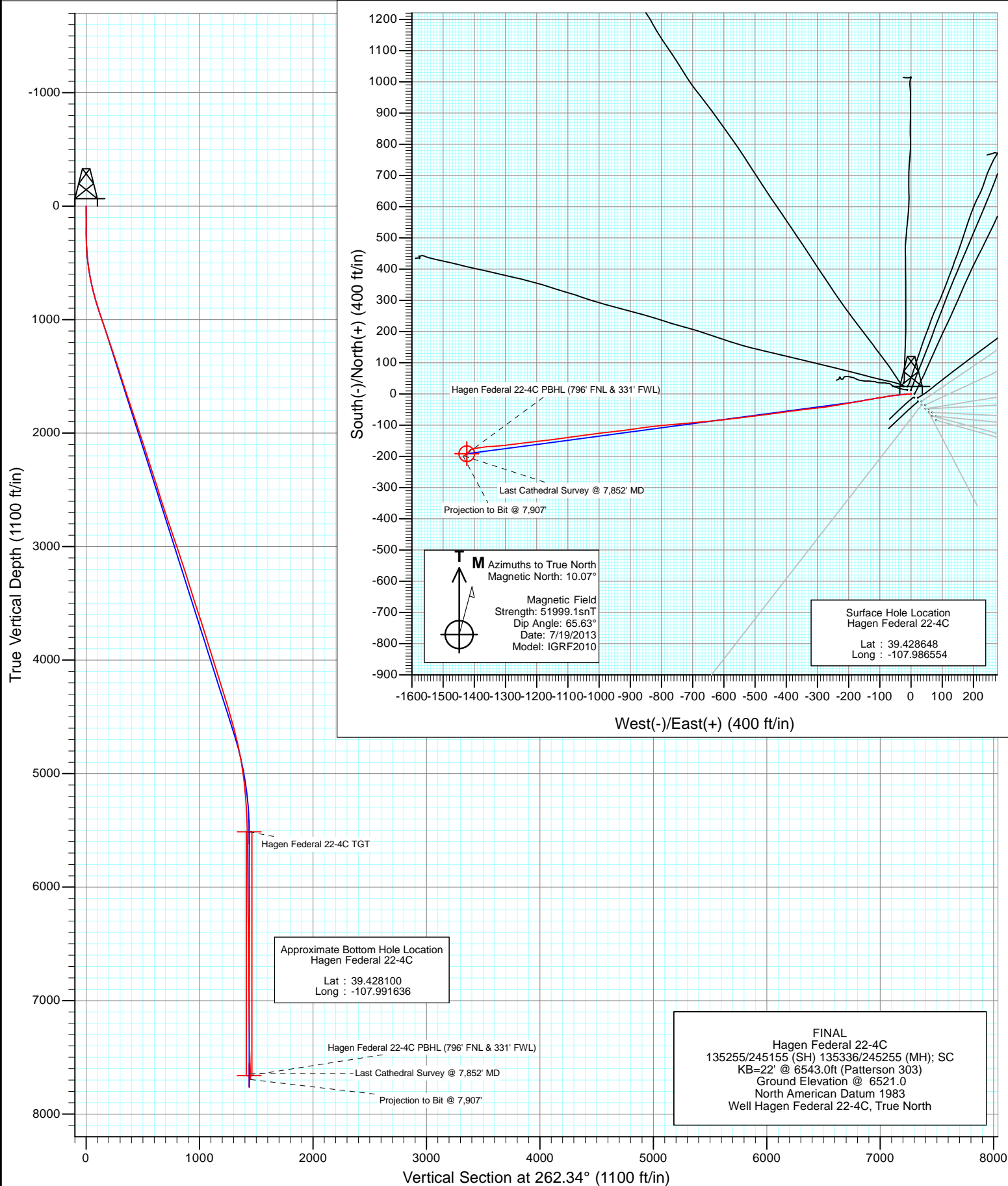


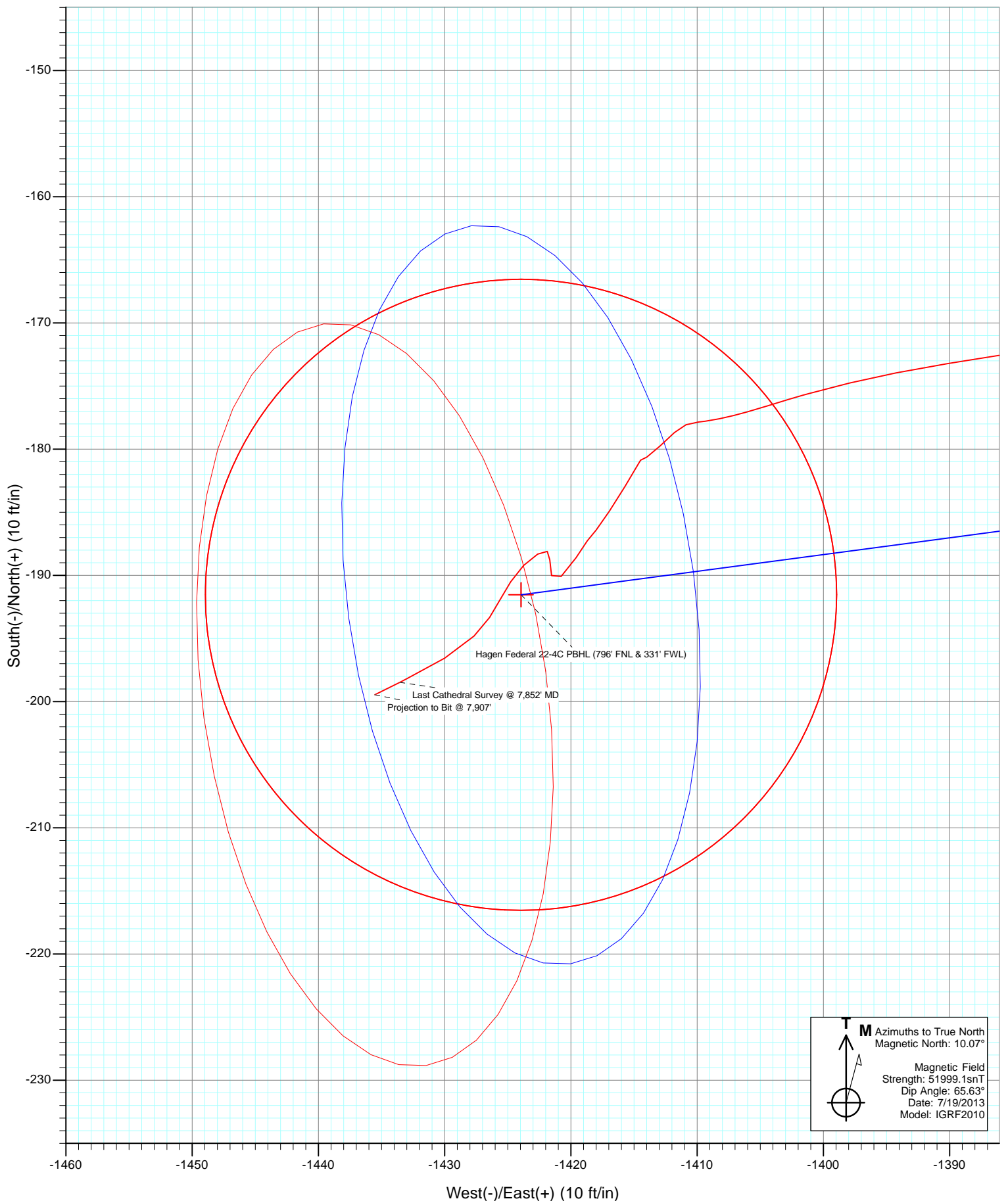


Project: S. Piceance (Parachute)
Site: PC-22 Pad NENW 2 7S 95W
Well: Hagen Federal 22-4C
Wellbore: OH
Design: FINAL



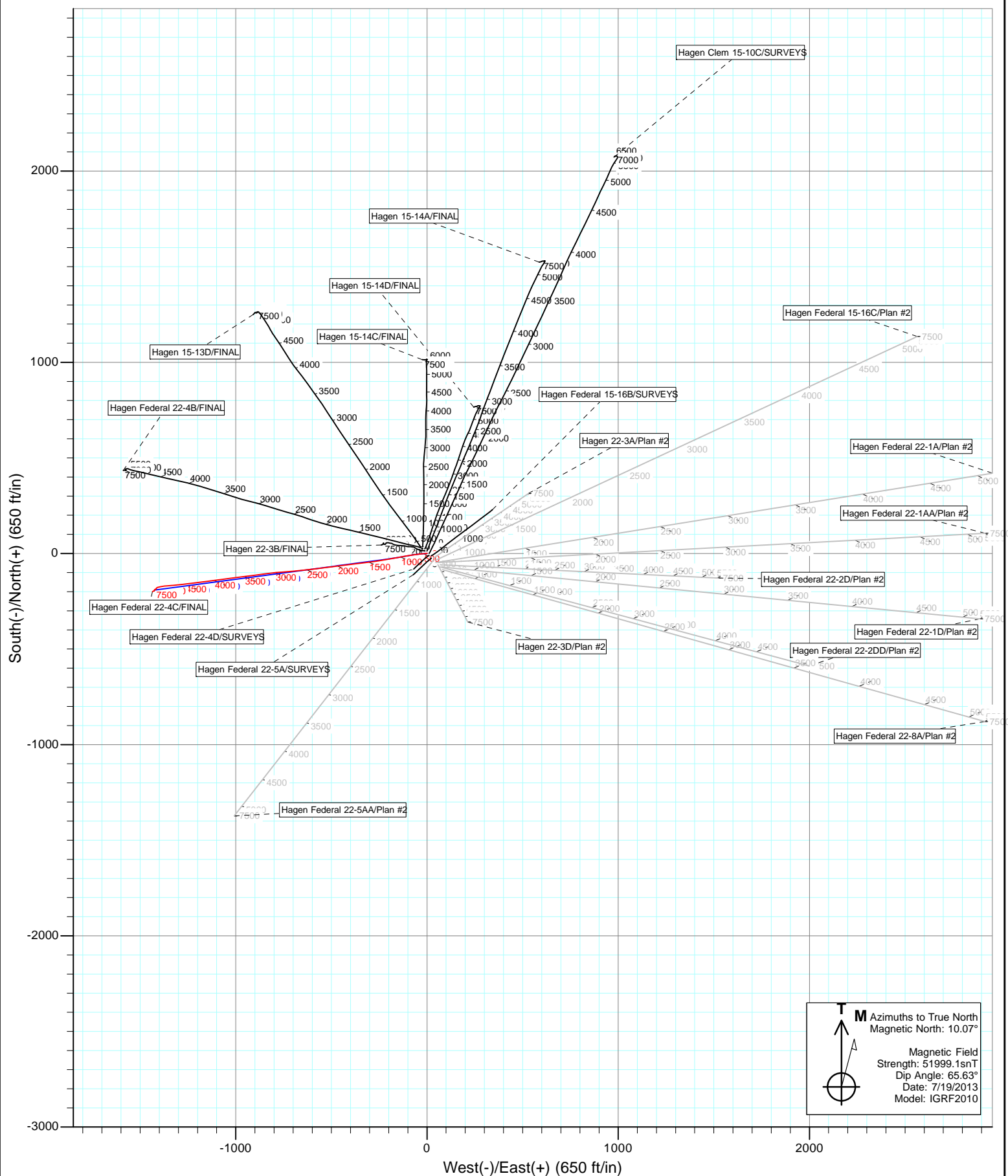


Project: S. Piceance (Parachute)
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Project: S. Piceance (Parachute)
Site: PC-22 Pad NENW 2 7S 95W
Well: Hagen Federal 22-4C
Wellbore: OH
Design: FINAL



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Hagen Federal 22-4C
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 22-4C	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 22-4C			
Well Position	+N/-S	0.0 ft	Northing:	1,590,629.78 ft
	+E/-W	0.0 ft	Easting:	2,297,714.12 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	7/19/2013	10.07	65.63	51,999

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	262.34

Survey Program	Date	7/29/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
110.0	7,907.0	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	
110.0	0.40	306.30	110.0	0.2	-0.3	0.3	0.36	0.36	
141.0	0.20	343.10	141.0	0.3	-0.4	0.4	0.86	-0.65	
171.0	0.10	357.00	171.0	0.4	-0.4	0.4	0.35	-0.33	
202.0	0.30	24.10	202.0	0.5	-0.4	0.3	0.70	0.65	
232.0	0.10	280.10	232.0	0.6	-0.4	0.3	1.13	-0.67	
262.0	0.80	257.50	262.0	0.6	-0.6	0.5	2.36	2.33	
