

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Peschel 20H-332**

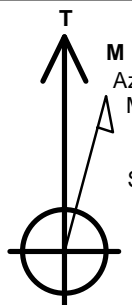
Surface Location: Peschel 4N65W20B Pad Sec.20-T4N-R65W
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
 Ground Elevation: 4802.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1350692.42	3225066.85	40.293240	-104.693150	

RKB - 15' WELL @ 4817.0ft (RKB - 15')

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 950'FSL & 950'FWL	1.0	0.0	0.0	Point
BHL 992'FSL & 500'FEL	7058.0	58.6	3788.3	Point



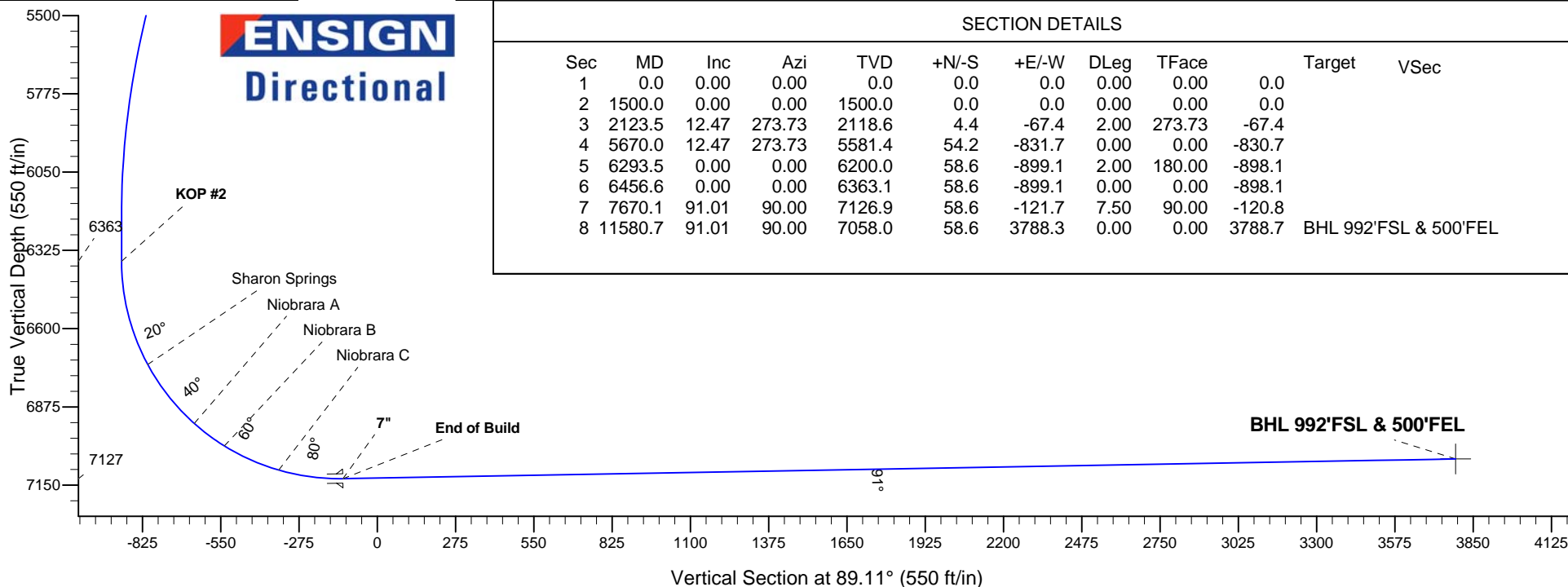
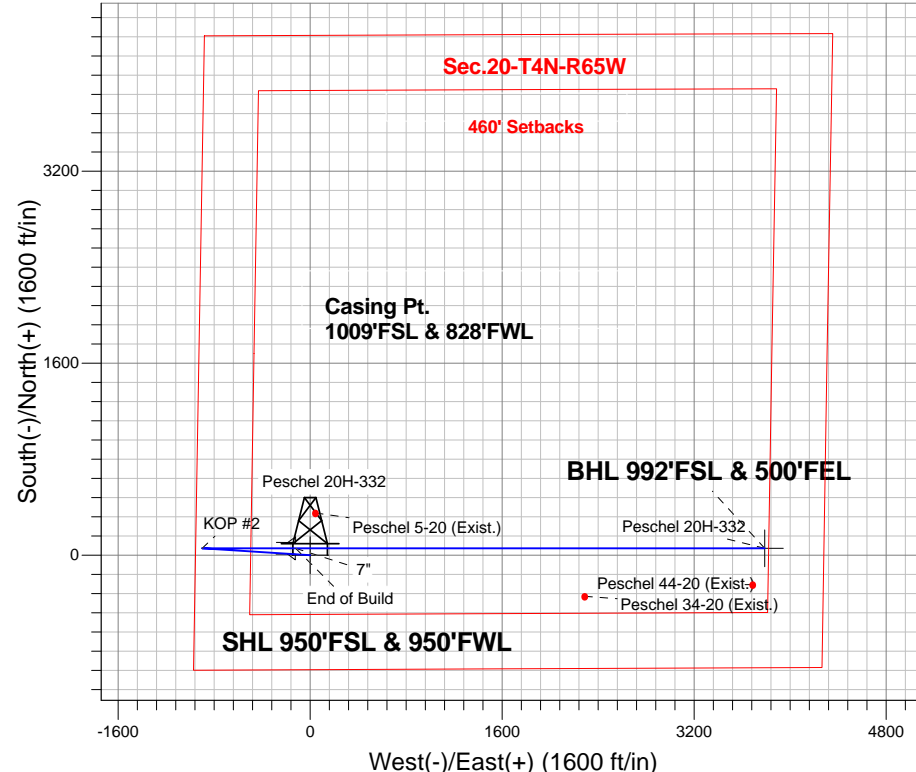
Azimuths to True North
 Magnetic North: 8.39°

Magnetic Field
 Strength: 52745.9snT
 Dip Angle: 66.87°
 Date: 8/27/2014
 Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
1500.0	1500.0	KOP #1
6363.1	6456.6	KOP #2
7126.9	7670.1	End of Build

Peschel 4N65W20B Pad Sec.20-T4N-R65W
 Peschel 20H-332
 Plan #1 (8-22-14)
 14:21, August 28 2014





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.20-T4N-R65W

Peschel 4N65W20B Pad Sec.20-T4N-R65W

Peschel 20H-332

Wellbore #1

Plan: Plan #1 (8-22-14)

Standard Planning Report

28 August, 2014

Database:	Landmark	Local Co-ordinate Reference:	Well Peschel 20H-332
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 20H-332	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-22-14)		

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 20H-332					
Well Position	+N/-S	-149.4 ft	Northing:	1,350,692.42 ft	Latitude:	40.293240
	+E/-W	-2.8 ft	Easting:	3,225,066.85 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 (8-22-14)			
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	89.11

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,123.5	12.47	273.73	2,118.6	4.4	-67.4	2.00	2.00	0.00	273.73	
5,670.0	12.47	273.73	5,581.4	54.2	-831.7	0.00	0.00	0.00	0.00	
6,293.5	0.00	0.00	6,200.0	58.6	-899.1	2.00	-2.00	0.00	180.00	
6,456.6	0.00	0.00	6,363.1	58.6	-899.1	0.00	0.00	0.00	0.00	
7,670.1	91.01	90.00	7,126.9	58.6	-121.7	7.50	7.50	0.00	90.00	
11,580.7	91.01	90.00	7,058.0	58.6	3,788.3	0.00	0.00	0.00	0.00	BHL 992'FSL & 50C

Database:	Landmark	Local Co-ordinate Reference:	Well Peschel 20H-332
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 20H-332	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-22-14)		

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
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
1,600.0	2.00	273.73	1,600.0	0.1	-1.7	-1.7	2.00	2.00	0.00
1,700.0	4.00	273.73	1,699.8	0.5	-7.0	-7.0	2.00	2.00	0.00
1,800.0	6.00	273.73	1,799.5	1.0	-15.7	-15.6	2.00	2.00	0.00
1,900.0	8.00	273.73	1,898.7	1.8	-27.8	-27.8	2.00	2.00	0.00
2,000.0	10.00	273.73	1,997.5	2.8	-43.4	-43.4	2.00	2.00	0.00
2,100.0	12.00	273.73	2,095.6	4.1	-62.5	-62.4	2.00	2.00	0.00
2,123.5	12.47	273.73	2,118.6	4.4	-67.4	-67.4	2.00	2.00	0.00
2,200.0	12.47	273.73	2,193.3	5.5	-83.9	-83.8	0.00	0.00	0.00
2,300.0	12.47	273.73	2,290.9	6.9	-105.5	-105.4	0.00	0.00	0.00
2,400.0	12.47	273.73	2,388.6	8.3	-127.0	-126.9	0.00	0.00	0.00
2,500.0	12.47	273.73	2,486.2	9.7	-148.6	-148.4	0.00	0.00	0.00
2,600.0	12.47	273.73	2,583.8	11.1	-170.1	-169.9	0.00	0.00	0.00
2,700.0	12.47	273.73	2,681.5	12.5	-191.7	-191.5	0.00	0.00	0.00
2,800.0	12.47	273.73	2,779.1	13.9	-213.2	-213.0	0.00	0.00	0.00
2,900.0	12.47	273.73	2,876.8	15.3	-234.8	-234.5	0.00	0.00	0.00
3,000.0	12.47	273.73	2,974.4	16.7	-256.3	-256.0	0.00	0.00	0.00
3,100.0	12.47	273.73	3,072.0	18.1	-277.9	-277.5	0.00	0.00	0.00
3,200.0	12.47	273.73	3,169.7	19.5	-299.4	-299.1	0.00	0.00	0.00
3,300.0	12.47	273.73	3,267.3	20.9	-321.0	-320.6	0.00	0.00	0.00
3,400.0	12.47	273.73	3,365.0	22.3	-342.5	-342.1	0.00	0.00	0.00
3,500.0	12.47	273.73	3,462.6	23.7	-364.1	-363.6	0.00	0.00	0.00
3,600.0	12.47	273.73	3,560.3	25.1	-385.6	-385.2	0.00	0.00	0.00
3,700.0	12.47	273.73	3,657.9	26.5	-407.2	-406.7	0.00	0.00	0.00
3,784.1	12.47	273.73	3,740.0	27.7	-425.3	-424.8	0.00	0.00	0.00
Parkman									
3,800.0	12.47	273.73	3,755.5	27.9	-428.7	-428.2	0.00	0.00	0.00
3,900.0	12.47	273.73	3,853.2	29.3	-450.3	-449.7	0.00	0.00	0.00
4,000.0	12.47	273.73	3,950.8	30.8	-471.8	-471.3	0.00	0.00	0.00
4,100.0	12.47	273.73	4,048.5	32.2	-493.3	-492.8	0.00	0.00	0.00
4,200.0	12.47	273.73	4,146.1	33.6	-514.9	-514.3	0.00	0.00	0.00
4,300.0	12.47	273.73	4,243.7	35.0	-536.4	-535.8	0.00	0.00	0.00
4,400.0	12.47	273.73	4,341.4	36.4	-558.0	-557.4	0.00	0.00	0.00
4,434.4	12.47	273.73	4,375.0	36.9	-565.4	-564.8	0.00	0.00	0.00
Sussex									
4,500.0	12.47	273.73	4,439.0	37.8	-579.5	-578.9	0.00	0.00	0.00
4,600.0	12.47	273.73	4,536.7	39.2	-601.1	-600.4	0.00	0.00	0.00

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Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	North Reference:	True
Well:	Peschel 20H-332	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-22-14)		

