PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name:- **Rieder 18Q-221**

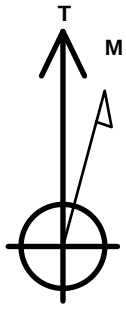
Surface Location: Rieder 4N67W18Q Pad Sec.18-T4N-R67W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4812.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1355266.67	3158679.84	40.307210	-104.931030	

RKB - 15' WELL @ 4827.0ft (RKB - 15')

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 366'FSL & 2212'FEL	1.0	0.0	0.0	Point
BHL 500'FNL & 2005'FEL	6943.0	4411.8	22.3	Point



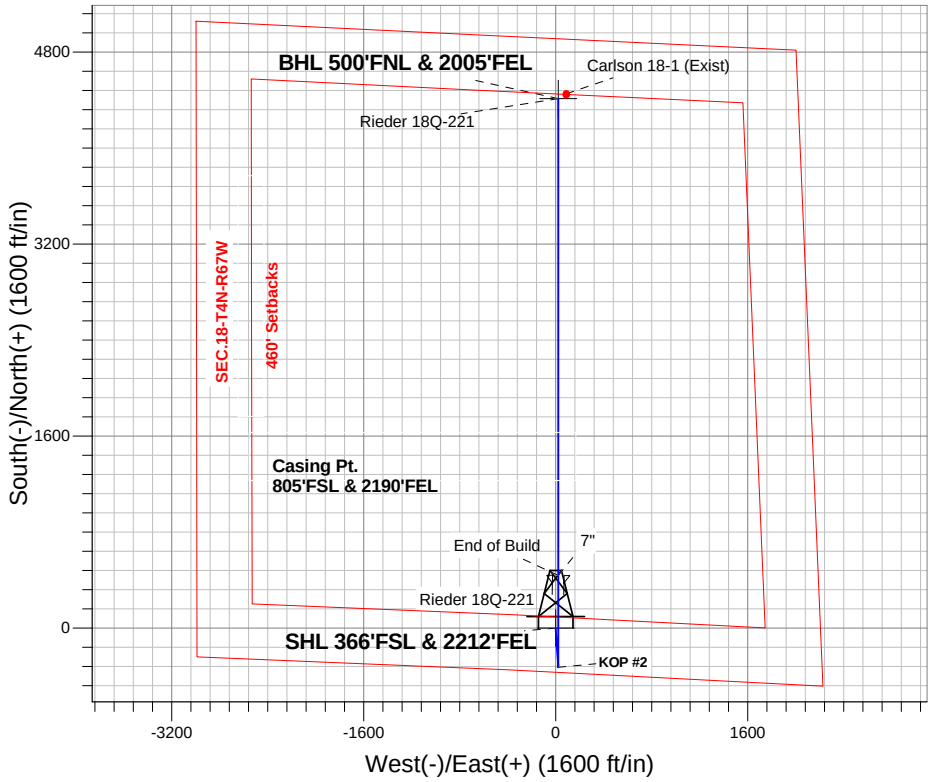
Azimuths to True North
Magnetic North: 8.52°

Magnetic Field
Strength: 52736.2snT
Dip Angle: 66.84°
Date: 7/30/2014
Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
2000.0	2000.0	KOP #1
6183.2	6202.4	KOP #2
6947.2	7403.2	End of Build

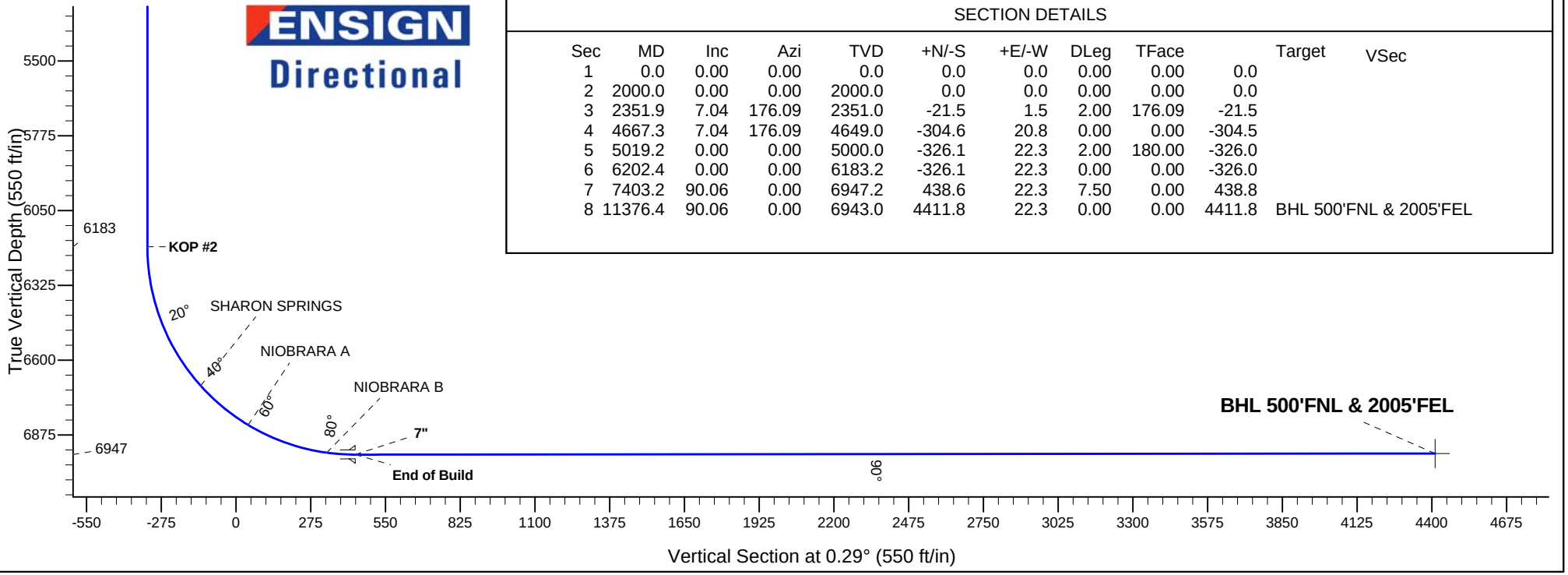
Rieder 4N67W18Q Pad Sec.18-T4N-R67
Rieder 18Q-221
Plan #1 (7-30-14)
13:47, August 04 2014



ENSIGN Directional

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	2000.0	0.00	0.00	2000.0	0.0	0.0	0.00	0.00	0.0	
3	2351.9	7.04	176.09	2351.0	-21.5	1.5	2.00	176.09	-21.5	
4	4667.3	7.04	176.09	4649.0	-304.6	20.8	0.00	0.00	-304.5	
5	5019.2	0.00	0.00	5000.0	-326.1	22.3	2.00	180.00	-326.0	
6	6202.4	0.00	0.00	6183.2	-326.1	22.3	0.00	0.00	-326.0	
7	7403.2	90.06	0.00	6947.2	438.6	22.3	7.50	0.00	438.8	
8	11376.4	90.06	0.00	6943.0	4411.8	22.3	0.00	0.00	4411.8	BHL 500'FNL & 2005'FEL



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.18-T4N-R67W
Rieder 4N67W18Q Pad Sec.18-T4N-R67
Rieder 18Q-221

Wellbore #1

Plan: Plan #1 (7-30-14)

Standard Planning Report

04 August, 2014

Database:	Landmark	**Local Co-ordinate Reference:**	Well Rieder 18Q-221
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**TVD Reference:**	WELL @ 4827.0ft (RKB - 15')
Project:	SEC.18-T4N-R67W	**MD Reference:**	WELL @ 4827.0ft (RKB - 15')
Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**North Reference:**	True
Well:	Rieder 18Q-221	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (7-30-14)		

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 4N67W18Q Pad Sec.18-T4N-R67				
Site Position:		**Northing:**	1,355,266.69 ft	**Latitude:**	40.307210
From:	Lat/Long	**Easting:**	3,158,679.84 ft	**Longitude:**	-104.931030
Position Uncertainty:	0.0 ft	**Slot Radius:**	"	**Grid Convergence:**	0.37 °

Well	Rieder 18Q-221					
Well Position	**+N/-S**	0.0 ft	**Northing:**	1,355,266.67 ft	**Latitude:**	40.307210
	+E/-W	0.0 ft	**Easting:**	3,158,679.84 ft	**Longitude:**	-104.931030
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	4,812.0 ft

Wellbore	Wellbore #1				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	7/30/2014	8.52	66.84	52,736

Design	Plan #1 (7-30-14)				
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	0.29	

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	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,351.9	7.04	176.09	2,351.0	-21.5	1.5	2.00	2.00	0.00	176.09	
4,667.3	7.04	176.09	4,649.0	-304.6	20.8	0.00	0.00	0.00	0.00	
5,019.2	0.00	0.00	5,000.0	-326.1	22.3	2.00	-2.00	0.00	180.00	
6,202.4	0.00	0.00	6,183.2	-326.1	22.3	0.00	0.00	0.00	0.00	
7,403.2	90.06	0.00	6,947.2	438.6	22.3	7.50	7.50	0.00	0.00	
11,376.4	90.06	0.00	6,943.0	4,411.8	22.3	0.00	0.00	0.00	0.00	BHL 500'FNL & 20(

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Project:	SEC.18-T4N-R67W	**MD Reference:**	WELL @ 4827.0ft (RKB - 15')
Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**North Reference:**	True
Well:	Rieder 18Q-221	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (7-30-14)		

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 366'FSL & 2212'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
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
2,100.0	2.00	176.09	2,100.0	-1.7	0.1	-1.7	2.00	2.00	0.00
2,200.0	4.00	176.09	2,199.8	-7.0	0.5	-7.0	2.00	2.00	0.00
2,300.0	6.00	176.09	2,299.5	-15.7	1.1	-15.7	2.00	2.00	0.00
2,351.9	7.04	176.09	2,351.0	-21.5	1.5	-21.5	2.00	2.00	0.00
2,400.0	7.04	176.09	2,398.8	-27.4	1.9	-27.4	0.00	0.00	0.00
2,500.0	7.04	176.09	2,498.0	-39.6	2.7	-39.6	0.00	0.00	0.00
2,600.0	7.04	176.09	2,597.2	-51.9	3.5	-51.8	0.00	0.00	0.00
2,700.0	7.04	176.09	2,696.5	-64.1	4.4	-64.1	0.00	0.00	0.00
2,800.0	7.04	176.09	2,795.7	-76.3	5.2	-76.3	0.00	0.00	0.00
2,900.0	7.04	176.09	2,895.0	-88.5	6.1	-88.5	0.00	0.00	0.00
3,000.0	7.04	176.09	2,994.2	-100.8	6.9	-100.7	0.00	0.00	0.00
3,100.0	7.04	176.09	3,093.5	-113.0	7.7	-112.9	0.00	0.00	0.00
3,200.0	7.04	176.09	3,192.7	-125.2	8.6	-125.2	0.00	0.00	0.00
3,300.0	7.04	176.09	3,292.0	-137.4	9.4	-137.4	0.00	0.00	0.00
3,400.0	7.04	176.09	3,391.2	-149.7	10.2	-149.6	0.00	0.00	0.00
3,459.2	7.04	176.09	3,450.0	-156.9	10.7	-156.8	0.00	0.00	0.00
PARKMAN									
3,500.0	7.04	176.09	3,490.5	-161.9	11.1	-161.8	0.00	0.00	0.00
3,600.0	7.04	176.09	3,589.7	-174.1	11.9	-174.0	0.00	0.00	0.00
3,700.0	7.04	176.09	3,689.0	-186.3	12.7	-186.3	0.00	0.00	0.00
3,800.0	7.04	176.09	3,788.2	-198.5	13.6	-198.5	0.00	0.00	0.00
3,900.0	7.04	176.09	3,887.5	-210.8	14.4	-210.7	0.00	0.00	0.00
3,973.1	7.04	176.09	3,960.0	-219.7	15.0	-219.6	0.00	0.00	0.00
SUSSEX									
4,000.0	7.04	176.09	3,986.7	-223.0	15.3	-222.9	0.00	0.00	0.00
4,100.0	7.04	176.09	4,085.9	-235.2	16.1	-235.1	0.00	0.00	0.00
4,200.0	7.04	176.09	4,185.2	-247.4	16.9	-247.4	0.00	0.00	0.00
4,300.0	7.04	176.09	4,284.4	-259.7	17.8	-259.6	0.00	0.00	0.00
4,400.0	7.04	176.09	4,383.7	-271.9	18.6	-271.8	0.00	0.00	0.00

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Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**North Reference:**	True
Well:	Rieder 18Q-221	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (7-30-14)		

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	7.04	176.09	4,482.9	-284.1	19.4	-284.0	0.00	0.00	0.00
4,537.4	7.04	176.09	4,520.0	-288.7	19.7	-288.6	0.00	0.00	0.00
SHANNON									
4,600.0	7.04	176.09	4,582.2	-296.3	20.3	-296.2	0.00	0.00	0.00
4,667.3	7.04	176.09	4,649.0	-304.6	20.8	-304.5	0.00	0.00	0.00
4,700.0	6.38	176.09	4,681.4	-308.4	21.1	-308.3	2.00	-2.00	0.00
4,800.0	4.38	176.09	4,781.0	-317.7	21.7	-317.6	2.00	-2.00	0.00
4,900.0	2.38	176.09	4,880.8	-323.6	22.1	-323.5	2.00	-2.00	0.00
5,000.0	0.38	176.09	4,980.8	-326.0	22.3	-325.9	2.00	-2.00	0.00
5,019.2	0.00	0.00	5,000.0	-326.1	22.3	-326.0	2.00	-2.00	0.00
5,100.0	0.00	0.00	5,080.8	-326.1	22.3	-326.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,180.8	-326.1	22.3	-326.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,280.8	-326.1	22.3	-326.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,380.8	-326.1	22.3	-326.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,480.8	-326.1	22.3	-326.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,580.8	-326.1	22.3	-326.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,680.8	-326.1	22.3	-326.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,780.8	-326.1	22.3	-326.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,880.8	-326.1	22.3	-326.0	0.00	0.00	0.00
6,000.0	0.00	0.00	5,980.8	-326.1	22.3	-326.0	0.00	0.00	0.00
6,100.0	0.00	0.00	6,080.8	-326.1	22.3	-326.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,180.8	-326.1	22.3	-326.0	0.00	0.00	0.00
6,202.4	0.00	0.00	6,183.2	-326.1	22.3	-326.0	0.00	0.00	0.00
KOP #2									
6,300.0	7.32	0.00	6,280.5	-319.9	22.3	-319.8	7.50	7.50	0.00
6,400.0	14.82	0.00	6,378.6	-300.7	22.3	-300.6	7.50	7.50	0.00
6,500.0	22.32	0.00	6,473.3	-268.9	22.3	-268.8	7.50	7.50	0.00
6,600.0	29.82	0.00	6,563.1	-225.0	22.3	-224.8	7.50	7.50	0.00
6,700.0	37.32	0.00	6,646.3	-169.7	22.3	-169.6	7.50	7.50	0.00
6,761.9	41.96	0.00	6,694.0	-130.2	22.3	-130.1	7.50	7.50	0.00
SHARON SPRINGS									
6,800.0	44.82	0.00	6,721.7	-104.1	22.3	-103.9	7.50	7.50	0.00
6,900.0	52.32	0.00	6,787.8	-29.1	22.3	-29.0	7.50	7.50	0.00
6,989.0	58.99	0.00	6,838.0	44.3	22.3	44.4	7.50	7.50	0.00
NIOBRARA A									
7,000.0	59.82	0.00	6,843.6	53.8	22.3	53.9	7.50	7.50	0.00
7,100.0	67.32	0.00	6,888.1	143.3	22.3	143.4	7.50	7.50	0.00
7,200.0	74.82	0.00	6,920.5	237.8	22.3	237.9	7.50	7.50	0.00
7,297.7	82.15	0.00	6,940.0	333.5	22.3	333.6	7.50	7.50	0.00
NIOBRARA B									
7,300.0	82.32	0.00	6,940.3	335.7	22.3	335.8	7.50	7.50	0.00
7,400.0	89.82	0.00	6,947.2	435.4	22.3	435.5	7.50	7.50	0.00
7,403.2	90.06	0.00	6,947.2	438.6	22.3	438.7	7.50	7.50	0.00
End of Build - 7"									
7,500.0	90.06	0.00	6,947.1	535.4	22.3	535.5	0.00	0.00	0.00
7,600.0	90.06	0.00	6,947.0	635.4	22.3	635.5	0.00	0.00	0.00
7,700.0	90.06	0.00	6,946.8	735.4	22.3	735.5	0.00	0.00	0.00
7,800.0	90.06	0.00	6,946.7	835.4	22.3	835.5	0.00	0.00	0.00
7,900.0	90.06	0.00	6,946.6	935.4	22.3	935.5	0.00	0.00	0.00
8,000.0	90.06	0.00	6,946.5	1,035.4	22.3	1,035.5	0.00	0.00	0.00
8,100.0	90.06	0.00	6,946.4	1,135.4	22.3	1,135.5	0.00	0.00	0.00
8,200.0	90.06	0.00	6,946.3	1,235.4	22.3	1,235.5	0.00	0.00	0.00

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Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**North Reference:**	True
Well:	Rieder 18Q-221	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (7-30-14)		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,300.0	90.06	0.00	6,946.2	1,335.4	22.3	1,335.5	0.00	0.00	0.00
8,400.0	90.06	0.00	6,946.1	1,435.4	22.3	1,435.5	0.00	0.00	0.00
8,500.0	90.06	0.00	6,946.0	1,535.4	22.3	1,535.5	0.00	0.00	0.00
8,600.0	90.06	0.00	6,945.9	1,635.4	22.3	1,635.5	0.00	0.00	0.00
8,700.0	90.06	0.00	6,945.8	1,735.4	22.3	1,735.5	0.00	0.00	0.00
8,800.0	90.06	0.00	6,945.7	1,835.4	22.3	1,835.5	0.00	0.00	0.00
8,900.0	90.06	0.00	6,945.6	1,935.4	22.3	1,935.5	0.00	0.00	0.00
9,000.0	90.06	0.00	6,945.5	2,035.4	22.3	2,035.5	0.00	0.00	0.00
9,100.0	90.06	0.00	6,945.4	2,135.4	22.3	2,135.5	0.00	0.00	0.00
9,200.0	90.06	0.00	6,945.3	2,235.4	22.3	2,235.5	0.00	0.00	0.00
9,300.0	90.06	0.00	6,945.2	2,335.4	22.3	2,335.5	0.00	0.00	0.00
9,400.0	90.06	0.00	6,945.1	2,435.4	22.3	2,435.5	0.00	0.00	0.00
9,500.0	90.06	0.00	6,945.0	2,535.4	22.3	2,535.5	0.00	0.00	0.00
9,600.0	90.06	0.00	6,944.9	2,635.4	22.3	2,635.5	0.00	0.00	0.00
9,700.0	90.06	0.00	6,944.8	2,735.4	22.3	2,735.5	0.00	0.00	0.00
9,800.0	90.06	0.00	6,944.7	2,835.4	22.3	2,835.5	0.00	0.00	0.00
9,900.0	90.06	0.00	6,944.5	2,935.4	22.3	2,935.5	0.00	0.00	0.00
10,000.0	90.06	0.00	6,944.4	3,035.4	22.3	3,035.5	0.00	0.00	0.00
10,100.0	90.06	0.00	6,944.3	3,135.4	22.3	3,135.5	0.00	0.00	0.00
10,200.0	90.06	0.00	6,944.2	3,235.4	22.3	3,235.5	0.00	0.00	0.00
10,300.0	90.06	0.00	6,944.1	3,335.4	22.3	3,335.5	0.00	0.00	0.00
10,400.0	90.06	0.00	6,944.0	3,435.4	22.3	3,435.5	0.00	0.00	0.00
10,500.0	90.06	0.00	6,943.9	3,535.4	22.3	3,535.5	0.00	0.00	0.00
10,600.0	90.06	0.00	6,943.8	3,635.4	22.3	3,635.5	0.00	0.00	0.00
10,700.0	90.06	0.00	6,943.7	3,735.4	22.3	3,735.5	0.00	0.00	0.00
10,800.0	90.06	0.00	6,943.6	3,835.4	22.3	3,835.5	0.00	0.00	0.00
10,900.0	90.06	0.00	6,943.5	3,935.4	22.3	3,935.5	0.00	0.00	0.00
11,000.0	90.06	0.00	6,943.4	4,035.4	22.3	4,035.5	0.00	0.00	0.00
11,100.0	90.06	0.00	6,943.3	4,135.4	22.3	4,135.5	0.00	0.00	0.00
11,200.0	90.06	0.00	6,943.2	4,235.4	22.3	4,235.5	0.00	0.00	0.00
11,300.0	90.06	0.00	6,943.1	4,335.4	22.3	4,335.5	0.00	0.00	0.00
11,376.4	90.06	0.00	6,943.0	4,411.8	22.3	4,411.8	0.00	0.00	0.00
BHL 500'FNL & 2005'FEL									

