PETROLEUM DEVELOPMENT CORP Weld County CO

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

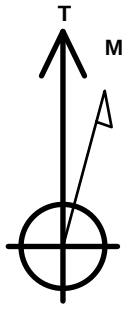
Surface Location: Rieder 4N67W18Q Pad Sec.18-T4N-R67W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4812.0

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.0	0.0	1355266.49	3158651.95	40.307210	-104.931130	

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

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 365'FSL & 2242'FEL	1.0	0.0	0.0	Point
BHL 500'FNL & 2160'FEL	7025.0	4422.7	-106.0	Point



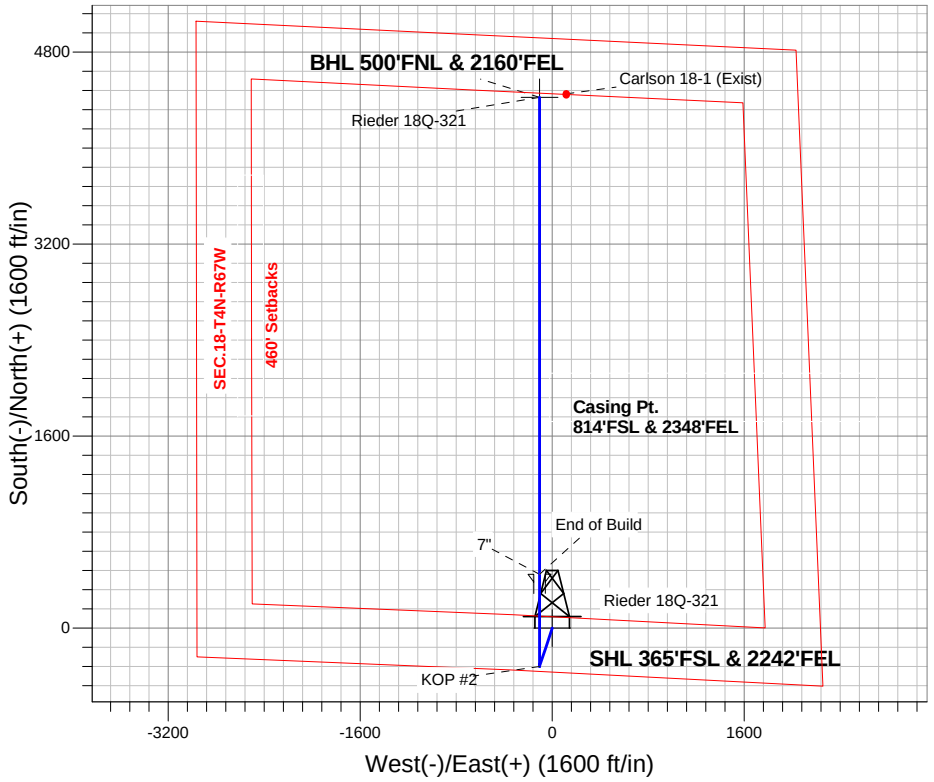
Azimuths to True North
Magnetic North: 8.52°

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

ANNOTATIONS

TVD	MD	Annotation
1600.0	1600.0	KOP #1
6281.8	6300.7	KOP #2
7045.8	7504.7	End of Build

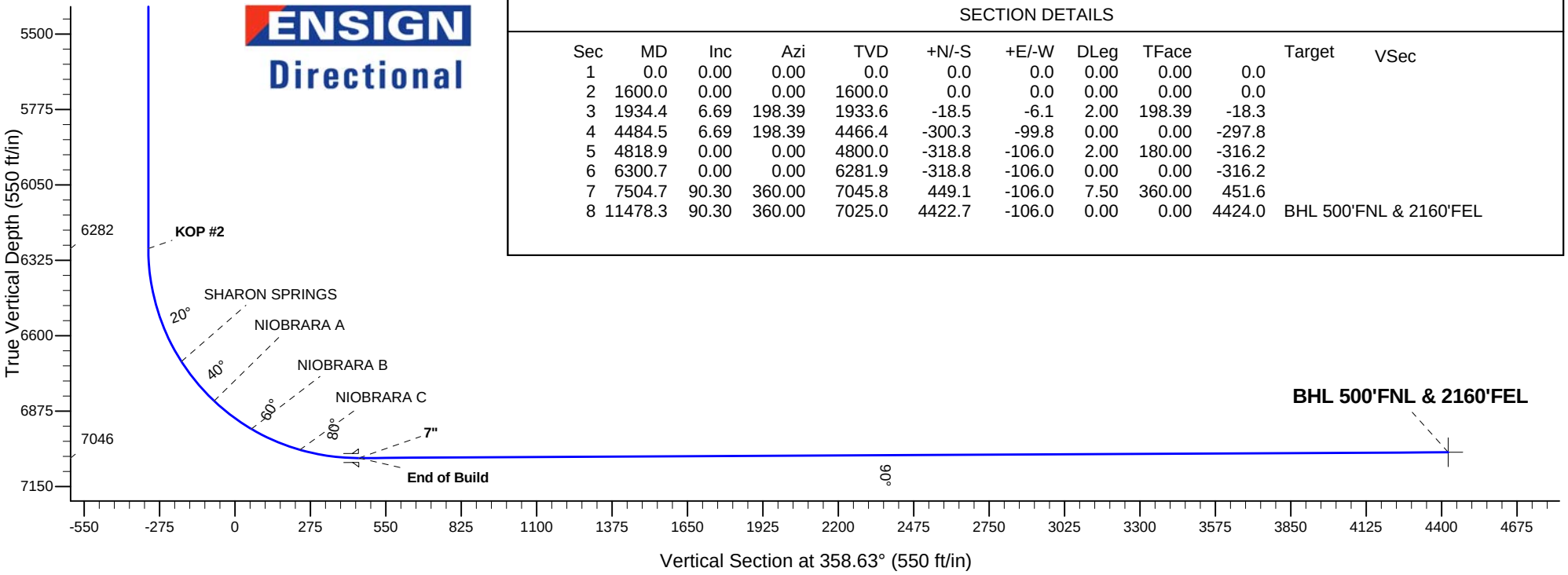
Rieder 4N67W18Q Pad Sec.18-T4N-R67
Rieder 18Q-321
Plan #1 (7-30-14)
14:42, August 04 2014



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	1600.0	0.00	0.00	1600.0	0.0	0.0	0.00	0.00	0.0	
3	1934.4	6.69	198.39	1933.6	-18.5	-6.1	2.00	198.39	-18.3	
4	4484.5	6.69	198.39	4466.4	-300.3	-99.8	0.00	0.00	-297.8	
5	4818.9	0.00	0.00	4800.0	-318.8	-106.0	2.00	180.00	-316.2	
6	6300.7	0.00	0.00	6281.9	-318.8	-106.0	0.00	0.00	-316.2	
7	7504.7	90.30	360.00	7045.8	449.1	-106.0	7.50	360.00	451.6	
8	11478.3	90.30	360.00	7025.0	4422.7	-106.0	0.00	0.00	4424.0	BHL 500'FNL & 2160'FEL



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.18-T4N-R67W
Rieder 4N67W18Q Pad Sec.18-T4N-R67
Rieder 18Q-321

Wellbore #1

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

Standard Planning Report

04 August, 2014

Database:	Landmark	**Local Co-ordinate Reference:**	Well Rieder 18Q-321
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-321	**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-321					
Well Position	**+N/-S**	0.0 ft	**Northing:**	1,355,266.49 ft	**Latitude:**	40.307210
	+E/-W	-27.9 ft	**Easting:**	3,158,651.95 ft	**Longitude:**	-104.931130
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	8.53	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	358.63	

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	
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,934.4	6.69	198.39	1,933.6	-18.5	-6.1	2.00	2.00	0.00	198.39	
4,484.5	6.69	198.39	4,466.4	-300.3	-99.8	0.00	0.00	0.00	0.00	
4,818.9	0.00	0.00	4,800.0	-318.8	-106.0	2.00	-2.00	0.00	180.00	
6,300.7	0.00	0.00	6,281.9	-318.8	-106.0	0.00	0.00	0.00	0.00	
7,504.7	90.30	360.00	7,045.8	449.1	-106.0	7.50	7.50	0.00	360.00	
11,478.3	90.30	360.00	7,025.0	4,422.7	-106.0	0.00	0.00	0.00	0.00	BHL 500'FNL & 216

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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-321	**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 365'FSL & 2242'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
KOP #1									
1,700.0	2.00	198.39	1,700.0	-1.7	-0.6	-1.6	2.00	2.00	0.00
1,800.0	4.00	198.39	1,799.8	-6.6	-2.2	-6.6	2.00	2.00	0.00
1,900.0	6.00	198.39	1,899.5	-14.9	-5.0	-14.8	2.00	2.00	0.00
1,934.4	6.69	198.39	1,933.6	-18.5	-6.1	-18.3	2.00	2.00	0.00
2,000.0	6.69	198.39	1,998.8	-25.7	-8.6	-25.5	0.00	0.00	0.00
2,100.0	6.69	198.39	2,098.1	-36.8	-12.2	-36.5	0.00	0.00	0.00
2,200.0	6.69	198.39	2,197.4	-47.9	-15.9	-47.5	0.00	0.00	0.00
2,300.0	6.69	198.39	2,296.8	-58.9	-19.6	-58.4	0.00	0.00	0.00
2,400.0	6.69	198.39	2,396.1	-70.0	-23.3	-69.4	0.00	0.00	0.00
2,500.0	6.69	198.39	2,495.4	-81.0	-26.9	-80.3	0.00	0.00	0.00
2,600.0	6.69	198.39	2,594.7	-92.1	-30.6	-91.3	0.00	0.00	0.00
2,700.0	6.69	198.39	2,694.0	-103.1	-34.3	-102.3	0.00	0.00	0.00
2,800.0	6.69	198.39	2,793.4	-114.2	-37.9	-113.2	0.00	0.00	0.00
2,900.0	6.69	198.39	2,892.7	-125.2	-41.6	-124.2	0.00	0.00	0.00
3,000.0	6.69	198.39	2,992.0	-136.3	-45.3	-135.1	0.00	0.00	0.00
3,100.0	6.69	198.39	3,091.3	-147.3	-49.0	-146.1	0.00	0.00	0.00
3,200.0	6.69	198.39	3,190.6	-158.4	-52.6	-157.1	0.00	0.00	0.00
3,300.0	6.69	198.39	3,290.0	-169.4	-56.3	-168.0	0.00	0.00	0.00
3,400.0	6.69	198.39	3,389.3	-180.5	-60.0	-179.0	0.00	0.00	0.00
3,461.1	6.69	198.39	3,450.0	-187.2	-62.2	-185.7	0.00	0.00	0.00
PARKMAN									
3,500.0	6.69	198.39	3,488.6	-191.5	-63.7	-189.9	0.00	0.00	0.00
3,600.0	6.69	198.39	3,587.9	-202.6	-67.3	-200.9	0.00	0.00	0.00
3,700.0	6.69	198.39	3,687.2	-213.6	-71.0	-211.8	0.00	0.00	0.00
3,800.0	6.69	198.39	3,786.5	-224.7	-74.7	-222.8	0.00	0.00	0.00
3,900.0	6.69	198.39	3,885.9	-235.7	-78.3	-233.8	0.00	0.00	0.00
3,974.6	6.69	198.39	3,960.0	-244.0	-81.1	-241.9	0.00	0.00	0.00
SUSSEX									
4,000.0	6.69	198.39	3,985.2	-246.8	-82.0	-244.7	0.00	0.00	0.00
4,100.0	6.69	198.39	4,084.5	-257.8	-85.7	-255.7	0.00	0.00	0.00
4,200.0	6.69	198.39	4,183.8	-268.9	-89.4	-266.6	0.00	0.00	0.00
4,300.0	6.69	198.39	4,283.1	-279.9	-93.0	-277.6	0.00	0.00	0.00
4,400.0	6.69	198.39	4,382.5	-291.0	-96.7	-288.6	0.00	0.00	0.00

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Site:	Rieder 4N67W18Q Pad Sec.18-T4N-R67	**North Reference:**	True
Well:	Rieder 18Q-321	**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)
4,484.5	6.69	198.39	4,466.4	-300.3	-99.8	-297.8	0.00	0.00	0.00
4,500.0	6.38	198.39	4,481.8	-302.0	-100.4	-299.5	2.00	-2.00	0.00
4,538.4	5.61	198.39	4,520.0	-305.8	-101.6	-303.3	2.00	-2.00	0.00
SHANNON									
4,600.0	4.38	198.39	4,581.3	-310.9	-103.3	-308.3	2.00	-2.00	0.00
4,700.0	2.38	198.39	4,681.2	-316.5	-105.2	-313.9	2.00	-2.00	0.00
4,800.0	0.38	198.39	4,781.1	-318.7	-105.9	-316.1	2.00	-2.00	0.00
4,818.9	0.00	0.00	4,800.0	-318.8	-106.0	-316.2	2.00	-2.00	0.00
4,900.0	0.00	0.00	4,881.1	-318.8	-106.0	-316.2	0.00	0.00	0.00
5,000.0	0.00	0.00	4,981.1	-318.8	-106.0	-316.2	0.00	0.00	0.00
5,100.0	0.00	0.00	5,081.1	-318.8	-106.0	-316.2	0.00	0.00	0.00
5,200.0	0.00	0.00	5,181.1	-318.8	-106.0	-316.2	0.00	0.00	0.00
5,300.0	0.00	0.00	5,281.1	-318.8	-106.0	-316.2	0.00	0.00	0.00
5,400.0	0.00	0.00	5,381.1	-318.8	-106.0	-316.2	0.00	0.00	0.00
5,500.0	0.00	0.00	5,481.1	-318.8	-106.0	-316.2	0.00	0.00	0.00
5,600.0	0.00	0.00	5,581.1	-318.8	-106.0	-316.2	0.00	0.00	0.00
5,700.0	0.00	0.00	5,681.1	-318.8	-106.0	-316.2	0.00	0.00	0.00
5,800.0	0.00	0.00	5,781.1	-318.8	-106.0	-316.2	0.00	0.00	0.00
5,900.0	0.00	0.00	5,881.1	-318.8	-106.0	-316.2	0.00	0.00	0.00
6,000.0	0.00	0.00	5,981.1	-318.8	-106.0	-316.2	0.00	0.00	0.00
6,100.0	0.00	0.00	6,081.1	-318.8	-106.0	-316.2	0.00	0.00	0.00
6,200.0	0.00	0.00	6,181.1	-318.8	-106.0	-316.2	0.00	0.00	0.00
6,300.0	0.00	0.00	6,281.1	-318.8	-106.0	-316.2	0.00	0.00	0.00
6,300.7	0.00	0.00	6,281.8	-318.8	-106.0	-316.2	0.00	0.00	0.00
KOP #2									
6,400.0	7.44	360.00	6,380.9	-312.4	-106.0	-309.7	7.50	7.50	0.00
6,500.0	14.94	360.00	6,478.9	-293.0	-106.0	-290.3	7.50	7.50	0.00
6,600.0	22.44	360.00	6,573.5	-260.9	-106.0	-258.3	7.50	7.50	0.00
6,700.0	29.94	360.00	6,663.2	-216.8	-106.0	-214.2	7.50	7.50	0.00
6,736.0	32.65	360.00	6,694.0	-198.1	-106.0	-195.5	7.50	7.50	0.00
SHARON SPRINGS									
6,800.0	37.44	360.00	6,746.3	-161.4	-106.0	-158.8	7.50	7.50	0.00
6,900.0	44.94	360.00	6,821.5	-95.6	-106.0	-93.0	7.50	7.50	0.00
6,923.6	46.72	360.00	6,838.0	-78.6	-106.0	-76.1	7.50	7.50	0.00
NIOBRARA A									
7,000.0	52.44	360.00	6,887.5	-20.5	-106.0	-18.0	7.50	7.50	0.00
7,093.9	59.48	360.00	6,940.0	57.2	-106.0	59.8	7.50	7.50	0.00
NIOBRARA B									
7,100.0	59.94	360.00	6,943.1	62.5	-106.0	65.1	7.50	7.50	0.00
7,200.0	67.44	360.00	6,987.4	152.1	-106.0	154.6	7.50	7.50	0.00
7,286.6	73.94	360.00	7,016.0	233.8	-106.0	236.3	7.50	7.50	0.00
NIOBRARA C									
7,300.0	74.94	360.00	7,019.6	246.7	-106.0	249.2	7.50	7.50	0.00
7,400.0	82.44	360.00	7,039.2	344.7	-106.0	347.1	7.50	7.50	0.00
7,500.0	89.94	360.00	7,045.8	444.4	-106.0	446.8	7.50	7.50	0.00
7,504.7	90.30	360.00	7,045.8	449.1	-106.0	451.5	7.50	7.50	0.00
End of Build - 7"									
7,600.0	90.30	360.00	7,045.3	544.4	-106.0	546.8	0.00	0.00	0.00
7,700.0	90.30	360.00	7,044.8	644.4	-106.0	646.8	0.00	0.00	0.00
7,800.0	90.30	360.00	7,044.3	744.4	-106.0	746.7	0.00	0.00	0.00
7,900.0	90.30	360.00	7,043.7	844.4	-106.0	846.7	0.00	0.00	0.00
8,000.0	90.30	360.00	7,043.2	944.4	-106.0	946.7	0.00	0.00	0.00