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	12.47	273.73	4,634.3	40.6	-622.6	-621.9	0.00	0.00	0.00
4,800.0	12.47	273.73	4,731.9	42.0	-644.2	-643.5	0.00	0.00	0.00
4,900.0	12.47	273.73	4,829.6	43.4	-665.7	-665.0	0.00	0.00	0.00
5,000.0	12.47	273.73	4,927.2	44.8	-687.3	-686.5	0.00	0.00	0.00
5,100.0	12.47	273.73	5,024.9	46.2	-708.8	-708.0	0.00	0.00	0.00
5,200.0	12.47	273.73	5,122.5	47.6	-730.4	-729.6	0.00	0.00	0.00
5,279.4	12.47	273.73	5,200.0	48.7	-747.5	-746.6	0.00	0.00	0.00
Shannon									
5,300.0	12.47	273.73	5,220.1	49.0	-751.9	-751.1	0.00	0.00	0.00
5,400.0	12.47	273.73	5,317.8	50.4	-773.5	-772.6	0.00	0.00	0.00
5,500.0	12.47	273.73	5,415.4	51.8	-795.0	-794.1	0.00	0.00	0.00
5,600.0	12.47	273.73	5,513.1	53.2	-816.6	-815.7	0.00	0.00	0.00
5,670.0	12.47	273.73	5,581.4	54.2	-831.7	-830.7	0.00	0.00	0.00
5,700.0	11.87	273.73	5,610.7	54.6	-838.0	-837.0	2.00	-2.00	0.00
5,800.0	9.87	273.73	5,708.9	55.8	-856.8	-855.8	2.00	-2.00	0.00
5,900.0	7.87	273.73	5,807.7	56.8	-872.2	-871.2	2.00	-2.00	0.00
6,000.0	5.87	273.73	5,907.0	57.6	-884.1	-883.1	2.00	-2.00	0.00
6,100.0	3.87	273.73	6,006.6	58.2	-892.6	-891.6	2.00	-2.00	0.00
6,200.0	1.87	273.73	6,106.5	58.5	-897.6	-896.6	2.00	-2.00	0.00
6,293.5	0.00	0.00	6,200.0	58.6	-899.1	-898.1	2.00	-2.00	0.00
6,300.0	0.00	0.00	6,206.5	58.6	-899.1	-898.1	0.00	0.00	0.00
6,400.0	0.00	0.00	6,306.5	58.6	-899.1	-898.1	0.00	0.00	0.00
6,456.6	0.00	0.00	6,363.1	58.6	-899.1	-898.1	0.00	0.00	0.00
KOP #2									
6,500.0	3.25	90.00	6,406.5	58.6	-897.9	-896.9	7.50	7.50	0.00
6,600.0	10.75	90.00	6,505.7	58.6	-885.7	-884.7	7.50	7.50	0.00
6,700.0	18.25	90.00	6,602.4	58.6	-860.7	-859.6	7.50	7.50	0.00
6,800.0	25.75	90.00	6,695.1	58.6	-823.2	-822.2	7.50	7.50	0.00
6,834.8	28.36	90.00	6,726.0	58.6	-807.4	-806.4	7.50	7.50	0.00
Sharon Springs									
6,900.0	33.25	90.00	6,782.0	58.6	-774.0	-773.0	7.50	7.50	0.00
7,000.0	40.75	90.00	6,861.8	58.6	-713.9	-712.9	7.50	7.50	0.00
7,099.9	48.24	90.00	6,933.0	58.6	-643.9	-642.9	7.50	7.50	0.00
Niobrara A									
7,100.0	48.25	90.00	6,933.1	58.6	-643.8	-642.8	7.50	7.50	0.00
7,200.0	55.75	90.00	6,994.6	58.6	-565.1	-564.1	7.50	7.50	0.00
7,231.9	58.15	90.00	7,012.0	58.6	-538.3	-537.4	7.50	7.50	0.00
Niobrara B									
7,300.0	63.25	90.00	7,045.3	58.6	-478.9	-478.0	7.50	7.50	0.00
7,400.0	70.75	90.00	7,084.4	58.6	-387.0	-386.0	7.50	7.50	0.00
7,441.6	73.88	90.00	7,097.0	58.6	-347.3	-346.4	7.50	7.50	0.00
Niobrara C									
7,500.0	78.25	90.00	7,111.1	58.6	-290.7	-289.7	7.50	7.50	0.00
7,600.0	85.75	90.00	7,125.0	58.6	-191.7	-190.8	7.50	7.50	0.00
7,670.1	91.01	90.00	7,126.9	58.6	-121.7	-120.7	7.50	7.50	0.00
End of Build - 7"									
7,700.0	91.01	90.00	7,126.4	58.6	-91.8	-90.8	0.00	0.00	0.00
7,800.0	91.01	90.00	7,124.6	58.6	8.2	9.1	0.00	0.00	0.00
7,900.0	91.01	90.00	7,122.9	58.6	108.2	109.1	0.00	0.00	0.00
8,000.0	91.01	90.00	7,121.1	58.6	208.2	209.1	0.00	0.00	0.00
8,100.0	91.01	90.00	7,119.4	58.6	308.2	309.0	0.00	0.00	0.00
8,200.0	91.01	90.00	7,117.6	58.6	408.2	409.0	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Peschel 20H-332
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 20H-332	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-22-14)		

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	7,115.8	58.6	508.1	509.0	0.00	0.00	0.00
8,400.0	91.01	90.00	7,114.1	58.6	608.1	609.0	0.00	0.00	0.00
8,500.0	91.01	90.00	7,112.3	58.6	708.1	708.9	0.00	0.00	0.00
8,600.0	91.01	90.00	7,110.5	58.6	808.1	808.9	0.00	0.00	0.00
8,700.0	91.01	90.00	7,108.8	58.6	908.1	908.9	0.00	0.00	0.00
8,800.0	91.01	90.00	7,107.0	58.6	1,008.1	1,008.8	0.00	0.00	0.00
8,900.0	91.01	90.00	7,105.3	58.6	1,108.0	1,108.8	0.00	0.00	0.00
9,000.0	91.01	90.00	7,103.5	58.6	1,208.0	1,208.8	0.00	0.00	0.00
9,100.0	91.01	90.00	7,101.7	58.6	1,308.0	1,308.8	0.00	0.00	0.00
9,200.0	91.01	90.00	7,100.0	58.6	1,408.0	1,408.7	0.00	0.00	0.00
9,300.0	91.01	90.00	7,098.2	58.6	1,508.0	1,508.7	0.00	0.00	0.00
9,400.0	91.01	90.00	7,096.4	58.6	1,608.0	1,608.7	0.00	0.00	0.00
9,500.0	91.01	90.00	7,094.7	58.6	1,708.0	1,708.7	0.00	0.00	0.00
9,600.0	91.01	90.00	7,092.9	58.6	1,807.9	1,808.6	0.00	0.00	0.00
9,700.0	91.01	90.00	7,091.2	58.6	1,907.9	1,908.6	0.00	0.00	0.00
9,800.0	91.01	90.00	7,089.4	58.6	2,007.9	2,008.6	0.00	0.00	0.00
9,900.0	91.01	90.00	7,087.6	58.6	2,107.9	2,108.5	0.00	0.00	0.00
10,000.0	91.01	90.00	7,085.9	58.6	2,207.9	2,208.5	0.00	0.00	0.00
10,100.0	91.01	90.00	7,084.1	58.6	2,307.9	2,308.5	0.00	0.00	0.00
10,200.0	91.01	90.00	7,082.3	58.6	2,407.8	2,408.5	0.00	0.00	0.00
10,300.0	91.01	90.00	7,080.6	58.6	2,507.8	2,508.4	0.00	0.00	0.00
10,400.0	91.01	90.00	7,078.8	58.6	2,607.8	2,608.4	0.00	0.00	0.00
10,500.0	91.01	90.00	7,077.0	58.6	2,707.8	2,708.4	0.00	0.00	0.00
10,600.0	91.01	90.00	7,075.3	58.6	2,807.8	2,808.4	0.00	0.00	0.00
10,700.0	91.01	90.00	7,073.5	58.6	2,907.8	2,908.3	0.00	0.00	0.00
10,800.0	91.01	90.00	7,071.8	58.6	3,007.8	3,008.3	0.00	0.00	0.00
10,900.0	91.01	90.00	7,070.0	58.6	3,107.7	3,108.3	0.00	0.00	0.00
11,000.0	91.01	90.00	7,068.2	58.6	3,207.7	3,208.2	0.00	0.00	0.00
11,100.0	91.01	90.00	7,066.5	58.6	3,307.7	3,308.2	0.00	0.00	0.00
11,200.0	91.01	90.00	7,064.7	58.6	3,407.7	3,408.2	0.00	0.00	0.00
11,300.0	91.01	90.00	7,062.9	58.6	3,507.7	3,508.2	0.00	0.00	0.00
11,400.0	91.01	90.00	7,061.2	58.6	3,607.7	3,608.1	0.00	0.00	0.00
11,500.0	91.01	90.00	7,059.4	58.6	3,707.6	3,708.1	0.00	0.00	0.00
11,580.7	91.01	90.00	7,058.0	58.6	3,788.3	3,788.7	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 950'FSL & 950'F	0.00	0.00	1.0	0.0	0.0	1,350,692.43	3,225,066.85	40.293240	-104.693150
- plan hits target center									
- Point									
BHL 992'FSL & 500'F	0.00	0.00	7,058.0	58.6	3,788.3	1,350,785.47	3,228,854.28	40.293400	-104.679570
- plan hits target center									
- Point									

Database:	Landmark	Local Co-ordinate Reference:	Well Peschel 20H-332
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 20H-332	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-22-14)		

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,670.1	7,126.9	7"	7	7-1/2

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,784.1	3,740.0	Parkman		0.00	
4,434.4	4,375.0	Sussex		0.00	
5,279.4	5,200.0	Shannon		0.00	
6,834.8	6,726.0	Sharon Springs		0.00	
7,099.9	6,933.0	Niobrara A		0.00	
7,231.9	7,012.0	Niobrara B		0.00	
7,441.6	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)	
1,500.0	1,500.0	0.0	0.0	KOP #1
6,456.6	6,363.1	4.4	-67.4	KOP #2
7,670.1	7,126.9	54.2	-831.7	End of Build



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.20-T4N-R65W

Peschel 4N65W20B Pad Sec.20-T4N-R65W

Peschel 20H-332

Wellbore #1

Plan #1 (8-22-14)

Anticollision Report

28 August, 2014



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20H-332
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 20H-332	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 (8-22-14)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (8-22-14)
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	11,580.6	Plan #1 (8-22-14) (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 34-20 (Exist.) - Wellbore #1 - Wellbore #1	10,079.6	7,116.5	400.9	175.7	1.780	CC
Peschel 34-20 (Exist.) - Wellbore #1 - Wellbore #1	10,100.0	7,116.1	401.4	175.6	1.778	ES, SF
Peschel 44-20 (Exist.) - Wellbore #1 - Wellbore #1	11,480.3	7,126.8	302.4	38.6	1.146	Level 2, CC, ES, SF
Peschel 5-20 (Exist.) - Wellbore #1 - Wellbore #1	7,836.4	7,109.0	294.8	124.8	1.734	CC, ES, SF
Peschel 4N65W20B Pad Sec.20-T4N-R65W						
Peschel 20H-202 - Wellbore #1 - Plan #1 (8-22-14)	1,000.0	999.0	29.3	25.0	6.858	CC, ES
Peschel 20H-202 - Wellbore #1 - Plan #1 (8-22-14)	11,580.7	11,493.8	381.9	138.7	1.570	SF
Peschel 20H-232 - Wellbore #1 - Plan #1 (8-22-14)	1,000.0	1,000.0	29.1	24.9	6.825	CC
Peschel 20H-232 - Wellbore #1 - Plan #1 (8-22-14)	11,580.7	11,488.2	199.3	-33.0	0.858	Level 1, ES, SF
Peschel 20H-302 - Wellbore #1 - Plan #1 (8-22-14)	800.0	800.0	62.0	58.6	18.388	CC, ES
Peschel 20H-302 - Wellbore #1 - Plan #1 (8-22-14)	11,580.7	11,588.7	510.2	263.6	2.069	SF
Peschel 20I-312 - Wellbore #1 - Plan #1 (8-25-14)	800.0	800.0	58.3	54.9	17.289	CC, ES
Peschel 20I-312 - Wellbore #1 - Plan #1 (8-25-14)	11,580.7	11,600.6	677.7	430.3	2.739	SF