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
BHL 500'FNL & 2005' - plan hits target center - Point	0.00	0.00	6,943.0	4,411.8	22.3	1,359,678.30	3,158,673.84	40.319320	-104.930950
SHL 366'FSL & 2212' - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,355,266.69	3,158,679.84	40.307210	-104.931030

Database:	Landmark	**Local Co-ordinate Reference:**	Well Rieder 18Q-221
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**TVD Reference:**	WELL @ 4827.0ft (RKB - 15')
Project:	SEC.18-T4N-R67W	**MD Reference:**	WELL @ 4827.0ft (RKB - 15')
Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**North Reference:**	True
Well:	Rieder 18Q-221	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (7-30-14)		

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,403.2	6,947.2	7"	7	7-1/2

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,459.2	3,450.0	PARKMAN		0.00	
3,973.1	3,960.0	SUSSEX			
4,537.4	4,520.0	SHANNON			
6,761.9	6,694.0	SHARON SPRINGS			
6,989.0	6,838.0	NIOBRARA A			
7,297.7	6,940.0	NIOBRARA B			
	7,016.0	NIOBRARA C			
	7,142.0	FT HAYS			
	7,163.0	CODELL			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
2,000.0	2,000.0	0.0	0.0	KOP #1
6,202.4	6,183.2	-326.1	22.3	KOP #2
7,403.2	6,947.2	438.6	22.3	End of Build

ENSIGN Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.18-T4N-R67W
Rieder 4N67W18Q Pad Sec.18-T4N-R67
Rieder 18Q-221

Wellbore #1
Plan #1 (7-30-14)

Anticollision Report

04 August, 2014

PDC ENERGY
Growing E&P Value

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-221
Project:	SEC.18-T4N-R67W	**TVD Reference:**	WELL @ 4827.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**MD Reference:**	WELL @ 4827.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Rieder 18Q-221	**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 (7-30-14)	**Offset TVD Reference:**	Offset Datum

Reference Plan #1 (7-30-14)

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.0ft	**Error Surface:**	Elliptical Conic
Warning Levels Evaluated at:	2.00 **Sigma**		

Survey Tool Program **Date** 8/4/2014

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,376.4	Plan #1 (7-30-14) (Wellbore #1)	MWD	MWD - Standard

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Existing Wells Sec.18-T4N-R67W						
Carlson 18-1 (Exist) - Wellbore #1 - Wellbore #1	11,376.4	6,957.0	78.0	-148.7	0.344	Level 1, CC, ES, SF
Rieder 4N67W18Q Pad Sec.18-T4N-R67						
Rieder 18Q-321 - Wellbore #1 - Plan #1 (7-30-14)	1,600.0	1,600.0	27.9	20.9	4.003	CC
Rieder 18Q-321 - Wellbore #1 - Plan #1 (7-30-14)	11,376.4	11,467.8	176.4	18.2	1.115	Level 2, ES, SF
Rieder 18Q-421 - Wellbore #1 - Plan #1 (7-30-14)	1,400.0	1,400.0	58.6	52.5	9.651	CC, ES
Rieder 18Q-421 - Wellbore #1 - Plan #1 (7-30-14)	11,376.4	11,567.8	380.9	232.4	2.565	SF
Rieder 18T-201 - Wellbore #1 - Plan #1 (7-30-14)	800.0	799.0	119.9	116.6	35.595	CC, ES
Rieder 18T-201 - Wellbore #1 - Plan #1 (7-30-14)	11,376.4	11,412.1	619.8	445.2	3.550	SF
Rieder 18T-241 - Wellbore #1 - Plan #1 (7-30-14)	1,200.0	1,200.0	61.4	56.2	11.869	CC, ES
Rieder 18T-241 - Wellbore #1 - Plan #1 (7-30-14)	11,376.4	11,387.6	309.9	135.0	1.772	SF
Rieder 18T-301 - Wellbore #1 - Plan #1 (7-30-14)	1,000.0	999.0	92.0	87.8	21.563	CC, ES
Rieder 18T-301 - Wellbore #1 - Plan #1 (7-30-14)	11,376.4	11,497.6	473.5	301.3	2.749	SF
Rieder 18T-341 - Wellbore #1 - Plan #1 (7-30-14)	1,600.0	1,600.0	30.7	23.7	4.403	CC
Rieder 18T-341 - Wellbore #1 - Plan #1 (7-30-14)	11,376.4	11,477.3	174.1	16.9	1.108	Level 2, ES, SF

