

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Peschel 20I-312**

Surface Location: Peschel 4N65W20B Pad Sec.20-T4N-R65W
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
 Ground Elevation: 4802.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1350634.14	3225067.38	40.293080	-104.693150	
RKB - 15' WELL @ 4817.0ft (RKB - 15')						

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 890'FSL & 950'FWL	1.0	0.0	0.0	Point
BHL 316'FSL & 500'FEL	7058.0	-560.7	3777.2	Point



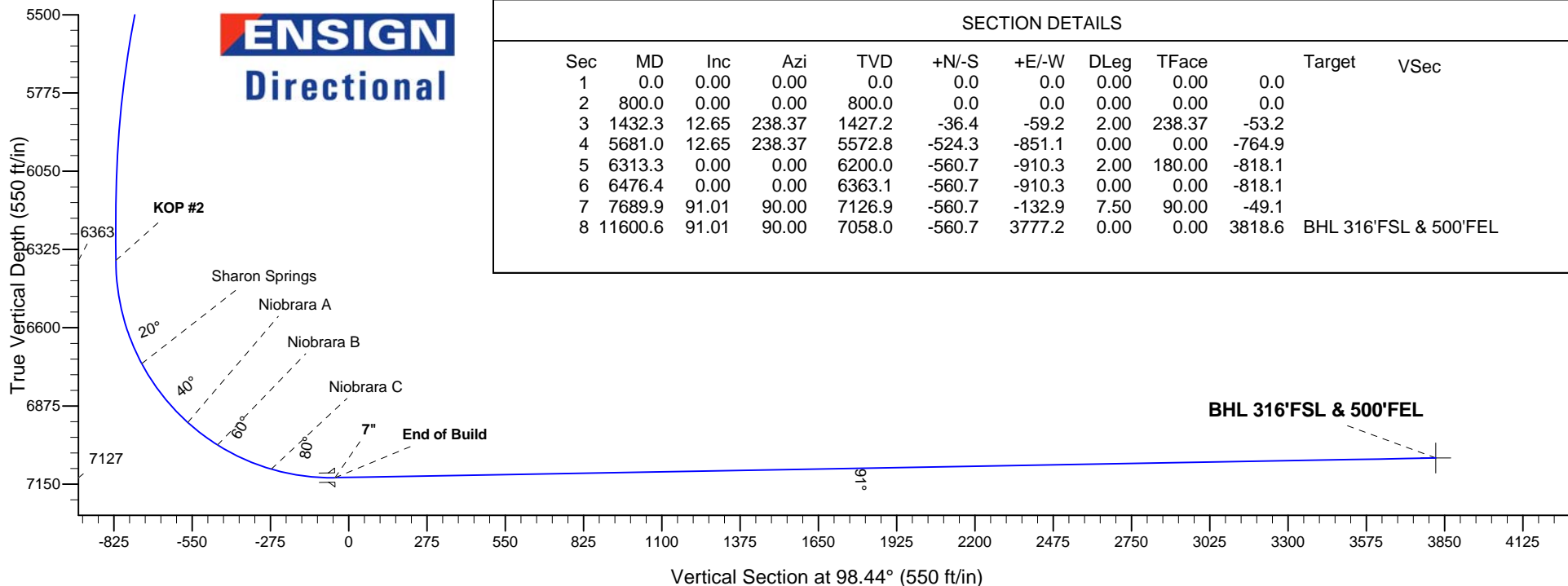
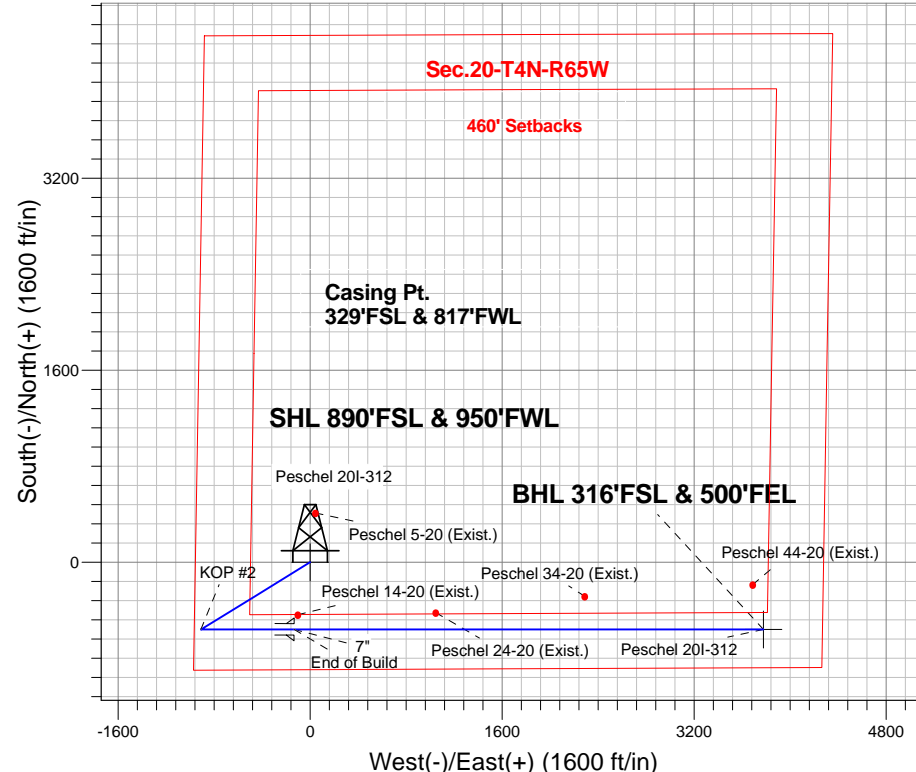
Azimuths to True North
 Magnetic North: 8.39°

Magnetic Field
 Strength: 52745.8snT
 Dip Angle: 66.87°
 Date: 8/27/2014
 Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
800.0	800.0	KOP #1
6363.1	6476.4	KOP #2
7126.9	7689.9	End of Build

Peschel 4N65W20B Pad Sec.20-T4N-R65W
 Peschel 20I-312
 Plan #1 (8-25-14)
 15:49, August 28 2014



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	Target	VSec
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.0	
3	1432.3	12.65	238.37	1427.2	-36.4	-59.2	2.00	238.37	-53.2	
4	5681.0	12.65	238.37	5572.8	-524.3	-851.1	0.00	0.00	-764.9	
5	6313.3	0.00	0.00	6200.0	-560.7	-910.3	2.00	180.00	-818.1	
6	6476.4	0.00	0.00	6363.1	-560.7	-910.3	0.00	0.00	-818.1	
7	7689.9	91.01	90.00	7126.9	-560.7	-132.9	7.50	90.00	-49.1	
8	11600.6	91.01	90.00	7058.0	-560.7	3777.2	0.00	0.00	3818.6	BHL 316'FSL & 500'FEL



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.20-T4N-R65W

Peschel 4N65W20B Pad Sec.20-T4N-R65W

Peschel 20I-312

Wellbore #1

Plan: Plan #1 (8-25-14)

Standard Planning Report

28 August, 2014

Database:	Landmark	Local Co-ordinate Reference:	Well Peschel 20I-312
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4817.0ft (RKB - 15')
Project:	SEC.20-T4N-R65W	MD Reference:	WELL @ 4817.0ft (RKB - 15')
Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	North Reference:	True
Well:	Peschel 20I-312	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-25-14)		

Project	SEC.20-T4N-R65W, Weld, Colorado		
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						Peschel 4N65W20B Pad Sec.20-T4N-R65W											
Site Position:						Northing:			1,350,841.81 ft			Latitude:			40.293650		
From:			Lat/Long			Easting:			3,225,068.28 ft			Longitude:			-104.693140		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.52 °		

Well	Peschel 20I-312					
Well Position	+N/-S	-207.7 ft	Northing:	1,350,634.14 ft	Latitude:	40.293080
	+E/-W	-2.8 ft	Easting:	3,225,067.38 ft	Longitude:	-104.693150
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,802.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/27/2014	8.39	66.87	52,746

Design	Plan #1 (8-25-14)			
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	98.44

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,432.3	12.65	238.37	1,427.2	-36.4	-59.2	2.00	2.00	0.00	238.37	
5,681.0	12.65	238.37	5,572.8	-524.3	-851.1	0.00	0.00	0.00	0.00	
6,313.3	0.00	0.00	6,200.0	-560.7	-910.3	2.00	-2.00	0.00	180.00	
6,476.4	0.00	0.00	6,363.1	-560.7	-910.3	0.00	0.00	0.00	0.00	
7,689.9	91.01	90.00	7,126.9	-560.7	-132.9	7.50	7.50	0.00	90.00	
11,600.6	91.01	90.00	7,058.0	-560.7	3,777.2	0.00	0.00	0.00	0.00	BHL 316'FSL & 50C

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Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	North Reference:	True
Well:	Peschel 20I-312	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-25-14)		

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
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
900.0	2.00	238.37	900.0	-0.9	-1.5	-1.3	2.00	2.00	0.00
1,000.0	4.00	238.37	999.8	-3.7	-5.9	-5.3	2.00	2.00	0.00
1,100.0	6.00	238.37	1,099.5	-8.2	-13.4	-12.0	2.00	2.00	0.00
1,200.0	8.00	238.37	1,198.7	-14.6	-23.7	-21.3	2.00	2.00	0.00
1,300.0	10.00	238.37	1,297.5	-22.8	-37.1	-33.3	2.00	2.00	0.00
1,400.0	12.00	238.37	1,395.6	-32.8	-53.3	-47.9	2.00	2.00	0.00
1,432.3	12.65	238.37	1,427.2	-36.4	-59.2	-53.2	2.00	2.00	0.00
1,500.0	12.65	238.37	1,493.2	-44.2	-71.8	-64.5	0.00	0.00	0.00
1,600.0	12.65	238.37	1,590.8	-55.7	-90.4	-81.3	0.00	0.00	0.00
1,700.0	12.65	238.37	1,688.4	-67.2	-109.1	-98.0	0.00	0.00	0.00
1,800.0	12.65	238.37	1,786.0	-78.7	-127.7	-114.8	0.00	0.00	0.00
1,900.0	12.65	238.37	1,883.5	-90.1	-146.4	-131.5	0.00	0.00	0.00
2,000.0	12.65	238.37	1,981.1	-101.6	-165.0	-148.3	0.00	0.00	0.00
2,100.0	12.65	238.37	2,078.7	-113.1	-183.6	-165.0	0.00	0.00	0.00
2,200.0	12.65	238.37	2,176.3	-124.6	-202.3	-181.8	0.00	0.00	0.00
2,300.0	12.65	238.37	2,273.8	-136.1	-220.9	-198.5	0.00	0.00	0.00
2,400.0	12.65	238.37	2,371.4	-147.6	-239.6	-215.3	0.00	0.00	0.00
2,500.0	12.65	238.37	2,469.0	-159.0	-258.2	-232.0	0.00	0.00	0.00
2,600.0	12.65	238.37	2,566.6	-170.5	-276.8	-248.8	0.00	0.00	0.00
2,700.0	12.65	238.37	2,664.1	-182.0	-295.5	-265.5	0.00	0.00	0.00
2,800.0	12.65	238.37	2,761.7	-193.5	-314.1	-282.3	0.00	0.00	0.00
2,900.0	12.65	238.37	2,859.3	-205.0	-332.8	-299.0	0.00	0.00	0.00
3,000.0	12.65	238.37	2,956.9	-216.4	-351.4	-315.8	0.00	0.00	0.00
3,100.0	12.65	238.37	3,054.4	-227.9	-370.0	-332.6	0.00	0.00	0.00
3,200.0	12.65	238.37	3,152.0	-239.4	-388.7	-349.3	0.00	0.00	0.00
3,300.0	12.65	238.37	3,249.6	-250.9	-407.3	-366.1	0.00	0.00	0.00
3,400.0	12.65	238.37	3,347.1	-262.4	-425.9	-382.8	0.00	0.00	0.00
3,500.0	12.65	238.37	3,444.7	-273.8	-444.6	-399.6	0.00	0.00	0.00
3,600.0	12.65	238.37	3,542.3	-285.3	-463.2	-416.3	0.00	0.00	0.00
3,700.0	12.65	238.37	3,639.9	-296.8	-481.9	-433.1	0.00	0.00	0.00
3,800.0	12.65	238.37	3,737.4	-308.3	-500.5	-449.8	0.00	0.00	0.00
3,802.6	12.65	238.37	3,740.0	-308.6	-501.0	-450.3	0.00	0.00	0.00
Parkman									
3,900.0	12.65	238.37	3,835.0	-319.8	-519.1	-466.6	0.00	0.00	0.00
4,000.0	12.65	238.37	3,932.6	-331.3	-537.8	-483.3	0.00	0.00	0.00
4,100.0	12.65	238.37	4,030.2	-342.7	-556.4	-500.1	0.00	0.00	0.00
4,200.0	12.65	238.37	4,127.7	-354.2	-575.1	-516.8	0.00	0.00	0.00
4,300.0	12.65	238.37	4,225.3	-365.7	-593.7	-533.6	0.00	0.00	0.00
4,400.0	12.65	238.37	4,322.9	-377.2	-612.3	-550.3	0.00	0.00	0.00
4,453.4	12.65	238.37	4,375.0	-383.3	-622.3	-559.3	0.00	0.00	0.00
Sussex									
4,500.0	12.65	238.37	4,420.5	-388.7	-631.0	-567.1	0.00	0.00	0.00
4,600.0	12.65	238.37	4,518.0	-400.1	-649.6	-583.8	0.00	0.00	0.00

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Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	North Reference:	True
Well:	Peschel 20I-312	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-25-14)		

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)
4,700.0	12.65	238.37	4,615.6	-411.6	-668.3	-600.6	0.00	0.00	0.00
4,800.0	12.65	238.37	4,713.2	-423.1	-686.9	-617.3	0.00	0.00	0.00
4,900.0	12.65	238.37	4,810.8	-434.6	-705.5	-634.1	0.00	0.00	0.00
5,000.0	12.65	238.37	4,908.3	-446.1	-724.2	-650.8	0.00	0.00	0.00
5,100.0	12.65	238.37	5,005.9	-457.5	-742.8	-667.6	0.00	0.00	0.00
5,200.0	12.65	238.37	5,103.5	-469.0	-761.5	-684.3	0.00	0.00	0.00
5,298.9	12.65	238.37	5,200.0	-480.4	-779.9	-700.9	0.00	0.00	0.00
Shannon									
5,300.0	12.65	238.37	5,201.1	-480.5	-780.1	-701.1	0.00	0.00	0.00
5,400.0	12.65	238.37	5,298.6	-492.0	-798.7	-717.8	0.00	0.00	0.00
5,500.0	12.65	238.37	5,396.2	-503.5	-817.4	-734.6	0.00	0.00	0.00
5,600.0	12.65	238.37	5,493.8	-515.0	-836.0	-751.4	0.00	0.00	0.00
5,681.0	12.65	238.37	5,572.8	-524.3	-851.1	-764.9	0.00	0.00	0.00
5,700.0	12.27	238.37	5,591.4	-526.4	-854.6	-768.1	2.00	-2.00	0.00
5,800.0	10.27	238.37	5,689.4	-536.6	-871.2	-783.0	2.00	-2.00	0.00
5,900.0	8.27	238.37	5,788.1	-545.1	-885.0	-795.3	2.00	-2.00	0.00
6,000.0	6.27	238.37	5,887.3	-551.7	-895.7	-805.0	2.00	-2.00	0.00
6,100.0	4.27	238.37	5,986.9	-556.5	-903.5	-812.0	2.00	-2.00	0.00
6,200.0	2.27	238.37	6,086.7	-559.5	-908.4	-816.4	2.00	-2.00	0.00
6,300.0	0.27	238.37	6,186.7	-560.7	-910.3	-818.1	2.00	-2.00	0.00
6,313.3	0.00	0.00	6,200.0	-560.7	-910.3	-818.1	2.00	-2.00	0.00
6,400.0	0.00	0.00	6,286.7	-560.7	-910.3	-818.1	0.00	0.00	0.00
6,476.4	0.00	0.00	6,363.1	-560.7	-910.3	-818.1	0.00	0.00	0.00
KOP #2									
6,500.0	1.77	90.00	6,386.7	-560.7	-909.9	-817.7	7.50	7.50	0.00
6,600.0	9.27	90.00	6,486.2	-560.7	-900.3	-808.2	7.50	7.50	0.00
6,700.0	16.77	90.00	6,583.5	-560.7	-877.8	-786.0	7.50	7.50	0.00
6,800.0	24.27	90.00	6,677.1	-560.7	-842.8	-751.3	7.50	7.50	0.00
6,854.6	28.36	90.00	6,726.0	-560.7	-818.6	-727.4	7.50	7.50	0.00
Sharon Springs									
6,900.0	31.77	90.00	6,765.3	-560.7	-795.8	-704.9	7.50	7.50	0.00
7,000.0	39.27	90.00	6,846.7	-560.7	-737.8	-647.5	7.50	7.50	0.00
7,100.0	46.77	90.00	6,919.7	-560.7	-669.6	-580.0	7.50	7.50	0.00
7,119.7	48.24	90.00	6,933.0	-560.7	-655.1	-565.7	7.50	7.50	0.00
Niobrara A									
7,200.0	54.27	90.00	6,983.3	-560.7	-592.5	-503.7	7.50	7.50	0.00
7,251.7	58.15	90.00	7,012.0	-560.7	-549.5	-461.2	7.50	7.50	0.00
Niobrara B									
7,300.0	61.77	90.00	7,036.2	-560.7	-507.7	-419.9	7.50	7.50	0.00
7,400.0	69.27	90.00	7,077.6	-560.7	-416.8	-329.9	7.50	7.50	0.00
7,461.4	73.88	90.00	7,097.0	-560.7	-358.5	-272.3	7.50	7.50	0.00
Niobrara C									
7,500.0	76.77	90.00	7,106.8	-560.7	-321.2	-235.4	7.50	7.50	0.00
7,600.0	84.27	90.00	7,123.2	-560.7	-222.6	-137.9	7.50	7.50	0.00
7,689.9	91.01	90.00	7,126.9	-560.7	-132.9	-49.1	7.50	7.50	0.00
End of Build - 7"									
7,700.0	91.01	90.00	7,126.8	-560.7	-122.8	-39.1	0.00	0.00	0.00
7,800.0	91.01	90.00	7,125.0	-560.7	-22.8	59.8	0.00	0.00	0.00
7,900.0	91.01	90.00	7,123.2	-560.7	77.2	158.7	0.00	0.00	0.00
8,000.0	91.01	90.00	7,121.5	-560.7	177.2	257.6	0.00	0.00	0.00
8,100.0	91.01	90.00	7,119.7	-560.7	277.2	356.5	0.00	0.00	0.00
8,200.0	91.01	90.00	7,117.9	-560.7	377.1	455.4	0.00	0.00	0.00

