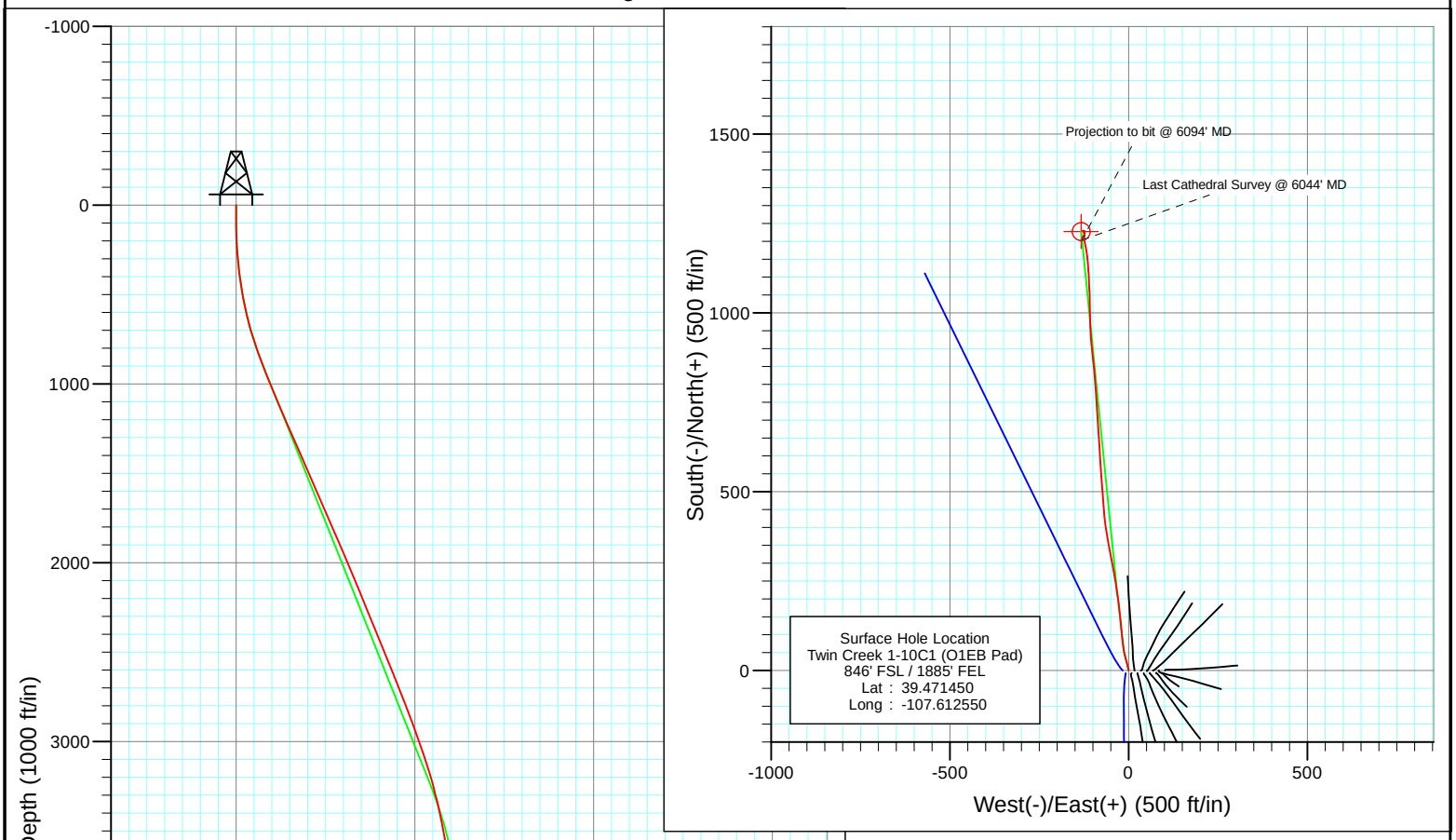
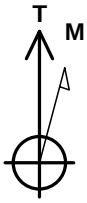
Project: Mamm Creek
Site: SWSE S1-T7S-R92W (O1EB Pad)
Well: Twin Creek 1-10C1 (O1EB Pad)
Wellbore: Final
Design: DD





