

Well Name: **Walters 24-21DU**

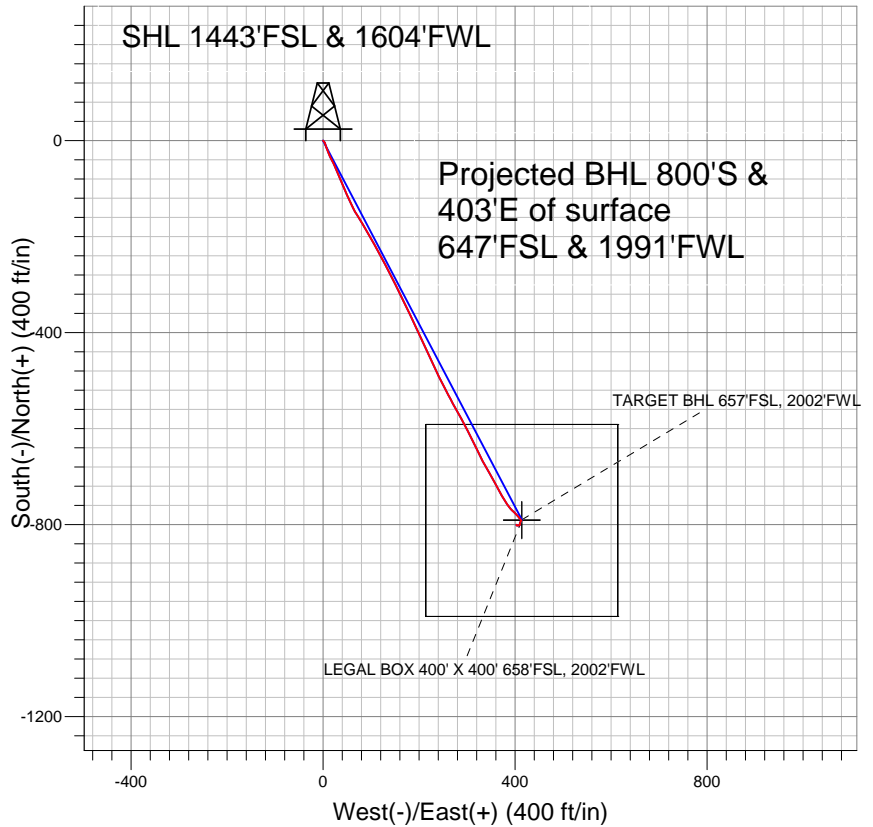
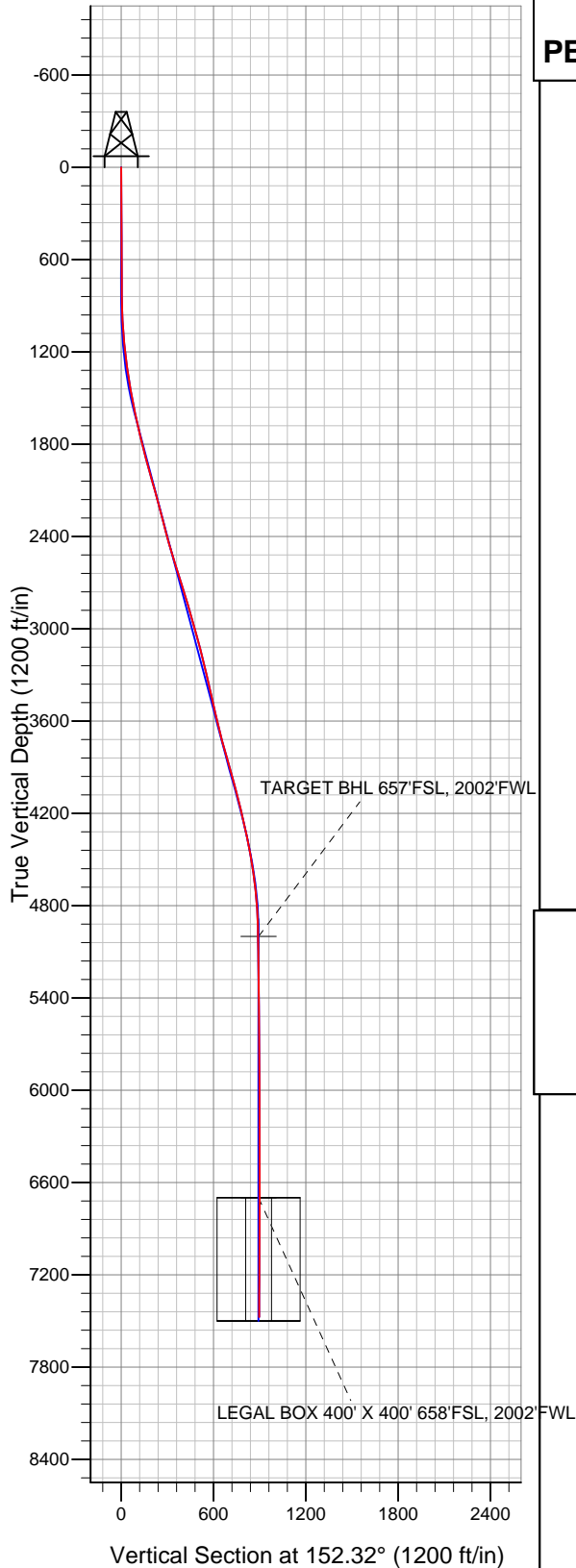
Surface Location: Walters/Wedco/Ryland Pad Sec.21-T4N-R67W  
North American Datum 1983 US State Plane 1983 Colorado Northern Zone

