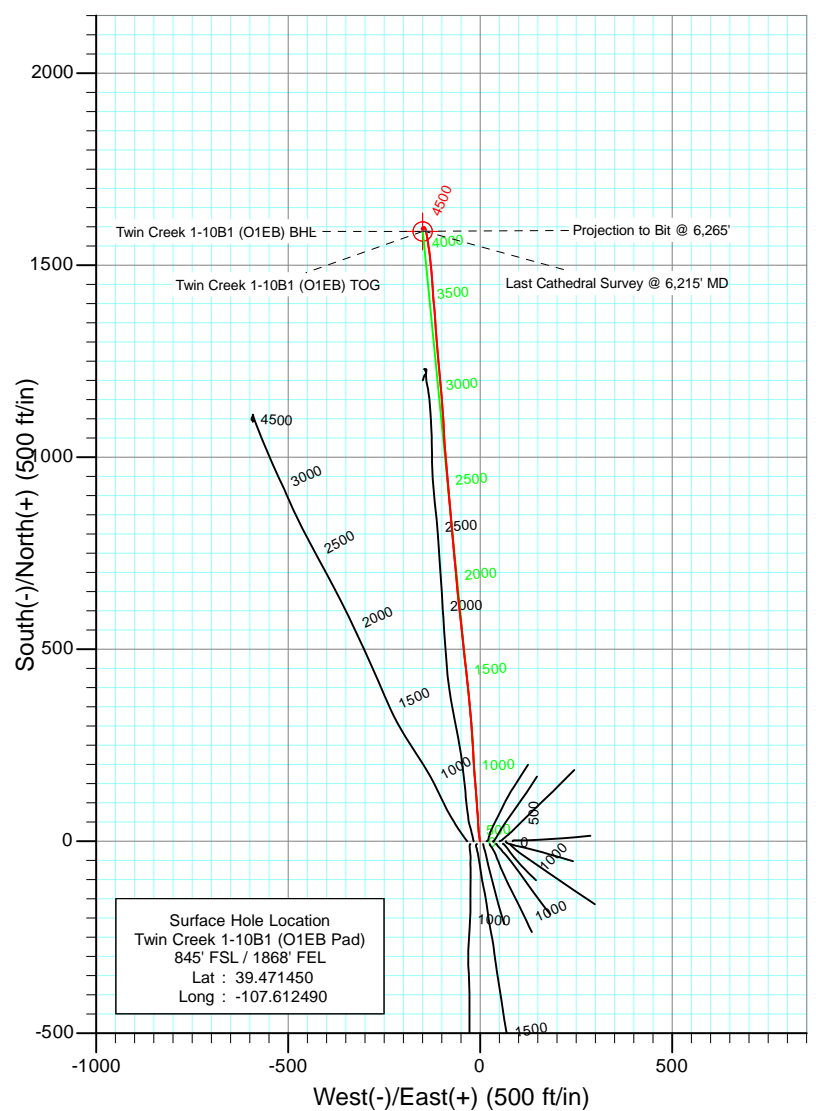