Azimuths to True North
Magnetic North: 10.27°

Magnetic Field
Strength: 52359.4snT
Dip Angle: 65.81°
Date: 9/24/2010
Model: IGRF2010

DESIGN DETAILS: DD
105386 (SH), 105408 (MH): KR
KBE @ 6084.0ft (Nabors M15)

Target	Azimuth	Origin	N/S	E/W	From TVD
Twin Creek 1-10C1 (O1EB) BHL	353.83	Slot	0.0	0.0	0.0

Project: Mamm Creek
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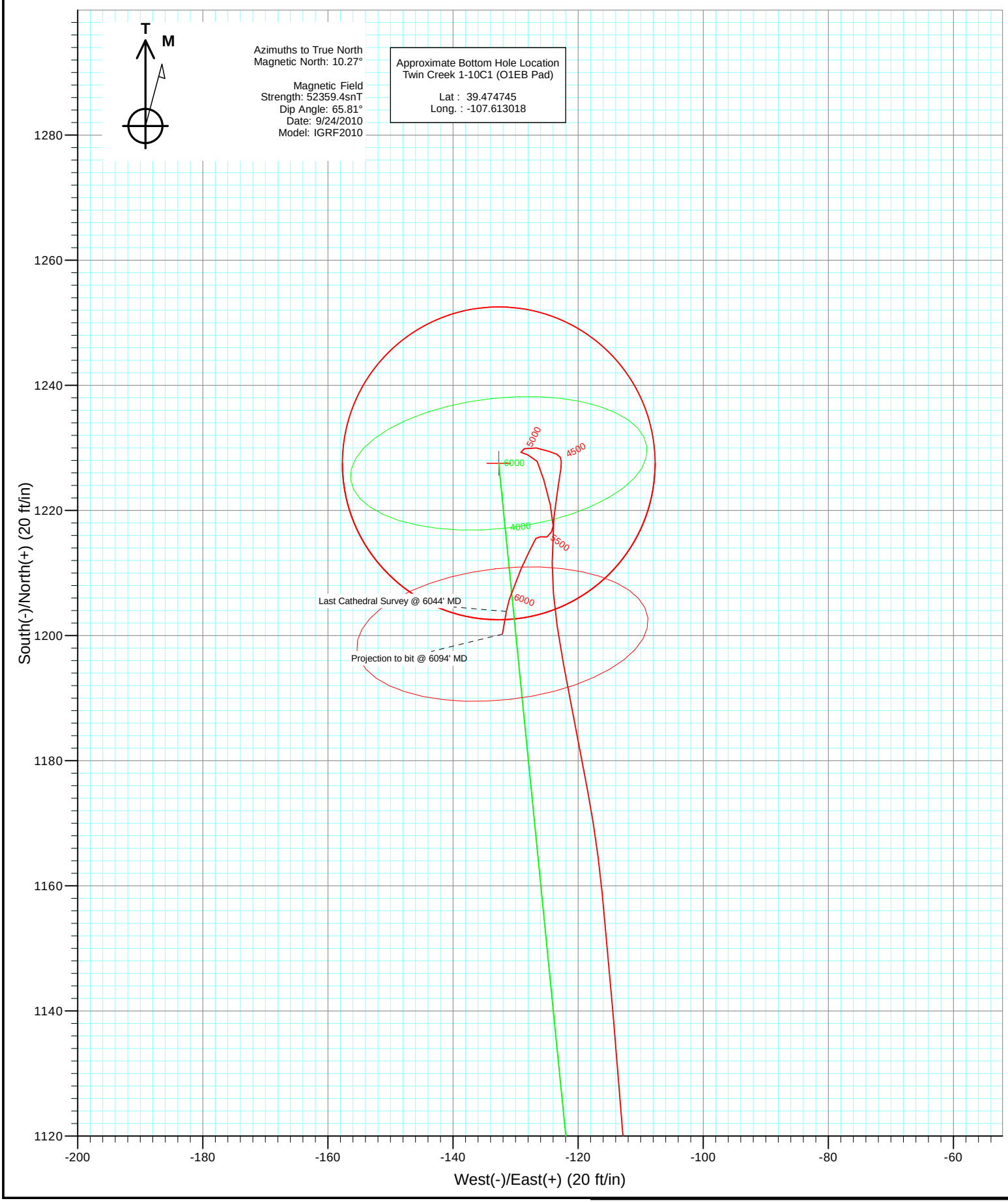
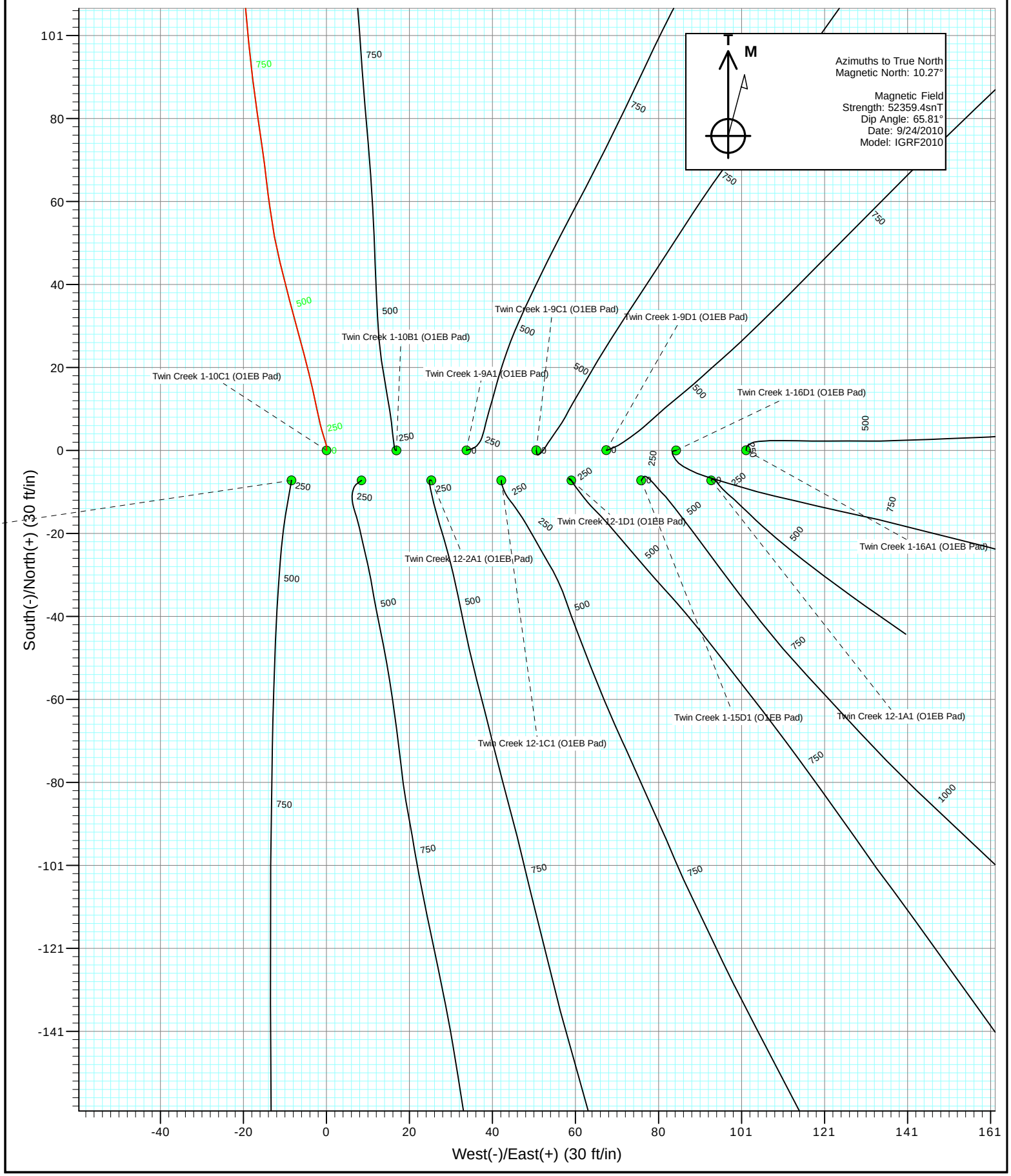


