

# PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Rieder 18T-321**

Surface Location: Rieder 4N67W18Y Pad Sec.18-T4N-R67W  
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone  
 Ground Elevation: 4806.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1355509.43	3160170.37	40.307850	-104.925680	
RKB -15' WELL @ 4821.0ft (RKB -15')						

## WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 675'FSL & 712'FEL	1.0	0.0	0.0	Point
BHL 500'FNL & 1075'FEL	7025.0	4134.9	-538.2	Point

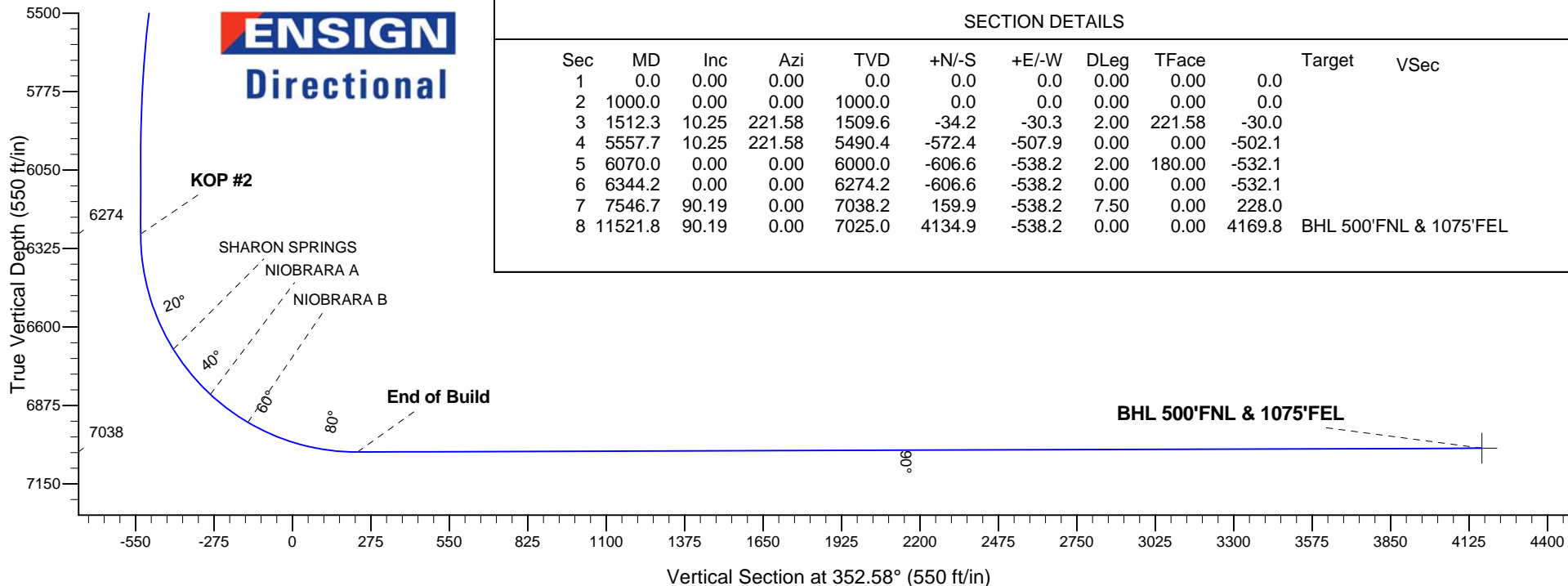
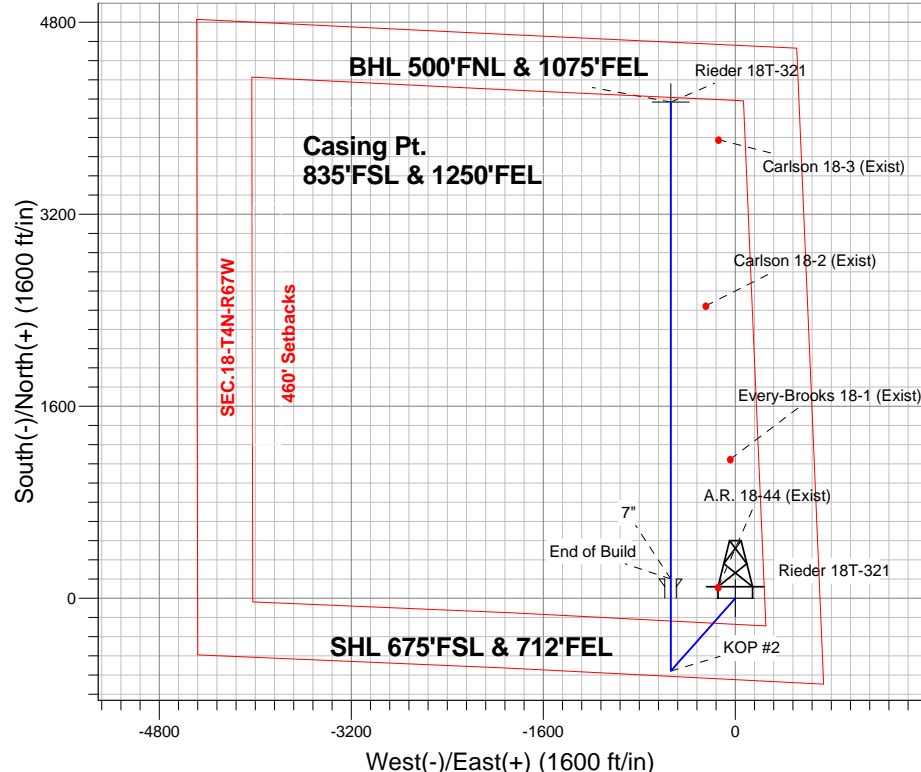


Azimuths to True North  
 Magnetic North: 8.52°  
 Magnetic Field  
 Strength: 52736.9snT  
 Dip Angle: 66.84°  
 Date: 7/31/2014  
 Model: IGRF2010

## ANNOTATIONS

TVD	MD	Annotation
1000.0	1000.0	KOP #1
6274.2	6344.2	KOP #2
7038.2	7546.7	End of Build

Rieder 4N67W18Y Pad Sec.18-T4N-R67W  
 Rieder 18T-321  
 Plan #1 (7-31-14)  
 10:13, August 05 2014





# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.18-T4N-R67W**

**Rieder 4N67W18Y Pad Sec.18-T4N-R67W**

**Rieder 18T-321**

**Wellbore #1**

**Plan: Plan #1 (7-31-14)**

## **Standard Planning Report**

**05 August, 2014**

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Project:</b>	SEC.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (7-31-14)		

<b>Project</b>	SEC.18-T4N-R67W, Weld County, CO		
<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						Rieder 4N67W18Y Pad Sec.18-T4N-R67W											
Site Position:						Northing:			1,355,509.65ft			Latitude:			40.307850		
From:			Lat/Long			Easting:			3,160,201.05ft			Longitude:			-104.925570		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.37 °		

Well	Rieder 18T-321					
Well Position	+N-S	0.0 ft	Northing:	1,355,509.43 ft	Latitude:	40.307850
	+E-W	-30.7 ft	Easting:	3,160,170.37 ft	Longitude:	-104.925680
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,806.0 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	7/31/2014	8.52	66.84	52,737

<b>Design</b>	Plan #1 (7-31-14)			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<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	352.58

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,512.3	10.25	221.58	1,509.6	-34.2	-30.3	2.00	2.00	0.00	221.58	
5,557.7	10.25	221.58	5,490.4	-572.4	-507.9	0.00	0.00	0.00	0.00	
6,070.0	0.00	0.00	6,000.0	-606.6	-538.2	2.00	-2.00	0.00	180.00	
6,344.2	0.00	0.00	6,274.2	-606.6	-538.2	0.00	0.00	0.00	0.00	
7,546.7	90.19	0.00	7,038.2	159.9	-538.2	7.50	7.50	0.00	0.00	
11,521.8	90.19	0.00	7,025.0	4,134.9	-538.2	0.00	0.00	0.00	0.00	BHL 500'FNL & 107

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Project:</b>	SEC.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (7-31-14)		

Planned 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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
1.0	0.00	0.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>SHL 675'FSL &amp; 712'FEL</b>									
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>KOP #1</b>									
1,100.0	2.00	221.58	1,100.0	-1.3	-1.2	-1.1	2.00	2.00	0.00
1,200.0	4.00	221.58	1,199.8	-5.2	-4.6	-4.6	2.00	2.00	0.00
1,300.0	6.00	221.58	1,299.5	-11.7	-10.4	-10.3	2.00	2.00	0.00
1,400.0	8.00	221.58	1,398.7	-20.9	-18.5	-18.3	2.00	2.00	0.00
1,500.0	10.00	221.58	1,497.5	-32.6	-28.9	-28.6	2.00	2.00	0.00
1,512.3	10.25	221.58	1,509.6	-34.2	-30.3	-30.0	2.00	2.00	0.00
1,600.0	10.25	221.58	1,595.9	-45.8	-40.7	-40.2	0.00	0.00	0.00
1,700.0	10.25	221.58	1,694.3	-59.1	-52.5	-51.9	0.00	0.00	0.00
1,800.0	10.25	221.58	1,792.7	-72.5	-64.3	-63.5	0.00	0.00	0.00
1,900.0	10.25	221.58	1,891.1	-85.8	-76.1	-75.2	0.00	0.00	0.00
2,000.0	10.25	221.58	1,989.5	-99.1	-87.9	-86.9	0.00	0.00	0.00
2,100.0	10.25	221.58	2,087.9	-112.4	-99.7	-98.6	0.00	0.00	0.00
2,200.0	10.25	221.58	2,186.3	-125.7	-111.5	-110.2	0.00	0.00	0.00
2,300.0	10.25	221.58	2,284.7	-139.0	-123.3	-121.9	0.00	0.00	0.00
2,400.0	10.25	221.58	2,383.1	-152.3	-135.1	-133.6	0.00	0.00	0.00
2,500.0	10.25	221.58	2,481.5	-165.6	-146.9	-145.2	0.00	0.00	0.00
2,600.0	10.25	221.58	2,579.9	-178.9	-158.7	-156.9	0.00	0.00	0.00
2,700.0	10.25	221.58	2,678.3	-192.2	-170.5	-168.6	0.00	0.00	0.00
2,800.0	10.25	221.58	2,776.7	-205.5	-182.3	-180.3	0.00	0.00	0.00
2,900.0	10.25	221.58	2,875.1	-218.8	-194.1	-191.9	0.00	0.00	0.00
3,000.0	10.25	221.58	2,973.5	-232.1	-205.9	-203.6	0.00	0.00	0.00
3,100.0	10.25	221.58	3,072.0	-245.4	-217.7	-215.3	0.00	0.00	0.00
3,200.0	10.25	221.58	3,170.4	-258.7	-229.6	-226.9	0.00	0.00	0.00
3,300.0	10.25	221.58	3,268.8	-272.0	-241.4	-238.6	0.00	0.00	0.00
3,400.0	10.25	221.58	3,367.2	-285.3	-253.2	-250.3	0.00	0.00	0.00
3,484.2	10.25	221.58	3,450.0	-296.5	-263.1	-260.1	0.00	0.00	0.00
<b>PARKMAN</b>									
3,500.0	10.25	221.58	3,465.6	-298.6	-265.0	-261.9	0.00	0.00	0.00
3,600.0	10.25	221.58	3,564.0	-312.0	-276.8	-273.6	0.00	0.00	0.00
3,700.0	10.25	221.58	3,662.4	-325.3	-288.6	-285.3	0.00	0.00	0.00
3,800.0	10.25	221.58	3,760.8	-338.6	-300.4	-297.0	0.00	0.00	0.00
3,900.0	10.25	221.58	3,859.2	-351.9	-312.2	-308.6	0.00	0.00	0.00
4,000.0	10.25	221.58	3,957.6	-365.2	-324.0	-320.3	0.00	0.00	0.00
4,002.4	10.25	221.58	3,960.0	-365.5	-324.3	-320.6	0.00	0.00	0.00
<b>SUSSEX</b>									
4,100.0	10.25	221.58	4,056.0	-378.5	-335.8	-332.0	0.00	0.00	0.00
4,200.0	10.25	221.58	4,154.4	-391.8	-347.6	-343.6	0.00	0.00	0.00
4,300.0	10.25	221.58	4,252.8	-405.1	-359.4	-355.3	0.00	0.00	0.00
4,400.0	10.25	221.58	4,351.2	-418.4	-371.2	-367.0	0.00	0.00	0.00

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<b>Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (7-31-14)		

Planned 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)
4,500.0	10.25	221.58	4,449.6	-431.7	-383.0	-378.7	0.00	0.00	0.00
4,571.5	10.25	221.58	4,520.0	-441.2	-391.5	-387.0	0.00	0.00	0.00
<b>SHANNON</b>									
4,600.0	10.25	221.58	4,548.0	-445.0	-394.8	-390.3	0.00	0.00	0.00
4,700.0	10.25	221.58	4,646.4	-458.3	-406.6	-402.0	0.00	0.00	0.00
4,800.0	10.25	221.58	4,744.8	-471.6	-418.4	-413.7	0.00	0.00	0.00
4,900.0	10.25	221.58	4,843.3	-484.9	-430.2	-425.3	0.00	0.00	0.00
5,000.0	10.25	221.58	4,941.7	-498.2	-442.0	-437.0	0.00	0.00	0.00
5,100.0	10.25	221.58	5,040.1	-511.5	-453.9	-448.7	0.00	0.00	0.00
5,200.0	10.25	221.58	5,138.5	-524.8	-465.7	-460.3	0.00	0.00	0.00
5,300.0	10.25	221.58	5,236.9	-538.1	-477.5	-472.0	0.00	0.00	0.00
5,400.0	10.25	221.58	5,335.3	-551.4	-489.3	-483.7	0.00	0.00	0.00
5,500.0	10.25	221.58	5,433.7	-564.8	-501.1	-495.4	0.00	0.00	0.00
5,557.7	10.25	221.58	5,490.4	-572.4	-507.9	-502.1	0.00	0.00	0.00
5,600.0	9.40	221.58	5,532.1	-577.8	-512.7	-506.8	2.00	-2.00	0.00
5,700.0	7.40	221.58	5,631.1	-588.8	-522.4	-516.4	2.00	-2.00	0.00
5,800.0	5.40	221.58	5,730.4	-597.1	-529.8	-523.7	2.00	-2.00	0.00
5,900.0	3.40	221.58	5,830.1	-602.8	-534.9	-528.8	2.00	-2.00	0.00
6,000.0	1.40	221.58	5,930.0	-606.0	-537.6	-531.5	2.00	-2.00	0.00
6,070.0	0.00	0.00	6,000.0	-606.6	-538.2	-532.1	2.00	-2.00	0.00
6,100.0	0.00	0.00	6,030.0	-606.6	-538.2	-532.1	0.00	0.00	0.00
6,200.0	0.00	0.00	6,130.0	-606.6	-538.2	-532.1	0.00	0.00	0.00
6,300.0	0.00	0.00	6,230.0	-606.6	-538.2	-532.1	0.00	0.00	0.00
6,344.2	0.00	0.00	6,274.2	-606.6	-538.2	-532.1	0.00	0.00	0.00
<b>KOP #2</b>									
6,400.0	4.18	0.00	6,330.0	-604.6	-538.2	-530.0	7.50	7.50	0.00
6,500.0	11.68	0.00	6,429.0	-590.8	-538.2	-516.4	7.50	7.50	0.00
6,600.0	19.18	0.00	6,525.3	-564.2	-538.2	-490.0	7.50	7.50	0.00
6,700.0	26.68	0.00	6,617.3	-525.2	-538.2	-451.4	7.50	7.50	0.00
6,769.6	31.91	0.00	6,678.0	-491.2	-538.2	-417.6	7.50	7.50	0.00
<b>SHARON SPRINGS</b>									
6,800.0	34.18	0.00	6,703.5	-474.6	-538.2	-401.2	7.50	7.50	0.00
6,900.0	41.68	0.00	6,782.3	-413.2	-538.2	-340.3	7.50	7.50	0.00
6,975.4	47.34	0.00	6,836.0	-360.4	-538.2	-287.9	7.50	7.50	0.00
<b>NIOBRARA A</b>									
7,000.0	49.18	0.00	6,852.4	-342.0	-538.2	-269.7	7.50	7.50	0.00
7,100.0	56.68	0.00	6,912.6	-262.3	-538.2	-190.6	7.50	7.50	0.00
7,140.5	59.73	0.00	6,934.0	-227.8	-538.2	-156.4	7.50	7.50	0.00
<b>NIOBRARA B</b>									
7,200.0	64.18	0.00	6,961.9	-175.3	-538.2	-104.4	7.50	7.50	0.00
7,300.0	71.68	0.00	6,999.5	-82.7	-538.2	-12.6	7.50	7.50	0.00
7,328.7	73.84	0.00	7,008.0	-55.3	-538.2	14.6	7.50	7.50	0.00
<b>NIOBRARA C</b>									
7,400.0	79.18	0.00	7,024.6	14.0	-538.2	83.3	7.50	7.50	0.00
7,500.0	86.68	0.00	7,036.9	113.2	-538.2	181.7	7.50	7.50	0.00
7,546.7	90.19	0.00	7,038.2	159.8	-538.2	228.0	7.50	7.50	0.00
<b>End of Build - 7"</b>									
7,600.0	90.19	0.00	7,038.0	213.1	-538.2	280.8	0.01	0.01	0.00
7,700.0	90.19	0.00	7,037.7	313.1	-538.2	380.0	0.00	0.00	0.00
7,800.0	90.19	0.00	7,037.3	413.1	-538.2	479.1	0.00	0.00	0.00
7,900.0	90.19	0.00	7,037.0	513.1	-538.2	578.3	0.00	0.00	0.00
8,000.0	90.19	0.00	7,036.7	613.1	-538.2	677.5	0.00	0.00	0.00

