

# Whiting Oil & Gas

## Well Name: Twomile #15-1033AH

Surface Location: Twomile #15-1033H Pad Sec.15-T11N-R57W  
North American Datum 1983 , US State Plane 1983Colorado Northern Zone

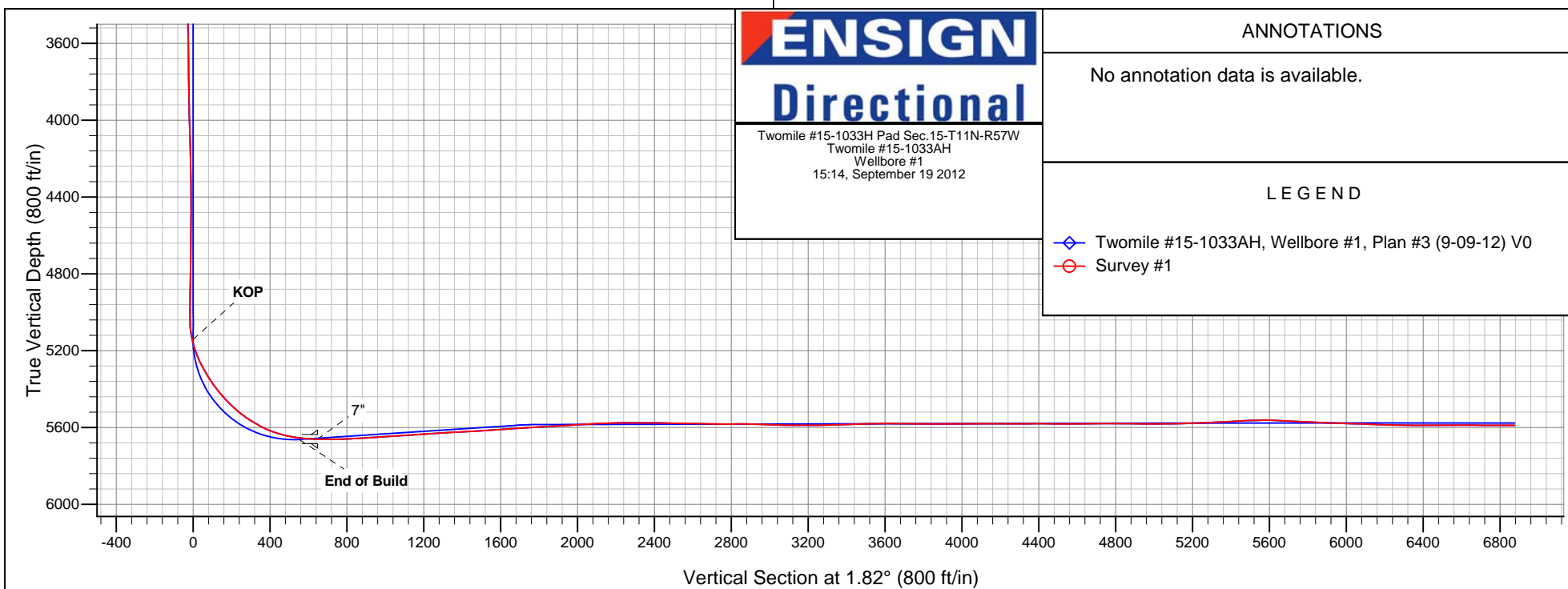
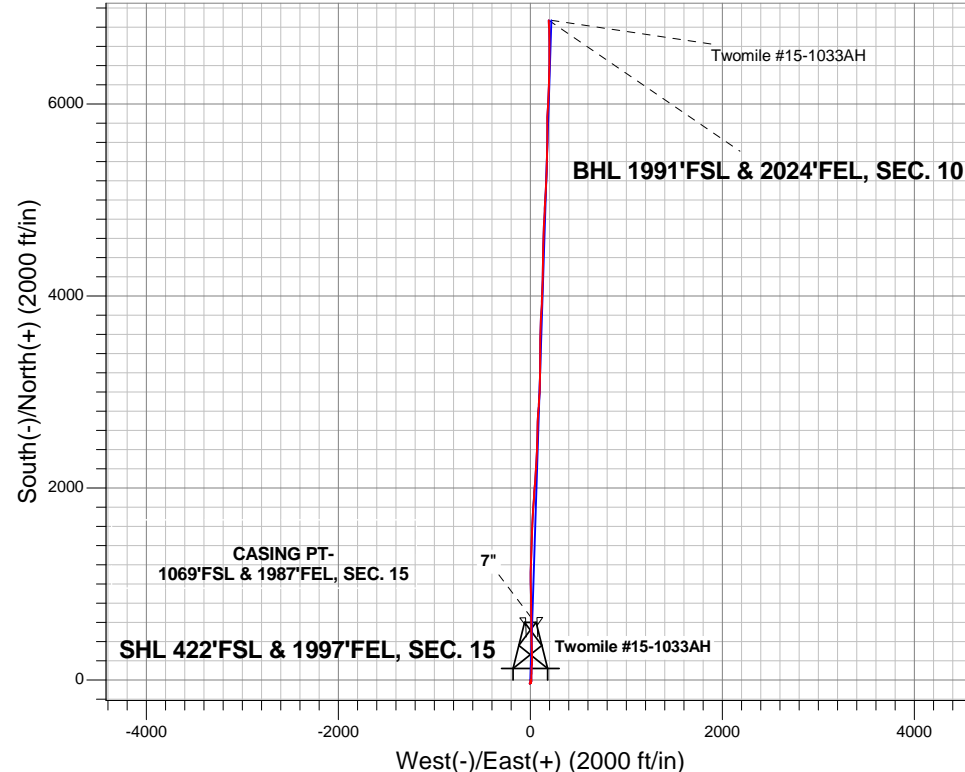
Ground Elevation: 4909.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1583021.23	3487899.78	40.920428	-103.734511	
		Cade21 kb 16.5		RKB @ 4925.5ft (Cade21 kb 16.5)		

