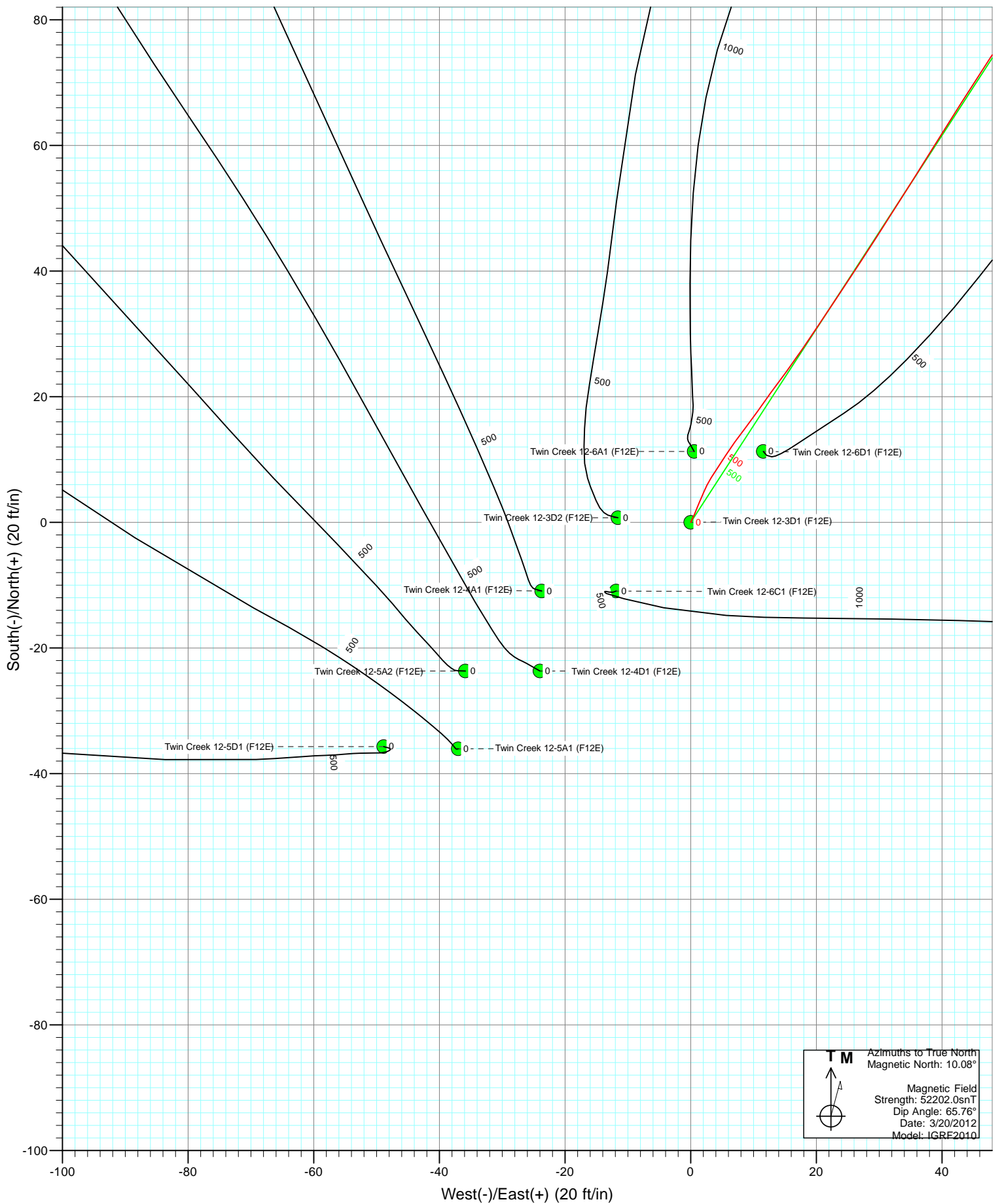
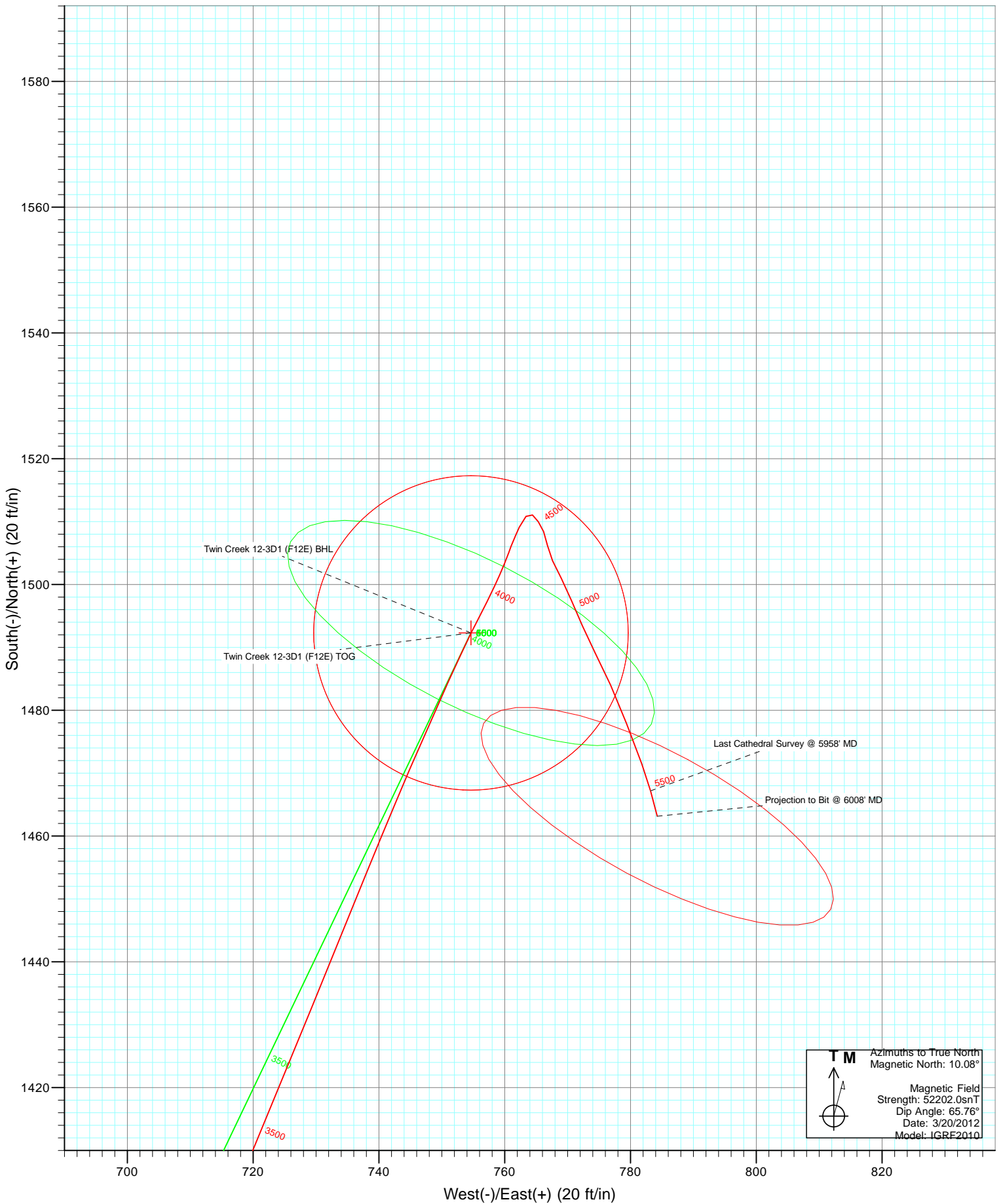


