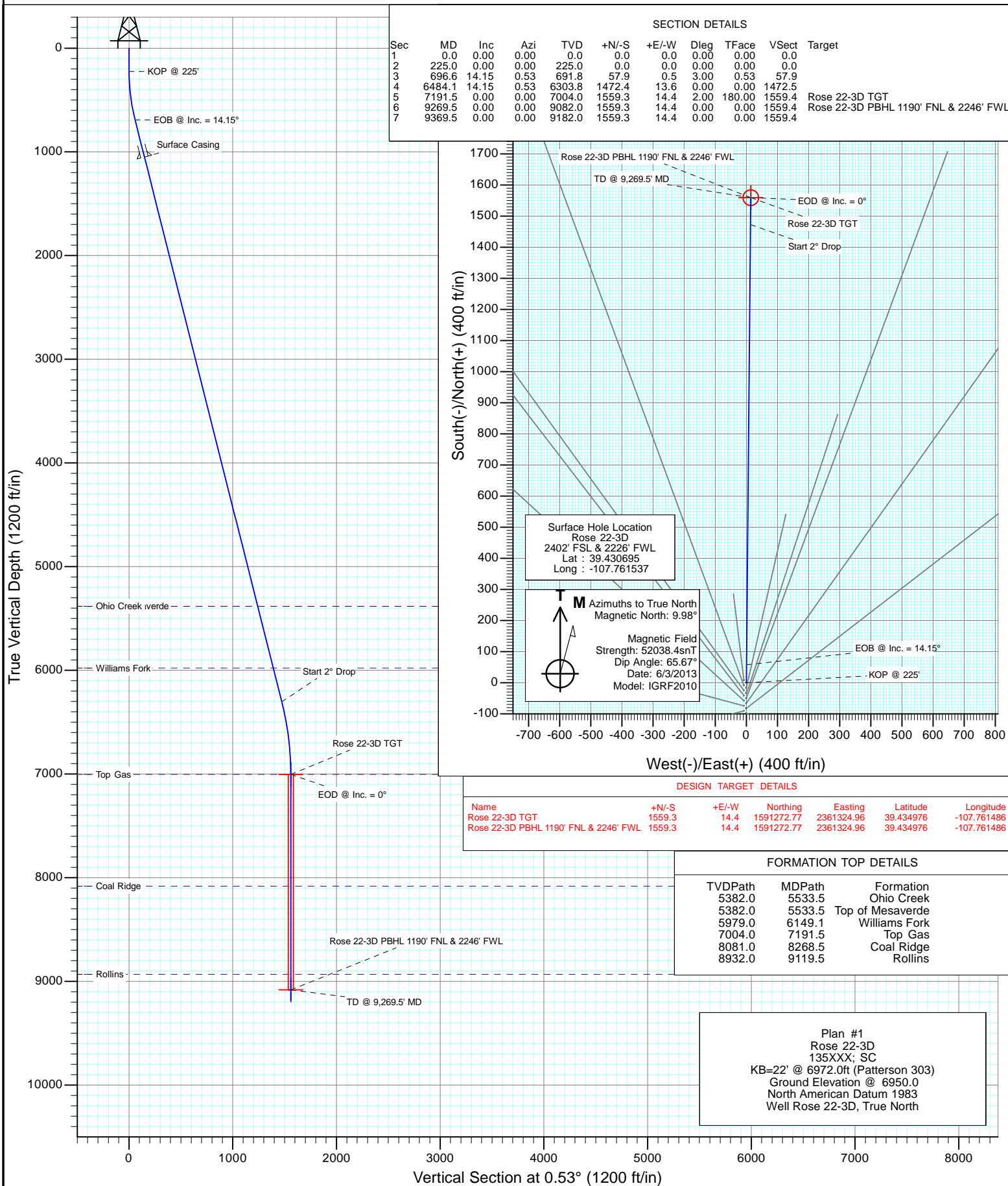
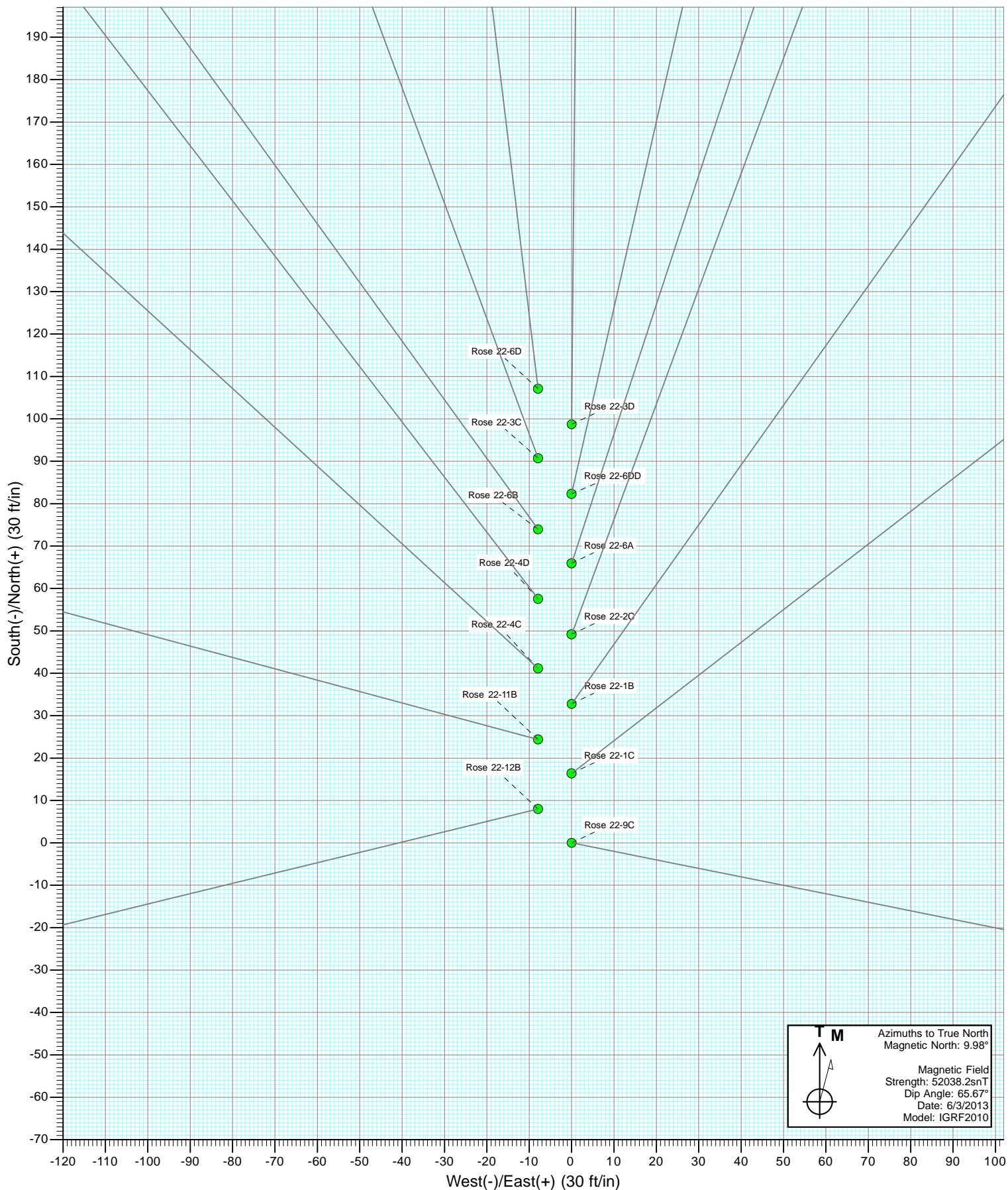
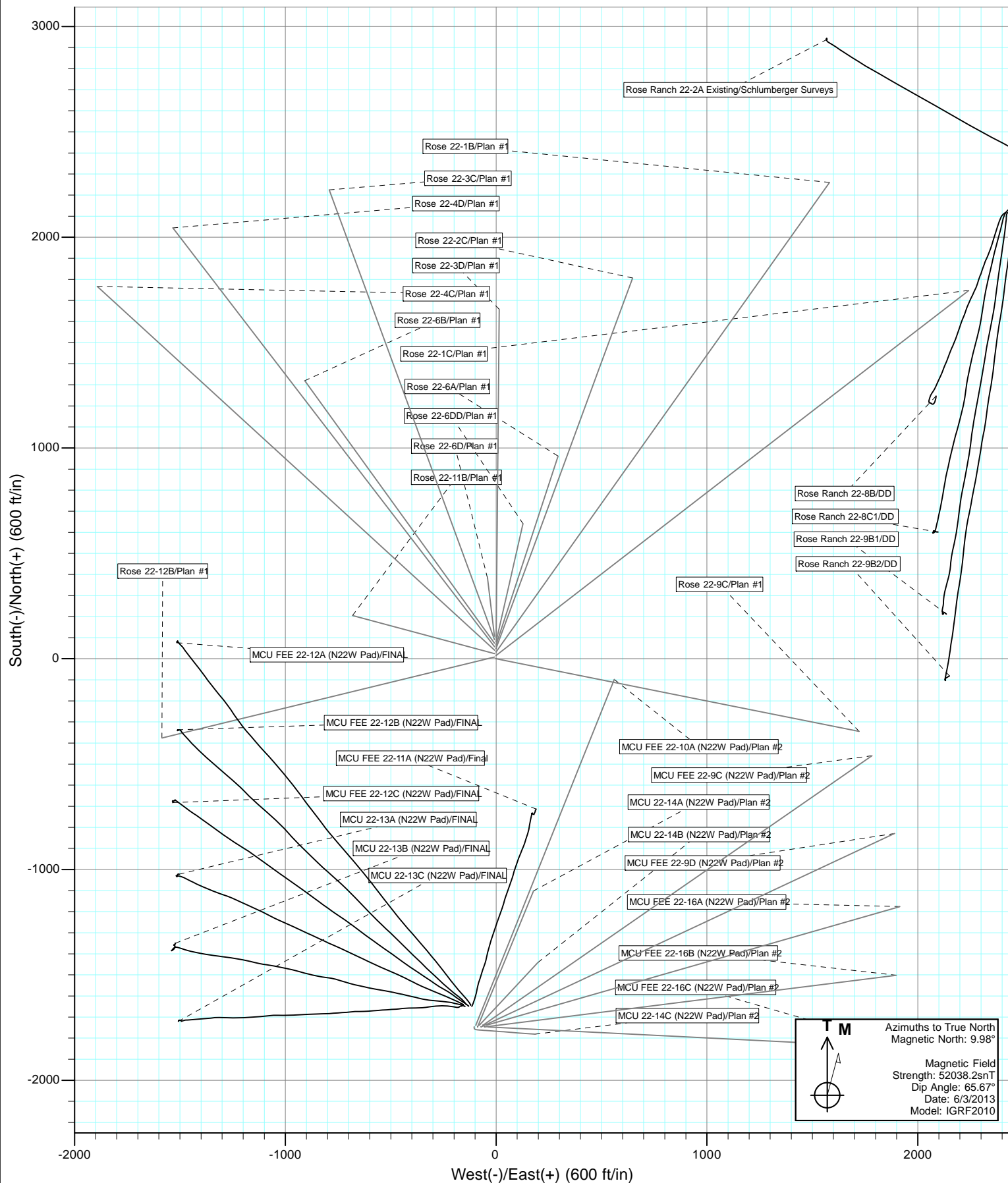




Project: Mamm Creek  
Site: K22W Pad  
Well: Rose 22-3D  
Wellbore: OH  
Design: Plan #1