Ground Elevation: 4940.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1350912.82	3167444.40	40.295100	-104.899710	

Original Well Elev WELL @ 4953.0ft (Original Well Elev)

**PETROLEUM DEVELOPMENT CORP Weld County CO**



**LEGEND**

- Walters 24-21DU, Wellbore #1, Plan #1 (6-4-10) V0
- Wellbore #1
- Survey #1

**Final Survey Plot**

Projected Final Survey -  
7582'MD & 7475'TVD @ 896'VS  
0.4 deg Inc 352.8 deg AZ

Project: SEC.21-T4N-R67W  
Site: Walters/Wedco/Ryland Pad Sec.21-T4N-R67W  
Well: Walters 24-21DU  
Plan: Wellbore #1



## **Directional**

# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.21-T4N-R67W**

**Walters/Wedco/Ryland Pad Sec.21-T4N-R67W**

**Walters 24-21DU**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**03 June, 2011**

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Walters 24-21DU
<b>Project:</b>	SEC.21-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4953.0ft (Original Well Elev)
<b>Site:</b>	Walters/Wedco/Ryland Pad Sec.21-T4N-R67W	<b>MD Reference:</b>	WELL @ 4953.0ft (Original Well Elev)
<b>Well:</b>	Walters 24-21DU	<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.21-T4N-R67W, 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		Walters/Wedco/Ryland Pad Sec.21-T4N-R67W			
Site Position:		Northing:	1,351,058.86ft	Latitude:	40.295500
From:	Lat/Long	Easting:	3,167,490.83ft	Longitude:	-104.899540
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.39 °

Well	Walters 24-21DU					
Well Position	+N-S	0.0 ft	Northing:	1,350,912.82 ft	Latitude:	40.295100
	+E-W	0.0 ft	Easting:	3,167,444.40 ft	Longitude:	-104.899710
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,940.0 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>
	IGRF200510	12/31/2009	9.09	67.00	53,234

