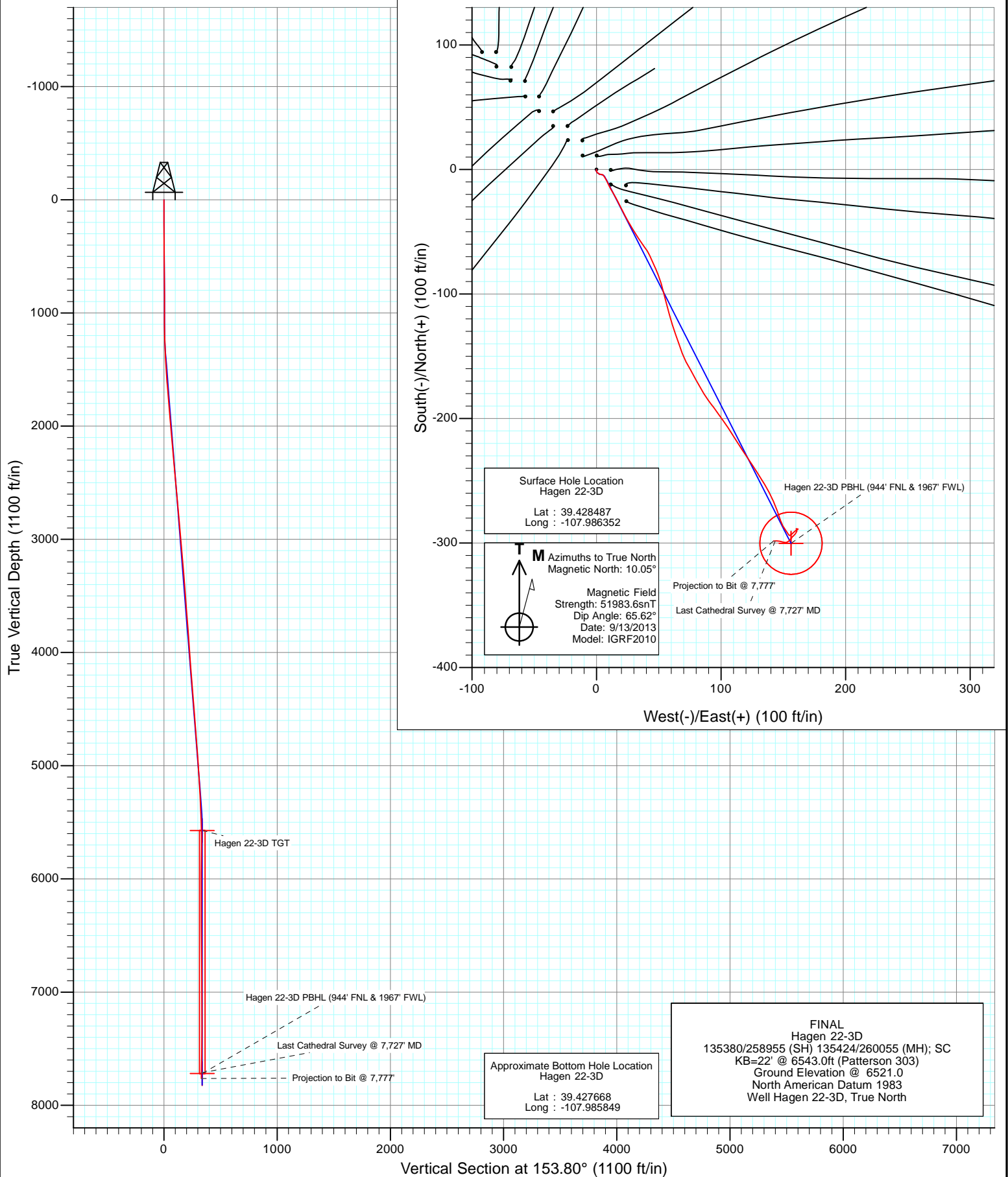


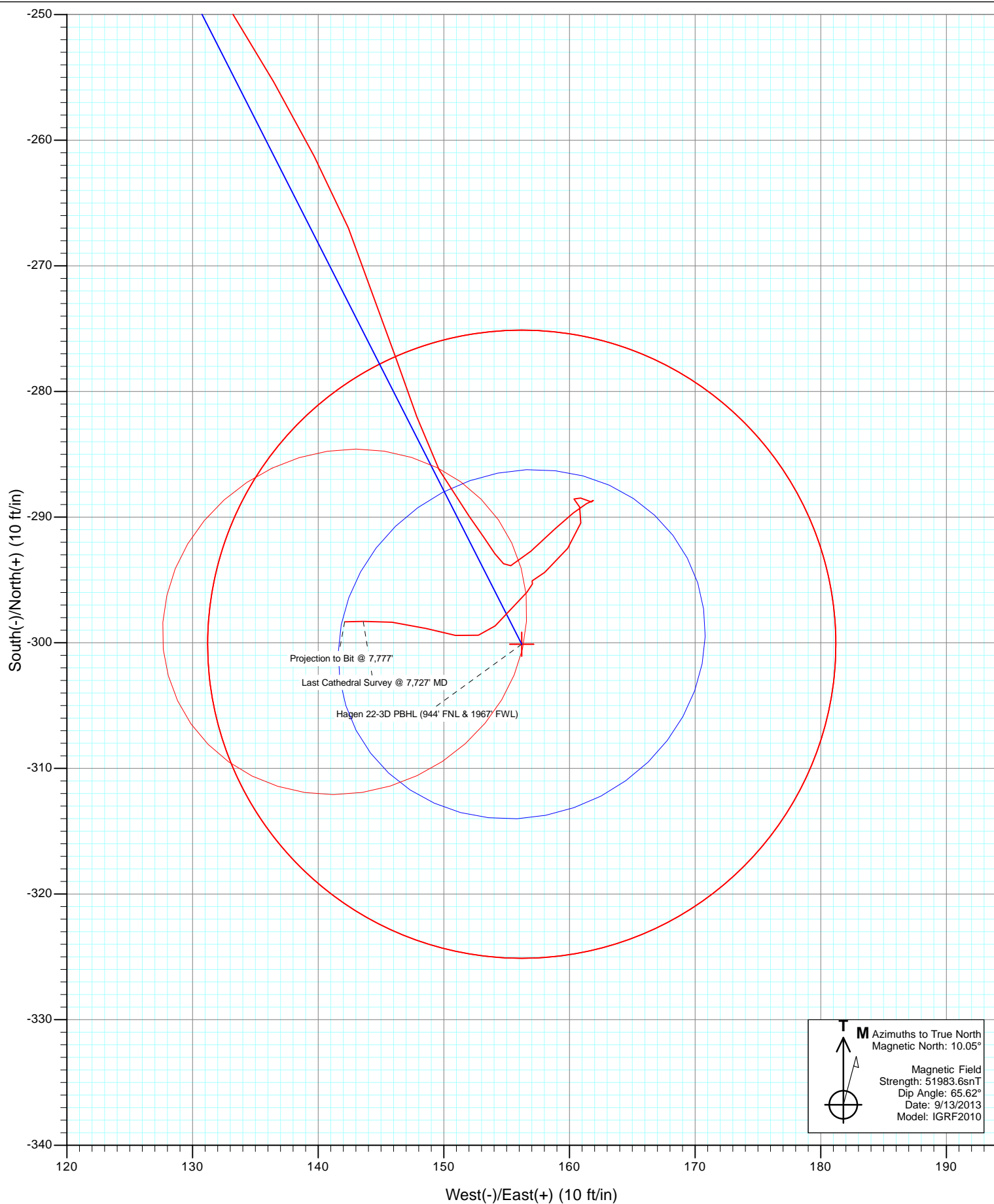


Project: S. Piceance (Parachute)
Site: PC-22 Pad NENW 2 7S 95W
Well: Hagen 22-3D
Wellbore: OH
Design: FINAL



