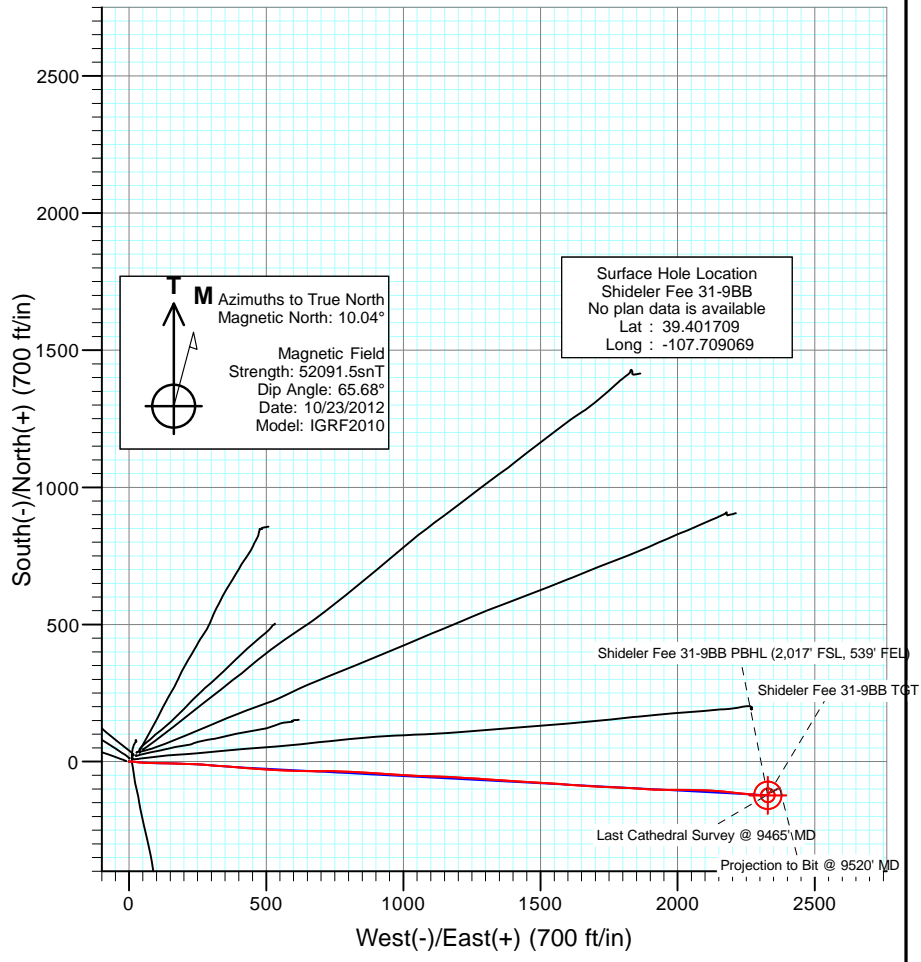
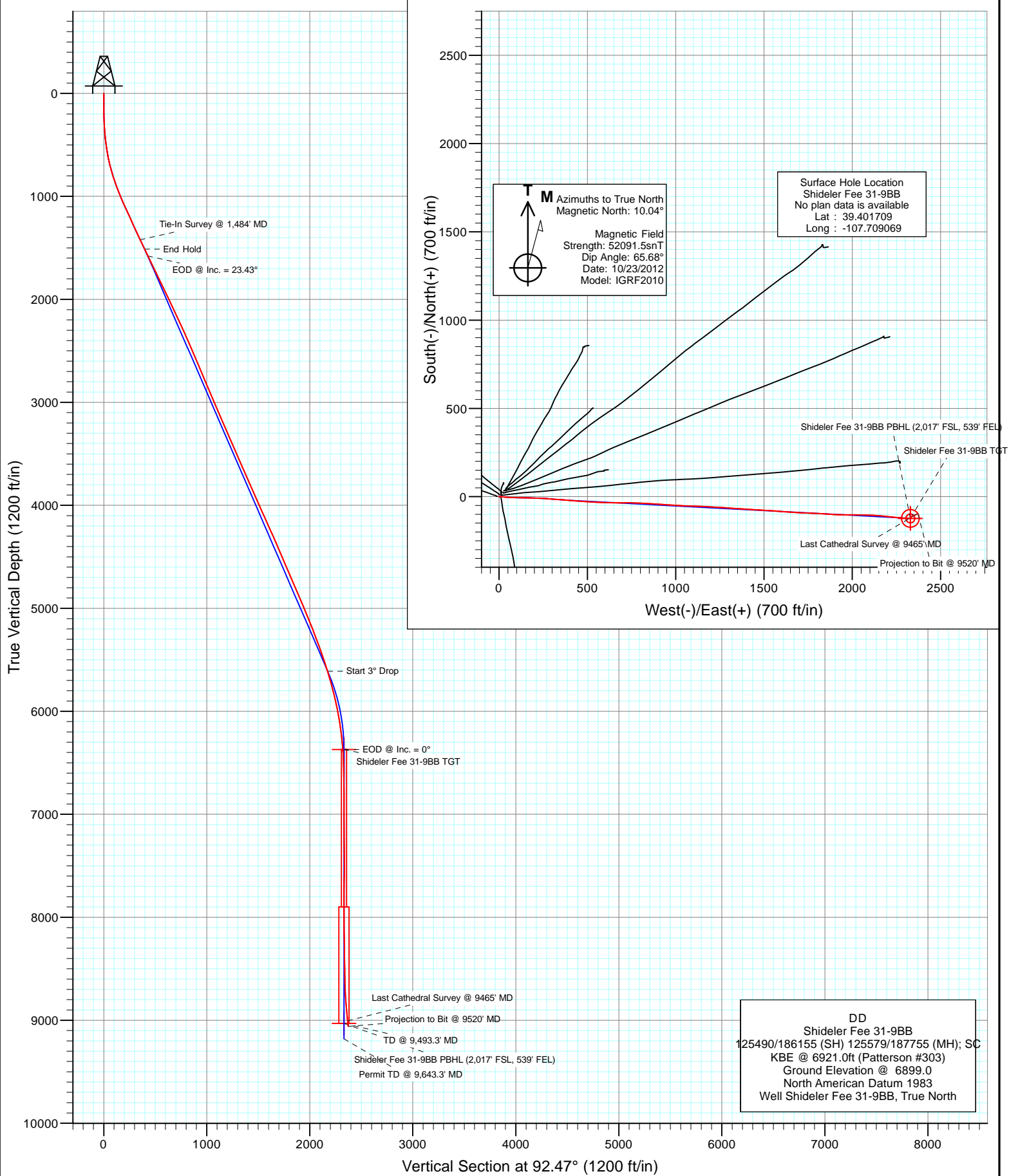




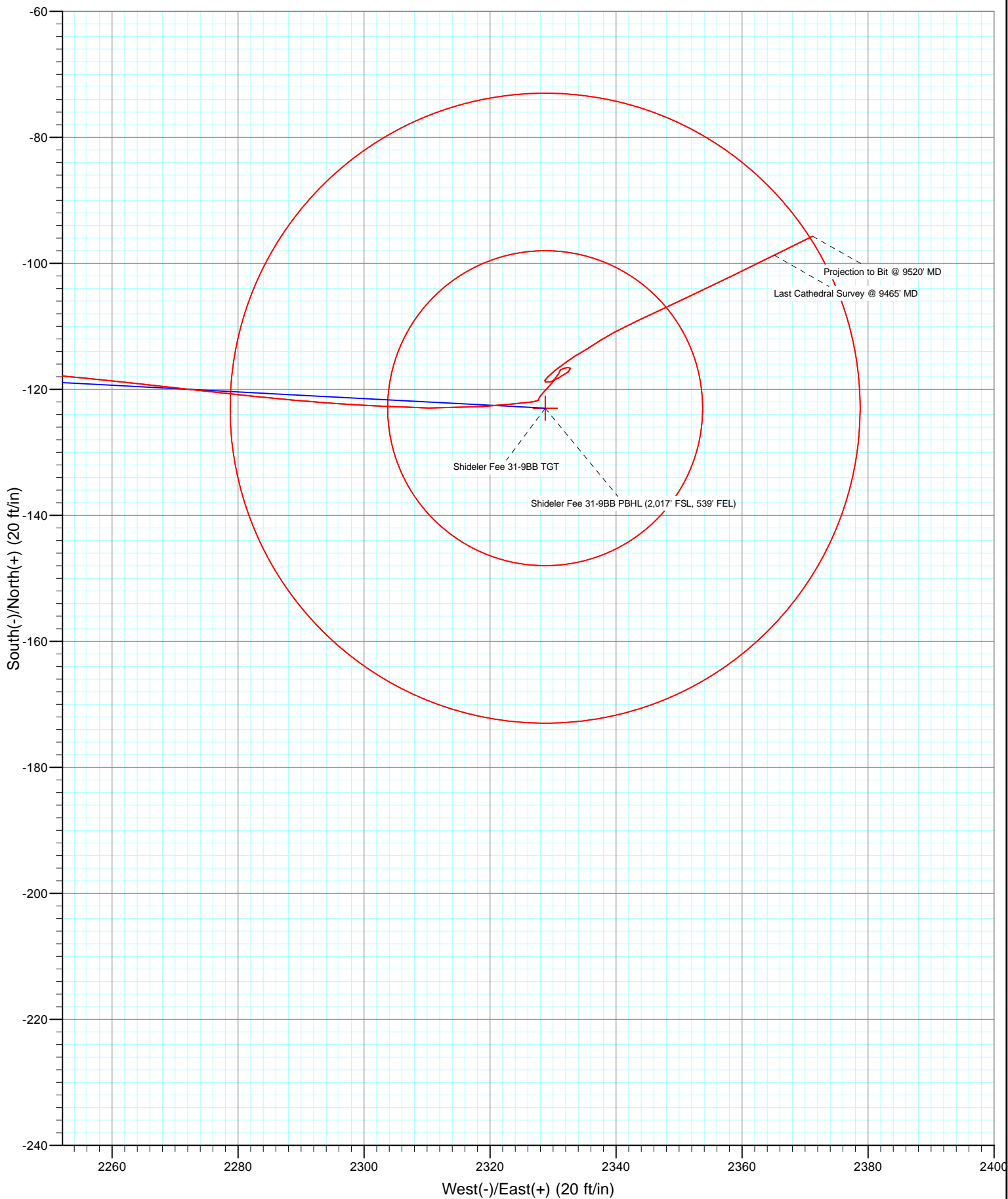
Project: Mamm Creek
 Site: K31E Pad
 Well: Shideler Fee 31-9BB
 Wellbore: DD
 Design: DD



DD
 Shideler Fee 31-9BB
 125490/186155 (SH) 125579/187755 (MH); SC
 KBE @ 6921.0ft (Patterson #303)
 Ground Elevation @ 6899.0
 North American Datum 1983
 Well Shideler Fee 31-9BB, True North



Project: Mamm Creek
Site: K31E Pad
Well: Shideler Fee 31-9BB
Wellbore: DD
Design: DD



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Fee 31-9BB
Project:	Mamm Creek	TVD Reference:	KBE @ 6921.0ft (Patterson #303)
Site:	K31E Pad	MD Reference:	KBE @ 6921.0ft (Patterson #303)
Well:	Shideler Fee 31-9BB	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 31-9BB			
Well Position	+N/-S	0.0 ft	Northing:	1,578,795.17 ft
	+E/-W	0.0 ft	Easting:	2,375,830.83 ft
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	10/23/2012	10.04	65.68	52,091

Design	DD			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	92.47

Survey Program	Date	10/31/2012		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
79.0	9,520.0	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	
79.0	0.10	81.10	79.0	0.0	0.1	0.1	0.13	0.13	
110.0	0.40	85.30	110.0	0.0	0.2	0.2	0.97	0.97	
141.0	0.40	79.10	141.0	0.1	0.4	0.4	0.14	0.00	
171.0	0.40	61.50	171.0	0.1	0.6	0.6	0.41	0.00	
202.0	0.80	78.60	202.0	0.2	0.9	0.9	1.40	1.29	
232.0	1.90	92.00	232.0	0.2	1.6	1.6	3.79	3.67	
263.0	2.60	90.80	263.0	0.2	2.8	2.8	2.26	2.26	
