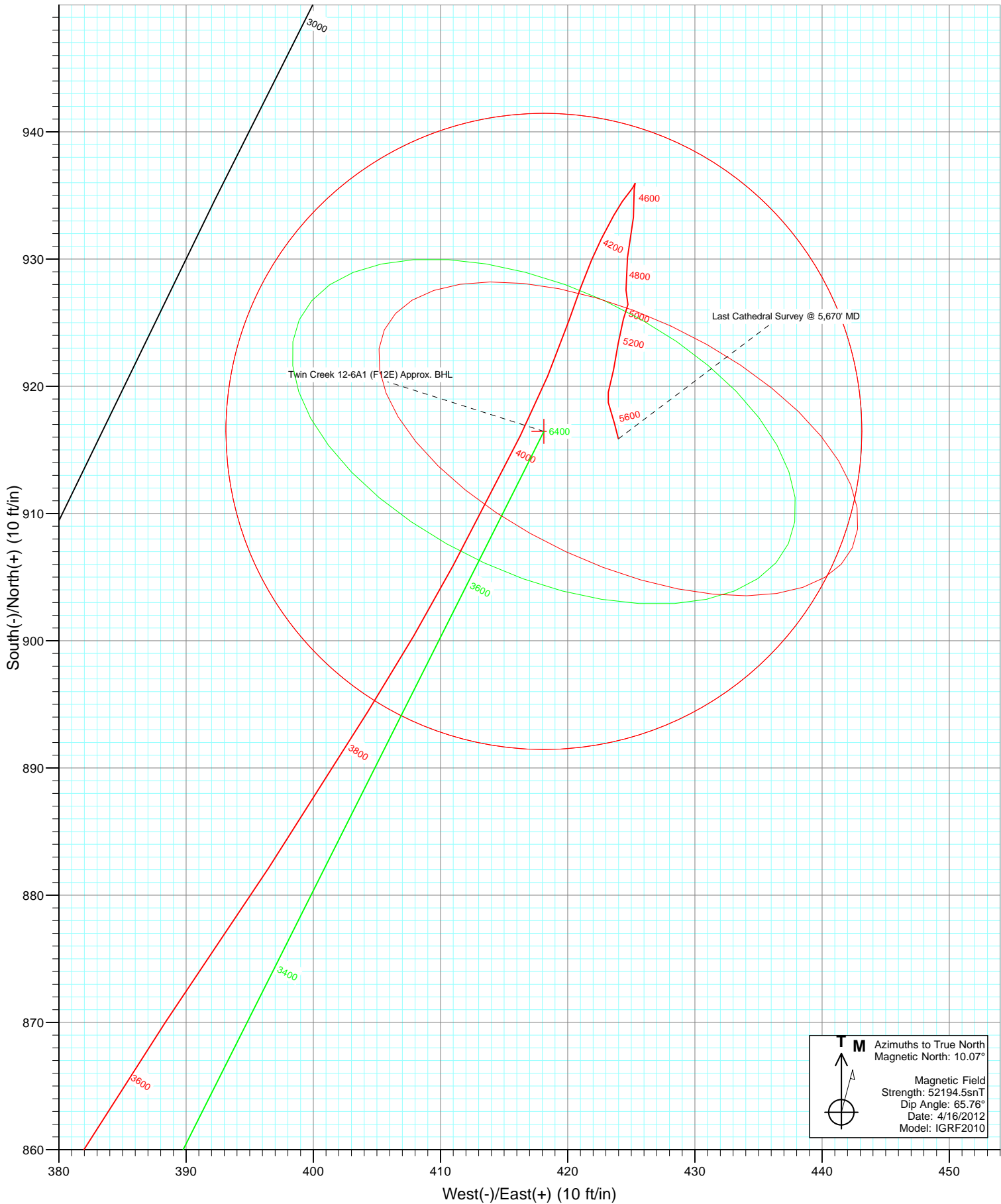


Approximate Bottom Hole Location
 Twin Creek 12-6A1 (F12E)
 Lat : 39° 27' 52.56 N
 Long : 107° 37' 2.20 W



T M Azimuths to True North
 Magnetic North: 10.07°

Magnetic Field
 Strength: 52194.5snT
 Dip Angle: 65.76°
 Date: 4/16/2012
 Model: IGRF2010

Cathedral Energy Services

Survey Report

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well Twin Creek 12-6A1 (F12E)
Project: Mamm Creek	TVD Reference: KBE @ 6167.0ft (Nabors M15)
Site: F12E Pad	MD Reference: KBE @ 6167.0ft (Nabors M15)
Well: Twin Creek 12-6A1 (F12E)	North Reference: True
Wellbore: DD	Survey Calculation Method: Minimum Curvature
Design: DD	Database: USA EDM 5000 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 F12E Pad				
Site Position:	Northing: 1,600,159.70 ft	Latitude: 39.462050		
From: Lat/Long	Easting: 2,401,852.74 ft	Longitude: -107.618770		
Position Uncertainty: 0.0 ft	Slot Radius: 13.200 in	Grid Convergence: -1.34 °		

