

# PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Dalton 24L-441**

Surface Location: Dalton SW-24L Pad Sec.24-T7N-R66W  
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

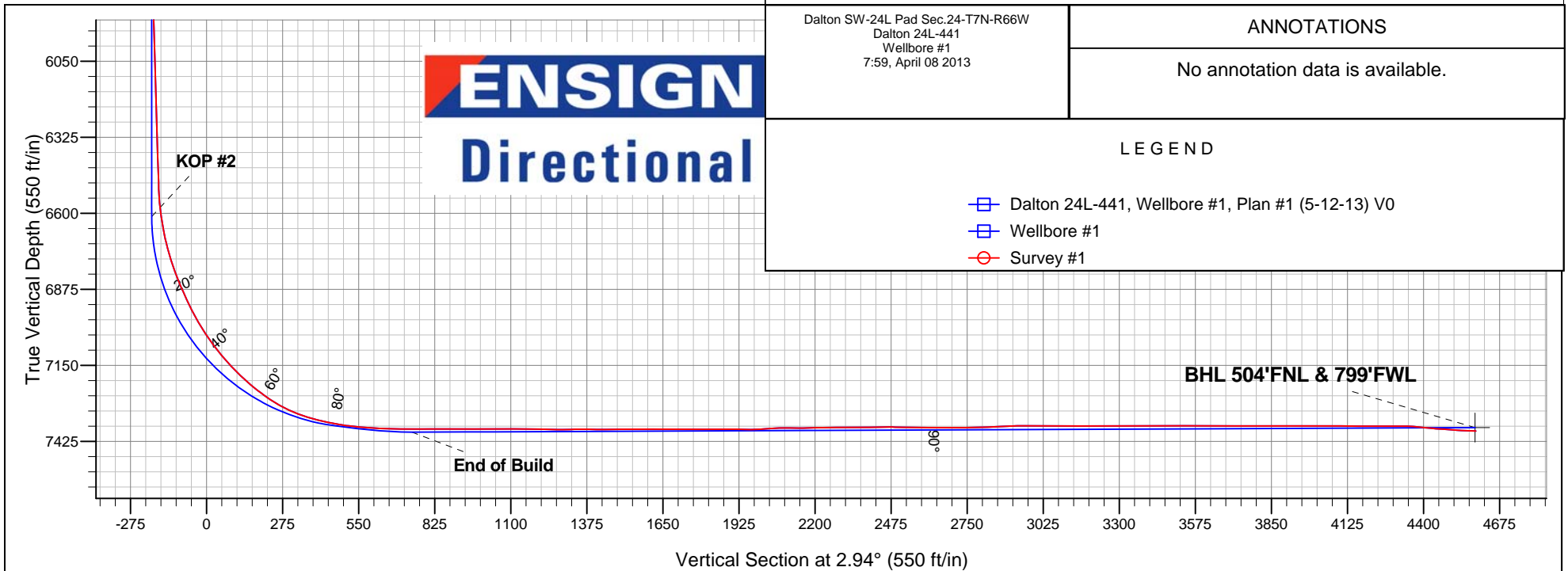
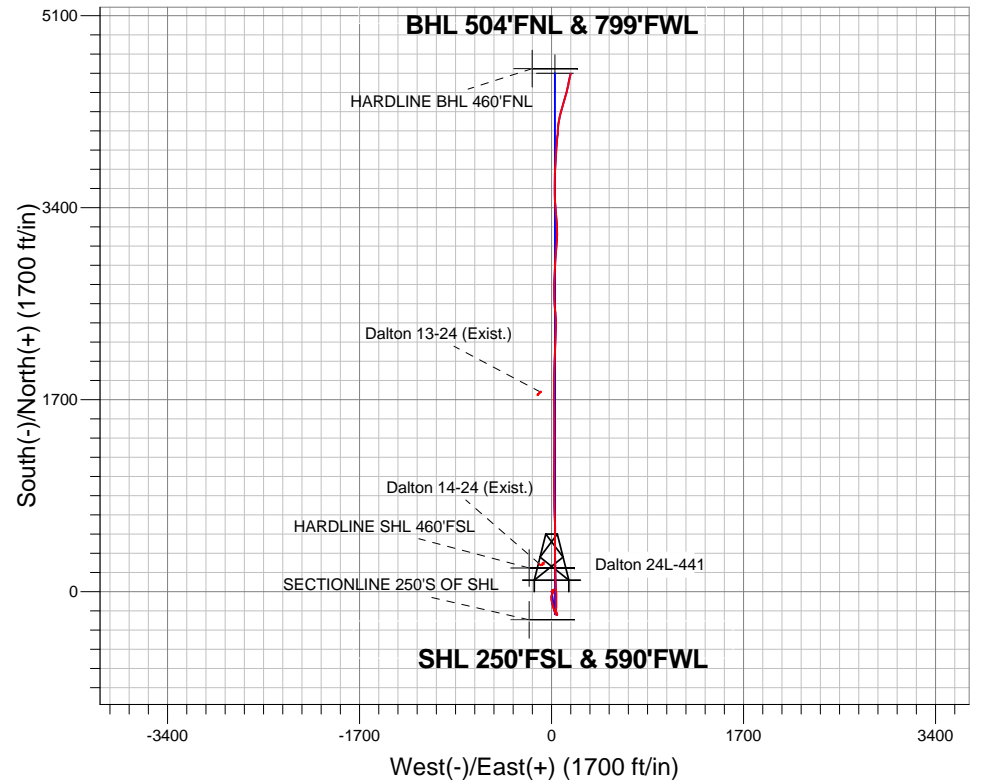
Ground Elevation: 4880.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1445686.75	3213114.75	40.554280	-104.733050	