293.0	1.40	254.20	293.0	0.4	-1.2	1.1	1.95	1.94	
324.0	2.30	256.10	324.0	0.2	-2.2	2.1	2.91	2.90	
354.0	3.10	272.60	353.9	0.0	-3.6	3.5	3.69	2.67	
385.0	3.60	265.30	384.9	0.0	-5.4	5.3	2.12	1.61	
478.0	6.20	264.20	477.5	-0.7	-13.3	13.3	2.80	2.80	
570.0	8.70	266.50	568.8	-1.7	-25.2	25.2	2.74	2.72	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Hagen Federal 22-4C
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 22-4C	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
661.0	11.60	263.10	658.3	-3.2	-41.1	41.2	3.25	3.19	
753.0	13.90	262.10	748.0	-5.8	-61.3	61.5	2.51	2.50	
845.0	17.00	260.30	836.7	-9.6	-85.5	86.0	3.41	3.37	
937.0	18.30	260.70	924.4	-14.2	-113.0	113.9	1.42	1.41	
990.0	18.60	260.00	974.7	-17.0	-129.5	130.6	0.70	0.57	
1,155.0	18.60	260.10	1,131.0	-26.1	-181.3	183.2	0.02	0.00	
1,246.0	18.90	260.10	1,217.2	-31.1	-210.2	212.4	0.33	0.33	
1,338.0	18.60	260.40	1,304.3	-36.1	-239.3	242.0	0.34	-0.33	
1,430.0	18.10	260.50	1,391.6	-41.0	-267.9	270.9	0.54	-0.54	
1,522.0	18.20	264.30	1,479.1	-44.7	-296.3	299.6	1.29	0.11	
1,613.0	17.70	263.50	1,565.6	-47.7	-324.1	327.6	0.61	-0.55	
1,705.0	18.90	263.60	1,653.0	-51.0	-352.8	356.5	1.30	1.30	
1,796.0	18.70	261.90	1,739.1	-54.7	-381.9	385.8	0.64	-0.22	
1,888.0	17.90	261.30	1,826.5	-58.9	-410.5	414.7	0.89	-0.87	
