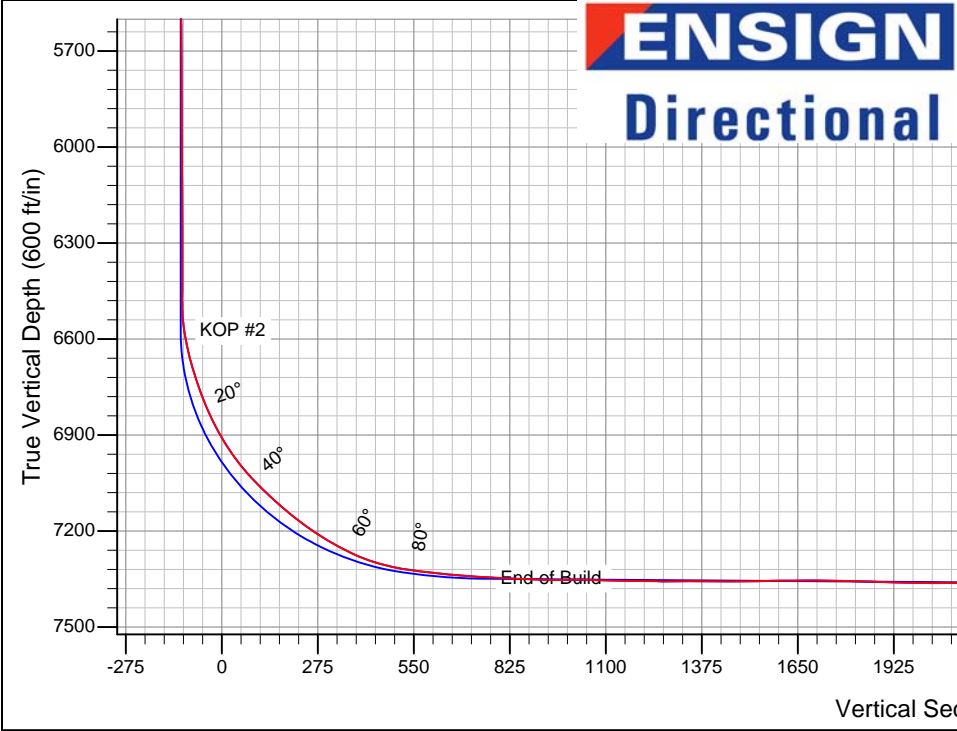
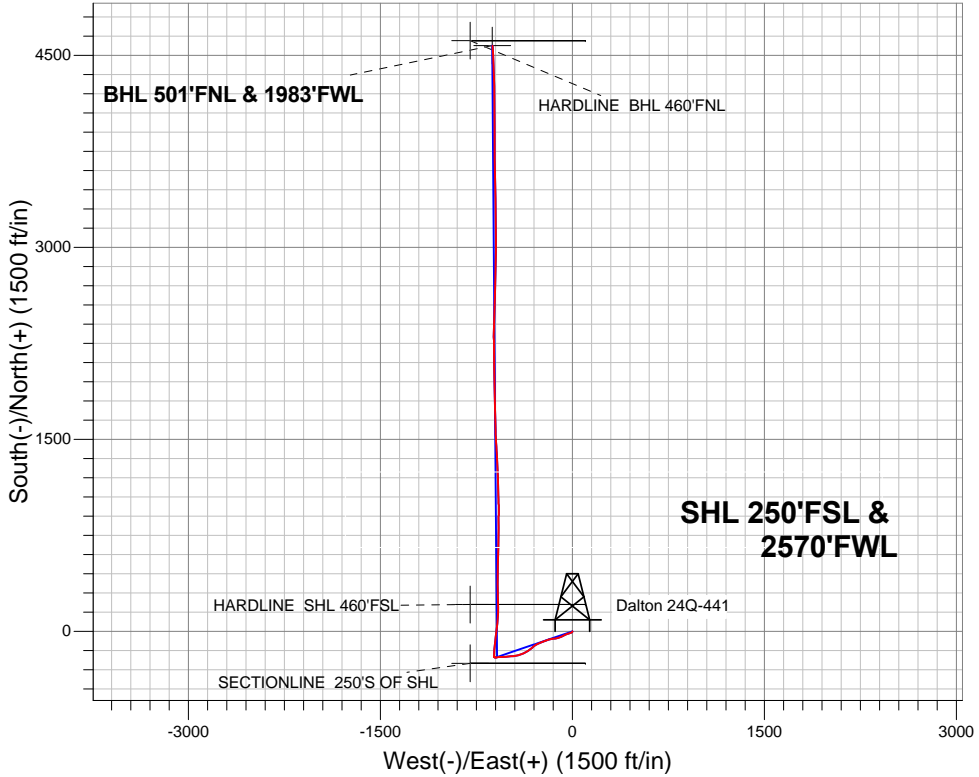


