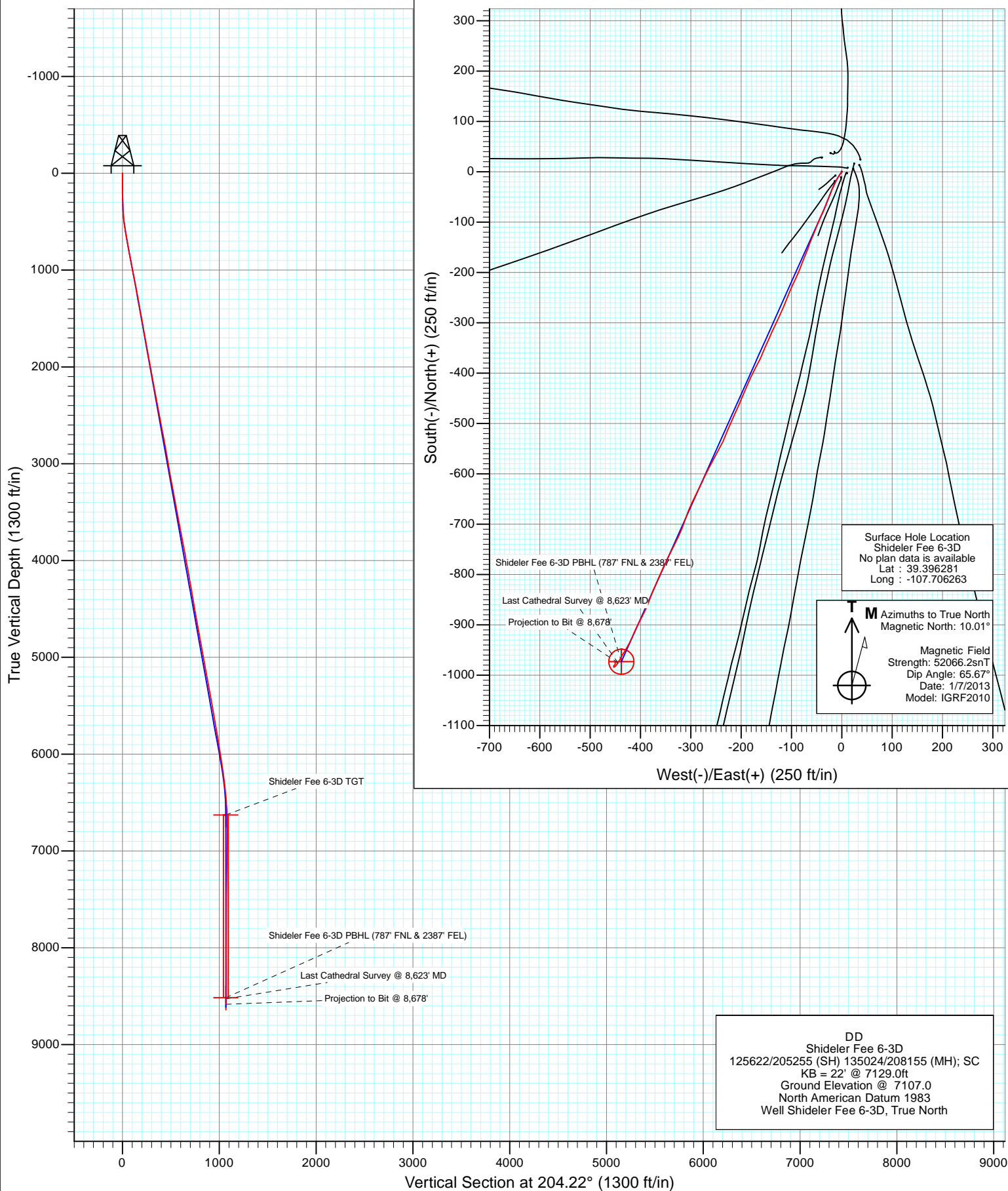


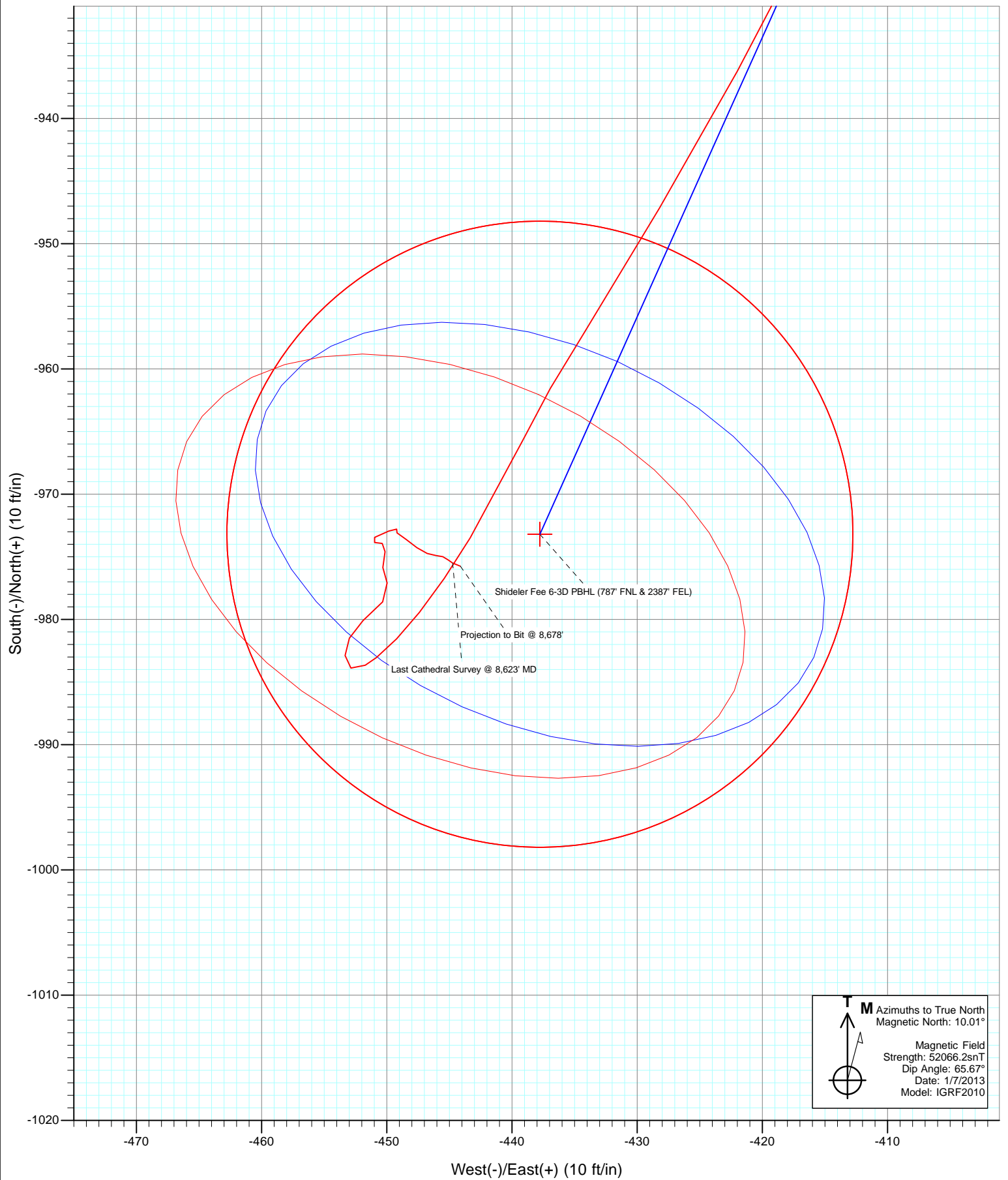


Project: Mamm Creek
Site: O31E Pad
Well: Shideler Fee 6-3D
Wellbore: DD
Design: FINAL