Azimuths to True North
 Magnetic North: 10.08°
 Magnetic Field
 Strength: 52202.0snT
 Dip Angle: 65.76°
 Date: 3/20/2012
 Model: IGRF2010





Cathedral Energy Services

Survey Report

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well Twin Creek 12-3D1 (F12E)
Project: Mamm Creek	TVD Reference: KBE @ 6167.0ft (Original Well Elev)
Site: F12E Pad	MD Reference: KBE @ 6167.0ft (Original Well Elev)
Well: Twin Creek 12-3D1 (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 12-3D1 (F12E)				
Well Position	+N/-S 0.0 ft	Northing: 1,600,160.87 ft	Latitude: 39.462053	
	+E/-W 0.0 ft	Easting: 2,401,849.09 ft	Longitude: -107.618783	
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	3/20/2012	10.08	65.76	52,202

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	26.83

Survey Program		Date 4/4/2012
From (ft)	To (ft)	Survey (Wellbore)
154.0	6,008.0	Survey #1 (DD)
		Tool Name MWD
		Description Geolink MWD

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	0.70	26.10	154.0	0.8	0.4	0.9	0.45	0.45	
185.0	0.70	22.40	185.0	1.2	0.6	1.3	0.15	0.00	
216.0	0.90	20.40	216.0	1.6	0.7	1.7	0.65	0.65	
247.0	1.10	23.60	247.0	2.1	0.9	2.3	0.67	0.65	
277.0	1.20	22.00	277.0	2.6	1.2	2.9	0.35	0.33	
308.0	1.20	24.10	308.0	3.2	1.4	3.5	0.14	0.00	
338.0	1.60	22.50	338.0	3.9	1.7	4.3	1.34	1.33	
369.0	2.20	24.50	368.9	4.9	2.1	5.3	1.95	1.94	
400.0	2.20	24.80	399.9	5.9	2.6	6.5	0.04	0.00	
430.0	3.10	31.80	429.9	7.2	3.3	7.9	3.18	3.00	
461.0	3.90	34.80	460.8	8.7	4.3	9.7	2.65	2.58	
492.0	4.50	32.30	491.8	10.6	5.6	12.0	2.02	1.94	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Twin Creek 12-3D1 (F12E)
Project:	Mamm Creek	TD Reference:	KBE @ 6167.0ft (Original Well Elev)
Site:	F12E Pad	MVD Reference:	KBE @ 6167.0ft (Original Well Elev)
Well:	Twin Creek 12-3D1 (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
523.0	5.10	35.20	522.6	12.8	7.0	14.6	2.09	1.94	
553.0	5.70	38.40	552.5	15.0	8.7	17.4	2.24	2.00	
584.0	6.50	34.40	583.3	17.7	10.7	20.6	2.92	2.58	
614.0	7.20	36.20	613.1	20.6	12.7	24.1	2.44	2.33	
645.0	8.20	36.70	643.8	24.0	15.2	28.2	3.23	3.23	
676.0	8.90	34.20	674.5	27.7	17.9	32.8	2.56	2.26	
768.0	11.70	33.20	765.0	41.4	27.0	49.1	3.05	3.04	
860.0	15.50	31.90	854.4	59.6	38.6	70.6	4.14	4.13	
951.0	18.30	33.50	941.5	81.9	52.9	97.0	3.12	3.08	
1,044.0	21.30	34.10	1,029.0	108.1	70.4	128.2	3.23	3.23	
1,110.0	22.40	34.00	1,090.2	128.4	84.2	152.6	1.67	1.67	
1,193.0	22.60	34.10	1,166.9	154.7	102.0	184.1	0.25	0.24	
