

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Guttersen 31Y-441**

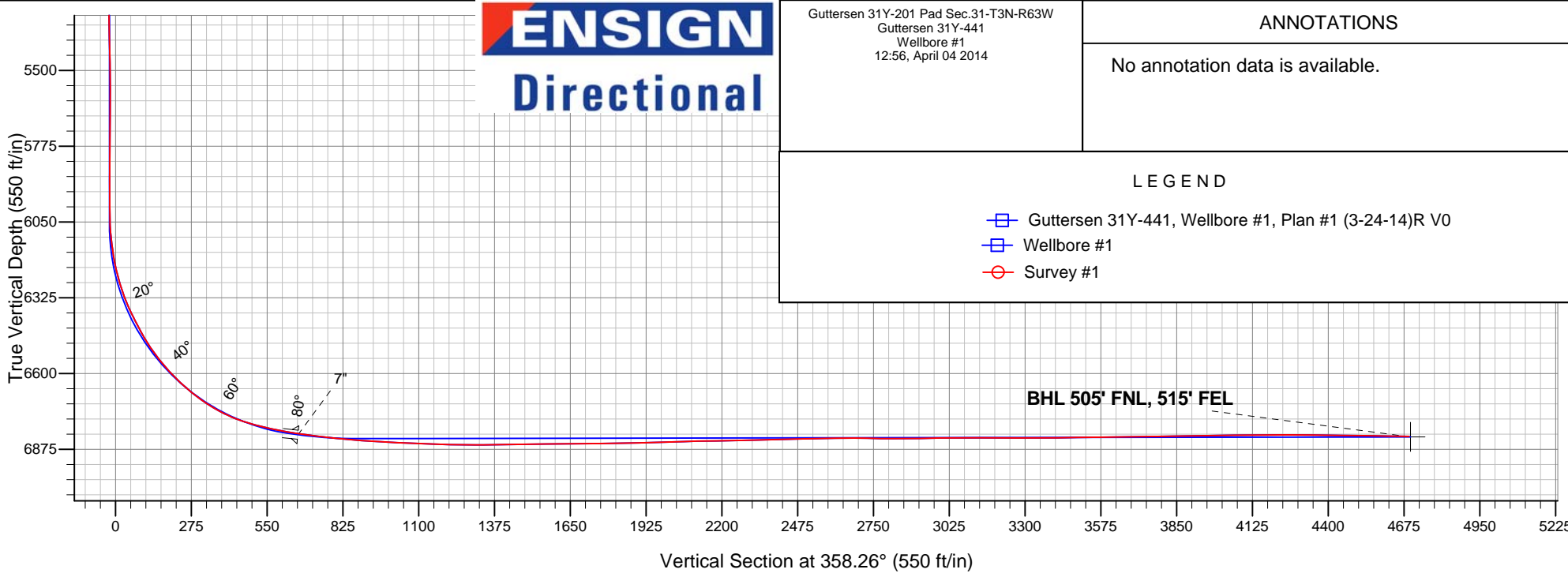
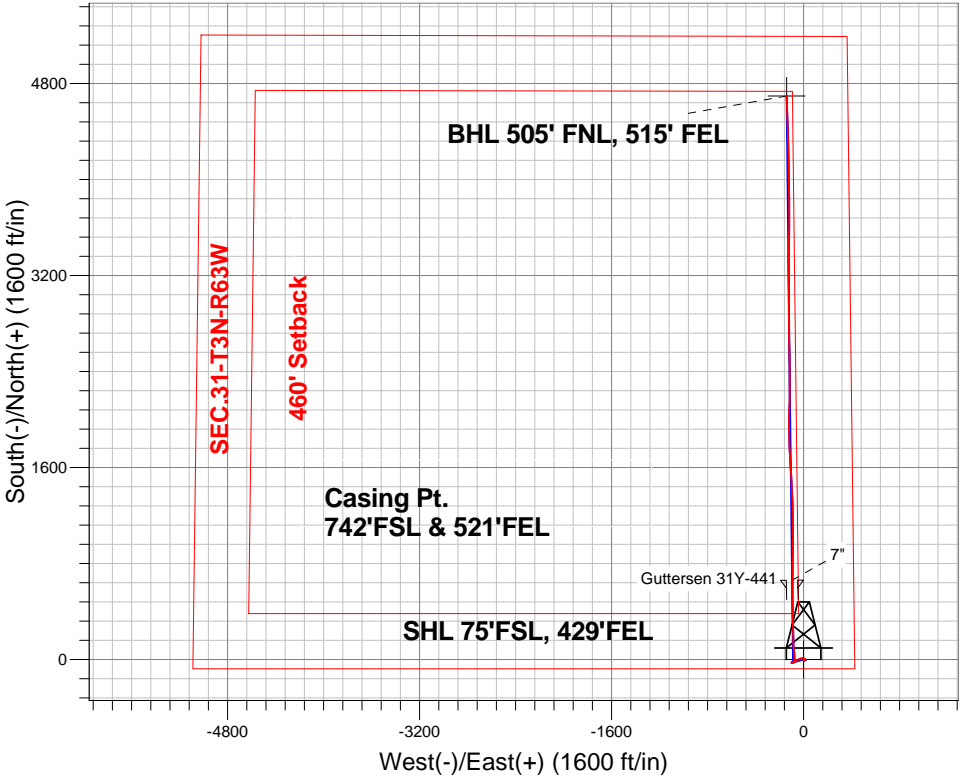
Surface Location: Guttersen 31Y-201 Pad Sec.31-T3N-R63W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4836.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1308211.60	3287124.44	40.174870	-104.472460	
Ensign 136 RKB - 12.5' WELL @ 4848.5ft (Ensign 136 RKB - 12.5')						