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Well:	Rieder 18Q-321	**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)
8,100.0	90.30	360.00	7,042.7	1,044.4	-106.0	1,046.6	0.00	0.00	0.00
8,200.0	90.30	360.00	7,042.2	1,144.4	-106.0	1,146.6	0.00	0.00	0.00
8,300.0	90.30	360.00	7,041.6	1,244.4	-106.0	1,246.6	0.00	0.00	0.00
8,400.0	90.30	360.00	7,041.1	1,344.4	-106.0	1,346.5	0.00	0.00	0.00
8,500.0	90.30	360.00	7,040.6	1,444.4	-106.0	1,446.5	0.00	0.00	0.00
8,600.0	90.30	360.00	7,040.1	1,544.4	-106.0	1,546.5	0.00	0.00	0.00
8,700.0	90.30	360.00	7,039.5	1,644.4	-106.0	1,646.5	0.00	0.00	0.00
8,800.0	90.30	360.00	7,039.0	1,744.4	-106.0	1,746.4	0.00	0.00	0.00
8,900.0	90.30	360.00	7,038.5	1,844.4	-106.0	1,846.4	0.00	0.00	0.00
9,000.0	90.30	360.00	7,038.0	1,944.4	-106.0	1,946.4	0.00	0.00	0.00
9,100.0	90.30	360.00	7,037.5	2,044.4	-106.0	2,046.3	0.00	0.00	0.00
9,200.0	90.30	360.00	7,036.9	2,144.4	-106.0	2,146.3	0.00	0.00	0.00
9,300.0	90.30	360.00	7,036.4	2,244.4	-106.0	2,246.3	0.00	0.00	0.00
9,400.0	90.30	360.00	7,035.9	2,344.4	-106.0	2,346.2	0.00	0.00	0.00
9,500.0	90.30	360.00	7,035.4	2,444.4	-106.0	2,446.2	0.00	0.00	0.00
9,600.0	90.30	360.00	7,034.8	2,544.4	-106.0	2,546.2	0.00	0.00	0.00
9,700.0	90.30	360.00	7,034.3	2,644.4	-106.0	2,646.2	0.00	0.00	0.00
9,800.0	90.30	360.00	7,033.8	2,744.4	-106.0	2,746.1	0.00	0.00	0.00
9,900.0	90.30	360.00	7,033.3	2,844.4	-106.0	2,846.1	0.00	0.00	0.00
10,000.0	90.30	360.00	7,032.7	2,944.4	-106.0	2,946.1	0.00	0.00	0.00
10,100.0	90.30	360.00	7,032.2	3,044.4	-106.0	3,046.0	0.00	0.00	0.00
10,200.0	90.30	360.00	7,031.7	3,144.4	-106.0	3,146.0	0.00	0.00	0.00
10,300.0	90.30	360.00	7,031.2	3,244.4	-106.0	3,246.0	0.00	0.00	0.00
10,400.0	90.30	360.00	7,030.6	3,344.4	-106.0	3,345.9	0.00	0.00	0.00
10,500.0	90.30	360.00	7,030.1	3,444.4	-106.0	3,445.9	0.00	0.00	0.00
10,600.0	90.30	360.00	7,029.6	3,544.4	-106.0	3,545.9	0.00	0.00	0.00
10,700.0	90.30	360.00	7,029.1	3,644.4	-106.0	3,645.9	0.00	0.00	0.00
10,800.0	90.30	360.00	7,028.6	3,744.4	-106.0	3,745.8	0.00	0.00	0.00
10,900.0	90.30	360.00	7,028.0	3,844.4	-106.0	3,845.8	0.00	0.00	0.00
11,000.0	90.30	360.00	7,027.5	3,944.4	-106.0	3,945.8	0.00	0.00	0.00
11,100.0	90.30	360.00	7,027.0	4,044.4	-106.0	4,045.7	0.00	0.00	0.00
11,200.0	90.30	360.00	7,026.5	4,144.4	-106.0	4,145.7	0.00	0.00	0.00
11,300.0	90.30	360.00	7,025.9	4,244.4	-106.0	4,245.7	0.00	0.00	0.00
11,400.0	90.30	360.00	7,025.4	4,344.4	-106.0	4,345.6	0.00	0.00	0.00
11,478.3	90.30	360.00	7,025.0	4,422.7	-106.0	4,424.0	0.00	0.00	0.00
BHL 500'FNL & 2160'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
SHL 365'FSL & 2242' - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,355,266.51	3,158,651.95	40.307210	-104.931130
BHL 500'FNL & 2160' - plan hits target center - Point	0.00	0.00	7,025.0	4,422.7	-106.0	1,359,688.22	3,158,517.62	40.319350	-104.931510

Database:	Landmark	**Local Co-ordinate Reference:**	Well Rieder 18Q-321
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-321	**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 (")
7,504.7	7,045.8	7"	7	7-1/2

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,461.1	3,450.0	PARKMAN			
3,974.6	3,960.0	SUSSEX			
4,538.4	4,520.0	SHANNON			
6,736.0	6,694.0	SHARON SPRINGS			
6,923.6	6,838.0	NIOBRARA A			
7,093.9	6,940.0	NIOBRARA B			
7,286.6	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
1,600.0	1,600.0	0.0	0.0	KOP #1
6,300.7	6,281.8	-318.8	-106.0	KOP #2
7,504.7	7,045.8	449.1	-106.0	End of Build

ENSIGN Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.18-T4N-R67W
Rieder 4N67W18Q Pad Sec.18-T4N-R67
Rieder 18Q-321

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-321
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-321	**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	11,478.3	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	11,478.3	7,039.0	225.0	-3.5	0.985	Level 1, CC, ES, SF
Rieder 4N67W18Q Pad Sec.18-T4N-R67						
Rieder 18Q-221 - Wellbore #1 - Plan #1 (7-30-14)	1,600.0	1,600.0	27.9	20.9	4.003	CC
Rieder 18Q-221 - Wellbore #1 - Plan #1 (7-30-14)	11,478.3	11,376.4	176.7	18.4	1.116	Level 2, ES, SF
Rieder 18Q-421 - Wellbore #1 - Plan #1 (7-30-14)	1,400.0	1,400.0	30.7	24.6	5.055	CC, ES
Rieder 18Q-421 - Wellbore #1 - Plan #1 (7-30-14)	11,478.3	11,579.0	207.1	67.8	1.487	Level 3, SF
Rieder 18T-201 - Wellbore #1 - Plan #1 (7-30-14)	800.0	799.0	147.8	144.4	43.873	CC, ES
Rieder 18T-201 - Wellbore #1 - Plan #1 (7-30-14)	11,478.3	11,412.1	780.5	606.4	4.482	SF
Rieder 18T-241 - Wellbore #1 - Plan #1 (7-30-14)	1,200.0	1,200.0	89.2	84.1	17.264	CC, ES
Rieder 18T-241 - Wellbore #1 - Plan #1 (7-30-14)	11,478.3	11,387.6	473.6	300.6	2.739	SF
Rieder 18T-301 - Wellbore #1 - Plan #1 (7-30-14)	1,000.0	999.0	119.9	115.7	28.097	CC, ES
Rieder 18T-301 - Wellbore #1 - Plan #1 (7-30-14)	11,478.3	11,497.6	622.7	447.7	3.559	SF
Rieder 18T-341 - Wellbore #1 - Plan #1 (7-30-14)	1,600.0	1,600.0	58.6	51.6	8.406	CC, ES
Rieder 18T-341 - Wellbore #1 - Plan #1 (7-30-14)	11,478.3	11,477.3	310.1	135.2	1.773	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
10,600.0	7,029.6	7,043.6	7,043.6	71.2	140.9	91.22	4,451.8	117.1	934.5	722.5	211.99	4.408	
10,700.0	7,029.1	7,043.1	7,043.1	73.0	140.9	91.09	4,451.8	117.1	837.7	623.9	213.86	3.917	
10,800.0	7,028.6	7,042.6	7,042.6	74.9	140.9	90.95	4,451.8	117.1	741.8	526.1	215.74	3.439	
10,900.0	7,028.0	7,042.0	7,042.0	76.8	140.8	90.82	4,451.8	117.1	647.1	429.5	217.61	2.974	
11,000.0	7,027.5	7,041.5	7,041.5	78.7	140.8	90.68	4,451.8	117.1	554.3	334.9	219.49	2.526	
11,100.0	7,027.0	7,041.0	7,041.0	80.6	140.8	90.55	4,451.8	117.1	464.6	243.2	221.37	2.099	
11,200.0	7,026.5	7,040.5	7,040.5	82.5	140.8	90.41	4,451.8	117.1	379.9	156.6	223.25	1.702	
11,300.0	7,025.9	7,039.9	7,039.9	84.3	140.8	90.28	4,451.8	117.1	304.7	79.5	225.13	1.353	Level 3
11,400.0	7,025.4	7,039.4	7,039.4	86.2	140.8	90.14	4,451.8	117.1	247.6	20.6	227.01	1.091	Level 2
11,478.3	7,025.0	7,039.0	7,039.0	87.7	140.8	90.04	4,451.8	117.1	225.0	-3.5	228.48	0.985	Level 1, CC, ES, SF