Offset Design Existing wells Sec.20-T4N-R65W - Peschel 34-20 (Exist.) - Wellbore #1 - Wellbore #1											
Survey Program: 7370-UNKNOWN											
Offset Site Error: 0.0ft											
Offset Well Error: 0.0ft											
Reference	Offset	Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)
9,200.0	7,100.0	7,132.0	7,132.0	59.5	142.6	92.21	-342.3	2,287.5	966.6	764.6	201.99
9,300.0	7,098.2	7,130.2	7,130.2	62.1	142.6	91.96	-342.3	2,287.5	876.6	672.0	204.60
9,400.0	7,096.4	7,128.4	7,128.4	64.7	142.6	91.71	-342.3	2,287.5	789.0	581.8	207.23
9,500.0	7,094.7	7,126.7	7,126.7	67.4	142.5	91.46	-342.3	2,287.5	704.7	494.9	209.86
9,600.0	7,092.9	7,124.9	7,124.9	70.0	142.5	91.21	-342.3	2,287.5	625.1	412.6	212.50
9,700.0	7,091.2	7,123.2	7,123.2	72.7	142.5	90.96	-342.3	2,287.5	552.1	337.0	215.15
9,800.0	7,089.4	7,121.4	7,121.4	75.4	142.4	90.70	-342.3	2,287.5	488.8	271.0	217.81
9,900.0	7,087.6	7,119.6	7,119.6	78.1	142.4	90.45	-342.3	2,287.5	439.3	218.9	220.47
10,000.0	7,085.9	7,117.9	7,117.9	80.8	142.4	90.20	-342.3	2,287.5	408.8	185.6	223.14
10,079.6	7,084.5	7,116.5	7,116.5	82.9	142.3	90.00	-342.3	2,287.5	400.9	175.7	225.26
10,100.0	7,084.1	7,116.1	7,116.1	83.5	142.3	89.95	-342.3	2,287.5	401.4	175.6	225.81
10,200.0	7,082.3	7,114.3	7,114.3	86.2	142.3	89.70	-342.3	2,287.5	418.6	190.1	228.48
10,300.0	7,080.6	7,112.6	7,112.6	88.9	142.3	89.45	-342.3	2,287.5	457.5	226.3	231.15

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 20H-332
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 20H-332	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 (8-22-14)	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						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)		
10,400.0	7,078.8	7,110.8	7,110.8	91.6	142.2	89.19	-342.3	2,287.5	513.2	279.3	233.83	2.195	
10,500.0	7,077.0	7,109.0	7,109.0	94.4	142.2	88.94	-342.3	2,287.5	580.8	344.3	236.50	2.456	
10,600.0	7,075.3	7,107.3	7,107.3	97.1	142.1	88.69	-342.3	2,287.5	656.8	417.7	239.17	2.746	
10,700.0	7,073.5	7,105.5	7,105.5	99.8	142.1	88.44	-342.3	2,287.5	738.6	496.7	241.85	3.054	
10,800.0	7,071.8	7,103.8	7,103.8	102.6	142.1	88.19	-342.3	2,287.5	824.3	579.8	244.52	3.371	
10,900.0	7,070.0	7,102.0	7,102.0	105.3	142.0	87.93	-342.3	2,287.5	913.0	665.8	247.19	3.693	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20H-332
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 20H-332	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 (8-22-14)	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
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
10,600.0	7,075.3	7,142.3	7,142.3	97.1	142.8	92.94	-243.8	3,687.9	930.6	691.0	239.66	3.883	
10,700.0	7,073.5	7,140.5	7,140.5	99.8	142.8	92.60	-243.8	3,687.9	836.7	594.3	242.42	3.451	
10,800.0	7,071.8	7,138.8	7,138.8	102.6	142.8	92.27	-243.8	3,687.9	744.3	499.2	245.18	3.036	
10,900.0	7,070.0	7,137.0	7,137.0	105.3	142.7	91.94	-243.8	3,687.9	654.2	406.3	247.93	2.639	
11,000.0	7,068.2	7,135.2	7,135.2	108.1	142.7	91.60	-243.8	3,687.9	567.5	316.8	250.69	2.264	
11,100.0	7,066.5	7,133.5	7,133.5	110.8	142.7	91.27	-243.8	3,687.9	485.8	232.4	253.43	1.917	
11,200.0	7,064.7	7,131.7	7,131.7	113.6	142.6	90.94	-243.8	3,687.9	412.3	156.1	256.17	1.609	
11,300.0	7,062.9	7,129.9	7,129.9	116.3	142.6	90.60	-243.8	3,687.9	352.0	93.1	258.91	1.360	Level 3
11,400.0	7,061.2	7,128.2	7,128.2	119.1	142.6	90.27	-243.8	3,687.9	312.9	51.2	261.64	1.196	Level 2
11,480.3	7,059.8	7,126.8	7,126.8	121.3	142.5	90.00	-243.8	3,687.9	302.4	38.6	263.83	1.146	Level 2, CC, ES, SF
11,500.0	7,059.4	7,126.4	7,126.4	121.8	142.5	89.93	-243.8	3,687.9	303.0	38.7	264.37	1.146	Level 2
11,580.7	7,058.0	7,125.0	7,125.0	124.1	142.5	89.66	-243.8	3,687.9	318.6	52.1	266.56	1.195	Level 2

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20H-332
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 20H-332	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 (8-22-14)	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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	7.20	7.20	353.4	44.6	356.5				
100.0	100.0	85.0	85.0	0.1	1.7	7.20	7.20	353.4	44.6	356.2	354.4	1.81	196.509	
200.0	200.0	185.0	185.0	0.3	3.7	7.20	7.20	353.4	44.6	356.2	352.2	4.04	88.223	
300.0	300.0	285.0	285.0	0.6	5.7	7.20	7.20	353.4	44.6	356.2	349.9	6.26	56.880	
400.0	400.0	385.0	385.0	0.8	7.7	7.20	7.20	353.4	44.6	356.2	347.7	8.49	41.969	
500.0	500.0	485.0	485.0	1.0	9.7	7.20	7.20	353.4	44.6	356.2	345.5	10.71	33.252	
600.0	600.0	585.0	585.0	1.2	11.7	7.20	7.20	353.4	44.6	356.2	343.3	12.94	27.534	
700.0	700.0	685.0	685.0	1.5	13.7	7.20	7.20	353.4	44.6	356.2	341.0	15.16	23.493	
800.0	800.0	785.0	785.0	1.7	15.7	7.20	7.20	353.4	44.6	356.2	338.8	17.39	20.487	
900.0	900.0	885.0	885.0	1.9	17.7	7.20	7.20	353.4	44.6	356.2	336.6	19.61	18.163	
1,000.0	1,000.0	985.0	985.0	2.1	19.7	7.20	7.20	353.4	44.6	356.2	334.4	21.84	16.312	
1,100.0	1,100.0	1,085.0	1,085.0	2.4	21.7	7.20	7.20	353.4	44.6	356.2	332.1	24.06	14.804	
1,200.0	1,200.0	1,185.0	1,185.0	2.6	23.7	7.20	7.20	353.4	44.6	356.2	329.9	26.28	13.551	
1,300.0	1,300.0	1,285.0	1,285.0	2.8	25.7	7.20	7.20	353.4	44.6	356.2	327.7	28.51	12.494	
1,400.0	1,400.0	1,385.0	1,385.0	3.0	27.7	7.20	7.20	353.4	44.6	356.2	325.5	30.73	11.589	
1,500.0	1,500.0	1,485.0	1,485.0	3.3	29.7	7.20	7.20	353.4	44.6	356.2	323.2	32.96	10.807	
1,600.0	1,600.0	1,585.0	1,585.0	3.5	31.7	93.75	93.75	353.4	44.6	356.3	321.1	35.17	10.130	
1,700.0	1,699.8	1,684.8	1,684.8	3.7	33.7	94.58	94.58	353.4	44.6	356.7	319.3	37.37	9.544	
1,800.0	1,799.5	1,784.5	1,784.5	3.9	35.7	95.95	95.95	353.4	44.6	357.5	317.9	39.58	9.032	
1,900.0	1,898.7	1,883.7	1,883.7	4.1	37.7	97.84	97.84	353.4	44.6	359.0	317.2	41.79	8.589	
2,000.0	1,997.5	1,982.5	1,982.5	4.4	39.6	100.22	100.22	353.4	44.6	361.4	317.4	44.01	8.213	
2,100.0	2,095.6	2,080.6	2,080.6	4.7	41.6	103.04	103.04	353.4	44.6	365.4	319.1	46.23	7.903	
2,200.0	2,193.3	2,178.3	2,178.3	5.0	43.6	106.18	106.18	353.4	44.6	370.9	322.4	48.46	7.654	
2,300.0	2,290.9	2,275.9	2,275.9	5.4	45.5	109.26	109.26	353.4	44.6	377.6	326.9	50.70	7.448	
2,400.0	2,388.6	2,373.6	2,373.6	5.7	47.5	112.23	112.23	353.4	44.6	385.4	332.5	52.94	7.280	
2,500.0	2,486.2	2,471.2	2,471.2	6.1	49.4	115.08	115.08	353.4	44.6	394.3	339.1	55.18	7.145	
2,600.0	2,583.8	2,568.8	2,568.8	6.5	51.4	117.81	117.81	353.4	44.6	404.1	346.7	57.41	7.038	
2,700.0	2,681.5	2,666.5	2,666.5	6.9	53.3	120.40	120.40	353.4	44.6	414.8	355.1	59.64	6.955	
2,800.0	2,779.1	2,764.1	2,764.1	7.3	55.3	122.86	122.86	353.4	44.6	426.3	364.4	61.86	6.892	
2,900.0	2,876.8	2,861.8	2,861.8	7.8	57.2	125.20	125.20	353.4	44.6	438.6	374.5	64.06	6.846	
3,000.0	2,974.4	2,959.4	2,959.4	8.2	59.2	127.40	127.40	353.4	44.6	451.6	385.3	66.26	6.815	
3,100.0	3,072.0	3,057.0	3,057.0	8.6	61.1	129.49	129.49	353.4	44.6	465.2	396.7	68.46	6.796	
3,200.0	3,169.7	3,154.7	3,154.7	9.1	63.1	131.45	131.45	353.4	44.6	479.4	408.8	70.64	6.787	
3,300.0	3,267.3	3,252.3	3,252.3	9.5	65.0	133.31	133.31	353.4	44.6	494.2	421.3	72.82	6.786	
3,400.0	3,365.0	3,350.0	3,350.0	9.9	67.0	135.05	135.05	353.4	44.6	509.4	434.4	74.99	6.793	
3,500.0	3,462.6	3,447.6	3,447.6	10.4	69.0	136.70	136.70	353.4	44.6	525.1	447.9	77.16	6.805	
3,600.0	3,560.3	3,545.3	3,545.3	10.8	70.9	138.25	138.25	353.4	44.6	541.2	461.8	79.32	6.822	
3,700.0	3,657.9	3,642.9	3,642.9	11.3	72.9	139.71	139.71	353.4	44.6	557.6	476.1	81.48	6.844	
3,800.0	3,755.5	3,740.5	3,740.5	11.8	74.8	141.09	141.09	353.4	44.6	574.4	490.8	83.63	6.868	
3,900.0	3,853.2	3,838.2	3,838.2	12.2	76.8	142.40	142.40	353.4	44.6	591.5	505.7	85.79	6.895	
4,000.0	3,950.8	3,935.8	3,935.8	12.7	78.7	143.63	143.63	353.4	44.6	608.9	521.0	87.94	6.924	
4,100.0	4,048.5	4,033.5	4,033.5	13.1	80.7	144.79	144.79	353.4	44.6	626.6	536.5	90.09	6.955	
4,200.0	4,146.1	4,131.1	4,131.1	13.6	82.6	145.89	145.89	353.4	44.6	644.5	552.2	92.24	6.987	
4,300.0	4,243.7	4,228.7	4,228.7	14.1	84.6	146.93	146.93	353.4	44.6	662.6	568.2	94.38	7.020	
4,400.0	4,341.4	4,326.4	4,326.4	14.5	86.5	147.91	147.91	353.4	44.6	680.9	584.4	96.53	7.054	
4,500.0	4,439.0	4,424.0	4,424.0	15.0	88.5	148.85	148.85	353.4	44.6	699.4	600.8	98.68	7.088	
4,600.0	4,536.7	4,521.7	4,521.7	15.4	90.4	149.73	149.73	353.4	44.6	718.1	617.3	100.82	7.123	
4,700.0	4,634.3	4,619.3	4,619.3	15.9	92.4	150.57	150.57	353.4	44.6	737.0	634.0	102.97	7.157	
4,800.0	4,731.9	4,716.9	4,716.9	16.4	94.3	151.37	151.37	353.4	44.6	755.9	650.8	105.11	7.192	
4,900.0	4,829.6	4,814.6	4,814.6	16.8	96.3	152.13	152.13	353.4	44.6	775.1	667.8	107.26	7.226	
5,000.0	4,927.2	4,912.2	4,912.2	17.3	98.2	152.86	152.86	353.4	44.6	794.3	684.9	109.40	7.260	