FINAL SURVEY

Projected Bottom Hole Location
11218'MD 6828'TVD 4691'N & 141'W of SHL
89.2 degree Incl @ 358.1 degree AZM



Guttersen 31Y-201 Pad Sec.31-T3N-R63W
Guttersen 31Y-441
Wellbore #1
12:56, April 04 2014

ANNOTATIONS

No annotation data is available.

LEGEND

- Guttersen 31Y-441, Wellbore #1, Plan #1 (3-24-14)R V0
- Wellbore #1
- Survey #1



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.31-T3N-R63W

Guttersen 31Y-201 Pad Sec.31-T3N-R63W

Guttersen 31Y-441

Wellbore #1

Survey: Survey #1

Standard Survey Report

04 April, 2014

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Gutteresen 31Y-441
Project:	SEC.31-T3N-R63W	TVD Reference:	WELL @ 4848.5ft (Ensign 136 RKB - 12.5')
Site:	Gutteresen 31Y-201 Pad Sec.31-T3N-R63W	MD Reference:	WELL @ 4848.5ft (Ensign 136 RKB - 12.5')
Well:	Gutteresen 31Y-441	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.31-T3N-R63W, Weld County, Colorado		
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		Guttersen 31Y-201 Pad Sec.31-T3N-R63W			
Site Position:		Northing:	1,308,211.98ft	Latitude:	40.174870
From:	Lat/Long	Easting:	3,287,155.18ft	Longitude:	-104.472350
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.66 °

Well	Gutteresen 31Y-441					
Well Position	+N-S	0.0 ft	Northing:	1,308,211.60 ft	Latitude:	40.174870
	+E-W	0.0 ft	Easting:	3,287,124.44 ft	Longitude:	-104.472460
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,836.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/30/2014	8.31	66.82	52,750

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	358.26	

Survey Program	Date	4/3/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
130.0	11,218.0	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	0.01	138.90	1.0	0.0	0.0	0.0	0.69	0.69	0.00	
SHL 75°FSL, 429°FEL										
130.0	0.90	138.90	130.0	-0.8	0.7	-0.8	0.69	0.69	0.00	
221.0	1.10	134.20	221.0	-1.9	1.8	-2.0	0.24	0.22	-5.16	
316.0	1.20	143.30	316.0	-3.4	3.0	-3.4	0.22	0.11	9.58	
406.0	1.30	148.40	405.9	-5.0	4.1	-5.1	0.17	0.11	5.67	
497.0	0.90	126.80	496.9	-6.3	5.2	-6.4	0.63	-0.44	-23.74	
588.0	1.00	142.10	587.9	-7.3	6.3	-7.5	0.30	0.11	16.81	
679.0	0.40	3.70	678.9	-7.6	6.8	-7.8	1.46	-0.66	-152.09	
770.0	0.40	57.00	769.9	-7.2	7.1	-7.4	0.39	0.00	58.57	
881.0	0.60	32.90	880.9	-6.5	7.7	-6.7	0.26	0.18	-21.71	