Project: Mamm Creek
Site: SWSE S1-T7S-R92W (O1EB Pad)
Well: Twin Creek 1-10C1 (O1EB Pad)
Wellbore: Final
Design: DD



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Twin Creek 1-10C1 (O1EB Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 6084.0ft (Nabors M15)
Site:	SWSE S1-T7S-R92W (O1EB Pad)	**MD Reference:**	KBE @ 6084.0ft (Nabors M15)
Well:	Twin Creek 1-10C1 (O1EB Pad)	**North Reference:**	True
Wellbore:	DD	**Survey Calculation Method:**	Minimum Curvature
Design:	DD	**Database:**	EDM 5000.1 US Multi Users DB

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 SWSE S1-T7S-R92W (O1EB Pad)

Site Position:		**Northing:**	1,603,540.14 ft	**Latitude:**	39.471450
From:	Lat/Long	**Easting:**	2,403,755.74 ft	**Longitude:**	-107.612310
Position Uncertainty:	0.0 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	-1.33 °

Well Twin Creek 1-10C1 (O1EB Pad)

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,603,541.66 ft	**Latitude:**	39.471450
	+E/-W	0.0 ft	**Easting:**	2,403,688.01 ft	**Longitude:**	-107.612550
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	6,062.0 ft

Wellbore DD

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/24/2010	10.27	65.81	52,359

Design DD

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	353.83

Survey Program **Date** 10/4/2010

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
124.0	6,094.0	Survey #1 (DD)	MWD	Geolink MWD

