

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Rieder 18T-401**

Surface Location: Rieder 4N67W18Y Pad Sec.18-T4N-R67W
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
 Ground Elevation: 4805.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1355509.24	3160139.69	40.307850	-104.925790	
RKB - 15' WELL @ 4820.0ft (RKB - 15')						

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 674'FSL & 742'FEL	1.0	0.0	0.0	Point
BHL 500'FNL & 1230'FEL	7154.0	4142.2	-663.7	Point



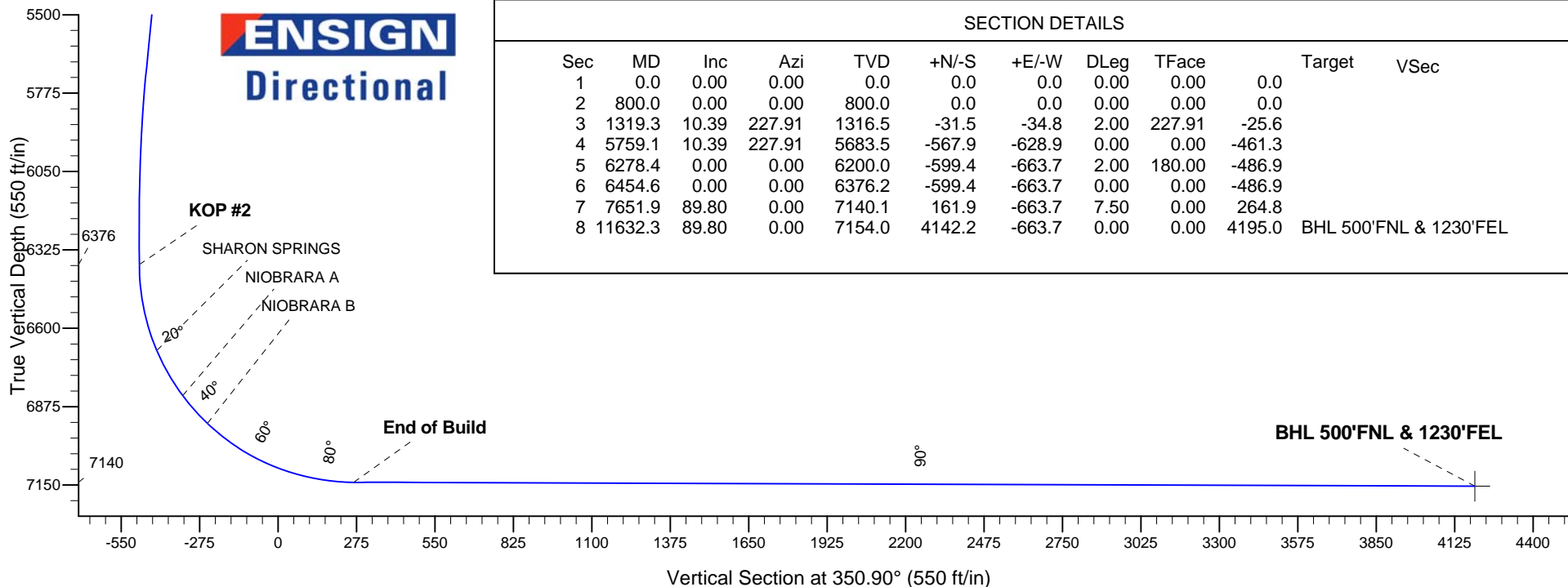
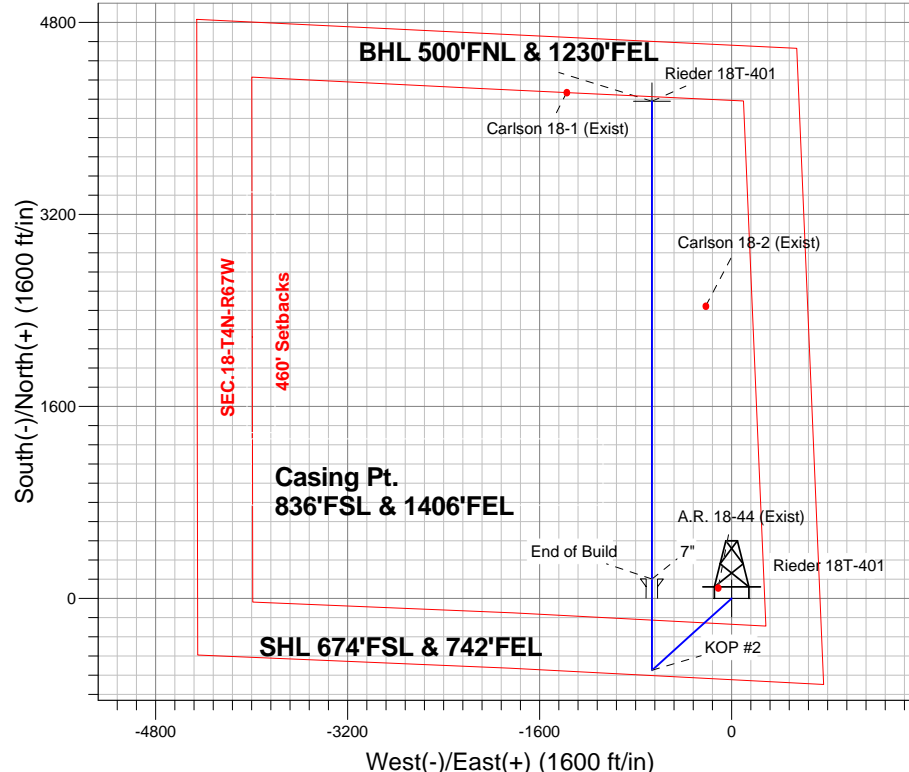
Azimuths to True North
 Magnetic North: 8.52°

Magnetic Field
 Strength: 52736.9snT
 Dip Angle: 66.84°
 Date: 7/31/2014
 Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
800.0	800.0	KOP #1
6376.2	6454.6	KOP #2
7140.1	7651.9	End of Build

Rieder 4N67W18Y Pad Sec.18-T4N-R67W
 Rieder 18T-401
 Plan #1 (7-31-14)
 10:30, August 05 2014





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.18-T4N-R67W

Rieder 4N67W18Y Pad Sec.18-T4N-R67W

Rieder 18T-401

Wellbore #1

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

Standard Planning Report

05 August, 2014

Database:	Landmark	Local Co-ordinate Reference:	Well Rieder 18T-401
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Project:	SEC.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	North Reference:	True
Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (7-31-14)		

Project	SEC.18-T4N-R67W, Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	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-401					
Well Position	+N/-S	0.0 ft	Northing:	1,355,509.24 ft	Latitude:	40.307850
	+E/-W	-61.4 ft	Easting:	3,160,139.69 ft	Longitude:	-104.925790
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,805.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/31/2014	8.52	66.84	52,737

Design	Plan #1 (7-31-14)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	350.90

Plan Sections										
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	
800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,319.3	10.39	227.91	1,316.5	-31.5	-34.8	2.00	2.00	0.00	227.91	
5,759.1	10.39	227.91	5,683.5	-567.9	-628.9	0.00	0.00	0.00	0.00	
6,278.4	0.00	0.00	6,200.0	-599.4	-663.7	2.00	-2.00	0.00	180.00	
6,454.6	0.00	0.00	6,376.2	-599.4	-663.7	0.00	0.00	0.00	0.00	
7,651.9	89.80	0.00	7,140.1	161.9	-663.7	7.50	7.50	0.00	0.00	
11,632.3	89.80	0.00	7,154.0	4,142.2	-663.7	0.00	0.00	0.00	0.00	BHL 500'FNL & 123

Database:	Landmark	Local Co-ordinate Reference:	Well Rieder 18T-401
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Project:	SEC.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	North Reference:	True
Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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
SHL 674'FSL & 742'FEL									
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
KOP #1									
900.0	2.00	227.91	900.0	-1.2	-1.3	-1.0	2.00	2.00	0.00
1,000.0	4.00	227.91	999.8	-4.7	-5.2	-3.8	2.00	2.00	0.00
1,100.0	6.00	227.91	1,099.5	-10.5	-11.6	-8.5	2.00	2.00	0.00
1,200.0	8.00	227.91	1,198.7	-18.7	-20.7	-15.2	2.00	2.00	0.00
1,300.0	10.00	227.91	1,297.5	-29.2	-32.3	-23.7	2.00	2.00	0.00
1,319.3	10.39	227.91	1,316.5	-31.5	-34.8	-25.6	2.00	2.00	0.00
1,400.0	10.39	227.91	1,395.8	-41.2	-45.6	-33.5	0.00	0.00	0.00
1,500.0	10.39	227.91	1,494.2	-53.3	-59.0	-43.3	0.00	0.00	0.00
1,600.0	10.39	227.91	1,592.6	-65.4	-72.4	-53.1	0.00	0.00	0.00
1,700.0	10.39	227.91	1,690.9	-77.5	-85.8	-62.9	0.00	0.00	0.00
1,800.0	10.39	227.91	1,789.3	-89.5	-99.2	-72.7	0.00	0.00	0.00
1,900.0	10.39	227.91	1,887.6	-101.6	-112.5	-82.5	0.00	0.00	0.00
2,000.0	10.39	227.91	1,986.0	-113.7	-125.9	-92.4	0.00	0.00	0.00
2,100.0	10.39	227.91	2,084.4	-125.8	-139.3	-102.2	0.00	0.00	0.00
2,200.0	10.39	227.91	2,182.7	-137.9	-152.7	-112.0	0.00	0.00	0.00
2,300.0	10.39	227.91	2,281.1	-150.0	-166.0	-121.8	0.00	0.00	0.00
2,400.0	10.39	227.91	2,379.5	-162.0	-179.4	-131.6	0.00	0.00	0.00
2,500.0	10.39	227.91	2,477.8	-174.1	-192.8	-141.4	0.00	0.00	0.00
2,600.0	10.39	227.91	2,576.2	-186.2	-206.2	-151.2	0.00	0.00	0.00
2,700.0	10.39	227.91	2,674.5	-198.3	-219.6	-161.1	0.00	0.00	0.00
2,800.0	10.39	227.91	2,772.9	-210.4	-232.9	-170.9	0.00	0.00	0.00
2,900.0	10.39	227.91	2,871.3	-222.5	-246.3	-180.7	0.00	0.00	0.00
3,000.0	10.39	227.91	2,969.6	-234.5	-259.7	-190.5	0.00	0.00	0.00
3,100.0	10.39	227.91	3,068.0	-246.6	-273.1	-200.3	0.00	0.00	0.00
3,200.0	10.39	227.91	3,166.3	-258.7	-286.5	-210.1	0.00	0.00	0.00
3,300.0	10.39	227.91	3,264.7	-270.8	-299.8	-219.9	0.00	0.00	0.00
3,400.0	10.39	227.91	3,363.1	-282.9	-313.2	-229.8	0.00	0.00	0.00
3,488.4	10.39	227.91	3,450.0	-293.6	-325.0	-238.4	0.00	0.00	0.00
PARKMAN									
3,500.0	10.39	227.91	3,461.4	-295.0	-326.6	-239.6	0.00	0.00	0.00
3,600.0	10.39	227.91	3,559.8	-307.0	-340.0	-249.4	0.00	0.00	0.00
3,700.0	10.39	227.91	3,658.2	-319.1	-353.4	-259.2	0.00	0.00	0.00
3,800.0	10.39	227.91	3,756.5	-331.2	-366.7	-269.0	0.00	0.00	0.00
3,900.0	10.39	227.91	3,854.9	-343.3	-380.1	-278.8	0.00	0.00	0.00
4,000.0	10.39	227.91	3,953.2	-355.4	-393.5	-288.6	0.00	0.00	0.00
4,006.9	10.39	227.91	3,960.0	-356.2	-394.4	-289.3	0.00	0.00	0.00
SUSSEX									
4,100.0	10.39	227.91	4,051.6	-367.5	-406.9	-298.5	0.00	0.00	0.00
4,200.0	10.39	227.91	4,150.0	-379.5	-420.3	-308.3	0.00	0.00	0.00
4,300.0	10.39	227.91	4,248.3	-391.6	-433.6	-318.1	0.00	0.00	0.00
4,400.0	10.39	227.91	4,346.7	-403.7	-447.0	-327.9	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Rieder 18T-401
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Project:	SEC.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	North Reference:	True
Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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	10.39	227.91	4,445.0	-415.8	-460.4	-337.7	0.00	0.00	0.00
4,576.2	10.39	227.91	4,520.0	-425.0	-470.6	-345.2	0.00	0.00	0.00
SHANNON									
4,600.0	10.39	227.91	4,543.4	-427.9	-473.8	-347.5	0.00	0.00	0.00
4,700.0	10.39	227.91	4,641.8	-440.0	-487.2	-357.4	0.00	0.00	0.00
4,800.0	10.39	227.91	4,740.1	-452.0	-500.5	-367.2	0.00	0.00	0.00
4,900.0	10.39	227.91	4,838.5	-464.1	-513.9	-377.0	0.00	0.00	0.00
5,000.0	10.39	227.91	4,936.9	-476.2	-527.3	-386.8	0.00	0.00	0.00
5,100.0	10.39	227.91	5,035.2	-488.3	-540.7	-396.6	0.00	0.00	0.00
5,200.0	10.39	227.91	5,133.6	-500.4	-554.1	-406.4	0.00	0.00	0.00
5,300.0	10.39	227.91	5,231.9	-512.5	-567.4	-416.2	0.00	0.00	0.00
5,400.0	10.39	227.91	5,330.3	-524.5	-580.8	-426.1	0.00	0.00	0.00
5,500.0	10.39	227.91	5,428.7	-536.6	-594.2	-435.9	0.00	0.00	0.00
5,600.0	10.39	227.91	5,527.0	-548.7	-607.6	-445.7	0.00	0.00	0.00
5,700.0	10.39	227.91	5,625.4	-560.8	-621.0	-455.5	0.00	0.00	0.00
5,759.1	10.39	227.91	5,683.5	-567.9	-628.9	-461.3	0.00	0.00	0.00
5,800.0	9.57	227.91	5,723.8	-572.7	-634.1	-465.2	2.00	-2.00	0.00
5,900.0	7.57	227.91	5,822.7	-582.7	-645.2	-473.3	2.00	-2.00	0.00
6,000.0	5.57	227.91	5,922.0	-590.3	-653.7	-479.5	2.00	-2.00	0.00
6,100.0	3.57	227.91	6,021.7	-595.7	-659.6	-483.8	2.00	-2.00	0.00
6,200.0	1.57	227.91	6,121.6	-598.7	-662.9	-486.3	2.00	-2.00	0.00
6,278.4	0.00	0.00	6,200.0	-599.4	-663.7	-486.9	2.00	-2.00	0.00
6,300.0	0.00	0.00	6,221.6	-599.4	-663.7	-486.9	0.00	0.00	0.00
6,400.0	0.00	0.00	6,321.6	-599.4	-663.7	-486.9	0.00	0.00	0.00
6,454.6	0.00	0.00	6,376.2	-599.4	-663.7	-486.9	0.00	0.00	0.00
KOP #2									
6,500.0	3.41	0.00	6,421.5	-598.1	-663.7	-485.5	7.50	7.50	0.00
6,600.0	10.91	0.00	6,520.7	-585.6	-663.7	-473.2	7.50	7.50	0.00
6,700.0	18.41	0.00	6,617.4	-560.3	-663.7	-448.3	7.50	7.50	0.00
6,764.9	23.27	0.00	6,678.0	-537.2	-663.7	-425.5	7.50	7.50	0.00
SHARON SPRINGS									
6,800.0	25.91	0.00	6,709.9	-522.6	-663.7	-411.1	7.50	7.50	0.00
6,900.0	33.41	0.00	6,796.8	-473.2	-663.7	-362.2	7.50	7.50	0.00
6,948.0	37.01	0.00	6,836.0	-445.5	-663.7	-334.9	7.50	7.50	0.00
NIOBRARA A									
7,000.0	40.91	0.00	6,876.4	-412.8	-663.7	-302.6	7.50	7.50	0.00
7,080.0	46.90	0.00	6,934.0	-357.4	-663.7	-247.9	7.50	7.50	0.00
NIOBRARA B									
7,100.0	48.41	0.00	6,947.5	-342.6	-663.7	-233.3	7.50	7.50	0.00
7,198.6	55.80	0.00	7,008.0	-264.9	-663.7	-156.5	7.50	7.50	0.00
NIOBRARA C									
7,200.0	55.91	0.00	7,008.8	-263.7	-663.7	-155.4	7.50	7.50	0.00
7,300.0	63.41	0.00	7,059.3	-177.5	-663.7	-70.2	7.50	7.50	0.00
7,400.0	70.91	0.00	7,098.1	-85.4	-663.7	20.7	7.50	7.50	0.00
7,500.0	78.41	0.00	7,124.5	11.0	-663.7	115.9	7.50	7.50	0.00
7,543.2	81.64	0.00	7,132.0	53.5	-663.7	157.8	7.50	7.50	0.00
FT HAYS									
7,600.0	85.91	0.00	7,138.2	110.0	-663.7	213.6	7.50	7.50	0.00
7,651.9	89.80	0.00	7,140.1	161.9	-663.7	264.8	7.50	7.50	0.00
End of Build - 7"									
7,700.0	89.80	0.00	7,140.3	210.0	-663.7	312.3	0.00	0.00	0.00
7,800.0	89.80	0.00	7,140.6	310.0	-663.7	411.0	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Rieder 18T-401
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Project:	SEC.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	North Reference:	True
Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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)
7,900.0	89.80	0.00	7,141.0	409.9	-663.7	509.8	0.00	0.00	0.00
8,000.0	89.80	0.00	7,141.3	509.9	-663.7	608.5	0.00	0.00	0.00
8,100.0	89.80	0.00	7,141.7	609.9	-663.7	707.3	0.00	0.00	0.00
8,200.0	89.80	0.00	7,142.0	709.9	-663.7	806.0	0.00	0.00	0.00
8,300.0	89.80	0.00	7,142.4	809.9	-663.7	904.7	0.00	0.00	0.00
8,400.0	89.80	0.00	7,142.7	909.9	-663.7	1,003.5	0.00	0.00	0.00
8,500.0	89.80	0.00	7,143.1	1,009.9	-663.7	1,102.2	0.00	0.00	0.00
8,600.0	89.80	0.00	7,143.4	1,109.9	-663.7	1,201.0	0.00	0.00	0.00
8,700.0	89.80	0.00	7,143.8	1,209.9	-663.7	1,299.7	0.00	0.00	0.00
8,800.0	89.80	0.00	7,144.1	1,309.9	-663.7	1,398.4	0.00	0.00	0.00
8,900.0	89.80	0.00	7,144.5	1,409.9	-663.7	1,497.2	0.00	0.00	0.00
9,000.0	89.80	0.00	7,144.8	1,509.9	-663.7	1,595.9	0.00	0.00	0.00
9,100.0	89.80	0.00	7,145.2	1,609.9	-663.7	1,694.7	0.00	0.00	0.00
9,200.0	89.80	0.00	7,145.5	1,709.9	-663.7	1,793.4	0.00	0.00	0.00
9,300.0	89.80	0.00	7,145.9	1,809.9	-663.7	1,892.1	0.00	0.00	0.00
9,400.0	89.80	0.00	7,146.2	1,909.9	-663.7	1,990.9	0.00	0.00	0.00
9,500.0	89.80	0.00	7,146.6	2,009.9	-663.7	2,089.6	0.00	0.00	0.00
9,600.0	89.80	0.00	7,146.9	2,109.9	-663.7	2,188.4	0.00	0.00	0.00
9,700.0	89.80	0.00	7,147.3	2,209.9	-663.7	2,287.1	0.00	0.00	0.00
9,800.0	89.80	0.00	7,147.6	2,309.9	-663.7	2,385.8	0.00	0.00	0.00
9,900.0	89.80	0.00	7,148.0	2,409.9	-663.7	2,484.6	0.00	0.00	0.00
10,000.0	89.80	0.00	7,148.3	2,509.9	-663.7	2,583.3	0.00	0.00	0.00
10,100.0	89.80	0.00	7,148.7	2,609.9	-663.7	2,682.1	0.00	0.00	0.00
10,200.0	89.80	0.00	7,149.0	2,709.9	-663.7	2,780.8	0.00	0.00	0.00
10,300.0	89.80	0.00	7,149.3	2,809.9	-663.7	2,879.5	0.00	0.00	0.00
10,400.0	89.80	0.00	7,149.7	2,909.9	-663.7	2,978.3	0.00	0.00	0.00
10,500.0	89.80	0.00	7,150.0	3,009.9	-663.7	3,077.0	0.00	0.00	0.00
10,600.0	89.80	0.00	7,150.4	3,109.9	-663.7	3,175.8	0.00	0.00	0.00
10,700.0	89.80	0.00	7,150.7	3,209.9	-663.7	3,274.5	0.00	0.00	0.00
10,800.0	89.80	0.00	7,151.1	3,309.9	-663.7	3,373.2	0.00	0.00	0.00
10,900.0	89.80	0.00	7,151.4	3,409.9	-663.7	3,472.0	0.00	0.00	0.00
11,000.0	89.80	0.00	7,151.8	3,509.9	-663.7	3,570.7	0.00	0.00	0.00
11,100.0	89.80	0.00	7,152.1	3,609.9	-663.7	3,669.5	0.00	0.00	0.00
11,200.0	89.80	0.00	7,152.5	3,709.9	-663.7	3,768.2	0.00	0.00	0.00
11,300.0	89.80	0.00	7,152.8	3,809.9	-663.7	3,866.9	0.00	0.00	0.00
11,400.0	89.80	0.00	7,153.2	3,909.9	-663.7	3,965.7	0.00	0.00	0.00
11,500.0	89.80	0.00	7,153.5	4,009.9	-663.7	4,064.4	0.00	0.00	0.00
11,600.0	89.80	0.00	7,153.9	4,109.9	-663.7	4,163.2	0.00	0.00	0.00
11,632.3	89.80	0.00	7,154.0	4,142.2	-663.7	4,195.0	0.00	0.00	0.00