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-321
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-321	**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-221 - 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	90.01	0.0	27.9	27.9				
100.0	100.0	100.0	100.0	0.1	0.1	90.01	0.0	27.9	27.9	27.7	0.22	124.086	
200.0	200.0	200.0	200.0	0.3	0.3	90.01	0.0	27.9	27.9	27.2	0.67	41.362	
300.0	300.0	300.0	300.0	0.6	0.6	90.01	0.0	27.9	27.9	26.8	1.12	24.817	
400.0	400.0	400.0	400.0	0.8	0.8	90.01	0.0	27.9	27.9	26.3	1.57	17.727	
500.0	500.0	500.0	500.0	1.0	1.0	90.01	0.0	27.9	27.9	25.9	2.02	13.787	
600.0	600.0	600.0	600.0	1.2	1.2	90.01	0.0	27.9	27.9	25.4	2.47	11.281	
700.0	700.0	700.0	700.0	1.5	1.5	90.01	0.0	27.9	27.9	25.0	2.92	9.545	
800.0	800.0	800.0	800.0	1.7	1.7	90.01	0.0	27.9	27.9	24.5	3.37	8.272	
900.0	900.0	900.0	900.0	1.9	1.9	90.01	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	90.01	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	90.01	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	90.01	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	90.01	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	90.01	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	90.01	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	90.01	0.0	27.9	27.9	20.9	6.97	4.003	CC
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	-111.70	0.0	27.9	28.5	21.1	7.39	3.856	
1,800.0	1,799.8	1,799.8	1,799.8	3.9	3.9	-120.73	0.0	27.9	30.8	23.0	7.78	3.960	
1,900.0	1,899.5	1,899.5	1,899.5	4.0	4.2	-132.62	0.0	27.9	36.1	27.9	8.17	4.411	
1,934.4	1,933.6	1,933.6	1,933.6	4.1	4.2	-136.70	0.0	27.9	38.7	30.4	8.31	4.663	
2,000.0	1,998.8	1,998.8	1,998.8	4.2	4.4	-143.43	0.0	27.9	44.6	36.1	8.57	5.205	
2,100.0	2,098.1	2,099.3	2,099.2	4.4	4.6	-149.37	-1.7	28.0	53.4	44.4	8.96	5.962	
2,200.0	2,197.4	2,200.2	2,200.1	4.7	4.8	-151.07	-7.0	28.4	60.3	51.0	9.32	6.468	
2,300.0	2,296.8	2,301.5	2,300.9	4.9	4.9	-150.02	-15.8	29.0	65.0	55.3	9.71	6.698	
2,400.0	2,396.1	2,402.1	2,400.8	5.1	5.1	-147.02	-27.7	29.8	68.0	57.9	10.12	6.718	
2,500.0	2,495.4	2,502.0	2,500.0	5.4	5.3	-144.00	-39.9	30.6	70.9	60.3	10.55	6.717	
2,600.0	2,594.7	2,601.9	2,599.1	5.7	5.5	-141.22	-52.1	31.5	73.9	62.9	11.00	6.720	
2,700.0	2,694.0	2,701.8	2,698.2	5.9	5.8	-138.67	-64.3	32.3	77.2	65.7	11.47	6.726	
2,800.0	2,793.4	2,801.7	2,797.4	6.2	6.0	-136.33	-76.5	33.1	80.5	68.6	11.96	6.734	
2,900.0	2,892.7	2,901.6	2,896.5	6.5	6.2	-134.18	-88.7	34.0	84.0	71.5	12.46	6.742	
3,000.0	2,992.0	3,001.4	2,995.7	6.7	6.5	-132.20	-100.9	34.8	87.6	74.6	12.98	6.751	
3,100.0	3,091.3	3,101.3	3,094.8	7.0	6.8	-130.38	-113.1	35.6	91.3	77.8	13.51	6.760	
3,200.0	3,190.6	3,201.2	3,193.9	7.3	7.0	-128.70	-125.4	36.5	95.1	81.0	14.05	6.768	
3,300.0	3,290.0	3,301.1	3,293.1	7.6	7.3	-127.15	-137.6	37.3	98.9	84.3	14.60	6.777	
3,400.0	3,389.3	3,401.0	3,392.2	7.9	7.6	-125.72	-149.8	38.1	102.8	87.7	15.16	6.785	
3,500.0	3,488.6	3,500.9	3,491.4	8.2	7.8	-124.39	-162.0	39.0	106.8	91.1	15.73	6.793	
3,600.0	3,587.9	3,600.8	3,590.5	8.5	8.1	-123.16	-174.2	39.8	110.9	94.6	16.30	6.801	
3,700.0	3,687.2	3,700.7	3,689.6	8.8	8.4	-122.02	-186.4	40.6	114.9	98.1	16.88	6.809	
3,800.0	3,786.5	3,800.6	3,788.8	9.1	8.7	-120.96	-198.6	41.5	119.1	101.6	17.47	6.816	
3,900.0	3,885.9	3,900.5	3,887.9	9.4	9.0	-119.96	-210.8	42.3	123.2	105.2	18.06	6.824	
4,000.0	3,985.2	4,000.4	3,987.1	9.7	9.3	-119.04	-223.0	43.1	127.4	108.8	18.65	6.831	
4,100.0	4,084.5	4,100.3	4,086.2	10.0	9.6	-118.17	-235.3	44.0	131.6	112.4	19.25	6.838	
4,200.0	4,183.8	4,200.1	4,185.3	10.3	9.9	-117.35	-247.5	44.8	135.9	116.0	19.85	6.845	
4,300.0	4,283.1	4,300.0	4,284.5	10.6	10.2	-116.59	-259.7	45.7	140.2	119.7	20.46	6.852	
4,400.0	4,382.5	4,399.9	4,383.6	10.9	10.5	-115.87	-271.9	46.5	144.5	123.4	21.06	6.859	
4,484.5	4,466.4	4,484.3	4,467.4	11.1	10.7	-115.30	-282.2	47.2	148.1	126.5	21.58	6.864	
4,500.0	4,481.8	4,499.8	4,482.7	11.2	10.8	-115.19	-284.1	47.3	148.8	127.1	21.67	6.865	
4,600.0	4,581.3	4,599.7	4,581.9	11.4	11.1	-113.83	-296.3	48.2	152.2	130.0	22.24	6.844	
4,700.0	4,681.2	4,699.4	4,680.9	11.6	11.4	-111.39	-308.3	49.0	154.4	131.6	22.79	6.775	
4,800.0	4,781.1	4,799.4	4,780.4	11.8	11.6	-108.77	-317.7	49.6	155.6	132.3	23.25	6.692	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-321
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-321	**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-221 - 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
4,818.9	4,800.0	4,818.3	4,799.2	11.8	11.6	90.10	-319.1	49.7	155.7	132.4	23.33	6.674	
4,900.0	4,881.1	4,899.7	4,880.5	12.0	11.8	91.77	-323.6	50.0	156.1	132.4	23.67	6.595	
5,000.0	4,981.1	5,000.2	4,981.0	12.2	12.0	92.65	-326.0	50.2	156.3	132.3	24.04	6.503	
5,100.0	5,081.1	5,100.3	5,081.1	12.3	12.2	92.68	-326.1	50.2	156.3	131.9	24.39	6.409	
5,200.0	5,181.1	5,200.3	5,181.1	12.5	12.4	92.68	-326.1	50.2	156.3	131.6	24.74	6.318	
5,300.0	5,281.1	5,300.3	5,281.1	12.7	12.5	92.68	-326.1	50.2	156.3	131.2	25.10	6.229	
5,400.0	5,381.1	5,400.3	5,381.1	12.9	12.7	92.68	-326.1	50.2	156.3	130.9	25.46	6.141	
5,500.0	5,481.1	5,500.3	5,481.1	13.0	12.9	92.68	-326.1	50.2	156.3	130.5	25.82	6.056	
5,600.0	5,581.1	5,600.3	5,581.1	13.2	13.1	92.68	-326.1	50.2	156.3	130.2	26.18	5.972	
5,700.0	5,681.1	5,700.3	5,681.1	13.4	13.3	92.68	-326.1	50.2	156.3	129.8	26.55	5.889	
5,800.0	5,781.1	5,800.3	5,781.1	13.6	13.5	92.68	-326.1	50.2	156.3	129.4	26.91	5.809	
5,900.0	5,881.1	5,900.3	5,881.1	13.8	13.6	92.68	-326.1	50.2	156.3	129.0	27.29	5.730	
6,000.0	5,981.1	6,000.3	5,981.1	13.9	13.8	92.68	-326.1	50.2	156.3	128.7	27.66	5.652	
6,100.0	6,081.1	6,100.3	6,081.1	14.1	14.0	92.68	-326.1	50.2	156.3	128.3	28.03	5.577	
6,200.0	6,181.1	6,200.3	6,181.1	14.3	14.2	92.68	-326.1	50.2	156.3	127.9	28.41	5.503	
6,300.7	6,281.9	6,301.5	6,282.0	14.5	14.4	90.33	-319.7	50.2	156.2	127.4	28.74	5.435	
6,307.7	6,288.8	6,308.4	6,288.8	14.5	14.4	90.00	-318.8	50.2	156.2	127.4	28.75	5.432	
6,350.0	6,331.1	6,350.2	6,330.1	14.6	14.4	88.02	-311.9	50.2	156.3	127.4	28.84	5.418	
6,400.0	6,380.9	6,399.2	6,377.8	14.7	14.4	85.69	-300.9	50.2	156.6	127.7	28.90	5.418	
6,450.0	6,430.2	6,447.9	6,424.4	14.7	14.5	83.41	-287.0	50.2	157.2	128.3	28.93	5.434	
6,500.0	6,478.9	6,496.1	6,469.7	14.7	14.5	81.19	-270.3	50.2	158.1	129.1	28.92	5.465	
6,550.0	6,526.7	6,544.0	6,513.5	14.8	14.5	79.03	-251.0	50.2	159.1	130.2	28.88	5.510	
6,600.0	6,573.5	6,591.6	6,555.8	14.8	14.5	76.95	-229.1	50.2	160.4	131.6	28.81	5.566	
6,650.0	6,619.1	6,638.8	6,596.3	14.8	14.5	74.96	-204.8	50.2	161.8	133.1	28.72	5.633	
6,700.0	6,663.2	6,685.7	6,634.9	14.8	14.5	73.07	-178.3	50.2	163.3	134.7	28.61	5.708	
6,750.0	6,705.7	6,732.4	6,671.7	14.8	14.5	71.28	-149.6	50.2	165.0	136.5	28.50	5.789	
6,800.0	6,746.3	6,778.7	6,706.4	14.8	14.5	69.60	-118.9	50.2	166.7	138.3	28.38	5.874	
6,850.0	6,785.0	6,824.8	6,739.0	14.8	14.6	68.04	-86.3	50.2	168.5	140.2	28.27	5.960	
6,900.0	6,821.5	6,870.6	6,769.4	14.8	14.6	66.58	-52.0	50.2	170.3	142.1	28.18	6.044	
6,950.0	6,855.7	6,916.3	6,797.6	14.8	14.7	65.24	-16.2	50.2	172.1	144.0	28.11	6.122	
7,000.0	6,887.5	6,961.7	6,823.5	14.9	14.9	64.02	21.1	50.2	173.8	145.7	28.08	6.190	
7,050.0	6,916.7	7,006.9	6,847.0	15.0	15.0	62.90	59.8	50.2	175.5	147.4	28.10	6.246	
7,100.0	6,943.1	7,050.0	6,867.3	15.2	15.2	61.94	97.8	50.2	177.1	149.0	28.17	6.287	
7,150.0	6,966.7	7,096.9	6,886.9	15.4	15.4	61.01	140.4	50.2	178.6	150.3	28.32	6.306	
7,200.0	6,987.4	7,141.6	6,903.1	15.7	15.7	60.22	182.1	50.2	180.0	151.4	28.55	6.303	
7,250.0	7,005.0	7,186.3	6,916.8	16.0	16.0	59.55	224.5	50.2	181.2	152.3	28.87	6.277	
7,300.0	7,019.6	7,230.8	6,928.0	16.3	16.4	58.97	267.6	50.2	182.3	153.0	29.28	6.226	
7,350.0	7,031.0	7,275.2	6,936.6	16.7	16.7	58.51	311.2	50.2	183.2	153.4	29.78	6.151	
7,400.0	7,039.2	7,319.6	6,942.7	17.2	17.1	58.14	355.2	50.2	183.9	153.5	30.37	6.054	
7,450.0	7,044.1	7,364.0	6,946.2	17.7	17.6	57.88	399.4	50.2	184.4	153.3	31.06	5.936	
7,504.7	7,045.8	7,413.6	6,947.1	18.2	18.1	57.72	449.0	50.2	184.7	152.8	31.94	5.783	
7,600.0	7,045.3	7,508.9	6,947.1	19.3	19.2	57.82	544.3	50.2	184.5	150.7	33.84	5.453	
7,700.0	7,044.8	7,608.9	6,946.9	20.5	20.4	57.93	644.3	50.2	184.3	148.2	36.03	5.114	
7,800.0	7,044.3	7,708.9	6,946.8	21.9	21.8	58.04	744.3	50.2	184.1	145.7	38.40	4.793	
7,900.0	7,043.7	7,808.9	6,946.7	23.3	23.2	58.15	844.3	50.2	183.8	142.9	40.91	4.493	
8,000.0	7,043.2	7,908.9	6,946.6	24.8	24.7	58.26	944.3	50.2	183.6	140.1	43.55	4.216	
8,100.0	7,042.7	8,008.9	6,946.5	26.3	26.3	58.38	1,044.3	50.2	183.4	137.1	46.29	3.962	
8,200.0	7,042.2	8,108.9	6,946.4	27.9	27.9	58.49	1,144.3	50.2	183.2	134.1	49.12	3.729	
8,300.0	7,041.6	8,208.9	6,946.3	29.6	29.5	58.60	1,244.3	50.2	183.0	130.9	52.02	3.517	
8,400.0	7,041.1	8,308.9	6,946.2	31.2	31.2	58.71	1,344.3	50.2	182.7	127.8	54.98	3.324	
8,500.0	7,040.6	8,408.9	6,946.1	32.9	32.9	58.82	1,444.3	50.2	182.5	124.5	58.00	3.147	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-321
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-321	**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-221 - 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	7,040.1	8,508.9	6,946.0	34.6	34.6	58.94	1,544.3	50.2	182.3	121.2	61.07	2.985	
8,700.0	7,039.5	8,608.9	6,945.9	36.4	36.3	59.05	1,644.3	50.2	182.1	117.9	64.18	2.837	
8,800.0	7,039.0	8,708.9	6,945.8	38.1	38.1	59.16	1,744.3	50.2	181.9	114.6	67.33	2.701	
8,900.0	7,038.5	8,808.9	6,945.7	39.9	39.9	59.28	1,844.3	50.2	181.7	111.2	70.51	2.577	
9,000.0	7,038.0	8,908.9	6,945.6	41.7	41.6	59.39	1,944.3	50.2	181.4	107.7	73.71	2.461	
9,100.0	7,037.5	9,008.9	6,945.5	43.5	43.4	59.50	2,044.3	50.2	181.2	104.3	76.95	2.355	
9,200.0	7,036.9	9,108.9	6,945.4	45.3	45.2	59.62	2,144.3	50.2	181.0	100.8	80.21	2.257	
9,300.0	7,036.4	9,208.9	6,945.3	47.1	47.1	59.73	2,244.3	50.2	180.8	97.3	83.49	2.166	
9,400.0	7,035.9	9,308.9	6,945.2	48.9	48.9	59.85	2,344.3	50.2	180.6	93.8	86.80	2.081	
9,500.0	7,035.4	9,408.9	6,945.1	50.7	50.7	59.96	2,444.3	50.2	180.4	90.3	90.12	2.002	
9,600.0	7,034.8	9,508.9	6,945.0	52.6	52.6	60.08	2,544.3	50.2	180.2	86.7	93.46	1.928	
9,700.0	7,034.3	9,608.9	6,944.9	54.4	54.4	60.19	2,644.3	50.2	180.0	83.2	96.82	1.859	
9,800.0	7,033.8	9,708.9	6,944.7	56.3	56.2	60.31	2,744.3	50.2	179.8	79.6	100.19	1.794	
9,900.0	7,033.3	9,808.9	6,944.6	58.1	58.1	60.43	2,844.3	50.2	179.6	76.0	103.58	1.734	
10,000.0	7,032.7	9,908.9	6,944.5	60.0	60.0	60.54	2,944.3	50.2	179.4	72.4	106.98	1.677	
10,100.0	7,032.2	10,008.9	6,944.4	61.8	61.8	60.66	3,044.3	50.2	179.1	68.8	110.39	1.623	
10,200.0	7,031.7	10,108.9	6,944.3	63.7	63.7	60.78	3,144.3	50.2	178.9	65.1	113.82	1.572	
10,300.0	7,031.2	10,208.9	6,944.2	65.6	65.5	60.89	3,244.3	50.2	178.7	61.5	117.26	1.524	
10,400.0	7,030.6	10,308.9	6,944.1	67.4	67.4	61.01	3,344.3	50.2	178.5	57.8	120.71	1.479	Level 3
10,500.0	7,030.1	10,408.9	6,944.0	69.3	69.3	61.13	3,444.3	50.2	178.3	54.2	124.17	1.436	Level 3
10,600.0	7,029.6	10,508.9	6,943.9	71.2	71.2	61.25	3,544.3	50.2	178.1	50.5	127.64	1.396	Level 3
10,700.0	7,029.1	10,608.9	6,943.8	73.0	73.0	61.36	3,644.3	50.2	177.9	46.8	131.12	1.357	Level 3
10,800.0	7,028.6	10,708.9	6,943.7	74.9	74.9	61.48	3,744.3	50.2	177.7	43.1	134.61	1.320	Level 3
10,900.0	7,028.0	10,808.9	6,943.6	76.8	76.8	61.60	3,844.3	50.2	177.5	39.4	138.12	1.285	Level 3
11,000.0	7,027.5	10,908.9	6,943.5	78.7	78.7	61.72	3,944.3	50.2	177.3	35.7	141.63	1.252	Level 3
11,100.0	7,027.0	11,008.9	6,943.4	80.6	80.6	61.84	4,044.3	50.2	177.1	32.0	145.15	1.220	Level 2
11,200.0	7,026.5	11,108.9	6,943.3	82.5	82.5	61.96	4,144.3	50.2	176.9	28.3	148.68	1.190	Level 2
11,300.0	7,025.9	11,208.9	6,943.2	84.3	84.4	62.08	4,244.3	50.2	176.7	24.5	152.22	1.161	Level 2
11,400.0	7,025.4	11,308.9	6,943.1	86.2	86.2	62.20	4,344.3	50.2	176.5	20.8	155.76	1.133	Level 2
11,454.6	7,025.1	11,363.4	6,943.0	87.3	87.3	62.26	4,398.8	50.2	176.4	18.7	157.70	1.119	Level 2
11,478.3	7,025.0	11,376.4	6,943.0	87.7	87.5	62.28	4,411.8	50.2	176.7	18.4	158.35	1.116	Level 2, ES, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-321
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-321	**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	-90.01	0.0	-30.7	30.7				
100.0	100.0	100.0	100.0	0.1	0.1	-90.01	0.0	-30.7	30.7	30.5	0.22	136.495	
200.0	200.0	200.0	200.0	0.3	0.3	-90.01	0.0	-30.7	30.7	30.0	0.67	45.498	
300.0	300.0	300.0	300.0	0.6	0.6	-90.01	0.0	-30.7	30.7	29.6	1.12	27.299	
400.0	400.0	400.0	400.0	0.8	0.8	-90.01	0.0	-30.7	30.7	29.1	1.57	19.499	
500.0	500.0	500.0	500.0	1.0	1.0	-90.01	0.0	-30.7	30.7	28.7	2.02	15.166	
600.0	600.0	600.0	600.0	1.2	1.2	-90.01	0.0	-30.7	30.7	28.2	2.47	12.409	
700.0	700.0	700.0	700.0	1.5	1.5	-90.01	0.0	-30.7	30.7	27.8	2.92	10.500	
800.0	800.0	800.0	800.0	1.7	1.7	-90.01	0.0	-30.7	30.7	27.3	3.37	9.100	
900.0	900.0	900.0	900.0	1.9	1.9	-90.01	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	-90.01	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	-90.01	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	-90.01	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	-90.01	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	-90.01	0.0	-30.7	30.7	24.6	6.07	5.055	CC, ES
1,500.0	1,500.0	1,499.3	1,499.3	3.3	3.2	-92.50	-1.4	-31.7	31.7	25.3	6.49	4.891	
1,600.0	1,600.0	1,598.4	1,598.3	3.5	3.4	-99.02	-5.5	-34.8	35.3	28.4	6.89	5.114	
1,700.0	1,700.0	1,697.2	1,696.6	3.7	3.6	56.25	-12.4	-39.9	40.9	33.6	7.27	5.623	
1,800.0	1,799.8	1,796.1	1,794.9	3.9	3.8	52.57	-21.8	-46.9	47.4	39.8	7.63	6.219	
1,900.0	1,899.5	1,896.0	1,893.9	4.0	4.0	52.21	-32.0	-54.4	52.6	44.6	8.00	6.576	
1,934.4	1,933.6	1,930.3	1,928.0	4.1	4.1	52.78	-35.5	-57.0	53.9	45.8	8.14	6.626	
2,000.0	1,998.8	1,995.9	1,993.0	4.2	4.3	54.17	-42.2	-62.0	56.2	47.8	8.41	6.682	
2,100.0	2,098.1	2,095.8	2,092.2	4.4	4.5	56.07	-52.3	-69.5	59.7	50.8	8.84	6.752	
2,200.0	2,197.4	2,195.7	2,191.3	4.7	4.8	57.76	-62.5	-77.1	63.2	53.9	9.29	6.806	
2,300.0	2,296.8	2,295.7	2,290.4	4.9	5.1	59.27	-72.7	-84.7	66.8	57.1	9.76	6.847	
2,400.0	2,396.1	2,395.6	2,389.5	5.1	5.3	60.63	-82.9	-92.2	70.5	60.2	10.25	6.877	
2,500.0	2,495.4	2,495.5	2,488.6	5.4	5.6	61.85	-93.0	-99.8	74.1	63.4	10.75	6.898	
2,600.0	2,594.7	2,595.4	2,587.7	5.7	5.9	62.96	-103.2	-107.3	77.8	66.6	11.26	6.912	
2,700.0	2,694.0	2,695.3	2,686.8	5.9	6.2	63.96	-113.4	-114.9	81.6	69.8	11.79	6.920	
2,800.0	2,793.4	2,795.3	2,785.9	6.2	6.5	64.88	-123.6	-122.4	85.3	73.0	12.33	6.923	
2,900.0	2,892.7	2,895.2	2,885.1	6.5	6.8	65.72	-133.7	-130.0	89.1	76.2	12.87	6.923	
3,000.0	2,992.0	2,995.1	2,984.2	6.7	7.1	66.49	-143.9	-137.5	92.9	79.5	13.43	6.920	
3,100.0	3,091.3	3,095.0	3,083.3	7.0	7.4	67.20	-154.1	-145.1	96.7	82.7	13.99	6.914	
3,200.0	3,190.6	3,194.9	3,182.4	7.3	7.7	67.86	-164.3	-152.7	100.5	86.0	14.56	6.907	
3,300.0	3,290.0	3,294.9	3,281.5	7.6	8.0	68.47	-174.4	-160.2	104.4	89.2	15.13	6.898	
3,400.0	3,389.3	3,394.8	3,380.6	7.9	8.3	69.04	-184.6	-167.8	108.2	92.5	15.71	6.889	
3,500.0	3,488.6	3,494.7	3,479.7	8.2	8.7	69.56	-194.8	-175.3	112.1	95.8	16.29	6.879	
3,600.0	3,587.9	3,594.6	3,578.9	8.5	9.0	70.05	-205.0	-182.9	115.9	99.1	16.88	6.868	
3,700.0	3,687.2	3,694.5	3,678.0	8.8	9.3	70.51	-215.1	-190.4	119.8	102.3	17.47	6.857	
3,800.0	3,786.5	3,794.5	3,777.1	9.1	9.6	70.94	-225.3	-198.0	123.7	105.6	18.07	6.846	
3,900.0	3,885.9	3,894.4	3,876.2	9.4	9.9	71.35	-235.5	-205.6	127.6	108.9	18.67	6.835	
4,000.0	3,985.2	3,994.3	3,975.3	9.7	10.3	71.73	-245.7	-213.1	131.5	112.2	19.27	6.824	
4,100.0	4,084.5	4,094.2	4,074.4	10.0	10.6	72.09	-255.8	-220.7	135.4	115.5	19.87	6.813	
4,200.0	4,183.8	4,194.1	4,173.5	10.3	10.9	72.43	-266.0	-228.2	139.3	118.8	20.48	6.802	
4,300.0	4,283.1	4,294.1	4,272.6	10.6	11.2	72.75	-276.2	-235.8	143.2	122.1	21.08	6.791	
4,400.0	4,382.5	4,394.0	4,371.8	10.9	11.5	73.05	-286.4	-243.3	147.1	125.4	21.69	6.781	
4,484.5	4,466.4	4,479.0	4,456.1	11.1	11.8	73.32	-295.0	-249.7	150.4	128.2	22.21	6.771	
4,500.0	4,481.8	4,495.0	4,472.0	11.2	11.9	73.40	-296.5	-250.8	150.9	128.6	22.29	6.769	
4,600.0	4,581.3	4,598.0	4,574.5	11.4	12.1	73.86	-304.5	-256.8	153.7	131.0	22.77	6.753	
4,700.0	4,681.2	4,701.1	4,677.4	11.6	12.3	74.14	-309.5	-260.5	155.5	132.3	23.19	6.707	
4,800.0	4,781.1	4,804.3	4,780.5	11.8	12.5	74.25	-311.6	-262.0	156.3	132.7	23.56	6.633	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-321
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-321	**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
4,818.9	4,800.0	4,823.7	4,800.0	11.8	12.5	-87.36	-311.6	-262.1	156.3	132.7	23.62	6.615	
4,900.0	4,881.1	4,904.9	4,881.1	12.0	12.6	-87.36	-311.6	-262.1	156.3	132.4	23.91	6.536	
5,000.0	4,981.1	5,004.9	4,981.1	12.2	12.8	-87.36	-311.6	-262.1	156.3	132.0	24.25	6.444	
5,100.0	5,081.1	5,104.9	5,081.1	12.3	13.0	-87.36	-311.6	-262.1	156.3	131.7	24.59	6.354	
5,200.0	5,181.1	5,204.9	5,181.1	12.5	13.1	-87.36	-311.6	-262.1	156.3	131.3	24.94	6.266	
5,300.0	5,281.1	5,304.9	5,281.1	12.7	13.3	-87.36	-311.6	-262.1	156.3	131.0	25.29	6.179	
5,400.0	5,381.1	5,404.9	5,381.1	12.9	13.5	-87.36	-311.6	-262.1	156.3	130.6	25.65	6.094	
5,500.0	5,481.1	5,504.9	5,481.1	13.0	13.6	-87.36	-311.6	-262.1	156.3	130.3	26.00	6.010	
5,600.0	5,581.1	5,604.9	5,581.1	13.2	13.8	-87.36	-311.6	-262.1	156.3	129.9	26.36	5.928	
5,700.0	5,681.1	5,704.9	5,681.1	13.4	14.0	-87.36	-311.6	-262.1	156.3	129.6	26.72	5.848	
5,800.0	5,781.1	5,804.9	5,781.1	13.6	14.2	-87.36	-311.6	-262.1	156.3	129.2	27.09	5.769	