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 20H-332
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 20H-332	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 (8-22-14)	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		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	5,024.9	5,009.9	5,009.9	17.8	100.2	153.55	353.4	44.6	813.7	702.1	111.55	7.294		
5,200.0	5,122.5	5,107.5	5,107.5	18.2	102.2	154.21	353.4	44.6	833.2	719.5	113.69	7.328		
5,300.0	5,220.1	5,205.1	5,205.1	18.7	104.1	154.84	353.4	44.6	852.7	736.9	115.84	7.361		
5,400.0	5,317.8	5,302.8	5,302.8	19.2	106.1	155.44	353.4	44.6	872.4	754.4	117.99	7.394		
5,500.0	5,415.4	5,400.4	5,400.4	19.7	108.0	156.01	353.4	44.6	892.2	772.0	120.14	7.426		
5,600.0	5,513.1	5,498.1	5,498.1	20.1	110.0	156.56	353.4	44.6	912.0	789.7	122.28	7.458		
5,700.0	5,610.7	5,595.7	5,595.7	20.6	111.9	157.13	353.4	44.6	931.8	807.2	124.63	7.476		
5,800.0	5,708.9	5,693.9	5,693.9	20.9	113.9	157.71	353.4	44.6	949.3	821.9	127.39	7.452		
5,900.0	5,807.7	5,792.7	5,792.7	21.2	115.9	158.16	353.4	44.6	963.6	833.5	130.05	7.409		
6,000.0	5,907.0	5,892.0	5,892.0	21.4	117.8	158.50	353.4	44.6	974.7	842.1	132.60	7.350		
6,100.0	6,006.6	5,991.6	5,991.6	21.6	119.8	158.74	353.4	44.6	982.6	847.6	135.04	7.276		
6,200.0	6,106.5	6,091.5	6,091.5	21.8	121.8	158.88	353.4	44.6	987.3	849.9	137.35	7.188		
6,300.0	6,206.5	6,191.5	6,191.5	21.9	123.8	72.65	353.4	44.6	988.7	843.7	145.04	6.817		
6,400.0	6,306.5	6,291.5	6,291.5	22.1	125.8	72.65	353.4	44.6	988.7	841.5	147.17	6.718		
6,500.0	6,406.5	6,391.5	6,391.5	22.2	127.8	-17.39	353.4	44.6	987.5	843.9	143.59	6.878		
6,600.0	6,505.7	6,490.7	6,490.7	22.2	129.8	-17.88	353.4	44.6	975.9	832.4	143.48	6.802		
6,700.0	6,602.4	6,587.4	6,587.4	22.1	131.7	-18.93	353.4	44.6	952.1	810.9	141.21	6.742		
6,800.0	6,695.1	6,680.1	6,680.1	21.9	133.6	-20.66	353.4	44.6	916.5	779.5	137.01	6.690		
6,900.0	6,782.0	6,767.0	6,767.0	21.7	135.3	-23.30	353.4	44.6	870.1	738.6	131.49	6.617		
7,000.0	6,861.8	6,846.8	6,846.8	21.5	136.9	-27.16	353.4	44.6	813.8	687.9	125.90	6.464		
7,100.0	6,933.1	6,918.1	6,918.1	21.4	138.4	-32.75	353.4	44.6	748.9	626.4	122.53	6.112		
7,200.0	6,994.6	6,979.6	6,979.6	21.4	139.6	-40.67	353.4	44.6	677.2	552.5	124.74	5.429		
7,300.0	7,045.3	7,030.3	7,030.3	21.7	140.6	-51.36	353.4	44.6	600.9	466.1	134.79	4.458		
7,400.0	7,084.4	7,069.4	7,069.4	22.3	141.4	-64.24	353.4	44.6	522.7	373.1	149.51	3.496		
7,500.0	7,111.1	7,096.1	7,096.1	23.2	141.9	-76.96	353.4	44.6	446.5	285.3	161.14	2.771		
7,600.0	7,125.0	7,110.0	7,110.0	24.3	142.2	-86.60	353.4	44.6	377.8	211.6	166.21	2.273		
7,700.0	7,126.4	7,111.4	7,111.4	25.6	142.2	-90.47	353.4	44.6	324.8	157.0	167.84	1.935		
7,800.0	7,124.6	7,109.6	7,109.6	27.2	142.2	-90.12	353.4	44.6	297.0	127.7	169.36	1.754		
7,836.4	7,124.0	7,109.0	7,109.0	27.8	142.2	-90.00	353.4	44.6	294.8	124.8	169.98	1.734	CC, ES, SF	
7,900.0	7,122.9	7,107.9	7,107.9	28.9	142.2	-89.78	353.4	44.6	301.6	130.5	171.06	1.763		
8,000.0	7,121.1	7,106.1	7,106.1	30.8	142.1	-89.44	353.4	44.6	337.1	164.2	172.92	1.950		
8,100.0	7,119.4	7,104.4	7,104.4	32.8	142.1	-89.10	353.4	44.6	395.4	220.5	174.91	2.261		
8,200.0	7,117.6	7,102.6	7,102.6	35.0	142.1	-88.75	353.4	44.6	468.0	291.0	176.99	2.644		
8,300.0	7,115.8	7,100.8	7,100.8	37.2	142.0	-88.41	353.4	44.6	549.3	370.1	179.16	3.066		
8,400.0	7,114.1	7,099.1	7,099.1	39.5	142.0	-88.07	353.4	44.6	635.9	454.6	181.39	3.506		
8,500.0	7,112.3	7,097.3	7,097.3	41.9	141.9	-87.73	353.4	44.6	726.0	542.3	183.68	3.953		
8,600.0	7,110.5	7,095.5	7,095.5	44.3	141.9	-87.39	353.4	44.6	818.4	632.4	186.01	4.400		
8,700.0	7,108.8	7,093.8	7,093.8	46.7	141.9	-87.04	353.4	44.6	912.4	724.0	188.38	4.843		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20H-332
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 20H-332	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 (8-22-14)	Offset TVD Reference:	Offset Datum

Offset Design Peschel 4N65W20B Pad Sec.20-T4N-R65W - Peschel 20H-202 - 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)	Semi Major Axis (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	5.47	5.47	29.1	2.8	29.3				
100.0	100.0	99.0	99.0	0.1	0.1	5.47	5.47	29.1	2.8	29.3	29.0	0.22	130.893	
200.0	200.0	199.0	199.0	0.3	0.3	5.47	5.47	29.1	2.8	29.3	28.6	0.67	43.559	
300.0	300.0	299.0	299.0	0.6	0.6	5.47	5.47	29.1	2.8	29.3	28.2	1.12	26.100	
400.0	400.0	399.0	399.0	0.8	0.8	5.47	5.47	29.1	2.8	29.3	27.7	1.57	18.632	
500.0	500.0	499.0	499.0	1.0	1.0	5.47	5.47	29.1	2.8	29.3	27.3	2.02	14.487	
600.0	600.0	599.0	599.0	1.2	1.2	5.47	5.47	29.1	2.8	29.3	26.8	2.47	11.851	
700.0	700.0	699.0	699.0	1.5	1.5	5.47	5.47	29.1	2.8	29.3	26.4	2.92	10.026	
800.0	800.0	799.0	799.0	1.7	1.7	5.47	5.47	29.1	2.8	29.3	25.9	3.37	8.688	
900.0	900.0	899.0	899.0	1.9	1.9	5.47	5.47	29.1	2.8	29.3	25.5	3.82	7.666	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	5.47	5.47	29.1	2.8	29.3	25.0	4.27	6.858 CC, ES	
1,100.0	1,100.0	1,098.6	1,098.6	2.4	2.4	2.39	2.39	29.8	1.2	29.9	25.2	4.71	6.343	
1,200.0	1,200.0	1,198.0	1,197.9	2.6	2.6	-6.15	-6.15	32.0	-3.4	32.2	27.0	5.15	6.251	
1,300.0	1,300.0	1,296.9	1,296.4	2.8	2.8	-17.54	-17.54	35.5	-11.2	37.3	31.7	5.59	6.675	
1,400.0	1,400.0	1,395.2	1,393.9	3.0	3.0	-28.59	-28.59	40.4	-22.0	46.3	40.2	6.05	7.647	
1,500.0	1,500.0	1,492.4	1,490.0	3.3	3.3	-37.46	-37.46	46.6	-35.7	59.3	52.8	6.53	9.080	
1,600.0	1,600.0	1,588.9	1,584.8	3.5	3.6	42.95	42.95	54.0	-52.2	75.2	68.2	6.94	10.828	
1,700.0	1,699.8	1,686.8	1,680.4	3.7	3.9	39.91	39.91	62.6	-71.1	91.2	83.8	7.38	12.363	
1,800.0	1,799.5	1,785.9	1,777.2	3.9	4.3	38.90	38.90	71.3	-90.4	104.8	97.0	7.82	13.401	
1,900.0	1,898.7	1,885.3	1,874.3	4.1	4.7	39.20	39.20	80.1	-109.8	115.7	107.4	8.29	13.967	
2,000.0	1,997.5	1,984.9	1,971.6	4.4	5.1	40.49	40.49	88.9	-129.2	124.0	115.2	8.78	14.121	
2,100.0	2,095.6	2,084.6	2,069.0	4.7	5.5	42.65	42.65	97.7	-148.6	129.8	120.5	9.33	13.916	
2,200.0	2,193.3	2,184.3	2,166.4	5.0	5.9	45.43	45.43	106.5	-168.0	134.0	124.0	9.94	13.475	
2,300.0	2,290.9	2,284.0	2,263.8	5.4	6.4	48.07	48.07	115.3	-187.4	138.4	127.8	10.61	13.048	
2,400.0	2,388.6	2,383.7	2,361.2	5.7	6.8	50.54	50.54	124.1	-206.9	143.1	131.8	11.31	12.653	
2,500.0	2,486.2	2,483.4	2,458.6	6.1	7.2	52.86	52.86	132.9	-226.3	148.1	136.0	12.05	12.289	
2,600.0	2,583.8	2,583.1	2,556.0	6.5	7.7	55.02	55.02	141.7	-245.7	153.3	140.5	12.82	11.955	
2,700.0	2,681.5	2,682.8	2,653.4	6.9	8.1	57.04	57.04	150.5	-265.1	158.7	145.1	13.62	11.651	
2,800.0	2,779.1	2,782.5	2,750.8	7.3	8.6	58.92	58.92	159.3	-284.6	164.3	149.8	14.44	11.375	
2,900.0	2,876.8	2,882.2	2,848.2	7.8	9.0	60.68	60.68	168.1	-304.0	170.0	154.7	15.28	11.125	
3,000.0	2,974.4	2,981.9	2,945.6	8.2	9.5	62.32	62.32	176.9	-323.4	175.9	159.7	16.14	10.898	
3,100.0	3,072.0	3,081.6	3,043.0	8.6	9.9	63.85	63.85	185.7	-342.8	181.9	164.9	17.01	10.693	
3,200.0	3,169.7	3,181.3	3,140.3	9.1	10.4	65.29	65.29	194.5	-362.3	188.1	170.2	17.90	10.508	
3,300.0	3,267.3	3,281.0	3,237.7	9.5	10.8	66.63	66.63	203.3	-381.7	194.3	175.5	18.79	10.340	
3,400.0	3,365.0	3,380.7	3,335.1	9.9	11.3	67.89	67.89	212.1	-401.1	200.7	181.0	19.70	10.188	
3,500.0	3,462.6	3,480.4	3,432.5	10.4	11.7	69.07	69.07	220.9	-420.5	207.1	186.5	20.61	10.051	
3,600.0	3,560.3	3,580.1	3,529.9	10.8	12.2	70.18	70.18	229.7	-440.0	213.7	192.1	21.53	9.926	
3,700.0	3,657.9	3,679.8	3,627.3	11.3	12.7	71.23	71.23	238.5	-459.4	220.3	197.8	22.45	9.812	
3,800.0	3,755.5	3,779.5	3,724.7	11.8	13.1	72.21	72.21	247.3	-478.8	226.9	203.6	23.38	9.709	
3,900.0	3,853.2	3,879.2	3,822.1	12.2	13.6	73.14	73.14	256.1	-498.2	233.7	209.4	24.31	9.614	
4,000.0	3,950.8	3,978.9	3,919.5	12.7	14.0	74.01	74.01	264.9	-517.7	240.5	215.2	25.24	9.528	
4,100.0	4,048.5	4,078.6	4,016.9	13.1	14.5	74.84	74.84	273.7	-537.1	247.3	221.2	26.17	9.449	
4,200.0	4,146.1	4,178.3	4,114.3	13.6	15.0	75.62	75.62	282.5	-556.5	254.2	227.1	27.11	9.377	
4,300.0	4,243.7	4,278.0	4,211.7	14.1	15.4	76.36	76.36	291.3	-575.9	261.2	233.1	28.05	9.310	
4,400.0	4,341.4	4,377.7	4,309.1	14.5	15.9	77.06	77.06	300.1	-595.4	268.2	239.2	28.99	9.249	
4,500.0	4,439.0	4,477.4	4,406.5	15.0	16.4	77.73	77.73	308.9	-614.8	275.2	245.2	29.93	9.193	
4,600.0	4,536.7	4,577.2	4,503.9	15.4	16.8	78.36	78.36	317.7	-634.2	282.2	251.4	30.88	9.141	
4,700.0	4,634.3	4,676.9	4,601.3	15.9	17.3	78.96	78.96	326.5	-653.6	289.3	257.5	31.82	9.092	
4,800.0	4,731.9	4,776.6	4,698.7	16.4	17.7	79.53	79.53	335.3	-673.1	296.4	263.7	32.76	9.048	
4,900.0	4,829.6	4,876.3	4,796.1	16.8	18.2	80.08	80.08	344.1	-692.5	303.6	269.9	33.71	9.006	
5,000.0	4,927.2	4,976.0	4,893.5	17.3	18.7	80.60	80.60	352.9	-711.9	310.8	276.1	34.65	8.968	

