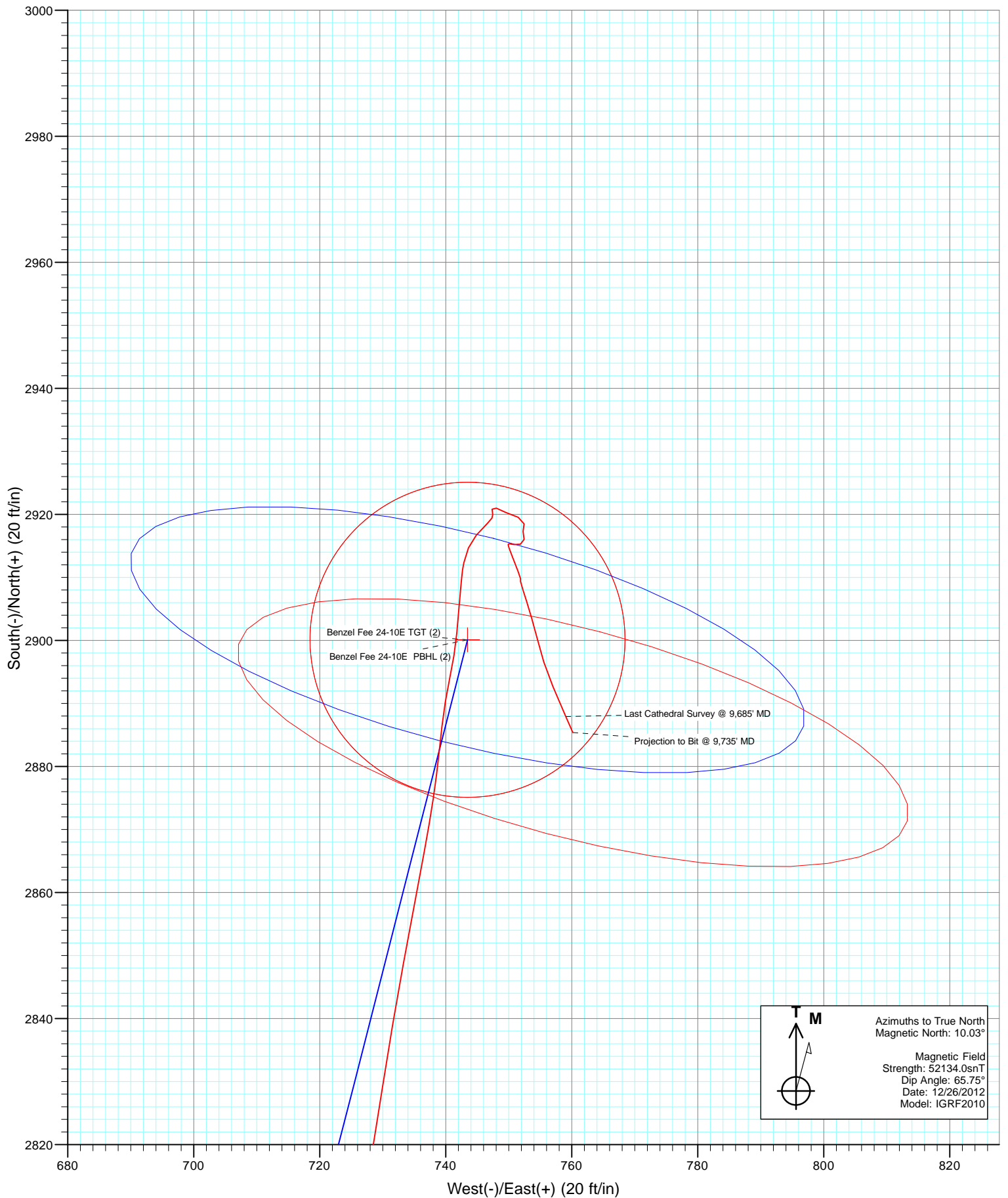


Azimuths to True North
 Magnetic North: 10.03°

Magnetic Field
 Strength: 52134.0snT
 Dip Angle: 65.75°
 Date: 12/26/2012
 Model: IGRF2010



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Benzel Federal 24-10E (F25NWB Pad)
Project:	Mamm Creek	TVD Reference:	kbe @ 5851.0ft
Site:	F25NWB Pad	MD Reference:	kbe @ 5851.0ft
Well:	Benzel Federal 24-10E (F25NWB Pad)	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	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 24-10E (F25NWB Pad)					
Well Position	+N/-S	0.0 ft	Northing:	1,614,971.26 ft	Latitude:	39.500733
	+E/-W	0.0 ft	Easting:	2,371,847.81 ft	Longitude:	-107.726297
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	12/26/2012	10.03	65.75	52,134

Design	FINAL				
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	14.32	

Survey Program	Date	1/4/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
146.0	1,491.0	Survey #1 (DD)	MWD	Geolink MWD	
1,617.0	9,735.0	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		
146.0	0.30	308.40	146.0	0.2	-0.3	0.2	0.21	0.21		
177.0	0.30	355.90	177.0	0.4	-0.4	0.3	0.78	0.00		
207.0	0.50	7.10	207.0	0.6	-0.4	0.5	0.71	0.67		
237.0	1.10	23.90	237.0	1.0	-0.2	0.9	2.13	2.00		
268.0	2.10	27.20	268.0	1.7	0.2	1.7	3.24	3.23		
298.0	3.20	27.60	298.0	3.0	0.8	3.1	3.67	3.67		
328.0	4.80	25.20	327.9	4.9	1.7	5.1	5.36	5.33		
359.0	6.50	20.40	358.7	7.7	2.9	8.1	5.69	5.48		
390.0	7.80	19.20	389.5	11.3	4.2	12.0	4.22	4.19		
421.0	9.10	17.10	420.1	15.6	5.6	16.5	4.31	4.19		
452.0	9.90	16.00	450.7	20.5	7.1	21.6	2.65	2.58		

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Benzel Federal 24-10E (F25NWB Pad)
Project:	Mamm Creek	TVD Reference:	kbe @ 5851.0ft
Site:	F25NWB Pad	MD Reference:	kbe @ 5851.0ft
Well:	Benzel Federal 24-10E (F25NWB Pad)	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	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
482.0	10.90	15.30	480.2	25.8	8.5	27.1	3.36	3.33	
512.0	11.60	13.70	509.7	31.4	10.0	32.9	2.55	2.33	
543.0	12.70	13.80	540.0	37.8	11.5	39.4	3.55	3.55	
573.0	14.20	13.10	569.1	44.5	13.1	46.4	5.03	5.00	
604.0	15.30	13.10	599.1	52.2	14.9	54.3	3.55	3.55	
