

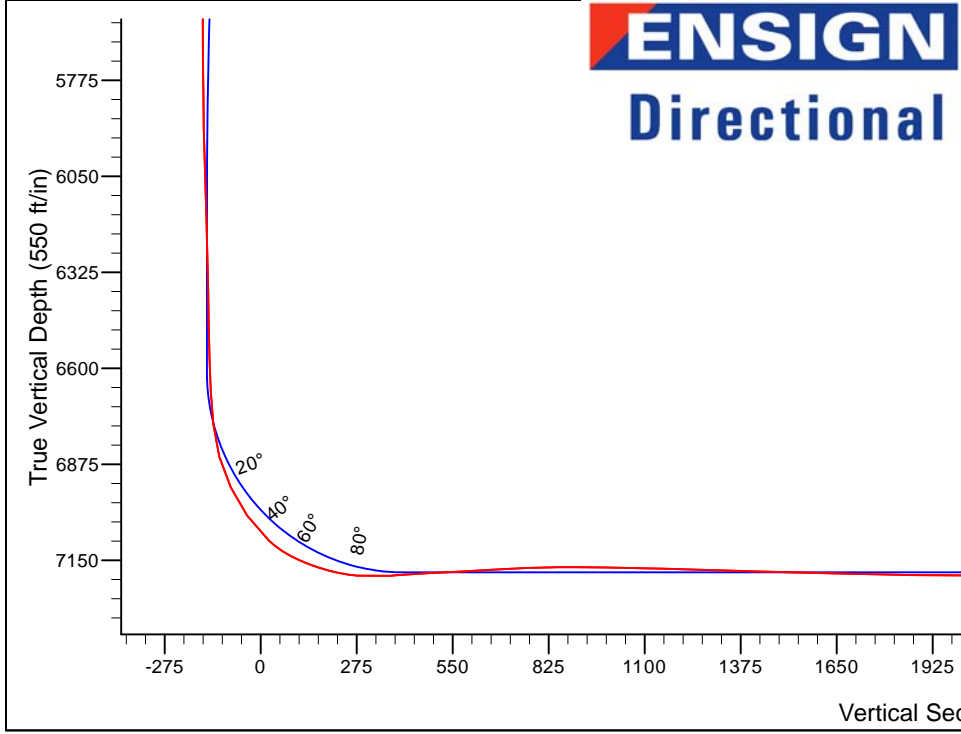
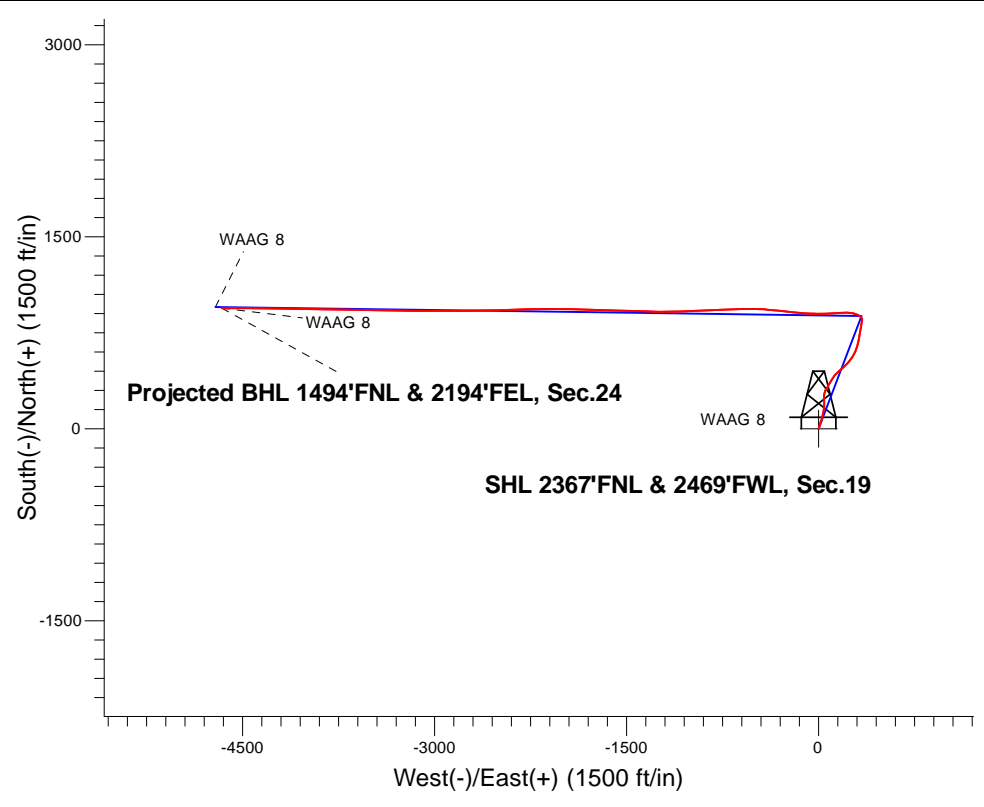
Extraction Oil & Gas