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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)
961.0	0.70	77.70	960.9	-6.0	8.4	-6.3	0.63	0.13	56.00
1,056.0	0.90	82.80	1,055.9	-5.8	9.7	-6.1	0.22	0.21	5.37
1,147.0	1.10	101.30	1,146.9	-5.9	11.3	-6.2	0.41	0.22	20.33
1,238.0	1.10	106.00	1,237.9	-6.3	13.0	-6.7	0.10	0.00	5.16
1,329.0	1.30	94.80	1,328.8	-6.6	14.9	-7.1	0.34	0.22	-12.31
1,420.0	0.40	327.00	1,419.8	-6.4	15.7	-6.9	1.73	-0.99	-140.44
1,510.0	0.40	348.30	1,509.8	-5.9	15.5	-6.3	0.16	0.00	23.67
1,601.0	0.40	300.30	1,600.8	-5.4	15.1	-5.8	0.36	0.00	-52.75
1,692.0	0.50	298.00	1,691.8	-5.0	14.5	-5.5	0.11	0.11	-2.53
1,783.0	0.30	332.50	1,782.8	-4.6	14.1	-5.1	0.33	-0.22	37.91
1,874.0	0.20	338.60	1,873.8	-4.3	13.9	-4.7	0.11	-0.11	6.70
1,964.0	0.30	292.00	1,963.8	-4.0	13.6	-4.5	0.24	0.11	-51.78
2,055.0	0.20	259.10	2,054.8	-4.0	13.2	-4.4	0.19	-0.11	-36.15
2,146.0	0.00	66.50	2,145.8	-4.0	13.1	-4.4	0.22	-0.22	0.00
2,240.0	0.40	318.60	2,239.8	-3.8	12.9	-4.2	0.43	0.43	0.00
2,335.0	0.70	353.90	2,334.8	-2.9	12.6	-3.3	0.46	0.32	37.16
2,430.0	1.80	356.50	2,429.8	-0.9	12.4	-1.3	1.16	1.16	2.74
2,526.0	0.60	321.00	2,525.8	1.0	12.0	0.7	1.41	-1.25	-36.98
2,621.0	0.80	310.00	2,620.8	1.8	11.2	1.5	0.25	0.21	-11.58
2,716.0	0.80	298.70	2,715.8	2.6	10.1	2.3	0.17	0.00	-11.89
2,811.0	1.40	300.80	2,810.7	3.5	8.5	3.2	0.63	0.63	2.21
2,906.0	1.70	304.90	2,905.7	4.9	6.4	4.7	0.34	0.32	4.32
3,002.0	2.90	291.10	3,001.6	6.6	3.0	6.5	1.37	1.25	-14.38
3,097.0	3.50	284.60	3,096.5	8.2	-2.1	8.2	0.74	0.63	-6.84
3,192.0	4.10	267.20	3,191.3	8.7	-8.3	9.0	1.36	0.63	-18.32
3,287.0	6.20	263.90	3,285.9	8.0	-16.8	8.5	2.23	2.21	-3.47
3,383.0	6.80	252.30	3,381.3	5.7	-27.4	6.6	1.50	0.63	-12.08
