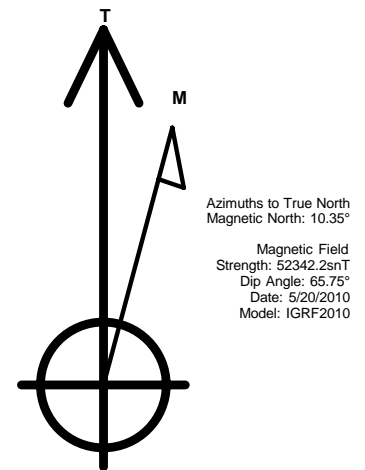
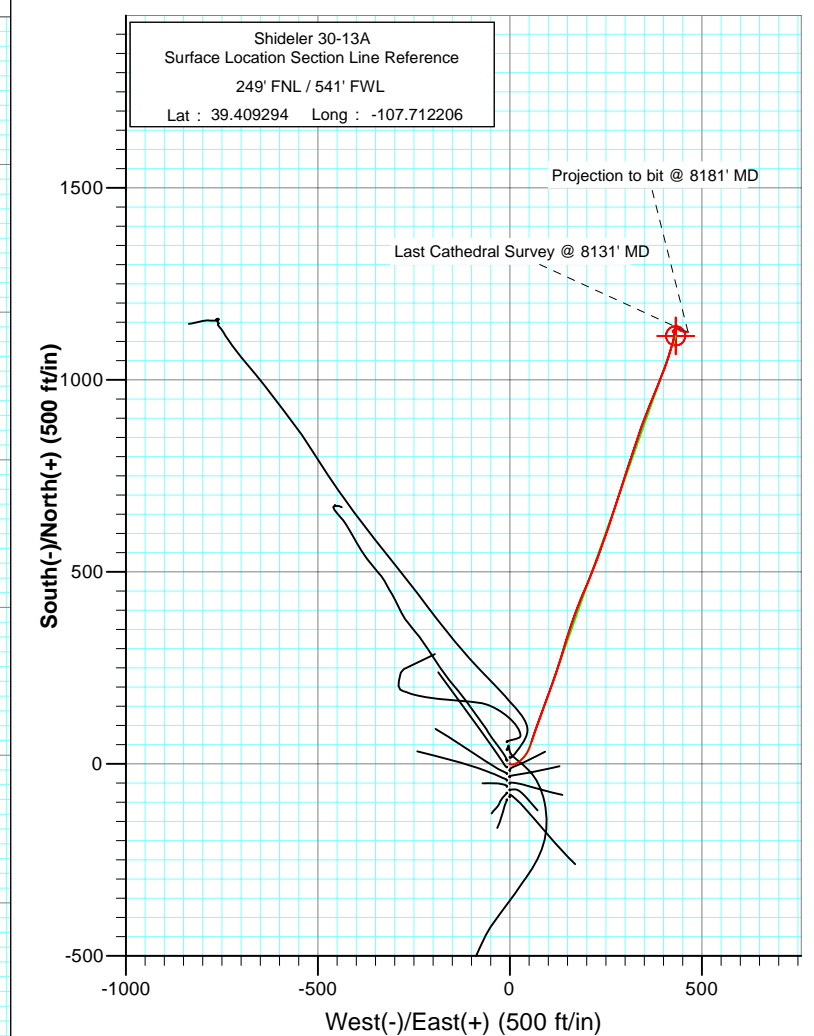