CODELL - BHL 500'FNL & 1230'FEL

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,651.9	7,140.1	7"	7	7-1/2

Database:	Landmark	Local Co-ordinate Reference:	Well Rieder 18T-401
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Project:	SEC.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	North Reference:	True
Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (7-31-14)		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,488.4	3,450.0	PARKMAN				
4,006.9	3,960.0	SUSSEX				
4,576.2	4,520.0	SHANNON				
6,764.9	6,678.0	SHARON SPRINGS				
6,948.0	6,836.0	NIOBRARA A				
7,080.0	6,934.0	NIOBRARA B				
7,198.6	7,008.0	NIOBRARA C				
7,543.2	7,132.0	FT HAYS				
11,632.3	7,154.0	CODELL				

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
800.0	800.0	0.0	0.0	KOP #1
6,454.6	6,376.2	-599.4	-663.7	KOP #2
7,651.9	7,140.1	161.9	-663.7	End of Build



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.18-T4N-R67W

Rieder 4N67W18Y Pad Sec.18-T4N-R67W

Rieder 18T-401

Wellbore #1

Plan #1 (7-31-14)

Anticollision Report

05 August, 2014



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Rieder 18T-401
Project:	SEC.18-T4N-R67W	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (7-31-14)	Offset TVD Reference:	Offset Datum

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

Survey Tool Program		Date	8/5/2014		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	11,632.3	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)	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	1,153.2	1,137.3	142.4	117.2	5.659	CC
A.R. 18-44 (Exist) - Wellbore #1 - Wellbore #1	1,300.0	1,282.5	144.0	115.6	5.065	ES
A.R. 18-44 (Exist) - Wellbore #1 - Wellbore #1	7,600.0	7,123.2	552.5	391.8	3.439	SF
Carlson 18-1 (Exist) - Wellbore #1 - Wellbore #1	11,632.3	7,175.0	712.4	484.9	3.131	CC, ES, SF
Carlson 18-2 (Exist) - Wellbore #1 - Wellbore #1	9,927.3	7,130.0	449.0	253.9	2.301	CC, ES, SF
Rieder 4N67W18Q Pad Sec.18-T4N-R67						
Rieder 18T-201 - Wellbore #1 - Plan #1 (7-30-14)	6,286.2	6,264.7	156.3	122.6	4.629	CC, ES
Rieder 18T-201 - Wellbore #1 - Plan #1 (7-30-14)	11,632.3	11,404.5	267.5	152.0	2.316	SF
Rieder 4N67W18Y Pad Sec.18-T4N-R67W						
Rieder 18T-221 - Wellbore #1 - Plan #1 (7-31-14)	800.0	801.0	61.4	58.0	18.187	CC, ES
Rieder 18T-221 - Wellbore #1 - Plan #1 (7-31-14)	11,632.3	11,419.2	377.2	234.4	2.641	SF
Rieder 18T-321 - Wellbore #1 - Plan #1 (7-31-14)	800.0	801.0	30.7	27.3	9.094	CC, ES
Rieder 18T-321 - Wellbore #1 - Plan #1 (7-31-14)	11,632.3	11,521.8	203.3	68.8	1.511	SF
Rieder 18Y-241 - Wellbore #1 - Plan #1 (7-31-14)	800.0	801.0	89.2	85.9	26.454	CC, ES
Rieder 18Y-241 - Wellbore #1 - Plan #1 (7-31-14)	11,632.3	11,408.0	874.5	711.0	5.347	SF
Rieder 18Y-301 - Wellbore #1 - Plan #1 (7-31-14)	800.0	801.0	150.6	147.2	44.641	CC, ES
Rieder 18Y-301 - Wellbore #1 - Plan #1 (7-31-14)	5,100.0	5,003.0	979.9	949.7	32.444	SF
Rieder 18Y-441 - Wellbore #1 - Plan #1 (7-31-14)	800.0	801.0	119.9	116.6	35.547	CC, ES
Rieder 18Y-441 - Wellbore #1 - Plan #1 (7-31-14)	6,000.0	5,963.4	995.3	959.4	27.758	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			Minimum Separation			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)	Separation (ft)	Factor
0.0	0.0	0.0	0.0	0.0	0.0	-50.77	91.1	-111.6	144.8			
100.0	100.0	85.0	85.0	0.1	1.7	-50.77	91.1	-111.6	144.0	142.2	1.81	79.454
200.0	200.0	185.0	185.0	0.3	3.7	-50.77	91.1	-111.6	144.0	140.0	4.04	35.671
300.0	300.0	285.0	285.0	0.6	5.7	-50.77	91.1	-111.6	144.0	137.8	6.26	22.998
400.0	400.0	385.0	385.0	0.8	7.7	-50.77	91.1	-111.6	144.0	135.5	8.49	16.969
500.0	500.0	485.0	485.0	1.0	9.7	-50.77	91.1	-111.6	144.0	133.3	10.71	13.445

