

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Alm 33U-404**

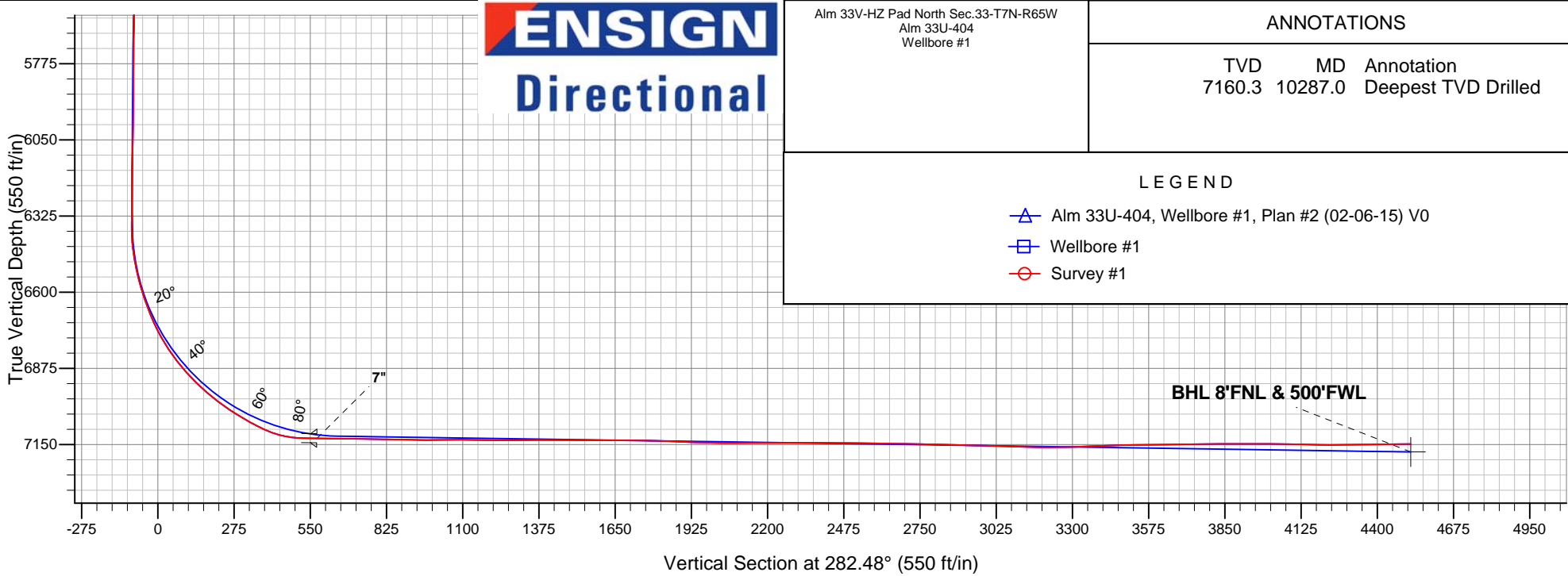
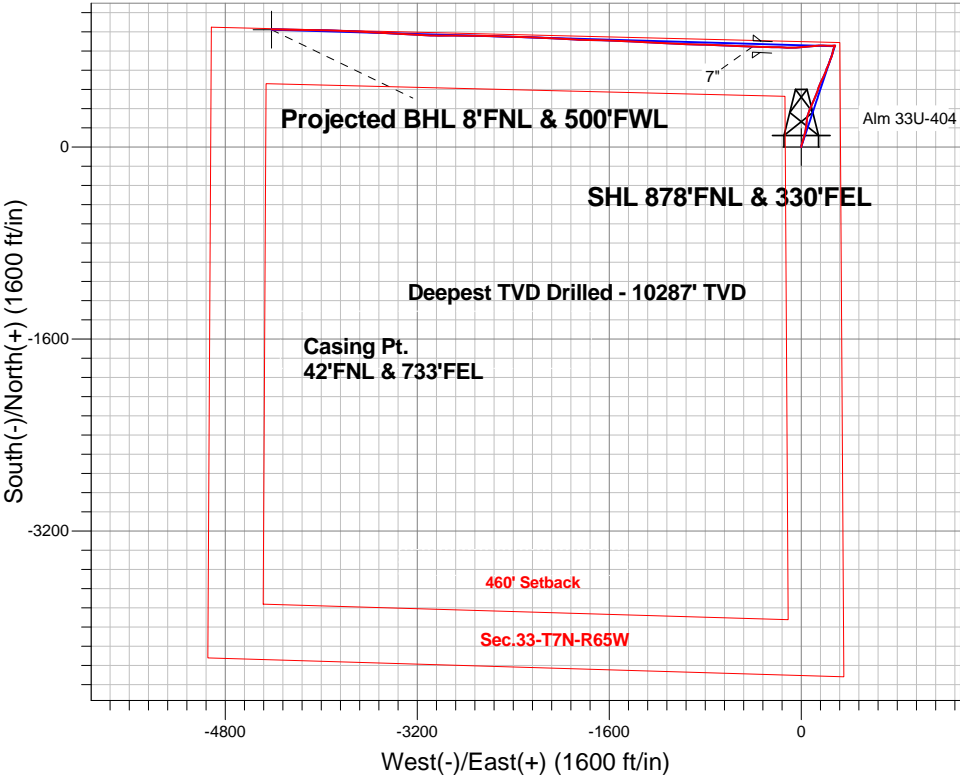
Surface Location: Alm 33V-HZ Pad North Sec.33-T7N-R65W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4792.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1439047.39	3233471.87	40.535550	-104.660020	
Ensign Rig #134 RKB - 13' WELL @ 4805.0ft (Ensign Rig #134 RKB - 13')						