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Well:	Peschel 20I-312	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-25-14)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,300.0	91.01	90.00	7,116.2	-560.7	477.1	554.3	0.00	0.00	0.00
8,400.0	91.01	90.00	7,114.4	-560.7	577.1	653.2	0.00	0.00	0.00
8,500.0	91.01	90.00	7,112.7	-560.7	677.1	752.1	0.00	0.00	0.00
8,600.0	91.01	90.00	7,110.9	-560.7	777.1	851.0	0.00	0.00	0.00
8,700.0	91.01	90.00	7,109.1	-560.7	877.1	949.9	0.00	0.00	0.00
8,800.0	91.01	90.00	7,107.4	-560.7	977.1	1,048.8	0.00	0.00	0.00
8,900.0	91.01	90.00	7,105.6	-560.7	1,077.0	1,147.7	0.00	0.00	0.00
9,000.0	91.01	90.00	7,103.8	-560.7	1,177.0	1,246.6	0.00	0.00	0.00
9,100.0	91.01	90.00	7,102.1	-560.7	1,277.0	1,345.5	0.00	0.00	0.00
9,200.0	91.01	90.00	7,100.3	-560.7	1,377.0	1,444.4	0.00	0.00	0.00
9,300.0	91.01	90.00	7,098.6	-560.7	1,477.0	1,543.3	0.00	0.00	0.00
9,400.0	91.01	90.00	7,096.8	-560.7	1,577.0	1,642.2	0.00	0.00	0.00
9,500.0	91.01	90.00	7,095.0	-560.7	1,676.9	1,741.1	0.00	0.00	0.00
9,600.0	91.01	90.00	7,093.3	-560.7	1,776.9	1,840.0	0.00	0.00	0.00
9,700.0	91.01	90.00	7,091.5	-560.7	1,876.9	1,938.9	0.00	0.00	0.00
9,800.0	91.01	90.00	7,089.7	-560.7	1,976.9	2,037.8	0.00	0.00	0.00
9,900.0	91.01	90.00	7,088.0	-560.7	2,076.9	2,136.7	0.00	0.00	0.00
10,000.0	91.01	90.00	7,086.2	-560.7	2,176.9	2,235.6	0.00	0.00	0.00
10,100.0	91.01	90.00	7,084.5	-560.7	2,276.9	2,334.5	0.00	0.00	0.00
10,200.0	91.01	90.00	7,082.7	-560.7	2,376.8	2,433.4	0.00	0.00	0.00
10,300.0	91.01	90.00	7,080.9	-560.7	2,476.8	2,532.3	0.00	0.00	0.00
10,400.0	91.01	90.00	7,079.2	-560.7	2,576.8	2,631.2	0.00	0.00	0.00
10,500.0	91.01	90.00	7,077.4	-560.7	2,676.8	2,730.1	0.00	0.00	0.00
10,600.0	91.01	90.00	7,075.6	-560.7	2,776.8	2,829.0	0.00	0.00	0.00
10,700.0	91.01	90.00	7,073.9	-560.7	2,876.8	2,927.9	0.00	0.00	0.00
10,800.0	91.01	90.00	7,072.1	-560.7	2,976.7	3,026.8	0.00	0.00	0.00
10,900.0	91.01	90.00	7,070.3	-560.7	3,076.7	3,125.7	0.00	0.00	0.00
11,000.0	91.01	90.00	7,068.6	-560.7	3,176.7	3,224.6	0.00	0.00	0.00
11,100.0	91.01	90.00	7,066.8	-560.7	3,276.7	3,323.5	0.00	0.00	0.00
11,200.0	91.01	90.00	7,065.1	-560.7	3,376.7	3,422.4	0.00	0.00	0.00
11,300.0	91.01	90.00	7,063.3	-560.7	3,476.7	3,521.3	0.00	0.00	0.00
11,400.0	91.01	90.00	7,061.5	-560.7	3,576.7	3,620.2	0.00	0.00	0.00
11,500.0	91.01	90.00	7,059.8	-560.7	3,676.6	3,719.1	0.00	0.00	0.00
11,600.0	91.01	90.00	7,058.0	-560.7	3,776.6	3,818.0	0.00	0.00	0.00
11,600.6	91.01	90.00	7,058.0	-560.7	3,777.2	3,818.6	0.00	0.00	0.00

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
SHL 890'FSL & 950'F	0.00	0.00	1.0	0.0	0.0	1,350,634.15	3,225,067.38	40.293080	-104.693150
- plan hits target center									
- Point									
BHL 316'FSL & 500'F	0.00	0.00	7,058.0	-560.7	3,777.2	1,350,107.82	3,228,849.39	40.291540	-104.679610
- plan hits target center									
- Point									

Database:	Landmark	Local Co-ordinate Reference:	Well Peschel 20I-312
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4817.0ft (RKB - 15')
Project:	SEC.20-T4N-R65W	MD Reference:	WELL @ 4817.0ft (RKB - 15')
Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	North Reference:	True
Well:	Peschel 20I-312	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-25-14)		

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,689.9	7,126.9	7"	7	7-1/2

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,802.6	3,740.0	Parkman		0.00	
4,453.4	4,375.0	Sussex		0.00	
5,298.9	5,200.0	Shannon		0.00	
6,854.6	6,726.0	Sharon Springs		0.00	
7,119.7	6,933.0	Niobrara A		0.00	
7,251.7	7,012.0	Niobrara B		0.00	
7,461.4	7,097.0	Niobrara C		0.00	
	7,212.0	Ft. Hays		0.00	
	7,229.0	Codell		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
800.0	800.0	0.0	0.0	KOP #1
6,476.4	6,363.1	-36.4	-59.2	KOP #2
7,689.9	7,126.9	-524.3	-851.1	End of Build



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.20-T4N-R65W

Peschel 4N65W20B Pad Sec.20-T4N-R65W

Peschel 20I-312

Wellbore #1

Plan #1 (8-25-14)

Anticollision Report

28 August, 2014



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20I-312
Project:	SEC.20-T4N-R65W	TVD Reference:	WELL @ 4817.0ft (RKB - 15')
Reference Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	MD Reference:	WELL @ 4817.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Peschel 20I-312	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 (8-25-14)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (8-25-14)
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	MD Interval 100.0ft
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 1,000.0ft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISCWSA
Scan Method:	Closest Approach 3D
Error Surface:	Elliptical Conic

Survey Tool Program		Date	8/28/2014		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	11,600.6	Plan #1 (8-25-14) (Wellbore #1)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Existing wells Sec.20-T4N-R65W						
Peschel 14-20 (Exist.) - Wellbore #1 - Wellbore #1	7,719.6	7,111.4	123.5	-44.0	0.738	Level 1, CC, ES, SF
Peschel 24-20 (Exist.) - Wellbore #1 - Wellbore #1	8,869.0	7,108.1	141.8	-50.2	0.739	Level 1, CC, ES, SF
Peschel 34-20 (Exist.) - Wellbore #1 - Wellbore #1	10,110.7	7,116.3	276.7	51.8	1.230	Level 2, CC, ES, SF
Peschel 44-20 (Exist.) - Wellbore #1 - Wellbore #1	11,511.3	7,126.6	375.2	111.8	1.424	Level 3, CC, ES, SF
Peschel 44-20S (P&A) - Wellbore #1 - Wellbore #1						Out of range
Peschel 5-20 (Exist.) - Wellbore #1 - Wellbore #1	800.0	785.0	414.1	396.7	23.817	CC
Peschel 5-20 (Exist.) - Wellbore #1 - Wellbore #1	900.0	885.0	415.2	395.6	21.197	ES
Peschel 5-20 (Exist.) - Wellbore #1 - Wellbore #1	8,000.0	7,106.5	981.4	809.3	5.704	SF
Peschel 4N65W20B Pad Sec.20-T4N-R65W						
Peschel 20H-232 - Wellbore #1 - Plan #1 (8-22-14)	800.0	800.0	29.1	25.8	8.644	CC, ES
Peschel 20H-232 - Wellbore #1 - Plan #1 (8-22-14)	11,600.6	11,478.9	497.0	252.7	2.034	SF
Peschel 20H-302 - Wellbore #1 - Plan #1 (8-22-14)	800.0	800.0	120.3	116.9	35.668	CC, ES
Peschel 20H-302 - Wellbore #1 - Plan #1 (8-22-14)	5,100.0	4,993.2	985.5	949.4	27.318	SF
Peschel 20H-332 - Wellbore #1 - Plan #1 (8-22-14)	800.0	800.0	58.3	54.9	17.289	CC, ES
Peschel 20H-332 - Wellbore #1 - Plan #1 (8-22-14)	11,600.6	11,569.6	677.6	430.5	2.742	SF
Peschel 20I-402 - Wellbore #1 - Plan #1 (8-25-14)	500.0	500.0	29.1	27.1	14.407	CC, ES
Peschel 20I-402 - Wellbore #1 - Plan #1 (8-25-14)	11,600.6	11,706.4	276.3	60.0	1.277	Level 3, SF

Offset Design Existing wells Sec.20-T4N-R65W - Peschel 14-20 (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 7341-UNKNOWN												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)		
0.0	0.0	0.0	0.0	0.0	0.0	-166.72	-437.2	-103.2	449.4				
100.0	100.0	85.0	85.0	0.1	1.7	-166.72	-437.2	-103.2	449.2	447.4	1.81	247.814	
200.0	200.0	185.0	185.0	0.3	3.7	-166.72	-437.2	-103.2	449.2	445.1	4.04	111.257	
300.0	300.0	285.0	285.0	0.6	5.7	-166.72	-437.2	-103.2	449.2	442.9	6.26	71.730	
400.0	400.0	385.0	385.0	0.8	7.7	-166.72	-437.2	-103.2	449.2	440.7	8.49	52.927	
500.0	500.0	485.0	485.0	1.0	9.7	-166.72	-437.2	-103.2	449.2	438.5	10.71	41.934	
600.0	600.0	585.0	585.0	1.2	11.7	-166.72	-437.2	-103.2	449.2	436.2	12.94	34.722	
700.0	700.0	685.0	685.0	1.5	13.7	-166.72	-437.2	-103.2	449.2	434.0	15.16	29.627	
800.0	800.0	785.0	785.0	1.7	15.7	-166.72	-437.2	-103.2	449.2	431.8	17.39	25.836	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20I-312
Project:	SEC.20-T4N-R65W	TVD Reference:	WELL @ 4817.0ft (RKB - 15')
Reference Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	MD Reference:	WELL @ 4817.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Peschel 20I-312	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 (8-25-14)	Offset TVD Reference:	Offset Datum

