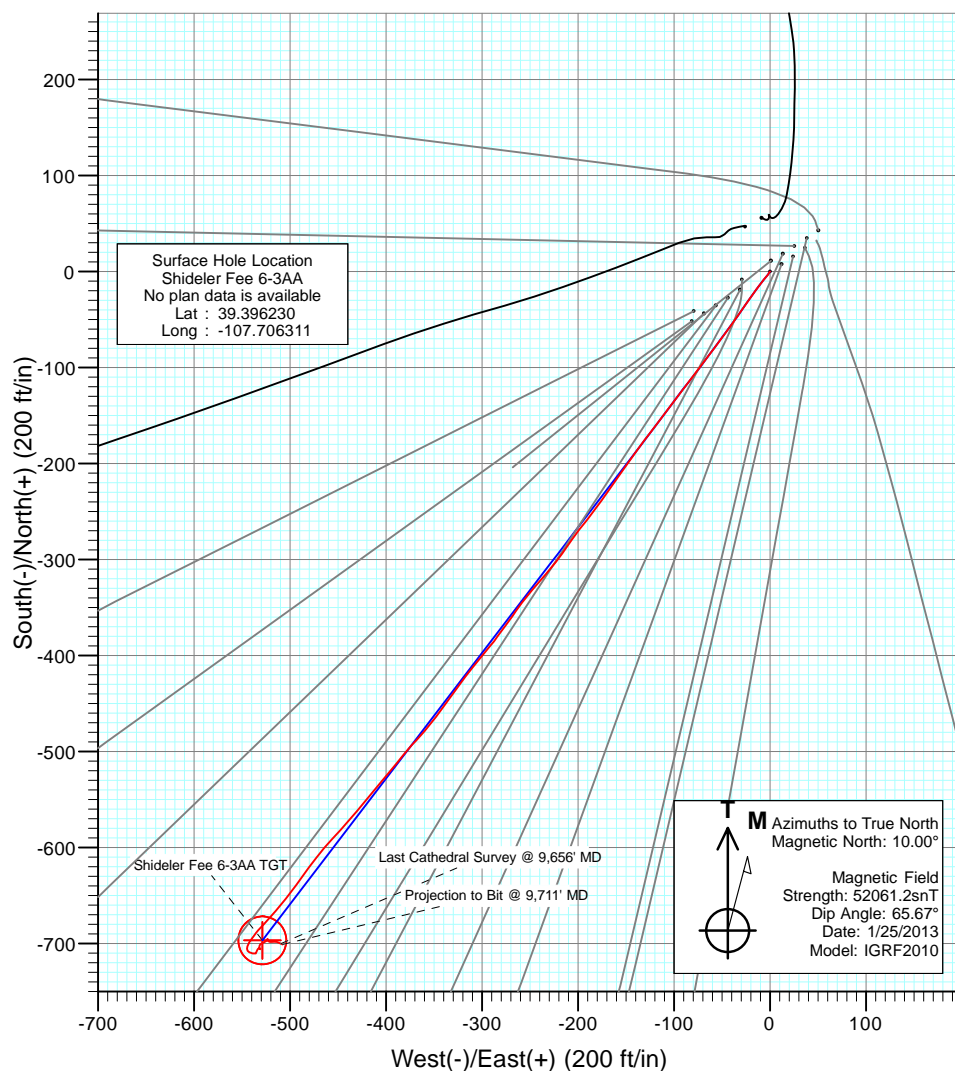