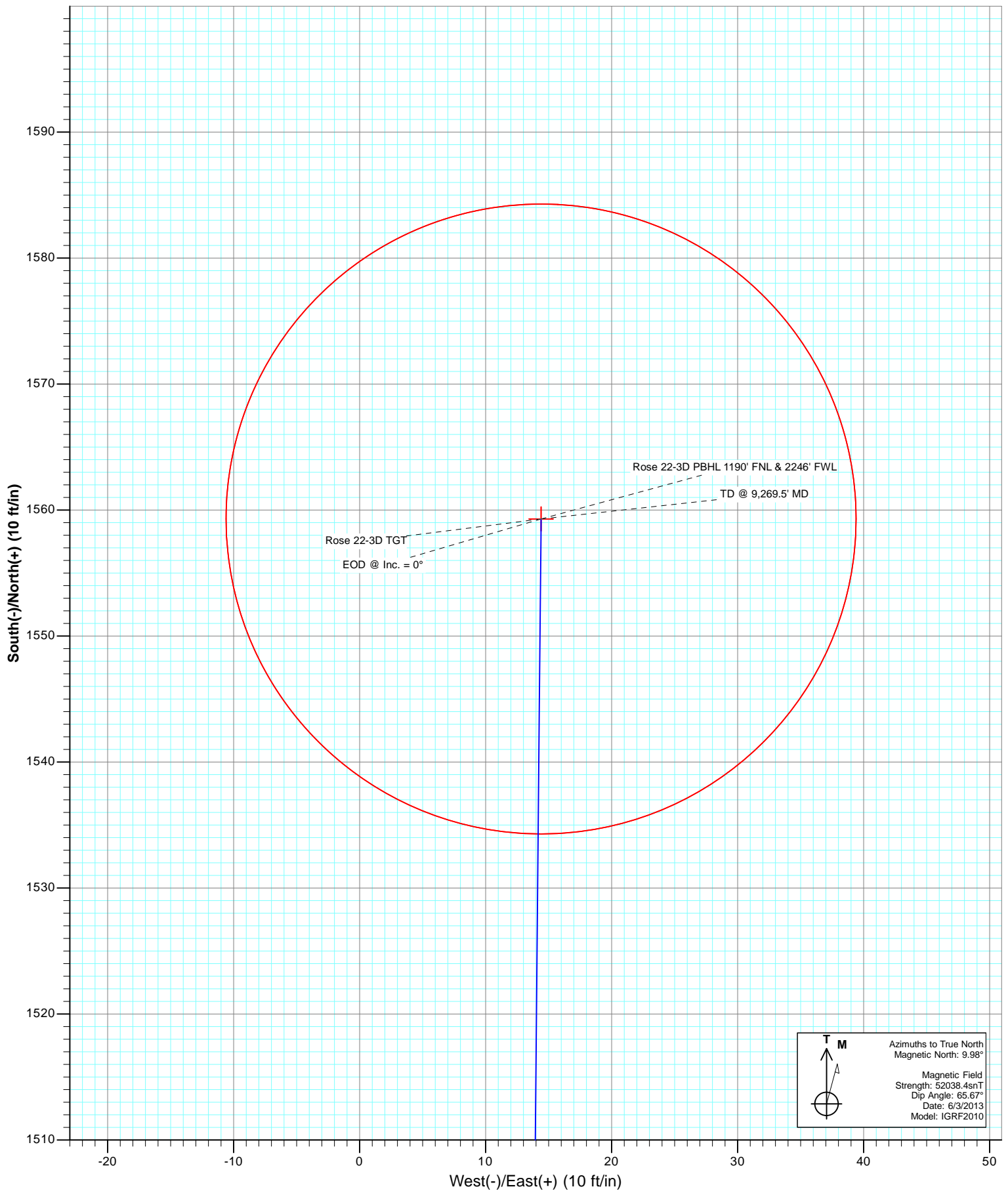








Project: Mamm Creek  
Site: K22W Pad  
Well: Rose 22-3D  
Wellbore: OH  
Plan: Plan #1



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Rose 22-3D
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Project:</b>	Mamm Creek	<b>MD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Site:</b>	K22W Pad	<b>North Reference:</b>	True
<b>Well:</b>	Rose 22-3D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

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

Site		K22W Pad			
Site Position:		Northing:	1,589,615.65 ft	Latitude:	39.430424
From:	Lat/Long	Easting:	2,361,269.29 ft	Longitude:	-107.761537
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.43 °

Well	Rose 22-3D					
Well Position	+N/-S	0.0 ft	Northing:	1,589,714.31 ft	Latitude:	39.430695
	+E/-W	0.0 ft	Easting:	2,361,271.75 ft	Longitude:	-107.761537
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,950.0 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/3/2013	9.98	65.67	52,038

Design		Plan #1		
Audit Notes:				
Version:		Phase:	PLAN	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	0.53

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
225.0	0.00	0.00	225.0	0.0	0.0	0.00	0.00	0.00	0.00	
696.6	14.15	0.53	691.8	57.9	0.5	3.00	3.00	0.00	0.53	
6,484.1	14.15	0.53	6,303.8	1,472.4	13.6	0.00	0.00	0.00	0.00	
7,191.5	0.00	0.00	7,004.0	1,559.3	14.4	2.00	-2.00	0.00	180.00	Rose 22-3D TGT
9,269.5	0.00	0.00	9,082.0	1,559.3	14.4	0.00	0.00	0.00	0.00	Rose 22-3D PBHL 11'
9,369.5	0.00	0.00	9,182.0	1,559.3	14.4	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 Rose 22-3D
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Project:</b>	Mamm Creek	<b>MD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Site:</b>	K22W Pad	<b>North Reference:</b>	True
<b>Well:</b>	Rose 22-3D	<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	
225.0	0.00	0.00	225.0	0.0	0.0	0.0	0.00	0.00	KOP @ 225'
300.0	2.25	0.53	300.0	1.5	0.0	1.5	3.00	3.00	
400.0	5.25	0.53	399.8	8.0	0.1	8.0	3.00	3.00	
500.0	8.25	0.53	499.1	19.8	0.2	19.8	3.00	3.00	
600.0	11.25	0.53	597.6	36.7	0.3	36.7	3.00	3.00	
696.6	14.15	0.53	691.8	57.9	0.5	57.9	3.00	3.00	EOB @ Inc. = 14.15°
700.0	14.15	0.53	695.1	58.8	0.5	58.8	0.00	0.00	
800.0	14.15	0.53	792.1	83.2	0.8	83.2	0.00	0.00	
900.0	14.15	0.53	889.1	107.6	1.0	107.6	0.00	0.00	
1,000.0	14.15	0.53	986.0	132.1	1.2	132.1	0.00	0.00	
1,066.0	14.15	0.53	1,050.0	148.2	1.4	148.2	0.00	0.00	Surface Casing
1,100.0	14.15	0.53	1,083.0	156.5	1.4	156.5	0.00	0.00	
1,200.0	14.15	0.53	1,180.0	181.0	1.7	181.0	0.00	0.00	
1,300.0	14.15	0.53	1,276.9	205.4	1.9	205.4	0.00	0.00	
1,400.0	14.15	0.53	1,373.9	229.8	2.1	229.9	0.00	0.00	
1,500.0	14.15	0.53	1,470.9	254.3	2.3	254.3	0.00	0.00	
1,600.0	14.15	0.53	1,567.8	278.7	2.6	278.7	0.00	0.00	
1,700.0	14.15	0.53	1,664.8	303.2	2.8	303.2	0.00	0.00	
1,800.0	14.15	0.53	1,761.8	327.6	3.0	327.6	0.00	0.00	
1,900.0	14.15	0.53	1,858.7	352.0	3.3	352.1	0.00	0.00	
2,000.0	14.15	0.53	1,955.7	376.5	3.5	376.5	0.00	0.00	
2,100.0	14.15	0.53	2,052.7	400.9	3.7	400.9	0.00	0.00	
2,200.0	14.15	0.53	2,149.6	425.4	3.9	425.4	0.00	0.00	
2,300.0	14.15	0.53	2,246.6	449.8	4.2	449.8	0.00	0.00	
2,400.0	14.15	0.53	2,343.6	474.2	4.4	474.3	0.00	0.00	
2,500.0	14.15	0.53	2,440.5	498.7	4.6	498.7	0.00	0.00	
2,600.0	14.15	0.53	2,537.5	523.1	4.8	523.1	0.00	0.00	
2,700.0	14.15	0.53	2,634.5	547.6	5.1	547.6	0.00	0.00	
2,800.0	14.15	0.53	2,731.4	572.0	5.3	572.0	0.00	0.00	
2,900.0	14.15	0.53	2,828.4	596.4	5.5	596.5	0.00	0.00	
3,000.0	14.15	0.53	2,925.4	620.9	5.7	620.9	0.00	0.00	
3,100.0	14.15	0.53	3,022.3	645.3	6.0	645.4	0.00	0.00	
3,200.0	14.15	0.53	3,119.3	669.8	6.2	669.8	0.00	0.00	
3,300.0	14.15	0.53	3,216.3	694.2	6.4	694.2	0.00	0.00	
3,400.0	14.15	0.53	3,313.2	718.6	6.6	718.7	0.00	0.00	
3,500.0	14.15	0.53	3,410.2	743.1	6.9	743.1	0.00	0.00	
3,600.0	14.15	0.53	3,507.2	767.5	7.1	767.6	0.00	0.00	
3,700.0	14.15	0.53	3,604.1	792.0	7.3	792.0	0.00	0.00	
3,800.0	14.15	0.53	3,701.1	816.4	7.5	816.4	0.00	0.00	
3,900.0	14.15	0.53	3,798.1	840.8	7.8	840.9	0.00	0.00	
4,000.0	14.15	0.53	3,895.0	865.3	8.0	865.3	0.00	0.00	
4,100.0	14.15	0.53	3,992.0	889.7	8.2	889.8	0.00	0.00	
4,200.0	14.15	0.53	4,089.0	914.2	8.4	914.2	0.00	0.00	
4,300.0	14.15	0.53	4,185.9	938.6	8.7	938.6	0.00	0.00	
4,400.0	14.15	0.53	4,282.9	963.0	8.9	963.1	0.00	0.00	
4,500.0	14.15	0.53	4,379.9	987.5	9.1	987.5	0.00	0.00	
4,600.0	14.15	0.53	4,476.8	1,011.9	9.3	1,012.0	0.00	0.00	
4,700.0	14.15	0.53	4,573.8	1,036.4	9.6	1,036.4	0.00	0.00	
4,800.0	14.15	0.53	4,670.8	1,060.8	9.8	1,060.9	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 Rose 22-3D
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Project:</b>	Mamm Creek	<b>MD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Site:</b>	K22W Pad	<b>North Reference:</b>	True
<b>Well:</b>	Rose 22-3D	<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
4,900.0	14.15	0.53	4,767.7	1,085.3	10.0	1,085.3	0.00	0.00	
5,000.0	14.15	0.53	4,864.7	1,109.7	10.3	1,109.7	0.00	0.00	
5,100.0	14.15	0.53	4,961.7	1,134.1	10.5	1,134.2	0.00	0.00	
5,200.0	14.15	0.53	5,058.6	1,158.6	10.7	1,158.6	0.00	0.00	
5,300.0	14.15	0.53	5,155.6	1,183.0	10.9	1,183.1	0.00	0.00	
5,400.0	14.15	0.53	5,252.6	1,207.5	11.2	1,207.5	0.00	0.00	
5,500.0	14.15	0.53	5,349.5	1,231.9	11.4	1,231.9	0.00	0.00	
5,533.5	14.15	0.53	5,382.0	1,240.1	11.5	1,240.1	0.00	0.00	Top of Mesaverde - Ohio Creek
5,600.0	14.15	0.53	5,446.5	1,256.3	11.6	1,256.4	0.00	0.00	
5,700.0	14.15	0.53	5,543.5	1,280.8	11.8	1,280.8	0.00	0.00	
5,800.0	14.15	0.53	5,640.4	1,305.2	12.1	1,305.3	0.00	0.00	
5,900.0	14.15	0.53	5,737.4	1,329.7	12.3	1,329.7	0.00	0.00	
6,000.0	14.15	0.53	5,834.4	1,354.1	12.5	1,354.2	0.00	0.00	
6,100.0	14.15	0.53	5,931.3	1,378.5	12.7	1,378.6	0.00	0.00	
6,149.1	14.15	0.53	5,979.0	1,390.5	12.8	1,390.6	0.00	0.00	Williams Fork
6,200.0	14.15	0.53	6,028.3	1,403.0	13.0	1,403.0	0.00	0.00	
6,300.0	14.15	0.53	6,125.3	1,427.4	13.2	1,427.5	0.00	0.00	
6,400.0	14.15	0.53	6,222.2	1,451.9	13.4	1,451.9	0.00	0.00	
6,484.1	14.15	0.53	6,303.8	1,472.4	13.6	1,472.5	0.00	0.00	Start 2° Drop
6,500.0	13.83	0.53	6,319.2	1,476.3	13.6	1,476.3	2.00	-2.00	
6,600.0	11.83	0.53	6,416.7	1,498.5	13.8	1,498.5	2.00	-2.00	
6,700.0	9.83	0.53	6,514.9	1,517.2	14.0	1,517.3	2.00	-2.00	
6,800.0	7.83	0.53	6,613.7	1,532.6	14.2	1,532.7	2.00	-2.00	
6,900.0	5.83	0.53	6,713.0	1,544.5	14.3	1,544.5	2.00	-2.00	
7,000.0	3.83	0.53	6,812.7	1,552.9	14.3	1,553.0	2.00	-2.00	
7,100.0	1.83	0.53	6,912.5	1,557.8	14.4	1,557.9	2.00	-2.00	
7,191.5	0.00	0.00	7,004.0	1,559.3	14.4	1,559.4	2.00	-2.00	EOD @ Inc. = 0° - Top Gas
7,200.0	0.00	0.00	7,012.5	1,559.3	14.4	1,559.4	0.00	0.00	
7,300.0	0.00	0.00	7,112.5	1,559.3	14.4	1,559.4	0.00	0.00	
7,400.0	0.00	0.00	7,212.5	1,559.3	14.4	1,559.4	0.00	0.00	
7,500.0	0.00	0.00	7,312.5	1,559.3	14.4	1,559.4	0.00	0.00	
7,600.0	0.00	0.00	7,412.5	1,559.3	14.4	1,559.4	0.00	0.00	
7,700.0	0.00	0.00	7,512.5	1,559.3	14.4	1,559.4	0.00	0.00	
7,800.0	0.00	0.00	7,612.5	1,559.3	14.4	1,559.4	0.00	0.00	
7,900.0	0.00	0.00	7,712.5	1,559.3	14.4	1,559.4	0.00	0.00	
8,000.0	0.00	0.00	7,812.5	1,559.3	14.4	1,559.4	0.00	0.00	
8,100.0	0.00	0.00	7,912.5	1,559.3	14.4	1,559.4	0.00	0.00	
8,200.0	0.00	0.00	8,012.5	1,559.3	14.4	1,559.4	0.00	0.00	
8,268.5	0.00	0.00	8,081.0	1,559.3	14.4	1,559.4	0.00	0.00	Coal Ridge
8,300.0	0.00	0.00	8,112.5	1,559.3	14.4	1,559.4	0.00	0.00	
8,400.0	0.00	0.00	8,212.5	1,559.3	14.4	1,559.4	0.00	0.00	
8,500.0	0.00	0.00	8,312.5	1,559.3	14.4	1,559.4	0.00	0.00	
8,600.0	0.00	0.00	8,412.5	1,559.3	14.4	1,559.4	0.00	0.00	
8,700.0	0.00	0.00	8,512.5	1,559.3	14.4	1,559.4	0.00	0.00	
8,800.0	0.00	0.00	8,612.5	1,559.3	14.4	1,559.4	0.00	0.00	
8,900.0	0.00	0.00	8,712.5	1,559.3	14.4	1,559.4	0.00	0.00	
9,000.0	0.00	0.00	8,812.5	1,559.3	14.4	1,559.4	0.00	0.00	
9,100.0	0.00	0.00	8,912.5	1,559.3	14.4	1,559.4	0.00	0.00	
9,119.5	0.00	0.00	8,932.0	1,559.3	14.4	1,559.4	0.00	0.00	Rollins
9,200.0	0.00	0.00	9,012.5	1,559.3	14.4	1,559.4	0.00	0.00	
9,269.5	0.00	0.00	9,082.0	1,559.3	14.4	1,559.4	0.00	0.00	TD @ 9,269.5' MD
9,300.0	0.00	0.00	9,112.5	1,559.3	14.4	1,559.4	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 Rose 22-3D
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Project:</b>	Mamm Creek	<b>MD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Site:</b>	K22W Pad	<b>North Reference:</b>	True
<b>Well:</b>	Rose 22-3D	<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
9,369.5	0.00	0.00	9,182.0	1,559.3	14.4	1,559.4	0.00	0.00	Permit TD @ 9,369.5' MD

Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Rose 22-3D PBHL 1190' - plan hits target center - Circle (radius 25.0)	0.00	0.00	9,082.0	1,559.3	14.4	1,591,272.77	2,361,324.96	39.434976	-107.761486
Rose 22-3D TGT - plan hits target center - Point	0.00	0.00	7,004.0	1,559.3	14.4	1,591,272.77	2,361,324.96	39.434976	-107.761486

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,066.0	1,050.0	Surface Casing			

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,533.5	5,382.0	Top of Mesaverde			
5,533.5	5,382.0	Ohio Creek			
6,149.1	5,979.0	Williams Fork			
7,191.5	7,004.0	Top Gas			
8,268.5	8,081.0	Coal Ridge			
9,119.5	8,932.0	Rollins			

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
225.0	225.0	0.0	0.0	KOP @ 225'
696.6	691.8	57.9	0.5	EOB @ Inc. = 14.15°
6,484.1	6,303.8	1,472.4	13.6	Start 2° Drop
7,191.5	7,004.0	1,559.3	14.4	EOD @ Inc. = 0°
9,269.5	9,082.0	1,559.3	14.4	TD @ 9,269.5' MD
9,369.5	9,182.0	1,559.3	14.4	Permit TD @ 9,369.5' MD

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

**Mamm Creek**

**K22W Pad**

**Rose 22-3D**

**OH**

**Plan #1**

## **Anticollision Report**

**13 June, 2013**

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Rose 22-3D
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Reference Site:</b>	K22W Pad	<b>MD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rose 22-3D	<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		

Survey Tool Program		Date	6/4/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	9,368.7	Plan #1 (OH)	MWD	Geolink MWD	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
K22W Pad						
Rose 22-11B - OH - Plan #1	200.0	200.0	74.7	74.1	120.276	CC, ES
Rose 22-11B - OH - Plan #1	2,200.0	2,151.9	491.0	481.2	50.144	SF
Rose 22-12B - OH - Plan #1	200.0	200.0	91.1	90.4	146.541	CC, ES
Rose 22-12B - OH - Plan #1	1,500.0	1,412.0	477.6	470.3	64.707	SF
Rose 22-1B - OH - Plan #1	200.0	200.0	65.9	65.3	106.111	CC, ES
Rose 22-1B - OH - Plan #1	1,300.0	1,304.7	159.6	150.2	16.941	SF
Rose 22-1C - OH - Plan #1	200.0	200.0	82.3	81.7	132.490	CC, ES
Rose 22-1C - OH - Plan #1	1,300.0	1,277.7	248.0	238.8	26.915	SF
Rose 22-2C - OH - Plan #1	476.0	482.4	47.4	45.7	29.083	CC
Rose 22-2C - OH - Plan #1	500.0	506.9	47.4	45.7	27.449	ES
Rose 22-2C - OH - Plan #1	1,500.0	1,507.1	104.2	92.9	9.227	SF
Rose 22-3C - OH - Plan #1	200.0	200.0	11.3	10.6	18.120	CC, ES
Rose 22-3C - OH - Plan #1	1,100.0	1,100.6	66.8	59.7	9.426	SF
Rose 22-4C - OH - Plan #1	200.0	200.0	58.1	57.5	93.499	CC, ES
Rose 22-4C - OH - Plan #1	1,300.0	1,286.1	212.0	203.2	24.192	SF
Rose 22-4D - OH - Plan #1	200.0	200.0	41.9	41.3	67.467	CC, ES
Rose 22-4D - OH - Plan #1	1,400.0	1,395.6	180.4	170.5	18.349	SF
Rose 22-6A - OH - Plan #1	200.0	200.0	32.8	32.2	52.759	CC, ES
Rose 22-6A - OH - Plan #1	4,500.0	4,480.8	494.6	474.3	24.436	SF
Rose 22-6B - OH - Plan #1	200.0	200.0	26.0	25.4	41.852	CC, ES
Rose 22-6B - OH - Plan #1	3,700.0	3,673.7	499.0	470.4	17.444	SF
Rose 22-6D - OH - Plan #1	487.3	486.6	9.3	7.6	5.308	CC, ES
Rose 22-6D - OH - Plan #1	500.0	499.2	9.4	7.6	5.187	SF
Rose 22-6DD - OH - Plan #1	200.0	200.0	16.4	15.8	26.387	CC, ES
Rose 22-6DD - OH - Plan #1	300.0	300.0	17.9	16.9	18.422	SF
Rose 22-9C - OH - Plan #1	200.0	200.0	98.7	98.1	158.856	CC, ES
Rose 22-9C - OH - Plan #1	1,500.0	1,408.7	487.9	480.1	62.666	SF