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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,500.0	6,943.9	6,957.9	6,957.9	71.0	139.2	90.82	4,451.8	89.2	918.9	708.7	210.13	4.373	
10,600.0	6,943.8	6,957.8	6,957.8	72.9	139.2	90.73	4,451.8	89.2	819.2	607.2	212.01	3.864	
10,700.0	6,943.7	6,957.7	6,957.7	74.8	139.2	90.64	4,451.8	89.2	719.5	505.7	213.90	3.364	
10,800.0	6,943.6	6,957.6	6,957.6	76.6	139.2	90.55	4,451.8	89.2	620.1	404.3	215.78	2.874	
10,900.0	6,943.5	6,957.5	6,957.5	78.5	139.1	90.46	4,451.8	89.2	520.7	303.1	217.66	2.392	
11,000.0	6,943.4	6,957.4	6,957.4	80.4	139.1	90.37	4,451.8	89.2	421.8	202.2	219.55	1.921	
11,100.0	6,943.3	6,957.3	6,957.3	82.3	139.1	90.28	4,451.8	89.2	323.4	102.0	221.44	1.461	Level 3
11,200.0	6,943.2	6,957.2	6,957.2	84.2	139.1	90.19	4,451.8	89.2	226.5	3.2	223.32	1.014	Level 2
11,300.0	6,943.1	6,957.1	6,957.1	86.1	139.1	90.10	4,451.8	89.2	134.3	-90.9	225.21	0.596	Level 1
11,376.4	6,943.0	6,957.0	6,957.0	87.5	139.1	90.04	4,451.8	89.2	78.0	-148.7	226.66	0.344	Level 1, CC, ES, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-221
Project:	SEC.18-T4N-R67W	**TVD Reference:**	WELL @ 4827.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**MD Reference:**	WELL @ 4827.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Rieder 18Q-221	**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 (7-30-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Rieder 4N67W18Q Pad Sec.18-T4N-R67 - Rieder 18Q-321 - Wellbore #1 - Plan #1 (7-30-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-89.99	0.0	-27.9	27.9				
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-27.9	27.9	27.7	0.22	124.086	
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-27.9	27.9	27.2	0.67	41.362	
300.0	300.0	300.0	300.0	0.6	0.6	-89.99	0.0	-27.9	27.9	26.8	1.12	24.817	
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-27.9	27.9	26.3	1.57	17.727	
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-27.9	27.9	25.9	2.02	13.787	
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	0.0	-27.9	27.9	25.4	2.47	11.281	
700.0	700.0	700.0	700.0	1.5	1.5	-89.99	0.0	-27.9	27.9	25.0	2.92	9.545	
800.0	800.0	800.0	800.0	1.7	1.7	-89.99	0.0	-27.9	27.9	24.5	3.37	8.272	
900.0	900.0	900.0	900.0	1.9	1.9	-89.99	0.0	-27.9	27.9	24.1	3.82	7.299	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-89.99	0.0	-27.9	27.9	23.6	4.27	6.531	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-89.99	0.0	-27.9	27.9	23.2	4.72	5.909	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-89.99	0.0	-27.9	27.9	22.7	5.17	5.395	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-89.99	0.0	-27.9	27.9	22.3	5.62	4.963	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-89.99	0.0	-27.9	27.9	21.8	6.07	4.596	
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	-89.99	0.0	-27.9	27.9	21.4	6.52	4.279	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	-89.99	0.0	-27.9	27.9	20.9	6.97	4.003	CC
1,700.0	1,700.0	1,699.7	1,699.6	3.7	3.7	-93.30	-1.6	-28.4	28.5	21.1	7.39	3.856	
1,800.0	1,800.0	1,799.1	1,798.9	3.9	3.9	-102.30	-6.6	-30.1	30.8	23.0	7.78	3.957	
1,900.0	1,900.0	1,898.0	1,897.5	4.2	4.0	-114.14	-14.7	-32.8	36.0	27.8	8.19	4.397	
2,000.0	2,000.0	1,997.0	1,995.8	4.4	4.2	-124.97	-25.4	-36.3	44.5	35.9	8.60	5.178	
2,100.0	2,100.0	2,096.5	2,094.6	4.6	4.4	52.93	-36.4	-40.0	53.3	44.3	8.99	5.930	
2,200.0	2,199.8	2,196.2	2,193.7	4.8	4.7	51.14	-47.4	-43.7	60.2	50.8	9.35	6.439	
2,300.0	2,299.5	2,296.1	2,292.9	4.9	4.9	52.09	-58.5	-47.3	64.9	55.2	9.72	6.679	
2,351.9	2,351.0	2,348.0	2,344.4	5.0	5.0	53.48	-64.2	-49.2	66.6	56.7	9.93	6.708	
2,400.0	2,398.8	2,396.0	2,392.1	5.1	5.1	55.02	-69.5	-51.0	67.9	57.8	10.13	6.706	
2,500.0	2,498.0	2,495.9	2,491.3	5.3	5.4	58.05	-80.5	-54.7	70.8	60.2	10.56	6.706	
2,600.0	2,597.2	2,595.8	2,590.5	5.5	5.6	60.84	-91.6	-58.3	73.8	62.8	11.00	6.710	
2,700.0	2,696.5	2,695.7	2,689.8	5.8	5.9	63.40	-102.6	-62.0	77.1	65.6	11.47	6.716	
2,800.0	2,795.7	2,795.6	2,789.0	6.0	6.2	65.75	-113.7	-65.7	80.4	68.5	11.96	6.725	
2,900.0	2,895.0	2,895.5	2,888.2	6.2	6.5	67.90	-124.7	-69.3	83.9	71.4	12.46	6.734	
3,000.0	2,994.2	2,995.4	2,987.4	6.5	6.7	69.89	-135.7	-73.0	87.5	74.5	12.98	6.743	
3,100.0	3,093.5	3,095.3	3,086.6	6.7	7.0	71.71	-146.8	-76.7	91.2	77.7	13.50	6.752	
3,200.0	3,192.7	3,195.1	3,185.8	7.0	7.3	73.40	-157.8	-80.3	95.0	80.9	14.04	6.761	
3,300.0	3,292.0	3,295.0	3,285.0	7.3	7.6	74.95	-168.9	-84.0	98.8	84.2	14.59	6.770	
3,400.0	3,391.2	3,394.9	3,384.2	7.6	7.9	76.38	-179.9	-87.7	102.7	87.6	15.15	6.779	
3,500.0	3,490.5	3,494.8	3,483.4	7.8	8.2	77.71	-190.9	-91.4	106.7	91.0	15.72	6.788	
3,600.0	3,589.7	3,594.7	3,582.7	8.1	8.5	78.94	-202.0	-95.0	110.7	94.4	16.29	6.796	
3,700.0	3,689.0	3,694.6	3,681.9	8.4	8.8	80.09	-213.0	-98.7	114.8	97.9	16.87	6.804	
3,800.0	3,788.2	3,794.5	3,781.1	8.7	9.1	81.16	-224.0	-102.4	118.9	101.5	17.46	6.812	
3,900.0	3,887.5	3,894.4	3,880.3	9.0	9.4	82.15	-235.1	-106.0	123.1	105.0	18.05	6.820	
4,000.0	3,986.7	3,994.3	3,979.5	9.3	9.7	83.08	-246.1	-109.7	127.3	108.6	18.64	6.828	
4,100.0	4,085.9	4,094.2	4,078.7	9.6	10.0	83.95	-257.2	-113.4	131.5	112.3	19.24	6.835	
4,200.0	4,185.2	4,194.1	4,177.9	9.9	10.3	84.77	-268.2	-117.0	135.8	115.9	19.84	6.842	
4,300.0	4,284.4	4,294.0	4,277.1	10.2	10.6	85.53	-279.2	-120.7	140.0	119.6	20.45	6.849	
4,400.0	4,383.7	4,393.8	4,376.4	10.5	10.9	86.25	-290.3	-124.4	144.3	123.3	21.05	6.856	
4,500.0	4,482.9	4,493.9	4,475.8	10.8	11.2	86.94	-301.3	-128.0	148.7	127.0	21.66	6.863	
4,600.0	4,582.2	4,596.0	4,577.4	11.1	11.4	88.33	-310.6	-131.1	152.1	129.9	22.23	6.845	
4,667.3	4,649.0	4,664.7	4,645.9	11.3	11.6	89.93	-314.9	-132.5	153.8	131.2	22.61	6.802	
4,700.0	4,681.4	4,697.9	4,679.1	11.4	11.6	90.84	-316.4	-133.0	154.4	131.6	22.78	6.776	
4,800.0	4,781.0	4,799.5	4,780.7	11.6	11.8	93.53	-318.7	-133.8	155.6	132.3	23.25	6.692	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-221
Project:	SEC.18-T4N-R67W	**TVD Reference:**	WELL @ 4827.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**MD Reference:**	WELL @ 4827.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Rieder 18Q-221	**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 (7-30-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Rieder 4N67W18Q Pad Sec.18-T4N-R67 - Rieder 18Q-321 - Wellbore #1 - Plan #1 (7-30-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,900.0	4,880.8	4,899.7	4,880.8	11.8	12.0	95.68	-318.8	-133.9	156.1	132.4	23.67	6.595	
5,000.0	4,980.8	4,999.7	4,980.8	12.0	12.2	96.57	-318.8	-133.9	156.3	132.3	24.04	6.504	
5,019.2	5,000.0	5,018.9	5,000.0	12.0	12.2	-87.32	-318.8	-133.9	156.3	132.2	24.11	6.485	
5,100.0	5,080.8	5,099.7	5,080.8	12.2	12.3	-87.32	-318.8	-133.9	156.3	131.9	24.39	6.409	
5,200.0	5,180.8	5,199.7	5,180.8	12.4	12.5	-87.32	-318.8	-133.9	156.3	131.6	24.74	6.318	
5,300.0	5,280.8	5,299.7	5,280.8	12.5	12.7	-87.32	-318.8	-133.9	156.3	131.2	25.10	6.229	
5,400.0	5,380.8	5,399.7	5,380.8	12.7	12.8	-87.32	-318.8	-133.9	156.3	130.9	25.46	6.142	
5,500.0	5,480.8	5,499.7	5,480.8	12.9	13.0	-87.32	-318.8	-133.9	156.3	130.5	25.82	6.056	
5,600.0	5,580.8	5,599.7	5,580.8	13.1	13.2	-87.32	-318.8	-133.9	156.3	130.2	26.18	5.972	
5,700.0	5,680.8	5,699.7	5,680.8	13.3	13.4	-87.32	-318.8	-133.9	156.3	129.8	26.54	5.889	
5,800.0	5,780.8	5,799.7	5,780.8	13.5	13.6	-87.32	-318.8	-133.9	156.3	129.4	26.91	5.809	
5,900.0	5,880.8	5,899.7	5,880.8	13.6	13.8	-87.32	-318.8	-133.9	156.3	129.1	27.28	5.730	
6,000.0	5,980.8	5,999.7	5,980.8	13.8	13.9	-87.32	-318.8	-133.9	156.3	128.7	27.66	5.653	
6,100.0	6,080.8	6,099.7	6,080.8	14.0	14.1	-87.32	-318.8	-133.9	156.3	128.3	28.03	5.577	
6,202.4	6,183.2	6,202.1	6,183.2	14.2	14.3	-87.32	-318.8	-133.9	156.3	127.9	28.42	5.501	
6,250.0	6,230.8	6,249.6	6,230.8	14.3	14.4	-87.87	-318.8	-133.9	156.3	127.7	28.59	5.467	
6,300.0	6,280.5	6,299.4	6,280.5	14.4	14.5	-89.61	-318.8	-133.9	156.2	127.4	28.73	5.435	
6,308.4	6,288.8	6,307.7	6,288.8	14.4	14.5	-90.00	-318.8	-133.9	156.2	127.4	28.75	5.432	
6,350.0	6,329.9	6,349.1	6,330.2	14.4	14.6	-91.96	-317.3	-133.9	156.3	127.4	28.84	5.418	
6,400.0	6,378.6	6,399.3	6,380.1	14.4	14.6	-94.31	-312.5	-133.9	156.6	127.7	28.90	5.419	
6,450.0	6,426.5	6,449.8	6,430.0	14.5	14.7	-96.63	-304.3	-133.9	157.2	128.3	28.92	5.437	
6,500.0	6,473.3	6,500.9	6,479.7	14.5	14.7	-98.92	-292.7	-133.9	158.1	129.2	28.90	5.471	
6,550.0	6,518.9	6,552.3	6,529.0	14.5	14.8	-101.15	-277.7	-133.9	159.2	130.4	28.84	5.521	
6,600.0	6,563.1	6,604.3	6,577.5	14.5	14.8	-103.31	-259.3	-133.9	160.5	131.8	28.75	5.585	
6,650.0	6,605.6	6,656.7	6,625.1	14.5	14.8	-105.39	-237.4	-133.9	162.1	133.4	28.63	5.661	
6,700.0	6,646.3	6,709.5	6,671.4	14.5	14.8	-107.37	-212.0	-133.9	163.7	135.2	28.49	5.747	
6,750.0	6,685.1	6,762.8	6,716.3	14.5	14.8	-109.25	-183.3	-133.9	165.5	137.2	28.34	5.840	
6,800.0	6,721.7	6,816.6	6,759.4	14.5	14.8	-111.01	-151.2	-133.9	167.4	139.2	28.20	5.936	
6,850.0	6,756.0	6,870.8	6,800.5	14.6	14.8	-112.66	-115.8	-133.9	169.4	141.3	28.08	6.032	
6,900.0	6,787.8	6,925.4	6,839.2	14.7	14.8	-114.19	-77.3	-133.9	171.3	143.3	27.98	6.123	
6,950.0	6,817.1	6,980.4	6,875.4	14.8	14.9	-115.58	-35.9	-133.9	173.3	145.3	27.93	6.203	
7,000.0	6,843.6	7,035.8	6,908.7	15.0	15.0	-116.85	8.4	-133.9	175.2	147.2	27.95	6.267	
7,050.0	6,867.3	7,091.6	6,938.9	15.2	15.2	-117.99	55.3	-133.9	177.0	148.9	28.04	6.312	
7,100.0	6,888.1	7,147.8	6,965.7	15.5	15.4	-118.99	104.6	-133.9	178.6	150.4	28.22	6.331	
7,150.0	6,905.8	7,204.2	6,989.0	15.8	15.7	-119.87	156.0	-133.9	180.2	151.7	28.50	6.321	
7,200.0	6,920.5	7,260.9	7,008.5	16.1	16.1	-120.61	209.2	-133.9	181.5	152.6	28.90	6.280	
7,250.0	6,932.0	7,317.8	7,024.0	16.5	16.5	-121.22	264.0	-133.9	182.6	153.2	29.42	6.208	
7,300.0	6,940.3	7,374.9	7,035.5	17.0	17.0	-121.70	319.9	-133.9	183.6	153.5	30.05	6.108	
7,350.0	6,945.4	7,432.2	7,042.7	17.4	17.5	-122.04	376.7	-133.9	184.2	153.4	30.81	5.980	
7,403.2	6,947.2	7,493.3	7,045.8	18.0	18.1	-122.27	437.7	-133.9	184.7	153.0	31.74	5.819	
7,500.0	6,947.1	7,591.5	7,045.4	19.1	19.2	-122.19	535.9	-133.9	184.5	150.9	33.66	5.482	
7,600.0	6,947.0	7,691.5	7,044.8	20.3	20.4	-122.08	635.9	-133.9	184.3	148.5	35.83	5.143	
7,700.0	6,946.8	7,791.5	7,044.3	21.7	21.8	-121.97	735.9	-133.9	184.1	145.9	38.19	4.820	
7,800.0	6,946.7	7,891.5	7,043.8	23.1	23.2	-121.86	835.9	-133.9	183.9	143.2	40.69	4.518	
7,900.0	6,946.6	7,991.5	7,043.3	24.6	24.7	-121.74	935.9	-133.9	183.6	140.3	43.32	4.239	
8,000.0	6,946.5	8,091.5	7,042.7	26.1	26.2	-121.63	1,035.9	-133.9	183.4	137.4	46.05	3.983	
8,100.0	6,946.4	8,191.5	7,042.2	27.7	27.8	-121.52	1,135.9	-133.9	183.2	134.3	48.87	3.749	
8,200.0	6,946.3	8,291.5	7,041.7	29.4	29.4	-121.41	1,235.9	-133.9	183.0	131.2	51.77	3.535	
8,300.0	6,946.2	8,391.5	7,041.2	31.0	31.1	-121.30	1,335.9	-133.9	182.8	128.0	54.73	3.340	
8,400.0	6,946.1	8,491.5	7,040.6	32.7	32.8	-121.19	1,435.9	-133.9	182.5	124.8	57.74	3.161	
8,500.0	6,946.0	8,591.5	7,040.1	34.4	34.5	-121.07	1,535.9	-133.9	182.3	121.5	60.80	2.999	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-221
Project:	SEC.18-T4N-R67W	**TVD Reference:**	WELL @ 4827.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**MD Reference:**	WELL @ 4827.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Rieder 18Q-221	**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 (7-30-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Rieder 4N67W18Q Pad Sec.18-T4N-R67 - Rieder 18Q-321 - Wellbore #1 - Plan #1 (7-30-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,600.0	6,945.9	8,691.5	7,039.6	36.2	36.2	-120.96	1,635.9	-133.9	182.1	118.2	63.91	2.849	
8,700.0	6,945.8	8,791.5	7,039.1	37.9	38.0	-120.85	1,735.9	-133.9	181.9	114.8	67.05	2.713	
8,800.0	6,945.7	8,891.5	7,038.5	39.7	39.7	-120.73	1,835.9	-133.9	181.7	111.5	70.23	2.587	
8,900.0	6,945.6	8,991.5	7,038.0	41.5	41.5	-120.62	1,935.9	-133.9	181.5	108.0	73.44	2.471	
9,000.0	6,945.5	9,091.5	7,037.5	43.3	43.3	-120.51	2,035.9	-133.9	181.3	104.6	76.67	2.364	
9,100.0	6,945.4	9,191.5	7,037.0	45.1	45.1	-120.39	2,135.9	-133.9	181.0	101.1	79.93	2.265	
9,200.0	6,945.3	9,291.5	7,036.5	46.9	46.9	-120.28	2,235.9	-133.9	180.8	97.6	83.21	2.173	
9,300.0	6,945.2	9,391.5	7,035.9	48.7	48.8	-120.16	2,335.9	-133.9	180.6	94.1	86.51	2.088	
9,400.0	6,945.1	9,491.5	7,035.4	50.6	50.6	-120.05	2,435.9	-133.9	180.4	90.6	89.83	2.008	
9,500.0	6,945.0	9,591.5	7,034.9	52.4	52.4	-119.93	2,535.9	-133.9	180.2	87.0	93.17	1.934	
9,600.0	6,944.9	9,691.5	7,034.4	54.2	54.3	-119.82	2,635.9	-133.9	180.0	83.5	96.53	1.865	
9,700.0	6,944.8	9,791.5	7,033.8	56.1	56.1	-119.70	2,735.9	-133.9	179.8	79.9	99.90	1.800	
9,800.0	6,944.7	9,891.5	7,033.3	57.9	58.0	-119.58	2,835.9	-133.9	179.6	76.3	103.28	1.739	
9,900.0	6,944.5	9,991.5	7,032.8	59.8	59.8	-119.47	2,935.9	-133.9	179.4	72.7	106.68	1.681	
10,000.0	6,944.4	10,091.5	7,032.3	61.6	61.7	-119.35	3,035.9	-133.9	179.2	69.1	110.10	1.627	
10,100.0	6,944.3	10,191.5	7,031.7	63.5	63.5	-119.23	3,135.9	-133.9	179.0	65.4	113.52	1.576	
10,200.0	6,944.2	10,291.5	7,031.2	65.4	65.4	-119.12	3,235.9	-133.9	178.8	61.8	116.96	1.528	
10,300.0	6,944.1	10,391.5	7,030.7	67.3	67.3	-119.00	3,335.9	-133.9	178.6	58.1	120.41	1.483	Level 3
10,400.0	6,944.0	10,491.5	7,030.2	69.1	69.1	-118.88	3,435.9	-133.9	178.3	54.5	123.87	1.440	Level 3
10,500.0	6,943.9	10,591.5	7,029.6	71.0	71.0	-118.76	3,535.9	-133.9	178.1	50.8	127.34	1.399	Level 3
10,600.0	6,943.8	10,691.5	7,029.1	72.9	72.9	-118.65	3,635.9	-133.9	177.9	47.1	130.82	1.360	Level 3
10,700.0	6,943.7	10,791.5	7,028.6	74.8	74.8	-118.53	3,735.9	-133.9	177.7	43.4	134.31	1.323	Level 3
10,800.0	6,943.6	10,891.5	7,028.1	76.6	76.6	-118.41	3,835.9	-133.9	177.5	39.7	137.81	1.288	Level 3
10,900.0	6,943.5	10,991.5	7,027.5	78.5	78.5	-118.29	3,935.9	-133.9	177.3	36.0	141.32	1.255	Level 3
11,000.0	6,943.4	11,091.5	7,027.0	80.4	80.4	-118.17	4,035.8	-133.9	177.1	32.3	144.84	1.223	Level 2
11,100.0	6,943.3	11,191.5	7,026.5	82.3	82.3	-118.05	4,135.8	-133.9	177.0	28.6	148.37	1.193	Level 2
11,200.0	6,943.2	11,291.5	7,026.0	84.2	84.2	-117.93	4,235.8	-133.9	176.8	24.8	151.91	1.164	Level 2
11,300.0	6,943.1	11,391.5	7,025.5	86.1	86.1	-117.81	4,335.8	-133.9	176.6	21.1	155.46	1.136	Level 2
11,376.4	6,943.0	11,467.8	7,025.1	87.5	87.5	-117.72	4,412.2	-133.9	176.4	18.2	158.17	1.115	Level 2, ES, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-221
Project:	SEC.18-T4N-R67W	**TVD Reference:**	WELL @ 4827.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**MD Reference:**	WELL @ 4827.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Rieder 18Q-221	**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 (7-30-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Rieder 4N67W18Q Pad Sec.18-T4N-R67 - Rieder 18Q-421 - Wellbore #1 - Plan #1 (7-30-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-58.6	58.6				
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-58.6	58.6	58.3	0.22	260.581	
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-58.6	58.6	57.9	0.67	86.860	
300.0	300.0	300.0	300.0	0.6	0.6	-90.00	0.0	-58.6	58.6	57.4	1.12	52.116	
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-58.6	58.6	57.0	1.57	37.226	
500.0	500.0	500.0	500.0	1.0	1.0	-90.00	0.0	-58.6	58.6	56.5	2.02	28.953	
600.0	600.0	600.0	600.0	1.2	1.2	-90.00	0.0	-58.6	58.6	56.1	2.47	23.689	