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 20H-332
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 20H-332	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 (8-22-14)	Offset TVD Reference:	Offset Datum

Offset Design Peschel 4N65W20B Pad Sec.20-T4N-R65W - Peschel 20H-202 - 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	5,024.9	5,075.7	4,990.9	17.8	19.1	81.10	81.10	361.6	-731.3	318.0	282.4	35.60	8.932	
5,200.0	5,122.5	5,175.4	5,088.3	18.2	19.6	81.57	81.57	370.4	-750.7	325.2	288.6	36.54	8.898	
5,300.0	5,220.1	5,275.1	5,185.7	18.7	20.1	82.03	82.03	379.2	-770.2	332.4	294.9	37.49	8.867	
5,400.0	5,317.8	5,374.8	5,283.1	19.2	20.5	82.47	82.47	388.0	-789.6	339.7	301.3	38.44	8.838	
5,500.0	5,415.4	5,474.5	5,380.5	19.7	21.0	82.88	82.88	396.8	-809.0	347.0	307.6	39.38	8.811	
5,600.0	5,513.1	5,574.2	5,477.9	20.1	21.5	83.28	83.28	405.6	-828.4	354.3	313.9	40.33	8.785	
5,700.0	5,610.7	5,679.2	5,580.8	20.6	21.8	83.92	83.92	414.3	-847.5	360.9	319.8	41.19	8.764	
5,800.0	5,708.9	5,784.9	5,685.0	20.9	22.2	84.72	84.72	421.4	-863.2	366.3	324.4	41.88	8.747	
5,900.0	5,807.7	5,890.5	5,789.8	21.2	22.4	85.46	85.46	426.9	-875.4	370.4	328.0	42.48	8.721	
6,000.0	5,907.0	5,996.1	5,895.0	21.4	22.6	86.13	86.13	430.8	-884.0	373.3	330.4	43.00	8.683	
6,100.0	6,006.6	6,101.7	6,000.4	21.6	22.8	86.75	86.75	433.1	-889.1	375.0	331.6	43.43	8.635	
6,200.0	6,106.5	6,206.8	6,105.5	21.8	22.9	87.32	87.32	433.8	-890.7	375.4	331.6	43.77	8.576	
6,300.0	6,206.5	6,306.8	6,205.5	21.9	23.1	1.28	1.28	433.8	-890.7	375.3	344.3	31.04	12.092	
6,354.5	6,261.0	6,361.4	6,260.0	22.0	23.1	1.28	1.28	433.8	-890.7	375.3	344.1	31.24	12.015	
6,400.0	6,306.5	6,406.5	6,305.2	22.1	23.2	1.35	1.35	433.8	-890.2	375.3	344.0	31.39	11.958	
6,500.0	6,406.5	6,504.5	6,402.6	22.2	23.2	-87.33	-87.33	433.8	-880.5	375.7	331.1	44.55	8.432	
6,600.0	6,505.7	6,601.0	6,496.6	22.2	23.1	-85.74	-85.74	433.8	-858.8	376.3	331.7	44.57	8.443	
6,700.0	6,602.4	6,696.4	6,586.1	22.1	22.9	-84.24	-84.24	433.8	-825.9	377.2	332.8	44.36	8.503	
6,800.0	6,695.1	6,790.7	6,669.8	21.9	22.7	-82.85	-82.85	433.8	-782.6	378.2	334.2	43.98	8.599	
6,900.0	6,782.0	6,884.1	6,746.8	21.7	22.5	-81.58	-81.58	433.8	-730.0	379.4	335.8	43.53	8.715	
7,000.0	6,861.8	6,976.6	6,816.3	21.5	22.3	-80.46	-80.46	433.8	-669.0	380.5	337.4	43.10	8.829	
7,100.0	6,933.1	7,068.4	6,877.4	21.4	22.2	-79.49	-79.49	433.8	-600.5	381.7	338.8	42.83	8.911	
7,200.0	6,994.6	7,159.5	6,929.5	21.4	22.2	-78.69	-78.69	433.8	-525.8	382.7	339.8	42.86	8.930	
7,300.0	7,045.3	7,250.0	6,972.1	21.7	22.4	-78.07	-78.07	433.8	-446.1	383.5	340.2	43.30	8.859	
7,400.0	7,084.4	7,340.7	7,005.0	22.3	22.8	-77.63	-77.63	433.8	-361.7	384.2	339.9	44.26	8.680	
7,500.0	7,111.1	7,430.8	7,027.6	23.2	23.4	-77.38	-77.38	433.8	-274.4	384.5	338.8	45.76	8.403	
7,600.0	7,125.0	7,520.9	7,039.8	24.3	24.3	-77.32	-77.32	433.8	-185.2	384.6	336.8	47.77	8.051	
7,700.0	7,126.4	7,613.2	7,041.6	25.6	25.5	-77.41	-77.41	433.8	-93.0	384.5	334.2	50.26	7.649	
7,800.0	7,124.6	7,713.2	7,040.2	27.2	26.9	-77.46	-77.46	433.8	7.0	384.4	331.1	53.28	7.214	
7,900.0	7,122.9	7,813.2	7,038.8	28.9	28.6	-77.51	-77.51	433.8	107.0	384.3	327.7	56.68	6.781	
8,000.0	7,121.1	7,913.2	7,037.3	30.8	30.5	-77.56	-77.56	433.8	207.0	384.3	323.9	60.39	6.363	
8,100.0	7,119.4	8,013.2	7,035.9	32.8	32.5	-77.61	-77.61	433.8	307.0	384.2	319.8	64.35	5.970	
8,200.0	7,117.6	8,113.2	7,034.5	35.0	34.6	-77.66	-77.66	433.8	407.0	384.1	315.6	68.53	5.605	
8,300.0	7,115.8	8,213.2	7,033.0	37.2	36.8	-77.70	-77.70	433.8	507.0	384.0	311.2	72.89	5.269	
8,400.0	7,114.1	8,313.2	7,031.6	39.5	39.1	-77.75	-77.75	433.8	607.0	384.0	306.6	77.40	4.961	
8,500.0	7,112.3	8,413.2	7,030.2	41.9	41.5	-77.80	-77.80	433.8	707.0	383.9	301.9	82.02	4.680	
8,600.0	7,110.5	8,513.2	7,028.8	44.3	43.9	-77.85	-77.85	433.8	806.9	383.8	297.1	86.76	4.424	
8,700.0	7,108.8	8,613.2	7,027.3	46.7	46.4	-77.90	-77.90	433.8	906.9	383.8	292.2	91.58	4.191	
8,800.0	7,107.0	8,713.2	7,025.9	49.2	48.9	-77.95	-77.95	433.8	1,006.9	383.7	287.2	96.48	3.977	
8,900.0	7,105.3	8,813.2	7,024.5	51.8	51.4	-77.99	-77.99	433.8	1,106.9	383.6	282.2	101.44	3.782	
9,000.0	7,103.5	8,913.2	7,023.0	54.3	53.9	-78.04	-78.04	433.8	1,206.9	383.6	277.1	106.46	3.603	
9,100.0	7,101.7	9,013.2	7,021.6	56.9	56.5	-78.09	-78.09	433.8	1,306.9	383.5	272.0	111.52	3.439	
9,200.0	7,100.0	9,113.2	7,020.2	59.5	59.1	-78.14	-78.14	433.8	1,406.9	383.4	266.8	116.63	3.287	
9,300.0	7,098.2	9,213.2	7,018.7	62.1	61.7	-78.19	-78.19	433.8	1,506.9	383.4	261.6	121.78	3.148	
9,400.0	7,096.4	9,313.2	7,017.3	64.7	64.4	-78.24	-78.24	433.8	1,606.9	383.3	256.3	126.96	3.019	
9,500.0	7,094.7	9,413.2	7,015.9	67.4	67.0	-78.28	-78.28	433.8	1,706.8	383.2	251.0	132.17	2.899	
9,600.0	7,092.9	9,513.2	7,014.4	70.0	69.7	-78.33	-78.33	433.8	1,806.8	383.2	245.7	137.41	2.788	
9,700.0	7,091.2	9,613.2	7,013.0	72.7	72.3	-78.38	-78.38	433.8	1,906.8	383.1	240.4	142.67	2.685	
9,800.0	7,089.4	9,713.2	7,011.6	75.4	75.0	-78.43	-78.43	433.8	2,006.8	383.0	235.1	147.95	2.589	
9,900.0	7,087.6	9,813.2	7,010.1	78.1	77.7	-78.48	-78.48	433.8	2,106.8	383.0	229.7	153.25	2.499	
10,000.0	7,085.9	9,913.2	7,008.7	80.8	80.4	-78.53	-78.53	433.8	2,206.8	382.9	224.3	158.57	2.415	