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
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
124.0	0.80	358.50	124.0	0.9	0.0	0.9	0.65	0.65	
154.0	1.10	352.50	154.0	1.4	-0.1	1.4	1.05	1.00	
185.0	2.00	340.10	185.0	2.2	-0.3	2.2	3.08	2.90	
216.0	2.60	341.40	216.0	3.3	-0.7	3.4	1.94	1.94	
247.0	3.80	346.00	246.9	5.0	-1.2	5.1	3.96	3.87	
277.0	5.10	346.30	276.8	7.3	-1.7	7.4	4.33	4.33	
308.0	5.90	348.10	307.7	10.2	-2.4	10.4	2.64	2.58	
339.0	6.20	348.30	338.5	13.4	-3.0	13.6	0.97	0.97	
370.0	7.10	347.30	369.3	16.9	-3.8	17.2	2.93	2.90	
401.0	7.50	344.40	400.0	20.7	-4.8	21.1	1.75	1.29	
431.0	8.10	345.00	429.8	24.6	-5.8	25.1	2.02	2.00	
462.0	9.20	345.50	460.4	29.1	-7.0	29.7	3.56	3.55	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Twin Creek 1-10C1 (O1EB Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 6084.0ft (Nabors M15)
Site:	SWSE S1-T7S-R92W (O1EB Pad)	**MD Reference:**	KBE @ 6084.0ft (Nabors M15)
Well:	Twin Creek 1-10C1 (O1EB Pad)	**North Reference:**	True
Wellbore:	DD	**Survey Calculation Method:**	Minimum Curvature
Design:	DD	**Database:**	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	10.50	345.10	490.0	34.1	-8.3	34.8	4.34	4.33	
523.0	11.00	345.80	520.4	39.7	-9.8	40.5	1.67	1.61	
554.0	11.60	346.00	550.8	45.6	-11.3	46.5	1.94	1.94	
585.0	12.20	349.70	581.2	51.8	-12.6	52.9	3.13	1.94	
615.0	12.90	351.90	610.4	58.3	-13.6	59.4	2.83	2.33	
646.0	14.30	353.60	640.6	65.5	-14.6	66.7	4.70	4.52	
677.0	15.30	351.70	670.5	73.3	-15.6	74.6	3.59	3.23	
708.0	16.20	351.80	700.4	81.7	-16.8	83.0	2.90	2.90	
738.0	16.70	353.00	729.1	90.1	-17.9	91.5	2.02	1.67	
768.0	17.40	354.70	757.8	98.8	-18.8	100.3	2.86	2.33	
799.0	18.70	355.30	787.3	108.4	-19.7	109.9	4.24	4.19	
861.0	20.90	354.80	845.6	129.3	-21.5	130.9	3.56	3.55	
953.0	21.40	353.00	931.4	162.3	-25.0	164.1	0.89	0.54	
1,046.0	22.40	353.10	1,017.7	196.8	-29.2	198.8	1.08	1.08	
1,104.0	22.50	352.30	1,071.3	218.7	-32.0	220.9	0.55	0.17	
1,264.0	23.80	348.70	1,218.5	280.7	-42.5	283.7	1.20	0.81	
1,360.0	23.80	349.40	1,306.3	318.8	-49.8	322.3	0.29	0.00	
1,455.0	23.70	350.10	1,393.2	356.4	-56.6	360.4	0.31	-0.11	
1,550.0	23.50	351.50	1,480.3	394.0	-62.7	398.4	0.63	-0.21	
1,645.0	23.40	353.70	1,567.5	431.4	-67.6	436.2	0.93	-0.11	
1,741.0	23.30	356.20	1,655.6	469.3	-70.9	474.2	1.04	-0.10	
1,836.0	23.80	354.90	1,742.7	507.2	-73.9	512.2	0.76	0.53	
1,931.0	23.60	356.90	1,829.7	545.2	-76.6	550.3	0.87	-0.21	
2,026.0	23.50	355.90	1,916.8	583.1	-79.0	588.2	0.43	-0.11	
2,121.0	22.60	357.30	2,004.2	620.3	-81.2	625.4	1.11	-0.95	
2,216.0	23.00	355.60	2,091.7	657.0	-83.5	662.2	0.81	0.42	
2,311.0	22.50	356.30	2,179.4	693.6	-86.1	698.9	0.60	-0.53	
2,406.0	22.20	356.50	2,267.2	729.7	-88.4	735.0	0.33	-0.32	
2,501.0	22.10	355.50	2,355.2	765.4	-90.9	770.8	0.41	-0.11	
2,596.0	22.10	356.10	2,443.2	801.1	-93.5	806.5	0.24	0.00	
2,691.0	22.60	355.30	2,531.1	837.1	-96.2	842.6	0.62	0.53	
2,786.0	22.00	353.20	2,619.0	873.0	-99.8	878.6	1.05	-0.63	
2,881.0	21.60	354.50	2,707.2	908.0	-103.6	913.9	0.66	-0.42	
2,976.0	20.70	356.80	2,795.8	942.2	-106.2	948.2	1.29	-0.95	
3,071.0	20.50	358.50	2,884.7	975.6	-107.6	981.5	0.66	-0.21	
3,166.0	19.90	358.60	2,973.9	1,008.4	-108.4	1,014.2	0.63	-0.63	
3,261.0	18.90	359.00	3,063.5	1,039.9	-109.1	1,045.6	1.06	-1.05	
