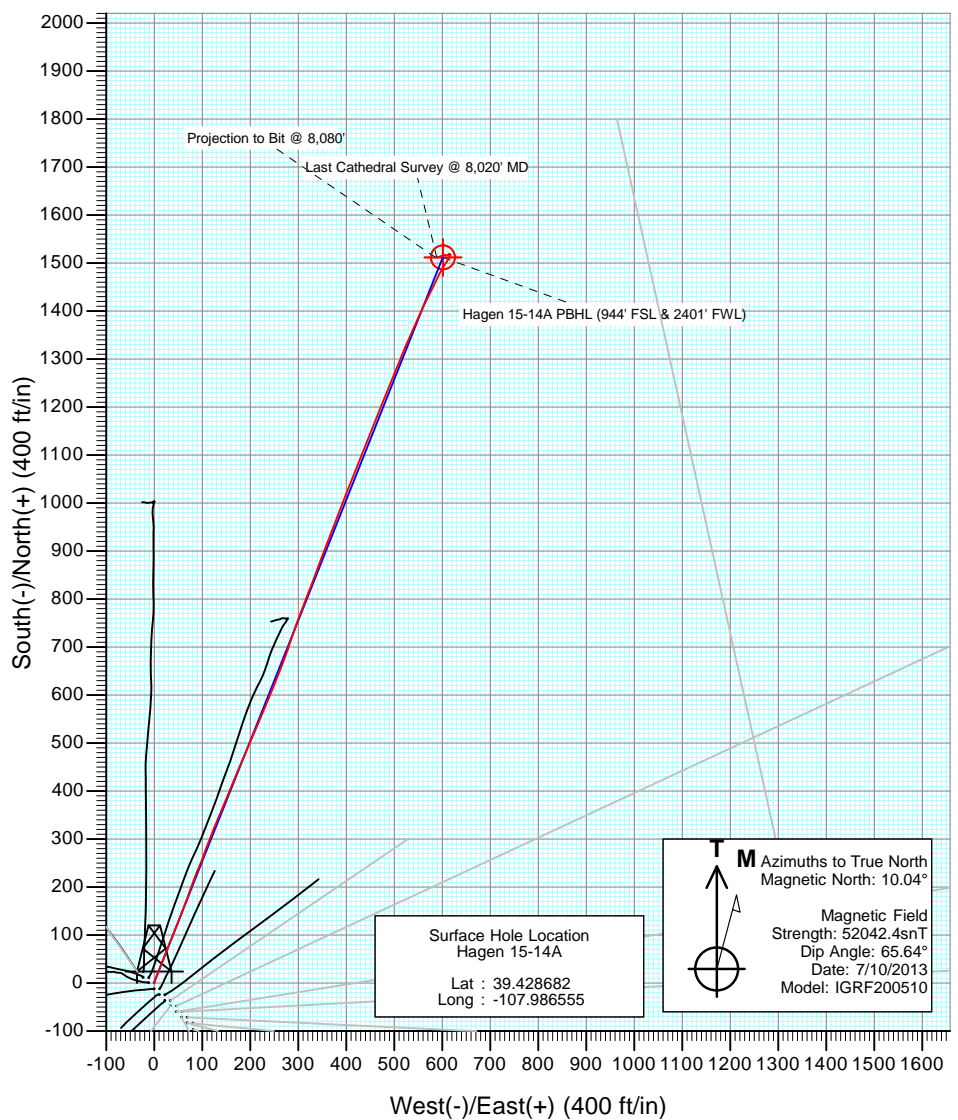