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<b>Project:</b>	SEC.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (7-31-14)		

Planned 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)
8,100.0	90.19	0.00	7,036.3	713.1	-538.2	776.6	0.00	0.00	0.00
8,200.0	90.19	0.00	7,036.0	813.1	-538.2	875.8	0.00	0.00	0.00
8,300.0	90.19	0.00	7,035.7	913.1	-538.2	975.0	0.00	0.00	0.00
8,400.0	90.19	0.00	7,035.4	1,013.1	-538.2	1,074.1	0.00	0.00	0.00
8,500.0	90.19	0.00	7,035.0	1,113.1	-538.2	1,173.3	0.00	0.00	0.00
8,600.0	90.19	0.00	7,034.7	1,213.1	-538.2	1,272.5	0.00	0.00	0.00
8,700.0	90.19	0.00	7,034.4	1,313.1	-538.2	1,371.6	0.00	0.00	0.00
8,800.0	90.19	0.00	7,034.0	1,413.1	-538.2	1,470.8	0.00	0.00	0.00
8,900.0	90.19	0.00	7,033.7	1,513.1	-538.2	1,569.9	0.00	0.00	0.00
9,000.0	90.19	0.00	7,033.4	1,613.1	-538.2	1,669.1	0.00	0.00	0.00
9,100.0	90.19	0.00	7,033.0	1,713.1	-538.2	1,768.3	0.00	0.00	0.00
9,200.0	90.19	0.00	7,032.7	1,813.1	-538.2	1,867.4	0.00	0.00	0.00
9,300.0	90.19	0.00	7,032.4	1,913.1	-538.2	1,966.6	0.00	0.00	0.00
9,400.0	90.19	0.00	7,032.0	2,013.1	-538.2	2,065.8	0.00	0.00	0.00
9,500.0	90.19	0.00	7,031.7	2,113.1	-538.2	2,164.9	0.00	0.00	0.00
9,600.0	90.19	0.00	7,031.4	2,213.1	-538.2	2,264.1	0.00	0.00	0.00
9,700.0	90.19	0.00	7,031.0	2,313.1	-538.2	2,363.2	0.00	0.00	0.00
9,800.0	90.19	0.00	7,030.7	2,413.1	-538.2	2,462.4	0.00	0.00	0.00
9,900.0	90.19	0.00	7,030.4	2,513.1	-538.2	2,561.6	0.00	0.00	0.00
10,000.0	90.19	0.00	7,030.0	2,613.1	-538.2	2,660.7	0.00	0.00	0.00
10,100.0	90.19	0.00	7,029.7	2,713.1	-538.2	2,759.9	0.00	0.00	0.00
10,200.0	90.19	0.00	7,029.4	2,813.1	-538.2	2,859.1	0.00	0.00	0.00
10,300.0	90.19	0.00	7,029.1	2,913.1	-538.2	2,958.2	0.00	0.00	0.00
10,400.0	90.19	0.00	7,028.7	3,013.1	-538.2	3,057.4	0.00	0.00	0.00
10,500.0	90.19	0.00	7,028.4	3,113.1	-538.2	3,156.5	0.00	0.00	0.00
10,600.0	90.19	0.00	7,028.1	3,213.1	-538.2	3,255.7	0.00	0.00	0.00
10,700.0	90.19	0.00	7,027.7	3,313.1	-538.2	3,354.9	0.00	0.00	0.00
10,800.0	90.19	0.00	7,027.4	3,413.1	-538.2	3,454.0	0.00	0.00	0.00
10,900.0	90.19	0.00	7,027.1	3,513.1	-538.2	3,553.2	0.00	0.00	0.00
11,000.0	90.19	0.00	7,026.7	3,613.1	-538.2	3,652.4	0.00	0.00	0.00
11,100.0	90.19	0.00	7,026.4	3,713.1	-538.2	3,751.5	0.00	0.00	0.00
11,200.0	90.19	0.00	7,026.1	3,813.1	-538.2	3,850.7	0.00	0.00	0.00
11,300.0	90.19	0.00	7,025.7	3,913.1	-538.2	3,949.9	0.00	0.00	0.00
11,400.0	90.19	0.00	7,025.4	4,013.1	-538.2	4,049.0	0.00	0.00	0.00
11,500.0	90.19	0.00	7,025.1	4,113.1	-538.2	4,148.2	0.00	0.00	0.00
11,521.8	90.19	0.00	7,025.0	4,134.9	-538.2	4,169.8	0.00	0.00	0.00
BHL 500'FNL & 1075'FEL									

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,546.7	7,038.2	7"	7	7-1/2

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Project:</b>	SEC.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (7-31-14)		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,484.2	3,450.0	PARKMAN				
4,002.4	3,960.0	SUSSEX				
4,571.5	4,520.0	SHANNON				
6,769.6	6,678.0	SHARON SPRINGS				
6,975.4	6,836.0	NIOBRARA A				
7,140.5	6,934.0	NIOBRARA B				
7,328.7	7,008.0	NIOBRARA C				
	7,132.0	FT HAYS				
	7,154.0	CODELL				

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,000.0	1,000.0	0.0	0.0	KOP #1
6,344.2	6,274.2	-606.6	-538.2	KOP #2
7,546.7	7,038.2	159.8	-538.2	End of Build



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.18-T4N-R67W**

**Rieder 4N67W18Y Pad Sec.18-T4N-R67W**

**Rieder 18T-321**

**Wellbore #1**

**Plan #1 (7-31-14)**

## **Anticollision Report**

**05 August, 2014**





<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Project:</b>	SEC.18-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Reference Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan #1 (7-31-14)		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	MD Interval 100.0ft	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 1,000.0ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma		

<b>Survey Tool Program</b>	<b>Date</b> 8/5/2014			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	11,521.8	Plan #1 (7-31-14) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Existing Wells Sec.18-T4N-R67W						
A.R. 18-44 (Exist) - Wellbore #1 - Wellbore #1	1,388.3	1,371.1	166.8	136.5	5.500	CC
A.R. 18-44 (Exist) - Wellbore #1 - Wellbore #1	1,500.0	1,481.5	167.7	134.9	5.110	ES
A.R. 18-44 (Exist) - Wellbore #1 - Wellbore #1	7,477.8	7,019.3	396.0	237.9	2.505	SF
Carlson 18-2 (Exist) - Wellbore #1 - Wellbore #1	9,824.1	7,011.6	292.8	100.1	1.519	CC, ES, SF
Carlson 18-3 (Exist) - Wellbore #1 - Wellbore #1	11,208.5	7,017.0	398.8	180.3	1.826	CC, ES, SF
Every-Brooks 18-1 (Exist) - Wellbore #1 - Wellbore #1	8,545.4	7,015.9	496.4	325.7	2.909	CC, ES, SF
Rieder 4N67W18Y Pad Sec.18-T4N-R67W						
Rieder 18T-221 - Wellbore #1 - Plan #1 (7-31-14)	1,000.0	1,000.0	30.7	26.4	7.184	CC
Rieder 18T-221 - Wellbore #1 - Plan #1 (7-31-14)	11,514.8	11,419.2	175.9	25.0	1.165	Level 2, ES, SF
Rieder 18T-401 - Wellbore #1 - Plan #1 (7-31-14)	800.0	799.0	30.7	27.3	9.106	CC, ES
Rieder 18T-401 - Wellbore #1 - Plan #1 (7-31-14)	11,521.8	11,624.5	203.2	68.8	1.512	SF
Rieder 18Y-241 - Wellbore #1 - Plan #1 (7-31-14)	1,000.0	1,000.0	58.6	54.3	13.715	CC, ES
Rieder 18Y-241 - Wellbore #1 - Plan #1 (7-31-14)	11,521.8	11,408.0	697.1	530.2	4.178	SF
Rieder 18Y-301 - Wellbore #1 - Plan #1 (7-31-14)	1,000.0	1,000.0	119.9	115.7	28.082	CC, ES
Rieder 18Y-301 - Wellbore #1 - Plan #1 (7-31-14)	1,200.0	1,195.9	127.7	122.7	25.442	SF
Rieder 18Y-441 - Wellbore #1 - Plan #1 (7-31-14)	1,000.0	1,000.0	89.2	85.0	20.899	CC, ES
Rieder 18Y-441 - Wellbore #1 - Plan #1 (7-31-14)	11,521.8	11,609.6	861.0	694.9	5.183	SF