FINAL SURVEY

Projected Bottom Hole Location
11583'MD 7149'TVD 979'N & 4414'W of SHL
90.7 degree Incl @ 270.6 degree AZM



Alm 33V-HZ Pad North Sec.33-T7N-R65W
Alm 33U-404
Wellbore #1

ANNOTATIONS

TVD	MD	Annotation
7160.3	10287.0	Deepest TVD Drilled

LEGEND

- Alm 33U-404, Wellbore #1, Plan #2 (02-06-15) V0
- Wellbore #1
- Survey #1



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.33-T7N-R65W

Alm 33V-HZ Pad North Sec.33-T7N-R65W

Alm 33U-404

Wellbore #1

Survey: Survey #1

Standard Survey Report

27 February, 2015

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alm 33U-404
Project:	SEC.33-T7N-R65W	TVD Reference:	WELL @ 4805.0ft (Ensign Rig #134 RKB - 13')
Site:	Alm 33V-HZ Pad North Sec.33-T7N-R65W	MD Reference:	WELL @ 4805.0ft (Ensign Rig #134 RKB - 13')
Well:	Alm 33U-404	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.33-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		Alm 33V-HZ Pad North Sec.33-T7N-R65W			
Site Position:		Northing:	1,439,018.27 ft	Latitude:	40.535470
From:	Lat/Long	Easting:	3,233,472.15 ft	Longitude:	-104.660020
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.54 °

Well	Alm 33U-404					
Well Position	+N-S	0.0 ft	Northing:	1,439,047.39 ft	Latitude:	40.535550
	+E-W	0.0 ft	Easting:	3,233,471.87 ft	Longitude:	-104.660020
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,792.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/12/2015	8.32	67.05	52,827

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	282.48	

Survey Program	Date	2/27/2015			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
132.0	11,583.0	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 (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
1.0	0.00	305.40	1.0	0.0	0.0	0.0	0.00	0.00	0.00	
SHL 878°FNL & 330°FEL										
132.0	0.10	305.40	132.0	0.1	-0.1	0.1	0.08	0.08	0.00	
193.0	1.10	3.70	193.0	0.7	-0.1	0.2	1.72	1.64	95.57	
286.0	2.80	19.70	285.9	3.7	0.7	0.1	1.90	1.83	17.20	
409.0	3.60	13.10	408.7	10.3	2.6	-0.3	0.72	0.65	-5.37	
562.0	4.90	14.30	561.3	21.3	5.3	-0.6	0.85	0.85	0.78	
716.0	6.60	20.60	714.5	36.0	10.1	-2.0	1.18	1.10	4.09	
871.0	8.30	18.00	868.2	55.0	16.6	-4.4	1.12	1.10	-1.68	
1,007.0	8.70	12.20	1,002.7	74.3	21.9	-5.3	0.70	0.29	-4.26	
1,100.0	8.50	12.00	1,094.7	87.9	24.8	-5.2	0.22	-0.22	-0.22	