Well Name: **WAAG 8**

Surface Location: WAAG North Pad Sec.19-T7N-R65W
 North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
 Ground Elevation: 4886.0
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.0 0.0 1448388.03 3220340.68 40.561520 -104.706960
 H&P319 RKB @ 4910.0ft (H&P319)

FINAL SURVEY

Projected Bottom Hole Location
 12091'MD 7205'TVD 942'N & 4663'W of SHL
 90.9 degree Incl @ 269.9 degree AZM

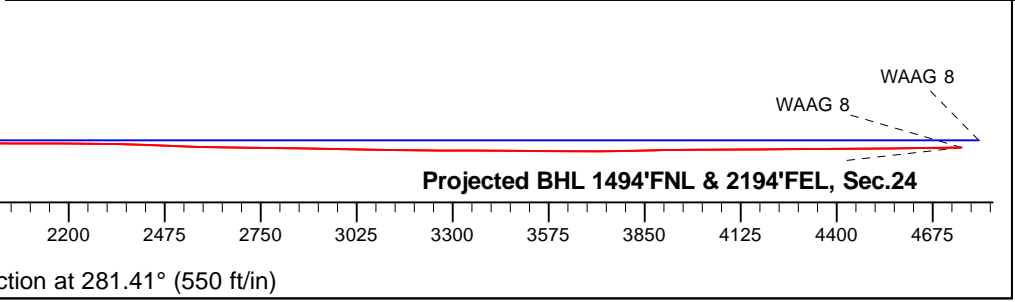


WAAG North Pad Sec.19-T7N-R65W
 WAAG 8
 Wellbore #1
 13:12, August 18 2015

ANNOTATIONS
 No annotation data is available.

LEGEND

- ✕ WAAG 8, Wellbore #1, Plan #1 (7-30-15) V0
- ▣ Wellbore #1
- Survey #1





Extraction Oil & Gas

SEC.19-T7N-R65W

WAAG North Pad Sec.19-T7N-R65W

WAAG 8

Wellbore #1

Survey: Survey #1

Standard Survey Report

18 August, 2015



Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well WAAG 8
Project:	SEC.19-T7N-R65W	TVD Reference:	RKB @ 4910.0ft (H&P319)
Site:	WAAG North Pad Sec.19-T7N-R65W	MD Reference:	RKB @ 4910.0ft (H&P319)
Well:	WAAG 8	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	US_EDM

Project	SEC.19-T7N-R65W, Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	WAAG North Pad Sec.19-T7N-R65W				
Site Position:		Northing:	1,448,388.03 usft	Latitude:	40.561520
From:	Lat/Long	Easting:	3,220,340.68 usft	Longitude:	-104.706960
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.51 °

Well	WAAG 8					
Well Position	+N/-S	0.0 ft	Northing:	1,448,388.03 usft	Latitude:	40.561520
	+E/-W	0.0 ft	Easting:	3,220,340.68 usft	Longitude:	-104.706960
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,886.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	7/31/2015	8.32	67.08	52,639

Design	Wellbore #1				
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	281.41	

