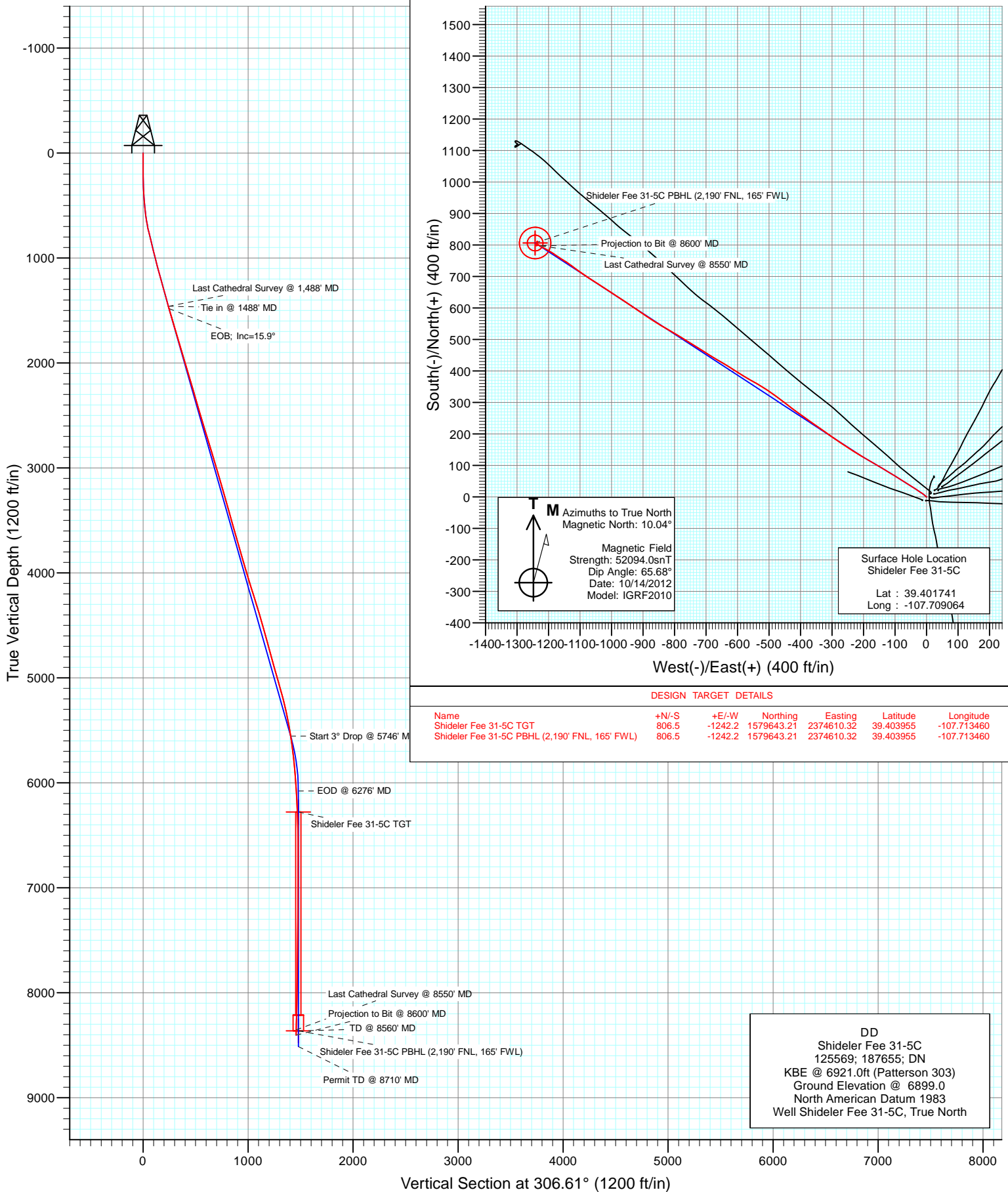


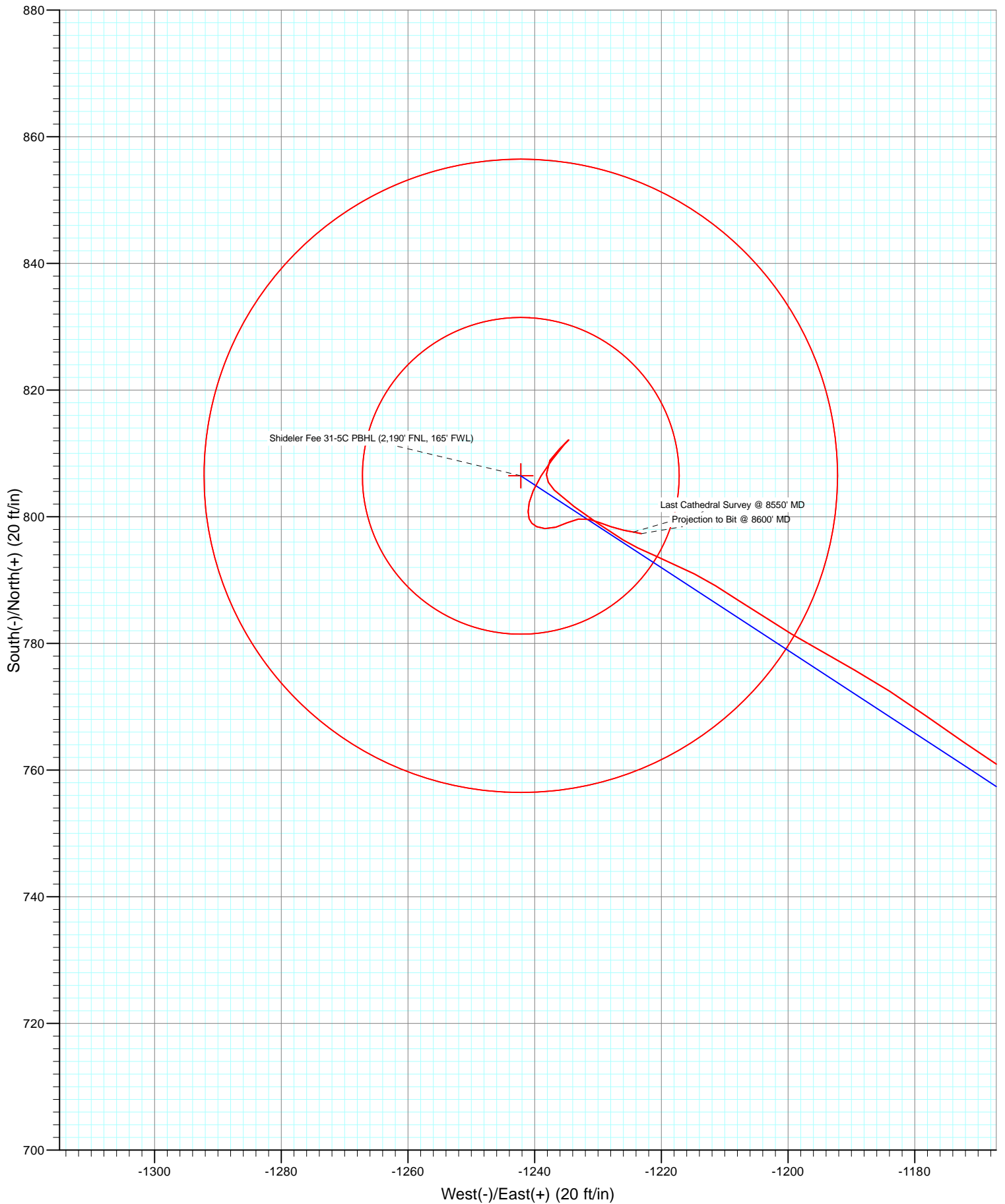


Project: Mamm Creek
 Site: K31E Pad
 Well: Shideler Fee 31-5C
 Wellbore: DD
 Design: DD