## FINAL SURVEY

Projected Bottom Hole Location  
12278' MD 5589' TVD 6873' N & 192' E of SHL

89.90 degree Incl @ 358.30 degree AZM





## **Whiting Oil & Gas**

**SEC.15-T11N-R57W**

**Twomile #15-1033H Pad Sec.15-T11N-R57W**

**Twomile #15-1033AH**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**19 September, 2012**

<b>Company:</b>	Whiting Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Twomile #15-1033AH
<b>Project:</b>	SEC.15-T11N-R57W	<b>TVD Reference:</b>	RKB @ 4925.5ft (Cade21 kb 16.5)
<b>Site:</b>	Twomile #15-1033H Pad Sec.15-T11N-R57W	<b>MD Reference:</b>	RKB @ 4925.5ft (Cade21 kb 16.5)
<b>Well:</b>	Twomile #15-1033AH	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Landmark

<b>Project</b>	SEC.15-T11N-R57W, Weld County, Colorado		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

Site		Twomile #15-1033H Pad Sec.15-T11N-R57W			
Site Position:		Northing:	1,583,021.23ft	Latitude:	40.920428
From:	Lat/Long	Easting:	3,487,899.78ft	Longitude:	-103.734511
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	1.14 °

Well	Twomile #15-1033AH					
Well Position	+N/-S	0.0 ft	Northing:	1,583,021.23 ft	Latitude:	40.920428
	+E/-W	0.0 ft	Easting:	3,487,899.78 ft	Longitude:	-103.734511
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,909.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/4/2012	8.17	67.59	53,377

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	1.82	

Survey Program		Date	9/19/2012		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
101.0	12,278.0	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
	0.1	0.00	171.30	0.1	0.0	0.0	0.0	0.00	0.00	0.00
HARDLINE 660'FSL										
	1.0	0.01	171.30	1.0	0.0	0.0	0.0	0.89	0.89	0.00
SHL 422'FSL & 1997'FEL										
	101.0	0.90	171.30	101.0	-0.8	0.1	-0.8	0.89	0.89	0.00
	251.0	0.90	189.40	251.0	-3.1	0.1	-3.1	0.19	0.00	12.07
	409.0	1.10	168.70	409.0	-5.8	0.2	-5.8	0.26	0.13	-13.10
	566.0	1.10	92.00	565.9	-7.4	2.0	-7.3	0.87	0.00	-48.85
	722.0	1.60	187.10	721.9	-9.6	3.2	-9.5	1.30	0.32	60.96
	881.0	1.90	189.00	880.8	-14.4	2.5	-14.3	0.19	0.19	1.19
	1,039.0	2.40	191.50	1,038.7	-20.2	1.5	-20.1	0.32	0.32	1.58
	1,197.0	2.20	191.70	1,196.6	-26.4	0.2	-26.4	0.13	-0.13	0.13