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Rieder 18T-401
Project:	SEC.18-T4N-R67W	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (7-31-14)	Offset TVD Reference:	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		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		
600.0	600.0	585.0	585.0	1.2	11.7	-50.77	91.1	-111.6	144.0	131.1	12.94	11.133		
700.0	700.0	685.0	685.0	1.5	13.7	-50.77	91.1	-111.6	144.0	128.9	15.16	9.499		
800.0	800.0	785.0	785.0	1.7	15.7	-50.77	91.1	-111.6	144.0	126.6	17.39	8.283		
900.0	900.0	885.0	885.0	1.9	17.7	82.01	91.1	-111.6	143.8	124.2	19.59	7.340		
1,000.0	999.8	984.8	984.8	2.1	19.7	84.09	91.1	-111.6	143.1	121.4	21.77	6.574		
1,100.0	1,099.5	1,084.5	1,084.5	2.3	21.7	87.58	91.1	-111.6	142.5	118.5	23.97	5.944		
1,153.2	1,152.3	1,137.3	1,137.3	2.4	22.7	90.00	91.1	-111.6	142.4	117.2	25.16	5.659 CC		
1,200.0	1,198.7	1,183.7	1,183.7	2.5	23.7	92.44	91.1	-111.6	142.5	116.3	26.19	5.440		
1,300.0	1,297.5	1,282.5	1,282.5	2.8	25.6	98.57	91.1	-111.6	144.0	115.6	28.43	5.065 ES		
1,400.0	1,395.8	1,380.8	1,380.8	3.1	27.6	105.35	91.1	-111.6	147.8	117.1	30.68	4.818		
1,500.0	1,494.2	1,479.2	1,479.2	3.4	29.6	111.76	91.1	-111.6	153.6	120.7	32.92	4.667		
1,600.0	1,592.6	1,577.6	1,577.6	3.8	31.6	117.64	91.1	-111.6	161.3	126.1	35.14	4.589		
1,700.0	1,690.9	1,675.9	1,675.9	4.2	33.5	122.95	91.1	-111.6	170.5	133.1	37.35	4.565		
1,800.0	1,789.3	1,774.3	1,774.3	4.5	35.5	127.70	91.1	-111.6	181.0	141.5	39.54	4.579		
1,900.0	1,887.6	1,872.6	1,872.6	4.9	37.5	131.90	91.1	-111.6	192.7	151.0	41.72	4.619		
2,000.0	1,986.0	1,971.0	1,971.0	5.3	39.4	135.62	91.1	-111.6	205.3	161.4	43.89	4.677		
2,100.0	2,084.4	2,069.4	2,069.4	5.7	41.4	138.90	91.1	-111.6	218.6	172.6	46.06	4.747		
2,200.0	2,182.7	2,167.7	2,167.7	6.1	43.4	141.81	91.1	-111.6	232.6	184.4	48.22	4.824		
2,300.0	2,281.1	2,266.1	2,266.1	6.5	45.3	144.38	91.1	-111.6	247.1	196.7	50.38	4.905		
2,400.0	2,379.5	2,364.5	2,364.5	6.9	47.3	146.66	91.1	-111.6	262.1	209.5	52.54	4.988		
2,500.0	2,477.8	2,462.8	2,462.8	7.3	49.3	148.70	91.1	-111.6	277.4	222.7	54.70	5.071		
2,600.0	2,576.2	2,561.2	2,561.2	7.7	51.2	150.52	91.1	-111.6	293.0	236.1	56.86	5.153		
2,700.0	2,674.5	2,659.5	2,659.5	8.1	53.2	152.16	91.1	-111.6	308.9	249.9	59.02	5.234		
2,800.0	2,772.9	2,757.9	2,757.9	8.5	55.2	153.64	91.1	-111.6	325.0	263.8	61.18	5.312		
2,900.0	2,871.3	2,856.3	2,856.3	8.9	57.1	154.98	91.1	-111.6	341.3	277.9	63.34	5.388		
3,000.0	2,969.6	2,954.6	2,954.6	9.3	59.1	156.20	91.1	-111.6	357.7	292.2	65.50	5.461		
3,100.0	3,068.0	3,053.0	3,053.0	9.7	61.1	157.31	91.1	-111.6	374.3	306.7	67.67	5.532		
3,200.0	3,166.3	3,151.3	3,151.3	10.1	63.0	158.33	91.1	-111.6	391.1	321.2	69.84	5.600		
3,300.0	3,264.7	3,249.7	3,249.7	10.5	65.0	159.26	91.1	-111.6	407.9	335.9	72.00	5.665		
3,400.0	3,363.1	3,348.1	3,348.1	10.9	67.0	160.12	91.1	-111.6	424.9	350.7	74.17	5.728		
3,500.0	3,461.4	3,446.4	3,446.4	11.4	68.9	160.92	91.1	-111.6	441.9	365.5	76.35	5.788		
3,600.0	3,559.8	3,544.8	3,544.8	11.8	70.9	161.65	91.1	-111.6	459.0	380.5	78.52	5.846		
3,700.0	3,658.2	3,643.2	3,643.2	12.2	72.9	162.33	91.1	-111.6	476.2	395.5	80.69	5.901		
3,800.0	3,756.5	3,741.5	3,741.5	12.6	74.8	162.97	91.1	-111.6	493.4	410.5	82.87	5.954		
3,900.0	3,854.9	3,839.9	3,839.9	13.0	76.8	163.56	91.1	-111.6	510.7	425.6	85.04	6.005		
4,000.0	3,953.2	3,938.2	3,938.2	13.4	78.8	164.11	91.1	-111.6	528.0	440.8	87.22	6.054		
4,100.0	4,051.6	4,036.6	4,036.6	13.8	80.7	164.63	91.1	-111.6	545.4	456.0	89.39	6.101		
4,200.0	4,150.0	4,135.0	4,135.0	14.2	82.7	165.11	91.1	-111.6	562.8	471.3	91.57	6.146		
4,300.0	4,248.3	4,233.3	4,233.3	14.7	84.7	165.57	91.1	-111.6	580.3	486.5	93.75	6.190		
4,400.0	4,346.7	4,331.7	4,331.7	15.1	86.6	166.00	91.1	-111.6	597.8	501.9	95.93	6.231		
4,500.0	4,445.0	4,430.0	4,430.0	15.5	88.6	166.41	91.1	-111.6	615.3	517.2	98.11	6.272		
4,600.0	4,543.4	4,528.4	4,528.4	15.9	90.6	166.79	91.1	-111.6	632.9	532.6	100.29	6.310		
4,700.0	4,641.8	4,626.8	4,626.8	16.3	92.5	167.15	91.1	-111.6	650.4	548.0	102.47	6.347		
4,800.0	4,740.1	4,725.1	4,725.1	16.7	94.5	167.50	91.1	-111.6	668.0	563.4	104.65	6.383		
4,900.0	4,838.5	4,823.5	4,823.5	17.1	96.5	167.82	91.1	-111.6	685.7	578.8	106.84	6.418		
5,000.0	4,936.9	4,921.9	4,921.9	17.6	98.4	168.13	91.1	-111.6	703.3	594.3	109.02	6.451		
5,100.0	5,035.2	5,020.2	5,020.2	18.0	100.4	168.43	91.1	-111.6	721.0	609.8	111.20	6.483		
5,200.0	5,133.6	5,118.6	5,118.6	18.4	102.4	168.71	91.1	-111.6	738.7	625.3	113.39	6.515		
5,300.0	5,231.9	5,216.9	5,216.9	18.8	104.3	168.97	91.1	-111.6	756.4	640.8	115.57	6.545		
5,400.0	5,330.3	5,315.3	5,315.3	19.2	106.3	169.23	91.1	-111.6	774.1	656.3	117.76	6.574		
5,500.0	5,428.7	5,413.7	5,413.7	19.6	108.3	169.47	91.1	-111.6	791.8	671.9	119.94	6.602		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Rieder 18T-401
Project:	SEC.18-T4N-R67W	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (7-31-14)	Offset TVD Reference:	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	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	
5,600.0	5,527.0	5,512.0	5,512.0	20.1	110.2	169.71	91.1	-111.6	809.5	687.4	122.13	6.629		
5,700.0	5,625.4	5,610.4	5,610.4	20.5	112.2	169.93	91.1	-111.6	827.3	703.0	124.31	6.655		
5,800.0	5,723.8	5,708.8	5,708.8	20.9	114.2	170.16	91.1	-111.6	844.8	718.0	126.76	6.664		
5,900.0	5,822.7	5,807.7	5,807.7	21.1	116.2	170.38	91.1	-111.6	859.5	730.0	129.50	6.637		
6,000.0	5,922.0	5,907.0	5,907.0	21.4	118.1	170.55	91.1	-111.6	870.8	738.6	132.10	6.591		
6,100.0	6,021.7	6,006.7	6,006.7	21.5	120.1	170.66	91.1	-111.6	878.6	744.0	134.57	6.529		
6,200.0	6,121.6	6,106.6	6,106.6	21.7	122.1	170.72	91.1	-111.6	883.0	746.2	136.88	6.451		
6,300.0	6,221.6	6,206.6	6,206.6	21.8	124.1	38.65	91.1	-111.6	884.1	745.0	139.06	6.358		
6,400.0	6,321.6	6,306.6	6,306.6	21.9	126.1	38.65	91.1	-111.6	884.1	742.9	141.23	6.260		
6,500.0	6,421.5	6,406.5	6,406.5	22.1	128.1	38.75	91.1	-111.6	883.0	739.9	143.16	6.168		
6,600.0	6,520.7	6,505.7	6,505.7	22.1	130.1	39.72	91.1	-111.6	873.4	729.7	143.70	6.078		
6,700.0	6,617.4	6,602.4	6,602.4	22.0	132.0	41.77	91.1	-111.6	853.9	710.9	142.97	5.973		
6,800.0	6,709.9	6,694.9	6,694.9	21.9	133.9	45.00	91.1	-111.6	825.5	683.9	141.64	5.828		
6,900.0	6,796.8	6,781.8	6,781.8	21.7	135.6	49.53	91.1	-111.6	789.5	648.7	140.78	5.608		
7,000.0	6,876.4	6,861.4	6,861.4	21.4	137.2	55.40	91.1	-111.6	747.5	605.9	141.64	5.278		
7,100.0	6,947.5	6,932.5	6,932.5	21.1	138.6	62.46	91.1	-111.6	702.1	557.2	144.90	4.845		
7,200.0	7,008.8	6,993.8	6,993.8	20.8	139.9	70.19	91.1	-111.6	656.3	506.4	149.89	4.378		
7,300.0	7,059.3	7,044.3	7,044.3	20.5	140.9	77.72	91.1	-111.6	614.0	459.2	154.78	3.967		
7,400.0	7,098.1	7,083.1	7,083.1	20.2	141.7	84.03	91.1	-111.6	579.6	421.5	158.11	3.666		
7,500.0	7,124.5	7,109.5	7,109.5	20.0	142.2	88.33	91.1	-111.6	557.9	398.1	159.79	3.491		
7,581.0	7,136.6	7,121.6	7,121.6	19.8	142.4	90.00	91.1	-111.6	552.1	391.6	160.51	3.440		
7,600.0	7,138.2	7,123.2	7,123.2	19.8	142.5	90.14	91.1	-111.6	552.5	391.8	160.63	3.439 SF		
7,700.0	7,140.3	7,125.3	7,125.3	19.7	142.5	90.04	91.1	-111.6	564.8	403.5	161.27	3.502		
7,800.0	7,140.6	7,125.6	7,125.6	20.2	142.5	90.08	91.1	-111.6	593.9	431.9	162.05	3.665		
7,900.0	7,141.0	7,126.0	7,126.0	21.1	142.5	90.12	91.1	-111.6	637.6	474.6	162.98	3.912		
8,000.0	7,141.3	7,126.3	7,126.3	22.3	142.5	90.15	91.1	-111.6	693.0	529.0	164.04	4.225		
8,100.0	7,141.7	7,126.7	7,126.7	23.5	142.5	90.19	91.1	-111.6	757.7	592.5	165.22	4.586		
8,200.0	7,142.0	7,127.0	7,127.0	24.8	142.5	90.22	91.1	-111.6	829.4	662.9	166.49	4.982		
8,300.0	7,142.4	7,127.4	7,127.4	26.1	142.5	90.26	91.1	-111.6	906.4	738.6	167.84	5.401		
8,400.0	7,142.7	7,127.7	7,127.7	27.6	142.6	90.30	91.1	-111.6	987.6	818.4	169.27	5.835		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Rieder 18T-401
Project:	SEC.18-T4N-R67W	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (7-31-14)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.18-T4N-R67W - Carlson 18-1 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7291-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		
11,100.0	7,152.1	7,173.1	7,173.1	74.6	143.5	-89.83	4,218.7	-1,372.0	934.0	716.4	217.55	4.293		
11,200.0	7,152.5	7,173.5	7,173.5	76.4	143.5	-89.86	4,218.7	-1,372.0	872.1	652.7	219.42	3.974		
11,300.0	7,152.8	7,173.8	7,173.8	78.3	143.5	-89.88	4,218.7	-1,372.0	817.8	596.5	221.30	3.695		
11,400.0	7,153.2	7,174.2	7,174.2	80.2	143.5	-89.91	4,218.7	-1,372.0	772.7	549.5	223.18	3.462		
11,500.0	7,153.5	7,174.5	7,174.5	82.0	143.5	-89.94	4,218.7	-1,372.0	738.4	513.4	225.06	3.281		
11,600.0	7,153.9	7,174.9	7,174.9	83.9	143.5	-89.97	4,218.7	-1,372.0	716.6	489.7	226.94	3.158		
11,632.3	7,154.0	7,175.0	7,175.0	84.5	143.5	-89.98	4,218.7	-1,372.0	712.4	484.9	227.55	3.131 CC, ES, SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Rieder 18T-401
Project:	SEC.18-T4N-R67W	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (7-31-14)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.18-T4N-R67W - Carlson 18-2 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7255-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	
9,100.0	7,145.2	7,127.2	7,127.2	38.7	142.5	89.63	2,437.2	-214.7	941.2	760.8	180.41	5.217		
9,200.0	7,145.5	7,127.5	7,127.5	40.4	142.6	89.68	2,437.2	-214.7	854.7	672.6	182.13	4.693		
9,300.0	7,145.9	7,127.9	7,127.9	42.1	142.6	89.72	2,437.2	-214.7	771.4	587.5	183.87	4.195		
9,400.0	7,146.2	7,128.2	7,128.2	43.8	142.6	89.77	2,437.2	-214.7	692.5	506.9	185.62	3.731		
9,500.0	7,146.6	7,128.6	7,128.6	45.6	142.6	89.81	2,437.2	-214.7	619.8	432.4	187.39	3.307		
9,600.0	7,146.9	7,128.9	7,128.9	47.3	142.6	89.85	2,437.2	-214.7	555.6	366.4	189.18	2.937		
9,700.0	7,147.3	7,129.3	7,129.3	49.1	142.6	89.90	2,437.2	-214.7	503.2	312.2	190.97	2.635		
9,800.0	7,147.6	7,129.6	7,129.6	50.9	142.6	89.94	2,437.2	-214.7	466.6	273.9	192.77	2.421		
9,900.0	7,148.0	7,130.0	7,130.0	52.6	142.6	89.99	2,437.2	-214.7	449.8	255.2	194.58	2.311		
9,927.3	7,148.0	7,130.0	7,130.0	53.1	142.6	90.00	2,437.2	-214.7	449.0	253.9	195.08	2.301 CC, ES, SF		
10,000.0	7,148.3	7,130.3	7,130.3	54.4	142.6	90.03	2,437.2	-214.7	454.8	258.4	196.40	2.316		
10,100.0	7,148.7	7,130.7	7,130.7	56.2	142.6	90.08	2,437.2	-214.7	481.0	282.8	198.23	2.427		
10,200.0	7,149.0	7,131.0	7,131.0	58.1	142.6	90.12	2,437.2	-214.7	525.3	325.2	200.07	2.626		
10,300.0	7,149.3	7,131.3	7,131.3	59.9	142.6	90.17	2,437.2	-214.7	583.5	381.6	201.91	2.890		
10,400.0	7,149.7	7,131.7	7,131.7	61.7	142.6	90.21	2,437.2	-214.7	651.9	448.2	203.75	3.200		
10,500.0	7,150.0	7,132.0	7,132.0	63.5	142.6	90.26	2,437.2	-214.7	727.7	522.1	205.60	3.539		
10,600.0	7,150.4	7,132.4	7,132.4	65.4	142.6	90.30	2,437.2	-214.7	808.8	601.3	207.45	3.899		
10,700.0	7,150.7	7,132.7	7,132.7	67.2	142.7	90.34	2,437.2	-214.7	893.7	684.4	209.31	4.270		
10,800.0	7,151.1	7,133.1	7,133.1	69.0	142.7	90.39	2,437.2	-214.7	981.4	770.3	211.17	4.647		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Rieder 18T-401
Project:	SEC.18-T4N-R67W	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (7-31-14)	Offset TVD Reference:	Offset Datum

Offset Design Rieder 4N67W18Q Pad Sec.18-T4N-R67 - Rieder 18T-201 - Wellbore #1 - Plan #1 (7-30-14)													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 (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
2,400.0	2,379.5	2,519.2	2,499.4	6.9	7.2	30.64	30.64	-373.9	-1,137.0	987.3	975.2	12.08	81.717	
2,500.0	2,477.8	2,615.5	2,594.3	7.3	7.6	30.46	30.46	-383.0	-1,123.7	960.4	947.7	12.68	75.720	
2,600.0	2,576.2	2,711.8	2,689.2	7.7	7.9	30.26	30.26	-392.2	-1,110.4	933.5	920.2	13.29	70.255	
2,700.0	2,674.5	2,808.0	2,784.1	8.1	8.3	30.06	30.06	-401.4	-1,097.0	906.6	892.7	13.89	65.255	
2,800.0	2,772.9	2,904.3	2,879.0	8.5	8.7	29.84	29.84	-410.5	-1,083.7	879.7	865.2	14.50	60.666	
2,900.0	2,871.3	3,000.6	2,973.9	8.9	9.0	29.61	29.61	-419.7	-1,070.4	852.9	837.7	15.11	56.440	
3,000.0	2,969.6	3,096.8	3,068.8	9.3	9.4	29.37	29.37	-428.9	-1,057.1	826.0	810.3	15.72	52.539	
3,100.0	3,068.0	3,193.1	3,163.7	9.7	9.8	29.11	29.11	-438.0	-1,043.8	799.1	782.8	16.33	48.927	
3,200.0	3,166.3	3,289.4	3,258.6	10.1	10.2	28.83	28.83	-447.2	-1,030.4	772.3	755.4	16.95	45.574	
3,300.0	3,264.7	3,385.6	3,353.5	10.5	10.5	28.53	28.53	-456.4	-1,017.1	745.5	728.0	17.56	42.454	
3,400.0	3,363.1	3,481.9	3,448.4	10.9	10.9	28.21	28.21	-465.5	-1,003.8	718.7	700.5	18.18	39.544	
3,500.0	3,461.4	3,578.1	3,543.3	11.4	11.3	27.86	27.86	-474.7	-990.5	692.0	673.2	18.79	36.824	
3,600.0	3,559.8	3,674.4	3,638.1	11.8	11.7	27.48	27.48	-483.9	-977.2	665.2	645.8	19.41	34.277	
3,700.0	3,658.2	3,770.7	3,733.0	12.2	12.0	27.08	27.08	-493.0	-963.8	638.5	618.5	20.02	31.888	
3,800.0	3,756.5	3,866.9	3,827.9	12.6	12.4	26.64	26.64	-502.2	-950.5	611.8	591.2	20.64	29.642	
3,900.0	3,854.9	3,963.2	3,922.8	13.0	12.8	26.16	26.16	-511.4	-937.2	585.2	563.9	21.26	27.528	
4,000.0	3,953.2	4,059.5	4,017.7	13.4	13.2	25.63	25.63	-520.5	-923.9	558.6	536.7	21.88	25.535	
4,100.0	4,051.6	4,155.7	4,112.6	13.8	13.6	25.05	25.05	-529.7	-910.6	532.0	509.5	22.49	23.653	
4,200.0	4,150.0	4,252.0	4,207.5	14.2	13.9	24.41	24.41	-538.9	-897.3	505.5	482.4	23.11	21.874	
4,300.0	4,248.3	4,348.3	4,302.4	14.7	14.3	23.70	23.70	-548.0	-883.9	479.1	455.4	23.73	20.191	
4,400.0	4,346.7	4,444.5	4,397.3	15.1	14.7	22.90	22.90	-557.2	-870.6	452.8	428.4	24.35	18.595	
4,500.0	4,445.0	4,540.8	4,492.2	15.5	15.1	22.01	22.01	-566.4	-857.3	426.5	401.5	24.97	17.083	
4,600.0	4,543.4	4,632.0	4,582.2	15.9	15.4	21.15	21.15	-574.7	-845.3	400.8	375.3	25.51	15.708	
4,700.0	4,641.8	4,722.2	4,671.6	16.3	15.6	20.54	20.54	-581.3	-835.6	376.8	350.8	26.00	14.490	
4,800.0	4,740.1	4,813.2	4,762.3	16.7	15.8	20.25	20.25	-586.4	-828.2	354.5	328.0	26.47	13.393	
4,900.0	4,838.5	4,905.0	4,853.9	17.1	16.0	20.36	20.36	-589.9	-823.1	333.9	307.0	26.92	12.406	
5,000.0	4,936.9	5,000.0	4,948.8	17.6	16.1	20.95	20.95	-591.8	-820.4	315.1	287.8	27.35	11.522	
5,100.0	5,035.2	5,092.5	5,041.2	18.0	16.3	22.04	22.04	-592.0	-820.0	298.0	270.2	27.78	10.727	
5,200.0	5,133.6	5,190.8	5,139.6	18.4	16.4	23.42	23.42	-592.0	-820.0	281.3	253.1	28.23	9.966	
5,300.0	5,231.9	5,289.2	5,237.9	18.8	16.5	24.96	24.96	-592.0	-820.0	264.8	236.1	28.69	9.230	
5,400.0	5,330.3	5,387.5	5,336.3	19.2	16.7	26.71	26.71	-592.0	-820.0	248.5	219.4	29.18	8.519	
5,500.0	5,428.7	5,485.9	5,434.7	19.6	16.8	28.70	28.70	-592.0	-820.0	232.5	202.8	29.69	7.833	
5,600.0	5,527.0	5,584.3	5,533.0	20.1	16.9	30.98	30.98	-592.0	-820.0	216.8	186.6	30.22	7.174	
5,700.0	5,625.4	5,682.6	5,631.4	20.5	17.1	33.61	33.61	-592.0	-820.0	201.5	170.7	30.80	6.543	
5,800.0	5,723.8	5,781.0	5,729.8	20.9	17.2	36.53	36.53	-592.0	-820.0	186.9	155.5	31.43	5.946	
5,900.0	5,822.7	5,879.9	5,828.7	21.1	17.4	39.27	39.27	-592.0	-820.0	175.1	143.1	32.03	5.467	
6,000.0	5,922.0	5,979.3	5,928.0	21.4	17.5	41.64	41.64	-592.0	-820.0	166.4	133.8	32.58	5.107	
6,100.0	6,021.7	6,078.9	6,027.7	21.5	17.7	43.45	43.45	-592.0	-820.0	160.5	127.4	33.06	4.855	
6,200.0	6,121.6	6,178.8	6,127.6	21.7	17.8	44.52	44.52	-592.0	-820.0	157.3	123.8	33.46	4.699	
6,286.2	6,207.8	6,264.7	6,213.5	21.8	17.9	45.08	45.08	-591.4	-820.0	156.3	122.6	33.77	4.629 CC, ES	
6,300.0	6,221.6	6,278.3	6,227.1	21.8	17.9	46.84	46.84	-590.8	-820.0	156.6	122.7	33.82	4.629	
6,400.0	6,321.6	6,375.8	6,323.8	21.9	18.0	48.56	48.56	-579.0	-820.0	157.7	123.4	34.29	4.599	
6,500.0	6,421.5	6,469.2	6,414.3	22.1	18.1	47.78	47.78	-556.2	-820.0	162.4	127.5	34.89	4.654	
6,600.0	6,520.7	6,559.7	6,498.7	22.1	18.0	46.13	46.13	-523.8	-820.0	170.4	135.1	35.27	4.831	
6,700.0	6,617.4	6,650.0	6,578.6	22.0	18.0	44.44	44.44	-481.8	-820.0	180.6	145.3	35.28	5.119	
6,800.0	6,709.9	6,734.3	6,648.1	21.9	17.9	42.09	42.09	-434.3	-820.0	191.9	157.1	34.82	5.512	
6,900.0	6,796.8	6,819.0	6,712.4	21.7	17.8	40.62	40.62	-379.1	-820.0	203.6	169.7	33.92	6.003	
7,000.0	6,876.4	6,900.0	6,767.7	21.4	17.8	41.10	41.10	-320.0	-820.0	215.0	182.3	32.63	6.588	
7,100.0	6,947.5	6,984.6	6,818.5	21.1	17.7	44.19	44.19	-252.4	-820.0	225.4	194.3	31.11	7.244	
7,200.0	7,008.8	7,065.8	6,859.9	20.8	17.6	41.99	41.99	-182.6	-820.0	234.5	205.0	29.52	7.945	
7,300.0	7,059.3	7,150.0	6,894.8	20.5	17.6	40.29	40.29	-106.0	-820.0	242.1	214.0	28.06	8.627	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Rieder 18T-401
Project:	SEC.18-T4N-R67W	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (7-31-14)	Offset TVD Reference:	Offset Datum