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Rose 22-3D
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Reference Site:</b>	K22W Pad	<b>MD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rose 22-3D	<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 K22W Pad - Rose 22-11B - OH - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance					Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis			
0.0	0.0	0.0	0.0	0.0	0.0	-173.92	-74.3	-7.9	74.7					
100.0	100.0	100.0	100.0	0.1	0.1	-173.92	-74.3	-7.9	74.7	74.5	0.27	274.477		
200.0	200.0	200.0	200.0	0.3	0.3	-173.92	-74.3	-7.9	74.7	74.1	0.62	120.276 CC, ES		
300.0	300.0	300.1	300.1	0.5	0.5	-174.43	-74.3	-8.1	76.2	75.2	0.97	78.507		
400.0	399.8	400.5	400.4	0.7	0.7	-172.13	-73.2	-11.9	82.1	80.8	1.33	61.810		
500.0	499.1	499.9	499.4	1.0	0.9	-167.51	-70.9	-20.6	93.0	91.3	1.72	54.074		
600.0	597.6	598.4	597.3	1.3	1.1	-163.70	-68.2	-30.8	109.4	107.3	2.13	51.266		
700.0	695.1	695.9	694.3	1.7	1.4	-161.55	-65.5	-40.9	131.0	128.4	2.57	51.053		
800.0	792.1	793.0	790.8	2.1	1.6	-160.45	-62.8	-50.9	154.9	151.8	3.02	51.258		
900.0	889.1	890.0	887.3	2.6	1.8	-159.65	-60.1	-60.9	178.8	175.3	3.49	51.285		
1,000.0	986.0	987.1	983.8	3.0	2.1	-159.03	-57.4	-71.0	202.8	198.8	3.96	51.228		
1,100.0	1,083.0	1,084.2	1,080.3	3.5	2.3	-158.55	-54.7	-81.0	226.8	222.3	4.43	51.134		
1,200.0	1,180.0	1,181.2	1,176.8	3.9	2.6	-158.16	-52.0	-91.1	250.8	245.8	4.91	51.026		
1,300.0	1,276.9	1,278.3	1,273.3	4.4	2.8	-157.83	-49.3	-101.1	274.8	269.4	5.40	50.914		
1,400.0	1,373.9	1,375.4	1,369.8	4.9	3.1	-157.56	-46.6	-111.1	298.8	292.9	5.88	50.805		
1,500.0	1,470.9	1,472.4	1,466.3	5.3	3.3	-157.33	-43.9	-121.2	322.8	316.4	6.37	50.701		
1,600.0	1,567.8	1,569.5	1,562.8	5.8	3.6	-157.13	-41.2	-131.2	346.8	340.0	6.85	50.603		
1,700.0	1,664.8	1,666.6	1,659.3	6.2	3.8	-156.96	-38.5	-141.3	370.9	363.5	7.34	50.512		
1,800.0	1,761.8	1,763.6	1,755.8	6.7	4.1	-156.81	-35.8	-151.3	394.9	387.1	7.83	50.427		
1,900.0	1,858.7	1,860.7	1,852.4	7.1	4.3	-156.67	-33.1	-161.3	418.9	410.6	8.32	50.348		
2,000.0	1,955.7	1,957.8	1,948.9	7.6	4.5	-156.55	-30.4	-171.4	443.0	434.2	8.81	50.275		
2,100.0	2,052.7	2,054.8	2,045.4	8.1	4.8	-156.44	-27.8	-181.4	467.0	457.7	9.30	50.207		
2,200.0	2,149.6	2,151.9	2,141.9	8.5	5.0	-156.35	-25.1	-191.5	491.0	481.2	9.79	50.144 SF		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Rose 22-3D
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Reference Site:</b>	K22W Pad	<b>MD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rose 22-3D	<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 K22W Pad - Rose 22-12B - 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	-175.02	-90.7	-7.9	91.1					
100.0	100.0	100.0	100.0	0.1	0.1	-175.02	-90.7	-7.9	91.1	90.8	0.27	334.414		
200.0	200.0	200.0	200.0	0.3	0.3	-175.02	-90.7	-7.9	91.1	90.4	0.62	146.541	CC, ES	
300.0	300.0	298.8	298.8	0.5	0.5	-174.78	-91.0	-9.3	93.0	92.0	0.97	95.843		
400.0	399.8	396.5	396.3	0.7	0.7	-171.73	-92.5	-15.4	101.8	100.4	1.34	76.056		
500.0	499.1	492.5	491.6	1.0	0.9	-167.41	-95.1	-26.1	118.1	116.3	1.74	67.754		
600.0	597.6	585.9	583.8	1.3	1.2	-162.95	-98.7	-41.0	142.3	140.1	2.19	64.889		
700.0	695.1	676.1	671.9	1.7	1.6	-158.95	-103.2	-59.4	174.3	171.6	2.69	64.750		
800.0	792.1	766.2	759.2	2.1	2.0	-155.79	-108.6	-81.3	211.2	207.9	3.24	65.161		
900.0	889.1	858.5	848.4	2.6	2.5	-153.42	-114.1	-104.1	248.8	244.9	3.82	65.199		
1,000.0	986.0	950.7	937.6	3.0	2.9	-151.67	-119.7	-126.9	286.6	282.2	4.40	65.149		
1,100.0	1,083.0	1,043.0	1,026.8	3.5	3.3	-150.33	-125.2	-149.7	324.6	319.6	4.99	65.064		
1,200.0	1,180.0	1,135.2	1,116.0	3.9	3.8	-149.27	-130.8	-172.5	362.8	357.2	5.58	64.969		
1,300.0	1,276.9	1,227.5	1,205.2	4.4	4.2	-148.41	-136.3	-195.3	401.0	394.8	6.18	64.876		
1,400.0	1,373.9	1,319.7	1,294.5	4.9	4.7	-147.70	-141.9	-218.1	439.3	432.5	6.78	64.788		
1,500.0	1,470.9	1,412.0	1,383.7	5.3	5.1	-147.10	-147.4	-241.0	477.6	470.3	7.38	64.707	SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Rose 22-3D
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Reference Site:</b>	K22W Pad	<b>MD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rose 22-3D	<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 K22W Pad - Rose 22-1B - OH - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance					Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis			
0.0	0.0	0.0	0.0	0.0	0.0	-180.00	-65.9	0.0	65.9					
100.0	100.0	100.0	100.0	0.1	0.1	-180.00	-65.9	0.0	65.9	65.7	0.27	242.150		
200.0	200.0	200.0	200.0	0.3	0.3	-180.00	-65.9	0.0	65.9	65.3	0.62	106.111 CC, ES		
300.0	300.0	300.0	300.0	0.5	0.5	179.48	-65.9	0.0	67.4	66.4	0.97	69.494		
400.0	399.8	402.9	402.9	0.7	0.7	178.25	-63.7	1.6	71.8	70.4	1.32	54.191		
500.0	499.1	505.8	505.4	1.0	0.9	174.83	-56.9	6.4	77.2	75.5	1.69	45.597		
600.0	597.6	608.6	607.2	1.3	1.2	169.82	-45.7	14.4	84.1	82.0	2.11	39.938		
700.0	695.1	710.9	707.8	1.7	1.5	163.84	-30.0	25.5	93.1	90.5	2.62	35.544		
800.0	792.1	813.0	806.8	2.1	2.0	157.03	-10.1	39.6	102.1	98.8	3.31	30.814		
900.0	889.1	914.3	903.8	2.6	2.5	148.95	13.9	56.7	110.0	105.8	4.24	25.929		
1,000.0	986.0	1,014.4	997.8	3.0	3.2	139.74	41.8	76.4	118.1	112.7	5.42	21.815		
1,100.0	1,083.0	1,112.7	1,088.4	3.5	3.9	129.77	73.0	98.6	128.3	121.5	6.77	18.946		
1,200.0	1,180.0	1,208.9	1,175.1	3.9	4.6	119.70	107.0	122.7	142.0	133.8	8.16	17.398		
1,300.0	1,276.9	1,304.7	1,260.8	4.4	5.4	111.13	141.8	147.4	159.6	150.2	9.42	16.941 SF		
1,400.0	1,373.9	1,400.4	1,346.6	4.9	6.2	104.32	176.5	172.1	180.2	169.7	10.56	17.072		
1,500.0	1,470.9	1,496.2	1,432.3	5.3	6.9	98.91	211.3	196.8	202.8	191.2	11.59	17.500		
1,600.0	1,567.8	1,592.0	1,518.1	5.8	7.7	94.58	246.1	221.5	226.8	214.3	12.55	18.070		
1,700.0	1,664.8	1,687.7	1,603.8	6.2	8.5	91.08	280.8	246.1	251.9	238.4	13.47	18.699		
1,800.0	1,761.8	1,783.5	1,689.6	6.7	9.3	88.21	315.6	270.8	277.6	263.3	14.35	19.342		
1,900.0	1,858.7	1,879.2	1,775.3	7.1	10.1	85.82	350.3	295.5	303.9	288.7	15.21	19.976		
2,000.0	1,955.7	1,975.0	1,861.0	7.6	10.8	83.81	385.1	320.2	330.6	314.6	16.06	20.587		
2,100.0	2,052.7	2,070.8	1,946.8	8.1	11.6	82.10	419.9	344.8	357.7	340.8	16.90	21.170		
2,200.0	2,149.6	2,166.5	2,032.5	8.5	12.4	80.63	454.6	369.5	385.0	367.3	17.73	21.721		
2,300.0	2,246.6	2,262.3	2,118.3	9.0	13.2	79.35	489.4	394.2	412.5	394.0	18.55	22.241		
2,400.0	2,343.6	2,358.0	2,204.0	9.4	14.0	78.23	524.2	418.9	440.2	420.8	19.37	22.730		
2,500.0	2,440.5	2,453.8	2,289.8	9.9	14.8	77.25	558.9	443.6	468.0	447.8	20.18	23.190		
2,600.0	2,537.5	2,549.5	2,375.5	10.4	15.5	76.37	593.7	468.2	496.0	475.0	21.00	23.622		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Rose 22-3D