Offset Design Existing Wells Sec.18-T4N-R67W - A.R. 18-44 (Exist) - Wellbore #1 - Wellbore #1												Offset Site Error: 0.0 ft	
Survey Program: 7290-UNKNOWN												Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft) +E/-W (ft)		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)		Separation Factor
0.0	0.0	0.0	0.0	0.0	0.0	-57.37	91.1	-142.2	169.7				
100.0	100.0	84.0	84.0	0.1	1.7	-57.37	91.1	-142.2	168.9	167.1	1.79	94.223	
200.0	200.0	184.0	184.0	0.3	3.7	-57.37	91.1	-142.2	168.9	164.9	4.02	42.043	
300.0	300.0	284.0	284.0	0.6	5.7	-57.37	91.1	-142.2	168.9	162.7	6.24	27.058	
400.0	400.0	384.0	384.0	0.8	7.7	-57.37	91.1	-142.2	168.9	160.4	8.47	19.949	
500.0	500.0	484.0	484.0	1.0	9.7	-57.37	91.1	-142.2	168.9	158.2	10.69	15.798	
600.0	600.0	584.0	584.0	1.2	11.7	-57.37	91.1	-142.2	168.9	156.0	12.92	13.077	
700.0	700.0	684.0	684.0	1.5	13.7	-57.37	91.1	-142.2	168.9	153.8	15.14	11.155	
800.0	800.0	784.0	784.0	1.7	15.7	-57.37	91.1	-142.2	168.9	151.5	17.37	9.726	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Project:</b>	SEC.18-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Reference Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.18-T4N-R67W - A.R. 18-44 (Exist) - Wellbore #1 - Wellbore #1												Offset Site Error: 0.0 ft	
Survey Program: 7290-UNKNOWN												Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			
900.0	900.0	884.0	884.0	1.9	17.7	-57.37	91.1	-142.2	168.9	149.3	19.59	8.622	
1,000.0	1,000.0	984.0	984.0	2.1	19.7	-57.37	91.1	-142.2	168.9	147.1	21.82	7.742	
1,100.0	1,100.0	1,084.0	1,084.0	2.3	21.7	81.64	91.1	-142.2	168.6	144.6	24.01	7.022	
1,200.0	1,199.8	1,183.8	1,183.8	2.5	23.7	83.42	91.1	-142.2	168.0	141.8	26.19	6.412	
1,300.0	1,299.5	1,283.5	1,283.5	2.7	25.7	86.39	91.1	-142.2	167.2	138.8	28.39	5.889	
1,388.3	1,387.1	1,371.1	1,371.1	2.9	27.4	90.00	91.1	-142.2	166.8	136.5	30.34	5.500 CC	
1,400.0	1,398.7	1,382.7	1,382.7	2.9	27.7	90.55	91.1	-142.2	166.9	136.3	30.60	5.453	
1,500.0	1,497.5	1,481.5	1,481.5	3.2	29.6	95.81	91.1	-142.2	167.7	134.9	32.83	5.110 ES	
1,600.0	1,595.9	1,579.9	1,579.9	3.5	31.6	101.67	91.1	-142.2	170.5	135.4	35.07	4.862	
1,700.0	1,694.3	1,678.3	1,678.3	3.8	33.6	107.30	91.1	-142.2	175.0	137.7	37.31	4.691	
1,800.0	1,792.7	1,776.7	1,776.7	4.1	35.5	112.60	91.1	-142.2	181.2	141.6	39.54	4.582	
1,900.0	1,891.1	1,875.1	1,875.1	4.5	37.5	117.53	91.1	-142.2	188.8	147.0	41.76	4.521	
2,000.0	1,989.5	1,973.5	1,973.5	4.8	39.5	122.05	91.1	-142.2	197.8	153.8	43.97	4.497	
2,100.0	2,087.9	2,071.9	2,071.9	5.2	41.4	126.17	91.1	-142.2	207.9	161.7	46.17	4.502	
2,200.0	2,186.3	2,170.3	2,170.3	5.6	43.4	129.89	91.1	-142.2	218.9	170.6	48.35	4.528	
2,300.0	2,284.7	2,268.7	2,268.7	6.0	45.4	133.26	91.1	-142.2	230.8	180.3	50.53	4.569	
2,400.0	2,383.1	2,367.1	2,367.1	6.3	47.3	136.28	91.1	-142.2	243.5	190.8	52.70	4.620	
2,500.0	2,481.5	2,465.5	2,465.5	6.7	49.3	139.01	91.1	-142.2	256.7	201.9	54.86	4.679	
2,600.0	2,579.9	2,563.9	2,563.9	7.1	51.3	141.47	91.1	-142.2	270.5	213.5	57.02	4.743	
2,700.0	2,678.3	2,662.3	2,662.3	7.5	53.2	143.68	91.1	-142.2	284.7	225.5	59.19	4.810	
2,800.0	2,776.7	2,760.7	2,760.7	7.9	55.2	145.69	91.1	-142.2	299.3	237.9	61.34	4.879	
2,900.0	2,875.1	2,859.1	2,859.1	8.3	57.2	147.51	91.1	-142.2	314.2	250.7	63.50	4.948	
3,000.0	2,973.5	2,957.5	2,957.5	8.7	59.2	149.17	91.1	-142.2	329.4	263.8	65.66	5.017	
3,100.0	3,072.0	3,056.0	3,056.0	9.1	61.1	150.68	91.1	-142.2	344.9	277.0	67.82	5.085	
3,200.0	3,170.4	3,154.4	3,154.4	9.5	63.1	152.05	91.1	-142.2	360.5	290.6	69.99	5.152	
3,300.0	3,268.8	3,252.8	3,252.8	9.9	65.1	153.32	91.1	-142.2	376.4	304.3	72.15	5.217	
3,400.0	3,367.2	3,351.2	3,351.2	10.3	67.0	154.48	91.1	-142.2	392.4	318.1	74.31	5.281	
3,500.0	3,465.6	3,449.6	3,449.6	10.7	69.0	155.55	91.1	-142.2	408.6	332.1	76.48	5.343	
3,600.0	3,564.0	3,548.0	3,548.0	11.1	71.0	156.54	91.1	-142.2	424.9	346.3	78.64	5.403	
3,700.0	3,662.4	3,646.4	3,646.4	11.5	72.9	157.46	91.1	-142.2	441.3	360.5	80.81	5.461	
3,800.0	3,760.8	3,744.8	3,744.8	11.9	74.9	158.31	91.1	-142.2	457.8	374.8	82.98	5.517	
3,900.0	3,859.2	3,843.2	3,843.2	12.3	76.9	159.11	91.1	-142.2	474.4	389.3	85.15	5.572	
4,000.0	3,957.6	3,941.6	3,941.6	12.7	78.8	159.84	91.1	-142.2	491.1	403.8	87.32	5.625	
4,100.0	4,056.0	4,040.0	4,040.0	13.1	80.8	160.53	91.1	-142.2	507.9	418.4	89.49	5.675	
4,200.0	4,154.4	4,138.4	4,138.4	13.5	82.8	161.18	91.1	-142.2	524.7	433.1	91.66	5.724	
4,300.0	4,252.8	4,236.8	4,236.8	13.9	84.7	161.79	91.1	-142.2	541.6	447.8	93.84	5.772	
4,400.0	4,351.2	4,335.2	4,335.2	14.3	86.7	162.36	91.1	-142.2	558.6	462.6	96.01	5.818	
4,500.0	4,449.6	4,433.6	4,433.6	14.8	88.7	162.89	91.1	-142.2	575.6	477.4	98.19	5.862	
4,600.0	4,548.0	4,532.0	4,532.0	15.2	90.6	163.40	91.1	-142.2	592.6	492.2	100.36	5.905	
4,700.0	4,646.4	4,630.4	4,630.4	15.6	92.6	163.87	91.1	-142.2	609.7	507.2	102.54	5.946	
4,800.0	4,744.8	4,728.8	4,728.8	16.0	94.6	164.33	91.1	-142.2	626.8	522.1	104.72	5.986	
4,900.0	4,843.3	4,827.3	4,827.3	16.4	96.5	164.75	91.1	-142.2	644.0	537.1	106.90	6.024	
5,000.0	4,941.7	4,925.7	4,925.7	16.8	98.5	165.16	91.1	-142.2	661.2	552.1	109.08	6.062	
5,100.0	5,040.1	5,024.1	5,024.1	17.2	100.5	165.54	91.1	-142.2	678.4	567.2	111.26	6.098	
5,200.0	5,138.5	5,122.5	5,122.5	17.6	102.4	165.91	91.1	-142.2	695.7	582.2	113.44	6.133	
5,300.0	5,236.9	5,220.9	5,220.9	18.0	104.4	166.25	91.1	-142.2	713.0	597.3	115.62	6.166	
5,400.0	5,335.3	5,319.3	5,319.3	18.4	106.4	166.59	91.1	-142.2	730.3	612.5	117.80	6.199	
5,500.0	5,433.7	5,417.7	5,417.7	18.8	108.4	166.90	91.1	-142.2	747.6	627.6	119.98	6.231	
5,600.0	5,532.1	5,516.1	5,516.1	19.2	110.3	167.23	91.1	-142.2	764.6	642.2	122.42	6.246	
5,700.0	5,631.1	5,615.1	5,615.1	19.5	112.3	167.53	91.1	-142.2	778.9	653.8	125.12	6.225	
5,800.0	5,730.4	5,714.4	5,714.4	19.7	114.3	167.75	91.1	-142.2	789.8	662.1	127.69	6.185	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Project:</b>	SEC.18-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Reference Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.18-T4N-R67W - A.R. 18-44 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7290-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
5,900.0	5,830.1	5,814.1	5,814.1	19.9	116.3	167.90	91.1	-142.2	797.3	667.2	130.13	6.127		
6,000.0	5,930.0	5,914.0	5,914.0	20.1	118.3	167.98	91.1	-142.2	801.4	668.9	132.43	6.051		
6,100.0	6,030.0	6,014.0	6,014.0	20.2	120.3	29.58	91.1	-142.2	802.2	667.6	134.61	5.960		
6,200.0	6,130.0	6,114.0	6,114.0	20.3	122.3	29.58	91.1	-142.2	802.2	665.4	136.78	5.865		
6,300.0	6,230.0	6,214.0	6,214.0	20.4	124.3	29.58	91.1	-142.2	802.2	663.3	138.96	5.773		
6,400.0	6,330.0	6,314.0	6,314.0	20.6	126.3	29.71	91.1	-142.2	800.4	659.7	140.74	5.687		
6,500.0	6,429.0	6,413.0	6,413.0	20.6	128.3	30.67	91.1	-142.2	788.5	647.7	140.78	5.601		
6,600.0	6,525.3	6,509.3	6,509.3	20.5	130.2	32.61	91.1	-142.2	765.6	626.4	139.16	5.502		
6,700.0	6,617.3	6,601.3	6,601.3	20.3	132.0	35.72	91.1	-142.2	732.5	596.0	136.51	5.366		
6,800.0	6,703.5	6,687.5	6,687.5	20.1	133.7	40.24	91.1	-142.2	690.5	556.5	134.01	5.153		
6,900.0	6,782.3	6,766.3	6,766.3	19.8	135.3	46.44	91.1	-142.2	641.1	507.7	133.43	4.805		
7,000.0	6,852.4	6,836.4	6,836.4	19.5	136.7	54.44	91.1	-142.2	586.8	450.4	136.43	4.301		
7,100.0	6,912.6	6,896.6	6,896.6	19.2	137.9	63.89	91.1	-142.2	530.7	387.8	142.92	3.713		
7,200.0	6,961.9	6,945.9	6,945.9	18.9	138.9	73.67	91.1	-142.2	477.2	327.1	150.15	3.178		
7,300.0	6,999.5	6,983.5	6,983.5	18.7	139.7	82.15	91.1	-142.2	432.4	277.3	155.11	2.788		
7,400.0	7,024.6	7,008.6	7,008.6	18.4	140.2	87.91	91.1	-142.2	403.4	246.1	157.32	2.564		
7,477.8	7,035.3	7,019.3	7,019.3	18.2	140.4	90.00	91.1	-142.2	396.0	237.9	158.06	2.505 SF		
7,500.0	7,036.9	7,020.9	7,020.9	18.2	140.4	90.18	91.1	-142.2	396.6	238.4	158.20	2.507		
7,600.0	7,038.0	7,022.0	7,022.0	18.4	140.4	89.94	91.1	-142.2	414.3	255.5	158.85	2.608		
7,700.0	7,037.7	7,021.7	7,021.7	19.4	140.4	89.89	91.1	-142.2	454.0	294.3	159.64	2.844		
7,800.0	7,037.3	7,021.3	7,021.3	20.4	140.4	89.85	91.1	-142.2	510.4	349.8	160.59	3.178		
7,900.0	7,037.0	7,021.0	7,021.0	21.6	140.4	89.80	91.1	-142.2	578.7	417.1	161.66	3.580		
8,000.0	7,036.7	7,020.7	7,020.7	22.9	140.4	89.75	91.1	-142.2	655.2	492.4	162.85	4.023		
8,100.0	7,036.3	7,020.3	7,020.3	24.2	140.4	89.70	91.1	-142.2	737.4	573.2	164.14	4.493		
8,200.0	7,036.0	7,020.0	7,020.0	25.6	140.4	89.65	91.1	-142.2	823.5	658.0	165.50	4.976		
8,300.0	7,035.7	7,019.7	7,019.7	27.1	140.4	89.61	91.1	-142.2	912.4	745.5	166.93	5.466		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Project:</b>	SEC.18-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Reference Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Existing Wells Sec.18-T4N-R67W - Carlson 18-2 (Exist) - Wellbore #1 - Wellbore #1												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 7255-UNKNOWN												<b>Offset Well Error:</b>	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,900.0	7,033.7	7,014.7	7,014.7	36.6	140.3	90.60	2,437.2	-245.4	969.4	792.9	176.45	5.494	
9,000.0	7,033.4	7,014.4	7,014.4	38.3	140.3	90.53	2,437.2	-245.4	874.6	696.4	178.15	4.909	
9,100.0	7,033.0	7,014.0	7,014.0	40.1	140.3	90.47	2,437.2	-245.4	781.0	601.2	179.86	4.342	
9,200.0	7,032.7	7,013.7	7,013.7	41.8	140.3	90.40	2,437.2	-245.4	689.4	507.8	181.60	3.796	
9,300.0	7,032.4	7,013.4	7,013.4	43.5	140.3	90.34	2,437.2	-245.4	600.3	417.0	183.35	3.274	
9,400.0	7,032.0	7,013.0	7,013.0	45.3	140.3	90.28	2,437.2	-245.4	515.3	330.2	185.11	2.784	
9,500.0	7,031.7	7,012.7	7,012.7	47.1	140.3	90.21	2,437.2	-245.4	436.8	249.9	186.88	2.337	
9,600.0	7,031.4	7,012.4	7,012.4	48.8	140.2	90.15	2,437.2	-245.4	368.7	180.0	188.66	1.954	
9,700.0	7,031.0	7,012.0	7,012.0	50.6	140.2	90.08	2,437.2	-245.4	318.0	127.5	190.46	1.670	
9,800.0	7,030.7	7,011.7	7,011.7	52.4	140.2	90.02	2,437.2	-245.4	293.8	101.5	192.26	1.528	
9,824.1	7,030.6	7,011.6	7,011.6	52.9	140.2	90.00	2,437.2	-245.4	292.8	100.1	192.69	1.519	CC, ES, SF
9,900.0	7,030.4	7,011.4	7,011.4	54.2	140.2	89.95	2,437.2	-245.4	302.5	108.4	194.07	1.559	
10,000.0	7,030.0	7,011.0	7,011.0	56.1	140.2	89.89	2,437.2	-245.4	341.6	145.7	195.88	1.744	
10,100.0	7,029.7	7,010.7	7,010.7	57.9	140.2	89.82	2,437.2	-245.4	402.3	204.6	197.70	2.035	
10,200.0	7,029.4	7,010.4	7,010.4	59.7	140.2	89.76	2,437.2	-245.4	476.5	276.9	199.53	2.388	
10,300.0	7,029.1	7,010.1	7,010.1	61.5	140.2	89.69	2,437.2	-245.4	558.8	357.4	201.36	2.775	
10,400.0	7,028.7	7,009.7	7,009.7	63.4	140.2	89.63	2,437.2	-245.4	646.1	442.9	203.19	3.179	
10,500.0	7,028.4	7,009.4	7,009.4	65.2	140.2	89.56	2,437.2	-245.4	736.6	531.6	205.03	3.593	
10,600.0	7,028.1	7,009.1	7,009.1	67.1	140.2	89.50	2,437.2	-245.4	829.3	622.4	206.88	4.009	
10,700.0	7,027.7	7,008.7	7,008.7	68.9	140.2	89.43	2,437.2	-245.4	923.5	714.8	208.73	4.425	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Project:</b>	SEC.18-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Reference Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Existing Wells Sec.18-T4N-R67W - Carlson 18-3 (Exist) - Wellbore #1 - Wellbore #1													<b>Offset Site Error:</b>	0.0 ft
Survey Program: 7288-UNKNOWN													<b>Offset Well Error:</b>	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,300.0	7,029.1	7,020.1	7,020.1	61.5	140.4	90.43	90.43	3,821.6	-139.4	992.1	790.5	201.58	4.922	
10,400.0	7,028.7	7,019.7	7,019.7	63.4	140.4	90.39	90.39	3,821.6	-139.4	901.5	698.0	203.42	4.432	
10,500.0	7,028.4	7,019.4	7,019.4	65.2	140.4	90.34	90.34	3,821.6	-139.4	813.0	607.7	205.26	3.961	
10,600.0	7,028.1	7,019.1	7,019.1	67.1	140.4	90.29	90.29	3,821.6	-139.4	727.5	520.4	207.11	3.513	
10,700.0	7,027.7	7,018.7	7,018.7	68.9	140.4	90.24	90.24	3,821.6	-139.4	646.2	437.2	208.96	3.092	
10,800.0	7,027.4	7,018.4	7,018.4	70.8	140.4	90.19	90.19	3,821.6	-139.4	570.8	360.0	210.81	2.708	
10,900.0	7,027.1	7,018.1	7,018.1	72.6	140.4	90.15	90.15	3,821.6	-139.4	504.1	291.5	212.67	2.371	
11,000.0	7,026.7	7,017.7	7,017.7	74.5	140.4	90.10	90.10	3,821.6	-139.4	450.0	235.4	214.53	2.097	
11,100.0	7,026.4	7,017.4	7,017.4	76.4	140.3	90.05	90.05	3,821.6	-139.4	413.2	196.9	216.39	1.910	
11,200.0	7,026.1	7,017.1	7,017.1	78.2	140.3	90.00	90.00	3,821.6	-139.4	398.9	180.6	218.25	1.827	
11,208.5	7,026.0	7,017.0	7,017.0	78.4	140.3	90.00	90.00	3,821.6	-139.4	398.8	180.3	218.41	1.826 CC, ES, SF	
11,300.0	7,025.7	7,016.7	7,016.7	80.1	140.3	89.96	89.96	3,821.6	-139.4	409.1	189.0	220.12	1.859	
11,400.0	7,025.4	7,016.4	7,016.4	82.0	140.3	89.91	89.91	3,821.6	-139.4	442.4	220.4	221.99	1.993	
11,500.0	7,025.1	7,016.1	7,016.1	83.8	140.3	89.86	89.86	3,821.6	-139.4	494.0	270.1	223.86	2.207	