Offset Design Rieder 4N67W18Q Pad Sec.18-T4N-R67 - Rieder 18T-201 - Wellbore #1 - Plan #1 (7-30-14)												Offset Site Error:	0.0 ft	
Survey Program: 0-MWD												Offset Well Error:	0.0 ft	
Reference		Offset		Semi Major Axis			Distance		Between Centres		Between Ellipses	Minimum Separation	Separation Factor	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)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor		
7,400.0	7,098.1	7,226.3	6,919.0	20.2	17.6	-39.18	-33.6	-820.0	247.7	220.8	26.96	9.189		
7,500.0	7,124.5	7,305.9	6,936.4	20.0	17.9	-38.46	44.0	-820.0	251.4	225.0	26.46	9.503		
7,600.0	7,138.2	7,385.3	6,945.6	19.8	18.5	-38.16	122.8	-820.0	253.1	226.4	26.68	9.483		
7,700.0	7,140.3	7,472.3	6,947.1	19.7	19.4	-38.13	209.7	-820.0	253.2	225.5	27.68	9.146		
7,800.0	7,140.6	7,572.3	6,947.0	20.2	20.5	-38.07	309.7	-820.0	253.5	224.5	29.04	8.729		
7,900.0	7,141.0	7,672.3	6,946.9	21.1	21.7	-38.01	409.7	-820.0	253.9	223.3	30.56	8.307		
8,000.0	7,141.3	7,772.3	6,946.8	22.3	23.0	-37.95	509.7	-820.0	254.3	222.0	32.22	7.891		
8,100.0	7,141.7	7,872.3	6,946.7	23.5	24.4	-37.88	609.7	-820.0	254.6	220.6	34.00	7.489		
8,200.0	7,142.0	7,972.3	6,946.6	24.8	25.8	-37.82	709.7	-820.0	255.0	219.1	35.87	7.108		
8,300.0	7,142.4	8,072.3	6,946.5	26.1	27.4	-37.76	809.7	-820.0	255.3	217.5	37.83	6.750		
8,400.0	7,142.7	8,172.3	6,946.4	27.6	28.9	-37.70	909.7	-820.0	255.7	215.8	39.85	6.416		
8,500.0	7,143.1	8,272.3	6,946.3	29.0	30.5	-37.63	1,009.7	-820.0	256.1	214.1	41.94	6.106		
8,600.0	7,143.4	8,372.3	6,946.2	30.6	32.1	-37.57	1,109.7	-820.0	256.4	212.3	44.07	5.819		
8,700.0	7,143.8	8,472.3	6,946.1	32.1	33.8	-37.51	1,209.7	-820.0	256.8	210.5	46.24	5.553		
8,800.0	7,144.1	8,572.3	6,946.0	33.7	35.5	-37.45	1,309.7	-820.0	257.1	208.7	48.45	5.307		
8,900.0	7,144.5	8,672.3	6,945.9	35.4	37.2	-37.39	1,409.7	-820.0	257.5	206.8	50.69	5.080		
9,000.0	7,144.8	8,772.3	6,945.8	37.0	38.9	-37.33	1,509.7	-820.0	257.9	204.9	52.96	4.869		
9,100.0	7,145.2	8,872.3	6,945.7	38.7	40.6	-37.27	1,609.7	-820.0	258.2	203.0	55.25	4.674		
9,200.0	7,145.5	8,972.3	6,945.6	40.4	42.4	-37.21	1,709.7	-820.0	258.6	201.0	57.55	4.493		
9,300.0	7,145.9	9,072.3	6,945.5	42.1	44.2	-37.15	1,809.7	-820.0	258.9	199.1	59.87	4.325		
9,400.0	7,146.2	9,172.3	6,945.3	43.8	45.9	-37.09	1,909.7	-820.1	259.3	197.1	62.21	4.168		
9,500.0	7,146.6	9,272.3	6,945.2	45.6	47.7	-37.03	2,009.7	-820.1	259.7	195.1	64.56	4.023		
9,600.0	7,146.9	9,372.3	6,945.1	47.3	49.5	-36.97	2,109.7	-820.1	260.0	193.1	66.91	3.886		
9,700.0	7,147.3	9,472.3	6,945.0	49.1	51.3	-36.91	2,209.7	-820.1	260.4	191.1	69.28	3.759		
9,800.0	7,147.6	9,572.3	6,944.9	50.9	53.2	-36.85	2,309.7	-820.1	260.8	189.1	71.65	3.640		
9,900.0	7,148.0	9,672.3	6,944.8	52.6	55.0	-36.79	2,409.7	-820.1	261.1	187.1	74.03	3.528		
10,000.0	7,148.3	9,772.3	6,944.7	54.4	56.8	-36.73	2,509.7	-820.1	261.5	185.1	76.41	3.422		
10,100.0	7,148.7	9,872.3	6,944.6	56.2	58.6	-36.67	2,609.7	-820.1	261.9	183.1	78.79	3.323		
10,200.0	7,149.0	9,972.3	6,944.5	58.1	60.5	-36.61	2,709.7	-820.1	262.2	181.0	81.18	3.230		
10,300.0	7,149.3	10,072.3	6,944.4	59.9	62.3	-36.55	2,809.7	-820.1	262.6	179.0	83.58	3.142		
10,400.0	7,149.7	10,172.3	6,944.3	61.7	64.2	-36.49	2,909.7	-820.1	263.0	177.0	85.97	3.059		
10,500.0	7,150.0	10,272.3	6,944.2	63.5	66.0	-36.43	3,009.7	-820.1	263.3	175.0	88.37	2.980		
10,600.0	7,150.4	10,372.3	6,944.1	65.4	67.9	-36.37	3,109.7	-820.1	263.7	172.9	90.76	2.905		
10,700.0	7,150.7	10,472.3	6,944.0	67.2	69.8	-36.32	3,209.7	-820.1	264.1	170.9	93.16	2.834		
10,800.0	7,151.1	10,572.3	6,943.9	69.0	71.6	-36.26	3,309.7	-820.1	264.4	168.9	95.56	2.767		
10,900.0	7,151.4	10,672.3	6,943.8	70.9	73.5	-36.20	3,409.7	-820.1	264.8	166.8	97.95	2.703		
11,000.0	7,151.8	10,772.3	6,943.7	72.7	75.4	-36.14	3,509.7	-820.1	265.2	164.8	100.35	2.642		
11,100.0	7,152.1	10,872.3	6,943.6	74.6	77.2	-36.09	3,609.7	-820.1	265.5	162.8	102.75	2.584		
11,200.0	7,152.5	10,972.3	6,943.5	76.4	79.1	-36.03	3,709.7	-820.1	265.9	160.7	105.14	2.529		
11,300.0	7,152.8	11,072.3	6,943.4	78.3	81.0	-35.97	3,809.7	-820.1	266.3	158.7	107.53	2.476		
11,400.0	7,153.2	11,172.2	6,943.3	80.2	82.8	-35.91	3,909.7	-820.1	266.6	156.7	109.92	2.426		
11,500.0	7,153.5	11,272.2	6,943.1	82.0	84.7	-35.86	4,009.7	-820.1	267.0	154.7	112.32	2.377		
11,600.0	7,153.9	11,372.2	6,943.0	83.9	86.6	-35.80	4,109.7	-820.1	267.4	152.7	114.70	2.331		
11,632.3	7,154.0	11,404.5	6,943.0	84.5	87.2	-35.78	4,142.0	-820.1	267.5	152.0	115.47	2.316 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Rieder 18T-401
Project:	SEC.18-T4N-R67W	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (7-31-14)	Offset TVD Reference:	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
0.0	0.0	1.0	1.0	0.0	0.0	90.00	90.00	0.0	61.4	61.4	61.4	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	90.00	90.00	0.0	61.4	61.4	61.1	0.23	270.285	
200.0	200.0	201.0	201.0	0.3	0.3	90.00	90.00	0.0	61.4	61.4	60.7	0.68	90.694	
300.0	300.0	301.0	301.0	0.6	0.6	90.00	90.00	0.0	61.4	61.4	60.2	1.13	54.489	
400.0	400.0	401.0	401.0	0.8	0.8	90.00	90.00	0.0	61.4	61.4	59.8	1.58	38.943	
500.0	500.0	501.0	501.0	1.0	1.0	90.00	90.00	0.0	61.4	61.4	59.3	2.03	30.298	
600.0	600.0	601.0	601.0	1.2	1.2	90.00	90.00	0.0	61.4	61.4	58.9	2.47	24.795	
700.0	700.0	701.0	701.0	1.5	1.5	90.00	90.00	0.0	61.4	61.4	58.4	2.92	20.983	
800.0	800.0	801.0	801.0	1.7	1.7	90.00	90.00	0.0	61.4	61.4	58.0	3.37	18.187 CC, ES	
900.0	900.0	901.0	901.0	1.9	1.9	-138.97	-138.97	0.0	61.4	62.7	58.9	3.80	16.492	
1,000.0	999.8	1,000.8	1,000.8	2.1	2.1	-141.87	-141.87	0.0	61.4	66.7	62.5	4.21	15.849	
1,100.0	1,099.5	1,100.5	1,100.5	2.3	2.4	-145.97	-145.97	0.0	61.4	73.8	69.1	4.63	15.947	
1,200.0	1,198.7	1,199.7	1,199.7	2.5	2.6	-150.50	-150.50	0.0	61.4	84.2	79.1	5.05	16.671	
1,300.0	1,297.5	1,301.1	1,301.1	2.8	2.8	-154.33	-154.33	-1.5	60.4	96.7	91.3	5.45	17.754	
1,400.0	1,395.8	1,403.2	1,403.0	3.1	3.0	-156.69	-156.69	-6.0	57.3	109.0	103.2	5.85	18.641	
1,500.0	1,494.2	1,506.0	1,505.4	3.4	3.2	-157.58	-157.58	-13.5	52.3	118.6	112.3	6.27	18.905	
1,600.0	1,592.6	1,609.3	1,607.9	3.8	3.4	-157.35	-157.35	-24.2	45.1	125.3	118.6	6.73	18.628	
1,700.0	1,690.9	1,712.9	1,710.1	4.2	3.6	-156.15	-156.15	-38.0	35.8	129.1	121.9	7.21	17.900	
1,800.0	1,789.3	1,812.8	1,808.4	4.5	3.9	-154.56	-154.56	-52.8	25.9	131.6	123.9	7.73	17.018	
1,900.0	1,887.6	1,912.7	1,906.7	4.9	4.2	-153.03	-153.03	-67.5	16.0	134.2	125.9	8.28	16.206	
2,000.0	1,986.0	2,012.6	2,005.1	5.3	4.6	-151.56	-151.56	-82.3	6.0	136.8	128.0	8.85	15.459	
2,100.0	2,084.4	2,112.5	2,103.4	5.7	4.9	-150.15	-150.15	-97.1	-3.9	139.6	130.1	9.45	14.774	
2,200.0	2,182.7	2,212.4	2,201.7	6.1	5.2	-148.79	-148.79	-111.9	-13.8	142.4	132.3	10.06	14.147	
2,300.0	2,281.1	2,312.3	2,300.0	6.5	5.6	-147.49	-147.49	-126.6	-23.8	145.3	134.6	10.70	13.575	
2,400.0	2,379.5	2,412.2	2,398.3	6.9	5.9	-146.24	-146.24	-141.4	-33.7	148.3	136.9	11.36	13.052	
2,500.0	2,477.8	2,512.1	2,496.6	7.3	6.3	-145.04	-145.04	-156.2	-43.6	151.3	139.3	12.03	12.574	
2,600.0	2,576.2	2,612.0	2,594.9	7.7	6.7	-143.88	-143.88	-170.9	-53.6	154.4	141.7	12.72	12.137	
2,700.0	2,674.5	2,711.9	2,693.2	8.1	7.1	-142.78	-142.78	-185.7	-63.5	157.6	144.1	13.42	11.737	
2,800.0	2,772.9	2,811.8	2,791.5	8.5	7.4	-141.71	-141.71	-200.5	-73.4	160.8	146.7	14.14	11.372	
2,900.0	2,871.3	2,911.7	2,889.8	8.9	7.8	-140.69	-140.69	-215.3	-83.4	164.1	149.2	14.87	11.036	
3,000.0	2,969.6	3,011.6	2,988.1	9.3	8.2	-139.71	-139.71	-230.0	-93.3	167.4	151.8	15.60	10.728	
3,100.0	3,068.0	3,111.5	3,086.4	9.7	8.6	-138.76	-138.76	-244.8	-103.2	170.8	154.4	16.35	10.445	
3,200.0	3,166.3	3,211.4	3,184.7	10.1	9.0	-137.86	-137.86	-259.6	-113.1	174.2	157.1	17.10	10.184	
3,300.0	3,264.7	3,311.3	3,283.0	10.5	9.4	-136.99	-136.99	-274.3	-123.1	177.7	159.8	17.87	9.943	
3,400.0	3,363.1	3,411.2	3,381.3	10.9	9.8	-136.15	-136.15	-289.1	-133.0	181.2	162.5	18.64	9.720	
3,500.0	3,461.4	3,511.1	3,479.6	11.4	10.2	-135.34	-135.34	-303.9	-142.9	184.7	165.3	19.41	9.514	
3,600.0	3,559.8	3,611.1	3,577.9	11.8	10.6	-134.57	-134.57	-318.7	-152.9	188.3	168.1	20.19	9.323	
3,700.0	3,658.2	3,711.0	3,676.3	12.2	11.0	-133.82	-133.82	-333.4	-162.8	191.9	170.9	20.98	9.146	
3,800.0	3,756.5	3,810.9	3,774.6	12.6	11.4	-133.10	-133.10	-348.2	-172.7	195.5	173.7	21.77	8.981	
3,900.0	3,854.9	3,910.8	3,872.9	13.0	11.8	-132.41	-132.41	-363.0	-182.7	199.2	176.6	22.56	8.827	
4,000.0	3,953.2	4,010.7	3,971.2	13.4	12.2	-131.74	-131.74	-377.7	-192.6	202.9	179.5	23.36	8.683	
4,100.0	4,051.6	4,110.6	4,069.5	13.8	12.6	-131.10	-131.10	-392.5	-202.5	206.6	182.4	24.16	8.549	
4,200.0	4,150.0	4,210.5	4,167.8	14.2	13.0	-130.48	-130.48	-407.3	-212.4	210.3	185.4	24.97	8.423	
4,300.0	4,248.3	4,310.4	4,266.1	14.7	13.4	-129.88	-129.88	-422.1	-222.4	214.1	188.3	25.78	8.306	
4,400.0	4,346.7	4,410.3	4,364.4	15.1	13.8	-129.30	-129.30	-436.8	-232.3	217.9	191.3	26.59	8.195	
4,500.0	4,445.0	4,510.2	4,462.7	15.5	14.2	-128.74	-128.74	-451.6	-242.2	221.7	194.3	27.40	8.091	
4,600.0	4,543.4	4,610.1	4,561.0	15.9	14.6	-128.20	-128.20	-466.4	-252.2	225.5	197.3	28.22	7.993	
4,700.0	4,641.8	4,710.0	4,659.3	16.3	15.0	-127.68	-127.68	-481.2	-262.1	229.4	200.4	29.03	7.901	
4,800.0	4,740.1	4,809.9	4,757.6	16.7	15.4	-127.18	-127.18	-495.9	-272.0	233.3	203.4	29.85	7.814	
4,900.0	4,838.5	4,909.8	4,855.9	17.1	15.8	-126.69	-126.69	-510.7	-282.0	237.2	206.5	30.67	7.732	
5,000.0	4,936.9	5,009.7	4,954.2	17.6	16.2	-126.22	-126.22	-525.5	-291.9	241.1	209.6	31.49	7.655	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Rieder 18T-401
Project:	SEC.18-T4N-R67W	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (7-31-14)	Offset TVD Reference:	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
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)			
5,100.0	5,035.2	5,109.6	5,052.5	18.0	16.6	-125.76	-540.2	-301.8	245.0	212.7	32.31	7.581		
5,200.0	5,133.6	5,209.5	5,150.8	18.4	17.0	-125.32	-555.0	-311.8	248.9	215.8	33.14	7.512		
5,300.0	5,231.9	5,309.4	5,249.1	18.8	17.4	-124.89	-569.8	-321.7	252.9	218.9	33.96	7.446		
5,400.0	5,330.3	5,407.5	5,345.8	19.2	17.8	-124.60	-583.8	-331.1	257.0	222.3	34.72	7.403		
5,500.0	5,428.7	5,504.2	5,441.5	19.6	18.0	-124.94	-595.2	-338.8	262.3	227.0	35.29	7.433		
5,600.0	5,527.0	5,600.0	5,536.7	20.1	18.3	-125.90	-603.8	-344.6	268.9	233.1	35.73	7.525		
5,700.0	5,625.4	5,696.5	5,632.9	20.5	18.4	-127.44	-609.9	-348.6	276.8	240.8	36.04	7.681		
5,800.0	5,723.8	5,791.6	5,727.9	20.9	18.6	-129.47	-613.1	-350.8	286.2	250.0	36.19	7.907		
5,900.0	5,822.7	5,887.3	5,823.7	21.1	18.7	-131.60	-613.9	-351.3	295.5	259.3	36.20	8.163		
6,000.0	5,922.0	5,986.7	5,923.0	21.4	18.9	-133.32	-613.9	-351.3	303.2	267.0	36.22	8.372		
6,100.0	6,021.7	6,086.4	6,022.7	21.5	19.0	-134.48	-613.9	-351.3	308.8	272.5	36.31	8.505		
6,200.0	6,121.6	6,186.3	6,122.6	21.7	19.1	-135.11	-613.9	-351.3	311.9	275.5	36.45	8.557		
6,300.0	6,221.6	6,287.1	6,223.4	21.8	19.2	92.41	-612.6	-351.3	312.6	276.0	36.62	8.537		
6,400.0	6,321.6	6,387.3	6,322.7	21.9	19.3	90.12	-600.1	-351.3	312.4	276.0	36.33	8.598		
6,403.6	6,325.1	6,390.7	6,326.1	22.0	19.3	90.00	-599.4	-351.3	312.4	276.0	36.31	8.603		
6,500.0	6,421.5	6,483.0	6,415.4	22.1	19.2	85.91	-576.1	-351.3	313.2	277.7	35.53	8.816		
6,600.0	6,520.7	6,575.6	6,501.4	22.1	19.1	81.52	-542.1	-351.3	316.0	281.5	34.52	9.155		
6,700.0	6,617.4	6,665.6	6,580.5	22.0	18.9	77.38	-499.2	-351.3	320.5	287.1	33.45	9.581		
6,800.0	6,709.9	6,753.5	6,652.4	21.9	18.6	73.58	-448.7	-351.3	326.3	293.9	32.39	10.072		
6,900.0	6,796.8	6,839.5	6,716.7	21.7	18.4	70.16	-391.6	-351.3	332.9	301.5	31.39	10.603		
7,000.0	6,876.4	6,924.0	6,773.1	21.4	18.1	67.14	-328.9	-351.3	339.8	309.3	30.48	11.149		
7,100.0	6,947.5	7,007.1	6,821.6	21.1	17.9	64.54	-261.5	-351.3	346.8	317.1	29.69	11.678		
7,200.0	7,008.8	7,089.0	6,862.0	20.8	17.7	62.35	-190.2	-351.3	353.3	324.2	29.08	12.148		
7,300.0	7,059.3	7,170.1	6,894.2	20.5	17.5	60.58	-115.8	-351.3	359.1	330.4	28.71	12.510		
7,400.0	7,098.1	7,250.0	6,918.0	20.2	17.3	59.22	-39.6	-351.3	363.9	335.3	28.62	12.717		
7,500.0	7,124.5	7,330.3	6,933.8	20.0	17.3	58.23	39.1	-351.3	367.6	338.7	28.89	12.725		
7,600.0	7,138.2	7,409.8	6,941.3	19.8	17.5	57.63	118.2	-351.3	369.9	340.4	29.51	12.532		
7,700.0	7,140.3	7,501.7	6,941.9	19.7	18.1	57.46	210.1	-351.3	370.5	340.0	30.54	12.131		
7,800.0	7,140.6	7,601.7	6,942.0	20.2	18.9	57.42	310.1	-351.3	370.7	338.8	31.90	11.619		
7,900.0	7,141.0	7,701.7	6,942.1	21.1	20.0	57.38	410.1	-351.3	370.9	337.3	33.54	11.058		
8,000.0	7,141.3	7,801.7	6,942.1	22.3	21.1	57.34	510.1	-351.3	371.0	335.6	35.41	10.478		
8,100.0	7,141.7	7,901.7	6,942.2	23.5	22.4	57.30	610.1	-351.3	371.2	333.7	37.48	9.904		
8,200.0	7,142.0	8,001.7	6,942.2	24.8	23.7	57.26	710.1	-351.3	371.3	331.6	39.72	9.349		
8,300.0	7,142.4	8,101.7	6,942.3	26.1	25.2	57.22	810.1	-351.3	371.5	329.4	42.10	8.825		
8,400.0	7,142.7	8,201.7	6,942.3	27.6	26.6	57.19	910.1	-351.3	371.7	327.1	44.59	8.334		
8,500.0	7,143.1	8,301.7	6,942.4	29.0	28.1	57.15	1,010.1	-351.3	371.8	324.6	47.19	7.879		
8,600.0	7,143.4	8,401.7	6,942.4	30.6	29.7	57.11	1,110.1	-351.3	372.0	322.1	49.87	7.459		
8,700.0	7,143.8	8,501.7	6,942.5	32.1	31.3	57.07	1,210.1	-351.3	372.1	319.5	52.62	7.072		
8,800.0	7,144.1	8,601.7	6,942.5	33.7	32.9	57.03	1,310.1	-351.3	372.3	316.9	55.43	6.717		
8,900.0	7,144.5	8,701.7	6,942.6	35.4	34.6	56.99	1,410.0	-351.3	372.5	314.2	58.29	6.390		
9,000.0	7,144.8	8,801.7	6,942.6	37.0	36.3	56.96	1,510.0	-351.3	372.6	311.4	61.19	6.090		
9,100.0	7,145.2	8,901.7	6,942.7	38.7	38.0	56.92	1,610.0	-351.3	372.8	308.6	64.13	5.813		
9,200.0	7,145.5	9,001.7	6,942.7	40.4	39.7	56.88	1,710.0	-351.3	372.9	305.8	67.10	5.558		
9,300.0	7,145.9	9,101.7	6,942.8	42.1	41.5	56.84	1,810.0	-351.3	373.1	303.0	70.09	5.323		
9,400.0	7,146.2	9,201.7	6,942.8	43.8	43.2	56.80	1,910.0	-351.3	373.3	300.2	73.11	5.105		
9,500.0	7,146.6	9,301.7	6,942.9	45.6	45.0	56.76	2,010.0	-351.3	373.4	297.3	76.15	4.904		
9,600.0	7,146.9	9,401.7	6,942.9	47.3	46.8	56.73	2,110.0	-351.3	373.6	294.4	79.21	4.716		
9,700.0	7,147.3	9,501.7	6,943.0	49.1	48.6	56.69	2,210.0	-351.3	373.7	291.5	82.28	4.542		
9,800.0	7,147.6	9,601.7	6,943.0	50.9	50.4	56.65	2,310.0	-351.3	373.9	288.5	85.37	4.380		
9,900.0	7,148.0	9,701.7	6,943.1	52.6	52.2	56.61	2,410.0	-351.3	374.1	285.6	88.47	4.228		
10,000.0	7,148.3	9,801.6	6,943.2	54.4	54.0	56.57	2,510.0	-351.3	374.2	282.7	91.58	4.087		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Rieder 18T-401
Project:	SEC.18-T4N-R67W	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (7-31-14)	Offset TVD Reference:	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	7,148.7	9,901.6	6,943.2	56.2	55.8	56.54	2,610.0	-351.3	374.4	279.7	94.69	3.954	
10,200.0	7,149.0	10,001.6	6,943.3	58.1	57.7	56.50	2,710.0	-351.3	374.6	276.7	97.82	3.829	
10,300.0	7,149.3	10,101.6	6,943.3	59.9	59.5	56.46	2,810.0	-351.3	374.7	273.8	100.95	3.712	
10,400.0	7,149.7	10,201.6	6,943.4	61.7	61.3	56.42	2,910.0	-351.3	374.9	270.8	104.09	3.601	
10,500.0	7,150.0	10,301.6	6,943.4	63.5	63.2	56.39	3,010.0	-351.3	375.1	267.8	107.24	3.497	
10,600.0	7,150.4	10,401.6	6,943.5	65.4	65.0	56.35	3,110.0	-351.3	375.2	264.8	110.39	3.399	
10,700.0	7,150.7	10,501.6	6,943.5	67.2	66.9	56.31	3,210.0	-351.3	375.4	261.8	113.54	3.306	
10,800.0	7,151.1	10,601.6	6,943.6	69.0	68.7	56.27	3,310.0	-351.3	375.5	258.8	116.70	3.218	
10,900.0	7,151.4	10,701.6	6,943.6	70.9	70.6	56.23	3,410.0	-351.3	375.7	255.9	119.86	3.135	
11,000.0	7,151.8	10,801.6	6,943.7	72.7	72.5	56.20	3,510.0	-351.3	375.9	252.9	123.02	3.055	
11,100.0	7,152.1	10,901.6	6,943.7	74.6	74.3	56.16	3,610.0	-351.3	376.0	249.9	126.19	2.980	
11,200.0	7,152.5	11,001.6	6,943.8	76.4	76.2	56.12	3,710.0	-351.3	376.2	246.8	129.35	2.908	
11,300.0	7,152.8	11,101.6	6,943.8	78.3	78.1	56.08	3,810.0	-351.3	376.4	243.8	132.52	2.840	
11,400.0	7,153.2	11,201.6	6,943.9	80.2	79.9	56.05	3,910.0	-351.3	376.5	240.8	135.69	2.775	
11,500.0	7,153.5	11,301.6	6,943.9	82.0	81.8	56.01	4,010.0	-351.3	376.7	237.8	138.87	2.713	
11,600.0	7,153.9	11,401.6	6,944.0	83.9	83.7	55.97	4,110.0	-351.3	376.9	234.8	142.04	2.653	
11,604.2	7,153.9	11,405.8	6,944.0	84.0	83.8	55.97	4,114.2	-351.3	376.9	234.7	142.17	2.651	
11,632.3	7,154.0	11,419.2	6,944.0	84.5	84.0	55.96	4,127.6	-351.3	377.2	234.4	142.83	2.641 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Rieder 18T-401
Project:	SEC.18-T4N-R67W	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (7-31-14)	Offset TVD Reference:	Offset Datum

