,561.9	3,263.3	28.1	26.2	-112.10	8.0	-1,293.7	441.5	389.5	51.92	8.502		
3,700.0	3,325.1	3,660.6	3,351.4	29.1	27.1	-112.46	8.9	-1,338.3	457.2	403.5	53.63	8.525		
3,800.0	3,411.0	3,759.3	3,439.5	30.1	28.0	-112.78	9.8	-1,382.8	472.9	417.6	55.33	8.547		
3,900.0	3,497.0	3,858.0	3,527.5	31.1	28.9	-113.09	10.8	-1,427.4	488.6	431.6	57.03	8.568		



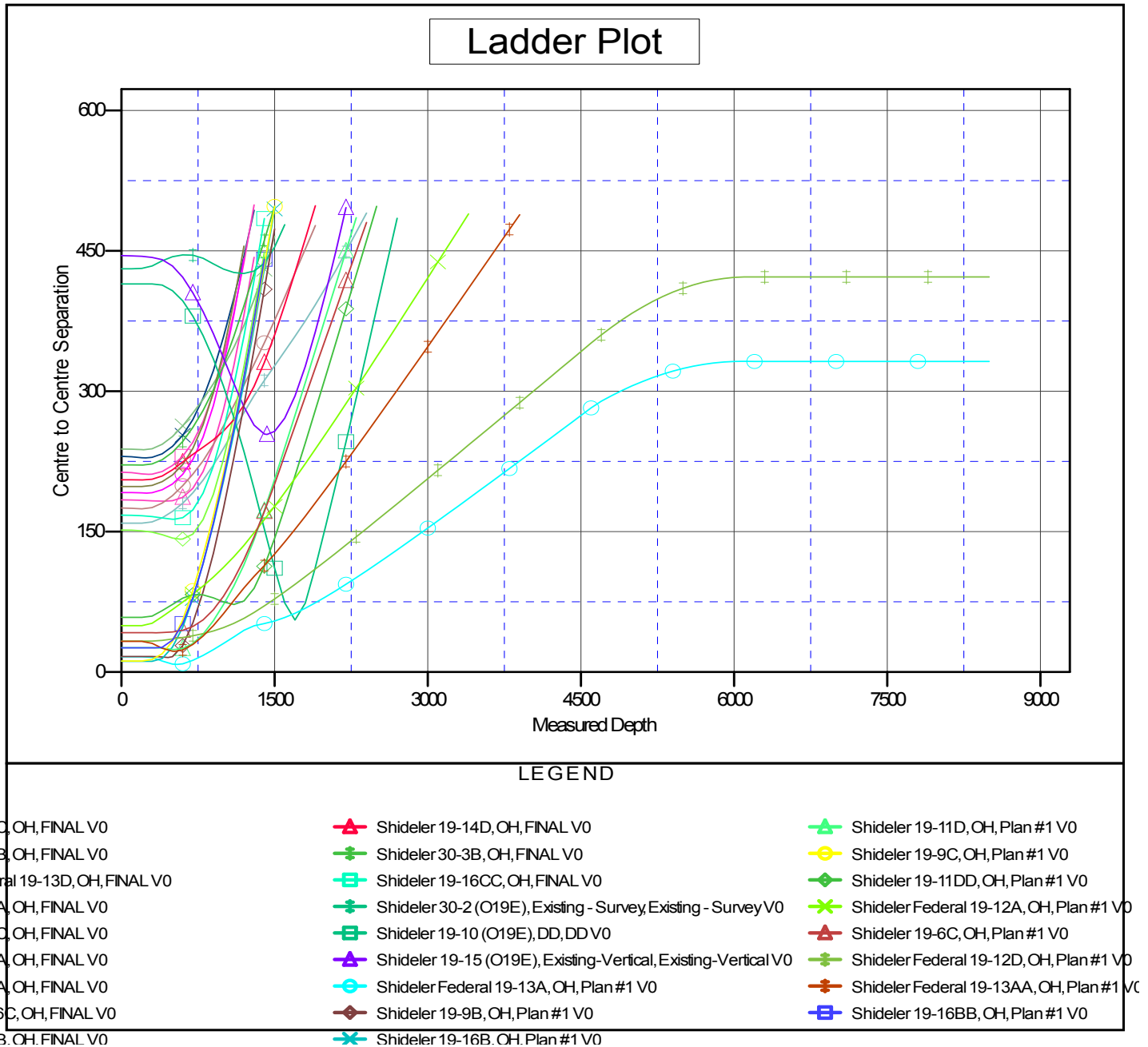
# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Shideler Federal 19-12C
<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 19-12C	<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 19-12C  
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