PETROLEUM DEVELOPMENT CORP Weld County CO

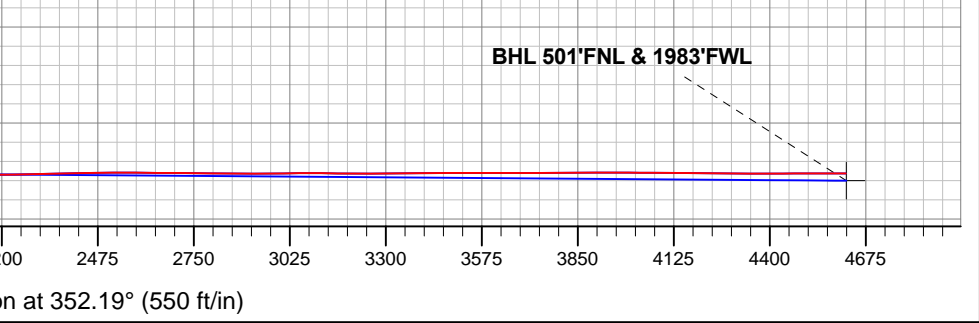
Well Name: **Dalton 24Q-441**  
Surface Location: Dalton 24Q-241 Pad Sec.24-T7N-R66W  
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone  
Ground Elevation: 4865.0  
+N/-S +E/-W Northing Easting Latitude Longitude Slot  
0.0 0.0 1445711.21 3215093.09 40.554300 -104.725930  
RKB - 15' WELL @ 4880.0ft (RKB - 15')

FINAL SURVEY

Projected Bottom Hole Location  
11797'MD 7357'TVD 4575'N &  
625'W of SHL 90.30 degree Incl  
@ 357.20 degree AZM



Dalton 24Q-241 Pad Sec.24-T7N-R66W Dalton 24Q-441 Wellbore #1 8:00, May 15 2013	ANNOTATIONS
	No annotation data is available.
LEGEND	
Dalton 24Q-441, Wellbore #1, Plan #3 (5-02-13) V0	
Wellbore #1	
Survey #1	





# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.24-T7N-R66W**

**Dalton 24Q-241 Pad Sec.24-T7N-R66W**

**Dalton 24Q-441**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**15 May, 2013**



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24Q-441
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4880.0ft (RKB - 15')
<b>Site:</b>	Dalton 24Q-241 Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4880.0ft (RKB - 15')
<b>Well:</b>	Dalton 24Q-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)
705.0	6.10	252.80	703.6	-17.3	-30.4	-13.0	0.43	0.43	0.00
800.0	6.60	251.90	798.0	-20.5	-40.4	-14.8	0.54	0.53	-0.95
872.0	7.00	251.90	869.5	-23.2	-48.5	-16.3	0.56	0.56	0.00
965.0	7.70	244.40	961.7	-27.6	-59.5	-19.3	1.28	0.75	-8.06
1,057.0	7.90	244.20	1,052.9	-33.0	-70.8	-23.1	0.22	0.22	-0.22
1,183.0	8.00	245.80	1,177.7	-40.4	-86.6	-28.2	0.19	0.08	1.27
1,307.0	8.00	246.50	1,300.5	-47.4	-102.4	-33.0	0.08	0.00	0.56
1,430.0	7.90	257.00	1,422.3	-52.7	-118.5	-36.1	1.18	-0.08	8.54
1,551.0	7.40	260.30	1,542.2	-55.9	-134.2	-37.1	0.55	-0.41	2.73
1,674.0	9.10	266.00	1,663.9	-57.9	-151.7	-36.7	1.53	1.38	4.63
1,796.0	7.80	254.90	1,784.6	-60.7	-169.4	-37.1	1.70	-1.07	-9.10
1,922.0	7.70	260.50	1,909.5	-64.3	-185.9	-38.5	0.60	-0.08	4.44
2,048.0	8.90	250.70	2,034.2	-68.9	-203.5	-40.6	1.47	0.95	-7.78
2,175.0	7.30	240.30	2,159.9	-76.2	-219.8	-45.6	1.70	-1.26	-8.19
2,302.0	8.40	251.00	2,285.7	-83.2	-235.5	-50.4	1.44	0.87	8.43
2,429.0	7.60	250.90	2,411.5	-89.0	-252.2	-53.9	0.63	-0.63	-0.08
2,556.0	9.00	243.30	2,537.1	-96.2	-269.1	-58.7	1.40	1.10	-5.98
2,682.0	8.10	240.70	2,661.7	-105.0	-285.6	-65.2	0.78	-0.71	-2.06
2,809.0	10.00	230.30	2,787.2	-116.4	-301.9	-74.3	1.97	1.50	-8.19
2,936.0	9.60	228.50	2,912.3	-130.4	-318.3	-86.0	0.40	-0.31	-1.42
3,063.0	11.00	236.10	3,037.3	-144.2	-336.3	-97.2	1.53	1.10	5.98
3,191.0	9.50	234.50	3,163.2	-157.2	-355.0	-107.4	1.19	-1.17	-1.25
3,318.0	10.00	248.00	3,288.4	-167.4	-373.8	-115.0	1.84	0.39	10.63
3,445.0	9.00	244.90	3,413.7	-175.7	-393.0	-120.7	0.88	-0.79	-2.44
3,571.0	8.60	252.40	3,538.2	-182.8	-410.9	-125.2	0.96	-0.32	5.95
3,698.0	9.20	259.50	3,663.7	-187.5	-430.0	-127.3	0.98	0.47	5.59
3,825.0	7.60	256.50	3,789.3	-191.3	-448.1	-128.6	1.31	-1.26	-2.36
3,952.0	9.30	264.90	3,914.9	-194.2	-466.5	-128.9	1.65	1.34	6.61
4,080.0	9.50	266.30	4,041.2	-195.8	-487.3	-127.7	0.24	0.16	1.09
4,206.0	9.20	265.60	4,165.5	-197.2	-507.8	-126.4	0.25	-0.24	-0.56
4,334.0	8.40	264.70	4,292.0	-198.9	-527.3	-125.3	0.63	-0.63	-0.70
4,461.0	7.70	271.20	4,417.8	-199.5	-545.0	-123.6	0.90	-0.55	5.12
4,587.0	6.90	268.30	4,542.7	-199.6	-561.0	-121.5	0.70	-0.63	-2.30
4,713.0	6.30	264.70	4,667.9	-200.4	-575.5	-120.4	0.58	-0.48	-2.86
4,808.0	7.00	254.40	4,762.3	-202.5	-586.2	-120.9	1.45	0.74	-10.84
4,903.0	4.30	258.90	4,856.8	-204.7	-595.3	-121.9	2.88	-2.84	4.74
5,030.0	3.00	285.80	4,983.5	-204.7	-603.2	-120.8	1.67	-1.02	21.18
5,157.0	0.80	302.40	5,110.5	-203.4	-607.1	-118.9	1.77	-1.73	13.07
5,284.0	0.50	292.00	5,237.5	-202.7	-608.4	-118.1	0.25	-0.24	-8.19
5,411.0	0.40	317.10	5,364.5	-202.1	-609.2	-117.5	0.17	-0.08	19.76
5,538.0	0.40	306.60	5,491.4	-201.6	-609.9	-116.8	0.06	0.00	-8.27
5,665.0	0.30	355.30	5,618.4	-201.0	-610.2	-116.1	0.24	-0.08	38.35
5,792.0	0.30	51.20	5,745.4	-200.4	-610.0	-115.6	0.22	0.00	44.02
5,919.0	0.30	324.20	5,872.4	-199.9	-609.9	-115.2	0.33	0.00	-68.50
6,046.0	0.50	329.30	5,999.4	-199.2	-610.4	-114.4	0.16	0.16	4.02
6,173.0	0.40	266.10	6,126.4	-198.8	-611.1	-113.8	0.38	-0.08	-49.76
6,300.0	0.40	300.30	6,253.4	-198.6	-612.0	-113.5	0.19	0.00	26.93
6,427.0	0.40	250.90	6,380.4	-198.5	-612.8	-113.3	0.26	0.00	-38.90
6,491.0	0.70	244.00	6,444.4	-198.7	-613.3	-113.5	0.48	0.47	-10.78
6,522.0	0.40	254.00	6,475.4	-198.8	-613.6	-113.6	1.01	-0.97	32.26
6,554.0	1.70	328.90	6,507.4	-198.5	-614.0	-113.2	5.13	4.06	234.06
6,586.0	4.70	356.00	6,539.4	-196.7	-614.3	-111.4	10.25	9.38	84.69
6,618.0	7.70	2.00	6,571.2	-193.3	-614.3	-108.0	9.58	9.38	18.75