3,356.0	17.80	357.20	3,153.7	1,069.8	-110.0	1,075.5	1.30	-1.16	
3,451.0	14.90	357.40	3,244.8	1,096.5	-111.3	1,102.1	3.05	-3.05	
3,546.0	13.00	355.10	3,337.0	1,119.4	-112.8	1,125.0	2.08	-2.00	
3,641.0	11.80	355.70	3,429.8	1,139.7	-114.4	1,145.4	1.27	-1.26	
3,736.0	11.20	354.00	3,522.9	1,158.6	-116.1	1,164.3	0.73	-0.63	
3,831.0	9.30	349.40	3,616.4	1,175.3	-118.5	1,181.2	2.18	-2.00	
3,926.0	8.00	348.80	3,710.3	1,189.3	-121.2	1,195.5	1.37	-1.37	
4,021.0	6.80	351.40	3,804.5	1,201.4	-123.3	1,207.7	1.31	-1.26	
4,117.0	5.50	0.30	3,899.9	1,211.6	-124.1	1,217.9	1.68	-1.35	
4,211.0	3.30	5.00	3,993.6	1,218.8	-123.9	1,225.1	2.37	-2.34	
4,306.0	2.40	11.50	4,088.5	1,223.5	-123.2	1,229.6	1.01	-0.95	
4,401.0	1.60	4.90	4,183.5	1,226.7	-122.7	1,232.8	0.87	-0.84	
4,496.0	0.60	334.20	4,278.4	1,228.5	-122.8	1,234.6	1.19	-1.05	
4,589.0	0.50	280.00	4,371.4	1,229.0	-123.4	1,235.2	0.55	-0.11	
4,685.0	1.10	293.10	4,467.4	1,229.5	-124.7	1,235.7	0.65	0.62	
4,779.0	1.40	279.00	4,561.4	1,230.0	-126.7	1,236.5	0.45	0.32	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Twin Creek 1-10C1 (O1EB Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 6084.0ft (Nabors M15)
Site:	SWSE S1-T7S-R92W (O1EB Pad)	**MD Reference:**	KBE @ 6084.0ft (Nabors M15)
Well:	Twin Creek 1-10C1 (O1EB Pad)	**North Reference:**	True
Wellbore:	DD	**Survey Calculation Method:**	Minimum Curvature
Design:	DD	**Database:**	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
4,874.0	1.00	248.50	4,656.4	1,229.9	-128.6	1,236.6	0.78	-0.42	
4,969.0	0.40	139.10	4,751.4	1,229.3	-129.1	1,236.1	1.26	-0.63	
5,064.0	1.10	100.30	4,846.4	1,228.9	-128.0	1,235.5	0.87	0.74	
5,159.0	1.30	147.10	4,941.4	1,227.8	-126.5	1,234.3	1.02	0.21	
5,254.0	2.50	167.10	5,036.3	1,224.9	-125.5	1,231.3	1.42	1.26	
5,349.0	2.50	163.50	5,131.2	1,220.9	-124.4	1,227.2	0.17	0.00	
5,443.0	1.70	185.60	5,225.2	1,217.5	-124.0	1,223.8	1.20	-0.85	
5,479.0	1.40	205.30	5,261.1	1,216.6	-124.2	1,222.9	1.69	-0.83	
5,538.0	0.90	245.20	5,320.1	1,215.8	-125.0	1,222.2	1.55	-0.85	
5,634.0	0.60	310.60	5,416.1	1,215.8	-126.0	1,222.3	0.88	-0.31	
5,729.0	0.80	209.10	5,511.1	1,215.5	-126.7	1,222.1	1.15	0.21	
5,824.0	1.60	206.90	5,606.1	1,213.8	-127.7	1,220.5	0.84	0.84	
5,919.0	2.60	203.90	5,701.0	1,210.6	-129.1	1,217.5	1.06	1.05	
6,014.0	3.60	199.10	5,795.9	1,205.8	-131.0	1,212.9	1.09	1.05	
6,044.0	4.20	189.70	5,825.8	1,203.8	-131.5	1,211.0	2.92	2.00	
6,094.0	4.20	189.70	5,875.7	1,200.2	-132.1	1,207.5	0.00	0.00	

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
Twin Creek 1-10C1 (O1E	0.00	0.00	5,834.0	1,227.5	-132.7	1,604,771.95	2,403,583.91	39.474820	-107.613020
- survey misses target center by 25.1ft at 6044.0ft MD (5825.8 TVD, 1203.8 N, -131.5 E)									
- Circle (radius 25.0)									
Twin Creek 1-10C1 (O1E	0.00	0.00	3,979.0	1,227.5	-132.7	1,604,771.95	2,403,583.91	39.474820	-107.613020
- survey misses target center by 13.0ft at 4197.0ft MD (3979.7 TVD, 1218.0 N, -123.9 E)									
- Point									

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
6,044.0	5,825.8	1,203.8	-131.5	Last Cathedral Survey @ 6044' MD
6,094.0	5,875.7	1,200.2	-132.1	Projection to bit @ 6094' MD

Checked By: _____ Approved By: _____ Date: _____