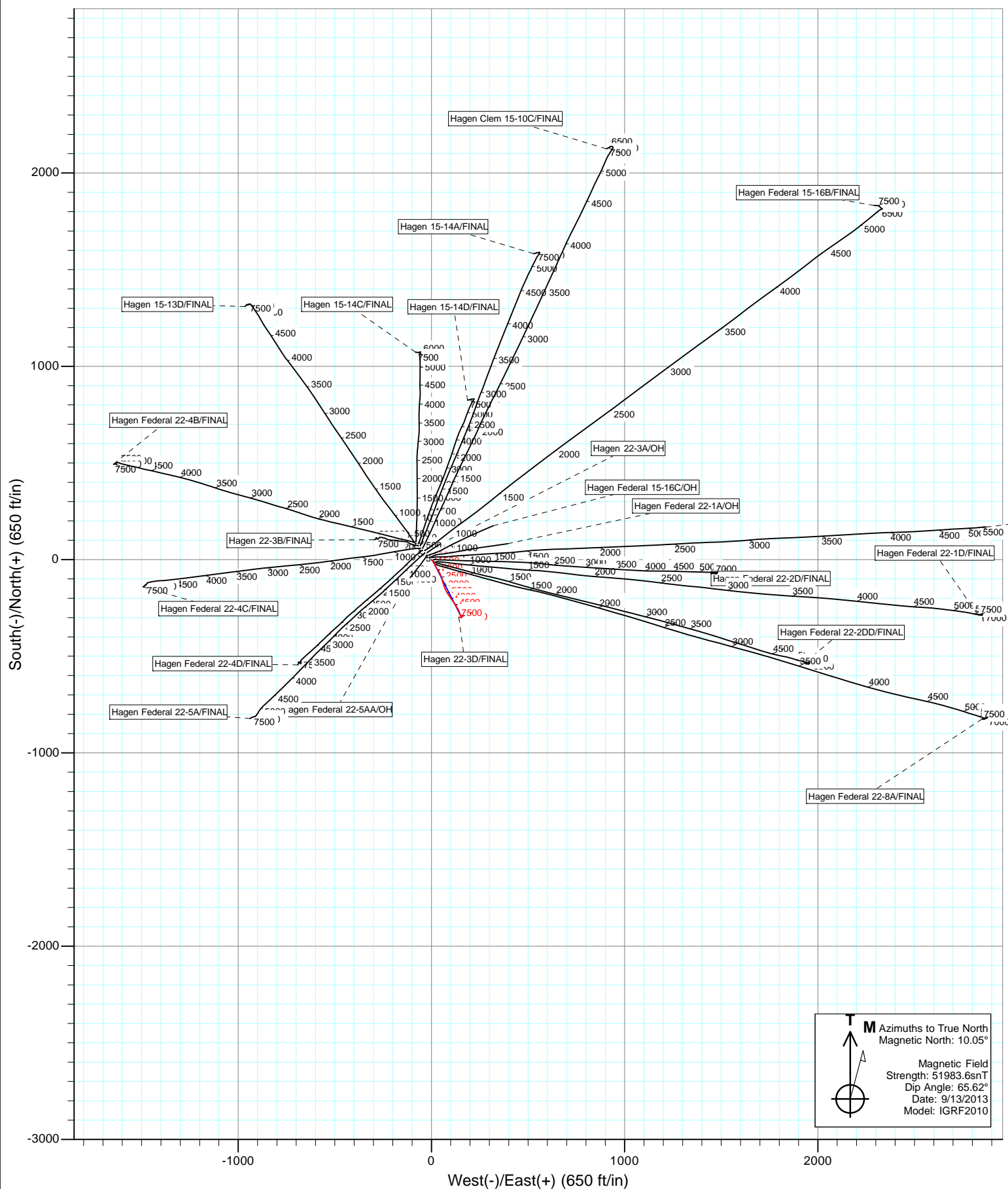


Project: S. Piceance (Parachute)
Site: PC-22 Pad NENW 2 7S 95W
Well: Hagen 22-3D
Wellbore: OH
Design: FINAL





Project: S. Piceance (Parachute)
Site: PC-22 Pad NENW 2 7S 95W
Well: Hagen 22-3D
Design: FINAL



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Hagen 22-3D
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 22-3D	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 22-3D			
Well Position	+N/-S	0.0 ft	Northing:	1,590,569.59 ft
	+E/-W	0.0 ft	Easting:	2,297,769.55 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	9/13/2013	10.05	65.62	51,984