Well Twin Creek 12-6A1 (F12E)				
Well Position	+N/-S 0.0 ft	Northing: 1,600,172.12 ft	Latitude: 39.462084	
	+E/-W 0.0 ft	Easting: 2,401,849.92 ft	Longitude: -107.618781	
Position Uncertainty	0.0 ft	Wellhead Elevation: ft	Ground Level: 6,145.0 ft	

Wellbore DD					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/16/2012	10.07	65.76	52,195

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	24.52

Survey Program		Date 5/8/2012		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
154.0	1,110.0	Survey #1 (DD)	MWD	Geolink MWD
1,256.0	5,670.0	Survey #2 (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	
154.0	1.00	329.60	154.0	1.2	-0.7	0.8	0.65	0.65	
185.0	0.90	330.60	185.0	1.6	-0.9	1.1	0.33	-0.32	
216.0	0.80	358.60	216.0	2.0	-1.1	1.4	1.36	-0.32	
247.0	0.60	13.00	247.0	2.4	-1.0	1.8	0.85	-0.65	
277.0	0.40	4.10	277.0	2.7	-1.0	2.0	0.71	-0.67	
308.0	0.50	27.00	308.0	2.9	-0.9	2.3	0.66	0.32	
338.0	0.50	8.60	338.0	3.1	-0.8	2.5	0.53	0.00	
369.0	0.70	18.60	369.0	3.5	-0.8	2.8	0.73	0.65	
400.0	0.80	18.30	400.0	3.8	-0.6	3.2	0.32	0.32	
430.0	0.80	9.40	430.0	4.2	-0.5	3.6	0.41	0.00	
461.0	1.10	8.70	461.0	4.8	-0.4	4.1	0.97	0.97	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Twin Creek 12-6A1 (F12E)
Project:	Mamm Creek	TVD Reference:	KBE @ 6167.0ft (Nabors M15)
Site:	F12E Pad	MD Reference:	KBE @ 6167.0ft (Nabors M15)
Well:	Twin Creek 12-6A1 (F12E)	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	USA EDM 5000 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	1.40	9.80	492.0	5.4	-0.3	4.8	0.97	0.97	
523.0	1.80	7.80	522.9	6.3	-0.2	5.6	1.30	1.29	
553.0	2.20	356.40	552.9	7.3	-0.2	6.6	1.87	1.33	
584.0	2.90	357.40	583.9	8.7	-0.3	7.8	2.26	2.26	
614.0	4.00	358.40	613.8	10.5	-0.3	9.4	3.67	3.67	
645.0	4.60	357.70	644.8	12.8	-0.4	11.5	1.94	1.94	
676.0	5.80	357.20	675.6	15.6	-0.5	14.0	3.87	3.87	
706.0	6.40	359.20	705.5	18.8	-0.6	16.9	2.12	2.00	
737.0	7.40	359.80	736.2	22.5	-0.7	20.2	3.23	3.23	
768.0	8.20	359.80	766.9	26.7	-0.7	24.1	2.58	2.58	
860.0	9.80	4.00	857.8	41.1	-0.1	37.3	1.88	1.74	
951.0	9.60	11.10	947.5	56.3	1.9	52.0	1.33	-0.22	
1,044.0	10.46	20.09	1,039.1	71.8	6.2	67.9	1.92	0.92	
1,110.0	11.34	19.47	1,103.9	83.6	10.5	80.4	1.35	1.33	
1,256.0	13.80	22.40	1,246.4	113.2	21.9	112.1	1.74	1.68	
1,351.0	16.30	23.70	1,338.1	135.9	31.6	136.7	2.66	2.63	
1,447.0	19.80	25.60	1,429.4	162.9	44.0	166.5	3.70	3.65	
1,542.0	23.60	27.70	1,517.6	194.3	59.8	201.6	4.08	4.00	
1,637.0	26.90	29.20	1,603.6	229.9	79.1	242.0	3.54	3.47	
1,732.0	28.10	27.20	1,687.8	268.5	99.9	285.8	1.59	1.26	
1,826.0	29.40	23.90	1,770.2	309.3	119.3	330.9	2.18	1.38	
1,921.0	29.80	24.50	1,852.8	352.1	138.6	377.9	0.52	0.42	
2,016.0	29.90	23.10	1,935.2	395.4	157.6	425.1	0.74	0.11	
2,111.0	27.70	23.30	2,018.5	437.4	175.7	470.9	2.32	-2.32	
2,207.0	27.60	21.60	2,103.5	478.6	192.7	515.4	0.83	-0.10	
2,302.0	27.30	25.20	2,187.8	518.8	210.1	559.2	1.77	-0.32	
2,397.0	26.70	26.00	2,272.5	557.7	228.7	602.3	0.74	-0.63	
2,492.0	24.50	25.60	2,358.1	594.6	246.6	643.3	2.32	-2.32	
2,587.0	21.60	27.40	2,445.6	627.9	263.1	680.5	3.14	-3.05	
2,681.0	21.10	27.30	2,533.1	658.3	278.8	714.7	0.53	-0.53	
2,776.0	20.20	27.90	2,622.0	688.0	294.4	748.1	0.97	-0.95	
2,871.0	17.50	29.10	2,711.9	715.0	309.0	778.8	2.87	-2.84	
2,965.0	16.70	25.50	2,801.7	739.5	321.7	806.3	1.41	-0.85	
3,060.0	15.70	25.80	2,893.0	763.4	333.1	832.8	1.06	-1.05	
3,156.0	15.20	25.90	2,985.5	786.5	344.3	858.4	0.52	-0.52	
3,250.0	13.60	23.40	3,076.6	807.7	354.1	881.8	1.83	-1.70	
3,345.0	11.90	26.70	3,169.2	826.7	362.9	902.7	1.95	-1.79	
3,440.0	10.20	30.60	3,262.4	842.7	371.6	920.9	1.95	-1.79	
3,535.0	9.80	30.50	3,356.0	856.9	380.0	937.3	0.42	-0.42	
3,630.0	9.10	34.80	3,449.7	870.0	388.4	952.7	1.05	-0.74	
3,724.0	8.80	32.80	3,542.6	882.2	396.5	967.2	0.46	-0.32	
3,808.7	8.80	32.09	3,626.3	893.1	403.5	980.0	0.13	0.00	Twin Creek 12-6A1 (F12E) TOG
3,819.0	8.80	32.00	3,636.4	894.4	404.3	981.6	0.13	0.00	
3,914.0	7.30	28.20	3,730.5	905.9	411.0	994.8	1.67	-1.58	
4,009.0	6.60	26.40	3,824.8	916.1	416.3	1,006.3	0.77	-0.74	
4,103.0	5.40	18.70	3,918.3	925.2	420.1	1,016.1	1.53	-1.28	
4,198.0	3.00	26.90	4,013.0	931.6	422.7	1,023.0	2.60	-2.53	
4,292.0	1.10	35.80	4,107.0	934.5	424.3	1,026.3	2.04	-2.02	
4,387.0	0.50	41.00	4,202.0	935.6	425.1	1,027.6	0.64	-0.63	
4,481.0	0.10	313.70	4,296.0	936.0	425.3	1,028.1	0.54	-0.43	
4,572.0	0.70	182.60	4,387.0	935.5	425.2	1,027.6	0.85	0.66	
4,671.0	1.80	181.10	4,485.9	933.3	425.2	1,025.6	1.11	1.11	
4,766.0	2.10	194.40	4,580.9	930.1	424.7	1,022.5	0.57	0.32	

