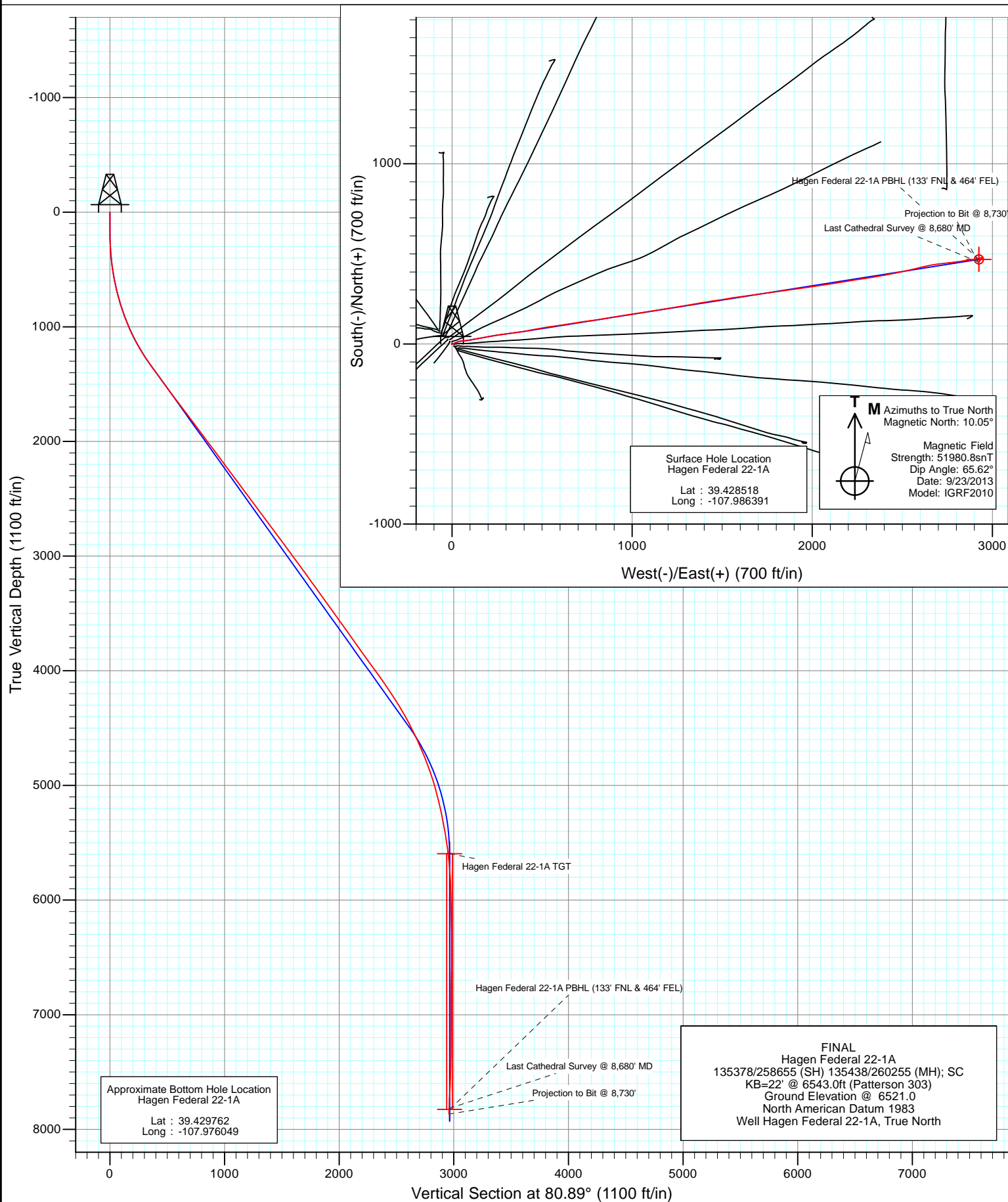


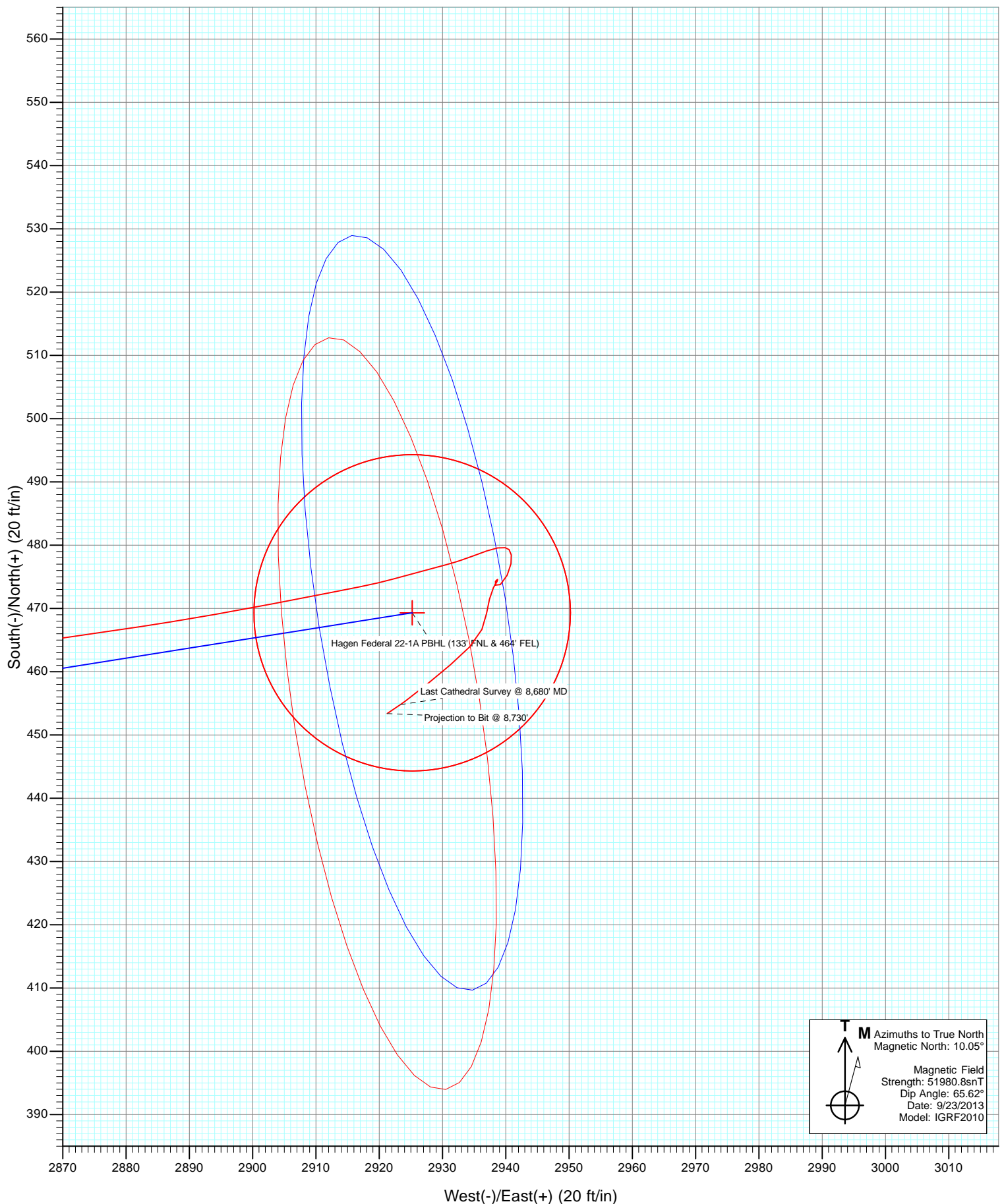


Project: S. Piceance (Parachute)
Site: PC-22 Pad NENW 2 7S 95W
Well: Hagen Federal 22-1A
Wellbore: OH
Design: FINAL