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,192.0	10.50	11.50	1,185.4	102.8	27.9	-5.0	2.18	2.17	-0.54
1,285.0	10.80	12.50	1,276.8	119.6	31.4	-4.8	0.38	0.32	1.08
1,377.0	10.70	13.10	1,367.2	136.3	35.2	-4.9	0.16	-0.11	0.65
1,470.0	10.30	11.70	1,458.7	152.9	38.9	-4.9	0.51	-0.43	-1.51
1,562.0	10.20	10.10	1,549.2	169.0	42.0	-4.5	0.33	-0.11	-1.74
1,655.0	9.80	4.80	1,640.8	185.0	44.1	-3.1	1.08	-0.43	-5.70
1,747.0	9.70	2.90	1,731.4	200.5	45.1	-0.7	0.37	-0.11	-2.07
1,871.0	9.80	3.40	1,853.7	221.5	46.3	2.7	0.11	0.08	0.40
1,932.0	9.90	7.40	1,913.8	231.9	47.3	4.0	1.13	0.16	6.56
1,963.0	10.20	8.00	1,944.3	237.2	48.0	4.4	1.02	0.97	1.94
2,055.0	9.90	12.00	2,034.9	253.0	50.8	5.1	0.83	-0.33	4.35
2,086.0	9.70	16.60	2,065.4	258.1	52.1	4.9	2.61	-0.65	14.84
2,209.0	9.60	23.40	2,186.7	277.5	59.1	2.3	0.93	-0.08	5.53
2,305.0	9.40	20.10	2,281.4	292.2	65.0	-0.3	0.60	-0.21	-3.44
2,400.0	9.10	19.40	2,375.1	306.6	70.1	-2.2	0.34	-0.32	-0.74
2,432.0	8.90	17.10	2,406.7	311.3	71.7	-2.7	1.29	-0.63	-7.19
2,527.0	8.80	20.30	2,500.6	325.1	76.4	-4.3	0.53	-0.11	3.37
2,685.0	8.70	23.30	2,656.8	347.5	85.3	-8.2	0.30	-0.06	1.90
2,812.0	8.90	25.90	2,782.3	365.1	93.4	-12.3	0.35	0.16	2.05
2,844.0	9.00	25.50	2,813.9	369.6	95.6	-13.4	0.37	0.31	-1.25
2,971.0	9.60	26.40	2,939.2	388.1	104.5	-18.2	0.49	0.47	0.71
3,066.0	9.90	25.20	3,032.8	402.5	111.5	-21.9	0.38	0.32	-1.26
3,161.0	9.40	21.70	3,126.5	417.1	117.9	-25.0	0.81	-0.53	-3.68
3,256.0	9.40	21.00	3,220.2	431.6	123.5	-27.4	0.12	0.00	-0.74
3,351.0	9.10	18.00	3,314.0	446.0	128.6	-29.2	0.60	-0.32	-3.16
3,446.0	11.00	22.00	3,407.5	461.5	134.3	-31.5	2.13	2.00	4.21
3,541.0	10.10	19.00	3,500.9	477.8	140.5	-33.9	1.11	-0.95	-3.16