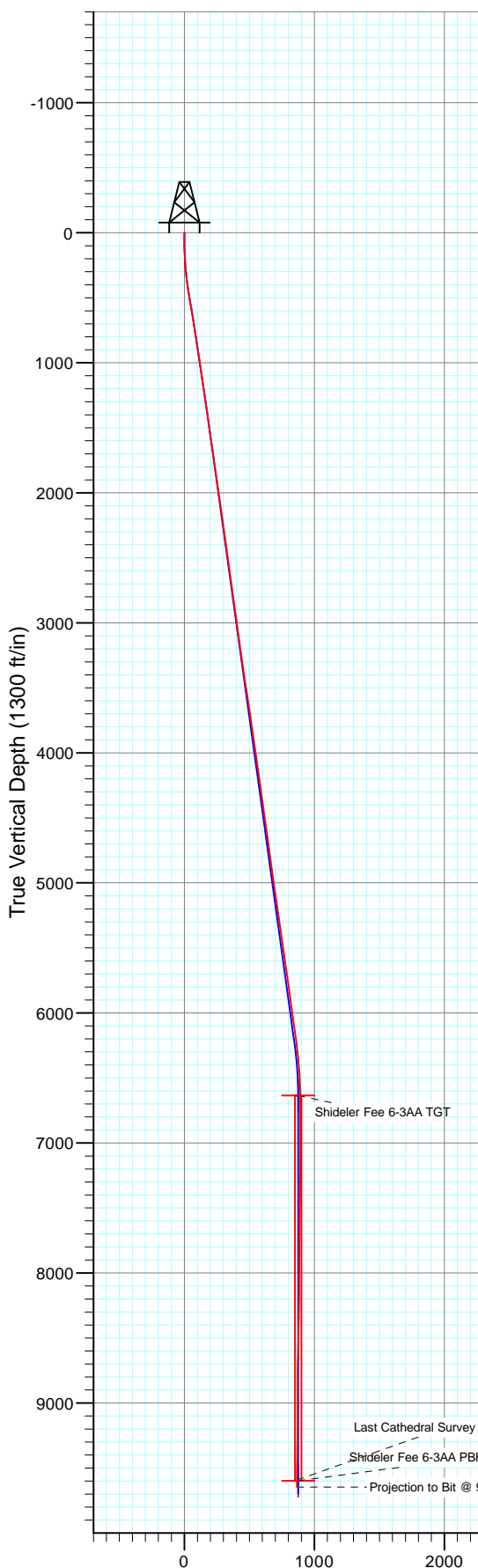