Offset Design Existing wells Sec.20-T4N-R65W - Peschel 14-20 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7341-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
900.0	900.0	885.0	885.0	1.9	17.7	-45.26		-437.2	-103.2	448.0	428.4	19.58	22.873	
1,000.0	999.8	984.8	984.8	2.1	19.7	-45.79		-437.2	-103.2	444.3	422.5	21.75	20.422	
1,100.0	1,099.5	1,084.5	1,084.5	2.3	21.7	-46.69		-437.2	-103.2	438.2	414.3	23.92	18.322	
1,200.0	1,198.7	1,183.7	1,183.7	2.5	23.7	-47.99		-437.2	-103.2	430.0	403.9	26.08	16.486	
1,300.0	1,297.5	1,282.5	1,282.5	2.8	25.6	-49.73		-437.2	-103.2	419.6	391.3	28.24	14.856	
1,400.0	1,395.6	1,380.6	1,380.6	3.1	27.6	-51.95		-437.2	-103.2	407.4	377.0	30.43	13.389	
1,500.0	1,493.2	1,478.2	1,478.2	3.5	29.6	-54.46		-437.2	-103.2	394.2	361.5	32.70	12.053	
1,600.0	1,590.8	1,575.8	1,575.8	3.9	31.5	-57.09		-437.2	-103.2	381.7	346.6	35.04	10.892	
1,700.0	1,688.4	1,673.4	1,673.4	4.3	33.5	-59.89		-437.2	-103.2	370.0	332.6	37.41	9.890	
1,800.0	1,786.0	1,771.0	1,771.0	4.8	35.4	-62.85		-437.2	-103.2	359.3	319.5	39.82	9.025	
1,900.0	1,883.5	1,868.5	1,868.5	5.2	37.4	-65.98		-437.2	-103.2	349.7	307.4	42.24	8.278	
2,000.0	1,981.1	1,966.1	1,966.1	5.6	39.3	-69.27		-437.2	-103.2	341.2	296.5	44.69	7.634	
2,100.0	2,078.7	2,063.7	2,063.7	6.1	41.3	-72.71		-437.2	-103.2	333.9	286.7	47.16	7.080	
2,200.0	2,176.3	2,161.3	2,161.3	6.6	43.2	-76.28		-437.2	-103.2	327.9	278.3	49.63	6.607	
2,300.0	2,273.8	2,258.8	2,258.8	7.0	45.2	-79.96		-437.2	-103.2	323.3	271.2	52.10	6.205	
2,400.0	2,371.4	2,356.4	2,356.4	7.5	47.1	-83.73		-437.2	-103.2	320.1	265.5	54.57	5.866	
2,500.0	2,469.0	2,454.0	2,454.0	7.9	49.1	-87.56		-437.2	-103.2	318.4	261.4	57.02	5.584	
2,563.6	2,531.0	2,516.0	2,516.0	8.2	50.3	-90.00		-437.2	-103.2	318.1	259.5	58.56	5.432	
2,600.0	2,566.6	2,551.6	2,551.6	8.4	51.0	-91.40		-437.2	-103.2	318.2	258.7	59.44	5.353	
2,700.0	2,664.1	2,649.1	2,649.1	8.9	53.0	-95.24		-437.2	-103.2	319.5	257.6	61.84	5.166	
2,800.0	2,761.7	2,746.7	2,746.7	9.4	54.9	-99.02		-437.2	-103.2	322.3	258.1	64.20	5.019	
2,900.0	2,859.3	2,844.3	2,844.3	9.8	56.9	-102.73		-437.2	-103.2	326.5	260.0	66.53	4.907	
3,000.0	2,956.9	2,941.9	2,941.9	10.3	58.8	-106.34		-437.2	-103.2	332.1	263.3	68.82	4.826	
3,100.0	3,054.4	3,039.4	3,039.4	10.8	60.8	-109.81		-437.2	-103.2	339.1	268.0	71.08	4.770	
3,200.0	3,152.0	3,137.0	3,137.0	11.3	62.7	-113.14		-437.2	-103.2	347.3	274.0	73.30	4.738	
3,300.0	3,249.6	3,234.6	3,234.6	11.7	64.7	-116.32		-437.2	-103.2	356.6	281.1	75.49	4.724	
3,400.0	3,347.1	3,332.1	3,332.1	12.2	66.6	-119.32		-437.2	-103.2	367.0	289.4	77.65	4.727	
3,500.0	3,444.7	3,429.7	3,429.7	12.7	68.6	-122.16		-437.2	-103.2	378.4	298.6	79.79	4.743	
3,600.0	3,542.3	3,527.3	3,527.3	13.2	70.5	-124.84		-437.2	-103.2	390.7	308.8	81.91	4.770	
3,700.0	3,639.9	3,624.9	3,624.9	13.6	72.5	-127.35		-437.2	-103.2	403.8	319.8	84.01	4.807	
3,800.0	3,737.4	3,722.4	3,722.4	14.1	74.4	-129.70		-437.2	-103.2	417.7	331.6	86.10	4.851	
3,900.0	3,835.0	3,820.0	3,820.0	14.6	76.4	-131.91		-437.2	-103.2	432.2	344.0	88.19	4.901	
4,000.0	3,932.6	3,917.6	3,917.6	15.1	78.4	-133.97		-437.2	-103.2	447.3	357.0	90.27	4.955	
4,100.0	4,030.2	4,015.2	4,015.2	15.6	80.3	-135.90		-437.2	-103.2	462.9	370.6	92.34	5.013	
4,200.0	4,127.7	4,112.7	4,112.7	16.1	82.3	-137.70		-437.2	-103.2	479.1	384.7	94.42	5.074	
4,300.0	4,225.3	4,210.3	4,210.3	16.5	84.2	-139.39		-437.2	-103.2	495.7	399.2	96.49	5.137	
4,400.0	4,322.9	4,307.9	4,307.9	17.0	86.2	-140.96		-437.2	-103.2	512.7	414.1	98.56	5.201	
4,500.0	4,420.5	4,405.5	4,405.5	17.5	88.1	-142.44		-437.2	-103.2	530.0	429.4	100.63	5.267	
4,600.0	4,518.0	4,503.0	4,503.0	18.0	90.1	-143.82		-437.2	-103.2	547.7	445.0	102.71	5.332	
4,700.0	4,615.6	4,600.6	4,600.6	18.5	92.0	-145.12		-437.2	-103.2	565.6	460.8	104.79	5.398	
4,800.0	4,713.2	4,698.2	4,698.2	18.9	94.0	-146.34		-437.2	-103.2	583.9	477.0	106.87	5.463	
4,900.0	4,810.8	4,795.8	4,795.8	19.4	95.9	-147.49		-437.2	-103.2	602.3	493.4	108.95	5.529	
5,000.0	4,908.3	4,893.3	4,893.3	19.9	97.9	-148.57		-437.2	-103.2	621.0	510.0	111.04	5.593	
5,100.0	5,005.9	4,990.9	4,990.9	20.4	99.8	-149.58		-437.2	-103.2	639.9	526.8	113.13	5.657	
5,200.0	5,103.5	5,088.5	5,088.5	20.9	101.8	-150.54		-437.2	-103.2	659.0	543.8	115.22	5.720	
5,300.0	5,201.1	5,186.1	5,186.1	21.4	103.7	-151.45		-437.2	-103.2	678.3	561.0	117.32	5.782	
5,400.0	5,298.6	5,283.6	5,283.6	21.8	105.7	-152.30		-437.2	-103.2	697.7	578.3	119.42	5.843	
5,500.0	5,396.2	5,381.2	5,381.2	22.3	107.6	-153.11		-437.2	-103.2	717.2	595.7	121.52	5.902	
5,600.0	5,493.8	5,478.8	5,478.8	22.8	109.6	-153.88		-437.2	-103.2	736.9	613.3	123.62	5.961	
5,700.0	5,591.4	5,576.4	5,576.4	23.3	111.5	-154.63		-437.2	-103.2	756.7	630.8	125.85	6.013	
5,800.0	5,689.4	5,674.4	5,674.4	23.6	113.5	-155.40		-437.2	-103.2	774.4	645.9	128.52	6.026	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20I-312
Project:	SEC.20-T4N-R65W	TVD Reference:	WELL @ 4817.0ft (RKB - 15')
Reference Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	MD Reference:	WELL @ 4817.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Peschel 20I-312	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 (8-25-14)	Offset TVD Reference:	Offset Datum

Offset Design		Existing wells Sec.20-T4N-R65W - Peschel 14-20 (Exist.) - Wellbore #1 - Wellbore #1										Offset Site Error:		0.0 ft		
Survey Program: 7341-UNKNOWN														Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor				
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)					
5,900.0	5,788.1	5,773.1	5,773.1	23.9	115.5	-156.01	-437.2	-103.2	789.2	658.0	131.11	6.019				
6,000.0	5,887.3	5,872.3	5,872.3	24.1	117.4	-156.47	-437.2	-103.2	800.7	667.1	133.63	5.992				
6,100.0	5,986.9	5,971.9	5,971.9	24.3	119.4	-156.80	-437.2	-103.2	809.2	673.1	136.03	5.948				
6,200.0	6,086.7	6,071.7	6,071.7	24.5	121.4	-156.99	-437.2	-103.2	814.4	676.1	138.32	5.888				
6,300.0	6,186.7	6,171.7	6,171.7	24.6	123.4	-157.07	-437.2	-103.2	816.5	676.0	140.48	5.812				
6,400.0	6,286.7	6,271.7	6,271.7	24.7	125.4	81.30	-437.2	-103.2	816.5	667.6	148.91	5.483				
6,500.0	6,386.7	6,371.7	6,371.7	24.8	127.4	-8.71	-437.2	-103.2	816.1	671.5	144.65	5.642				
6,600.0	6,486.2	6,471.2	6,471.2	24.8	129.4	-8.92	-437.2	-103.2	806.6	661.9	144.69	5.575				
6,700.0	6,583.5	6,568.5	6,568.5	24.7	131.4	-9.46	-437.2	-103.2	784.4	642.2	142.18	5.517				
6,800.0	6,677.1	6,662.1	6,662.1	24.5	133.2	-10.38	-437.2	-103.2	749.8	612.7	137.13	5.468				
6,900.0	6,765.3	6,750.3	6,750.3	24.3	135.0	-11.85	-437.2	-103.2	703.6	573.8	129.73	5.423				
7,000.0	6,846.7	6,831.7	6,831.7	24.0	136.6	-14.12	-437.2	-103.2	646.5	526.0	120.50	5.365				
7,100.0	6,919.7	6,904.7	6,904.7	23.8	138.1	-17.66	-437.2	-103.2	579.7	469.0	110.69	5.237				
7,200.0	6,983.3	6,968.3	6,968.3	23.6	139.4	-23.38	-437.2	-103.2	504.6	401.1	103.52	4.875				
7,300.0	7,036.2	7,021.2	7,021.2	23.5	140.4	-32.85	-437.2	-103.2	423.0	316.9	106.06	3.988				
7,400.0	7,077.6	7,062.6	7,062.6	23.6	141.3	-48.06	-437.2	-103.2	337.0	211.3	125.74	2.680				
7,500.0	7,106.8	7,091.8	7,091.8	24.0	141.8	-68.01	-437.2	-103.2	250.6	98.0	152.54	1.643				
7,600.0	7,123.2	7,108.2	7,108.2	24.6	142.2	-84.49	-437.2	-103.2	171.8	6.8	165.01	1.041 Level 2				
7,700.0	7,126.8	7,111.8	7,111.8	25.5	142.2	-90.16	-437.2	-103.2	125.1	-42.1	167.23	0.748 Level 1				
7,719.6	7,126.4	7,111.4	7,111.4	25.7	142.2	-90.00	-437.2	-103.2	123.5	-44.0	167.50	0.738 Level 1, CC, ES, SF				
7,800.0	7,125.0	7,110.0	7,110.0	26.7	142.2	-89.34	-437.2	-103.2	147.4	-21.2	168.61	0.874 Level 1				
7,900.0	7,123.2	7,108.2	7,108.2	28.3	142.2	-88.53	-437.2	-103.2	218.7	48.5	170.17	1.285 Level 3				
8,000.0	7,121.5	7,106.5	7,106.5	30.0	142.1	-87.71	-437.2	-103.2	306.4	134.5	171.87	1.783				
8,100.0	7,119.7	7,104.7	7,104.7	31.9	142.1	-86.89	-437.2	-103.2	399.9	226.3	173.67	2.303				
8,200.0	7,117.9	7,102.9	7,102.9	34.0	142.1	-86.08	-437.2	-103.2	496.0	320.4	175.56	2.825				
8,300.0	7,116.2	7,101.2	7,101.2	36.2	142.0	-85.27	-437.2	-103.2	593.4	415.9	177.50	3.343				
8,400.0	7,114.4	7,099.4	7,099.4	38.5	142.0	-84.46	-437.2	-103.2	691.5	512.0	179.48	3.853				
8,500.0	7,112.7	7,097.7	7,097.7	40.8	142.0	-83.65	-437.2	-103.2	790.0	608.5	181.50	4.353				
8,600.0	7,110.9	7,095.9	7,095.9	43.2	141.9	-82.84	-437.2	-103.2	888.9	705.4	183.52	4.844				
8,700.0	7,109.1	7,094.1	7,094.1	45.6	141.9	-82.04	-437.2	-103.2	988.0	802.5	185.56	5.325				

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20I-312
Project:	SEC.20-T4N-R65W	TVD Reference:	WELL @ 4817.0ft (RKB - 15')
Reference Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	MD Reference:	WELL @ 4817.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Peschel 20I-312	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 (8-25-14)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 7362-UNKNOWN												Offset Well Error:	0.0 ft
Existing wells Sec.20-T4N-R65W - Peschel 24-20 (Exist.) - Wellbore #1 - Wellbore #1													
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,900.0	7,123.2	7,125.2	7,125.2	28.3	142.5	-96.87	-418.9	1,046.1	979.2	809.7	169.58	5.775	
8,000.0	7,121.5	7,123.5	7,123.5	30.0	142.5	-96.17	-418.9	1,046.1	880.4	708.9	171.58	5.131	
8,100.0	7,119.7	7,121.7	7,121.7	31.9	142.4	-95.46	-418.9	1,046.1	781.9	608.2	173.70	4.502	
8,200.0	7,117.9	7,119.9	7,119.9	34.0	142.4	-94.75	-418.9	1,046.1	683.8	507.9	175.92	3.887	
8,300.0	7,116.2	7,118.2	7,118.2	36.2	142.4	-94.05	-418.9	1,046.1	586.4	408.2	178.21	3.290	
8,400.0	7,114.4	7,116.4	7,116.4	38.5	142.3	-93.34	-418.9	1,046.1	490.0	309.4	180.56	2.714	
8,500.0	7,112.7	7,114.7	7,114.7	40.8	142.3	-92.63	-418.9	1,046.1	395.3	212.4	182.95	2.161	
8,600.0	7,110.9	7,112.9	7,112.9	43.2	142.3	-91.92	-418.9	1,046.1	304.1	118.7	185.38	1.640	
8,700.0	7,109.1	7,111.1	7,111.1	45.6	142.2	-91.20	-418.9	1,046.1	220.6	32.8	187.83	1.175 Level 2	
8,800.0	7,107.4	7,109.4	7,109.4	48.1	142.2	-90.49	-418.9	1,046.1	157.7	-32.6	190.29	0.829 Level 1	
8,869.0	7,106.1	7,108.1	7,108.1	49.8	142.2	-90.00	-418.9	1,046.1	141.8	-50.2	191.99	0.739 Level 1, CC, ES, SF	
8,900.0	7,105.6	7,107.6	7,107.6	50.6	142.2	-89.78	-418.9	1,046.1	145.1	-47.6	192.75	0.753 Level 1	
9,000.0	7,103.8	7,105.8	7,105.8	53.2	142.1	-89.07	-418.9	1,046.1	193.0	-2.2	195.22	0.988 Level 1	
9,100.0	7,102.1	7,104.1	7,104.1	55.7	142.1	-88.36	-418.9	1,046.1	270.9	73.3	197.68	1.371 Level 3	
9,200.0	7,100.3	7,102.3	7,102.3	58.3	142.0	-87.64	-418.9	1,046.1	360.0	159.8	200.14	1.799	
9,300.0	7,098.6	7,100.6	7,100.6	61.0	142.0	-86.93	-418.9	1,046.1	453.6	251.0	202.58	2.239	
9,400.0	7,096.8	7,098.8	7,098.8	63.6	142.0	-86.22	-418.9	1,046.1	549.4	344.4	205.01	2.680	
9,500.0	7,095.0	7,097.0	7,097.0	66.2	141.9	-85.52	-418.9	1,046.1	646.6	439.1	207.41	3.117	
9,600.0	7,093.3	7,095.3	7,095.3	68.9	141.9	-84.81	-418.9	1,046.1	744.4	534.6	209.80	3.548	
9,700.0	7,091.5	7,093.5	7,093.5	71.5	141.9	-84.10	-418.9	1,046.1	842.8	630.6	212.16	3.972	
9,800.0	7,089.7	7,091.7	7,091.7	74.2	141.8	-83.40	-418.9	1,046.1	941.5	727.0	214.50	4.389	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20I-312
Project:	SEC.20-T4N-R65W	TVD Reference:	WELL @ 4817.0ft (RKB - 15')
Reference Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	MD Reference:	WELL @ 4817.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Peschel 20I-312	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 (8-25-14)	Offset TVD Reference:	Offset Datum

Offset Design Existing wells Sec.20-T4N-R65W - Peschel 34-20 (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error: 0.0 ft	
Survey Program: 7370-UNKNOWN												Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis		Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)		
9,200.0	7,100.3	7,132.3	7,132.3	58.3	142.6	-93.32	-284.0	2,287.5	951.6	750.9	200.70	4.741	
9,300.0	7,098.6	7,130.6	7,130.6	61.0	142.6	-92.96	-284.0	2,287.5	856.5	653.1	203.33	4.212	
9,400.0	7,096.8	7,128.8	7,128.8	63.6	142.6	-92.59	-284.0	2,287.5	762.5	556.5	205.97	3.702	
9,500.0	7,095.0	7,127.0	7,127.0	66.2	142.5	-92.23	-284.0	2,287.5	670.3	461.7	208.62	3.213	
9,600.0	7,093.3	7,125.3	7,125.3	68.9	142.5	-91.86	-284.0	2,287.5	580.7	369.4	211.28	2.749	
9,700.0	7,091.5	7,123.5	7,123.5	71.5	142.5	-91.50	-284.0	2,287.5	495.1	281.2	213.94	2.314	
9,800.0	7,089.7	7,121.7	7,121.7	74.2	142.4	-91.13	-284.0	2,287.5	416.0	199.4	216.60	1.920	
9,900.0	7,088.0	7,120.0	7,120.0	76.9	142.4	-90.77	-284.0	2,287.5	347.7	128.5	219.26	1.586	
10,000.0	7,086.2	7,118.2	7,118.2	79.6	142.4	-90.40	-284.0	2,287.5	298.0	76.0	221.93	1.343	Level 3
10,100.0	7,084.5	7,116.5	7,116.5	82.3	142.3	-90.04	-284.0	2,287.5	276.9	52.3	224.59	1.233	Level 2
10,110.7	7,084.3	7,116.3	7,116.3	82.6	142.3	-90.00	-284.0	2,287.5	276.7	51.8	224.88	1.230	Level 2, CC, ES, SF
10,200.0	7,082.7	7,114.7	7,114.7	85.0	142.3	-89.67	-284.0	2,287.5	290.7	63.5	227.26	1.279	Level 3
10,300.0	7,080.9	7,112.9	7,112.9	87.7	142.3	-89.31	-284.0	2,287.5	335.2	105.3	229.92	1.458	Level 3
10,400.0	7,079.2	7,111.2	7,111.2	90.5	142.2	-88.94	-284.0	2,287.5	400.3	167.7	232.57	1.721	
10,500.0	7,077.4	7,109.4	7,109.4	93.2	142.2	-88.58	-284.0	2,287.5	477.6	242.4	235.22	2.030	
10,600.0	7,075.6	7,107.6	7,107.6	95.9	142.2	-88.21	-284.0	2,287.5	562.1	324.2	237.87	2.363	
10,700.0	7,073.9	7,105.9	7,105.9	98.6	142.1	-87.85	-284.0	2,287.5	651.0	410.5	240.51	2.707	
10,800.0	7,072.1	7,104.1	7,104.1	101.4	142.1	-87.49	-284.0	2,287.5	742.7	499.5	243.14	3.055	
10,900.0	7,070.3	7,102.3	7,102.3	104.1	142.0	-87.12	-284.0	2,287.5	836.3	590.5	245.77	3.403	
11,000.0	7,068.6	7,100.6	7,100.6	106.9	142.0	-86.76	-284.0	2,287.5	931.2	682.9	248.39	3.749	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20I-312
Project:	SEC.20-T4N-R65W	TVD Reference:	WELL @ 4817.0ft (RKB - 15')
Reference Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	MD Reference:	WELL @ 4817.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Peschel 20I-312	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 (8-25-14)	Offset TVD Reference:	Offset Datum

