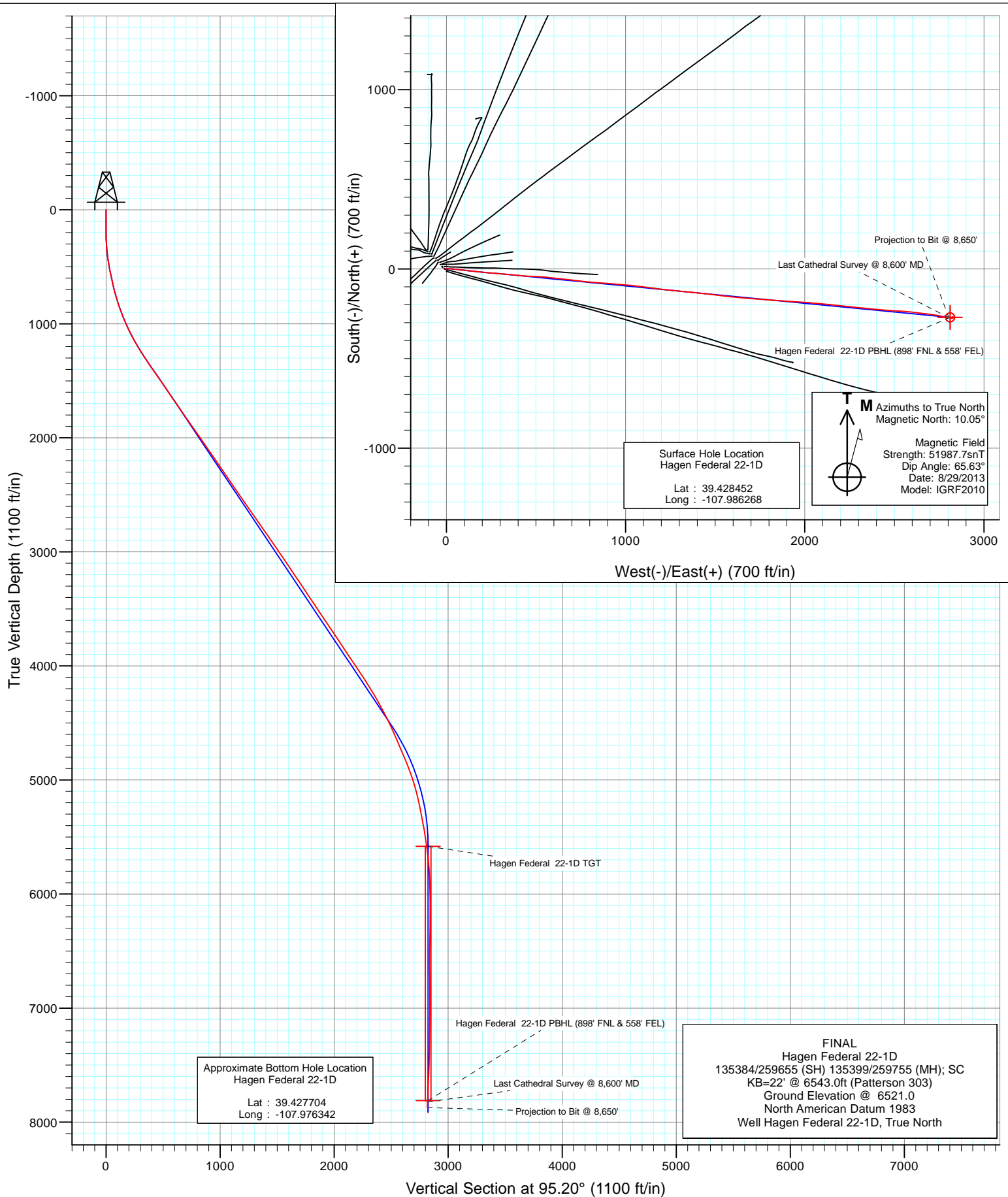


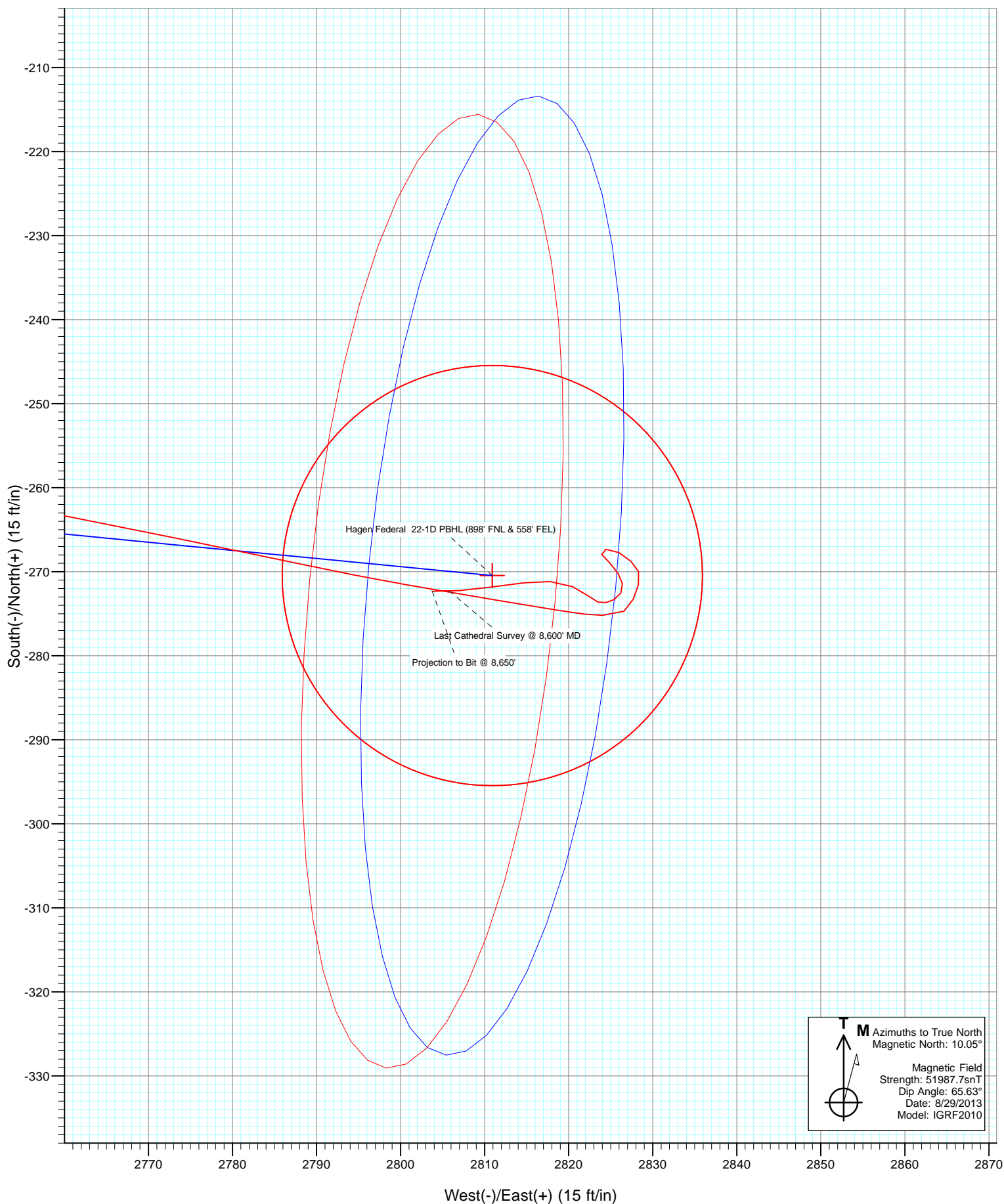


Project: S. Piceance (Parachute)
Site: PC-22 Pad NENW 2 7S 95W
Well: Hagen Federal 22-1D
Wellbore: OH
Design: FINAL