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Reference Site:</b>	K22W Pad	<b>MD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rose 22-3D	<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 K22W Pad - Rose 22-1C - 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	-180.00	-82.3	0.0	82.3					
100.0	100.0	100.0	100.0	0.1	0.1	-180.00	-82.3	0.0	82.3	82.0	0.27	302.350		
200.0	200.0	200.0	200.0	0.3	0.3	-180.00	-82.3	0.0	82.3	81.7	0.62	132.490 CC, ES		
300.0	300.0	301.3	301.3	0.5	0.5	179.10	-81.9	0.5	83.4	82.4	0.97	85.716		
400.0	399.8	403.9	403.7	0.7	0.7	176.28	-78.5	4.9	86.8	85.4	1.34	64.832		
500.0	499.1	505.9	505.2	1.0	0.9	171.16	-71.9	13.6	92.8	91.0	1.75	53.142		
600.0	597.6	607.2	605.1	1.3	1.3	164.63	-62.0	26.4	102.3	100.1	2.24	45.665		
700.0	695.1	707.3	703.0	1.7	1.7	157.66	-49.0	43.1	116.1	113.3	2.87	40.444		
800.0	792.1	806.3	798.5	2.1	2.2	150.66	-33.1	63.7	132.4	128.7	3.68	35.961		
900.0	889.1	903.9	891.2	2.6	2.7	143.38	-14.6	87.7	149.9	145.2	4.66	32.189		
1,000.0	986.0	1,000.0	980.9	3.0	3.4	136.09	6.5	115.1	169.5	163.8	5.76	29.446		
1,100.0	1,083.0	1,093.1	1,066.0	3.5	4.1	129.12	29.6	144.9	192.3	185.4	6.93	27.761		
1,200.0	1,180.0	1,184.7	1,147.9	3.9	4.9	122.59	54.7	177.3	218.7	210.6	8.09	27.024		
1,300.0	1,276.9	1,277.7	1,230.5	4.4	5.7	117.06	80.9	211.2	248.0	238.8	9.21	26.915 SF		
1,400.0	1,373.9	1,370.8	1,313.1	4.9	6.5	112.68	107.0	245.2	279.0	268.7	10.28	27.152		
1,500.0	1,470.9	1,463.8	1,395.7	5.3	7.3	109.16	133.2	279.1	311.2	299.9	11.29	27.557		
1,600.0	1,567.8	1,556.9	1,478.3	5.8	8.1	106.29	159.4	313.0	344.4	332.1	12.28	28.041		
1,700.0	1,664.8	1,649.9	1,560.8	6.2	8.9	103.91	185.6	346.9	378.2	364.9	13.24	28.552		
1,800.0	1,761.8	1,742.9	1,643.4	6.7	9.7	101.93	211.8	380.8	412.4	398.2	14.19	29.065		
1,900.0	1,858.7	1,836.0	1,726.0	7.1	10.5	100.24	238.0	414.7	447.1	432.0	15.12	29.565		
2,000.0	1,955.7	1,929.0	1,808.6	7.6	11.3	98.79	264.2	448.6	482.0	466.0	16.04	30.045		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Rose 22-3D
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Reference Site:</b>	K22W Pad	<b>MD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rose 22-3D	<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 K22W Pad - Rose 22-2C - OH - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance					Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis			
0.0	0.0	0.0	0.0	0.0	0.0	-180.00	-49.5	0.0	49.5					
100.0	100.0	100.0	100.0	0.1	0.1	-180.00	-49.5	0.0	49.5	49.3	0.27	181.951		
200.0	200.0	200.0	200.0	0.3	0.3	-180.00	-49.5	0.0	49.5	48.9	0.62	79.732		
300.0	300.0	302.5	302.4	0.5	0.5	178.37	-47.0	0.9	48.5	47.5	0.98	49.717		
400.0	399.8	404.8	404.4	0.7	0.7	175.00	-39.2	3.8	47.6	46.3	1.34	35.634		
476.0	475.2	482.4	481.4	0.9	0.9	170.92	-30.0	7.2	47.4	45.7	1.63	29.083 CC		
500.0	499.1	506.9	505.6	1.0	1.0	169.37	-26.4	8.5	47.4	45.7	1.73	27.449 ES		
600.0	597.6	608.9	605.7	1.3	1.4	161.75	-8.6	15.1	48.3	46.1	2.21	21.909		
700.0	695.1	710.5	704.4	1.7	1.9	152.82	14.1	23.4	51.0	48.2	2.87	17.757		
800.0	792.1	811.1	800.8	2.1	2.4	142.31	41.1	33.4	54.0	50.2	3.81	14.162		
900.0	889.1	910.5	895.8	2.6	2.9	132.34	68.7	43.5	58.1	53.2	4.90	11.855		
1,000.0	986.0	1,010.0	990.8	3.0	3.4	123.89	96.2	53.7	63.7	57.7	6.03	10.561		
1,100.0	1,083.0	1,109.4	1,085.8	3.5	4.0	116.93	123.8	63.8	70.5	63.3	7.15	9.855		
1,200.0	1,180.0	1,208.8	1,180.8	3.9	4.5	111.25	151.4	74.0	78.1	69.9	8.24	9.483		
1,300.0	1,276.9	1,308.3	1,275.8	4.4	5.0	106.62	179.0	84.1	86.4	77.1	9.29	9.302		
1,400.0	1,373.9	1,407.7	1,370.8	4.9	5.6	102.81	206.6	94.3	95.1	84.8	10.30	9.231		
1,500.0	1,470.9	1,507.1	1,465.8	5.3	6.1	99.65	234.1	104.4	104.2	92.9	11.29	9.227 SF		
1,600.0	1,567.8	1,606.6	1,560.8	5.8	6.7	97.00	261.7	114.6	113.5	101.2	12.26	9.260		
1,700.0	1,664.8	1,706.0	1,655.8	6.2	7.2	94.76	289.3	124.7	123.0	109.8	13.21	9.316		
1,800.0	1,761.8	1,805.5	1,750.8	6.7	7.7	92.84	316.9	134.9	132.7	118.6	14.14	9.385		
1,900.0	1,858.7	1,904.9	1,845.8	7.1	8.3	91.18	344.4	145.0	142.6	127.5	15.07	9.460		
2,000.0	1,955.7	2,004.3	1,940.8	7.6	8.8	89.74	372.0	155.2	152.5	136.5	15.99	9.538		
2,100.0	2,052.7	2,103.8	2,035.8	8.1	9.4	88.48	399.6	165.3	162.5	145.6	16.90	9.617		
2,200.0	2,149.6	2,203.2	2,130.8	8.5	9.9	87.36	427.2	175.5	172.6	154.8	17.80	9.694		
2,300.0	2,246.6	2,302.6	2,225.8	9.0	10.5	86.36	454.8	185.6	182.7	164.0	18.71	9.769		
2,400.0	2,343.6	2,402.1	2,320.8	9.4	11.0	85.47	482.3	195.8	192.9	173.3	19.60	9.842		
2,500.0	2,440.5	2,501.5	2,415.7	9.9	11.5	84.67	509.9	205.9	203.2	182.7	20.50	9.912		
2,600.0	2,537.5	2,601.0	2,510.7	10.4	12.1	83.95	537.5	216.1	213.4	192.0	21.39	9.979		
2,700.0	2,634.5	2,700.4	2,605.7	10.8	12.6	83.29	565.1	226.2	223.7	201.5	22.28	10.042		
2,800.0	2,731.4	2,799.8	2,700.7	11.3	13.2	82.70	592.7	236.4	234.1	210.9	23.17	10.103		
2,900.0	2,828.4	2,899.3	2,795.7	11.7	13.7	82.15	620.2	246.5	244.4	220.4	24.05	10.161		
3,000.0	2,925.4	2,998.7	2,890.7	12.2	14.3	81.64	647.8	256.7	254.8	229.8	24.94	10.217		
3,100.0	3,022.3	3,098.1	2,985.7	12.7	14.8	81.18	675.4	266.9	265.2	239.3	25.82	10.269		
3,200.0	3,119.3	3,197.6	3,080.7	13.1	15.3	80.75	703.0	277.0	275.6	248.9	26.70	10.320		
3,300.0	3,216.3	3,297.0	3,175.7	13.6	15.9	80.35	730.6	287.2	286.0	258.4	27.58	10.368		
3,400.0	3,313.2	3,396.5	3,270.7	14.0	16.4	79.98	758.1	297.3	296.4	267.9	28.46	10.413		
3,500.0	3,410.2	3,495.9	3,365.7	14.5	17.0	79.64	785.7	307.5	306.8	277.5	29.34	10.457		
3,600.0	3,507.2	3,595.3	3,460.7	15.0	17.5	79.31	813.3	317.6	317.3	287.1	30.22	10.498		
3,700.0	3,604.1	3,694.8	3,555.7	15.4	18.1	79.01	840.9	327.8	327.8	296.7	31.10	10.538		
3,800.0	3,701.1	3,794.2	3,650.7	15.9	18.6	78.73	868.4	337.9	338.2	306.2	31.98	10.576		
3,900.0	3,798.1	3,893.6	3,745.7	16.3	19.2	78.46	896.0	348.1	348.7	315.8	32.86	10.612		
4,000.0	3,895.0	3,993.1	3,840.7	16.8	19.7	78.21	923.6	358.2	359.2	325.5	33.74	10.647		
4,100.0	3,992.0	4,092.5	3,935.7	17.3	20.2	77.98	951.2	368.4	369.7	335.1	34.61	10.681		
4,200.0	4,089.0	4,191.9	4,030.7	17.7	20.8	77.75	978.8	378.5	380.2	344.7	35.49	10.712		
4,300.0	4,185.9	4,291.4	4,125.7	18.2	21.3	77.54	1,006.3	388.7	390.7	354.3	36.36	10.743		
4,400.0	4,282.9	4,390.8	4,220.7	18.6	21.9	77.34	1,033.9	398.8	401.2	363.9	37.24	10.773		
4,500.0	4,379.9	4,490.3	4,315.7	19.1	22.4	77.15	1,061.5	409.0	411.7	373.6	38.12	10.801		
4,600.0	4,476.8	4,589.7	4,410.6	19.6	23.0	76.97	1,089.1	419.1	422.2	383.2	38.99	10.828		
4,700.0	4,573.8	4,689.1	4,505.6	20.0	23.5	76.80	1,116.7	429.3	432.7	392.9	39.87	10.854		
4,800.0	4,670.8	4,788.6	4,600.6	20.5	24.0	76.64	1,144.2	439.4	443.2	402.5	40.74	10.879		
4,900.0	4,767.7	4,888.0	4,695.6	21.0	24.6	76.48	1,171.8	449.6	453.8	412.2	41.62	10.903		
5,000.0	4,864.7	4,987.4	4,790.6	21.4	25.1	76.33	1,199.4	459.7	464.3	421.8	42.49	10.927		