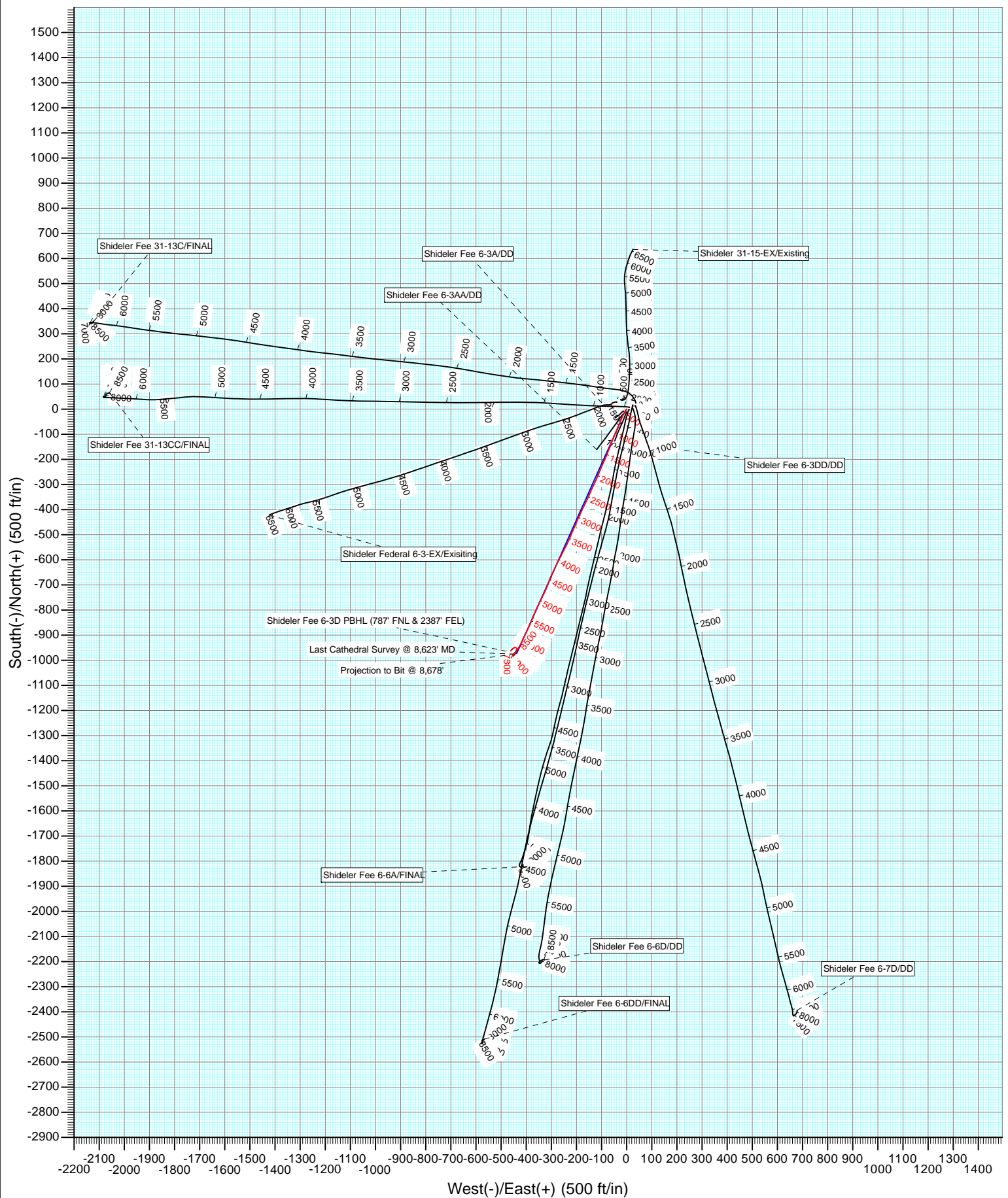


Project: Mamm Creek
Site: O31E Pad
Well: Shideler Fee 6-3D
Wellbore: DD
Design: FINAL





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



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Fee 6-3D
Project:	Mamm Creek	TVD Reference:	KB = 22' @ 7129.0ft
Site:	O31E Pad	MD Reference:	KB = 22' @ 7129.0ft
Well:	Shideler Fee 6-3D	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		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 6-3D				
Well Position	+N/-S	0.0 ft	Northing:	1,576,799.43 ft	Latitude:	39.396281
	+E/-W	0.0 ft	Easting:	2,376,575.50 ft	Longitude:	-107.706263
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	7,107.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/7/2013	10.01	65.67	52,066