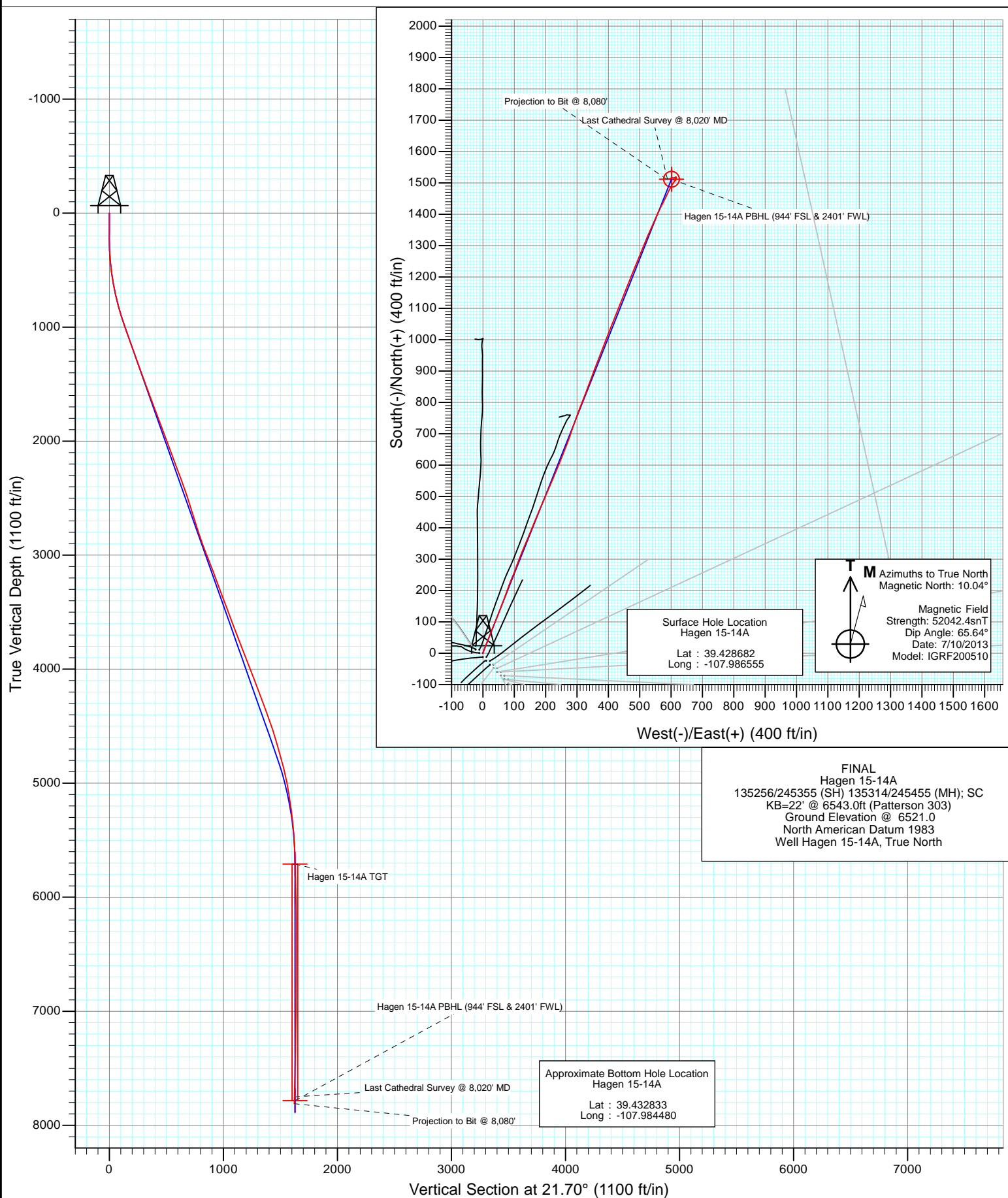