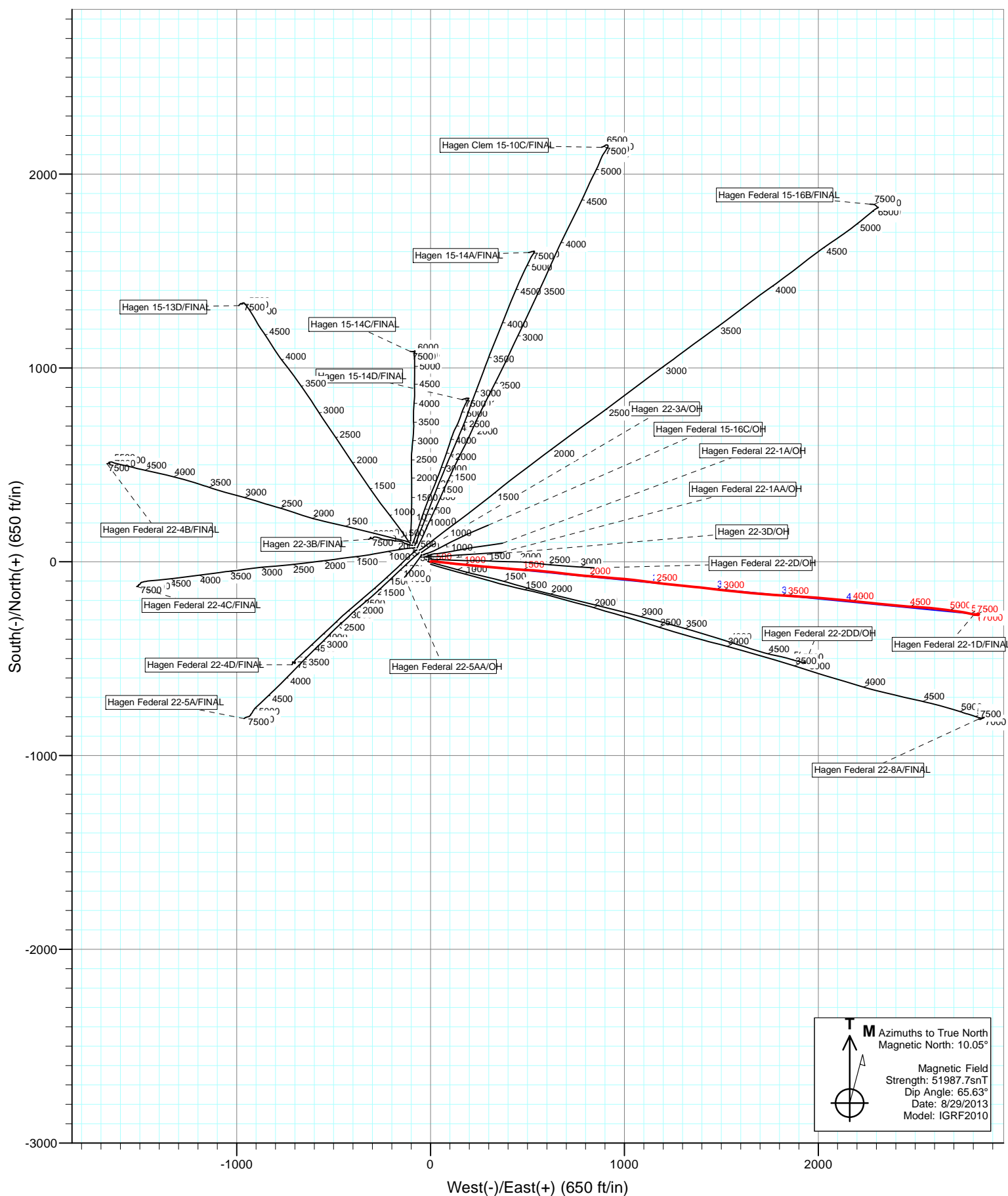


Project: S. Piceance (Parachute)
Site: PC-22 Pad NENW 2 7S 95W
Well: Hagen Federal 22-1D
Wellbore: OH
Design: FINAL





Project: S. Piceance (Parachute)
Site: PC-22 Pad NENW 2 7S 95W
Well: Hagen Federal 22-1D
Wellbore: OH
Design: FINAL



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Hagen Federal 22-1D
Project:	S. Piceance (Parachute)	TVD Reference:	KB=22' @ 6543.0ft (Patterson 303)
Site:	PC-22 Pad NENW 2 7S 95W	MD Reference:	KB=22' @ 6543.0ft (Patterson 303)
Well:	Hagen Federal 22-1D	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Project	S. Piceance (Parachute), Garfield County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site	PC-22 Pad NENW 2 7S 95W			
Site Position:		Northing:	1,590,596.09 ft	Latitude: 39.428560
From:	Lat/Long	Easting:	2,297,773.66 ft	Longitude: -107.986340
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence: -1.57 °

Well	Hagen Federal 22-1D			
Well Position	+N/-S	0.0 ft	Northing:	1,590,556.19 ft
	+E/-W	0.0 ft	Easting:	2,297,792.92 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level: 6,521.0 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/29/2013	10.06	65.63	51,988