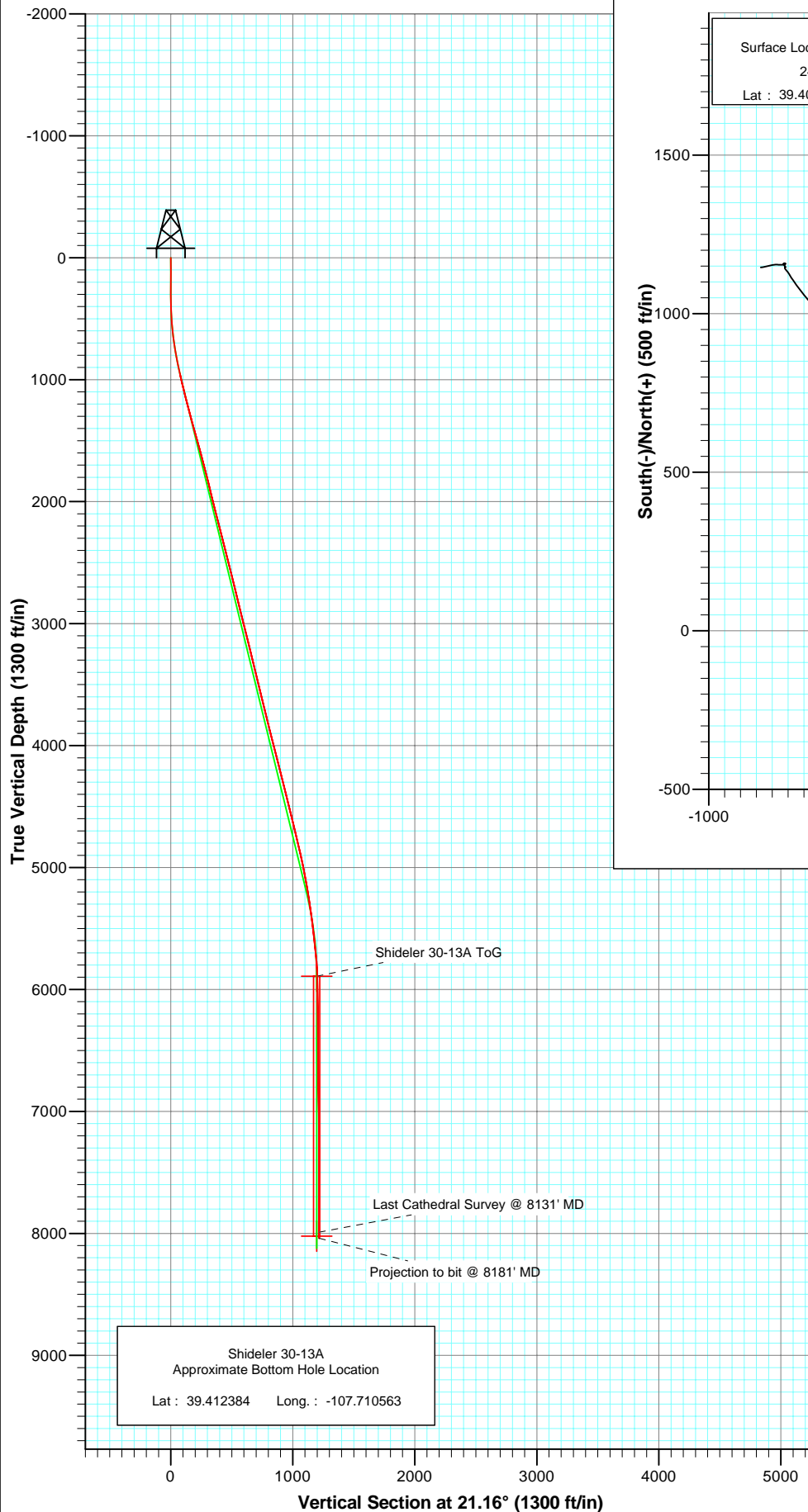