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	204.22	

Survey Program	Date	1/15/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
111.0	8,678.0	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	0.20	227.50	111.0	-0.1	-0.1	0.2	0.18	0.18		
141.0	0.10	186.30	141.0	-0.2	-0.2	0.3	0.47	-0.33		
171.0	0.20	196.40	171.0	-0.3	-0.2	0.3	0.34	0.33		
203.0	0.30	171.10	203.0	-0.4	-0.2	0.5	0.46	0.31		
234.0	0.40	209.10	234.0	-0.6	-0.2	0.6	0.80	0.32		
265.0	0.90	213.70	265.0	-0.9	-0.4	1.0	1.62	1.61		
295.0	1.50	218.80	295.0	-1.4	-0.8	1.6	2.03	2.00		
326.0	2.10	221.50	326.0	-2.1	-1.4	2.5	1.95	1.94		
356.0	2.90	216.70	355.9	-3.1	-2.3	3.8	2.75	2.67		
387.0	3.60	214.40	386.9	-4.6	-3.3	5.5	2.30	2.26		
418.0	4.60	214.00	417.8	-6.4	-4.5	7.7	3.23	3.23		
449.0	5.50	210.90	448.7	-8.7	-6.0	10.4	3.03	2.90		

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Fee 6-3D
Project:	Mamm Creek	TVD Reference:	KB = 22' @ 7129.0ft
Site:	O31E Pad	MD Reference:	KB = 22' @ 7129.0ft
Well:	Shideler Fee 6-3D	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
479.0	6.30	211.10	478.5	-11.4	-7.6	13.5	2.67	2.67	
510.0	7.20	210.50	509.3	-14.5	-9.4	17.1	2.91	2.90	
541.0	7.80	204.20	540.1	-18.1	-11.3	21.1	3.28	1.94	
571.0	8.30	208.30	569.8	-21.8	-13.1	25.3	2.54	1.67	
662.0	10.00	202.60	659.6	-34.9	-19.3	39.8	2.11	1.87	
753.0	10.40	200.60	749.2	-49.9	-25.2	55.9	0.59	0.44	
844.0	10.80	202.50	838.6	-65.5	-31.4	72.6	0.58	0.44	
937.0	10.80	204.00	930.0	-81.5	-38.2	90.0	0.30	0.00	
995.0	10.90	204.40	986.9	-91.4	-42.7	100.9	0.22	0.17	
1,065.0	10.90	202.10	1,055.7	-103.6	-47.9	114.1	0.62	0.00	
1,156.0	11.10	202.10	1,145.0	-119.7	-54.5	131.5	0.22	0.22	
1,247.0	11.20	202.10	1,234.3	-136.0	-61.1	149.1	0.11	0.11	
1,339.0	10.10	198.30	1,324.7	-151.9	-67.0	166.0	1.42	-1.20	
1,430.0	10.20	203.80	1,414.3	-166.9	-72.8	182.0	1.07	0.11	
1,522.0	10.10	201.40	1,504.8	-181.8	-79.0	198.2	0.47	-0.11	
1,613.0	9.50	201.30	1,594.5	-196.3	-84.6	213.7	0.66	-0.66	
1,705.0	10.50	206.20	1,685.1	-210.9	-91.1	229.7	1.43	1.09	
1,796.0	10.60	204.60	1,774.6	-225.9	-98.2	246.3	0.34	0.11	
1,888.0	10.40	202.10	1,865.0	-241.3	-104.9	263.1	0.54	-0.22	
1,979.0	10.50	199.90	1,954.5	-256.7	-110.8	279.6	0.45	0.11	
2,070.0	10.40	205.60	2,044.0	-271.9	-117.2	296.0	1.14	-0.11	
2,161.0	10.30	203.30	2,133.5	-286.8	-123.9	312.4	0.47	-0.11	
2,253.0	10.90	207.20	2,224.0	-302.1	-131.2	329.3	1.02	0.65	
2,344.0	10.20	203.90	2,313.4	-317.1	-138.4	345.9	1.02	-0.77	
2,436.0	10.20	203.10	2,404.0	-332.0	-144.8	362.2	0.15	0.00	
2,527.0	10.70	204.70	2,493.5	-347.1	-151.5	378.7	0.64	0.55	
2,619.0	10.80	201.70	2,583.8	-362.9	-158.3	395.9	0.62	0.11	
2,711.0	10.80	209.00	2,674.2	-378.4	-165.7	413.1	1.49	0.00	