700.0	700.0	700.0	700.0	1.5	1.5	-90.00	0.0	-58.6	58.6	55.6	2.92	20.045	
800.0	800.0	800.0	800.0	1.7	1.7	-90.00	0.0	-58.6	58.6	55.2	3.37	17.372	
900.0	900.0	900.0	900.0	1.9	1.9	-90.00	0.0	-58.6	58.6	54.7	3.82	15.328	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-90.00	0.0	-58.6	58.6	54.3	4.27	13.715	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-90.00	0.0	-58.6	58.6	53.8	4.72	12.409	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-90.00	0.0	-58.6	58.6	53.4	5.17	11.330	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-90.00	0.0	-58.6	58.6	53.0	5.62	10.423	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-90.00	0.0	-58.6	58.6	52.5	6.07	9.651	CC, ES
1,500.0	1,500.0	1,498.8	1,498.7	3.3	3.2	-91.31	-1.4	-59.6	59.6	53.1	6.49	9.186	
1,600.0	1,600.0	1,597.3	1,597.1	3.5	3.4	-94.98	-5.5	-62.6	62.9	56.0	6.89	9.133	
1,700.0	1,700.0	1,695.3	1,694.8	3.7	3.6	-100.23	-12.2	-67.6	68.9	61.6	7.30	9.445	
1,800.0	1,800.0	1,793.3	1,792.1	3.9	3.8	-106.10	-21.5	-74.6	78.0	70.3	7.72	10.109	
1,900.0	1,900.0	1,892.5	1,890.5	4.2	4.0	-111.08	-31.6	-82.1	88.5	80.3	8.14	10.865	
2,000.0	2,000.0	1,991.7	1,988.9	4.4	4.3	-114.98	-41.7	-89.6	99.4	90.9	8.57	11.601	
2,100.0	2,100.0	2,091.0	2,087.4	4.6	4.5	66.44	-51.8	-97.1	110.1	101.1	8.97	12.275	
2,200.0	2,199.8	2,190.6	2,186.2	4.8	4.8	65.91	-62.0	-104.6	119.4	110.0	9.35	12.772	
2,300.0	2,299.5	2,290.3	2,285.0	4.9	5.0	66.88	-72.1	-112.1	127.3	117.6	9.75	13.065	
2,351.9	2,351.0	2,342.0	2,336.3	5.0	5.2	67.90	-77.4	-116.0	130.9	121.0	9.96	13.145	
2,400.0	2,398.8	2,389.9	2,383.9	5.1	5.3	69.03	-82.3	-119.7	134.2	124.0	10.17	13.195	
2,500.0	2,498.0	2,489.5	2,482.7	5.3	5.6	71.20	-92.4	-127.2	141.1	130.4	10.62	13.288	
2,600.0	2,597.2	2,589.1	2,581.5	5.5	5.9	73.17	-102.6	-134.7	148.1	137.0	11.08	13.367	
2,700.0	2,696.5	2,688.8	2,680.3	5.8	6.2	74.96	-112.7	-142.3	155.4	143.8	11.56	13.434	
2,800.0	2,795.7	2,788.4	2,779.1	6.0	6.5	76.59	-122.9	-149.8	162.7	150.7	12.06	13.489	
2,900.0	2,895.0	2,888.0	2,878.0	6.2	6.8	78.08	-133.0	-157.3	170.2	157.6	12.57	13.535	
3,000.0	2,994.2	2,987.6	2,976.8	6.5	7.1	79.44	-143.2	-164.9	177.8	164.7	13.10	13.572	
3,100.0	3,093.5	3,087.3	3,075.6	6.7	7.4	80.69	-153.3	-172.4	185.5	171.8	13.63	13.602	
3,200.0	3,192.7	3,186.9	3,174.4	7.0	7.7	81.84	-163.4	-179.9	193.2	179.0	14.18	13.626	
3,300.0	3,292.0	3,286.5	3,273.3	7.3	8.0	82.90	-173.6	-187.5	201.0	186.3	14.73	13.645	
3,400.0	3,391.2	3,386.2	3,372.1	7.6	8.3	83.88	-183.7	-195.0	208.9	193.6	15.30	13.660	
3,500.0	3,490.5	3,485.8	3,470.9	7.8	8.6	84.79	-193.9	-202.5	216.9	201.0	15.86	13.671	
3,600.0	3,589.7	3,585.4	3,569.7	8.1	8.9	85.64	-204.0	-210.1	224.9	208.5	16.44	13.680	
3,700.0	3,689.0	3,685.0	3,668.5	8.4	9.3	86.43	-214.2	-217.6	232.9	215.9	17.02	13.686	
3,800.0	3,788.2	3,784.7	3,767.4	8.7	9.6	87.16	-224.3	-225.1	241.0	223.4	17.61	13.690	
3,900.0	3,887.5	3,884.3	3,866.2	9.0	9.9	87.85	-234.5	-232.7	249.1	230.9	18.20	13.693	
4,000.0	3,986.7	3,983.9	3,965.0	9.3	10.2	88.49	-244.6	-240.2	257.3	238.5	18.79	13.694	
4,100.0	4,085.9	4,083.5	4,063.8	9.6	10.5	89.10	-254.7	-247.8	265.5	246.1	19.39	13.695	
4,200.0	4,185.2	4,183.2	4,162.6	9.9	10.9	89.66	-264.9	-255.3	273.7	253.7	19.99	13.694	
4,300.0	4,284.4	4,282.8	4,261.5	10.2	11.2	90.20	-275.0	-262.8	281.9	261.4	20.59	13.693	
4,400.0	4,383.7	4,382.4	4,360.3	10.5	11.5	90.70	-285.2	-270.4	290.2	269.0	21.20	13.691	
4,500.0	4,482.9	4,483.6	4,460.7	10.8	11.8	91.20	-295.4	-277.9	298.4	276.6	21.80	13.688	
4,600.0	4,582.2	4,590.3	4,566.8	11.1	12.1	92.11	-304.0	-284.3	305.1	282.7	22.37	13.635	
4,667.3	4,649.0	4,662.1	4,638.5	11.3	12.2	93.02	-307.9	-287.3	308.3	285.5	22.75	13.550	
4,700.0	4,681.4	4,696.9	4,673.2	11.4	12.3	93.54	-309.3	-288.3	309.5	286.6	22.93	13.500	
4,800.0	4,781.0	4,803.5	4,779.7	11.6	12.5	95.02	-311.5	-289.9	311.7	288.3	23.40	13.321	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-221
Project:	SEC.18-T4N-R67W	**TVD Reference:**	WELL @ 4827.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**MD Reference:**	WELL @ 4827.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Rieder 18Q-221	**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 (7-30-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Rieder 4N67W18Q Pad Sec.18-T4N-R67 - Rieder 18Q-421 - Wellbore #1 - Plan #1 (7-30-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,900.0	4,880.8	4,904.6	4,880.8	11.8	12.6	96.11	-311.6	-290.0	312.3	288.5	23.83	13.110	
5,000.0	4,980.8	5,004.5	4,980.8	12.0	12.8	96.56	-311.6	-290.0	312.6	288.4	24.20	12.918	
5,019.2	5,000.0	5,023.7	5,000.0	12.0	12.8	-87.34	-311.6	-290.0	312.6	288.3	24.27	12.882	
5,100.0	5,080.8	5,104.5	5,080.8	12.2	13.0	-87.34	-311.6	-290.0	312.6	288.1	24.55	12.733	
5,200.0	5,180.8	5,204.5	5,180.8	12.4	13.1	-87.34	-311.6	-290.0	312.6	287.7	24.90	12.554	
5,300.0	5,280.8	5,304.5	5,280.8	12.5	13.3	-87.34	-311.6	-290.0	312.6	287.4	25.25	12.378	
5,400.0	5,380.8	5,404.5	5,380.8	12.7	13.5	-87.34	-311.6	-290.0	312.6	287.0	25.61	12.206	
5,500.0	5,480.8	5,504.5	5,480.8	12.9	13.6	-87.34	-311.6	-290.0	312.6	286.6	25.97	12.038	
5,600.0	5,580.8	5,604.5	5,580.8	13.1	13.8	-87.34	-311.6	-290.0	312.6	286.3	26.33	11.873	
5,700.0	5,680.8	5,704.5	5,680.8	13.3	14.0	-87.34	-311.6	-290.0	312.6	285.9	26.69	11.711	
5,800.0	5,780.8	5,804.5	5,780.8	13.5	14.2	-87.34	-311.6	-290.0	312.6	285.6	27.06	11.552	
5,900.0	5,880.8	5,904.5	5,880.8	13.6	14.3	-87.34	-311.6	-290.0	312.6	285.2	27.43	11.397	
6,000.0	5,980.8	6,004.5	5,980.8	13.8	14.5	-87.34	-311.6	-290.0	312.6	284.8	27.80	11.244	
6,100.0	6,080.8	6,104.5	6,080.8	14.0	14.7	-87.34	-311.6	-290.0	312.6	284.4	28.18	11.095	
6,202.4	6,183.2	6,206.9	6,183.2	14.2	14.9	-87.34	-311.6	-290.0	312.6	284.1	28.56	10.945	
6,250.0	6,230.8	6,254.5	6,230.8	14.3	15.0	-87.62	-311.6	-290.0	312.5	283.8	28.73	10.880	
6,300.0	6,280.5	6,304.3	6,280.5	14.4	15.1	-88.49	-311.6	-290.0	312.4	283.5	28.87	10.822	
6,350.0	6,329.9	6,353.6	6,329.9	14.4	15.2	-89.95	-311.6	-290.0	312.3	283.3	28.97	10.779	
6,351.5	6,331.4	6,355.1	6,331.4	14.4	15.2	-90.00	-311.6	-290.0	312.3	283.3	28.97	10.778	
6,400.0	6,378.6	6,402.3	6,378.6	14.4	15.2	-91.93	-311.6	-290.0	312.5	283.4	29.04	10.759	
6,450.0	6,426.5	6,451.6	6,427.8	14.5	15.3	-94.26	-310.4	-290.0	313.2	284.1	29.07	10.773	
6,500.0	6,473.3	6,501.8	6,477.8	14.5	15.4	-96.58	-306.0	-290.0	314.5	285.4	29.07	10.819	
6,550.0	6,518.9	6,553.0	6,528.4	14.5	15.5	-98.88	-298.1	-290.0	316.3	287.3	29.03	10.899	
6,600.0	6,563.1	6,605.1	6,579.3	14.5	15.5	-101.14	-286.6	-290.0	318.7	289.8	28.95	11.009	
6,650.0	6,605.6	6,658.3	6,630.2	14.5	15.5	-103.34	-271.3	-290.0	321.5	292.7	28.84	11.149	
6,700.0	6,646.3	6,712.6	6,680.9	14.5	15.5	-105.47	-252.1	-290.0	324.8	296.1	28.71	11.314	
6,750.0	6,685.1	6,767.9	6,731.1	14.5	15.5	-107.53	-228.8	-290.0	328.4	299.9	28.56	11.500	
6,800.0	6,721.7	6,824.4	6,780.5	14.5	15.5	-109.49	-201.4	-290.0	332.3	303.9	28.40	11.702	
6,850.0	6,756.0	6,882.1	6,828.7	14.6	15.5	-111.35	-169.7	-290.0	336.5	308.2	28.25	11.911	
6,900.0	6,787.8	6,941.0	6,875.3	14.7	15.5	-113.09	-133.7	-290.0	340.7	312.6	28.11	12.120	
6,950.0	6,817.1	7,001.0	6,919.8	14.8	15.5	-114.72	-93.5	-290.0	345.1	317.0	28.01	12.317	
7,000.0	6,843.6	7,062.2	6,961.7	15.0	15.5	-116.21	-49.0	-290.0	349.3	321.3	27.97	12.489	
7,050.0	6,867.3	7,124.5	7,000.7	15.2	15.5	-117.57	-0.3	-290.0	353.4	325.4	28.00	12.624	
7,100.0	6,888.1	7,187.9	7,036.1	15.5	15.5	-118.79	52.3	-290.0	357.3	329.2	28.11	12.711	
7,150.0	6,905.8	7,252.4	7,067.5	15.8	15.7	-119.86	108.5	-290.0	360.9	332.6	28.33	12.739	
7,200.0	6,920.5	7,317.7	7,094.3	16.1	16.0	-120.78	168.1	-290.0	364.1	335.5	28.68	12.698	
7,250.0	6,932.0	7,383.9	7,116.3	16.5	16.5	-121.54	230.5	-290.0	366.9	337.7	29.15	12.584	
7,300.0	6,940.3	7,450.8	7,132.9	17.0	17.0	-122.15	295.3	-290.0	369.1	339.3	29.77	12.400	
7,350.0	6,945.4	7,518.2	7,143.8	17.4	17.6	-122.59	361.8	-290.0	370.8	340.2	30.53	12.145	
7,403.2	6,947.2	7,590.4	7,149.0	18.0	18.3	-122.87	433.7	-290.0	371.9	340.4	31.48	11.811	
7,500.0	6,947.1	7,691.4	7,149.4	19.1	19.4	-122.95	534.8	-290.0	372.1	338.8	33.34	11.161	
7,600.0	6,947.0	7,791.4	7,149.7	20.3	20.6	-123.00	634.8	-290.0	372.4	336.9	35.43	10.509	
7,700.0	6,946.8	7,891.4	7,150.0	21.7	22.0	-123.05	734.8	-290.0	372.6	334.9	37.70	9.883	
7,800.0	6,946.7	7,991.4	7,150.3	23.1	23.3	-123.10	834.8	-290.0	372.8	332.7	40.10	9.296	
7,900.0	6,946.6	8,091.4	7,150.6	24.6	24.8	-123.15	934.8	-290.0	373.0	330.4	42.63	8.751	
8,000.0	6,946.5	8,191.4	7,150.9	26.1	26.3	-123.20	1,034.8	-290.0	373.2	328.0	45.25	8.249	
8,100.0	6,946.4	8,291.4	7,151.2	27.7	27.9	-123.26	1,134.8	-290.0	373.5	325.5	47.95	7.788	
8,200.0	6,946.3	8,391.4	7,151.5	29.4	29.5	-123.31	1,234.8	-290.0	373.7	323.0	50.72	7.367	
8,300.0	6,946.2	8,491.4	7,151.8	31.0	31.2	-123.36	1,334.8	-290.0	373.9	320.3	53.55	6.983	
8,400.0	6,946.1	8,591.4	7,152.1	32.7	32.8	-123.41	1,434.8	-290.0	374.1	317.7	56.42	6.631	
8,500.0	6,946.0	8,691.4	7,152.4	34.4	34.5	-123.46	1,534.8	-290.0	374.3	315.0	59.33	6.309	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-221
Project:	SEC.18-T4N-R67W	**TVD Reference:**	WELL @ 4827.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**MD Reference:**	WELL @ 4827.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Rieder 18Q-221	**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 (7-30-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Rieder 4N67W18Q Pad Sec.18-T4N-R67 - Rieder 18Q-421 - Wellbore #1 - Plan #1 (7-30-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,600.0	6,945.9	8,791.4	7,152.7	36.2	36.3	-123.51	1,634.8	-290.0	374.6	312.3	62.28	6.014	
8,700.0	6,945.8	8,891.4	7,153.0	37.9	38.0	-123.56	1,734.8	-290.0	374.8	309.5	65.26	5.743	
8,800.0	6,945.7	8,991.4	7,153.3	39.7	39.8	-123.61	1,834.8	-290.0	375.0	306.7	68.26	5.494	
8,900.0	6,945.6	9,091.4	7,153.6	41.5	41.5	-123.66	1,934.8	-290.0	375.2	304.0	71.28	5.264	
9,000.0	6,945.5	9,191.4	7,153.9	43.3	43.3	-123.72	2,034.8	-290.0	375.5	301.1	74.32	5.052	
9,100.0	6,945.4	9,291.4	7,154.2	45.1	45.1	-123.77	2,134.8	-290.0	375.7	298.3	77.37	4.855	
9,200.0	6,945.3	9,391.4	7,154.5	46.9	46.9	-123.82	2,234.8	-290.0	375.9	295.5	80.44	4.673	
9,300.0	6,945.2	9,491.4	7,154.8	48.7	48.7	-123.87	2,334.8	-290.0	376.1	292.6	83.52	4.503	
9,400.0	6,945.1	9,591.4	7,155.1	50.6	50.6	-123.92	2,434.8	-290.0	376.4	289.7	86.61	4.345	
9,500.0	6,945.0	9,691.4	7,155.4	52.4	52.4	-123.97	2,534.8	-290.0	376.6	286.9	89.71	4.198	
9,600.0	6,944.9	9,791.4	7,155.7	54.2	54.2	-124.02	2,634.8	-290.0	376.8	284.0	92.82	4.060	
9,700.0	6,944.8	9,891.4	7,156.0	56.1	56.1	-124.07	2,734.8	-290.0	377.0	281.1	95.93	3.930	
9,800.0	6,944.7	9,991.4	7,156.3	57.9	57.9	-124.12	2,834.8	-290.0	377.3	278.2	99.05	3.809	
9,900.0	6,944.5	10,091.4	7,156.6	59.8	59.8	-124.17	2,934.8	-290.0	377.5	275.3	102.17	3.695	
10,000.0	6,944.4	10,191.4	7,156.9	61.6	61.6	-124.22	3,034.8	-290.0	377.7	272.4	105.30	3.587	
10,100.0	6,944.3	10,291.4	7,157.2	63.5	63.5	-124.27	3,134.8	-290.0	377.9	269.5	108.43	3.486	
10,200.0	6,944.2	10,391.4	7,157.5	65.4	65.3	-124.32	3,234.8	-290.0	378.2	266.6	111.56	3.390	
10,300.0	6,944.1	10,491.4	7,157.8	67.3	67.2	-124.37	3,334.8	-290.0	378.4	263.7	114.69	3.299	
10,400.0	6,944.0	10,591.4	7,158.0	69.1	69.1	-124.42	3,434.8	-290.0	378.6	260.8	117.83	3.213	
10,500.0	6,943.9	10,691.4	7,158.3	71.0	70.9	-124.47	3,534.8	-290.0	378.8	257.9	120.97	3.132	
10,600.0	6,943.8	10,791.4	7,158.6	72.9	72.8	-124.52	3,634.8	-290.0	379.1	255.0	124.11	3.054	
10,700.0	6,943.7	10,891.4	7,158.9	74.8	74.7	-124.57	3,734.8	-290.0	379.3	252.1	127.25	2.981	
10,800.0	6,943.6	10,991.4	7,159.2	76.6	76.6	-124.62	3,834.8	-290.0	379.5	249.1	130.39	2.911	
10,900.0	6,943.5	11,091.4	7,159.5	78.5	78.4	-124.67	3,934.8	-290.0	379.8	246.2	133.53	2.844	
11,000.0	6,943.4	11,191.4	7,159.8	80.4	80.3	-124.72	4,034.8	-290.0	380.0	243.3	136.67	2.780	
11,100.0	6,943.3	11,291.4	7,160.1	82.3	82.2	-124.77	4,134.8	-290.0	380.2	240.4	139.81	2.719	
11,200.0	6,943.2	11,391.4	7,160.4	84.2	84.1	-124.82	4,234.8	-290.0	380.4	237.5	142.95	2.661	
11,300.0	6,943.1	11,491.4	7,160.7	86.1	86.0	-124.87	4,334.8	-290.0	380.7	234.6	146.09	2.606	
11,376.4	6,943.0	11,567.8	7,160.9	87.5	87.4	-124.91	4,411.1	-290.0	380.9	232.4	148.49	2.565 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-221
Project:	SEC.18-T4N-R67W	**TVD Reference:**	WELL @ 4827.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**MD Reference:**	WELL @ 4827.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Rieder 18Q-221	**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 (7-30-14)	**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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.00	0.0	119.9	119.9				
100.0	100.0	99.0	99.0	0.1	0.1	90.00	0.0	119.9	119.9	119.7	0.22	536.248	
200.0	200.0	199.0	199.0	0.3	0.3	90.00	0.0	119.9	119.9	119.3	0.67	178.452	
300.0	300.0	299.0	299.0	0.6	0.6	90.00	0.0	119.9	119.9	118.8	1.12	106.928	
400.0	400.0	399.0	399.0	0.8	0.8	90.00	0.0	119.9	119.9	118.4	1.57	76.334	
500.0	500.0	499.0	499.0	1.0	1.0	90.00	0.0	119.9	119.9	117.9	2.02	59.352	
600.0	600.0	599.0	599.0	1.2	1.2	90.00	0.0	119.9	119.9	117.5	2.47	48.551	
700.0	700.0	699.0	699.0	1.5	1.5	90.00	0.0	119.9	119.9	117.0	2.92	41.076	
800.0	800.0	799.0	799.0	1.7	1.7	90.00	0.0	119.9	119.9	116.6	3.37	35.595	CC, ES
900.0	900.0	895.7	895.6	1.9	1.9	90.42	-0.9	121.2	121.3	117.5	3.79	31.998	
1,000.0	1,000.0	992.1	991.9	2.1	2.1	91.67	-3.6	125.2	125.5	121.3	4.20	29.875	
1,100.0	1,100.0	1,088.1	1,087.6	2.4	2.3	93.56	-8.2	131.8	132.6	128.0	4.62	28.707	
1,200.0	1,200.0	1,183.4	1,182.3	2.6	2.5	95.88	-14.5	141.0	142.8	137.7	5.05	28.289	
1,300.0	1,300.0	1,277.9	1,275.7	2.8	2.7	98.40	-22.5	152.7	156.1	150.6	5.48	28.475	
1,400.0	1,400.0	1,376.2	1,372.6	3.0	3.0	100.86	-31.9	166.3	171.4	165.4	5.93	28.903	
1,500.0	1,500.0	1,474.8	1,469.8	3.3	3.4	102.92	-41.3	179.9	186.9	180.5	6.38	29.317	
1,600.0	1,600.0	1,573.3	1,566.9	3.5	3.7	104.67	-50.7	193.6	202.6	195.8	6.82	29.694	
1,700.0	1,700.0	1,671.9	1,664.1	3.7	4.0	106.16	-60.1	207.2	218.5	211.3	7.28	30.036	
1,800.0	1,800.0	1,770.5	1,761.3	3.9	4.4	107.46	-69.4	220.8	234.6	226.8	7.73	30.346	
1,900.0	1,900.0	1,869.1	1,858.5	4.2	4.7	108.58	-78.8	234.5	250.7	242.5	8.18	30.629	
2,000.0	2,000.0	1,967.7	1,955.7	4.4	5.1	109.57	-88.2	248.1	266.9	258.2	8.64	30.887	
2,100.0	2,100.0	2,066.4	2,053.0	4.6	5.5	-65.68	-97.6	261.8	282.5	273.3	9.10	31.024	
2,200.0	2,199.8	2,165.4	2,150.6	4.8	5.8	-65.54	-107.0	275.5	296.6	287.1	9.52	31.156	
2,300.0	2,299.5	2,264.5	2,248.3	4.9	6.2	-66.01	-116.5	289.2	309.4	299.4	9.95	31.084	
2,351.9	2,351.0	2,315.9	2,299.0	5.0	6.4	-66.47	-121.4	296.3	315.4	305.3	10.18	30.972	
2,400.0	2,398.8	2,363.6	2,346.0	5.1	6.6	-67.06	-125.9	302.9	321.0	310.5	10.41	30.838	
2,500.0	2,498.0	2,462.7	2,443.7	5.3	7.0	-68.21	-135.4	316.6	332.5	321.6	10.88	30.552	
2,600.0	2,597.2	2,561.9	2,541.4	5.5	7.3	-69.29	-144.8	330.3	344.2	332.8	11.37	30.258	
2,700.0	2,696.5	2,661.0	2,639.1	5.8	7.7	-70.29	-154.2	344.1	355.9	344.1	11.88	29.962	
2,800.0	2,795.7	2,760.1	2,736.8	6.0	8.1	-71.23	-163.7	357.8	367.8	355.4	12.40	29.667	
2,900.0	2,895.0	2,859.2	2,834.5	6.2	8.5	-72.11	-173.1	371.5	379.8	366.8	12.93	29.376	
3,000.0	2,994.2	2,958.3	2,932.2	6.5	8.9	-72.94	-182.6	385.2	391.8	378.4	13.47	29.090	