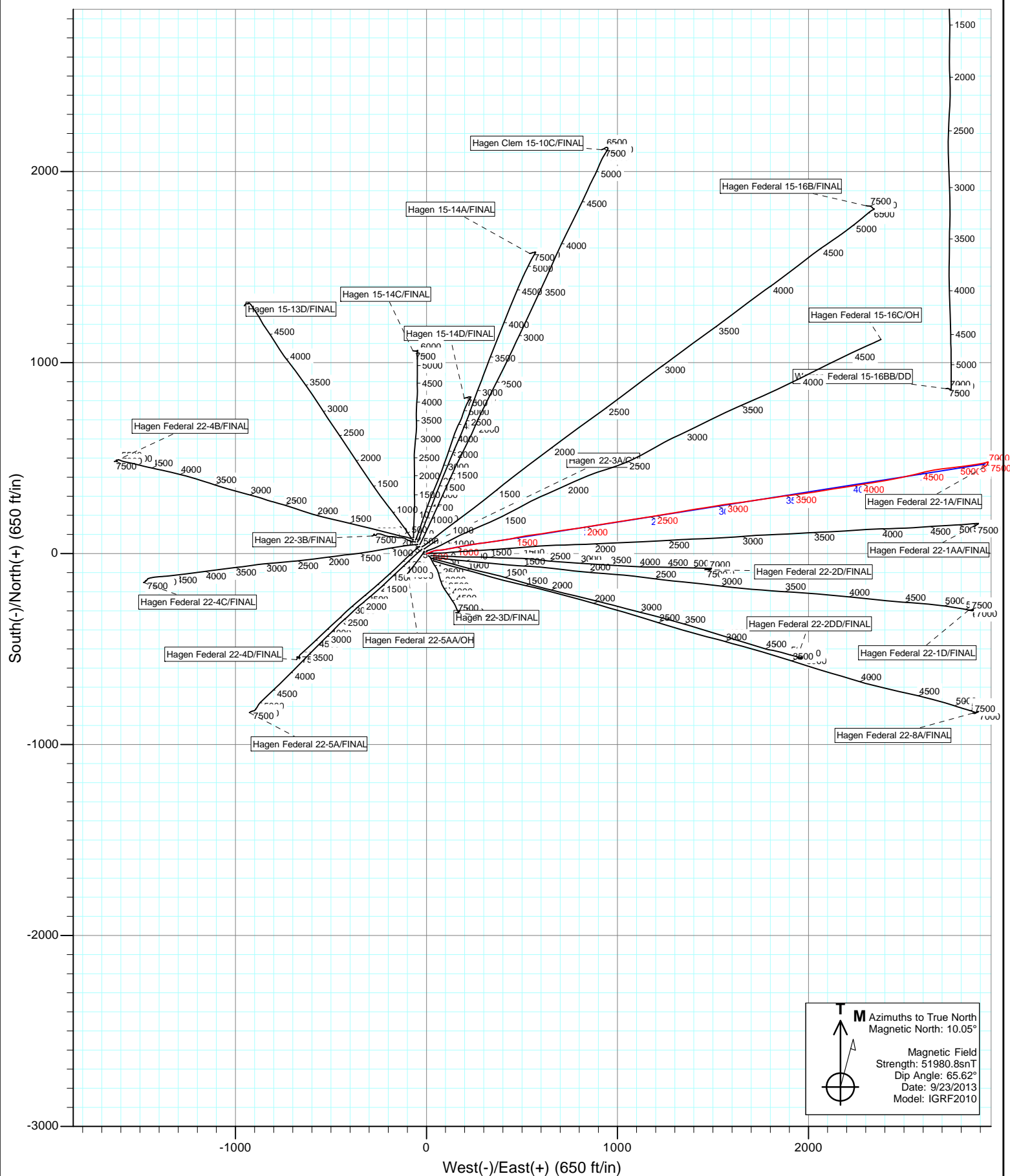


Project: S. Piceance (Parachute)
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Project: S. Piceance (Parachute)
Site: PC-22 Pad NENW 2 7S 95W
Well: Hagen Federal 22-1A
Wellbore: OH
Design: FINAL



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Hagen Federal 22-1A
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 22-1A	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 22-1A					
Well Position	+N/-S	0.0 ft	Northing:	1,590,581.18 ft	Latitude:	39.428518
	+E/-W	0.0 ft	Easting:	2,297,758.85 ft	Longitude:	-107.986391
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	9/23/2013	10.05	65.62	51,981