1,980.0	18.40	263.20	1,913.9	-62.7	-438.9	443.4	0.84	0.54	
2,071.0	18.10	263.30	2,000.3	-66.1	-467.2	471.8	0.33	-0.33	
2,162.0	18.20	262.20	2,086.8	-69.7	-495.3	500.2	0.39	0.11	
2,253.0	17.80	261.90	2,173.3	-73.6	-523.2	528.3	0.45	-0.44	
2,345.0	18.40	264.20	2,260.8	-77.0	-551.5	556.9	1.01	0.65	
2,436.0	18.00	263.60	2,347.2	-80.0	-579.8	585.3	0.49	-0.44	
2,527.0	17.20	262.90	2,434.0	-83.2	-607.1	612.8	0.91	-0.88	
2,619.0	18.20	265.00	2,521.6	-86.2	-634.9	640.8	1.29	1.09	
2,711.0	17.10	264.30	2,609.3	-88.8	-662.7	668.6	1.22	-1.20	
2,802.0	17.80	264.20	2,696.1	-91.5	-689.9	695.9	0.77	0.77	
2,894.0	19.10	265.10	2,783.4	-94.2	-718.9	725.0	1.45	1.41	
2,986.0	18.90	265.10	2,870.4	-96.8	-748.7	754.9	0.22	-0.22	
3,077.0	18.30	266.10	2,956.6	-99.0	-777.6	783.9	0.75	-0.66	
3,168.0	19.30	263.30	3,042.8	-101.7	-806.8	813.2	1.48	1.10	
3,260.0	18.60	262.50	3,129.8	-105.4	-836.5	843.1	0.81	-0.76	
3,353.0	17.90	262.70	3,218.1	-109.2	-865.4	872.2	0.76	-0.75	
3,444.0	17.00	261.60	3,304.9	-112.9	-892.4	899.5	1.05	-0.99	
3,536.0	17.80	263.10	3,392.7	-116.6	-919.7	927.0	1.00	0.87	
3,628.0	17.20	264.00	3,480.4	-119.7	-947.1	954.6	0.72	-0.65	
3,720.0	18.40	262.80	3,568.0	-122.9	-975.1	982.8	1.36	1.30	
3,811.0	18.00	262.10	3,654.5	-126.6	-1,003.3	1,011.2	0.50	-0.44	
3,903.0	17.80	263.00	3,742.0	-130.3	-1,031.3	1,039.5	0.37	-0.22	