635.0	16.50	13.30	628.9	60.5	16.9	62.8	3.87	3.87	
666.0	17.40	12.80	658.6	69.3	18.9	71.8	2.94	2.90	
696.0	18.20	12.30	687.1	78.3	20.9	81.0	2.71	2.67	
727.0	19.10	12.90	716.5	87.9	23.1	90.9	2.97	2.90	
758.0	19.50	12.70	745.8	97.9	25.3	101.1	1.31	1.29	
789.0	19.80	12.20	775.0	108.1	27.6	111.6	1.11	0.97	
819.0	20.10	12.00	803.2	118.1	29.7	121.8	1.03	1.00	
850.0	20.60	12.00	832.2	128.7	32.0	132.6	1.61	1.61	
881.0	21.00	11.80	861.2	139.4	34.2	143.6	1.31	1.29	
912.0	21.90	12.40	890.1	150.5	36.6	154.9	2.99	2.90	
942.0	23.20	13.60	917.8	161.7	39.2	166.4	4.60	4.33	
1,034.0	24.90	15.50	1,001.8	198.0	48.6	203.9	2.03	1.85	
1,125.0	26.50	15.20	1,083.8	236.1	59.1	243.3	1.76	1.76	
1,217.0	27.80	15.40	1,165.6	276.5	70.2	285.3	1.42	1.41	
1,307.0	30.80	15.10	1,244.1	319.0	81.7	329.3	3.34	3.33	
1,400.0	31.80	15.60	1,323.6	365.6	94.5	377.6	1.11	1.08	
1,491.0	32.60	14.90	1,400.6	412.4	107.3	426.1	0.97	0.88	Last Cathedral Survey @ 1,491' MD
1,617.0	33.30	14.60	1,506.3	478.7	124.7	494.7	0.57	0.56	
1,709.0	33.80	14.50	1,583.0	527.9	137.5	545.5	0.55	0.54	
1,800.0	32.50	13.30	1,659.2	576.2	149.5	595.3	1.60	-1.43	
1,892.0	32.80	13.60	1,736.6	624.5	161.0	644.9	0.37	0.33	
1,983.0	33.10	13.10	1,813.0	672.6	172.4	694.4	0.44	0.33	
2,075.0	32.30	11.90	1,890.4	721.1	183.2	744.1	1.12	-0.87	
2,167.0	32.60	12.10	1,968.1	769.4	193.5	793.4	0.35	0.33	
2,259.0	30.70	11.90	2,046.4	816.7	203.5	841.6	2.07	-2.07	
2,350.0	29.90	11.80	2,124.9	861.6	212.9	887.5	0.88	-0.88	
2,442.0	29.20	17.30	2,205.0	905.5	224.3	932.8	3.04	-0.76	
2,534.0	30.90	17.90	2,284.6	949.4	238.2	978.8	1.88	1.85	
2,625.0	30.50	17.60	2,362.9	993.6	252.4	1,025.2	0.47	-0.44	
2,717.0	32.50	17.20	2,441.3	1,039.5	266.8	1,073.2	2.19	2.17	
2,809.0	31.90	17.50	2,519.1	1,086.3	281.4	1,122.1	0.67	-0.65	
2,900.0	31.50	17.40	2,596.6	1,131.9	295.7	1,169.9	0.44	-0.44	
2,992.0	30.60	17.70	2,675.4	1,177.1	310.0	1,217.3	0.99	-0.98	
3,084.0	32.00	16.10	2,754.0	1,222.9	323.9	1,265.0	1.77	1.52	
3,175.0	32.10	16.00	2,831.1	1,269.3	337.3	1,313.3	0.12	0.11	
3,267.0	31.30	15.80	2,909.4	1,315.8	350.5	1,361.6	0.88	-0.87	
3,358.0	32.00	13.30	2,986.9	1,362.0	362.5	1,409.3	1.63	0.77	
3,450.0	31.90	13.60	3,064.9	1,409.3	373.8	1,458.0	0.20	-0.11	