Offset Design Existing wells Sec.20-T4N-R65W - Peschel 44-20 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7394-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
10,600.0	7,075.6	7,142.6	7,142.6	95.9	142.9	-92.45	-185.5	3,687.9	985.4	746.8	238.55	4.131		
10,700.0	7,073.9	7,140.9	7,140.9	98.6	142.8	-92.18	-185.5	3,687.9	893.7	652.4	241.29	3.704		
10,800.0	7,072.1	7,139.1	7,139.1	101.4	142.8	-91.91	-185.5	3,687.9	804.1	560.0	244.02	3.295		
10,900.0	7,070.3	7,137.3	7,137.3	104.1	142.7	-91.64	-185.5	3,687.9	717.2	470.4	246.76	2.906		
11,000.0	7,068.6	7,135.6	7,135.6	106.9	142.7	-91.38	-185.5	3,687.9	634.1	384.6	249.49	2.542		
11,100.0	7,066.8	7,133.8	7,133.8	109.6	142.7	-91.11	-185.5	3,687.9	556.7	304.4	252.22	2.207		
11,200.0	7,065.1	7,132.1	7,132.1	112.4	142.6	-90.84	-185.5	3,687.9	487.5	232.5	254.95	1.912		
11,300.0	7,063.3	7,130.3	7,130.3	115.1	142.6	-90.57	-185.5	3,687.9	430.6	172.9	257.68	1.671		
11,400.0	7,061.5	7,128.5	7,128.5	117.9	142.6	-90.30	-185.5	3,687.9	391.4	131.0	260.41	1.503		
11,500.0	7,059.8	7,126.8	7,126.8	120.6	142.5	-90.03	-185.5	3,687.9	375.4	112.3	263.13	1.427 Level 3		
11,511.3	7,059.6	7,126.6	7,126.6	121.0	142.5	-90.00	-185.5	3,687.9	375.2	111.8	263.44	1.424 Level 3, CC, ES, SF		
11,600.0	7,058.0	7,125.0	7,125.0	123.4	142.5	-89.76	-185.5	3,687.9	385.6	119.7	265.85	1.450 Level 3		
11,600.6	7,058.0	7,125.0	7,125.0	123.4	142.5	-89.76	-185.5	3,687.9	385.7	119.8	265.86	1.451 Level 3		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20I-312
Project:	SEC.20-T4N-R65W	TVD Reference:	WELL @ 4817.0ft (RKB - 15')
Reference Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	MD Reference:	WELL @ 4817.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Peschel 20I-312	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 (8-25-14)	Offset TVD Reference:	Offset Datum

Offset Design Existing wells Sec.20-T4N-R65W - Peschel 5-20 (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error: 0.0 ft	
Survey Program: 7456-UNKNOWN												Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			
0.0	0.0	0.0	0.0	0.0	0.0	6.19	411.7	44.6	414.4				
100.0	100.0	85.0	85.0	0.1	1.7	6.19	411.7	44.6	414.1	412.3	1.81	228.449	
200.0	200.0	185.0	185.0	0.3	3.7	6.19	411.7	44.6	414.1	410.0	4.04	102.563	
300.0	300.0	285.0	285.0	0.6	5.7	6.19	411.7	44.6	414.1	407.8	6.26	66.125	
400.0	400.0	385.0	385.0	0.8	7.7	6.19	411.7	44.6	414.1	405.6	8.49	48.791	
500.0	500.0	485.0	485.0	1.0	9.7	6.19	411.7	44.6	414.1	403.4	10.71	38.657	
600.0	600.0	585.0	585.0	1.2	11.7	6.19	411.7	44.6	414.1	401.1	12.94	32.009	
700.0	700.0	685.0	685.0	1.5	13.7	6.19	411.7	44.6	414.1	398.9	15.16	27.312	
800.0	800.0	785.0	785.0	1.7	15.7	6.19	411.7	44.6	414.1	396.7	17.39	23.817 CC	
900.0	900.0	885.0	885.0	1.9	17.7	127.99	411.7	44.6	415.2	395.6	19.59	21.197 ES	
1,000.0	999.8	984.8	984.8	2.1	19.7	128.51	411.7	44.6	418.4	396.6	21.76	19.228	
1,100.0	1,099.5	1,084.5	1,084.5	2.3	21.7	129.34	411.7	44.6	423.9	400.0	23.93	17.714	
1,200.0	1,198.7	1,183.7	1,183.7	2.5	23.7	130.47	411.7	44.6	431.7	405.7	26.09	16.550	
1,300.0	1,297.5	1,282.5	1,282.5	2.8	25.6	131.84	411.7	44.6	442.1	413.9	28.23	15.661	
1,400.0	1,395.6	1,380.6	1,380.6	3.1	27.6	133.42	411.7	44.6	455.2	424.8	30.35	14.997	
1,500.0	1,493.2	1,478.2	1,478.2	3.5	29.6	135.25	411.7	44.6	470.5	438.0	32.52	14.469	
1,600.0	1,590.8	1,575.8	1,575.8	3.9	31.5	137.05	411.7	44.6	486.5	451.8	34.72	14.010	
1,700.0	1,688.4	1,673.4	1,673.4	4.3	33.5	138.73	411.7	44.6	502.9	466.0	36.93	13.617	
1,800.0	1,786.0	1,771.0	1,771.0	4.8	35.4	140.31	411.7	44.6	519.7	480.6	39.14	13.279	
1,900.0	1,883.5	1,868.5	1,868.5	5.2	37.4	141.79	411.7	44.6	536.9	495.6	41.34	12.987	
2,000.0	1,981.1	1,966.1	1,966.1	5.6	39.3	143.17	411.7	44.6	554.4	510.9	43.55	12.732	
2,100.0	2,078.7	2,063.7	2,063.7	6.1	41.3	144.48	411.7	44.6	572.3	526.5	45.75	12.510	
2,200.0	2,176.3	2,161.3	2,161.3	6.6	43.2	145.70	411.7	44.6	590.4	542.4	47.94	12.314	
2,300.0	2,273.8	2,258.8	2,258.8	7.0	45.2	146.85	411.7	44.6	608.7	558.6	50.13	12.142	
2,400.0	2,371.4	2,356.4	2,356.4	7.5	47.1	147.94	411.7	44.6	627.3	575.0	52.32	11.989	
2,500.0	2,469.0	2,454.0	2,454.0	7.9	49.1	148.96	411.7	44.6	646.1	591.6	54.51	11.853	
2,600.0	2,566.6	2,551.6	2,551.6	8.4	51.0	149.93	411.7	44.6	665.0	608.3	56.69	11.731	
2,700.0	2,664.1	2,649.1	2,649.1	8.9	53.0	150.84	411.7	44.6	684.2	625.3	58.87	11.622	
2,800.0	2,761.7	2,746.7	2,746.7	9.4	54.9	151.71	411.7	44.6	703.5	642.4	61.05	11.523	
2,900.0	2,859.3	2,844.3	2,844.3	9.8	56.9	152.53	411.7	44.6	722.9	659.7	63.23	11.434	
3,000.0	2,956.9	2,941.9	2,941.9	10.3	58.8	153.30	411.7	44.6	742.5	677.1	65.40	11.353	
3,100.0	3,054.4	3,039.4	3,039.4	10.8	60.8	154.04	411.7	44.6	762.2	694.7	67.58	11.280	
3,200.0	3,152.0	3,137.0	3,137.0	11.3	62.7	154.74	411.7	44.6	782.1	712.3	69.75	11.213	
3,300.0	3,249.6	3,234.6	3,234.6	11.7	64.7	155.40	411.7	44.6	802.0	730.1	71.92	11.152	
3,400.0	3,347.1	3,332.1	3,332.1	12.2	66.6	156.03	411.7	44.6	822.1	748.0	74.09	11.095	
3,500.0	3,444.7	3,429.7	3,429.7	12.7	68.6	156.64	411.7	44.6	842.2	765.9	76.26	11.044	
3,600.0	3,542.3	3,527.3	3,527.3	13.2	70.5	157.21	411.7	44.6	862.4	784.0	78.43	10.996	
3,700.0	3,639.9	3,624.9	3,624.9	13.6	72.5	157.76	411.7	44.6	882.7	802.1	80.60	10.952	
3,800.0	3,737.4	3,722.4	3,722.4	14.1	74.4	158.28	411.7	44.6	903.1	820.3	82.76	10.911	
3,900.0	3,835.0	3,820.0	3,820.0	14.6	76.4	158.79	411.7	44.6	923.5	838.6	84.93	10.874	
4,000.0	3,932.6	3,917.6	3,917.6	15.1	78.4	159.26	411.7	44.6	944.0	856.9	87.10	10.839	
4,100.0	4,030.2	4,015.2	4,015.2	15.6	80.3	159.72	411.7	44.6	964.6	875.3	89.26	10.806	
4,200.0	4,127.7	4,112.7	4,112.7	16.1	82.3	160.16	411.7	44.6	985.2	893.8	91.43	10.776	
7,700.0	7,126.8	7,111.8	7,111.8	25.5	142.2	-90.17	411.7	44.6	986.7	819.5	167.23	5.900	
7,800.0	7,125.0	7,110.0	7,110.0	26.7	142.2	-90.07	411.7	44.6	974.7	806.1	168.64	5.780	
7,867.4	7,123.8	7,108.8	7,108.8	27.7	142.2	-90.00	411.7	44.6	972.4	802.6	169.74	5.729	
7,900.0	7,123.2	7,108.2	7,108.2	28.3	142.2	-89.97	411.7	44.6	972.9	802.7	170.26	5.714	
8,000.0	7,121.5	7,106.5	7,106.5	30.0	142.1	-89.86	411.7	44.6	981.4	809.3	172.06	5.704 SF	
8,100.0	7,119.7	7,104.7	7,104.7	31.9	142.1	-89.76	411.7	44.6	999.8	825.8	173.99	5.746	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20I-312
Project:	SEC.20-T4N-R65W	TVD Reference:	WELL @ 4817.0ft (RKB - 15')
Reference Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	MD Reference:	WELL @ 4817.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Peschel 20I-312	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 (8-25-14)	Offset TVD Reference:	Offset Datum

Offset Design Peschel 4N65W20B Pad Sec.20-T4N-R65W - Peschel 20H-232 - Wellbore #1 - Plan #1 (8-22-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	0.00	29.1	0.0	29.1					
100.0	100.0	100.0	100.0	0.1	0.1	0.00	29.1	0.0	29.1	28.9	0.22	129.666		
200.0	200.0	200.0	200.0	0.3	0.3	0.00	29.1	0.0	29.1	28.5	0.67	43.222		
300.0	300.0	300.0	300.0	0.6	0.6	0.00	29.1	0.0	29.1	28.0	1.12	25.933		
400.0	400.0	400.0	400.0	0.8	0.8	0.00	29.1	0.0	29.1	27.6	1.57	18.524		
500.0	500.0	500.0	500.0	1.0	1.0	0.00	29.1	0.0	29.1	27.1	2.02	14.407		
600.0	600.0	600.0	600.0	1.2	1.2	0.00	29.1	0.0	29.1	26.7	2.47	11.788		
700.0	700.0	700.0	700.0	1.5	1.5	0.00	29.1	0.0	29.1	26.2	2.92	9.974		
800.0	800.0	800.0	800.0	1.7	1.7	0.00	29.1	0.0	29.1	25.8	3.37	8.644	CC, ES	
900.0	900.0	900.0	900.0	1.9	1.9	124.44	29.1	0.0	30.1	26.3	3.80	7.919		
1,000.0	999.8	999.8	999.8	2.1	2.1	131.83	29.1	0.0	33.3	29.1	4.22	7.906		
1,100.0	1,099.5	1,100.0	1,100.0	2.3	2.3	138.89	29.0	-1.7	39.0	34.3	4.63	8.420		
1,200.0	1,198.7	1,200.4	1,200.2	2.5	2.5	142.83	28.4	-7.0	46.2	41.2	5.04	9.170		
1,300.0	1,297.5	1,300.8	1,300.3	2.8	2.8	144.55	27.4	-15.7	54.7	49.2	5.47	9.997		
1,400.0	1,395.6	1,401.4	1,400.1	3.1	3.0	144.82	26.1	-27.9	64.3	58.4	5.94	10.828		
1,500.0	1,493.2	1,502.1	1,499.5	3.5	3.3	143.91	24.4	-43.6	74.4	68.0	6.48	11.489		
1,600.0	1,590.8	1,602.4	1,598.1	3.9	3.6	141.32	22.3	-62.5	83.2	76.1	7.10	11.720		
1,700.0	1,688.4	1,702.0	1,695.7	4.3	3.9	138.84	20.2	-81.9	91.8	84.0	7.77	11.810		
1,800.0	1,786.0	1,801.6	1,793.3	4.8	4.3	136.79	18.1	-101.4	100.6	92.1	8.49	11.849		
1,900.0	1,883.5	1,901.1	1,890.9	5.2	4.7	135.07	16.0	-120.8	109.4	100.2	9.23	11.854		
2,000.0	1,981.1	2,000.7	1,988.5	5.6	5.1	133.61	13.9	-140.2	118.4	108.4	10.00	11.839		
2,100.0	2,078.7	2,100.2	2,086.2	6.1	5.5	132.35	11.8	-159.6	127.4	116.6	10.79	11.812		
2,200.0	2,176.3	2,199.8	2,183.8	6.6	5.9	131.26	9.7	-179.1	136.5	124.9	11.59	11.777		
2,300.0	2,273.8	2,299.3	2,281.4	7.0	6.3	130.31	7.6	-198.5	145.6	133.2	12.40	11.738		
2,400.0	2,371.4	2,398.9	2,379.0	7.5	6.7	129.47	5.4	-217.9	154.7	141.5	13.22	11.698		
2,500.0	2,469.0	2,498.5	2,476.6	7.9	7.1	128.72	3.3	-237.4	163.9	149.8	14.06	11.658		
2,600.0	2,566.6	2,598.0	2,574.3	8.4	7.5	128.05	1.2	-256.8	173.1	158.2	14.89	11.619		
2,700.0	2,664.1	2,697.6	2,671.9	8.9	7.9	127.45	-0.9	-276.2	182.3	166.5	15.74	11.581		
2,800.0	2,761.7	2,797.1	2,769.5	9.4	8.3	126.91	-3.0	-295.6	191.5	174.9	16.59	11.545		
2,900.0	2,859.3	2,896.7	2,867.1	9.8	8.8	126.42	-5.1	-315.1	200.8	183.3	17.44	11.510		
3,000.0	2,956.9	2,996.2	2,964.7	10.3	9.2	125.97	-7.2	-334.5	210.0	191.7	18.30	11.478		
3,100.0	3,054.4	3,095.8	3,062.4	10.8	9.6	125.56	-9.4	-353.9	219.3	200.1	19.16	11.446		
3,200.0	3,152.0	3,195.4	3,160.0	11.3	10.1	125.18	-11.5	-373.3	228.6	208.6	20.02	11.417		
3,300.0	3,249.6	3,294.9	3,257.6	11.7	10.5	124.83	-13.6	-392.8	237.9	217.0	20.89	11.389		
3,400.0	3,347.1	3,394.5	3,355.2	12.2	10.9	124.51	-15.7	-412.2	247.2	225.4	21.75	11.363		
3,500.0	3,444.7	3,494.0	3,452.8	12.7	11.3	124.21	-17.8	-431.6	256.5	233.9	22.62	11.338		
3,600.0	3,542.3	3,593.6	3,550.5	13.2	11.8	123.93	-19.9	-451.0	265.8	242.3	23.49	11.314		
3,700.0	3,639.9	3,693.1	3,648.1	13.6	12.2	123.67	-22.0	-470.5	275.1	250.8	24.37	11.292		
3,800.0	3,737.4	3,792.7	3,745.7	14.1	12.6	123.43	-24.1	-489.9	284.5	259.2	25.24	11.271		
3,900.0	3,835.0	3,892.3	3,843.3	14.6	13.1	123.20	-26.3	-509.3	293.8	267.7	26.11	11.251		
4,000.0	3,932.6	3,991.8	3,940.9	15.1	13.5	122.99	-28.4	-528.7	303.1	276.1	26.99	11.232		
4,100.0	4,030.2	4,091.4	4,038.6	15.6	13.9	122.79	-30.5	-548.2	312.5	284.6	27.86	11.214		
4,200.0	4,127.7	4,190.9	4,136.2	16.1	14.4	122.60	-32.6	-567.6	321.8	293.1	28.74	11.197		
4,300.0	4,225.3	4,290.5	4,233.8	16.5	14.8	122.42	-34.7	-587.0	331.2	301.5	29.62	11.181		
4,400.0	4,322.9	4,390.0	4,331.4	17.0	15.3	122.26	-36.8	-606.5	340.5	310.0	30.50	11.165		
4,500.0	4,420.5	4,489.6	4,429.1	17.5	15.7	122.10	-38.9	-625.9	349.9	318.5	31.38	11.151		
4,600.0	4,518.0	4,589.2	4,526.7	18.0	16.1	121.95	-41.0	-645.3	359.2	327.0	32.26	11.136		
4,700.0	4,615.6	4,688.7	4,624.3	18.5	16.6	121.80	-43.2	-664.7	368.6	335.4	33.14	11.123		
4,800.0	4,713.2	4,788.3	4,721.9	18.9	17.0	121.67	-45.3	-684.2	377.9	343.9	34.02	11.110		
4,900.0	4,810.8	4,887.8	4,819.5	19.4	17.4	121.54	-47.4	-703.6	387.3	352.4	34.90	11.098		
5,000.0	4,908.3	4,987.4	4,917.2	19.9	17.9	121.41	-49.5	-723.0	396.7	360.9	35.78	11.086		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20I-312
Project:	SEC.20-T4N-R65W	TVD Reference:	WELL @ 4817.0ft (RKB - 15')
Reference Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	MD Reference:	WELL @ 4817.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Peschel 20I-312	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 (8-25-14)	Offset TVD Reference:	Offset Datum

