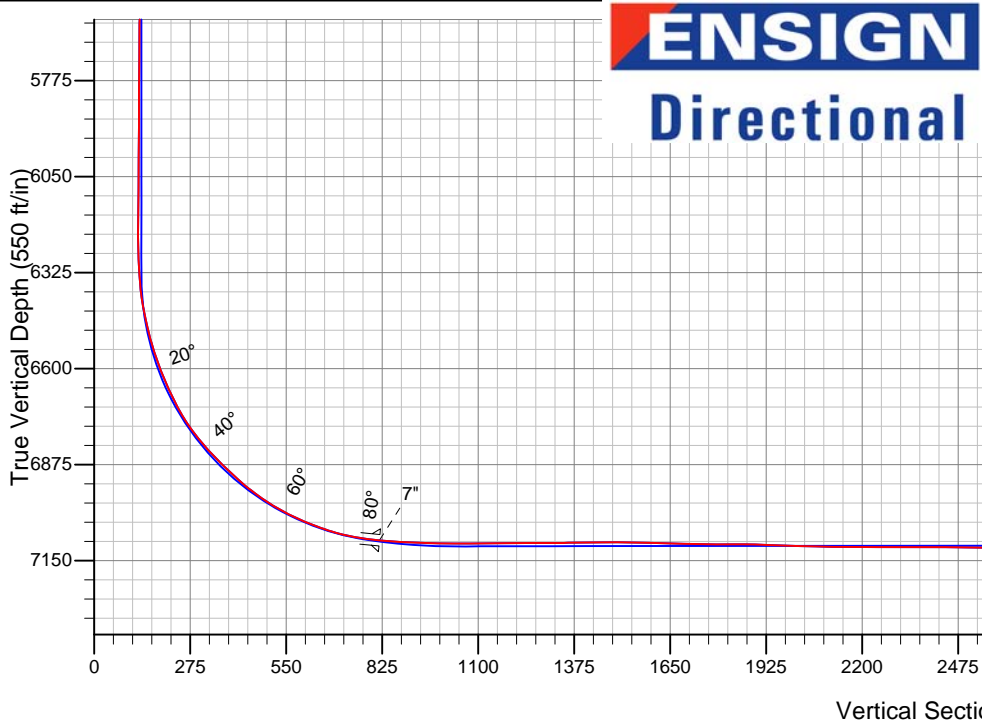
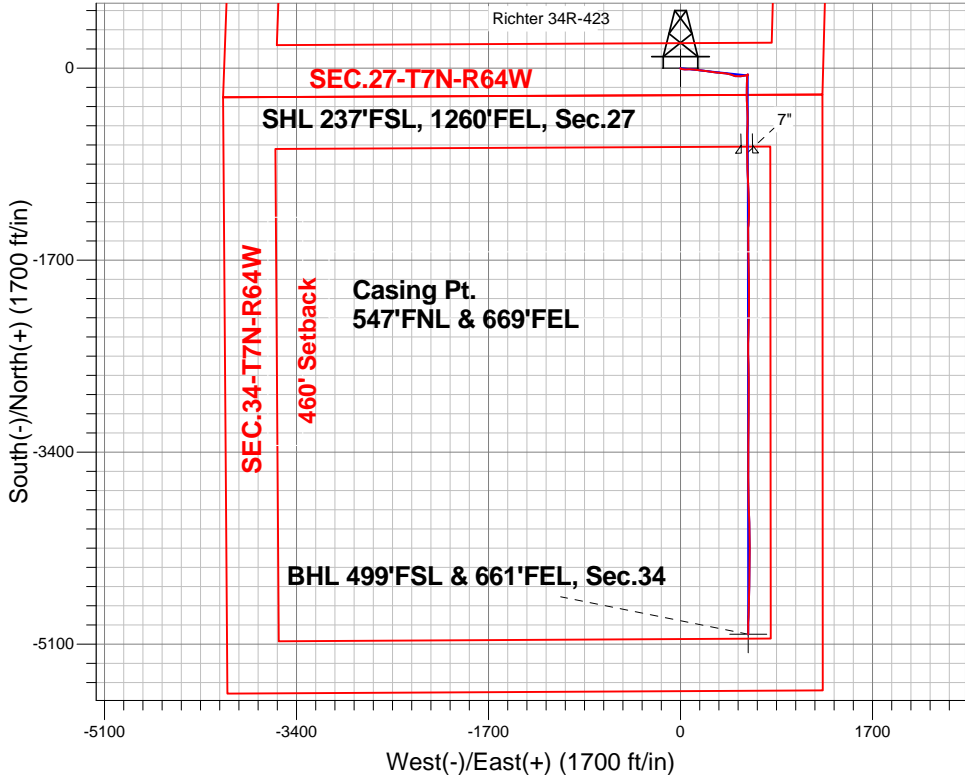