Project: Mamm Creek
 Site: O31E Pad
 Well: Shideler Fee 6-3AA
 Wellbore: DD
 Design: FINAL



DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Shideler Fee 6-3AA TGT	-696.7	-528.8	1576097.50	2376015.96	39.394317	-107.708182
Shideler Fee 6-3AA PBHL (528' FNL & 2492' FEL)	-96.7	-528.8	1576097.50	2376015.96	39.394317	-107.708182

FORMATION TOP DETAILS

No formation data is available

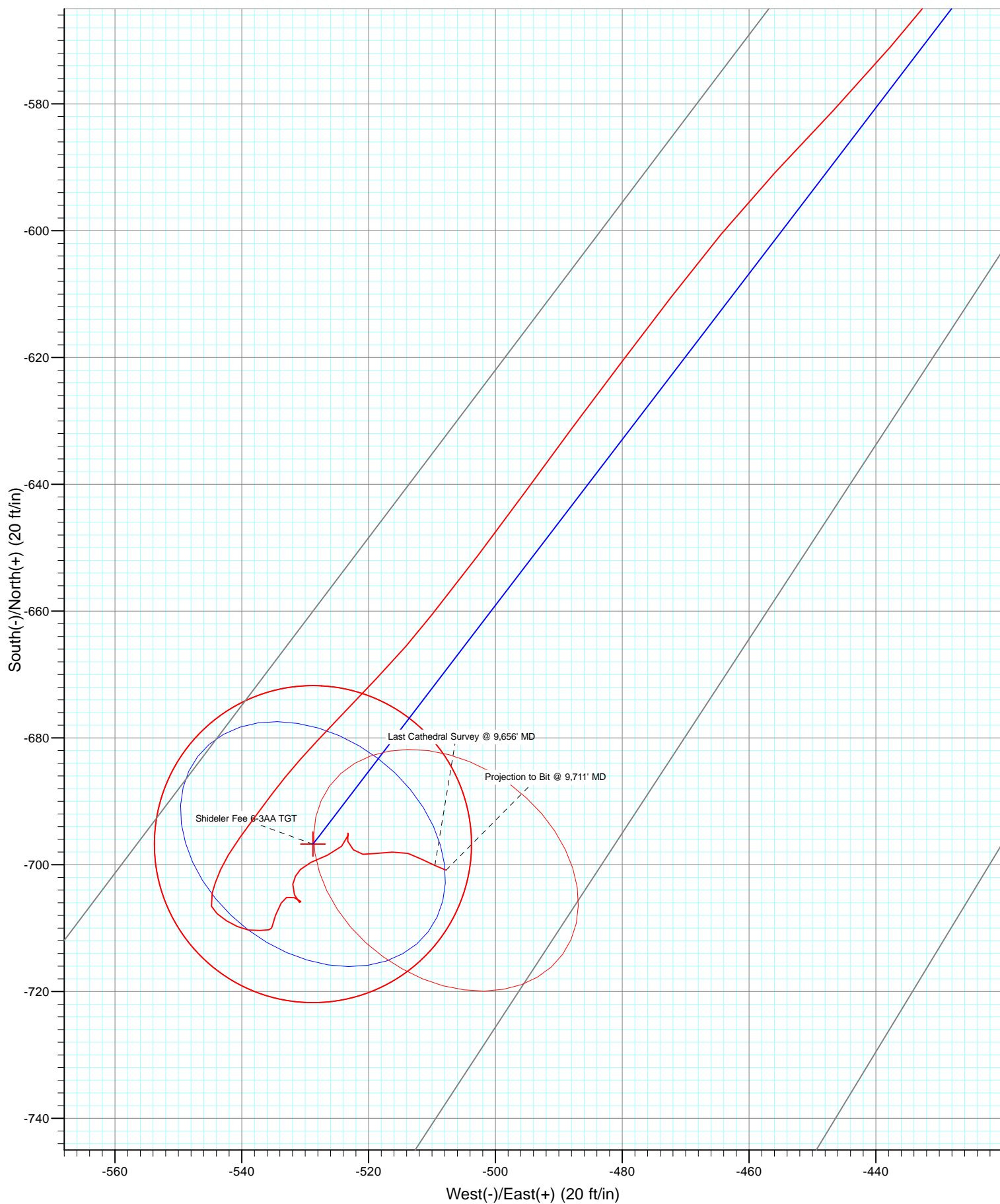
FINAL

Shideler Fee 6-3AA
 125614/204955 (SH) 135063/208455 (MH); SC
 KB = 22' @ 7126.0ft (Patterson #303)
 Ground Elevation @ 7104.0
 North American Datum 1983
 Well Shideler Fee 6-3AA, True North

Vertical Section at 216.64° (1300 ft/in)



Project: Mamm Creek
Site: O31E Pad
Well: Shideler Fee 6-3AA
Wellbore: DD
Design: FINAL



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Fee 6-3AA
Project:	Mamm Creek	TVD Reference:	KB = 22' @ 7126.0ft (Patterson #303)
Site:	O31E Pad	MD Reference:	KB = 22' @ 7126.0ft (Patterson #303)
Well:	Shideler Fee 6-3AA	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		O31E Pad			
Site Position:		Northing:	1,577,012.73 ft	Latitude:	39.396873
From:	Lat/Long	Easting:	2,376,675.10 ft	Longitude:	-107.705929
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.39 °

Well	Shideler Fee 6-3AA					
Well Position	+N/-S	0.0 ft	Northing:	1,576,781.20 ft	Latitude:	39.396230
	+E/-W	0.0 ft	Easting:	2,376,561.49 ft	Longitude:	-107.706311
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	7,104.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/25/2013	10.00	65.67	52,061

