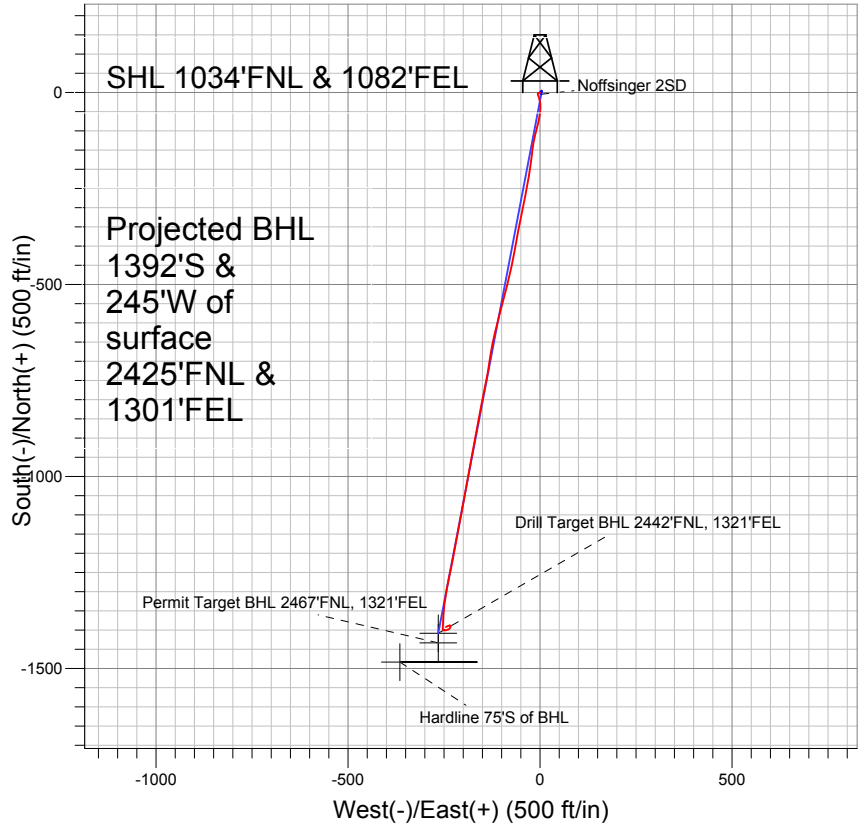
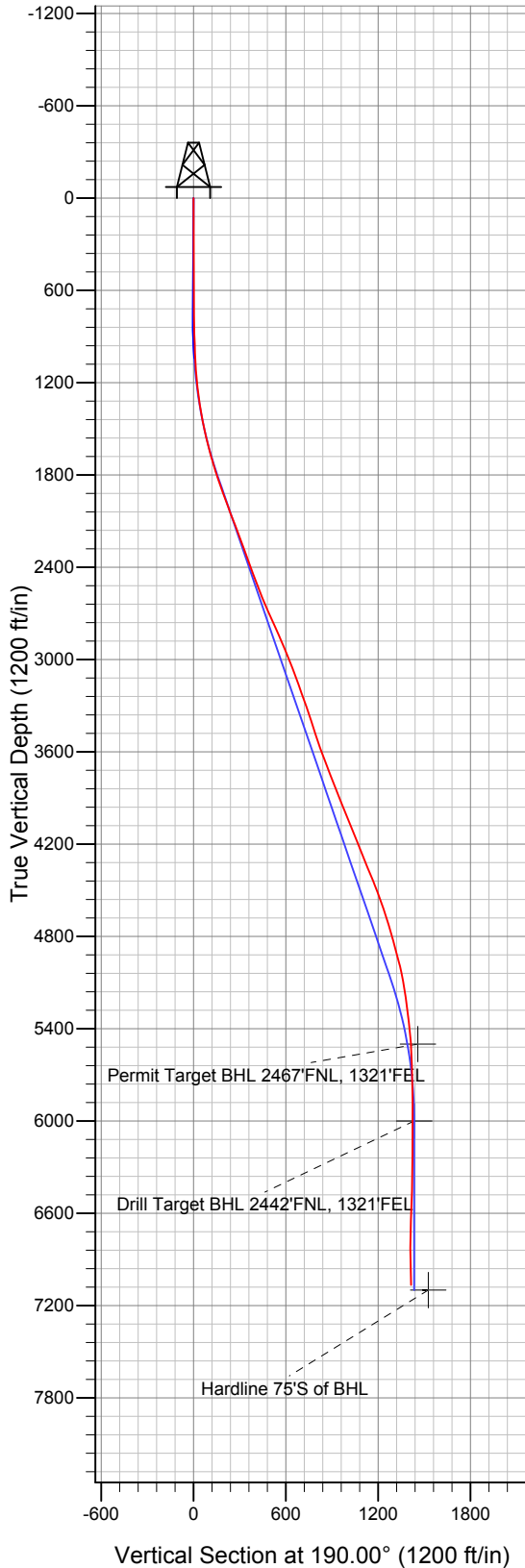