PETROLEUM DEVELOPMENT CORP Weld County CO

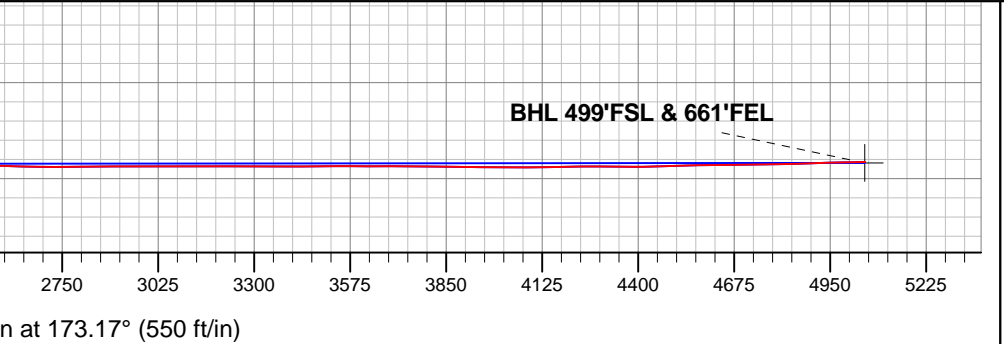
Well Name: **Richter 34R-423**
Surface Location: Richter 27T-HZ Pad Sec.27-T7N-R64W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4870.0
+N/-S +E/-W Northing Easting Latitude Longitude Slot
0.0 0.0 1440181.01 3269248.12 40.537660 -104.531270
RKB - 13.5' WELL @ 4883.5ft (RKB - 13.5')

FINAL SURVEY

Projected Bottom Hole Location
11760'MD 7102'TVD 5014'S & 600'E of SHL
91.1 degree Incl @ 180.2 degree AZM



Richter 27T-HZ Pad Sec.27-T7N-R64W Richter 34R-423 Wellbore #1 9:07, January 06 2014	ANNOTATIONS
	No annotation data is available.
LEGEND	
◆ Richter 34R-423, Wellbore #1, Plan #2 (12-17-13)R V0	
□ Wellbore #1	
○ Survey #1	