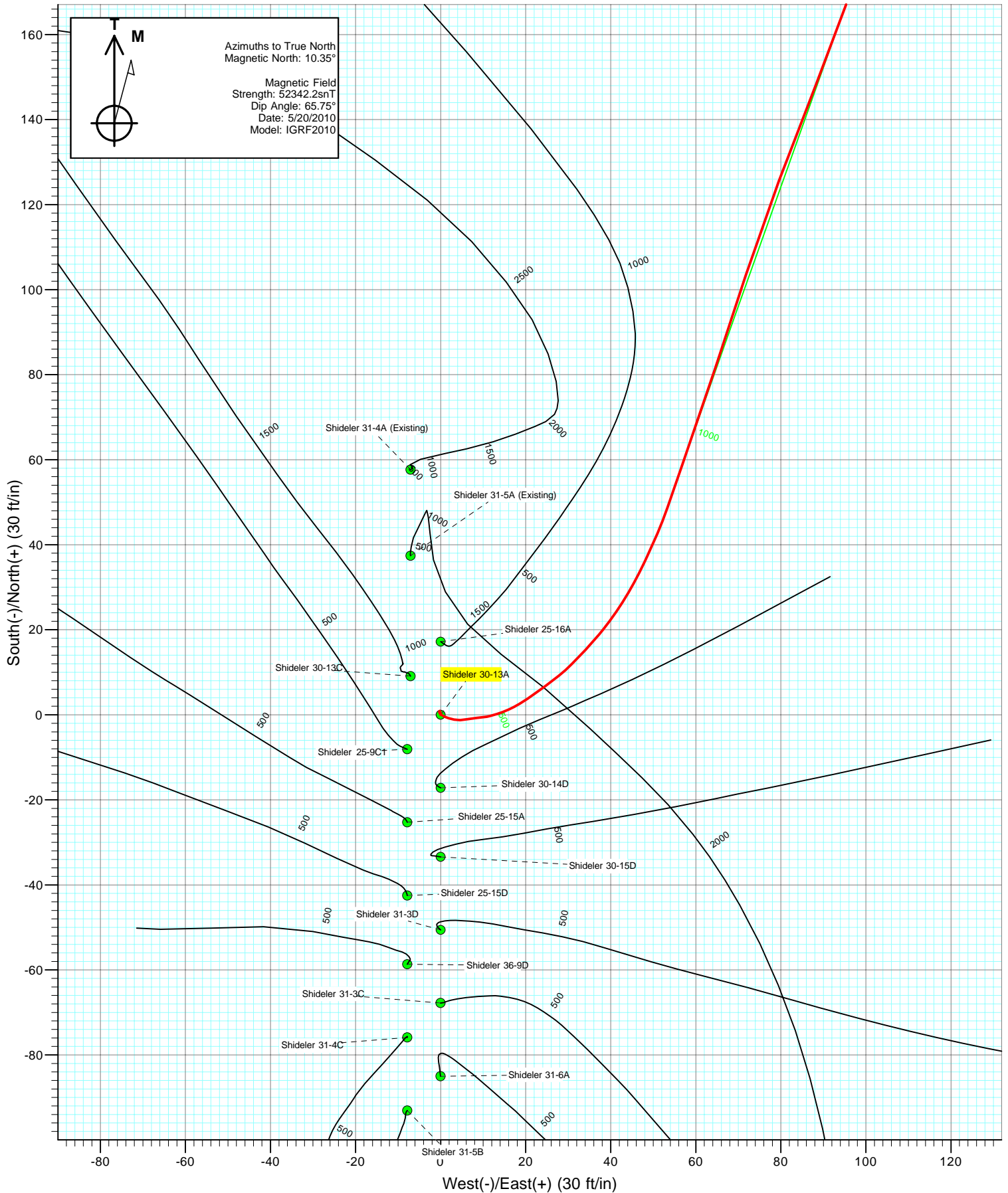
Project: Mamm Creek
Site: C31E Pad (NENW 31-7S-92W)
Well: Shideler 30-13A
Wellbore: Final
Plan: DD