11,521.8	7,025.0	7,016.0	7,016.0	84.2	140.3	89.85	89.85	3,821.6	-139.4	507.1	282.9	224.27	2.261	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Project:</b>	SEC.18-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Reference Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Existing Wells Sec.18-T4N-R67W - Every-Brooks 18-1 (Exist) - Wellbore #1 - Wellbore #1											Offset Site Error:	0.0 ft
Survey Program: 7263-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
7,700.0	7,037.7	7,018.7	7,018.7	19.4	140.4	90.32	1,158.5	-41.8	980.3	820.7	159.60	6.142		
7,800.0	7,037.3	7,018.3	7,018.3	20.4	140.4	90.29	1,158.5	-41.8	895.5	735.0	160.54	5.578		
7,900.0	7,037.0	7,018.0	7,018.0	21.6	140.4	90.25	1,158.5	-41.8	814.2	652.5	161.62	5.038		
8,000.0	7,036.7	7,017.7	7,017.7	22.9	140.4	90.21	1,158.5	-41.8	737.4	574.6	162.81	4.529		
8,100.0	7,036.3	7,017.3	7,017.3	24.2	140.3	90.17	1,158.5	-41.8	666.9	502.8	164.09	4.064		
8,200.0	7,036.0	7,017.0	7,017.0	25.6	140.3	90.13	1,158.5	-41.8	604.7	439.2	165.46	3.655		
8,300.0	7,035.7	7,016.7	7,016.7	27.1	140.3	90.09	1,158.5	-41.8	553.7	386.8	166.89	3.318		
8,400.0	7,035.4	7,016.4	7,016.4	28.6	140.3	90.06	1,158.5	-41.8	517.2	348.8	168.38	3.072		
8,500.0	7,035.0	7,016.0	7,016.0	30.1	140.3	90.02	1,158.5	-41.8	498.4	328.5	169.92	2.933		
8,545.4	7,034.9	7,015.9	7,015.9	30.8	140.3	90.00	1,158.5	-41.8	496.4	325.7	170.64	2.909 CC, ES, SF		
8,600.0	7,034.7	7,015.7	7,015.7	31.7	140.3	89.98	1,158.5	-41.8	499.4	327.9	171.50	2.912		
8,700.0	7,034.4	7,015.4	7,015.4	33.3	140.3	89.94	1,158.5	-41.8	519.9	346.8	173.12	3.003		
8,800.0	7,034.0	7,015.0	7,015.0	35.0	140.3	89.90	1,158.5	-41.8	557.9	383.1	174.76	3.192		
8,900.0	7,033.7	7,014.7	7,014.7	36.6	140.3	89.86	1,158.5	-41.8	610.0	433.6	176.44	3.458		
9,000.0	7,033.4	7,014.4	7,014.4	38.3	140.3	89.83	1,158.5	-41.8	673.1	495.0	178.13	3.779		
9,100.0	7,033.0	7,014.0	7,014.0	40.1	140.3	89.79	1,158.5	-41.8	744.3	564.5	179.85	4.139		
9,200.0	7,032.7	7,013.7	7,013.7	41.8	140.3	89.75	1,158.5	-41.8	821.5	640.0	181.58	4.524		
9,300.0	7,032.4	7,013.4	7,013.4	43.5	140.3	89.71	1,158.5	-41.8	903.2	719.9	183.32	4.927		
9,400.0	7,032.0	7,013.0	7,013.0	45.3	140.3	89.67	1,158.5	-41.8	988.3	803.2	185.09	5.340		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Project:</b>	SEC.18-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Reference Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Rieder 4N67W18Y Pad Sec.18-T4N-R67W - Rieder 18T-221 - Wellbore #1 - Plan #1 (7-31-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	89.99	89.99	0.0	30.7	30.7				
100.0	100.0	100.0	100.0	0.1	0.1	89.99	89.99	0.0	30.7	30.7	30.5	0.22	136.494	
200.0	200.0	200.0	200.0	0.3	0.3	89.99	89.99	0.0	30.7	30.7	30.0	0.67	45.498	
300.0	300.0	300.0	300.0	0.6	0.6	89.99	89.99	0.0	30.7	30.7	29.6	1.12	27.299	
400.0	400.0	400.0	400.0	0.8	0.8	89.99	89.99	0.0	30.7	30.7	29.1	1.57	19.499	
500.0	500.0	500.0	500.0	1.0	1.0	89.99	89.99	0.0	30.7	30.7	28.7	2.02	15.166	
600.0	600.0	600.0	600.0	1.2	1.2	89.99	89.99	0.0	30.7	30.7	28.2	2.47	12.409	
700.0	700.0	700.0	700.0	1.5	1.5	89.99	89.99	0.0	30.7	30.7	27.8	2.92	10.500	
800.0	800.0	800.0	800.0	1.7	1.7	89.99	89.99	0.0	30.7	30.7	27.3	3.37	9.100	
900.0	900.0	900.0	900.0	1.9	1.9	89.99	89.99	0.0	30.7	30.7	26.9	3.82	8.029	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	89.99	89.99	0.0	30.7	30.7	26.4	4.27	7.184 CC	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.4	-133.92	-133.92	0.0	30.7	31.9	27.2	4.69	6.788	
1,200.0	1,199.8	1,199.8	1,199.8	2.5	2.6	-139.93	-139.93	0.0	30.7	35.7	30.6	5.10	7.002	
1,300.0	1,299.5	1,300.6	1,300.5	2.7	2.8	-145.90	-145.90	-1.5	29.7	41.4	35.9	5.48	7.559	
1,400.0	1,398.7	1,401.5	1,401.4	2.9	3.0	-149.89	-149.89	-5.9	26.7	47.7	41.9	5.84	8.165	
1,500.0	1,497.5	1,502.7	1,502.2	3.2	3.2	-152.48	-152.48	-13.3	21.8	54.4	48.2	6.22	8.742	
1,600.0	1,595.9	1,604.2	1,602.9	3.5	3.4	-153.58	-153.58	-23.6	14.8	60.2	53.5	6.64	9.056	
1,700.0	1,694.3	1,706.0	1,703.4	3.8	3.6	-152.71	-152.71	-37.0	5.8	63.0	55.9	7.10	8.875	
1,800.0	1,792.7	1,806.1	1,801.9	4.1	3.9	-150.88	-150.88	-51.8	-4.1	64.3	56.7	7.60	8.461	
1,900.0	1,891.1	1,906.1	1,900.2	4.5	4.2	-149.12	-149.12	-66.6	-14.1	65.6	57.4	8.12	8.074	
2,000.0	1,989.5	2,006.0	1,998.6	4.8	4.5	-147.43	-147.43	-81.3	-24.0	66.9	58.2	8.67	7.715	
2,100.0	2,087.9	2,106.0	2,097.0	5.2	4.9	-145.80	-145.80	-96.1	-33.9	68.3	59.1	9.26	7.383	
2,200.0	2,186.3	2,206.0	2,195.4	5.6	5.2	-144.25	-144.25	-110.9	-43.9	69.8	59.9	9.86	7.078	
2,300.0	2,284.7	2,306.0	2,293.7	6.0	5.6	-142.76	-142.76	-125.7	-53.8	71.3	60.8	10.49	6.798	
2,400.0	2,383.1	2,405.9	2,392.1	6.3	5.9	-141.33	-141.33	-140.5	-63.8	72.9	61.7	11.14	6.541	
2,500.0	2,481.5	2,505.9	2,490.5	6.7	6.3	-139.96	-139.96	-155.3	-73.7	74.5	62.7	11.81	6.306	
2,600.0	2,579.9	2,605.9	2,588.8	7.1	6.7	-138.66	-138.66	-170.0	-83.6	76.1	63.6	12.50	6.091	
2,700.0	2,678.3	2,705.8	2,687.2	7.5	7.0	-137.40	-137.40	-184.8	-93.6	77.8	64.6	13.20	5.895	
2,800.0	2,776.7	2,805.8	2,785.6	7.9	7.4	-136.21	-136.21	-199.6	-103.5	79.5	65.6	13.92	5.715	
2,900.0	2,875.1	2,905.8	2,884.0	8.3	7.8	-135.06	-135.06	-214.4	-113.4	81.3	66.7	14.65	5.550	
3,000.0	2,973.5	3,005.8	2,982.3	8.7	8.2	-133.96	-133.96	-229.2	-123.4	83.1	67.7	15.39	5.399	
3,100.0	3,072.0	3,105.7	3,080.7	9.1	8.6	-132.91	-132.91	-243.9	-133.3	84.9	68.8	16.14	5.260	
3,200.0	3,170.4	3,205.7	3,179.1	9.5	9.0	-131.90	-131.90	-258.7	-143.3	86.7	69.8	16.90	5.133	
3,300.0	3,268.8	3,305.7	3,277.5	9.9	9.4	-130.93	-130.93	-273.5	-153.2	88.6	70.9	17.67	5.015	
3,400.0	3,367.2	3,405.6	3,375.8	10.3	9.8	-130.01	-130.01	-288.3	-163.1	90.5	72.1	18.44	4.907	
3,500.0	3,465.6	3,505.6	3,474.2	10.7	10.2	-129.12	-129.12	-303.1	-173.1	92.4	73.2	19.23	4.807	
3,600.0	3,564.0	3,605.6	3,572.6	11.1	10.6	-128.27	-128.27	-317.9	-183.0	94.4	74.3	20.01	4.714	
3,700.0	3,662.4	3,705.6	3,670.9	11.5	10.9	-127.45	-127.45	-332.6	-192.9	96.3	75.5	20.81	4.629	
3,800.0	3,760.8	3,805.5	3,769.3	11.9	11.3	-126.67	-126.67	-347.4	-202.9	98.3	76.7	21.60	4.549	
3,900.0	3,859.2	3,905.5	3,867.7	12.3	11.7	-125.92	-125.92	-362.2	-212.8	100.3	77.9	22.41	4.475	
4,000.0	3,957.6	4,005.5	3,966.1	12.7	12.1	-125.19	-125.19	-377.0	-222.8	102.3	79.1	23.21	4.407	
4,100.0	4,056.0	4,105.4	4,064.4	13.1	12.6	-124.50	-124.50	-391.8	-232.7	104.3	80.3	24.02	4.343	
4,200.0	4,154.4	4,205.4	4,162.8	13.5	13.0	-123.83	-123.83	-406.5	-242.6	106.3	81.5	24.83	4.283	
4,300.0	4,252.8	4,305.4	4,261.2	13.9	13.4	-123.19	-123.19	-421.3	-252.6	108.4	82.8	25.64	4.227	
4,400.0	4,351.2	4,405.4	4,359.5	14.3	13.8	-122.57	-122.57	-436.1	-262.5	110.5	84.0	26.46	4.175	
4,500.0	4,449.6	4,505.3	4,457.9	14.8	14.2	-121.97	-121.97	-450.9	-272.4	112.5	85.3	27.28	4.126	
4,600.0	4,548.0	4,605.3	4,556.3	15.2	14.6	-121.39	-121.39	-465.7	-282.4	114.6	86.5	28.10	4.079	
4,700.0	4,646.4	4,705.3	4,654.7	15.6	15.0	-120.84	-120.84	-480.4	-292.3	116.7	87.8	28.92	4.036	
4,800.0	4,744.8	4,805.2	4,753.0	16.0	15.4	-120.30	-120.30	-495.2	-302.2	118.8	89.1	29.75	3.995	
4,900.0	4,843.3	4,905.2	4,851.4	16.4	15.8	-119.79	-119.79	-510.0	-312.2	121.0	90.4	30.57	3.957	
5,000.0	4,941.7	5,005.2	4,949.8	16.8	16.2	-119.29	-119.29	-524.8	-322.1	123.1	91.7	31.40	3.921	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Project:</b>	SEC.18-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Reference Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Rieder 4N67W18Y Pad Sec.18-T4N-R67W - Rieder 18T-221 - Wellbore #1 - Plan #1 (7-31-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,040.1	5,105.2	5,048.1	17.2	16.6	-118.81		-539.6	-332.1	125.2	93.0	32.22	3.887	
5,200.0	5,138.5	5,205.1	5,146.5	17.6	17.0	-118.34		-554.4	-342.0	127.4	94.3	33.05	3.854	
5,300.0	5,236.9	5,305.1	5,244.9	18.0	17.4	-117.89		-569.1	-351.9	129.5	95.7	33.88	3.824	
5,400.0	5,335.3	5,404.2	5,342.5	18.4	17.8	-117.67		-583.4	-361.5	131.9	97.2	34.64	3.807	
5,500.0	5,433.7	5,502.5	5,439.8	18.8	18.0	-118.66		-595.0	-369.3	135.3	100.2	35.15	3.849	
5,600.0	5,532.1	5,600.0	5,536.7	19.2	18.3	-120.79		-603.8	-375.3	139.9	104.5	35.44	3.949	
5,700.0	5,631.1	5,698.2	5,634.7	19.5	18.4	-123.09		-609.9	-379.4	144.6	109.1	35.53	4.070	
5,800.0	5,730.4	5,795.7	5,732.1	19.7	18.6	-125.30		-613.2	-381.6	149.1	113.5	35.56	4.192	
5,900.0	5,830.1	5,893.8	5,830.1	19.9	18.7	-127.39		-613.9	-382.0	153.2	117.7	35.54	4.312	
6,000.0	5,930.0	5,993.7	5,930.0	20.1	18.9	-128.65		-613.9	-382.0	155.8	120.2	35.59	4.378	
6,100.0	6,030.0	6,093.7	6,030.0	20.2	19.0	92.67		-613.9	-382.0	156.3	120.5	35.81	4.366	
6,200.0	6,130.0	6,193.7	6,130.0	20.3	19.1	92.67		-613.9	-382.0	156.3	120.3	36.08	4.333	
6,300.0	6,230.0	6,294.1	6,230.4	20.4	19.2	92.01		-612.1	-382.0	156.3	120.0	36.23	4.314	
6,360.3	6,290.3	6,354.4	6,290.3	20.5	19.3	90.12		-605.6	-382.0	156.2	120.2	35.99	4.339	
6,400.0	6,330.0	6,393.5	6,328.8	20.6	19.3	87.88		-598.9	-382.0	156.3	120.7	35.63	4.387	
6,500.0	6,429.0	6,491.2	6,423.1	20.6	19.2	83.39		-573.5	-382.0	157.2	122.5	34.73	4.528	
6,600.0	6,525.3	6,587.4	6,512.1	20.5	19.0	79.11		-537.0	-382.0	159.1	125.4	33.70	4.721	
6,700.0	6,617.3	6,682.3	6,594.6	20.3	18.8	75.15		-490.3	-382.0	161.6	129.0	32.61	4.957	
6,800.0	6,703.5	6,775.9	6,669.8	20.1	18.6	71.56		-434.5	-382.0	164.7	133.2	31.55	5.221	
6,900.0	6,782.3	6,868.5	6,736.8	19.8	18.3	68.39		-370.8	-382.0	168.1	137.5	30.56	5.501	
7,000.0	6,852.4	6,960.1	6,795.1	19.5	18.0	65.66		-300.2	-382.0	171.5	141.8	29.70	5.775	
7,100.0	6,912.6	7,050.0	6,843.7	19.2	17.8	63.39		-224.7	-382.0	174.8	145.8	29.05	6.018	
7,200.0	6,961.9	7,141.1	6,883.6	18.9	17.5	61.52		-142.8	-382.0	177.7	149.1	28.65	6.203	
7,300.0	6,999.5	7,230.7	6,913.0	18.7	17.4	60.10		-58.2	-382.0	180.2	151.6	28.60	6.301	
7,400.0	7,024.6	7,319.9	6,932.2	18.4	17.3	59.09		28.8	-382.0	182.1	153.1	28.92	6.294	
7,500.0	7,036.9	7,408.9	6,941.2	18.2	17.5	58.48		117.3	-382.0	183.2	153.6	29.64	6.181	
7,600.0	7,038.0	7,504.8	6,942.0	18.4	18.1	58.41		213.2	-382.0	183.4	152.6	30.77	5.959	
7,700.0	7,037.7	7,604.8	6,942.0	19.4	19.0	58.51		313.2	-382.0	183.1	150.9	32.22	5.685	
7,800.0	7,037.3	7,704.8	6,942.1	20.4	20.0	58.61		413.2	-382.0	182.9	149.0	33.94	5.390	
7,900.0	7,037.0	7,804.8	6,942.1	21.6	21.2	58.71		513.2	-382.0	182.7	146.8	35.91	5.089	
8,000.0	7,036.7	7,904.8	6,942.2	22.9	22.4	58.82		613.2	-382.0	182.5	144.5	38.08	4.794	
8,100.0	7,036.3	8,004.8	6,942.2	24.2	23.8	58.92		713.2	-382.0	182.4	141.9	40.42	4.511	
8,200.0	7,036.0	8,104.8	6,942.3	25.6	25.2	59.02		813.2	-382.0	182.2	139.2	42.91	4.245	
8,300.0	7,035.7	8,204.8	6,942.3	27.1	26.7	59.13		913.2	-382.0	182.0	136.4	45.52	3.997	
8,400.0	7,035.4	8,304.8	6,942.4	28.6	28.2	59.23		1,013.2	-382.0	181.8	133.5	48.24	3.768	
8,500.0	7,035.0	8,404.8	6,942.4	30.1	29.8	59.34		1,113.2	-382.0	181.6	130.5	51.04	3.557	
8,600.0	7,034.7	8,504.8	6,942.5	31.7	31.4	59.44		1,213.2	-382.0	181.4	127.4	53.92	3.364	
8,700.0	7,034.4	8,604.8	6,942.5	33.3	33.0	59.54		1,313.2	-382.0	181.2	124.3	56.87	3.186	
8,800.0	7,034.0	8,704.8	6,942.6	35.0	34.7	59.65		1,413.2	-382.0	181.0	121.1	59.87	3.023	
8,900.0	7,033.7	8,804.8	6,942.6	36.6	36.4	59.75		1,513.2	-382.0	180.8	117.9	62.92	2.873	
9,000.0	7,033.4	8,904.8	6,942.7	38.3	38.1	59.86		1,613.2	-382.0	180.6	114.6	66.02	2.735	
9,100.0	7,033.0	9,004.8	6,942.7	40.1	39.8	59.96		1,713.2	-382.0	180.4	111.2	69.16	2.608	
9,200.0	7,032.7	9,104.8	6,942.8	41.8	41.5	60.07		1,813.2	-382.0	180.2	107.9	72.33	2.491	
9,300.0	7,032.4	9,204.8	6,942.8	43.5	43.3	60.18		1,913.2	-382.0	180.0	104.5	75.53	2.383	
9,400.0	7,032.0	9,304.8	6,942.9	45.3	45.1	60.28		2,013.2	-382.0	179.8	101.1	78.76	2.283	
9,500.0	7,031.7	9,404.8	6,942.9	47.1	46.8	60.39		2,113.2	-382.0	179.6	97.6	82.01	2.190	
9,600.0	7,031.4	9,504.8	6,943.0	48.8	48.6	60.50		2,213.2	-382.0	179.4	94.1	85.29	2.104	
9,700.0	7,031.0	9,604.8	6,943.0	50.6	50.4	60.60		2,313.2	-382.0	179.3	90.7	88.59	2.023	
9,800.0	7,030.7	9,704.8	6,943.1	52.4	52.2	60.71		2,413.2	-382.0	179.1	87.2	91.91	1.948	
9,900.0	7,030.4	9,804.8	6,943.2	54.2	54.1	60.82		2,513.2	-382.0	178.9	83.6	95.25	1.878	
10,000.0	7,030.0	9,904.8	6,943.2	56.1	55.9	60.92		2,613.2	-382.0	178.7	80.1	98.60	1.812	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Project:</b>	SEC.18-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Reference Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Rieder 4N67W18Y Pad Sec.18-T4N-R67W - Rieder 18T-221 - Wellbore #1 - Plan #1 (7-31-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
10,100.0	7,029.7	10,004.8	6,943.3	57.9	57.7	61.03	2,713.2	-382.0	178.5	76.5	101.97	1.750		
10,200.0	7,029.4	10,104.8	6,943.3	59.7	59.6	61.14	2,813.2	-382.0	178.3	73.0	105.36	1.692		