<b>Company:</b>	Whiting Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Twomile #15-1033AH
<b>Project:</b>	SEC.15-T11N-R57W	<b>TVD Reference:</b>	RKB @ 4925.5ft (Cade21 kb 16.5)
<b>Site:</b>	Twomile #15-1033H Pad Sec.15-T11N-R57W	<b>MD Reference:</b>	RKB @ 4925.5ft (Cade21 kb 16.5)
<b>Well:</b>	Twomile #15-1033AH	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)	
1,349.0	1.90	204.90	1,348.5	-31.6	-1.5	-31.6	0.37	-0.20	8.68	
1,500.0	1.00	220.00	1,499.4	-34.8	-3.4	-34.9	0.64	-0.60	10.00	
1,558.0	1.10	219.80	1,557.4	-35.7	-4.0	-35.8	0.17	0.17	-0.34	
1,650.0	0.40	355.20	1,649.4	-36.0	-4.6	-36.1	1.54	-0.76	147.17	
1,744.0	0.60	339.20	1,743.4	-35.2	-4.8	-35.4	0.26	0.21	-17.02	
1,805.0	0.80	287.30	1,804.4	-34.8	-5.4	-34.9	1.05	0.33	-85.08	
1,897.0	1.00	227.40	1,896.4	-35.1	-6.6	-35.3	0.99	0.22	-65.11	
1,986.0	1.70	159.90	1,985.4	-36.9	-6.7	-37.1	1.81	0.79	-75.84	
2,079.0	0.70	158.10	2,078.4	-38.7	-6.0	-38.9	1.08	-1.08	-1.94	
2,172.0	1.50	30.80	2,171.4	-38.2	-5.2	-38.4	2.15	0.86	-136.88	
2,267.0	1.00	41.60	2,266.3	-36.5	-4.0	-36.6	0.58	-0.53	11.37	
2,361.0	0.50	34.50	2,360.3	-35.6	-3.2	-35.7	0.54	-0.53	-7.55	
2,457.0	0.80	11.90	2,456.3	-34.6	-2.8	-34.7	0.41	0.31	-23.54	
2,552.0	0.10	125.90	2,551.3	-34.0	-2.6	-34.0	0.89	-0.74	120.00	
2,647.0	1.30	64.20	2,646.3	-33.6	-1.6	-33.6	1.32	1.26	-64.95	
2,741.0	1.80	37.50	2,740.3	-31.9	0.3	-31.9	0.92	0.53	-28.40	
2,836.0	0.40	88.90	2,835.3	-30.7	1.5	-30.7	1.66	-1.47	54.11	
2,931.0	0.90	54.00	2,930.3	-30.3	2.5	-30.2	0.65	0.53	-36.74	
3,027.0	0.20	108.90	3,026.2	-29.9	3.2	-29.8	0.84	-0.73	57.19	
3,122.0	0.20	256.20	3,121.2	-30.0	3.2	-29.9	0.40	0.00	155.05	
3,217.0	0.40	343.90	3,216.2	-29.7	3.0	-29.6	0.46	0.21	92.32	
3,312.0	0.70	12.60	3,311.2	-28.8	3.0	-28.7	0.42	0.32	30.21	
3,407.0	0.70	54.20	3,406.2	-27.9	3.6	-27.8	0.52	0.00	43.79	
3,502.0	1.50	40.00	3,501.2	-26.6	4.9	-26.5	0.88	0.84	-14.95	
3,597.0	0.90	39.30	3,596.2	-25.1	6.1	-24.9	0.63	-0.63	-0.74	
3,692.0	0.80	355.90	3,691.2	-23.9	6.6	-23.6	0.67	-0.11	-45.68	
3,787.0	0.70	350.20	3,786.2	-22.6	6.4	-22.4	0.13	-0.11	-6.00	
3,881.0	0.70	356.60	3,880.2	-21.5	6.3	-21.3	0.08	0.00	6.81	
3,977.0	1.60	355.00	3,976.2	-19.6	6.1	-19.4	0.94	0.94	-1.67	
4,071.0	1.30	351.60	4,070.1	-17.2	5.9	-17.0	0.33	-0.32	-3.62	
4,166.0	2.10	1.50	4,165.1	-14.4	5.8	-14.2	0.89	0.84	10.42	
4,261.0	0.60	16.40	4,260.1	-12.2	5.9	-12.0	1.61	-1.58	15.68	
4,356.0	0.60	14.80	4,355.0	-11.2	6.2	-11.0	0.02	0.00	-1.68	
4,451.0	0.40	338.30	4,450.0	-10.4	6.2	-10.2	0.39	-0.21	-38.42	
4,546.0	0.60	193.40	4,545.0	-10.6	6.0	-10.4	1.01	0.21	-152.53	
4,641.0	0.60	165.10	4,640.0	-11.6	6.0	-11.4	0.31	0.00	-29.79	
4,736.0	1.00	138.40	4,735.0	-12.7	6.7	-12.5	0.56	0.42	-28.11	
4,831.0	0.90	139.00	4,830.0	-13.9	7.7	-13.6	0.11	-0.11	0.63	
4,926.0	0.70	147.60	4,925.0	-14.9	8.5	-14.6	0.24	-0.21	9.05	
4,990.0	1.10	167.60	4,989.0	-15.8	8.9	-15.6	0.79	0.63	31.25	
5,021.0	0.90	163.20	5,020.0	-16.4	9.0	-16.1	0.69	-0.65	-14.19	
5,053.0	1.80	4.70	5,052.0	-16.1	9.1	-15.8	8.31	2.81	-495.31	
5,084.0	5.40	1.50	5,082.9	-14.2	9.2	-13.9	11.63	11.61	-10.32	
5,116.0	9.10	2.40	5,114.7	-10.1	9.3	-9.8	11.57	11.56	2.81	
5,148.0	12.80	1.30	5,146.1	-4.1	9.5	-3.7	11.58	11.56	-3.44	
5,179.0	16.40	0.30	5,176.1	3.8	9.6	4.1	11.64	11.61	-3.23	
5,211.0	20.00	0.60	5,206.5	13.8	9.7	14.1	11.25	11.25	0.94	
5,243.0	22.90	359.90	5,236.2	25.5	9.7	25.7	9.10	9.06	-2.19	
5,275.0	25.50	2.20	5,265.4	38.6	10.0	38.9	8.64	8.13	7.19	
5,306.0	28.20	3.20	5,293.1	52.5	10.7	52.9	8.83	8.71	3.23	
5,337.0	31.00	1.30	5,320.0	67.8	11.2	68.2	9.53	9.03	-6.13	
5,369.0	33.70	0.80	5,347.1	85.0	11.6	85.3	8.48	8.44	-1.56	
5,401.0	35.80	1.70	5,373.4	103.2	12.0	103.5	6.76	6.56	2.81	
5,432.0	36.80	4.80	5,398.3	121.5	13.0	121.9	6.74	3.23	10.00	

