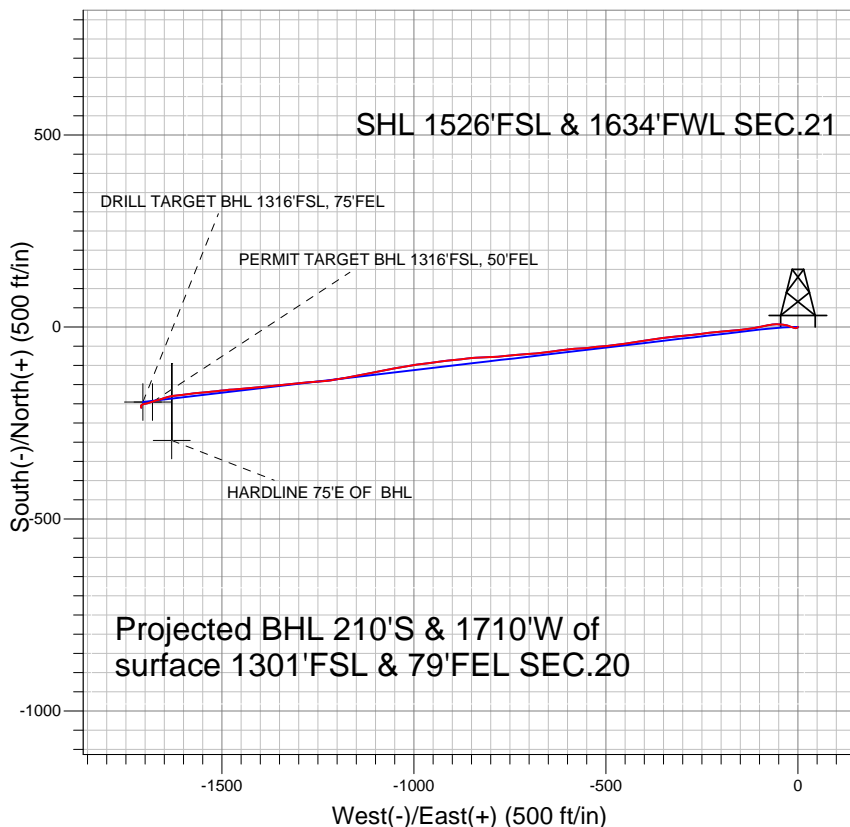
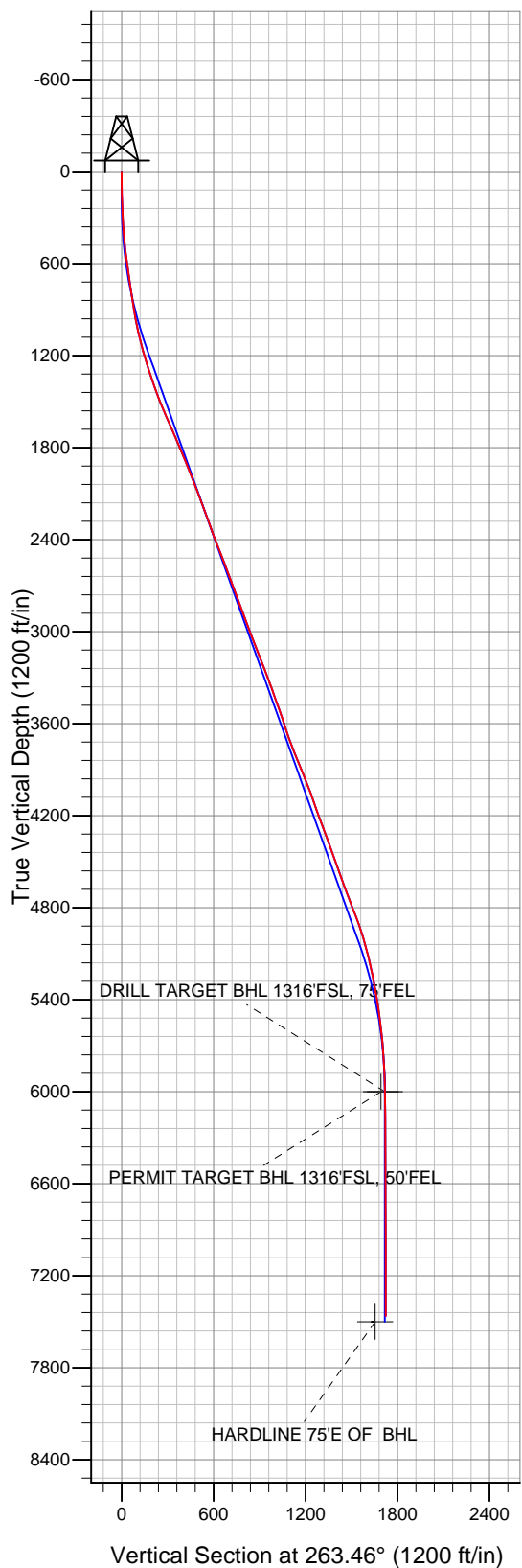