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	95.20

Survey Program	Date	9/12/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
118.0	8,650.0	Survey #1 (OH)	Geolink 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	
118.0	0.40	326.30	118.0	0.3	-0.2	-0.3	0.34	0.34	
148.0	0.30	359.10	148.0	0.5	-0.3	-0.3	0.73	-0.33	
179.0	0.40	355.70	179.0	0.7	-0.3	-0.4	0.33	0.32	
209.0	0.70	37.20	209.0	0.9	-0.2	-0.3	1.60	1.00	
240.0	1.30	62.60	240.0	1.3	0.2	0.1	2.36	1.94	
270.0	2.60	69.00	270.0	1.7	1.2	1.0	4.39	4.33	
301.0	3.50	78.30	300.9	2.1	2.8	2.6	3.30	2.90	
331.0	4.70	90.70	330.9	2.3	4.9	4.7	4.95	4.00	
362.0	5.80	92.70	361.7	2.2	7.7	7.5	3.60	3.55	
393.0	6.50	94.30	392.5	2.0	11.0	10.8	2.32	2.26	
484.0	9.80	96.20	482.6	0.8	23.9	23.7	3.64	3.63	
576.0	12.20	95.20	572.9	-1.0	41.3	41.3	2.62	2.61	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Hagen Federal 22-1D
Project:	S. Piceance (Parachute)	TVD Reference:	KB=22' @ 6543.0ft (Patterson 303)
Site:	PC-22 Pad NENW 2 7S 95W	MD Reference:	KB=22' @ 6543.0ft (Patterson 303)
Well:	Hagen Federal 22-1D	North Reference:	True
Wellbore:	OH	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
667.0	13.10	97.30	661.7	-3.2	61.1	61.2	1.11	0.99	
759.0	15.70	96.00	750.8	-5.8	83.9	84.0	2.85	2.83	
850.0	18.70	97.20	837.7	-8.9	110.6	110.9	3.32	3.30	
941.0	21.30	94.90	923.2	-12.1	141.5	142.1	2.98	2.86	
1,032.0	24.20	96.30	1,007.1	-15.6	176.5	177.2	3.24	3.19	
1,124.0	27.10	95.50	1,090.1	-19.7	216.2	217.1	3.17	3.15	
1,215.0	30.30	94.40	1,169.9	-23.4	259.7	260.7	3.56	3.52	
1,306.0	32.20	95.40	1,247.7	-27.5	306.7	307.9	2.16	2.09	
1,397.0	33.50	95.40	1,324.1	-32.1	355.9	357.3	1.43	1.43	
1,466.0	35.10	95.80	1,381.1	-35.9	394.6	396.2	2.34	2.32	
1,614.0	34.60	92.10	1,502.6	-41.7	478.9	480.7	1.47	-0.34	
1,706.0	34.10	94.20	1,578.6	-44.6	530.7	532.6	1.40	-0.54	
1,797.0	34.20	96.20	1,653.9	-49.2	581.6	583.7	1.24	0.11	
1,889.0	34.80	95.80	1,729.7	-54.7	633.4	635.8	0.70	0.65	
1,981.0	34.80	97.40	1,805.2	-60.7	685.6	688.2	0.99	0.00	
2,072.0	34.90	96.40	1,879.9	-66.9	737.2	740.2	0.64	0.11	
2,164.0	34.90	95.10	1,955.4	-72.2	789.6	792.9	0.81	0.00	
2,256.0	35.40	94.50	2,030.6	-76.7	842.3	845.8	0.66	0.54	
2,348.0	34.30	94.30	2,106.1	-80.7	894.8	898.4	1.20	-1.20	
2,439.0	34.40	94.90	2,181.2	-84.8	945.9	949.7	0.39	0.11	
2,531.0	34.60	94.80	2,257.0	-89.2	997.9	1,001.8	0.23	0.22	
2,623.0	34.00	96.50	2,333.0	-94.3	1,049.4	1,053.7	1.23	-0.65	
2,714.0	35.00	97.00	2,408.0	-100.4	1,100.6	1,105.2	1.14	1.10	
2,806.0	34.20	97.40	2,483.8	-106.9	1,152.5	1,157.4	0.90	-0.87	
2,897.0	34.90	97.10	2,558.7	-113.4	1,203.7	1,209.0	0.79	0.77	
2,989.0	34.80	96.00	2,634.2	-119.4	1,255.9	1,261.5	0.69	-0.11	
3,081.0	35.30	95.70	2,709.5	-124.8	1,308.4	1,314.4	0.57	0.54	
3,172.0	34.30	95.10	2,784.3	-129.7	1,360.1	1,366.3	1.16	-1.10	
3,264.0	35.50	96.80	2,859.7	-135.2	1,412.5	1,418.9	1.68	1.30	
3,356.0	35.00	96.50	2,934.8	-141.3	1,465.2	1,472.0	0.58	-0.54	
3,447.0	33.50	97.00	3,010.1	-147.3	1,516.1	1,523.2	1.68	-1.65	
3,539.0	33.90	96.00	3,086.6	-153.1	1,566.8	1,574.2	0.74	0.43	
3,630.0	33.80	96.30	3,162.2	-158.5	1,617.2	1,624.9	0.21	-0.11	
3,722.0	35.00	94.20	3,238.1	-163.3	1,669.0	1,676.9	1.83	1.30	
3,814.0	33.20	94.30	3,314.3	-167.1	1,720.4	1,728.5	1.96	-1.96	
3,905.0	34.00	94.20	3,390.1	-170.8	1,770.6	1,778.8	0.88	0.88	
3,997.0	33.40	94.20	3,466.6	-174.6	1,821.5	1,829.8	0.65	-0.65	
4,089.0	34.60	93.90	3,542.9	-178.2	1,872.8	1,881.3	1.32	1.30	
4,180.0	33.60	93.20	3,618.2	-181.4	1,923.8	1,932.3	1.18	-1.10	
4,272.0	34.20	94.50	3,694.6	-184.8	1,974.9	1,983.6	1.02	0.65	