5,900.0	5,881.1	5,904.9	5,881.1	13.8	14.3	-87.36	-311.6	-262.1	156.3	128.8	27.46	5.692	
6,000.0	5,981.1	6,004.9	5,981.1	13.9	14.5	-87.36	-311.6	-262.1	156.3	128.5	27.83	5.616	
6,100.0	6,081.1	6,104.9	6,081.1	14.1	14.7	-87.36	-311.6	-262.1	156.3	128.1	28.20	5.542	
6,200.0	6,181.1	6,204.9	6,181.1	14.3	14.9	-87.36	-311.6	-262.1	156.3	127.7	28.57	5.470	
6,300.7	6,281.9	6,305.6	6,281.9	14.5	15.1	-87.36	-311.6	-262.1	156.3	127.3	28.95	5.398	
6,350.0	6,331.1	6,354.8	6,331.1	14.6	15.2	-87.95	-311.6	-262.1	156.2	127.1	29.11	5.367	
6,400.0	6,380.9	6,404.6	6,380.9	14.7	15.3	-89.72	-311.6	-262.1	156.1	126.9	29.20	5.347	
6,405.7	6,386.5	6,410.2	6,386.5	14.7	15.3	-90.00	-311.6	-262.1	156.1	126.9	29.20	5.346	
6,450.0	6,430.2	6,454.3	6,430.5	14.7	15.3	-92.18	-310.3	-262.1	156.2	127.0	29.23	5.345	
6,500.0	6,478.9	6,504.5	6,480.5	14.7	15.4	-94.64	-305.6	-262.1	156.6	127.4	29.22	5.360	
6,550.0	6,526.7	6,555.1	6,530.4	14.8	15.5	-97.07	-297.7	-262.1	157.3	128.2	29.18	5.392	
6,600.0	6,573.5	6,606.1	6,580.2	14.8	15.5	-99.46	-286.3	-262.1	158.3	129.2	29.10	5.440	
6,650.0	6,619.1	6,657.7	6,629.6	14.8	15.5	-101.78	-271.5	-262.1	159.5	130.5	29.00	5.502	
6,700.0	6,663.2	6,709.7	6,678.3	14.8	15.5	-104.04	-253.2	-262.1	161.0	132.1	28.87	5.577	
6,750.0	6,705.7	6,762.3	6,726.1	14.8	15.5	-106.20	-231.4	-262.1	162.7	133.9	28.72	5.664	
6,800.0	6,746.3	6,815.3	6,772.6	14.8	15.5	-108.25	-206.1	-262.1	164.5	135.9	28.56	5.760	
6,850.0	6,785.0	6,868.7	6,817.8	14.8	15.5	-110.20	-177.4	-262.1	166.5	138.1	28.40	5.862	
6,900.0	6,821.5	6,922.7	6,861.1	14.8	15.5	-112.02	-145.3	-262.1	168.6	140.3	28.25	5.967	
6,950.0	6,855.7	6,977.1	6,902.5	14.8	15.5	-113.72	-109.9	-262.1	170.7	142.6	28.11	6.071	
7,000.0	6,887.5	7,032.0	6,941.5	14.9	15.5	-115.29	-71.3	-262.1	172.8	144.8	28.01	6.171	
7,050.0	6,916.7	7,087.3	6,977.9	15.0	15.5	-116.73	-29.7	-262.1	174.9	147.0	27.95	6.260	
7,100.0	6,943.1	7,143.0	7,011.5	15.2	15.5	-118.02	14.8	-262.1	177.0	149.1	27.94	6.334	
7,150.0	6,966.7	7,199.2	7,041.9	15.4	15.5	-119.19	61.9	-262.1	178.9	150.9	28.01	6.389	
7,200.0	6,987.4	7,255.6	7,068.9	15.7	15.7	-120.21	111.5	-262.1	180.8	152.6	28.17	6.417	
7,250.0	7,005.0	7,312.4	7,092.4	16.0	16.0	-121.10	163.2	-262.1	182.4	154.0	28.42	6.419	
7,300.0	7,019.6	7,369.5	7,112.0	16.3	16.4	-121.85	216.8	-262.1	183.9	155.1	28.78	6.389	
7,350.0	7,031.0	7,426.8	7,127.6	16.7	16.8	-122.46	271.9	-262.1	185.1	155.8	29.24	6.329	
7,400.0	7,039.2	7,484.3	7,139.0	17.2	17.3	-122.94	328.3	-262.1	186.1	156.2	29.83	6.238	
7,450.0	7,044.1	7,542.0	7,146.3	17.7	17.8	-123.29	385.5	-262.1	186.8	156.3	30.52	6.119	
7,504.7	7,045.8	7,605.3	7,149.2	18.2	18.5	-123.51	448.6	-262.1	187.2	155.8	31.42	5.960	
7,600.0	7,045.3	7,700.7	7,149.5	19.3	19.5	-123.71	544.1	-262.1	187.7	154.5	33.16	5.659	
7,700.0	7,044.8	7,800.7	7,149.8	20.5	20.7	-123.92	644.1	-262.1	188.1	152.9	35.19	5.346	
7,800.0	7,044.3	7,900.7	7,150.1	21.9	22.1	-124.12	744.1	-262.1	188.6	151.2	37.39	5.045	
7,900.0	7,043.7	8,000.7	7,150.4	23.3	23.5	-124.33	844.1	-262.1	189.1	149.3	39.71	4.761	
8,000.0	7,043.2	8,100.7	7,150.7	24.8	25.0	-124.53	944.1	-262.1	189.5	147.4	42.15	4.497	
8,100.0	7,042.7	8,200.7	7,151.0	26.3	26.5	-124.74	1,044.1	-262.1	190.0	145.3	44.67	4.253	
8,200.0	7,042.2	8,300.7	7,151.3	27.9	28.1	-124.94	1,144.1	-262.1	190.5	143.2	47.27	4.030	
8,300.0	7,041.6	8,400.7	7,151.5	29.6	29.7	-125.14	1,244.1	-262.1	190.9	141.0	49.92	3.825	
8,400.0	7,041.1	8,500.7	7,151.8	31.2	31.3	-125.34	1,344.1	-262.1	191.4	138.8	52.62	3.638	
8,500.0	7,040.6	8,600.7	7,152.1	32.9	33.0	-125.54	1,444.1	-262.1	191.9	136.5	55.36	3.466	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-321
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-321	**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	7,040.1	8,700.7	7,152.4	34.6	34.7	-125.74	1,544.1	-262.1	192.4	134.2	58.13	3.309	
8,700.0	7,039.5	8,800.7	7,152.7	36.4	36.4	-125.94	1,644.1	-262.1	192.8	131.9	60.92	3.166	
8,800.0	7,039.0	8,900.7	7,153.0	38.1	38.2	-126.14	1,744.0	-262.1	193.3	129.6	63.73	3.034	
8,900.0	7,038.5	9,000.7	7,153.3	39.9	39.9	-126.33	1,844.0	-262.1	193.8	127.3	66.56	2.912	
9,000.0	7,038.0	9,100.7	7,153.6	41.7	41.7	-126.53	1,944.0	-262.1	194.3	124.9	69.40	2.800	
9,100.0	7,037.5	9,200.7	7,153.9	43.5	43.5	-126.72	2,044.0	-262.1	194.8	122.5	72.24	2.696	
9,200.0	7,036.9	9,300.7	7,154.2	45.3	45.3	-126.91	2,144.0	-262.1	195.3	120.2	75.10	2.600	
9,300.0	7,036.4	9,400.7	7,154.5	47.1	47.1	-127.10	2,244.0	-262.1	195.8	117.8	77.96	2.511	
9,400.0	7,035.9	9,500.7	7,154.8	48.9	48.9	-127.29	2,344.0	-262.1	196.3	115.5	80.82	2.429	
9,500.0	7,035.4	9,600.7	7,155.1	50.7	50.7	-127.48	2,444.0	-262.1	196.8	113.1	83.68	2.352	
9,600.0	7,034.8	9,700.7	7,155.4	52.6	52.6	-127.67	2,544.0	-262.1	197.3	110.7	86.54	2.280	
9,700.0	7,034.3	9,800.7	7,155.7	54.4	54.4	-127.86	2,644.0	-262.1	197.8	108.4	89.39	2.212	
9,800.0	7,033.8	9,900.7	7,156.0	56.3	56.2	-128.05	2,744.0	-262.1	198.3	106.0	92.25	2.149	
9,900.0	7,033.3	10,000.7	7,156.3	58.1	58.1	-128.23	2,844.0	-262.1	198.8	103.7	95.10	2.090	
10,000.0	7,032.7	10,100.7	7,156.6	60.0	59.9	-128.42	2,944.0	-262.1	199.3	101.4	97.95	2.035	
10,100.0	7,032.2	10,200.7	7,156.9	61.8	61.8	-128.60	3,044.0	-262.1	199.8	99.0	100.79	1.982	
10,200.0	7,031.7	10,300.6	7,157.2	63.7	63.6	-128.79	3,144.0	-262.1	200.3	96.7	103.63	1.933	
10,300.0	7,031.2	10,400.6	7,157.5	65.6	65.5	-128.97	3,244.0	-262.1	200.8	94.4	106.46	1.887	
10,400.0	7,030.6	10,500.6	7,157.8	67.4	67.4	-129.15	3,344.0	-262.1	201.4	92.1	109.28	1.843	
10,500.0	7,030.1	10,600.6	7,158.1	69.3	69.2	-129.33	3,444.0	-262.1	201.9	89.8	112.10	1.801	
10,600.0	7,029.6	10,700.6	7,158.4	71.2	71.1	-129.51	3,544.0	-262.1	202.4	87.5	114.90	1.761	
10,700.0	7,029.1	10,800.6	7,158.7	73.0	73.0	-129.69	3,644.0	-262.1	202.9	85.2	117.71	1.724	
10,800.0	7,028.6	10,900.6	7,159.0	74.9	74.9	-129.87	3,744.0	-262.1	203.5	83.0	120.50	1.688	
10,900.0	7,028.0	11,000.6	7,159.3	76.8	76.7	-130.04	3,844.0	-262.1	204.0	80.7	123.28	1.655	
11,000.0	7,027.5	11,100.6	7,159.6	78.7	78.6	-130.22	3,944.0	-262.1	204.5	78.4	126.06	1.622	
11,100.0	7,027.0	11,200.6	7,159.9	80.6	80.5	-130.39	4,044.0	-262.1	205.0	76.2	128.83	1.592	
11,200.0	7,026.5	11,300.6	7,160.2	82.5	82.4	-130.57	4,144.0	-262.1	205.6	74.0	131.59	1.562	
11,300.0	7,025.9	11,400.6	7,160.4	84.3	84.3	-130.74	4,244.0	-262.1	206.1	71.8	134.34	1.534	
11,400.0	7,025.4	11,500.6	7,160.7	86.2	86.2	-130.91	4,343.9	-262.1	206.6	69.6	137.08	1.508	
11,478.3	7,025.0	11,579.0	7,161.0	87.7	87.6	-131.05	4,422.3	-262.1	207.1	67.8	139.22	1.487	Level 3, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-321
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-321	**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	147.8	147.8				
100.0	100.0	99.0	99.0	0.1	0.1	90.00	0.0	147.8	147.8	147.6	0.22	660.957	
200.0	200.0	199.0	199.0	0.3	0.3	90.00	0.0	147.8	147.8	147.1	0.67	219.952	
300.0	300.0	299.0	299.0	0.6	0.6	90.00	0.0	147.8	147.8	146.7	1.12	131.795	
400.0	400.0	399.0	399.0	0.8	0.8	90.00	0.0	147.8	147.8	146.2	1.57	94.086	
500.0	500.0	499.0	499.0	1.0	1.0	90.00	0.0	147.8	147.8	145.8	2.02	73.154	
600.0	600.0	599.0	599.0	1.2	1.2	90.00	0.0	147.8	147.8	145.3	2.47	59.841	
700.0	700.0	699.0	699.0	1.5	1.5	90.00	0.0	147.8	147.8	144.9	2.92	50.628	
800.0	800.0	799.0	799.0	1.7	1.7	90.00	0.0	147.8	147.8	144.4	3.37	43.873	CC, ES
900.0	900.0	894.9	894.9	1.9	1.9	90.34	-0.9	149.1	149.2	145.4	3.79	39.369	
1,000.0	1,000.0	990.6	990.5	2.1	2.1	91.34	-3.6	153.0	153.3	149.1	4.20	36.525	
1,100.0	1,100.0	1,085.9	1,085.4	2.4	2.3	92.90	-8.1	159.6	160.3	155.7	4.62	34.726	
1,200.0	1,200.0	1,180.5	1,179.4	2.6	2.5	94.85	-14.3	168.6	170.3	165.3	5.05	33.716	
1,300.0	1,300.0	1,274.3	1,272.1	2.8	2.7	97.03	-22.2	180.1	183.4	177.9	5.50	33.334	
1,400.0	1,400.0	1,372.3	1,368.8	3.0	3.0	99.25	-31.5	193.6	198.5	192.5	5.98	33.206	
1,500.0	1,500.0	1,470.9	1,466.0	3.3	3.3	101.17	-40.9	207.3	213.9	207.4	6.46	33.108	
1,600.0	1,600.0	1,569.5	1,563.1	3.5	3.7	102.83	-50.3	220.9	229.4	222.5	6.95	33.030	
1,700.0	1,700.0	1,668.1	1,660.4	3.7	4.0	-94.20	-59.7	234.6	245.2	238.0	7.27	33.740	
1,800.0	1,799.8	1,766.8	1,757.7	3.9	4.4	-93.73	-69.1	248.2	261.4	253.7	7.68	34.027	
1,900.0	1,899.5	1,865.4	1,854.9	4.0	4.7	-94.00	-78.5	261.9	277.7	269.6	8.11	34.237	
1,934.4	1,933.6	1,899.3	1,888.2	4.1	4.8	-94.24	-81.7	266.6	283.4	275.2	8.27	34.291	
2,000.0	1,998.8	1,963.9	1,951.9	4.2	5.1	-94.96	-87.9	275.5	294.4	285.8	8.57	34.350	
2,100.0	2,098.1	2,062.3	2,049.0	4.4	5.5	-95.96	-97.2	289.1	311.1	302.0	9.05	34.386	
2,200.0	2,197.4	2,160.8	2,146.0	4.7	5.8	-96.85	-106.6	302.7	327.9	318.4	9.54	34.367	
2,300.0	2,296.8	2,259.2	2,243.1	4.9	6.2	-97.66	-116.0	316.4	344.8	334.8	10.05	34.308	
2,400.0	2,396.1	2,357.7	2,340.1	5.1	6.6	-98.39	-125.4	330.0	361.8	351.2	10.57	34.220	
2,500.0	2,495.4	2,456.1	2,437.2	5.4	6.9	-99.06	-134.7	343.6	378.8	367.6	11.10	34.112	
2,600.0	2,594.7	2,554.6	2,534.2	5.7	7.3	-99.67	-144.1	357.2	395.8	384.2	11.64	33.992	
2,700.0	2,694.0	2,653.1	2,631.3	5.9	7.7	-100.23	-153.5	370.9	412.9	400.7	12.19	33.863	
2,800.0	2,793.4	2,751.5	2,728.4	6.2	8.1	-100.74	-162.9	384.5	430.0	417.3	12.75	33.729	
2,900.0	2,892.7	2,850.0	2,825.4	6.5	8.5	-101.22	-172.2	398.1	447.2	433.8	13.31	33.593	
3,000.0	2,992.0	2,948.4	2,922.5	6.7	8.8	-101.66	-181.6	411.7	464.3	450.5	13.88	33.457	
3,100.0	3,091.3	3,046.9	3,019.5	7.0	9.2	-102.07	-191.0	425.3	481.5	467.1	14.45	33.323	
3,200.0	3,190.6	3,145.3	3,116.6	7.3	9.6	-102.45	-200.4	439.0	498.8	483.7	15.03	33.191	
3,300.0	3,290.0	3,243.8	3,213.6	7.6	10.0	-102.80	-209.7	452.6	516.0	500.4	15.61	33.062	
3,400.0	3,389.3	3,342.2	3,310.7	7.9	10.4	-103.14	-219.1	466.2	533.3	517.1	16.19	32.936	
3,500.0	3,488.6	3,440.7	3,407.7	8.2	10.8	-103.45	-228.5	479.8	550.6	533.8	16.78	32.814	
3,600.0	3,587.9	3,539.1	3,504.8	8.5	11.1	-103.74	-237.9	493.5	567.9	550.5	17.37	32.697	
3,700.0	3,687.2	3,637.6	3,601.8	8.8	11.5	-104.01	-247.2	507.1	585.2	567.2	17.96	32.583	
3,800.0	3,786.5	3,736.0	3,698.9	9.1	11.9	-104.27	-256.6	520.7	602.5	583.9	18.55	32.474	
3,900.0	3,885.9	3,834.5	3,795.9	9.4	12.3	-104.52	-266.0	534.3	619.8	600.7	19.15	32.369	
4,000.0	3,985.2	3,932.9	3,893.0	9.7	12.7	-104.75	-275.4	547.9	637.2	617.4	19.75	32.267	
4,100.0	4,084.5	4,031.4	3,990.1	10.0	13.1	-104.97	-284.7	561.6	654.5	634.2	20.35	32.169	
4,200.0	4,183.8	4,129.8	4,087.1	10.3	13.5	-105.18	-294.1	575.2	671.9	650.9	20.95	32.075	
4,300.0	4,283.1	4,228.3	4,184.2	10.6	13.8	-105.38	-303.5	588.8	689.3	667.7	21.55	31.985	
4,400.0	4,382.5	4,326.7	4,281.2	10.9	14.2	-105.56	-312.9	602.4	706.6	684.5	22.15	31.898	
4,484.5	4,466.4	4,409.9	4,363.2	11.1	14.6	-105.71	-320.8	614.0	721.3	698.7	22.66	31.827	
4,500.0	4,481.8	4,425.2	4,378.3	11.2	14.6	-105.79	-322.2	616.1	724.0	701.3	22.76	31.813	
4,600.0	4,581.3	4,523.8	4,475.4	11.4	15.0	-106.12	-331.6	629.7	740.8	717.5	23.32	31.770	
4,700.0	4,681.2	4,638.2	4,588.4	11.6	15.4	-106.14	-342.0	644.8	756.0	732.2	23.84	31.717	
4,800.0	4,781.1	4,766.3	4,715.5	11.8	15.7	-105.95	-350.9	657.7	767.0	742.7	24.28	31.586	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-321
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-321	**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
4,818.9	4,800.0	4,790.6	4,739.7	11.8	15.8	92.50	-352.2	659.6	768.5	744.2	24.36	31.546	
4,900.0	4,881.1	4,895.6	4,844.4	12.0	16.0	92.80	-356.5	665.8	773.5	748.9	24.68	31.344	
5,000.0	4,981.1	5,025.4	4,974.2	12.2	16.2	92.96	-358.8	669.2	776.2	751.2	25.05	30.983	
5,100.0	5,081.1	5,131.4	5,080.1	12.3	16.3	92.96	-358.9	669.3	776.3	750.9	25.40	30.564	
5,200.0	5,181.1	5,231.4	5,180.1	12.5	16.4	92.96	-358.9	669.3	776.3	750.6	25.73	30.166	
5,300.0	5,281.1	5,331.4	5,280.1	12.7	16.6	92.96	-358.9	669.3	776.3	750.2	26.07	29.775	
5,400.0	5,381.1	5,431.4	5,380.1	12.9	16.7	92.96	-358.9	669.3	776.3	749.9	26.41	29.390	
5,500.0	5,481.1	5,531.4	5,480.1	13.0	16.9	92.96	-358.9	669.3	776.3	749.6	26.76	29.011	
5,600.0	5,581.1	5,631.4	5,580.1	13.2	17.0	92.96	-358.9	669.3	776.3	749.2	27.11	28.639	
5,700.0	5,681.1	5,731.4	5,680.1	13.4	17.1	92.96	-358.9	669.3	776.3	748.9	27.46	28.273	
5,800.0	5,781.1	5,831.4	5,780.1	13.6	17.3	92.96	-358.9	669.3	776.3	748.5	27.81	27.914	
5,900.0	5,881.1	5,931.4	5,880.1	13.8	17.4	92.96	-358.9	669.3	776.3	748.2	28.17	27.561	
6,000.0	5,981.1	6,031.4	5,980.1	13.9	17.6	92.96	-358.9	669.3	776.3	747.8	28.53	27.214	
6,100.0	6,081.1	6,131.4	6,080.1	14.1	17.7	92.96	-358.9	669.3	776.3	747.4	28.89	26.873	
6,200.0	6,181.1	6,231.4	6,180.1	14.3	17.9	92.96	-358.9	669.3	776.3	747.1	29.25	26.539	
6,300.7	6,281.9	6,336.9	6,285.4	14.5	18.0	92.45	-352.0	669.3	776.0	746.4	29.61	26.205	
6,350.0	6,331.1	6,387.7	6,335.5	14.6	18.0	91.97	-343.6	669.3	775.8	746.0	29.76	26.067	
6,400.0	6,380.9	6,438.8	6,385.2	14.7	18.1	91.47	-331.7	669.3	775.5	745.7	29.87	25.962	
6,450.0	6,430.2	6,489.5	6,433.5	14.7	18.1	90.97	-316.7	669.3	775.4	745.4	29.95	25.889	
6,500.0	6,478.9	6,539.6	6,480.3	14.7	18.1	90.46	-298.8	669.3	775.3	745.3	30.00	25.844	
6,545.7	6,522.7	6,585.1	6,521.7	14.8	18.0	90.00	-279.8	669.3	775.3	745.3	30.02	25.823	
6,550.0	6,526.7	6,589.3	6,525.5	14.8	18.0	89.96	-277.9	669.3	775.3	745.3	30.03	25.821	
6,600.0	6,573.5	6,638.6	6,568.8	14.8	18.0	89.45	-254.5	669.3	775.3	745.3	30.04	25.814	
6,650.0	6,619.1	6,687.4	6,610.1	14.8	18.0	88.95	-228.5	669.3	775.4	745.4	30.04	25.816	
6,700.0	6,663.2	6,735.9	6,649.4	14.8	17.9	88.46	-200.2	669.3	775.6	745.5	30.04	25.819	
6,750.0	6,705.7	6,783.9	6,686.5	14.8	17.9	87.98	-169.7	669.3	775.8	745.7	30.05	25.817	
6,800.0	6,746.3	6,831.6	6,721.3	14.8	17.8	87.50	-137.2	669.3	776.0	746.0	30.08	25.799	
6,850.0	6,785.0	6,878.9	6,753.9	14.8	17.8	87.04	-102.9	669.3	776.3	746.2	30.14	25.758	
6,900.0	6,821.5	6,925.8	6,784.0	14.8	17.7	86.59	-66.9	669.3	776.7	746.4	30.24	25.685	
6,950.0	6,855.7	6,972.4	6,811.7	14.8	17.7	86.16	-29.3	669.3	777.0	746.7	30.39	25.572	
7,000.0	6,887.5	7,018.8	6,836.8	14.9	17.6	85.74	9.6	669.3	777.5	746.9	30.59	25.414	
7,050.0	6,916.7	7,064.8	6,859.5	15.0	17.6	85.34	49.6	669.3	777.9	747.0	30.86	25.205	
7,100.0	6,943.1	7,110.6	6,879.5	15.2	17.6	84.97	90.8	669.3	778.3	747.1	31.20	24.943	
7,150.0	6,966.7	7,156.1	6,897.0	15.4	17.6	84.61	132.8	669.3	778.8	747.1	31.62	24.627	
7,200.0	6,987.4	7,200.0	6,911.5	15.7	17.6	84.28	174.2	669.3	779.2	747.1	32.11	24.263	
7,250.0	7,005.0	7,246.5	6,924.2	16.0	17.7	83.96	219.0	669.3	779.6	746.9	32.71	23.837	
7,300.0	7,019.6	7,291.4	6,933.8	16.3	17.8	83.67	262.8	669.3	780.1	746.7	33.37	23.373	
7,350.0	7,031.0	7,336.1	6,940.8	16.7	18.1	83.40	306.9	669.3	780.5	746.4	34.12	22.875	
7,400.0	7,039.2	7,380.6	6,945.3	17.2	18.5	83.16	351.3	669.3	780.9	745.9	34.94	22.349	
7,450.0	7,044.1	7,425.1	6,947.1	17.7	18.9	82.95	395.6	669.3	781.2	745.4	35.82	21.806	
7,504.7	7,045.8	7,478.5	6,947.1	18.2	19.4	82.82	449.0	669.3	781.4	744.5	36.93	21.159	
7,600.0	7,045.3	7,573.7	6,947.0	19.3	20.5	82.85	544.3	669.3	781.4	742.3	39.05	20.010	
7,700.0	7,044.8	7,673.7	6,946.9	20.5	21.7	82.88	644.3	669.3	781.3	739.8	41.49	18.831	
7,800.0	7,044.3	7,773.7	6,946.8	21.9	23.0	82.91	744.3	669.3	781.3	737.1	44.13	17.703	
7,900.0	7,043.7	7,873.7	6,946.7	23.3	24.4	82.94	844.3	669.3	781.2	734.3	46.93	16.646	
8,000.0	7,043.2	7,973.7	6,946.6	24.8	25.9	82.97	944.3	669.3	781.1	731.3	49.87	15.664	
8,100.0	7,042.7	8,073.7	6,946.5	26.3	27.4	83.00	1,044.3	669.3	781.1	728.2	52.92	14.761	
8,200.0	7,042.2	8,173.7	6,946.4	27.9	28.9	83.03	1,144.3	669.3	781.0	725.0	56.06	13.932	
8,300.0	7,041.6	8,273.7	6,946.3	29.6	30.5	83.06	1,244.3	669.3	781.0	721.7	59.28	13.174	
8,400.0	7,041.1	8,373.7	6,946.2	31.2	32.2	83.09	1,344.3	669.3	780.9	718.4	62.58	12.480	
8,500.0	7,040.6	8,473.7	6,946.1	32.9	33.8	83.12	1,444.3	669.3	780.9	715.0	65.92	11.845	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-321
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-321	**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
8,600.0	7,040.1	8,573.7	6,946.0	34.6	35.5	83.15	1,544.3	669.3	780.8	711.5	69.32	11.264	
8,700.0	7,039.5	8,673.7	6,945.9	36.4	37.2	83.18	1,644.3	669.3	780.8	708.0	72.76	10.731	
8,800.0	7,039.0	8,773.7	6,945.8	38.1	38.9	83.21	1,744.3	669.3	780.7	704.5	76.23	10.241	
8,900.0	7,038.5	8,873.7	6,945.7	39.9	40.7	83.24	1,844.3	669.3	780.7	700.9	79.74	9.790	
9,000.0	7,038.0	8,973.7	6,945.6	41.7	42.4	83.27	1,944.3	669.3	780.6	697.4	83.28	9.374	
9,100.0	7,037.5	9,073.7	6,945.4	43.5	44.2	83.31	2,044.3	669.3	780.6	693.7	86.84	8.989	
9,200.0	7,036.9	9,173.7	6,945.3	45.3	46.0	83.34	2,144.3	669.3	780.5	690.1	90.42	8.632	
9,300.0	7,036.4	9,273.7	6,945.2	47.1	47.8	83.37	2,244.3	669.3	780.5	686.5	94.02	8.301	
9,400.0	7,035.9	9,373.7	6,945.1	48.9	49.6	83.40	2,344.3	669.3	780.4	682.8	97.64	7.993	
9,500.0	7,035.4	9,473.7	6,945.0	50.7	51.4	83.43	2,444.3	669.3	780.4	679.1	101.27	7.706	
9,600.0	7,034.8	9,573.7	6,944.9	52.6	53.2	83.46	2,544.3	669.3	780.3	675.4	104.92	7.438	
9,700.0	7,034.3	9,673.7	6,944.8	54.4	55.0	83.49	2,644.3	669.3	780.3	671.7	108.58	7.186	
9,800.0	7,033.8	9,773.7	6,944.7	56.3	56.8	83.52	2,744.3	669.3	780.2	668.0	112.25	6.951	
9,900.0	7,033.3	9,873.7	6,944.6	58.1	58.7	83.55	2,844.3	669.3	780.2	664.3	115.93	6.730	
10,000.0	7,032.7	9,973.7	6,944.5	60.0	60.5	83.58	2,944.3	669.3	780.1	660.5	119.62	6.522	
10,100.0	7,032.2	10,073.7	6,944.4	61.8	62.4	83.61	3,044.3	669.3	780.1	656.8	123.32	6.326	
10,200.0	7,031.7	10,173.7	6,944.3	63.7	64.2	83.64	3,144.3	669.3	780.1	653.0	127.03	6.141	