3,478.0	6.70	237.50	3,475.6	1.1	-37.4	2.2	1.83	-0.11	-15.58
3,573.0	7.60	238.60	3,569.9	-5.2	-47.4	-3.7	0.96	0.95	1.16
3,668.0	8.40	238.90	3,663.9	-12.0	-58.7	-10.3	0.84	0.84	0.32
3,764.0	6.60	242.80	3,759.1	-18.2	-69.6	-16.1	1.95	-1.88	4.06
3,859.0	4.80	251.40	3,853.7	-22.0	-78.3	-19.6	2.09	-1.89	9.05
3,954.0	3.20	241.20	3,948.4	-24.5	-84.4	-21.9	1.84	-1.68	-10.74
4,049.0	1.10	276.40	4,043.3	-25.7	-87.6	-23.0	2.51	-2.21	37.05
4,144.0	1.40	277.10	4,138.3	-25.4	-89.6	-22.7	0.32	0.32	0.74
4,239.0	1.40	256.00	4,233.3	-25.6	-91.9	-22.8	0.54	0.00	-22.21
4,334.0	0.90	254.20	4,328.3	-26.1	-93.8	-23.2	0.53	-0.53	-1.89
4,430.0	1.10	289.40	4,424.3	-26.0	-95.4	-23.0	0.66	0.21	36.67
4,525.0	1.10	275.80	4,519.2	-25.6	-97.1	-22.6	0.27	0.00	-14.32
4,620.0	0.90	254.60	4,614.2	-25.7	-98.8	-22.7	0.44	-0.21	-22.32
4,715.0	0.70	239.50	4,709.2	-26.2	-100.0	-23.1	0.30	-0.21	-15.89
4,811.0	1.00	250.20	4,805.2	-26.7	-101.3	-23.7	0.35	0.31	11.15
4,906.0	0.50	139.60	4,900.2	-27.3	-101.8	-24.2	1.33	-0.53	-116.42
5,001.0	0.40	142.10	4,995.2	-27.9	-101.3	-24.8	0.11	-0.11	2.63
5,096.0	0.40	119.60	5,090.2	-28.3	-100.8	-25.3	0.16	0.00	-23.68
5,192.0	0.40	72.30	5,186.2	-28.4	-100.2	-25.3	0.33	0.00	-49.27
5,287.0	1.00	29.40	5,281.2	-27.6	-99.5	-24.5	0.80	0.63	-45.16
5,382.0	2.20	50.70	5,376.2	-25.7	-97.7	-22.7	1.39	1.26	22.42
5,477.0	1.50	32.90	5,471.1	-23.5	-95.6	-20.6	0.94	-0.74	-18.74
5,573.0	1.90	81.60	5,567.1	-22.2	-93.3	-19.4	1.51	0.42	50.73
5,668.0	2.20	106.70	5,662.0	-22.5	-90.0	-19.8	0.99	0.32	26.42
5,763.0	2.10	103.20	5,756.9	-23.4	-86.6	-20.8	0.17	-0.11	-3.68
5,858.0	1.70	100.60	5,851.9	-24.1	-83.5	-21.5	0.43	-0.42	-2.74
5,954.0	1.30	80.00	5,947.9	-24.2	-81.0	-21.7	0.69	-0.42	-21.46