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<b>Site:</b>	Twomile #15-1033H Pad Sec.15-T11N-R57W	<b>MD Reference:</b>	RKB @ 4925.5ft (Cade21 kb 16.5)
<b>Well:</b>	Twomile #15-1033AH	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
5,464.0	39.70	3.60	5,423.5	141.3	14.5	141.7	9.35	9.06	-3.75
5,496.0	42.40	1.80	5,447.6	162.3	15.4	162.7	9.21	8.44	-5.63
5,527.0	44.60	1.30	5,470.1	183.6	16.0	184.0	7.18	7.10	-1.61
5,559.0	47.00	0.80	5,492.4	206.5	16.4	206.9	7.58	7.50	-1.56
5,591.0	49.90	358.90	5,513.6	230.5	16.4	230.9	10.09	9.06	-5.94
5,622.0	53.10	357.60	5,532.9	254.7	15.6	255.1	10.83	10.32	-4.19
5,654.0	56.10	357.80	5,551.4	280.8	14.6	281.1	9.39	9.38	0.63
5,685.0	58.60	358.50	5,568.2	306.9	13.7	307.1	8.29	8.06	2.26
5,717.0	59.80	358.90	5,584.6	334.3	13.1	334.6	3.90	3.75	1.25
5,749.0	63.60	359.70	5,599.7	362.5	12.8	362.7	12.08	11.88	2.50
5,780.0	66.90	0.30	5,612.7	390.7	12.8	390.9	10.79	10.65	1.94
5,812.0	70.60	0.10	5,624.3	420.5	12.9	420.7	11.58	11.56	-0.63
5,843.0	73.50	359.40	5,633.9	450.0	12.7	450.1	9.60	9.35	-2.26
5,875.0	76.50	358.70	5,642.1	480.9	12.2	481.0	9.61	9.38	-2.19
5,897.5	78.83	359.50	5,646.9	502.9	11.9	503.0	10.89	10.32	3.56
WP 1									
5,906.0	79.70	359.80	5,648.5	511.2	11.8	511.3	10.89	10.33	3.52
5,938.0	81.90	358.90	5,653.6	542.8	11.5	542.9	7.41	6.88	-2.81
5,955.7	83.23	358.96	5,655.9	560.3	11.1	560.4	7.51	7.50	0.31
LANDING PT									
5,970.0	84.30	359.00	5,657.5	574.5	10.9	574.6	7.51	7.50	0.31
6,001.0	86.40	0.10	5,660.0	605.4	10.6	605.5	7.64	6.77	3.55
6,043.0	89.50	358.20	5,661.5	647.4	10.0	647.4	8.66	7.38	-4.52
7"									
6,108.0	90.90	358.90	5,661.3	712.4	8.4	712.3	2.41	2.15	1.08
6,139.0	90.70	359.00	5,660.8	743.4	7.8	743.2	0.72	-0.65	0.32
6,171.0	90.90	359.60	5,660.4	775.4	7.4	775.2	1.98	0.63	1.88
6,203.0	92.00	358.90	5,659.6	807.3	7.0	807.2	4.07	3.44	-2.19
6,234.0	93.00	358.30	5,658.2	838.3	6.2	838.1	3.76	3.23	-1.94
6,266.0	93.40	357.60	5,656.4	870.2	5.1	869.9	2.52	1.25	-2.19
6,298.0	93.70	358.30	5,654.5	902.1	4.0	901.8	2.38	0.94	2.19
6,329.0	93.80	359.00	5,652.4	933.1	3.2	932.7	2.28	0.32	2.26
6,361.0	94.70	0.60	5,650.1	965.0	3.1	964.6	5.72	2.81	5.00
6,393.0	94.40	1.10	5,647.5	996.9	3.6	996.5	1.82	-0.94	1.56
6,424.0	92.90	0.40	5,645.6	1,027.8	4.0	1,027.4	5.34	-4.84	-2.26
6,456.0	92.10	358.90	5,644.2	1,059.8	3.8	1,059.4	5.31	-2.50	-4.69
6,488.0	92.70	359.40	5,642.8	1,091.7	3.3	1,091.3	2.44	1.88	1.56
6,519.0	93.90	359.70	5,641.0	1,122.7	3.1	1,122.2	3.99	3.87	0.97
6,551.0	94.20	1.00	5,638.8	1,154.6	3.3	1,154.1	4.16	0.94	4.06
6,582.0	95.20	2.90	5,636.2	1,185.5	4.3	1,185.0	6.91	3.23	6.13
6,614.0	95.10	2.20	5,633.4	1,217.3	5.7	1,216.9	2.20	-0.31	-2.19
6,646.0	93.70	1.30	5,630.9	1,249.2	6.7	1,248.8	5.20	-4.38	-2.81
6,677.0	92.30	1.70	5,629.3	1,280.2	7.5	1,279.8	4.70	-4.52	1.29
6,709.0	92.90	2.70	5,627.8	1,312.1	8.8	1,311.7	3.64	1.88	3.13
6,741.0	93.00	2.90	5,626.2	1,344.0	10.3	1,343.7	0.70	0.31	0.63
6,772.0	93.00	2.70	5,624.6	1,374.9	11.8	1,374.6	0.64	0.00	-0.65
6,804.0	93.10	1.80	5,622.9	1,406.9	13.1	1,406.6	2.83	0.31	-2.81
6,836.0	93.60	3.20	5,621.0	1,438.8	14.5	1,438.5	4.64	1.56	4.38
6,868.0	94.00	2.70	5,618.9	1,470.7	16.1	1,470.4	2.00	1.25	-1.56
6,899.0	92.20	359.40	5,617.2	1,501.6	16.7	1,501.4	12.11	-5.81	-10.65
6,931.0	92.90	2.00	5,615.8	1,533.6	17.1	1,533.4	8.41	2.19	8.13
6,962.0	94.00	1.30	5,613.9	1,564.5	18.0	1,564.3	4.20	3.55	-2.26
6,994.0	94.20	2.20	5,611.6	1,596.4	18.9	1,596.2	2.87	0.63	2.81
7,026.0	94.50	2.90	5,609.2	1,628.3	20.4	1,628.1	2.37	0.94	2.19