294.0	2.90	91.10	293.9	0.2	4.3	4.3	0.97	0.97	
386.0	4.90	92.30	385.7	0.0	10.6	10.6	2.18	2.17	
479.0	7.10	96.70	478.2	-0.8	20.3	20.3	2.42	2.37	
570.0	9.40	97.60	568.2	-2.5	33.2	33.3	2.53	2.53	
663.0	12.70	92.90	659.5	-4.0	51.0	51.1	3.68	3.55	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Fee 31-9BB
Project:	Mamm Creek	TVD Reference:	KBE @ 6921.0ft (Patterson #303)
Site:	K31E Pad	MD Reference:	KBE @ 6921.0ft (Patterson #303)
Well:	Shideler Fee 31-9BB	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
755.0	16.00	91.00	748.6	-4.7	73.7	73.9	3.62	3.59	
847.0	18.30	91.70	836.5	-5.4	100.9	101.0	2.51	2.50	
939.0	20.80	91.20	923.2	-6.2	131.6	131.8	2.72	2.72	
1,031.0	23.00	91.90	1,008.6	-7.1	165.9	166.1	2.41	2.39	
1,124.0	24.10	92.40	1,093.8	-8.5	203.1	203.2	1.20	1.18	
1,216.0	25.00	91.90	1,177.5	-9.9	241.3	241.5	1.00	0.98	
1,308.0	24.00	94.50	1,261.2	-12.0	279.3	279.6	1.60	-1.09	
1,400.0	24.70	94.60	1,345.1	-15.0	317.2	317.5	0.76	0.76	
1,484.0	25.60	93.70	1,421.1	-17.6	352.8	353.2	1.16	1.07	
1,619.0	26.30	95.00	1,542.5	-22.1	411.7	412.2	0.67	0.52	
1,711.0	25.40	94.20	1,625.3	-25.3	451.6	452.3	1.05	-0.98	
1,803.0	25.70	93.80	1,708.3	-28.1	491.2	492.0	0.38	0.33	
1,894.0	26.10	94.00	1,790.1	-30.8	530.9	531.7	0.45	0.44	
1,986.0	25.40	92.20	1,873.0	-33.0	570.8	571.7	1.14	-0.76	
2,077.0	25.40	91.40	1,955.2	-34.2	609.8	610.7	0.38	0.00	
2,168.0	25.40	90.90	2,037.4	-35.0	648.8	649.7	0.24	0.00	
2,260.0	25.70	89.80	2,120.4	-35.2	688.5	689.4	0.61	0.33	
2,351.0	24.40	89.80	2,202.8	-35.1	727.0	727.9	1.43	-1.43	