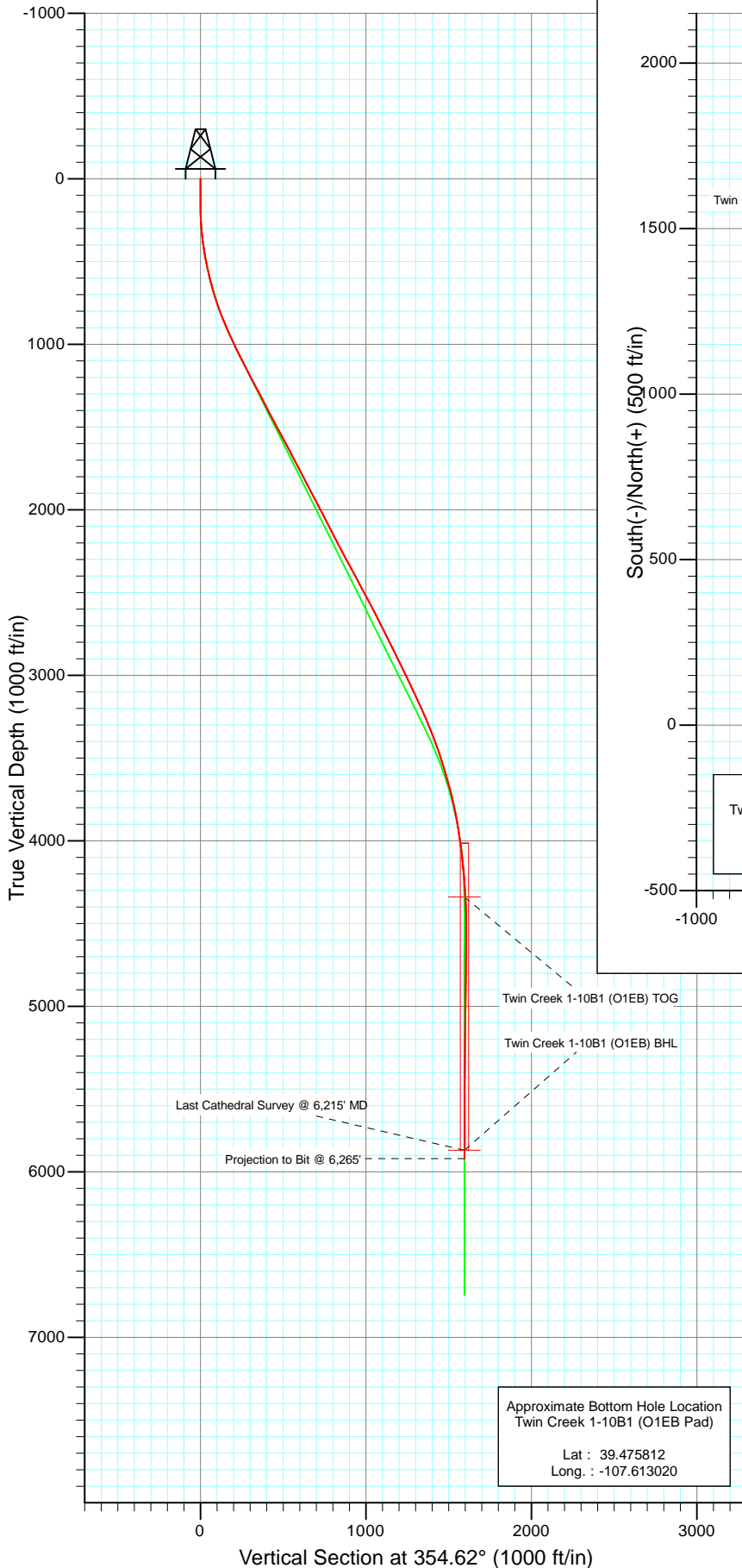