10,300.0	7,031.2	10,273.7	6,944.2	65.6	66.1	83.67	3,244.3	669.3	780.0	649.3	130.74	5.966	
10,400.0	7,030.6	10,373.7	6,944.1	67.4	67.9	83.70	3,344.3	669.3	780.0	645.5	134.46	5.801	
10,500.0	7,030.1	10,473.7	6,944.0	69.3	69.8	83.73	3,444.3	669.3	779.9	641.7	138.19	5.644	
10,600.0	7,029.6	10,573.7	6,943.9	71.2	71.6	83.76	3,544.3	669.3	779.9	637.9	141.92	5.495	
10,700.0	7,029.1	10,673.7	6,943.8	73.0	73.5	83.79	3,644.3	669.3	779.8	634.2	145.66	5.354	
10,800.0	7,028.6	10,773.7	6,943.7	74.9	75.4	83.82	3,744.3	669.3	779.8	630.4	149.40	5.219	
10,900.0	7,028.0	10,873.7	6,943.6	76.8	77.2	83.86	3,844.3	669.3	779.7	626.6	153.14	5.091	
11,000.0	7,027.5	10,973.7	6,943.5	78.7	79.1	83.89	3,944.3	669.3	779.7	622.8	156.90	4.969	
11,100.0	7,027.0	11,073.7	6,943.4	80.6	81.0	83.92	4,044.3	669.3	779.6	619.0	160.65	4.853	
11,200.0	7,026.5	11,173.7	6,943.2	82.5	82.9	83.95	4,144.3	669.3	779.6	615.2	164.41	4.742	
11,300.0	7,025.9	11,273.7	6,943.1	84.3	84.8	83.98	4,244.3	669.3	779.5	611.4	168.17	4.635	
11,400.0	7,025.4	11,373.7	6,943.0	86.2	86.6	84.01	4,344.3	669.3	779.5	607.6	171.94	4.534	
11,431.4	7,025.2	11,405.1	6,943.0	86.8	87.2	84.02	4,375.6	669.3	779.5	606.4	173.12	4.503	
11,478.3	7,025.0	11,412.1	6,943.0	87.7	87.4	84.02	4,382.6	669.3	780.5	606.4	174.13	4.482	SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-321
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-321	**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	89.2	89.2				
100.0	100.0	100.0	100.0	0.1	0.1	89.99	0.0	89.2	89.2	89.0	0.22	397.076	
200.0	200.0	200.0	200.0	0.3	0.3	89.99	0.0	89.2	89.2	88.6	0.67	132.359	
300.0	300.0	300.0	300.0	0.6	0.6	89.99	0.0	89.2	89.2	88.1	1.12	79.415	
400.0	400.0	400.0	400.0	0.8	0.8	89.99	0.0	89.2	89.2	87.7	1.57	56.725	
500.0	500.0	500.0	500.0	1.0	1.0	89.99	0.0	89.2	89.2	87.2	2.02	44.120	
600.0	600.0	600.0	600.0	1.2	1.2	89.99	0.0	89.2	89.2	86.8	2.47	36.098	
700.0	700.0	700.0	700.0	1.5	1.5	89.99	0.0	89.2	89.2	86.3	2.92	30.544	
800.0	800.0	800.0	800.0	1.7	1.7	89.99	0.0	89.2	89.2	85.9	3.37	26.472	
900.0	900.0	900.0	900.0	1.9	1.9	89.99	0.0	89.2	89.2	85.4	3.82	23.357	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	89.99	0.0	89.2	89.2	85.0	4.27	20.899	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	89.99	0.0	89.2	89.2	84.5	4.72	18.908	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	89.99	0.0	89.2	89.2	84.1	5.17	17.264	CC, ES
1,300.0	1,300.0	1,298.1	1,298.1	2.8	2.8	90.83	-1.3	90.3	90.3	84.7	5.59	16.158	
1,400.0	1,400.0	1,395.9	1,395.8	3.0	3.0	93.22	-5.3	93.4	93.6	87.6	5.99	15.628	
1,500.0	1,500.0	1,493.3	1,492.8	3.3	3.2	96.82	-11.8	98.5	99.5	93.1	6.40	15.536	
1,600.0	1,600.0	1,590.8	1,589.6	3.5	3.4	101.15	-20.8	105.6	108.1	101.3	6.83	15.831	
1,700.0	1,700.0	1,690.1	1,688.1	3.7	3.6	-93.89	-30.7	113.4	118.2	110.9	7.23	16.351	
1,800.0	1,799.8	1,789.5	1,786.7	3.9	3.8	-92.58	-40.6	121.1	128.6	121.0	7.61	16.892	
1,900.0	1,899.5	1,888.9	1,885.4	4.0	4.1	-92.88	-50.4	128.9	139.2	131.2	8.02	17.360	
1,934.4	1,933.6	1,923.1	1,919.2	4.1	4.2	-93.29	-53.8	131.6	142.9	134.7	8.16	17.503	
2,000.0	1,998.8	1,988.3	1,983.9	4.2	4.4	-94.30	-60.3	136.6	150.0	141.6	8.45	17.751	
2,100.0	2,098.1	2,087.6	2,082.4	4.4	4.6	-95.66	-70.2	144.4	160.9	152.0	8.90	18.071	
2,200.0	2,197.4	2,187.0	2,181.0	4.7	4.9	-96.85	-80.1	152.2	171.9	162.5	9.38	18.331	
2,300.0	2,296.8	2,286.3	2,279.5	4.9	5.2	-97.89	-89.9	159.9	183.0	173.1	9.87	18.542	
2,400.0	2,396.1	2,385.6	2,378.1	5.1	5.5	-98.82	-99.8	167.7	194.1	183.7	10.37	18.714	
2,500.0	2,495.4	2,485.0	2,476.6	5.4	5.8	-99.65	-109.7	175.4	205.2	194.4	10.89	18.852	
2,600.0	2,594.7	2,584.3	2,575.1	5.7	6.1	-100.39	-119.6	183.2	216.4	205.0	11.41	18.964	
2,700.0	2,694.0	2,683.6	2,673.7	5.9	6.4	-101.05	-129.4	190.9	227.7	215.7	11.95	19.055	
2,800.0	2,793.4	2,783.0	2,772.2	6.2	6.7	-101.66	-139.3	198.7	238.9	226.4	12.49	19.128	
2,900.0	2,892.7	2,882.3	2,870.7	6.5	7.0	-102.21	-149.2	206.5	250.2	237.1	13.04	19.186	
3,000.0	2,992.0	2,981.6	2,969.3	6.7	7.3	-102.71	-159.0	214.2	261.5	247.9	13.60	19.233	
3,100.0	3,091.3	3,081.0	3,067.8	7.0	7.7	-103.17	-168.9	222.0	272.8	258.6	14.16	19.271	
3,200.0	3,190.6	3,180.3	3,166.4	7.3	8.0	-103.60	-178.8	229.7	284.1	269.4	14.72	19.300	
3,300.0	3,290.0	3,279.6	3,264.9	7.6	8.3	-103.99	-188.7	237.5	295.5	280.2	15.29	19.323	
3,400.0	3,389.3	3,379.0	3,363.4	7.9	8.6	-104.35	-198.5	245.2	306.8	291.0	15.86	19.341	
3,500.0	3,488.6	3,478.3	3,462.0	8.2	8.9	-104.69	-208.4	253.0	318.2	301.8	16.44	19.354	
3,600.0	3,587.9	3,577.6	3,560.5	8.5	9.2	-105.00	-218.3	260.7	329.6	312.6	17.02	19.364	
3,700.0	3,687.2	3,677.0	3,659.0	8.8	9.6	-105.30	-228.2	268.5	341.0	323.4	17.60	19.371	
3,800.0	3,786.5	3,776.3	3,757.6	9.1	9.9	-105.57	-238.0	276.3	352.4	334.2	18.19	19.375	
3,900.0	3,885.9	3,875.6	3,856.1	9.4	10.2	-105.83	-247.9	284.0	363.8	345.0	18.77	19.377	
4,000.0	3,985.2	3,975.0	3,954.7	9.7	10.5	-106.07	-257.8	291.8	375.2	355.8	19.36	19.377	
4,100.0	4,084.5	4,074.3	4,053.2	10.0	10.9	-106.30	-267.6	299.5	386.6	366.7	19.95	19.376	
4,200.0	4,183.8	4,173.6	4,151.7	10.3	11.2	-106.51	-277.5	307.3	398.0	377.5	20.55	19.373	
4,300.0	4,283.1	4,273.0	4,250.3	10.6	11.5	-106.71	-287.4	315.0	409.5	388.3	21.14	19.370	
4,400.0	4,382.5	4,372.3	4,348.8	10.9	11.8	-106.90	-297.3	322.8	420.9	399.2	21.73	19.366	
4,484.5	4,466.4	4,456.2	4,432.1	11.1	12.1	-107.06	-305.6	329.4	430.6	408.3	22.24	19.362	
4,500.0	4,481.8	4,471.7	4,447.4	11.2	12.1	-107.11	-307.1	330.6	432.3	410.0	22.33	19.363	
4,600.0	4,581.3	4,571.1	4,546.0	11.4	12.5	-107.21	-317.0	338.3	443.1	420.2	22.86	19.382	
4,700.0	4,681.2	4,671.2	4,645.4	11.6	12.8	-106.86	-327.0	346.1	452.9	429.5	23.36	19.386	
4,800.0	4,781.1	4,782.2	4,755.7	11.8	13.1	-106.20	-336.1	353.3	460.3	436.5	23.78	19.357	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-321
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-321	**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
4,818.9	4,800.0	4,803.2	4,776.6	11.8	13.1	92.32	-337.4	354.4	461.3	437.4	23.85	19.339	
4,900.0	4,881.1	4,893.7	4,867.0	12.0	13.3	92.85	-341.9	357.8	464.6	440.4	24.16	19.233	
5,000.0	4,981.1	5,005.7	4,978.9	12.2	13.5	93.13	-344.2	359.7	466.4	441.9	24.51	19.025	
5,100.0	5,081.1	5,107.9	5,081.1	12.3	13.6	93.13	-344.3	359.7	466.4	441.5	24.86	18.759	
5,200.0	5,181.1	5,207.9	5,181.1	12.5	13.8	93.13	-344.3	359.7	466.4	441.2	25.20	18.506	
5,300.0	5,281.1	5,307.9	5,281.1	12.7	14.0	93.13	-344.3	359.7	466.4	440.9	25.55	18.257	
5,400.0	5,381.1	5,407.9	5,381.1	12.9	14.1	93.13	-344.3	359.7	466.4	440.5	25.89	18.012	
5,500.0	5,481.1	5,507.9	5,481.1	13.0	14.3	93.13	-344.3	359.7	466.4	440.2	26.24	17.772	
5,600.0	5,581.1	5,607.9	5,581.1	13.2	14.4	93.13	-344.3	359.7	466.4	439.8	26.60	17.536	
5,700.0	5,681.1	5,707.9	5,681.1	13.4	14.6	93.13	-344.3	359.7	466.4	439.5	26.95	17.304	
5,800.0	5,781.1	5,807.9	5,781.1	13.6	14.8	93.13	-344.3	359.7	466.4	439.1	27.31	17.077	
5,900.0	5,881.1	5,907.9	5,881.1	13.8	14.9	93.13	-344.3	359.7	466.4	438.7	27.67	16.853	
6,000.0	5,981.1	6,007.9	5,981.1	13.9	15.1	93.13	-344.3	359.7	466.4	438.4	28.04	16.635	
6,100.0	6,081.1	6,107.9	6,081.1	14.1	15.3	93.13	-344.3	359.7	466.4	438.0	28.40	16.420	
6,200.0	6,181.1	6,207.9	6,181.1	14.3	15.5	93.13	-344.3	359.7	466.4	437.6	28.77	16.210	
6,300.7	6,281.9	6,311.5	6,284.4	14.5	15.6	92.31	-337.6	359.7	466.1	437.0	29.13	16.001	
6,350.0	6,331.1	6,361.3	6,333.5	14.6	15.6	91.51	-329.4	359.7	465.9	436.6	29.27	15.915	
6,400.0	6,380.9	6,411.5	6,382.3	14.7	15.7	90.70	-317.9	359.7	465.7	436.4	29.38	15.851	
6,442.9	6,423.3	6,454.2	6,423.3	14.7	15.7	90.00	-305.6	359.7	465.7	436.3	29.45	15.815	
6,450.0	6,430.2	6,461.2	6,429.9	14.7	15.7	89.89	-303.4	359.7	465.7	436.3	29.46	15.810	
6,500.0	6,478.9	6,510.5	6,476.0	14.7	15.7	89.08	-286.0	359.7	465.8	436.3	29.50	15.787	
6,550.0	6,526.7	6,559.3	6,520.5	14.8	15.7	88.28	-265.8	359.7	465.9	436.4	29.53	15.780	
6,600.0	6,573.5	6,607.8	6,563.3	14.8	15.6	87.49	-243.0	359.7	466.2	436.6	29.53	15.785	
6,650.0	6,619.1	6,655.9	6,604.2	14.8	15.6	86.71	-217.8	359.7	466.5	437.0	29.53	15.798	
6,700.0	6,663.2	6,703.6	6,643.2	14.8	15.6	85.95	-190.3	359.7	466.9	437.4	29.52	15.814	
6,750.0	6,705.7	6,750.0	6,679.3	14.8	15.6	85.23	-161.3	359.7	467.4	437.8	29.53	15.828	
6,800.0	6,746.3	6,798.1	6,714.9	14.8	15.5	84.49	-128.9	359.7	467.9	438.4	29.55	15.834	
6,850.0	6,785.0	6,844.8	6,747.4	14.8	15.5	83.80	-95.4	359.7	468.5	438.9	29.60	15.827	
6,900.0	6,821.5	6,891.2	6,777.7	14.8	15.5	83.14	-60.2	359.7	469.1	439.4	29.69	15.801	
6,950.0	6,855.7	6,937.4	6,805.6	14.8	15.5	82.50	-23.4	359.7	469.8	439.9	29.82	15.751	
7,000.0	6,887.5	6,983.3	6,831.1	14.9	15.5	81.90	14.8	359.7	470.4	440.4	30.02	15.674	
7,050.0	6,916.7	7,029.0	6,854.1	15.0	15.5	81.34	54.2	359.7	471.1	440.9	30.27	15.565	
7,100.0	6,943.1	7,074.4	6,874.6	15.2	15.6	80.80	94.7	359.7	471.8	441.2	30.59	15.422	
7,150.0	6,966.7	7,119.6	6,892.6	15.4	15.8	80.31	136.2	359.7	472.5	441.5	30.99	15.247	
7,200.0	6,987.4	7,164.7	6,908.1	15.7	16.1	79.85	178.5	359.7	473.1	441.7	31.48	15.032	
7,250.0	7,005.0	7,209.5	6,921.0	16.0	16.4	79.44	221.5	359.7	473.8	441.7	32.03	14.789	
7,300.0	7,019.6	7,254.3	6,931.3	16.3	16.7	79.07	265.0	359.7	474.4	441.7	32.68	14.517	
7,350.0	7,031.0	7,300.0	6,939.3	16.7	17.1	78.73	310.0	359.7	474.9	441.5	33.41	14.215	
7,400.0	7,039.2	7,343.3	6,944.3	17.2	17.5	78.45	353.0	359.7	475.4	441.2	34.20	13.900	
7,450.0	7,044.1	7,387.7	6,946.8	17.7	18.0	78.20	397.3	359.7	475.8	440.7	35.07	13.566	
7,504.7	7,045.8	7,439.4	6,947.1	18.2	18.5	78.04	449.0	359.7	476.1	439.9	36.15	13.169	
7,600.0	7,045.3	7,534.7	6,947.0	19.3	19.6	78.08	544.3	359.7	476.0	437.7	38.26	12.439	
7,700.0	7,044.8	7,634.7	6,946.9	20.5	20.9	78.13	644.3	359.7	475.9	435.2	40.70	11.691	
7,800.0	7,044.3	7,734.7	6,946.8	21.9	22.2	78.18	744.3	359.7	475.8	432.5	43.34	10.979	
7,900.0	7,043.7	7,834.7	6,946.7	23.3	23.6	78.23	844.3	359.7	475.7	429.6	46.13	10.312	
8,000.0	7,043.2	7,934.7	6,946.6	24.8	25.1	78.28	944.3	359.7	475.6	426.6	49.06	9.695	
8,100.0	7,042.7	8,034.7	6,946.5	26.3	26.7	78.33	1,044.3	359.7	475.5	423.4	52.09	9.129	
8,200.0	7,042.2	8,134.7	6,946.4	27.9	28.2	78.38	1,144.3	359.7	475.5	420.2	55.22	8.610	
8,300.0	7,041.6	8,234.7	6,946.3	29.6	29.9	78.43	1,244.3	359.7	475.4	416.9	58.43	8.136	
8,400.0	7,041.1	8,334.7	6,946.2	31.2	31.5	78.48	1,344.3	359.7	475.3	413.6	61.70	7.703	
8,500.0	7,040.6	8,434.7	6,946.1	32.9	33.2	78.53	1,444.3	359.7	475.2	410.2	65.03	7.307	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-321
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-321	**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
8,600.0	7,040.1	8,534.7	6,946.0	34.6	34.9	78.58	1,544.3	359.7	475.1	406.7	68.41	6.945	
8,700.0	7,039.5	8,634.7	6,945.9	36.4	36.7	78.63	1,644.3	359.7	475.0	403.2	71.83	6.614	
8,800.0	7,039.0	8,734.7	6,945.8	38.1	38.4	78.68	1,744.3	359.7	475.0	399.7	75.28	6.309	
8,900.0	7,038.5	8,834.7	6,945.7	39.9	40.2	78.73	1,844.3	359.7	474.9	396.1	78.77	6.029	
9,000.0	7,038.0	8,934.7	6,945.6	41.7	41.9	78.78	1,944.3	359.7	474.8	392.5	82.28	5.770	
9,100.0	7,037.5	9,034.7	6,945.5	43.5	43.7	78.83	2,044.3	359.7	474.7	388.9	85.82	5.532	
9,200.0	7,036.9	9,134.7	6,945.4	45.3	45.5	78.88	2,144.3	359.7	474.6	385.2	89.38	5.310	
9,300.0	7,036.4	9,234.7	6,945.3	47.1	47.3	78.93	2,244.3	359.7	474.5	381.6	92.95	5.105	
9,400.0	7,035.9	9,334.7	6,945.1	48.9	49.1	78.98	2,344.3	359.7	474.5	377.9	96.55	4.914	
9,500.0	7,035.4	9,434.7	6,945.0	50.7	51.0	79.03	2,444.3	359.7	474.4	374.2	100.16	4.736	
9,600.0	7,034.8	9,534.7	6,944.9	52.6	52.8	79.07	2,544.3	359.7	474.3	370.5	103.79	4.570	
9,700.0	7,034.3	9,634.7	6,944.8	54.4	54.6	79.12	2,644.3	359.7	474.2	366.8	107.42	4.415	
9,800.0	7,033.8	9,734.7	6,944.7	56.3	56.5	79.17	2,744.3	359.7	474.1	363.1	111.07	4.269	
9,900.0	7,033.3	9,834.7	6,944.6	58.1	58.3	79.22	2,844.3	359.7	474.1	359.3	114.73	4.132	
10,000.0	7,032.7	9,934.7	6,944.5	60.0	60.2	79.27	2,944.3	359.7	474.0	355.6	118.40	4.003	
10,100.0	7,032.2	10,034.7	6,944.4	61.8	62.0	79.32	3,044.3	359.7	473.9	351.8	122.08	3.882	
10,200.0	7,031.7	10,134.7	6,944.3	63.7	63.9	79.37	3,144.3	359.7	473.8	348.1	125.77	3.768	
10,300.0	7,031.2	10,234.7	6,944.2	65.6	65.8	79.42	3,244.3	359.7	473.8	344.3	129.46	3.659	
10,400.0	7,030.6	10,334.7	6,944.1	67.4	67.6	79.47	3,344.3	359.7	473.7	340.5	133.16	3.557	
10,500.0	7,030.1	10,434.7	6,944.0	69.3	69.5	79.52	3,444.3	359.7	473.6	336.7	136.87	3.460	
10,600.0	7,029.6	10,534.7	6,943.9	71.2	71.4	79.57	3,544.3	359.7	473.5	332.9	140.58	3.368	
10,700.0	7,029.1	10,634.7	6,943.8	73.0	73.2	79.62	3,644.3	359.7	473.4	329.2	144.30	3.281	
10,800.0	7,028.6	10,734.6	6,943.7	74.9	75.1	79.67	3,744.3	359.7	473.4	325.4	148.02	3.198	
10,900.0	7,028.0	10,834.6	6,943.6	76.8	77.0	79.72	3,844.3	359.7	473.3	321.5	151.75	3.119	
11,000.0	7,027.5	10,934.6	6,943.5	78.7	78.9	79.77	3,944.3	359.7	473.2	317.7	155.48	3.044	
11,100.0	7,027.0	11,034.6	6,943.4	80.6	80.8	79.82	4,044.3	359.7	473.1	313.9	159.22	2.972	
11,200.0	7,026.5	11,134.6	6,943.3	82.5	82.6	79.87	4,144.3	359.7	473.1	310.1	162.96	2.903	
11,300.0	7,025.9	11,234.6	6,943.2	84.3	84.5	79.92	4,244.3	359.7	473.0	306.3	166.71	2.837	
11,400.0	7,025.4	11,334.6	6,943.1	86.2	86.4	79.97	4,344.3	359.7	472.9	302.5	170.46	2.774	
11,445.7	7,025.2	11,380.3	6,943.0	87.1	87.3	79.99	4,390.0	359.7	472.9	300.7	172.17	2.747	
11,478.3	7,025.0	11,387.6	6,943.0	87.7	87.4	80.00	4,397.2	359.7	473.6	300.6	172.92	2.739	SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-321
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-321	**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	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	
900.0	900.0	899.0	899.0	1.9	1.9	90.00	0.0	119.9	119.9	116.1	3.82	31.405	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	90.00	0.0	119.9	119.9	115.7	4.27	28.097	CC, ES
1,100.0	1,100.0	1,096.0	1,095.9	2.4	2.3	90.50	-1.1	121.1	121.2	116.5	4.69	25.845	
1,200.0	1,200.0	1,192.7	1,192.5	2.6	2.5	91.97	-4.3	124.8	125.0	119.9	5.09	24.542	
1,300.0	1,300.0	1,288.9	1,288.5	2.8	2.7	94.23	-9.7	130.8	131.6	126.1	5.51	23.885	
1,400.0	1,400.0	1,384.6	1,383.4	3.0	2.9	97.01	-17.1	139.2	141.1	135.2	5.94	23.755	
1,500.0	1,500.0	1,482.0	1,479.8	3.3	3.2	100.01	-26.4	149.7	153.2	146.8	6.39	23.977	
1,600.0	1,600.0	1,580.9	1,577.7	3.5	3.4	102.66	-36.0	160.5	165.9	159.0	6.85	24.214	
1,700.0	1,700.0	1,679.9	1,675.6	3.7	3.7	-93.76	-45.7	171.4	179.0	171.8	7.23	24.765	
1,800.0	1,799.8	1,779.0	1,773.6	3.9	4.0	-93.06	-55.3	182.2	192.4	184.8	7.63	25.219	
1,900.0	1,899.5	1,878.1	1,871.6	4.0	4.3	-93.40	-64.9	193.1	206.0	197.9	8.05	25.592	
1,934.4	1,933.6	1,912.1	1,905.3	4.1	4.4	-93.71	-68.2	196.8	210.7	202.5	8.20	25.701	
2,000.0	1,998.8	1,977.0	1,969.5	4.2	4.6	-94.55	-74.5	203.9	219.8	211.3	8.49	25.876	
2,100.0	2,098.1	2,075.9	2,067.3	4.4	5.0	-95.70	-84.2	214.7	233.7	224.8	8.96	26.081	
2,200.0	2,197.4	2,174.8	2,165.2	4.7	5.3	-96.72	-93.8	225.5	247.8	238.3	9.45	26.227	
2,300.0	2,296.8	2,273.8	2,263.1	4.9	5.6	-97.64	-103.4	236.4	261.8	251.9	9.95	26.325	
2,400.0	2,396.1	2,372.7	2,360.9	5.1	5.9	-98.46	-113.0	247.2	276.0	265.5	10.46	26.386	
2,500.0	2,495.4	2,471.6	2,458.8	5.4	6.3	-99.19	-122.6	258.0	290.2	279.2	10.98	26.419	
2,600.0	2,594.7	2,570.5	2,556.6	5.7	6.6	-99.87	-132.2	268.9	304.4	292.9	11.52	26.430	
2,700.0	2,694.0	2,669.4	2,654.5	5.9	7.0	-100.48	-141.8	279.7	318.7	306.6	12.06	26.425	
2,800.0	2,793.4	2,768.4	2,752.3	6.2	7.3	-101.03	-151.5	290.5	333.0	320.4	12.61	26.408	
2,900.0	2,892.7	2,867.3	2,850.2	6.5	7.6	-101.55	-161.1	301.4	347.3	334.2	13.17	26.381	
3,000.0	2,992.0	2,966.2	2,948.0	6.7	8.0	-102.02	-170.7	312.2	361.7	348.0	13.73	26.347	
3,100.0	3,091.3	3,065.1	3,045.9	7.0	8.3	-102.45	-180.3	323.0	376.1	361.8	14.29	26.308	
3,200.0	3,190.6	3,164.1	3,143.8	7.3	8.7	-102.86	-189.9	333.8	390.5	375.6	14.87	26.266	
3,300.0	3,290.0	3,263.0	3,241.6	7.6	9.0	-103.23	-199.5	344.7	404.9	389.4	15.44	26.221	
3,400.0	3,389.3	3,361.9	3,339.5	7.9	9.4	-103.58	-209.2	355.5	419.3	403.3	16.02	26.175	
3,500.0	3,488.6	3,460.8	3,437.3	8.2	9.7	-103.91	-218.8	366.3	433.8	417.2	16.60	26.128	
3,600.0	3,587.9	3,559.7	3,535.2	8.5	10.1	-104.21	-228.4	377.2	448.2	431.0	17.19	26.081	
3,700.0	3,687.2	3,658.7	3,633.0	8.8	10.4	-104.50	-238.0	388.0	462.7	444.9	17.77	26.034	
3,800.0	3,786.5	3,757.6	3,730.9	9.1	10.8	-104.77	-247.6	398.8	477.2	458.8	18.36	25.987	
3,900.0	3,885.9	3,856.5	3,828.7	9.4	11.1	-105.02	-257.2	409.6	491.7	472.7	18.95	25.940	
4,000.0	3,985.2	3,955.4	3,926.6	9.7	11.5	-105.26	-266.8	420.5	506.2	486.6	19.55	25.895	
4,100.0	4,084.5	4,054.3	4,024.5	10.0	11.8	-105.48	-276.5	431.3	520.7	500.5	20.14	25.850	
4,200.0	4,183.8	4,153.3	4,122.3	10.3	12.2	-105.69	-286.1	442.1	535.2	514.5	20.74	25.807	
4,300.0	4,283.1	4,252.2	4,220.2	10.6	12.6	-105.90	-295.7	453.0	549.7	528.4	21.34	25.764	
4,400.0	4,382.5	4,351.1	4,318.0	10.9	12.9	-106.09	-305.3	463.8	564.3	542.3	21.94	25.723	
4,484.5	4,466.4	4,434.7	4,400.7	11.1	13.2	-106.24	-313.4	472.9	576.5	554.1	22.44	25.689	
4,500.0	4,481.8	4,450.0	4,415.9	11.2	13.3	-106.31	-314.9	474.6	578.8	556.3	22.54	25.683	
4,600.0	4,581.3	4,549.1	4,513.8	11.4	13.6	-106.54	-324.5	485.5	592.7	569.6	23.08	25.679	
4,700.0	4,681.2	4,654.3	4,618.0	11.6	14.0	-106.41	-334.6	496.8	605.5	581.9	23.59	25.668	
4,800.0	4,781.1	4,773.3	4,736.2	11.8	14.3	-106.04	-343.5	506.8	614.8	590.8	24.03	25.589	