10,300.0	7,029.1	10,204.8	6,943.4	61.5	61.4	61.25	2,913.2	-382.0	178.1	69.4	108.76	1.638		
10,400.0	7,028.7	10,304.8	6,943.4	63.4	63.2	61.36	3,013.2	-382.0	177.9	65.8	112.17	1.586		
10,500.0	7,028.4	10,404.8	6,943.5	65.2	65.1	61.46	3,113.2	-382.0	177.8	62.2	115.60	1.538		
10,600.0	7,028.1	10,504.8	6,943.5	67.1	66.9	61.57	3,213.2	-382.0	177.6	58.5	119.04	1.492	Level 3	
10,700.0	7,027.7	10,604.8	6,943.6	68.9	68.8	61.68	3,313.2	-382.0	177.4	54.9	122.49	1.448	Level 3	
10,800.0	7,027.4	10,704.8	6,943.6	70.8	70.7	61.79	3,413.2	-382.0	177.2	51.3	125.95	1.407	Level 3	
10,900.0	7,027.1	10,804.8	6,943.7	72.6	72.5	61.90	3,513.2	-382.0	177.0	47.6	129.42	1.368	Level 3	
11,000.0	7,026.7	10,904.8	6,943.7	74.5	74.4	62.01	3,613.2	-382.0	176.9	44.0	132.90	1.331	Level 3	
11,100.0	7,026.4	11,004.8	6,943.8	76.4	76.3	62.12	3,713.2	-382.0	176.7	40.3	136.39	1.295	Level 3	
11,200.0	7,026.1	11,104.8	6,943.8	78.2	78.1	62.23	3,813.2	-382.0	176.5	36.6	139.89	1.262	Level 3	
11,300.0	7,025.7	11,204.8	6,943.9	80.1	80.0	62.34	3,913.2	-382.0	176.3	32.9	143.40	1.230	Level 2	
11,400.0	7,025.4	11,304.8	6,943.9	82.0	81.9	62.45	4,013.2	-382.0	176.1	29.2	146.92	1.199	Level 2	
11,500.0	7,025.1	11,404.8	6,944.0	83.8	83.8	62.56	4,113.2	-382.0	176.0	25.5	150.45	1.170	Level 2	
11,514.8	7,025.0	11,419.2	6,944.0	84.1	84.0	62.58	4,127.6	-382.0	175.9	25.0	150.96	1.165	Level 2, ES, SF	
11,521.8	7,025.0	11,419.2	6,944.0	84.2	84.0	62.58	4,127.6	-382.0	176.1	25.0	151.08	1.165	Level 2	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Project:</b>	SEC.18-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Reference Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Rieder 4N67W18Y Pad Sec.18-T4N-R67W - Rieder 18T-401 - Wellbore #1 - Plan #1 (7-31-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-89.99	-89.99	0.0	-30.7	30.7				
100.0	100.0	99.0	99.0	0.1	0.1	-89.99	-89.99	0.0	-30.7	30.7	30.5	0.22	137.178	
200.0	200.0	199.0	199.0	0.3	0.3	-89.99	-89.99	0.0	-30.7	30.7	30.0	0.67	45.650	
300.0	300.0	299.0	299.0	0.6	0.6	-89.99	-89.99	0.0	-30.7	30.7	29.6	1.12	27.353	
400.0	400.0	399.0	399.0	0.8	0.8	-89.99	-89.99	0.0	-30.7	30.7	29.1	1.57	19.527	
500.0	500.0	499.0	499.0	1.0	1.0	-89.99	-89.99	0.0	-30.7	30.7	28.7	2.02	15.183	
600.0	600.0	599.0	599.0	1.2	1.2	-89.99	-89.99	0.0	-30.7	30.7	28.2	2.47	12.420	
700.0	700.0	699.0	699.0	1.5	1.5	-89.99	-89.99	0.0	-30.7	30.7	27.8	2.92	10.508	
800.0	800.0	799.0	799.0	1.7	1.7	-89.99	-89.99	0.0	-30.7	30.7	27.3	3.37	9.106 CC, ES	
900.0	900.0	898.2	898.2	1.9	1.9	-92.02	-92.02	-1.1	-31.9	32.0	28.2	3.79	8.422	
1,000.0	1,000.0	997.1	997.0	2.1	2.1	-97.24	-97.24	-4.5	-35.7	36.1	31.8	4.21	8.569	
1,100.0	1,100.0	1,095.7	1,095.2	2.3	2.3	36.02	36.02	-10.2	-42.0	42.0	37.4	4.60	9.129	
1,200.0	1,199.8	1,194.1	1,192.9	2.5	2.5	32.57	32.57	-18.1	-50.8	48.3	43.3	4.98	9.699	
1,300.0	1,299.5	1,292.3	1,289.9	2.7	2.8	30.30	30.30	-28.3	-62.0	54.8	49.5	5.37	10.204	
1,400.0	1,398.7	1,391.6	1,387.6	2.9	3.1	29.16	29.16	-40.2	-75.2	60.7	55.0	5.79	10.489	
1,500.0	1,497.5	1,491.6	1,485.9	3.2	3.4	29.68	29.68	-52.3	-88.6	63.7	57.5	6.23	10.224	
1,600.0	1,595.9	1,591.6	1,584.3	3.5	3.8	31.14	31.14	-64.4	-101.9	64.9	58.2	6.73	9.645	
1,700.0	1,694.3	1,691.5	1,682.6	3.8	4.1	32.55	32.55	-76.4	-115.3	66.0	58.8	7.25	9.110	
1,800.0	1,792.7	1,791.5	1,781.0	4.1	4.5	33.92	33.92	-88.5	-128.7	67.2	59.5	7.80	8.625	
1,900.0	1,891.1	1,891.5	1,879.3	4.5	4.9	35.23	35.23	-100.6	-142.1	68.5	60.1	8.37	8.185	
2,000.0	1,889.5	1,891.5	1,877.6	4.8	5.3	36.50	36.50	-112.7	-155.4	69.8	60.8	8.96	7.786	
2,100.0	2,087.9	2,091.5	2,076.0	5.2	5.7	37.73	37.73	-124.8	-168.8	71.1	61.5	9.57	7.425	
2,200.0	2,186.3	2,191.4	2,174.3	5.6	6.0	38.90	38.90	-136.8	-182.2	72.4	62.2	10.20	7.098	
2,300.0	2,284.7	2,291.4	2,272.7	6.0	6.4	40.04	40.04	-148.9	-195.6	73.8	62.9	10.85	6.801	
2,400.0	2,383.1	2,391.4	2,371.0	6.3	6.8	41.13	41.13	-161.0	-209.0	75.2	63.7	11.51	6.531	
2,500.0	2,481.5	2,491.4	2,469.3	6.7	7.2	42.19	42.19	-173.1	-222.3	76.6	64.4	12.19	6.286	
2,600.0	2,579.9	2,591.4	2,567.7	7.1	7.6	43.20	43.20	-185.2	-235.7	78.1	65.2	12.88	6.062	
2,700.0	2,678.3	2,691.3	2,666.0	7.5	8.1	44.18	44.18	-197.2	-249.1	79.5	66.0	13.58	5.858	
2,800.0	2,776.7	2,791.3	2,764.4	7.9	8.5	45.12	45.12	-209.3	-262.5	81.0	66.7	14.29	5.671	
2,900.0	2,875.1	2,891.3	2,862.7	8.3	8.9	46.03	46.03	-221.4	-275.8	82.5	67.5	15.01	5.500	
3,000.0	2,973.5	2,991.3	2,961.1	8.7	9.3	46.90	46.90	-233.5	-289.2	84.1	68.3	15.74	5.342	
3,100.0	3,072.0	3,091.3	3,059.4	9.1	9.7	47.74	47.74	-245.6	-302.6	85.6	69.2	16.48	5.197	
3,200.0	3,170.4	3,191.2	3,157.7	9.5	10.1	48.56	48.56	-257.7	-316.0	87.2	70.0	17.22	5.063	
3,300.0	3,268.8	3,291.2	3,256.1	9.9	10.5	49.34	49.34	-269.7	-329.3	88.8	70.8	17.98	4.940	
3,400.0	3,367.2	3,391.2	3,354.4	10.3	10.9	50.09	50.09	-281.8	-342.7	90.4	71.7	18.73	4.825	
3,500.0	3,465.6	3,491.2	3,452.8	10.7	11.3	50.82	50.82	-293.9	-356.1	92.0	72.5	19.50	4.719	
3,600.0	3,564.0	3,591.2	3,551.1	11.1	11.7	51.53	51.53	-306.0	-369.5	93.7	73.4	20.27	4.620	
3,700.0	3,662.4	3,691.2	3,649.4	11.5	12.1	52.21	52.21	-318.1	-382.9	95.3	74.3	21.05	4.528	
3,800.0	3,760.8	3,791.1	3,747.8	11.9	12.6	52.86	52.86	-330.1	-396.2	97.0	75.1	21.83	4.442	
3,900.0	3,859.2	3,891.1	3,846.1	12.3	13.0	53.50	53.50	-342.2	-409.6	98.6	76.0	22.61	4.362	
4,000.0	3,957.6	3,991.1	3,944.5	12.7	13.4	54.11	54.11	-354.3	-423.0	100.3	76.9	23.40	4.288	
4,100.0	4,056.0	4,091.1	4,042.8	13.1	13.8	54.70	54.70	-366.4	-436.4	102.0	77.8	24.19	4.217	
4,200.0	4,154.4	4,191.1	4,141.2	13.5	14.2	55.28	55.28	-378.5	-449.7	103.7	78.7	24.99	4.152	
4,300.0	4,252.8	4,291.0	4,239.5	13.9	14.6	55.83	55.83	-390.5	-463.1	105.4	79.7	25.78	4.090	
4,400.0	4,351.2	4,391.0	4,337.8	14.3	15.0	56.37	56.37	-402.6	-476.5	107.2	80.6	26.58	4.031	
4,500.0	4,449.6	4,491.0	4,436.2	14.8	15.5	56.89	56.89	-414.7	-489.9	108.9	81.5	27.39	3.977	
4,600.0	4,548.0	4,591.0	4,534.5	15.2	15.9	57.39	57.39	-426.8	-503.3	110.7	82.5	28.19	3.925	
4,700.0	4,646.4	4,691.0	4,632.9	15.6	16.3	57.88	57.88	-438.9	-516.6	112.4	83.4	29.00	3.876	
4,800.0	4,744.8	4,790.9	4,731.2	16.0	16.7	58.35	58.35	-450.9	-530.0	114.2	84.4	29.81	3.830	
4,900.0	4,843.3	4,890.9	4,829.6	16.4	17.1	58.81	58.81	-463.0	-543.4	115.9	85.3	30.62	3.786	
5,000.0	4,941.7	4,990.9	4,927.9	16.8	17.5	59.25	59.25	-475.1	-556.8	117.7	86.3	31.43	3.745	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Project:</b>	SEC.18-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Reference Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Rieder 4N67W18Y Pad Sec.18-T4N-R67W - Rieder 18T-401 - Wellbore #1 - Plan #1 (7-31-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
5,100.0	5,040.1	5,090.9	5,026.2	17.2	17.9	59.69	-487.2	-570.1	119.5	87.2	32.25	3.705		
5,200.0	5,138.5	5,190.9	5,124.6	17.6	18.4	60.10	-499.3	-583.5	121.3	88.2	33.06	3.668		
5,300.0	5,236.9	5,290.8	5,222.9	18.0	18.8	60.51	-511.4	-596.9	123.1	89.2	33.88	3.633		
5,400.0	5,335.3	5,390.8	5,321.3	18.4	19.2	60.90	-523.4	-610.3	124.9	90.2	34.70	3.599		
5,500.0	5,433.7	5,490.8	5,419.6	18.8	19.6	61.29	-535.5	-623.6	126.7	91.2	35.52	3.567		
5,600.0	5,532.1	5,590.8	5,517.9	19.2	20.0	61.55	-547.6	-637.0	128.6	92.4	36.29	3.545		
5,700.0	5,631.1	5,690.7	5,616.2	19.5	20.4	60.74	-559.7	-650.4	132.0	95.2	36.76	3.591		
5,800.0	5,730.4	5,791.4	5,715.3	19.7	20.8	58.78	-571.7	-663.7	137.1	100.1	36.95	3.709		
5,900.0	5,830.1	5,894.2	5,816.9	19.9	21.1	56.60	-582.2	-675.3	142.5	105.5	36.94	3.857		
6,000.0	5,930.0	5,997.4	5,919.4	20.1	21.3	54.51	-590.2	-684.2	147.7	110.8	36.86	4.007		
6,100.0	6,030.0	6,100.8	6,022.5	20.2	21.5	-85.90	-595.7	-690.3	152.6	115.9	36.74	4.154		
6,200.0	6,130.0	6,204.6	6,126.2	20.3	21.7	-87.11	-598.8	-693.7	155.7	118.9	36.77	4.234		
6,300.0	6,230.0	6,307.5	6,229.0	20.4	21.8	-87.36	-599.4	-694.4	156.3	119.3	37.01	4.225		
6,400.0	6,330.0	6,407.4	6,329.0	20.6	22.0	-88.11	-599.4	-694.4	156.3	119.2	37.10	4.212		
6,449.2	6,378.9	6,456.4	6,377.9	20.6	22.0	-90.00	-599.4	-694.4	156.2	119.4	36.75	4.249		
6,500.0	6,429.0	6,506.9	6,428.4	20.6	22.1	-92.49	-597.6	-694.4	156.3	120.1	36.25	4.312		
6,600.0	6,525.3	6,607.8	6,528.3	20.5	22.1	-97.35	-584.1	-694.4	157.5	122.4	35.11	4.486		
6,700.0	6,617.3	6,710.5	6,627.3	20.3	22.0	-102.03	-556.9	-694.4	159.7	125.9	33.86	4.717		
6,800.0	6,703.5	6,815.2	6,723.5	20.1	21.9	-106.39	-515.9	-694.4	162.9	130.3	32.60	4.997		
6,900.0	6,782.3	6,921.8	6,814.8	19.8	21.6	-110.35	-460.9	-694.4	166.7	135.3	31.39	5.311		
7,000.0	6,852.4	7,030.3	6,898.9	19.5	21.3	-113.83	-392.6	-694.4	170.9	140.6	30.28	5.643		
7,100.0	6,912.6	7,140.5	6,973.6	19.2	21.0	-116.79	-311.6	-694.4	175.1	145.7	29.37	5.963		
7,200.0	6,961.9	7,252.4	7,036.7	18.9	20.7	-119.21	-219.3	-694.4	179.1	150.3	28.72	6.234		
7,300.0	6,999.5	7,365.7	7,086.1	18.7	20.3	-121.08	-117.5	-694.4	182.4	154.0	28.45	6.412		
7,400.0	7,024.6	7,480.1	7,120.3	18.4	20.0	-122.41	-8.5	-694.4	185.0	156.4	28.63	6.462		
7,500.0	7,036.9	7,595.2	7,137.8	18.2	19.8	-123.20	105.2	-694.4	186.6	157.3	29.30	6.370		
7,600.0	7,038.0	7,702.8	7,140.3	18.4	19.7	-123.48	212.8	-694.4	187.2	156.9	30.34	6.171		
7,700.0	7,037.7	7,802.8	7,140.6	19.4	20.2	-123.65	312.8	-694.4	187.6	156.0	31.62	5.933		
7,800.0	7,037.3	7,902.8	7,141.0	20.4	21.2	-123.82	412.8	-694.4	188.0	154.8	33.17	5.668		
7,900.0	7,037.0	8,002.8	7,141.3	21.6	22.3	-123.99	512.8	-694.4	188.4	153.4	34.95	5.390		
8,000.0	7,036.7	8,102.8	7,141.7	22.9	23.5	-124.17	612.8	-694.4	188.8	151.8	36.93	5.112		
8,100.0	7,036.3	8,202.8	7,142.0	24.2	24.8	-124.34	712.8	-694.4	189.1	150.1	39.07	4.841		
8,200.0	7,036.0	8,302.8	7,142.4	25.6	26.2	-124.51	812.8	-694.4	189.5	148.2	41.34	4.584		
8,300.0	7,035.7	8,402.8	7,142.7	27.1	27.6	-124.68	912.8	-694.4	189.9	146.2	43.73	4.343		
8,400.0	7,035.4	8,502.8	7,143.1	28.6	29.1	-124.84	1,012.8	-694.4	190.3	144.1	46.21	4.118		
8,500.0	7,035.0	8,602.8	7,143.4	30.1	30.6	-125.01	1,112.8	-694.4	190.7	141.9	48.77	3.910		
8,600.0	7,034.7	8,702.8	7,143.8	31.7	32.2	-125.18	1,212.7	-694.4	191.1	139.7	51.39	3.718		
8,700.0	7,034.4	8,802.8	7,144.1	33.3	33.8	-125.35	1,312.7	-694.4	191.5	137.4	54.06	3.542		
8,800.0	7,034.0	8,902.8	7,144.5	35.0	35.4	-125.51	1,412.7	-694.4	191.9	135.1	56.77	3.379		
8,900.0	7,033.7	9,002.8	7,144.8	36.6	37.0	-125.68	1,512.7	-694.4	192.3	132.7	59.53	3.230		
9,000.0	7,033.4	9,102.8	7,145.2	38.3	38.7	-125.84	1,612.7	-694.4	192.7	130.3	62.31	3.092		
9,100.0	7,033.0	9,202.8	7,145.5	40.1	40.4	-126.01	1,712.7	-694.4	193.1	127.9	65.11	2.965		
9,200.0	7,032.7	9,302.8	7,145.9	41.8	42.1	-126.17	1,812.7	-694.4	193.5	125.5	67.93	2.848		
9,300.0	7,032.4	9,402.8	7,146.2	43.5	43.9	-126.33	1,912.7	-694.4	193.9	123.1	70.77	2.739		
9,400.0	7,032.0	9,502.8	7,146.6	45.3	45.6	-126.49	2,012.7	-694.4	194.3	120.6	73.62	2.639		
9,500.0	7,031.7	9,602.8	7,146.9	47.1	47.4	-126.65	2,112.7	-694.4	194.7	118.2	76.48	2.545		
9,600.0	7,031.4	9,702.8	7,147.3	48.8	49.1	-126.81	2,212.7	-694.4	195.1	115.7	79.35	2.458		
9,700.0	7,031.0	9,802.8	7,147.6	50.6	50.9	-126.97	2,312.7	-694.4	195.5	113.3	82.23	2.377		
9,800.0	7,030.7	9,902.8	7,148.0	52.4	52.7	-127.13	2,412.7	-694.4	195.9	110.8	85.11	2.302		
9,900.0	7,030.4	10,002.8	7,148.3	54.2	54.5	-127.29	2,512.7	-694.4	196.3	108.3	87.99	2.231		
10,000.0	7,030.0	10,102.8	7,148.7	56.1	56.3	-127.45	2,612.7	-694.4	196.7	105.8	90.87	2.165		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Project:</b>	SEC.18-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Reference Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Rieder 4N67W18Y Pad Sec.18-T4N-R67W - Rieder 18T-401 - Wellbore #1 - Plan #1 (7-31-14)												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,100.0	7,029.7	10,202.8	7,149.0	57.9	58.1	-127.61	2,712.7	-694.4	197.1	103.4	93.75	2.103	
10,200.0	7,029.4	10,302.8	7,149.4	59.7	59.9	-127.76	2,812.7	-694.4	197.5	100.9	96.64	2.044	
10,300.0	7,029.1	10,402.8	7,149.7	61.5	61.7	-127.92	2,912.7	-694.4	198.0	98.4	99.52	1.989	
10,400.0	7,028.7	10,502.8	7,150.1	63.4	63.6	-128.07	3,012.7	-694.4	198.4	96.0	102.40	1.937	
10,500.0	7,028.4	10,602.8	7,150.4	65.2	65.4	-128.23	3,112.7	-694.4	198.8	93.5	105.27	1.888	
10,600.0	7,028.1	10,702.8	7,150.8	67.1	67.2	-128.38	3,212.7	-694.4	199.2	91.1	108.14	1.842	
10,700.0	7,027.7	10,802.8	7,151.1	68.9	69.1	-128.54	3,312.7	-694.4	199.6	88.6	111.01	1.798	
10,800.0	7,027.4	10,902.7	7,151.5	70.8	70.9	-128.69	3,412.7	-694.4	200.1	86.2	113.87	1.757	
10,900.0	7,027.1	11,002.7	7,151.8	72.6	72.8	-128.84	3,512.7	-694.4	200.5	83.8	116.73	1.718	
11,000.0	7,026.7	11,102.7	7,152.2	74.5	74.6	-128.99	3,612.7	-694.4	200.9	81.3	119.58	1.680	
11,100.0	7,026.4	11,202.7	7,152.5	76.4	76.5	-129.14	3,712.7	-694.4	201.4	78.9	122.43	1.645	
