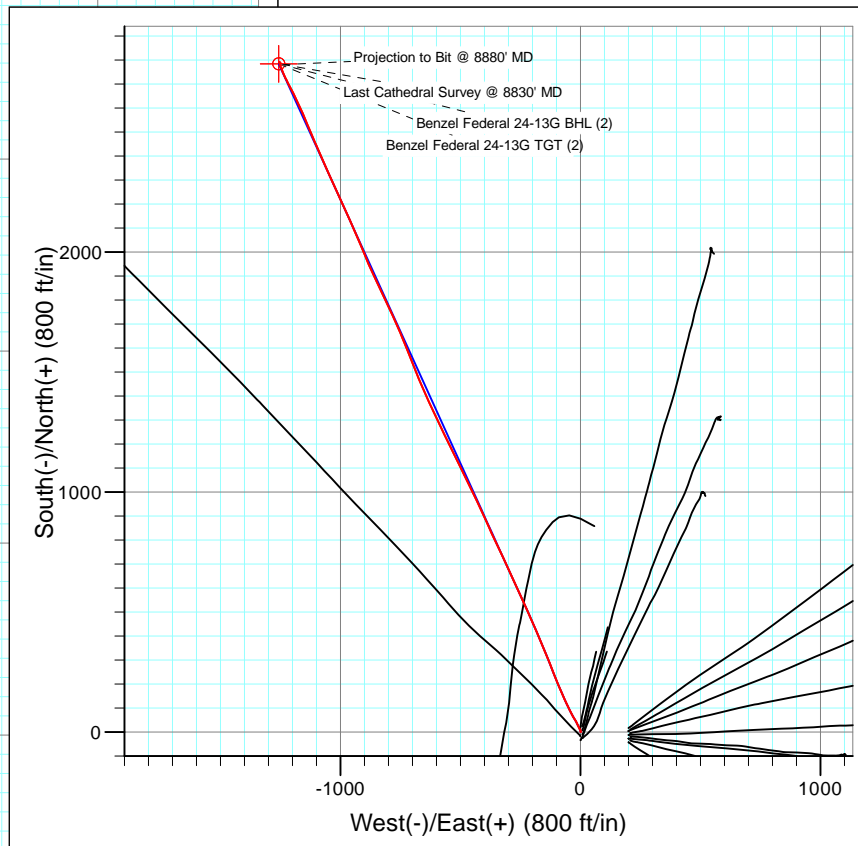
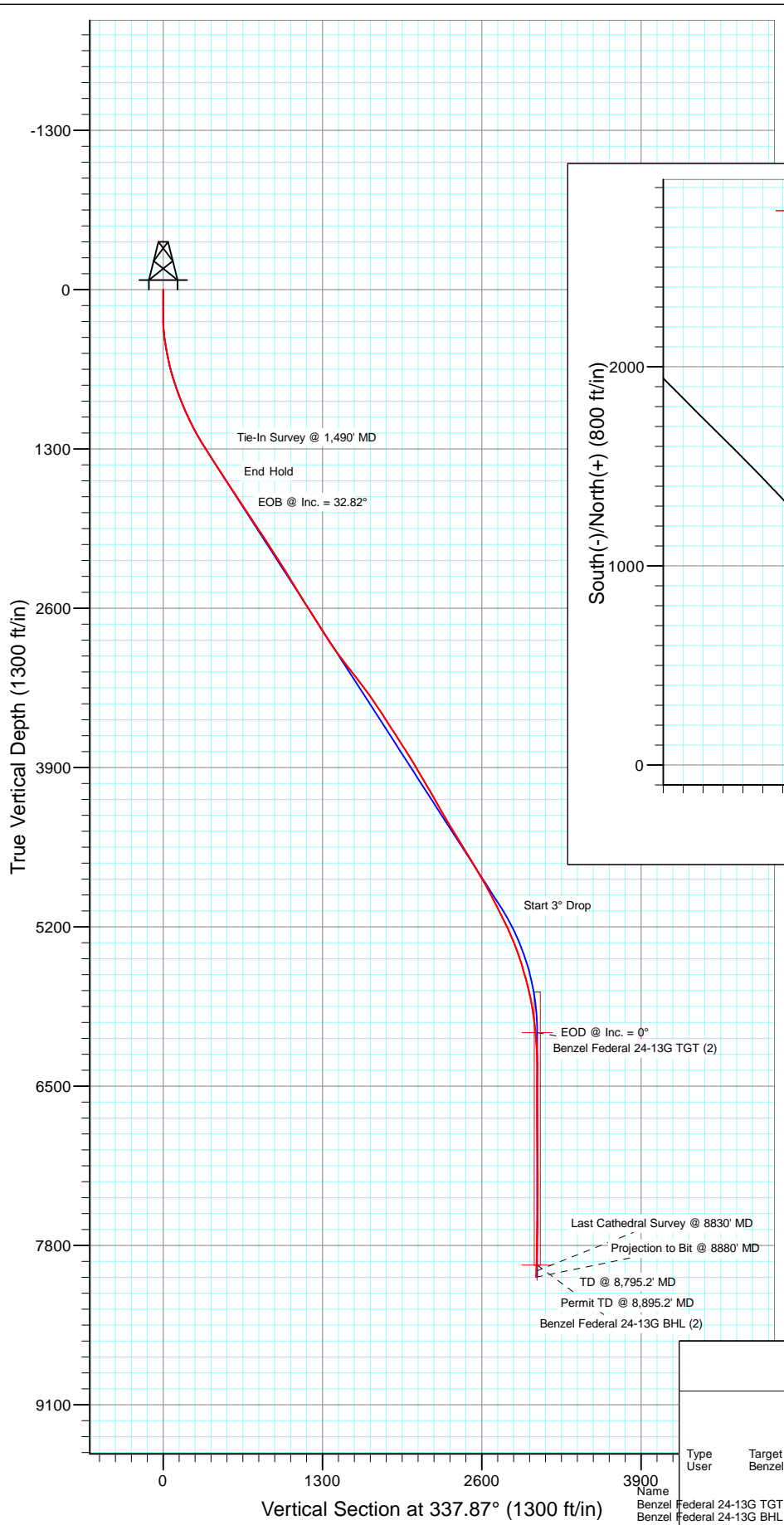