1,257.0	23.20	34.40	1,225.9	175.3	116.0	208.8	0.96	0.94	
1,352.0	24.90	32.80	1,312.6	207.6	137.4	247.2	1.92	1.79	
1,448.0	26.40	31.70	1,399.1	242.7	159.6	288.6	1.64	1.56	
1,543.0	28.00	29.40	1,483.6	280.1	181.6	331.9	2.01	1.68	
1,638.0	30.10	27.30	1,566.7	320.7	203.5	378.0	2.46	2.21	
1,732.0	33.10	25.90	1,646.7	364.8	225.5	427.3	3.29	3.19	
1,826.0	36.00	25.10	1,724.2	412.9	248.4	480.6	3.12	3.08	
1,921.0	37.80	24.60	1,800.1	464.6	272.4	537.6	1.92	1.89	
2,016.0	38.30	24.30	1,874.9	517.9	296.6	596.1	0.56	0.53	
2,111.0	38.40	24.30	1,949.4	571.7	320.9	655.0	0.11	0.11	
2,206.0	38.40	24.90	2,023.9	625.3	345.5	713.9	0.39	0.00	
2,301.0	37.70	25.90	2,098.7	678.2	370.6	772.5	0.98	-0.74	
2,396.0	35.70	23.40	2,174.9	729.8	394.3	829.2	2.63	-2.11	
2,491.0	35.10	24.60	2,252.3	780.1	416.7	884.1	0.97	-0.63	
2,585.0	33.60	24.90	2,329.9	828.2	438.9	937.1	1.61	-1.60	
2,680.0	34.20	26.70	2,408.8	875.9	461.9	990.1	1.23	0.63	
2,775.0	34.60	25.60	2,487.1	924.1	485.6	1,043.8	0.78	0.42	
2,870.0	35.80	26.70	2,564.8	973.2	509.7	1,098.5	1.43	1.26	
2,965.0	35.10	27.00	2,642.2	1,022.4	534.6	1,153.6	0.76	-0.74	
3,060.0	33.90	27.70	2,720.5	1,070.2	559.3	1,207.4	1.33	-1.26	
3,155.0	33.40	25.60	2,799.5	1,117.2	582.9	1,260.1	1.33	-0.53	
3,250.0	31.50	25.90	2,879.7	1,163.2	605.1	1,311.0	2.01	-2.00	
3,344.0	29.60	26.30	2,960.7	1,206.1	626.1	1,358.8	2.03	-2.02	
3,439.0	26.90	25.60	3,044.3	1,246.5	645.8	1,403.8	2.86	-2.84	
3,534.0	25.80	25.00	3,129.5	1,284.6	663.8	1,445.9	1.19	-1.16	
3,629.0	23.40	26.90	3,215.8	1,320.2	681.1	1,485.4	2.66	-2.53	
3,724.0	21.00	23.90	3,303.8	1,352.6	696.5	1,521.3	2.79	-2.53	
3,819.0	18.90	21.20	3,393.1	1,382.5	709.0	1,553.6	2.41	-2.21	
3,913.0	16.70	22.40	3,482.6	1,409.2	719.6	1,582.3	2.37	-2.34	
4,008.0	14.80	22.30	3,574.0	1,433.0	729.4	1,608.0	2.00	-2.00	
4,103.0	12.40	22.00	3,666.3	1,453.7	737.9	1,630.2	2.53	-2.53	
4,197.0	10.20	23.40	3,758.5	1,470.7	744.9	1,648.6	2.36	-2.34	
4,292.0	8.30	24.20	3,852.3	1,484.7	751.1	1,663.8	2.00	-2.00	
4,387.0	5.80	27.60	3,946.5	1,495.2	756.1	1,675.5	2.67	-2.63	
4,467.0	3.52	23.23	4,026.2	1,501.0	759.0	1,682.0	2.88	-2.85	Twin Creek 12-3D1 (F12E) TOG
4,482.0	3.10	21.70	4,041.2	1,501.8	759.3	1,682.9	2.88	-2.82	
4,576.0	2.50	22.10	4,135.1	1,506.1	761.0	1,687.4	0.64	-0.64	
4,670.0	1.50	25.60	4,229.1	1,509.1	762.3	1,690.7	1.07	-1.06	
4,765.0	1.00	40.40	4,324.1	1,510.8	763.4	1,692.7	0.62	-0.53	
4,860.0	0.80	130.20	4,419.0	1,511.0	764.4	1,693.4	1.35	-0.21	
4,955.0	0.90	146.20	4,514.0	1,510.0	765.4	1,692.9	0.27	0.11	

