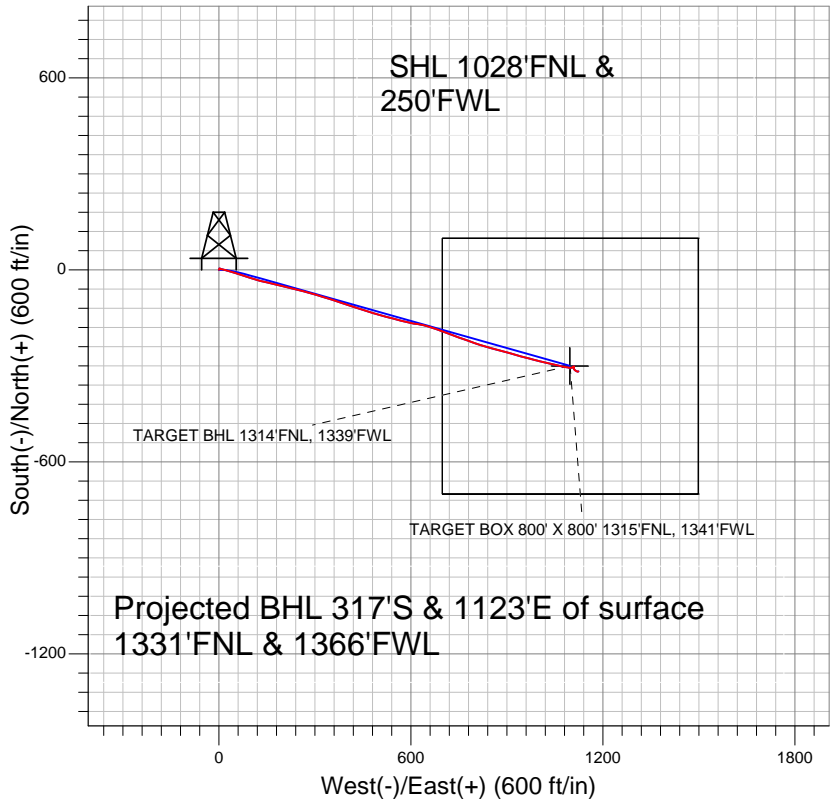


**PETROLEUM DEVELOPMENT CORP Weld County CO**



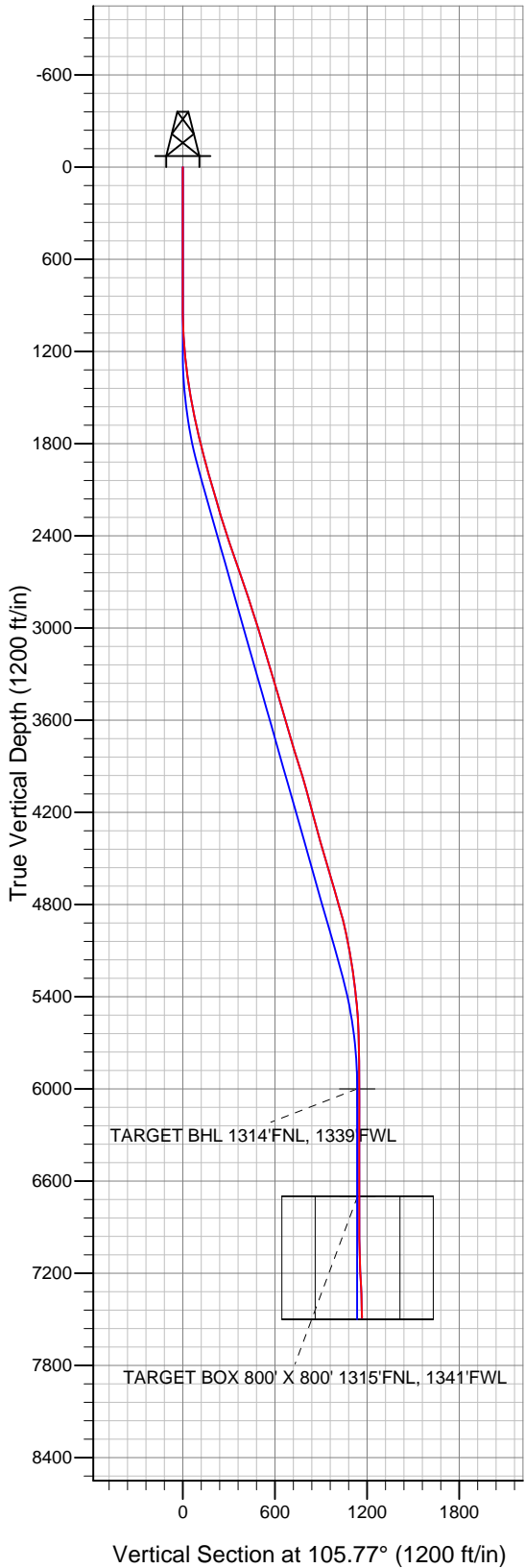
**LEGEND**

- △ EEE 21ADU, Wellbore #1, Plan #1 (3-5-10) V0
- Wellbore #1
- Survey #1

# Final Survey Plot

Projected Final Survey -  
7645'MD & 7490'TVD @ 1167' VS  
1.5 deg Inc 65.9 deg AZ

Project: SEC.21-T4N-R67W  
Site: EEE 21-21DU/Ryland Pad Sec.21-T4N-R67W  
Well: EEE 21ADU  
Plan: Wellbore #1





## **Directional**

# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.21-T4N-R67W**

**EEE 21-21DU/Ryland Pad Sec.21-T4N-R67W**

**EEE 21ADU**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**21 September, 2010**





<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well EEE 21ADU
<b>Project:</b>	SEC.21-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4935.0ft (Original Well Elev)
<b>Site:</b>	EEE 21-21DU/Ryland Pad Sec.21-T4N-R67W	<b>MD Reference:</b>	WELL @ 4935.0ft (Original Well Elev)
<b>Well:</b>	EEE 21ADU	<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

<b>Site</b>	EEE 21-21DU/Ryland Pad Sec.21-T4N-R67W		
<b>Site Position:</b>		<b>Northing:</b>	1,353,763.02 ft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,166,027.74 ft
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	"
		<b>Latitude:</b>	40° 18' 10.620 N
		<b>Longitude:</b>	104° 54' 16.992 W
		<b>Grid Convergence:</b>	0.38 °

<b>Well</b>	EEE 21ADU		