3,994.0	17.30	262.40	3,828.8	-133.8	-1,058.5	1,066.9	0.58	-0.55	
4,085.0	16.90	262.40	3,915.8	-137.3	-1,085.0	1,093.7	0.44	-0.44	
4,177.0	17.90	261.70	4,003.6	-141.1	-1,112.3	1,121.2	1.11	1.09	
4,268.0	17.10	262.70	4,090.3	-144.9	-1,139.4	1,148.5	0.94	-0.88	
4,360.0	16.60	262.80	4,178.4	-148.2	-1,165.8	1,175.2	0.54	-0.54	
4,451.0	18.10	262.90	4,265.2	-151.6	-1,192.8	1,202.3	1.65	1.65	
4,542.0	17.20	263.50	4,352.0	-154.9	-1,220.2	1,229.9	1.01	-0.99	
4,634.0	16.20	264.10	4,440.1	-157.7	-1,246.4	1,256.3	1.10	-1.09	
4,725.0	15.30	262.30	4,527.7	-160.6	-1,271.0	1,281.0	1.13	-0.99	
4,816.0	15.40	263.50	4,615.4	-163.6	-1,294.9	1,305.1	0.37	0.11	
4,908.0	13.60	264.70	4,704.5	-166.0	-1,317.8	1,328.1	1.98	-1.96	
4,999.0	11.90	266.20	4,793.2	-167.6	-1,337.8	1,348.2	1.90	-1.87	
5,091.0	9.50	266.30	4,883.6	-168.7	-1,354.8	1,365.2	2.61	-2.61	
5,183.0	7.60	262.20	4,974.6	-170.0	-1,368.4	1,378.9	2.17	-2.07	
5,275.0	7.20	261.80	5,065.8	-171.7	-1,380.2	1,390.7	0.44	-0.43	
5,366.0	5.50	260.70	5,156.3	-173.2	-1,390.1	1,400.8	1.87	-1.87	
5,458.0	4.40	256.30	5,247.9	-174.8	-1,397.9	1,408.7	1.26	-1.20	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Hagen Federal 22-4C
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 22-4C	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