Design	FINAL			
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	216.64

Survey Program	Date	2/14/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
111.0	9,711.0	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	
111.0	0.70	211.70	111.0	-0.6	-0.4	0.7	0.63	0.63	
141.0	1.20	214.10	141.0	-1.0	-0.6	1.2	1.67	1.67	
172.0	2.10	216.80	172.0	-1.7	-1.2	2.1	2.91	2.90	
203.0	2.90	216.40	203.0	-2.8	-2.0	3.4	2.58	2.58	
234.0	3.80	217.90	233.9	-4.2	-3.1	5.2	2.92	2.90	
265.0	4.70	218.10	264.8	-6.1	-4.5	7.5	2.90	2.90	
295.0	5.80	218.50	294.7	-8.2	-6.2	10.3	3.67	3.67	
326.0	6.70	218.10	325.5	-10.9	-8.3	13.6	2.91	2.90	
418.0	8.00	215.70	416.7	-20.3	-15.3	25.4	1.45	1.41	
510.0	9.80	216.10	507.6	-31.8	-23.7	39.6	1.96	1.96	
601.0	10.20	213.10	597.2	-44.8	-32.6	55.4	0.72	0.44	
692.0	9.30	217.30	686.9	-57.4	-41.5	70.8	1.26	-0.99	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Fee 6-3AA
Project:	Mamm Creek	TVD Reference:	KB = 22' @ 7126.0ft (Patterson #303)
Site:	O31E Pad	MD Reference:	KB = 22' @ 7126.0ft (Patterson #303)
Well:	Shideler Fee 6-3AA	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
784.0	8.60	216.70	777.8	-68.8	-50.1	85.1	0.77	-0.76	
875.0	8.50	215.00	867.8	-79.8	-58.0	98.7	0.30	-0.11	
968.0	8.30	217.60	959.8	-90.8	-66.1	112.2	0.46	-0.22	
1,062.0	8.30	215.80	1,052.8	-101.6	-74.2	125.8	0.28	0.00	
1,154.0	8.40	219.30	1,143.8	-112.2	-82.3	139.2	0.56	0.11	
1,245.0	8.50	218.80	1,233.9	-122.6	-90.7	152.5	0.14	0.11	
1,337.0	8.40	214.90	1,324.9	-133.4	-98.8	166.0	0.63	-0.11	
1,413.0	8.20	216.60	1,400.1	-142.3	-105.2	177.0	0.42	-0.26	
1,523.0	8.30	218.00	1,508.9	-154.9	-114.8	192.8	0.20	0.09	
1,614.0	8.20	216.80	1,599.0	-165.2	-122.7	205.8	0.22	-0.11	
1,706.0	8.20	217.50	1,690.0	-175.7	-130.7	219.0	0.11	0.00	
1,797.0	8.10	216.10	1,780.1	-186.0	-138.4	231.9	0.24	-0.11	
1,889.0	8.10	214.60	1,871.2	-196.6	-145.9	244.8	0.23	0.00	
1,980.0	8.20	215.00	1,961.3	-207.2	-153.3	257.7	0.13	0.11	
2,070.0	8.10	214.70	2,050.4	-217.7	-160.5	270.5	0.12	-0.11	
2,162.0	8.00	216.10	2,141.5	-228.2	-168.0	283.3	0.24	-0.11	
2,254.0	8.20	215.60	2,232.6	-238.7	-175.6	296.3	0.23	0.22	
2,345.0	8.00	216.30	2,322.6	-249.1	-183.1	309.1	0.25	-0.22	
2,437.0	7.80	219.30	2,413.8	-259.0	-190.9	321.8	0.50	-0.22	
2,528.0	7.80	218.10	2,503.9	-268.7	-198.6	334.1	0.18	0.00	
2,620.0	7.80	213.70	2,595.1	-278.8	-205.9	346.6	0.65	0.00	
2,712.0	7.90	216.60	2,686.2	-289.1	-213.1	359.1	0.44	0.11	
2,803.0	7.80	214.60	2,776.4	-299.2	-220.4	371.6	0.32	-0.11	
2,895.0	7.90	221.90	2,867.5	-309.0	-228.1	384.1	1.09	0.11	
2,986.0	7.70	220.10	2,957.7	-318.3	-236.2	396.4	0.35	-0.22	
3,078.0	8.10	220.70	3,048.8	-328.0	-244.4	409.0	0.44	0.43	
3,169.0	8.00	218.60	3,138.9	-337.8	-252.6	421.8	0.34	-0.11	
3,261.0	7.90	215.10	3,230.0	-347.9	-260.2	434.5	0.54	-0.11	
3,353.0	8.40	216.70	3,321.1	-358.5	-267.9	447.5	0.60	0.54	