2,803.0	10.60	207.00	2,764.6	-393.5	-173.7	430.1	0.46	-0.22	
2,894.0	10.20	204.80	2,854.1	-408.3	-180.9	446.5	0.62	-0.44	
2,985.0	9.60	202.20	2,943.8	-422.6	-187.1	462.2	0.82	-0.66	
3,077.0	10.00	204.50	3,034.4	-437.0	-193.3	477.8	0.61	0.43	
3,169.0	9.90	201.50	3,125.0	-451.6	-199.5	493.7	0.57	-0.11	
3,260.0	10.50	204.80	3,214.6	-466.4	-205.9	509.8	0.92	0.66	
3,352.0	10.00	203.80	3,305.1	-481.4	-212.6	526.2	0.58	-0.54	
3,443.0	11.20	204.30	3,394.6	-496.6	-219.4	542.9	1.32	1.32	
3,535.0	10.70	202.30	3,484.9	-512.7	-226.4	560.4	0.68	-0.54	
3,627.0	10.40	202.30	3,575.4	-528.3	-232.8	577.3	0.33	-0.33	
3,718.0	11.20	208.80	3,664.7	-543.6	-240.1	594.3	1.60	0.88	
3,810.0	10.80	207.20	3,755.1	-559.1	-248.4	611.8	0.55	-0.43	
3,902.0	10.70	208.90	3,845.4	-574.3	-256.4	628.9	0.36	-0.11	
3,993.0	10.30	206.90	3,934.9	-588.9	-264.2	645.5	0.59	-0.44	
4,085.0	10.20	206.20	4,025.4	-603.5	-271.5	661.8	0.17	-0.11	
4,176.0	10.20	205.10	4,115.0	-618.1	-278.5	677.9	0.21	0.00	
4,267.0	10.00	206.30	4,204.6	-632.5	-285.4	693.9	0.32	-0.22	
4,359.0	9.80	205.40	4,295.2	-646.7	-292.3	709.7	0.27	-0.22	
4,451.0	9.40	205.50	4,385.9	-660.5	-298.9	725.0	0.44	-0.43	
4,542.0	10.50	200.90	4,475.6	-675.0	-305.1	740.7	1.49	1.21	
4,634.0	10.20	199.60	4,566.1	-690.5	-310.8	757.2	0.41	-0.33	
4,726.0	10.40	200.60	4,656.6	-705.9	-316.4	773.6	0.29	0.22	
4,817.0	10.40	205.70	4,746.1	-721.0	-322.9	790.0	1.01	0.00	
4,909.0	9.80	206.40	4,836.7	-735.5	-330.0	806.2	0.67	-0.65	
5,000.0	10.70	206.80	4,926.2	-750.0	-337.2	822.3	0.99	0.99	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Fee 6-3D
Project:	Mamm Creek	TVD Reference:	KB = 22' @ 7129.0ft
Site:	O31E Pad	MD Reference:	KB = 22' @ 7129.0ft
Well:	Shideler Fee 6-3D	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
5,092.0	10.50	205.30	5,016.6	-765.2	-344.7	839.2	0.37	-0.22	
5,184.0	10.20	205.50	5,107.2	-780.1	-351.7	855.8	0.33	-0.33	
5,276.0	9.00	203.60	5,197.9	-794.1	-358.1	871.1	1.35	-1.30	
5,368.0	10.10	204.30	5,288.6	-808.0	-364.3	886.4	1.20	1.20	
5,460.0	11.00	204.00	5,379.0	-823.4	-371.2	903.2	0.98	0.98	
5,551.0	9.80	201.00	5,468.5	-838.6	-377.5	919.6	1.45	-1.32	
5,643.0	10.00	199.70	5,559.2	-853.4	-383.0	935.4	0.33	0.22	
5,735.0	10.50	205.10	5,649.7	-868.5	-389.3	951.8	1.18	0.54	
5,826.0	10.60	207.50	5,739.2	-883.4	-396.7	968.4	0.50	0.11	
5,917.0	9.40	205.90	5,828.8	-897.6	-403.8	984.2	1.35	-1.32	
6,009.0	9.80	206.20	5,919.5	-911.3	-410.5	999.5	0.44	0.43	
6,101.0	8.30	201.50	6,010.3	-924.5	-416.4	1,014.0	1.82	-1.63	
6,192.0	8.10	209.80	6,100.4	-936.2	-422.0	1,026.9	1.32	-0.22	
6,284.0	7.60	209.40	6,191.6	-947.1	-428.2	1,039.4	0.55	-0.54	