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-321
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-321	**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
4,818.9	4,800.0	4,795.9	4,758.7	11.8	14.3	92.43	-344.8	508.3	616.2	592.0	24.10	25.562	
4,900.0	4,881.1	4,893.2	4,855.8	12.0	14.5	92.81	-349.2	513.2	620.4	596.0	24.41	25.415	
5,000.0	4,981.1	5,013.5	4,976.1	12.2	14.7	93.01	-351.5	515.9	622.7	597.9	24.78	25.133	
5,100.0	5,081.1	5,117.6	5,080.1	12.3	14.9	93.02	-351.6	515.9	622.8	597.6	25.12	24.788	
5,200.0	5,181.1	5,217.6	5,180.1	12.5	15.0	93.02	-351.6	515.9	622.8	597.3	25.46	24.459	
5,300.0	5,281.1	5,317.6	5,280.1	12.7	15.2	93.02	-351.6	515.9	622.8	597.0	25.80	24.136	
5,400.0	5,381.1	5,417.6	5,380.1	12.9	15.3	93.02	-351.6	515.9	622.8	596.6	26.15	23.818	
5,500.0	5,481.1	5,517.6	5,480.1	13.0	15.5	93.02	-351.6	515.9	622.8	596.3	26.49	23.505	
5,600.0	5,581.1	5,617.6	5,580.1	13.2	15.6	93.02	-351.6	515.9	622.8	595.9	26.84	23.198	
5,700.0	5,681.1	5,717.6	5,680.1	13.4	15.8	93.02	-351.6	515.9	622.8	595.6	27.20	22.897	
5,800.0	5,781.1	5,817.6	5,780.1	13.6	15.9	93.02	-351.6	515.9	622.8	595.2	27.55	22.601	
5,900.0	5,881.1	5,917.6	5,880.1	13.8	16.1	93.02	-351.6	515.9	622.8	594.8	27.91	22.310	
6,000.0	5,981.1	6,017.6	5,980.1	13.9	16.2	93.02	-351.6	515.9	622.8	594.5	28.28	22.025	
6,100.0	6,081.1	6,117.6	6,080.1	14.1	16.4	93.02	-351.6	515.9	622.8	594.1	28.64	21.745	
6,200.0	6,181.1	6,217.6	6,180.1	14.3	16.6	93.02	-351.6	515.9	622.8	593.8	29.01	21.470	
6,300.7	6,281.9	6,318.3	6,280.9	14.5	16.7	93.02	-351.6	515.9	622.8	593.4	29.38	21.199	
6,350.0	6,331.1	6,369.8	6,332.3	14.6	16.8	93.02	-349.9	515.9	622.8	593.2	29.54	21.083	
6,400.0	6,380.9	6,422.0	6,384.2	14.7	16.9	93.00	-344.7	515.9	622.7	593.1	29.67	20.992	
6,450.0	6,430.2	6,474.2	6,435.7	14.7	16.9	92.98	-336.0	515.9	622.7	593.0	29.76	20.928	
6,500.0	6,478.9	6,526.4	6,486.4	14.7	16.9	92.94	-323.7	515.9	622.7	592.9	29.81	20.887	
6,550.0	6,526.7	6,578.6	6,536.2	14.8	16.9	92.88	-308.0	515.9	622.7	592.8	29.84	20.866	
6,600.0	6,573.5	6,630.7	6,584.7	14.8	16.9	92.82	-289.0	515.9	622.6	592.8	29.85	20.860	
6,650.0	6,619.1	6,682.7	6,631.7	14.8	16.9	92.74	-266.8	515.9	622.6	592.8	29.84	20.863	
6,700.0	6,663.2	6,734.7	6,677.1	14.8	16.9	92.65	-241.4	515.9	622.6	592.7	29.83	20.869	
6,750.0	6,705.7	6,786.6	6,720.6	14.8	16.8	92.54	-213.1	515.9	622.5	592.7	29.83	20.870	
6,800.0	6,746.3	6,838.4	6,761.9	14.8	16.8	92.43	-181.9	515.9	622.5	592.6	29.84	20.859	
6,850.0	6,785.0	6,890.2	6,801.0	14.8	16.8	92.31	-148.1	515.9	622.4	592.5	29.88	20.827	
6,900.0	6,821.5	6,941.8	6,837.7	14.8	16.7	92.17	-111.7	515.9	622.3	592.4	29.97	20.767	
6,950.0	6,855.7	6,993.3	6,871.7	14.8	16.7	92.03	-73.1	515.9	622.3	592.2	30.10	20.672	
7,000.0	6,887.5	7,044.7	6,903.0	14.9	16.6	91.87	-32.3	515.9	622.2	591.9	30.30	20.535	
7,050.0	6,916.7	7,096.0	6,931.5	15.0	16.6	91.71	10.3	515.9	622.2	591.6	30.57	20.352	
7,100.0	6,943.1	7,147.1	6,956.9	15.2	16.5	91.54	54.7	515.9	622.1	591.2	30.92	20.120	
7,150.0	6,966.7	7,198.1	6,979.3	15.4	16.5	91.37	100.5	515.9	622.1	590.7	31.36	19.839	
7,200.0	6,987.4	7,249.0	6,998.5	15.7	16.5	91.19	147.6	515.9	622.0	590.1	31.88	19.510	
7,250.0	7,005.0	7,299.8	7,014.5	16.0	16.6	91.00	195.8	515.9	622.0	589.5	32.50	19.139	
7,300.0	7,019.6	7,350.4	7,027.2	16.3	17.0	90.81	244.8	515.9	622.0	588.7	33.20	18.731	
7,350.0	7,031.0	7,400.9	7,036.6	16.7	17.5	90.62	294.3	515.9	621.9	587.9	34.00	18.293	
7,400.0	7,039.2	7,451.2	7,042.8	17.2	17.9	90.42	344.3	515.9	621.9	587.0	34.87	17.834	
7,450.0	7,044.1	7,501.4	7,045.6	17.7	18.4	90.23	394.4	515.9	621.9	586.1	35.82	17.361	
7,504.7	7,045.8	7,556.1	7,045.6	18.2	19.0	90.08	449.2	515.9	621.9	584.9	36.95	16.832	
7,600.0	7,045.3	7,651.4	7,045.1	19.3	20.1	90.08	544.4	515.9	621.9	582.8	39.08	15.915	
7,700.0	7,044.8	7,751.4	7,044.6	20.5	21.3	90.08	644.4	515.9	621.9	580.4	41.54	14.972	
7,800.0	7,044.3	7,851.4	7,044.1	21.9	22.7	90.08	744.4	515.9	621.9	577.7	44.19	14.072	
7,900.0	7,043.7	7,951.4	7,043.6	23.3	24.1	90.08	844.4	515.9	621.9	574.9	47.01	13.228	
8,000.0	7,043.2	8,051.4	7,043.0	24.8	25.5	90.08	944.4	515.9	621.9	571.9	49.97	12.446	
8,100.0	7,042.7	8,151.4	7,042.5	26.3	27.1	90.08	1,044.4	515.9	621.9	568.8	53.04	11.725	
8,200.0	7,042.2	8,251.4	7,042.0	27.9	28.6	90.08	1,144.4	515.9	621.9	565.7	56.20	11.065	
8,300.0	7,041.6	8,351.4	7,041.5	29.6	30.2	90.08	1,244.4	515.9	621.9	562.4	59.45	10.461	
8,400.0	7,041.1	8,451.4	7,040.9	31.2	31.9	90.08	1,344.4	515.9	621.9	559.1	62.76	9.909	
8,500.0	7,040.6	8,551.4	7,040.4	32.9	33.5	90.08	1,444.4	515.9	621.9	555.8	66.13	9.404	
8,600.0	7,040.1	8,651.4	7,039.9	34.6	35.2	90.08	1,544.4	515.9	621.9	552.3	69.54	8.942	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-321
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-321	**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	7,039.5	8,751.4	7,039.4	36.4	37.0	90.08	1,644.4	515.9	621.9	548.9	73.00	8.518	
8,800.0	7,039.0	8,851.4	7,038.9	38.1	38.7	90.08	1,744.4	515.9	621.9	545.4	76.50	8.129	
8,900.0	7,038.5	8,951.4	7,038.3	39.9	40.4	90.08	1,844.4	515.9	621.9	541.9	80.03	7.771	
9,000.0	7,038.0	9,051.4	7,037.8	41.7	42.2	90.08	1,944.4	515.9	621.9	538.3	83.58	7.440	
9,100.0	7,037.5	9,151.4	7,037.3	43.5	44.0	90.08	2,044.4	515.9	621.9	534.7	87.16	7.135	
9,200.0	7,036.9	9,251.4	7,036.8	45.3	45.8	90.08	2,144.4	515.9	621.9	531.1	90.76	6.852	
9,300.0	7,036.4	9,351.4	7,036.2	47.1	47.6	90.08	2,244.4	515.9	621.9	527.5	94.38	6.589	
9,400.0	7,035.9	9,451.4	7,035.7	48.9	49.4	90.08	2,344.4	515.9	621.9	523.9	98.02	6.345	
9,500.0	7,035.4	9,551.4	7,035.2	50.7	51.2	90.08	2,444.4	515.9	621.9	520.2	101.67	6.117	
9,600.0	7,034.8	9,651.4	7,034.7	52.6	53.0	90.08	2,544.4	515.9	621.9	516.5	105.33	5.904	
9,700.0	7,034.3	9,751.4	7,034.1	54.4	54.8	90.08	2,644.4	515.9	621.9	512.9	109.01	5.705	
9,800.0	7,033.8	9,851.4	7,033.6	56.3	56.7	90.08	2,744.4	515.9	621.9	509.2	112.70	5.518	
9,900.0	7,033.3	9,951.4	7,033.1	58.1	58.5	90.08	2,844.4	515.9	621.9	505.5	116.39	5.343	
10,000.0	7,032.7	10,051.4	7,032.6	60.0	60.4	90.08	2,944.4	515.9	621.9	501.8	120.10	5.178	
10,100.0	7,032.2	10,151.4	7,032.0	61.8	62.2	90.08	3,044.4	515.9	621.9	498.1	123.81	5.023	
10,200.0	7,031.7	10,251.4	7,031.5	63.7	64.1	90.08	3,144.4	515.9	621.9	494.3	127.54	4.876	
10,300.0	7,031.2	10,351.4	7,031.0	65.6	65.9	90.08	3,244.4	515.9	621.9	490.6	131.26	4.738	
10,400.0	7,030.6	10,451.4	7,030.5	67.4	67.8	90.08	3,344.4	515.9	621.9	486.9	135.00	4.607	
10,500.0	7,030.1	10,551.4	7,030.0	69.3	69.7	90.08	3,444.4	515.9	621.9	483.1	138.74	4.482	
10,600.0	7,029.6	10,651.4	7,029.4	71.2	71.5	90.08	3,544.4	515.9	621.9	479.4	142.48	4.364	
10,700.0	7,029.1	10,751.4	7,028.9	73.0	73.4	90.08	3,644.4	515.9	621.9	475.6	146.23	4.253	
10,800.0	7,028.6	10,851.4	7,028.4	74.9	75.3	90.08	3,744.4	515.9	621.9	471.9	149.99	4.146	
10,900.0	7,028.0	10,951.4	7,027.9	76.8	77.1	90.08	3,844.4	515.9	621.9	468.1	153.75	4.045	
11,000.0	7,027.5	11,051.4	7,027.3	78.7	79.0	90.08	3,944.4	515.9	621.9	464.4	157.51	3.948	
11,100.0	7,027.0	11,151.4	7,026.8	80.6	80.9	90.08	4,044.4	515.9	621.9	460.6	161.28	3.856	
11,200.0	7,026.5	11,251.4	7,026.3	82.5	82.8	90.08	4,144.4	515.9	621.9	456.8	165.05	3.768	
11,300.0	7,025.9	11,351.4	7,025.8	84.3	84.7	90.08	4,244.4	515.9	621.9	453.0	168.82	3.684	
11,400.0	7,025.4	11,451.4	7,025.2	86.2	86.5	90.08	4,344.4	515.9	621.9	449.3	172.60	3.603	
11,439.1	7,025.2	11,490.5	7,025.0	87.0	87.3	90.08	4,383.5	515.9	621.9	447.8	174.08	3.572	
11,478.3	7,025.0	11,497.6	7,025.0	87.7	87.4	90.08	4,390.6	515.9	622.7	447.7	174.95	3.559	SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-321
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-321	**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	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	
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	90.00	0.0	58.6	58.6	52.1	6.52	8.986	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	90.00	0.0	58.6	58.6	51.6	6.97	8.406	CC, ES
1,700.0	1,700.0	1,699.2	1,699.2	3.7	3.7	-108.43	-1.6	59.3	59.8	52.5	7.36	8.129	
1,800.0	1,799.8	1,798.3	1,798.1	3.9	3.9	-108.54	-6.3	61.3	63.5	55.8	7.70	8.249	
1,900.0	1,899.5	1,897.2	1,896.6	4.0	4.0	-108.70	-14.1	64.7	69.7	61.7	8.06	8.648	
1,934.4	1,933.6	1,931.1	1,930.4	4.1	4.1	-108.75	-17.5	66.2	72.4	64.2	8.19	8.839	
2,000.0	1,998.8	1,996.3	1,995.1	4.2	4.2	-108.68	-24.8	69.3	78.0	69.5	8.45	9.227	
2,100.0	2,098.1	2,095.9	2,094.0	4.4	4.5	-108.52	-36.0	74.2	86.5	77.7	8.87	9.755	
2,200.0	2,197.4	2,195.6	2,192.8	4.7	4.7	-108.39	-47.1	79.1	95.1	85.8	9.31	10.209	
2,300.0	2,296.8	2,295.2	2,291.7	4.9	4.9	-108.28	-58.3	83.9	103.6	93.9	9.78	10.600	
2,400.0	2,396.1	2,394.8	2,390.6	5.1	5.2	-108.19	-69.5	88.8	112.2	101.9	10.26	10.937	
2,500.0	2,495.4	2,494.5	2,489.5	5.4	5.4	-108.11	-80.7	93.7	120.7	110.0	10.75	11.229	
2,600.0	2,594.7	2,594.1	2,588.4	5.7	5.7	-108.04	-91.9	98.5	129.3	118.0	11.26	11.480	
2,700.0	2,694.0	2,693.7	2,687.3	5.9	6.0	-107.98	-103.1	103.4	137.8	126.0	11.78	11.699	
2,800.0	2,793.4	2,793.4	2,786.2	6.2	6.2	-107.92	-114.2	108.3	146.4	134.1	12.31	11.890	
2,900.0	2,892.7	2,893.0	2,885.0	6.5	6.5	-107.88	-125.4	113.1	154.9	142.1	12.85	12.056	
3,000.0	2,992.0	2,992.6	2,983.9	6.7	6.8	-107.83	-136.6	118.0	163.5	150.1	13.40	12.202	
3,100.0	3,091.3	3,092.3	3,082.8	7.0	7.1	-107.80	-147.8	122.8	172.0	158.1	13.95	12.331	
3,200.0	3,190.6	3,191.9	3,181.7	7.3	7.4	-107.76	-159.0	127.7	180.6	166.1	14.51	12.444	
3,300.0	3,290.0	3,291.5	3,280.6	7.6	7.7	-107.73	-170.2	132.6	189.1	174.0	15.08	12.545	
3,400.0	3,389.3	3,391.2	3,379.5	7.9	8.0	-107.70	-181.3	137.4	197.7	182.0	15.64	12.634	
3,500.0	3,488.6	3,490.8	3,478.3	8.2	8.3	-107.67	-192.5	142.3	206.2	190.0	16.22	12.714	
3,600.0	3,587.9	3,590.4	3,577.2	8.5	8.6	-107.65	-203.7	147.2	214.8	198.0	16.80	12.786	
3,700.0	3,687.2	3,690.1	3,676.1	8.8	8.9	-107.63	-214.9	152.0	223.3	205.9	17.38	12.850	
3,800.0	3,786.5	3,789.7	3,775.0	9.1	9.2	-107.61	-226.1	156.9	231.9	213.9	17.96	12.908	
3,900.0	3,885.9	3,889.3	3,873.9	9.4	9.5	-107.59	-237.3	161.8	240.4	221.9	18.55	12.960	
4,000.0	3,985.2	3,989.0	3,972.8	9.7	9.8	-107.57	-248.4	166.6	249.0	229.8	19.14	13.007	
4,100.0	4,084.5	4,088.6	4,071.7	10.0	10.1	-107.55	-259.6	171.5	257.5	237.8	19.73	13.050	
4,200.0	4,183.8	4,188.2	4,170.5	10.3	10.4	-107.54	-270.8	176.3	266.1	245.7	20.33	13.089	
4,300.0	4,283.1	4,287.9	4,269.4	10.6	10.7	-107.52	-282.0	181.2	274.6	253.7	20.92	13.124	
4,400.0	4,382.5	4,387.5	4,368.3	10.9	11.0	-107.51	-293.2	186.1	283.1	261.6	21.52	13.156	
4,484.5	4,466.4	4,471.7	4,451.9	11.1	11.3	-107.50	-302.6	190.2	290.4	268.3	22.03	13.182	
4,500.0	4,481.8	4,487.1	4,467.2	11.2	11.4	-107.51	-304.4	190.9	291.7	269.6	22.12	13.188	
4,600.0	4,581.3	4,587.6	4,566.9	11.4	11.7	-107.24	-315.6	195.8	299.5	276.9	22.65	13.225	
4,700.0	4,681.2	4,692.0	4,670.8	11.6	11.9	-106.70	-325.0	199.9	305.4	282.3	23.10	13.222	
4,800.0	4,781.1	4,796.7	4,775.3	11.8	12.1	-106.12	-330.9	202.5	308.7	285.2	23.49	13.140	