Design	FINAL				
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	80.89	

Survey Program	Date	10/3/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
117.0	8,730.0	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		
117.0	0.30	143.90	117.0	-0.2	0.2	0.1	0.26	0.26		
148.0	0.30	142.50	148.0	-0.4	0.3	0.2	0.02	0.00		
179.0	0.40	169.30	179.0	-0.5	0.3	0.3	0.61	0.32		
209.0	0.30	120.40	209.0	-0.7	0.4	0.3	1.01	-0.33		
240.0	1.20	88.30	240.0	-0.7	0.8	0.7	3.09	2.90		
270.0	2.10	65.90	270.0	-0.5	1.6	1.5	3.64	3.00		
301.0	2.60	64.30	301.0	0.0	2.8	2.8	1.63	1.61		
331.0	3.40	76.50	330.9	0.6	4.3	4.3	3.40	2.67		
362.0	4.80	67.60	361.8	1.3	6.4	6.5	4.95	4.52		
392.0	6.00	70.10	391.7	2.3	9.0	9.2	4.08	4.00		
453.0	7.90	66.70	452.3	5.0	15.9	16.4	3.19	3.11		
484.0	8.30	63.80	482.9	6.8	19.8	20.7	1.84	1.29		

Cathedral Energy Services

Survey Report

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Site:	PC-22 Pad NENW 2 7S 95W	MD Reference:	KB=22' @ 6543.0ft (Patterson 303)
Well:	Hagen Federal 22-1A	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
576.0	10.60	72.60	573.7	12.3	33.9	35.4	2.95	2.50	
667.0	12.90	82.90	662.8	16.1	51.9	53.8	3.41	2.53	
759.0	15.90	86.80	751.9	18.0	74.7	76.6	3.43	3.26	
850.0	17.90	78.00	839.0	21.6	100.8	103.0	3.56	2.20	
941.0	20.50	79.10	924.9	27.6	130.2	132.9	2.88	2.86	
1,032.0	23.80	79.60	1,009.2	33.9	163.9	167.2	3.63	3.63	
1,124.0	27.10	80.30	1,092.2	40.8	202.8	206.7	3.60	3.59	
1,215.0	30.00	81.00	1,172.2	47.8	245.7	250.2	3.21	3.19	
1,306.0	32.60	82.30	1,249.9	54.7	292.5	297.5	2.95	2.86	
1,397.0	35.60	81.80	1,325.3	61.7	343.0	348.5	3.31	3.30	
1,505.0	36.20	81.40	1,412.7	71.0	405.7	411.8	0.60	0.56	
1,612.0	36.00	77.80	1,499.2	82.4	467.6	474.8	1.99	-0.19	
1,704.0	36.20	80.90	1,573.5	92.4	520.9	529.0	2.00	0.22	
1,795.0	37.60	83.00	1,646.3	100.0	575.0	583.6	2.07	1.54	
1,887.0	37.40	81.20	1,719.3	107.7	630.5	639.6	1.21	-0.22	
1,978.0	37.30	79.90	1,791.7	116.8	684.9	694.8	0.87	-0.11	
2,070.0	36.60	82.90	1,865.2	125.0	739.6	750.1	2.10	-0.76	
2,162.0	36.40	81.90	1,939.1	132.3	793.8	804.8	0.68	-0.22	
2,254.0	37.00	80.80	2,012.9	140.6	848.2	859.7	0.97	0.65	
2,345.0	37.00	79.80	2,085.6	149.8	902.2	914.5	0.66	0.00	
2,437.0	36.30	81.40	2,159.4	158.8	956.3	969.4	1.29	-0.76	
2,529.0	36.70	80.90	2,233.3	167.2	1,010.4	1,024.1	0.54	0.43	
2,620.0	37.00	80.60	2,306.2	176.0	1,064.3	1,078.7	0.38	0.33	
2,712.0	36.90	81.00	2,379.7	184.8	1,118.9	1,134.0	0.28	-0.11	
2,804.0	35.60	81.50	2,453.9	193.1	1,172.6	1,188.4	1.45	-1.41	
2,895.0	37.10	81.10	2,527.2	201.2	1,225.9	1,242.3	1.67	1.65	
2,987.0	36.90	80.50	2,600.6	210.1	1,280.6	1,297.7	0.45	-0.22	