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.27-T7N-R64W

Richter 27T-HZ Pad Sec.27-T7N-R64W

Richter 34R-423

Wellbore #1

Survey: Survey #1

Standard Survey Report

07 January, 2014

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Richter 34R-423
Project:	SEC.27-T7N-R64W	TVD Reference:	WELL @ 4883.5ft (RKB - 13.5')
Site:	Richter 27T-HZ Pad Sec.27-T7N-R64W	MD Reference:	WELL @ 4883.5ft (RKB - 13.5')
Well:	Richter 34R-423	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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)
994.0	3.10	100.40	993.7	-7.5	12.4	8.9	0.82	0.82	0.82
1,088.0	3.70	96.00	1,087.6	-8.3	17.9	10.3	0.70	0.64	-4.68
1,184.0	3.80	100.40	1,183.4	-9.2	24.1	12.0	0.32	0.10	4.58
1,279.0	5.60	96.70	1,278.0	-10.3	31.8	14.0	1.92	1.89	-3.89
1,374.0	7.50	90.90	1,372.4	-10.9	42.6	15.9	2.12	2.00	-6.11
1,470.0	8.90	89.30	1,467.4	-10.9	56.3	17.5	1.48	1.46	-1.67
1,565.0	9.20	84.20	1,561.3	-10.1	71.2	18.5	0.90	0.32	-5.37
1,660.0	9.10	94.00	1,655.1	-9.8	86.3	20.0	1.64	-0.11	10.32
1,755.0	9.10	97.00	1,748.9	-11.3	101.2	23.2	0.50	0.00	3.16
1,851.0	9.10	92.60	1,843.7	-12.5	116.3	26.3	0.72	0.00	-4.58
1,946.0	8.80	99.70	1,937.5	-14.1	131.0	29.6	1.20	-0.32	7.47
2,041.0	9.60	96.90	2,031.3	-16.3	146.0	33.5	0.96	0.84	-2.95
2,137.0	9.30	94.20	2,126.0	-17.8	161.7	36.9	0.56	-0.31	-2.81
2,232.0	8.60	99.10	2,219.8	-19.5	176.4	40.3	1.09	-0.74	5.16
2,327.0	8.70	96.20	2,313.7	-21.4	190.5	43.9	0.47	0.11	-3.05
2,422.0	8.50	97.90	2,407.7	-23.1	204.6	47.3	0.34	-0.21	1.79
2,518.0	9.50	97.70	2,502.5	-25.2	219.5	51.1	1.04	1.04	-0.21
2,613.0	9.20	93.90	2,596.2	-26.7	234.9	54.5	0.72	-0.32	-4.00
2,708.0	9.40	97.60	2,690.0	-28.3	250.1	57.8	0.66	0.21	3.89
2,803.0	9.70	101.10	2,783.7	-30.8	265.7	62.2	0.69	0.32	3.68
2,899.0	9.10	101.10	2,878.4	-33.9	281.1	67.1	0.63	-0.63	0.00
2,994.0	9.80	97.60	2,972.1	-36.4	296.4	71.4	0.95	0.74	-3.68
3,089.0	9.50	94.90	3,065.7	-38.1	312.3	75.0	0.57	-0.32	-2.84