Survey Program	Date	8/18/2015			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
966.0	12,091.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
859.0	1.30	25.00	859.6	-0.6	-0.4	0.3	0.00	0.00	0.00	
SHL 2367'FNL & 2469'FWL										
966.0	1.30	25.70	966.6	1.6	0.6	-0.3	0.01	0.00	0.65	
1,057.0	2.20	24.70	1,057.5	4.1	1.8	-1.0	0.99	0.99	-1.10	
1,148.0	4.10	24.00	1,148.4	8.7	3.9	-2.1	2.09	2.09	-0.77	
1,239.0	5.90	16.10	1,239.0	16.1	6.5	-3.2	2.11	1.98	-8.68	
1,330.0	8.00	13.60	1,329.4	26.8	9.3	-3.8	2.33	2.31	-2.75	
1,421.0	10.20	15.90	1,419.2	40.7	13.0	-4.7	2.45	2.42	2.53	
1,513.0	12.20	17.50	1,509.5	57.8	18.1	-6.3	2.20	2.17	1.74	
1,604.0	13.50	17.30	1,598.2	77.1	24.2	-8.4	1.43	1.43	-0.22	
1,696.0	14.30	13.90	1,687.5	98.4	30.1	-10.0	1.24	0.87	-3.70	

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well WAAG 8
Project:	SEC.19-T7N-R65W	TVD Reference:	RKB @ 4910.0ft (H&P319)
Site:	WAAG North Pad Sec.19-T7N-R65W	MD Reference:	RKB @ 4910.0ft (H&P319)
Well:	WAAG 8	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	US_EDM