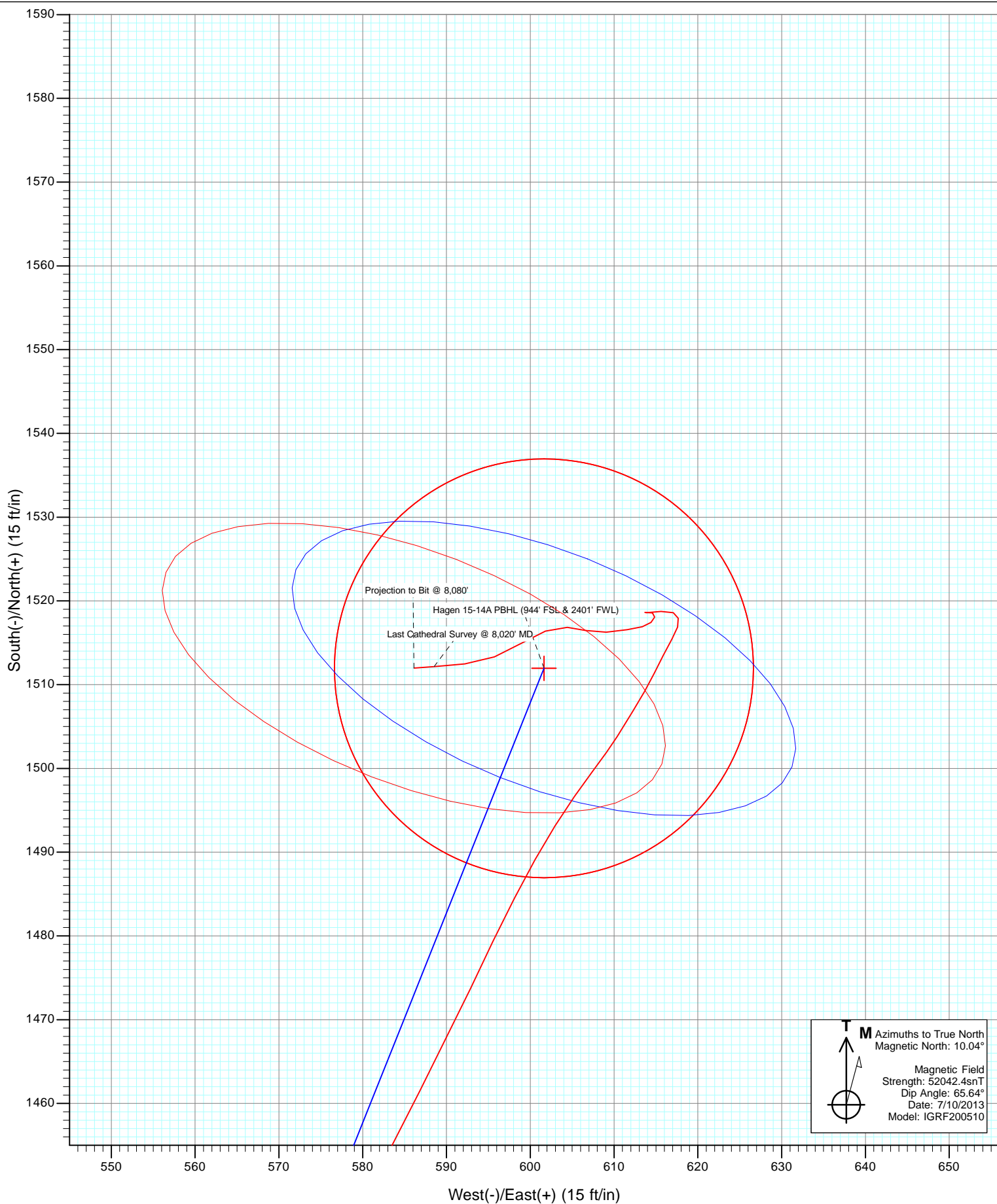
Project: S. Piceance (Parachute)  
Site: PC-22 Pad NENW 2 7S 95W  
Well: Hagen 15-14A  
Wellbore: OH  
Design: FINAL