Project: Mamm Creek
Site: K31E Pad
Well: Shideler Fee 31-5C
Wellbore: DD
Design: DD



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Fee 31-5C
Project:	Mamm Creek	TVD Reference:	KBE @ 6921.0ft (Patterson 303)
Site:	K31E Pad	MD Reference:	KBE @ 6921.0ft (Patterson 303)
Well:	Shideler Fee 31-5C	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		K31E Pad			
Site Position:		Northing:	1,578,791.89 ft	Latitude:	39.401699
From:	Lat/Long	Easting:	2,375,816.61 ft	Longitude:	-107.709119
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.39 °

Well	Shideler Fee 31-5C					
Well Position	+N/-S	0.0 ft	Northing:	1,578,806.78 ft	Latitude:	39.401741
	+E/-W	0.0 ft	Easting:	2,375,832.52 ft	Longitude:	-107.709064
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,899.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/14/2012	10.04	65.68	52,094

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	306.61	

Survey Program	Date	10/31/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
79.0	1,488.0	Survey #1 (DD)	MWD	Geolink MWD	
1,619.0	8,600.0	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	
1,488.0	15.90	300.60	1,459.7	128.6	-204.3	240.7	0.00	0.00		
1,619.0	16.30	302.40	1,585.6	147.6	-235.3	276.8	0.49	0.31		
1,711.0	16.60	304.00	1,673.8	161.8	-257.1	302.9	0.59	0.33		
1,802.0	16.50	304.10	1,761.0	176.3	-278.5	328.7	0.11	-0.11		
1,894.0	16.60	304.60	1,849.2	191.1	-300.2	354.9	0.19	0.11		
1,985.0	16.60	305.30	1,936.4	206.0	-321.5	380.9	0.22	0.00		
2,077.0	16.70	305.10	2,024.6	221.2	-343.0	407.3	0.13	0.11		
2,168.0	16.70	305.20	2,111.7	236.3	-364.4	433.4	0.03	0.00		
2,260.0	16.30	305.50	2,200.0	251.4	-385.7	459.5	0.44	-0.43		
2,351.0	16.00	305.90	2,287.4	266.1	-406.3	484.8	0.35	-0.33		
2,443.0	15.60	307.70	2,375.9	281.1	-426.3	509.9	0.69	-0.43		
2,534.0	16.70	307.00	2,463.3	296.5	-446.5	535.2	1.23	1.21		

