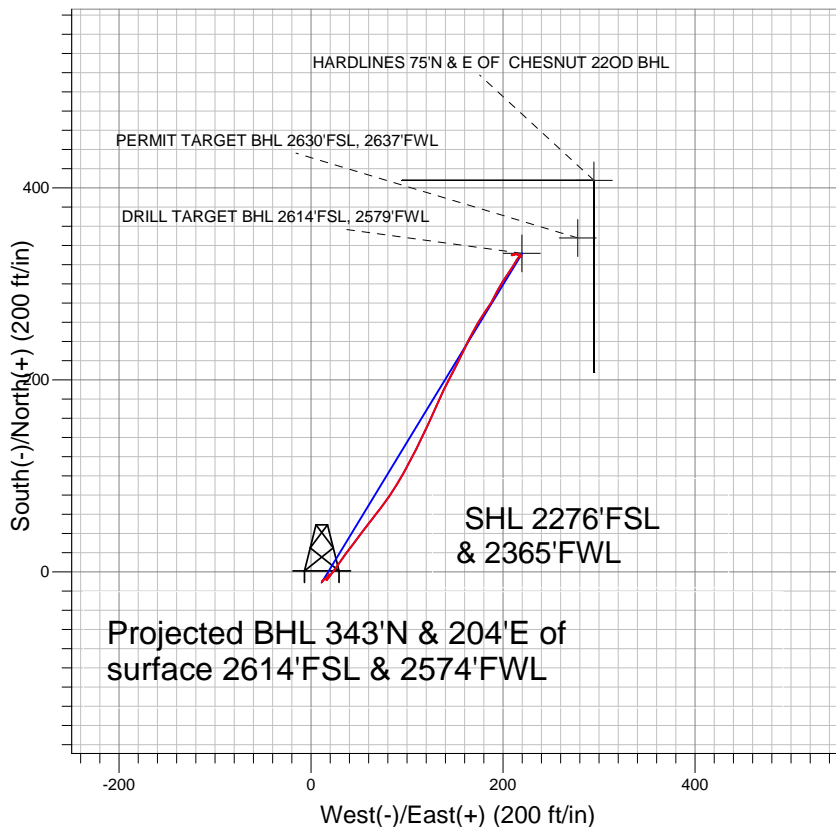
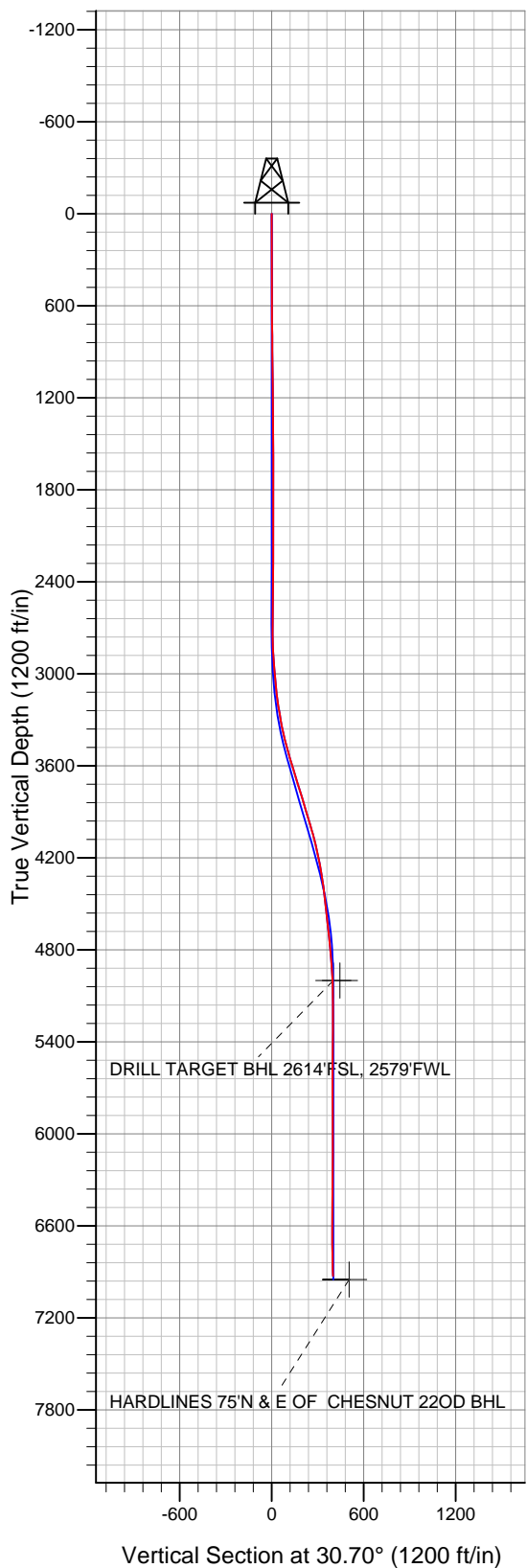