DESIGN DETAILS: DD				
Job# 105152 (SH) 105218 (MH): KR				
KBE @ 6772.0ft (Nabors M15)				
Target	Azimuth	Origin Type	N/S	E/W From TVD
Shideler 30-13A BHL	21.16	Slot	0.0	0.0 0.0

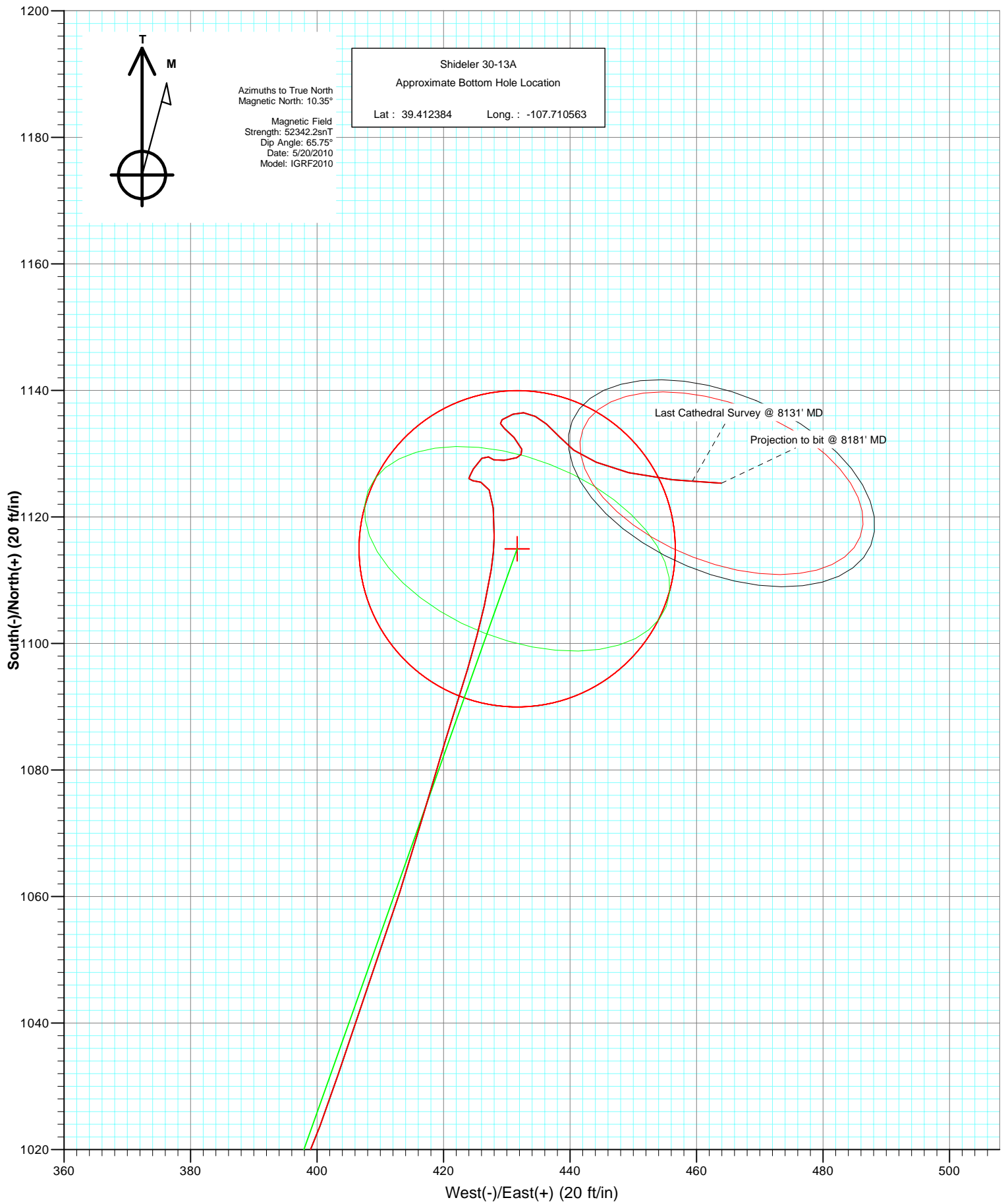


Project: Mamm Creek
Site: C31E Pad (NENW 31-7S-92W)
Well: Shideler 30-13A
Wellbore: Final
Design: DD





Project: Mamm Creek
Site: C31E Pad (NENW 31-7S-92W)
Well: Shideler 30-13A
Wellbore: Final
Plan: DD



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler 30-13A
Project:	Mamm Creek	TVD Reference:	KBE @ 6772.0ft (Nabors M15)
Site:	C31E Pad (NENW 31-7S-92W)	MD Reference:	KBE @ 6772.0ft (Nabors M15)
Well:	Shideler 30-13A	North Reference:	True
Wellbore:	Final	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	EDM 5000.1 US 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		C31E Pad (NENW 31-7S-92W)			
Site Position:		Northing:	1,581,611.55 ft	Latitude:	39.409394
From:	Lat/Long	Easting:	2,375,162.79 ft	Longitude:	-107.711675
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.39 °

Well	Shideler 30-13A					
Well Position	+N/-S	0.0 ft	Northing:	1,581,578.77 ft	Latitude:	39.409294
	+E/-W	0.0 ft	Easting:	2,375,012.03 ft	Longitude:	-107.712206
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,750.0 ft

Wellbore	Final				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/20/2010	10.35	65.75	52,342