3,078.0	36.20	80.20	2,673.7	219.2	1,334.0	1,351.9	0.79	-0.77	
3,170.0	36.30	79.60	2,747.9	228.7	1,387.6	1,406.3	0.40	0.11	
3,262.0	37.00	81.70	2,821.8	237.6	1,441.8	1,461.2	1.56	0.76	
3,354.0	36.90	81.10	2,895.3	245.9	1,496.4	1,516.5	0.41	-0.11	
3,445.0	37.00	80.20	2,968.0	254.8	1,550.4	1,571.2	0.60	0.11	
3,536.0	36.40	83.30	3,041.0	262.6	1,604.2	1,625.6	2.14	-0.66	
3,628.0	35.90	82.40	3,115.3	269.3	1,658.1	1,679.8	0.79	-0.54	
3,720.0	34.80	81.60	3,190.3	276.7	1,710.8	1,733.0	1.30	-1.20	
3,811.0	36.40	81.50	3,264.3	284.5	1,763.2	1,786.0	1.76	1.76	
3,903.0	35.50	81.30	3,338.8	292.6	1,816.6	1,840.0	0.99	-0.98	
3,995.0	36.10	82.60	3,413.4	300.1	1,869.9	1,893.8	1.05	0.65	
4,086.0	36.00	82.50	3,487.0	307.1	1,923.0	1,947.3	0.13	-0.11	
4,178.0	35.70	82.20	3,561.5	314.3	1,976.4	2,001.2	0.38	-0.33	
4,270.0	35.70	81.20	3,636.2	322.0	2,029.5	2,054.9	0.63	0.00	
4,362.0	35.30	81.10	3,711.1	330.2	2,082.3	2,108.3	0.44	-0.43	
4,453.0	34.70	80.80	3,785.7	338.4	2,133.8	2,160.5	0.69	-0.66	
4,545.0	36.10	81.10	3,860.7	346.8	2,186.4	2,213.8	1.53	1.52	
4,636.0	36.10	80.70	3,934.2	355.3	2,239.4	2,267.4	0.26	0.00	
4,728.0	35.80	80.90	4,008.7	363.9	2,292.7	2,321.4	0.35	-0.33	
4,819.0	35.50	80.60	4,082.6	372.5	2,345.0	2,374.4	0.38	-0.33	
4,911.0	33.80	80.70	4,158.3	381.0	2,396.7	2,426.7	1.85	-1.85	
5,002.0	33.20	78.10	4,234.2	390.2	2,446.0	2,476.9	1.71	-0.66	
5,094.0	31.20	78.60	4,312.0	400.1	2,494.0	2,525.9	2.19	-2.17	
5,185.0	29.20	76.60	4,390.7	409.9	2,538.7	2,571.6	2.46	-2.20	
5,277.0	27.90	75.40	4,471.5	420.5	2,581.4	2,615.4	1.54	-1.41	
5,368.0	26.10	78.50	4,552.6	429.9	2,621.6	2,656.6	2.51	-1.98	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Hagen Federal 22-1A
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 22-1A	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
5,460.0	23.50	79.30	4,636.1	437.3	2,659.5	2,695.2	2.85	-2.83	
5,551.0	22.90	82.90	4,719.7	442.9	2,694.9	2,731.0	1.69	-0.66	
5,643.0	20.70	83.60	4,805.1	446.9	2,728.8	2,765.1	2.41	-2.39	
5,734.0	18.90	82.50	4,890.8	450.6	2,759.4	2,795.9	2.02	-1.98	
5,826.0	16.90	84.80	4,978.3	453.8	2,787.5	2,824.2	2.31	-2.17	
5,918.0	14.60	81.20	5,066.8	456.8	2,812.3	2,849.1	2.72	-2.50	
6,009.0	13.70	81.30	5,155.1	460.1	2,834.3	2,871.4	0.99	-0.99	
6,101.0	11.60	81.90	5,244.8	463.1	2,854.2	2,891.5	2.29	-2.28	
6,192.0	10.90	81.90	5,334.1	465.6	2,871.8	2,909.3	0.77	-0.77	
6,284.0	9.40	80.90	5,424.6	468.0	2,887.8	2,925.5	1.64	-1.63	
6,375.0	8.30	79.00	5,514.6	470.4	2,901.6	2,939.5	1.25	-1.21	
6,467.0	7.00	79.30	5,605.7	472.7	2,913.6	2,951.7	1.41	-1.41	
6,558.0	4.30	74.60	5,696.3	474.7	2,922.4	2,960.6	3.01	-2.97	