Offset Design		Peschel 4N65W20B Pad Sec.20-T4N-R65W - Peschel 20H-232 - Wellbore #1 - Plan #1 (8-22-14)											Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)					
5,100.0	5,005.9	5,086.9	5,014.8	20.4	18.3	121.30	-51.6	-742.4	406.0	369.4	36.66	11.075			
5,200.0	5,103.5	5,186.5	5,112.4	20.9	18.8	121.18	-53.7	-761.9	415.4	377.9	37.54	11.064			
5,300.0	5,201.1	5,286.1	5,210.0	21.4	19.2	121.08	-55.8	-781.3	424.8	386.3	38.43	11.054			
5,400.0	5,298.6	5,385.6	5,307.6	21.8	19.6	120.97	-57.9	-800.7	434.1	394.8	39.31	11.044			
5,500.0	5,396.2	5,485.2	5,405.3	22.3	20.1	120.88	-60.1	-820.1	443.5	403.3	40.19	11.034			
5,600.0	5,493.8	5,584.7	5,502.9	22.8	20.5	120.78	-62.2	-839.6	452.9	411.8	41.08	11.025			
5,700.0	5,591.4	5,683.2	5,599.6	23.3	20.9	120.80	-64.2	-858.1	462.3	420.4	41.89	11.036			
5,800.0	5,689.4	5,781.2	5,696.4	23.6	21.2	121.08	-65.9	-873.5	470.8	428.4	42.47	11.086			
5,900.0	5,788.1	5,879.2	5,793.6	23.9	21.4	121.37	-67.2	-885.6	477.9	435.0	42.96	11.126			
6,000.0	5,887.3	5,977.3	5,891.2	24.1	21.6	121.69	-68.1	-894.3	483.6	440.2	43.36	11.153			
6,100.0	5,986.9	6,075.3	5,989.1	24.3	21.8	122.02	-68.7	-899.8	487.8	444.2	43.68	11.169			
6,200.0	6,086.7	6,173.2	6,087.0	24.5	21.9	122.37	-69.0	-901.9	490.6	446.7	43.92	11.171			
6,300.0	6,186.7	6,272.9	6,186.7	24.6	22.1	122.61	-69.0	-901.9	491.8	447.7	44.13	11.145			
6,400.0	6,286.7	6,372.8	6,286.6	24.7	22.2	0.98	-69.0	-901.9	491.8	458.1	33.75	14.572			
6,500.0	6,386.7	6,471.1	6,384.5	24.8	22.2	-88.19	-69.0	-894.5	492.0	447.6	44.38	11.085			
6,600.0	6,486.2	6,567.8	6,479.2	24.8	22.1	-86.96	-69.0	-875.0	492.4	448.3	44.10	11.167			
6,700.0	6,583.5	6,663.4	6,569.6	24.7	22.0	-85.78	-69.0	-844.1	493.1	449.5	43.63	11.303			
6,800.0	6,677.1	6,757.8	6,654.5	24.5	21.8	-84.68	-69.0	-802.8	493.9	450.9	43.03	11.477			
6,900.0	6,765.3	6,850.0	6,731.7	24.3	21.6	-83.69	-69.0	-752.7	494.8	452.4	42.42	11.665			
7,000.0	6,846.7	6,943.9	6,803.7	24.0	21.4	-82.78	-69.0	-692.4	495.7	453.8	41.87	11.839			
7,100.0	6,919.7	7,035.7	6,866.4	23.8	21.3	-81.99	-69.0	-625.4	496.6	455.1	41.54	11.955			
7,200.0	6,983.3	7,126.9	6,920.2	23.6	21.4	-81.34	-69.0	-551.9	497.4	455.9	41.54	11.974			
7,300.0	7,036.2	7,217.6	6,964.7	23.5	21.6	-80.83	-69.0	-472.9	498.1	456.1	42.00	11.861			
7,400.0	7,077.6	7,308.0	6,999.5	23.6	22.1	-80.45	-69.0	-389.5	498.7	455.7	42.98	11.603			
7,500.0	7,106.8	7,400.0	7,024.5	24.0	22.8	-80.22	-69.0	-301.0	499.0	454.5	44.53	11.207			
7,508.4	7,108.6	7,405.6	7,025.6	24.0	22.9	-80.21	-69.0	-295.5	499.0	454.3	44.68	11.170			
7,600.0	7,123.2	7,488.0	7,038.3	24.6	23.8	-80.15	-68.9	-214.1	499.1	452.6	46.56	10.720			
7,700.0	7,126.8	7,578.3	7,042.0	25.5	24.9	-80.21	-68.9	-124.0	499.0	450.0	49.01	10.182			
7,800.0	7,125.0	7,678.3	7,040.5	26.7	26.4	-80.25	-68.9	-24.0	499.0	447.1	51.91	9.612			
7,900.0	7,123.2	7,778.3	7,039.1	28.3	28.0	-80.29	-68.9	76.0	498.9	443.7	55.20	9.038			
8,000.0	7,121.5	7,878.3	7,037.7	30.0	29.9	-80.33	-68.9	176.0	498.9	440.0	58.83	8.480			
8,100.0	7,119.7	7,978.3	7,036.2	31.9	31.9	-80.37	-68.9	276.0	498.8	436.1	62.74	7.950			
8,200.0	7,117.9	8,078.3	7,034.8	34.0	34.0	-80.40	-68.9	376.0	498.7	431.9	66.88	7.457			
8,300.0	7,116.2	8,178.3	7,033.4	36.2	36.2	-80.44	-68.9	475.9	498.7	427.5	71.22	7.002			
8,400.0	7,114.4	8,278.3	7,031.9	38.5	38.4	-80.48	-68.9	575.9	498.6	422.9	75.72	6.586			
8,500.0	7,112.7	8,378.3	7,030.5	40.8	40.8	-80.52	-68.9	675.9	498.6	418.2	80.35	6.205			
8,600.0	7,110.9	8,478.3	7,029.1	43.2	43.2	-80.55	-68.9	775.9	498.5	413.4	85.09	5.859			
8,700.0	7,109.1	8,578.3	7,027.6	45.6	45.6	-80.59	-68.9	875.9	498.5	408.6	89.92	5.543			
8,800.0	7,107.4	8,678.3	7,026.2	48.1	48.1	-80.63	-68.9	975.9	498.4	403.6	94.84	5.256			
8,900.0	7,105.6	8,778.3	7,024.8	50.6	50.6	-80.67	-68.9	1,075.9	498.4	398.6	99.82	4.993			
9,000.0	7,103.8	8,878.3	7,023.4	53.2	53.2	-80.70	-68.9	1,175.9	498.3	393.5	104.86	4.752			
9,100.0	7,102.1	8,978.3	7,021.9	55.7	55.7	-80.74	-68.9	1,275.9	498.3	388.3	109.95	4.532			
9,200.0	7,100.3	9,078.3	7,020.5	58.3	58.3	-80.78	-68.9	1,375.8	498.2	383.1	115.09	4.329			
9,300.0	7,098.6	9,178.3	7,019.1	61.0	61.0	-80.82	-68.9	1,475.8	498.2	377.9	120.26	4.142			
9,400.0	7,096.8	9,278.3	7,017.6	63.6	63.6	-80.85	-68.9	1,575.8	498.1	372.6	125.47	3.970			
9,500.0	7,095.0	9,378.3	7,016.2	66.2	66.2	-80.89	-68.9	1,675.8	498.1	367.4	130.71	3.810			
9,600.0	7,093.3	9,478.3	7,014.8	68.9	68.9	-80.93	-68.9	1,775.8	498.0	362.0	135.97	3.663			
9,700.0	7,091.5	9,578.3	7,013.3	71.5	71.6	-80.97	-68.9	1,875.8	498.0	356.7	141.26	3.525			
9,800.0	7,089.7	9,678.3	7,011.9	74.2	74.2	-81.01	-68.9	1,975.8	497.9	351.3	146.57	3.397			
9,900.0	7,088.0	9,778.3	7,010.5	76.9	76.9	-81.04	-68.9	2,075.8	497.9	346.0	151.90	3.277			
10,000.0	7,086.2	9,878.3	7,009.0	79.6	79.6	-81.08	-68.9	2,175.8	497.8	340.6	157.25	3.166			

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20I-312
Project:	SEC.20-T4N-R65W	TVD Reference:	WELL @ 4817.0ft (RKB - 15')
Reference Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	MD Reference:	WELL @ 4817.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Peschel 20I-312	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 (8-25-14)	Offset TVD Reference:	Offset Datum

Offset Design Peschel 4N65W20B Pad Sec.20-T4N-R65W - Peschel 20H-232 - Wellbore #1 - Plan #1 (8-22-14)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)					
10,100.0	7,084.5	9,978.3	7,007.6	82.3	82.3	-81.12	-68.9	2,275.8	497.8	335.1	162.61	3.061	
10,200.0	7,082.7	10,078.3	7,006.2	85.0	85.0	-81.16	-68.9	2,375.7	497.7	329.7	167.99	2.963	
10,300.0	7,080.9	10,178.3	7,004.7	87.7	87.7	-81.19	-68.9	2,475.7	497.7	324.3	173.38	2.870	
10,400.0	7,079.2	10,278.3	7,003.3	90.5	90.5	-81.23	-68.9	2,575.7	497.6	318.8	178.78	2.783	
10,500.0	7,077.4	10,378.3	7,001.9	93.2	93.2	-81.27	-68.9	2,675.7	497.6	313.4	184.20	2.701	
10,600.0	7,075.6	10,478.3	7,000.5	95.9	95.9	-81.31	-68.9	2,775.7	497.5	307.9	189.62	2.624	
10,700.0	7,073.9	10,578.3	6,999.0	98.6	98.7	-81.35	-68.9	2,875.7	497.5	302.4	195.05	2.550	
10,800.0	7,072.1	10,678.3	6,997.6	101.4	101.4	-81.38	-68.9	2,975.7	497.4	296.9	200.49	2.481	
10,900.0	7,070.3	10,778.3	6,996.2	104.1	104.1	-81.42	-68.9	3,075.7	497.4	291.4	205.94	2.415	
11,000.0	7,068.6	10,878.3	6,994.7	106.9	106.9	-81.46	-68.9	3,175.7	497.3	285.9	211.40	2.353	
11,100.0	7,066.8	10,978.3	6,993.3	109.6	109.6	-81.50	-68.9	3,275.6	497.3	280.4	216.86	2.293	
11,200.0	7,065.1	11,078.3	6,991.9	112.4	112.4	-81.53	-68.9	3,375.6	497.2	274.9	222.33	2.236	
11,300.0	7,063.3	11,178.3	6,990.4	115.1	115.2	-81.57	-68.9	3,475.6	497.2	269.4	227.81	2.182	
11,400.0	7,061.5	11,278.3	6,989.0	117.9	117.9	-81.61	-68.9	3,575.6	497.1	263.8	233.29	2.131	
11,500.0	7,059.8	11,378.3	6,987.6	120.6	120.7	-81.65	-68.9	3,675.6	497.1	258.3	238.78	2.082	
11,600.0	7,058.0	11,478.3	6,986.1	123.4	123.4	-81.69	-68.9	3,775.6	497.0	252.8	244.27	2.035	
11,600.6	7,058.0	11,478.9	6,986.1	123.4	123.5	-81.69	-68.9	3,776.2	497.0	252.7	244.31	2.034 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20I-312
Project:	SEC.20-T4N-R65W	TVD Reference:	WELL @ 4817.0ft (RKB - 15')
Reference Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	MD Reference:	WELL @ 4817.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Peschel 20I-312	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 (8-25-14)	Offset TVD Reference:	Offset Datum