3,184.0	9.10	96.00	3,159.5	-39.6	327.5	78.3	0.46	-0.42	1.16
3,279.0	9.20	93.70	3,253.3	-40.9	342.6	81.3	0.40	0.11	-2.42
3,375.0	10.00	98.10	3,347.9	-42.5	358.5	84.9	1.13	0.83	4.58
3,470.0	9.30	96.90	3,441.6	-44.6	374.3	88.8	0.77	-0.74	-1.26
3,565.0	8.30	96.20	3,535.5	-46.3	388.7	92.2	1.06	-1.05	-0.74
3,660.0	7.20	95.60	3,629.6	-47.6	401.5	95.0	1.16	-1.16	-0.63
3,755.0	7.10	91.80	3,723.9	-48.4	413.3	97.2	0.51	-0.11	-4.00
3,851.0	7.90	103.50	3,819.0	-50.1	425.6	100.3	1.79	0.83	12.19
3,945.0	9.80	111.10	3,911.9	-54.5	439.4	106.3	2.37	2.02	8.09
4,041.0	11.00	114.60	4,006.4	-61.2	455.3	114.9	1.41	1.25	3.65
4,136.0	11.10	105.30	4,099.6	-67.4	472.4	123.1	1.88	0.11	-9.79
4,231.0	9.80	96.20	4,193.0	-70.7	489.2	128.4	2.21	-1.37	-9.58
4,326.0	8.70	89.10	4,286.8	-71.5	504.5	130.9	1.67	-1.16	-7.47
4,422.0	7.40	90.70	4,381.8	-71.4	517.9	132.5	1.37	-1.35	1.67
4,517.0	8.30	87.90	4,476.0	-71.2	530.9	133.9	1.03	0.95	-2.95
4,612.0	6.30	88.60	4,570.2	-70.9	542.9	134.9	2.11	-2.11	0.74
4,707.0	6.20	78.80	4,664.6	-69.7	553.2	135.0	1.13	-0.11	-10.32
4,802.0	5.30	81.20	4,759.1	-68.1	562.5	134.5	0.98	-0.95	2.53
4,896.0	4.60	74.20	4,852.8	-66.4	570.5	133.8	0.98	-0.74	-7.45
4,991.0	4.00	70.80	4,947.5	-64.3	577.3	132.5	0.69	-0.63	-3.58
5,086.0	3.30	74.50	5,042.3	-62.4	583.0	131.3	0.78	-0.74	3.89
5,181.0	2.50	74.40	5,137.2	-61.1	587.7	130.6	0.84	-0.84	-0.11
5,276.0	0.90	107.60	5,232.2	-60.8	590.4	130.6	1.91	-1.68	34.95
5,371.0	1.40	78.90	5,327.1	-60.8	592.2	130.8	0.79	0.53	-30.21
5,466.0	0.80	93.30	5,422.1	-60.6	594.0	130.9	0.69	-0.63	15.16
5,561.0	1.10	50.50	5,517.1	-60.1	595.4	130.5	0.79	0.32	-45.05
5,657.0	0.50	50.50	5,613.1	-59.2	596.4	129.8	0.63	-0.63	0.00
5,752.0	0.80	358.20	5,708.1	-58.3	596.7	128.9	0.67	0.32	-55.05
5,847.0	0.30	65.20	5,803.1	-57.5	596.9	128.1	0.78	-0.53	70.53
5,942.0	0.60	295.30	5,898.1	-57.2	596.7	127.8	0.87	0.32	-136.74
6,038.0	0.40	353.30	5,994.1	-56.7	596.2	127.2	0.54	-0.21	60.42