## PETROLEUM DEVELOPMENT CORP Weld County CO



### LEGEND

- Ryland 20XD, Wellbore #1, Plan #1 (6-4-10) V0
- Wellbore #1
- Survey #1

## Final Survey Plot

Projected Final Survey -  
 7750'MD & 7462'TVD @ 1723'VS  
 0.9 deg Inc 169.7 deg AZ

Project: SEC.21-T4N-R67W  
 Site: Walters/Wedco/Ryland Pad Sec.21-T4N-R67W  
 Well: Ryland 20XD  
 Plan: Wellbore #1



## **Directional**

# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.21-T4N-R67W**

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

**Ryland 20XD**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**13 May, 2011**

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Ryland 20XD
<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>	Ryland 20XD	<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	Ryland 20XD					
Well Position	+N-S	0.0 ft	Northing:	1,350,996.80 ft	Latitude:	40.295330
	+E-W	0.0 ft	Easting:	3,167,471.72 ft	Longitude:	-104.899610
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	263.46	

<b>Survey Program</b>	<b>Date</b> 5/13/2011				
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
152.0	7,750.0	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	
152.0	1.50	222.80	152.0	-1.5	-1.4	1.5	0.99	0.99	0.00	
241.0	2.20	254.10	240.9	-2.8	-3.8	4.1	1.35	0.79	35.17	
333.0	3.80	282.20	332.8	-2.6	-8.5	8.7	2.31	1.74	30.54	
425.0	5.10	291.50	424.5	-0.5	-15.2	15.2	1.61	1.41	10.11	
518.0	7.00	289.90	517.0	3.0	-24.4	23.9	2.05	2.04	-1.72	
611.0	8.30	276.30	609.2	5.6	-36.4	35.5	2.39	1.40	-14.62	
668.0	8.70	272.20	665.6	6.2	-44.8	43.8	1.27	0.70	-7.19	
797.0	8.70	268.00	793.1	6.3	-64.3	63.2	0.49	0.00	-3.26	
891.0	8.80	256.50	886.0	4.4	-78.4	77.4	1.86	0.11	-12.23	
984.0	11.30	260.40	977.6	1.2	-94.3	93.6	2.78	2.69	4.19	
1,077.0	13.20	257.80	1,068.4	-2.6	-113.7	113.2	2.13	2.04	-2.80	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Ryland 20XD
<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>	Ryland 20XD	<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)
1,170.0	14.80	263.50	1,158.7	-6.2	-135.9	135.7	2.27	1.72	6.13
1,263.0	17.50	264.90	1,248.0	-8.8	-161.6	161.6	2.93	2.90	1.51
1,357.0	18.90	265.60	1,337.3	-11.2	-190.9	190.9	1.51	1.49	0.74
1,450.0	19.90	262.50	1,425.0	-14.4	-221.6	221.8	1.54	1.08	-3.33
1,543.0	21.50	263.40	1,512.0	-18.4	-254.2	254.6	1.75	1.72	0.97
1,637.0	23.70	264.50	1,598.8	-22.2	-290.1	290.8	2.38	2.34	1.17
1,730.0	24.00	263.40	1,683.8	-26.2	-327.5	328.4	0.58	0.32	-1.18
1,823.0	23.30	261.80	1,769.0	-31.0	-364.5	365.7	1.02	-0.75	-1.72
1,916.0	22.40	263.30	1,854.7	-35.7	-400.3	401.8	1.15	-0.97	1.61
2,010.0	21.40	258.40	1,942.0	-41.2	-434.9	436.8	2.22	-1.06	-5.21
2,103.0	22.30	263.90	2,028.3	-46.5	-469.1	471.3	2.40	0.97	5.91
2,196.0	20.90	265.50	2,114.8	-49.7	-503.2	505.5	1.63	-1.51	1.72