6,649.0	3.90	75.10	5,787.1	476.4	2,928.6	2,967.1	0.44	-0.44	
6,740.0	1.60	71.20	5,878.0	477.6	2,932.8	2,971.5	2.53	-2.53	
6,832.0	1.40	69.80	5,969.9	478.4	2,935.1	2,973.8	0.22	-0.22	
6,923.0	1.20	69.20	6,060.9	479.1	2,937.0	2,975.8	0.22	-0.22	
7,015.0	1.00	81.80	6,152.9	479.6	2,938.7	2,977.6	0.34	-0.22	
7,107.0	0.50	100.10	6,244.9	479.6	2,939.9	2,978.8	0.60	-0.54	
7,198.0	0.40	136.30	6,335.9	479.3	2,940.5	2,979.3	0.32	-0.11	
7,290.0	0.80	168.20	6,427.9	478.5	2,940.9	2,979.5	0.55	0.43	
7,381.0	1.00	193.10	6,518.9	477.1	2,940.8	2,979.3	0.48	0.22	
7,472.0	1.40	202.40	6,609.8	475.3	2,940.2	2,978.4	0.49	0.44	
7,564.0	1.00	235.10	6,701.8	473.8	2,939.1	2,977.1	0.84	-0.43	
7,656.0	0.50	346.80	6,793.8	473.7	2,938.4	2,976.3	1.38	-0.54	
7,747.0	0.30	21.80	6,884.8	474.3	2,938.4	2,976.4	0.34	-0.22	
7,838.0	0.30	74.10	6,975.8	474.6	2,938.7	2,976.8	0.29	0.00	
7,930.0	0.50	219.80	7,067.8	474.3	2,938.7	2,976.7	0.83	0.22	
8,022.0	1.00	205.60	7,159.8	473.3	2,938.1	2,976.0	0.58	0.54	
8,113.0	1.50	194.70	7,250.8	471.4	2,937.4	2,975.0	0.61	0.55	
8,204.0	1.40	187.90	7,341.7	469.2	2,937.0	2,974.2	0.22	-0.11	
8,296.0	1.90	202.70	7,433.7	466.7	2,936.2	2,973.1	0.71	0.54	
8,387.0	2.40	224.80	7,524.6	463.9	2,934.3	2,970.7	1.05	0.55	
8,479.0	2.80	229.30	7,616.5	461.1	2,931.2	2,967.3	0.49	0.43	
8,570.0	2.90	230.80	7,707.4	458.2	2,927.8	2,963.4	0.14	0.11	
8,662.0	2.90	233.30	7,799.3	455.3	2,924.1	2,959.3	0.14	0.00	
8,680.0	2.90	236.00	7,817.3	454.8	2,923.4	2,958.5	0.76	0.00	Last Cathedral Survey @ 8,680' MD
8,730.0	2.90	236.00	7,867.2	453.4	2,921.3	2,956.2	0.00	0.00	Projection to Bit @ 8,730'

Cathedral Energy Services

Survey Report

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Project:	S. Piceance (Parachute)	TVD Reference:	KB=22' @ 6543.0ft (Patterson 303)
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Well:	Hagen Federal 22-1A	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 22-1A TC	0.00	0.00	5,596.0	469.3	2,925.2	1,590,970.26	2,300,695.82	39.429806	-107.976035
- actual wellpath misses target center by 13.1ft at 6458.8ft MD (5597.6 TVD, 472.6 N, 2912.6 E)									
- Point									
Hagen Federal 22-1A PE	0.00	0.00	7,825.0	469.3	2,925.2	1,590,970.26	2,300,695.82	39.429806	-107.976035
- actual wellpath misses target center by 16.5ft at 8680.0ft MD (7817.3 TVD, 454.8 N, 2923.4 E)									
- Circle (radius 25.0)									

Design Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W		
		(ft)	(ft)	Comment	
8,680.0	7,817.3	454.8	2,923.4	Last Cathedral Survey @ 8,680' MD	
8,730.0	7,867.2	453.4	2,921.3	Projection to Bit @ 8,730'	

Checked By: _____ Approved By: _____ Date: _____