3,100.0	3,093.5	3,057.4	3,029.9	6.7	9.3	-73.72	-192.0	398.9	404.0	389.9	14.02	28.812	
3,200.0	3,192.7	3,156.6	3,127.6	7.0	9.6	-74.45	-201.4	412.6	416.2	401.6	14.58	28.543	
3,300.0	3,292.0	3,255.7	3,225.4	7.3	10.0	-75.15	-210.9	426.3	428.4	413.3	15.15	28.283	
3,400.0	3,391.2	3,354.8	3,323.1	7.6	10.4	-75.80	-220.3	440.1	440.7	425.0	15.72	28.033	
3,500.0	3,490.5	3,453.9	3,420.8	7.8	10.8	-76.42	-229.7	453.8	453.1	436.8	16.30	27.792	
3,600.0	3,589.7	3,553.0	3,518.5	8.1	11.2	-77.00	-239.2	467.5	465.5	448.6	16.89	27.561	
3,700.0	3,689.0	3,652.1	3,616.2	8.4	11.6	-77.55	-248.6	481.2	478.0	460.5	17.48	27.341	
3,800.0	3,788.2	3,751.2	3,713.9	8.7	12.0	-78.08	-258.1	494.9	490.5	472.4	18.08	27.129	
3,900.0	3,887.5	3,850.4	3,811.6	9.0	12.4	-78.58	-267.5	508.6	503.1	484.4	18.68	26.927	
4,000.0	3,986.7	3,949.5	3,909.3	9.3	12.8	-79.06	-276.9	522.3	515.6	496.4	19.29	26.734	
4,100.0	4,085.9	4,048.6	4,007.0	9.6	13.1	-79.51	-286.4	536.1	528.3	508.4	19.90	26.549	
4,200.0	4,185.2	4,147.7	4,104.7	9.9	13.5	-79.94	-295.8	549.8	540.9	520.4	20.51	26.373	
4,300.0	4,284.4	4,246.8	4,202.4	10.2	13.9	-80.35	-305.3	563.5	553.6	532.5	21.13	26.204	
4,400.0	4,383.7	4,345.9	4,300.1	10.5	14.3	-80.75	-314.7	577.2	566.3	544.5	21.74	26.043	
4,500.0	4,482.9	4,445.1	4,397.8	10.8	14.7	-81.12	-324.1	590.9	579.0	556.7	22.37	25.889	
4,600.0	4,582.2	4,544.2	4,495.6	11.1	15.1	-81.48	-333.6	604.6	591.8	568.8	22.99	25.741	
4,667.3	4,649.0	4,620.4	4,570.8	11.3	15.3	-81.77	-340.6	614.8	600.0	576.6	23.41	25.627	
4,700.0	4,681.4	4,660.0	4,609.9	11.4	15.4	-82.00	-343.8	619.5	603.5	579.9	23.61	25.567	
4,800.0	4,781.0	4,781.7	4,730.8	11.6	15.7	-82.57	-351.7	631.0	612.2	588.0	24.13	25.369	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-221
Project:	SEC.18-T4N-R67W	**TVD Reference:**	WELL @ 4827.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**MD Reference:**	WELL @ 4827.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Rieder 18Q-221	**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 (7-30-14)	**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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,900.0	4,880.8	4,903.9	4,852.7	11.8	16.0	-82.91	-356.7	638.3	617.7	593.1	24.59	25.114	
5,000.0	4,980.8	5,026.5	4,975.2	12.0	16.2	-83.05	-358.8	641.3	619.9	594.9	24.99	24.803	
5,019.2	5,000.0	5,050.0	4,998.8	12.0	16.2	93.03	-358.9	641.4	620.0	594.9	25.07	24.733	
5,100.0	5,080.8	5,131.0	5,079.8	12.2	16.3	93.03	-358.9	641.4	620.0	594.6	25.35	24.461	
5,200.0	5,180.8	5,231.0	5,179.8	12.4	16.4	93.03	-358.9	641.4	620.0	594.3	25.68	24.140	
5,300.0	5,280.8	5,331.0	5,279.8	12.5	16.6	93.03	-358.9	641.4	620.0	594.0	26.02	23.824	
5,400.0	5,380.8	5,431.0	5,379.8	12.7	16.7	93.03	-358.9	641.4	620.0	593.6	26.37	23.514	
5,500.0	5,480.8	5,531.0	5,479.8	12.9	16.9	93.03	-358.9	641.4	620.0	593.3	26.71	23.208	
5,600.0	5,580.8	5,631.0	5,579.8	13.1	17.0	93.03	-358.9	641.4	620.0	592.9	27.06	22.908	
5,700.0	5,680.8	5,731.0	5,679.8	13.3	17.1	93.03	-358.9	641.4	620.0	592.6	27.42	22.613	
5,800.0	5,780.8	5,831.0	5,779.8	13.5	17.3	93.03	-358.9	641.4	620.0	592.2	27.77	22.324	
5,900.0	5,880.8	5,931.0	5,879.8	13.6	17.4	93.03	-358.9	641.4	620.0	591.9	28.13	22.040	
6,000.0	5,980.8	6,031.0	5,979.8	13.8	17.6	93.03	-358.9	641.4	620.0	591.5	28.49	21.761	
6,100.0	6,080.8	6,131.0	6,079.8	14.0	17.7	93.03	-358.9	641.4	620.0	591.1	28.85	21.487	
6,202.4	6,183.2	6,233.5	6,182.2	14.2	17.9	93.03	-358.9	641.4	620.0	590.8	29.23	21.211	
6,250.0	6,230.8	6,283.1	6,231.8	14.3	18.0	93.03	-357.3	641.4	620.0	590.6	29.38	21.100	
6,300.0	6,280.5	6,335.4	6,283.8	14.4	18.0	93.02	-352.2	641.4	620.0	590.5	29.51	21.010	
6,350.0	6,329.9	6,387.6	6,335.3	14.4	18.0	92.99	-343.6	641.4	620.0	590.4	29.60	20.947	
6,400.0	6,378.6	6,439.8	6,386.1	14.4	18.1	92.95	-331.5	641.4	619.9	590.3	29.65	20.908	
6,450.0	6,426.5	6,491.9	6,435.8	14.5	18.1	92.90	-315.9	641.4	619.9	590.2	29.68	20.888	
6,500.0	6,473.3	6,544.0	6,484.4	14.5	18.0	92.83	-297.0	641.4	619.9	590.2	29.68	20.884	
6,550.0	6,518.9	6,596.1	6,531.5	14.5	18.0	92.75	-274.9	641.4	619.8	590.2	29.67	20.888	
6,600.0	6,563.1	6,648.1	6,576.9	14.5	18.0	92.66	-249.6	641.4	619.8	590.1	29.66	20.896	
6,650.0	6,605.6	6,700.0	6,620.5	14.5	18.0	92.56	-221.4	641.4	619.7	590.1	29.65	20.900	
6,700.0	6,646.3	6,751.8	6,661.9	14.5	17.9	92.44	-190.3	641.4	619.7	590.0	29.66	20.892	
6,750.0	6,685.1	6,803.5	6,701.1	14.5	17.9	92.32	-156.6	641.4	619.6	589.9	29.70	20.863	
6,800.0	6,721.7	6,855.2	6,737.8	14.5	17.8	92.18	-120.3	641.4	619.6	589.8	29.78	20.807	
6,850.0	6,756.0	6,906.7	6,772.0	14.6	17.7	92.04	-81.7	641.4	619.5	589.6	29.91	20.715	
6,900.0	6,787.8	6,958.1	6,803.4	14.7	17.7	91.89	-41.1	641.4	619.5	589.4	30.10	20.582	
6,950.0	6,817.1	7,009.4	6,831.9	14.8	17.7	91.73	1.5	641.4	619.4	589.0	30.36	20.402	
7,000.0	6,843.6	7,060.5	6,857.5	15.0	17.6	91.56	45.9	641.4	619.3	588.6	30.70	20.173	
7,050.0	6,867.3	7,111.5	6,879.9	15.2	17.6	91.38	91.7	641.4	619.3	588.2	31.13	19.894	
7,100.0	6,888.1	7,162.4	6,899.2	15.5	17.6	91.20	138.7	641.4	619.3	587.6	31.65	19.568	
7,150.0	6,905.8	7,213.2	6,915.3	15.8	17.6	91.01	186.9	641.4	619.2	587.0	32.25	19.198	
7,200.0	6,920.5	7,263.8	6,928.2	16.1	17.7	90.82	235.8	641.4	619.2	586.2	32.95	18.791	
7,250.0	6,932.0	7,314.3	6,937.7	16.5	18.0	90.63	285.4	641.4	619.2	585.4	33.74	18.353	
7,300.0	6,940.3	7,364.6	6,944.0	17.0	18.3	90.43	335.3	641.4	619.1	584.5	34.60	17.893	
7,350.0	6,945.4	7,414.8	6,946.9	17.4	18.8	90.24	385.4	641.4	619.1	583.6	35.54	17.419	
7,403.2	6,947.2	7,468.1	6,947.1	18.0	19.3	90.09	438.7	641.4	619.1	582.5	36.62	16.904	
7,500.0	6,947.1	7,564.8	6,947.0	19.1	20.4	90.09	535.4	641.4	619.1	580.3	38.77	15.967	
7,600.0	6,947.0	7,664.8	6,946.9	20.3	21.6	90.09	635.4	641.4	619.1	577.9	41.22	15.019	
7,700.0	6,946.8	7,764.8	6,946.8	21.7	22.9	90.09	735.4	641.4	619.1	575.2	43.87	14.113	
7,800.0	6,946.7	7,864.8	6,946.7	23.1	24.3	90.09	835.4	641.4	619.1	572.4	46.68	13.262	
7,900.0	6,946.6	7,964.8	6,946.6	24.6	25.7	90.09	935.4	641.4	619.1	569.5	49.63	12.474	
8,000.0	6,946.5	8,064.8	6,946.5	26.1	27.2	90.09	1,035.4	641.4	619.1	566.4	52.70	11.748	
8,100.0	6,946.4	8,164.8	6,946.4	27.7	28.8	90.09	1,135.4	641.4	619.1	563.2	55.86	11.083	
8,200.0	6,946.3	8,264.8	6,946.3	29.4	30.4	90.09	1,235.4	641.4	619.1	560.0	59.10	10.475	
8,300.0	6,946.2	8,364.8	6,946.2	31.0	32.0	90.09	1,335.4	641.4	619.1	556.7	62.41	9.920	
8,400.0	6,946.1	8,464.8	6,946.1	32.7	33.7	90.09	1,435.4	641.4	619.1	553.3	65.78	9.412	
8,500.0	6,946.0	8,564.8	6,946.0	34.4	35.3	90.09	1,535.4	641.4	619.1	549.9	69.20	8.947	
8,600.0	6,945.9	8,664.8	6,945.9	36.2	37.0	90.09	1,635.4	641.4	619.1	546.4	72.66	8.521	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-221
Project:	SEC.18-T4N-R67W	**TVD Reference:**	WELL @ 4827.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**MD Reference:**	WELL @ 4827.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Rieder 18Q-221	**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 (7-30-14)	**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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,700.0	6,945.8	8,764.8	6,945.8	37.9	38.8	90.09	1,735.4	641.4	619.1	543.0	76.15	8.130	
8,800.0	6,945.7	8,864.8	6,945.7	39.7	40.5	90.09	1,835.4	641.4	619.1	539.4	79.68	7.770	
8,900.0	6,945.6	8,964.8	6,945.6	41.5	42.3	90.09	1,935.4	641.4	619.1	535.9	83.23	7.438	
9,000.0	6,945.5	9,064.8	6,945.5	43.3	44.0	90.09	2,035.4	641.4	619.1	532.3	86.81	7.131	
9,100.0	6,945.4	9,164.8	6,945.4	45.1	45.8	90.09	2,135.4	641.4	619.1	528.7	90.41	6.847	
9,200.0	6,945.3	9,264.8	6,945.2	46.9	47.6	90.09	2,235.4	641.4	619.1	525.1	94.03	6.584	
9,300.0	6,945.2	9,364.8	6,945.1	48.7	49.4	90.09	2,335.4	641.4	619.1	521.4	97.67	6.339	
9,400.0	6,945.1	9,464.8	6,945.0	50.6	51.2	90.09	2,435.4	641.4	619.1	517.8	101.32	6.110	
9,500.0	6,945.0	9,564.8	6,944.9	52.4	53.0	90.09	2,535.4	641.4	619.1	514.1	104.98	5.897	
9,600.0	6,944.9	9,664.8	6,944.8	54.2	54.8	90.09	2,635.4	641.4	619.1	510.4	108.66	5.697	
9,700.0	6,944.8	9,764.8	6,944.7	56.1	56.7	90.09	2,735.4	641.4	619.1	506.7	112.35	5.510	
9,800.0	6,944.7	9,864.8	6,944.6	57.9	58.5	90.09	2,835.4	641.4	619.1	503.0	116.05	5.335	
9,900.0	6,944.5	9,964.8	6,944.5	59.8	60.4	90.09	2,935.4	641.4	619.1	499.3	119.75	5.170	
10,000.0	6,944.4	10,064.8	6,944.4	61.6	62.2	90.09	3,035.4	641.4	619.1	495.6	123.47	5.014	
10,100.0	6,944.3	10,164.8	6,944.3	63.5	64.0	90.09	3,135.4	641.4	619.1	491.9	127.19	4.867	
10,200.0	6,944.2	10,264.8	6,944.2	65.4	65.9	90.09	3,235.4	641.4	619.1	488.2	130.92	4.729	
10,300.0	6,944.1	10,364.8	6,944.1	67.3	67.8	90.09	3,335.4	641.4	619.1	484.4	134.65	4.598	
10,400.0	6,944.0	10,464.8	6,944.0	69.1	69.6	90.09	3,435.4	641.4	619.1	480.7	138.39	4.473	
10,500.0	6,943.9	10,564.8	6,943.9	71.0	71.5	90.09	3,535.4	641.4	619.1	476.9	142.14	4.355	
10,600.0	6,943.8	10,664.8	6,943.8	72.9	73.3	90.09	3,635.4	641.4	619.1	473.2	145.89	4.243	
10,700.0	6,943.7	10,764.8	6,943.7	74.8	75.2	90.09	3,735.4	641.4	619.1	469.4	149.65	4.137	
10,800.0	6,943.6	10,864.8	6,943.6	76.6	77.1	90.09	3,835.4	641.4	619.1	465.7	153.41	4.036	
10,900.0	6,943.5	10,964.8	6,943.5	78.5	79.0	90.09	3,935.4	641.4	619.1	461.9	157.17	3.939	
11,000.0	6,943.4	11,064.8	6,943.4	80.4	80.8	90.09	4,035.4	641.4	619.1	458.1	160.94	3.847	
11,100.0	6,943.3	11,164.8	6,943.3	82.3	82.7	90.09	4,135.4	641.4	619.1	454.4	164.71	3.759	
11,200.0	6,943.2	11,264.8	6,943.2	84.2	84.6	90.09	4,235.4	641.4	619.1	450.6	168.48	3.675	
11,300.0	6,943.1	11,364.8	6,943.0	86.1	86.5	90.09	4,335.4	641.4	619.1	446.8	172.26	3.594	
11,340.2	6,943.0	11,405.0	6,943.0	86.8	87.2	90.09	4,375.6	641.4	619.1	445.3	173.78	3.563	
11,376.4	6,943.0	11,412.1	6,943.0	87.5	87.4	90.09	4,382.6	641.4	619.8	445.2	174.59	3.550	SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-221
Project:	SEC.18-T4N-R67W	**TVD Reference:**	WELL @ 4827.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**MD Reference:**	WELL @ 4827.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Rieder 18Q-221	**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 (7-30-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Rieder 4N67W18Q Pad Sec.18-T4N-R67 - Rieder 18T-241 - Wellbore #1 - Plan #1 (7-30-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	89.99	0.0	61.4	61.4				
100.0	100.0	100.0	100.0	0.1	0.1	89.99	0.0	61.4	61.4	61.1	0.22	272.990	
200.0	200.0	200.0	200.0	0.3	0.3	89.99	0.0	61.4	61.4	60.7	0.67	90.997	
300.0	300.0	300.0	300.0	0.6	0.6	89.99	0.0	61.4	61.4	60.2	1.12	54.598	
400.0	400.0	400.0	400.0	0.8	0.8	89.99	0.0	61.4	61.4	59.8	1.57	38.999	
500.0	500.0	500.0	500.0	1.0	1.0	89.99	0.0	61.4	61.4	59.3	2.02	30.332	
600.0	600.0	600.0	600.0	1.2	1.2	89.99	0.0	61.4	61.4	58.9	2.47	24.817	
700.0	700.0	700.0	700.0	1.5	1.5	89.99	0.0	61.4	61.4	58.4	2.92	20.999	
800.0	800.0	800.0	800.0	1.7	1.7	89.99	0.0	61.4	61.4	58.0	3.37	18.199	
900.0	900.0	900.0	900.0	1.9	1.9	89.99	0.0	61.4	61.4	57.5	3.82	16.058	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	89.99	0.0	61.4	61.4	57.1	4.27	14.368	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	89.99	0.0	61.4	61.4	56.6	4.72	13.000	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	89.99	0.0	61.4	61.4	56.2	5.17	11.869	CC, ES
1,300.0	1,300.0	1,298.7	1,298.6	2.8	2.8	91.21	-1.3	62.4	62.4	56.8	5.59	11.168	
1,400.0	1,400.0	1,397.1	1,396.9	3.0	3.0	94.64	-5.3	65.5	65.8	59.8	5.99	10.984	
1,500.0	1,500.0	1,495.0	1,494.5	3.3	3.2	99.57	-11.9	70.7	71.9	65.5	6.40	11.234	
1,600.0	1,600.0	1,593.0	1,591.8	3.5	3.4	105.11	-21.0	77.9	81.1	74.3	6.83	11.881	
1,700.0	1,700.0	1,692.2	1,690.2	3.7	3.6	109.83	-30.9	85.6	91.6	84.3	7.25	12.627	
1,800.0	1,800.0	1,791.4	1,788.6	3.9	3.8	113.57	-40.7	93.4	102.5	94.8	7.68	13.349	
1,900.0	1,900.0	1,890.6	1,887.0	4.2	4.1	116.58	-50.6	101.1	113.8	105.7	8.11	14.032	
2,000.0	2,000.0	1,989.8	1,985.4	4.4	4.4	119.05	-60.5	108.9	125.4	116.8	8.55	14.671	
2,100.0	2,100.0	2,089.1	2,083.9	4.6	4.6	-55.42	-70.3	116.6	136.2	127.2	8.97	15.185	
2,200.0	2,199.8	2,188.7	2,182.7	4.8	4.9	-55.17	-80.2	124.4	145.0	135.6	9.36	15.495	
2,300.0	2,299.5	2,288.5	2,281.7	4.9	5.2	-56.04	-90.1	132.2	151.9	142.1	9.76	15.558	
2,351.9	2,351.0	2,340.2	2,333.0	5.0	5.4	-56.90	-95.3	136.2	154.7	144.7	9.98	15.501	
2,400.0	2,398.8	2,388.2	2,380.6	5.1	5.5	-57.84	-100.1	140.0	157.1	146.9	10.19	15.419	
2,500.0	2,498.0	2,487.9	2,479.5	5.3	5.8	-59.71	-110.0	147.8	162.3	151.6	10.64	15.250	
2,600.0	2,597.2	2,587.7	2,578.5	5.5	6.1	-61.46	-119.9	155.6	167.6	156.5	11.11	15.085	
2,700.0	2,696.5	2,687.4	2,677.4	5.8	6.4	-63.10	-129.8	163.3	173.1	161.5	11.59	14.927	
2,800.0	2,795.7	2,787.1	2,776.3	6.0	6.7	-64.64	-139.7	171.1	178.7	166.6	12.09	14.773	
2,900.0	2,895.0	2,886.8	2,875.3	6.2	7.0	-66.09	-149.6	178.9	184.4	171.8	12.61	14.626	
3,000.0	2,994.2	2,986.6	2,974.2	6.5	7.4	-67.45	-159.5	186.7	190.2	177.1	13.13	14.485	
3,100.0	3,093.5	3,086.3	3,073.1	6.7	7.7	-68.72	-169.4	194.5	196.2	182.5	13.67	14.350	
3,200.0	3,192.7	3,186.0	3,172.1	7.0	8.0	-69.93	-179.4	202.3	202.2	188.0	14.22	14.222	
3,300.0	3,292.0	3,285.8	3,271.0	7.3	8.3	-71.06	-189.3	210.1	208.3	193.5	14.77	14.100	
3,400.0	3,391.2	3,385.5	3,369.9	7.6	8.6	-72.12	-199.2	217.9	214.5	199.2	15.34	13.985	
3,500.0	3,490.5	3,485.2	3,468.8	7.8	8.9	-73.13	-209.1	225.6	220.8	204.9	15.91	13.875	
3,600.0	3,589.7	3,585.0	3,567.8	8.1	9.3	-74.08	-219.0	233.4	227.1	210.6	16.49	13.772	
3,700.0	3,689.0	3,684.7	3,666.7	8.4	9.6	-74.98	-228.9	241.2	233.5	216.4	17.07	13.674	
3,800.0	3,788.2	3,784.4	3,765.6	8.7	9.9	-75.83	-238.8	249.0	239.9	222.2	17.66	13.581	
3,900.0	3,887.5	3,884.2	3,864.6	9.0	10.2	-76.64	-248.7	256.8	246.4	228.1	18.26	13.494	
4,000.0	3,986.7	3,983.9	3,963.5	9.3	10.6	-77.40	-258.7	264.6	252.9	234.1	18.86	13.411	
4,100.0	4,085.9	4,083.6	4,062.4	9.6	10.9	-78.13	-268.6	272.4	259.5	240.0	19.46	13.333	
4,200.0	4,185.2	4,183.3	4,161.4	9.9	11.2	-78.82	-278.5	280.2	266.1	246.0	20.07	13.259	
4,300.0	4,284.4	4,283.1	4,260.3	10.2	11.5	-79.48	-288.4	287.9	272.8	252.1	20.68	13.190	
4,400.0	4,383.7	4,382.8	4,359.2	10.5	11.9	-80.10	-298.3	295.7	279.5	258.2	21.29	13.124	
4,500.0	4,482.9	4,482.5	4,458.2	10.8	12.2	-80.70	-308.2	303.5	286.2	264.3	21.91	13.062	
4,600.0	4,582.2	4,582.3	4,557.1	11.1	12.5	-81.27	-318.1	311.3	292.9	270.4	22.53	13.003	
4,667.3	4,649.0	4,649.4	4,623.7	11.3	12.7	-81.64	-324.8	316.5	297.5	274.5	22.95	12.965	
4,700.0	4,681.4	4,683.4	4,657.4	11.4	12.8	-81.84	-328.1	319.2	299.7	276.5	23.14	12.953	
4,800.0	4,781.0	4,790.8	4,764.3	11.6	13.1	-82.31	-336.6	325.9	305.2	281.5	23.63	12.916	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-221
Project:	SEC.18-T4N-R67W	**TVD Reference:**	WELL @ 4827.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**MD Reference:**	WELL @ 4827.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Rieder 18Q-221	**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 (7-30-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Rieder 4N67W18Q Pad Sec.18-T4N-R67 - Rieder 18T-241 - Wellbore #1 - Plan #1 (7-30-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,900.0	4,880.8	4,898.4	4,871.6	11.8	13.3	-82.60	-342.0	330.1	308.6	284.6	24.06	12.826	
5,000.0	4,980.8	5,006.1	4,979.3	12.0	13.5	-82.72	-344.2	331.8	310.0	285.6	24.44	12.684	
5,019.2	5,000.0	5,026.8	5,000.0	12.0	13.5	93.36	-344.3	331.9	310.1	285.6	24.51	12.649	