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	21.16	

Survey Program	Date	5/27/2010			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
111.0	961.0	Survey #1 (Final)	MWD	Geolink MWD	
1,065.0	8,181.0	Survey #2 (Final)	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	353.00	111.0	0.7	-0.1	0.6	0.63	0.63		
142.0	0.30	313.80	142.0	0.9	-0.2	0.8	1.63	-1.29		
172.0	0.40	209.30	172.0	0.9	-0.3	0.7	1.86	0.33		
202.0	0.70	175.90	202.0	0.6	-0.3	0.5	1.42	1.00		
233.0	1.50	135.90	233.0	0.1	0.0	0.1	3.43	2.58		
264.0	2.00	113.40	264.0	-0.4	0.8	-0.1	2.71	1.61		
295.0	2.40	107.50	295.0	-0.8	1.9	-0.1	1.48	1.29		
326.0	2.50	102.50	325.9	-1.1	3.2	0.1	0.76	0.32		
357.0	2.90	89.10	356.9	-1.3	4.6	0.5	2.40	1.29		
387.0	3.90	76.10	386.8	-1.0	6.4	1.4	4.19	3.33		
418.0	4.20	88.60	417.8	-0.7	8.5	2.4	3.00	0.97		

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler 30-13A
Project:	Mamm Creek	TVD Reference:	KBE @ 6772.0ft (Nabors M15)
Site:	C31E Pad (NENW 31-7S-92W)	MD Reference:	KBE @ 6772.0ft (Nabors M15)
Well:	Shideler 30-13A	North Reference:	True
Wellbore:	Final	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	EDM 5000.1 US 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
449.0	4.70	78.50	448.7	-0.4	10.9	3.5	2.99	1.61	
480.0	4.90	71.20	479.6	0.2	13.4	5.1	2.07	0.65	
511.0	5.70	67.20	510.4	1.3	16.1	7.0	2.84	2.58	
542.0	6.30	56.20	541.3	2.8	18.9	9.4	4.17	1.94	
573.0	6.50	56.30	572.1	4.7	21.8	12.3	0.65	0.65	
603.0	7.10	52.40	601.9	6.8	24.6	15.2	2.52	2.00	
634.0	7.50	52.30	632.6	9.2	27.8	18.6	1.29	1.29	
665.0	8.00	44.30	663.3	12.0	30.9	22.3	3.83	1.61	
696.0	8.80	44.00	694.0	15.2	34.0	26.5	2.58	2.58	
727.0	9.30	39.20	724.6	18.9	37.3	31.1	2.92	1.61	
758.0	9.40	35.90	755.2	22.9	40.3	35.9	1.76	0.32	
789.0	9.80	31.90	785.8	27.2	43.2	40.9	2.51	1.29	
819.0	10.90	28.00	815.3	31.8	45.9	46.2	4.35	3.67	
850.0	11.00	24.90	845.7	37.1	48.5	52.1	1.93	0.32	
881.0	11.60	23.30	876.1	42.6	51.0	58.2	2.18	1.94	
912.0	12.30	19.30	906.4	48.6	53.3	64.6	3.50	2.26	
961.0	13.10	19.00	954.2	58.8	56.8	75.4	1.64	1.63	
1,065.0	13.70	18.60	1,055.4	81.6	64.6	99.4	0.58	0.58	
1,160.0	14.10	17.70	1,147.6	103.3	71.7	122.2	0.48	0.42	
1,255.0	14.60	20.90	1,239.7	125.5	79.5	145.8	0.99	0.53	
1,350.0	15.50	21.20	1,331.4	148.5	88.4	170.4	0.95	0.95	
1,445.0	15.50	20.00	1,422.9	172.3	97.3	195.8	0.34	0.00	
1,539.0	15.00	19.00	1,513.6	195.6	105.6	220.5	0.60	-0.53	
1,634.0	15.50	20.20	1,605.3	219.1	113.9	245.5	0.62	0.53	
1,730.0	14.70	17.90	1,698.0	242.8	122.1	270.5	1.04	-0.83	
1,825.0	13.90	18.00	1,790.0	265.1	129.3	293.9	0.84	-0.84	
1,920.0	13.90	17.50	1,882.2	286.8	136.3	316.7	0.13	0.00	
2,015.0	13.90	16.40	1,974.5	308.7	143.0	339.5	0.28	0.00	
2,110.0	14.20	17.80	2,066.6	330.7	149.7	362.5	0.48	0.32	
2,205.0	14.30	16.70	2,158.7	353.0	156.7	385.8	0.30	0.11	