Cathedral Energy Services

Survey Report

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well Twin Creek 12-3D1 (F12E)
Project: Mamm Creek	TVD Reference: KBE @ 6167.0ft (Original Well Elev)
Site: F12E Pad	MD Reference: KBE @ 6167.0ft (Original Well Elev)
Well: Twin Creek 12-3D1 (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
5,049.0	1.30	156.20	4,608.0	1,508.4	766.2	1,691.8	0.47	0.43	
5,144.0	1.50	171.80	4,703.0	1,506.2	766.8	1,690.1	0.45	0.21	
5,239.0	1.60	151.80	4,797.9	1,503.8	767.6	1,688.4	0.58	0.11	
5,334.0	2.20	154.70	4,892.9	1,501.0	769.0	1,686.5	0.64	0.63	
5,429.0	2.50	156.20	4,987.8	1,497.4	770.6	1,684.0	0.32	0.32	
5,523.0	2.70	157.10	5,081.7	1,493.5	772.3	1,681.3	0.22	0.21	
5,618.0	3.10	152.90	5,176.6	1,489.2	774.4	1,678.4	0.48	0.42	
5,713.0	3.80	155.30	5,271.4	1,484.0	776.8	1,674.9	0.75	0.74	
5,808.0	4.10	159.50	5,366.2	1,478.0	779.4	1,670.6	0.44	0.32	
5,902.0	4.40	159.10	5,460.0	1,471.5	781.8	1,665.9	0.32	0.32	
5,958.0	4.80	165.10	5,515.8	1,467.2	783.2	1,662.7	1.12	0.71	Last Cathedral Survey @ 5958' MD
5,996.5	4.80	165.10	5,554.1	1,464.1	784.0	1,660.3	0.00	0.00	Twin Creek 12-3D1 (F12E) BHL
6,008.0	4.80	165.10	5,565.6	1,463.1	784.3	1,659.6	0.00	0.00	Projection to Bit @ 6008' MD

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Twin Creek 12-3D1 (F12)	0.00	0.00	4,027.0	1,492.3	754.6	1,601,635.17	2,402,638.33	39.466150	-107.616110
- actual wellpath misses target center by 9.8ft at 4467.2ft MD (4026.4 TVD, 1501.0 N, 759.0 E)									
- Point									
Twin Creek 12-3D1 (F12)	0.00	0.00	5,557.0	1,492.3	754.6	1,601,635.17	2,402,638.33	39.466150	-107.616110
- actual wellpath misses target center by 40.8ft at 5996.5ft MD (5554.1 TVD, 1464.1 N, 784.0 E)									
- Circle (radius 25.0)									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
5,958.0	5,515.8	1,467.2	783.2	Last Cathedral Survey @ 5958' MD
6,008.0	5,565.6	1,463.1	784.3	Projection to Bit @ 6008' MD

Checked By: _____ Approved By: _____ Date: _____