4,364.0	33.30	94.30	3,771.1	-188.7	2,025.9	2,034.7	0.99	-0.98	
4,455.0	33.50	95.60	3,847.0	-193.1	2,075.8	2,084.8	0.82	0.22	
4,547.0	33.70	95.40	3,923.7	-197.9	2,126.5	2,135.7	0.25	0.22	
4,638.0	34.50	96.00	3,999.0	-203.0	2,177.3	2,186.7	0.95	0.88	
4,730.0	33.70	95.70	4,075.2	-208.3	2,228.6	2,238.3	0.89	-0.87	
4,821.0	32.50	96.40	4,151.4	-213.5	2,278.0	2,288.0	1.38	-1.32	
4,913.0	31.10	95.80	4,229.6	-218.7	2,326.2	2,336.4	1.56	-1.52	
5,005.0	29.40	95.20	4,309.1	-223.1	2,372.3	2,382.8	1.88	-1.85	
5,096.0	27.70	95.10	4,389.0	-227.0	2,415.6	2,426.3	1.87	-1.87	
5,188.0	26.60	94.80	4,470.9	-230.6	2,457.5	2,468.2	1.20	-1.20	
5,279.0	24.60	93.60	4,553.0	-233.5	2,496.7	2,507.6	2.27	-2.20	
5,370.0	23.20	93.10	4,636.2	-235.7	2,533.5	2,544.4	1.55	-1.54	
5,462.0	22.90	94.80	4,720.8	-238.2	2,569.4	2,580.4	0.79	-0.33	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Hagen Federal 22-1D
Project:	S. Piceance (Parachute)	TVD Reference:	KB=22' @ 6543.0ft (Patterson 303)
Site:	PC-22 Pad NENW 2 7S 95W	MD Reference:	KB=22' @ 6543.0ft (Patterson 303)
Well:	Hagen Federal 22-1D	North Reference:	True
Wellbore:	OH	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
5,554.0	23.00	96.50	4,805.5	-241.7	2,605.1	2,616.3	0.73	0.11	
5,645.0	21.50	97.70	4,889.8	-245.9	2,639.3	2,650.7	1.72	-1.65	
5,737.0	18.00	96.70	4,976.3	-249.9	2,670.1	2,681.8	3.82	-3.80	
5,828.0	16.20	98.30	5,063.3	-253.3	2,696.7	2,708.5	2.04	-1.98	
5,920.0	13.20	98.10	5,152.3	-256.7	2,719.8	2,731.8	3.26	-3.26	
6,011.0	12.00	99.20	5,241.1	-259.6	2,739.4	2,751.6	1.34	-1.32	
6,103.0	10.50	101.00	5,331.3	-262.8	2,757.1	2,769.5	1.67	-1.63	
6,194.0	9.90	101.50	5,420.9	-265.9	2,772.9	2,785.5	0.67	-0.66	
6,286.0	8.90	102.00	5,511.6	-269.0	2,787.6	2,800.5	1.09	-1.09	
6,377.0	7.80	100.10	5,601.7	-271.5	2,800.5	2,813.6	1.25	-1.21	
6,469.0	5.90	99.20	5,693.0	-273.4	2,811.3	2,824.6	2.07	-2.07	
6,560.0	4.00	99.50	5,783.7	-274.6	2,819.1	2,832.4	2.09	-2.09	
6,652.0	2.20	90.70	5,875.5	-275.2	2,824.0	2,837.3	2.02	-1.96	
6,743.0	1.20	57.10	5,966.5	-274.7	2,826.6	2,839.8	1.51	-1.10	
6,834.0	1.20	18.00	6,057.5	-273.3	2,827.7	2,840.8	0.88	0.00	
6,926.0	1.10	21.60	6,149.5	-271.5	2,828.3	2,841.3	0.13	-0.11	
7,017.0	1.00	338.50	6,240.4	-270.0	2,828.3	2,841.1	0.85	-0.11	
7,109.0	1.00	307.40	6,332.4	-268.8	2,827.4	2,840.1	0.58	0.00	
7,200.0	1.20	305.40	6,423.4	-267.7	2,826.0	2,838.6	0.22	0.22	
7,292.0	1.00	257.60	6,515.4	-267.3	2,824.4	2,837.0	0.99	-0.22	
7,383.0	0.70	145.00	6,606.4	-268.0	2,824.0	2,836.6	1.56	-0.33	
7,475.0	1.10	131.80	6,698.4	-269.0	2,824.9	2,837.7	0.49	0.43	
7,566.0	0.90	155.30	6,789.4	-270.2	2,825.9	2,838.7	0.50	-0.22	
7,658.0	0.70	160.20	6,881.4	-271.4	2,826.4	2,839.3	0.23	-0.22	
7,749.0	0.90	211.60	6,972.3	-272.6	2,826.2	2,839.3	0.79	0.22	
7,841.0	0.60	251.60	7,064.3	-273.3	2,825.4	2,838.5	0.64	-0.33	
7,932.0	0.60	248.00	7,155.3	-273.7	2,824.5	2,837.6	0.04	0.00	
8,024.0	0.70	291.20	7,247.3	-273.6	2,823.5	2,836.7	0.53	0.11	
8,116.0	1.00	311.70	7,339.3	-272.9	2,822.4	2,835.5	0.46	0.33	
8,207.0	1.80	294.00	7,430.3	-271.8	2,820.5	2,833.5	0.99	0.88	
8,298.0	1.70	271.10	7,521.2	-271.2	2,817.8	2,830.8	0.77	-0.11	
8,389.0	2.30	264.90	7,612.2	-271.3	2,814.6	2,827.7	0.70	0.66	
8,481.0	2.40	260.00	7,704.1	-271.8	2,810.9	2,824.0	0.24	0.11	
8,573.0	2.60	267.30	7,796.0	-272.2	2,806.9	2,820.0	0.41	0.22	
8,600.0	2.30	268.80	7,823.0	-272.3	2,805.8	2,818.9	1.14	-1.11	Last Cathedral Survey @ 8,600' MD
8,650.0	2.30	268.80	7,873.0	-272.3	2,803.8	2,816.9	0.00	0.00	Projection to Bit @ 8,650'