2,289.0	19.10	262.10	2,202.1	-53.1	-534.8	537.3	2.30	-1.94	-3.66
2,382.0	20.10	266.40	2,289.8	-56.2	-565.8	568.5	1.89	1.08	4.62
2,475.0	20.90	264.90	2,376.9	-58.7	-598.3	601.1	1.03	0.86	-1.61
2,568.0	21.20	261.50	2,463.7	-62.6	-631.4	634.4	1.35	0.32	-3.66
2,661.0	21.20	263.30	2,550.4	-67.1	-664.7	668.1	0.70	0.00	1.94
2,755.0	21.10	265.90	2,638.0	-70.3	-698.5	702.0	1.00	-0.11	2.77
2,848.0	19.80	265.60	2,725.2	-72.7	-730.9	734.4	1.40	-1.40	-0.32
2,941.0	19.40	263.20	2,812.8	-75.7	-762.0	765.6	0.97	-0.43	-2.58
3,034.0	21.10	267.80	2,900.1	-78.2	-794.0	797.8	2.50	1.83	4.95
3,127.0	21.60	268.20	2,986.7	-79.3	-827.9	831.5	0.56	0.54	0.43
3,220.0	20.40	261.90	3,073.5	-82.2	-861.0	864.8	2.75	-1.29	-6.77
3,313.0	21.90	264.90	3,160.2	-86.0	-894.3	898.3	1.99	1.61	3.23
3,406.0	21.00	262.70	3,246.8	-89.7	-928.2	932.3	1.30	-0.97	-2.37
3,500.0	20.60	262.10	3,334.7	-94.1	-961.2	965.7	0.48	-0.43	-0.64
3,593.0	19.50	262.90	3,422.0	-98.2	-992.8	997.6	1.22	-1.18	0.86
3,686.0	19.20	258.50	3,509.8	-103.2	-1,023.2	1,028.3	1.60	-0.32	-4.73
3,779.0	18.60	260.30	3,597.8	-108.7	-1,052.8	1,058.4	0.90	-0.65	1.94
3,872.0	18.90	258.60	3,685.8	-114.2	-1,082.2	1,088.2	0.67	0.32	-1.83
3,965.0	21.70	260.00	3,773.0	-120.2	-1,113.9	1,120.4	3.06	3.01	1.51
4,058.0	21.80	258.20	3,859.4	-126.7	-1,147.8	1,154.7	0.73	0.11	-1.94
4,151.0	23.10	260.00	3,945.4	-133.4	-1,182.6	1,190.1	1.58	1.40	1.94
4,245.0	20.70	261.90	4,032.6	-138.9	-1,217.3	1,225.2	2.66	-2.55	2.02
4,338.0	18.50	265.50	4,120.2	-142.4	-1,248.2	1,256.3	2.70	-2.37	3.87
4,431.0	20.00	267.00	4,208.0	-144.4	-1,278.8	1,287.0	1.70	1.61	1.61
4,524.0	21.30	262.40	4,295.0	-147.5	-1,311.5	1,319.7	2.23	1.40	-4.95
4,617.0	20.00	264.20	4,382.1	-151.3	-1,344.0	1,352.5	1.56	-1.40	1.94
4,710.0	19.90	265.20	4,469.5	-154.3	-1,375.6	1,384.2	0.38	-0.11	1.08
4,803.0	19.10	263.90	4,557.1	-157.2	-1,406.5	1,415.3	0.98	-0.86	-1.40
4,896.0	20.50	265.20	4,644.6	-160.2	-1,437.9	1,446.8	1.58	1.51	1.40
4,989.0	20.30	265.40	4,731.8	-162.8	-1,470.2	1,479.2	0.23	-0.22	0.22
5,083.0	22.20	263.30	4,819.4	-166.2	-1,504.1	1,513.2	2.18	2.02	-2.23
5,176.0	19.60	265.30	4,906.3	-169.5	-1,537.1	1,546.4	2.90	-2.80	2.15
5,269.0	16.40	264.90	4,994.7	-172.0	-1,565.7	1,575.1	3.44	-3.44	-0.43
5,362.0	14.50	261.20	5,084.4	-174.9	-1,590.3	1,599.9	2.30	-2.04	-3.98
5,455.0	12.80	264.60	5,174.7	-177.7	-1,612.1	1,621.8	2.02	-1.83	3.66
5,548.0	11.30	259.90	5,265.7	-180.3	-1,631.3	1,641.2	1.93	-1.61	-5.05
5,641.0	10.30	252.50	5,357.0	-184.4	-1,648.2	1,658.5	1.84	-1.08	-7.96
5,734.0	8.70	253.20	5,448.8	-188.9	-1,662.9	1,673.6	1.72	-1.72	0.75
5,828.0	7.00	252.40	5,541.9	-192.7	-1,675.1	1,686.2	1.81	-1.81	-0.85
5,921.0	6.10	250.90	5,634.3	-196.0	-1,685.2	1,696.6	0.98	-0.97	-1.61
6,014.0	4.50	256.80	5,726.9	-198.5	-1,693.4	1,705.0	1.82	-1.72	6.34