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 Rose 22-3D
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Reference Site:</b>	K22W Pad	<b>MD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rose 22-3D	<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> K22W Pad - Rose 22-2C - OH - Plan #1													<b>Offset Site Error:</b>	0.0 ft
Survey Program: 0-MWD													<b>Offset Well Error:</b>	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,100.0	4,961.7	5,086.9	4,885.6	21.9	25.7	76.19	1,227.0	469.9	474.8	431.5	43.37	10.949		
5,200.0	5,058.6	5,186.3	4,980.6	22.3	26.2	76.05	1,254.5	480.0	485.4	441.1	44.24	10.971		
5,300.0	5,155.6	5,285.8	5,075.6	22.8	26.8	75.92	1,282.1	490.2	495.9	450.8	45.11	10.992		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Rose 22-3D
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Reference Site:</b>	K22W Pad	<b>MD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rose 22-3D	<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 K22W Pad - Rose 22-3C - 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	-135.37	-8.0	-7.9	11.3					
100.0	100.0	100.0	100.0	0.1	0.1	-135.37	-8.0	-7.9	11.3	11.0	0.27	41.352		
200.0	200.0	200.0	200.0	0.3	0.3	-135.37	-8.0	-7.9	11.3	10.6	0.62	18.120 CC, ES		
300.0	300.0	300.0	300.0	0.5	0.5	-140.64	-8.0	-7.9	12.4	11.4	0.97	12.726		
400.0	399.8	400.3	400.3	0.7	0.7	-147.24	-5.5	-8.8	16.2	14.9	1.33	12.176		
500.0	499.1	500.8	500.4	1.0	0.9	-147.28	1.9	-11.5	21.4	19.7	1.73	12.386		
600.0	597.6	601.3	600.0	1.3	1.2	-144.39	14.2	-16.1	27.9	25.7	2.21	12.625		
700.0	695.1	701.8	698.9	1.7	1.5	-140.47	31.5	-22.4	35.8	33.0	2.83	12.656		
800.0	792.1	802.4	796.6	2.1	1.9	-134.04	53.7	-30.6	43.3	39.6	3.65	11.868		
900.0	889.1	902.7	892.7	2.6	2.5	-123.82	80.5	-40.4	49.6	44.9	4.72	10.519		
1,000.0	986.0	1,002.0	986.3	3.0	3.1	-110.96	111.7	-51.9	56.9	50.9	5.96	9.547		
1,100.0	1,083.0	1,100.6	1,078.1	3.5	3.7	-98.73	145.5	-64.3	66.8	59.7	7.09	9.426 SF		
1,200.0	1,180.0	1,199.3	1,170.0	3.9	4.3	-89.89	179.3	-76.7	79.0	71.0	8.06	9.810		
1,300.0	1,276.9	1,297.9	1,261.8	4.4	5.0	-83.50	213.1	-89.1	92.6	83.7	8.92	10.380		
1,400.0	1,373.9	1,396.5	1,353.6	4.9	5.6	-78.78	246.9	-101.5	107.0	97.3	9.73	10.999		
1,500.0	1,470.9	1,495.1	1,445.4	5.3	6.3	-75.18	280.7	-114.0	122.0	111.5	10.51	11.609		
1,600.0	1,567.8	1,593.7	1,537.2	5.8	6.9	-72.38	314.5	-126.4	137.3	126.0	11.27	12.185		
1,700.0	1,664.8	1,692.4	1,629.0	6.2	7.6	-70.14	348.3	-138.8	152.9	140.8	12.02	12.719		
1,800.0	1,761.8	1,791.0	1,720.8	6.7	8.2	-68.32	382.1	-151.2	168.6	155.9	12.76	13.211		
1,900.0	1,858.7	1,889.6	1,812.6	7.1	8.9	-66.81	415.9	-163.6	184.5	171.0	13.51	13.662		
2,000.0	1,955.7	1,988.2	1,904.4	7.6	9.5	-65.54	449.8	-176.0	200.5	186.3	14.25	14.075		
2,100.0	2,052.7	2,086.9	1,996.3	8.1	10.2	-64.46	483.6	-188.4	216.6	201.6	14.99	14.453		
2,200.0	2,149.6	2,185.5	2,088.1	8.5	10.8	-63.52	517.4	-200.9	232.8	217.1	15.73	14.801		
2,300.0	2,246.6	2,284.1	2,179.9	9.0	11.5	-62.71	551.2	-213.3	249.0	232.5	16.47	15.120		
2,400.0	2,343.6	2,382.7	2,271.7	9.4	12.1	-62.00	585.0	-225.7	265.3	248.0	17.21	15.415		
2,500.0	2,440.5	2,481.3	2,363.5	9.9	12.8	-61.37	618.8	-238.1	281.5	263.6	17.95	15.687		
2,600.0	2,537.5	2,580.0	2,455.3	10.4	13.4	-60.81	652.6	-250.5	297.9	279.2	18.69	15.939		
2,700.0	2,634.5	2,678.6	2,547.1	10.8	14.1	-60.31	686.4	-262.9	314.2	294.8	19.43	16.173		
2,800.0	2,731.4	2,777.2	2,638.9	11.3	14.8	-59.85	720.2	-275.3	330.6	310.4	20.17	16.391		
2,900.0	2,828.4	2,875.8	2,730.7	11.7	15.4	-59.44	754.0	-287.8	346.9	326.0	20.91	16.594		
3,000.0	2,925.4	2,974.4	2,822.5	12.2	16.1	-59.07	787.8	-300.2	363.3	341.7	21.65	16.784		
3,100.0	3,022.3	3,073.1	2,914.4	12.7	16.7	-58.73	821.6	-312.6	379.7	357.4	22.39	16.962		
3,200.0	3,119.3	3,171.7	3,006.2	13.1	17.4	-58.42	855.4	-325.0	396.2	373.0	23.13	17.128		
3,300.0	3,216.3	3,270.3	3,098.0	13.6	18.0	-58.13	889.2	-337.4	412.6	388.7	23.87	17.285		
3,400.0	3,313.2	3,368.9	3,189.8	14.0	18.7	-57.86	923.0	-349.8	429.0	404.4	24.61	17.432		
3,500.0	3,410.2	3,467.5	3,281.6	14.5	19.3	-57.62	956.8	-362.3	445.5	420.1	25.35	17.571		
3,600.0	3,507.2	3,566.2	3,373.4	15.0	20.0	-57.39	990.6	-374.7	461.9	435.9	26.10	17.703		
3,700.0	3,604.1	3,664.8	3,465.2	15.4	20.7	-57.17	1,024.4	-387.1	478.4	451.6	26.84	17.827		
3,800.0	3,701.1	3,763.4	3,557.0	15.9	21.3	-56.97	1,058.2	-399.5	494.9	467.3	27.58	17.944		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Rose 22-3D
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Reference Site:</b>	K22W Pad	<b>MD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rose 22-3D	<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 K22W Pad - Rose 22-4C - OH - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance					Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis			
0.0	0.0	0.0	0.0	0.0	0.0	-172.18	-57.6	-7.9	58.1					
100.0	100.0	100.0	100.0	0.1	0.1	-172.18	-57.6	-7.9	58.1	57.8	0.27	213.369		
200.0	200.0	200.0	200.0	0.3	0.3	-172.18	-57.6	-7.9	58.1	57.5	0.62	93.499 CC, ES		
300.0	300.0	300.0	300.0	0.5	0.5	-172.88	-57.6	-7.9	59.6	58.6	0.97	61.399		
400.0	399.8	401.2	401.2	0.7	0.7	-172.48	-56.5	-9.0	65.2	63.9	1.32	49.357		
500.0	499.1	502.9	502.6	1.0	0.9	-169.30	-52.0	-14.0	73.2	71.5	1.69	43.302		
600.0	597.6	604.1	603.1	1.3	1.1	-164.33	-43.8	-22.9	84.0	81.9	2.12	39.665		
700.0	695.1	704.6	702.1	1.7	1.5	-158.60	-32.2	-35.6	98.1	95.5	2.65	36.955		
800.0	792.1	804.5	799.5	2.1	1.9	-152.46	-17.1	-52.1	113.6	110.3	3.36	33.822		
900.0	889.1	903.5	894.7	2.6	2.4	-145.62	1.2	-72.0	129.2	125.0	4.24	30.463		
1,000.0	986.0	1,001.1	987.1	3.0	2.9	-138.38	22.4	-95.3	146.1	140.8	5.29	27.626		
1,100.0	1,083.0	1,096.9	1,076.1	3.5	3.6	-131.09	46.4	-121.4	165.1	158.7	6.45	25.619		
1,200.0	1,180.0	1,191.2	1,162.0	3.9	4.3	-124.09	72.6	-150.1	187.3	179.7	7.63	24.555		
1,300.0	1,276.9	1,286.1	1,248.1	4.4	5.0	-118.33	99.5	-179.5	212.0	203.2	8.76	24.192 SF		
1,400.0	1,373.9	1,381.0	1,334.2	4.9	5.8	-113.76	126.4	-208.9	238.3	228.4	9.84	24.214		
1,500.0	1,470.9	1,475.8	1,420.3	5.3	6.5	-110.09	153.4	-238.2	265.8	254.9	10.88	24.434		
1,600.0	1,567.8	1,570.7	1,506.3	5.8	7.2	-107.10	180.3	-267.6	294.1	282.2	11.88	24.753		
1,700.0	1,664.8	1,665.5	1,592.4	6.2	8.0	-104.64	207.2	-297.0	323.0	310.2	12.86	25.118		
1,800.0	1,761.8	1,760.4	1,678.5	6.7	8.7	-102.57	234.1	-326.4	352.4	338.6	13.82	25.499		
1,900.0	1,858.7	1,855.3	1,764.6	7.1	9.5	-100.83	261.0	-355.8	382.2	367.4	14.77	25.880		
2,000.0	1,955.7	1,950.1	1,850.7	7.6	10.2	-99.33	287.9	-385.2	412.2	396.5	15.70	26.250		
2,100.0	2,052.7	2,045.0	1,936.8	8.1	10.9	-98.03	314.8	-414.6	442.5	425.9	16.63	26.605		
2,200.0	2,149.6	2,139.8	2,022.8	8.5	11.7	-96.90	341.7	-444.0	473.0	455.4	17.55	26.944		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Rose 22-3D
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Reference Site:</b>	K22W Pad	<b>MD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rose 22-3D	<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 K22W Pad - Rose 22-4D - 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	-169.12	-41.2	-7.9	41.9					
100.0	100.0	100.0	100.0	0.1	0.1	-169.12	-41.2	-7.9	41.9	41.6	0.27	153.964		
200.0	200.0	200.0	200.0	0.3	0.3	-169.12	-41.2	-7.9	41.9	41.3	0.62	67.467 CC, ES		
300.0	300.0	300.0	300.0	0.5	0.5	-170.00	-41.2	-7.9	43.4	42.4	0.97	44.710		
400.0	399.8	400.2	400.2	0.7	0.7	-171.14	-41.0	-8.0	49.7	48.4	1.32	37.725		
500.0	499.1	501.7	501.7	1.0	0.8	-170.01	-37.8	-10.5	58.6	57.0	1.67	35.060		
600.0	597.6	603.3	602.8	1.3	1.1	-166.61	-30.4	-16.2	69.3	67.2	2.06	33.668		
700.0	695.1	704.7	703.1	1.7	1.4	-162.04	-18.7	-25.2	82.0	79.5	2.52	32.549		
800.0	792.1	806.0	802.4	2.1	1.7	-156.55	-2.8	-37.4	94.6	91.5	3.13	30.277		
900.0	889.1	907.0	900.2	2.6	2.2	-149.79	17.2	-52.8	105.8	101.9	3.92	26.957		
1,000.0	986.0	1,007.2	995.7	3.0	2.7	-141.95	41.1	-71.1	116.6	111.7	4.94	23.606		
1,100.0	1,083.0	1,105.9	1,088.2	3.5	3.4	-133.37	68.4	-92.1	128.6	122.5	6.15	20.919		
1,200.0	1,180.0	1,202.8	1,177.2	3.9	4.0	-124.54	98.8	-115.4	143.1	135.6	7.44	19.218		
1,300.0	1,276.9	1,299.2	1,265.2	4.4	4.7	-116.96	130.0	-139.4	160.6	151.9	8.68	18.502		
1,400.0	1,373.9	1,395.6	1,353.1	4.9	5.4	-110.91	161.2	-163.4	180.4	170.5	9.83	18.349 SF		
1,500.0	1,470.9	1,491.9	1,441.1	5.3	6.2	-106.06	192.4	-187.3	201.7	190.8	10.91	18.493		
1,600.0	1,567.8	1,588.3	1,529.1	5.8	6.9	-102.14	223.6	-211.3	224.2	212.3	11.93	18.790		
1,700.0	1,664.8	1,684.7	1,617.1	6.2	7.6	-98.93	254.8	-235.3	247.6	234.7	12.92	19.164		