Project: Mamm Creek
 Site: F25NWB Pad
 Well: Benzel Federal 24-13G (F25NWB Pad)
 Wellbore: DD
 Design: DD



FORMATION TOP DETAILS

No formation data is available

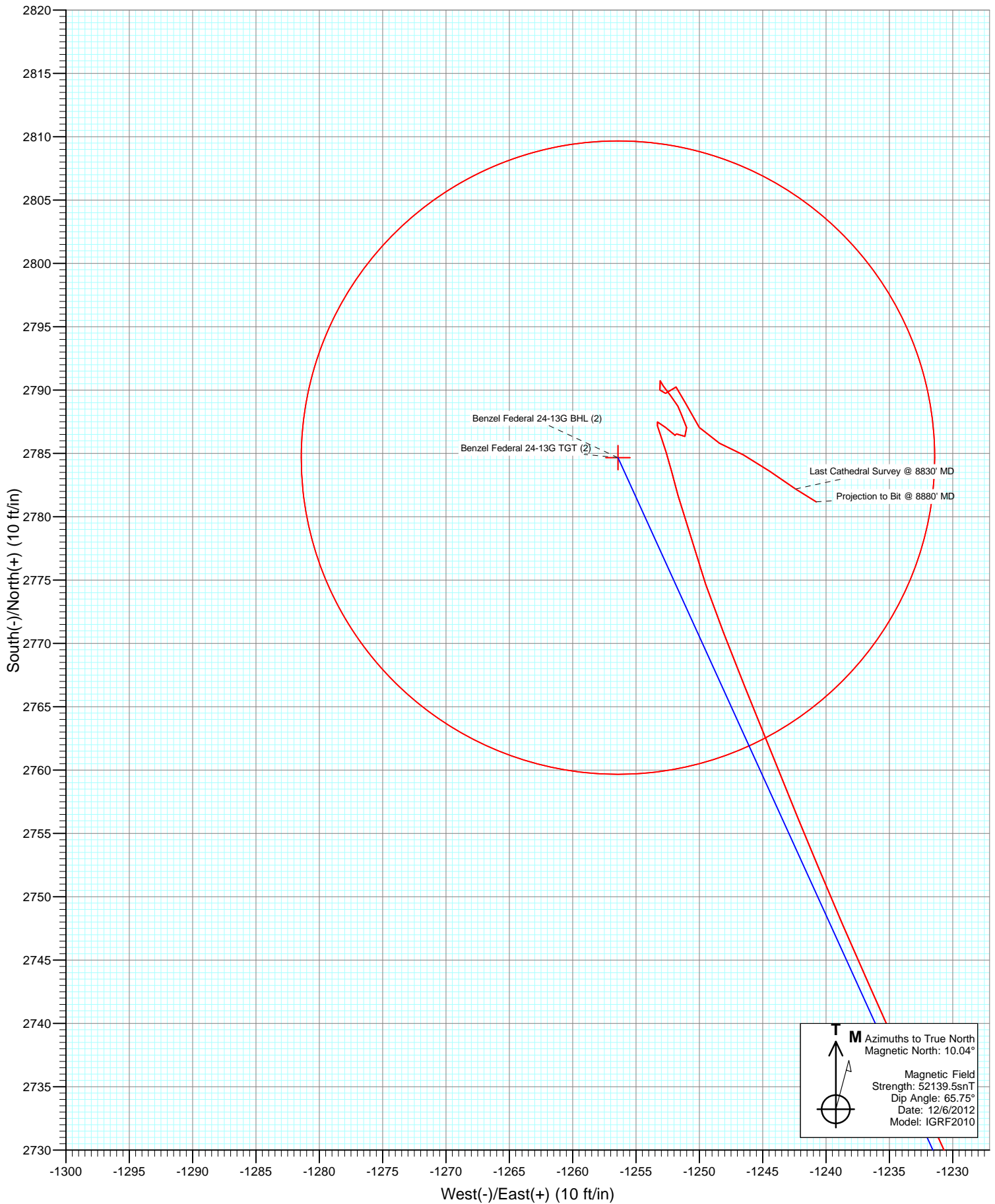
Azimuths to True North
 Magnetic North: 10.04°