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<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
7,058.0	94.40	2.70	5,606.7	1,660.2	21.9	1,660.0	0.70	-0.31	-0.63
7,089.0	94.60	1.70	5,604.3	1,691.0	23.1	1,690.9	3.28	0.65	-3.23
7,120.0	93.60	3.10	5,602.1	1,721.9	24.4	1,721.8	5.54	-3.23	4.52
7,152.0	92.70	4.70	5,600.3	1,753.8	26.6	1,753.8	5.73	-2.81	5.00
7,183.0	92.40	4.80	5,598.9	1,784.7	29.1	1,784.7	1.02	-0.97	0.32
7,200.3	92.62	4.64	5,598.2	1,801.9	30.6	1,801.9	1.56	1.25	-0.94
WP 2									
7,215.0	92.80	4.50	5,597.5	1,816.5	31.7	1,816.6	1.56	1.25	-0.94
7,247.0	93.70	4.10	5,595.7	1,848.4	34.1	1,848.5	3.08	2.81	-1.25
7,279.0	93.90	4.00	5,593.5	1,880.2	36.4	1,880.4	0.70	0.63	-0.31
7,310.0	93.40	3.60	5,591.6	1,911.1	38.4	1,911.4	2.06	-1.61	-1.29
7,342.0	93.60	2.70	5,589.6	1,943.0	40.2	1,943.3	2.88	0.63	-2.81
7,374.0	93.60	4.80	5,587.6	1,974.9	42.3	1,975.2	6.55	0.00	6.56
7,405.0	93.50	4.50	5,585.7	2,005.7	44.8	2,006.1	1.02	-0.32	-0.97
7,437.0	93.80	3.80	5,583.6	2,037.6	47.1	2,038.0	2.38	0.94	-2.19
7,468.0	92.60	4.80	5,581.9	2,068.4	49.4	2,068.9	5.04	-3.87	3.23
7,500.0	93.30	5.50	5,580.3	2,100.2	52.3	2,100.8	3.09	2.19	2.19
7,530.0	93.10	4.70	5,578.6	2,130.1	54.9	2,130.8	2.74	-0.67	-2.67
7,561.0	91.70	3.40	5,577.3	2,161.0	57.1	2,161.7	6.16	-4.52	-4.19
7,592.0	90.50	3.10	5,576.7	2,191.9	58.9	2,192.7	3.99	-3.87	-0.97
7,623.0	90.30	2.50	5,576.5	2,222.9	60.4	2,223.7	2.04	-0.65	-1.94
7,654.0	89.80	2.70	5,576.4	2,253.9	61.8	2,254.7	1.74	-1.61	0.65
7,685.0	90.00	2.50	5,576.5	2,284.8	63.2	2,285.7	0.91	0.65	-0.65
7,716.0	90.00	2.50	5,576.5	2,315.8	64.6	2,316.7	0.00	0.00	0.00
7,747.0	90.20	3.20	5,576.4	2,346.8	66.1	2,347.7	2.35	0.65	2.26
7,778.0	90.00	2.50	5,576.4	2,377.7	67.7	2,378.7	2.35	-0.65	-2.26
7,809.0	89.50	2.50	5,576.5	2,408.7	69.0	2,409.7	1.61	-1.61	0.00
7,840.0	89.30	2.20	5,576.9	2,439.7	70.3	2,440.7	1.16	-0.65	-0.97
7,870.0	89.10	2.00	5,577.3	2,469.6	71.4	2,470.7	0.94	-0.67	-0.67
7,901.0	89.10	1.50	5,577.8	2,500.6	72.3	2,501.6	1.61	0.00	-1.61
7,932.0	88.40	1.30	5,578.4	2,531.6	73.1	2,532.6	2.35	-2.26	-0.65
7,963.0	88.50	1.10	5,579.3	2,562.6	73.7	2,563.6	0.72	0.32	-0.65
7,994.0	89.30	1.00	5,579.9	2,593.6	74.3	2,594.6	2.60	2.58	-0.32
8,025.0	88.50	0.80	5,580.5	2,624.6	74.8	2,625.6	2.66	-2.58	-0.65
8,056.0	88.70	0.80	5,581.2	2,655.5	75.2	2,656.6	0.65	0.65	0.00
8,087.0	89.20	2.00	5,581.8	2,686.5	76.0	2,687.6	4.19	1.61	3.87
8,117.0	89.30	2.50	5,582.2	2,716.5	77.1	2,717.6	1.70	0.33	1.67
8,148.0	89.70	3.20	5,582.5	2,747.5	78.7	2,748.6	2.60	1.29	2.26
8,179.0	90.30	4.10	5,582.5	2,778.4	80.7	2,779.6	3.49	1.94	2.90
8,210.0	91.10	6.10	5,582.1	2,809.3	83.4	2,810.5	6.95	2.58	6.45
8,241.0	90.40	5.00	5,581.7	2,840.1	86.4	2,841.4	4.21	-2.26	-3.55
8,272.0	88.30	3.60	5,582.0	2,871.0	88.7	2,872.4	8.14	-6.77	-4.52
8,303.0	88.50	3.20	5,582.9	2,902.0	90.6	2,903.4	1.44	0.65	-1.29
8,334.0	88.50	3.80	5,583.7	2,932.9	92.5	2,934.4	1.93	0.00	1.94
8,365.0	88.30	3.80	5,584.6	2,963.8	94.5	2,965.3	0.65	-0.65	0.00
8,396.0	88.30	3.40	5,585.5	2,994.7	96.5	2,996.3	1.29	0.00	-1.29
8,427.0	88.10	2.50	5,586.5	3,025.7	98.1	3,027.3	2.97	-0.65	-2.90
8,458.0	88.40	2.00	5,587.4	3,056.6	99.3	3,058.3	1.88	0.97	-1.61
8,488.0	89.30	2.50	5,588.0	3,086.6	100.5	3,088.3	3.43	3.00	1.67
8,519.0	89.60	1.70	5,588.3	3,117.6	101.6	3,119.3	2.76	0.97	-2.58
8,549.0	89.80	0.80	5,588.5	3,147.6	102.2	3,149.2	3.07	0.67	-3.00
8,580.0	90.80	1.00	5,588.3	3,178.6	102.7	3,180.2	3.29	3.23	0.65
8,611.0	90.00	359.20	5,588.1	3,209.6	102.8	3,211.2	6.35	-2.58	-5.81
8,642.0	89.70	359.20	5,588.2	3,240.6	102.4	3,242.2	0.97	-0.97	0.00