3,444.0	8.40	216.60	3,411.1	-369.2	-275.8	460.8	0.02	0.00	
3,536.0	8.00	215.10	3,502.2	-379.8	-283.5	473.9	0.49	-0.43	
3,628.0	9.00	220.30	3,593.2	-390.5	-291.8	487.5	1.37	1.09	
3,719.0	8.60	219.00	3,683.1	-401.2	-300.7	501.4	0.49	-0.44	
3,811.0	8.50	218.70	3,774.1	-411.9	-309.3	515.1	0.12	-0.11	
3,902.0	8.60	217.30	3,864.1	-422.6	-317.6	528.6	0.25	0.11	
3,994.0	8.30	216.30	3,955.1	-433.4	-325.7	542.1	0.36	-0.33	
4,085.0	8.00	215.10	4,045.1	-443.9	-333.2	555.0	0.38	-0.33	
4,177.0	7.60	214.50	4,136.3	-454.1	-340.4	567.5	0.44	-0.43	
4,268.0	7.80	219.10	4,226.5	-463.9	-347.7	579.7	0.71	0.22	
4,360.0	7.60	220.50	4,317.6	-473.3	-355.6	592.0	0.30	-0.22	
4,451.0	8.40	222.40	4,407.7	-482.8	-363.9	604.6	0.93	0.88	
4,543.0	8.40	221.40	4,498.8	-492.8	-372.9	618.0	0.16	0.00	
4,635.0	8.00	219.00	4,589.8	-502.8	-381.4	631.1	0.57	-0.43	
4,726.0	7.30	217.30	4,680.0	-512.4	-388.9	643.2	0.81	-0.77	
4,818.0	7.60	219.00	4,771.2	-521.7	-396.2	655.1	0.40	0.33	
4,910.0	7.90	222.20	4,862.4	-531.1	-404.3	667.5	0.57	0.33	
5,001.0	8.50	220.50	4,952.5	-540.9	-412.9	680.4	0.71	0.66	
5,093.0	8.00	219.00	5,043.5	-551.0	-421.3	693.6	0.59	-0.54	
5,185.0	8.00	218.70	5,134.6	-561.0	-429.4	706.4	0.05	0.00	
5,277.0	8.20	220.70	5,225.7	-571.0	-437.7	719.3	0.38	0.22	
5,369.0	8.70	223.20	5,316.7	-581.0	-446.7	732.8	0.67	0.54	
5,460.0	8.30	223.10	5,406.7	-590.8	-455.9	746.2	0.44	-0.44	
5,552.0	7.80	219.10	5,497.8	-600.5	-464.4	759.0	0.82	-0.54	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Fee 6-3AA
Project:	Mamm Creek	TVD Reference:	KB = 22' @ 7126.0ft (Patterson #303)
Site:	O31E Pad	MD Reference:	KB = 22' @ 7126.0ft (Patterson #303)
Well:	Shideler Fee 6-3AA	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
5,644.0	8.00	217.90	5,588.9	-610.4	-472.2	771.6	0.28	0.22	
5,736.0	8.20	216.70	5,680.0	-620.7	-480.1	784.6	0.28	0.22	
5,827.0	8.40	217.10	5,770.0	-631.2	-488.0	797.7	0.23	0.22	
5,918.0	7.70	215.40	5,860.2	-641.5	-495.5	810.5	0.81	-0.77	
6,010.0	7.40	218.00	5,951.4	-651.2	-502.7	822.6	0.49	-0.33	
6,101.0	7.70	217.60	6,041.6	-660.7	-510.1	834.5	0.33	0.33	
6,193.0	8.80	224.00	6,132.6	-670.6	-518.7	847.6	1.56	1.20	
6,285.0	8.00	223.10	6,223.6	-680.3	-528.0	861.0	0.88	-0.87	
6,377.0	6.10	216.80	6,314.9	-688.9	-535.3	872.2	2.23	-2.07	
6,468.0	4.50	215.80	6,405.5	-695.7	-540.3	880.6	1.76	-1.76	
6,560.0	3.00	203.90	6,497.3	-700.8	-543.4	886.6	1.83	-1.63	
6,651.0	1.90	192.80	6,588.3	-704.5	-544.7	890.3	1.31	-1.21	
6,697.5	1.30	183.02	6,634.8	-705.7	-544.8	891.5	1.42	-1.30	Shideler Fee 6-3AA TGT
6,743.0	0.80	159.80	6,680.2	-706.6	-544.8	892.1	1.42	-1.09	
6,835.0	1.10	130.10	6,772.2	-707.7	-543.9	892.5	0.62	0.33	
6,927.0	1.20	124.30	6,864.2	-708.8	-542.4	892.5	0.17	0.11	
7,018.0	1.30	112.30	6,955.2	-709.8	-540.7	892.2	0.31	0.11	
7,109.0	1.00	100.00	7,046.2	-710.3	-538.9	891.6	0.43	-0.33	
7,201.0	1.30	86.60	7,138.1	-710.4	-537.1	890.5	0.44	0.33	