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
1,787.0	14.30	12.70	1,775.7	120.3	35.3	-10.8	0.33	0.00	-1.32	
1,879.0	14.40	9.00	1,864.8	142.6	39.6	-10.5	1.00	0.11	-4.02	
1,970.0	14.20	5.00	1,953.0	164.9	42.3	-8.8	1.11	-0.22	-4.40	
2,062.0	14.10	1.30	2,042.2	187.4	43.5	-5.6	0.99	-0.11	-4.02	
2,154.0	14.20	359.00	2,131.4	209.9	43.6	-1.2	0.62	0.11	-2.50	
2,245.0	13.90	356.00	2,219.7	231.9	42.6	4.1	0.87	-0.33	-3.30	
2,337.0	12.90	2.70	2,309.2	253.2	42.4	8.6	2.01	-1.09	7.28	
2,431.0	12.80	12.70	2,400.8	273.9	45.1	10.0	2.37	-0.11	10.64	
2,525.0	11.60	21.30	2,492.7	292.8	50.9	8.1	2.31	-1.28	9.15	
2,620.0	11.30	33.30	2,585.8	309.5	59.4	3.0	2.52	-0.32	12.63	
2,714.0	10.90	31.20	2,678.1	324.8	69.1	-3.5	0.60	-0.43	-2.23	
2,809.0	10.60	27.50	2,771.4	340.2	77.8	-8.9	0.79	-0.32	-3.89	
2,903.0	10.90	34.00	2,863.8	355.3	86.8	-14.7	1.33	0.32	6.91	
2,997.0	11.00	32.60	2,956.1	370.2	96.6	-21.4	0.30	0.11	-1.49	
3,092.0	11.20	31.30	3,049.3	385.7	106.2	-27.8	0.34	0.21	-1.37	
3,186.0	10.10	27.00	3,141.7	400.9	114.7	-33.1	1.44	-1.17	-4.57	
3,280.0	9.20	39.40	3,234.3	414.0	123.2	-38.9	2.40	-0.96	13.19	
3,374.0	10.50	46.80	3,327.0	425.7	134.2	-47.3	1.93	1.38	7.87	
3,469.0	12.50	47.00	3,420.0	438.6	148.1	-58.3	2.11	2.11	0.21	
3,563.0	10.80	46.30	3,512.1	451.7	161.9	-69.3	1.81	-1.81	-0.74	
3,657.0	10.30	48.60	3,604.5	463.3	174.6	-79.4	0.70	-0.53	2.45	
3,752.0	11.60	47.30	3,697.8	475.4	187.9	-90.1	1.39	1.37	-1.37	
3,846.0	13.40	47.00	3,789.6	489.2	202.9	-102.0	1.92	1.91	-0.32	
3,940.0	11.40	45.40	3,881.4	503.2	217.4	-113.6	2.16	-2.13	-1.70	
4,034.0	13.70	41.90	3,973.1	518.0	231.5	-124.4	2.58	2.45	-3.72	
4,129.0	16.10	38.60	4,064.9	536.7	247.2	-136.1	2.68	2.53	-3.47	
4,223.0	17.90	34.20	4,154.8	558.8	263.5	-147.7	2.35	1.91	-4.68	
4,318.0	19.10	27.30	4,244.9	584.7	278.8	-157.6	2.63	1.26	-7.26	
4,412.0	17.90	18.30	4,334.1	612.1	290.4	-163.5	3.29	-1.28	-9.57	
4,506.0	16.00	16.60	4,424.0	638.2	298.6	-166.4	2.09	-2.02	-1.81	
4,601.0	15.10	13.90	4,515.5	662.8	305.4	-168.2	1.22	-0.95	-2.84	
4,695.0	13.70	13.40	4,606.5	685.5	310.9	-169.1	1.50	-1.49	-0.53	
4,789.0	12.00	13.20	4,698.2	705.8	315.7	-169.8	1.81	-1.81	-0.21	
4,883.0	10.80	9.70	4,790.3	724.0	319.4	-169.8	1.47	-1.28	-3.72	
4,978.0	9.10	12.20	4,883.9	740.1	322.5	-169.6	1.85	-1.79	2.63	
5,072.0	7.90	7.10	4,976.9	753.8	324.9	-169.3	1.51	-1.28	-5.43	
5,167.0	6.90	3.70	5,071.1	766.0	326.0	-168.0	1.15	-1.05	-3.58	
5,261.0	6.80	11.80	5,164.4	777.1	327.5	-167.3	1.03	-0.11	8.62	
5,355.0	7.00	12.70	5,257.7	788.1	329.9	-167.4	0.24	0.21	0.96	
5,449.0	6.20	10.40	5,351.1	798.7	332.1	-167.5	0.90	-0.85	-2.45	
5,543.0	7.00	3.90	5,444.5	809.4	333.4	-166.6	1.16	0.85	-6.91	
5,638.0	8.20	11.80	5,538.6	821.8	335.2	-165.9	1.67	1.26	8.32	
5,732.0	7.00	11.50	5,631.8	834.0	337.7	-166.0	1.28	-1.28	-0.32	

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well WAAG 8
Project:	SEC.19-T7N-R65W	TVD Reference:	RKB @ 4910.0ft (H&P319)
Site:	WAAG North Pad Sec.19-T7N-R65W	MD Reference:	RKB @ 4910.0ft (H&P319)
Well:	WAAG 8	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	US_EDM