## PETROLEUM DEVELOPMENT CORP Weld County CO



### LEGEND

- Chesnut 22OD, Wellbore #1, Plan #1 (5-24-10) V0
- Wellbore #1
- Survey #1

## Final Survey Plot

Projected Final Survey -  
6971'MD & 6928'TVD @ 399' VS  
1.7 deg Inc 56.2 deg AZ

Project: SEC.22-T5N-R64W  
Site: Chesnut 22KD Pad Sec.22-T5N-R64W  
Well: Chesnut 22OD  
Plan: Wellbore #1



## **Directional**

# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.22-T5N-R64W**

**Chesnut 22KD Pad Sec.22-T5N-R64W**

**Chesnut 22OD**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**22 December, 2010**

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Site Chesnut 22KD Pad Sec.22-T5N-R64W
<b>Project:</b>	SEC.22-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4613.0ft (Original Well Elev)
<b>Site:</b>	Chesnut 22KD Pad Sec.22-T5N-R64W	<b>MD Reference:</b>	WELL @ 4613.0ft (Original Well Elev)
<b>Well:</b>	Chesnut 22OD	<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.22-T5N-R64W, 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		Chesnut 22KD Pad Sec.22-T5N-R64W			
Site Position:		Northing:	1,384,126.67 ft	Latitude:	40° 23' 1.788 N
From:	Lat/Long	Easting:	3,268,289.24 ft	Longitude:	104° 32' 12.876 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.62 °

Well	Chesnut 22OD					
Well Position	+N-S	-10.9 ft	Northing:	1,384,115.85 ft	Latitude:	40° 23' 1.680 N
	+E-W	11.1 ft	Easting:	3,268,300.50 ft	Longitude:	104° 32' 12.732 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,600.0 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	11/23/2010	8.82	67.09	53,208