1,800.0	1,761.8	1,781.0	1,705.0	6.7	8.3	-96.27	286.0	-259.3	271.5	257.7	13.88	19.570		
1,900.0	1,858.7	1,877.4	1,793.0	7.1	9.0	-94.05	317.2	-283.2	296.0	281.2	14.81	19.984		
2,000.0	1,955.7	1,973.8	1,881.0	7.6	9.7	-92.16	348.5	-307.2	320.8	305.0	15.73	20.392		
2,100.0	2,052.7	2,070.2	1,968.9	8.1	10.5	-90.54	379.7	-331.2	345.8	329.2	16.64	20.787		
2,200.0	2,149.6	2,166.5	2,056.9	8.5	11.2	-89.14	410.9	-355.2	371.1	353.6	17.54	21.165		
2,300.0	2,246.6	2,262.9	2,144.9	9.0	11.9	-87.92	442.1	-379.1	396.6	378.2	18.43	21.524		
2,400.0	2,343.6	2,359.3	2,232.9	9.4	12.6	-86.84	473.3	-403.1	422.3	402.9	19.31	21.864		
2,500.0	2,440.5	2,455.7	2,320.8	9.9	13.4	-85.89	504.5	-427.1	448.0	427.8	20.19	22.185		
2,600.0	2,537.5	2,552.0	2,408.8	10.4	14.1	-85.04	535.7	-451.0	473.9	452.8	21.07	22.488		
2,700.0	2,634.5	2,648.4	2,496.8	10.8	14.8	-84.28	566.9	-475.0	499.8	477.9	21.95	22.774		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Rose 22-3D
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Reference Site:</b>	K22W Pad	<b>MD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rose 22-3D	<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 K22W Pad - Rose 22-6A - 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	-180.00	-32.8	0.0	32.8					
100.0	100.0	100.0	100.0	0.1	0.1	-180.00	-32.8	0.0	32.8	32.5	0.27	120.398		
200.0	200.0	200.0	200.0	0.3	0.3	-180.00	-32.8	0.0	32.8	32.2	0.62	52.759 CC, ES		
300.0	300.0	300.0	300.0	0.5	0.5	179.49	-32.8	0.0	34.3	33.3	0.97	35.316		
400.0	399.8	401.0	401.0	0.7	0.7	178.58	-31.1	0.7	39.2	37.9	1.32	29.701		
500.0	499.1	502.2	502.0	1.0	0.9	176.30	-26.2	2.7	46.1	44.5	1.67	27.638		
600.0	597.6	603.3	602.7	1.3	1.1	173.41	-18.0	6.1	55.2	53.2	2.03	27.237		
700.0	695.1	705.3	703.9	1.7	1.3	170.59	-5.7	10.6	65.8	63.4	2.41	27.349		
800.0	792.1	804.6	802.1	2.1	1.6	168.56	8.4	15.2	76.8	74.0	2.81	27.331		
900.0	889.1	904.0	900.4	2.6	1.9	167.05	22.5	19.8	87.9	84.7	3.23	27.214		
1,000.0	986.0	1,003.4	998.6	3.0	2.2	165.87	36.5	24.4	99.1	95.5	3.66	27.052		
1,100.0	1,083.0	1,102.7	1,096.9	3.5	2.5	164.93	50.6	29.0	110.3	106.2	4.11	26.872		
1,200.0	1,180.0	1,202.1	1,195.1	3.9	2.8	164.17	64.7	33.5	121.5	117.0	4.55	26.692		
1,300.0	1,276.9	1,301.4	1,293.4	4.4	3.1	163.53	78.7	38.1	132.8	127.8	5.01	26.518		
1,400.0	1,373.9	1,400.8	1,391.6	4.9	3.4	163.00	92.8	42.7	144.0	138.6	5.47	26.355		
1,500.0	1,470.9	1,500.1	1,489.9	5.3	3.7	162.54	106.8	47.3	155.3	149.4	5.93	26.203		
1,600.0	1,567.8	1,599.5	1,588.1	5.8	4.0	162.14	120.9	51.9	166.6	160.2	6.39	26.063		
1,700.0	1,664.8	1,698.9	1,686.4	6.2	4.3	161.80	135.0	56.4	177.9	171.0	6.86	25.934		
1,800.0	1,761.8	1,798.2	1,784.6	6.7	4.7	161.49	149.0	61.0	189.1	181.8	7.33	25.815		
1,900.0	1,858.7	1,897.6	1,882.9	7.1	5.0	161.22	163.1	65.6	200.4	192.6	7.80	25.706		
2,000.0	1,955.7	1,996.9	1,981.1	7.6	5.3	160.98	177.2	70.2	211.7	203.5	8.27	25.605		
2,100.0	2,052.7	2,096.3	2,079.4	8.1	5.6	160.76	191.2	74.8	223.0	214.3	8.74	25.512		
2,200.0	2,149.6	2,195.6	2,177.6	8.5	5.9	160.57	205.3	79.4	234.3	225.1	9.22	25.426		
2,300.0	2,246.6	2,295.0	2,275.9	9.0	6.2	160.39	219.3	83.9	245.6	235.9	9.69	25.347		
2,400.0	2,343.6	2,394.3	2,374.1	9.4	6.5	160.23	233.4	88.5	256.9	246.8	10.17	25.273		
2,500.0	2,440.5	2,493.7	2,472.4	9.9	6.8	160.08	247.5	93.1	268.2	257.6	10.64	25.204		
2,600.0	2,537.5	2,593.1	2,570.6	10.4	7.1	159.94	261.5	97.7	279.6	268.4	11.12	25.141		
2,700.0	2,634.5	2,692.4	2,668.9	10.8	7.4	159.82	275.6	102.3	290.9	279.3	11.60	25.081		
2,800.0	2,731.4	2,791.8	2,767.1	11.3	7.7	159.70	289.7	106.8	302.2	290.1	12.07	25.025		
2,900.0	2,828.4	2,891.1	2,865.4	11.7	8.1	159.59	303.7	111.4	313.5	300.9	12.55	24.973		
3,000.0	2,925.4	2,990.5	2,963.6	12.2	8.4	159.49	317.8	116.0	324.8	311.8	13.03	24.923		
3,100.0	3,022.3	3,089.8	3,061.9	12.7	8.7	159.40	331.8	120.6	336.1	322.6	13.51	24.877		
3,200.0	3,119.3	3,189.2	3,160.1	13.1	9.0	159.31	345.9	125.2	347.4	333.4	13.99	24.834		
3,300.0	3,216.3	3,288.6	3,258.4	13.6	9.3	159.23	360.0	129.7	358.7	344.3	14.47	24.793		
3,400.0	3,313.2	3,387.9	3,356.6	14.0	9.6	159.15	374.0	134.3	370.1	355.1	14.95	24.754		
3,500.0	3,410.2	3,487.3	3,454.9	14.5	9.9	159.08	388.1	138.9	381.4	366.0	15.43	24.717		
3,600.0	3,507.2	3,586.6	3,553.1	15.0	10.2	159.01	402.2	143.5	392.7	376.8	15.91	24.682		
3,700.0	3,604.1	3,686.0	3,651.3	15.4	10.5	158.94	416.2	148.1	404.0	387.6	16.39	24.649		
3,800.0	3,701.1	3,785.3	3,749.6	15.9	10.8	158.88	430.3	152.7	415.3	398.5	16.87	24.618		
3,900.0	3,798.1	3,884.7	3,847.8	16.3	11.2	158.83	444.3	157.2	426.7	409.3	17.35	24.588		
4,000.0	3,895.0	3,984.0	3,946.1	16.8	11.5	158.77	458.4	161.8	438.0	420.1	17.83	24.560		
4,100.0	3,992.0	4,083.4	4,044.3	17.3	11.8	158.72	472.5	166.4	449.3	431.0	18.31	24.533		
4,200.0	4,089.0	4,182.8	4,142.6	17.7	12.1	158.67	486.5	171.0	460.6	441.8	18.80	24.507		
4,300.0	4,185.9	4,282.1	4,240.8	18.2	12.4	158.62	500.6	175.6	471.9	452.7	19.28	24.482		
4,400.0	4,282.9	4,381.5	4,339.1	18.6	12.7	158.58	514.6	180.1	483.3	463.5	19.76	24.459		
4,500.0	4,379.9	4,480.8	4,437.3	19.1	13.0	158.53	528.7	184.7	494.6	474.3	20.24	24.436 SF		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Rose 22-3D
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Reference Site:</b>	K22W Pad	<b>MD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rose 22-3D	<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 K22W Pad - Rose 22-6B - OH - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance					Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis			
0.0	0.0	0.0	0.0	0.0	0.0	-162.29	-24.8	-7.9	26.0					
100.0	100.0	100.0	100.0	0.1	0.1	-162.29	-24.8	-7.9	26.0	25.7	0.27	95.508		
200.0	200.0	200.0	200.0	0.3	0.3	-162.29	-24.8	-7.9	26.0	25.4	0.62	41.852 CC, ES		
300.0	300.0	300.0	300.0	0.5	0.5	-163.72	-24.8	-7.9	27.4	26.4	0.97	28.258		
400.0	399.8	399.8	399.8	0.7	0.7	-166.79	-24.8	-7.9	33.7	32.4	1.32	25.602		
500.0	499.1	499.1	499.1	1.0	0.8	-170.13	-24.8	-7.9	45.3	43.6	1.66	27.233		
600.0	597.6	599.9	599.8	1.3	1.0	-171.07	-22.7	-9.4	60.2	58.2	2.01	29.962		
700.0	695.1	701.0	700.6	1.7	1.2	-169.35	-16.2	-14.1	76.6	74.2	2.38	32.230		
800.0	792.1	802.7	801.4	2.1	1.5	-166.09	-5.4	-21.9	91.9	89.1	2.81	32.674		
900.0	889.1	904.8	901.8	2.6	1.8	-161.41	9.9	-33.0	104.3	100.9	3.36	31.036		
1,000.0	986.0	1,006.3	1,000.4	3.0	2.2	-155.52	29.2	-46.9	114.5	110.4	4.07	28.143		
1,100.0	1,083.0	1,105.1	1,096.0	3.5	2.6	-150.05	49.4	-61.5	124.9	120.1	4.87	25.633		
1,200.0	1,180.0	1,203.9	1,191.6	3.9	3.1	-145.44	69.6	-76.2	136.3	130.6	5.74	23.755		
1,300.0	1,276.9	1,302.7	1,287.2	4.4	3.5	-141.57	89.8	-90.8	148.5	141.9	6.64	22.365		
1,400.0	1,373.9	1,401.5	1,382.8	4.9	4.0	-138.28	110.0	-105.4	161.2	153.7	7.56	21.331		
1,500.0	1,470.9	1,500.3	1,478.4	5.3	4.4	-135.48	130.2	-120.0	174.4	165.9	8.49	20.552		
1,600.0	1,567.8	1,599.0	1,574.0	5.8	4.9	-133.08	150.4	-134.6	187.9	178.5	9.42	19.956		
1,700.0	1,664.8	1,697.8	1,669.6	6.2	5.3	-131.00	170.6	-149.2	201.7	191.4	10.35	19.494		
1,800.0	1,761.8	1,796.6	1,765.2	6.7	5.8	-129.19	190.8	-163.8	215.8	204.5	11.28	19.130		
1,900.0	1,858.7	1,895.4	1,860.8	7.1	6.3	-127.60	211.0	-178.4	230.0	217.8	12.21	18.840		
2,000.0	1,955.7	1,994.2	1,956.4	7.6	6.7	-126.19	231.2	-193.0	244.3	231.2	13.13	18.605		
2,100.0	2,052.7	2,093.0	2,052.0	8.1	7.2	-124.94	251.4	-207.6	258.9	244.8	14.06	18.414		
2,200.0	2,149.6	2,191.8	2,147.6	8.5	7.7	-123.83	271.6	-222.2	273.5	258.5	14.98	18.257		
2,300.0	2,246.6	2,290.6	2,243.2	9.0	8.1	-122.83	291.8	-236.8	288.2	272.3	15.90	18.126		
2,400.0	2,343.6	2,389.4	2,338.8	9.4	8.6	-121.92	312.0	-251.4	302.9	286.1	16.82	18.016		
2,500.0	2,440.5	2,488.2	2,434.4	9.9	9.1	-121.10	332.2	-266.0	317.8	300.1	17.73	17.924		
2,600.0	2,537.5	2,587.0	2,529.9	10.4	9.5	-120.35	352.4	-280.6	332.7	314.1	18.64	17.845		
2,700.0	2,634.5	2,685.8	2,625.5	10.8	10.0	-119.67	372.6	-295.2	347.7	328.1	19.56	17.778		
2,800.0	2,731.4	2,784.6	2,721.1	11.3	10.5	-119.04	392.8	-309.8	362.7	342.2	20.47	17.721		
2,900.0	2,828.4	2,883.4	2,816.7	11.7	10.9	-118.46	413.0	-324.5	377.7	356.3	21.37	17.671		
3,000.0	2,925.4	2,982.2	2,912.3	12.2	11.4	-117.93	433.2	-339.1	392.8	370.5	22.28	17.628		
3,100.0	3,022.3	3,080.9	3,007.9	12.7	11.9	-117.44	453.4	-353.7	407.9	384.7	23.19	17.590		
3,200.0	3,119.3	3,179.7	3,103.5	13.1	12.4	-116.98	473.6	-368.3	423.0	398.9	24.09	17.557		
3,300.0	3,216.3	3,278.5	3,199.1	13.6	12.8	-116.55	493.8	-382.9	438.2	413.2	25.00	17.529		
3,400.0	3,313.2	3,377.3	3,294.7	14.0	13.3	-116.15	514.0	-397.5	453.3	427.4	25.90	17.504		
3,500.0	3,410.2	3,476.1	3,390.3	14.5	13.8	-115.78	534.2	-412.1	468.5	441.7	26.80	17.481		