3,637.0	9.40	14.70	3,595.5	493.3	145.2	-35.2	1.05	-0.73	-4.48
3,732.0	9.10	21.30	3,689.3	507.9	149.9	-36.6	1.16	-0.32	6.95
3,827.0	9.10	21.50	3,783.1	521.8	155.4	-38.9	0.03	0.00	0.21
3,922.0	12.10	26.60	3,876.5	537.7	162.6	-42.5	3.31	3.16	5.37
4,017.0	12.30	27.10	3,969.3	555.7	171.6	-47.5	0.24	0.21	0.53
4,113.0	12.60	25.90	4,063.1	574.2	180.9	-52.5	0.41	0.31	-1.25
4,208.0	12.00	24.10	4,155.9	592.5	189.4	-56.9	0.75	-0.63	-1.89
4,303.0	10.70	23.30	4,249.0	609.6	197.0	-60.6	1.38	-1.37	-0.84
4,398.0	9.80	21.90	4,342.5	625.2	203.5	-63.6	0.98	-0.95	-1.47
4,493.0	9.00	20.60	4,436.2	639.7	209.1	-65.9	0.87	-0.84	-1.37
4,588.0	8.40	18.50	4,530.1	653.2	213.9	-67.7	0.71	-0.63	-2.21
4,683.0	10.00	22.90	4,623.9	667.4	219.3	-69.9	1.84	1.68	4.63
4,779.0	9.10	20.40	4,718.6	682.2	225.2	-72.5	1.03	-0.94	-2.60
4,874.0	8.40	18.50	4,812.5	695.8	230.0	-74.3	0.80	-0.74	-2.00
4,969.0	8.70	21.50	4,906.4	709.1	234.9	-76.1	0.57	0.32	3.16
5,064.0	7.70	20.60	5,000.5	721.7	239.7	-78.1	1.06	-1.05	-0.95
5,191.0	9.30	24.50	5,126.1	739.0	247.0	-81.5	1.34	1.26	3.07
5,286.0	8.30	20.60	5,219.9	752.4	252.6	-84.0	1.23	-1.05	-4.11
5,381.0	8.00	17.60	5,314.0	765.2	257.0	-85.6	0.55	-0.32	-3.16
5,476.0	8.40	12.90	5,408.0	778.2	260.5	-86.2	0.82	0.42	-4.95
5,571.0	9.10	9.70	5,501.9	792.4	263.4	-85.9	0.90	0.74	-3.37
5,666.0	7.90	16.40	5,595.9	806.1	266.5	-86.0	1.64	-1.26	7.05
5,761.0	6.60	20.10	5,690.1	817.4	270.2	-87.2	1.45	-1.37	3.89
5,856.0	6.20	15.70	5,784.5	827.5	273.5	-88.2	0.67	-0.42	-4.63
5,951.0	3.90	15.50	5,879.1	835.6	275.7	-88.7	2.42	-2.42	-0.21
6,046.0	1.70	25.70	5,974.0	839.9	277.2	-89.1	2.37	-2.32	10.74
6,141.0	1.30	96.40	6,069.0	841.1	278.9	-90.5	1.86	-0.42	74.42