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b> 1,353,711.95 ft
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b> 3,166,019.71 ft
<b>Position Uncertainty</b>	0.0 ft	<b>Wellhead Elevation:</b>	ft
		<b>Latitude:</b>	40° 18' 10.116 N
		<b>Longitude:</b>	104° 54' 17.100 W
		<b>Ground Level:</b>	4,922.0 ft

<b>Wellbore</b>	Wellbore #1		
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>
	IGRF2010	9/14/2010	9.03
			<b>Dip Angle (°)</b>
			66.97
			<b>Field Strength (nT)</b>
			53,143

<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>
	0.0	0.0	0.0
			<b>Direction (°)</b>
			105.77

<b>Survey Program</b>	<b>Date</b> 9/21/2010		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>
706.0	7,645.0	Survey #1 (Wellbore #1)	MWD
			<b>Description</b>
			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
706.0	0.50	19.90	706.0	2.9	1.0	0.2	0.07	0.07	0.00
799.0	0.50	12.10	799.0	3.7	1.3	0.2	0.07	0.00	-8.39
893.0	0.20	31.50	893.0	4.2	1.4	0.2	0.34	-0.32	20.64
987.0	1.20	106.20	987.0	4.1	2.5	1.3	1.24	1.06	79.47
1,080.0	2.90	106.90	1,079.9	3.1	5.7	4.6	1.83	1.83	0.75
1,174.0	4.50	104.00	1,173.7	1.5	11.5	10.7	1.71	1.70	-3.09
1,267.0	6.10	106.20	1,266.3	-0.7	19.8	19.2	1.73	1.72	2.37
1,361.0	7.80	108.30	1,359.6	-4.1	30.7	30.6	1.83	1.81	2.23
1,454.0	8.80	102.70	1,451.6	-7.7	43.6	44.0	1.38	1.08	-6.02
1,548.0	10.70	110.20	1,544.3	-12.3	58.8	59.9	2.43	2.02	7.98
1,642.0	12.40	106.30	1,636.4	-18.1	76.7	78.7	1.99	1.81	-4.15