RKB Ensign 32 - 15' WELL @ 4895.0ft (RKB Ensign 32 - 15')

## FINAL SURVEY

Projected Bottom Hole Location  
11816' MD 7387' TVD 4586' N & 167' E of SHL  
87.6 degree Incl @ 11.9 degree AZM



Dalton SW-24L Pad Sec.24-T7N-R66W  
Dalton 24L-441  
Wellbore #1  
7:59, April 08 2013

### ANNOTATIONS

No annotation data is available.

### LEGEND

- Dalton 24L-441, Wellbore #1, Plan #1 (5-12-13) V0
- Wellbore #1
- Survey #1



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.24-T7N-R66W**

**Dalton SW-24L Pad Sec.24-T7N-R66W**

**Dalton 24L-441**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**08 April, 2013**

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24L-441
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Dalton SW-24L Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Dalton 24L-441	<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.24-T7N-R66W, Weld County, CO		
<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		Dalton SW-24L Pad Sec.24-T7N-R66W			
Site Position:		Northing:	1,445,686.99ft	Latitude:	40.554280
From:	Lat/Long	Easting:	3,213,142.53ft	Longitude:	-104.732950
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.50 °

Well	Dalton 24L-441					
Well Position	+N-S	0.0 ft	Northing:	1,445,686.75 ft	Latitude:	40.554280
	+E-W	0.0 ft	Easting:	3,213,114.75 ft	Longitude:	-104.733050
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,880.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	5/21/2012	8.74	67.15	53,117

<b>Design</b>	Wellbore #1				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	2.94	