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24Q-441
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4880.0ft (RKB - 15')
<b>Site:</b>	Dalton 24Q-241 Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4880.0ft (RKB - 15')
<b>Well:</b>	Dalton 24Q-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)
6,650.0	10.10	1.60	6,602.8	-188.3	-614.2	-103.1	7.50	7.50	-1.25
6,681.0	11.90	1.10	6,633.2	-182.4	-614.0	-97.3	5.81	5.81	-1.61
6,713.0	13.50	359.50	6,664.4	-175.4	-614.0	-90.3	5.12	5.00	-5.00
6,745.0	15.60	0.50	6,695.4	-167.4	-614.0	-82.3	6.61	6.56	3.13
6,776.0	16.70	2.50	6,725.2	-158.7	-613.8	-73.8	3.98	3.55	6.45
6,808.0	18.30	4.80	6,755.7	-149.1	-613.1	-64.4	5.45	5.00	7.19
6,840.0	20.20	5.80	6,785.9	-138.6	-612.2	-54.1	6.03	5.94	3.13
6,872.0	22.20	7.20	6,815.7	-127.1	-610.8	-42.9	6.45	6.25	4.38
6,904.0	24.20	7.20	6,845.2	-114.6	-609.3	-30.7	6.25	6.25	0.00
6,935.0	27.30	8.10	6,873.1	-101.3	-607.5	-17.8	10.08	10.00	2.90
6,967.0	28.40	9.70	6,901.4	-86.5	-605.1	-3.5	4.16	3.44	5.00
6,998.0	30.60	9.90	6,928.3	-71.5	-602.5	11.1	7.10	7.10	0.65
7,030.0	33.30	7.80	6,955.5	-54.8	-600.0	27.3	9.12	8.44	-6.56
7,062.0	36.10	6.50	6,981.8	-36.7	-597.7	44.9	9.05	8.75	-4.06
7,093.0	38.80	6.70	7,006.4	-18.0	-595.5	63.2	8.72	8.71	0.65
7,125.0	40.60	6.90	7,031.0	2.3	-593.1	82.9	5.64	5.63	0.63
7,157.0	43.20	5.30	7,054.9	23.6	-590.8	103.7	8.78	8.13	-5.00
7,189.0	44.40	5.80	7,077.9	45.6	-588.7	125.2	3.90	3.75	1.56
7,220.0	45.90	4.80	7,099.8	67.5	-586.7	146.6	5.35	4.84	-3.23
7,252.0	47.20	2.80	7,121.8	90.7	-585.1	169.4	6.09	4.06	-6.25
7,283.0	48.20	1.20	7,142.7	113.6	-584.3	192.0	5.00	3.23	-5.16
7,315.0	49.80	2.50	7,163.7	137.7	-583.6	215.8	5.87	5.00	4.06
7,347.0	51.70	1.10	7,183.9	162.5	-582.8	240.2	6.84	5.94	-4.38
7,378.0	54.20	359.70	7,202.6	187.2	-582.6	264.7	8.83	8.06	-4.52
7,410.0	56.50	359.30	7,220.8	213.6	-582.8	290.8	7.26	7.19	-1.25
7,442.0	58.20	359.30	7,238.1	240.5	-583.2	317.6	5.31	5.31	0.00
7,474.0	60.20	359.30	7,254.4	268.0	-583.5	344.8	6.25	6.25	0.00
7,505.0	63.00	359.30	7,269.2	295.3	-583.8	371.9	9.03	9.03	0.00
7,537.0	66.70	359.00	7,282.8	324.2	-584.3	400.6	11.59	11.56	-0.94
7,568.0	70.50	358.80	7,294.1	353.1	-584.8	429.3	12.27	12.26	-0.65
7,600.0	73.20	0.00	7,304.1	383.5	-585.1	459.5	9.16	8.44	3.75
7,632.0	76.80	0.90	7,312.3	414.4	-584.9	490.0	11.57	11.25	2.81
7,664.0	80.10	1.40	7,318.7	445.7	-584.3	521.0	10.43	10.31	1.56
7,689.0	82.40	2.00	7,322.5	470.4	-583.5	545.4	9.50	9.20	2.40
7,746.0	82.50	1.50	7,330.0	526.9	-581.8	601.1	0.89	0.18	-0.88
7,777.0	84.40	1.10	7,333.6	557.7	-581.1	631.5	6.26	6.13	-1.29
7,809.0	84.70	1.10	7,336.6	589.5	-580.5	663.0	0.94	0.94	0.00
7,840.0	85.30	0.90	7,339.3	620.4	-580.0	693.5	2.04	1.94	-0.65
7,872.0	85.60	0.70	7,341.9	652.3	-579.5	725.0	1.13	0.94	-0.63
7,904.0	86.10	0.70	7,344.2	684.2	-579.1	756.6	1.56	1.56	0.00
7,935.0	86.60	0.50	7,346.1	715.1	-578.8	787.2	1.74	1.61	-0.65
7,967.0	87.10	0.70	7,347.9	747.1	-578.5	818.8	1.68	1.56	0.63
7,999.0	87.50	0.70	7,349.4	779.1	-578.1	850.4	1.25	1.25	0.00
8,031.0	87.90	0.70	7,350.7	811.0	-577.7	882.0	1.25	1.25	0.00
8,062.0	88.20	0.50	7,351.7	842.0	-577.4	912.7	1.16	0.97	-0.65
8,094.0	87.80	359.70	7,352.9	874.0	-577.3	944.4	2.79	-1.25	-2.50
8,126.0	92.20	0.50	7,352.9	906.0	-577.2	976.0	13.98	13.75	2.50
8,158.0	92.10	0.40	7,351.7	938.0	-577.0	1,007.7	0.44	-0.31	-0.31
8,189.0	88.70	359.70	7,351.4	969.0	-577.0	1,038.4	11.20	-10.97	-2.26
8,221.0	87.20	358.60	7,352.6	1,000.9	-577.4	1,070.1	5.81	-4.69	-3.44
8,253.0	86.70	358.10	7,354.3	1,032.9	-578.4	1,101.9	2.21	-1.56	-1.56
8,284.0	89.50	358.80	7,355.3	1,063.8	-579.2	1,132.7	9.31	9.03	2.26
8,316.0	90.10	358.60	7,355.4	1,095.8	-579.9	1,164.5	1.98	1.88	-0.63