<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	-10.9	11.1	30.70	

<b>Survey Program</b>	<b>Date</b>	12/22/2010			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
701.0	6,971.0	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	-10.9	11.1	0.0	0.00	0.00	0.00	
701.0	0.40	28.00	701.0	-8.8	12.3	2.4	0.06	0.06	0.00	
796.0	0.50	67.30	796.0	-8.3	12.8	3.1	0.33	0.11	41.37	
891.0	0.60	69.60	891.0	-8.0	13.7	3.8	0.11	0.11	2.42	
986.0	0.70	48.60	986.0	-7.4	14.6	4.8	0.27	0.11	-22.11	
1,080.0	0.80	64.20	1,080.0	-6.8	15.6	5.9	0.24	0.11	16.60	
1,175.0	0.60	70.10	1,175.0	-6.3	16.7	6.8	0.22	-0.21	6.21	
1,270.0	0.50	38.10	1,270.0	-5.8	17.4	7.6	0.33	-0.11	-33.68	
1,365.0	0.60	19.90	1,365.0	-5.0	17.8	8.5	0.21	0.11	-19.16	
1,460.0	0.70	357.00	1,460.0	-4.0	18.0	9.5	0.29	0.11	-24.11	
1,555.0	0.20	2.40	1,554.9	-3.2	17.9	10.1	0.53	-0.53	5.68	
1,650.0	0.10	62.50	1,649.9	-3.0	18.0	10.3	0.18	-0.11	63.26	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Site Chesnut 22KD Pad Sec.22-T5N-R64W
<b>Project:</b>	SEC.22-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4613.0ft (Original Well Elev)
<b>Site:</b>	Chesnut 22KD Pad Sec.22-T5N-R64W	<b>MD Reference:</b>	WELL @ 4613.0ft (Original Well Elev)
<b>Well:</b>	Chesnut 22OD	<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)
1,745.0	0.20	23.70	1,744.9	-2.8	18.2	10.5	0.14	0.11	-40.84
1,838.0	0.30	83.00	1,837.9	-2.7	18.5	10.9	0.28	0.11	63.76
1,933.0	0.10	103.30	1,932.9	-2.6	18.8	11.0	0.22	-0.21	21.37
2,026.0	0.20	233.60	2,025.9	-2.8	18.7	10.9	0.30	0.11	140.11
2,122.0	0.40	238.10	2,121.9	-3.0	18.3	10.5	0.21	0.21	4.69
2,217.0	0.70	214.00	2,216.9	-3.7	17.7	9.6	0.39	0.32	-25.37
2,312.0	0.40	207.00	2,311.9	-4.5	17.2	8.7	0.32	-0.32	-7.37
2,408.0	0.60	197.80	2,407.9	-5.2	16.9	7.8	0.22	0.21	-9.58
2,503.0	0.80	196.80	2,502.9	-6.4	16.6	6.7	0.21	0.21	-1.05
2,597.0	1.10	186.20	2,596.9	-7.9	16.3	5.3	0.37	0.32	-11.28
2,692.0	0.60	36.40	2,691.9	-8.4	16.5	4.9	1.73	-0.53	-157.68
2,787.0	1.70	34.30	2,786.9	-6.8	17.6	6.8	1.16	1.16	-2.21
2,882.0	3.50	38.50	2,881.8	-3.4	20.2	11.1	1.90	1.89	4.42
2,976.0	4.50	38.00	2,975.6	1.8	24.2	17.6	1.06	1.06	-0.53
3,070.0	5.50	31.00	3,069.2	8.5	28.8	25.8	1.24	1.06	-7.45
3,165.0	7.90	38.60	3,163.5	17.5	35.2	36.8	2.69	2.53	8.00
3,260.0	9.40	36.00	3,257.5	28.9	43.9	51.0	1.63	1.58	-2.74
3,355.0	11.30	37.20	3,350.9	42.6	54.1	68.0	2.01	2.00	1.26
3,449.0	14.50	38.20	3,442.5	59.2	66.9	88.8	3.41	3.40	1.06
3,544.0	16.50	34.80	3,534.1	79.6	82.0	114.0	2.31	2.11	-3.58
3,639.0	17.10	29.10	3,625.0	102.9	96.5	141.5	1.84	0.63	-6.00
3,733.0	17.30	26.90	3,714.8	127.4	109.5	169.2	0.72	0.21	-2.34
3,829.0	17.00	24.20	3,806.5	153.0	121.7	197.4	0.89	-0.31	-2.81
3,922.0	16.50	24.10	3,895.6	177.4	132.7	224.0	0.54	-0.54	-0.11