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Richter 34R-423
Project:	SEC.27-T7N-R64W	TVD Reference:	WELL @ 4883.5ft (RKB - 13.5')
Site:	Richter 27T-HZ Pad Sec.27-T7N-R64W	MD Reference:	WELL @ 4883.5ft (RKB - 13.5')
Well:	Richter 34R-423	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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)
6,133.0	0.60	323.40	6,089.1	-56.0	595.9	126.4	0.34	0.21	-31.47
6,228.0	1.00	286.50	6,184.1	-55.3	594.8	125.7	0.67	0.42	-38.84
6,323.0	1.80	208.30	6,279.1	-56.4	593.3	126.6	1.97	0.84	-82.32
6,419.0	6.40	189.10	6,374.8	-63.0	591.7	132.9	4.93	4.79	-20.00
6,466.0	10.60	184.90	6,421.3	-69.9	590.9	139.7	9.03	8.94	-8.94
6,514.0	12.90	185.10	6,468.3	-79.6	590.1	149.3	4.79	4.79	0.42
6,561.0	15.10	184.40	6,513.9	-91.0	589.1	160.4	4.69	4.68	-1.49
6,609.0	18.70	180.70	6,559.8	-104.9	588.6	174.2	7.82	7.50	-7.71
6,656.0	21.70	178.90	6,603.9	-121.1	588.6	190.3	6.52	6.38	-3.83
6,704.0	23.70	181.10	6,648.2	-139.6	588.6	208.7	4.53	4.17	4.58
6,751.0	26.70	183.20	6,690.7	-159.6	587.8	228.4	6.66	6.38	4.47
6,800.0	31.10	181.90	6,733.6	-183.3	586.8	251.8	9.07	8.98	-2.65
6,847.0	35.80	179.30	6,772.8	-209.2	586.6	277.5	10.45	10.00	-5.53
6,895.0	40.30	179.30	6,810.6	-238.8	586.9	306.9	9.38	9.38	0.00
6,942.0	43.40	178.60	6,845.6	-270.1	587.5	338.1	6.67	6.60	-1.49
6,990.0	45.80	177.90	6,879.7	-303.8	588.6	371.6	5.10	5.00	-1.46
7,037.0	47.80	177.40	6,911.9	-338.0	590.0	405.8	4.33	4.26	-1.06
7,085.0	51.00	177.00	6,943.1	-374.4	591.7	442.1	6.70	6.67	-0.83
7,132.0	55.70	178.40	6,971.2	-412.1	593.2	479.7	10.28	10.00	2.98
7,181.0	59.80	180.70	6,997.3	-453.5	593.5	520.9	9.26	8.37	4.69
7,228.0	63.60	182.10	7,019.6	-494.9	592.5	561.8	8.50	8.09	2.98
7,276.0	67.60	181.40	7,039.4	-538.6	591.2	605.1	8.44	8.33	-1.46
7,323.0	70.60	181.80	7,056.2	-582.4	590.0	648.5	6.43	6.38	0.85
7,371.0	74.20	180.70	7,070.7	-628.2	589.0	693.8	7.81	7.50	-2.29
7,418.0	79.20	179.30	7,081.5	-673.9	589.0	739.2	11.03	10.64	-2.98
7,465.0	83.60	178.80	7,088.6	-720.4	589.8	785.4	9.42	9.36	-1.06
7,497.0	84.80	178.95	7,091.8	-752.2	590.4	817.1	3.78	3.75	0.47
7"									
7,529.0	86.00	179.10	7,094.4	-784.1	590.9	848.8	3.78	3.75	0.47
7,573.0	86.70	178.40	7,097.2	-828.0	591.9	892.5	2.25	1.59	-1.59
7,666.0	89.00	178.20	7,100.6	-920.9	594.6	985.1	2.48	2.47	-0.22
7,758.0	90.80	177.70	7,100.8	-1,012.8	597.9	1,076.7	2.03	1.96	-0.54
7,850.0	90.70	177.70	7,099.6	-1,104.7	601.6	1,168.4	0.11	-0.11	0.00
7,945.0	89.60	177.40	7,099.4	-1,199.6	605.7	1,263.2	1.20	-1.16	-0.32
8,040.0	91.00	182.50	7,098.9	-1,294.6	605.8	1,357.5	5.57	1.47	5.37
8,135.0	90.70	182.60	7,097.4	-1,389.5	601.5	1,451.2	0.33	-0.32	0.11
8,231.0	88.70	179.80	7,098.0	-1,485.5	599.5	1,546.2	3.58	-2.08	-2.92
8,326.0	88.40	179.10	7,100.4	-1,580.4	600.4	1,640.6	0.80	-0.32	-0.74
8,421.0	89.10	178.80	7,102.4	-1,675.4	602.2	1,735.1	0.80	0.74	-0.32
8,516.0	90.10	179.10	7,103.1	-1,770.4	603.9	1,829.6	1.10	1.05	0.32
8,612.0	87.80	178.60	7,104.9	-1,866.3	605.8	1,925.1	2.45	-2.40	-0.52
8,707.0	88.20	180.00	7,108.2	-1,961.2	607.0	2,019.5	1.53	0.42	1.47
8,802.0	89.20	180.90	7,110.3	-2,056.2	606.3	2,113.7	1.42	1.05	0.95
8,897.0	90.10	181.20	7,110.9	-2,151.2	604.5	2,207.8	1.00	0.95	0.32
8,993.0	90.00	181.20	7,110.8	-2,247.2	602.5	2,302.9	0.10	-0.10	0.00
9,088.0	89.50	180.40	7,111.2	-2,342.2	601.2	2,397.0	0.99	-0.53	-0.84
9,183.0	89.50	180.50	7,112.1	-2,437.2	600.4	2,491.3	0.11	0.00	0.11
9,278.0	88.30	179.70	7,113.9	-2,532.1	600.3	2,585.6	1.52	-1.26	-0.84
9,374.0	89.30	179.50	7,115.9	-2,628.1	600.9	2,680.9	1.06	1.04	-0.21
9,469.0	90.30	179.30	7,116.2	-2,723.1	601.9	2,775.4	1.07	1.05	-0.21
9,564.0	90.60	179.70	7,115.5	-2,818.1	602.8	2,869.8	0.53	0.32	0.42
9,659.0	90.00	180.00	7,115.0	-2,913.1	603.0	2,964.1	0.71	-0.63	0.32
9,755.0	90.00	180.20	7,115.0	-3,009.1	602.8	3,059.4	0.21	0.00	0.21