6,376.0	6.90	213.00	6,282.8	-957.1	-434.2	1,051.0	0.91	-0.76	
6,467.0	5.80	205.90	6,373.3	-965.8	-439.2	1,061.0	1.48	-1.21	
6,559.0	5.10	211.10	6,464.9	-973.5	-443.3	1,069.7	0.93	-0.76	
6,651.0	3.90	218.50	6,556.6	-979.4	-447.4	1,076.8	1.45	-1.30	
6,742.0	2.40	231.70	6,647.4	-983.0	-450.8	1,081.4	1.82	-1.65	
6,834.0	0.80	304.00	6,739.4	-983.9	-452.9	1,083.0	2.49	-1.74	
6,926.0	0.80	5.60	6,831.4	-982.9	-453.3	1,082.3	0.89	0.00	
7,017.0	1.00	21.00	6,922.4	-981.5	-453.0	1,080.9	0.34	0.22	
7,109.0	1.30	50.20	7,014.4	-980.1	-451.9	1,079.2	0.70	0.33	
7,201.0	1.40	43.10	7,106.3	-978.6	-450.3	1,077.2	0.21	0.11	
7,293.0	1.00	328.90	7,198.3	-977.1	-450.0	1,075.7	1.61	-0.43	
7,384.0	0.70	7.10	7,289.3	-975.9	-450.3	1,074.7	0.69	-0.33	
7,476.0	0.90	8.00	7,381.3	-974.6	-450.1	1,073.5	0.22	0.22	
7,568.0	0.40	259.90	7,473.3	-973.9	-450.4	1,072.9	1.19	-0.54	
7,659.0	0.40	293.10	7,564.3	-973.9	-451.0	1,073.1	0.25	0.00	
7,751.0	0.50	45.80	7,656.3	-973.4	-451.0	1,072.8	0.82	0.11	
7,843.0	1.10	74.50	7,748.3	-972.9	-449.8	1,071.8	0.76	0.65	
7,935.0	0.30	247.20	7,840.3	-972.8	-449.2	1,071.4	1.52	-0.87	
8,027.0	0.40	128.80	7,932.3	-973.1	-449.2	1,071.7	0.66	0.11	
8,118.0	0.70	124.10	8,023.3	-973.6	-448.5	1,071.9	0.33	0.33	
8,209.0	0.70	130.40	8,114.3	-974.3	-447.6	1,072.1	0.08	0.00	
8,301.0	0.50	103.40	8,206.3	-974.7	-446.8	1,072.2	0.37	-0.22	
8,393.0	0.40	104.90	8,298.3	-974.9	-446.1	1,072.1	0.11	-0.11	
8,484.0	0.30	90.20	8,389.3	-975.0	-445.5	1,071.9	0.15	-0.11	
8,576.0	0.40	145.80	8,481.3	-975.2	-445.1	1,072.0	0.37	0.11	
8,623.0	0.70	112.11	8,528.2	-975.5	-444.7	1,072.1	0.91	0.64	Last Cathedral Survey @ 8,623' MD
8,678.0	0.70	112.10	8,583.2	-975.7	-444.1	1,072.0	0.00	0.00	Projection to Bit @ 8,678'

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler Fee 6-3D
Project:	Mamm Creek	TVD Reference:	KB = 22' @ 7129.0ft
Site:	O31E Pad	MD Reference:	KB = 22' @ 7129.0ft
Well:	Shideler Fee 6-3D	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 6-3D TGT	0.00	0.00	6,628.0	-973.2	-437.8	1,575,837.16	2,376,114.23	39.393609	-107.707812
- actual wellpath misses target center by 15.5ft at 6721.7ft MD (6627.2 TVD, -982.4 N, -450.1 E)									
- Point									
Shideler Fee 6-3D PBHL	0.00	0.00	8,516.0	-973.2	-437.8	1,575,837.16	2,376,114.23	39.393609	-107.707812
- actual wellpath misses target center by 7.4ft at 8610.8ft MD (8516.0 TVD, -975.4 N, -444.9 E)									
- Circle (radius 25.0)									

Design Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W		
		(ft)	(ft)	Comment	
8,623.0	8,528.2	-975.5	-444.7	Last Cathedral Survey @ 8,623' MD	
8,678.0	8,583.2	-975.7	-444.1	Projection to Bit @ 8,678'	

Checked By: _____ Approved By: _____ Date: _____