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well EEE 21ADU
<b>Project:</b>	SEC.21-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4935.0ft (Original Well Elev)
<b>Site:</b>	EEE 21-21DU/Ryland Pad Sec.21-T4N-R67W	<b>MD Reference:</b>	WELL @ 4935.0ft (Original Well Elev)
<b>Well:</b>	EEE 21ADU	<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)
1,735.0	13.60	109.20	1,727.0	-24.5	96.6	99.6	1.47	1.29	3.12
1,828.0	14.10	107.10	1,817.3	-31.4	117.7	121.8	0.76	0.54	-2.26
1,922.0	14.50	101.10	1,908.4	-37.1	140.2	145.0	1.63	0.43	-6.38
2,015.0	15.50	104.00	1,998.2	-42.3	163.7	169.0	1.34	1.08	3.12
2,109.0	16.40	103.60	2,088.6	-48.5	188.8	194.9	0.96	0.96	-0.43
2,202.0	16.40	104.30	2,177.8	-54.8	214.3	221.1	0.21	0.00	0.75
2,296.0	16.70	104.10	2,267.9	-61.4	240.2	247.9	0.32	0.32	-0.21
2,389.0	17.50	103.80	2,356.8	-68.0	266.8	275.2	0.87	0.86	-0.32
2,483.0	18.20	105.90	2,446.3	-75.3	294.6	304.0	1.01	0.74	2.23
2,576.0	19.00	107.20	2,534.4	-83.8	323.0	333.7	0.97	0.86	1.40
2,670.0	19.60	107.70	2,623.1	-93.1	352.7	364.7	0.66	0.64	0.53
2,764.0	19.30	108.60	2,711.8	-102.9	382.4	396.0	0.45	-0.32	0.96
2,857.0	17.70	108.10	2,800.0	-112.2	410.4	425.5	1.73	-1.72	-0.54
2,951.0	17.90	108.90	2,889.5	-121.3	437.7	454.2	0.34	0.21	0.85
3,044.0	17.80	108.20	2,978.0	-130.4	464.7	482.6	0.25	-0.11	-0.75
3,138.0	16.40	103.90	3,067.8	-138.0	491.2	510.3	2.01	-1.49	-4.57
3,233.0	16.80	105.70	3,158.9	-145.0	517.5	537.4	0.69	0.42	1.89
3,327.0	16.70	104.80	3,248.9	-152.1	543.6	564.5	0.30	-0.11	-0.96
3,420.0	16.70	104.10	3,338.0	-158.8	569.5	591.2	0.22	0.00	-0.75
3,514.0	17.00	102.60	3,427.9	-165.1	596.0	618.4	0.56	0.32	-1.60
3,607.0	16.50	98.50	3,517.0	-170.0	622.3	645.1	1.38	-0.54	-4.41
3,701.0	15.60	105.50	3,607.3	-175.3	647.7	671.0	2.27	-0.96	7.45
3,794.0	16.40	108.90	3,696.7	-182.9	672.2	696.6	1.32	0.86	3.66
3,888.0	16.90	110.30	3,786.8	-192.0	697.6	723.5	0.68	0.53	1.49
3,982.0	17.80	110.70	3,876.5	-201.8	723.8	751.4	0.97	0.96	0.43
4,075.0	17.10	109.80	3,965.2	-211.4	750.0	779.2	0.81	-0.75	-0.97
4,169.0	15.60	109.60	4,055.4	-220.3	774.9	805.6	1.60	-1.60	-0.21
4,262.0	14.90	109.30	4,145.2	-228.5	798.0	830.0	0.76	-0.75	-0.32
4,355.0	15.30	107.70	4,234.9	-236.2	820.9	854.2	0.62	0.43	-1.72
4,449.0	14.80	104.50	4,325.7	-243.0	844.4	878.6	1.03	-0.53	-3.40
4,543.0	15.60	106.20	4,416.4	-249.5	868.1	903.3	0.97	0.85	1.81
4,636.0	16.60	104.50	4,505.8	-256.3	893.0	929.0	1.19	1.08	-1.83
4,730.0	16.40	105.90	4,595.9	-263.3	918.8	955.7	0.47	-0.21	1.49
4,823.0	16.30	105.10	4,685.2	-270.3	944.0	981.9	0.26	-0.11	-0.86
4,917.0	16.40	105.30	4,775.4	-277.2	969.5	1,008.4	0.12	0.11	0.21
5,011.0	15.10	104.00	4,865.8	-283.7	994.2	1,033.9	1.43	-1.38	-1.38
5,104.0	12.80	103.00	4,956.1	-288.9	1,016.0	1,056.3	2.49	-2.47	-1.08
5,198.0	11.00	103.30	5,048.1	-293.4	1,034.9	1,075.6	1.92	-1.91	0.32
5,291.0	9.50	101.40	5,139.6	-296.9	1,051.0	1,092.2	1.65	-1.61	-2.04
5,385.0	8.00	104.00	5,232.5	-300.0	1,065.0	1,106.4	1.65	-1.60	2.77
5,479.0	7.10	101.90	5,325.7	-302.8	1,077.0	1,118.8	1.00	-0.96	-2.23
5,573.0	6.30	100.30	5,419.0	-304.9	1,087.8	1,129.7	0.87	-0.85	-1.70
5,666.0	4.40	93.10	5,511.6	-306.0	1,096.4	1,138.3	2.16	-2.04	-7.74
5,760.0	2.90	77.20	5,605.4	-305.7	1,102.3	1,143.9	1.91	-1.60	-16.91
5,854.0	1.10	63.00	5,699.3	-304.8	1,105.4	1,146.6	1.97	-1.91	-15.11
5,947.0	0.70	61.10	5,792.3	-304.1	1,106.7	1,147.7	0.43	-0.43	-2.04
6,040.0	0.50	73.70	5,885.3	-303.7	1,107.6	1,148.4	0.26	-0.22	13.55
6,134.0	0.30	63.10	5,979.3	-303.5	1,108.2	1,149.0	0.23	-0.21	-11.28
6,154.6	0.27	68.51	6,000.0	-303.4	1,108.3	1,149.0	0.19	-0.14	26.26
TARGET BHL 1314'FNL, 1339'FWL									
6,227.0	0.20	98.30	6,072.3	-303.4	1,108.6	1,149.3	0.19	-0.10	41.15
6,321.0	0.10	51.50	6,166.3	-303.4	1,108.8	1,149.5	0.16	-0.11	-49.79
6,415.0	0.10	327.00	6,260.3	-303.2	1,108.8	1,149.5	0.14	0.00	-89.89