5,100.0	5,080.8	5,107.6	5,080.8	12.2	13.6	93.36	-344.3	331.9	310.1	285.3	24.80	12.503	
5,200.0	5,180.8	5,207.6	5,180.8	12.4	13.8	93.36	-344.3	331.9	310.1	284.9	25.14	12.333	
5,300.0	5,280.8	5,307.6	5,280.8	12.5	14.0	93.36	-344.3	331.9	310.1	284.6	25.49	12.165	
5,400.0	5,380.8	5,407.6	5,380.8	12.7	14.1	93.36	-344.3	331.9	310.1	284.2	25.84	12.001	
5,500.0	5,480.8	5,507.6	5,480.8	12.9	14.3	93.36	-344.3	331.9	310.1	283.9	26.19	11.839	
5,600.0	5,580.8	5,607.6	5,580.8	13.1	14.4	93.36	-344.3	331.9	310.1	283.5	26.55	11.681	
5,700.0	5,680.8	5,707.6	5,680.8	13.3	14.6	93.36	-344.3	331.9	310.1	283.2	26.91	11.525	
5,800.0	5,780.8	5,807.6	5,780.8	13.5	14.8	93.36	-344.3	331.9	310.1	282.8	27.27	11.372	
5,900.0	5,880.8	5,907.6	5,880.8	13.6	14.9	93.36	-344.3	331.9	310.1	282.5	27.63	11.223	
6,000.0	5,980.8	6,007.6	5,980.8	13.8	15.1	93.36	-344.3	331.9	310.1	282.1	28.00	11.076	
6,100.0	6,080.8	6,107.6	6,080.8	14.0	15.3	93.36	-344.3	331.9	310.1	281.7	28.36	10.932	
6,202.4	6,183.2	6,210.0	6,183.2	14.2	15.5	93.36	-344.3	331.9	310.1	281.3	28.74	10.788	
6,250.0	6,230.8	6,258.8	6,231.9	14.3	15.5	93.36	-342.7	331.9	310.1	281.2	28.90	10.729	
6,300.0	6,280.5	6,310.0	6,282.9	14.4	15.6	93.33	-337.8	331.9	310.1	281.0	29.03	10.681	
6,350.0	6,329.9	6,361.2	6,333.4	14.4	15.6	93.30	-329.4	331.9	310.1	280.9	29.12	10.647	
6,400.0	6,378.6	6,412.4	6,383.2	14.4	15.7	93.25	-317.7	331.9	310.0	280.9	29.18	10.626	
6,450.0	6,426.5	6,463.5	6,432.1	14.5	15.7	93.18	-302.6	331.9	310.0	280.8	29.21	10.614	
6,500.0	6,473.3	6,514.7	6,479.8	14.5	15.7	93.11	-284.4	331.9	310.0	280.8	29.22	10.610	
6,550.0	6,518.9	6,565.8	6,526.2	14.5	15.7	93.01	-262.9	331.9	310.0	280.8	29.22	10.610	
6,600.0	6,563.1	6,616.8	6,571.1	14.5	15.6	92.91	-238.5	331.9	309.9	280.7	29.21	10.612	
6,650.0	6,605.6	6,667.9	6,614.1	14.5	15.6	92.79	-211.2	331.9	309.9	280.7	29.20	10.612	
6,700.0	6,646.3	6,718.8	6,655.2	14.5	15.6	92.66	-181.0	331.9	309.9	280.7	29.22	10.605	
6,750.0	6,685.1	6,769.8	6,694.2	14.5	15.5	92.52	-148.2	331.9	309.8	280.6	29.26	10.588	
6,800.0	6,721.7	6,820.6	6,730.9	14.5	15.5	92.37	-113.0	331.9	309.8	280.5	29.35	10.557	
6,850.0	6,756.0	6,871.4	6,765.0	14.6	15.5	92.20	-75.4	331.9	309.8	280.3	29.48	10.508	
6,900.0	6,787.8	6,922.2	6,796.6	14.7	15.5	92.03	-35.7	331.9	309.7	280.1	29.68	10.437	
6,950.0	6,817.1	6,972.9	6,825.5	14.8	15.5	91.85	6.0	331.9	309.7	279.8	29.95	10.342	
7,000.0	6,843.6	7,023.5	6,851.5	15.0	15.5	91.66	49.4	331.9	309.7	279.4	30.30	10.222	
7,050.0	6,867.3	7,074.1	6,874.5	15.2	15.6	91.47	94.4	331.9	309.7	278.9	30.73	10.077	
7,100.0	6,888.1	7,124.5	6,894.4	15.5	15.8	91.26	140.8	331.9	309.6	278.4	31.25	9.907	
7,150.0	6,905.8	7,174.9	6,911.3	15.8	16.1	91.06	188.3	331.9	309.6	277.7	31.87	9.715	
7,200.0	6,920.5	7,225.3	6,924.9	16.1	16.5	90.84	236.7	331.9	309.6	277.0	32.58	9.503	
7,250.0	6,932.0	7,275.5	6,935.4	16.5	16.9	90.63	285.8	331.9	309.6	276.2	33.37	9.277	
7,300.0	6,940.3	7,325.7	6,942.5	17.0	17.4	90.41	335.5	331.9	309.6	275.3	34.25	9.039	
7,350.0	6,945.4	7,375.8	6,946.4	17.4	17.8	90.19	385.4	331.9	309.6	274.3	35.20	8.794	
7,403.2	6,947.2	7,429.0	6,947.1	18.0	18.4	90.00	438.6	331.9	309.5	273.3	36.29	8.529	
7,500.0	6,947.1	7,525.8	6,947.0	19.1	19.5	90.00	535.4	331.9	309.5	271.1	38.46	8.048	
7,600.0	6,947.0	7,625.8	6,946.9	20.3	20.8	90.00	635.4	331.9	309.5	268.6	40.94	7.562	
7,700.0	6,946.8	7,725.8	6,946.8	21.7	22.1	90.00	735.4	331.9	309.5	265.9	43.61	7.098	
7,800.0	6,946.7	7,825.8	6,946.7	23.1	23.5	90.00	835.4	331.9	309.5	263.1	46.44	6.665	
7,900.0	6,946.6	7,925.8	6,946.6	24.6	25.0	90.00	935.4	331.9	309.5	260.1	49.41	6.264	
8,000.0	6,946.5	8,025.8	6,946.5	26.1	26.5	90.00	1,035.4	331.9	309.5	257.0	52.50	5.896	
8,100.0	6,946.4	8,125.8	6,946.4	27.7	28.1	90.00	1,135.4	331.9	309.5	253.9	55.68	5.560	
8,200.0	6,946.3	8,225.8	6,946.3	29.4	29.7	90.00	1,235.4	331.9	309.5	250.6	58.93	5.252	
8,300.0	6,946.2	8,325.8	6,946.2	31.0	31.4	90.00	1,335.4	331.9	309.5	247.3	62.26	4.972	
8,400.0	6,946.1	8,425.8	6,946.1	32.7	33.1	90.00	1,435.4	331.9	309.5	243.9	65.64	4.716	
8,500.0	6,946.0	8,525.8	6,946.0	34.4	34.8	90.00	1,535.4	331.9	309.5	240.5	69.06	4.482	
8,600.0	6,945.9	8,625.8	6,945.9	36.2	36.5	90.00	1,635.4	331.9	309.5	237.0	72.53	4.268	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-221
Project:	SEC.18-T4N-R67W	**TVD Reference:**	WELL @ 4827.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**MD Reference:**	WELL @ 4827.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Rieder 18Q-221	**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 (7-30-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Rieder 4N67W18Q Pad Sec.18-T4N-R67 - Rieder 18T-241 - Wellbore #1 - Plan #1 (7-30-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,700.0	6,945.8	8,725.8	6,945.8	37.9	38.2	90.00	1,735.4	331.9	309.5	233.5	76.04	4.071	
8,800.0	6,945.7	8,825.8	6,945.7	39.7	40.0	90.00	1,835.4	331.9	309.5	230.0	79.57	3.890	
8,900.0	6,945.6	8,925.8	6,945.6	41.5	41.8	90.00	1,935.4	331.9	309.5	226.4	83.14	3.723	
9,000.0	6,945.5	9,025.8	6,945.5	43.3	43.6	90.00	2,035.4	331.9	309.5	222.8	86.72	3.569	
9,100.0	6,945.4	9,125.8	6,945.4	45.1	45.4	90.00	2,135.4	331.9	309.5	219.2	90.33	3.427	
9,200.0	6,945.3	9,225.8	6,945.3	46.9	47.2	90.00	2,235.4	331.9	309.5	215.6	93.96	3.295	
9,300.0	6,945.2	9,325.8	6,945.2	48.7	49.0	90.00	2,335.4	331.9	309.5	211.9	97.60	3.172	
9,400.0	6,945.1	9,425.8	6,945.1	50.6	50.8	90.00	2,435.4	331.9	309.5	208.3	101.25	3.057	
9,500.0	6,945.0	9,525.8	6,944.9	52.4	52.6	90.00	2,535.4	331.9	309.5	204.6	104.92	2.950	
9,600.0	6,944.9	9,625.8	6,944.8	54.2	54.5	90.00	2,635.4	331.9	309.5	200.9	108.61	2.850	
9,700.0	6,944.8	9,725.8	6,944.7	56.1	56.3	90.00	2,735.4	331.9	309.5	197.2	112.30	2.756	
9,800.0	6,944.7	9,825.8	6,944.6	57.9	58.2	90.00	2,835.4	331.9	309.5	193.5	116.00	2.668	
9,900.0	6,944.5	9,925.8	6,944.5	59.8	60.0	90.00	2,935.4	331.9	309.5	189.8	119.71	2.586	
10,000.0	6,944.4	10,025.8	6,944.4	61.6	61.9	90.00	3,035.4	331.9	309.5	186.1	123.43	2.508	
10,100.0	6,944.3	10,125.8	6,944.3	63.5	63.7	90.00	3,135.4	331.9	309.5	182.4	127.15	2.434	
10,200.0	6,944.2	10,225.8	6,944.2	65.4	65.6	90.00	3,235.4	331.9	309.5	178.7	130.89	2.365	
10,300.0	6,944.1	10,325.8	6,944.1	67.3	67.5	90.00	3,335.4	331.9	309.5	174.9	134.62	2.299	
10,400.0	6,944.0	10,425.8	6,944.0	69.1	69.3	90.00	3,435.4	331.8	309.5	171.2	138.37	2.237	
10,500.0	6,943.9	10,525.8	6,943.9	71.0	71.2	90.00	3,535.4	331.8	309.5	167.4	142.12	2.178	
10,600.0	6,943.8	10,625.8	6,943.8	72.9	73.1	90.00	3,635.4	331.8	309.5	163.7	145.87	2.122	
10,700.0	6,943.7	10,725.8	6,943.7	74.8	74.9	90.00	3,735.4	331.8	309.5	159.9	149.63	2.069	
10,800.0	6,943.6	10,825.8	6,943.6	76.6	76.8	90.00	3,835.4	331.8	309.5	156.2	153.39	2.018	
10,900.0	6,943.5	10,925.8	6,943.5	78.5	78.7	90.00	3,935.4	331.8	309.5	152.4	157.15	1.970	
11,000.0	6,943.4	11,025.8	6,943.4	80.4	80.6	90.00	4,035.4	331.8	309.5	148.6	160.92	1.924	
11,100.0	6,943.3	11,125.8	6,943.3	82.3	82.5	90.00	4,135.4	331.8	309.5	144.8	164.70	1.879	
11,200.0	6,943.2	11,225.8	6,943.2	84.2	84.4	90.00	4,235.4	331.8	309.5	141.1	168.47	1.837	
11,300.0	6,943.1	11,325.8	6,943.1	86.1	86.2	90.00	4,335.4	331.8	309.5	137.3	172.25	1.797	
11,349.9	6,943.0	11,375.7	6,943.0	87.0	87.2	90.00	4,385.3	331.8	309.5	135.4	174.14	1.778	
11,376.4	6,943.0	11,387.6	6,943.0	87.5	87.4	90.00	4,397.2	331.8	309.9	135.0	174.86	1.772 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-221
Project:	SEC.18-T4N-R67W	**TVD Reference:**	WELL @ 4827.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**MD Reference:**	WELL @ 4827.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Rieder 18Q-221	**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 (7-30-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Rieder 4N67W18Q Pad Sec.18-T4N-R67 - Rieder 18T-301 - Wellbore #1 - Plan #1 (7-30-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.00	0.0	92.0	92.0				
100.0	100.0	99.0	99.0	0.1	0.1	90.00	0.0	92.0	92.0	91.8	0.22	411.539	
200.0	200.0	199.0	199.0	0.3	0.3	90.00	0.0	92.0	92.0	91.4	0.67	136.952	
300.0	300.0	299.0	299.0	0.6	0.6	90.00	0.0	92.0	92.0	90.9	1.12	82.061	
400.0	400.0	399.0	399.0	0.8	0.8	90.00	0.0	92.0	92.0	90.5	1.57	58.582	
500.0	500.0	499.0	499.0	1.0	1.0	90.00	0.0	92.0	92.0	90.0	2.02	45.549	
600.0	600.0	599.0	599.0	1.2	1.2	90.00	0.0	92.0	92.0	89.6	2.47	37.260	
700.0	700.0	699.0	699.0	1.5	1.5	90.00	0.0	92.0	92.0	89.1	2.92	31.523	
800.0	800.0	799.0	799.0	1.7	1.7	90.00	0.0	92.0	92.0	88.7	3.37	27.317	
900.0	900.0	899.0	899.0	1.9	1.9	90.00	0.0	92.0	92.0	88.2	3.82	24.102	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	90.00	0.0	92.0	92.0	87.8	4.27	21.563	CC, ES
1,100.0	1,100.0	1,096.6	1,096.6	2.4	2.3	90.66	-1.1	93.3	93.3	88.6	4.69	19.893	
1,200.0	1,200.0	1,194.0	1,193.9	2.6	2.5	92.57	-4.4	97.0	97.2	92.1	5.10	19.070	
1,300.0	1,300.0	1,291.0	1,290.5	2.8	2.7	95.43	-9.8	103.1	103.9	98.4	5.51	18.852	
1,400.0	1,400.0	1,387.3	1,386.1	3.0	2.9	98.84	-17.3	111.6	113.7	107.7	5.93	19.152	
1,500.0	1,500.0	1,485.1	1,482.9	3.3	3.2	102.34	-26.7	122.1	126.1	119.7	6.37	19.794	
1,600.0	1,600.0	1,584.0	1,580.7	3.5	3.4	105.28	-36.3	133.0	139.1	132.2	6.81	20.434	
1,700.0	1,700.0	1,682.9	1,678.6	3.7	3.7	107.72	-46.0	143.8	152.3	145.1	7.24	21.028	
1,800.0	1,800.0	1,781.8	1,776.4	3.9	4.0	109.77	-55.6	154.6	165.9	158.2	7.69	21.577	
1,900.0	1,900.0	1,880.8	1,874.3	4.2	4.3	111.50	-65.2	165.5	179.5	171.4	8.13	22.081	
2,000.0	2,000.0	1,979.7	1,972.1	4.4	4.6	112.99	-74.8	176.3	193.4	184.8	8.58	22.545	
2,100.0	2,100.0	2,078.8	2,070.2	4.6	5.0	-62.00	-84.4	187.1	206.5	197.5	9.02	22.896	
2,200.0	2,199.8	2,178.1	2,168.4	4.8	5.3	-61.85	-94.1	198.0	218.0	208.6	9.42	23.137	
2,300.0	2,299.5	2,277.5	2,266.8	4.9	5.6	-62.50	-103.8	208.9	227.9	218.1	9.84	23.157	
2,351.9	2,351.0	2,329.1	2,317.9	5.0	5.8	-63.12	-108.8	214.5	232.5	222.4	10.07	23.087	
2,400.0	2,398.8	2,377.0	2,365.2	5.1	6.0	-63.84	-113.4	219.8	236.5	226.2	10.29	22.992	
2,500.0	2,498.0	2,476.5	2,463.6	5.3	6.3	-65.26	-123.1	230.7	245.0	234.3	10.75	22.791	
2,600.0	2,597.2	2,575.9	2,562.0	5.5	6.6	-66.59	-132.8	241.6	253.7	242.5	11.23	22.586	
2,700.0	2,696.5	2,675.4	2,660.3	5.8	7.0	-67.83	-142.4	252.4	262.5	250.8	11.73	22.380	
2,800.0	2,795.7	2,774.8	2,758.7	6.0	7.3	-68.99	-152.1	263.3	271.4	259.2	12.24	22.175	
2,900.0	2,895.0	2,874.3	2,857.1	6.2	7.7	-70.07	-161.8	274.2	280.4	267.7	12.76	21.973	
3,000.0	2,994.2	2,973.7	2,955.5	6.5	8.0	-71.09	-171.4	285.1	289.5	276.2	13.30	21.775	
3,100.0	3,093.5	3,073.2	3,053.9	6.7	8.4	-72.04	-181.1	296.0	298.7	284.9	13.84	21.582	
3,200.0	3,192.7	3,172.7	3,152.3	7.0	8.7	-72.94	-190.8	306.9	308.0	293.6	14.39	21.396	
3,300.0	3,292.0	3,272.1	3,250.7	7.3	9.1	-73.79	-200.4	317.8	317.3	302.4	14.96	21.216	
3,400.0	3,391.2	3,371.6	3,349.0	7.6	9.4	-74.58	-210.1	328.7	326.7	311.2	15.53	21.043	
3,500.0	3,490.5	3,471.0	3,447.4	7.8	9.8	-75.34	-219.8	339.6	336.2	320.1	16.10	20.878	
3,600.0	3,589.7	3,570.5	3,545.8	8.1	10.1	-76.05	-229.4	350.4	345.7	329.0	16.68	20.719	
3,700.0	3,689.0	3,669.9	3,644.2	8.4	10.5	-76.72	-239.1	361.3	355.3	338.0	17.27	20.567	
3,800.0	3,788.2	3,769.4	3,742.6	8.7	10.8	-77.36	-248.8	372.2	364.9	347.0	17.87	20.422	
3,900.0	3,887.5	3,868.9	3,841.0	9.0	11.2	-77.96	-258.4	383.1	374.5	356.1	18.46	20.284	
4,000.0	3,986.7	3,968.3	3,939.4	9.3	11.5	-78.54	-268.1	394.0	384.2	365.2	19.07	20.152	
4,100.0	4,085.9	4,067.8	4,037.7	9.6	11.9	-79.08	-277.8	404.9	393.9	374.3	19.67	20.026	
4,200.0	4,185.2	4,167.2	4,136.1	9.9	12.3	-79.60	-287.4	415.8	403.7	383.4	20.28	19.905	
4,300.0	4,284.4	4,266.7	4,234.5	10.2	12.6	-80.10	-297.1	426.7	413.5	392.6	20.89	19.791	
4,400.0	4,383.7	4,366.1	4,332.9	10.5	13.0	-80.57	-306.8	437.5	423.3	401.8	21.51	19.681	
4,500.0	4,482.9	4,465.6	4,431.3	10.8	13.3	-81.02	-316.4	448.4	433.2	411.1	22.13	19.577	
4,600.0	4,582.2	4,565.1	4,529.7	11.1	13.7	-81.45	-326.1	459.3	443.1	420.3	22.75	19.477	
4,667.3	4,649.0	4,634.2	4,598.1	11.3	13.9	-81.75	-332.8	466.9	449.7	426.5	23.17	19.411	
4,700.0	4,681.4	4,671.4	4,634.9	11.4	14.0	-81.97	-336.1	470.6	452.6	429.3	23.36	19.374	
4,800.0	4,781.0	4,785.4	4,748.2	11.6	14.3	-82.50	-344.2	479.7	459.9	436.0	23.88	19.261	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-221
Project:	SEC.18-T4N-R67W	**TVD Reference:**	WELL @ 4827.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**MD Reference:**	WELL @ 4827.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Rieder 18Q-221	**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 (7-30-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Rieder 4N67W18Q Pad Sec.18-T4N-R67 - Rieder 18T-301 - Wellbore #1 - Plan #1 (7-30-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,900.0	4,880.8	4,899.7	4,862.3	11.8	14.5	-82.82	-349.4	485.6	464.5	440.1	24.32	19.096	
5,000.0	4,980.8	5,014.3	4,976.8	12.0	14.7	-82.95	-351.5	488.0	466.4	441.7	24.71	18.872	
5,019.2	5,000.0	5,036.3	4,998.9	12.0	14.7	93.13	-351.6	488.0	466.4	441.6	24.78	18.820	
5,100.0	5,080.8	5,117.2	5,079.8	12.2	14.9	93.13	-351.6	488.0	466.4	441.4	25.07	18.608	
5,200.0	5,180.8	5,217.2	5,179.8	12.4	15.0	93.13	-351.6	488.0	466.4	441.0	25.41	18.359	
5,300.0	5,280.8	5,317.2	5,279.8	12.5	15.2	93.13	-351.6	488.0	466.4	440.7	25.75	18.114	
5,400.0	5,380.8	5,417.2	5,379.8	12.7	15.3	93.13	-351.6	488.0	466.4	440.3	26.10	17.873	
5,500.0	5,480.8	5,517.2	5,479.8	12.9	15.5	93.13	-351.6	488.0	466.4	440.0	26.45	17.637	
5,600.0	5,580.8	5,617.2	5,579.8	13.1	15.6	93.13	-351.6	488.0	466.4	439.6	26.80	17.405	
5,700.0	5,680.8	5,717.2	5,679.8	13.3	15.8	93.13	-351.6	488.0	466.4	439.3	27.15	17.177	
5,800.0	5,780.8	5,817.2	5,779.8	13.5	15.9	93.13	-351.6	488.0	466.4	438.9	27.51	16.953	
5,900.0	5,880.8	5,917.2	5,879.8	13.6	16.1	93.13	-351.6	488.0	466.4	438.6	27.87	16.734	
6,000.0	5,980.8	6,017.2	5,979.8	13.8	16.2	93.13	-351.6	488.0	466.4	438.2	28.24	16.518	
6,100.0	6,080.8	6,117.2	6,079.8	14.0	16.4	93.13	-351.6	488.0	466.4	437.8	28.60	16.307	
6,202.4	6,183.2	6,219.7	6,182.2	14.2	16.6	93.13	-351.6	488.0	466.4	437.4	28.98	16.094	
6,250.0	6,230.8	6,267.2	6,229.8	14.3	16.6	93.31	-351.6	488.0	466.5	437.4	29.13	16.012	
6,300.0	6,280.5	6,317.0	6,279.5	14.4	16.7	93.86	-351.6	488.0	466.8	437.6	29.26	15.956	
6,350.0	6,329.9	6,368.8	6,331.3	14.4	16.8	94.65	-350.0	488.0	467.3	438.0	29.34	15.929	
6,400.0	6,378.6	6,421.3	6,383.5	14.4	16.9	95.42	-344.8	488.0	467.9	438.5	29.38	15.923	
6,450.0	6,426.5	6,474.2	6,435.7	14.5	16.9	96.16	-336.0	488.0	468.5	439.1	29.40	15.937	
6,500.0	6,473.3	6,527.6	6,487.6	14.5	16.9	96.88	-323.4	488.0	469.2	439.8	29.38	15.967	
6,550.0	6,518.9	6,581.5	6,538.9	14.5	16.9	97.57	-307.1	488.0	469.9	440.5	29.35	16.010	
6,600.0	6,563.1	6,635.8	6,589.4	14.5	16.9	98.23	-287.0	488.0	470.6	441.3	29.30	16.060	
6,650.0	6,605.6	6,690.6	6,638.7	14.5	16.9	98.85	-263.2	488.0	471.4	442.1	29.26	16.113	
6,700.0	6,646.3	6,745.8	6,686.5	14.5	16.9	99.43	-235.6	488.0	472.2	443.0	29.22	16.161	
6,750.0	6,685.1	6,801.4	6,732.6	14.5	16.8	99.97	-204.5	488.0	472.9	443.7	29.20	16.198	
6,800.0	6,721.7	6,857.4	6,776.6	14.5	16.8	100.46	-169.8	488.0	473.7	444.4	29.21	16.215	
6,850.0	6,756.0	6,913.8	6,818.1	14.6	16.7	100.91	-131.8	488.0	474.3	445.1	29.27	16.205	
6,900.0	6,787.8	6,970.5	6,857.0	14.7	16.7	101.30	-90.5	488.0	475.0	445.6	29.39	16.159	
6,950.0	6,817.1	7,027.5	6,892.9	14.8	16.6	101.64	-46.2	488.0	475.5	445.9	29.58	16.073	