Magnetic Field
 Strength: 52139.5snT
 Dip Angle: 65.75°
 Date: 12/6/2012
 Model: IGRF2010

DD Benzel Federal 24-13G (F25NWB Pad) 125591/200855 (SH) 125646/204555 (MH); SC							
kbe @ 5851.0ft (Patterson 308) North American Datum 1983 Well Benzel Federal 24-13G (F25NWB Pad), True North							
Type User	Target	Azimuth	Origin Type	N/S	E/W	From	TVD
	Benzel Federal 24-13G (F25NWB) BHL	337.87	Slot	0.0	0.0		0.0
Name							
Benzel Federal 24-13G TGT (2)		6063.5	+N/-S			Latitude	Longitude
Benzel Federal 24-13G BHL (2)		7960.0	2784.7	-1256.4		39.508310	-107.73077



Project: Mamm Creek
Site: F25NWB Pad
Well: Benzel Federal 24-13G (F25NWB Pad)
Wellbore: DD
Design: DD



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Benzel Federal 24-13G (F25NWB Pad)
Project:	Mamm Creek	TVD Reference:	kbe @ 5851.0ft (Patterson 308)
Site:	F25NWB Pad	MD Reference:	kbe @ 5851.0ft (Patterson 308)
Well:	Benzel Federal 24-13G (F25NWB Pad)	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		F25NWB Pad			
Site Position:		Northing:	1,614,821.30 ft	Latitude:	39.500328
From:	Lat/Long	Easting:	2,371,946.03 ft	Longitude:	-107.725936
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.40 °

Well	Benzel Federal 24-13G (F25NWB Pad)					
Well Position	+N/-S	0.0 ft	Northing:	1,614,946.69 ft	Latitude:	39.500665
	+E/-W	0.0 ft	Easting:	2,371,839.30 ft	Longitude:	-107.726325
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,829.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/6/2012	10.04	65.75	52,139

Design	DD				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	337.87	

Survey Program	Date	12/14/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
175.0	8,880.0	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		
175.0	0.70	82.20	175.0	0.1	1.1	-0.3	0.40	0.40		
205.0	0.90	83.50	205.0	0.2	1.5	-0.4	0.67	0.67		
236.0	0.80	58.70	236.0	0.3	1.9	-0.4	1.22	-0.32		
266.0	1.40	349.70	266.0	0.8	2.0	0.0	4.47	2.00		
297.0	2.70	337.40	297.0	1.9	1.7	1.1	4.40	4.19		
328.0	4.10	339.60	327.9	3.6	1.0	2.9	4.53	4.52		
358.0	5.80	338.30	357.8	6.0	0.1	5.5	5.68	5.67		
389.0	7.50	337.50	388.6	9.3	-1.3	9.1	5.49	5.48		
419.0	9.00	336.50	418.3	13.3	-3.0	13.4	5.02	5.00		
450.0	9.80	334.30	448.9	17.9	-5.1	18.5	2.83	2.58		
481.0	10.50	334.40	479.4	22.8	-7.4	23.9	2.26	2.26		
511.0	10.70	335.70	508.9	27.8	-9.8	29.4	1.04	0.67		