3,600.0	3,507.2	3,574.9	3,485.9	15.0	14.2	-115.43	554.4	-426.7	483.8	456.1	27.70	17.462		
3,700.0	3,604.1	3,673.7	3,581.5	15.4	14.7	-115.10	574.6	-441.3	499.0	470.4	28.61	17.444 SF		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Rose 22-3D
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Reference Site:</b>	K22W Pad	<b>MD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rose 22-3D	<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 K22W Pad - Rose 22-6D - 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	-43.34	8.4	-7.9	11.5					
100.0	100.0	100.0	100.0	0.1	0.1	-43.34	8.4	-7.9	11.5	11.3	0.27	42.326		
200.0	200.0	200.0	200.0	0.3	0.3	-43.34	8.4	-7.9	11.5	10.9	0.62	18.547		
300.0	300.0	299.6	299.6	0.5	0.5	-41.72	10.9	-8.2	12.5	11.5	0.97	12.835		
400.0	399.8	399.6	399.4	0.7	0.7	-52.06	15.0	-8.7	11.2	9.9	1.35	8.330		
487.3	486.4	486.6	486.4	0.9	0.8	-86.81	18.6	-9.1	9.3	7.6	1.76	5.308 CC, ES		
500.0	499.1	499.2	499.0	1.0	0.9	-94.49	19.1	-9.2	9.4	7.6	1.81	5.187 SF		
600.0	597.6	598.4	598.1	1.3	1.0	-143.58	23.2	-9.7	16.8	14.7	2.13	7.894		
700.0	695.1	696.8	696.4	1.7	1.2	-161.37	27.3	-10.2	33.3	30.9	2.41	13.817		
800.0	792.1	794.6	794.2	2.1	1.4	-167.86	31.3	-10.7	53.2	50.4	2.73	19.473		
900.0	889.1	892.5	892.0	2.6	1.6	-170.80	35.4	-11.2	73.4	70.3	3.07	23.925		
1,000.0	986.0	990.4	989.8	3.0	1.8	-172.48	39.4	-11.6	93.6	90.2	3.41	27.493		
1,100.0	1,083.0	1,088.3	1,087.6	3.5	2.0	-173.55	43.4	-12.1	114.0	110.2	3.75	30.411		
1,200.0	1,180.0	1,186.2	1,185.4	3.9	2.2	-174.30	47.5	-12.6	134.3	130.3	4.09	32.839		
1,300.0	1,276.9	1,284.1	1,283.2	4.4	2.3	-174.86	51.5	-13.1	154.7	150.3	4.43	34.891		
1,400.0	1,373.9	1,382.0	1,381.0	4.9	2.5	-175.28	55.6	-13.6	175.1	170.3	4.78	36.647		
1,500.0	1,470.9	1,479.9	1,478.8	5.3	2.7	-175.62	59.6	-14.1	195.5	190.4	5.12	38.166		
1,600.0	1,567.8	1,577.8	1,576.6	5.8	2.9	-175.89	63.7	-14.6	215.9	210.5	5.47	39.494		
1,700.0	1,664.8	1,675.7	1,674.4	6.2	3.1	-176.11	67.7	-15.1	236.3	230.5	5.81	40.665		
1,800.0	1,761.8	1,773.6	1,772.2	6.7	3.3	-176.30	71.8	-15.5	256.7	250.6	6.16	41.704		
1,900.0	1,858.7	1,871.5	1,870.1	7.1	3.4	-176.47	75.8	-16.0	277.2	270.7	6.50	42.633		
2,000.0	1,955.7	1,969.3	1,967.9	7.6	3.6	-176.61	79.8	-16.5	297.6	290.7	6.85	43.469		
2,100.0	2,052.7	2,067.2	2,065.7	8.1	3.8	-176.73	83.9	-17.0	318.0	310.8	7.19	44.224		
2,200.0	2,149.6	2,165.1	2,163.5	8.5	4.0	-176.83	87.9	-17.5	338.4	330.9	7.54	44.910		
2,300.0	2,246.6	2,263.0	2,261.3	9.0	4.2	-176.93	92.0	-18.0	358.8	350.9	7.88	45.536		
2,400.0	2,343.6	2,360.9	2,359.1	9.4	4.4	-177.01	96.0	-18.5	379.2	371.0	8.22	46.109		
2,500.0	2,440.5	2,458.8	2,456.9	9.9	4.6	-177.09	100.1	-18.9	399.7	391.1	8.57	46.637		
2,600.0	2,537.5	2,556.7	2,554.7	10.4	4.7	-177.16	104.1	-19.4	420.1	411.2	8.91	47.123		
2,700.0	2,634.5	2,654.6	2,652.5	10.8	4.9	-177.22	108.1	-19.9	440.5	431.2	9.26	47.574		
2,800.0	2,731.4	2,752.5	2,750.3	11.3	5.1	-177.28	112.2	-20.4	460.9	451.3	9.60	47.991		
2,900.0	2,828.4	2,850.4	2,848.1	11.7	5.3	-177.33	116.2	-20.9	481.3	471.4	9.95	48.380		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Rose 22-3D
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Reference Site:</b>	K22W Pad	<b>MD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rose 22-3D	<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 K22W Pad - Rose 22-6DD - 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	-180.00	-16.4	0.0	16.4					
100.0	100.0	100.0	100.0	0.1	0.1	-180.00	-16.4	0.0	16.4	16.1	0.27	60.215		
200.0	200.0	200.0	200.0	0.3	0.3	-180.00	-16.4	0.0	16.4	15.8	0.62	26.387 CC, ES		
300.0	300.0	300.0	300.0	0.5	0.5	179.51	-16.4	0.0	17.9	16.9	0.97	18.422 SF		
400.0	399.8	399.8	399.8	0.7	0.7	179.64	-16.4	0.0	24.4	23.1	1.32	18.546		
500.0	499.1	499.1	499.1	1.0	0.8	179.76	-16.4	0.0	36.2	34.5	1.66	21.807		
600.0	597.6	597.6	597.6	1.3	1.0	179.83	-16.4	0.0	53.1	51.1	1.99	26.617		
700.0	695.1	698.8	698.8	1.7	1.2	179.44	-13.9	0.6	72.8	70.4	2.33	31.200		
800.0	792.1	800.5	800.1	2.1	1.4	178.48	-6.3	2.3	89.9	87.2	2.69	33.452		
900.0	889.1	899.3	898.5	2.6	1.6	177.63	2.6	4.3	105.5	102.5	3.04	34.729		
1,000.0	986.0	998.0	996.8	3.0	1.8	177.01	11.5	6.4	121.2	117.8	3.39	35.730		
1,100.0	1,083.0	1,096.8	1,095.2	3.5	2.0	176.53	20.4	8.4	136.9	133.1	3.75	36.532		
1,200.0	1,180.0	1,195.5	1,193.5	3.9	2.2	176.14	29.3	10.4	152.5	148.4	4.10	37.188		
1,300.0	1,276.9	1,294.3	1,291.8	4.4	2.5	175.83	38.2	12.4	168.2	163.8	4.46	37.732		
1,400.0	1,373.9	1,393.0	1,390.2	4.9	2.7	175.57	47.0	14.5	183.9	179.1	4.82	38.191		
1,500.0	1,470.9	1,491.8	1,488.5	5.3	2.9	175.36	55.9	16.5	199.6	194.5	5.17	38.582		
1,600.0	1,567.8	1,590.6	1,586.8	5.8	3.1	175.17	64.8	18.5	215.3	209.8	5.53	38.920		
1,700.0	1,664.8	1,689.3	1,685.2	6.2	3.4	175.01	73.7	20.5	231.0	225.1	5.89	39.213		
1,800.0	1,761.8	1,788.1	1,783.5	6.7	3.6	174.87	82.6	22.5	246.7	240.5	6.25	39.471		
1,900.0	1,858.7	1,886.8	1,881.8	7.1	3.8	174.75	91.5	24.6	262.4	255.8	6.61	39.699		
2,000.0	1,955.7	1,985.6	1,980.2	7.6	4.1	174.64	100.4	26.6	278.1	271.2	6.97	39.903		
2,100.0	2,052.7	2,084.3	2,078.5	8.1	4.3	174.54	109.3	28.6	293.9	286.5	7.33	40.085		
2,200.0	2,149.6	2,183.1	2,176.8	8.5	4.5	174.45	118.2	30.6	309.6	301.9	7.69	40.249		
2,300.0	2,246.6	2,281.9	2,275.2	9.0	4.7	174.37	127.0	32.7	325.3	317.2	8.05	40.397		
2,400.0	2,343.6	2,380.6	2,373.5	9.4	5.0	174.30	135.9	34.7	341.0	332.6	8.41	40.532		
2,500.0	2,440.5	2,479.4	2,471.9	9.9	5.2	174.24	144.8	36.7	356.7	347.9	8.77	40.656		
2,600.0	2,537.5	2,578.1	2,570.2	10.4	5.4	174.18	153.7	38.7	372.4	363.3	9.13	40.769		
2,700.0	2,634.5	2,676.9	2,668.5	10.8	5.7	174.12	162.6	40.8	388.1	378.6	9.50	40.873		
2,800.0	2,731.4	2,775.6	2,766.9	11.3	5.9	174.07	171.5	42.8	403.8	394.0	9.86	40.969		
2,900.0	2,828.4	2,874.4	2,865.2	11.7	6.1	174.02	180.4	44.8	419.5	409.3	10.22	41.058		
3,000.0	2,925.4	2,973.2	2,963.5	12.2	6.4	173.98	189.3	46.8	435.2	424.7	10.58	41.140		
3,100.0	3,022.3	3,071.9	3,061.9	12.7	6.6	173.94	198.2	48.9	451.0	440.0	10.94	41.217		
3,200.0	3,119.3	3,170.7	3,160.2	13.1	6.8	173.90	207.0	50.9	466.7	455.4	11.30	41.289		
3,300.0	3,216.3	3,269.4	3,258.5	13.6	7.1	173.86	215.9	52.9	482.4	470.7	11.66	41.356		
3,400.0	3,313.2	3,368.2	3,356.9	14.0	7.3	173.83	224.8	54.9	498.1	486.1	12.03	41.419		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Rose 22-3D
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Reference Site:</b>	K22W Pad	<b>MD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rose 22-3D	<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> K22W Pad - Rose 22-9C - OH - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						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	-180.00	-98.7	0.0	98.7					
100.0	100.0	100.0	100.0	0.1	0.1	-180.00	-98.7	0.0	98.7	98.4	0.27	362.516		
200.0	200.0	200.0	200.0	0.3	0.3	-180.00	-98.7	0.0	98.7	98.1	0.62	158.856 CC, ES		
300.0	300.0	298.9	298.8	0.5	0.5	178.05	-99.2	2.5	100.7	99.7	0.98	103.192		
400.0	399.8	396.9	396.5	0.7	0.7	174.24	-100.7	9.9	109.2	107.8	1.36	80.281		
500.0	499.1	493.2	492.0	1.0	1.0	169.20	-103.1	22.0	125.0	123.2	1.79	69.920		
600.0	597.6	586.8	584.2	1.3	1.3	164.05	-106.4	38.3	148.6	146.4	2.26	65.671		
700.0	695.1	677.2	672.2	1.7	1.7	159.46	-110.4	58.1	180.1	177.3	2.79	64.557		
800.0	792.1	765.9	757.7	2.1	2.2	155.74	-115.0	81.5	216.8	213.4	3.37	64.312		
900.0	889.1	857.8	845.9	2.6	2.6	152.77	-120.1	106.6	254.7	250.7	3.99	63.908		
1,000.0	986.0	949.6	934.1	3.0	3.1	150.56	-125.1	131.8	293.1	288.5	4.61	63.587		
1,100.0	1,083.0	1,041.4	1,022.2	3.5	3.6	148.86	-130.1	156.9	331.7	326.5	5.24	63.324		
1,200.0	1,180.0	1,133.2	1,110.4	3.9	4.1	147.51	-135.2	182.1	370.6	364.7	5.87	63.109		
1,300.0	1,276.9	1,225.1	1,198.6	4.4	4.6	146.42	-140.2	207.3	409.6	403.1	6.51	62.933		
1,400.0	1,373.9	1,316.9	1,286.7	4.9	5.0	145.52	-145.3	232.4	448.7	441.6	7.15	62.788		
1,500.0	1,470.9	1,408.7	1,374.9	5.3	5.5	144.76	-150.3	257.6	487.9	480.1	7.79	62.666 SF		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Rose 22-3D
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Reference Site:</b>	K22W Pad	<b>MD Reference:</b>	KB=22' @ 6972.0ft (Patterson 303)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rose 22-3D	<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' @ 6972.0ft (Patterson 303)  
 Offset Depths are relative to Offset Datum  
 Central Meridian is -105.500000 °

Coordinates are relative to: Rose 22-3D  
 Coordinate System is US State Plane 1983, Colorado Central Zone  
 Grid Convergence at Surface is: -1.43°