Project: Mamm Creek  
 Site: SWSE S1-T7S-R92W (O1EB Pad)  
 Well: Twin Creek 1-10B1 (O1EB Pad)  
 Wellbore: DD  
 Design: FINAL



Azimuths to True North  
 Magnetic North: 10.27°

Magnetic Field  
 Strength: 52355.5nT  
 Dip Angle: 65.81°  
 Date: 10/8/2010  
 Model: IGRF2010

DESIGN DETAILS: DD

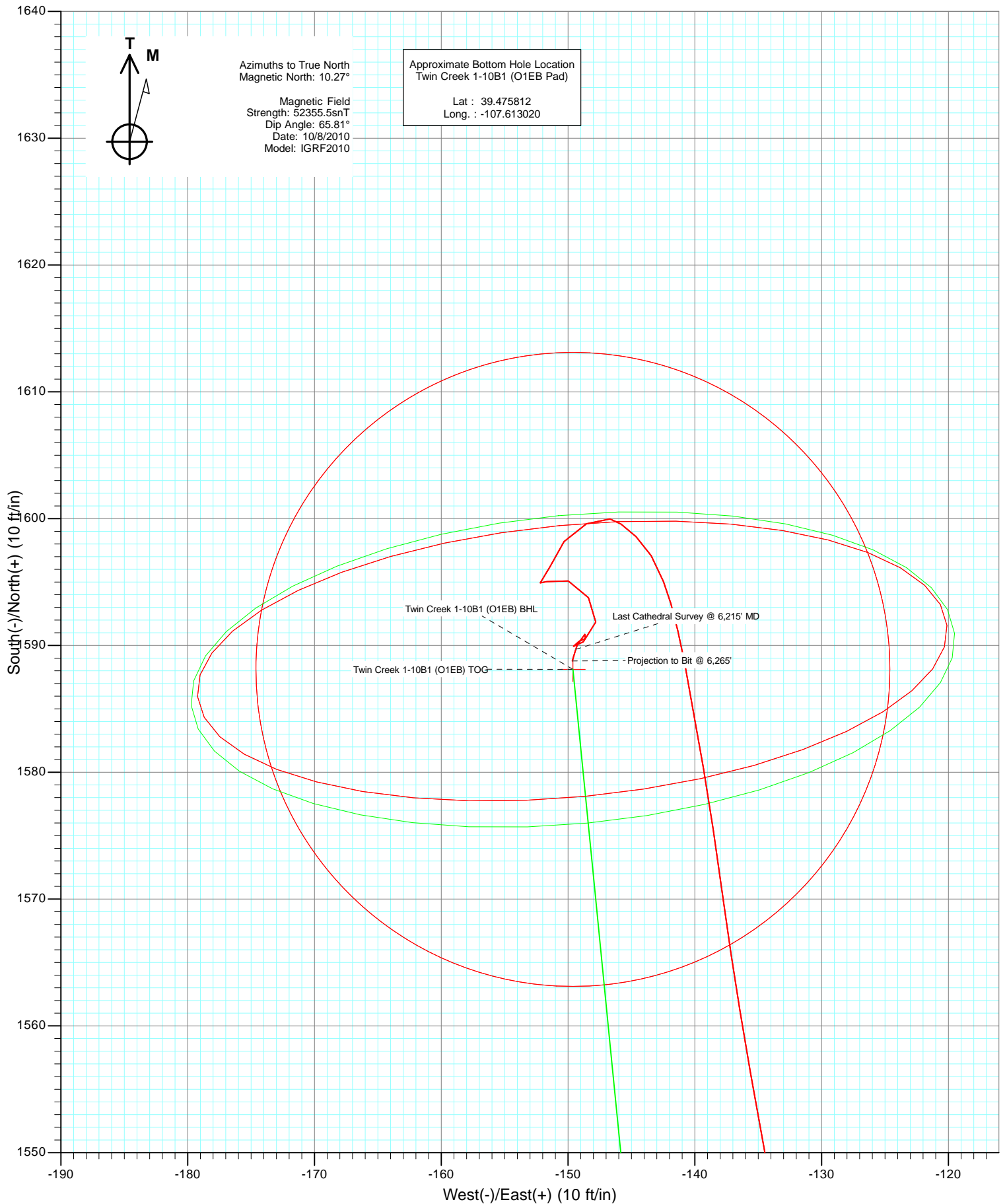
105383 (SH) 105443 (MH): KR

KBE @ 6084.0ft (Nabors M15)

Target	Azimuth	Origin	N/S	E/W	From TVD
Twin Creek 1-10B1 (O1EB) BHL	354.62	Slot	0.0	0.0	0.0



Project: Mamm Creek  
Site: SWSE S1-T7S-R92W (O1EB Pad)  
Well: Twin Creek 1-10B1 (O1EB Pad)  
Wellbore: DD  
Design: FINAL



# Cathedral Energy

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Twin Creek 1-10B1 (O1EB Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 6084.0ft (Nabors M15)
<b>Site:</b>	SWSE S1-T7S-R92W (O1EB Pad)	<b>MD Reference:</b>	KBE @ 6084.0ft (Nabors M15)
<b>Well:</b>	Twin Creek 1-10B1 (O1EB Pad)	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	DD	<b>Database:</b>	EDM 5000.1 US Multi Users DB