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Richter 34R-423
Project:	SEC.27-T7N-R64W	TVD Reference:	WELL @ 4883.5ft (RKB - 13.5')
Site:	Richter 27T-HZ Pad Sec.27-T7N-R64W	MD Reference:	WELL @ 4883.5ft (RKB - 13.5')
Well:	Richter 34R-423	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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)
9,850.0	90.50	180.00	7,114.6	-3,104.1	602.7	3,153.7	0.57	0.53	-0.21
9,945.0	89.60	180.70	7,114.5	-3,199.1	602.1	3,248.0	1.20	-0.95	0.74
10,040.0	89.50	180.70	7,115.2	-3,294.1	600.9	3,342.2	0.11	-0.11	0.00
10,136.0	90.70	179.80	7,115.1	-3,390.1	600.5	3,437.4	1.56	1.25	-0.94
10,231.0	90.30	180.40	7,114.2	-3,485.1	600.4	3,531.7	0.76	-0.42	0.63
10,326.0	89.30	179.80	7,114.6	-3,580.1	600.2	3,626.0	1.23	-1.05	-0.63
10,421.0	90.50	179.10	7,114.7	-3,675.1	601.1	3,720.5	1.46	1.26	-0.74
10,516.0	88.90	179.70	7,115.2	-3,770.1	602.1	3,814.9	1.80	-1.68	0.63
10,612.0	89.30	178.80	7,116.7	-3,866.0	603.4	3,910.4	1.03	0.42	-0.94
10,707.0	89.80	177.70	7,117.5	-3,961.0	606.3	4,005.0	1.27	0.53	-1.16
10,802.0	90.30	178.10	7,117.4	-4,055.9	609.7	4,099.7	0.67	0.53	0.42
10,897.0	91.30	179.30	7,116.1	-4,150.9	611.9	4,194.2	1.64	1.05	1.26
10,992.0	89.70	180.40	7,115.2	-4,245.9	612.1	4,288.5	2.04	-1.68	1.16
11,087.0	89.80	180.90	7,115.7	-4,340.9	611.1	4,382.7	0.54	0.11	0.53
11,183.0	91.80	180.00	7,114.3	-4,436.9	610.3	4,477.9	2.28	2.08	-0.94
11,278.0	91.50	180.70	7,111.6	-4,531.8	609.7	4,572.2	0.80	-0.32	0.74
11,373.0	90.10	181.10	7,110.3	-4,626.8	608.2	4,666.3	1.53	-1.47	0.42
11,468.0	91.00	181.80	7,109.3	-4,721.7	605.8	4,760.3	1.20	0.95	0.74
11,554.0	91.50	181.90	7,107.5	-4,807.7	603.1	4,845.3	0.59	0.58	0.12
11,659.0	91.90	180.90	7,104.4	-4,912.6	600.5	4,949.2	1.03	0.38	-0.95
11,708.0	91.10	180.20	7,103.1	-4,961.6	600.0	4,997.7	2.17	-1.63	-1.43
11,759.4	91.10	180.20	7,102.1	-5,013.0	599.8	5,048.7	0.00	0.00	0.00
BHL 500'FSL & 660'FEL									
11,760.0	91.10	180.20	7,102.1	-5,013.6	599.8	5,049.3	0.00	0.00	0.00

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,497.0	7,091.8	7"	7	7-1/2

Checked By: _____ Approved By: _____ Date: _____