11,200.0	7,026.1	11,302.7	7,152.8	78.2	78.4	-129.29	3,812.7	-694.4	201.8	76.5	125.27	1.611	
11,300.0	7,025.7	11,402.7	7,153.2	80.1	80.2	-129.44	3,912.7	-694.4	202.2	74.1	128.11	1.578	
11,400.0	7,025.4	11,502.7	7,153.5	82.0	82.1	-129.59	4,012.7	-694.4	202.6	71.7	130.94	1.548	
11,500.0	7,025.1	11,602.7	7,153.9	83.8	84.0	-129.74	4,112.7	-694.4	203.1	69.3	133.76	1.518	
11,521.8	7,025.0	11,624.5	7,154.0	84.2	84.4	-129.77	4,134.4	-694.4	203.2	68.8	134.37	1.512 SF	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Project:</b>	SEC.18-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Reference Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Rieder 4N67W18Y Pad Sec.18-T4N-R67W - Rieder 18Y-241 - Wellbore #1 - Plan #1 (7-31-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.00	90.00	0.0	58.6	58.6				
100.0	100.0	100.0	100.0	0.1	0.1	90.00	90.00	0.0	58.6	58.6	58.3	0.22	260.579	
200.0	200.0	200.0	200.0	0.3	0.3	90.00	90.00	0.0	58.6	58.6	57.9	0.67	86.860	
300.0	300.0	300.0	300.0	0.6	0.6	90.00	90.00	0.0	58.6	58.6	57.4	1.12	52.116	
400.0	400.0	400.0	400.0	0.8	0.8	90.00	90.00	0.0	58.6	58.6	57.0	1.57	37.226	
500.0	500.0	500.0	500.0	1.0	1.0	90.00	90.00	0.0	58.6	58.6	56.5	2.02	28.953	
600.0	600.0	600.0	600.0	1.2	1.2	90.00	90.00	0.0	58.6	58.6	56.1	2.47	23.689	
700.0	700.0	700.0	700.0	1.5	1.5	90.00	90.00	0.0	58.6	58.6	55.6	2.92	20.045	
800.0	800.0	800.0	800.0	1.7	1.7	90.00	90.00	0.0	58.6	58.6	55.2	3.37	17.372	
900.0	900.0	900.0	900.0	1.9	1.9	90.00	90.00	0.0	58.6	58.6	54.7	3.82	15.328	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	90.00	90.00	0.0	58.6	58.6	54.3	4.27	13.715 CC, ES	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.4	-132.81	-132.81	0.0	58.6	59.7	55.0	4.69	12.726	
1,200.0	1,199.8	1,199.8	1,199.8	2.5	2.6	-136.23	-136.23	0.0	58.6	63.4	58.3	5.10	12.439	
1,300.0	1,299.5	1,299.5	1,299.5	2.7	2.8	-141.08	-141.08	0.0	58.6	70.0	64.5	5.51	12.705	
1,400.0	1,398.7	1,398.7	1,398.7	2.9	3.0	-146.46	-146.46	0.0	58.6	79.8	73.9	5.92	13.485	
1,500.0	1,497.5	1,498.1	1,498.1	3.2	3.2	-150.64	-150.64	-1.7	58.8	93.0	86.7	6.31	14.736	
1,600.0	1,595.9	1,597.7	1,597.5	3.5	3.4	-152.58	-152.58	-6.7	59.6	107.6	100.9	6.70	16.060	
1,700.0	1,694.3	1,697.6	1,697.1	3.8	3.6	-152.48	-152.48	-15.3	60.8	121.5	114.4	7.12	17.069	
1,800.0	1,792.7	1,797.6	1,796.3	4.1	3.8	-150.93	-150.93	-27.3	62.6	134.7	127.2	7.58	17.782	
1,900.0	1,891.1	1,897.1	1,894.6	4.5	4.0	-148.53	-148.53	-42.1	64.8	147.5	139.4	8.08	18.259	
2,000.0	1,989.5	1,996.0	1,992.4	4.8	4.3	-146.38	-146.38	-57.2	67.0	160.5	151.9	8.62	18.623	
2,100.0	2,087.9	2,095.0	2,090.2	5.2	4.5	-144.55	-144.55	-72.4	69.2	173.6	164.4	9.18	18.908	
2,200.0	2,186.3	2,194.0	2,188.0	5.6	4.8	-142.98	-142.98	-87.5	71.5	186.9	177.1	9.77	19.130	
2,300.0	2,284.7	2,293.0	2,285.8	6.0	5.1	-141.62	-141.62	-102.6	73.7	200.3	190.0	10.38	19.302	
2,400.0	2,383.1	2,392.0	2,383.6	6.3	5.4	-140.43	-140.43	-117.8	75.9	213.8	202.8	11.00	19.435	
2,500.0	2,481.5	2,491.0	2,481.4	6.7	5.7	-139.38	-139.38	-132.9	78.2	227.4	215.8	11.64	19.538	
2,600.0	2,579.9	2,590.0	2,579.2	7.1	6.0	-138.45	-138.45	-148.1	80.4	241.1	228.8	12.29	19.617	
2,700.0	2,678.3	2,689.0	2,677.0	7.5	6.3	-137.62	-137.62	-163.2	82.6	254.8	241.9	12.95	19.678	
2,800.0	2,776.7	2,788.0	2,774.8	7.9	6.7	-136.88	-136.88	-178.3	84.9	268.6	255.0	13.62	19.725	
2,900.0	2,875.1	2,887.0	2,872.6	8.3	7.0	-136.20	-136.20	-193.5	87.1	282.4	268.1	14.29	19.760	
3,000.0	2,973.5	2,986.0	2,970.4	8.7	7.3	-135.60	-135.60	-208.6	89.3	296.2	281.2	14.97	19.786	
3,100.0	3,072.0	3,084.9	3,068.3	9.1	7.7	-135.04	-135.04	-223.8	91.6	310.1	294.4	15.66	19.806	
3,200.0	3,170.4	3,183.9	3,166.1	9.5	8.0	-134.53	-134.53	-238.9	93.8	324.0	307.6	16.35	19.820	
3,300.0	3,268.8	3,282.9	3,263.9	9.9	8.3	-134.07	-134.07	-254.0	96.0	337.9	320.9	17.04	19.829	
3,400.0	3,367.2	3,381.9	3,361.7	10.3	8.7	-133.64	-133.64	-269.2	98.2	351.8	334.1	17.74	19.835	
3,500.0	3,465.6	3,480.9	3,459.5	10.7	9.0	-133.24	-133.24	-284.3	100.5	365.8	347.3	18.44	19.838	
3,600.0	3,564.0	3,579.9	3,557.3	11.1	9.4	-132.87	-132.87	-299.5	102.7	379.8	360.6	19.14	19.839	
3,700.0	3,662.4	3,678.9	3,655.1	11.5	9.7	-132.53	-132.53	-314.6	104.9	393.7	373.9	19.85	19.838	
3,800.0	3,760.8	3,777.9	3,752.9	11.9	10.1	-132.21	-132.21	-329.7	107.2	407.7	387.2	20.56	19.836	
3,900.0	3,859.2	3,876.9	3,850.7	12.3	10.4	-131.92	-131.92	-344.9	109.4	421.7	400.5	21.27	19.832	
4,000.0	3,957.6	3,975.9	3,948.5	12.7	10.8	-131.64	-131.64	-360.0	111.6	435.8	413.8	21.98	19.828	
4,100.0	4,056.0	4,074.9	4,046.3	13.1	11.2	-131.38	-131.38	-375.2	113.9	449.8	427.1	22.69	19.823	
4,200.0	4,154.4	4,173.8	4,144.1	13.5	11.5	-131.14	-131.14	-390.3	116.1	463.8	440.4	23.41	19.817	
4,300.0	4,252.8	4,272.8	4,241.9	13.9	11.9	-130.90	-130.90	-405.4	118.3	477.9	453.8	24.12	19.811	
4,400.0	4,351.2	4,371.8	4,339.7	14.3	12.2	-130.69	-130.69	-420.6	120.6	491.9	467.1	24.84	19.805	
4,500.0	4,449.6	4,470.8	4,437.5	14.8	12.6	-130.48	-130.48	-435.7	122.8	506.0	480.4	25.56	19.798	
4,600.0	4,548.0	4,569.8	4,535.3	15.2	12.9	-130.29	-130.29	-450.9	125.0	520.0	493.8	26.28	19.792	
4,700.0	4,646.4	4,668.8	4,633.1	15.6	13.3	-130.11	-130.11	-466.0	127.3	534.1	507.1	27.00	19.785	
4,800.0	4,744.8	4,767.8	4,730.9	16.0	13.7	-129.93	-129.93	-481.1	129.5	548.2	520.5	27.72	19.778	
4,900.0	4,843.3	4,866.8	4,828.7	16.4	14.0	-129.77	-129.77	-496.3	131.7	562.3	533.8	28.44	19.771	
5,000.0	4,941.7	4,965.8	4,926.5	16.8	14.4	-129.61	-129.61	-511.4	134.0	576.4	547.2	29.16	19.764	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Project:</b>	SEC.18-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Reference Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Rieder 4N67W18Y Pad Sec.18-T4N-R67W - Rieder 18Y-241 - Wellbore #1 - Plan #1 (7-31-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,040.1	5,064.8	5,024.3	17.2	14.8	-129.46	-129.46	-526.5	136.2	590.4	560.6	29.88	19.758	
5,200.0	5,138.5	5,163.8	5,122.1	17.6	15.1	-129.31	-129.31	-541.7	138.4	604.5	573.9	30.61	19.751	
5,300.0	5,236.9	5,262.7	5,219.9	18.0	15.5	-129.18	-129.18	-556.8	140.7	618.6	587.3	31.33	19.744	
5,400.0	5,335.3	5,361.7	5,317.7	18.4	15.8	-129.05	-129.05	-572.0	142.9	632.7	600.7	32.06	19.737	
5,500.0	5,433.7	5,460.7	5,415.5	18.8	16.2	-128.92	-128.92	-587.1	145.1	646.8	614.0	32.78	19.731	
5,600.0	5,532.1	5,559.7	5,513.3	19.2	16.6	-128.87	-128.87	-602.2	147.3	660.7	627.2	33.50	19.724	
5,700.0	5,631.1	5,661.5	5,613.9	19.5	16.9	-128.77	-128.77	-617.2	149.6	672.7	638.6	34.12	19.719	
5,800.0	5,730.4	5,765.7	5,717.4	19.7	17.2	-128.67	-128.67	-629.3	151.3	682.0	647.4	34.63	19.695	
5,900.0	5,830.1	5,870.4	5,821.7	19.9	17.4	-128.60	-128.60	-637.6	152.6	688.3	653.3	35.05	19.640	
6,000.0	5,930.0	5,975.3	5,926.5	20.1	17.6	-128.57	-128.57	-642.2	153.2	691.8	656.4	35.39	19.547	
6,100.0	6,030.0	6,078.8	6,030.0	20.2	17.7	93.02	93.02	-643.1	153.4	692.5	656.8	35.70	19.400	
6,200.0	6,130.0	6,178.8	6,130.0	20.3	17.9	93.02	93.02	-643.1	153.4	692.5	656.6	35.97	19.253	
6,300.0	6,230.0	6,281.3	6,232.5	20.4	18.0	92.86	92.86	-641.2	153.4	692.4	656.2	36.21	19.121	
6,400.0	6,330.0	6,384.5	6,334.7	20.6	18.0	91.87	91.87	-626.9	153.4	691.9	655.7	36.27	19.076	
6,500.0	6,429.0	6,485.8	6,432.1	20.6	17.9	90.77	90.77	-599.6	153.4	691.6	655.5	36.10	19.157	
6,569.5	6,496.3	6,555.1	6,496.3	20.5	17.8	90.00	90.00	-573.6	153.4	691.6	655.7	35.86	19.285	
6,600.0	6,525.3	6,585.2	6,523.4	20.5	17.7	89.66	89.66	-560.5	153.4	691.6	655.8	35.74	19.349	
6,700.0	6,617.3	6,682.9	6,607.6	20.3	17.5	88.57	88.57	-510.9	153.4	691.8	656.5	35.25	19.626	
6,800.0	6,703.5	6,779.1	6,683.5	20.1	17.2	87.52	87.52	-451.9	153.4	692.2	657.5	34.69	19.956	
6,900.0	6,782.3	6,873.8	6,750.4	19.8	17.0	86.51	86.51	-385.0	153.4	692.9	658.7	34.14	20.296	
7,000.0	6,852.4	6,967.3	6,807.9	19.5	16.8	85.56	85.56	-311.4	153.4	693.7	660.0	33.68	20.594	
7,100.0	6,912.6	7,059.5	6,855.4	19.2	16.8	84.69	84.69	-232.4	153.4	694.6	661.2	33.40	20.796	
7,200.0	6,961.9	7,150.0	6,892.3	18.9	16.8	83.91	83.91	-149.9	153.4	695.5	662.2	33.36	20.852	
7,300.0	6,999.5	7,241.2	6,919.5	18.7	17.0	83.22	83.22	-62.9	153.4	696.5	662.8	33.62	20.719	
7,400.0	7,024.6	7,330.8	6,935.9	18.4	17.3	82.65	82.65	25.2	153.4	697.3	663.1	34.20	20.392	
7,500.0	7,036.9	7,419.9	6,941.9	18.2	17.8	82.19	82.19	114.0	153.4	698.1	663.0	35.09	19.891	
7,600.0	7,038.0	7,519.1	6,942.0	18.4	18.5	82.09	82.09	213.2	153.4	698.2	661.8	36.42	19.172	
7,700.0	7,037.7	7,619.1	6,942.0	19.4	19.4	82.12	82.12	313.2	153.4	698.2	660.1	38.08	18.335	
7,800.0	7,037.3	7,719.1	6,942.1	20.4	20.4	82.16	82.16	413.2	153.4	698.1	658.1	40.03	17.439	
7,900.0	7,037.0	7,819.1	6,942.1	21.6	21.5	82.19	82.19	513.2	153.4	698.0	655.8	42.24	16.526	
8,000.0	7,036.7	7,919.1	6,942.2	22.9	22.8	82.22	82.22	613.2	153.4	698.0	653.3	44.66	15.628	
8,100.0	7,036.3	8,019.1	6,942.2	24.2	24.1	82.25	82.25	713.2	153.4	697.9	650.7	47.27	14.764	
8,200.0	7,036.0	8,119.1	6,942.3	25.6	25.5	82.28	82.28	813.2	153.4	697.9	647.9	50.04	13.948	
8,300.0	7,035.7	8,219.1	6,942.3	27.1	27.0	82.31	82.31	913.2	153.4	697.8	644.9	52.93	13.184	
8,400.0	7,035.4	8,319.1	6,942.4	28.6	28.5	82.34	82.34	1,013.2	153.4	697.8	641.9	55.94	12.475	
8,500.0	7,035.0	8,419.1	6,942.4	30.1	30.1	82.37	82.37	1,113.2	153.4	697.7	638.7	59.04	11.819	
8,600.0	7,034.7	8,519.1	6,942.5	31.7	31.7	82.41	82.41	1,213.2	153.4	697.7	635.5	62.21	11.214	
8,700.0	7,034.4	8,619.1	6,942.5	33.3	33.3	82.44	82.44	1,313.2	153.4	697.6	632.2	65.46	10.657	
8,800.0	7,034.0	8,719.1	6,942.6	35.0	35.0	82.47	82.47	1,413.2	153.4	697.6	628.8	68.77	10.144	
8,900.0	7,033.7	8,819.1	6,942.6	36.6	36.7	82.50	82.50	1,513.2	153.4	697.5	625.4	72.13	9.671	
9,000.0	7,033.4	8,919.1	6,942.7	38.3	38.4	82.53	82.53	1,613.2	153.4	697.5	622.0	75.53	9.235	
9,100.0	7,033.0	9,019.1	6,942.7	40.1	40.1	82.56	82.56	1,713.2	153.4	697.4	618.5	78.97	8.832	
9,200.0	7,032.7	9,119.1	6,942.8	41.8	41.9	82.59	82.59	1,813.2	153.4	697.4	614.9	82.44	8.459	
9,300.0	7,032.4	9,219.1	6,942.9	43.5	43.7	82.62	82.62	1,913.2	153.4	697.3	611.4	85.94	8.114	
9,400.0	7,032.0	9,319.1	6,942.9	45.3	45.4	82.66	82.66	2,013.2	153.4	697.3	607.8	89.47	7.793	
9,500.0	7,031.7	9,419.1	6,943.0	47.1	47.2	82.69	82.69	2,113.2	153.4	697.2	604.2	93.02	7.495	
9,600.0	7,031.4	9,519.1	6,943.0	48.8	49.0	82.72	82.72	2,213.2	153.4	697.2	600.6	96.60	7.218	
9,700.0	7,031.0	9,619.1	6,943.1	50.6	50.8	82.75	82.75	2,313.2	153.4	697.1	597.0	100.19	6.958	
9,800.0	7,030.7	9,719.1	6,943.1	52.4	52.6	82.78	82.78	2,413.2	153.4	697.1	593.3	103.80	6.716	
9,900.0	7,030.4	9,819.1	6,943.2	54.2	54.5	82.81	82.81	2,513.2	153.4	697.0	589.6	107.42	6.489	
10,000.0	7,030.0	9,919.1	6,943.2	56.1	56.3	82.84	82.84	2,613.2	153.4	697.0	585.9	111.06	6.276	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Project:</b>	SEC.18-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Reference Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Rieder 4N67W18Y Pad Sec.18-T4N-R67W - Rieder 18Y-241 - Wellbore #1 - Plan #1 (7-31-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
10,100.0	7,029.7	10,019.1	6,943.3	57.9	58.1	82.88	2,713.2	153.4	697.0	582.2	114.71	6.076		
10,200.0	7,029.4	10,119.1	6,943.3	59.7	60.0	82.91	2,813.2	153.4	696.9	578.5	118.37	5.888		
10,300.0	7,029.1	10,219.1	6,943.4	61.5	61.8	82.94	2,913.2	153.4	696.9	574.8	122.04	5.710		
10,400.0	7,028.7	10,319.1	6,943.4	63.4	63.7	82.97	3,013.2	153.4	696.8	571.1	125.72	5.543		
10,500.0	7,028.4	10,419.1	6,943.5	65.2	65.5	83.00	3,113.2	153.4	696.8	567.4	129.40	5.384		
10,600.0	7,028.1	10,519.1	6,943.5	67.1	67.4	83.03	3,213.2	153.4	696.7	563.6	133.10	5.234		
10,700.0	7,027.7	10,619.1	6,943.6	68.9	69.2	83.06	3,313.2	153.4	696.7	559.9	136.81	5.092		
10,800.0	7,027.4	10,719.1	6,943.6	70.8	71.1	83.09	3,413.2	153.4	696.6	556.1	140.52	4.958		
10,900.0	7,027.1	10,819.1	6,943.7	72.6	73.0	83.13	3,513.2	153.4	696.6	552.3	144.23	4.830		
11,000.0	7,026.7	10,919.1	6,943.7	74.5	74.8	83.16	3,613.2	153.4	696.5	548.6	147.96	4.708		
11,100.0	7,026.4	11,019.1	6,943.8	76.4	76.7	83.19	3,713.2	153.4	696.5	544.8	151.68	4.592		
11,200.0	7,026.1	11,119.1	6,943.8	78.2	78.6	83.22	3,813.2	153.4	696.4	541.0	155.42	4.481		
11,300.0	7,025.7	11,219.1	6,943.9	80.1	80.5	83.25	3,913.2	153.4	696.4	537.2	159.16	4.376		
11,400.0	7,025.4	11,319.0	6,944.0	82.0	82.3	83.28	4,013.2	153.4	696.3	533.5	162.90	4.275		
11,469.2	7,025.2	11,388.2	6,944.0	83.3	83.6	83.30	4,082.3	153.4	696.3	530.8	165.49	4.208		
11,500.0	7,025.1	11,408.0	6,944.0	83.8	84.0	83.31	4,102.1	153.4	696.4	530.0	166.44	4.184		
11,521.8	7,025.0	11,408.0	6,944.0	84.2	84.0	83.31	4,102.1	153.4	697.1	530.2	166.85	4.178 SF		