<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		

<b>Site</b>	SWSE S1-T7S-R92W (O1EB Pad)			
<b>Site Position:</b>		<b>Northing:</b>	1,603,540.14 ft	<b>Latitude:</b> 39.471450
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,403,755.74 ft	<b>Longitude:</b> -107.612310
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b> -1.33 °

<b>Well</b>	Twin Creek 1-10B1 (O1EB Pad)			
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>	1,603,541.29 ft
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>	2,403,704.94 ft
<b>Position Uncertainty</b>	0.0 ft	<b>Wellhead Elevation:</b>	ft	<b>Ground Level:</b> 6,062.0 ft

<b>Wellbore</b>	DD				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	10/8/2010	10.26	65.81	52,355

<b>Design</b>	DD			
<b>Audit Notes:</b>				
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b> 0.0
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	354.62

<b>Survey Program</b>	<b>Date</b>	10/18/2010		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
124.0	6,265.0	Survey #1 (DD)	MWD	Geolink MWD

<b>Survey</b>									
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Formations / Comments</b>
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
124.0	0.30	288.00	124.0	0.1	-0.3	0.1	0.24	0.24	
154.0	0.80	345.30	154.0	0.3	-0.4	0.4	2.29	1.67	
185.0	1.30	350.20	185.0	0.9	-0.6	0.9	1.64	1.61	
216.0	1.80	357.00	216.0	1.7	-0.6	1.8	1.72	1.61	
247.0	2.60	350.00	247.0	2.9	-0.8	3.0	2.72	2.58	
277.0	3.70	355.40	276.9	4.5	-1.0	4.6	3.79	3.67	
308.0	4.60	354.00	307.8	6.8	-1.2	6.8	2.92	2.90	
339.0	6.00	348.90	338.7	9.6	-1.6	9.7	4.76	4.52	
370.0	7.10	351.80	369.5	13.1	-2.2	13.2	3.70	3.55	
401.0	8.40	349.70	400.2	17.2	-2.9	17.4	4.29	4.19	
431.0	9.20	351.50	429.9	21.7	-3.6	22.0	2.82	2.67	
462.0	10.20	355.60	460.4	26.9	-4.2	27.2	3.92	3.23	

# Cathedral Energy

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Twin Creek 1-10B1 (O1EB Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 6084.0ft (Nabors M15)
<b>Site:</b>	SWSE S1-T7S-R92W (O1EB Pad)	<b>MD Reference:</b>	KBE @ 6084.0ft (Nabors M15)
<b>Well:</b>	Twin Creek 1-10B1 (O1EB Pad)	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	DD	<b>Database:</b>	EDM 5000.1 US Multi Users DB

### Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
492.0	11.00	356.70	489.9	32.4	-4.6	32.7	2.75	2.67	
523.0	11.60	357.40	520.3	38.5	-4.9	38.8	1.99	1.94	
554.0	12.40	358.10	550.6	44.9	-5.2	45.2	2.62	2.58	
585.0	13.40	357.60	580.8	51.8	-5.4	52.1	3.25	3.23	
615.0	13.80	356.60	610.0	58.9	-5.8	59.2	1.55	1.33	
646.0	14.80	356.10	640.0	66.5	-6.3	66.8	3.25	3.23	
677.0	15.50	355.10	670.0	74.6	-6.9	74.9	2.41	2.26	
708.0	17.00	355.20	699.7	83.3	-7.6	83.6	4.84	4.84	
738.0	17.90	356.00	728.3	92.2	-8.3	92.6	3.10	3.00	
768.0	18.90	355.80	756.8	101.7	-9.0	102.1	3.34	3.33	
799.0	20.30	356.10	786.0	112.0	-9.7	112.5	4.53	4.52	
830.0	21.10	355.90	815.0	123.0	-10.5	123.4	2.59	2.58	
861.0	22.00	355.80	843.8	134.3	-11.3	134.8	2.91	2.90	
892.0	22.80	355.00	872.5	146.1	-12.3	146.6	2.76	2.58	
923.0	23.10	354.90	901.0	158.1	-13.3	158.7	0.98	0.97	
954.0	23.60	355.40	929.5	170.4	-14.4	171.0	1.73	1.61	
985.0	24.80	356.60	957.8	183.1	-15.2	183.7	4.18	3.87	
1,046.0	26.10	357.40	1,012.9	209.2	-16.6	209.9	2.20	2.13	
1,110.0	26.50	356.70	1,070.2	237.6	-18.1	238.2	0.79	0.62	
1,256.0	27.60	355.10	1,200.3	303.8	-22.8	304.6	0.90	0.75	
1,351.0	28.30	354.90	1,284.2	348.1	-26.7	349.1	0.74	0.74	
1,446.0	26.90	355.20	1,368.4	392.0	-30.5	393.1	1.48	-1.47	
1,541.0	28.20	352.90	1,452.6	435.7	-35.1	437.0	1.77	1.37	
1,636.0	28.10	353.20	1,536.4	480.2	-40.5	481.8	0.18	-0.11	
1,731.0	28.30	354.30	1,620.1	524.8	-45.4	526.7	0.59	0.21	
1,826.0	27.20	354.10	1,704.2	568.8	-49.9	571.0	1.16	-1.16	
1,921.0	28.10	353.50	1,788.3	612.6	-54.6	615.0	0.99	0.95	
2,016.0	27.50	354.30	1,872.3	656.7	-59.3	659.3	0.74	-0.63	
2,111.0	27.10	355.70	1,956.8	700.1	-63.1	702.9	0.80	-0.42	
2,206.0	27.20	353.70	2,041.3	743.2	-67.1	746.3	0.97	0.11	
2,302.0	27.40	355.20	2,126.6	787.1	-71.4	790.3	0.75	0.21	
2,397.0	27.90	354.90	2,210.8	831.0	-75.2	834.4	0.55	0.53	
2,492.0	28.00	355.60	2,294.7	875.3	-78.9	878.9	0.36	0.11	
2,587.0	28.80	354.50	2,378.2	920.4	-82.8	924.1	1.01	0.84	
2,682.0	27.50	355.40	2,462.0	965.0	-86.7	968.9	1.44	-1.37	
2,777.0	28.40	354.80	2,545.9	1,009.4	-90.6	1,013.4	0.99	0.95	
2,872.0	27.00	357.40	2,630.0	1,053.4	-93.6	1,057.5	1.95	-1.47	
2,967.0	26.20	356.10	2,715.0	1,095.9	-96.0	1,100.1	1.04	-0.84	
3,062.0	27.20	356.00	2,799.9	1,138.5	-98.9	1,142.7	1.05	1.05	
3,157.0	26.30	355.10	2,884.7	1,181.1	-102.2	1,185.5	1.04	-0.95	
3,252.0	25.80	354.00	2,970.0	1,222.6	-106.2	1,227.2	0.73	-0.53	
3,347.0	24.90	355.50	3,055.9	1,263.1	-109.9	1,267.9	1.16	-0.95	
3,441.0	25.80	355.70	3,140.8	1,303.2	-113.0	1,308.1	0.96	0.96	
3,536.0	23.70	355.90	3,227.1	1,342.9	-115.9	1,347.9	2.21	-2.21	
3,631.0	21.90	354.70	3,314.7	1,379.6	-118.9	1,384.7	1.96	-1.89	
3,726.0	20.50	356.10	3,403.2	1,413.8	-121.7	1,419.0	1.57	-1.47	
3,821.0	17.80	356.60	3,493.0	1,444.9	-123.7	1,450.2	2.85	-2.84	
3,916.0	17.00	354.00	3,583.6	1,473.2	-126.0	1,478.6	1.17	-0.84	
4,011.0	14.90	355.20	3,675.0	1,499.2	-128.5	1,504.7	2.24	-2.21	
4,106.0	12.70	355.20	3,767.2	1,521.8	-130.4	1,527.3	2.32	-2.32	
4,201.0	10.20	349.60	3,860.3	1,540.5	-132.8	1,546.2	2.88	-2.63	
4,296.0	9.30	350.10	3,954.0	1,556.3	-135.6	1,562.2	0.95	-0.95	
4,391.0	7.30	352.20	4,048.0	1,569.9	-137.7	1,575.9	2.13	-2.11	