5,550.0	3.20	252.40	5,339.7	-176.4	-1,403.8	1,414.8	1.33	-1.30	
5,641.0	2.00	257.50	5,430.6	-177.5	-1,407.8	1,418.9	1.34	-1.32	
5,733.0	0.70	268.30	5,522.6	-177.8	-1,409.9	1,421.0	1.43	-1.41	
5,824.0	0.60	245.10	5,613.6	-178.1	-1,410.9	1,422.0	0.31	-0.11	
5,916.0	0.80	229.80	5,705.6	-178.7	-1,411.8	1,423.0	0.30	0.22	
6,006.0	1.20	224.70	5,795.6	-179.8	-1,412.9	1,424.3	0.45	0.44	
6,098.0	0.50	242.30	5,887.6	-180.6	-1,414.0	1,425.4	0.80	-0.76	
6,190.0	0.20	247.00	5,979.6	-180.9	-1,414.5	1,426.0	0.33	-0.33	
6,282.0	0.80	202.30	6,071.6	-181.5	-1,414.9	1,426.4	0.73	0.65	
6,373.0	1.30	215.50	6,162.6	-183.0	-1,415.7	1,427.5	0.61	0.55	
6,464.0	1.60	210.10	6,253.5	-184.9	-1,416.9	1,428.9	0.36	0.33	
6,556.0	0.70	225.70	6,345.5	-186.4	-1,418.0	1,430.2	1.03	-0.98	
6,647.0	0.70	213.30	6,436.5	-187.3	-1,418.7	1,431.0	0.17	0.00	
6,739.0	1.30	213.80	6,528.5	-188.6	-1,419.6	1,432.1	0.65	0.65	
6,830.0	1.10	223.80	6,619.5	-190.1	-1,420.8	1,433.4	0.32	-0.22	
6,922.0	0.90	347.80	6,711.5	-190.0	-1,421.5	1,434.2	1.92	-0.22	
7,013.0	0.70	1.47	6,802.4	-188.8	-1,421.7	1,434.1	0.30	-0.22	
7,105.0	0.30	296.10	6,894.4	-188.1	-1,421.9	1,434.3	0.69	-0.43	
7,196.0	0.80	238.90	6,985.4	-188.3	-1,422.6	1,435.0	0.75	0.55	
7,288.0	1.00	225.50	7,077.4	-189.2	-1,423.7	1,436.3	0.31	0.22	
7,379.0	1.10	211.20	7,168.4	-190.5	-1,424.8	1,437.4	0.31	0.11	