<b>Survey Program</b>	<b>Date</b>	4/8/2013			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
123.0	11,816.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
<b>SECTIONLINE 250'S OF SHL</b>										
1.2	0.01	27.60	1.2	0.0	0.0	0.0	0.73	0.73	0.00	
<b>HARDLINE SHL 460'FSL</b>										
32.6	0.24	27.60	32.6	0.1	0.0	0.1	0.73	0.73	0.00	
<b>HARDLINE BHL 460'FNL</b>										
123.0	0.90	27.60	123.0	0.9	0.4	0.9	0.73	0.73	0.00	
212.0	1.10	17.20	212.0	2.3	1.0	2.3	0.30	0.22	-11.69	
300.0	2.00	15.80	299.9	4.6	1.7	4.7	1.02	1.02	-1.59	
394.0	2.20	28.10	393.9	7.7	3.0	7.9	0.52	0.21	13.09	
519.0	1.80	44.50	518.8	11.3	5.5	11.5	0.56	-0.32	13.12	
644.0	1.10	54.50	643.8	13.4	7.8	13.7	0.59	-0.56	8.00	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24L-441
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Dalton SW-24L Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Dalton 24L-441	<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)
770.0	1.40	78.70	769.7	14.4	10.3	14.9	0.48	0.24	19.21
862.0	1.70	67.50	861.7	15.1	12.7	15.7	0.46	0.33	-12.17
968.0	2.90	61.50	967.6	17.0	16.5	17.8	1.15	1.13	-5.66
1,093.0	1.50	214.10	1,092.6	17.1	18.4	18.1	3.43	-1.12	122.08
1,221.0	1.70	220.70	1,220.5	14.3	16.2	15.1	0.21	0.16	5.16
1,313.0	3.80	194.50	1,312.4	10.3	14.5	11.1	2.60	2.28	-28.48
1,405.0	1.90	185.00	1,404.3	5.9	13.6	6.6	2.12	-2.07	-10.33
1,498.0	2.00	194.70	1,497.2	2.8	13.1	3.4	0.37	0.11	10.43
1,590.0	3.80	193.80	1,589.1	-1.8	12.0	-1.1	1.96	1.96	-0.98
1,682.0	4.30	190.10	1,680.9	-8.1	10.6	-7.6	0.61	0.54	-4.02
1,774.0	5.40	212.60	1,772.6	-15.2	7.7	-14.7	2.37	1.20	24.46
1,866.0	6.10	203.30	1,864.1	-23.3	3.4	-23.1	1.26	0.76	-10.11
1,962.0	7.30	197.00	1,959.5	-33.8	-0.4	-33.8	1.46	1.25	-6.56
2,057.0	9.90	183.50	2,053.4	-47.7	-2.6	-47.8	3.45	2.74	-14.21
2,152.0	9.40	170.50	2,147.1	-63.5	-1.9	-63.6	2.35	-0.53	-13.68
2,248.0	9.60	174.70	2,241.7	-79.3	0.2	-79.1	0.75	0.21	4.38
2,375.0	9.40	167.10	2,367.0	-99.9	3.5	-99.6	1.00	-0.16	-5.98
2,502.0	8.70	162.20	2,492.4	-119.2	8.7	-118.6	0.82	-0.55	-3.86
2,629.0	9.40	164.50	2,617.8	-138.3	14.4	-137.4	0.62	0.55	1.81
2,756.0	8.70	160.60	2,743.3	-157.4	20.4	-156.1	0.73	-0.55	-3.07