7,293.0	0.40	82.20	7,230.1	-710.3	-535.7	889.6	0.98	-0.98	
7,384.0	0.20	10.60	7,321.1	-710.1	-535.4	889.3	0.42	-0.22	
7,476.0	0.10	100.00	7,413.1	-709.9	-535.3	889.1	0.24	-0.11	
7,568.0	0.50	7.90	7,505.1	-709.5	-535.1	888.7	0.56	0.43	
7,659.0	1.50	19.60	7,596.1	-708.0	-534.7	887.2	1.12	1.10	
7,751.0	1.20	31.20	7,688.1	-706.1	-533.8	885.1	0.44	-0.33	
7,842.0	0.50	77.80	7,779.1	-705.2	-532.9	883.9	1.02	-0.77	
7,934.0	1.00	96.90	7,871.1	-705.2	-531.7	883.2	0.60	0.54	
8,026.0	0.70	154.60	7,963.1	-705.8	-530.7	883.0	0.94	-0.33	
8,118.0	0.70	307.10	8,055.1	-706.0	-530.9	883.3	1.48	0.00	
8,209.0	1.20	337.70	8,146.0	-704.7	-531.7	882.8	0.76	0.55	
8,300.0	1.00	8.40	8,237.0	-703.1	-531.9	881.6	0.67	-0.22	
8,392.0	0.70	32.50	8,329.0	-701.8	-531.5	880.3	0.50	-0.33	
8,484.0	0.90	40.10	8,421.0	-700.8	-530.7	879.0	0.25	0.22	
8,575.0	1.70	63.10	8,512.0	-699.6	-529.1	877.1	1.03	0.88	
8,667.0	1.80	70.10	8,603.9	-698.5	-526.5	874.7	0.26	0.11	
8,759.0	1.60	44.10	8,695.9	-697.1	-524.3	872.2	0.86	-0.22	
8,851.0	1.10	11.40	8,787.9	-695.3	-523.2	870.1	0.98	-0.54	
8,943.0	0.80	202.00	8,879.9	-695.0	-523.3	870.0	2.06	-0.33	
9,034.0	0.90	162.90	8,970.9	-696.3	-523.3	871.0	0.63	0.11	
9,125.0	1.20	134.30	9,061.8	-697.7	-522.4	871.6	0.65	0.33	
9,217.0	1.00	90.90	9,153.8	-698.3	-520.9	871.2	0.91	-0.22	
9,309.0	1.40	83.70	9,245.8	-698.2	-519.0	870.0	0.46	0.43	
9,401.0	2.00	86.30	9,337.8	-698.0	-516.3	868.2	0.66	0.65	
9,492.0	1.20	108.40	9,428.7	-698.2	-513.8	866.8	1.09	-0.88	
9,584.0	1.70	117.00	9,520.7	-699.1	-511.6	866.3	0.59	0.54	
9,656.0	2.00	113.20	9,592.7	-700.1	-509.5	865.8	0.45	0.42	Last Cathedral Survey @ 9,656' MD - Shideler F
9,711.0	2.00	113.20	9,647.6	-700.9	-507.8	865.4	0.00	0.00	Projection to Bit @ 9,711' MD

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Fee 6-3AA
Project:	Mamm Creek	TVD Reference:	KB = 22' @ 7126.0ft (Patterson #303)
Site:	O31E Pad	MD Reference:	KB = 22' @ 7126.0ft (Patterson #303)
Well:	Shideler Fee 6-3AA	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	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									
Shideler Fee 6-3AA TGT	0.00	0.00	6,635.0	-696.7	-528.8	1,576,097.50	2,376,015.96	39.394317	-107.708182
- actual wellpath misses target center by 18.4ft at 6697.6ft MD (6634.9 TVD, -705.7 N, -544.8 E)									
- Point									
Shideler Fee 6-3AA PBI-	0.00	0.00	9,598.0	-696.7	-528.8	1,576,097.50	2,376,015.96	39.394317	-107.708182
- actual wellpath misses target center by 20.2ft at 9656.0ft MD (9592.7 TVD, -700.1 N, -509.5 E)									
- Circle (radius 25.0)									

Design Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W		
		(ft)	(ft)	Comment	
9,656.0	9,592.7	-700.1	-509.5	Last Cathedral Survey @ 9,656' MD	
9,711.0	9,647.6	-700.9	-507.8	Projection to Bit @ 9,711' MD	

Checked By: _____ Approved By: _____ Date: _____