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Fee 31-5C
Project:	Mamm Creek	TVD Reference:	KBE @ 6921.0ft (Patterson 303)
Site:	K31E Pad	MD Reference:	KBE @ 6921.0ft (Patterson 303)
Well:	Shideler Fee 31-5C	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
2,626.0	16.90	307.60	2,551.4	312.6	-467.6	561.8	0.29	0.22	
2,718.0	17.00	303.40	2,639.4	328.2	-489.4	588.6	1.34	0.11	
2,810.0	17.20	304.50	2,727.3	343.3	-511.9	615.6	0.41	0.22	
2,901.0	16.90	299.10	2,814.3	357.3	-534.5	642.2	1.77	-0.33	
2,993.0	16.70	300.10	2,902.4	370.5	-557.6	668.6	0.38	-0.22	
3,085.0	16.70	301.30	2,990.5	384.0	-580.4	694.9	0.37	0.00	
3,176.0	16.30	302.20	3,077.8	397.6	-602.3	720.6	0.52	-0.44	
3,268.0	16.00	303.20	3,166.1	411.4	-623.9	746.1	0.44	-0.33	
3,359.0	16.40	299.00	3,253.5	424.5	-645.6	771.4	1.36	0.44	
3,451.0	16.00	300.70	3,341.9	437.3	-667.9	796.9	0.67	-0.43	
3,542.0	15.90	302.40	3,429.4	450.3	-689.2	821.8	0.52	-0.11	
3,634.0	15.20	303.40	3,518.0	463.7	-709.9	846.4	0.81	-0.76	
3,725.0	16.10	301.90	3,605.6	477.0	-730.6	870.9	1.08	0.99	
3,817.0	16.00	302.50	3,694.0	490.5	-752.1	896.2	0.21	-0.11	
3,908.0	16.40	300.30	3,781.4	503.7	-773.8	921.5	0.80	0.44	
4,000.0	16.00	301.00	3,869.8	516.8	-795.8	947.0	0.48	-0.43	
4,091.0	17.30	300.10	3,957.0	530.1	-818.3	973.0	1.46	1.43	
4,183.0	17.00	301.10	4,044.9	543.9	-841.6	1,000.0	0.46	-0.33	
4,275.0	16.90	302.50	4,132.9	558.0	-864.4	1,026.7	0.46	-0.11	
4,366.0	17.10	304.00	4,219.9	572.6	-886.7	1,053.2	0.53	0.22	
4,458.0	17.20	303.40	4,307.8	587.6	-909.3	1,080.3	0.22	0.11	
4,549.0	17.30	305.40	4,394.7	602.9	-931.5	1,107.3	0.66	0.11	
4,641.0	15.60	304.70	4,482.9	617.9	-952.8	1,133.3	1.86	-1.85	
4,733.0	16.00	302.30	4,571.5	631.7	-973.7	1,158.3	0.83	0.43	
4,824.0	15.60	302.50	4,659.0	645.0	-994.6	1,183.0	0.44	-0.44	
4,916.0	14.80	304.40	4,747.8	658.2	-1,014.8	1,207.1	1.02	-0.87	
5,007.0	15.30	303.00	4,835.7	671.3	-1,034.4	1,230.7	0.68	0.55	
5,099.0	16.30	301.80	4,924.2	684.8	-1,055.6	1,255.7	1.14	1.09	
5,190.0	15.60	303.90	5,011.7	698.3	-1,076.6	1,280.7	1.00	-0.77	
5,281.0	15.60	305.60	5,099.4	712.3	-1,096.7	1,305.1	0.50	0.00	
5,373.0	14.90	307.40	5,188.1	726.6	-1,116.2	1,329.3	0.92	-0.76	
5,465.0	13.30	305.50	5,277.3	740.0	-1,134.2	1,351.7	1.81	-1.74	
5,556.0	11.80	300.40	5,366.2	750.8	-1,150.7	1,371.4	2.05	-1.65	
5,648.0	10.30	303.30	5,456.5	760.0	-1,165.7	1,389.0	1.74	-1.63	
5,739.0	8.90	305.50	5,546.2	768.6	-1,178.2	1,404.2	1.59	-1.54	
5,831.0	7.80	299.30	5,637.2	775.8	-1,189.5	1,417.5	1.54	-1.20	
5,922.0	6.60	300.30	5,727.5	781.4	-1,199.4	1,428.8	1.33	-1.32	
6,014.0	5.80	304.50	5,818.9	786.7	-1,207.8	1,438.7	1.00	-0.87	
6,106.0	4.40	296.70	5,910.6	791.0	-1,214.8	1,446.8	1.69	-1.52	
6,198.0	4.10	293.00	6,002.3	793.8	-1,220.9	1,453.5	0.44	-0.33	