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Project:</b>	SEC.18-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Reference Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Rieder 4N67W18Y Pad Sec.18-T4N-R67W - Rieder 18Y-301 - Wellbore #1 - Plan #1 (7-31-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	90.00	0.0	119.9	119.9					
100.0	100.0	100.0	100.0	0.1	0.1	90.00	0.0	119.9	119.9	119.7	0.22	533.566		
200.0	200.0	200.0	200.0	0.3	0.3	90.00	0.0	119.9	119.9	119.3	0.67	177.855		
300.0	300.0	300.0	300.0	0.6	0.6	90.00	0.0	119.9	119.9	118.8	1.12	106.713		
400.0	400.0	400.0	400.0	0.8	0.8	90.00	0.0	119.9	119.9	118.4	1.57	76.224		
500.0	500.0	500.0	500.0	1.0	1.0	90.00	0.0	119.9	119.9	117.9	2.02	59.285		
600.0	600.0	600.0	600.0	1.2	1.2	90.00	0.0	119.9	119.9	117.5	2.47	48.506		
700.0	700.0	700.0	700.0	1.5	1.5	90.00	0.0	119.9	119.9	117.0	2.92	41.044		
800.0	800.0	800.0	800.0	1.7	1.7	90.00	0.0	119.9	119.9	116.6	3.37	35.571		
900.0	900.0	900.0	900.0	1.9	1.9	90.00	0.0	119.9	119.9	116.1	3.82	31.386		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	90.00	0.0	119.9	119.9	115.7	4.27	28.082 CC, ES		
1,100.0	1,100.0	1,098.1	1,098.0	2.3	2.3	-131.46	-1.5	120.7	121.9	117.2	4.66	26.134		
1,200.0	1,199.8	1,195.9	1,195.7	2.5	2.5	-131.10	-5.9	123.0	127.7	122.7	5.02	25.442 SF		
1,300.0	1,299.5	1,293.3	1,292.7	2.7	2.7	-130.56	-13.3	126.9	137.5	132.1	5.40	25.455		
1,400.0	1,398.7	1,390.0	1,388.8	2.9	2.9	-129.91	-23.5	132.3	151.1	145.3	5.82	25.986		
1,500.0	1,497.5	1,486.4	1,484.1	3.2	3.1	-129.22	-36.4	139.1	168.5	162.3	6.27	26.862		
1,600.0	1,595.9	1,584.5	1,580.9	3.5	3.4	-129.08	-50.4	146.5	187.8	181.0	6.78	27.682		
1,700.0	1,694.3	1,682.7	1,677.8	3.8	3.7	-129.01	-64.5	153.8	207.0	199.7	7.33	28.263		
1,800.0	1,792.7	1,780.8	1,774.6	4.1	4.0	-128.94	-78.5	161.2	226.3	218.4	7.89	28.667		
1,900.0	1,891.1	1,878.9	1,871.4	4.5	4.3	-128.89	-92.6	168.6	245.6	237.1	8.49	28.942		
2,000.0	1,889.5	1,877.1	1,868.3	4.8	4.7	-128.84	-106.6	176.0	264.8	255.8	9.09	29.129		
2,100.0	2,087.9	2,075.2	2,065.1	5.2	5.0	-128.81	-120.7	183.4	284.1	274.4	9.71	29.249		
2,200.0	2,186.3	2,173.3	2,161.9	5.6	5.3	-128.77	-134.7	190.8	303.4	293.0	10.35	29.322		
2,300.0	2,284.7	2,271.4	2,258.8	6.0	5.7	-128.74	-148.8	198.2	322.7	311.7	10.99	29.362		
2,400.0	2,383.1	2,369.6	2,355.6	6.3	6.0	-128.71	-162.8	205.5	341.9	330.3	11.64	29.377		
2,500.0	2,481.5	2,467.7	2,452.4	6.7	6.4	-128.69	-176.9	212.9	361.2	348.9	12.30	29.374		
2,600.0	2,579.9	2,565.8	2,549.3	7.1	6.7	-128.67	-190.9	220.3	380.5	367.5	12.96	29.359		
2,700.0	2,678.3	2,663.9	2,646.1	7.5	7.1	-128.65	-204.9	227.7	399.7	386.1	13.63	29.335		
2,800.0	2,776.7	2,762.1	2,742.9	7.9	7.5	-128.63	-219.0	235.1	419.0	404.7	14.30	29.305		
2,900.0	2,875.1	2,860.2	2,839.8	8.3	7.8	-128.61	-233.0	242.5	438.3	423.3	14.97	29.270		
3,000.0	2,973.5	2,958.3	2,936.6	8.7	8.2	-128.60	-247.1	249.9	457.5	441.9	15.65	29.233		
3,100.0	3,072.0	3,056.4	3,033.4	9.1	8.6	-128.59	-261.1	257.2	476.8	460.5	16.33	29.194		
3,200.0	3,170.4	3,154.6	3,130.3	9.5	8.9	-128.57	-275.2	264.6	496.1	479.1	17.02	29.153		
3,300.0	3,268.8	3,252.7	3,227.1	9.9	9.3	-128.56	-289.2	272.0	515.3	497.6	17.70	29.113		
3,400.0	3,367.2	3,350.8	3,323.9	10.3	9.7	-128.55	-303.3	279.4	534.6	516.2	18.39	29.072		
3,500.0	3,465.6	3,448.9	3,420.8	10.7	10.0	-128.54	-317.3	286.8	553.9	534.8	19.08	29.032		
3,600.0	3,564.0	3,547.1	3,517.6	11.1	10.4	-128.53	-331.4	294.2	573.2	553.4	19.77	28.992		
3,700.0	3,662.4	3,645.2	3,614.5	11.5	10.8	-128.52	-345.4	301.6	592.4	572.0	20.46	28.953		
3,800.0	3,760.8	3,743.3	3,711.3	11.9	11.1	-128.51	-359.4	308.9	611.7	590.5	21.16	28.915		
3,900.0	3,859.2	3,841.4	3,808.1	12.3	11.5	-128.51	-373.5	316.3	631.0	609.1	21.85	28.877		
4,000.0	3,957.6	3,939.6	3,905.0	12.7	11.9	-128.50	-387.5	323.7	650.2	627.7	22.55	28.841		
4,100.0	4,056.0	4,037.7	4,001.8	13.1	12.3	-128.49	-401.6	331.1	669.5	646.3	23.24	28.806		
4,200.0	4,154.4	4,135.8	4,098.6	13.5	12.6	-128.49	-415.6	338.5	688.8	664.8	23.94	28.771		
4,300.0	4,252.8	4,233.9	4,195.5	13.9	13.0	-128.48	-429.7	345.9	708.0	683.4	24.64	28.738		
4,400.0	4,351.2	4,332.1	4,292.3	14.3	13.4	-128.47	-443.7	353.3	727.3	702.0	25.34	28.706		
4,500.0	4,449.6	4,430.2	4,389.1	14.8	13.8	-128.47	-457.8	360.6	746.6	720.5	26.04	28.675		
4,600.0	4,548.0	4,528.3	4,486.0	15.2	14.1	-128.46	-471.8	368.0	765.8	739.1	26.74	28.645		
4,700.0	4,646.4	4,626.5	4,582.8	15.6	14.5	-128.46	-485.9	375.4	785.1	757.7	27.44	28.615		
4,800.0	4,744.8	4,724.6	4,679.6	16.0	14.9	-128.45	-499.9	382.8	804.4	776.2	28.14	28.587		
4,900.0	4,843.3	4,822.7	4,776.5	16.4	15.3	-128.45	-513.9	390.2	823.7	794.8	28.84	28.559		
5,000.0	4,941.7	4,920.8	4,873.3	16.8	15.6	-128.44	-528.0	397.6	842.9	813.4	29.54	28.533		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Project:</b>	SEC.18-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Reference Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Rieder 4N67W18Y Pad Sec.18-T4N-R67W - Rieder 18Y-301 - Wellbore #1 - Plan #1 (7-31-14)													<b>Offset Site Error:</b>	0.0 ft
Survey Program: 0-MWD													<b>Offset Well Error:</b>	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning	
Reference	Offset	Reference	Offset	(ft)	(ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
5,100.0	5,040.1	5,019.0	4,970.1	17.2	16.0	-128.44	-542.0	405.0	862.2	832.0	30.25	28.507		
5,200.0	5,138.5	5,117.1	5,067.0	17.6	16.4	-128.44	-556.1	412.3	881.5	850.5	30.95	28.482		
5,300.0	5,236.9	5,215.2	5,163.8	18.0	16.8	-128.43	-570.1	419.7	900.7	869.1	31.65	28.458		
5,400.0	5,335.3	5,313.3	5,260.6	18.4	17.1	-128.43	-584.2	427.1	920.0	887.6	32.36	28.434		
5,500.0	5,433.7	5,411.5	5,357.5	18.8	17.5	-128.43	-598.2	434.5	939.3	906.2	33.06	28.411		
5,600.0	5,532.1	5,509.6	5,454.3	19.2	17.9	-128.54	-612.3	441.9	958.4	924.6	33.76	28.383		
5,700.0	5,631.1	5,611.2	5,554.6	19.5	18.3	-128.65	-626.8	449.5	975.6	941.2	34.40	28.365		
5,800.0	5,730.4	5,731.0	5,673.2	19.7	18.6	-128.66	-641.1	457.0	989.4	954.5	34.93	28.325		
5,900.0	5,830.1	5,851.8	5,793.5	19.9	18.8	-128.67	-651.0	462.3	998.9	963.6	35.39	28.227		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Project:</b>	SEC.18-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Reference Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Rieder 4N67W18Y Pad Sec.18-T4N-R67W - Rieder 18Y-441 - Wellbore #1 - Plan #1 (7-31-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.00	90.00	0.0	89.2	89.2				
100.0	100.0	100.0	100.0	0.1	0.1	90.00	90.00	0.0	89.2	89.2	89.0	0.22	397.073	
200.0	200.0	200.0	200.0	0.3	0.3	90.00	90.00	0.0	89.2	89.2	88.6	0.67	132.358	
300.0	300.0	300.0	300.0	0.6	0.6	90.00	90.00	0.0	89.2	89.2	88.1	1.12	79.415	
400.0	400.0	400.0	400.0	0.8	0.8	90.00	90.00	0.0	89.2	89.2	87.7	1.57	56.725	
500.0	500.0	500.0	500.0	1.0	1.0	90.00	90.00	0.0	89.2	89.2	87.2	2.02	44.119	
600.0	600.0	600.0	600.0	1.2	1.2	90.00	90.00	0.0	89.2	89.2	86.8	2.47	36.098	
700.0	700.0	700.0	700.0	1.5	1.5	90.00	90.00	0.0	89.2	89.2	86.3	2.92	30.544	
800.0	800.0	800.0	800.0	1.7	1.7	90.00	90.00	0.0	89.2	89.2	85.9	3.37	26.472	
900.0	900.0	900.0	900.0	1.9	1.9	90.00	90.00	0.0	89.2	89.2	85.4	3.82	23.357	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	90.00	90.00	0.0	89.2	89.2	85.0	4.27	20.899 CC, ES	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.4	-132.39	-132.39	0.0	89.2	90.4	85.7	4.69	19.260	
1,200.0	1,199.8	1,199.8	1,199.8	2.5	2.6	-134.69	-134.69	0.0	89.2	94.0	88.9	5.10	18.443	
1,300.0	1,299.5	1,298.7	1,298.7	2.7	2.8	-137.16	-137.16	-1.6	89.8	100.7	95.2	5.48	18.380	
1,400.0	1,398.7	1,397.4	1,397.2	2.9	3.0	-138.70	-138.70	-6.4	91.4	110.9	105.0	5.85	18.947	
1,500.0	1,497.5	1,495.7	1,495.2	3.2	3.1	-139.40	-139.40	-14.4	94.1	124.4	118.1	6.25	19.896	
1,600.0	1,595.9	1,593.6	1,592.4	3.5	3.3	-139.28	-139.28	-25.6	97.9	140.1	133.4	6.70	20.915	
1,700.0	1,694.3	1,691.7	1,689.4	3.8	3.6	-138.10	-138.10	-39.6	102.6	156.4	149.2	7.19	21.746	
1,800.0	1,792.7	1,790.3	1,786.7	4.1	3.8	-136.97	-136.97	-54.1	107.6	172.9	165.2	7.73	22.383	
1,900.0	1,891.1	1,888.9	1,884.1	4.5	4.1	-136.03	-136.03	-68.7	112.5	189.5	181.2	8.29	22.869	
2,000.0	1,889.5	1,887.4	1,881.5	4.8	4.4	-135.25	-135.25	-83.2	117.4	206.1	197.2	8.87	23.237	
2,100.0	2,087.9	2,086.0	2,078.8	5.2	4.7	-134.58	-134.58	-97.8	122.4	222.7	213.3	9.47	23.515	
2,200.0	2,186.3	2,184.6	2,176.2	5.6	5.0	-134.00	-134.00	-112.3	127.3	239.4	229.3	10.09	23.727	
2,300.0	2,284.7	2,283.2	2,273.6	6.0	5.3	-133.50	-133.50	-126.9	132.2	256.1	245.3	10.72	23.887	
2,400.0	2,383.1	2,381.7	2,370.9	6.3	5.7	-133.06	-133.06	-141.5	137.2	272.8	261.4	11.36	24.008	
2,500.0	2,481.5	2,480.3	2,468.3	6.7	6.0	-132.67	-132.67	-156.0	142.1	289.5	277.5	12.01	24.100	
2,600.0	2,579.9	2,578.9	2,565.7	7.1	6.3	-132.33	-132.33	-170.6	147.0	306.2	293.5	12.67	24.168	
2,700.0	2,678.3	2,677.5	2,663.1	7.5	6.7	-132.02	-132.02	-185.1	152.0	322.9	309.6	13.33	24.219	
2,800.0	2,776.7	2,776.1	2,760.4	7.9	7.0	-131.74	-131.74	-199.7	156.9	339.7	325.7	14.00	24.256	
2,900.0	2,875.1	2,874.6	2,857.8	8.3	7.3	-131.48	-131.48	-214.2	161.8	356.4	341.7	14.68	24.282	
3,000.0	2,973.5	2,973.2	2,955.2	8.7	7.7	-131.25	-131.25	-228.8	166.7	373.2	357.8	15.36	24.299	
3,100.0	3,072.0	3,071.8	3,052.5	9.1	8.0	-131.04	-131.04	-243.4	171.7	389.9	373.9	16.04	24.310	
3,200.0	3,170.4	3,170.4	3,149.9	9.5	8.4	-130.85	-130.85	-257.9	176.6	406.7	390.0	16.73	24.315	
3,300.0	3,268.8	3,268.9	3,247.3	9.9	8.7	-130.67	-130.67	-272.5	181.5	423.4	406.0	17.41	24.317	
3,400.0	3,367.2	3,367.5	3,344.7	10.3	9.1	-130.50	-130.50	-287.0	186.5	440.2	422.1	18.10	24.315	
3,500.0	3,465.6	3,466.1	3,442.0	10.7	9.5	-130.35	-130.35	-301.6	191.4	457.0	438.2	18.80	24.311	
3,600.0	3,564.0	3,564.7	3,539.4	11.1	9.8	-130.21	-130.21	-316.1	196.3	473.8	454.3	19.49	24.304	
3,700.0	3,662.4	3,663.2	3,636.8	11.5	10.2	-130.08	-130.08	-330.7	201.3	490.5	470.4	20.19	24.296	
3,800.0	3,760.8	3,761.8	3,734.1	11.9	10.5	-129.96	-129.96	-345.3	206.2	507.3	486.4	20.89	24.287	
3,900.0	3,859.2	3,860.4	3,831.5	12.3	10.9	-129.84	-129.84	-359.8	211.1	524.1	502.5	21.59	24.277	
4,000.0	3,957.6	3,959.0	3,928.9	12.7	11.3	-129.73	-129.73	-374.4	216.1	540.9	518.6	22.29	24.266	
4,100.0	4,056.0	4,057.5	4,026.3	13.1	11.6	-129.63	-129.63	-388.9	221.0	557.7	534.7	22.99	24.255	
4,200.0	4,154.4	4,156.1	4,123.6	13.5	12.0	-129.53	-129.53	-403.5	225.9	574.5	550.8	23.70	24.243	
4,300.0	4,252.8	4,254.7	4,221.0	13.9	12.3	-129.44	-129.44	-418.0	230.8	591.3	566.9	24.40	24.231	
4,400.0	4,351.2	4,353.3	4,318.4	14.3	12.7	-129.36	-129.36	-432.6	235.8	608.0	582.9	25.11	24.219	
4,500.0	4,449.6	4,451.8	4,415.7	14.8	13.1	-129.28	-129.28	-447.1	240.7	624.8	599.0	25.81	24.207	
4,600.0	4,548.0	4,550.4	4,513.1	15.2	13.4	-129.20	-129.20	-461.7	245.6	641.6	615.1	26.52	24.194	
4,700.0	4,646.4	4,649.0	4,610.5	15.6	13.8	-129.13	-129.13	-476.3	250.6	658.4	631.2	27.23	24.182	
4,800.0	4,744.8	4,747.6	4,707.8	16.0	14.2	-129.06	-129.06	-490.8	255.5	675.2	647.3	27.94	24.170	
4,900.0	4,843.3	4,846.2	4,805.2	16.4	14.5	-128.99	-128.99	-505.4	260.4	692.0	663.4	28.65	24.158	
5,000.0	4,941.7	4,944.7	4,902.6	16.8	14.9	-128.93	-128.93	-519.9	265.4	708.8	679.5	29.36	24.146	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Project:</b>	SEC.18-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Reference Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Rieder 4N67W18Y Pad Sec.18-T4N-R67W - Rieder 18Y-441 - Wellbore #1 - Plan #1 (7-31-14)												Offset Site Error: 0.0 ft	
Survey Program: 0-MWD												Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance					Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)		Separation Factor
				(ft)	(ft)		+N/-S (ft)	+E/-W (ft)					
5,100.0	5,040.1	5,043.3	5,000.0	17.2	15.3	-128.87	-534.5	270.3	725.6	695.5	30.07	24.135	
5,200.0	5,138.5	5,141.9	5,097.3	17.6	15.6	-128.81	-549.0	275.2	742.4	711.6	30.78	24.123	
5,300.0	5,236.9	5,240.5	5,194.7	18.0	16.0	-128.76	-563.6	280.1	759.2	727.7	31.49	24.112	
5,400.0	5,335.3	5,339.0	5,292.1	18.4	16.4	-128.71	-578.2	285.1	776.0	743.8	32.20	24.100	
5,500.0	5,433.7	5,437.6	5,389.4	18.8	16.7	-128.66	-592.7	290.0	792.8	759.9	32.91	24.090	
5,600.0	5,532.1	5,536.2	5,486.8	19.2	17.1	-128.70	-607.3	294.9	809.4	775.8	33.62	24.077	
5,700.0	5,631.1	5,638.7	5,588.1	19.5	17.5	-128.72	-622.2	300.0	824.2	789.9	34.25	24.066	
5,800.0	5,730.4	5,749.7	5,698.3	19.7	17.8	-128.67	-635.3	304.4	835.7	800.9	34.78	24.025	
5,900.0	5,830.1	5,861.4	5,809.5	19.9	18.0	-128.64	-644.4	307.5	843.6	808.4	35.22	23.953	
6,000.0	5,930.0	5,973.5	5,921.5	20.1	18.2	-128.63	-649.4	309.2	848.0	812.4	35.58	23.834	
6,100.0	6,030.0	6,082.1	6,030.0	20.2	18.3	92.96	-650.4	309.5	848.9	813.0	35.89	23.651	
6,200.0	6,130.0	6,182.1	6,130.0	20.3	18.5	92.96	-650.4	309.5	848.9	812.7	36.16	23.474	
6,300.0	6,230.0	6,282.1	6,230.0	20.4	18.6	92.96	-650.4	309.5	848.9	812.4	36.43	23.299	
6,321.1	6,251.1	6,303.1	6,251.1	20.5	18.6	92.97	-650.4	309.5	848.9	812.4	36.49	23.265	
6,400.0	6,330.0	6,382.0	6,330.0	20.6	18.7	93.09	-650.4	309.5	849.0	812.3	36.70	23.135	
6,500.0	6,429.0	6,485.3	6,433.3	20.6	18.9	93.86	-648.3	309.5	849.7	812.8	36.86	23.050	
6,600.0	6,525.3	6,593.6	6,540.3	20.5	18.9	94.69	-632.6	309.5	850.6	813.8	36.80	23.113	
6,700.0	6,617.3	6,704.0	6,646.0	20.3	18.8	95.44	-601.2	309.5	851.6	815.1	36.51	23.325	
6,800.0	6,703.5	6,816.1	6,747.6	20.1	18.5	96.09	-554.0	309.5	852.6	816.6	36.03	23.661	
6,900.0	6,782.3	6,930.0	6,842.6	19.8	18.3	96.63	-491.4	309.5	853.5	818.0	35.45	24.073	
7,000.0	6,852.4	7,045.2	6,928.2	19.5	18.0	97.05	-414.5	309.5	854.2	819.3	34.88	24.494	
7,100.0	6,912.6	7,161.4	7,001.9	19.2	17.7	97.32	-324.7	309.5	854.7	820.3	34.42	24.830	
7,200.0	6,961.9	7,278.2	7,061.3	18.9	17.5	97.45	-224.3	309.5	855.0	820.7	34.22	24.981	
7,300.0	6,999.5	7,395.1	7,104.8	18.7	17.5	97.42	-115.9	309.5	854.9	820.5	34.39	24.862	
7,400.0	7,024.6	7,511.8	7,131.3	18.4	17.8	97.25	-2.4	309.5	854.6	819.6	34.99	24.426	
7,500.0	7,036.9	7,627.0	7,140.1	18.2	18.3	96.93	112.4	309.5	854.0	818.0	36.02	23.709	
7,548.1	7,039.0	7,675.1	7,140.5	18.1	18.6	96.83	160.5	309.5	853.8	817.2	36.64	23.299	
7,600.0	7,038.0	7,727.0	7,140.9	18.4	19.0	96.92	212.4	309.5	854.0	816.6	37.35	22.861	
7,700.0	7,037.7	7,827.0	7,141.6	19.4	19.9	96.99	312.4	309.5	854.1	815.1	39.00	21.901	
7,800.0	7,037.3	7,927.0	7,142.4	20.4	20.9	97.06	412.3	309.5	854.2	813.3	40.93	20.869	
7,900.0	7,037.0	8,027.0	7,143.1	21.6	22.0	97.13	512.3	309.5	854.4	811.2	43.12	19.815	
8,000.0	7,036.7	8,127.0	7,143.9	22.9	23.2	97.21	612.3	309.5	854.5	809.0	45.52	18.773	
8,100.0	7,036.3	8,227.0	7,144.6	24.2	24.5	97.28	712.3	309.5	854.6	806.5	48.10	17.769	
8,200.0	7,036.0	8,327.0	7,145.4	25.6	25.9	97.35	812.3	309.5	854.8	803.9	50.83	16.815	
8,300.0	7,035.7	8,427.0	7,146.1	27.1	27.4	97.42	912.3	309.5	854.9	801.2	53.70	15.921	
8,400.0	7,035.4	8,527.0	7,146.9	28.6	28.9	97.49	1,012.3	309.5	855.0	798.4	56.67	15.087	
8,500.0	7,035.0	8,627.0	7,147.6	30.1	30.4	97.57	1,112.3	309.5	855.2	795.4	59.74	14.314	
8,600.0	7,034.7	8,726.9	7,148.4	31.7	32.0	97.64	1,212.3	309.5	855.3	792.4	62.89	13.600	
8,700.0	7,034.4	8,826.9	7,149.1	33.3	33.7	97.71	1,312.3	309.5	855.5	789.4	66.11	12.940	
8,800.0	7,034.0	8,926.9	7,149.9	35.0	35.3	97.78	1,412.3	309.5	855.6	786.2	69.38	12.332	
8,900.0	7,033.7	9,026.9	7,150.6	36.6	37.0	97.85	1,512.3	309.5	855.8	783.1	72.71	11.770	
9,000.0	7,033.4	9,126.9	7,151.4	38.3	38.7	97.92	1,612.2	309.5	855.9	779.8	76.08	11.250	
9,100.0	7,033.0	9,226.9	7,152.1	40.1	40.4	98.00	1,712.2	309.5	856.1	776.6	79.49	10.770	
9,200.0	7,032.7	9,326.9	7,152.9	41.8	42.2	98.07	1,812.2	309.5	856.2	773.3	82.93	10.325	
9,300.0	7,032.4	9,426.9	7,153.6	43.5	43.9	98.14	1,912.2	309.5	856.4	770.0	86.40	9.912	
9,400.0	7,032.0	9,526.9	7,154.4	45.3	45.7	98.21	2,012.2	309.5	856.5	766.6	89.89	9.529	
9,500.0	7,031.7	9,626.9	7,155.1	47.1	47.5	98.28	2,112.2	309.5	856.7	763.3	93.41	9.172	
9,600.0	7,031.4	9,726.9	7,155.9	48.8	49.3	98.35	2,212.2	309.5	856.8	759.9	96.94	8.839	
9,700.0	7,031.0	9,826.9	7,156.6	50.6	51.1	98.43	2,312.2	309.5	857.0	756.5	100.50	8.528	
9,800.0	7,030.7	9,926.9	7,157.4	52.4	52.9	98.50	2,412.2	309.5	857.1	753.1	104.07	8.237	
9,900.0	7,030.4	10,026.9	7,158.1	54.2	54.7	98.57	2,512.2	309.5	857.3	749.7	107.65	7.964	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Project:</b>	SEC.18-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Reference Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Rieder 4N67W18Y Pad Sec.18-T4N-R67W - Rieder 18Y-441 - Wellbore #1 - Plan #1 (7-31-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
10,000.0	7,030.0	10,126.9	7,158.9	56.1	56.5	98.64	2,612.2	309.5	857.5	746.2	111.24	7.708		
10,100.0	7,029.7	10,226.9	7,159.6	57.9	58.3	98.71	2,712.2	309.5	857.6	742.8	114.85	7.467		
10,200.0	7,029.4	10,326.9	7,160.4	59.7	60.2	98.78	2,812.1	309.5	857.8	739.3	118.47	7.241		
10,300.0	7,029.1	10,426.8	7,161.1	61.5	62.0	98.85	2,912.1	309.5	858.0	735.9	122.09	7.027		
10,400.0	7,028.7	10,526.8	7,161.9	63.4	63.8	98.93	3,012.1	309.5	858.1	732.4	125.72	6.826		
10,500.0	7,028.4	10,626.8	7,162.6	65.2	65.7	99.00	3,112.1	309.5	858.3	728.9	129.36	6.635		
10,600.0	7,028.1	10,726.8	7,163.4	67.1	67.5	99.07	3,212.1	309.5	858.5	725.5	133.01	6.454		
10,700.0	7,027.7	10,826.8	7,164.1	68.9	69.4	99.14	3,312.1	309.5	858.6	722.0	136.66	6.283		
10,800.0	7,027.4	10,926.8	7,164.9	70.8	71.3	99.21	3,412.1	309.5	858.8	718.5	140.32	6.120		
10,900.0	7,027.1	11,026.8	7,165.6	72.6	73.1	99.28	3,512.1	309.5	859.0	715.0	143.98	5.966		
11,000.0	7,026.7	11,126.8	7,166.4	74.5	75.0	99.35	3,612.1	309.5	859.2	711.5	147.65	5.819		
11,100.0	7,026.4	11,226.8	7,167.1	76.4	76.9	99.43	3,712.1	309.5	859.3	708.0	151.32	5.679		
11,200.0	7,026.1	11,326.8	7,167.9	78.2	78.7	99.50	3,812.1	309.5	859.5	704.5	154.99	5.545		
11,300.0	7,025.7	11,426.8	7,168.6	80.1	80.6	99.57	3,912.0	309.5	859.7	701.0	158.67	5.418		
11,400.0	7,025.4	11,526.8	7,169.4	82.0	82.5	99.64	4,012.0	309.5	859.9	697.5	162.35	5.296		
11,447.3	7,025.2	11,574.0	7,169.7	82.8	83.4	99.67	4,059.3	309.5	860.0	695.9	164.09	5.241		
11,500.0	7,025.1	11,609.6	7,170.0	83.8	84.0	99.70	4,094.8	309.5	860.2	694.5	165.72	5.191		
11,521.8	7,025.0	11,609.6	7,170.0	84.2	84.0	99.70	4,094.8	309.5	861.0	694.9	166.12	5.183 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Project:</b>	SEC.18-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Reference Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4821.0ft (RKB -15')