2,443.0	23.80	92.30	2,286.8	-35.8	764.6	765.4	1.29	-0.65	
2,535.0	24.20	91.20	2,370.9	-36.9	802.0	802.8	0.65	0.43	
2,627.0	23.60	94.20	2,455.0	-38.7	839.2	840.1	1.47	-0.65	
2,719.0	23.80	94.40	2,539.2	-41.4	876.1	877.0	0.23	0.22	
2,810.0	22.90	93.50	2,622.8	-43.9	912.1	913.1	1.06	-0.99	
2,902.0	22.30	93.30	2,707.7	-46.0	947.4	948.5	0.66	-0.65	
2,994.0	22.80	93.20	2,792.7	-48.0	982.6	983.7	0.55	0.54	
3,085.0	23.00	93.20	2,876.5	-50.0	1,017.9	1,019.1	0.22	0.22	
3,177.0	23.30	92.60	2,961.1	-51.8	1,054.1	1,055.3	0.41	0.33	
3,268.0	23.60	92.20	3,044.6	-53.3	1,090.2	1,091.5	0.37	0.33	
3,360.0	23.70	92.00	3,128.9	-54.7	1,127.1	1,128.4	0.14	0.11	
3,451.0	23.20	93.00	3,212.3	-56.3	1,163.3	1,164.6	0.70	-0.55	
3,543.0	22.90	92.90	3,297.0	-58.1	1,199.3	1,200.7	0.33	-0.33	
3,634.0	23.50	93.70	3,380.6	-60.2	1,235.1	1,236.5	0.74	0.66	
3,726.0	23.80	93.40	3,464.9	-62.5	1,271.9	1,273.4	0.35	0.33	
3,817.0	24.00	94.00	3,548.1	-64.8	1,308.7	1,310.3	0.35	0.22	
3,909.0	23.80	94.40	3,632.2	-67.6	1,345.9	1,347.5	0.28	-0.22	
4,000.0	23.70	93.40	3,715.5	-70.1	1,382.4	1,384.1	0.46	-0.11	
4,092.0	23.80	93.70	3,799.7	-72.4	1,419.4	1,421.2	0.17	0.11	
4,183.0	23.70	93.10	3,883.0	-74.5	1,456.0	1,457.8	0.29	-0.11	
4,275.0	23.60	94.00	3,967.3	-76.8	1,492.8	1,494.7	0.41	-0.11	
4,367.0	24.60	92.30	4,051.3	-78.9	1,530.3	1,532.3	1.32	1.09	
4,458.0	24.50	95.40	4,134.0	-81.4	1,568.0	1,570.1	1.42	-0.11	
4,550.0	23.90	93.70	4,218.0	-84.4	1,605.6	1,607.8	1.00	-0.65	
4,641.0	23.90	95.50	4,301.2	-87.4	1,642.4	1,644.6	0.80	0.00	