4,018.0	16.80	27.50	3,987.6	202.2	144.7	251.4	1.06	0.31	3.54
4,110.0	14.80	25.80	4,076.1	224.6	155.9	276.4	2.23	-2.17	-1.85
4,205.0	12.20	26.90	4,168.5	244.4	165.7	298.5	2.75	-2.74	1.16
4,299.0	9.90	31.10	4,260.7	260.2	174.4	316.5	2.59	-2.45	4.47
4,394.0	8.90	35.60	4,354.4	273.2	182.9	332.0	1.31	-1.05	4.74
4,487.0	6.40	27.10	4,446.6	283.7	189.5	344.3	2.94	-2.69	-9.14
4,581.0	6.00	27.00	4,540.1	292.7	194.1	354.5	0.43	-0.43	-0.11
4,676.0	6.50	33.50	4,634.5	301.6	199.3	364.8	0.91	0.53	6.84
4,771.0	5.70	34.20	4,729.0	310.0	204.9	374.9	0.85	-0.84	0.74
4,866.0	5.30	31.70	4,823.5	317.6	209.9	384.0	0.49	-0.42	-2.63
4,962.0	4.00	30.90	4,919.2	324.3	213.9	391.8	1.36	-1.35	-0.83
5,043.2	2.18	35.63	5,000.3	328.0	216.3	396.1	2.26	-2.24	5.83
<b>DRILL TARGET BHL 2614'FSL, 2579'FWL</b>									
5,045.5	2.13	35.88	5,002.6	328.0	216.3	396.2	2.26	-2.22	10.91
<b>PERMIT TARGET BHL 2630'FSL, 2637'FWL</b>									
5,056.0	1.90	37.20	5,013.1	328.3	216.5	396.6	2.26	-2.21	12.54
5,151.0	0.60	60.60	5,108.1	329.8	217.9	398.6	1.44	-1.37	24.63
5,246.0	0.50	101.30	5,203.0	330.0	218.8	399.1	0.41	-0.11	42.84
5,342.0	0.60	175.40	5,299.0	329.4	219.2	398.9	0.70	0.10	77.19
5,437.0	0.40	201.90	5,394.0	328.6	219.1	398.1	0.32	-0.21	27.89
5,532.0	0.10	224.20	5,489.0	328.2	219.0	397.7	0.33	-0.32	23.47
5,627.0	0.20	270.50	5,584.0	328.2	218.7	397.6	0.16	0.11	48.74
5,722.0	0.10	296.90	5,679.0	328.2	218.5	397.5	0.13	-0.11	27.79
5,816.0	0.40	306.50	5,773.0	328.4	218.2	397.5	0.32	0.32	10.21
5,911.0	0.40	333.50	5,868.0	328.9	217.7	397.7	0.20	0.00	28.42
6,005.0	0.50	299.80	5,962.0	329.4	217.2	397.9	0.30	0.11	-35.85
6,100.0	0.80	292.30	6,057.0	329.9	216.3	397.8	0.33	0.32	-7.89
6,195.0	0.90	303.50	6,152.0	330.6	215.0	397.7	0.20	0.11	11.79
6,290.0	0.70	294.70	6,247.0	331.2	213.9	397.7	0.25	-0.21	-9.26

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Site Chesnut 22KD Pad Sec.22-T5N-R64W
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<b>Well:</b>	Chesnut 22OD	<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)
6,385.0	0.50	236.60	6,342.0	331.2	213.0	397.3	0.64	-0.21	-61.16
6,480.0	1.80	261.50	6,437.0	330.8	211.2	396.0	1.43	1.37	26.21
6,574.0	0.70	232.60	6,531.0	330.2	209.3	394.5	1.31	-1.17	-30.74
6,669.0	0.80	95.10	6,626.0	329.8	209.5	394.2	1.47	0.11	-144.74
6,762.0	0.80	69.20	6,718.9	330.0	210.7	395.0	0.39	0.00	-27.85
6,858.0	1.30	64.00	6,814.9	330.7	212.3	396.5	0.53	0.52	-5.42
6,929.0	1.50	60.10	6,885.9	331.5	213.9	397.9	0.31	0.28	-5.49
6,971.0	1.70	56.20	6,927.9	332.1	214.9	399.0	0.54	0.48	-9.29
HARDLINES 75'N & E OF CHESNUT 22OD BHL									

Checked By: _____	Approved By: _____	Date: _____
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