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-321
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-321	**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
4,818.9	4,800.0	4,816.5	4,795.1	11.8	12.2	92.38	-331.6	202.8	309.1	285.5	23.56	13.116	
4,900.0	4,881.1	4,901.6	4,880.2	12.0	12.3	92.69	-333.3	203.5	309.8	286.0	23.86	12.986	
5,000.0	4,981.1	5,002.6	4,981.1	12.2	12.5	92.70	-333.4	203.6	309.9	285.7	24.21	12.799	
5,100.0	5,081.1	5,102.6	5,081.1	12.3	12.7	92.70	-333.4	203.6	309.9	285.3	24.56	12.620	
5,200.0	5,181.1	5,202.6	5,181.1	12.5	12.8	92.70	-333.4	203.6	309.9	285.0	24.90	12.444	
5,300.0	5,281.1	5,302.6	5,281.1	12.7	13.0	92.70	-333.4	203.6	309.9	284.6	25.25	12.271	
5,400.0	5,381.1	5,402.6	5,381.1	12.9	13.2	92.70	-333.4	203.6	309.9	284.3	25.61	12.102	
5,500.0	5,481.1	5,502.6	5,481.1	13.0	13.3	92.70	-333.4	203.6	309.9	283.9	25.96	11.935	
5,600.0	5,581.1	5,602.6	5,581.1	13.2	13.5	92.70	-333.4	203.6	309.9	283.6	26.32	11.772	
5,700.0	5,681.1	5,702.6	5,681.1	13.4	13.7	92.70	-333.4	203.6	309.9	283.2	26.68	11.613	
5,800.0	5,781.1	5,802.6	5,781.1	13.6	13.9	92.70	-333.4	203.6	309.9	282.8	27.05	11.456	
5,900.0	5,881.1	5,902.6	5,881.1	13.8	14.1	92.70	-333.4	203.6	309.9	282.5	27.42	11.303	
6,000.0	5,981.1	6,002.6	5,981.1	13.9	14.2	92.70	-333.4	203.6	309.9	282.1	27.79	11.152	
6,100.0	6,081.1	6,102.6	6,081.1	14.1	14.4	92.70	-333.4	203.6	309.9	281.7	28.16	11.005	
6,200.0	6,181.1	6,202.6	6,181.1	14.3	14.6	92.70	-333.4	203.6	309.9	281.3	28.53	10.860	
6,300.7	6,281.9	6,303.3	6,281.9	14.5	14.8	92.70	-333.4	203.6	309.9	281.0	28.91	10.718	
6,350.0	6,331.1	6,353.5	6,332.1	14.6	14.9	92.69	-331.7	203.6	309.9	280.8	29.08	10.656	
6,400.0	6,380.9	6,404.5	6,382.8	14.7	14.9	92.68	-326.7	203.6	309.9	280.7	29.21	10.608	
6,450.0	6,430.2	6,455.5	6,433.0	14.7	15.0	92.65	-318.3	203.6	309.9	280.6	29.30	10.574	
6,500.0	6,478.9	6,506.4	6,482.6	14.7	15.0	92.61	-306.6	203.6	309.9	280.5	29.37	10.552	
6,550.0	6,526.7	6,557.3	6,531.2	14.8	15.0	92.55	-291.5	203.6	309.8	280.4	29.40	10.539	
6,600.0	6,573.5	6,608.3	6,578.8	14.8	15.0	92.49	-273.3	203.6	309.8	280.4	29.41	10.535	
6,650.0	6,619.1	6,659.1	6,625.0	14.8	15.0	92.42	-252.0	203.6	309.8	280.4	29.41	10.534	
6,700.0	6,663.2	6,710.0	6,669.6	14.8	15.0	92.33	-227.7	203.6	309.8	280.4	29.40	10.536	
6,750.0	6,705.7	6,760.8	6,712.5	14.8	15.0	92.24	-200.4	203.6	309.8	280.4	29.41	10.534	
6,800.0	6,746.3	6,811.6	6,753.5	14.8	15.0	92.13	-170.4	203.6	309.7	280.3	29.42	10.527	
6,850.0	6,785.0	6,862.3	6,792.3	14.8	15.0	92.02	-137.8	203.6	309.7	280.3	29.47	10.509	
6,900.0	6,821.5	6,913.0	6,828.9	14.8	15.0	91.90	-102.7	203.6	309.7	280.1	29.56	10.478	
6,950.0	6,855.7	6,963.7	6,863.0	14.8	15.1	91.77	-65.3	203.6	309.7	280.0	29.70	10.428	
7,000.0	6,887.5	7,014.3	6,894.6	14.9	15.1	91.63	-25.8	203.6	309.7	279.8	29.90	10.357	
7,050.0	6,916.7	7,064.8	6,923.4	15.0	15.2	91.48	15.8	203.6	309.6	279.5	30.17	10.262	
7,100.0	6,943.1	7,115.3	6,949.4	15.2	15.4	91.33	59.0	203.6	309.6	279.1	30.53	10.142	
7,150.0	6,966.7	7,165.8	6,972.4	15.4	15.6	91.17	103.9	203.6	309.6	278.6	30.97	9.998	
7,200.0	6,987.4	7,216.1	6,992.5	15.7	15.8	91.01	150.1	203.6	309.6	278.1	31.50	9.829	
7,250.0	7,005.0	7,266.5	7,009.4	16.0	16.1	90.84	197.5	203.6	309.6	277.4	32.12	9.638	
7,300.0	7,019.6	7,316.7	7,023.1	16.3	16.5	90.67	245.8	203.6	309.6	276.7	32.83	9.429	
7,350.0	7,031.0	7,366.9	7,033.7	16.7	16.9	90.50	294.9	203.6	309.5	275.9	33.63	9.205	
7,400.0	7,039.2	7,417.1	7,040.9	17.2	17.4	90.33	344.5	203.6	309.5	275.0	34.51	8.969	
7,450.0	7,044.1	7,467.1	7,044.9	17.7	17.8	90.15	394.4	203.6	309.5	274.1	35.47	8.727	
7,496.2	7,045.8	7,513.4	7,045.8	18.1	18.3	89.99	440.6	203.6	309.5	273.1	36.42	8.500	
7,504.7	7,045.8	7,521.9	7,045.7	18.2	18.4	89.98	449.1	203.6	309.5	272.9	36.60	8.458	
7,600.0	7,045.3	7,617.2	7,045.2	19.3	19.5	89.98	544.4	203.6	309.5	270.8	38.74	7.989	
7,700.0	7,044.8	7,717.2	7,044.7	20.5	20.7	89.98	644.4	203.6	309.5	268.3	41.23	7.508	
7,800.0	7,044.3	7,817.2	7,044.2	21.9	22.1	89.98	744.4	203.6	309.5	265.6	43.90	7.050	
7,900.0	7,043.7	7,917.2	7,043.6	23.3	23.5	89.98	844.4	203.6	309.5	262.8	46.74	6.622	
8,000.0	7,043.2	8,017.2	7,043.1	24.8	25.0	89.98	944.4	203.6	309.5	259.8	49.72	6.226	
8,100.0	7,042.7	8,117.2	7,042.6	26.3	26.5	89.98	1,044.4	203.6	309.5	256.7	52.80	5.862	
8,200.0	7,042.2	8,217.2	7,042.1	27.9	28.1	89.98	1,144.4	203.6	309.5	253.6	55.98	5.529	
8,300.0	7,041.6	8,317.2	7,041.5	29.6	29.7	89.98	1,244.4	203.6	309.5	250.3	59.24	5.225	
8,400.0	7,041.1	8,417.2	7,041.0	31.2	31.4	89.98	1,344.4	203.6	309.5	247.0	62.57	4.947	
8,500.0	7,040.6	8,517.2	7,040.5	32.9	33.1	89.98	1,444.4	203.6	309.5	243.6	65.95	4.694	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-321
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-321	**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