3,542.0	32.00	14.20	3,143.0	1,456.6	385.5	1,506.7	0.36	0.11	
3,633.0	31.50	14.70	3,220.4	1,503.0	397.5	1,554.6	0.62	-0.55	
3,725.0	31.10	14.40	3,299.0	1,549.2	409.5	1,602.4	0.47	-0.43	
3,816.0	30.60	12.80	3,377.1	1,594.6	420.5	1,649.0	1.06	-0.55	
3,908.0	33.20	11.50	3,455.2	1,642.1	430.7	1,697.6	2.92	2.83	
3,999.0	33.30	11.80	3,531.3	1,691.0	440.7	1,747.4	0.21	0.11	
4,091.0	31.80	11.30	3,608.9	1,739.5	450.7	1,796.9	1.66	-1.63	
4,182.0	30.50	11.30	3,686.7	1,785.6	459.9	1,843.9	1.43	-1.43	
4,274.0	31.90	13.80	3,765.4	1,832.1	470.3	1,891.5	2.07	1.52	
4,365.0	31.90	14.40	3,842.7	1,878.8	482.0	1,939.6	0.35	0.00	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Benzel Federal 24-10E (F25NWB Pad)
Project:	Mamm Creek	TVD Reference:	kbe @ 5851.0ft
Site:	F25NWB Pad	MD Reference:	kbe @ 5851.0ft
Well:	Benzel Federal 24-10E (F25NWB Pad)	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	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
4,457.0	31.50	15.40	3,921.0	1,925.5	494.4	1,987.9	0.72	-0.43	
4,548.0	30.90	15.00	3,998.8	1,971.0	506.8	2,035.1	0.70	-0.66	
4,640.0	32.20	15.00	4,077.2	2,017.5	519.2	2,083.2	1.41	1.41	
4,732.0	32.40	15.00	4,155.0	2,065.0	531.9	2,132.4	0.22	0.22	
4,823.0	31.60	16.80	4,232.1	2,111.3	545.1	2,180.6	1.37	-0.88	
4,914.0	32.50	16.60	4,309.3	2,157.6	559.0	2,228.8	1.00	0.99	
5,006.0	32.00	16.30	4,387.1	2,204.7	572.9	2,277.9	0.57	-0.54	
5,097.0	31.30	17.00	4,464.5	2,250.4	586.6	2,325.6	0.87	-0.77	
5,188.0	32.00	15.20	4,542.0	2,296.3	599.8	2,373.3	1.29	0.77	
5,280.0	30.40	16.40	4,620.7	2,342.1	612.8	2,420.9	1.87	-1.74	
5,371.0	31.70	14.30	4,698.7	2,387.4	625.2	2,467.9	1.86	1.43	
5,463.0	30.20	14.90	4,777.6	2,433.2	637.1	2,515.2	1.66	-1.63	
5,554.0	30.80	12.90	4,856.0	2,478.0	648.2	2,561.4	1.30	0.66	
5,646.0	29.40	13.90	4,935.6	2,522.9	658.9	2,607.5	1.62	-1.52	
5,738.0	28.30	14.50	5,016.1	2,565.9	669.8	2,651.9	1.24	-1.20	
5,829.0	27.50	14.10	5,096.6	2,607.2	680.3	2,694.5	0.90	-0.88	
5,921.0	26.40	15.00	5,178.6	2,647.6	690.8	2,736.2	1.28	-1.20	
6,012.0	24.70	14.00	5,260.7	2,685.6	700.6	2,775.4	1.93	-1.87	
6,103.0	22.40	13.00	5,344.1	2,720.9	709.1	2,811.7	2.57	-2.53	
6,195.0	19.70	11.80	5,429.9	2,753.2	716.2	2,844.8	2.97	-2.93	