Offset Design Rieder 4N67W18Y Pad Sec.18-T4N-R67W - Rieder 18T-321 - 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
0.0	0.0	1.0	1.0	0.0	0.0	90.01	90.01	0.0	30.7	30.7	30.7	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	90.01	90.01	0.0	30.7	30.7	30.5	0.23	135.142	
200.0	200.0	201.0	201.0	0.3	0.3	90.01	90.01	0.0	30.7	30.7	30.0	0.68	45.347	
300.0	300.0	301.0	301.0	0.6	0.6	90.01	90.01	0.0	30.7	30.7	29.6	1.13	27.244	
400.0	400.0	401.0	401.0	0.8	0.8	90.01	90.01	0.0	30.7	30.7	29.1	1.58	19.471	
500.0	500.0	501.0	501.0	1.0	1.0	90.01	90.01	0.0	30.7	30.7	28.7	2.03	15.149	
600.0	600.0	601.0	601.0	1.2	1.2	90.01	90.01	0.0	30.7	30.7	28.2	2.47	12.397	
700.0	700.0	701.0	701.0	1.5	1.5	90.01	90.01	0.0	30.7	30.7	27.8	2.92	10.491	
800.0	800.0	801.0	801.0	1.7	1.7	90.01	90.01	0.0	30.7	30.7	27.3	3.37	9.094 CC, ES	
900.0	900.0	901.0	901.0	1.9	1.9	-139.98	-139.98	0.0	30.7	32.0	28.2	3.80	8.421	
1,000.0	999.8	1,000.8	1,000.8	2.1	2.1	-145.27	-145.27	0.0	30.7	36.2	32.0	4.21	8.593	
1,100.0	1,099.5	1,101.7	1,101.7	2.3	2.3	-150.43	-150.43	-1.4	29.5	42.2	37.6	4.60	9.167	
1,200.0	1,198.7	1,202.8	1,202.6	2.5	2.5	-153.85	-153.85	-5.4	25.9	48.6	43.6	4.97	9.761	
1,300.0	1,297.5	1,304.1	1,303.5	2.8	2.7	-156.08	-156.08	-12.1	20.0	55.2	49.9	5.37	10.291	
1,400.0	1,395.8	1,405.7	1,404.4	3.1	3.0	-157.10	-157.10	-21.5	11.6	61.1	55.3	5.80	10.532	
1,500.0	1,494.2	1,507.6	1,505.0	3.4	3.2	-156.44	-156.44	-33.6	0.9	63.8	57.6	6.26	10.195	
1,600.0	1,592.6	1,607.7	1,603.4	3.8	3.5	-154.98	-154.98	-46.9	-10.9	65.0	58.2	6.76	9.611	
1,700.0	1,690.9	1,707.7	1,701.8	4.2	3.8	-153.57	-153.57	-60.2	-22.7	66.1	58.9	7.29	9.079	
1,800.0	1,789.3	1,807.6	1,800.2	4.5	4.2	-152.21	-152.21	-73.5	-34.5	67.3	59.5	7.84	8.595	
1,900.0	1,887.6	1,907.6	1,898.6	4.9	4.5	-150.89	-150.89	-86.8	-46.3	68.6	60.2	8.41	8.158	
2,000.0	1,986.0	2,007.6	1,997.0	5.3	4.9	-149.63	-149.63	-100.1	-58.1	69.9	60.9	9.00	7.762	
2,100.0	2,084.4	2,107.6	2,095.4	5.7	5.2	-148.41	-148.41	-113.4	-69.9	71.2	61.6	9.62	7.403	
2,200.0	2,182.7	2,207.6	2,193.8	6.1	5.6	-147.23	-147.23	-126.7	-81.7	72.5	62.3	10.25	7.078	
2,300.0	2,281.1	2,307.5	2,292.1	6.5	6.0	-146.10	-146.10	-140.0	-93.5	73.9	63.0	10.89	6.783	
2,400.0	2,379.5	2,407.5	2,390.5	6.9	6.4	-145.01	-145.01	-153.3	-105.3	75.3	63.7	11.56	6.515	
2,500.0	2,477.8	2,507.5	2,488.9	7.3	6.8	-143.96	-143.96	-166.6	-117.1	76.7	64.5	12.24	6.271	
2,600.0	2,576.2	2,607.5	2,587.3	7.7	7.1	-142.95	-142.95	-179.9	-128.9	78.2	65.2	12.92	6.048	
2,700.0	2,674.5	2,707.5	2,685.7	8.1	7.5	-141.98	-141.98	-193.2	-140.7	79.6	66.0	13.63	5.845	
2,800.0	2,772.9	2,807.4	2,784.1	8.5	7.9	-141.04	-141.04	-206.5	-152.5	81.1	66.8	14.34	5.659	
2,900.0	2,871.3	2,907.4	2,882.5	8.9	8.3	-140.13	-140.13	-219.8	-164.3	82.7	67.6	15.06	5.489	
3,000.0	2,969.6	3,007.4	2,980.8	9.3	8.7	-139.26	-139.26	-233.1	-176.1	84.2	68.4	15.79	5.332	
3,100.0	3,068.0	3,107.4	3,079.2	9.7	9.1	-138.42	-138.42	-246.4	-187.9	85.8	69.2	16.53	5.188	
3,200.0	3,166.3	3,207.4	3,177.6	10.1	9.5	-137.61	-137.61	-259.7	-199.7	87.3	70.1	17.28	5.055	
3,300.0	3,264.7	3,307.4	3,276.0	10.5	9.9	-136.83	-136.83	-273.0	-211.5	88.9	70.9	18.03	4.932	
3,400.0	3,363.1	3,407.3	3,374.4	10.9	10.3	-136.08	-136.08	-286.3	-223.4	90.5	71.7	18.79	4.818	
3,500.0	3,461.4	3,507.3	3,472.8	11.4	10.7	-135.35	-135.35	-299.6	-235.2	92.1	72.6	19.56	4.712	
3,600.0	3,559.8	3,607.3	3,571.2	11.8	11.1	-134.65	-134.65	-312.9	-247.0	93.8	73.5	20.33	4.614	
3,700.0	3,658.2	3,707.3	3,669.5	12.2	11.5	-133.97	-133.97	-326.2	-258.8	95.4	74.3	21.10	4.522	
3,800.0	3,756.5	3,807.3	3,767.9	12.6	11.9	-133.32	-133.32	-339.5	-270.6	97.1	75.2	21.88	4.437	
3,900.0	3,854.9	3,907.2	3,866.3	13.0	12.3	-132.68	-132.68	-352.8	-282.4	98.8	76.1	22.67	4.357	
4,000.0	3,953.2	4,007.2	3,964.7	13.4	12.7	-132.07	-132.07	-366.1	-294.2	100.5	77.0	23.46	4.283	
4,100.0	4,051.6	4,107.2	4,063.1	13.8	13.2	-131.48	-131.48	-379.4	-306.0	102.2	77.9	24.25	4.213	
4,200.0	4,150.0	4,207.2	4,161.5	14.2	13.6	-130.91	-130.91	-392.7	-317.8	103.9	78.8	25.05	4.147	
4,300.0	4,248.3	4,307.2	4,259.9	14.7	14.0	-130.36	-130.36	-406.0	-329.6	105.6	79.7	25.84	4.086	
4,400.0	4,346.7	4,407.1	4,358.2	15.1	14.4	-129.82	-129.82	-419.3	-341.4	107.3	80.7	26.64	4.028	
4,500.0	4,445.0	4,507.1	4,456.6	15.5	14.8	-129.30	-129.30	-432.7	-353.2	109.0	81.6	27.45	3.973	
4,600.0	4,543.4	4,607.1	4,555.0	15.9	15.2	-128.80	-128.80	-446.0	-365.0	110.8	82.5	28.25	3.921	
4,700.0	4,641.8	4,707.1	4,653.4	16.3	15.6	-128.31	-128.31	-459.3	-376.8	112.5	83.5	29.06	3.873	
4,800.0	4,740.1	4,807.1	4,751.8	16.7	16.0	-127.84	-127.84	-472.6	-388.6	114.3	84.4	29.87	3.827	
4,900.0	4,838.5	4,907.0	4,850.2	17.1	16.4	-127.39	-127.39	-485.9	-400.4	116.1	85.4	30.68	3.783	
5,000.0	4,936.9	5,007.0	4,948.6	17.6	16.8	-126.94	-126.94	-499.2	-412.2	117.9	86.4	31.49	3.742	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Rieder 18T-401
Project:	SEC.18-T4N-R67W	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (7-31-14)	Offset TVD Reference:	Offset Datum