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24Q-441
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4880.0ft (RKB - 15')
<b>Site:</b>	Dalton 24Q-241 Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4880.0ft (RKB - 15')
<b>Well:</b>	Dalton 24Q-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)
8,348.0	88.90	358.10	7,355.7	1,127.8	-580.9	1,196.3	4.06	-3.75	-1.56
8,380.0	88.50	357.70	7,356.4	1,159.8	-582.0	1,228.1	1.77	-1.25	-1.25
8,412.0	89.90	358.30	7,356.9	1,191.8	-583.1	1,260.0	4.76	4.38	1.88
8,443.0	90.90	358.60	7,356.7	1,222.7	-584.0	1,290.8	3.37	3.23	0.97
8,475.0	89.60	357.70	7,356.5	1,254.7	-585.0	1,322.6	4.94	-4.06	-2.81
8,507.0	89.30	357.20	7,356.8	1,286.7	-586.4	1,354.5	1.82	-0.94	-1.56
8,539.0	90.20	357.60	7,357.0	1,318.7	-587.9	1,386.3	3.08	2.81	1.25
8,570.0	90.10	357.00	7,356.9	1,349.6	-589.3	1,417.2	1.96	-0.32	-1.94
8,602.0	89.80	356.90	7,356.9	1,381.6	-591.0	1,449.1	0.99	-0.94	-0.31
8,634.0	90.00	356.50	7,357.0	1,413.5	-592.9	1,481.0	1.40	0.63	-1.25
8,665.0	90.70	356.30	7,356.8	1,444.5	-594.8	1,511.9	2.35	2.26	-0.65
8,697.0	91.20	356.70	7,356.3	1,476.4	-596.8	1,543.8	2.00	1.56	1.25
8,729.0	91.30	357.00	7,355.6	1,508.3	-598.5	1,575.7	0.99	0.31	0.94
8,760.0	91.10	357.90	7,354.9	1,539.3	-599.9	1,606.6	2.97	-0.65	2.90
8,792.0	90.70	358.10	7,354.4	1,571.3	-601.0	1,638.4	1.40	-1.25	0.63
8,824.0	90.20	357.90	7,354.2	1,603.3	-602.2	1,670.2	1.68	-1.56	-0.63
8,856.0	89.50	358.30	7,354.2	1,635.2	-603.2	1,702.1	2.52	-2.19	1.25
8,887.0	88.90	359.00	7,354.7	1,666.2	-604.0	1,732.9	2.97	-1.94	2.26
8,919.0	89.00	359.00	7,355.3	1,698.2	-604.5	1,764.6	0.31	0.31	0.00
8,951.0	88.10	359.10	7,356.1	1,730.2	-605.0	1,796.4	2.83	-2.81	0.31
8,982.0	87.80	358.60	7,357.2	1,761.2	-605.7	1,827.2	1.88	-0.97	-1.61
9,014.0	88.10	358.60	7,358.3	1,793.2	-606.4	1,859.0	0.94	0.94	0.00
9,046.0	88.40	358.40	7,359.3	1,825.1	-607.3	1,890.7	1.13	0.94	-0.63
9,077.0	88.40	358.60	7,360.2	1,856.1	-608.1	1,921.5	0.64	0.00	0.65