2,882.0	8.10	159.00	2,867.9	-174.6	26.7	-173.0	0.51	-0.48	-1.27
3,005.0	7.30	152.70	2,989.8	-189.7	33.4	-187.7	0.94	-0.65	-5.12
3,136.0	4.30	149.90	3,120.1	-201.3	39.7	-199.0	2.30	-2.29	-2.14
3,263.0	2.40	120.00	3,246.9	-206.8	44.4	-204.2	1.98	-1.50	-23.54
3,390.0	0.90	46.50	3,373.9	-207.4	47.4	-204.7	1.82	-1.18	-57.87
3,517.0	0.70	58.70	3,500.8	-206.3	48.8	-203.5	0.21	-0.16	9.61
3,644.0	0.40	333.30	3,627.8	-205.5	49.3	-202.7	0.61	-0.24	-67.24
3,771.0	0.40	4.70	3,754.8	-204.7	49.1	-201.9	0.17	0.00	24.72
3,898.0	0.60	359.10	3,881.8	-203.6	49.1	-200.8	0.16	0.16	-4.41
4,025.0	0.30	33.00	4,008.8	-202.6	49.3	-199.8	0.31	-0.24	26.69
4,152.0	0.70	335.00	4,135.8	-201.6	49.2	-198.9	0.47	0.31	-45.67
4,279.0	0.80	344.70	4,262.8	-200.1	48.6	-197.3	0.13	0.08	7.64
4,405.0	0.70	318.60	4,388.8	-198.7	47.9	-195.9	0.28	-0.08	-20.71
4,532.0	0.40	332.20	4,515.8	-197.7	47.1	-195.0	0.26	-0.24	10.71
4,659.0	0.50	334.60	4,642.8	-196.8	46.7	-194.1	0.08	0.08	1.89
4,786.0	0.10	192.60	4,769.8	-196.4	46.4	-193.8	0.46	-0.31	-111.81
4,913.0	0.40	282.80	4,896.8	-196.4	46.0	-193.8	0.32	0.24	71.02
5,040.0	0.40	272.40	5,023.8	-196.3	45.1	-193.7	0.06	0.00	-8.19
5,167.0	0.30	218.10	5,150.8	-196.5	44.5	-194.0	0.26	-0.08	-42.76
5,294.0	0.40	238.30	5,277.8	-197.0	43.9	-194.5	0.12	0.08	15.91
5,420.0	0.70	257.80	5,403.8	-197.4	42.8	-195.0	0.28	0.24	15.48
5,547.0	1.30	236.70	5,530.8	-198.4	40.8	-196.0	0.55	0.47	-16.61
5,674.0	1.20	28.60	5,657.7	-198.0	40.2	-195.7	1.91	-0.08	119.61
5,769.0	1.10	24.00	5,752.7	-196.3	41.1	-193.9	0.14	-0.11	-4.84
5,897.0	1.50	19.60	5,880.7	-193.6	42.1	-191.2	0.32	0.31	-3.44
6,024.0	1.70	1.40	6,007.6	-190.1	42.7	-187.7	0.43	0.16	-14.33
6,151.0	1.40	358.20	6,134.6	-186.7	42.7	-184.3	0.25	-0.24	-2.52
6,279.0	1.70	338.70	6,262.6	-183.4	42.0	-181.0	0.47	0.23	-15.23
6,406.0	2.60	328.30	6,389.5	-179.2	39.8	-176.9	0.77	0.71	-8.19
6,502.0	2.50	328.00	6,485.4	-175.5	37.5	-173.4	0.11	-0.10	-0.31
6,533.0	2.20	324.60	6,516.3	-174.5	36.8	-172.4	1.07	-0.97	-10.97
6,565.0	3.80	346.80	6,548.3	-173.0	36.2	-170.9	6.09	5.00	69.38
6,597.0	6.20	359.10	6,580.2	-170.2	36.0	-168.1	8.17	7.50	38.44