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 20H-332
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 20H-332	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 (8-22-14)	Offset TVD Reference:	Offset Datum

Offset Design		Peschel 4N65W20B Pad Sec.20-T4N-R65W - Peschel 20H-202 - 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	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)			
10,100.0	7,084.1	10,013.2	7,007.3	83.5	83.1	-78.58	433.8	2,306.8	382.8	218.9	163.90	2.336		
10,200.0	7,082.3	10,113.2	7,005.9	86.2	85.8	-78.62	433.8	2,406.8	382.8	213.5	169.25	2.262		
10,300.0	7,080.6	10,213.2	7,004.4	88.9	88.6	-78.67	433.8	2,506.8	382.7	208.1	174.61	2.192		
10,400.0	7,078.8	10,313.2	7,003.0	91.6	91.3	-78.72	433.8	2,606.7	382.6	202.6	179.98	2.126		
10,500.0	7,077.0	10,413.2	7,001.6	94.4	94.0	-78.77	433.8	2,706.7	382.6	197.2	185.37	2.064		
10,600.0	7,075.3	10,513.2	7,000.1	97.1	96.7	-78.82	433.8	2,806.7	382.5	191.7	190.76	2.005		
10,700.0	7,073.5	10,613.2	6,998.7	99.8	99.5	-78.87	433.8	2,906.7	382.4	186.3	196.17	1.950		
10,800.0	7,071.8	10,713.2	6,997.3	102.6	102.2	-78.92	433.8	3,006.7	382.4	180.8	201.58	1.897		
10,900.0	7,070.0	10,813.2	6,995.8	105.3	105.0	-78.97	433.8	3,106.7	382.3	175.3	207.01	1.847		
11,000.0	7,068.2	10,913.2	6,994.4	108.1	107.7	-79.01	433.8	3,206.7	382.2	169.8	212.44	1.799		
11,100.0	7,066.5	11,013.2	6,993.0	110.8	110.5	-79.06	433.8	3,306.7	382.2	164.3	217.88	1.754		
11,200.0	7,064.7	11,113.2	6,991.5	113.6	113.2	-79.11	433.8	3,406.7	382.1	158.8	223.32	1.711		
11,300.0	7,062.9	11,213.2	6,990.1	116.3	116.0	-79.16	433.8	3,506.6	382.1	153.3	228.77	1.670		
11,400.0	7,061.2	11,313.2	6,988.7	119.1	118.7	-79.21	433.8	3,606.6	382.0	147.8	234.23	1.631		
11,500.0	7,059.4	11,413.2	6,987.2	121.8	121.3	-79.26	433.8	3,706.6	381.9	142.4	239.56	1.594		
11,580.7	7,058.0	11,493.8	6,986.1	124.1	122.7	-79.30	433.8	3,787.3	381.9	138.7	243.16	1.570 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20H-332
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 20H-332	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 (8-22-14)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Peschel 4N65W20B Pad Sec.20-T4N-R65W - Peschel 20H-232 - Wellbore #1 - Plan #1 (8-22-14)													
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
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	
600.0	600.0	600.0	600.0	1.2	1.2	180.00	-29.1	0.0	29.1	26.7	2.47	11.788	
700.0	700.0	700.0	700.0	1.5	1.5	180.00	-29.1	0.0	29.1	26.2	2.92	9.974	
800.0	800.0	800.0	800.0	1.7	1.7	180.00	-29.1	0.0	29.1	25.8	3.37	8.644	
900.0	900.0	900.0	900.0	1.9	1.9	180.00	-29.1	0.0	29.1	25.3	3.82	7.627	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	180.00	-29.1	0.0	29.1	24.9	4.27	6.825 CC	
1,100.0	1,100.0	1,099.8	1,099.8	2.4	2.3	-176.63	-29.3	-1.7	29.4	24.7	4.70	6.246	
1,200.0	1,200.0	1,199.5	1,199.3	2.6	2.5	-167.00	-29.9	-6.9	30.7	25.6	5.13	5.983	
1,300.0	1,300.0	1,298.6	1,298.0	2.8	2.8	-153.37	-30.8	-15.5	34.5	29.0	5.56	6.209	
1,400.0	1,400.0	1,397.0	1,395.7	3.0	3.0	-139.63	-32.1	-27.3	42.4	36.4	6.01	7.046	
1,500.0	1,500.0	1,494.5	1,492.0	3.3	3.3	-128.57	-33.7	-42.3	54.7	48.2	6.49	8.425	
1,600.0	1,600.0	1,591.7	1,587.5	3.5	3.6	-34.95	-35.7	-60.4	69.9	63.0	6.89	10.142	
1,700.0	1,699.8	1,690.6	1,684.5	3.7	3.9	-31.15	-37.8	-79.7	83.6	76.3	7.31	11.443	
1,800.0	1,799.5	1,790.0	1,782.0	3.9	4.3	-29.44	-39.9	-99.1	94.6	86.9	7.73	12.229	
1,900.0	1,898.7	1,889.7	1,879.7	4.1	4.6	-29.03	-42.0	-118.6	102.6	94.4	8.17	12.548	
2,000.0	1,997.5	1,989.5	1,977.6	4.4	5.0	-29.59	-44.2	-138.0	107.5	98.9	8.63	12.455	
2,100.0	2,095.6	2,089.5	2,075.6	4.7	5.4	-31.04	-46.3	-157.5	109.4	100.3	9.11	12.006	
2,200.0	2,193.3	2,189.4	2,173.6	5.0	5.8	-33.15	-48.4	-177.0	109.4	99.7	9.66	11.319	
2,246.2	2,238.4	2,235.5	2,218.8	5.2	6.0	-34.14	-49.4	-186.0	109.4	99.4	9.93	11.010	
2,300.0	2,290.9	2,289.3	2,271.6	5.4	6.2	-35.30	-50.5	-196.5	109.4	99.1	10.25	10.670	
2,400.0	2,388.6	2,389.2	2,369.5	5.7	6.6	-37.44	-52.6	-216.0	109.5	98.7	10.87	10.073	
2,500.0	2,486.2	2,489.1	2,467.5	6.1	7.0	-39.57	-54.8	-235.5	109.8	98.3	11.53	9.527	
2,600.0	2,583.8	2,589.1	2,565.5	6.5	7.5	-41.68	-56.9	-255.0	110.3	98.1	12.22	9.026	
2,700.0	2,681.5	2,689.0	2,663.5	6.9	7.9	-43.77	-59.0	-274.5	110.9	98.0	12.95	8.568	
2,800.0	2,779.1	2,788.9	2,761.4	7.3	8.3	-45.84	-61.1	-294.0	111.7	98.0	13.70	8.151	
2,900.0	2,876.8	2,888.8	2,859.4	7.8	8.7	-47.88	-63.2	-313.5	112.6	98.1	14.49	7.770	
3,000.0	2,974.4	2,988.7	2,957.4	8.2	9.2	-49.89	-65.4	-333.0	113.6	98.3	15.30	7.424	
3,100.0	3,072.0	3,088.6	3,055.3	8.6	9.6	-51.85	-67.5	-352.5	114.8	98.7	16.15	7.110	
3,200.0	3,169.7	3,188.6	3,153.3	9.1	10.0	-53.77	-69.6	-372.0	116.1	99.1	17.01	6.825	
3,300.0	3,267.3	3,288.5	3,251.3	9.5	10.5	-55.65	-71.7	-391.5	117.5	99.7	17.90	6.568	
3,400.0	3,365.0	3,388.4	3,349.3	9.9	10.9	-57.48	-73.8	-411.0	119.1	100.3	18.80	6.334	
3,500.0	3,462.6	3,488.3	3,447.2	10.4	11.3	-59.26	-76.0	-430.5	120.8	101.1	19.73	6.123	
3,600.0	3,560.3	3,588.2	3,545.2	10.8	11.8	-60.99	-78.1	-450.0	122.6	101.9	20.66	5.932	
3,700.0	3,657.9	3,688.1	3,643.2	11.3	12.2	-62.67	-80.2	-469.5	124.5	102.9	21.61	5.760	
3,800.0	3,755.5	3,788.0	3,741.1	11.8	12.6	-64.30	-82.3	-489.0	126.5	103.9	22.57	5.604	
3,900.0	3,853.2	3,888.0	3,839.1	12.2	13.1	-65.88	-84.5	-508.5	128.6	105.1	23.54	5.463	
4,000.0	3,950.8	3,987.9	3,937.1	12.7	13.5	-67.40	-86.6	-528.0	130.8	106.3	24.51	5.336	
4,100.0	4,048.5	4,087.8	4,035.1	13.1	13.9	-68.87	-88.7	-547.5	133.1	107.6	25.49	5.221	
4,200.0	4,146.1	4,187.7	4,133.0	13.6	14.4	-70.30	-90.8	-567.0	135.5	109.0	26.47	5.117	
4,300.0	4,243.7	4,287.6	4,231.0	14.1	14.8	-71.67	-92.9	-586.5	137.9	110.5	27.46	5.023	
4,400.0	4,341.4	4,387.5	4,329.0	14.5	15.2	-72.99	-95.1	-606.0	140.5	112.0	28.44	4.938	
4,500.0	4,439.0	4,487.5	4,427.0	15.0	15.7	-74.27	-97.2	-625.5	143.1	113.6	29.43	4.861	
4,600.0	4,536.7	4,587.4	4,524.9	15.4	16.1	-75.50	-99.3	-645.0	145.7	115.3	30.42	4.791	
4,700.0	4,634.3	4,687.3	4,622.9	15.9	16.6	-76.68	-101.4	-664.5	148.5	117.1	31.40	4.728	
4,800.0	4,731.9	4,787.2	4,720.9	16.4	17.0	-77.82	-103.5	-684.0	151.3	118.9	32.38	4.671	
4,900.0	4,829.6	4,887.1	4,818.8	16.8	17.4	-78.92	-105.7	-703.5	154.1	120.8	33.37	4.619	