<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	152.32	

<b>Survey Program</b>	<b>Date</b> 6/3/2011				
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
735.0	7,582.0	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	
735.0	0.50	136.10	735.0	-2.3	2.2	3.1	0.07	0.07	0.00	
828.0	0.50	130.70	828.0	-2.9	2.8	3.8	0.05	0.00	-5.81	
921.0	1.40	153.50	921.0	-4.1	3.6	5.4	1.03	0.97	24.52	
1,014.0	3.30	162.20	1,013.9	-7.7	5.0	9.1	2.07	2.04	9.35	
1,106.0	4.90	161.10	1,105.7	-14.0	7.0	15.6	1.74	1.74	-1.20	
1,199.0	6.80	158.90	1,198.2	-22.8	10.3	25.0	2.06	2.04	-2.37	
1,292.0	8.10	154.50	1,290.4	-33.9	15.1	37.0	1.53	1.40	-4.73	
1,386.0	9.00	153.60	1,383.3	-46.5	21.2	51.0	0.97	0.96	-0.96	
1,479.0	10.00	154.90	1,475.1	-60.3	27.9	66.3	1.10	1.08	1.40	
1,572.0	11.20	160.80	1,566.5	-76.1	34.3	83.3	1.74	1.29	6.34	
1,665.0	12.30	155.10	1,657.5	-93.6	41.4	102.2	1.72	1.18	-6.13	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Walters 24-21DU
<b>Project:</b>	SEC.21-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4953.0ft (Original Well Elev)
<b>Site:</b>	Walters/Wedco/Ryland Pad Sec.21-T4N-R67W	<b>MD Reference:</b>	WELL @ 4953.0ft (Original Well Elev)
<b>Well:</b>	Walters 24-21DU	<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)
1,758.0	13.50	156.10	1,748.2	-112.6	50.0	122.9	1.31	1.29	1.08
1,851.0	14.90	155.70	1,838.3	-133.4	59.3	145.7	1.51	1.51	-0.43
1,945.0	15.00	147.40	1,929.2	-154.6	70.8	169.9	2.28	0.11	-8.83
2,037.0	16.20	151.00	2,017.8	-175.9	83.5	194.6	1.68	1.30	3.91
2,131.0	15.60	150.10	2,108.2	-198.3	96.1	220.3	0.69	-0.64	-0.96
2,224.0	14.80	148.90	2,197.9	-219.3	108.5	244.6	0.92	-0.86	-1.29
2,317.0	14.40	152.80	2,287.9	-239.8	119.9	268.1	1.14	-0.43	4.19
2,410.0	15.10	152.00	2,377.9	-260.8	130.9	291.7	0.78	0.75	-0.86
2,503.0	16.20	152.30	2,467.4	-283.0	142.6	316.8	1.19	1.18	0.32
2,596.0	17.20	153.90	2,556.5	-306.8	154.7	343.5	1.18	1.08	1.72
2,690.0	17.90	155.30	2,646.1	-332.4	166.8	371.9	0.87	0.74	1.49
2,783.0	17.20	154.10	2,734.8	-357.8	178.8	399.9	0.85	-0.75	-1.29
2,876.0	16.20	153.80	2,823.9	-381.8	190.6	426.6	1.08	-1.08	-0.32
2,969.0	16.00	155.40	2,913.2	-405.1	201.6	452.4	0.52	-0.22	1.72
3,061.0	16.00	156.50	3,001.6	-428.2	212.0	477.7	0.33	0.00	1.20
3,155.0	14.50	154.80	3,092.3	-450.7	222.1	502.4	1.66	-1.60	-1.81
3,248.0	14.20	154.60	3,182.4	-471.6	232.0	525.4	0.33	-0.32	-0.22
3,341.0	13.60	154.60	3,272.7	-491.8	241.6	547.7	0.65	-0.65	0.00
3,434.0	13.20	151.60	3,363.2	-511.0	251.3	569.2	0.86	-0.43	-3.23
3,528.0	12.60	153.90	3,454.8	-529.6	260.9	590.2	0.84	-0.64	2.45
3,621.0	13.10	149.50	3,545.5	-547.8	270.7	610.9	1.18	0.54	-4.73
3,714.0	13.30	151.90	3,636.0	-566.3	281.1	632.1	0.63	0.22	2.58
3,807.0	15.20	152.70	3,726.2	-586.6	291.8	655.0	2.05	2.04	0.86
3,901.0	15.70	151.50	3,816.8	-608.7	303.5	680.0	0.63	0.53	-1.28
3,994.0	16.10	155.00	3,906.2	-631.5	314.9	705.5	1.12	0.43	3.76
4,087.0	15.30	153.60	3,995.7	-654.2	325.8	730.7	0.95	-0.86	-1.51
4,180.0	13.30	150.50	4,085.8	-674.5	336.6	753.6	2.30	-2.15	-3.33
4,274.0	14.00	150.50	4,177.2	-693.8	347.5	775.8	0.74	0.74	0.00
4,365.0	13.30	152.50	4,265.6	-712.6	357.7	797.3	0.93	-0.77	2.20
4,458.0	11.90	150.10	4,356.4	-730.4	367.5	817.5	1.61	-1.51	-2.58
4,552.0	10.80	149.50	4,448.5	-746.4	376.8	836.0	1.18	-1.17	-0.64
4,645.0	9.40	145.70	4,540.1	-760.2	385.5	852.3	1.67	-1.51	-4.09
4,739.0	6.90	132.00	4,633.1	-770.3	394.0	865.2	3.35	-2.66	-14.57
4,832.0	5.80	134.00	4,725.6	-777.3	401.5	874.9	1.21	-1.18	2.15
4,925.0	3.60	141.90	4,818.3	-782.9	406.7	882.2	2.46	-2.37	8.49
5,018.0	2.20	149.80	4,911.1	-786.7	409.4	886.9	1.56	-1.51	8.49
5,107.0	1.06	129.65	5,000.1	-788.7	410.9	889.3	1.42	-1.29	-22.65
TARGET BHL 657'FSL, 2002'FWL									
5,112.0	1.00	127.20	5,005.1	-788.8	411.0	889.4	1.42	-1.12	-48.81
5,205.0	0.70	142.60	5,098.1	-789.7	412.0	890.7	0.40	-0.32	16.56
5,299.0	0.70	157.00	5,192.1	-790.7	412.5	891.9	0.19	0.00	15.32
5,392.0	0.60	169.50	5,285.1	-791.7	412.8	892.9	0.19	-0.11	13.44
5,486.0	0.50	209.00	5,379.1	-792.6	412.7	893.6	0.41	-0.11	42.02
5,579.0	1.10	220.90	5,472.1	-793.6	411.9	894.1	0.67	0.65	12.80
5,673.0	1.10	215.50	5,566.0	-795.0	410.8	894.9	0.11	0.00	-5.74
5,766.0	1.00	182.40	5,659.0	-796.6	410.3	896.0	0.65	-0.11	-35.59
5,859.0	0.70	173.40	5,752.0	-797.9	410.3	897.2	0.35	-0.32	-9.68
5,952.0	0.50	174.00	5,845.0	-798.9	410.4	898.1	0.22	-0.22	0.65
6,045.0	0.20	178.60	5,938.0	-799.5	410.5	898.6	0.32	-0.32	4.95
6,138.0	0.30	226.80	6,031.0	-799.8	410.3	898.9	0.24	0.11	51.83
6,231.0	0.40	228.00	6,124.0	-800.2	409.9	899.0	0.11	0.11	1.29
6,325.0	0.30	207.20	6,218.0	-800.6	409.5	899.2	0.17	-0.11	-22.13
6,418.0	0.20	196.80	6,311.0	-801.0	409.4	899.5	0.12	-0.11	-11.18