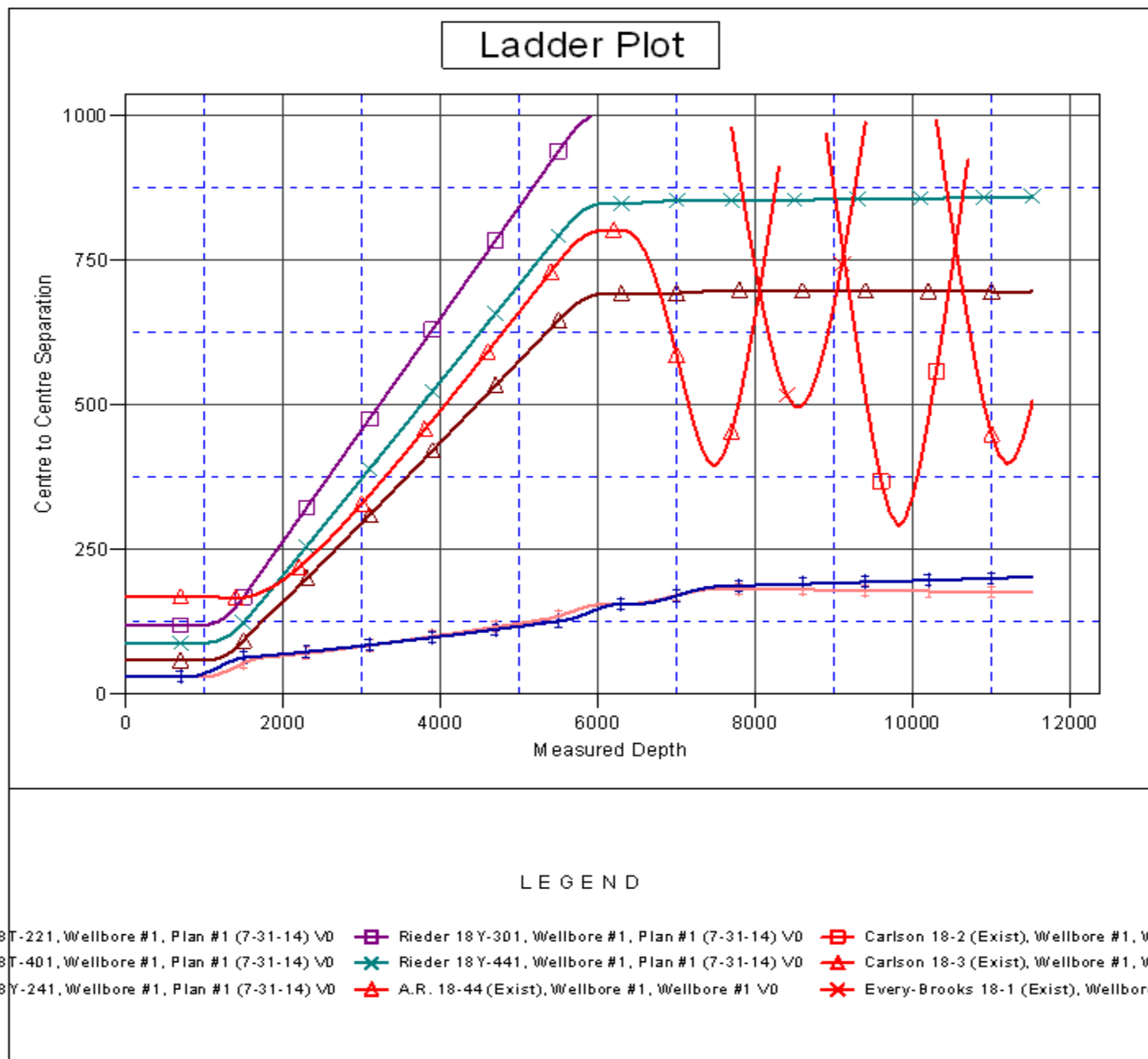
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Rieder 18T-321

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.37°



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Rieder 18T-321
<b>Project:</b>	SEC.18-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Reference Site:</b>	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	<b>MD Reference:</b>	WELL @ 4821.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Rieder 18T-321	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (7-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4821.0ft (RKB -15')

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Central Meridian is -105.500000 °

Coordinates are relative to: Rieder 18T-321

Coordinate System is US State Plane 1983, Colorado Northern Zone

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