7,000.0	6,843.6	7,084.7	6,925.5	15.0	16.6	101.92	0.8	488.0	476.0	446.1	29.86	15.941	
7,050.0	6,867.3	7,142.1	6,954.6	15.2	16.5	102.14	50.3	488.0	476.4	446.2	30.23	15.761	
7,100.0	6,888.1	7,199.7	6,979.9	15.5	16.5	102.30	102.0	488.0	476.7	446.0	30.69	15.531	
7,150.0	6,905.8	7,257.4	7,001.4	15.8	16.5	102.41	155.5	488.0	476.9	445.6	31.27	15.251	
7,200.0	6,920.5	7,315.2	7,018.7	16.1	16.7	102.45	210.6	488.0	476.9	445.0	31.95	14.929	
7,250.0	6,932.0	7,373.0	7,031.8	16.5	17.2	102.44	266.9	488.0	476.9	444.2	32.73	14.570	
7,300.0	6,940.3	7,430.7	7,040.7	17.0	17.7	102.36	323.9	488.0	476.8	443.2	33.61	14.184	
7,350.0	6,945.4	7,488.3	7,045.2	17.4	18.3	102.22	381.4	488.0	476.5	441.9	34.59	13.777	
7,403.2	6,947.2	7,546.1	7,045.7	18.0	18.9	102.06	439.2	488.0	476.2	440.6	35.68	13.347	
7,500.0	6,947.1	7,642.9	7,045.2	19.1	20.0	102.02	535.9	488.0	476.2	438.4	37.79	12.599	
7,600.0	6,947.0	7,742.9	7,044.7	20.3	21.2	101.97	635.9	488.0	476.1	435.9	40.20	11.842	
7,700.0	6,946.8	7,842.9	7,044.1	21.7	22.6	101.92	735.9	488.0	476.0	433.2	42.81	11.119	
7,800.0	6,946.7	7,942.9	7,043.6	23.1	24.0	101.87	835.9	488.0	475.9	430.3	45.58	10.441	
7,900.0	6,946.6	8,042.9	7,043.1	24.6	25.4	101.82	935.9	488.0	475.8	427.3	48.48	9.814	
8,000.0	6,946.5	8,142.9	7,042.6	26.1	26.9	101.77	1,035.9	488.0	475.7	424.2	51.51	9.236	
8,100.0	6,946.4	8,242.9	7,042.0	27.7	28.5	101.72	1,135.9	488.0	475.6	421.0	54.62	8.708	
8,200.0	6,946.3	8,342.9	7,041.5	29.4	30.1	101.67	1,235.9	488.0	475.6	417.7	57.82	8.225	
8,300.0	6,946.2	8,442.9	7,041.0	31.0	31.7	101.62	1,335.9	488.0	475.5	414.4	61.08	7.784	
8,400.0	6,946.1	8,542.9	7,040.5	32.7	33.4	101.57	1,435.9	488.0	475.4	411.0	64.40	7.381	
8,500.0	6,946.0	8,642.9	7,039.9	34.4	35.1	101.52	1,535.9	488.0	475.3	407.5	67.77	7.013	
8,600.0	6,945.9	8,742.9	7,039.4	36.2	36.8	101.47	1,635.9	488.0	475.2	404.0	71.19	6.676	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-221
Project:	SEC.18-T4N-R67W	**TVD Reference:**	WELL @ 4827.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**MD Reference:**	WELL @ 4827.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Rieder 18Q-221	**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 (7-30-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Rieder 4N67W18Q Pad Sec.18-T4N-R67 - Rieder 18T-301 - Wellbore #1 - Plan #1 (7-30-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,700.0	6,945.8	8,842.9	7,038.9	37.9	38.5	101.42	1,735.9	488.0	475.1	400.5	74.64	6.366	
8,800.0	6,945.7	8,942.9	7,038.4	39.7	40.3	101.37	1,835.9	488.0	475.0	396.9	78.12	6.081	
8,900.0	6,945.6	9,042.9	7,037.8	41.5	42.1	101.32	1,935.9	488.0	475.0	393.3	81.63	5.819	
9,000.0	6,945.5	9,142.9	7,037.3	43.3	43.8	101.27	2,035.9	488.0	474.9	389.7	85.16	5.576	
9,100.0	6,945.4	9,242.9	7,036.8	45.1	45.6	101.22	2,135.9	488.0	474.8	386.1	88.72	5.352	
9,200.0	6,945.3	9,342.9	7,036.3	46.9	47.4	101.17	2,235.9	488.0	474.7	382.4	92.29	5.144	
9,300.0	6,945.2	9,442.9	7,035.8	48.7	49.2	101.13	2,335.9	488.0	474.6	378.7	95.89	4.950	
9,400.0	6,945.1	9,542.9	7,035.2	50.6	51.0	101.08	2,435.9	488.0	474.6	375.1	99.50	4.770	
9,500.0	6,945.0	9,642.9	7,034.7	52.4	52.9	101.03	2,535.9	488.0	474.5	371.4	103.12	4.601	
9,600.0	6,944.9	9,742.9	7,034.2	54.2	54.7	100.98	2,635.9	488.0	474.4	367.6	106.76	4.444	
9,700.0	6,944.8	9,842.9	7,033.7	56.1	56.5	100.93	2,735.9	488.0	474.3	363.9	110.40	4.296	
9,800.0	6,944.7	9,942.9	7,033.1	57.9	58.4	100.88	2,835.9	488.0	474.2	360.2	114.06	4.158	
9,900.0	6,944.5	10,042.9	7,032.6	59.8	60.2	100.83	2,935.9	488.0	474.2	356.4	117.73	4.027	
10,000.0	6,944.4	10,142.9	7,032.1	61.6	62.1	100.78	3,035.9	488.0	474.1	352.7	121.41	3.905	
10,100.0	6,944.3	10,242.9	7,031.6	63.5	63.9	100.73	3,135.9	488.0	474.0	348.9	125.09	3.789	
10,200.0	6,944.2	10,342.9	7,031.0	65.4	65.8	100.68	3,235.9	488.0	473.9	345.1	128.78	3.680	
10,300.0	6,944.1	10,442.9	7,030.5	67.3	67.6	100.63	3,335.9	488.0	473.8	341.4	132.48	3.577	
10,400.0	6,944.0	10,542.9	7,030.0	69.1	69.5	100.58	3,435.9	488.0	473.8	337.6	136.19	3.479	
10,500.0	6,943.9	10,642.9	7,029.5	71.0	71.4	100.53	3,535.9	488.0	473.7	333.8	139.90	3.386	
10,600.0	6,943.8	10,742.9	7,028.9	72.9	73.2	100.48	3,635.9	488.0	473.6	330.0	143.62	3.298	
10,700.0	6,943.7	10,842.9	7,028.4	74.8	75.1	100.43	3,735.9	488.0	473.5	326.2	147.34	3.214	
10,800.0	6,943.6	10,942.9	7,027.9	76.6	77.0	100.38	3,835.9	488.0	473.5	322.4	151.07	3.134	
10,900.0	6,943.5	11,042.9	7,027.4	78.5	78.9	100.33	3,935.9	488.0	473.4	318.6	154.80	3.058	
11,000.0	6,943.4	11,142.9	7,026.9	80.4	80.7	100.28	4,035.9	488.0	473.3	314.8	158.54	2.985	
11,100.0	6,943.3	11,242.9	7,026.3	82.3	82.6	100.23	4,135.9	488.0	473.2	310.9	162.28	2.916	
11,200.0	6,943.2	11,342.9	7,025.8	84.2	84.5	100.18	4,235.9	488.0	473.2	307.1	166.03	2.850	
11,300.0	6,943.1	11,442.9	7,025.3	86.1	86.4	100.13	4,335.8	488.0	473.1	303.3	169.78	2.786	
11,346.9	6,943.0	11,489.8	7,025.0	87.0	87.3	100.11	4,382.8	488.0	473.0	301.5	171.54	2.758	
11,376.4	6,943.0	11,497.6	7,025.0	87.5	87.4	100.10	4,390.6	488.0	473.5	301.3	172.23	2.749	SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-221
Project:	SEC.18-T4N-R67W	**TVD Reference:**	WELL @ 4827.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**MD Reference:**	WELL @ 4827.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Rieder 18Q-221	**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 (7-30-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Rieder 4N67W18Q Pad Sec.18-T4N-R67 - Rieder 18T-341 - Wellbore #1 - Plan #1 (7-30-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	89.98	0.0	30.7	30.7				
100.0	100.0	100.0	100.0	0.1	0.1	89.98	0.0	30.7	30.7	30.5	0.22	136.495	
200.0	200.0	200.0	200.0	0.3	0.3	89.98	0.0	30.7	30.7	30.0	0.67	45.498	
300.0	300.0	300.0	300.0	0.6	0.6	89.98	0.0	30.7	30.7	29.6	1.12	27.299	
400.0	400.0	400.0	400.0	0.8	0.8	89.98	0.0	30.7	30.7	29.1	1.57	19.499	
500.0	500.0	500.0	500.0	1.0	1.0	89.98	0.0	30.7	30.7	28.7	2.02	15.166	
600.0	600.0	600.0	600.0	1.2	1.2	89.98	0.0	30.7	30.7	28.2	2.47	12.409	
700.0	700.0	700.0	700.0	1.5	1.5	89.98	0.0	30.7	30.7	27.8	2.92	10.500	
800.0	800.0	800.0	800.0	1.7	1.7	89.98	0.0	30.7	30.7	27.3	3.37	9.100	
900.0	900.0	900.0	900.0	1.9	1.9	89.98	0.0	30.7	30.7	26.9	3.82	8.029	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	89.98	0.0	30.7	30.7	26.4	4.27	7.184	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	89.98	0.0	30.7	30.7	26.0	4.72	6.500	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	89.98	0.0	30.7	30.7	25.5	5.17	5.935	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	89.98	0.0	30.7	30.7	25.1	5.62	5.460	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	89.98	0.0	30.7	30.7	24.6	6.07	5.055	
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	89.98	0.0	30.7	30.7	24.2	6.52	4.707	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	89.98	0.0	30.7	30.7	23.7	6.97	4.403	CC
1,700.0	1,700.0	1,699.5	1,699.5	3.7	3.7	92.88	-1.6	31.4	31.4	24.0	7.39	4.252	
1,800.0	1,800.0	1,798.8	1,798.7	3.9	3.9	100.70	-6.3	33.4	34.0	26.3	7.79	4.373	
1,900.0	1,900.0	1,897.6	1,897.1	4.2	4.0	111.02	-14.2	36.8	39.6	31.4	8.19	4.832	
2,000.0	2,000.0	1,996.4	1,995.2	4.4	4.2	120.87	-24.8	41.5	48.5	39.9	8.60	5.643	
2,100.0	2,100.0	2,095.8	2,093.8	4.6	4.4	-49.43	-35.9	46.3	57.8	48.8	8.99	6.431	
2,200.0	2,199.8	2,195.5	2,192.8	4.8	4.7	-47.45	-47.1	51.2	65.1	55.7	9.35	6.960	
2,300.0	2,299.5	2,295.4	2,291.9	4.9	4.9	-47.94	-58.3	56.1	70.0	60.3	9.72	7.202	
2,351.9	2,351.0	2,347.2	2,343.4	5.0	5.0	-49.00	-64.2	58.6	71.7	61.8	9.92	7.223	
2,400.0	2,398.8	2,395.3	2,391.1	5.1	5.2	-50.22	-69.6	60.9	73.0	62.8	10.12	7.209	
2,500.0	2,498.0	2,495.2	2,490.2	5.3	5.4	-52.62	-80.8	65.8	75.7	65.2	10.55	7.179	
2,600.0	2,597.2	2,595.1	2,589.4	5.5	5.7	-54.85	-92.0	70.7	78.6	67.6	10.99	7.151	
2,700.0	2,696.5	2,695.0	2,688.6	5.8	6.0	-56.92	-103.2	75.6	81.6	70.1	11.46	7.123	
2,800.0	2,795.7	2,795.0	2,787.7	6.0	6.2	-58.84	-114.4	80.4	84.7	72.8	11.94	7.096	
2,900.0	2,895.0	2,894.9	2,886.9	6.2	6.5	-60.62	-125.6	85.3	87.9	75.5	12.43	7.069	
3,000.0	2,994.2	2,994.8	2,986.1	6.5	6.8	-62.28	-136.8	90.2	91.2	78.2	12.94	7.042	
3,100.0	3,093.5	3,094.7	3,085.2	6.7	7.1	-63.82	-148.1	95.1	94.5	81.0	13.47	7.016	
3,200.0	3,192.7	3,194.6	3,184.4	7.0	7.4	-65.26	-159.3	100.0	97.9	83.9	14.00	6.990	
3,300.0	3,292.0	3,294.5	3,283.5	7.3	7.7	-66.60	-170.5	104.8	101.3	86.8	14.55	6.965	
3,400.0	3,391.2	3,394.4	3,382.7	7.6	8.0	-67.85	-181.7	109.7	104.9	89.7	15.11	6.941	
3,500.0	3,490.5	3,494.3	3,481.9	7.8	8.3	-69.01	-192.9	114.6	108.4	92.7	15.67	6.918	
3,600.0	3,589.7	3,594.3	3,581.0	8.1	8.6	-70.11	-204.1	119.5	112.0	95.8	16.24	6.896	
3,700.0	3,689.0	3,694.2	3,680.2	8.4	8.9	-71.13	-215.3	124.3	115.6	98.8	16.82	6.874	
3,800.0	3,788.2	3,794.1	3,779.4	8.7	9.2	-72.10	-226.6	129.2	119.3	101.9	17.41	6.854	
3,900.0	3,887.5	3,894.0	3,878.5	9.0	9.5	-73.00	-237.8	134.1	123.0	105.0	18.00	6.835	
4,000.0	3,986.7	3,993.9	3,977.7	9.3	9.8	-73.85	-249.0	139.0	126.7	108.1	18.59	6.816	
4,100.0	4,085.9	4,093.8	4,076.8	9.6	10.1	-74.66	-260.2	143.8	130.5	111.3	19.19	6.799	
4,200.0	4,185.2	4,193.7	4,176.0	9.9	10.4	-75.41	-271.4	148.7	134.3	114.5	19.80	6.782	
4,300.0	4,284.4	4,293.7	4,275.2	10.2	10.7	-76.13	-282.6	153.6	138.1	117.7	20.41	6.766	
4,400.0	4,383.7	4,393.6	4,374.3	10.5	11.1	-76.81	-293.8	158.5	141.9	120.9	21.02	6.751	
4,500.0	4,482.9	4,493.5	4,473.5	10.8	11.4	-77.45	-305.1	163.4	145.7	124.1	21.63	6.737	
4,600.0	4,582.2	4,594.0	4,573.3	11.1	11.7	-78.10	-316.3	168.2	149.6	127.3	22.25	6.723	
4,667.3	4,649.0	4,663.2	4,642.1	11.3	11.8	-78.96	-322.7	171.0	151.5	128.8	22.64	6.691	
4,700.0	4,681.4	4,696.7	4,675.5	11.4	11.9	-79.51	-325.3	172.2	152.1	129.3	22.82	6.666	
4,800.0	4,781.0	4,799.3	4,777.9	11.6	12.1	-81.07	-331.0	174.6	153.5	130.2	23.32	6.583	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-221
Project:	SEC.18-T4N-R67W	**TVD Reference:**	WELL @ 4827.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**MD Reference:**	WELL @ 4827.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Rieder 18Q-221	**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 (7-30-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Rieder 4N67W18Q Pad Sec.18-T4N-R67 - Rieder 18T-341 - Wellbore #1 - Plan #1 (7-30-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,900.0	4,880.8	4,901.8	4,880.3	11.8	12.3	-82.47	-333.3	175.7	153.8	130.1	23.76	6.473	
5,000.0	4,980.8	5,002.2	4,980.8	12.0	12.5	-83.34	-333.4	175.7	153.6	129.4	24.16	6.356	
5,019.2	5,000.0	5,021.5	5,000.0	12.0	12.5	92.72	-333.4	175.7	153.5	129.3	24.23	6.338	
5,100.0	5,080.8	5,102.2	5,080.8	12.2	12.7	92.72	-333.4	175.7	153.5	129.0	24.51	6.264	
5,200.0	5,180.8	5,202.2	5,180.8	12.4	12.8	92.72	-333.4	175.7	153.5	128.7	24.86	6.176	
5,300.0	5,280.8	5,302.2	5,280.8	12.5	13.0	92.72	-333.4	175.7	153.5	128.3	25.21	6.090	
5,400.0	5,380.8	5,402.2	5,380.8	12.7	13.2	92.72	-333.4	175.7	153.5	128.0	25.57	6.005	
5,500.0	5,480.8	5,502.2	5,480.8	12.9	13.3	92.72	-333.4	175.7	153.5	127.6	25.93	5.922	
5,600.0	5,580.8	5,602.2	5,580.8	13.1	13.5	92.72	-333.4	175.7	153.5	127.3	26.29	5.841	
5,700.0	5,680.8	5,702.2	5,680.8	13.3	13.7	92.72	-333.4	175.7	153.5	126.9	26.65	5.761	
5,800.0	5,780.8	5,802.2	5,780.8	13.5	13.9	92.72	-333.4	175.7	153.5	126.5	27.02	5.683	
5,900.0	5,880.8	5,902.2	5,880.8	13.6	14.1	92.72	-333.4	175.7	153.5	126.2	27.39	5.606	
6,000.0	5,980.8	6,002.2	5,980.8	13.8	14.2	92.72	-333.4	175.7	153.5	125.8	27.76	5.531	
6,100.0	6,080.8	6,102.2	6,080.8	14.0	14.4	92.72	-333.4	175.7	153.5	125.4	28.13	5.458	
6,202.4	6,183.2	6,204.7	6,183.2	14.2	14.6	92.72	-333.4	175.7	153.5	125.0	28.52	5.384	
6,250.0	6,230.8	6,252.2	6,230.8	14.3	14.7	93.27	-333.4	175.7	153.6	124.9	28.67	5.357	
6,300.0	6,280.5	6,302.0	6,280.5	14.4	14.8	94.99	-333.4	175.7	154.0	125.2	28.79	5.349	
6,350.0	6,329.9	6,352.6	6,331.2	14.4	14.9	97.35	-331.8	175.7	154.7	125.8	28.84	5.362	
6,400.0	6,378.6	6,403.8	6,382.0	14.4	14.9	99.66	-326.8	175.7	155.6	126.8	28.86	5.392	
6,450.0	6,426.5	6,455.4	6,432.9	14.5	15.0	101.91	-318.3	175.7	156.8	128.0	28.83	5.439	
6,500.0	6,473.3	6,507.4	6,483.6	14.5	15.0	104.09	-306.3	175.7	158.2	129.4	28.76	5.502	
6,550.0	6,518.9	6,559.9	6,533.7	14.5	15.0	106.18	-290.7	175.7	159.8	131.1	28.65	5.578	
6,600.0	6,563.1	6,612.9	6,583.1	14.5	15.0	108.16	-271.5	175.7	161.5	133.0	28.51	5.666	
6,650.0	6,605.6	6,666.3	6,631.4	14.5	15.0	110.04	-248.7	175.7	163.4	135.0	28.34	5.764	
6,700.0	6,646.3	6,720.2	6,678.4	14.5	15.0	111.80	-222.4	175.7	165.3	137.1	28.17	5.869	
6,750.0	6,685.1	6,774.5	6,723.7	14.5	15.0	113.44	-192.6	175.7	167.3	139.3	27.98	5.978	
6,800.0	6,721.7	6,829.2	6,767.2	14.5	15.0	114.95	-159.4	175.7	169.3	141.5	27.81	6.087	
6,850.0	6,756.0	6,884.4	6,808.5	14.6	15.0	116.32	-122.9	175.7	171.2	143.6	27.66	6.190	
6,900.0	6,787.8	6,939.9	6,847.3	14.7	15.0	117.57	-83.2	175.7	173.1	145.6	27.55	6.284	
6,950.0	6,817.1	6,995.7	6,883.3	14.8	15.1	118.69	-40.5	175.7	174.9	147.4	27.50	6.362	
7,000.0	6,843.6	7,052.0	6,916.3	15.0	15.2	119.67	5.0	175.7	176.6	149.1	27.51	6.419	
7,050.0	6,867.3	7,108.4	6,946.0	15.2	15.3	120.51	53.0	175.7	178.1	150.5	27.61	6.449	
7,100.0	6,888.1	7,165.2	6,972.2	15.5	15.6	121.23	103.4	175.7	179.4	151.6	27.82	6.449	
7,150.0	6,905.8	7,222.2	6,994.7	15.8	15.9	121.81	155.7	175.7	180.5	152.4	28.13	6.416	
7,200.0	6,920.5	7,279.3	7,013.2	16.1	16.2	122.26	209.8	175.7	181.4	152.8	28.56	6.350	
7,250.0	6,932.0	7,336.6	7,027.7	16.5	16.7	122.58	265.2	175.7	182.0	152.9	29.12	6.250	
7,300.0	6,940.3	7,394.0	7,038.0	17.0	17.1	122.76	321.7	175.7	182.4	152.6	29.81	6.119	
7,350.0	6,945.4	7,451.5	7,044.0	17.4	17.7	122.82	378.7	175.7	182.5	151.9	30.62	5.961	
7,403.2	6,947.2	7,511.9	7,045.8	18.0	18.3	122.74	439.2	175.7	182.3	150.7	31.61	5.769	
7,500.0	6,947.1	7,608.7	7,045.3	19.1	19.4	122.63	535.9	175.7	182.1	148.6	33.50	5.436	
7,600.0	6,947.0	7,708.7	7,044.7	20.3	20.6	122.52	635.9	175.7	181.9	146.2	35.67	5.100	
7,700.0	6,946.8	7,808.7	7,044.2	21.7	22.0	122.41	735.9	175.7	181.7	143.7	38.01	4.780	
7,800.0	6,946.7	7,908.7	7,043.7	23.1	23.4	122.30	835.9	175.7	181.4	140.9	40.50	4.480	
7,900.0	6,946.6	8,008.7	7,043.2	24.6	24.8	122.18	935.9	175.7	181.2	138.1	43.11	4.204	
8,000.0	6,946.5	8,108.7	7,042.6	26.1	26.4	122.07	1,035.9	175.7	181.0	135.2	45.83	3.949	
8,100.0	6,946.4	8,208.7	7,042.1	27.7	28.0	121.96	1,135.9	175.7	180.8	132.1	48.64	3.717	
8,200.0	6,946.3	8,308.7	7,041.6	29.4	29.6	121.85	1,235.9	175.7	180.6	129.0	51.52	3.505	
8,300.0	6,946.2	8,408.7	7,041.1	31.0	31.3	121.73	1,335.9	175.7	180.3	125.9	54.46	3.311	
8,400.0	6,946.1	8,508.7	7,040.5	32.7	32.9	121.62	1,435.9	175.7	180.1	122.6	57.47	3.134	
8,500.0	6,946.0	8,608.7	7,040.0	34.4	34.6	121.51	1,535.9	175.7	179.9	119.4	60.52	2.973	
8,600.0	6,945.9	8,708.7	7,039.5	36.2	36.4	121.39	1,635.9	175.7	179.7	116.1	63.61	2.825	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-221
Project:	SEC.18-T4N-R67W	**TVD Reference:**	WELL @ 4827.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**MD Reference:**	WELL @ 4827.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Rieder 18Q-221	**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 (7-30-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Rieder 4N67W18Q Pad Sec.18-T4N-R67 - Rieder 18T-341 - Wellbore #1 - Plan #1 (7-30-14)