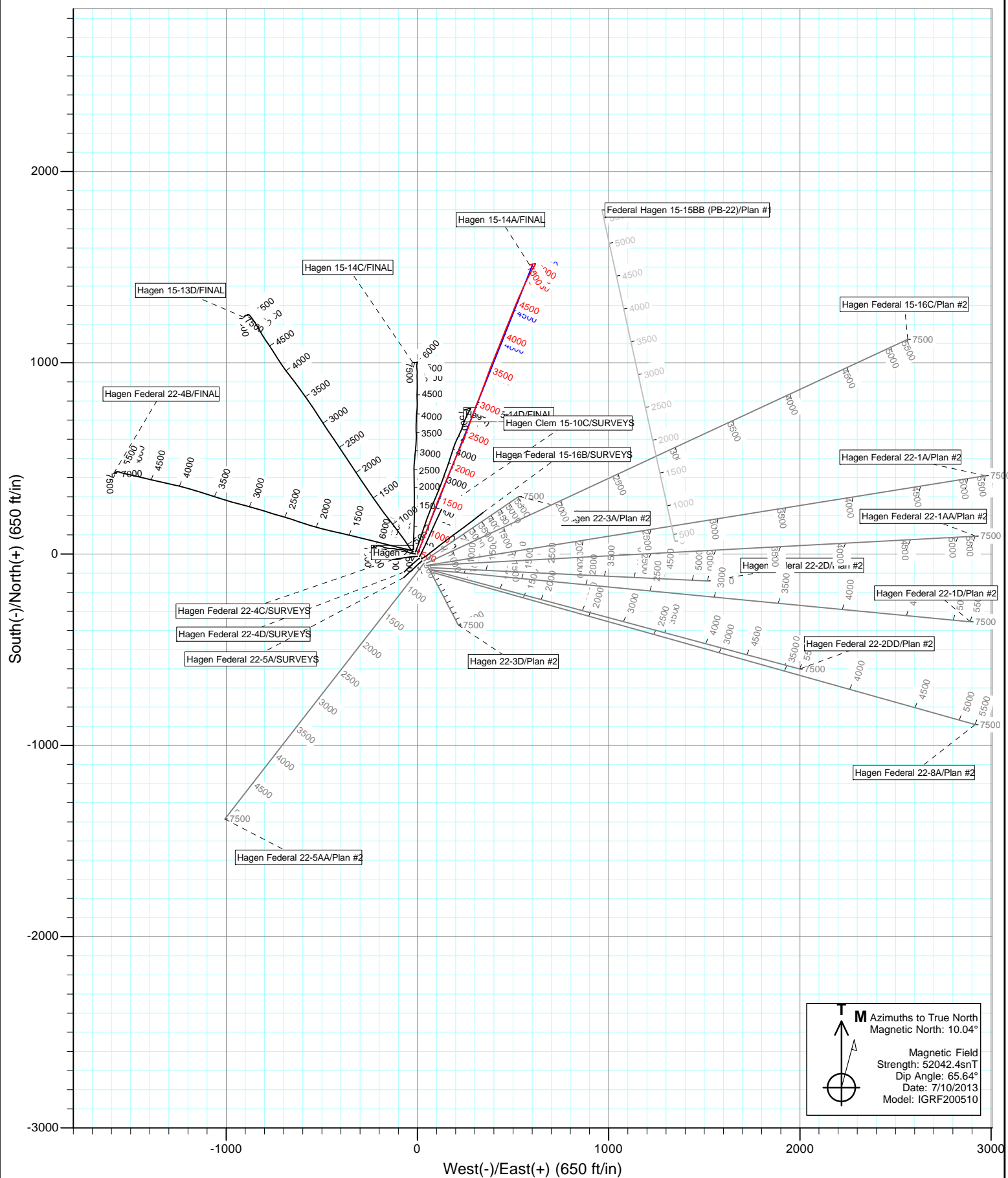


FINAL  
Hagen 15-14A  
135256/245355 (SH) 135314/245455 (MH); SC  
KB=22° @ 6543.0ft (Patterson 303)  
Ground Elevation @ 6521.0  
North American Datum 1983  
Well Hagen 15-14A, True North



Project: S. Piceance (Parachute)  
Site: PC-22 Pad NENW 2 7S 95W  
Well: Hagen 15-14A  
Wellbore: OH  
Design: FINAL





# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Hagen 15-14A
<b>Project:</b>	S. Piceance (Parachute)	<b>TVD Reference:</b>	KB=22' @ 6543.0ft (Patterson 303)
<b>Site:</b>	PC-22 Pad NENW 2 7S 95W	<b>MD Reference:</b>	KB=22' @ 6543.0ft (Patterson 303)
<b>Well:</b>	Hagen 15-14A	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	SURVEYS	<b>Database:</b>	USA EDM 5000 Multi Users DB

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

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

<b>Well</b>	Hagen 15-14A			
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>	1,590,642.16 ft
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>	2,297,714.17 ft
<b>Position Uncertainty</b>	0.0 ft		<b>Wellhead Elevation:</b>	ft
			<b>Ground Level:</b>	6,521.0 ft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF200510	7/10/2013	10.04	65.64	52,042

<b>Design</b>	SURVEYS			
<b>Audit Notes:</b>				
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b> 0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	21.70

<b>Survey Program</b>	<b>Date</b>	7/20/2013		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
110.0	8,080.0	Survey #1 (OH)	Geolink MWD	Geolink MWD