Offset Design Rieder 4N67W18Y Pad Sec.18-T4N-R67W - Rieder 18T-321 - Wellbore #1 - Plan #1 (7-31-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWDD													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	5,035.2	5,107.0	5,046.9	18.0	17.2	-126.51	-126.51	-512.5	-424.0	119.6	87.3	32.31	3.703	
5,200.0	5,133.6	5,207.0	5,145.3	18.4	17.6	-126.09	-126.09	-525.8	-435.8	121.4	88.3	33.13	3.666	
5,300.0	5,231.9	5,307.0	5,243.7	18.8	18.0	-125.69	-125.69	-539.1	-447.6	123.2	89.3	33.94	3.630	
5,400.0	5,330.3	5,406.9	5,342.1	19.2	18.5	-125.30	-125.30	-552.4	-459.4	125.0	90.3	34.76	3.597	
5,500.0	5,428.7	5,506.9	5,440.5	19.6	18.9	-124.91	-124.91	-565.7	-471.2	126.8	91.3	35.58	3.565	
5,600.0	5,527.0	5,605.9	5,537.9	20.1	19.2	-124.70	-124.70	-578.5	-482.6	128.8	92.5	36.34	3.546	
5,700.0	5,625.4	5,703.6	5,634.7	20.5	19.5	-125.61	-125.61	-589.1	-492.0	132.3	95.5	36.79	3.596	
5,800.0	5,723.8	5,800.0	5,730.4	20.9	19.7	-127.59	-127.59	-597.1	-499.1	137.3	100.4	36.97	3.714	
5,900.0	5,822.7	5,898.3	5,828.4	21.1	19.9	-129.76	-129.76	-602.8	-504.1	142.6	105.6	36.97	3.856	
6,000.0	5,922.0	5,995.2	5,925.3	21.4	20.1	-131.80	-131.80	-605.9	-506.9	147.6	110.7	36.91	4.000	
6,100.0	6,021.7	6,092.7	6,022.7	21.5	20.2	-133.75	-133.75	-606.6	-507.5	152.4	115.6	36.81	4.142	
6,200.0	6,121.6	6,192.5	6,122.6	21.7	20.3	-134.98	-134.98	-606.6	-507.5	155.6	118.8	36.80	4.228	
6,300.0	6,221.6	6,292.5	6,222.6	21.8	20.4	92.64	92.64	-606.6	-507.5	156.3	119.4	36.99	4.227	
6,400.0	6,321.6	6,392.9	6,322.9	21.9	20.5	92.07	92.07	-605.1	-507.5	156.3	119.2	37.12	4.210	
6,462.2	6,383.7	6,455.1	6,384.8	22.0	20.6	90.12	90.12	-598.6	-507.5	156.2	119.4	36.79	4.245	
6,500.0	6,421.5	6,492.3	6,421.4	22.1	20.6	87.87	87.87	-592.3	-507.5	156.3	120.0	36.34	4.301	
6,600.0	6,520.7	6,589.8	6,515.7	22.1	20.5	83.08	83.08	-567.5	-507.5	157.3	122.1	35.22	4.468	
6,700.0	6,617.4	6,685.8	6,604.6	22.0	20.4	78.52	78.52	-531.5	-507.5	159.4	125.4	34.02	4.686	
6,800.0	6,709.9	6,780.3	6,687.1	21.9	20.2	74.31	74.31	-485.5	-507.5	162.3	129.5	32.83	4.943	
6,900.0	6,796.8	6,873.6	6,762.2	21.7	19.9	70.51	70.51	-430.4	-507.5	165.8	134.1	31.71	5.228	
7,000.0	6,876.4	6,965.7	6,829.4	21.4	19.6	67.17	67.17	-367.5	-507.5	169.6	138.9	30.69	5.526	
7,100.0	6,947.5	7,056.8	6,887.9	21.1	19.4	64.31	64.31	-297.7	-507.5	173.4	143.6	29.80	5.820	
7,200.0	7,008.8	7,147.0	6,937.3	20.8	19.1	61.91	61.91	-222.2	-507.5	177.1	148.0	29.09	6.088	
7,300.0	7,059.3	7,236.6	6,977.1	20.5	18.8	59.98	59.98	-142.0	-507.5	180.5	151.8	28.64	6.302	
7,400.0	7,098.1	7,325.6	7,007.1	20.2	18.6	58.49	58.49	-58.3	-507.5	183.2	154.8	28.49	6.432	
7,500.0	7,124.5	7,414.2	7,027.1	20.0	18.4	57.43	57.43	27.9	-507.5	185.4	156.6	28.71	6.457	
7,600.0	7,138.2	7,500.0	7,036.9	19.8	18.2	56.80	56.80	113.2	-507.5	186.7	157.4	29.31	6.370	
7,700.0	7,140.3	7,596.5	7,038.0	19.7	18.4	56.53	56.53	209.6	-507.5	187.2	156.9	30.30	6.179	
7,800.0	7,140.6	7,696.5	7,037.7	20.2	19.3	56.36	56.36	309.6	-507.5	187.6	156.0	31.58	5.941	
7,900.0	7,141.0	7,796.5	7,037.4	21.1	20.4	56.18	56.18	409.6	-507.5	188.0	154.9	33.12	5.675	
8,000.0	7,141.3	7,896.5	7,037.0	22.3	21.6	56.01	56.01	509.6	-507.5	188.4	153.5	34.90	5.397	
8,100.0	7,141.7	7,996.5	7,036.7	23.5	22.8	55.84	55.84	609.6	-507.5	188.7	151.9	36.88	5.118	
8,200.0	7,142.0	8,096.5	7,036.4	24.8	24.2	55.67	55.67	709.6	-507.5	189.1	150.1	39.02	4.847	
8,300.0	7,142.4	8,196.5	7,036.0	26.1	25.6	55.50	55.50	809.6	-507.5	189.5	148.2	41.29	4.589	
8,400.0	7,142.7	8,296.5	7,035.7	27.6	27.0	55.33	55.33	909.6	-507.5	189.9	146.2	43.68	4.347	
8,500.0	7,143.1	8,396.5	7,035.4	29.0	28.5	55.16	55.16	1,009.6	-507.5	190.3	144.1	46.16	4.122	
8,600.0	7,143.4	8,496.5	7,035.0	30.6	30.1	54.99	54.99	1,109.6	-507.5	190.7	142.0	48.72	3.914	
8,700.0	7,143.8	8,596.5	7,034.7	32.1	31.7	54.83	54.83	1,209.6	-507.5	191.1	139.7	51.34	3.722	
8,800.0	7,144.1	8,696.4	7,034.4	33.7	33.3	54.66	54.66	1,309.6	-507.5	191.5	137.4	54.01	3.545	
8,900.0	7,144.5	8,796.4	7,034.0	35.4	34.9	54.49	54.49	1,409.6	-507.5	191.8	135.1	56.73	3.382	
9,000.0	7,144.8	8,896.4	7,033.7	37.0	36.6	54.33	54.33	1,509.6	-507.5	192.2	132.8	59.48	3.232	
9,100.0	7,145.2	8,996.4	7,033.4	38.7	38.3	54.16	54.16	1,609.6	-507.5	192.6	130.4	62.26	3.094	
9,200.0	7,145.5	9,096.4	7,033.0	40.4	40.0	54.00	54.00	1,709.6	-507.5	193.0	128.0	65.06	2.967	
9,300.0	7,145.9	9,196.4	7,032.7	42.1	41.7	53.84	53.84	1,809.6	-507.5	193.4	125.6	67.89	2.850	
9,400.0	7,146.2	9,296.4	7,032.4	43.8	43.5	53.67	53.67	1,909.6	-507.5	193.8	123.1	70.72	2.741	
9,500.0	7,146.6	9,396.4	7,032.0	45.6	45.2	53.51	53.51	2,009.6	-507.5	194.2	120.7	73.58	2.640	
9,600.0	7,146.9	9,496.4	7,031.7	47.3	47.0	53.35	53.35	2,109.6	-507.5	194.7	118.2	76.44	2.547	
9,700.0	7,147.3	9,596.4	7,031.4	49.1	48.8	53.19	53.19	2,209.6	-507.5	195.1	115.8	79.31	2.459	
9,800.0	7,147.6	9,696.4	7,031.1	50.9	50.6	53.03	53.03	2,309.6	-507.5	195.5	113.3	82.18	2.378	
9,900.0	7,148.0	9,796.4	7,030.7	52.6	52.4	52.87	52.87	2,409.6	-507.5	195.9	110.8	85.06	2.303	
10,000.0	7,148.3	9,896.4	7,030.4	54.4	54.2	52.71	52.71	2,509.6	-507.5	196.3	108.3	87.95	2.232	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Rieder 18T-401
Project:	SEC.18-T4N-R67W	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (7-31-14)	Offset TVD Reference:	Offset Datum