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<b>Site:</b>	Dalton SW-24L Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Dalton 24L-441	<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)
6,629.0	8.60	3.50	6,611.9	-166.1	36.1	-164.0	7.70	7.50	13.75
6,660.0	10.20	10.80	6,642.5	-161.1	36.7	-159.0	6.43	5.16	23.55
6,691.0	11.30	11.70	6,672.9	-155.4	37.9	-153.3	3.59	3.55	2.90
6,723.0	13.50	7.30	6,704.2	-148.6	39.0	-146.4	7.48	6.88	-13.75
6,755.0	15.70	2.10	6,735.2	-140.6	39.6	-138.4	8.00	6.88	-16.25
6,787.0	17.00	0.80	6,765.9	-131.6	39.8	-129.4	4.22	4.06	-4.06
6,819.0	18.80	359.80	6,796.3	-121.8	39.9	-119.5	5.71	5.63	-3.13
6,850.0	21.10	359.10	6,825.5	-111.2	39.8	-109.0	7.46	7.42	-2.26
6,882.0	23.30	359.60	6,855.1	-99.1	39.7	-96.9	6.90	6.88	1.56
6,914.0	24.40	0.00	6,884.3	-86.1	39.6	-84.0	3.47	3.44	1.25
6,945.0	24.00	0.80	6,912.6	-73.4	39.7	-71.3	1.67	-1.29	2.58
6,977.0	25.80	0.50	6,941.6	-60.0	39.8	-57.8	5.64	5.63	-0.94
7,009.0	28.50	0.10	6,970.1	-45.4	39.9	-43.3	8.46	8.44	-1.25
7,041.0	31.00	0.50	6,997.9	-29.5	40.0	-27.4	7.84	7.81	1.25
7,073.0	33.70	358.70	7,024.9	-12.4	39.9	-10.3	8.96	8.44	-5.63
7,105.0	35.10	357.30	7,051.3	5.7	39.2	7.7	5.02	4.38	-4.38
7,136.0	37.00	356.30	7,076.4	23.9	38.2	25.8	6.42	6.13	-3.23
7,168.0	38.60	356.10	7,101.7	43.5	36.9	45.3	5.01	5.00	-0.63
7,200.0	40.30	356.80	7,126.4	63.8	35.7	65.5	5.49	5.31	2.19
7,231.0	42.70	357.00	7,149.6	84.3	34.6	85.9	7.75	7.74	0.65
7,263.0	45.00	358.20	7,172.7	106.4	33.6	108.0	7.64	7.19	3.75
7,295.0	47.30	358.70	7,194.9	129.5	33.0	131.0	7.28	7.19	1.56
7,327.0	50.00	358.20	7,216.0	153.5	32.4	155.0	8.52	8.44	-1.56
7,358.0	51.40	358.50	7,235.6	177.5	31.7	178.9	4.58	4.52	0.97
7,390.0	53.80	358.50	7,255.1	202.9	31.0	204.2	7.50	7.50	0.00
7,422.0	56.50	358.70	7,273.3	229.1	30.4	230.4	8.45	8.44	0.63
7,454.0	59.70	358.50	7,290.3	256.3	29.7	257.5	10.01	10.00	-0.63
7,485.0	63.10	359.10	7,305.1	283.5	29.1	284.6	11.10	10.97	1.94
7,517.0	67.10	359.60	7,318.6	312.5	28.8	313.6	12.58	12.50	1.56
7,549.0	71.00	0.00	7,330.0	342.4	28.7	343.4	12.24	12.19	1.25
7,581.0	73.50	0.70	7,339.8	372.9	28.9	373.9	8.09	7.81	2.19
7,612.0	76.20	0.70	7,347.9	402.8	29.3	403.8	8.71	8.71	0.00
7,644.0	77.80	0.00	7,355.1	434.0	29.4	434.9	5.44	5.00	-2.19
7,676.0	79.60	0.00	7,361.3	465.3	29.4	466.2	5.63	5.63	0.00
7,708.0	82.00	0.00	7,366.4	496.9	29.4	497.8	7.50	7.50	0.00
7,732.0	84.10	359.80	7,369.3	520.8	29.4	521.6	8.79	8.75	-0.83
7,780.0	84.10	359.80	7,374.3	568.5	29.2	569.3	0.00	0.00	0.00
7,799.0	87.40	359.60	7,375.7	587.4	29.1	588.2	17.40	17.37	-1.05
7,830.0	88.00	358.90	7,376.9	618.4	28.7	619.1	2.97	1.94	-2.26
7,862.0	88.00	358.50	7,378.0	650.4	28.0	651.0	1.25	0.00	-1.25
7,893.0	87.90	358.00	7,379.2	681.4	27.1	681.8	1.64	-0.32	-1.61
7,925.0	88.90	357.80	7,380.0	713.3	25.9	713.7	3.19	3.13	-0.63
7,957.0	90.10	358.20	7,380.3	745.3	24.8	745.6	3.95	3.75	1.25
7,989.0	90.50	358.20	7,380.2	777.3	23.8	777.5	1.25	1.25	0.00
8,020.0	90.50	359.10	7,379.9	808.3	23.0	808.4	2.90	0.00	2.90
8,052.0	89.80	358.20	7,379.8	840.3	22.3	840.3	3.56	-2.19	-2.81
8,084.0	90.30	358.90	7,379.8	872.3	21.5	872.2	2.69	1.56	2.19
8,116.0	91.00	359.10	7,379.4	904.2	20.9	904.1	2.28	2.19	0.63
8,148.0	89.40	358.90	7,379.3	936.2	20.4	936.1	5.04	-5.00	-0.63
8,179.0	89.20	359.40	7,379.7	967.2	19.9	967.0	1.74	-0.65	1.61
8,211.0	88.80	0.70	7,380.2	999.2	19.9	998.9	4.25	-1.25	4.06
8,243.0	90.60	1.50	7,380.4	1,031.2	20.5	1,030.9	6.16	5.63	2.50
8,275.0	91.30	1.90	7,379.9	1,063.2	21.5	1,062.9	2.52	2.19	1.25