**PETROLEUM DEVELOPMENT CORP Weld County CO**



**LEGEND**

- △ Noffsinger 2SD, Wellbore #1, plan 2 tied to survey nov 2 10 V0
- Wellbore #1
- Survey #3

**Final Survey Plot**

Projected Final Survey -  
7305'MD & 7066'TVD @ 1413' VS  
2.8 deg Inc 239.0 deg AZ

Project: SEC.2-T5N-R65W  
Site: Noffsinger Pad Sec.2-T5N-R65W  
Well: Noffsinger 2SD  
Plan: Wellbore #1



## **Directional**

# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.2-T5N-R65W**

**Noffsinger Pad Sec.2-T5N-R65W**

**Noffsinger 2SD**

**Wellbore #1**

**Survey: Survey #3**

## **Standard Survey Report**

**22 November, 2010**

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Noffsinger 2SD
<b>Project:</b>	SEC.2-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4660.0ft (Original Well Elev)
<b>Site:</b>	Noffsinger Pad Sec.2-T5N-R65W	<b>MD Reference:</b>	WELL @ 4660.0ft (Original Well Elev)
<b>Well:</b>	Noffsinger 2SD	<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.2-T5N-R65W, 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		Noffsinger Pad Sec.2-T5N-R65W			
Site Position:		Northing:	1,401,288.04 ft	Latitude:	40° 25' 53.908 N
From:	Lat/Long	Easting:	3,243,490.07 ft	Longitude:	104° 37' 31.148 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.57 °

Well	Noffsinger 2SD					
Well Position	+N-S	0.0 ft	Northing:	1,401,529.49 ft	Latitude:	40° 25' 56.276 N
	+E-W	0.0 ft	Easting:	3,243,666.14 ft	Longitude:	104° 37' 28.841 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,647.0 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	6/21/2010	8.92	67.13	53,269