Offset Design Rieder 4N67W18Y Pad Sec.18-T4N-R67W - Rieder 18T-321 - 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							
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	7,148.7	9,996.4	7,030.1	56.2	56.0	52.56	2,609.5	-507.5	196.7	105.9	90.83	2.166	
10,200.0	7,149.0	10,096.4	7,029.7	58.1	57.8	52.40	2,709.5	-507.5	197.1	103.4	93.71	2.103	
10,300.0	7,149.3	10,196.4	7,029.4	59.9	59.6	52.24	2,809.5	-507.5	197.5	100.9	96.60	2.045	
10,400.0	7,149.7	10,296.4	7,029.1	61.7	61.5	52.09	2,909.5	-507.5	197.9	98.5	99.48	1.990	
10,500.0	7,150.0	10,396.4	7,028.7	63.5	63.3	51.93	3,009.5	-507.5	198.4	96.0	102.36	1.938	
10,600.0	7,150.4	10,496.4	7,028.4	65.4	65.2	51.78	3,109.5	-507.5	198.8	93.6	105.23	1.889	
10,700.0	7,150.7	10,596.4	7,028.1	67.2	67.0	51.62	3,209.5	-507.5	199.2	91.1	108.10	1.843	
10,800.0	7,151.1	10,696.4	7,027.7	69.0	68.9	51.47	3,309.5	-507.5	199.6	88.7	110.97	1.799	
10,900.0	7,151.4	10,796.4	7,027.4	70.9	70.7	51.32	3,409.5	-507.5	200.1	86.2	113.84	1.757	
11,000.0	7,151.8	10,896.4	7,027.1	72.7	72.6	51.17	3,509.5	-507.5	200.5	83.8	116.70	1.718	
11,100.0	7,152.1	10,996.4	7,026.7	74.6	74.4	51.01	3,609.5	-507.5	200.9	81.4	119.55	1.681	
11,200.0	7,152.5	11,096.4	7,026.4	76.4	76.3	50.86	3,709.5	-507.5	201.3	78.9	122.40	1.645	
11,300.0	7,152.8	11,196.4	7,026.1	78.3	78.2	50.71	3,809.5	-507.5	201.8	76.5	125.24	1.611	
11,400.0	7,153.2	11,296.4	7,025.7	80.2	80.0	50.56	3,909.5	-507.5	202.2	74.1	128.07	1.579	
11,500.0	7,153.5	11,396.4	7,025.4	82.0	81.9	50.42	4,009.5	-507.5	202.6	71.7	130.90	1.548	
11,600.0	7,153.9	11,496.4	7,025.1	83.9	83.8	50.27	4,109.5	-507.5	203.1	69.3	133.73	1.519	
11,609.2	7,153.9	11,505.6	7,025.1	84.1	83.9	50.25	4,118.7	-507.5	203.1	69.1	133.99	1.516	
11,632.3	7,154.0	11,521.8	7,025.0	84.5	84.2	50.23	4,134.9	-507.5	203.3	68.8	134.55	1.511 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Rieder 18T-401
Project:	SEC.18-T4N-R67W	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (7-31-14)	Offset TVD Reference:	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	
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 (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			
0.0	0.0	1.0	1.0	0.0	0.0	90.01	0.0	89.2	89.2	89.2	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	90.01	0.0	89.2	89.2	89.0	0.23	393.141	
200.0	200.0	201.0	201.0	0.3	0.3	90.01	0.0	89.2	89.2	88.6	0.68	131.918	
300.0	300.0	301.0	301.0	0.6	0.6	90.01	0.0	89.2	89.2	88.1	1.13	79.256	
400.0	400.0	401.0	401.0	0.8	0.8	90.01	0.0	89.2	89.2	87.7	1.58	56.644	
500.0	500.0	501.0	501.0	1.0	1.0	90.01	0.0	89.2	89.2	87.2	2.03	44.070	
600.0	600.0	601.0	601.0	1.2	1.2	90.01	0.0	89.2	89.2	86.8	2.47	36.065	
700.0	700.0	701.0	701.0	1.5	1.5	90.01	0.0	89.2	89.2	86.3	2.92	30.521	
800.0	800.0	801.0	801.0	1.7	1.7	90.01	0.0	89.2	89.2	85.9	3.37	26.454 CC, ES	
900.0	900.0	901.0	901.0	1.9	1.9	-138.63	0.0	89.2	90.6	86.8	3.80	23.832	
1,000.0	999.8	1,000.8	1,000.8	2.1	2.1	-140.68	0.0	89.2	94.5	90.3	4.21	22.464	
1,100.0	1,099.5	1,100.5	1,100.5	2.3	2.4	-143.71	0.0	89.2	101.4	96.8	4.63	21.928	
1,200.0	1,198.7	1,199.7	1,199.7	2.5	2.6	-147.30	0.0	89.2	111.5	106.5	5.05	22.079	
1,300.0	1,297.5	1,298.5	1,298.5	2.8	2.8	-151.04	0.0	89.2	125.0	119.5	5.48	22.809	
1,400.0	1,395.8	1,396.8	1,396.8	3.1	3.0	-154.54	0.0	89.2	141.0	135.1	5.92	23.810	
1,500.0	1,494.2	1,496.2	1,496.2	3.4	3.2	-156.79	-1.6	89.5	157.2	150.9	6.35	24.763	
1,600.0	1,592.6	1,596.1	1,595.9	3.8	3.4	-157.49	-6.6	90.2	172.9	166.2	6.76	25.563	
1,700.0	1,690.9	1,696.2	1,695.6	4.2	3.6	-157.03	-15.1	91.5	187.9	180.7	7.20	26.088	
1,800.0	1,789.3	1,796.2	1,795.0	4.5	3.8	-155.65	-27.1	93.2	202.3	194.7	7.68	26.354	
1,900.0	1,887.6	1,895.5	1,893.2	4.9	4.0	-153.67	-41.9	95.4	216.4	208.2	8.19	26.413	
2,000.0	1,986.0	1,994.3	1,990.7	5.3	4.3	-151.84	-57.0	97.6	230.7	221.9	8.74	26.389	
2,100.0	2,084.4	2,093.0	2,088.2	5.7	4.5	-150.23	-72.1	99.9	245.1	235.8	9.31	26.319	
2,200.0	2,182.7	2,191.7	2,185.8	6.1	4.8	-148.80	-87.2	102.1	259.8	249.9	9.91	26.217	
2,300.0	2,281.1	2,290.4	2,283.3	6.5	5.1	-147.52	-102.3	104.3	274.5	264.0	10.52	26.097	
2,400.0	2,379.5	2,389.2	2,380.8	6.9	5.4	-146.37	-117.4	106.5	289.4	278.3	11.15	25.966	
2,500.0	2,477.8	2,487.9	2,478.4	7.3	5.7	-145.33	-132.5	108.8	304.4	292.7	11.79	25.830	
2,600.0	2,576.2	2,586.6	2,575.9	7.7	6.0	-144.39	-147.6	111.0	319.5	307.1	12.44	25.693	
2,700.0	2,674.5	2,685.4	2,673.5	8.1	6.3	-143.54	-162.7	113.2	334.7	321.6	13.10	25.558	
2,800.0	2,772.9	2,784.1	2,771.0	8.5	6.6	-142.76	-177.8	115.4	349.9	336.2	13.76	25.427	
2,900.0	2,871.3	2,882.8	2,868.5	8.9	7.0	-142.04	-192.8	117.7	365.2	350.8	14.44	25.301	
3,000.0	2,969.6	2,981.5	2,966.1	9.3	7.3	-141.38	-207.9	119.9	380.6	365.5	15.11	25.180	
3,100.0	3,068.0	3,080.3	3,063.6	9.7	7.6	-140.78	-223.0	122.1	396.0	380.2	15.80	25.064	
3,200.0	3,166.3	3,179.0	3,161.2	10.1	8.0	-140.22	-238.1	124.4	411.4	394.9	16.49	24.954	
3,300.0	3,264.7	3,277.7	3,258.7	10.5	8.3	-139.69	-253.2	126.6	426.8	409.7	17.18	24.850	
3,400.0	3,363.1	3,376.4	3,356.2	10.9	8.7	-139.21	-268.3	128.8	442.3	424.5	17.87	24.751	
3,500.0	3,461.4	3,475.2	3,453.8	11.4	9.0	-138.76	-283.4	131.0	457.9	439.3	18.57	24.657	
3,600.0	3,559.8	3,573.9	3,551.3	11.8	9.4	-138.34	-298.5	133.3	473.4	454.1	19.27	24.568	
3,700.0	3,658.2	3,672.6	3,648.8	12.2	9.7	-137.94	-313.6	135.5	489.0	469.0	19.97	24.484	
3,800.0	3,756.5	3,771.3	3,746.4	12.6	10.1	-137.57	-328.7	137.7	504.6	483.9	20.68	24.405	
3,900.0	3,854.9	3,870.1	3,843.9	13.0	10.4	-137.22	-343.8	139.9	520.2	498.8	21.38	24.329	
4,000.0	3,953.2	3,968.8	3,941.5	13.4	10.8	-136.89	-358.9	142.2	535.8	513.7	22.09	24.258	
4,100.0	4,051.6	4,067.5	4,039.0	13.8	11.1	-136.58	-374.0	144.4	551.5	528.7	22.80	24.190	
4,200.0	4,150.0	4,166.2	4,136.5	14.2	11.5	-136.29	-389.1	146.6	567.1	543.6	23.51	24.125	
4,300.0	4,248.3	4,265.0	4,234.1	14.7	11.8	-136.01	-404.2	148.8	582.8	558.6	24.22	24.064	
4,400.0	4,346.7	4,363.7	4,331.6	15.1	12.2	-135.75	-419.3	151.1	598.5	573.6	24.93	24.005	
4,500.0	4,445.0	4,462.4	4,429.2	15.5	12.6	-135.50	-434.4	153.3	614.2	588.6	25.65	23.950	
4,600.0	4,543.4	4,561.1	4,526.7	15.9	12.9	-135.26	-449.5	155.5	629.9	603.6	26.36	23.897	
4,700.0	4,641.8	4,659.9	4,624.2	16.3	13.3	-135.04	-464.6	157.7	645.6	618.6	27.08	23.846	
4,800.0	4,740.1	4,758.6	4,721.8	16.7	13.6	-134.82	-479.7	160.0	661.4	633.6	27.79	23.798	
4,900.0	4,838.5	4,857.3	4,819.3	17.1	14.0	-134.62	-494.8	162.2	677.1	648.6	28.51	23.752	
5,000.0	4,936.9	4,956.0	4,916.8	17.6	14.4	-134.43	-509.9	164.4	692.9	663.6	29.22	23.708	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Rieder 18T-401
Project:	SEC.18-T4N-R67W	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (7-31-14)	Offset TVD Reference:	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	5,035.2	5,054.8	5,014.4	18.0	14.7	-134.24		-525.0	166.6	708.6	678.7	29.94	23.665	
5,200.0	5,133.6	5,153.5	5,111.9	18.4	15.1	-134.06		-540.1	168.9	724.4	693.7	30.66	23.625	
5,300.0	5,231.9	5,252.2	5,209.5	18.8	15.4	-133.89		-555.2	171.1	740.1	708.8	31.38	23.586	
5,400.0	5,330.3	5,350.9	5,307.0	19.2	15.8	-133.73		-570.3	173.3	755.9	723.8	32.10	23.549	
5,500.0	5,428.7	5,449.7	5,404.5	19.6	16.2	-133.57		-585.4	175.5	771.7	738.9	32.82	23.514	
5,600.0	5,527.0	5,548.4	5,502.1	20.1	16.5	-133.42		-600.5	177.8	787.5	753.9	33.54	23.480	
5,700.0	5,625.4	5,649.9	5,602.4	20.5	16.9	-133.30		-615.7	180.0	803.2	769.0	34.24	23.458	
5,800.0	5,723.8	5,755.1	5,706.9	20.9	17.2	-133.47		-628.2	181.9	818.1	783.2	34.85	23.473	
5,900.0	5,822.7	5,860.8	5,812.2	21.1	17.4	-133.83		-637.0	183.1	830.2	794.9	35.32	23.507	
6,000.0	5,922.0	5,966.8	5,918.1	21.4	17.6	-134.23		-641.9	183.9	839.1	803.4	35.71	23.502	
6,100.0	6,021.7	6,071.4	6,022.7	21.5	17.7	-134.64		-643.1	184.0	845.0	808.9	36.03	23.451	
6,200.0	6,121.6	6,171.3	6,122.6	21.7	17.9	-134.90		-643.1	184.0	848.1	811.8	36.30	23.363	
6,300.0	6,221.6	6,274.0	6,225.2	21.8	18.0	92.85		-641.6	184.0	848.8	812.3	36.55	23.225	
6,400.0	6,321.6	6,378.1	6,328.3	21.9	18.0	91.94		-628.2	184.0	848.3	811.6	36.61	23.168	
6,500.0	6,421.5	6,477.3	6,424.0	22.1	17.9	90.30		-602.4	184.0	847.8	811.3	36.48	23.237	
6,517.3	6,438.8	6,494.0	6,439.8	22.1	17.9	90.00		-596.8	184.0	847.7	811.3	36.44	23.267	
6,600.0	6,520.7	6,572.7	6,512.2	22.1	17.8	88.58		-566.1	184.0	848.0	811.9	36.17	23.449	
6,700.0	6,617.4	6,665.2	6,592.8	22.0	17.5	86.91		-520.7	184.0	849.1	813.4	35.70	23.784	
6,800.0	6,709.9	6,755.2	6,665.3	21.9	17.3	85.31		-467.5	184.0	850.8	815.6	35.14	24.208	
6,900.0	6,796.8	6,842.9	6,729.5	21.7	17.1	83.79		-407.8	184.0	853.0	818.4	34.56	24.681	
7,000.0	6,876.4	6,928.8	6,785.3	21.4	16.9	82.38		-342.6	184.0	855.6	821.6	34.02	25.151	
7,100.0	6,947.5	7,013.1	6,832.6	21.1	16.8	81.09		-272.9	184.0	858.5	824.9	33.58	25.565	
7,200.0	7,008.8	7,100.0	6,873.1	20.8	16.8	79.89		-196.0	184.0	861.4	828.1	33.30	25.867	
7,300.0	7,059.3	7,177.7	6,901.7	20.5	16.8	78.93		-123.8	184.0	864.1	830.9	33.26	25.982	
7,400.0	7,098.1	7,258.5	6,923.5	20.2	17.0	78.09		-46.1	184.0	866.6	833.2	33.47	25.892	
7,500.0	7,124.5	7,338.6	6,936.8	20.0	17.3	77.42		32.9	184.0	868.8	834.8	33.98	25.570	
7,600.0	7,138.2	7,418.1	6,941.9	19.8	17.8	76.92		112.2	184.1	870.4	835.6	34.77	25.032	
7,700.0	7,140.3	7,515.9	6,942.0	19.7	18.5	76.77		210.1	184.1	870.9	834.8	36.02	24.178	
7,800.0	7,140.6	7,615.9	6,942.0	20.2	19.3	76.75		310.1	184.1	870.9	833.3	37.61	23.160	
7,900.0	7,141.0	7,715.9	6,942.1	21.1	20.3	76.73		410.1	184.1	871.0	831.5	39.49	22.058	
8,000.0	7,141.3	7,815.9	6,942.1	22.3	21.5	76.71		510.1	184.1	871.1	829.4	41.62	20.929	
8,100.0	7,141.7	7,915.9	6,942.2	23.5	22.7	76.69		610.1	184.1	871.1	827.2	43.97	19.812	
8,200.0	7,142.0	8,015.9	6,942.2	24.8	24.1	76.67		710.1	184.1	871.2	824.7	46.51	18.733	
8,300.0	7,142.4	8,115.9	6,942.3	26.1	25.5	76.66		810.1	184.1	871.3	822.1	49.19	17.711	
8,400.0	7,142.7	8,215.9	6,942.3	27.6	26.9	76.64		910.0	184.1	871.3	819.3	52.02	16.751	
8,500.0	7,143.1	8,315.9	6,942.4	29.0	28.5	76.62		1,010.0	184.1	871.4	816.5	54.95	15.859	
8,600.0	7,143.4	8,415.9	6,942.4	30.6	30.0	76.60		1,110.0	184.1	871.5	813.5	57.97	15.032	
8,700.0	7,143.8	8,515.9	6,942.5	32.1	31.6	76.58		1,210.0	184.1	871.5	810.5	61.08	14.269	
8,800.0	7,144.1	8,615.9	6,942.5	33.7	33.3	76.56		1,310.0	184.1	871.6	807.4	64.25	13.566	
8,900.0	7,144.5	8,715.9	6,942.6	35.4	34.9	76.54		1,410.0	184.1	871.7	804.2	67.48	12.917	
9,000.0	7,144.8	8,815.9	6,942.6	37.0	36.6	76.52		1,510.0	184.1	871.7	801.0	70.77	12.319	
9,100.0	7,145.2	8,915.9	6,942.7	38.7	38.4	76.50		1,610.0	184.1	871.8	797.7	74.09	11.767	
9,200.0	7,145.5	9,015.9	6,942.7	40.4	40.1	76.48		1,710.0	184.1	871.9	794.4	77.46	11.257	
9,300.0	7,145.9	9,115.9	6,942.8	42.1	41.8	76.47		1,810.0	184.1	872.0	791.1	80.85	10.784	
9,400.0	7,146.2	9,215.9	6,942.9	43.8	43.6	76.45		1,910.0	184.1	872.0	787.7	84.28	10.347	
9,500.0	7,146.6	9,315.9	6,942.9	45.6	45.4	76.43		2,010.0	184.1	872.1	784.4	87.73	9.941	
9,600.0	7,146.9	9,415.9	6,943.0	47.3	47.2	76.41		2,110.0	184.1	872.2	781.0	91.20	9.563	
9,700.0	7,147.3	9,515.9	6,943.0	49.1	49.0	76.39		2,210.0	184.1	872.2	777.5	94.70	9.211	
9,800.0	7,147.6	9,615.9	6,943.1	50.9	50.8	76.37		2,310.0	184.1	872.3	774.1	98.21	8.882	
9,900.0	7,148.0	9,715.9	6,943.1	52.6	52.6	76.35		2,410.0	184.1	872.4	770.6	101.74	8.575	
10,000.0	7,148.3	9,815.9	6,943.2	54.4	54.4	76.33		2,510.0	184.1	872.4	767.2	105.28	8.287	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Rieder 18T-401
Project:	SEC.18-T4N-R67W	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (7-31-14)	Offset TVD Reference:	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
10,100.0	7,148.7	9,915.9	6,943.2	56.2	56.2	76.31	76.31	2,610.0	184.1	872.5	763.7	108.83	8.017	
10,200.0	7,149.0	10,015.9	6,943.3	58.1	58.1	76.30	76.30	2,710.0	184.1	872.6	760.2	112.40	7.763	
10,300.0	7,149.3	10,115.9	6,943.3	59.9	59.9	76.28	76.28	2,810.0	184.1	872.7	756.7	115.98	7.524	
10,400.0	7,149.7	10,215.9	6,943.4	61.7	61.8	76.26	76.26	2,910.0	184.1	872.7	753.2	119.56	7.299	
10,500.0	7,150.0	10,315.9	6,943.4	63.5	63.6	76.24	76.24	3,010.0	184.1	872.8	749.6	123.16	7.087	
10,600.0	7,150.4	10,415.9	6,943.5	65.4	65.5	76.22	76.22	3,110.0	184.1	872.9	746.1	126.76	6.886	
10,700.0	7,150.7	10,515.9	6,943.5	67.2	67.3	76.20	76.20	3,210.0	184.1	872.9	742.6	130.37	6.696	
10,800.0	7,151.1	10,615.9	6,943.6	69.0	69.2	76.18	76.18	3,310.0	184.1	873.0	739.0	133.99	6.516	
10,900.0	7,151.4	10,715.9	6,943.6	70.9	71.0	76.16	76.16	3,410.0	184.1	873.1	735.5	137.61	6.345	
11,000.0	7,151.8	10,815.9	6,943.7	72.7	72.9	76.14	76.14	3,510.0	184.1	873.1	731.9	141.24	6.182	
11,100.0	7,152.1	10,915.9	6,943.7	74.6	74.8	76.13	76.13	3,610.0	184.1	873.2	728.3	144.87	6.028	
11,200.0	7,152.5	11,015.9	6,943.8	76.4	76.6	76.11	76.11	3,710.0	184.1	873.3	724.8	148.51	5.880	
11,300.0	7,152.8	11,115.9	6,943.8	78.3	78.5	76.09	76.09	3,810.0	184.1	873.4	721.2	152.15	5.740	
11,400.0	7,153.2	11,215.9	6,943.9	80.2	80.4	76.07	76.07	3,910.0	184.1	873.4	717.6	155.79	5.606	
11,500.0	7,153.5	11,315.9	6,944.0	82.0	82.3	76.05	76.05	4,010.0	184.1	873.5	714.1	159.44	5.478	
11,553.4	7,153.7	11,369.4	6,944.0	83.0	83.3	76.04	76.04	4,063.5	184.1	873.5	712.1	161.39	5.412	
11,600.0	7,153.9	11,408.0	6,944.0	83.9	84.0	76.03	76.03	4,102.1	184.1	873.6	710.7	162.95	5.361	
11,632.3	7,154.0	11,408.0	6,944.0	84.5	84.0	76.03	76.03	4,102.1	184.1	874.5	711.0	163.54	5.347 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Rieder 18T-401
Project:	SEC.18-T4N-R67W	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (7-31-14)	Offset TVD Reference:	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	
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)		
0.0	0.0	1.0	1.0	0.0	0.0	90.00	0.0	150.6	150.6				
100.0	100.0	101.0	101.0	0.1	0.1	90.00	0.0	150.6	150.6	150.4	0.23	663.426	
200.0	200.0	201.0	201.0	0.3	0.3	90.00	0.0	150.6	150.6	149.9	0.68	222.611	
300.0	300.0	301.0	301.0	0.6	0.6	90.00	0.0	150.6	150.6	149.5	1.13	133.745	
400.0	400.0	401.0	401.0	0.8	0.8	90.00	0.0	150.6	150.6	149.0	1.58	95.586	
500.0	500.0	501.0	501.0	1.0	1.0	90.00	0.0	150.6	150.6	148.6	2.03	74.368	
600.0	600.0	601.0	601.0	1.2	1.2	90.00	0.0	150.6	150.6	148.1	2.47	60.859	
700.0	700.0	701.0	701.0	1.5	1.5	90.00	0.0	150.6	150.6	147.7	2.92	51.503	
800.0	800.0	801.0	801.0	1.7	1.7	90.00	0.0	150.6	150.6	147.2	3.37	44.641 CC, ES	
900.0	900.0	901.0	901.0	1.9	1.9	-138.34	0.0	150.6	151.9	148.1	3.80	39.980	
1,000.0	999.8	1,000.0	1,000.0	2.1	2.1	-139.55	0.0	150.6	155.9	151.7	4.21	37.048	
1,100.0	1,099.5	1,098.1	1,098.1	2.3	2.3	-140.88	-1.5	151.4	163.3	158.7	4.60	35.526	
1,200.0	1,198.7	1,195.1	1,194.9	2.5	2.5	-141.71	-5.9	153.7	174.9	169.9	4.98	35.119	
1,300.0	1,297.5	1,291.4	1,290.9	2.8	2.7	-142.08	-13.1	157.5	190.6	185.2	5.39	35.343	
1,400.0	1,395.8	1,387.0	1,385.8	3.1	2.9	-142.09	-23.1	162.8	209.5	203.6	5.85	35.808	
1,500.0	1,494.2	1,482.6	1,480.3	3.4	3.1	-141.40	-35.8	169.5	229.6	223.3	6.35	36.167	
1,600.0	1,592.6	1,580.4	1,576.8	3.8	3.4	-140.57	-49.8	176.8	250.3	243.4	6.89	36.332	
1,700.0	1,690.9	1,678.2	1,673.3	4.2	3.7	-139.87	-63.8	184.2	270.9	263.5	7.45	36.357	
1,800.0	1,789.3	1,775.9	1,769.8	4.5	4.0	-139.27	-77.8	191.5	291.6	283.6	8.04	36.287	
1,900.0	1,887.6	1,873.7	1,866.3	4.9	4.3	-138.75	-91.8	198.9	312.4	303.7	8.64	36.156	
2,000.0	1,986.0	1,971.5	1,962.8	5.3	4.6	-138.30	-105.8	206.3	333.1	323.9	9.26	35.994	
2,100.0	2,084.4	2,069.3	2,059.3	5.7	5.0	-137.90	-119.8	213.6	353.9	344.0	9.88	35.814	
2,200.0	2,182.7	2,167.1	2,155.8	6.1	5.3	-137.54	-133.8	221.0	374.7	364.2	10.52	35.625	
2,300.0	2,281.1	2,264.9	2,252.3	6.5	5.7	-137.22	-147.8	228.3	395.5	384.4	11.16	35.435	
2,400.0	2,379.5	2,362.7	2,348.8	6.9	6.0	-136.93	-161.8	235.7	416.3	404.5	11.81	35.248	
2,500.0	2,477.8	2,460.5	2,445.3	7.3	6.4	-136.67	-175.8	243.1	437.2	424.7	12.47	35.066	
2,600.0	2,576.2	2,558.3	2,541.8	7.7	6.7	-136.43	-189.8	250.4	458.0	444.9	13.13	34.890	
2,700.0	2,674.5	2,656.0	2,638.3	8.1	7.1	-136.22	-203.8	257.8	478.8	465.0	13.79	34.722	
2,800.0	2,772.9	2,753.8	2,734.8	8.5	7.4	-136.02	-217.8	265.1	499.7	485.2	14.46	34.562	
2,900.0	2,871.3	2,851.6	2,831.3	8.9	7.8	-135.84	-231.8	272.5	520.5	505.4	15.13	34.410	
3,000.0	2,969.6	2,949.4	2,927.8	9.3	8.2	-135.67	-245.8	279.9	541.4	525.6	15.80	34.266	
3,100.0	3,068.0	3,047.2	3,024.3	9.7	8.5	-135.51	-259.8	287.2	562.2	545.8	16.47	34.129	
3,200.0	3,166.3	3,145.0	3,120.8	10.1	8.9	-135.37	-273.8	294.6	583.1	566.0	17.15	33.999	
3,300.0	3,264.7	3,242.8	3,217.3	10.5	9.3	-135.23	-287.8	301.9	604.0	586.1	17.83	33.876	
3,400.0	3,363.1	3,340.6	3,313.8	10.9	9.6	-135.11	-301.8	309.3	624.8	606.3	18.51	33.759	
3,500.0	3,461.4	3,438.4	3,410.3	11.4	10.0	-134.99	-315.8	316.7	645.7	626.5	19.19	33.648	
3,600.0	3,559.8	3,536.1	3,506.8	11.8	10.4	-134.88	-329.8	324.0	666.6	646.7	19.87	33.543	
3,700.0	3,658.2	3,633.9	3,603.3	12.2	10.7	-134.78	-343.8	331.4	687.5	666.9	20.56	33.443	
3,800.0	3,756.5	3,731.7	3,699.8	12.6	11.1	-134.68	-357.8	338.8	708.3	687.1	21.24	33.348	
3,900.0	3,854.9	3,829.5	3,796.3	13.0	11.5	-134.59	-371.8	346.1	729.2	707.3	21.93	33.258	
4,000.0	3,953.2	3,927.3	3,892.9	13.4	11.8	-134.50	-385.8	353.5	750.1	727.5	22.61	33.172	
4,100.0	4,051.6	4,025.1	3,989.4	13.8	12.2	-134.42	-399.8	360.8	771.0	747.7	23.30	33.090	
4,200.0	4,150.0	4,122.9	4,085.9	14.2	12.6	-134.34	-413.8	368.2	791.9	767.9	23.99	33.012	
4,300.0	4,248.3	4,220.7	4,182.4	14.7	13.0	-134.27	-427.8	375.6	812.8	788.1	24.68	32.937	
4,400.0	4,346.7	4,318.5	4,278.9	15.1	13.3	-134.20	-441.8	382.9	833.7	808.3	25.37	32.866	
4,500.0	4,445.0	4,416.2	4,375.4	15.5	13.7	-134.13	-455.8	390.3	854.5	828.5	26.06	32.797	
4,600.0	4,543.4	4,514.0	4,471.9	15.9	14.1	-134.07	-469.8	397.6	875.4	848.7	26.75	32.732	
4,700.0	4,641.8	4,611.8	4,568.4	16.3	14.5	-134.01	-483.8	405.0	896.3	868.9	27.44	32.670	
4,800.0	4,740.1	4,709.6	4,664.9	16.7	14.8	-133.95	-497.8	412.4	917.2	889.1	28.13	32.610	
4,900.0	4,838.5	4,807.4	4,761.4	17.1	15.2	-133.89	-511.8	419.7	938.1	909.3	28.82	32.552	
5,000.0	4,936.9	4,905.2	4,857.9	17.6	15.6	-133.84	-525.8	427.1	959.0	929.5	29.51	32.497	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Rieder 18T-401
Project:	SEC.18-T4N-R67W	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (7-31-14)	Offset TVD Reference:	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
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	
5,100.0	5,035.2	5,003.0	4,954.4	18.0	16.0	-133.79	-539.8	434.4	979.9	949.7	30.20	32.444 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Rieder 18T-401
Project:	SEC.18-T4N-R67W	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (7-31-14)	Offset TVD Reference:	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	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	1.0	1.0	0.0	0.0	90.00	90.00	0.0	119.9	119.9	119.9	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	90.00	90.00	0.0	119.9	119.9	119.7	0.23	528.284	
200.0	200.0	201.0	201.0	0.3	0.3	90.00	90.00	0.0	119.9	119.9	119.3	0.68	177.265	
300.0	300.0	301.0	301.0	0.6	0.6	90.00	90.00	0.0	119.9	119.9	118.8	1.13	106.500	
400.0	400.0	401.0	401.0	0.8	0.8	90.00	90.00	0.0	119.9	119.9	118.4	1.58	76.115	
500.0	500.0	501.0	501.0	1.0	1.0	90.00	90.00	0.0	119.9	119.9	117.9	2.03	59.219	
600.0	600.0	601.0	601.0	1.2	1.2	90.00	90.00	0.0	119.9	119.9	117.5	2.47	48.462	
700.0	700.0	701.0	701.0	1.5	1.5	90.00	90.00	0.0	119.9	119.9	117.0	2.92	41.012	
800.0	800.0	801.0	801.0	1.7	1.7	90.00	90.00	0.0	119.9	119.9	116.6	3.37	35.547 CC, ES	
900.0	900.0	901.0	901.0	1.9	1.9	-138.45	-138.45	0.0	119.9	121.2	117.4	3.80	31.906	
1,000.0	999.8	1,000.8	1,000.8	2.1	2.1	-139.98	-139.98	0.0	119.9	125.2	121.0	4.21	29.746	
1,100.0	1,099.5	1,100.5	1,100.5	2.3	2.4	-142.33	-142.33	0.0	119.9	132.0	127.4	4.63	28.529	
1,200.0	1,198.7	1,199.7	1,199.7	2.5	2.6	-145.22	-145.22	0.0	119.9	141.9	136.8	5.05	28.073	
1,300.0	1,297.5	1,297.7	1,297.7	2.8	2.8	-147.73	-147.73	-1.6	120.5	155.2	149.8	5.46	28.435	
1,400.0	1,395.8	1,395.6	1,395.4	3.1	3.0	-149.21	-149.21	-6.3	122.1	171.3	165.4	5.87	29.197	
1,500.0	1,494.2	1,493.5	1,492.9	3.4	3.1	-149.44	-149.44	-14.2	124.7	187.9	181.6	6.30	29.809	
1,600.0	1,592.6	1,591.1	1,589.9	3.8	3.3	-148.70	-148.70	-25.3	128.5	204.9	198.1	6.77	30.246	
1,700.0	1,690.9	1,688.9	1,686.6	4.2	3.6	-147.27	-147.27	-39.2	133.2	222.3	215.1	7.29	30.513	
1,800.0	1,789.3	1,787.2	1,783.6	4.5	3.8	-145.91	-145.91	-53.7	138.1	240.0	232.2	7.83	30.638	
1,900.0	1,887.6	1,885.4	1,880.7	4.9	4.1	-144.74	-144.74	-68.2	143.0	257.9	249.4	8.41	30.672	
2,000.0	1,986.0	1,983.7	1,977.8	5.3	4.4	-143.72	-143.72	-82.7	147.9	275.7	266.8	9.00	30.643	
2,100.0	2,084.4	2,082.0	2,074.9	5.7	4.7	-142.82	-142.82	-97.2	152.8	293.7	284.1	9.61	30.570	
2,200.0	2,182.7	2,180.3	2,171.9	6.1	5.0	-142.03	-142.03	-111.7	157.8	311.8	301.5	10.23	30.474	
2,300.0	2,281.1	2,278.5	2,269.0	6.5	5.3	-141.33	-141.33	-126.2	162.7	329.8	319.0	10.86	30.362	
2,400.0	2,379.5	2,376.8	2,366.1	6.9	5.6	-140.69	-140.69	-140.7	167.6	348.0	336.5	11.51	30.241	
2,500.0	2,477.8	2,475.1	2,463.1	7.3	6.0	-140.12	-140.12	-155.2	172.5	366.1	354.0	12.16	30.117	
2,600.0	2,576.2	2,573.4	2,560.2	7.7	6.3	-139.61	-139.61	-169.8	177.4	384.3	371.5	12.81	29.992	
2,700.0	2,674.5	2,671.6	2,657.3	8.1	6.6	-139.14	-139.14	-184.3	182.3	402.6	389.1	13.48	29.869	
2,800.0	2,772.9	2,769.9	2,754.4	8.5	7.0	-138.71	-138.71	-198.8	187.3	420.8	406.7	14.15	29.749	
2,900.0	2,871.3	2,868.2	2,851.4	8.9	7.3	-138.31	-138.31	-213.3	192.2	439.1	424.3	14.82	29.634	
3,000.0	2,969.6	2,966.4	2,948.5	9.3	7.7	-137.95	-137.95	-227.8	197.1	457.4	441.9	15.49	29.522	
3,100.0	3,068.0	3,064.7	3,045.6	9.7	8.0	-137.62	-137.62	-242.3	202.0	475.7	459.5	16.17	29.415	
3,200.0	3,166.3	3,163.0	3,142.6	10.1	8.4	-137.31	-137.31	-256.8	206.9	494.0	477.2	16.85	29.313	
3,300.0	3,264.7	3,261.3	3,239.7	10.5	8.7	-137.02	-137.02	-271.3	211.8	512.3	494.8	17.54	29.216	
3,400.0	3,363.1	3,359.5	3,336.8	10.9	9.1	-136.75	-136.75	-285.9	216.7	530.7	512.5	18.22	29.123	
3,500.0	3,461.4	3,457.8	3,433.9	11.4	9.4	-136.50	-136.50	-300.4	221.7	549.0	530.1	18.91	29.034	
3,600.0	3,559.8	3,556.1	3,530.9	11.8	9.8	-136.27	-136.27	-314.9	226.6	567.4	547.8	19.60	28.950	
3,700.0	3,658.2	3,654.4	3,628.0	12.2	10.1	-136.05	-136.05	-329.4	231.5	585.8	565.5	20.29	28.869	
3,800.0	3,756.5	3,752.6	3,725.1	12.6	10.5	-135.85	-135.85	-343.9	236.4	604.2	583.2	20.98	28.793	
3,900.0	3,854.9	3,850.9	3,822.1	13.0	10.9	-135.65	-135.65	-358.4	241.3	622.5	600.9	21.68	28.720	
4,000.0	3,953.2	3,949.2	3,919.2	13.4	11.2	-135.47	-135.47	-372.9	246.2	640.9	618.6	22.37	28.650	
4,100.0	4,051.6	4,047.5	4,016.3	13.8	11.6	-135.30	-135.30	-387.4	251.2	659.3	636.3	23.07	28.584	
4,200.0	4,150.0	4,145.7	4,113.4	14.2	11.9	-135.14	-135.14	-401.9	256.1	677.7	654.0	23.76	28.520	
4,300.0	4,248.3	4,244.0	4,210.4	14.7	12.3	-134.98	-134.98	-416.5	261.0	696.2	671.7	24.46	28.460	
4,400.0	4,346.7	4,342.3	4,307.5	15.1	12.7	-134.84	-134.84	-431.0	265.9	714.6	689.4	25.16	28.402	
4,500.0	4,445.0	4,440.6	4,404.6	15.5	13.0	-134.70	-134.70	-445.5	270.8	733.0	707.1	25.86	28.346	
4,600.0	4,543.4	4,538.8	4,501.7	15.9	13.4	-134.56	-134.56	-460.0	275.7	751.4	724.9	26.56	28.293	
4,700.0	4,641.8	4,637.1	4,598.7	16.3	13.8	-134.44	-134.44	-474.5	280.6	769.8	742.6	27.26	28.243	
4,800.0	4,740.1	4,735.4	4,695.8	16.7	14.1	-134.32	-134.32	-489.0	285.6	788.3	760.3	27.96	28.194	
4,900.0	4,838.5	4,833.6	4,792.9	17.1	14.5	-134.20	-134.20	-503.5	290.5	806.7	778.1	28.66	28.147	
5,000.0	4,936.9	4,931.9	4,889.9	17.6	14.9	-134.09	-134.09	-518.0	295.4	825.1	795.8	29.36	28.102	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Rieder 18T-401
Project:	SEC.18-T4N-R67W	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (7-31-14)	Offset TVD Reference:	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)	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	5,035.2	5,030.2	4,987.0	18.0	15.2	-133.99	-532.6	300.3	843.6	813.5	30.06	28.059		
5,200.0	5,133.6	5,128.5	5,084.1	18.4	15.6	-133.89	-547.1	305.2	862.0	831.3	30.77	28.018		
5,300.0	5,231.9	5,226.7	5,181.2	18.8	15.9	-133.79	-561.6	310.1	880.5	849.0	31.47	27.978		
5,400.0	5,330.3	5,325.0	5,278.2	19.2	16.3	-133.70	-576.1	315.1	898.9	866.7	32.17	27.939		
5,500.0	5,428.7	5,423.3	5,375.3	19.6	16.7	-133.61	-590.6	320.0	917.4	884.5	32.88	27.903		
5,600.0	5,527.0	5,521.6	5,472.4	20.1	17.0	-133.53	-605.1	324.9	935.8	902.2	33.58	27.867		
5,700.0	5,625.4	5,622.2	5,571.8	20.5	17.4	-133.45	-619.9	329.9	954.3	920.0	34.28	27.834		
5,800.0	5,723.8	5,735.2	5,683.9	20.9	17.7	-133.61	-633.8	334.6	971.5	936.6	34.93	27.810		
5,900.0	5,822.7	5,849.0	5,797.2	21.1	18.0	-133.97	-643.6	337.9	985.3	949.9	35.43	27.808		
6,000.0	5,922.0	5,963.4	5,911.4	21.4	18.2	-134.35	-649.1	339.8	995.3	959.4	35.85	27.758 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Rieder 18T-401
Project:	SEC.18-T4N-R67W	TVD Reference:	WELL @ 4820.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Y Pad Sec.18-T4N-R67W	MD Reference:	WELL @ 4820.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Rieder 18T-401	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (7-31-14)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4820.0ft (RKB - 15')