<b>Survey</b>									
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Formations / Comments</b>
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
110.0	0.10	290.50	110.0	0.0	-0.1	0.0	0.09	0.09	
141.0	0.50	290.50	141.0	0.1	-0.2	0.0	1.29	1.29	
171.0	0.20	319.30	171.0	0.2	-0.4	0.0	1.13	-1.00	
202.0	0.70	15.80	202.0	0.4	-0.4	0.2	1.98	1.61	
232.0	1.00	30.20	232.0	0.8	-0.2	0.7	1.22	1.00	
262.0	0.90	22.10	262.0	1.2	0.0	1.2	0.56	-0.33	
293.0	1.10	22.40	293.0	1.7	0.2	1.7	0.65	0.65	
324.0	1.70	24.40	324.0	2.4	0.5	2.5	1.94	1.94	
354.0	2.50	24.90	354.0	3.4	1.0	3.6	2.67	2.67	
385.0	3.30	23.30	384.9	4.9	1.6	5.1	2.59	2.58	
416.0	4.30	22.70	415.8	6.8	2.4	7.2	3.23	3.23	
508.0	7.30	22.40	507.4	15.4	6.0	16.5	3.26	3.26	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Hagen 15-14A
<b>Project:</b>	S. Piceance (Parachute)	<b>TVD Reference:</b>	KB=22' @ 6543.0ft (Patterson 303)
<b>Site:</b>	PC-22 Pad NENW 2 7S 95W	<b>MVD Reference:</b>	KB=22' @ 6543.0ft (Patterson 303)
<b>Well:</b>	Hagen 15-14A	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	SURVEYS	<b>Database:</b>	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
600.0	10.40	19.50	598.3	28.6	11.0	30.6	3.40	3.37	
692.0	12.00	20.60	688.5	45.4	17.1	48.5	1.75	1.74	
784.0	14.20	23.20	778.1	64.7	24.9	69.3	2.48	2.39	
876.0	16.40	21.40	866.8	87.2	34.1	93.6	2.45	2.39	
967.0	18.70	21.60	953.6	112.7	44.2	121.0	2.53	2.53	
1,035.0	19.30	21.70	1,017.9	133.3	52.3	143.2	0.88	0.88	
1,152.0	19.70	20.50	1,128.2	169.7	66.4	182.2	0.48	0.34	
1,244.0	20.00	19.20	1,214.7	199.1	77.0	213.4	0.58	0.33	
1,335.0	19.90	22.20	1,300.3	228.1	88.0	244.5	1.13	-0.11	
1,430.0	20.00	21.40	1,389.6	258.2	100.0	276.9	0.31	0.11	
1,522.0	19.50	19.80	1,476.1	287.3	111.0	308.0	0.80	-0.54	
1,614.0	20.30	22.10	1,562.7	316.5	122.2	339.3	1.22	0.87	
1,705.0	20.70	22.60	1,647.9	346.0	134.3	371.1	0.48	0.44	
1,797.0	20.60	22.90	1,734.0	375.9	146.8	403.6	0.16	-0.11	
1,888.0	21.00	22.90	1,819.0	405.7	159.4	435.9	0.44	0.44	
1,980.0	20.40	22.50	1,905.1	435.7	172.0	468.4	0.67	-0.65	
2,072.0	20.60	22.80	1,991.3	465.4	184.4	500.6	0.25	0.22	
2,162.0	20.70	23.30	2,075.5	494.6	196.8	532.4	0.23	0.11	
2,253.0	20.40	23.80	2,160.7	523.9	209.5	564.3	0.38	-0.33	
2,345.0	20.20	22.70	2,247.0	553.3	222.1	596.2	0.47	-0.22	
2,436.0	20.10	22.10	2,332.4	582.2	234.1	627.5	0.25	-0.11	
2,528.0	19.40	22.40	2,419.0	611.0	245.9	658.6	0.77	-0.76	
2,620.0	18.10	22.60	2,506.1	638.3	257.2	688.2	1.41	-1.41	
2,711.0	17.70	20.40	2,592.7	664.3	267.4	716.2	0.86	-0.44	
2,803.0	16.70	18.60	2,680.6	690.0	276.5	743.3	1.23	-1.09	
2,894.0	17.80	19.50	2,767.5	715.5	285.3	770.3	1.24	1.21	
2,986.0	19.60	19.50	2,854.7	743.3	295.2	799.8	1.96	1.96	
3,077.0	20.70	20.50	2,940.1	772.7	305.9	831.1	1.27	1.21	
3,169.0	21.50	21.90	3,025.9	803.6	317.9	864.2	1.03	0.87	
3,260.0	21.20	20.90	3,110.7	834.5	330.0	897.3	0.52	-0.33	
3,352.0	19.90	19.80	3,196.8	864.7	341.2	929.6	1.47	-1.41	
3,444.0	20.50	21.10	3,283.2	894.5	352.3	961.4	0.81	0.65	
3,536.0	20.20	20.00	3,369.4	924.5	363.6	993.4	0.53	-0.33	
3,628.0	20.90	21.00	3,455.6	954.7	374.9	1,025.7	0.85	0.76	
3,720.0	20.80	20.40	3,541.5	985.3	386.4	1,058.4	0.26	-0.11	
3,811.0	21.00	22.00	3,626.6	1,015.6	398.2	1,090.8	0.66	0.22	
3,903.0	20.70	21.20	3,712.5	1,046.0	410.2	1,123.6	0.45	-0.33	