6,286.0	17.50	10.30	5,516.2	2,781.6	721.8	2,873.7	2.47	-2.42	
6,378.0	14.90	9.90	5,604.5	2,806.9	726.3	2,899.3	2.83	-2.83	
6,470.0	13.10	8.80	5,693.8	2,828.9	729.9	2,921.5	1.98	-1.96	
6,562.0	11.90	10.40	5,783.6	2,848.5	733.2	2,941.4	1.36	-1.30	
6,653.0	11.40	10.70	5,872.7	2,866.6	736.6	2,959.7	0.55	-0.55	
6,745.0	8.40	5.50	5,963.4	2,882.2	738.9	2,975.4	3.40	-3.26	
6,837.0	5.80	11.70	6,054.6	2,893.4	740.5	2,986.7	2.94	-2.83	
6,927.1	4.12	5.68	6,144.4	2,901.1	741.8	2,994.4	1.95	-1.87	Benzel Fee 24-10E TGT (2)
6,928.0	4.10	5.60	6,145.3	2,901.2	741.8	2,994.5	1.95	-1.83	
7,020.0	4.10	4.10	6,237.1	2,907.7	742.3	3,001.0	0.12	0.00	
7,112.0	1.70	13.70	6,328.9	2,912.3	742.9	3,005.6	2.65	-2.61	
7,203.0	1.40	21.40	6,419.9	2,914.7	743.6	3,008.0	0.40	-0.33	
7,294.0	1.60	40.10	6,510.9	2,916.7	744.8	3,010.3	0.58	0.22	
7,386.0	1.70	46.40	6,602.8	2,918.6	746.7	3,012.6	0.22	0.11	
7,477.0	0.60	339.40	6,693.8	2,920.0	747.5	3,014.1	1.72	-1.21	
7,568.0	0.50	10.50	6,784.8	2,920.8	747.4	3,014.9	0.34	-0.11	
7,660.0	0.80	111.50	6,876.8	2,921.0	748.0	3,015.2	1.11	0.33	
7,752.0	1.20	115.60	6,968.8	2,920.3	749.5	3,015.0	0.44	0.43	
7,843.0	1.50	107.90	7,059.8	2,919.6	751.5	3,014.7	0.38	0.33	
7,935.0	0.90	195.90	7,151.8	2,918.5	752.5	3,013.9	1.87	-0.65	
8,027.0	0.60	175.90	7,243.7	2,917.3	752.3	3,012.7	0.43	-0.33	
8,118.0	1.00	170.30	7,334.7	2,916.1	752.5	3,011.6	0.45	0.44	
8,210.0	0.90	270.20	7,426.7	2,915.3	751.9	3,010.7	1.58	-0.11	
8,301.0	0.30	257.90	7,517.7	2,915.2	750.9	3,010.4	0.67	-0.66	
8,393.0	0.30	295.20	7,609.7	2,915.3	750.5	3,010.3	0.21	0.00	
8,484.0	0.20	270.00	7,700.7	2,915.4	750.1	3,010.3	0.16	-0.11	
8,576.0	0.20	188.70	7,792.7	2,915.2	749.9	3,010.1	0.28	0.00	
8,667.0	0.50	155.10	7,883.7	2,914.7	750.1	3,009.7	0.39	0.33	
8,759.0	1.30	160.00	7,975.7	2,913.4	750.6	3,008.5	0.87	0.87	
8,851.0	1.80	157.90	8,067.7	2,911.0	751.5	3,006.5	0.55	0.54	
8,942.0	0.20	309.70	8,158.7	2,909.8	751.9	3,005.4	2.17	-1.76	
9,034.0	0.70	167.10	8,250.7	2,909.4	751.9	3,004.9	0.94	0.54	
9,125.0	1.00	162.50	8,341.7	2,908.1	752.3	3,003.8	0.34	0.33	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Benzel Federal 24-10E (F25NWB Pad)
Project:	Mamm Creek	TVD Reference:	kbe @ 5851.0ft