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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)
8,306.0	90.90	1.20	7,379.3	1,094.2	22.3	1,093.9	2.60	-1.29	-2.26
8,338.0	89.40	0.80	7,379.2	1,126.2	22.9	1,125.9	4.85	-4.69	-1.25
8,370.0	89.10	0.30	7,379.6	1,158.2	23.2	1,157.8	1.82	-0.94	-1.56
8,402.0	88.90	359.80	7,380.2	1,190.2	23.2	1,189.8	1.68	-0.63	-1.56
8,433.0	88.60	359.40	7,380.9	1,221.2	23.0	1,220.7	1.61	-0.97	-1.29
8,465.0	88.90	0.10	7,381.5	1,253.2	22.9	1,252.7	2.38	0.94	2.19
8,499.0	90.50	0.30	7,381.7	1,287.2	23.0	1,286.6	4.74	4.71	0.59
8,529.0	91.30	0.70	7,381.3	1,317.1	23.2	1,316.6	2.98	2.67	1.33
8,560.0	90.00	0.10	7,380.9	1,348.1	23.5	1,347.6	4.62	-4.19	-1.94
8,592.0	89.30	359.60	7,381.1	1,380.1	23.4	1,379.5	2.69	-2.19	-1.56
8,623.0	89.50	359.80	7,381.4	1,411.1	23.2	1,410.5	0.91	0.65	0.65
8,655.0	90.20	0.00	7,381.5	1,443.1	23.2	1,442.4	2.28	2.19	0.63
8,697.0	90.70	0.00	7,381.2	1,485.1	23.2	1,484.4	1.19	1.19	0.00
8,751.0	90.20	0.10	7,380.8	1,539.1	23.2	1,538.3	0.94	-0.93	0.19
8,782.0	89.90	0.00	7,380.7	1,570.1	23.2	1,569.3	1.02	-0.97	-0.32
8,814.0	90.20	359.60	7,380.7	1,602.1	23.1	1,601.2	1.56	0.94	-1.25
8,846.0	90.20	359.20	7,380.6	1,634.1	22.8	1,633.1	1.25	0.00	-1.25
8,878.0	90.00	358.70	7,380.5	1,666.1	22.2	1,665.1	1.68	-0.63	-1.56
8,909.0	90.00	359.10	7,380.5	1,697.1	21.6	1,696.0	1.29	0.00	1.29
8,941.0	89.60	359.60	7,380.6	1,729.1	21.2	1,727.9	2.00	-1.25	1.56
8,973.0	89.10	359.80	7,381.0	1,761.1	21.1	1,759.9	1.68	-1.56	0.63
9,005.0	89.60	0.10	7,381.4	1,793.1	21.0	1,791.8	1.82	1.56	0.94
9,036.0	90.30	359.80	7,381.4	1,824.1	21.0	1,822.8	2.46	2.26	-0.97
9,068.0	90.70	0.00	7,381.1	1,856.1	21.0	1,854.7	1.40	1.25	0.63
9,100.0	90.30	0.00	7,380.8	1,888.1	21.0	1,886.7	1.25	-1.25	0.00
9,132.0	89.30	0.50	7,380.9	1,920.1	21.1	1,918.7	3.49	-3.13	1.56
9,164.0	88.60	0.10	7,381.5	1,952.1	21.3	1,950.6	2.52	-2.19	-1.25
9,195.0	91.30	1.50	7,381.6	1,983.1	21.7	1,981.6	9.81	8.71	4.52
9,227.0	94.00	3.30	7,380.1	2,015.0	23.0	2,013.6	10.14	8.44	5.63
9,259.0	94.70	3.40	7,377.7	2,046.9	24.9	2,045.5	2.21	2.19	0.31
9,291.0	91.30	3.60	7,376.0	2,078.8	26.9	2,077.4	10.64	-10.63	0.63
9,323.0	89.10	3.30	7,375.9	2,110.7	28.8	2,109.4	6.94	-6.88	-0.94
9,354.0	89.50	2.90	7,376.2	2,141.7	30.5	2,140.4	1.82	1.29	-1.29
9,386.0	90.60	2.80	7,376.2	2,173.6	32.0	2,172.4	3.45	3.44	-0.31
9,418.0	91.50	2.80	7,375.6	2,205.6	33.6	2,204.4	2.81	2.81	0.00
9,449.0	91.40	2.60	7,374.8	2,236.5	35.1	2,235.4	0.72	-0.32	-0.65
9,481.0	90.30	2.40	7,374.4	2,268.5	36.5	2,267.4	3.49	-3.44	-0.63
9,513.0	90.40	0.50	7,374.2	2,300.5	37.3	2,299.4	5.95	0.31	-5.94
9,545.0	90.90	359.80	7,373.8	2,332.5	37.4	2,331.3	2.69	1.56	-2.19
9,576.0	89.90	358.70	7,373.6	2,363.5	37.0	2,362.3	4.80	-3.23	-3.55
9,608.0	90.20	358.00	7,373.6	2,395.5	36.0	2,394.2	2.38	0.94	-2.19
9,640.0	90.70	357.00	7,373.3	2,427.4	34.6	2,426.0	3.49	1.56	-3.13
9,671.0	90.70	357.50	7,372.9	2,458.4	33.1	2,456.9	1.61	0.00	1.61
9,703.0	89.00	355.60	7,373.0	2,490.3	31.2	2,488.7	7.97	-5.31	-5.94
9,735.0	89.30	355.90	7,373.5	2,522.3	28.9	2,520.4	1.33	0.94	0.94
9,766.0	89.30	355.90	7,373.9	2,553.2	26.6	2,551.2	0.00	0.00	0.00
9,798.0	88.80	356.10	7,374.4	2,585.1	24.4	2,582.9	1.68	-1.56	0.63
9,830.0	89.10	357.00	7,375.0	2,617.0	22.5	2,614.7	2.96	0.94	2.81
9,861.0	89.70	358.40	7,375.3	2,648.0	21.2	2,645.6	4.91	1.94	4.52
9,893.0	90.60	359.40	7,375.2	2,680.0	20.6	2,677.5	4.20	2.81	3.13
9,925.0	89.60	0.80	7,375.2	2,712.0	20.7	2,709.5	5.38	-3.13	4.38
9,956.0	90.80	2.60	7,375.1	2,743.0	21.6	2,740.5	6.98	3.87	5.81
9,988.0	91.40	4.00	7,374.5	2,774.9	23.4	2,772.5	4.76	1.88	4.38
10,020.0	92.00	3.50	7,373.5	2,806.8	25.5	2,804.4	2.44	1.88	-1.56