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Hagen Federal 22-1D
Project:	S. Piceance (Parachute)	TVD Reference:	KB=22' @ 6543.0ft (Patterson 303)
Site:	PC-22 Pad NENW 2 7S 95W	MD Reference:	KB=22' @ 6543.0ft (Patterson 303)
Well:	Hagen Federal 22-1D	North Reference:	True
Wellbore:	OH	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									
Hagen Federal 22-1D P	0.00	0.00	7,811.0	-270.5	2,810.9	1,590,208.92	2,300,595.37	39.427709	-107.976317
- actual wellpath misses target center by 5.0ft at 8587.8ft MD (7810.8 TVD, -272.3 N, 2806.3 E)									
- Circle (radius 25.0)									
Hagen Federal 22-1D T	0.00	0.00	5,582.0	-270.5	2,810.9	1,590,208.92	2,300,595.37	39.427709	-107.976317
- actual wellpath misses target center by 13.0ft at 6359.0ft MD (5583.8 TVD, -271.1 N, 2798.1 E)									
- Point									

Design Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W		
		(ft)	(ft)	Comment	
8,600.0	7,823.0	-272.3	2,805.8	Last Cathedral Survey @ 8,600' MD	
8,650.0	7,873.0	-272.3	2,803.8	Projection to Bit @ 8,650'	

Checked By: _____ Approved By: _____ Date: _____