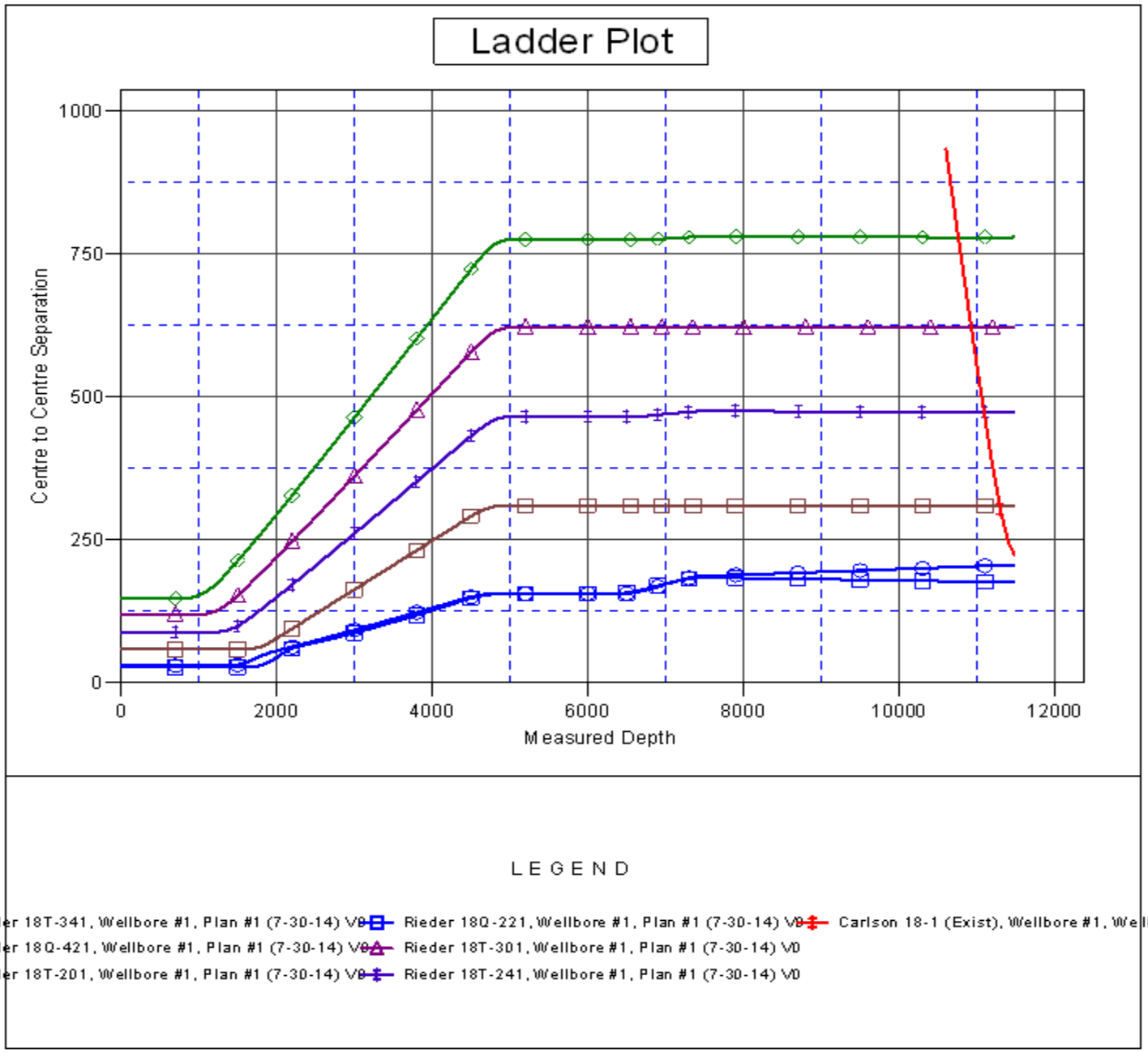
Offset Well Error: 0.0 ft

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
8,600.0	7,040.1	8,617.2	7,040.0	34.6	34.8	89.98	1,544.4	203.6	309.5	240.2	69.37	4.462	
8,700.0	7,039.5	8,717.2	7,039.5	36.4	36.5	89.98	1,644.4	203.6	309.5	236.7	72.84	4.249	
8,800.0	7,039.0	8,817.2	7,038.9	38.1	38.3	89.98	1,744.4	203.6	309.5	233.2	76.35	4.054	
8,900.0	7,038.5	8,917.2	7,038.4	39.9	40.0	89.98	1,844.4	203.6	309.5	229.7	79.88	3.875	
9,000.0	7,038.0	9,017.2	7,037.9	41.7	41.8	89.98	1,944.4	203.6	309.5	226.1	83.44	3.710	
9,100.0	7,037.5	9,117.2	7,037.4	43.5	43.6	89.98	2,044.4	203.6	309.5	222.5	87.03	3.557	
9,200.0	7,036.9	9,217.2	7,036.8	45.3	45.4	89.98	2,144.4	203.6	309.5	218.9	90.64	3.415	
9,300.0	7,036.4	9,317.2	7,036.3	47.1	47.2	89.98	2,244.4	203.6	309.5	215.3	94.26	3.284	
9,400.0	7,035.9	9,417.2	7,035.8	48.9	49.0	89.98	2,344.4	203.6	309.5	211.6	97.90	3.162	
9,500.0	7,035.4	9,517.2	7,035.3	50.7	50.9	89.98	2,444.4	203.6	309.5	208.0	101.56	3.048	
9,600.0	7,034.8	9,617.2	7,034.7	52.6	52.7	89.98	2,544.4	203.6	309.5	204.3	105.23	2.942	
9,700.0	7,034.3	9,717.2	7,034.2	54.4	54.5	89.98	2,644.4	203.6	309.5	200.6	108.91	2.842	
9,800.0	7,033.8	9,817.2	7,033.7	56.3	56.4	89.98	2,744.4	203.6	309.5	196.9	112.60	2.749	
9,900.0	7,033.3	9,917.2	7,033.2	58.1	58.2	89.98	2,844.4	203.6	309.5	193.2	116.30	2.662	
10,000.0	7,032.7	10,017.2	7,032.6	60.0	60.1	89.98	2,944.4	203.6	309.5	189.5	120.01	2.579	
10,100.0	7,032.2	10,117.2	7,032.1	61.8	61.9	89.98	3,044.4	203.6	309.5	185.8	123.73	2.502	
10,200.0	7,031.7	10,217.2	7,031.6	63.7	63.8	89.98	3,144.4	203.6	309.5	182.1	127.45	2.429	
10,300.0	7,031.2	10,317.2	7,031.1	65.6	65.7	89.98	3,244.4	203.6	309.5	178.4	131.18	2.360	
10,400.0	7,030.6	10,417.2	7,030.6	67.4	67.5	89.98	3,344.4	203.6	309.5	174.6	134.92	2.294	
10,500.0	7,030.1	10,517.2	7,030.0	69.3	69.4	89.98	3,444.4	203.6	309.5	170.9	138.67	2.232	
10,600.0	7,029.6	10,617.2	7,029.5	71.2	71.3	89.98	3,544.4	203.6	309.5	167.1	142.41	2.174	
10,700.0	7,029.1	10,717.2	7,029.0	73.0	73.2	89.98	3,644.4	203.6	309.5	163.4	146.17	2.118	
10,800.0	7,028.6	10,817.2	7,028.5	74.9	75.0	89.98	3,744.4	203.6	309.5	159.6	149.92	2.065	
10,900.0	7,028.0	10,917.2	7,027.9	76.8	76.9	89.98	3,844.4	203.6	309.5	155.9	153.69	2.014	
11,000.0	7,027.5	11,017.2	7,027.4	78.7	78.8	89.98	3,944.4	203.6	309.5	152.1	157.45	1.966	
11,100.0	7,027.0	11,117.2	7,026.9	80.6	80.7	89.98	4,044.4	203.6	309.5	148.3	161.22	1.920	
11,200.0	7,026.5	11,217.2	7,026.4	82.5	82.6	89.98	4,144.4	203.6	309.5	144.5	164.99	1.876	
11,300.0	7,025.9	11,317.2	7,025.8	84.3	84.5	89.98	4,244.4	203.6	309.5	140.8	168.77	1.834	
11,400.0	7,025.4	11,417.2	7,025.3	86.2	86.3	89.98	4,344.4	203.6	309.5	137.1	172.48	1.795	
11,438.8	7,025.2	11,455.9	7,025.1	87.0	86.9	89.98	4,383.1	203.6	309.5	135.7	173.80	1.781	
11,478.3	7,025.0	11,477.3	7,025.0	87.7	87.2	89.98	4,404.5	203.6	310.1	135.2	174.88	1.773	SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-321
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-321	**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')
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Rieder 18Q-321
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.37°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Rieder 18Q-321
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-321	**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-321
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°