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<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)
6,511.0	0.30	246.70	6,404.0	-801.2	409.1	899.6	0.25	0.11	53.66
6,604.0	0.30	238.90	6,497.0	-801.5	408.7	899.6	0.04	0.00	-8.39
6,697.0	0.40	270.00	6,590.0	-801.6	408.1	899.4	0.23	0.11	33.44
6,790.0	0.40	245.40	6,683.0	-801.7	407.5	899.3	0.18	0.00	-26.45
6,806.9	0.44	254.16	6,699.9	-801.8	407.4	899.2	0.45	0.24	51.78
<b>LEGAL BOX 400' X 400' 658'FSL, 2002'FWL</b>									
6,883.0	0.70	277.20	6,776.0	-801.8	406.6	898.9	0.45	0.34	30.28
6,977.0	0.40	264.30	6,870.0	-801.7	405.7	898.5	0.34	-0.32	-13.72
7,069.0	0.40	259.00	6,962.0	-801.8	405.1	898.3	0.04	0.00	-5.76
7,163.0	0.40	272.80	7,056.0	-801.9	404.5	898.0	0.10	0.00	14.68
7,256.0	0.30	305.70	7,149.0	-801.7	403.9	897.6	0.24	-0.11	35.38
7,349.0	0.30	325.90	7,242.0	-801.4	403.6	897.2	0.11	0.00	21.72
7,442.0	0.30	323.00	7,335.0	-801.0	403.3	896.7	0.02	0.00	-3.12
7,535.0	0.40	352.80	7,428.0	-800.5	403.1	896.1	0.22	0.11	32.04
7,582.0	0.40	352.80	7,475.0	-800.1	403.1	895.8	0.00	0.00	0.00

Checked By: _____	Approved By: _____	Date: _____
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