<b>Company:</b>	Whiting Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Twomile #15-1033AH
<b>Project:</b>	SEC.15-T11N-R57W	<b>TVD Reference:</b>	RKB @ 4925.5ft (Cade21 kb 16.5)
<b>Site:</b>	Twomile #15-1033H Pad Sec.15-T11N-R57W	<b>MD Reference:</b>	RKB @ 4925.5ft (Cade21 kb 16.5)
<b>Well:</b>	Twomile #15-1033AH	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)	
8,673.0	90.40	359.40	5,588.1	3,271.6	102.0	3,273.2	2.35	2.26	0.65	
8,704.0	91.50	358.70	5,587.6	3,302.6	101.5	3,304.1	4.21	3.55	-2.26	
8,735.0	91.40	359.20	5,586.8	3,333.6	100.9	3,335.1	1.64	-0.32	1.61	
8,766.0	91.50	0.10	5,586.1	3,364.5	100.7	3,366.0	2.92	0.32	2.90	
8,796.0	92.00	1.10	5,585.1	3,394.5	101.0	3,396.0	3.73	1.67	3.33	
8,827.0	92.00	1.50	5,584.1	3,425.5	101.7	3,427.0	1.29	0.00	1.29	
8,858.0	91.70	0.40	5,583.1	3,456.5	102.2	3,458.0	3.68	-0.97	-3.55	
8,889.0	91.90	0.10	5,582.1	3,487.5	102.4	3,489.0	1.16	0.65	-0.97	
8,919.0	91.60	1.50	5,581.2	3,517.4	102.8	3,518.9	4.77	-1.00	4.67	
8,949.0	91.90	1.80	5,580.2	3,547.4	103.7	3,548.9	1.41	1.00	1.00	
8,980.0	90.00	2.20	5,579.7	3,578.4	104.7	3,579.9	6.26	-6.13	1.29	
9,011.0	89.90	2.50	5,579.8	3,609.4	106.0	3,610.9	1.02	-0.32	0.97	
9,042.0	89.70	1.70	5,579.9	3,640.3	107.1	3,641.9	2.66	-0.65	-2.58	
9,073.0	89.30	1.00	5,580.1	3,671.3	107.9	3,672.9	2.60	-1.29	-2.26	
9,104.0	88.60	359.90	5,580.7	3,702.3	108.1	3,703.9	4.21	-2.26	-3.55	
9,135.0	89.50	2.40	5,581.2	3,733.3	108.7	3,734.9	8.57	2.90	8.06	
9,165.0	89.50	2.40	5,581.5	3,763.3	110.0	3,764.9	0.00	0.00	0.00	
9,197.0	89.40	2.50	5,581.8	3,795.3	111.4	3,796.9	0.44	-0.31	0.31	
9,227.0	90.00	3.40	5,581.9	3,825.2	112.9	3,826.9	3.61	2.00	3.00	
9,259.0	90.10	4.70	5,581.9	3,857.1	115.2	3,858.8	4.07	0.31	4.06	
9,289.0	90.00	3.80	5,581.9	3,887.1	117.4	3,888.8	3.02	-0.33	-3.00	
9,320.0	89.90	2.90	5,581.9	3,918.0	119.2	3,919.8	2.92	-0.32	-2.90	
9,351.0	90.00	3.60	5,581.9	3,948.9	121.0	3,950.8	2.28	0.32	2.26	
9,382.0	90.40	3.10	5,581.8	3,979.9	122.8	3,981.8	2.07	1.29	-1.61	
9,413.0	91.10	2.50	5,581.4	4,010.9	124.3	4,012.8	2.97	2.26	-1.94	
9,444.0	90.90	2.90	5,580.9	4,041.8	125.7	4,043.8	1.44	-0.65	1.29	
9,475.0	89.60	0.80	5,580.8	4,072.8	126.7	4,074.8	7.97	-4.19	-6.77	
9,506.0	89.20	359.90	5,581.1	4,103.8	126.9	4,105.8	3.18	-1.29	-2.90	
9,537.0	90.10	1.00	5,581.3	4,134.8	127.2	4,136.7	4.58	2.90	3.55	
9,568.0	90.40	1.50	5,581.1	4,165.8	127.9	4,167.7	1.88	0.97	1.61	
9,598.0	90.20	0.40	5,581.0	4,195.8	128.4	4,197.7	3.73	-0.67	-3.67	
9,629.0	89.80	359.90	5,581.0	4,226.8	128.4	4,228.7	2.07	-1.29	-1.61	
9,659.0	89.60	359.20	5,581.1	4,256.8	128.2	4,258.7	2.43	-0.67	-2.33	
9,690.0	90.20	1.30	5,581.2	4,287.8	128.3	4,289.7	7.05	1.94	6.77	
9,720.0	90.00	1.50	5,581.1	4,317.8	129.1	4,319.7	0.94	-0.67	0.67	
9,751.0	90.90	2.00	5,580.9	4,348.8	130.0	4,350.7	3.32	2.90	1.61	
9,781.0	90.60	2.00	5,580.5	4,378.7	131.1	4,380.7	1.00	-1.00	0.00	
9,812.0	90.00	1.70	5,580.3	4,409.7	132.1	4,411.7	2.16	-1.94	-0.97	
9,842.0	88.60	0.40	5,580.7	4,439.7	132.6	4,441.7	6.37	-4.67	-4.33	
9,873.0	88.70	0.60	5,581.4	4,470.7	132.9	4,472.7	0.72	0.32	0.65	
9,903.0	90.10	2.00	5,581.8	4,500.7	133.6	4,502.7	6.60	4.67	4.67	
9,935.0	90.40	2.70	5,581.6	4,532.7	134.9	4,534.7	2.38	0.94	2.19	
9,967.0	90.10	2.40	5,581.5	4,564.6	136.3	4,566.7	1.33	-0.94	-0.94	
9,999.0	89.80	2.00	5,581.5	4,596.6	137.5	4,598.6	1.56	-0.94	-1.25	
10,030.0	90.00	1.80	5,581.6	4,627.6	138.6	4,629.6	0.91	0.65	-0.65	
10,062.0	90.30	1.70	5,581.5	4,659.6	139.5	4,661.6	0.99	0.94	-0.31	
10,094.0	90.50	1.70	5,581.2	4,691.6	140.5	4,693.6	0.63	0.63	0.00	
10,126.0	91.60	3.20	5,580.7	4,723.5	141.8	4,725.6	5.81	3.44	4.69	
10,157.0	91.40	2.90	5,579.8	4,754.5	143.5	4,756.6	1.16	-0.65	-0.97	
10,189.0	89.40	2.50	5,579.6	4,786.4	145.0	4,788.6	6.37	-6.25	-1.25	
10,221.0	89.50	2.50	5,579.9	4,818.4	146.4	4,820.6	0.31	0.31	0.00	
10,252.0	89.50	2.90	5,580.2	4,849.4	147.9	4,851.6	1.29	0.00	1.29	
10,284.0	89.30	2.50	5,580.5	4,881.3	149.4	4,883.6	1.40	-0.63	-1.25	
10,316.0	89.20	2.00	5,581.0	4,913.3	150.6	4,915.6	1.59	-0.31	-1.56	