3,994.0	21.00	23.00	3,797.6	1,076.0	422.4	1,156.0	0.78	0.33	
4,085.0	21.50	22.30	3,882.4	1,106.5	435.1	1,189.0	0.62	0.55	
4,177.0	21.80	21.00	3,967.9	1,138.0	447.6	1,222.9	0.61	0.33	
4,269.0	21.00	22.30	4,053.5	1,169.2	460.0	1,256.5	1.01	-0.87	
4,360.0	20.50	21.20	4,138.6	1,199.2	472.0	1,288.7	0.70	-0.55	
4,451.0	20.30	23.10	4,223.9	1,228.5	483.9	1,320.4	0.76	-0.22	
4,542.0	20.10	21.90	4,309.3	1,257.6	496.0	1,351.8	0.51	-0.22	
4,634.0	20.10	21.00	4,395.7	1,287.0	507.5	1,383.4	0.34	0.00	
4,725.0	19.40	22.70	4,481.4	1,315.5	519.0	1,414.2	1.00	-0.77	
4,816.0	17.40	24.40	4,567.7	1,341.9	530.4	1,442.9	2.28	-2.20	
4,908.0	16.10	24.10	4,655.8	1,366.1	541.3	1,469.4	1.42	-1.41	
5,000.0	16.00	24.10	4,744.2	1,389.3	551.7	1,494.8	0.11	-0.11	
5,091.0	14.80	26.40	4,832.0	1,411.1	562.0	1,518.9	1.48	-1.32	
5,183.0	12.50	26.20	4,921.4	1,430.6	571.6	1,540.6	2.50	-2.50	
5,275.0	10.90	25.70	5,011.5	1,447.4	579.8	1,559.2	1.74	-1.74	
5,367.0	9.00	27.50	5,102.1	1,461.6	586.9	1,575.0	2.09	-2.07	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Hagen 15-14A
<b>Project:</b>	S. Piceance (Parachute)	<b>TVD Reference:</b>	KB=22' @ 6543.0ft (Patterson 303)
<b>Site:</b>	PC-22 Pad NENW 2 7S 95W	<b>MD Reference:</b>	KB=22' @ 6543.0ft (Patterson 303)
<b>Well:</b>	Hagen 15-14A	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	SURVEYS	<b>Database:</b>	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
5,458.0	8.10	25.00	5,192.1	1,473.7	592.9	1,588.5	1.07	-0.99	
5,550.0	6.90	27.00	5,283.3	1,484.5	598.1	1,600.5	1.33	-1.30	
5,641.0	5.60	32.20	5,373.7	1,493.1	603.0	1,610.3	1.56	-1.43	
5,733.0	4.10	37.40	5,465.4	1,499.5	607.3	1,617.8	1.70	-1.63	
5,824.0	2.50	32.30	5,556.2	1,503.8	610.4	1,622.9	1.79	-1.76	
5,916.0	1.90	30.30	5,648.2	1,506.8	612.2	1,626.4	0.66	-0.65	
6,007.0	1.60	31.10	5,739.1	1,509.2	613.6	1,629.2	0.33	-0.33	
6,098.0	1.50	25.30	5,830.1	1,511.4	614.8	1,631.6	0.20	-0.11	
6,190.0	1.50	27.40	5,922.1	1,513.5	615.9	1,634.0	0.06	0.00	
6,282.0	1.20	29.00	6,014.0	1,515.4	616.9	1,636.1	0.33	-0.33	
6,373.0	0.80	19.60	6,105.0	1,516.9	617.6	1,637.7	0.47	-0.44	
6,464.0	0.60	343.40	6,196.0	1,517.9	617.6	1,638.7	0.52	-0.22	
6,556.0	0.60	293.80	6,288.0	1,518.6	617.1	1,639.1	0.55	0.00	
6,647.0	1.30	267.40	6,379.0	1,518.7	615.6	1,638.7	0.89	0.77	
6,739.0	0.90	262.10	6,471.0	1,518.6	613.8	1,637.9	0.45	-0.43	
6,830.0	0.70	76.50	6,562.0	1,518.6	613.7	1,637.9	1.76	-0.22	
6,922.0	0.50	118.00	6,654.0	1,518.6	614.6	1,638.2	0.50	-0.22	
7,014.0	0.40	199.00	6,746.0	1,518.1	614.8	1,637.8	0.64	-0.11	
7,105.0	0.60	223.10	6,837.0	1,517.4	614.4	1,637.1	0.31	0.22	
7,197.0	0.90	257.70	6,929.0	1,516.9	613.4	1,636.2	0.58	0.33	
7,288.0	1.40	260.10	7,019.9	1,516.6	611.6	1,635.2	0.55	0.55	
7,379.0	1.80	265.60	7,110.9	1,516.3	609.1	1,634.0	0.47	0.44	
7,471.0	1.30	286.40	7,202.9	1,516.5	606.6	1,633.3	0.81	-0.54	
7,563.0	1.50	274.00	7,294.8	1,516.8	604.4	1,632.8	0.39	0.22	
7,654.0	1.90	249.60	7,385.8	1,516.4	601.8	1,631.4	0.90	0.44	
7,745.0	2.20	237.70	7,476.7	1,514.9	598.9	1,629.0	0.57	0.33	
7,837.0	2.30	248.50	7,568.7	1,513.3	595.7	1,626.3	0.47	0.11	
7,928.0	2.30	264.50	7,659.6	1,512.5	592.2	1,624.2	0.70	0.00	
8,020.0	2.30	265.70	7,751.5	1,512.2	588.5	1,622.6	0.05	0.00	Last Cathedral Survey @ 8,020' MD
8,080.0	2.30	265.70	7,811.5	1,512.0	586.1	1,621.5	0.00	0.00	Projection to Bit @ 8,080'