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
5,826.0	5.10	2.30	5,725.3	843.8	339.0	-165.3	2.26	-2.02	-9.79	
5,921.0	4.30	7.60	5,820.0	851.5	339.7	-164.4	0.96	-0.84	5.58	
6,015.0	3.30	345.10	5,913.8	857.6	339.4	-163.0	1.89	-1.06	-23.94	
6,109.0	2.60	332.80	6,007.6	862.1	337.8	-160.5	1.00	-0.74	-13.09	
6,203.0	2.20	325.10	6,101.6	865.5	335.8	-157.8	0.55	-0.43	-8.19	
6,297.0	2.10	322.40	6,195.5	868.4	333.7	-155.2	0.15	-0.11	-2.87	
6,392.0	1.80	318.70	6,290.4	870.9	331.6	-152.7	0.34	-0.32	-3.89	
6,486.0	1.50	319.60	6,384.4	872.9	329.9	-150.6	0.32	-0.32	0.96	
6,580.0	1.40	322.10	6,478.4	874.7	328.3	-148.7	0.13	-0.11	2.66	
6,675.0	1.80	311.20	6,573.3	876.6	326.5	-146.6	0.53	0.42	-11.47	
6,769.0	3.60	310.70	6,667.2	879.5	323.2	-142.7	1.92	1.91	-0.53	
6,863.0	5.50	302.10	6,760.9	883.9	317.1	-135.9	2.14	2.02	-9.15	
6,957.0	16.80	294.50	6,853.0	891.9	300.9	-118.4	12.10	12.02	-8.09	
7,051.0	24.40	283.80	6,941.0	902.2	269.6	-85.7	8.99	8.09	-11.38	
7,145.0	36.00	270.20	7,022.2	906.9	222.9	-39.0	14.26	12.34	-14.47	
7,239.0	47.70	266.20	7,092.1	904.7	160.4	21.8	12.76	12.45	-4.26	
7,333.0	65.20	267.80	7,143.8	900.8	82.4	97.4	18.67	18.62	1.70	
7,427.0	74.00	269.90	7,176.6	899.0	-5.6	183.4	9.59	9.36	2.23	
7,522.0	84.80	273.00	7,194.0	901.4	-98.8	275.2	11.81	11.37	3.26	
7,616.0	94.40	276.00	7,194.7	908.8	-192.3	368.4	10.70	10.21	3.19	
7,650.0	94.90	275.90	7,191.9	912.3	-226.0	402.1	1.50	1.47	-0.29	
7,660.6	94.55	276.03	7,191.0	913.4	-236.6	412.7	3.55	-3.33	1.24	
Entry pt 1485'FNL & 2232'FWL										
7,731.0	92.20	276.90	7,186.9	921.3	-306.4	482.6	3.55	-3.33	1.23	
7,825.0	93.20	274.60	7,182.5	930.7	-399.8	576.1	2.67	1.06	-2.45	
7,920.0	93.50	271.50	7,176.9	935.8	-494.5	669.9	3.27	0.32	-3.26	
8,014.0	92.40	269.20	7,172.1	936.4	-588.4	762.0	2.71	-1.17	-2.45	
8,109.0	90.40	267.10	7,169.7	933.3	-683.3	854.4	3.05	-2.11	-2.21	
8,203.0	89.00	266.20	7,170.2	927.8	-777.1	945.3	1.77	-1.49	-0.96	
8,298.0	88.90	268.70	7,172.0	923.6	-872.0	1,037.5	2.63	-0.11	2.63	
8,392.0	88.60	268.30	7,174.0	921.1	-965.9	1,129.1	0.53	-0.32	-0.43	
8,486.0	88.70	267.10	7,176.2	917.3	-1,059.8	1,220.4	1.28	0.11	-1.28	
8,581.0	88.00	268.80	7,179.0	913.9	-1,154.7	1,312.7	1.93	-0.74	1.79	
8,675.0	88.50	271.60	7,181.9	914.3	-1,248.7	1,404.9	3.02	0.53	2.98	
8,770.0	88.50	271.30	7,184.3	916.7	-1,343.6	1,498.4	0.32	0.00	-0.32	
8,864.0	88.60	272.00	7,186.7	919.4	-1,437.5	1,591.0	0.75	0.11	0.74	
8,958.0	88.80	271.60	7,188.9	922.3	-1,531.5	1,683.7	0.48	0.21	-0.43	
9,053.0	88.60	271.50	7,191.0	924.9	-1,626.4	1,777.3	0.24	-0.21	-0.11	
9,147.0	89.30	271.60	7,192.7	927.4	-1,720.4	1,869.9	0.75	0.74	0.11	
9,241.0	89.70	271.50	7,193.6	930.0	-1,814.3	1,962.5	0.44	0.43	-0.11	
9,336.0	90.00	272.20	7,193.8	933.1	-1,909.3	2,056.1	0.80	0.32	0.74	
9,430.0	89.80	270.90	7,194.0	935.6	-2,003.2	2,148.8	1.40	-0.21	-1.38	
9,524.0	90.00	269.50	7,194.1	935.9	-2,097.2	2,241.0	1.50	0.21	-1.49	