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Ryland 20XD
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<b>Well:</b>	Ryland 20XD	<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)
6,107.0	3.40	254.70	5,819.6	-200.0	-1,699.6	1,711.4	1.19	-1.18	-2.26
6,202.0	2.20	257.60	5,914.5	-201.1	-1,704.1	1,715.9	1.27	-1.26	3.05
6,286.9	0.56	253.07	5,999.4	-201.6	-1,706.1	1,718.0	1.94	-1.94	-5.33
<b>PERMIT TARGET BHL 1316'FSL, 50'FEL</b>									
6,287.5	0.54	252.95	6,000.0	-201.6	-1,706.1	1,718.0	1.94	-1.93	-21.51
<b>DRILL TARGET BHL 1316'FSL, 75'FEL</b>									
6,295.0	0.40	250.70	6,007.5	-201.6	-1,706.2	1,718.0	1.94	-1.92	-29.90
6,481.0	0.40	246.90	6,193.5	-202.1	-1,707.4	1,719.3	0.01	0.00	-2.04
6,667.0	0.40	233.60	6,379.5	-202.7	-1,708.5	1,720.5	0.05	0.00	-7.15
6,854.0	0.30	212.40	6,566.5	-203.5	-1,709.3	1,721.4	0.09	-0.05	-11.34
7,040.0	0.30	226.50	6,752.5	-204.3	-1,709.9	1,722.1	0.04	0.00	7.58
7,226.0	0.40	209.70	6,938.5	-205.2	-1,710.6	1,722.8	0.08	0.05	-9.03
7,412.0	0.40	169.70	7,124.5	-206.4	-1,710.8	1,723.2	0.15	0.00	-21.51
7,597.0	0.70	168.70	7,309.5	-208.1	-1,710.5	1,723.0	0.16	0.16	-0.54
7,707.0	0.90	169.70	7,419.5	-209.6	-1,710.2	1,722.9	0.18	0.18	0.91
7,750.0	0.90	169.70	7,462.5	-210.3	-1,710.0	1,722.9	0.00	0.00	0.00
<b>HARDLINE 75'E OF BHL</b>									

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