9,109.0	88.50	359.00	7,361.0	1,888.1	-608.8	1,953.3	1.29	0.31	1.25
9,141.0	89.10	359.00	7,361.7	1,920.1	-609.3	1,985.1	1.88	1.88	0.00
9,173.0	89.30	359.30	7,362.1	1,952.1	-609.8	2,016.8	1.13	0.63	0.94
9,204.0	90.00	359.10	7,362.3	1,983.1	-610.2	2,047.6	2.35	2.26	-0.65
9,236.0	90.10	359.10	7,362.3	2,015.1	-610.7	2,079.4	0.31	0.31	0.00
9,268.0	90.30	358.90	7,362.2	2,047.1	-611.3	2,111.2	0.88	0.63	-0.63
9,299.0	90.30	358.40	7,362.0	2,078.0	-612.0	2,142.0	1.61	0.00	-1.61
9,331.0	90.60	359.00	7,361.8	2,110.0	-612.7	2,173.7	2.10	0.94	1.88
9,363.0	90.80	358.80	7,361.4	2,142.0	-613.4	2,205.5	0.88	0.63	-0.63
9,395.0	91.40	359.50	7,360.8	2,174.0	-613.8	2,237.3	2.88	1.88	2.19
9,426.0	91.50	359.30	7,360.0	2,205.0	-614.2	2,268.0	0.72	0.32	-0.65
9,458.0	91.20	359.80	7,359.2	2,237.0	-614.4	2,299.8	1.82	-0.94	1.56
9,490.0	91.30	359.50	7,358.5	2,269.0	-614.6	2,331.5	0.99	0.31	-0.94
9,522.0	91.50	359.50	7,357.8	2,301.0	-614.9	2,363.2	0.63	0.63	0.00
9,554.0	91.30	359.80	7,357.0	2,333.0	-615.1	2,394.9	1.13	-0.63	0.94
9,585.0	90.90	0.70	7,356.4	2,364.0	-614.9	2,425.6	3.18	-1.29	2.90
9,617.0	91.10	1.40	7,355.8	2,396.0	-614.4	2,457.2	2.27	0.63	2.19
9,649.0	90.90	2.00	7,355.3	2,427.9	-613.4	2,488.8	1.98	-0.63	1.88
9,680.0	90.70	2.50	7,354.8	2,458.9	-612.2	2,519.3	1.74	-0.65	1.61
9,712.0	90.00	2.30	7,354.6	2,490.9	-610.9	2,550.8	2.28	-2.19	-0.63
9,744.0	89.40	2.50	7,354.8	2,522.8	-609.5	2,582.3	1.98	-1.88	0.63
9,775.0	89.20	2.30	7,355.2	2,553.8	-608.2	2,612.8	0.91	-0.65	-0.65
9,807.0	89.30	2.10	7,355.6	2,585.8	-607.0	2,644.3	0.70	0.31	-0.63
9,839.0	89.60	1.40	7,355.9	2,617.8	-606.0	2,675.9	2.38	0.94	-2.19
9,871.0	89.90	1.80	7,356.1	2,649.8	-605.1	2,707.4	1.56	0.94	1.25
9,902.0	89.40	1.60	7,356.2	2,680.7	-604.2	2,738.0	1.74	-1.61	-0.65
9,934.0	89.50	0.90	7,356.5	2,712.7	-603.5	2,769.6	2.21	0.31	-2.19
9,966.0	89.10	1.40	7,356.9	2,744.7	-602.9	2,801.2	2.00	-1.25	1.56
9,998.0	89.20	1.20	7,357.4	2,776.7	-602.1	2,832.8	0.70	0.31	-0.63
10,029.0	89.50	0.90	7,357.8	2,807.7	-601.6	2,863.4	1.37	0.97	-0.97