4,733.0	23.30	93.10	4,385.5	-90.1	1,679.1	1,681.4	1.23	-0.65	
4,824.0	22.60	92.40	4,469.3	-91.8	1,714.5	1,716.9	0.83	-0.77	
4,916.0	23.10	91.40	4,554.0	-93.0	1,750.2	1,752.6	0.69	0.54	
5,008.0	24.20	93.50	4,638.3	-94.6	1,787.1	1,789.5	1.51	1.20	
5,099.0	24.00	93.70	4,721.4	-97.0	1,824.2	1,826.7	0.24	-0.22	
5,190.0	23.10	93.40	4,804.8	-99.2	1,860.5	1,863.0	1.00	-0.99	
5,282.0	22.70	93.10	4,889.5	-101.2	1,896.2	1,898.8	0.45	-0.43	
5,374.0	22.20	90.80	4,974.6	-102.4	1,931.3	1,933.9	1.10	-0.54	
5,465.0	21.80	89.80	5,059.0	-102.6	1,965.4	1,968.0	0.60	-0.44	
5,556.0	22.00	91.70	5,143.4	-103.1	1,999.3	2,001.9	0.81	0.22	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Fee 31-9BB
Project:	Mamm Creek	TVD Reference:	KBE @ 6921.0ft (Patterson #303)
Site:	K31E Pad	MD Reference:	KBE @ 6921.0ft (Patterson #303)
Well:	Shideler Fee 31-9BB	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
5,648.0	22.30	89.80	5,228.6	-103.5	2,034.0	2,036.6	0.84	0.33	
5,739.0	21.00	90.60	5,313.2	-103.6	2,067.6	2,070.1	1.46	-1.43	
5,831.0	19.60	92.60	5,399.5	-104.5	2,099.5	2,102.0	1.70	-1.52	
5,923.0	18.50	95.10	5,486.4	-106.5	2,129.4	2,132.1	1.49	-1.20	
6,014.0	18.00	93.60	5,572.8	-108.7	2,157.9	2,160.5	0.75	-0.55	
6,106.0	16.80	96.10	5,660.6	-111.0	2,185.3	2,188.0	1.54	-1.30	
6,198.0	14.80	97.00	5,749.2	-113.8	2,210.2	2,213.0	2.19	-2.17	
6,290.0	13.40	94.80	5,838.4	-116.1	2,232.4	2,235.4	1.63	-1.52	
6,382.0	12.00	95.40	5,928.1	-117.9	2,252.6	2,255.6	1.53	-1.52	
6,473.0	10.40	96.60	6,017.4	-119.8	2,270.2	2,273.2	1.78	-1.76	