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Hagen 15-14A
<b>Project:</b>	S. Piceance (Parachute)	<b>TVD Reference:</b>	KB=22' @ 6543.0ft (Patterson 303)
<b>Site:</b>	PC-22 Pad NENW 2 7S 95W	<b>MD Reference:</b>	KB=22' @ 6543.0ft (Patterson 303)
<b>Well:</b>	Hagen 15-14A	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	SURVEYS	<b>Database:</b>	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 15-14A PBHL (94	0.00	0.00	7,785.0	1,511.9	601.6	1,592,137.08	2,298,356.95	39.432833	-107.984425
- actual wellpath misses target center by 14.4ft at 8052.9ft MD (7784.4 TVD, 1512.1 N, 587.2 E)									
- Circle (radius 25.0)									
Hagen 15-14A TGT	0.00	0.00	5,709.0	1,511.9	601.6	1,592,137.08	2,298,356.95	39.432833	-107.984425
- actual wellpath misses target center by 12.1ft at 5976.8ft MD (5708.9 TVD, 1508.5 N, 613.2 E)									
- Point									

Design Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W		
		(ft)	(ft)	Comment	
8,020.0	7,751.5	1,512.2	588.5	Last Cathedral Survey @ 8,020' MD	
8,080.0	7,811.5	1,512.0	586.1	Projection to Bit @ 8,080'	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_