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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)
5,985.0	1.20	82.00	5,978.9	-24.1	-80.4	-21.6	0.35	-0.32	6.45
6,017.0	1.30	61.20	6,010.8	-23.8	-79.7	-21.4	1.44	0.31	-65.00
6,049.0	2.30	32.40	6,042.8	-23.1	-79.0	-20.7	4.12	3.13	-90.00
6,081.0	3.80	6.40	6,074.8	-21.5	-78.6	-19.1	6.26	4.69	-81.25
6,112.0	5.90	4.80	6,105.7	-18.9	-78.3	-16.5	6.79	6.77	-5.16
6,144.0	7.60	4.60	6,137.4	-15.2	-78.0	-12.8	5.31	5.31	-0.63
6,176.0	9.10	3.00	6,169.1	-10.5	-77.7	-8.2	4.74	4.69	-5.00
6,207.0	11.00	2.20	6,199.6	-5.1	-77.5	-2.8	6.15	6.13	-2.58
6,239.0	13.50	2.30	6,230.9	1.7	-77.2	4.0	7.81	7.81	0.31
6,271.0	16.00	2.30	6,261.8	9.8	-76.9	12.1	7.81	7.81	0.00
6,302.0	18.00	0.90	6,291.5	18.9	-76.6	21.2	6.58	6.45	-4.52
6,334.0	20.60	357.40	6,321.7	29.4	-76.8	31.7	8.89	8.13	-10.94
6,366.0	23.20	356.20	6,351.4	41.3	-77.5	43.7	8.24	8.13	-3.75
6,398.0	25.60	356.50	6,380.5	54.5	-78.3	56.9	7.51	7.50	0.94
6,429.0	27.00	356.20	6,408.3	68.2	-79.2	70.6	4.54	4.52	-0.97
6,461.0	28.20	354.20	6,436.7	83.0	-80.5	85.4	4.74	3.75	-6.25
6,493.0	30.00	353.20	6,464.6	98.5	-82.2	100.9	5.83	5.63	-3.13
6,525.0	32.50	353.50	6,492.0	115.0	-84.1	117.5	7.83	7.81	0.94
6,556.0	35.20	355.80	6,517.7	132.2	-85.7	134.7	9.64	8.71	7.42
6,588.0	37.60	358.80	6,543.5	151.1	-86.6	153.7	9.34	7.50	9.38
6,620.0	40.40	0.20	6,568.3	171.3	-86.7	173.8	9.17	8.75	4.38
6,652.0	42.90	0.60	6,592.3	192.5	-86.6	195.1	7.86	7.81	1.25
6,683.0	44.90	0.40	6,614.6	214.0	-86.4	216.5	6.47	6.45	-0.65
6,715.0	46.60	358.60	6,636.9	236.9	-86.6	239.5	6.67	5.31	-5.63
6,747.0	49.30	358.10	6,658.4	260.7	-87.3	263.2	8.52	8.44	-1.56
6,779.0	52.40	357.20	6,678.6	285.5	-88.3	288.0	9.93	9.69	-2.81
6,810.0	55.00	357.10	6,696.9	310.4	-89.6	313.0	8.39	8.39	-0.32
6,842.0	57.90	357.60	6,714.6	337.1	-90.8	339.7	9.16	9.06	1.56
6,874.0	60.40	359.30	6,731.0	364.5	-91.5	367.1	9.05	7.81	5.31
6,905.0	63.60	0.00	6,745.5	391.9	-91.7	394.5	10.51	10.32	2.26
6,937.0	67.10	0.20	6,758.9	421.0	-91.6	423.6	10.95	10.94	0.63
6,969.0	70.80	359.90	6,770.4	450.8	-91.6	453.4	11.60	11.56	-0.94
7,001.0	73.80	359.70	6,780.1	481.3	-91.7	483.9	9.39	9.38	-0.63
7,032.0	75.60	359.70	6,788.3	511.2	-91.9	513.8	5.81	5.81	0.00
7,064.0	77.00	359.90	6,795.9	542.3	-92.0	544.8	4.42	4.38	0.63
7,096.0	77.90	359.90	6,802.8	573.5	-92.0	576.1	2.81	2.81	0.00
7,127.0	79.40	359.90	6,808.9	603.9	-92.1	606.4	4.84	4.84	0.00
7,132.0	79.70	0.00	6,809.8	608.8	-92.1	611.4	6.31	6.00	2.00
7,191.0	82.30	359.90	6,819.1	667.1	-92.1	669.6	4.41	4.41	-0.17
7,222.0	82.20	359.90	6,823.2	697.8	-92.2	700.3	0.32	-0.32	0.00
7,252.0	83.10	0.00	6,827.1	727.6	-92.2	730.0	3.02	3.00	0.33
7,282.0	84.20	0.90	6,830.4	757.4	-92.0	759.8	4.73	3.67	3.00
7,313.0	84.20	0.90	6,833.5	788.2	-91.5	790.6	0.00	0.00	0.00
7,343.0	84.20	1.10	6,836.6	818.1	-91.0	820.5	0.66	0.00	0.67
7,373.0	83.80	0.80	6,839.7	847.9	-90.5	850.3	1.66	-1.33	-1.00
7,403.0	85.00	0.20	6,842.6	877.8	-90.2	880.1	4.47	4.00	-2.00
7,434.0	87.00	0.00	6,844.8	908.7	-90.2	911.0	6.48	6.45	-0.65
7,464.0	87.40	0.20	6,846.3	938.6	-90.1	941.0	1.49	1.33	0.67
7,494.0	87.30	0.20	6,847.6	968.6	-90.0	970.9	0.33	-0.33	0.00
7,525.0	87.30	0.00	6,849.1	999.6	-90.0	1,001.9	0.64	0.00	-0.65
7,555.0	87.30	0.20	6,850.5	1,029.5	-89.9	1,031.8	0.67	0.00	0.67
7,646.0	87.10	359.70	6,855.0	1,120.4	-90.0	1,122.7	0.59	-0.22	-0.55
7,737.0	89.30	359.30	6,857.8	1,211.4	-90.8	1,213.6	2.46	2.42	-0.44