Offset Design Peschel 4N65W20B Pad Sec.20-T4N-R65W - Peschel 20H-302 - Wellbore #1 - Plan #1 (8-22-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	1.33	120.2	2.8	120.3					
100.0	100.0	100.0	100.0	0.1	0.1	1.33	120.2	2.8	120.3	120.0	0.22	535.015		
200.0	200.0	200.0	200.0	0.3	0.3	1.33	120.2	2.8	120.3	119.6	0.67	178.338		
300.0	300.0	300.0	300.0	0.6	0.6	1.33	120.2	2.8	120.3	119.1	1.12	107.003		
400.0	400.0	400.0	400.0	0.8	0.8	1.33	120.2	2.8	120.3	118.7	1.57	76.431		
500.0	500.0	500.0	500.0	1.0	1.0	1.33	120.2	2.8	120.3	118.2	2.02	59.446		
600.0	600.0	600.0	600.0	1.2	1.2	1.33	120.2	2.8	120.3	117.8	2.47	48.638		
700.0	700.0	700.0	700.0	1.5	1.5	1.33	120.2	2.8	120.3	117.3	2.92	41.155		
800.0	800.0	800.0	800.0	1.7	1.7	1.33	120.2	2.8	120.3	116.9	3.37	35.668 CC, ES		
900.0	900.0	898.0	898.0	1.9	1.9	122.91	121.0	1.3	122.0	118.2	3.79	32.185		
1,000.0	999.8	995.9	995.7	2.1	2.1	122.77	123.5	-3.0	127.3	123.1	4.20	30.309		
1,100.0	1,099.5	1,093.4	1,092.8	2.3	2.3	122.55	127.6	-10.3	136.0	131.4	4.63	29.360		
1,200.0	1,198.7	1,190.3	1,189.1	2.5	2.6	122.27	133.3	-20.3	148.3	143.2	5.10	29.052		
1,300.0	1,297.5	1,286.6	1,284.2	2.8	2.9	121.94	140.6	-33.1	164.0	158.3	5.62	29.156		
1,400.0	1,395.6	1,382.0	1,378.0	3.1	3.2	121.59	149.3	-48.5	183.0	176.8	6.21	29.495		
1,500.0	1,493.2	1,478.9	1,472.8	3.5	3.5	121.52	159.3	-66.0	204.6	197.7	6.86	29.841		
1,600.0	1,590.8	1,576.5	1,568.2	3.9	3.9	121.59	169.3	-83.8	226.3	218.7	7.55	29.980		
1,700.0	1,688.4	1,674.2	1,663.7	4.3	4.3	121.64	179.4	-101.6	248.0	239.7	8.27	29.993		
1,800.0	1,786.0	1,771.8	1,759.1	4.8	4.7	121.68	189.5	-119.4	269.7	260.7	9.01	29.935		
1,900.0	1,883.5	1,869.4	1,854.6	5.2	5.1	121.72	199.6	-137.2	291.4	281.6	9.77	29.834		
2,000.0	1,981.1	1,967.0	1,950.1	5.6	5.5	121.75	209.7	-155.0	313.0	302.5	10.54	29.712		
2,100.0	2,078.7	2,064.6	2,045.5	6.1	5.9	121.78	219.8	-172.8	334.7	323.4	11.32	29.578		
2,200.0	2,176.3	2,162.3	2,141.0	6.6	6.3	121.80	229.9	-190.6	356.4	344.3	12.11	29.442		
2,300.0	2,273.8	2,259.9	2,236.4	7.0	6.8	121.82	240.0	-208.4	378.1	365.2	12.90	29.307		
2,400.0	2,371.4	2,357.5	2,331.9	7.5	7.2	121.84	250.1	-226.2	399.8	386.1	13.70	29.175		
2,500.0	2,469.0	2,455.1	2,427.3	7.9	7.6	121.86	260.2	-244.0	421.5	407.0	14.51	29.049		
2,600.0	2,566.6	2,552.7	2,522.8	8.4	8.0	121.88	270.3	-261.8	443.2	427.9	15.32	28.929		
2,700.0	2,664.1	2,650.3	2,618.2	8.9	8.5	121.89	280.3	-279.6	464.9	448.8	16.13	28.814		
2,800.0	2,761.7	2,748.0	2,713.7	9.4	8.9	121.90	290.4	-297.4	486.6	469.6	16.95	28.706		
2,900.0	2,859.3	2,845.6	2,809.1	9.8	9.4	121.91	300.5	-315.2	508.3	490.5	17.77	28.603		
3,000.0	2,956.9	2,943.2	2,904.6	10.3	9.8	121.92	310.6	-333.0	530.0	511.4	18.59	28.507		
3,100.0	3,054.4	3,040.8	3,000.0	10.8	10.2	121.93	320.7	-350.8	551.7	532.2	19.41	28.416		
3,200.0	3,152.0	3,138.4	3,095.5	11.3	10.7	121.94	330.8	-368.5	573.4	553.1	20.24	28.329		
3,300.0	3,249.6	3,236.1	3,190.9	11.7	11.1	121.95	340.9	-386.3	595.0	574.0	21.07	28.248		
3,400.0	3,347.1	3,333.7	3,286.4	12.2	11.6	121.96	351.0	-404.1	616.7	594.8	21.89	28.171		
3,500.0	3,444.7	3,431.3	3,381.8	12.7	12.0	121.97	361.1	-421.9	638.4	615.7	22.72	28.098		
3,600.0	3,542.3	3,528.9	3,477.3	13.2	12.5	121.97	371.2	-439.7	660.1	636.6	23.55	28.029		
3,700.0	3,639.9	3,626.5	3,572.7	13.6	12.9	121.98	381.3	-457.5	681.8	657.4	24.38	27.964		
3,800.0	3,737.4	3,724.2	3,668.2	14.1	13.3	121.99	391.4	-475.3	703.5	678.3	25.21	27.902		
3,900.0	3,835.0	3,821.8	3,763.6	14.6	13.8	121.99	401.4	-493.1	725.2	699.2	26.05	27.843		
4,000.0	3,932.6	3,919.4	3,859.1	15.1	14.2	122.00	411.5	-510.9	746.9	720.0	26.88	27.788		
4,100.0	4,030.2	4,017.0	3,954.5	15.6	14.7	122.00	421.6	-528.7	768.6	740.9	27.71	27.734		
4,200.0	4,127.7	4,114.6	4,050.0	16.1	15.1	122.01	431.7	-546.5	790.3	761.7	28.55	27.684		
4,300.0	4,225.3	4,212.2	4,145.4	16.5	15.6	122.01	441.8	-564.3	812.0	782.6	29.38	27.636		
4,400.0	4,322.9	4,309.9	4,240.9	17.0	16.0	122.02	451.9	-582.1	833.7	803.5	30.22	27.589		
4,500.0	4,420.5	4,407.5	4,336.3	17.5	16.5	122.02	462.0	-599.9	855.4	824.3	31.05	27.545		
4,600.0	4,518.0	4,505.1	4,431.8	18.0	16.9	122.02	472.1	-617.7	877.1	845.2	31.89	27.503		
4,700.0	4,615.6	4,602.7	4,527.2	18.5	17.4	122.03	482.2	-635.5	898.7	866.0	32.73	27.463		
4,800.0	4,713.2	4,700.3	4,622.7	18.9	17.8	122.03	492.3	-653.3	920.4	886.9	33.56	27.425		
4,900.0	4,810.8	4,798.0	4,718.1	19.4	18.2	122.03	502.4	-671.0	942.1	907.7	34.40	27.388		
5,000.0	4,908.3	4,895.6	4,813.6	19.9	18.7	122.04	512.4	-688.8	963.8	928.6	35.24	27.352		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20I-312
Project:	SEC.20-T4N-R65W	TVD Reference:	WELL @ 4817.0ft (RKB - 15')
Reference Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	MD Reference:	WELL @ 4817.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Peschel 20I-312	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 (8-25-14)	Offset TVD Reference:	Offset Datum

Offset Design Peschel 4N65W20B Pad Sec.20-T4N-R65W - Peschel 20H-302 - Wellbore #1 - Plan #1 (8-22-14)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance									Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,100.0	5,005.9	4,993.2	4,909.0	20.4	19.1	122.04	522.5	-706.6	985.5	949.4	36.08	27.318 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20I-312
Project:	SEC.20-T4N-R65W	TVD Reference:	WELL @ 4817.0ft (RKB - 15')
Reference Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	MD Reference:	WELL @ 4817.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Peschel 20I-312	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 (8-25-14)	Offset TVD Reference:	Offset Datum

Offset Design Peschel 4N65W20B Pad Sec.20-T4N-R65W - Peschel 20H-332 - Wellbore #1 - Plan #1 (8-22-14)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	0.00	58.3	0.0	58.3				
100.0	100.0	100.0	100.0	0.1	0.1	0.00	58.3	0.0	58.3	58.1	0.22	259.331	
200.0	200.0	200.0	200.0	0.3	0.3	0.00	58.3	0.0	58.3	57.6	0.67	86.444	
300.0	300.0	300.0	300.0	0.6	0.6	0.00	58.3	0.0	58.3	57.2	1.12	51.866	
400.0	400.0	400.0	400.0	0.8	0.8	0.00	58.3	0.0	58.3	56.7	1.57	37.047	
500.0	500.0	500.0	500.0	1.0	1.0	0.00	58.3	0.0	58.3	56.3	2.02	28.815	
600.0	600.0	600.0	600.0	1.2	1.2	0.00	58.3	0.0	58.3	55.8	2.47	23.576	
700.0	700.0	700.0	700.0	1.5	1.5	0.00	58.3	0.0	58.3	55.4	2.92	19.949	
800.0	800.0	800.0	800.0	1.7	1.7	0.00	58.3	0.0	58.3	54.9	3.37	17.289 CC, ES	
900.0	900.0	900.0	900.0	1.9	1.9	123.05	58.3	0.0	59.2	55.4	3.80	15.582	
1,000.0	999.8	999.8	999.8	2.1	2.1	127.04	58.3	0.0	62.2	58.0	4.22	14.756	
1,100.0	1,099.5	1,099.5	1,099.5	2.3	2.4	132.83	58.3	0.0	67.8	63.2	4.64	14.608	
1,200.0	1,198.7	1,198.7	1,198.7	2.5	2.6	139.39	58.3	0.0	76.7	71.6	5.08	15.098	
1,300.0	1,297.5	1,297.5	1,297.5	2.8	2.8	145.78	58.3	0.0	89.2	83.7	5.51	16.172	
1,400.0	1,395.6	1,395.6	1,395.6	3.1	3.0	151.43	58.3	0.0	105.6	99.6	5.95	17.751	
1,500.0	1,493.2	1,493.2	1,493.2	3.5	3.2	156.12	58.3	0.0	125.1	118.8	6.39	19.587	
1,600.0	1,590.8	1,593.5	1,593.5	3.9	3.5	159.18	58.4	-1.5	144.7	137.8	6.84	21.164	
1,700.0	1,688.4	1,694.9	1,694.8	4.3	3.7	160.50	58.7	-6.6	162.4	155.2	7.29	22.297	
1,800.0	1,786.0	1,797.2	1,796.7	4.8	3.9	160.60	59.3	-15.4	178.2	170.5	7.76	22.967	
1,900.0	1,883.5	1,900.1	1,898.8	5.2	4.1	159.79	60.1	-27.8	192.0	183.7	8.27	23.219	
2,000.0	1,981.1	2,003.2	2,000.7	5.6	4.4	158.22	61.2	-44.0	203.8	194.9	8.82	23.102	
2,100.0	2,078.7	2,106.4	2,101.9	6.1	4.7	155.99	62.4	-63.8	213.8	204.4	9.43	22.667	
2,200.0	2,176.3	2,206.2	2,199.4	6.6	5.0	153.50	63.8	-85.3	223.0	212.9	10.10	22.081	
2,300.0	2,273.8	2,305.4	2,296.2	7.0	5.4	151.21	65.2	-106.6	232.6	221.8	10.80	21.524	
2,400.0	2,371.4	2,404.5	2,392.9	7.5	5.7	149.11	66.6	-128.0	242.5	230.9	11.54	21.002	
2,500.0	2,469.0	2,503.6	2,489.7	7.9	6.1	147.17	68.0	-149.3	252.6	240.3	12.31	20.516	
2,600.0	2,566.6	2,602.7	2,586.5	8.4	6.5	145.38	69.4	-170.7	263.1	250.0	13.11	20.069	
2,700.0	2,664.1	2,701.9	2,683.3	8.9	6.9	143.73	70.8	-192.1	273.8	259.9	13.93	19.660	
2,800.0	2,761.7	2,801.0	2,780.1	9.4	7.3	142.21	72.2	-213.4	284.7	269.9	14.76	19.286	
2,900.0	2,859.3	2,900.1	2,876.9	9.8	7.8	140.80	73.6	-234.8	295.8	280.2	15.61	18.946	
3,000.0	2,956.9	2,999.3	2,973.7	10.3	8.2	139.49	75.0	-256.2	307.1	290.6	16.48	18.637	
3,100.0	3,054.4	3,098.4	3,070.5	10.8	8.6	138.27	76.4	-277.5	318.5	301.1	17.35	18.356	
3,200.0	3,152.0	3,197.5	3,167.3	11.3	9.0	137.14	77.8	-298.9	330.0	311.8	18.23	18.100	
3,300.0	3,249.6	3,296.6	3,264.0	11.7	9.5	136.08	79.2	-320.2	341.6	322.5	19.12	17.867	
3,400.0	3,347.1	3,395.8	3,360.8	12.2	9.9	135.10	80.6	-341.6	353.4	333.4	20.02	17.654	
3,500.0	3,444.7	3,494.9	3,457.6	12.7	10.4	134.17	81.9	-363.0	365.3	344.3	20.92	17.460	
3,600.0	3,542.3	3,594.0	3,554.4	13.2	10.8	133.31	83.3	-384.3	377.2	355.4	21.83	17.283	
3,700.0	3,639.9	3,693.1	3,651.2	13.6	11.3	132.50	84.7	-405.7	389.2	366.5	22.74	17.120	
3,800.0	3,737.4	3,792.3	3,748.0	14.1	11.7	131.73	86.1	-427.0	401.3	377.7	23.65	16.971	
3,900.0	3,835.0	3,891.4	3,844.8	14.6	12.2	131.01	87.5	-448.4	413.5	388.9	24.56	16.834	
4,000.0	3,932.6	3,990.5	3,941.6	15.1	12.6	130.34	88.9	-469.8	425.7	400.2	25.48	16.707	
4,100.0	4,030.2	4,089.7	4,038.4	15.6	13.1	129.70	90.3	-491.1	438.0	411.6	26.40	16.590	
4,200.0	4,127.7	4,188.8	4,135.1	16.1	13.5	129.09	91.7	-512.5	450.3	423.0	27.32	16.482	
4,300.0	4,225.3	4,287.9	4,231.9	16.5	14.0	128.52	93.1	-533.8	462.7	434.5	28.25	16.381	
4,400.0	4,322.9	4,387.0	4,328.7	17.0	14.5	127.98	94.5	-555.2	475.1	446.0	29.17	16.288	
4,500.0	4,420.5	4,486.2	4,425.5	17.5	14.9	127.46	95.9	-576.6	487.6	457.5	30.10	16.202	
4,600.0	4,518.0	4,585.3	4,522.3	18.0	15.4	126.97	97.3	-597.9	500.1	469.1	31.02	16.121	
4,700.0	4,615.6	4,684.4	4,619.1	18.5	15.8	126.51	98.7	-619.3	512.6	480.7	31.95	16.046	
4,800.0	4,713.2	4,783.5	4,715.9	18.9	16.3	126.07	100.0	-640.6	525.2	492.3	32.88	15.975	
4,900.0	4,810.8	4,882.7	4,812.7	19.4	16.8	125.64	101.4	-662.0	537.8	504.0	33.80	15.909	
5,000.0	4,908.3	4,981.8	4,909.4	19.9	17.2	125.24	102.8	-683.4	550.4	515.7	34.73	15.847	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20I-312
Project:	SEC.20-T4N-R65W	TVD Reference:	WELL @ 4817.0ft (RKB - 15')
Reference Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	MD Reference:	WELL @ 4817.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Peschel 20I-312	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 (8-25-14)	Offset TVD Reference:	Offset Datum