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Survey									
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6,236.0	1.00	64.00	6,164.0	841.3	280.7	-92.3	0.74	-0.32	-34.11
6,331.0	1.40	47.00	6,259.0	842.5	282.3	-93.6	0.56	0.42	-17.89
6,395.0	1.30	27.70	6,322.9	843.7	283.2	-94.2	0.72	-0.16	-30.16
6,426.0	1.20	32.80	6,353.9	844.3	283.5	-94.4	0.48	-0.32	16.45
6,458.0	1.40	260.00	6,385.9	844.5	283.3	-94.2	7.45	0.63	-415.00
6,490.0	4.70	264.60	6,417.9	844.3	281.6	-92.5	10.33	10.31	14.38
6,522.0	8.20	262.50	6,449.7	843.9	278.1	-89.2	10.96	10.94	-6.56
6,553.0	10.60	265.00	6,480.2	843.3	273.0	-84.4	7.85	7.74	8.06
6,585.0	11.80	267.80	6,511.6	842.9	266.8	-78.4	4.12	3.75	8.75
6,617.0	13.80	269.70	6,542.8	842.8	259.7	-71.5	6.39	6.25	5.94
6,648.0	15.50	270.40	6,572.8	842.8	251.9	-63.8	5.51	5.48	2.26
6,680.0	17.90	269.20	6,603.5	842.8	242.7	-54.9	7.58	7.50	-3.75
6,711.0	20.60	269.50	6,632.7	842.6	232.5	-44.9	8.72	8.71	0.97
6,743.0	20.90	272.30	6,662.7	842.8	221.2	-33.8	3.24	0.94	8.75
6,775.0	23.20	273.20	6,692.3	843.4	209.2	-22.0	7.26	7.19	2.81
6,807.0	25.20	272.50	6,721.5	844.1	196.1	-9.0	6.31	6.25	-2.19
6,838.0	27.70	270.40	6,749.3	844.4	182.3	4.5	8.61	8.06	-6.77
6,870.0	31.40	269.20	6,777.1	844.3	166.5	19.9	11.71	11.56	-3.75
6,902.0	34.60	267.80	6,803.9	843.9	149.1	36.8	10.28	10.00	-4.38
6,933.0	37.50	265.80	6,829.0	842.8	130.8	54.4	10.09	9.35	-6.45
6,965.0	39.90	266.90	6,854.0	841.6	110.9	73.6	7.80	7.50	3.44
6,997.0	42.00	265.70	6,878.1	840.2	90.0	93.7	7.01	6.56	-3.75
7,028.0	43.60	263.70	6,900.9	838.3	69.0	113.8	6.77	5.16	-6.45
7,060.0	46.00	262.70	6,923.6	835.6	46.6	135.1	7.82	7.50	-3.13
7,092.0	49.20	262.90	6,945.2	832.6	23.2	157.3	10.01	10.00	0.63
7,123.0	51.40	264.30	6,965.0	830.0	-0.5	179.9	7.90	7.10	4.52
7,155.0	53.00	266.00	6,984.6	827.8	-25.7	204.0	6.53	5.00	5.31
7,187.0	54.70	268.10	7,003.5	826.5	-51.5	228.9	7.50	5.31	6.56
7,218.0	56.10	271.30	7,021.1	826.4	-77.1	253.8	9.62	4.52	10.32
7,250.0	58.10	272.70	7,038.4	827.3	-103.9	280.2	7.25	6.25	4.38
7,282.0	59.80	272.90	7,054.9	828.7	-131.3	307.2	5.34	5.31	0.63
7,313.0	61.30	272.70	7,070.2	830.0	-158.2	333.8	4.87	4.84	-0.65
7,345.0	63.20	271.80	7,085.1	831.1	-186.5	361.7	6.44	5.94	-2.81
7,377.0	66.90	270.80	7,098.6	831.7	-215.5	390.2	11.90	11.56	-3.13
7,409.0	71.90	270.40	7,109.8	832.1	-245.5	419.5	15.67	15.63	-1.25
7,440.0	76.90	270.80	7,118.2	832.4	-275.3	448.7	16.18	16.13	1.29
7,472.0	82.20	270.80	7,124.0	832.8	-306.8	479.5	16.56	16.56	0.00
7,504.0	87.00	272.00	7,127.0	833.6	-338.6	510.7	15.46	15.00	3.75
7,518.0	88.90	272.20	7,127.5	834.1	-352.6	524.5	13.65	13.57	1.43
7,568.0	89.19	272.34	7,128.3	836.1	-402.6	573.7	0.64	0.57	0.29
7"									
7,623.0	89.50	272.50	7,129.0	838.4	-457.5	627.9	0.64	0.57	0.29
7,718.0	89.40	272.30	7,129.9	842.4	-552.4	721.4	0.24	-0.11	-0.21
7,813.0	88.90	271.60	7,131.3	845.6	-647.4	814.8	0.91	-0.53	-0.74
7,908.0	88.60	272.70	7,133.3	849.2	-742.3	908.2	1.20	-0.32	1.16
8,003.0	90.70	271.60	7,133.9	852.7	-837.2	1,001.7	2.50	2.21	-1.16
8,098.0	90.10	272.30	7,133.3	856.0	-932.1	1,095.1	0.97	-0.63	0.74
8,194.0	88.80	271.80	7,134.2	859.4	-1,028.1	1,189.5	1.45	-1.35	-0.52
8,289.0	90.70	272.50	7,134.6	863.0	-1,123.0	1,282.9	2.13	2.00	0.74
8,384.0	90.30	274.10	7,133.8	868.4	-1,217.8	1,376.7	1.74	-0.42	1.68
8,479.0	89.40	273.90	7,134.0	875.1	-1,312.6	1,470.7	0.97	-0.95	-0.21
8,574.0	89.60	272.20	7,134.8	880.1	-1,407.4	1,564.4	1.80	0.21	-1.79
8,669.0	89.90	271.80	7,135.3	883.4	-1,502.4	1,657.8	0.53	0.32	-0.42