<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	190.00	

<b>Survey Program</b>	<b>Date</b>	11/22/2010			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
761.0	1,041.0	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	
761.0	0.90	255.20	761.0	-1.5	-5.8	2.5	0.12	0.12	0.00	
886.0	1.70	166.30	885.9	-3.6	-6.3	4.6	1.53	0.64	-71.12	
1,010.0	3.50	159.40	1,009.8	-8.9	-4.5	9.6	1.47	1.45	-5.56	
1,103.0	3.50	161.70	1,102.6	-14.3	-2.6	14.5	0.15	0.00	2.47	
1,196.0	5.70	168.60	1,195.3	-21.5	-0.8	21.3	2.44	2.37	7.42	
1,290.0	7.50	175.20	1,288.7	-32.2	0.6	31.6	2.07	1.91	7.02	
1,383.0	10.20	185.30	1,380.6	-46.4	0.4	45.7	3.34	2.90	10.86	
1,476.0	11.60	189.20	1,471.9	-63.9	-1.9	63.2	1.70	1.51	4.19	
1,569.0	13.20	194.80	1,562.8	-83.4	-6.1	83.1	2.15	1.72	6.02	
1,663.0	15.00	193.80	1,653.9	-105.5	-11.8	106.0	1.93	1.91	-1.06	
1,756.0	17.10	190.40	1,743.3	-130.7	-17.1	131.7	2.47	2.26	-3.66	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Noffsinger 2SD
<b>Project:</b>	SEC.2-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4660.0ft (Original Well Elev)
<b>Site:</b>	Noffsinger Pad Sec.2-T5N-R65W	<b>MD Reference:</b>	WELL @ 4660.0ft (Original Well Elev)
<b>Well:</b>	Noffsinger 2SD	<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)
1,849.0	19.50	186.80	1,831.6	-159.6	-21.4	160.8	2.85	2.58	-3.87
1,942.0	19.80	188.00	1,919.2	-190.6	-25.4	192.1	0.54	0.32	1.29
2,035.0	20.10	188.50	2,006.6	-222.0	-30.0	223.8	0.37	0.32	0.54
2,128.0	21.20	190.90	2,093.6	-254.3	-35.5	256.6	1.49	1.18	2.58
2,221.0	20.80	192.90	2,180.4	-286.9	-42.4	289.9	0.88	-0.43	2.15
2,314.0	19.40	190.60	2,267.8	-318.2	-48.9	321.8	1.73	-1.51	-2.47
2,408.0	20.00	190.70	2,356.3	-349.3	-54.8	353.5	0.64	0.64	0.11
2,501.0	20.90	190.20	2,443.4	-381.3	-60.7	386.0	0.99	0.97	-0.54
2,594.0	21.80	191.20	2,530.0	-414.5	-67.0	419.9	1.04	0.97	1.08
2,687.0	21.70	191.90	2,616.4	-448.3	-73.9	454.3	0.30	-0.11	0.75
2,780.0	24.20	193.20	2,702.0	-483.7	-81.8	490.5	2.74	2.69	1.40
2,873.0	24.70	194.20	2,786.7	-521.1	-90.9	528.9	0.70	0.54	1.08
2,966.0	22.70	194.80	2,871.8	-557.3	-100.2	566.2	2.17	-2.15	0.65
3,059.0	22.90	194.80	2,957.6	-592.1	-109.4	602.1	0.22	0.22	0.00
3,153.0	21.70	193.10	3,044.5	-626.7	-118.0	637.7	1.45	-1.28	-1.81
3,246.0	19.40	190.90	3,131.6	-658.6	-124.9	670.3	2.61	-2.47	-2.37
3,339.0	19.70	188.70	3,219.3	-689.3	-130.2	701.4	0.85	0.32	-2.37
3,433.0	19.10	188.20	3,307.9	-720.2	-134.7	732.6	0.66	-0.64	-0.53
3,526.0	18.50	192.00	3,396.0	-749.7	-140.0	762.6	1.47	-0.65	4.09
3,619.0	18.40	190.00	3,484.2	-778.6	-145.6	792.0	0.69	-0.11	-2.15
3,712.0	19.20	191.70	3,572.2	-808.0	-151.2	822.0	1.04	0.86	1.83
3,806.0	20.40	191.40	3,660.7	-839.2	-157.6	853.8	1.28	1.28	-0.32
3,899.0	20.90	190.90	3,747.7	-871.4	-164.0	886.6	0.57	0.54	-0.54