Site:	F25NWB Pad	MD Reference:	kbe @ 5851.0ft
Well:	Benzel Federal 24-10E (F25NWB Pad)	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	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
9,217.0	1.50	162.40	8,433.6	2,906.2	752.9	3,002.1	0.54	0.54	
9,309.0	2.00	163.70	8,525.6	2,903.5	753.7	2,999.7	0.55	0.54	
9,400.0	2.20	165.80	8,616.5	2,900.2	754.6	2,996.8	0.24	0.22	
9,492.0	2.50	163.00	8,708.4	2,896.6	755.6	2,993.5	0.35	0.33	
9,584.0	2.70	157.00	8,800.4	2,892.7	757.0	2,990.1	0.37	0.22	
9,666.9	3.11	156.32	8,883.2	2,888.8	758.7	2,986.7	0.50	0.50	Benzel Fee 24-10E PBHL (2)
9,685.0	3.20	156.20	8,901.2	2,887.9	759.1	2,986.0	0.50	0.50	Last Cathedral Survey @ 9,685' MD
9,735.0	3.20	156.20	8,951.1	2,885.4	760.2	2,983.8	0.00	0.00	Projection to Bit @ 9,735' MD

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Benzel Fee 24-10E (F25 - hit/miss target - Shape	0.00	0.00	9,153.0	2,900.1	743.5	1,617,852.28	2,372,662.11	39.508695	-107.723662
- actual wellpath misses target center by 203.1ft at 9735.0ft MD (8951.1 TVD, 2885.4 N, 760.2 E)									
- Circle (radius 40.0)									
Benzel Fee 24-10E PBHL - hit/miss target - Shape	0.00	0.00	8,884.0	2,900.1	743.5	1,617,852.28	2,372,662.11	39.508695	-107.723662
- actual wellpath misses target center by 18.9ft at 9666.9ft MD (8883.2 TVD, 2888.8 N, 758.7 E)									
- Circle (radius 25.0)									
Benzel Fee 24-10E TGT - hit/miss target - Shape	0.00	0.00	6,144.5	2,900.1	743.5	1,617,852.28	2,372,662.11	39.508695	-107.723662
- actual wellpath misses target center by 2.0ft at 6927.1ft MD (6144.4 TVD, 2901.1 N, 741.8 E)									
- Point									
Benzel Fee 24-10E (F25 - hit/miss target - Shape	0.00	0.00	5,750.0	2,900.1	743.5	1,617,852.28	2,372,662.11	39.508695	-107.723662
- actual wellpath misses target center by 58.5ft at 6540.6ft MD (5762.6 TVD, 2844.1 N, 732.5 E)									
- Circle (radius 25.0)									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,491.0	1,400.6	412.4	107.3	Last Cathedral Survey @ 1,491' MD
9,685.0	8,901.2	2,887.9	759.1	Last Cathedral Survey @ 9,685' MD
9,735.0	8,951.1	2,885.4	760.2	Projection to Bit @ 9,735' MD

Checked By: _____ Approved By: _____ Date: _____