Offset Design Peschel 4N65W20B Pad Sec.20-T4N-R65W - Peschel 20H-332 - Wellbore #1 - Plan #1 (8-22-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,005.9	5,080.9	5,006.2	20.4	17.7	124.86		104.2	-704.7	563.1	527.4	35.66	15.789	
5,200.0	5,103.5	5,180.1	5,103.0	20.9	18.2	124.49		105.6	-726.1	575.7	539.1	36.59	15.735	
5,300.0	5,201.1	5,279.2	5,199.8	21.4	18.6	124.13		107.0	-747.4	588.4	550.9	37.52	15.683	
5,400.0	5,298.6	5,378.3	5,296.6	21.8	19.1	123.80		108.4	-768.8	601.1	562.7	38.45	15.635	
5,500.0	5,396.2	5,477.4	5,393.4	22.3	19.6	123.47		109.8	-790.2	613.9	574.5	39.38	15.589	
5,600.0	5,493.8	5,576.6	5,490.2	22.8	20.0	123.16		111.2	-811.5	626.6	586.3	40.31	15.546	
5,700.0	5,591.4	5,675.7	5,587.0	23.3	20.5	122.90		112.6	-832.9	639.4	598.1	41.23	15.508	
5,800.0	5,689.4	5,775.8	5,685.1	23.6	20.8	122.80		113.9	-852.5	650.8	608.9	41.93	15.521	
5,900.0	5,788.1	5,876.2	5,784.2	23.9	21.1	122.72		114.9	-868.8	660.2	617.7	42.54	15.522	
6,000.0	5,887.3	5,976.9	5,884.1	24.1	21.4	122.66		115.8	-881.7	667.6	624.6	43.06	15.506	
6,100.0	5,986.9	6,077.8	5,984.5	24.3	21.6	122.61		116.4	-891.0	673.0	629.5	43.49	15.476	
6,200.0	6,086.7	6,178.9	6,085.4	24.5	21.8	122.59		116.7	-896.8	676.4	632.5	43.84	15.429	
6,300.0	6,186.7	6,280.0	6,186.5	24.6	21.9	122.58		116.9	-899.1	677.7	633.6	44.10	15.366	
6,400.0	6,286.7	6,380.2	6,286.7	24.7	22.0	0.95		116.9	-899.1	677.7	644.2	33.50	20.232	
6,500.0	6,386.7	6,479.9	6,386.3	24.8	22.2	-89.05		116.9	-898.7	677.7	633.1	44.60	15.196	
6,600.0	6,486.2	6,578.4	6,484.4	24.8	22.2	-89.07		116.9	-889.4	677.7	633.1	44.63	15.186	
6,700.0	6,583.5	6,677.0	6,580.5	24.7	22.1	-89.09		116.9	-867.5	677.7	633.2	44.43	15.253	
6,800.0	6,677.1	6,775.6	6,673.0	24.5	21.9	-89.14		116.9	-833.4	677.7	633.6	44.06	15.379	
6,900.0	6,765.3	6,874.4	6,760.4	24.3	21.7	-89.19		116.9	-787.7	677.7	634.0	43.61	15.540	
7,000.0	6,846.7	6,973.2	6,841.2	24.0	21.5	-89.26		116.9	-731.0	677.6	634.5	43.16	15.701	
7,100.0	6,919.7	7,072.1	6,914.2	23.8	21.4	-89.35		116.9	-664.3	677.6	634.8	42.85	15.815	
7,200.0	6,983.3	7,171.2	6,977.9	23.6	21.4	-89.44		116.9	-588.6	677.6	634.8	42.82	15.825	
7,300.0	7,036.2	7,270.4	7,031.5	23.5	21.6	-89.55		116.9	-505.1	677.6	634.4	43.21	15.682	
7,400.0	7,077.6	7,369.8	7,073.8	23.6	22.1	-89.66		116.9	-415.3	677.6	633.5	44.13	15.356	
7,500.0	7,106.8	7,469.3	7,104.2	24.0	22.9	-89.78		116.9	-320.6	677.6	632.0	45.62	14.853	
7,600.0	7,123.2	7,569.1	7,122.0	24.6	23.9	-89.90		116.9	-222.5	677.6	629.9	47.67	14.216	
7,670.5	7,127.4	7,639.5	7,126.9	25.2	24.8	-89.96		116.9	-152.2	677.6	628.2	49.41	13.713	
7,700.0	7,126.8	7,669.0	7,126.9	25.5	25.2	-90.02		116.9	-122.8	677.6	627.4	50.17	13.507	
7,800.0	7,125.0	7,769.0	7,125.2	26.7	26.7	-90.02		116.9	-22.8	677.6	624.5	53.13	12.754	
7,900.0	7,123.2	7,869.0	7,123.4	28.3	28.4	-90.02		116.9	77.2	677.6	621.1	56.47	12.000	
8,000.0	7,121.5	7,969.0	7,121.7	30.0	30.2	-90.02		116.9	177.2	677.6	617.4	60.15	11.266	
8,100.0	7,119.7	8,069.0	7,119.9	31.9	32.2	-90.02		116.9	277.2	677.6	613.5	64.11	10.569	
8,200.0	7,117.9	8,169.0	7,118.1	34.0	34.3	-90.02		116.9	377.2	677.6	609.3	68.30	9.920	
8,300.0	7,116.2	8,269.0	7,116.4	36.2	36.5	-90.02		116.9	477.1	677.6	604.9	72.69	9.322	
8,400.0	7,114.4	8,369.0	7,114.6	38.5	38.8	-90.02		116.9	577.1	677.6	600.4	77.23	8.773	
8,500.0	7,112.7	8,469.0	7,112.8	40.8	41.1	-90.02		116.9	677.1	677.6	595.7	81.91	8.272	
8,600.0	7,110.9	8,569.0	7,111.1	43.2	43.5	-90.02		116.9	777.1	677.6	590.9	86.70	7.815	
8,700.0	7,109.1	8,669.0	7,109.3	45.6	46.0	-90.02		116.9	877.1	677.6	586.0	91.58	7.399	
8,800.0	7,107.4	8,769.0	7,107.6	48.1	48.5	-90.02		116.9	977.1	677.6	581.1	96.55	7.018	
8,900.0	7,105.6	8,869.0	7,105.8	50.6	51.0	-90.02		116.9	1,077.0	677.6	576.0	101.58	6.671	
9,000.0	7,103.8	8,969.0	7,104.0	53.2	53.5	-90.02		116.9	1,177.0	677.6	570.9	106.67	6.352	
9,100.0	7,102.1	9,069.0	7,102.3	55.7	56.1	-90.02		116.9	1,277.0	677.6	565.8	111.81	6.060	
9,200.0	7,100.3	9,169.0	7,100.5	58.3	58.7	-90.02		116.9	1,377.0	677.6	560.6	116.99	5.792	
9,300.0	7,098.6	9,269.0	7,098.7	61.0	61.3	-90.02		116.9	1,477.0	677.6	555.4	122.21	5.545	
9,400.0	7,096.8	9,369.0	7,097.0	63.6	63.9	-90.02		116.9	1,577.0	677.6	550.1	127.46	5.316	
9,500.0	7,095.0	9,469.0	7,095.2	66.2	66.6	-90.02		116.9	1,677.0	677.6	544.9	132.75	5.104	
9,600.0	7,093.3	9,569.0	7,093.5	68.9	69.2	-90.02		116.9	1,776.9	677.6	539.5	138.06	4.908	
9,700.0	7,091.5	9,669.0	7,091.7	71.5	71.9	-90.02		116.9	1,876.9	677.6	534.2	143.39	4.726	
9,800.0	7,089.7	9,769.0	7,089.9	74.2	74.6	-90.02		116.9	1,976.9	677.6	528.9	148.75	4.555	
9,900.0	7,088.0	9,869.0	7,088.2	76.9	77.3	-90.02		116.9	2,076.9	677.6	523.5	154.12	4.397	
10,000.0	7,086.2	9,969.0	7,086.4	79.6	79.9	-90.02		116.9	2,176.9	677.6	518.1	159.51	4.248	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20I-312
Project:	SEC.20-T4N-R65W	TVD Reference:	WELL @ 4817.0ft (RKB - 15')
Reference Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	MD Reference:	WELL @ 4817.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Peschel 20I-312	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 (8-25-14)	Offset TVD Reference:	Offset Datum

Offset Design Peschel 4N65W20B Pad Sec.20-T4N-R65W - Peschel 20H-332 - Wellbore #1 - Plan #1 (8-22-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
10,100.0	7,084.5	10,069.0	7,084.6	82.3	82.6	-90.02	116.9	2,276.9	677.6	512.7	164.91	4.109		
10,200.0	7,082.7	10,169.0	7,082.9	85.0	85.4	-90.02	116.9	2,376.8	677.6	507.3	170.33	3.978		
10,300.0	7,080.9	10,269.0	7,081.1	87.7	88.1	-90.02	116.9	2,476.8	677.6	501.8	175.76	3.855		
10,400.0	7,079.2	10,369.0	7,079.4	90.5	90.8	-90.02	116.9	2,576.8	677.6	496.4	181.20	3.740		
10,500.0	7,077.4	10,469.0	7,077.6	93.2	93.5	-90.02	116.9	2,676.8	677.6	491.0	186.65	3.630		
10,600.0	7,075.6	10,569.0	7,075.8	95.9	96.3	-90.02	116.9	2,776.8	677.6	485.5	192.11	3.527		
10,700.0	7,073.9	10,669.0	7,074.1	98.6	99.0	-90.02	116.9	2,876.8	677.6	480.0	197.58	3.429		
10,800.0	7,072.1	10,769.0	7,072.3	101.4	101.7	-90.02	116.9	2,976.8	677.6	474.5	203.06	3.337		
10,900.0	7,070.3	10,869.0	7,070.5	104.1	104.5	-90.02	116.9	3,076.7	677.6	469.1	208.54	3.249		
11,000.0	7,068.6	10,969.0	7,068.8	106.9	107.2	-90.02	116.9	3,176.7	677.6	463.6	214.04	3.166		
11,100.0	7,066.8	11,069.0	7,067.0	109.6	110.0	-90.02	116.9	3,276.7	677.6	458.1	219.53	3.087		
11,200.0	7,065.1	11,169.0	7,065.3	112.4	112.7	-90.02	116.9	3,376.7	677.6	452.6	225.04	3.011		
11,300.0	7,063.3	11,269.0	7,063.5	115.1	115.5	-90.02	116.9	3,476.7	677.6	447.1	230.54	2.939		
11,400.0	7,061.5	11,369.0	7,061.7	117.9	118.2	-90.02	116.9	3,576.7	677.6	441.6	236.06	2.871		
11,500.0	7,059.8	11,469.0	7,060.0	120.6	121.0	-90.02	116.9	3,676.6	677.6	436.0	241.58	2.805		
11,600.0	7,058.0	11,569.0	7,058.2	123.4	123.7	-90.02	116.9	3,776.6	677.6	430.5	247.10	2.742		
11,600.6	7,058.0	11,569.6	7,058.2	123.4	123.8	-90.02	116.9	3,777.2	677.6	430.5	247.13	2.742 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20I-312
Project:	SEC.20-T4N-R65W	TVD Reference:	WELL @ 4817.0ft (RKB - 15')
Reference Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	MD Reference:	WELL @ 4817.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Peschel 20I-312	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 (8-25-14)	Offset TVD Reference:	Offset Datum

Offset Design Peschel 4N65W20B Pad Sec.20-T4N-R65W - Peschel 20I-402 - Wellbore #1 - Plan #1 (8-25-14)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	180.00	-29.1	0.0	29.1				
100.0	100.0	100.0	100.0	0.1	0.1	180.00	-29.1	0.0	29.1	28.9	0.22	129.666	
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-29.1	0.0	29.1	28.5	0.67	43.222	
300.0	300.0	300.0	300.0	0.6	0.6	180.00	-29.1	0.0	29.1	28.0	1.12	25.933	
400.0	400.0	400.0	400.0	0.8	0.8	180.00	-29.1	0.0	29.1	27.6	1.57	18.524	
500.0	500.0	500.0	500.0	1.0	1.0	180.00	-29.1	0.0	29.1	27.1	2.02	14.407 CC, ES	
600.0	600.0	599.3	599.3	1.2	1.2	-177.51	-30.3	-1.3	30.3	27.8	2.45	12.370	
700.0	700.0	698.4	698.2	1.5	1.4	-171.13	-33.6	-5.2	34.0	31.2	2.87	11.866	
800.0	800.0	797.0	796.4	1.7	1.6	-163.27	-39.1	-11.7	41.0	37.6	3.31	12.370	
900.0	900.0	895.1	893.8	1.9	1.9	-35.40	-46.7	-20.8	50.1	46.3	3.73	13.440	
1,000.0	999.8	992.8	990.4	2.1	2.2	-31.57	-56.4	-32.3	59.7	55.6	4.14	14.440	
1,100.0	1,099.5	1,090.3	1,086.1	2.3	2.5	-29.20	-68.3	-46.3	69.8	65.2	4.57	15.271	
1,200.0	1,198.7	1,188.2	1,181.7	2.5	2.9	-27.81	-82.1	-62.7	79.8	74.8	5.02	15.893	
1,300.0	1,297.5	1,287.9	1,278.8	2.8	3.3	-27.60	-96.7	-79.9	87.4	81.9	5.50	15.908	
1,400.0	1,395.6	1,387.8	1,376.0	3.1	3.8	-28.44	-111.3	-97.2	92.0	86.0	6.01	15.314	
1,500.0	1,493.2	1,487.7	1,473.4	3.5	4.2	-30.03	-125.9	-114.5	94.3	87.7	6.58	14.328	
1,600.0	1,590.8	1,587.7	1,570.7	3.9	4.7	-31.61	-140.5	-131.8	96.5	89.3	7.19	13.416	
1,700.0	1,688.4	1,687.6	1,668.1	4.3	5.2	-33.12	-155.2	-149.0	98.7	90.9	7.84	12.602	
1,800.0	1,786.0	1,787.6	1,765.4	4.8	5.7	-34.57	-169.8	-166.3	101.1	92.6	8.51	11.882	
1,900.0	1,883.5	1,887.5	1,862.8	5.2	6.1	-35.94	-184.4	-183.6	103.4	94.2	9.20	11.242	
2,000.0	1,981.1	1,987.4	1,960.1	5.6	6.6	-37.25	-199.0	-200.9	105.9	96.0	9.92	10.673	
2,100.0	2,078.7	2,087.4	2,057.5	6.1	7.1	-38.51	-213.6	-218.2	108.4	97.7	10.66	10.166	
2,200.0	2,176.3	2,187.3	2,154.8	6.6	7.6	-39.70	-228.2	-235.5	110.9	99.5	11.42	9.712	
2,300.0	2,273.8	2,287.3	2,252.2	7.0	8.1	-40.85	-242.8	-252.7	113.5	101.3	12.20	9.305	
2,400.0	2,371.4	2,387.2	2,349.5	7.5	8.6	-41.94	-257.4	-270.0	116.1	103.1	12.99	8.938	
2,500.0	2,469.0	2,487.1	2,446.8	7.9	9.1	-42.98	-272.1	-287.3	118.8	105.0	13.80	8.608	
2,600.0	2,566.6	2,587.1	2,544.2	8.4	9.5	-43.98	-286.7	-304.6	121.5	106.9	14.62	8.310	
2,700.0	2,664.1	2,687.0	2,641.5	8.9	10.0	-44.93	-301.3	-321.9	124.3	108.8	15.46	8.039	
2,800.0	2,761.7	2,787.0	2,738.9	9.4	10.5	-45.84	-315.9	-339.2	127.0	110.7	16.30	7.792	
2,900.0	2,859.3	2,886.9	2,836.2	9.8	11.0	-46.71	-330.5	-356.4	129.8	112.7	17.16	7.567	
3,000.0	2,956.9	2,986.9	2,933.6	10.3	11.5	-47.55	-345.1	-373.7	132.7	114.6	18.02	7.362	
3,100.0	3,054.4	3,086.8	3,030.9	10.8	12.0	-48.35	-359.7	-391.0	135.5	116.6	18.89	7.173	
3,200.0	3,152.0	3,186.7	3,128.3	11.3	12.5	-49.12	-374.4	-408.3	138.4	118.6	19.77	7.000	
3,300.0	3,249.6	3,286.7	3,225.6	11.7	13.0	-49.85	-389.0	-425.6	141.3	120.7	20.66	6.840	
3,400.0	3,347.1	3,386.6	3,322.9	12.2	13.5	-50.56	-403.6	-442.9	144.3	122.7	21.55	6.693	
3,500.0	3,444.7	3,486.6	3,420.3	12.7	14.0	-51.23	-418.2	-460.2	147.2	124.8	22.45	6.557	
3,600.0	3,542.3	3,586.5	3,517.6	13.2	14.5	-51.88	-432.8	-477.4	150.2	126.8	23.36	6.430	
3,700.0	3,639.9	3,686.4	3,615.0	13.6	15.0	-52.51	-447.4	-494.7	153.2	128.9	24.27	6.313	
3,800.0	3,737.4	3,786.4	3,712.3	14.1	15.5	-53.11	-462.0	-512.0	156.2	131.0	25.18	6.203	
3,900.0	3,835.0	3,886.3	3,809.7	14.6	16.0	-53.69	-476.6	-529.3	159.2	133.1	26.10	6.101	
4,000.0	3,932.6	3,986.3	3,907.0	15.1	16.5	-54.25	-491.3	-546.6	162.3	135.3	27.02	6.006	
4,100.0	4,030.2	4,086.2	4,004.4	15.6	17.0	-54.78	-505.9	-563.9	165.3	137.4	27.94	5.917	
4,200.0	4,127.7	4,186.1	4,101.7	16.1	17.4	-55.30	-520.5	-581.1	168.4	139.5	28.87	5.833	
4,300.0	4,225.3	4,286.1	4,199.0	16.5	17.9	-55.80	-535.1	-598.4	171.5	141.7	29.80	5.755	
4,400.0	4,322.9	4,386.0	4,296.4	17.0	18.4	-56.28	-549.7	-615.7	174.6	143.9	30.73	5.681	
4,500.0	4,420.5	4,486.0	4,393.7	17.5	18.9	-56.74	-564.3	-633.0	177.7	146.0	31.67	5.611	
4,600.0	4,518.0	4,585.9	4,491.1	18.0	19.4	-57.19	-578.9	-650.3	180.8	148.2	32.60	5.546	
4,700.0	4,615.6	4,685.9	4,588.4	18.5	19.9	-57.62	-593.5	-667.6	183.9	150.4	33.54	5.484	
4,800.0	4,713.2	4,785.8	4,685.8	18.9	20.4	-58.04	-608.2	-684.8	187.1	152.6	34.48	5.425	
4,900.0	4,810.8	4,885.7	4,783.1	19.4	20.9	-58.44	-622.8	-702.1	190.2	154.8	35.43	5.370	
5,000.0	4,908.3	4,985.7	4,880.5	19.9	21.4	-58.83	-637.4	-719.4	193.4	157.0	36.37	5.317	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20I-312
Project:	SEC.20-T4N-R65W	TVD Reference:	WELL @ 4817.0ft (RKB - 15')
Reference Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	MD Reference:	WELL @ 4817.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Peschel 20I-312	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 (8-25-14)	Offset TVD Reference:	Offset Datum