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24L-441
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Dalton SW-24L Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Dalton 24L-441	<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)
10,052.0	92.50	3.10	7,372.3	2,838.8	27.4	2,836.4	2.00	1.56	-1.25
10,083.0	92.40	2.60	7,370.9	2,869.7	28.9	2,867.4	1.64	-0.32	-1.61
10,115.0	92.20	3.60	7,369.6	2,901.6	30.6	2,899.4	3.18	-0.63	3.13
10,147.0	92.00	3.80	7,368.5	2,933.5	32.7	2,931.3	0.88	-0.63	0.63
10,178.0	89.80	2.80	7,368.0	2,964.5	34.5	2,962.3	7.80	-7.10	-3.23
10,210.0	89.30	4.30	7,368.2	2,996.4	36.5	2,994.3	4.94	-1.56	4.69
10,242.0	89.60	4.90	7,368.5	3,028.3	39.0	3,026.3	2.10	0.94	1.88
10,274.0	90.10	4.50	7,368.6	3,060.2	41.7	3,058.3	2.00	1.56	-1.25
10,305.0	90.10	3.30	7,368.6	3,091.1	43.8	3,089.3	3.87	0.00	-3.87
10,337.0	88.90	359.80	7,368.9	3,123.1	44.6	3,121.3	11.56	-3.75	-10.94
10,369.0	89.80	0.80	7,369.2	3,155.1	44.8	3,153.2	4.20	2.81	3.13
10,401.0	91.10	2.80	7,369.0	3,187.1	45.8	3,185.2	7.45	4.06	6.25
10,432.0	90.30	0.70	7,368.6	3,218.1	46.7	3,216.2	7.25	-2.58	-6.77
10,464.0	90.10	358.00	7,368.5	3,250.1	46.4	3,248.1	8.46	-0.63	-8.44
10,496.0	89.80	354.60	7,368.5	3,282.0	44.3	3,279.9	10.67	-0.94	-10.63
10,528.0	90.20	354.90	7,368.5	3,313.8	41.4	3,311.6	1.56	1.25	0.94
10,560.0	89.70	353.40	7,368.5	3,345.7	38.1	3,343.2	4.94	-1.56	-4.69
10,591.0	90.50	354.30	7,368.5	3,376.5	34.8	3,373.8	3.88	2.58	2.90
10,623.0	89.50	354.50	7,368.5	3,408.3	31.7	3,405.5	3.19	-3.13	0.63
10,655.0	90.60	357.30	7,368.4	3,440.3	29.4	3,437.2	9.40	3.44	8.75
10,688.0	90.00	357.30	7,368.3	3,473.2	27.8	3,470.1	1.82	-1.82	0.00
10,718.0	89.70	357.80	7,368.4	3,503.2	26.6	3,499.9	1.94	-1.00	1.67
10,750.0	90.20	0.50	7,368.4	3,535.2	26.1	3,531.9	8.58	1.56	8.44
10,782.0	90.30	1.40	7,368.2	3,567.2	26.6	3,563.8	2.83	0.31	2.81
10,813.0	89.70	359.80	7,368.2	3,598.2	26.9	3,594.8	5.51	-1.94	-5.16
10,845.0	89.80	0.10	7,368.4	3,630.2	26.9	3,626.8	0.99	0.31	0.94
10,877.0	90.10	1.20	7,368.4	3,662.2	27.3	3,658.7	3.56	0.94	3.44
10,908.0	89.70	1.00	7,368.5	3,693.2	27.9	3,689.7	1.44	-1.29	-0.65
10,940.0	89.60	2.10	7,368.7	3,725.2	28.7	3,721.7	3.45	-0.31	3.44
10,972.0	90.00	5.20	7,368.8	3,757.1	30.8	3,753.7	9.77	1.25	9.69