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 20H-332
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 20H-332	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 (8-22-14)	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		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			
5,000.0	4,927.2	4,987.0	4,916.8	17.3	17.9	-79.98	-107.8	-722.9	157.0	122.7	34.34	4.572	
5,100.0	5,024.9	5,087.0	5,014.8	17.8	18.3	-81.00	-109.9	-742.4	160.0	124.7	35.32	4.530	
5,200.0	5,122.5	5,186.9	5,112.8	18.2	18.8	-81.99	-112.0	-761.9	163.0	126.7	36.30	4.491	
5,300.0	5,220.1	5,286.8	5,210.7	18.7	19.2	-82.93	-114.1	-781.4	166.1	128.8	37.27	4.456	
5,400.0	5,317.8	5,386.7	5,308.7	19.2	19.6	-83.85	-116.3	-800.9	169.2	130.9	38.23	4.424	
5,500.0	5,415.4	5,486.6	5,406.7	19.7	20.1	-84.73	-118.4	-820.4	172.3	133.1	39.20	4.396	
5,600.0	5,513.1	5,586.5	5,504.7	20.1	20.5	-85.58	-120.5	-839.9	175.5	135.3	40.16	4.370	
5,700.0	5,610.7	5,687.4	5,603.7	20.6	20.9	-86.61	-122.6	-858.8	178.5	137.5	41.07	4.347	
5,800.0	5,708.9	5,788.7	5,703.8	20.9	21.2	-87.85	-124.3	-874.5	181.1	139.3	41.77	4.335	
5,900.0	5,807.7	5,889.9	5,804.2	21.2	21.5	-89.04	-125.6	-886.7	183.0	140.7	42.36	4.321	
6,000.0	5,907.0	5,991.0	5,904.9	21.4	21.7	-90.19	-126.5	-895.3	184.5	141.6	42.86	4.304	
6,100.0	6,006.6	6,091.9	6,005.7	21.6	21.8	-91.30	-127.1	-900.4	185.4	142.1	43.28	4.284	
6,200.0	6,106.5	6,192.7	6,106.5	21.8	22.0	-92.39	-127.2	-901.9	185.8	142.2	43.61	4.261	
6,300.0	6,206.5	6,292.7	6,206.5	21.9	22.1	-179.14	-127.2	-901.9	185.9	156.3	29.61	6.278	
6,400.0	6,306.5	6,392.8	6,306.6	22.1	22.2	-179.30	-127.2	-901.4	185.9	155.9	29.97	6.202	
6,434.6	6,341.1	6,427.5	6,341.2	22.1	22.2	90.17	-127.2	-899.3	185.8	141.6	44.20	4.204	
6,500.0	6,406.5	6,492.2	6,405.4	22.2	22.2	87.94	-127.2	-891.2	186.0	141.7	44.29	4.198	
6,600.0	6,505.7	6,590.0	6,500.5	22.2	22.1	84.61	-127.2	-868.8	186.7	142.5	44.14	4.229	
6,700.0	6,602.4	6,686.6	6,590.9	22.1	21.9	81.43	-127.2	-835.0	188.0	144.3	43.72	4.300	
6,800.0	6,695.1	6,781.9	6,675.2	21.9	21.7	78.44	-127.2	-790.6	189.7	146.6	43.08	4.404	
6,900.0	6,782.0	6,876.2	6,752.5	21.7	21.5	75.72	-127.2	-736.8	191.8	149.5	42.33	4.532	
7,000.0	6,861.8	6,969.5	6,821.9	21.5	21.3	73.27	-127.2	-674.5	194.1	152.5	41.58	4.668	
7,100.0	6,933.1	7,061.9	6,882.7	21.4	21.3	71.15	-127.2	-604.9	196.4	155.5	40.98	4.794	
7,200.0	6,994.6	7,153.7	6,934.3	21.4	21.4	69.35	-127.2	-529.1	198.6	158.0	40.67	4.885	
7,300.0	7,045.3	7,244.8	6,976.2	21.7	21.7	67.88	-127.2	-448.2	200.6	159.8	40.79	4.918	
7,400.0	7,084.4	7,335.5	7,008.1	22.3	22.3	66.76	-127.2	-363.4	202.3	160.8	41.46	4.878	
7,500.0	7,111.1	7,425.8	7,029.6	23.2	23.1	65.97	-127.2	-275.7	203.5	160.8	42.72	4.763	
7,600.0	7,125.0	7,515.9	7,040.5	24.3	24.1	65.53	-127.2	-186.3	204.2	159.6	44.54	4.584	
7,700.0	7,126.4	7,609.3	7,041.5	25.6	25.3	65.45	-127.2	-93.0	204.3	157.4	46.91	4.355	
7,800.0	7,124.6	7,709.3	7,040.1	27.2	26.9	65.53	-127.2	7.0	204.2	154.4	49.77	4.102	
7,900.0	7,122.9	7,809.3	7,038.6	28.9	28.6	65.62	-127.2	107.0	204.0	151.0	52.99	3.850	
8,000.0	7,121.1	7,909.3	7,037.2	30.8	30.5	65.70	-127.2	207.0	203.9	147.4	56.50	3.609	
8,100.0	7,119.4	8,009.3	7,035.8	32.8	32.5	65.79	-127.2	307.0	203.8	143.5	60.25	3.382	
8,200.0	7,117.6	8,109.3	7,034.4	35.0	34.6	65.87	-127.2	407.0	203.6	139.4	64.21	3.171	
8,300.0	7,115.8	8,209.3	7,032.9	37.2	36.9	65.96	-127.2	507.0	203.5	135.2	68.34	2.978	
8,400.0	7,114.1	8,309.3	7,031.5	39.5	39.2	66.04	-127.2	606.9	203.4	130.7	72.60	2.801	
8,500.0	7,112.3	8,409.3	7,030.1	41.9	41.5	66.13	-127.2	706.9	203.2	126.2	76.99	2.640	
8,600.0	7,110.5	8,509.3	7,028.6	44.3	43.9	66.21	-127.2	806.9	203.1	121.6	81.48	2.493	
8,700.0	7,108.8	8,609.3	7,027.2	46.7	46.4	66.30	-127.2	906.9	202.9	116.9	86.05	2.358	
8,800.0	7,107.0	8,709.3	7,025.8	49.2	48.9	66.38	-127.2	1,006.9	202.8	112.1	90.70	2.236	
8,900.0	7,105.3	8,809.3	7,024.3	51.8	51.4	66.47	-127.2	1,106.9	202.7	107.3	95.41	2.124	
9,000.0	7,103.5	8,909.3	7,022.9	54.3	54.0	66.55	-127.2	1,206.9	202.5	102.4	100.18	2.022	
9,100.0	7,101.7	9,009.3	7,021.5	56.9	56.5	66.64	-127.2	1,306.9	202.4	97.4	105.00	1.928	
9,200.0	7,100.0	9,109.3	7,020.0	59.5	59.1	66.73	-127.2	1,406.9	202.3	92.4	109.86	1.841	
9,300.0	7,098.2	9,209.3	7,018.6	62.1	61.8	66.81	-127.2	1,506.8	202.1	87.4	114.76	1.761	
9,400.0	7,096.4	9,309.3	7,017.2	64.7	64.4	66.90	-127.2	1,606.8	202.0	82.3	119.70	1.688	
9,500.0	7,094.7	9,409.3	7,015.8	67.4	67.1	66.99	-127.2	1,706.8	201.9	77.2	124.66	1.619	
9,600.0	7,092.9	9,509.3	7,014.3	70.0	69.7	67.07	-127.2	1,806.8	201.8	72.1	129.66	1.556	
9,700.0	7,091.2	9,609.3	7,012.9	72.7	72.4	67.16	-127.2	1,906.8	201.6	66.9	134.68	1.497 Level 3	
9,800.0	7,089.4	9,709.3	7,011.5	75.4	75.1	67.25	-127.2	2,006.8	201.5	61.8	139.73	1.442 Level 3	
9,900.0	7,087.6	9,809.3	7,010.0	78.1	77.8	67.33	-127.2	2,106.8	201.4	56.6	144.80	1.391 Level 3	