6,290.0	2.90	301.00	6,094.2	796.3	-1,226.0	1,459.0	1.41	-1.30	
6,381.0	3.00	304.90	6,185.0	798.9	-1,229.9	1,463.7	0.25	0.11	
6,473.0	2.90	305.80	6,276.9	801.6	-1,233.8	1,468.4	0.12	-0.11	
6,565.0	2.20	315.00	6,368.8	804.2	-1,236.9	1,472.5	0.88	-0.76	
6,657.0	1.50	0.00	6,460.8	806.7	-1,238.1	1,474.9	1.69	-0.76	
6,748.0	1.50	27.90	6,551.7	808.9	-1,237.6	1,475.8	0.79	0.00	
6,843.0	1.50	53.40	6,646.7	810.8	-1,236.0	1,475.7	0.70	0.00	
6,934.0	1.00	32.80	6,737.7	812.1	-1,234.6	1,475.4	0.73	-0.55	
7,026.0	2.10	219.00	6,829.7	811.5	-1,235.2	1,475.5	3.37	1.20	
7,117.0	2.00	218.00	6,920.6	808.9	-1,237.3	1,475.6	0.12	-0.11	
7,209.0	1.80	210.30	7,012.6	806.4	-1,239.0	1,475.5	0.35	-0.22	
7,300.0	1.50	204.80	7,103.5	804.1	-1,240.2	1,475.1	0.37	-0.33	
7,392.0	1.00	190.40	7,195.5	802.2	-1,240.9	1,474.5	0.64	-0.54	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Fee 31-5C
Project:	Mamm Creek	TVD Reference:	KBE @ 6921.0ft (Patterson 303)
Site:	K31E Pad	MD Reference:	KBE @ 6921.0ft (Patterson 303)
Well:	Shideler Fee 31-5C	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
7,484.0	0.80	181.30	7,287.5	800.8	-1,241.0	1,473.8	0.27	-0.22	
7,575.0	0.60	160.80	7,378.5	799.7	-1,240.9	1,473.0	0.35	-0.22	
7,667.0	0.50	136.00	7,470.5	799.0	-1,240.4	1,472.2	0.28	-0.11	
7,758.0	0.70	118.00	7,561.5	798.4	-1,239.7	1,471.3	0.30	0.22	
7,850.0	1.00	92.80	7,653.5	798.1	-1,238.4	1,470.0	0.51	0.33	
7,942.0	1.20	73.70	7,745.5	798.4	-1,236.6	1,468.8	0.45	0.22	
8,033.0	1.20	63.90	7,836.4	799.0	-1,234.9	1,467.8	0.23	0.00	
8,124.0	1.20	79.50	7,927.4	799.6	-1,233.1	1,466.7	0.36	0.00	
8,216.0	1.00	106.70	8,019.4	799.6	-1,231.4	1,465.3	0.60	-0.22	
8,307.0	1.10	107.90	8,110.4	799.1	-1,229.8	1,463.7	0.11	0.11	
8,399.0	1.30	112.10	8,202.4	798.4	-1,228.0	1,461.9	0.24	0.22	
8,490.0	1.40	98.60	8,293.3	797.9	-1,225.9	1,459.9	0.37	0.11	
8,550.0	1.50	101.80	8,353.3	797.6	-1,224.4	1,458.5	0.21	0.17	
8,600.0	1.50	101.80	8,403.3	797.3	-1,223.1	1,457.3	0.00	0.00	

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Shideler Fee 31-5C TGT	0.00	0.00	6,278.0	806.5	-1,242.2	1,579,643.21	2,374,610.32	39.403955	-107.713460
- survey misses target center by 9.7ft at 6474.5ft MD (6278.4 TVD, 801.6 N, -1233.8 E)									
- Circle (radius 25.0)									
Shideler Fee 31-5C PBT	0.00	0.00	8,362.0	806.5	-1,242.2	1,579,643.21	2,374,610.32	39.403955	-107.713460
- survey misses target center by 21.7ft at 8550.0ft MD (8353.3 TVD, 797.6 N, -1224.4 E)									
- Circle (radius 50.0)									

Survey Annotations

	Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
			+N/-S (ft)	+E/-W (ft)	
	8,550.0	8,353.3	797.6	-1,224.4	Last Cathedral Survey @ 8550' MD
	8,600.0	8,403.3	797.3	-1,223.1	Projection to Bit @ 8600' MD

Checked By: _____ Approved By: _____ Date: _____