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well WAAG 8
Project:	SEC.19-T7N-R65W	TVD Reference:	RKB @ 4910.0ft (H&P319)
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Well:	WAAG 8	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	US_EDM

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
9,619.0	88.60	269.00	7,195.3	934.7	-2,192.2	2,333.8	1.56	-1.47	-0.53	
9,713.0	88.10	268.50	7,198.0	932.6	-2,286.1	2,425.5	0.75	-0.53	-0.53	
9,808.0	87.20	268.50	7,201.9	930.1	-2,381.0	2,518.0	0.95	-0.95	0.00	
9,902.0	89.20	268.50	7,204.8	927.7	-2,474.9	2,609.6	2.13	2.13	0.00	
9,996.0	89.60	269.00	7,205.8	925.6	-2,568.9	2,701.3	0.68	0.43	0.53	
10,090.0	89.30	269.50	7,206.7	924.4	-2,662.9	2,793.2	0.62	-0.32	0.53	
10,185.0	89.10	269.00	7,208.1	923.2	-2,757.9	2,886.0	0.57	-0.21	-0.53	
10,279.0	88.50	269.00	7,210.0	921.5	-2,851.9	2,977.8	0.64	-0.64	0.00	
10,373.0	88.90	269.40	7,212.2	920.2	-2,945.8	3,069.7	0.60	0.43	0.43	
10,468.0	90.00	270.40	7,213.1	920.0	-3,040.8	3,162.7	1.56	1.16	1.05	
10,562.0	89.80	270.60	7,213.2	920.9	-3,134.8	3,255.0	0.30	-0.21	0.21	
10,656.0	89.50	270.60	7,213.8	921.9	-3,228.8	3,347.4	0.32	-0.32	0.00	
10,750.0	89.40	270.80	7,214.7	923.0	-3,322.8	3,439.7	0.24	-0.11	0.21	
10,845.0	89.50	270.80	7,215.6	924.3	-3,417.8	3,533.1	0.11	0.11	0.00	
11,033.0	90.30	271.10	7,216.0	927.4	-3,605.7	3,718.0	0.45	0.43	0.16	
11,128.0	91.00	271.30	7,214.9	929.4	-3,700.7	3,811.5	0.77	0.74	0.21	
11,222.0	91.40	271.30	7,212.9	931.6	-3,794.7	3,904.0	0.43	0.43	0.00	
11,316.0	90.20	270.90	7,211.6	933.4	-3,888.6	3,996.4	1.35	-1.28	-0.43	
11,410.0	90.00	270.90	7,211.4	934.8	-3,982.6	4,088.9	0.21	-0.21	0.00	
11,504.0	90.60	271.30	7,210.9	936.7	-4,076.6	4,181.4	0.77	0.64	0.43	
11,599.0	90.40	270.90	7,210.1	938.5	-4,171.6	4,274.8	0.47	-0.21	-0.42	
11,693.0	90.40	270.90	7,209.4	940.0	-4,265.6	4,367.2	0.00	0.00	0.00	
11,882.0	90.50	270.20	7,208.0	941.8	-4,454.6	4,552.8	0.37	0.05	-0.37	
11,977.0	90.90	270.40	7,206.8	942.3	-4,549.6	4,646.0	0.47	0.42	0.21	
12,025.0	90.90	269.90	7,206.1	942.4	-4,597.5	4,693.1	1.04	0.00	-1.04	
12,091.0	90.90	269.90	7,205.0	942.3	-4,663.5	4,757.8	0.00	0.00	0.00	
BHL 1485'FNL & 2243'FEL SEC 24										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
SHL 2367'FNL & 2469'F'	0.00	0.00	-6.0	0.0	0.0	1,448,388.03	3,220,340.68	40.561520	-104.706960	
- hit/miss target										
- Shape										
- survey misses target center by 865.6ft at 859.0ft MD (859.6 TVD, -0.6 N, -0.4 E)										
- Point										

Checked By: _____ Approved By: _____ Date: _____