6,565.0	9.00	95.60	6,108.1	-121.4	2,285.6	2,288.7	1.53	-1.52	
6,657.0	7.80	93.10	6,199.1	-122.5	2,299.0	2,302.1	1.36	-1.30	
6,749.0	6.30	92.00	6,290.4	-123.0	2,310.3	2,313.4	1.64	-1.63	
6,840.0	4.50	83.30	6,381.0	-122.7	2,318.8	2,321.9	2.17	-1.98	
6,931.0	2.30	88.80	6,471.8	-122.3	2,324.2	2,327.3	2.44	-2.42	
7,022.0	1.20	73.80	6,562.8	-122.0	2,326.9	2,330.0	1.30	-1.21	
7,113.0	0.10	280.00	6,653.8	-121.7	2,327.7	2,330.8	1.42	-1.21	
7,205.0	0.20	16.00	6,745.8	-121.5	2,327.7	2,330.8	0.25	0.11	
7,297.0	0.40	35.40	6,837.8	-121.1	2,327.9	2,331.0	0.24	0.22	
7,388.0	0.80	43.90	6,928.8	-120.4	2,328.6	2,331.6	0.45	0.44	
7,480.0	1.50	41.30	7,020.7	-119.0	2,329.8	2,332.8	0.76	0.76	
7,571.0	0.80	23.80	7,111.7	-117.5	2,330.8	2,333.7	0.85	-0.77	
7,663.0	0.10	55.00	7,203.7	-116.9	2,331.2	2,334.0	0.78	-0.76	
7,754.0	0.70	68.30	7,294.7	-116.7	2,331.7	2,334.6	0.66	0.66	
7,846.0	0.10	141.30	7,386.7	-116.5	2,332.3	2,335.2	0.74	-0.65	
7,938.0	0.50	103.50	7,478.7	-116.7	2,332.8	2,335.6	0.46	0.43	
8,029.0	1.10	237.30	7,569.7	-117.2	2,332.4	2,335.3	1.64	0.66	
8,121.0	1.10	239.40	7,661.7	-118.2	2,330.9	2,333.8	0.04	0.00	
8,212.0	0.80	252.40	7,752.7	-118.8	2,329.6	2,332.5	0.40	-0.33	
8,303.0	0.30	310.90	7,843.7	-118.8	2,328.8	2,331.7	0.76	-0.55	
8,395.0	0.20	50.40	7,935.7	-118.6	2,328.7	2,331.7	0.42	-0.11	
8,486.0	0.70	37.50	8,026.7	-118.0	2,329.2	2,332.1	0.56	0.55	
8,578.0	1.20	53.70	8,118.7	-117.0	2,330.3	2,333.2	0.61	0.54	
8,669.0	1.90	53.10	8,209.6	-115.6	2,332.3	2,335.1	0.77	0.77	
8,761.0	0.20	79.90	8,301.6	-114.6	2,333.6	2,336.4	1.87	-1.85	