Offset Site Error: 0.0 ft

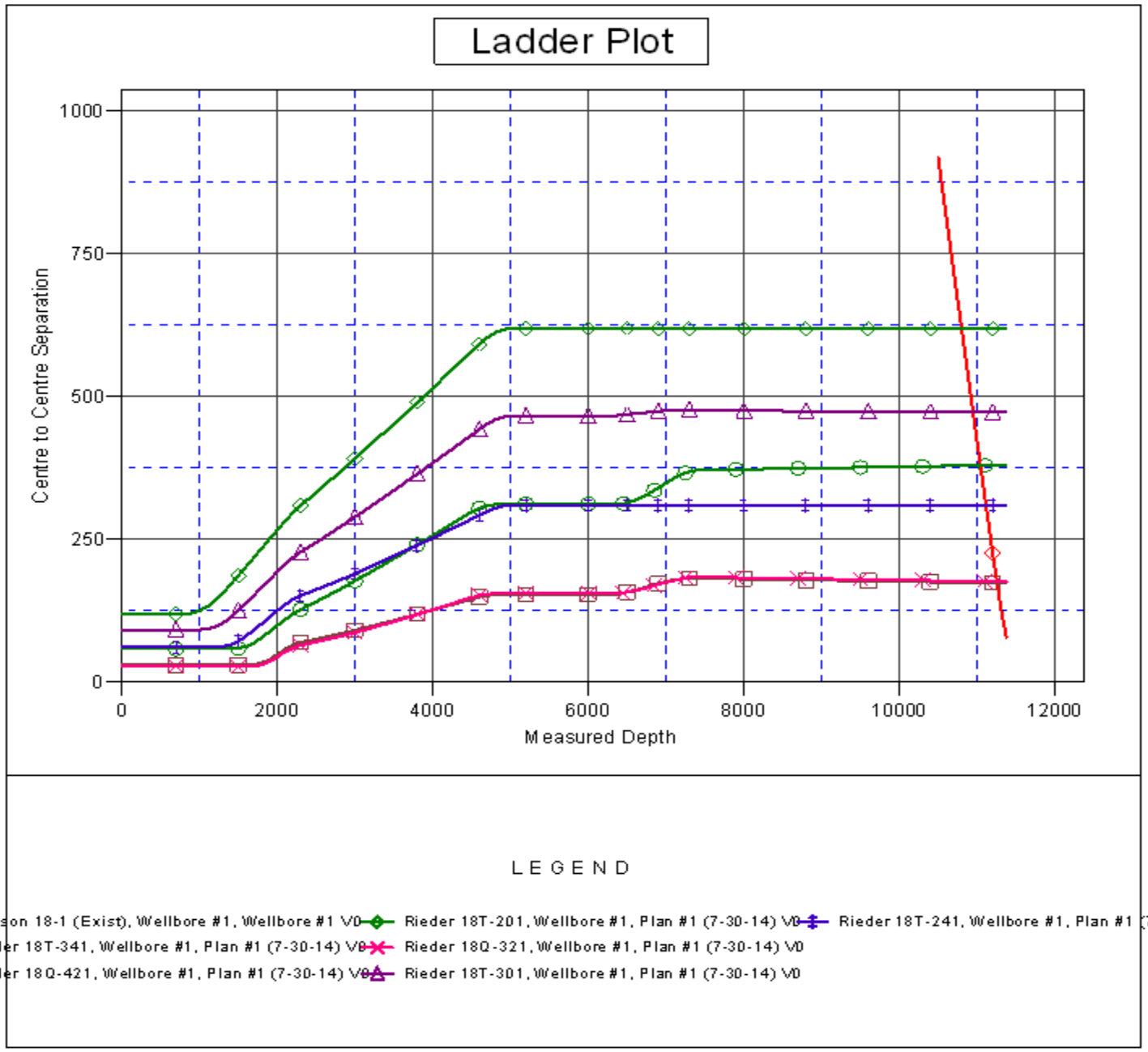
Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,700.0	6,945.8	8,808.7	7,039.0	37.9	38.1	121.28	1,735.9	175.7	179.5	112.7	66.74	2.689	
8,800.0	6,945.7	8,908.7	7,038.4	39.7	39.9	121.16	1,835.9	175.7	179.2	109.3	69.90	2.564	
8,900.0	6,945.6	9,008.7	7,037.9	41.5	41.7	121.05	1,935.9	175.7	179.0	105.9	73.10	2.449	
9,000.0	6,945.5	9,108.7	7,037.4	43.3	43.5	120.93	2,035.9	175.7	178.8	102.5	76.32	2.343	
9,100.0	6,945.4	9,208.7	7,036.9	45.1	45.3	120.82	2,135.9	175.7	178.6	99.0	79.57	2.245	
9,200.0	6,945.3	9,308.7	7,036.4	46.9	47.1	120.70	2,235.9	175.7	178.4	95.5	82.83	2.153	
9,300.0	6,945.2	9,408.7	7,035.8	48.7	48.9	120.59	2,335.9	175.7	178.2	92.0	86.12	2.069	
9,400.0	6,945.1	9,508.7	7,035.3	50.6	50.7	120.47	2,435.9	175.7	178.0	88.5	89.43	1.990	
9,500.0	6,945.0	9,608.7	7,034.8	52.4	52.5	120.35	2,535.9	175.7	177.7	85.0	92.76	1.916	
9,600.0	6,944.9	9,708.7	7,034.3	54.2	54.4	120.24	2,635.9	175.7	177.5	81.4	96.10	1.847	
9,700.0	6,944.8	9,808.7	7,033.7	56.1	56.2	120.12	2,735.9	175.7	177.3	77.9	99.46	1.783	
9,800.0	6,944.7	9,908.7	7,033.2	57.9	58.1	120.00	2,835.9	175.7	177.1	74.3	102.84	1.722	
9,900.0	6,944.5	10,008.7	7,032.7	59.8	59.9	119.89	2,935.9	175.7	176.9	70.7	106.23	1.665	
10,000.0	6,944.4	10,108.7	7,032.2	61.6	61.8	119.77	3,035.9	175.7	176.7	67.1	109.63	1.612	
10,100.0	6,944.3	10,208.7	7,031.6	63.5	63.6	119.65	3,135.9	175.7	176.5	63.4	113.04	1.561	
10,200.0	6,944.2	10,308.7	7,031.1	65.4	65.5	119.53	3,235.9	175.7	176.3	59.8	116.47	1.513	
10,300.0	6,944.1	10,408.7	7,030.6	67.3	67.4	119.41	3,335.9	175.7	176.1	56.2	119.91	1.468	Level 3
10,400.0	6,944.0	10,508.7	7,030.1	69.1	69.3	119.29	3,435.9	175.7	175.9	52.5	123.36	1.426	Level 3
10,500.0	6,943.9	10,608.7	7,029.5	71.0	71.1	119.18	3,535.9	175.7	175.7	48.8	126.82	1.385	Level 3
10,600.0	6,943.8	10,708.7	7,029.0	72.9	73.0	119.06	3,635.9	175.7	175.5	45.2	130.29	1.347	Level 3
10,700.0	6,943.7	10,808.7	7,028.5	74.8	74.9	118.94	3,735.9	175.7	175.3	41.5	133.77	1.310	Level 3
10,800.0	6,943.6	10,908.7	7,028.0	76.6	76.8	118.82	3,835.9	175.7	175.1	37.8	137.26	1.275	Level 3
10,900.0	6,943.5	11,008.7	7,027.5	78.5	78.6	118.70	3,935.9	175.7	174.8	34.1	140.77	1.242	Level 2
11,000.0	6,943.4	11,108.6	7,026.9	80.4	80.5	118.58	4,035.8	175.7	174.6	30.4	144.28	1.211	Level 2
11,100.0	6,943.3	11,208.6	7,026.4	82.3	82.4	118.45	4,135.8	175.7	174.4	26.7	147.80	1.180	Level 2
11,200.0	6,943.2	11,308.6	7,025.9	84.2	84.3	118.33	4,235.8	175.7	174.3	22.9	151.32	1.151	Level 2
11,300.0	6,943.1	11,408.6	7,025.4	86.1	86.1	118.21	4,335.8	175.7	174.1	19.2	154.83	1.124	Level 2
11,355.0	6,943.0	11,463.6	7,025.1	87.1	87.0	118.14	4,390.8	175.7	173.9	17.4	156.59	1.111	Level 2
11,376.4	6,943.0	11,477.3	7,025.0	87.5	87.2	118.13	4,404.5	175.7	174.1	16.9	157.16	1.108	Level 2, ES, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-221
Project:	SEC.18-T4N-R67W	**TVD Reference:**	WELL @ 4827.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**MD Reference:**	WELL @ 4827.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Rieder 18Q-221	**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 (7-30-14)	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4827.0ft (RKB - 15')	Coordinates are relative to: Rieder 18Q-221
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.500000 °	Grid Convergence at Surface is: 0.37°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-221
Project:	SEC.18-T4N-R67W	**TVD Reference:**	WELL @ 4827.0ft (RKB - 15')
Reference Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**MD Reference:**	WELL @ 4827.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Rieder 18Q-221	**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 (7-30-14)	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4827.0ft (RKB - 15')	Coordinates are relative to: Rieder 18Q-221
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.500000 °	Grid Convergence at Surface is: 0.37°