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24Q-441
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4880.0ft (RKB - 15')
<b>Site:</b>	Dalton 24Q-241 Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4880.0ft (RKB - 15')
<b>Well:</b>	Dalton 24Q-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)
10,061.0	90.00	0.90	7,357.9	2,839.7	-601.1	2,895.1	1.56	1.56	0.00
10,093.0	90.10	0.70	7,357.9	2,871.7	-600.6	2,926.7	0.70	0.31	-0.63
10,125.0	90.30	0.40	7,357.8	2,903.7	-600.3	2,958.4	1.13	0.63	-0.94
10,156.0	90.70	0.70	7,357.5	2,934.7	-600.0	2,989.0	1.61	1.29	0.97
10,188.0	91.00	0.70	7,357.0	2,966.7	-599.6	3,020.7	0.94	0.94	0.00
10,219.0	90.90	0.40	7,356.5	2,997.7	-599.3	3,051.3	1.02	-0.32	-0.97
10,251.0	90.10	0.40	7,356.2	3,029.7	-599.1	3,083.0	2.50	-2.50	0.00
10,283.0	89.20	359.80	7,356.4	3,061.7	-599.0	3,114.7	3.38	-2.81	-1.88
10,315.0	89.20	359.50	7,356.9	3,093.7	-599.2	3,146.4	0.94	0.00	-0.94
10,346.0	89.40	359.30	7,357.2	3,124.7	-599.6	3,177.2	0.91	0.65	-0.65
10,378.0	89.50	359.30	7,357.6	3,156.7	-600.0	3,208.9	0.31	0.31	0.00
10,410.0	89.90	359.30	7,357.7	3,188.7	-600.3	3,240.7	1.25	1.25	0.00
10,441.0	90.10	359.80	7,357.7	3,219.7	-600.6	3,271.4	1.74	0.65	1.61
10,473.0	90.30	359.80	7,357.6	3,251.7	-600.7	3,303.1	0.63	0.63	0.00
10,505.0	90.60	359.70	7,357.4	3,283.7	-600.8	3,334.9	0.99	0.94	-0.31
10,537.0	90.90	359.80	7,356.9	3,315.7	-601.0	3,366.6	0.99	0.94	0.31
10,569.0	91.30	0.20	7,356.3	3,347.7	-601.0	3,398.3	1.77	1.25	1.25
10,600.0	90.70	359.10	7,355.8	3,378.7	-601.2	3,429.0	4.04	-1.94	-3.55
10,632.0	89.80	358.40	7,355.6	3,410.6	-601.9	3,460.8	3.56	-2.81	-2.19
10,664.0	89.30	358.30	7,355.9	3,442.6	-602.8	3,492.6	1.59	-1.56	-0.31
10,696.0	90.00	358.30	7,356.1	3,474.6	-603.7	3,524.4	2.19	2.19	0.00
10,727.0	90.30	358.80	7,356.0	3,505.6	-604.5	3,555.2	1.88	0.97	1.61
10,759.0	89.70	358.40	7,356.0	3,537.6	-605.3	3,587.0	2.25	-1.88	-1.25
10,791.0	89.70	358.40	7,356.2	3,569.6	-606.2	3,618.9	0.00	0.00	0.00
10,823.0	90.10	359.00	7,356.2	3,601.6	-606.9	3,650.6	2.25	1.25	1.88
10,854.0	90.50	359.00	7,356.1	3,632.6	-607.5	3,681.4	1.29	1.29	0.00
10,886.0	90.30	359.30	7,355.8	3,664.6	-607.9	3,713.2	1.13	-0.63	0.94
10,918.0	90.20	359.70	7,355.7	3,696.6	-608.2	3,744.9	1.29	-0.31	1.25
10,950.0	90.10	0.00	7,355.6	3,728.6	-608.3	3,776.6	0.99	-0.31	0.94
10,981.0	90.50	0.40	7,355.5	3,759.6	-608.2	3,807.3	1.82	1.29	1.29
11,013.0	90.70	0.40	7,355.1	3,791.6	-608.0	3,839.0	0.63	0.63	0.00
11,045.0	90.40	0.20	7,354.8	3,823.6	-607.8	3,870.7	1.13	-0.94	-0.63
11,077.0	89.90	0.00	7,354.7	3,855.6	-607.7	3,902.4	1.68	-1.56	-0.63
11,108.0	89.90	359.80	7,354.8	3,886.6	-607.8	3,933.1	0.65	0.00	-0.65
11,140.0	90.00	359.30	7,354.8	3,918.6	-608.0	3,964.8	1.59	0.31	-1.56
11,172.0	89.60	359.00	7,354.9	3,950.5	-608.5	3,996.6	1.56	-1.25	-0.94
11,203.0	89.30	359.10	7,355.2	3,981.5	-609.0	4,027.4	1.02	-0.97	0.32
11,235.0	90.00	0.20	7,355.4	4,013.5	-609.2	4,059.1	4.07	2.19	3.44
11,267.0	90.00	359.80	7,355.4	4,045.5	-609.2	4,090.8	1.25	0.00	-1.25
11,299.0	89.40	359.80	7,355.6	4,077.5	-609.3	4,122.5	1.88	-1.88	0.00
11,330.0	89.00	359.50	7,356.0	4,108.5	-609.5	4,153.3	1.61	-1.29	-0.97
11,362.0	89.20	359.30	7,356.5	4,140.5	-609.9	4,185.0	0.88	0.63	-0.63
11,393.0	89.30	359.00	7,356.9	4,171.5	-610.3	4,215.8	1.02	0.32	-0.97
11,425.0	89.60	358.80	7,357.2	4,203.5	-610.9	4,247.5	1.13	0.94	-0.63
11,457.0	89.90	359.00	7,357.4	4,235.5	-611.6	4,279.3	1.13	0.94	0.63
11,489.0	90.10	358.80	7,357.4	4,267.5	-612.2	4,311.1	0.88	0.63	-0.63
11,521.0	89.80	358.40	7,357.4	4,299.5	-613.0	4,342.9	1.56	-0.94	-1.25
11,552.0	89.80	358.10	7,357.5	4,330.5	-613.9	4,373.7	0.97	0.00	-0.97
11,584.0	90.10	357.90	7,357.5	4,362.5	-615.0	4,405.6	1.13	0.94	-0.63
11,616.0	90.30	357.70	7,357.4	4,394.4	-616.2	4,437.4	0.88	0.63	-0.63
11,648.0	90.00	357.70	7,357.3	4,426.4	-617.5	4,469.3	0.94	-0.94	0.00
11,679.0	90.00	357.40	7,357.3	4,457.4	-618.9	4,500.1	0.97	0.00	-0.97
11,711.0	90.10	357.20	7,357.3	4,489.3	-620.4	4,532.0	0.70	0.31	-0.63