8,853.0	0.80	56.80	8,393.6	-114.2	2,334.3	2,337.1	0.68	0.65	
8,944.0	1.20	59.70	8,484.6	-113.4	2,335.7	2,338.4	0.44	0.44	
9,036.0	1.40	55.70	8,576.6	-112.3	2,337.4	2,340.1	0.24	0.22	
9,128.0	1.90	62.20	8,668.5	-110.9	2,339.7	2,342.3	0.58	0.54	
9,219.0	3.30	64.40	8,759.4	-109.1	2,343.4	2,345.9	1.54	1.54	
9,311.0	5.60	65.10	8,851.1	-106.1	2,349.9	2,352.3	2.50	2.50	
9,402.0	6.40	63.90	8,941.6	-102.0	2,358.5	2,360.7	0.89	0.88	
9,465.0	7.10	63.80	9,004.2	-98.7	2,365.1	2,367.2	1.11	1.11	
9,520.0	7.10	63.80	9,058.8	-95.7	2,371.2	2,373.1	0.00	0.00	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Fee 31-9BB
Project:	Mamm Creek	TVD Reference:	KBE @ 6921.0ft (Patterson #303)
Site:	K31E Pad	MD Reference:	KBE @ 6921.0ft (Patterson #303)
Well:	Shideler Fee 31-9BB	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									
Shideler Fee 31-9BB TC	0.00	0.00	6,370.5	-123.0	2,328.7	1,578,615.60	2,378,155.89	39.401371	-107.700828
- survey misses target center by 10.8ft at 6830.5ft MD (6371.5 TVD, -122.8 N, 2318.0 E)									
- Circle (radius 25.0)									
Shideler Fee 31-9BB PB	0.00	0.00	9,030.0	-123.0	2,328.7	1,578,615.60	2,378,155.89	39.401371	-107.700828
- survey misses target center by 50.8ft at 9465.0ft MD (9004.2 TVD, -98.7 N, 2365.1 E)									
- Circle (radius 50.0)									

Survey Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
9,465.0	9,004.2	-98.7	2,365.1	Last Cathedral Survey @ 9465' MD
9,520.0	9,058.8	-95.7	2,371.2	Projection to Bit @ 9520' MD

Checked By: _____ Approved By: _____ Date: _____