2,299.0	14.30	20.20	2,249.8	375.0	164.0	409.0	0.92	0.00	
2,395.0	14.30	19.00	2,342.8	397.4	172.0	432.7	0.31	0.00	
2,489.0	14.30	23.10	2,433.9	419.0	180.3	455.9	1.08	0.00	
2,584.0	14.70	23.80	2,525.9	440.9	189.8	479.6	0.46	0.42	
2,680.0	13.40	22.80	2,619.0	462.3	199.0	502.9	1.38	-1.35	
2,774.0	13.30	21.00	2,710.5	482.4	207.1	524.6	0.45	-0.11	
2,870.0	13.70	21.20	2,803.8	503.3	215.2	547.0	0.42	0.42	
2,965.0	14.00	20.60	2,896.0	524.5	223.3	569.8	0.35	0.32	
3,060.0	14.20	20.50	2,988.2	546.2	231.4	592.9	0.21	0.21	
3,155.0	14.50	19.90	3,080.2	568.3	239.5	616.5	0.35	0.32	
3,250.0	14.20	19.10	3,172.3	590.5	247.4	640.0	0.38	-0.32	
3,345.0	13.30	18.60	3,264.5	611.9	254.7	662.6	0.96	-0.95	
3,440.0	13.70	19.30	3,356.9	632.8	261.9	684.7	0.45	0.42	
3,535.0	13.90	19.40	3,449.2	654.2	269.4	707.4	0.21	0.21	
3,630.0	13.30	18.60	3,541.5	675.3	276.7	729.7	0.66	-0.63	
3,726.0	13.50	16.90	3,634.9	696.5	283.5	751.9	0.46	0.21	
3,821.0	14.10	17.40	3,727.1	718.2	290.1	774.5	0.64	0.63	
3,916.0	14.00	16.20	3,819.3	740.3	296.8	797.5	0.32	-0.11	
4,010.0	13.80	18.40	3,910.6	761.8	303.5	820.0	0.60	-0.21	
4,106.0	14.80	17.90	4,003.6	784.4	310.9	843.7	1.05	1.04	
4,201.0	14.30	18.70	4,095.5	807.0	318.4	867.5	0.57	-0.53	
4,296.0	14.50	18.80	4,187.5	829.4	326.0	891.1	0.21	0.21	
4,391.0	14.70	17.90	4,279.5	852.1	333.5	915.1	0.32	0.21	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler 30-13A
Project:	Mamm Creek	TVD Reference:	KBE @ 6772.0ft (Nabors M15)
Site:	C31E Pad (NENW 31-7S-92W)	MD Reference:	KBE @ 6772.0ft (Nabors M15)
Well:	Shideler 30-13A	North Reference:	True
Wellbore:	Final	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	EDM 5000.1 US 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
4,486.0	13.90	20.30	4,371.5	874.3	341.2	938.5	1.05	-0.84	
4,581.0	13.00	20.80	4,463.9	895.0	348.9	960.6	0.96	-0.95	
4,676.0	13.40	21.90	4,556.4	915.2	356.8	982.3	0.50	0.42	
4,772.0	13.60	20.80	4,649.8	936.1	365.0	1,004.7	0.34	0.21	
4,867.0	13.80	22.20	4,742.1	957.0	373.2	1,027.2	0.41	0.21	
4,961.0	13.70	22.80	4,833.4	977.6	381.8	1,049.5	0.19	-0.11	
5,055.0	12.30	21.70	4,925.0	997.2	389.8	1,070.7	1.51	-1.49	
5,150.0	11.30	22.50	5,017.9	1,015.2	397.1	1,090.1	1.07	-1.05	
5,246.0	10.10	18.30	5,112.3	1,031.9	403.4	1,107.9	1.49	-1.25	
5,341.0	9.20	19.10	5,205.9	1,047.0	408.5	1,123.8	0.96	-0.95	
5,436.0	8.30	18.30	5,299.8	1,060.6	413.1	1,138.3	0.96	-0.95	
5,530.0	7.60	15.40	5,392.9	1,073.1	416.9	1,151.2	0.86	-0.74	
5,625.0	7.20	17.70	5,487.1	1,084.8	420.4	1,163.4	0.52	-0.42	
5,720.0	6.90	16.80	5,581.4	1,095.9	423.8	1,175.0	0.34	-0.32	
5,815.0	5.70	12.30	5,675.8	1,106.0	426.5	1,185.4	1.36	-1.26	
5,875.0	5.30	9.30	5,735.6	1,111.7	427.5	1,191.0	0.82	-0.67	
5,936.0	4.50	0.20	5,796.3	1,116.8	428.0	1,196.0	1.82	-1.31	