Design	FINAL			
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	153.80

Survey Program	Date	9/23/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
117.0	7,777.0	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	0.20	193.60	117.0	-0.2	0.0	0.2	0.17	0.17	
148.0	0.60	177.40	148.0	-0.4	-0.1	0.3	1.33	1.29	
179.0	0.30	156.50	179.0	-0.6	0.0	0.6	1.09	-0.97	
209.0	0.50	167.60	209.0	-0.8	0.0	0.8	0.71	0.67	
270.0	0.30	214.70	270.0	-1.2	0.0	1.1	0.60	-0.33	
301.0	0.20	152.90	301.0	-1.4	0.0	1.2	0.87	-0.32	
423.0	0.40	144.80	423.0	-1.9	0.3	1.8	0.17	0.16	
484.0	0.30	170.80	484.0	-2.2	0.5	2.2	0.30	-0.16	
576.0	0.50	126.20	576.0	-2.7	0.8	2.8	0.39	0.22	
667.0	0.50	114.60	667.0	-3.1	1.5	3.5	0.11	0.00	
759.0	0.40	140.40	759.0	-3.5	2.1	4.1	0.24	-0.11	
850.0	0.10	114.80	850.0	-3.8	2.4	4.4	0.34	-0.33	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Hagen 22-3D
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 22-3D	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
941.0	0.30	74.90	941.0	-3.8	2.7	4.6	0.26	0.22	
1,024.0	0.70	106.20	1,024.0	-3.8	3.4	4.9	0.57	0.48	
1,151.0	0.50	84.60	1,151.0	-4.0	4.7	5.7	0.24	-0.16	
1,243.0	1.80	143.00	1,243.0	-5.1	5.9	7.2	1.73	1.41	
1,334.0	3.10	153.20	1,333.9	-8.5	7.9	11.1	1.50	1.43	
1,426.0	2.70	154.90	1,425.8	-12.6	9.9	15.7	0.44	-0.43	
1,518.0	3.70	147.80	1,517.6	-17.1	12.4	20.9	1.17	1.09	
1,609.0	4.30	152.50	1,608.4	-22.6	15.6	27.2	0.75	0.66	
1,700.0	5.50	153.70	1,699.1	-29.6	19.1	35.0	1.32	1.32	
1,791.0	5.10	151.30	1,789.7	-37.0	23.0	43.4	0.50	-0.44	
1,883.0	4.90	149.70	1,881.3	-44.0	26.9	51.4	0.26	-0.22	
1,975.0	4.50	150.20	1,973.0	-50.5	30.7	58.9	0.44	-0.43	
2,067.0	4.10	143.60	2,064.7	-56.3	34.4	65.7	0.69	-0.43	
2,159.0	4.70	144.30	2,156.5	-62.0	38.6	72.7	0.65	0.65	
2,250.0	5.60	153.70	2,247.1	-69.0	42.7	80.8	1.35	0.99	
2,342.0	5.50	157.40	2,338.7	-77.1	46.4	89.7	0.40	-0.11	
2,433.0	5.20	158.60	2,429.3	-85.0	49.6	98.2	0.35	-0.33	
2,525.0	4.80	161.00	2,520.9	-92.5	52.4	106.1	0.49	-0.43	
2,617.0	4.40	169.60	2,612.6	-99.6	54.3	113.3	0.87	-0.43	
2,709.0	5.50	165.10	2,704.3	-107.4	56.0	121.1	1.27	1.20	
2,800.0	5.70	163.90	2,794.9	-115.9	58.4	129.8	0.25	0.22	
2,892.0	5.50	162.70	2,886.4	-124.5	61.0	138.6	0.25	-0.22	
2,983.0	5.10	161.40	2,977.0	-132.5	63.6	147.0	0.46	-0.44	
3,075.0	5.10	159.40	3,068.7	-140.2	66.3	155.1	0.19	0.00	
3,167.0	4.70	161.70	3,160.3	-147.6	68.9	162.9	0.48	-0.43	
3,258.0	4.80	150.40	3,251.0	-154.5	72.0	170.4	1.03	0.11	
3,350.0	4.70	151.00	3,342.7	-161.1	75.7	178.0	0.12	-0.11	
3,441.0	4.30	152.30	3,433.4	-167.4	79.1	185.1	0.45	-0.44	
3,533.0	4.00	151.30	3,525.2	-173.3	82.3	191.8	0.34	-0.33	
3,625.0	4.60	147.50	3,616.9	-179.2	85.8	198.6	0.72	0.65	
3,716.0	4.60	144.10	3,707.6	-185.2	89.9	205.9	0.30	0.00	
3,808.0	4.20	143.30	3,799.4	-190.9	94.1	212.8	0.44	-0.43	
3,900.0	4.10	145.40	3,891.1	-196.3	97.9	219.4	0.20	-0.11	
3,992.0	3.80	144.20	3,982.9	-201.5	101.6	225.6	0.34	-0.33	
4,083.0	4.30	146.50	4,073.7	-206.8	105.2	232.0	0.58	0.55	
4,175.0	3.90	147.10	4,165.4	-212.3	108.8	238.5	0.44	-0.43	
4,266.0	5.10	148.60	4,256.2	-218.3	112.6	245.6	1.32	1.32	
4,358.0	5.00	145.70	4,347.8	-225.1	117.0	253.7	0.30	-0.11	
4,450.0	4.50	146.60	4,439.5	-231.5	121.3	261.2	0.55	-0.54	
4,541.0	4.50	146.00	4,530.2	-237.4	125.2	268.3	0.05	0.00	