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Benzel Federal 24-13G (F25NWB Pad)
Project:	Mamm Creek	TVD Reference:	kbe @ 5851.0ft (Patterson 308)
Site:	F25NWB Pad	MD Reference:	kbe @ 5851.0ft (Patterson 308)
Well:	Benzel Federal 24-13G (F25NWB Pad)	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
541.0	11.00	334.70	538.3	32.9	-12.1	35.1	1.18	1.00	
572.0	11.60	332.50	568.7	38.4	-14.8	41.1	2.38	1.94	
664.0	15.00	328.40	658.2	56.7	-25.4	62.1	3.83	3.70	
757.0	17.80	332.00	747.5	79.5	-38.3	88.1	3.20	3.01	
849.0	20.20	334.30	834.4	106.2	-51.8	117.9	2.73	2.61	
941.0	21.80	336.40	920.3	136.2	-65.6	150.9	1.92	1.74	
1,033.0	23.80	336.40	1,005.1	168.9	-79.8	186.5	2.17	2.17	
1,124.0	26.70	337.40	1,087.4	204.6	-95.0	225.3	3.22	3.19	
1,215.0	29.00	338.50	1,167.9	244.0	-111.0	267.8	2.59	2.53	
1,306.0	31.60	338.40	1,246.4	286.7	-127.9	313.7	2.86	2.86	
1,398.0	32.50	337.50	1,324.4	331.9	-146.2	362.6	1.11	0.98	
1,490.0	32.60	337.40	1,402.0	377.7	-165.2	412.1	0.12	0.11	
1,564.0	32.60	337.50	1,464.3	414.5	-180.5	451.9	0.07	0.00	
1,610.0	32.80	336.60	1,503.0	437.4	-190.1	476.8	1.14	0.43	
1,702.0	33.10	336.00	1,580.2	483.2	-210.3	526.8	0.48	0.33	
1,793.0	33.70	335.60	1,656.2	528.9	-230.8	576.9	0.70	0.66	
1,885.0	34.70	334.90	1,732.3	575.8	-252.5	628.5	1.17	1.09	
1,976.0	33.00	335.90	1,807.9	621.9	-273.6	679.1	1.97	-1.87	
2,068.0	33.30	335.70	1,884.9	667.8	-294.2	729.4	0.35	0.33	
2,160.0	33.60	335.20	1,961.6	713.9	-315.3	780.1	0.44	0.33	
2,251.0	33.50	334.60	2,037.5	759.5	-336.6	830.3	0.38	-0.11	
2,343.0	33.40	334.30	2,114.3	805.2	-358.5	880.9	0.21	-0.11	
2,435.0	32.40	335.70	2,191.5	850.5	-379.6	930.8	1.37	-1.09	
2,526.0	31.80	335.90	2,268.6	894.6	-399.4	979.2	0.67	-0.66	
2,618.0	31.40	335.30	2,346.9	938.5	-419.3	1,027.3	0.55	-0.43	
2,710.0	31.70	334.80	2,425.3	982.2	-439.6	1,075.4	0.43	0.33	
2,801.0	31.40	333.70	2,502.9	1,025.0	-460.3	1,122.9	0.71	-0.33	
2,893.0	32.70	333.30	2,580.9	1,068.7	-482.1	1,171.6	1.43	1.41	
2,985.0	31.70	332.90	2,658.7	1,112.4	-504.3	1,220.5	1.11	-1.09	
3,076.0	32.40	333.60	2,735.8	1,155.6	-526.0	1,268.6	0.87	0.77	
3,168.0	32.90	334.30	2,813.3	1,200.2	-547.8	1,318.1	0.68	0.54	
3,260.0	34.20	335.00	2,890.0	1,246.1	-569.6	1,368.9	1.47	1.41	
3,351.0	36.00	334.50	2,964.4	1,293.4	-591.9	1,421.1	2.00	1.98	
3,443.0	37.50	334.80	3,038.1	1,343.2	-615.5	1,476.1	1.64	1.63	
3,535.0	37.70	335.40	3,111.0	1,394.1	-639.1	1,532.1	0.45	0.22	
3,626.0	37.80	337.00	3,183.0	1,445.1	-661.6	1,587.8	1.08	0.11	
3,717.0	37.10	338.20	3,255.2	1,496.2	-682.7	1,643.2	1.11	-0.77	
3,809.0	34.70	338.70	3,329.8	1,546.4	-702.5	1,697.1	2.63	-2.61	
3,901.0	33.90	337.80	3,405.8	1,594.5	-721.7	1,748.9	1.03	-0.87	
3,992.0	32.30	337.60	3,482.0	1,640.5	-740.5	1,798.6	1.76	-1.76	
4,084.0	33.30	336.50	3,559.3	1,686.4	-760.0	1,848.5	1.27	1.09	
4,175.0	32.70	335.00	3,635.6	1,731.6	-780.3	1,898.0	1.11	-0.66	
4,267.0	32.80	334.40	3,713.0	1,776.6	-801.6	1,947.7	0.37	0.11	
4,358.0	31.90	335.20	3,789.9	1,820.6	-822.3	1,996.3	1.10	-0.99	
4,450.0	31.30	335.70	3,868.2	1,864.5	-842.4	2,044.5	0.71	-0.65	
4,541.0	30.70	333.00	3,946.3	1,906.7	-862.6	2,091.2	1.66	-0.66	
4,633.0	29.80	337.90	4,025.7	1,948.9	-881.9	2,137.5	2.86	-0.98	
4,724.0	30.90	337.60	4,104.3	1,991.4	-899.3	2,183.5	1.22	1.21	
4,816.0	29.30	337.10	4,183.9	2,034.0	-917.1	2,229.6	1.76	-1.74	