6,004.0	3.20	355.50	5,864.2	1,121.4	427.9	1,200.2	1.97	-1.91	
6,068.0	2.10	334.80	5,928.1	1,124.2	427.2	1,202.7	2.25	-1.72	
6,130.0	1.60	285.30	5,990.1	1,125.5	425.9	1,203.4	2.60	-0.81	
6,194.0	0.80	270.90	6,054.1	1,125.7	424.6	1,203.1	1.33	-1.25	
6,290.0	0.40	12.90	6,150.1	1,126.1	424.0	1,203.2	1.01	-0.42	
6,385.0	1.60	27.90	6,245.1	1,127.6	424.7	1,204.9	1.28	1.26	
6,480.0	1.10	55.30	6,340.0	1,129.3	426.1	1,206.9	0.85	-0.53	
6,575.0	0.50	136.60	6,435.0	1,129.5	427.1	1,207.5	1.20	-0.63	
6,670.0	0.70	104.70	6,530.0	1,129.0	428.0	1,207.4	0.40	0.21	
6,765.0	1.30	86.40	6,625.0	1,129.0	429.6	1,207.9	0.71	0.63	
6,860.0	1.20	69.40	6,720.0	1,129.4	431.6	1,209.0	0.40	-0.11	
6,955.0	1.20	351.50	6,815.0	1,130.7	432.4	1,210.5	1.59	0.00	
7,050.0	1.70	309.10	6,909.9	1,132.6	431.1	1,211.8	1.21	0.53	
7,145.0	0.80	320.90	7,004.9	1,134.0	429.6	1,212.6	0.98	-0.95	
7,240.0	0.40	323.10	7,099.9	1,134.8	429.0	1,213.1	0.42	-0.42	
7,334.0	0.70	53.10	7,193.9	1,135.4	429.3	1,213.8	0.86	0.32	
7,430.0	1.60	68.10	7,289.9	1,136.2	431.0	1,215.2	0.98	0.94	
7,489.0	1.80	93.80	7,348.9	1,136.5	432.7	1,216.0	1.32	0.34	
7,551.0	1.90	120.40	7,410.8	1,135.9	434.5	1,216.2	1.38	0.16	
7,619.0	1.70	128.70	7,478.8	1,134.7	436.3	1,215.7	0.48	-0.29	
7,716.0	1.70	140.90	7,575.8	1,132.7	438.3	1,214.5	0.37	0.00	
7,810.0	2.10	125.90	7,669.7	1,130.6	440.6	1,213.4	0.68	0.43	
7,905.0	2.80	112.70	7,764.6	1,128.7	444.2	1,212.9	0.94	0.74	
8,000.0	3.70	104.10	7,859.5	1,127.0	449.3	1,213.2	1.07	0.95	
8,095.0	4.80	95.30	7,954.2	1,125.9	456.2	1,214.7	1.34	1.16	
8,131.0	5.30	93.90	7,990.1	1,125.6	459.4	1,215.6	1.43	1.39	
8,181.0	5.30	93.90	8,039.8	1,125.3	464.0	1,216.9	0.00	0.00	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Shideler 30-13A
Project:	Mamm Creek	TVD Reference:	KBE @ 6772.0ft (Nabors M15)
Site:	C31E Pad (NENW 31-7S-92W)	MD Reference:	KBE @ 6772.0ft (Nabors M15)
Well:	Shideler 30-13A	North Reference:	True
Wellbore:	Final	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	EDM 5000.1 US 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 30-13A ToG	0.00	0.00	5,892.0	1,115.0	431.7	1,582,682.90	2,375,470.71	39.412356	-107.710678
- actual wellpath misses target center by 8.8ft at 6031.5ft MD (5891.6 TVD, 1122.8 N, 427.7 E)									
- Point									
Shideler 30-13A BHL	0.00	0.00	8,022.0	1,115.0	431.7	1,582,682.90	2,375,470.71	39.412356	-107.710678
- actual wellpath misses target center by 32.3ft at 8160.3ft MD (8019.3 TVD, 1125.5 N, 462.1 E)									
- Circle (radius 25.0)									

Design Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
961.0	954.2	58.8	56.8	Last Cathedral Survey @ 961' MD
8,131.0	7,990.1	1,125.6	459.4	Last Cathedral Survey @ 8131' MD
8,181.0	8,039.8	1,125.3	464.0	Projection to bit @ 8181' MD

Checked By: _____ Approved By: _____ Date: _____