4,632.0	4.40	148.10	4,620.9	-243.3	129.1	275.3	0.21	-0.11	
4,724.0	4.40	147.50	4,712.7	-249.3	132.8	282.3	0.05	0.00	
4,816.0	4.40	150.50	4,804.4	-255.3	136.5	289.4	0.25	0.00	
4,907.0	4.10	152.30	4,895.1	-261.3	139.7	296.1	0.36	-0.33	
4,999.0	3.80	157.00	4,986.9	-267.0	142.4	302.4	0.48	-0.33	
5,090.0	3.40	163.10	5,077.7	-272.3	144.4	308.1	0.61	-0.44	
5,182.0	3.30	156.70	5,169.6	-277.4	146.2	313.4	0.42	-0.11	
5,273.0	2.90	164.70	5,260.5	-282.0	147.9	318.3	0.65	-0.44	
5,365.0	2.80	149.40	5,352.3	-286.2	149.6	322.8	0.83	-0.11	
5,456.0	2.80	144.90	5,443.2	-289.9	152.0	327.3	0.24	0.00	
5,548.0	1.70	146.60	5,535.2	-292.9	154.1	330.8	1.20	-1.20	
5,586.0	1.11	131.91	5,573.1	-293.6	154.6	331.7	1.81	-1.56	Hagen 22-3D TGT
5,639.0	0.70	72.50	5,626.1	-293.9	155.3	332.3	1.81	-0.77	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Hagen 22-3D
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 22-3D	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
5,731.0	1.80	47.50	5,718.1	-292.7	156.9	331.9	1.31	1.20	
5,823.0	1.50	46.60	5,810.1	-290.9	158.9	331.2	0.33	-0.33	
5,914.0	0.90	52.80	5,901.1	-289.7	160.3	330.7	0.67	-0.66	
6,006.0	0.70	57.90	5,993.1	-288.9	161.4	330.5	0.23	-0.22	
6,097.0	0.10	122.50	6,084.0	-288.7	161.9	330.5	0.73	-0.66	
6,188.0	0.30	250.70	6,175.0	-288.8	161.7	330.5	0.41	0.22	
6,280.0	0.20	17.20	6,267.0	-288.7	161.6	330.4	0.49	-0.11	
6,372.0	0.90	276.80	6,359.0	-288.5	160.9	329.9	1.04	0.76	
6,463.0	0.30	132.60	6,450.0	-288.6	160.4	329.7	1.27	-0.66	
6,554.0	0.70	149.80	6,541.0	-289.2	160.8	330.5	0.46	0.44	
6,646.0	1.00	193.70	6,633.0	-290.5	160.9	331.7	0.75	0.33	
6,737.0	1.90	214.40	6,724.0	-292.5	159.9	333.0	1.13	0.99	
6,828.0	1.50	235.70	6,815.0	-294.4	158.0	333.9	0.81	-0.44	
6,920.0	0.00	132.20	6,906.9	-295.1	157.0	334.1	1.63	-1.63	
7,012.0	0.30	174.90	6,998.9	-295.3	157.1	334.3	0.33	0.33	
7,103.0	0.80	227.20	7,089.9	-296.0	156.6	334.7	0.73	0.55	
7,194.0	1.40	221.10	7,180.9	-297.3	155.4	335.3	0.67	0.66	
7,286.0	1.00	226.30	7,272.9	-298.7	154.1	336.0	0.45	-0.43	
7,377.0	1.00	255.80	7,363.9	-299.4	152.8	336.1	0.56	0.00	
7,469.0	1.30	280.00	7,455.9	-299.4	150.9	335.3	0.61	0.33	
7,561.0	1.70	285.70	7,547.8	-298.9	148.6	333.8	0.46	0.43	
7,652.0	1.80	275.30	7,638.8	-298.4	145.9	332.1	0.37	0.11	
7,727.0	1.70	268.30	7,713.8	-298.3	143.6	331.0	0.31	-0.13	Last Cathedral Survey @ 7,727' MD - Hagen 22- Projection to Bit @ 7,777'
7,777.0	1.70	268.30	7,763.7	-298.3	142.1	330.4	0.00	0.00	

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Hagen 22-3D TGT	0.00	0.00	5,573.0	-300.1	156.2	1,590,265.31	2,297,917.49	39.427663	-107.985799
- hit/miss target									
- Shape									
- actual wellpath misses target center by 6.7ft at 5586.0ft MD (5573.1 TVD, -293.6 N, 154.6 E)									
- Point									
Hagen 22-3D PBHL (94°)	0.00	0.00	7,720.0	-300.1	156.2	1,590,265.31	2,297,917.49	39.427663	-107.985799
- actual wellpath misses target center by 14.2ft at 7727.0ft MD (7713.8 TVD, -298.3 N, 143.6 E)									
- Circle (radius 25.0)									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
7,727.0	7,713.8	-298.3	143.6	Last Cathedral Survey @ 7,727' MD	
7,777.0	7,763.7	-298.3	142.1	Projection to Bit @ 7,777'	

Checked By: _____ Approved By: _____ Date: _____