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24Q-441
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4880.0ft (RKB - 15')
<b>Site:</b>	Dalton 24Q-241 Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4880.0ft (RKB - 15')
<b>Well:</b>	Dalton 24Q-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)
11,742.0	90.30	357.20	7,357.2	4,520.3	-621.9	4,562.9	0.65	0.65	0.00
11,797.0	90.30	357.20	7,356.9	4,575.2	-624.6	4,617.7	0.00	0.00	0.00
BHL 500'FNL & 1980'FWL									

Design Targets									
Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	
	- Shape								Latitude Longitude
HARDLINE SHL 460'		0.00	0.00	1.0	210.0	-800.0	1,445,914.23	3,214,291.31	40.554876 -104.728809
- survey misses target center by 827.1ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1				1.0	0.0	0.0	1,445,914.23	3,214,291.31	
Point 2				1.0	0.0	900.0	1,445,922.08	3,215,191.25	
SECTIONLINE 250'S		0.00	0.00	1.0	-250.0	-800.0	1,445,454.26	3,214,295.33	40.553614 -104.728809
- survey misses target center by 838.1ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1				1.0	0.0	0.0	1,445,454.26	3,214,295.33	
Point 2				1.0	0.0	900.0	1,445,462.11	3,215,195.26	
HARDLINE BHL 460'		0.00	0.00	1.0	4,615.9	-800.0	1,450,319.82	3,214,252.85	40.566970 -104.728809
- survey misses target center by 4684.7ft at 0.6ft MD (0.6 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1				1.0	0.0	0.0	1,450,319.82	3,214,252.85	
Point 2				1.0	0.0	900.0	1,450,327.68	3,215,152.79	
BHL 500'FNL & 1980'		0.00	0.00	7,380.0	4,575.9	-627.9	1,450,281.33	3,214,425.29	40.566860 -104.728190
- survey misses target center by 23.3ft at 11797.0ft MD (7356.9 TVD, 4575.2 N, -624.6 E)									
- Point									

Checked By: _____	Approved By: _____	Date: _____
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