7,471.0	1.10	210.30	7,260.4	-192.0	-1,425.7	1,438.5	0.02	0.00	
7,562.0	0.80	210.70	7,351.4	-193.3	-1,426.4	1,439.5	0.33	-0.33	
7,654.0	1.60	224.50	7,443.4	-194.8	-1,427.7	1,440.9	0.92	0.87	
7,745.0	2.10	239.60	7,534.3	-196.6	-1,430.0	1,443.4	0.76	0.55	
7,836.0	2.20	243.00	7,625.2	-198.2	-1,433.0	1,446.6	0.18	0.11	
7,852.0	2.30	243.50	7,641.2	-198.5	-1,433.5	1,447.2	0.64	0.62	Last Cathedral Survey @ 7,852' MD
7,907.0	2.30	243.50	7,696.2	-199.5	-1,435.5	1,449.3	0.00	0.00	Projection to Bit @ 7,907'

Targets									
Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	
- Shape									Latitude Longitude
Hagen Federal 22-4C T1	- actual wellpath misses target center by 19.7ft at 5723.8ft MD (5513.4 TVD, -177.8 N, -1409.8 E)	0.00	0.00	5,513.0	-191.5	-1,423.9	1,590,477.28	2,296,285.46	39.428122 -107.991595
- Point									
Hagen Federal 22-4C P1	- actual wellpath misses target center by 22.2ft at 7852.0ft MD (7641.2 TVD, -198.5 N, -1433.5 E)	0.00	0.00	7,660.0	-191.5	-1,423.9	1,590,477.28	2,296,285.46	39.428122 -107.991595
- Circle (radius 25.0)									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
7,852.0	7,641.2	-198.5	-1,433.5	Last Cathedral Survey @ 7,852' MD	
7,907.0	7,696.2	-199.5	-1,435.5	Projection to Bit @ 7,907'	

Checked By: _____ Approved By: _____ Date: _____