4,907.0	29.80	336.40	4,263.0	2,075.2	-934.8	2,274.5	0.67	0.55	
4,998.0	30.30	336.50	4,341.8	2,117.0	-953.0	2,320.0	0.55	0.55	
5,089.0	31.70	335.20	4,419.8	2,159.8	-972.2	2,366.9	1.71	1.54	
5,181.0	32.30	335.20	4,497.8	2,204.0	-992.6	2,415.6	0.65	0.65	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Benzel Federal 24-13G (F25NWB Pad)
Project:	Mamm Creek	TVD Reference:	kbe @ 5851.0ft (Patterson 308)
Site:	F25NWB Pad	MD Reference:	kbe @ 5851.0ft (Patterson 308)
Well:	Benzel Federal 24-13G (F25NWB Pad)	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
5,273.0	31.60	335.40	4,575.9	2,248.2	-1,013.0	2,464.2	0.77	-0.76	
5,364.0	31.00	336.50	4,653.6	2,291.4	-1,032.2	2,511.5	0.91	-0.66	
5,456.0	30.50	336.20	4,732.7	2,334.5	-1,051.1	2,558.5	0.57	-0.54	
5,547.0	30.20	336.20	4,811.2	2,376.6	-1,069.7	2,604.4	0.33	-0.33	
5,639.0	28.50	335.30	4,891.4	2,417.7	-1,088.2	2,649.5	1.91	-1.85	
5,730.0	26.50	336.70	4,972.1	2,456.1	-1,105.3	2,691.5	2.31	-2.20	
5,822.0	26.50	336.80	5,054.5	2,493.8	-1,121.5	2,732.5	0.05	0.00	
5,913.0	27.30	337.60	5,135.6	2,531.7	-1,137.4	2,773.7	0.96	0.88	
6,005.0	25.30	336.80	5,218.1	2,569.3	-1,153.2	2,814.5	2.21	-2.17	
6,096.0	22.10	335.80	5,301.4	2,602.8	-1,167.9	2,851.0	3.54	-3.52	
6,188.0	20.20	334.70	5,387.2	2,633.0	-1,181.8	2,884.2	2.11	-2.07	
6,279.0	18.10	332.70	5,473.2	2,659.7	-1,195.0	2,913.9	2.42	-2.31	
6,371.0	15.90	331.50	5,561.1	2,683.5	-1,207.6	2,940.7	2.42	-2.39	
6,463.0	15.10	333.70	5,649.8	2,705.3	-1,218.9	2,965.2	1.08	-0.87	
6,554.0	13.50	335.00	5,738.0	2,725.6	-1,228.6	2,987.6	1.79	-1.76	
6,646.0	10.50	336.10	5,827.9	2,743.0	-1,236.6	3,006.7	3.27	-3.26	
6,737.0	7.70	337.90	5,917.8	2,756.2	-1,242.2	3,021.1	3.09	-3.08	
6,829.0	6.20	338.10	6,009.1	2,766.5	-1,246.4	3,032.2	1.63	-1.63	
6,921.0	4.70	340.40	6,100.7	2,774.7	-1,249.5	3,041.0	1.65	-1.63	
7,018.0	4.00	345.50	6,197.4	2,781.7	-1,251.7	3,048.3	0.82	-0.72	
7,110.0	1.80	340.20	6,289.3	2,786.2	-1,253.0	3,052.9	2.41	-2.39	
7,201.0	0.20	100.00	6,380.3	2,787.5	-1,253.3	3,054.3	2.10	-1.76	
7,293.0	0.80	130.10	6,472.3	2,787.0	-1,252.7	3,053.6	0.69	0.65	
7,384.0	0.40	129.10	6,563.3	2,786.4	-1,251.9	3,052.8	0.44	-0.44	
7,475.0	0.40	334.00	6,654.3	2,786.5	-1,251.8	3,052.8	0.86	0.00	
7,566.0	0.40	147.20	6,745.3	2,786.5	-1,251.8	3,052.8	0.88	0.00	
7,658.0	0.60	81.40	6,837.3	2,786.3	-1,251.1	3,052.4	0.62	0.22	
7,750.0	0.90	331.30	6,929.3	2,787.0	-1,251.0	3,053.0	1.35	0.33	
7,842.0	0.60	349.00	7,021.2	2,788.2	-1,251.4	3,054.2	0.41	-0.33	
7,933.0	1.50	322.00	7,112.2	2,789.6	-1,252.3	3,055.8	1.10	0.99	
8,025.0	0.30	340.20	7,204.2	2,790.7	-1,253.1	3,057.2	1.32	-1.30	
8,116.0	1.20	176.50	7,295.2	2,790.0	-1,253.1	3,056.5	1.64	0.99	
8,208.0	1.00	29.30	7,387.2	2,789.7	-1,252.7	3,056.1	2.29	-0.22	
8,299.0	0.60	114.70	7,478.2	2,790.2	-1,251.8	3,056.3	1.24	-0.44	
8,391.0	1.40	163.60	7,570.2	2,789.0	-1,251.1	3,054.8	1.20	0.87	
8,483.0	1.40	137.30	7,662.2	2,787.1	-1,250.0	3,052.6	0.69	0.00	
8,574.0	1.20	117.40	7,753.1	2,785.8	-1,248.4	3,050.9	0.54	-0.22	
8,666.0	1.40	114.70	7,845.1	2,784.9	-1,246.5	3,049.3	0.23	0.22	
8,757.0	1.70	127.60	7,936.1	2,783.6	-1,244.4	3,047.3	0.50	0.33	
8,830.0	2.20	122.10	8,009.0	2,782.2	-1,242.4	3,045.3	0.73	0.68	Last Cathedral Survey @ 8830' MD
8,880.0	2.20	122.10	8,059.0	2,781.2	-1,240.8	3,043.7	0.00	0.00	Projection to Bit @ 8880' MD