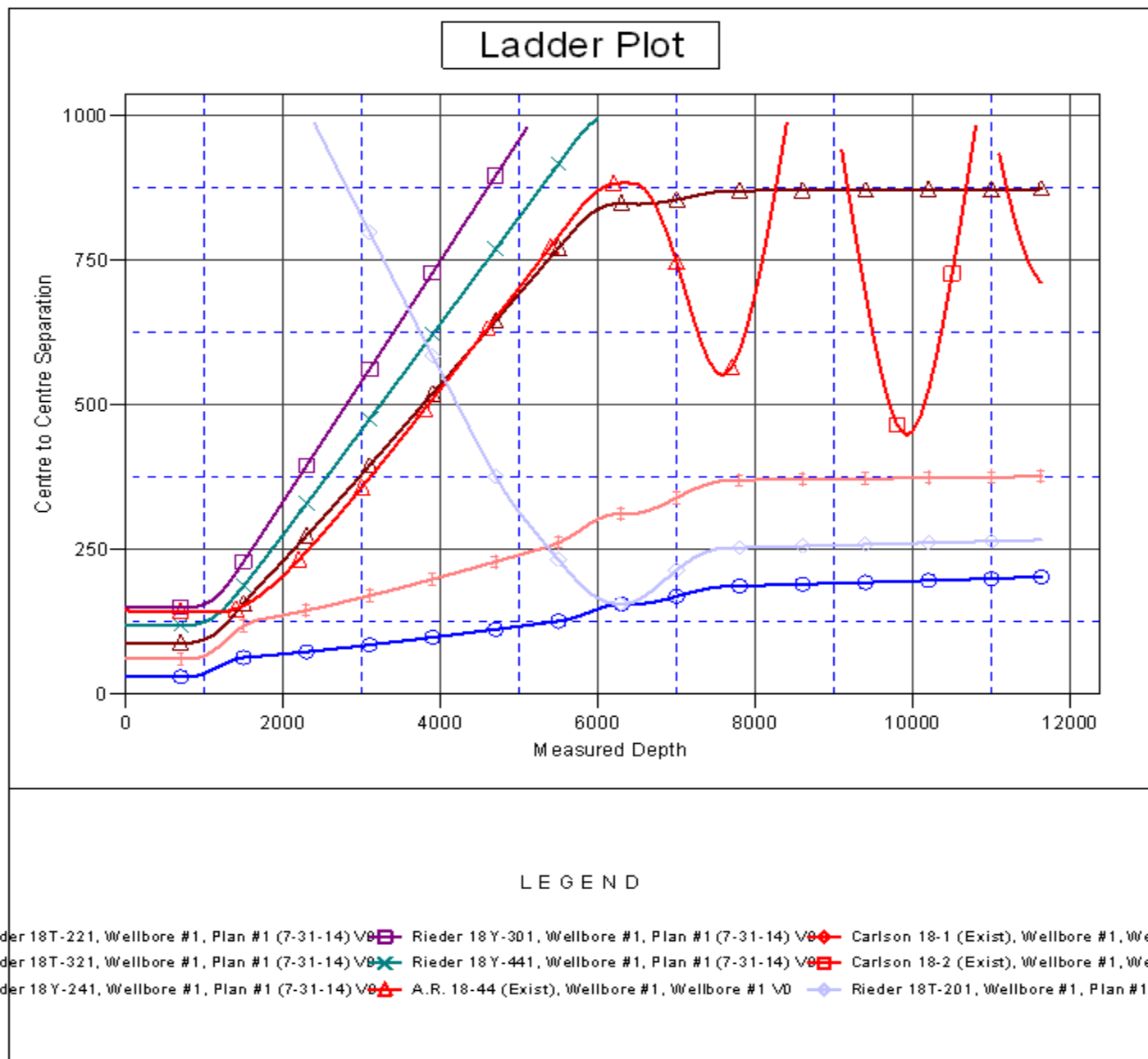
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Rieder 18T-401

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.37°



Coordinates are relative to: Rieder 18T-401
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.37°