Cathedral Energy Services

Survey Report

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well Twin Creek 12-6A1 (F12E)
Project: Mamm Creek	TVD Reference: KBE @ 6167.0ft (Nabors M15)
Site: F12E Pad	MD Reference: KBE @ 6167.0ft (Nabors M15)
Well: Twin Creek 12-6A1 (F12E)	North Reference: True
Wellbore: DD	Survey Calculation Method: Minimum Curvature
Design: DD	Database: USA EDM 5000 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
4,861.0	1.10	159.70	4,675.8	927.6	424.6	1,020.1	1.42	-1.05	
4,956.0	0.40	210.60	4,770.8	926.4	424.7	1,019.2	0.95	-0.74	
5,050.0	1.10	192.40	4,864.8	925.3	424.4	1,017.9	0.78	0.74	
5,145.0	0.20	189.90	4,959.8	924.2	424.2	1,016.9	0.95	-0.95	
5,240.0	0.80	193.20	5,054.8	923.4	424.0	1,016.1	0.63	0.63	
5,335.0	1.80	188.30	5,149.8	921.3	423.6	1,014.0	1.06	1.05	
5,430.0	0.40	216.20	5,244.8	919.5	423.2	1,012.2	1.54	-1.47	
5,525.0	0.70	159.70	5,339.8	918.7	423.2	1,011.5	0.61	0.32	
5,620.0	1.40	165.80	5,434.7	917.1	423.7	1,010.2	0.75	0.74	
5,662.2	1.40	165.80	5,477.0	916.1	423.9	1,009.4	0.00	0.00	Twin Creek 12-6A1 (F12E) BHL
5,670.0	1.40	165.80	5,484.7	915.9	424.0	1,009.2	0.00	0.00	Last Cathedral Survey @ 5,670' MD

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Twin Creek 12-6A1 (F12 - hit/miss target - Shape	0.00	0.00	5,477.0	916.5	418.1	1,601,078.58	2,402,289.31	39.464600	-107.617300
- actual wellpath misses target center by 5.8ft at 5662.2ft MD (5477.0 TVD, 916.1 N, 423.9 E)									
- Circle (radius 25.0)									
Twin Creek 12-6A1 (F12 - hit/miss target - Shape	0.00	0.00	3,622.0	916.5	418.1	1,601,078.58	2,402,289.31	39.464600	-107.617300
- actual wellpath misses target center by 27.9ft at 3808.7ft MD (3626.3 TVD, 893.1 N, 403.5 E)									
- Point									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
5,670.0	5,484.7	915.9	424.0	Last Cathedral Survey @ 5,670' MD

Checked By: _____ Approved By: _____ Date: _____