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Benzel Federal 24-13G (F25NWB Pad)
Project:	Mamm Creek	TVD Reference:	kbe @ 5851.0ft (Patterson 308)
Site:	F25NWB Pad	MD Reference:	kbe @ 5851.0ft (Patterson 308)
Well:	Benzel Federal 24-13G (F25NWB Pad)	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	USA EDM 5000 Multi Users DB

Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
- Shape									
Benzel Federal 24-13G I	0.00	0.00	7,960.0	2,784.7	-1,256.4	1,617,761.31	2,370,651.49	39.508310	-107.730778
- survey misses target center by 12.7ft at 8780.5ft MD (7959.6 TVD, 2783.2 N, -1243.9 E)									
- Circle (radius 25.0)									
Benzel Federal 24-13G `	0.00	0.00	6,063.5	2,784.7	-1,256.4	1,617,761.31	2,370,651.49	39.508310	-107.730778
- survey misses target center by 15.3ft at 6885.1ft MD (6064.9 TVD, 2771.8 N, -1248.4 E)									
- Point									

Survey Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
8,830.0	8,009.0	2,782.2	-1,242.4	Last Cathedral Survey @ 8830' MD
8,880.0	8,059.0	2,781.2	-1,240.8	Projection to Bit @ 8880' MD

Checked By: _____ Approved By: _____ Date: _____