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7,828.0	89.50	358.30	6,858.8	1,302.4	-92.7	1,304.6	1.12	0.22	-1.10
7,918.0	91.50	357.90	6,858.0	1,392.3	-95.7	1,394.6	2.27	2.22	-0.44
8,014.0	90.50	355.80	6,856.3	1,488.1	-100.9	1,490.5	2.42	-1.04	-2.19
8,109.0	90.30	356.00	6,855.6	1,582.9	-107.7	1,585.4	0.30	-0.21	0.21
8,204.0	90.50	356.90	6,855.0	1,677.7	-113.6	1,680.4	0.97	0.21	0.95
8,300.0	91.10	358.30	6,853.6	1,773.6	-117.6	1,776.4	1.59	0.63	1.46
8,395.0	91.30	359.30	6,851.7	1,868.6	-119.6	1,871.3	1.07	0.21	1.05
8,490.0	91.40	359.90	6,849.4	1,963.5	-120.3	1,966.3	0.64	0.11	0.63
8,585.0	91.80	1.50	6,846.8	2,058.5	-119.1	2,061.2	1.74	0.42	1.68
8,680.0	90.70	0.90	6,844.7	2,153.4	-117.1	2,156.0	1.32	-1.16	-0.63
8,776.0	91.10	0.00	6,843.2	2,249.4	-116.4	2,251.9	1.03	0.42	-0.94
8,871.0	91.50	359.90	6,841.0	2,344.4	-116.5	2,346.9	0.43	0.42	-0.11
8,966.0	92.00	359.30	6,838.1	2,439.4	-117.1	2,441.8	0.82	0.53	-0.63
9,061.0	90.80	359.30	6,835.8	2,534.3	-118.3	2,536.7	1.26	-1.26	0.00
9,157.0	90.70	359.00	6,834.5	2,630.3	-119.7	2,632.7	0.33	-0.10	-0.31
9,252.0	88.80	358.80	6,835.0	2,725.3	-121.5	2,727.7	2.01	-2.00	-0.21
9,347.0	90.00	0.00	6,836.0	2,820.3	-122.5	2,822.7	1.79	1.26	1.26
9,442.0	90.70	0.40	6,835.4	2,915.3	-122.2	2,917.6	0.85	0.74	0.42
9,537.0	90.70	359.70	6,834.2	3,010.3	-122.1	3,012.6	0.74	0.00	-0.74
9,632.0	90.40	359.20	6,833.3	3,105.2	-123.0	3,107.5	0.61	-0.32	-0.53
9,728.0	89.80	358.60	6,833.1	3,201.2	-124.9	3,203.5	0.88	-0.63	-0.63
9,823.0	89.70	0.20	6,833.5	3,296.2	-125.9	3,298.5	1.69	-0.11	1.68
9,918.0	90.30	1.80	6,833.5	3,391.2	-124.2	3,393.4	1.80	0.63	1.68
10,013.0	91.30	1.60	6,832.2	3,486.1	-121.4	3,488.2	1.07	1.05	-0.21
10,108.0	90.30	0.80	6,830.9	3,581.1	-119.4	3,583.1	1.35	-1.05	-0.84
10,204.0	91.20	359.70	6,829.6	3,677.1	-119.0	3,679.0	1.48	0.94	-1.15
10,299.0	90.70	359.30	6,828.1	3,772.1	-119.8	3,774.0	0.67	-0.53	-0.42
10,394.0	90.90	359.20	6,826.7	3,867.1	-121.1	3,869.0	0.24	0.21	-0.11
10,489.0	90.80	359.80	6,825.3	3,962.1	-121.9	3,963.9	0.64	-0.11	0.63
10,585.0	90.80	358.60	6,824.0	4,058.0	-123.2	4,059.9	1.25	0.00	-1.25
10,680.0	90.30	359.00	6,823.1	4,153.0	-125.2	4,154.9	0.67	-0.53	0.42
10,775.0	90.10	359.00	6,822.7	4,248.0	-126.9	4,249.9	0.21	-0.21	0.00
10,870.0	89.50	358.30	6,823.1	4,343.0	-129.1	4,344.9	0.97	-0.63	-0.74
10,966.0	89.20	358.10	6,824.2	4,438.9	-132.1	4,440.9	0.38	-0.31	-0.21
11,061.0	89.00	357.90	6,825.7	4,533.8	-135.4	4,535.9	0.30	-0.21	-0.21
11,156.0	89.20	358.30	6,827.1	4,628.8	-138.6	4,630.8	0.47	0.21	0.42
11,165.0	89.20	358.10	6,827.3	4,637.8	-138.9	4,639.8	2.22	0.00	-2.22
11,218.0	89.20	358.10	6,828.0	4,690.7	-140.6	4,692.8	0.00	0.00	0.00
BHL 500' FNL, 517' FEL									

Checked By: _____ Approved By: _____ Date: _____