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8,764.0	89.20	272.00	7,136.0	886.6	-1,597.3	1,751.2	0.77	-0.74	0.21
8,860.0	87.70	270.90	7,138.6	889.0	-1,693.3	1,845.4	1.94	-1.56	-1.15
8,955.0	87.90	271.30	7,142.3	890.8	-1,788.2	1,938.4	0.47	0.21	0.42
9,050.0	89.30	273.60	7,144.6	894.9	-1,883.0	2,031.9	2.83	1.47	2.42
9,145.0	90.50	273.00	7,144.7	900.4	-1,977.9	2,125.7	1.41	1.26	-0.63
9,240.0	90.10	272.70	7,144.2	905.1	-2,072.8	2,219.4	0.53	-0.42	-0.32
9,335.0	89.90	272.70	7,144.2	909.6	-2,167.7	2,313.0	0.21	-0.21	0.00
9,430.0	89.40	272.20	7,144.8	913.6	-2,262.6	2,406.5	0.74	-0.53	-0.53
9,526.0	90.10	272.30	7,145.2	917.4	-2,358.5	2,501.0	0.74	0.73	0.10
9,621.0	89.20	271.60	7,145.8	920.6	-2,453.4	2,594.4	1.20	-0.95	-0.74
9,716.0	88.90	271.50	7,147.4	923.2	-2,548.4	2,687.7	0.33	-0.32	-0.11
9,811.0	88.70	271.30	7,149.4	925.5	-2,643.3	2,780.9	0.30	-0.21	-0.21
9,906.0	88.50	270.80	7,151.7	927.3	-2,738.3	2,874.0	0.57	-0.21	-0.53
10,001.0	88.40	269.50	7,154.3	927.5	-2,833.3	2,966.7	1.37	-0.11	-1.37
10,097.0	88.40	270.10	7,157.0	927.2	-2,929.2	3,060.4	0.62	0.00	0.63
10,192.0	88.50	270.80	7,159.5	927.9	-3,024.2	3,153.2	0.74	0.11	0.74
10,287.0	90.60	272.00	7,160.3	930.2	-3,119.1	3,246.5	2.55	2.21	1.26
Deepest TVD Drilled									
10,382.0	92.20	273.00	7,158.0	934.4	-3,214.0	3,340.0	1.99	1.68	1.05
10,477.0	92.30	273.70	7,154.2	939.9	-3,308.8	3,433.7	0.74	0.11	0.74
10,572.0	90.70	273.60	7,151.7	946.0	-3,403.6	3,527.6	1.69	-1.68	-0.11
10,668.0	90.30	273.00	7,150.9	951.5	-3,499.4	3,622.3	0.75	-0.42	-0.63
10,763.0	91.10	273.00	7,149.7	956.5	-3,594.3	3,716.0	0.84	0.84	0.00
10,858.0	90.70	272.90	7,148.2	961.4	-3,689.1	3,809.7	0.43	-0.42	-0.11
10,953.0	89.70	272.00	7,147.9	965.4	-3,784.0	3,903.2	1.42	-1.05	-0.95
11,048.0	90.20	272.70	7,148.0	969.3	-3,879.0	3,996.8	0.91	0.53	0.74
11,143.0	88.30	271.80	7,149.2	973.0	-3,973.9	4,090.2	2.21	-2.00	-0.95
11,239.0	89.20	270.10	7,151.3	974.6	-4,069.8	4,184.3	2.00	0.94	-1.77
11,334.0	90.60	270.80	7,151.5	975.4	-4,164.8	4,277.2	1.65	1.47	0.74
11,429.0	90.70	270.90	7,150.4	976.8	-4,259.8	4,370.2	0.15	0.11	0.11
11,531.0	90.70	270.60	7,149.2	978.1	-4,361.8	4,470.1	0.29	0.00	-0.29
11,582.7	90.70	270.60	7,148.5	978.7	-4,413.5	4,520.7	0.00	0.00	0.00
BHL 10'FNL & 500'FWL									
11,583.0	90.70	270.60	7,148.5	978.7	-4,413.8	4,521.0	0.00	0.00	0.00

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,568.0	7,128.3	7"	7	7-1/2	

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
10,287.0	7,160.3	930.2	-3,119.1	Deepest TVD Drilled

Checked By: _____ Approved By: _____ Date: _____