<b>Company:</b>	Whiting Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Twomile #15-1033AH
<b>Project:</b>	SEC.15-T11N-R57W	<b>TVD Reference:</b>	RKB @ 4925.5ft (Cade21 kb 16.5)
<b>Site:</b>	Twomile #15-1033H Pad Sec.15-T11N-R57W	<b>MD Reference:</b>	RKB @ 4925.5ft (Cade21 kb 16.5)
<b>Well:</b>	Twomile #15-1033AH	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)	
10,347.0	89.90	2.50	5,581.2	4,944.3	151.8	4,946.6	2.77	2.26	1.61	
10,379.0	89.70	1.80	5,581.3	4,976.2	153.0	4,978.6	2.28	-0.63	-2.19	
10,411.0	90.30	3.20	5,581.3	5,008.2	154.4	5,010.6	4.76	1.88	4.38	
10,442.0	90.10	3.60	5,581.2	5,039.2	156.3	5,041.6	1.44	-0.65	1.29	
10,474.0	90.10	4.00	5,581.1	5,071.1	158.4	5,073.6	1.25	0.00	1.25	
10,506.0	90.50	2.20	5,581.0	5,103.0	160.1	5,105.6	5.76	1.25	-5.63	
10,537.0	91.30	4.00	5,580.5	5,134.0	161.8	5,136.5	6.35	2.58	5.81	
10,569.0	91.50	3.80	5,579.7	5,165.9	164.0	5,168.5	0.88	0.63	-0.63	
10,601.0	92.00	3.40	5,578.7	5,197.8	166.0	5,200.5	2.00	1.56	-1.25	
10,632.0	92.30	1.80	5,577.6	5,228.8	167.4	5,231.5	5.25	0.97	-5.16	
10,664.0	92.80	2.50	5,576.1	5,260.7	168.6	5,263.4	2.69	1.56	2.19	
10,695.0	92.80	1.30	5,574.6	5,291.7	169.6	5,294.4	3.87	0.00	-3.87	
10,727.0	93.40	1.70	5,572.9	5,323.6	170.5	5,326.3	2.25	1.88	1.25	
10,730.4	93.42	1.60	5,572.7	5,327.0	170.6	5,329.7	2.88	0.63	-2.81	
WP 3										
10,759.0	93.60	0.80	5,570.9	5,355.5	171.2	5,358.3	2.88	0.62	-2.81	
10,790.0	92.90	2.40	5,569.2	5,386.5	172.0	5,389.2	5.63	-2.26	5.16	
10,822.0	92.80	1.50	5,567.6	5,418.4	173.1	5,421.2	2.83	-0.31	-2.81	
10,854.0	93.40	0.40	5,565.9	5,450.4	173.6	5,453.1	3.91	1.88	-3.44	
10,885.0	92.30	1.00	5,564.3	5,481.3	174.0	5,484.1	4.04	-3.55	1.94	
10,917.0	91.50	0.30	5,563.3	5,513.3	174.4	5,516.1	3.32	-2.50	-2.19	
10,949.0	91.20	1.00	5,562.5	5,545.3	174.7	5,548.0	2.38	-0.94	2.19	
10,980.0	90.50	1.00	5,562.1	5,576.3	175.3	5,579.0	2.26	-2.26	0.00	
11,012.0	88.90	0.80	5,562.2	5,608.3	175.8	5,611.0	5.04	-5.00	-0.63	
11,044.0	86.40	359.60	5,563.5	5,640.2	175.9	5,643.0	8.66	-7.81	-3.75	
11,075.0	87.20	0.60	5,565.3	5,671.2	175.9	5,673.9	4.13	2.58	3.23	
11,107.0	86.80	359.70	5,566.9	5,703.2	176.0	5,705.9	3.07	-1.25	-2.81	
11,139.0	86.70	0.30	5,568.8	5,735.1	176.0	5,737.8	1.90	-0.31	1.88	
11,170.0	86.70	0.30	5,570.5	5,766.1	176.2	5,768.7	0.00	0.00	0.00	
11,202.0	87.20	0.10	5,572.2	5,798.0	176.3	5,800.7	1.68	1.56	-0.63	
11,234.0	87.40	359.40	5,573.7	5,830.0	176.2	5,832.6	2.27	0.63	-2.19	
11,266.0	87.80	1.00	5,575.1	5,861.9	176.3	5,864.6	5.15	1.25	5.00	
11,297.0	88.50	2.50	5,576.1	5,892.9	177.2	5,895.6	5.34	2.26	4.84	
11,329.0	88.40	5.00	5,577.0	5,924.8	179.3	5,927.5	7.82	-0.31	7.81	
11,360.0	88.80	5.50	5,577.7	5,955.7	182.1	5,958.5	2.07	1.29	1.61	
11,392.0	88.30	4.30	5,578.5	5,987.6	184.9	5,990.4	4.06	-1.56	-3.75	
11,424.0	87.70	1.70	5,579.6	6,019.5	186.6	6,022.4	8.33	-1.88	-8.13	
11,456.0	87.50	2.50	5,581.0	6,051.4	187.7	6,054.4	2.57	-0.63	2.50	
11,487.0	87.70	1.50	5,582.3	6,082.4	188.8	6,085.3	3.29	0.65	-3.23	
11,519.0	88.10	1.80	5,583.4	6,114.4	189.7	6,117.3	1.56	1.25	0.94	
11,551.0	87.80	1.70	5,584.6	6,146.3	190.7	6,149.3	0.99	-0.94	-0.31	
11,582.0	87.60	2.40	5,585.8	6,177.3	191.8	6,180.3	2.35	-0.65	2.26	
11,614.0	88.50	1.80	5,586.9	6,209.2	193.0	6,212.2	3.38	2.81	-1.88	
11,646.0	88.30	2.20	5,587.8	6,241.2	194.1	6,244.2	1.40	-0.63	1.25	
11,678.0	89.20	1.70	5,588.5	6,273.2	195.2	6,276.2	3.22	2.81	-1.56	
11,709.0	89.60	1.70	5,588.8	6,304.2	196.1	6,307.2	1.29	1.29	0.00	
11,741.0	89.30	1.00	5,589.1	6,336.2	196.9	6,339.2	2.38	-0.94	-2.19	
11,773.0	90.30	1.10	5,589.3	6,368.1	197.5	6,371.2	3.14	3.13	0.31	
11,805.0	90.60	1.10	5,589.0	6,400.1	198.1	6,403.2	0.94	0.94	0.00	
11,836.0	90.60	0.30	5,588.7	6,431.1	198.4	6,434.2	2.58	0.00	-2.58	
11,868.0	90.30	0.10	5,588.4	6,463.1	198.6	6,466.2	1.13	-0.94	-0.63	
11,900.0	90.10	0.60	5,588.3	6,495.1	198.8	6,498.2	1.68	-0.63	1.56	
11,931.0	90.00	0.30	5,588.3	6,526.1	199.0	6,529.2	1.02	-0.32	-0.97	
11,963.0	90.10	358.70	5,588.3	6,558.1	198.7	6,561.1	5.01	0.31	-5.00	