# Cathedral Energy

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Twin Creek 1-10B1 (O1EB Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 6084.0ft (Nabors M15)
<b>Site:</b>	SWSE S1-T7S-R92W (O1EB Pad)	<b>MD Reference:</b>	KBE @ 6084.0ft (Nabors M15)
<b>Well:</b>	Twin Creek 1-10B1 (O1EB Pad)	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	DD	<b>Database:</b>	EDM 5000.1 US Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
4,486.0	5.50	350.50	4,142.4	1,580.3	-139.3	1,586.4	1.91	-1.89	
4,580.0	4.90	349.10	4,236.0	1,588.7	-140.8	1,594.9	0.65	-0.64	
4,675.0	3.00	339.40	4,330.7	1,595.0	-142.5	1,601.4	2.11	-2.00	
4,769.0	2.20	313.70	4,424.7	1,598.6	-144.6	1,605.1	1.48	-0.85	
4,864.0	0.90	280.30	4,519.6	1,600.0	-146.7	1,606.7	1.61	-1.37	
4,959.0	1.50	245.40	4,614.6	1,599.6	-148.5	1,606.5	0.97	0.63	
5,054.0	1.30	215.40	4,709.6	1,598.2	-150.3	1,605.3	0.79	-0.21	
5,149.0	1.40	203.60	4,804.5	1,596.3	-151.4	1,603.4	0.31	0.11	
5,244.0	0.50	232.00	4,899.5	1,594.9	-152.2	1,602.2	1.04	-0.95	
5,339.0	1.10	67.50	4,994.5	1,595.0	-151.7	1,602.2	1.67	0.63	
5,433.0	1.10	108.70	5,088.5	1,595.1	-150.0	1,602.1	0.82	0.00	
5,529.0	1.50	144.80	5,184.5	1,593.8	-148.4	1,600.7	0.93	0.42	
5,624.0	1.10	188.90	5,279.5	1,591.8	-147.8	1,598.7	1.10	-0.42	
5,719.0	1.30	231.80	5,374.4	1,590.3	-148.8	1,597.2	0.94	0.21	
5,814.0	0.40	15.70	5,469.4	1,589.9	-149.6	1,597.0	1.73	-0.95	
5,909.0	0.40	79.40	5,564.4	1,590.3	-149.1	1,597.3	0.44	0.00	
6,004.0	0.30	44.60	5,659.4	1,590.6	-148.6	1,597.5	0.24	-0.11	
6,099.0	0.30	305.00	5,754.4	1,590.9	-148.7	1,597.8	0.48	0.00	
6,194.0	1.20	202.40	5,849.4	1,590.1	-149.2	1,597.1	1.37	0.95	
6,215.0	1.10	196.40	5,870.4	1,589.7	-149.4	1,596.7	0.74	-0.48	Last Cathedral Survey @ 6,215' MD
6,265.0	1.10	196.40	5,920.4	1,588.8	-149.7	1,595.8	0.00	0.00	Projection to Bit @ 6,265'

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Twin Creek 1-10B1 (O1EB Pad)	0.00	0.00	4,339.0	1,588.1	-149.6	1,605,132.45	2,403,592.30	39.475810	-107.613020
- survey misses target center by 10.1ft at 4683.2ft MD (4338.9 TVD, 1595.4 N, -142.6 E)									
- Point									
Twin Creek 1-10B1 (O1EB Pad)	0.00	0.00	5,869.0	1,588.1	-149.6	1,605,132.45	2,403,592.30	39.475810	-107.613020
- survey misses target center by 1.6ft at 6213.6ft MD (5869.0 TVD, 1589.7 N, -149.4 E)									
- Circle (radius 25.0)									

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
6,215.0	5,870.4	1,589.7	-149.4	Last Cathedral Survey @ 6,215' MD
6,265.0	5,920.4	1,588.8	-149.7	Projection to Bit @ 6,265'

Checked By: _____	Approved By: _____	Date: _____
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