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well EEE 21ADU
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<b>Site:</b>	EEE 21-21DU/Ryland Pad Sec.21-T4N-R67W	<b>MD Reference:</b>	WELL @ 4935.0ft (Original Well Elev)
<b>Well:</b>	EEE 21ADU	<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)
6,508.0	0.20	39.10	6,353.3	-303.0	1,108.9	1,149.5	0.21	0.11	77.53
6,602.0	0.40	2.70	6,447.3	-302.6	1,109.0	1,149.5	0.28	0.21	-38.72
6,695.0	0.40	5.60	6,540.3	-301.9	1,109.0	1,149.4	0.02	0.00	3.12
6,789.0	0.30	335.00	6,634.3	-301.4	1,109.0	1,149.1	0.22	-0.11	-32.55
6,854.7	0.27	246.34	6,700.0	-301.3	1,108.8	1,148.9	0.61	-0.04	-134.92
<b>TARGET BOX 800' X 800' 1315'FNL, 1341'FWL</b>									
6,882.0	0.40	228.20	6,727.3	-301.4	1,108.6	1,148.8	0.61	0.47	-66.48
6,976.0	0.90	186.10	6,821.3	-302.3	1,108.3	1,148.8	0.70	0.53	-44.79
7,069.0	1.30	181.50	6,914.3	-304.1	1,108.2	1,149.1	0.44	0.43	-4.95
7,163.0	1.90	169.70	7,008.3	-306.7	1,108.4	1,150.1	0.72	0.64	-12.55
7,257.0	2.70	152.70	7,102.2	-310.2	1,109.7	1,152.3	1.11	0.85	-18.09
7,350.0	2.80	133.00	7,195.1	-313.7	1,112.4	1,155.8	1.02	0.11	-21.18
7,444.0	3.30	119.00	7,288.9	-316.6	1,116.5	1,160.5	0.95	0.53	-14.89
7,537.0	1.80	93.70	7,381.9	-318.0	1,120.3	1,164.5	1.98	-1.61	-27.20
7,598.0	1.50	65.90	7,442.8	-317.7	1,121.9	1,166.1	1.38	-0.49	-45.57
7,645.0	1.50	65.90	7,489.8	-317.2	1,123.1	1,167.0	0.00	0.00	0.00

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