Offset Design		Peschel 4N65W20B Pad Sec.20-T4N-R65W - Peschel 20I-402 - Wellbore #1 - Plan #1 (8-25-14)											Offset Site Error:		0.0 ft
Survey Program:		0-MWD											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)					
5,100.0	5,005.9	5,085.6	4,977.8	20.4	21.9	-59.21	-652.0	-736.7	196.6	159.3	37.32	5.268			
5,200.0	5,103.5	5,185.6	5,075.2	20.9	22.4	-59.58	-666.6	-754.0	199.7	161.5	38.26	5.220			
5,300.0	5,201.1	5,285.5	5,172.5	21.4	22.9	-59.93	-681.2	-771.3	202.9	163.7	39.21	5.175			
5,400.0	5,298.6	5,385.4	5,269.8	21.8	23.4	-60.28	-695.8	-788.5	206.1	166.0	40.16	5.133			
5,500.0	5,396.2	5,485.4	5,367.2	22.3	23.9	-60.61	-710.5	-805.8	209.3	168.2	41.11	5.092			
5,600.0	5,493.8	5,585.3	5,464.5	22.8	24.4	-60.94	-725.1	-823.1	212.5	170.5	42.06	5.053			
5,700.0	5,591.4	5,685.3	5,561.9	23.3	24.9	-61.25	-739.7	-840.4	215.8	172.8	43.00	5.018			
5,800.0	5,689.4	5,785.6	5,659.6	23.6	25.4	-61.08	-754.3	-857.7	220.1	176.5	43.67	5.041			
5,900.0	5,788.1	5,890.4	5,762.2	23.9	25.7	-60.55	-768.3	-874.2	224.9	180.8	44.10	5.100			
6,000.0	5,887.3	5,995.4	5,865.7	24.1	26.0	-59.99	-779.8	-887.8	229.2	184.8	44.43	5.158			
6,100.0	5,986.9	6,100.7	5,969.9	24.3	26.3	-59.41	-788.8	-898.5	233.0	188.3	44.68	5.214			
6,200.0	6,086.7	6,206.1	6,074.8	24.5	26.5	-58.79	-795.4	-906.3	236.2	191.4	44.84	5.268			
6,300.0	6,186.7	6,311.6	6,180.2	24.6	26.7	-58.14	-799.5	-911.2	238.9	194.0	44.90	5.321			
6,400.0	6,286.7	6,417.4	6,285.9	24.7	26.8	-179.34	-801.1	-913.1	240.4	200.5	39.99	6.013			
6,500.0	6,386.7	6,518.1	6,386.7	24.8	26.9	90.75	-801.1	-913.1	240.5	195.2	45.23	5.317			
6,600.0	6,486.2	6,618.2	6,486.7	24.8	27.0	92.83	-801.1	-912.3	240.7	196.1	44.68	5.388			
6,700.0	6,583.5	6,719.9	6,587.7	24.7	27.0	95.52	-801.1	-900.8	241.6	197.9	43.71	5.527			
6,800.0	6,677.1	6,823.2	6,687.8	24.5	26.9	98.11	-801.1	-875.6	242.9	200.3	42.57	5.706			
6,900.0	6,765.3	6,928.1	6,785.0	24.3	26.7	100.55	-801.1	-836.4	244.6	203.2	41.38	5.911			
7,000.0	6,846.7	7,034.6	6,877.2	24.0	26.4	102.80	-801.1	-783.3	246.6	206.4	40.27	6.125			
7,100.0	6,919.7	7,142.6	6,962.3	23.8	26.1	104.79	-801.1	-717.0	248.7	209.4	39.38	6.317			
7,200.0	6,983.3	7,252.0	7,038.1	23.6	25.8	106.51	-801.1	-638.2	250.8	211.9	38.89	6.450			
7,300.0	7,036.2	7,362.6	7,102.6	23.5	25.5	107.92	-801.1	-548.4	252.7	213.8	38.99	6.483			
7,400.0	7,077.6	7,474.2	7,153.8	23.6	25.4	109.00	-801.1	-449.3	254.3	214.5	39.80	6.391			
7,500.0	7,106.8	7,586.6	7,190.2	24.0	25.4	109.73	-801.1	-343.1	255.4	214.1	41.37	6.175			
7,600.0	7,123.2	7,699.5	7,210.7	24.6	25.6	110.10	-801.1	-232.2	256.0	212.4	43.65	5.866			
7,700.0	7,126.8	7,809.6	7,215.1	25.5	26.2	110.17	-801.1	-122.3	256.2	209.7	46.42	5.518			
7,800.0	7,125.0	7,909.6	7,214.5	26.7	27.1	110.43	-801.1	-22.3	256.6	207.5	49.03	5.233			
7,900.0	7,123.2	8,009.6	7,214.0	28.3	28.5	110.68	-801.2	77.7	257.0	205.0	52.03	4.939			
8,000.0	7,121.5	8,109.6	7,213.5	30.0	30.1	110.94	-801.2	177.7	257.4	202.1	55.36	4.650			
8,100.0	7,119.7	8,209.6	7,212.9	31.9	32.0	111.19	-801.2	277.7	257.9	198.9	58.95	4.375			
8,200.0	7,117.9	8,309.6	7,212.4	34.0	34.0	111.44	-801.2	377.7	258.3	195.6	62.75	4.117			
8,300.0	7,116.2	8,409.5	7,211.8	36.2	36.2	111.69	-801.2	477.7	258.8	192.1	66.72	3.879			
8,400.0	7,114.4	8,509.5	7,211.3	38.5	38.5	111.94	-801.2	577.6	259.2	188.4	70.83	3.660			
8,500.0	7,112.7	8,609.5	7,210.8	40.8	40.8	112.19	-801.2	677.6	259.7	184.6	75.06	3.460			
8,600.0	7,110.9	8,709.5	7,210.2	43.2	43.2	112.44	-801.2	777.6	260.2	180.8	79.38	3.277			
8,700.0	7,109.1	8,809.5	7,209.7	45.6	45.6	112.69	-801.2	877.6	260.6	176.9	83.77	3.111			
8,800.0	7,107.4	8,909.5	7,209.1	48.1	48.1	112.94	-801.2	977.6	261.1	172.9	88.22	2.960			
8,900.0	7,105.6	9,009.5	7,208.6	50.6	50.6	113.19	-801.2	1,077.6	261.6	168.9	92.72	2.821			
9,000.0	7,103.8	9,109.5	7,208.1	53.2	53.2	113.43	-801.2	1,177.6	262.1	164.8	97.26	2.694			
9,100.0	7,102.1	9,209.5	7,207.5	55.7	55.7	113.68	-801.2	1,277.6	262.5	160.7	101.83	2.578			
9,200.0	7,100.3	9,309.5	7,207.0	58.3	58.3	113.92	-801.2	1,377.6	263.0	156.6	106.42	2.472			
9,300.0	7,098.6	9,409.5	7,206.4	61.0	60.9	114.16	-801.2	1,477.6	263.5	152.5	111.03	2.373			
9,400.0	7,096.8	9,509.5	7,205.9	63.6	63.6	114.40	-801.2	1,577.6	264.0	148.4	115.66	2.283			
9,500.0	7,095.0	9,609.5	7,205.3	66.2	66.2	114.64	-801.2	1,677.5	264.5	144.3	120.29	2.199			
9,600.0	7,093.3	9,709.4	7,204.8	68.9	68.9	114.88	-801.2	1,777.5	265.1	140.1	124.93	2.122			
9,700.0	7,091.5	9,809.4	7,204.3	71.5	71.5	115.12	-801.2	1,877.5	265.6	136.0	129.58	2.050			
9,800.0	7,089.7	9,909.4	7,203.7	74.2	74.2	115.36	-801.2	1,977.5	266.1	131.9	134.22	1.983			
9,900.0	7,088.0	10,009.4	7,203.2	76.9	76.9	115.60	-801.2	2,077.5	266.6	127.8	138.86	1.920			
10,000.0	7,086.2	10,109.4	7,202.6	79.6	79.6	115.84	-801.2	2,177.5	267.1	123.6	143.50	1.862			
10,100.0	7,084.5	10,209.4	7,202.1	82.3	82.3	116.07	-801.2	2,277.5	267.7	119.5	148.14	1.807			

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20I-312
Project:	SEC.20-T4N-R65W	TVD Reference:	WELL @ 4817.0ft (RKB - 15')
Reference Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	MD Reference:	WELL @ 4817.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Peschel 20I-312	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 (8-25-14)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:		0.0 ft
Survey Program: 0-MWD												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
10,200.0	7,082.7	10,309.4	7,201.6	85.0	85.0	116.31	-801.2	2,377.5	268.2	115.5	152.76	1.756		
10,300.0	7,080.9	10,409.4	7,201.0	87.7	87.7	116.54	-801.2	2,477.5	268.8	111.4	157.38	1.708		
10,400.0	7,079.2	10,509.4	7,200.5	90.5	90.4	116.77	-801.2	2,577.5	269.3	107.3	161.99	1.662		
10,500.0	7,077.4	10,609.4	7,199.9	93.2	93.2	117.00	-801.2	2,677.5	269.9	103.3	166.59	1.620		
10,600.0	7,075.6	10,709.4	7,199.4	95.9	95.9	117.23	-801.2	2,777.4	270.4	99.2	171.18	1.580		
10,700.0	7,073.9	10,809.4	7,198.9	98.6	98.6	117.46	-801.2	2,877.4	271.0	95.2	175.76	1.542		
10,800.0	7,072.1	10,909.4	7,198.3	101.4	101.4	117.69	-801.2	2,977.4	271.6	91.2	180.33	1.506		
10,900.0	7,070.3	11,009.4	7,197.8	104.1	104.1	117.92	-801.2	3,077.4	272.1	87.2	184.88	1.472	Level 3	
11,000.0	7,068.6	11,109.3	7,197.2	106.9	106.8	118.15	-801.2	3,177.4	272.7	83.3	189.42	1.440	Level 3	
11,100.0	7,066.8	11,209.3	7,196.7	109.6	109.6	118.37	-801.2	3,277.4	273.3	79.3	193.94	1.409	Level 3	
11,200.0	7,065.1	11,309.3	7,196.1	112.4	112.3	118.60	-801.2	3,377.4	273.9	75.4	198.45	1.380	Level 3	
11,300.0	7,063.3	11,409.3	7,195.6	115.1	115.1	118.82	-801.2	3,477.4	274.4	71.5	202.94	1.352	Level 3	
11,400.0	7,061.5	11,509.3	7,195.1	117.9	117.8	119.04	-801.2	3,577.4	275.0	67.6	207.42	1.326	Level 3	
11,500.0	7,059.8	11,609.3	7,194.5	120.6	120.6	119.27	-801.2	3,677.4	275.6	63.7	211.88	1.301	Level 3	
11,600.0	7,058.0	11,706.4	7,194.0	123.4	123.3	119.48	-801.2	3,774.5	276.2	60.0	216.27	1.277	Level 3	
11,600.6	7,058.0	11,706.4	7,194.0	123.4	123.3	119.48	-801.2	3,774.5	276.3	60.0	216.29	1.277	Level 3, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20I-312
Project:	SEC.20-T4N-R65W	TVD Reference:	WELL @ 4817.0ft (RKB - 15')
Reference Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	MD Reference:	WELL @ 4817.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Peschel 20I-312	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 (8-25-14)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4817.0ft (RKB - 15')

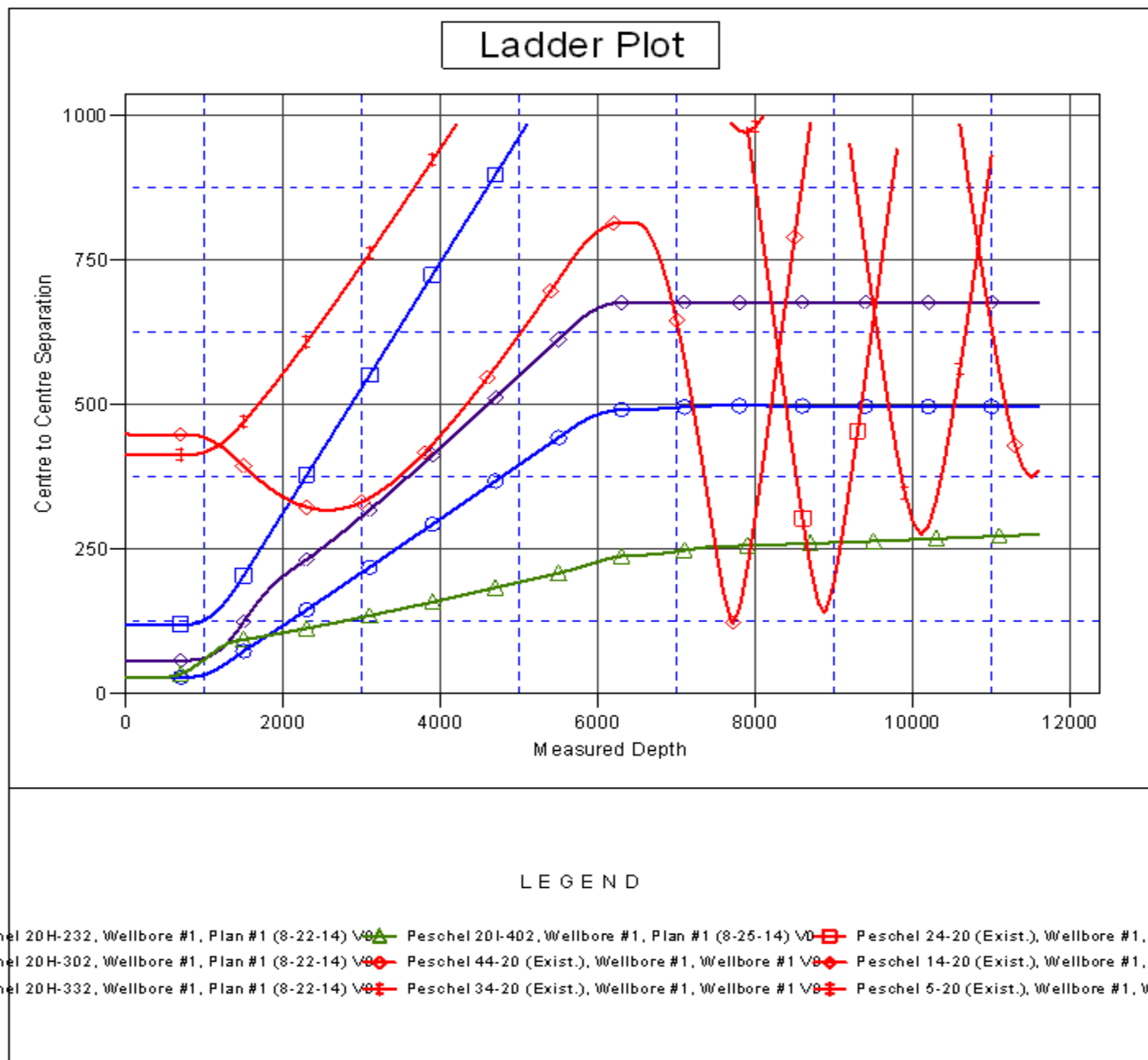
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Peschel 20I-312

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.52°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20I-312
Project:	SEC.20-T4N-R65W	TVD Reference:	WELL @ 4817.0ft (RKB - 15')
Reference Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	MD Reference:	WELL @ 4817.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Peschel 20I-312	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 (8-25-14)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4817.0ft (RKB - 15')

Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Peschel 20I-312

Coordinate System is US State Plane 1983, Colorado Northern Zone

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