11,004.0	90.00	4.20	7,368.8	3,789.0	33.4	3,785.7	3.13	0.00	-3.13
11,035.0	89.50	2.90	7,368.9	3,819.9	35.3	3,816.7	4.49	-1.61	-4.19
11,067.0	90.00	3.60	7,369.0	3,851.9	37.1	3,848.7	2.69	1.56	2.19
11,098.0	90.30	3.80	7,369.0	3,882.8	39.1	3,879.7	1.16	0.97	0.65
11,130.0	89.60	1.70	7,369.0	3,914.8	40.7	3,911.7	6.92	-2.19	-6.56
11,162.0	90.10	4.90	7,369.1	3,946.7	42.5	3,943.7	10.12	1.56	10.00
11,193.0	91.50	6.30	7,368.6	3,977.6	45.5	3,974.6	6.39	4.52	4.52
11,225.0	89.10	4.30	7,368.5	4,009.4	48.5	4,006.6	9.76	-7.50	-6.25
11,257.0	90.10	6.10	7,368.7	4,041.3	51.4	4,038.6	6.43	3.13	5.63
11,288.0	89.70	5.00	7,368.8	4,072.1	54.4	4,069.6	3.78	-1.29	-3.55
11,320.0	89.30	3.60	7,369.0	4,104.0	56.8	4,101.5	4.55	-1.25	-4.38
11,352.0	89.30	5.40	7,369.4	4,135.9	59.3	4,133.5	5.62	0.00	5.63
11,383.0	90.00	9.10	7,369.6	4,166.7	63.2	4,164.4	12.15	2.26	11.94
11,415.0	90.00	11.20	7,369.6	4,198.2	68.8	4,196.2	6.56	0.00	6.56
11,447.0	89.80	13.80	7,369.7	4,229.4	75.8	4,227.7	8.15	-0.63	8.13
11,479.0	90.20	16.30	7,369.7	4,260.3	84.1	4,259.0	7.91	1.25	7.81
11,510.0	90.00	17.70	7,369.6	4,290.0	93.1	4,289.1	4.56	-0.65	4.52
11,542.0	89.60	17.20	7,369.7	4,320.5	102.7	4,320.1	2.00	-1.25	-1.56
11,574.0	87.50	16.10	7,370.5	4,351.1	111.9	4,351.1	7.41	-6.56	-3.44
11,606.0	84.90	15.10	7,372.7	4,381.9	120.5	4,382.3	8.70	-8.13	-3.13
11,637.0	84.00	13.70	7,375.7	4,411.8	128.2	4,412.5	5.35	-2.90	-4.52
11,669.0	85.40	13.70	7,378.6	4,442.7	135.7	4,443.8	4.38	4.38	0.00
11,701.0	85.50	12.80	7,381.1	4,473.8	143.0	4,475.2	2.82	0.31	-2.81

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24L-441
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Dalton SW-24L Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Dalton 24L-441	<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)
11,732.0	86.40	11.70	7,383.3	4,504.0	149.6	4,505.7	4.58	2.90	-3.55
11,764.0	87.60	11.90	7,385.0	4,535.3	156.1	4,537.3	3.80	3.75	0.63
11,791.1	87.60	11.90	7,386.1	4,561.8	161.7	4,564.1	0.00	0.00	0.00
<b>BHL 500'FNL &amp; 660'FWL</b>									
11,816.0	87.60	11.90	7,387.2	4,586.1	166.8	4,588.6	0.00	0.00	0.00

Checked By: _____	Approved By: _____	Date: _____
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