3,992.0	22.50	190.40	3,834.1	-905.2	-170.3	921.0	1.73	1.72	-0.54
4,086.0	22.20	190.50	3,921.0	-940.3	-176.8	956.7	0.32	-0.32	0.11
4,179.0	21.40	189.90	4,007.4	-974.3	-182.9	991.3	0.89	-0.86	-0.65
4,272.0	22.30	189.70	4,093.7	-1,008.4	-188.8	1,025.9	0.97	0.97	-0.22
4,365.0	21.90	190.50	4,179.9	-1,042.9	-194.9	1,060.9	0.54	-0.43	0.86
4,458.0	21.50	191.60	4,266.3	-1,076.6	-201.5	1,095.2	0.61	-0.43	1.18
4,551.0	22.30	191.00	4,352.6	-1,110.6	-208.3	1,129.9	0.89	0.86	-0.65
4,644.0	22.60	189.00	4,438.5	-1,145.6	-214.5	1,165.4	0.88	0.32	-2.15
4,737.0	20.60	190.20	4,525.0	-1,179.3	-220.2	1,199.7	2.20	-2.15	1.29
4,830.0	18.30	192.60	4,612.7	-1,209.7	-226.3	1,230.6	2.62	-2.47	2.58
4,924.0	17.80	190.10	4,702.1	-1,238.3	-232.0	1,259.7	0.98	-0.53	-2.66
5,017.0	16.00	191.80	4,791.0	-1,264.8	-237.1	1,286.8	2.01	-1.94	1.83
5,111.0	14.70	191.60	4,881.7	-1,289.2	-242.2	1,311.6	1.38	-1.38	-0.21
5,204.0	14.60	188.40	4,971.7	-1,312.3	-246.2	1,335.1	0.88	-0.11	-3.44
5,297.0	11.20	187.90	5,062.3	-1,332.9	-249.2	1,355.9	3.66	-3.66	-0.54
5,390.0	8.80	183.70	5,153.9	-1,348.9	-250.9	1,372.0	2.70	-2.58	-4.52
5,484.0	7.60	184.88	5,246.9	-1,362.3	-251.9	1,385.3	1.29	-1.28	1.26
5,577.0	6.20	182.20	5,339.2	-1,373.4	-252.6	1,396.4	1.54	-1.51	-2.88
5,670.0	5.80	182.90	5,431.7	-1,383.1	-253.0	1,406.1	0.44	-0.43	0.75
5,742.2	4.01	183.64	5,503.7	-1,389.3	-253.4	1,412.2	2.47	-2.47	1.03
Permit Target BHL 2467'FNL, 1321'FEL									
5,763.0	3.50	184.00	5,524.4	-1,390.7	-253.5	1,413.6	2.47	-2.47	1.71
5,856.0	2.20	183.10	5,617.3	-1,395.3	-253.8	1,418.1	1.40	-1.40	-0.97
5,949.0	0.90	157.90	5,710.3	-1,397.7	-253.6	1,420.5	1.55	-1.40	-27.10
6,042.0	0.90	160.40	5,803.3	-1,399.1	-253.1	1,421.8	0.04	0.00	2.69
6,135.0	1.10	115.30	5,896.2	-1,400.2	-252.0	1,422.7	0.85	0.22	-48.49
6,238.6	0.86	104.99	5,999.8	-1,400.8	-250.4	1,423.0	0.29	-0.23	-9.95
Drill Target BHL 2442'FNL, 1321'FEL									
6,322.0	0.70	91.90	6,083.2	-1,401.0	-249.3	1,423.0	0.29	-0.19	-15.69
6,508.0	1.70	80.90	6,269.2	-1,400.6	-245.4	1,421.9	0.55	0.54	-5.91

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Noffsinger 2SD
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<b>Well:</b>	Noffsinger 2SD	<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)
6,695.0	2.50	66.00	6,456.0	-1,398.5	-238.9	1,418.7	0.51	0.43	-7.97
6,880.0	3.00	20.40	6,640.9	-1,392.3	-233.6	1,411.7	1.18	0.27	-24.65
7,067.0	2.20	264.40	6,827.8	-1,388.1	-235.4	1,407.9	2.37	-0.43	-62.03
7,256.0	2.80	239.00	7,016.6	-1,390.8	-243.0	1,411.9	0.66	0.32	-13.44
7,305.0	2.80	239.00	7,065.5	-1,392.0	-245.0	1,413.4	0.00	0.00	0.00
Hardline 75'S of BHL									

Checked By: _____	Approved By: _____	Date: _____
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