<b>Company:</b>	Whiting Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Twomile #15-1033AH
<b>Project:</b>	SEC.15-T11N-R57W	<b>TVD Reference:</b>	RKB @ 4925.5ft (Cade21 kb 16.5)
<b>Site:</b>	Twomile #15-1033H Pad Sec.15-T11N-R57W	<b>MD Reference:</b>	RKB @ 4925.5ft (Cade21 kb 16.5)
<b>Well:</b>	Twomile #15-1033AH	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)	
11,995.0	89.90	358.50	5,588.3	6,590.1	197.9	6,593.1	0.88	-0.63	-0.63	
12,026.0	89.60	358.30	5,588.4	6,621.1	197.1	6,624.0	1.16	-0.97	-0.65	
12,058.0	89.60	0.30	5,588.6	6,653.1	196.7	6,656.0	6.25	0.00	6.25	
12,090.0	89.80	0.30	5,588.8	6,685.1	196.8	6,688.0	0.63	0.63	0.00	
12,121.0	89.80	358.90	5,588.9	6,716.1	196.6	6,719.0	4.52	0.00	-4.52	
12,153.0	89.90	358.70	5,589.0	6,748.1	196.0	6,750.9	0.70	0.31	-0.63	
12,185.0	89.70	358.50	5,589.1	6,780.1	195.2	6,782.9	0.88	-0.63	-0.63	
12,216.0	90.00	358.30	5,589.2	6,811.1	194.3	6,813.8	1.16	0.97	-0.65	
12,228.0	89.80	358.30	5,589.2	6,823.1	194.0	6,825.8	1.67	-1.67	0.00	
12,277.2	89.90	358.30	5,589.3	6,872.2	192.5	6,874.9	0.20	0.20	0.00	
BHL 1991'FSL, 1998'FEL, SEC.10										
12,278.0	89.90	358.30	5,589.3	6,873.0	192.5	6,875.7	0.20	0.20	0.00	

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name		Casing Diameter (")	Hole Diameter (")
6,043.0	5,661.5	7"		7	7-1/2

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