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 20H-332
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 20H-332	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 (8-22-14)	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		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.0	7,085.9	9,909.3	7,008.6	80.8	80.5	67.42	-127.2	2,206.8	201.2	51.4	149.89	1.343	Level 3
10,100.0	7,084.1	10,009.3	7,007.2	83.5	83.2	67.51	-127.2	2,306.8	201.1	46.1	155.00	1.298	Level 3
10,200.0	7,082.3	10,109.3	7,005.7	86.2	85.9	67.59	-127.2	2,406.8	201.0	40.9	160.12	1.255	Level 3
10,300.0	7,080.6	10,209.3	7,004.3	88.9	88.6	67.68	-127.2	2,506.7	200.9	35.6	165.27	1.215	Level 2
10,400.0	7,078.8	10,309.3	7,002.9	91.6	91.3	67.77	-127.2	2,606.7	200.7	30.3	170.43	1.178	Level 2
10,500.0	7,077.0	10,409.3	7,001.4	94.4	94.0	67.86	-127.2	2,706.7	200.6	25.0	175.60	1.142	Level 2
10,600.0	7,075.3	10,509.3	7,000.0	97.1	96.8	67.94	-127.2	2,806.7	200.5	19.7	180.79	1.109	Level 2
10,700.0	7,073.5	10,609.3	6,998.6	99.8	99.5	68.03	-127.2	2,906.7	200.4	14.4	185.99	1.077	Level 2
10,800.0	7,071.8	10,709.3	6,997.1	102.6	102.3	68.12	-127.2	3,006.7	200.2	9.0	191.20	1.047	Level 2
10,900.0	7,070.0	10,809.3	6,995.7	105.3	105.0	68.21	-127.2	3,106.7	200.1	3.7	196.43	1.019	Level 2
11,000.0	7,068.2	10,909.3	6,994.3	108.1	107.7	68.30	-127.2	3,206.7	200.0	-1.7	201.67	0.992	Level 1
11,100.0	7,066.5	11,009.3	6,992.9	110.8	110.5	68.38	-127.2	3,306.7	199.9	-7.1	206.92	0.966	Level 1
11,200.0	7,064.7	11,109.3	6,991.4	113.6	113.3	68.47	-127.2	3,406.6	199.7	-12.4	212.18	0.941	Level 1
11,300.0	7,062.9	11,209.3	6,990.0	116.3	116.0	68.56	-127.2	3,506.6	199.6	-17.8	217.45	0.918	Level 1
11,400.0	7,061.2	11,309.3	6,988.6	119.1	118.8	68.65	-127.2	3,606.6	199.5	-23.2	222.73	0.896	Level 1
11,500.0	7,059.4	11,409.3	6,987.1	121.8	121.5	68.74	-127.2	3,706.6	199.4	-28.6	228.02	0.874	Level 1
11,558.5	7,058.4	11,467.8	6,986.3	123.5	123.1	68.79	-127.2	3,765.1	199.3	-31.8	231.11	0.862	Level 1
11,580.7	7,058.0	11,488.2	6,986.0	124.1	123.7	68.81	-127.2	3,785.5	199.3	-33.0	232.24	0.858	Level 1, ES, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20H-332
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 20H-332	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 (8-22-14)	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	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	2.58	2.58	61.9	2.8	62.0				
100.0	100.0	100.0	100.0	0.1	0.1	2.58	2.58	61.9	2.8	62.0	61.8	0.22	275.819	
200.0	200.0	200.0	200.0	0.3	0.3	2.58	2.58	61.9	2.8	62.0	61.3	0.67	91.940	
300.0	300.0	300.0	300.0	0.6	0.6	2.58	2.58	61.9	2.8	62.0	60.9	1.12	55.164	
400.0	400.0	400.0	400.0	0.8	0.8	2.58	2.58	61.9	2.8	62.0	60.4	1.57	39.403	
500.0	500.0	500.0	500.0	1.0	1.0	2.58	2.58	61.9	2.8	62.0	60.0	2.02	30.647	
600.0	600.0	600.0	600.0	1.2	1.2	2.58	2.58	61.9	2.8	62.0	59.5	2.47	25.074	
700.0	700.0	700.0	700.0	1.5	1.5	2.58	2.58	61.9	2.8	62.0	59.1	2.92	21.217	
800.0	800.0	800.0	800.0	1.7	1.7	2.58	2.58	61.9	2.8	62.0	58.6	3.37	18.388	CC, ES
900.0	900.0	899.0	899.0	1.9	1.9	1.19	1.19	62.8	1.3	62.8	59.0	3.81	16.473	
1,000.0	1,000.0	997.7	997.6	2.1	2.1	-2.76	-2.76	65.3	-3.1	65.4	61.2	4.25	15.391	
1,100.0	1,100.0	1,096.0	1,095.5	2.4	2.3	-8.60	-8.60	69.5	-10.5	70.4	65.7	4.69	14.997	
1,200.0	1,200.0	1,193.6	1,192.4	2.6	2.6	-15.38	-15.38	75.3	-20.7	78.4	73.3	5.15	15.220	
1,300.0	1,300.0	1,290.3	1,287.9	2.8	2.9	-22.15	-22.15	82.6	-33.6	90.0	84.3	5.63	15.967	
1,400.0	1,400.0	1,385.9	1,381.8	3.0	3.2	-28.27	-28.27	91.4	-49.1	105.3	99.2	6.16	17.114	
1,500.0	1,500.0	1,483.0	1,476.8	3.3	3.5	-33.38	-33.38	101.4	-66.8	123.6	116.9	6.72	18.394	
1,600.0	1,600.0	1,581.1	1,572.7	3.5	3.9	49.33	49.33	111.5	-84.7	141.5	134.5	7.03	20.139	
1,700.0	1,699.8	1,679.8	1,669.2	3.7	4.3	47.48	47.48	121.7	-102.7	157.5	150.0	7.48	21.055	
1,800.0	1,799.5	1,778.8	1,766.0	3.9	4.7	46.82	46.82	132.0	-120.7	171.2	163.2	7.95	21.534	
1,900.0	1,898.7	1,878.2	1,863.2	4.1	5.1	47.06	47.06	142.2	-138.8	182.5	174.0	8.44	21.614	
2,000.0	1,997.5	1,977.7	1,960.5	4.4	5.5	48.06	48.06	152.5	-157.0	191.5	182.5	8.97	21.345	
2,100.0	2,095.6	2,077.3	2,057.8	4.7	6.0	49.75	49.75	162.8	-175.1	198.3	188.7	9.55	20.768	
2,200.0	2,193.3	2,176.8	2,155.2	5.0	6.4	51.94	51.94	173.1	-193.3	203.7	193.5	10.19	19.991	
2,300.0	2,290.9	2,276.3	2,252.5	5.4	6.8	54.06	54.06	183.4	-211.4	209.4	198.5	10.88	19.255	
2,400.0	2,388.6	2,375.9	2,349.9	5.7	7.3	56.06	56.06	193.7	-229.5	215.4	203.8	11.60	18.574	
2,500.0	2,486.2	2,475.4	2,447.2	6.1	7.7	57.95	57.95	204.0	-247.7	221.6	209.2	12.35	17.949	
2,600.0	2,583.8	2,575.0	2,544.5	6.5	8.1	59.74	59.74	214.3	-265.8	228.0	214.9	13.12	17.378	
2,700.0	2,681.5	2,674.5	2,641.9	6.9	8.6	61.43	61.43	224.6	-284.0	234.7	220.7	13.92	16.857	
2,800.0	2,779.1	2,774.1	2,739.2	7.3	9.0	63.02	63.02	234.9	-302.1	241.5	226.8	14.74	16.383	
2,900.0	2,876.8	2,873.6	2,836.5	7.8	9.5	64.53	64.53	245.1	-320.3	248.5	232.9	15.58	15.952	
3,000.0	2,974.4	2,973.2	2,933.9	8.2	9.9	65.95	65.95	255.4	-338.4	255.7	239.3	16.43	15.561	
3,100.0	3,072.0	3,072.7	3,031.2	8.6	10.4	67.30	67.30	265.7	-356.6	263.0	245.7	17.30	15.206	
3,200.0	3,169.7	3,172.3	3,128.5	9.1	10.8	68.57	68.57	276.0	-374.7	270.5	252.3	18.17	14.882	
3,300.0	3,267.3	3,271.8	3,225.9	9.5	11.3	69.77	69.77	286.3	-392.9	278.1	259.0	19.06	14.588	
3,400.0	3,365.0	3,371.4	3,323.2	9.9	11.7	70.91	70.91	296.6	-411.0	285.8	265.8	19.95	14.321	
3,500.0	3,462.6	3,470.9	3,420.5	10.4	12.2	71.99	71.99	306.9	-429.1	293.6	272.7	20.86	14.076	
3,600.0	3,560.3	3,570.4	3,517.9	10.8	12.6	73.01	73.01	317.2	-447.3	301.5	279.7	21.76	13.853	
3,700.0	3,657.9	3,670.0	3,615.2	11.3	13.1	73.98	73.98	327.5	-465.4	309.5	286.8	22.67	13.649	
3,800.0	3,755.5	3,769.5	3,712.6	11.8	13.5	74.90	74.90	337.8	-483.6	317.6	294.0	23.59	13.461	
3,900.0	3,853.2	3,869.1	3,809.9	12.2	14.0	75.78	75.78	348.0	-501.7	325.7	301.2	24.51	13.289	
4,000.0	3,950.8	3,968.6	3,907.2	12.7	14.5	76.61	76.61	358.3	-519.9	333.9	308.5	25.43	13.131	
4,100.0	4,048.5	4,068.2	4,004.6	13.1	14.9	77.40	77.40	368.6	-538.0	342.2	315.9	26.36	12.985	
4,200.0	4,146.1	4,167.7	4,101.9	13.6	15.4	78.16	78.16	378.9	-556.2	350.6	323.3	27.28	12.850	
4,300.0	4,243.7	4,267.3	4,199.2	14.1	15.8	78.88	78.88	389.2	-574.3	359.0	330.8	28.21	12.726	
4,400.0	4,341.4	4,366.8	4,296.6	14.5	16.3	79.57	79.57	399.5	-592.5	367.5	338.4	29.14	12.610	
4,500.0	4,439.0	4,466.4	4,393.9	15.0	16.7	80.22	80.22	409.8	-610.6	376.0	345.9	30.07	12.503	
4,600.0	4,536.7	4,565.9	4,491.2	15.4	17.2	80.85	80.85	420.1	-628.7	384.6	353.6	31.01	12.404	
4,700.0	4,634.3	4,665.4	4,588.6	15.9	17.6	81.45	81.45	430.4	-646.9	393.2	361.3	31.94	12.311	
4,800.0	4,731.9	4,765.0	4,685.9	16.4	18.1	82.02	82.02	440.7	-665.0	401.9	369.0	32.87	12.225	
4,900.0	4,829.6	4,864.5	4,783.2	16.8	18.6	82.57	82.57	450.9	-683.2	410.6	376.7	33.81	12.144	
5,000.0	4,927.2	4,964.1	4,880.6	17.3	19.0	83.10	83.10	461.2	-701.3	419.3	384.5	34.74	12.069	

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 20H-332
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 20H-332	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 (8-22-14)	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	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	5,024.9	5,063.6	4,977.9	17.8	19.5	83.60		471.5	-719.5	428.0	392.4	35.67	11.998	
5,200.0	5,122.5	5,163.2	5,075.2	18.2	19.9	84.09		481.8	-737.6	436.8	400.2	36.61	11.932	
5,300.0	5,220.1	5,262.7	5,172.6	18.7	20.4	84.55		492.1	-755.8	445.7	408.1	37.54	11.870	
5,400.0	5,317.8	5,362.3	5,269.9	19.2	20.8	85.00		502.4	-773.9	454.5	416.0	38.48	11.812	
5,500.0	5,415.4	5,461.8	5,367.3	19.7	21.3	85.43		512.7	-792.1	463.4	424.0	39.41	11.757	
5,600.0	5,513.1	5,561.4	5,464.6	20.1	21.7	85.84		523.0	-810.2	472.3	431.9	40.35	11.706	
5,700.0	5,610.7	5,660.9	5,561.9	20.6	22.2	86.28		533.3	-828.3	481.2	440.0	41.26	11.662	
5,800.0	5,708.9	5,766.0	5,664.8	20.9	22.6	86.59		543.8	-846.8	490.0	448.0	42.01	11.663	
5,900.0	5,807.7	5,874.7	5,772.0	21.2	23.0	86.82		552.8	-862.7	497.3	454.7	42.64	11.664	
6,000.0	5,907.0	5,983.7	5,880.1	21.4	23.3	87.00		559.8	-875.1	503.0	459.8	43.15	11.655	
6,100.0	6,006.6	6,092.9	5,988.7	21.6	23.5	87.12		564.8	-883.9	507.0	463.4	43.59	11.632	
6,200.0	6,106.5	6,202.1	6,097.8	21.8	23.7	87.19		567.7	-889.1	509.4	465.4	43.93	11.594	
6,300.0	6,206.5	6,310.8	6,206.5	21.9	23.8	0.94		568.6	-890.7	510.1	478.0	32.08	15.900	
6,400.0	6,306.5	6,410.8	6,306.5	22.1	23.9	0.94		568.6	-890.7	510.1	477.7	32.43	15.731	
6,500.0	6,406.5	6,510.4	6,406.1	22.2	24.0	-89.09		568.6	-889.8	510.1	465.4	44.69	11.414	
6,600.0	6,505.7	6,609.4	6,504.4	22.2	24.0	-89.19		568.6	-878.5	510.1	465.4	44.67	11.418	
6,700.0	6,602.4	6,708.5	6,600.5	22.1	23.9	-89.29		568.6	-854.7	510.1	465.6	44.44	11.477	
6,800.0	6,695.1	6,807.8	6,692.8	21.9	23.8	-89.41		568.6	-818.5	510.1	466.0	44.06	11.578	
6,900.0	6,782.0	6,907.2	6,779.8	21.7	23.5	-89.54		568.6	-770.6	510.0	466.5	43.60	11.699	
7,000.0	6,861.8	7,006.7	6,860.0	21.5	23.3	-89.68		568.6	-711.7	510.0	466.9	43.17	11.814	
7,100.0	6,933.1	7,106.4	6,931.9	21.4	23.1	-89.83		568.6	-642.8	510.0	467.1	42.92	11.882	
7,200.0	6,994.6	7,206.3	6,994.4	21.4	22.9	-89.97		568.6	-564.9	510.0	467.0	42.99	11.864	
7,220.8	7,006.1	7,227.1	7,006.1	21.5	22.9	-90.00		568.6	-547.7	510.0	466.9	43.08	11.838	
7,300.0	7,045.3	7,306.3	7,046.3	21.7	23.0	-90.12		568.6	-479.4	510.0	466.5	43.51	11.721	
7,400.0	7,084.4	7,406.6	7,086.6	22.3	23.2	-90.26		568.6	-387.8	510.0	465.4	44.59	11.439	
7,500.0	7,111.1	7,506.9	7,114.6	23.2	23.7	-90.41		568.6	-291.4	510.0	463.8	46.24	11.030	
7,600.0	7,125.0	7,607.5	7,129.7	24.3	24.6	-90.54		568.6	-192.1	510.1	461.6	48.44	10.531	
7,700.0	7,126.4	7,708.0	7,132.1	25.6	25.7	-90.64		568.6	-91.7	510.1	459.0	51.07	9.987	
7,800.0	7,124.6	7,808.0	7,130.5	27.2	27.1	-90.66		568.6	8.3	510.1	455.9	54.13	9.423	
7,900.0	7,122.9	7,908.0	7,128.9	28.9	28.7	-90.68		568.6	108.3	510.1	452.5	57.57	8.860	
8,000.0	7,121.1	8,008.0	7,127.4	30.8	30.6	-90.70		568.6	208.3	510.1	448.7	61.34	8.316	
8,100.0	7,119.4	8,108.0	7,125.8	32.8	32.6	-90.72		568.6	308.3	510.1	444.7	65.36	7.804	
8,200.0	7,117.6	8,208.0	7,124.2	35.0	34.7	-90.75		568.6	408.3	510.1	440.5	69.61	7.327	
8,300.0	7,115.8	8,308.0	7,122.7	37.2	36.9	-90.77		568.6	508.3	510.1	436.0	74.04	6.889	
8,400.0	7,114.1	8,408.0	7,121.1	39.5	39.2	-90.79		568.6	608.2	510.1	431.5	78.63	6.487	
8,500.0	7,112.3	8,508.0	7,119.5	41.9	41.5	-90.81		568.6	708.2	510.1	426.7	83.33	6.121	
8,600.0	7,110.5	8,608.0	7,117.9	44.3	43.9	-90.83		568.6	808.2	510.1	421.9	88.15	5.787	
8,700.0	7,108.8	8,708.0	7,116.4	46.7	46.4	-90.85		568.6	908.2	510.1	417.0	93.05	5.482	
8,800.0	7,107.0	8,808.0	7,114.8	49.2	48.9	-90.88		568.6	1,008.2	510.1	412.1	98.03	5.203	
8,900.0	7,105.3	8,908.0	7,113.2	51.8	51.4	-90.90		568.6	1,108.2	510.1	407.0	103.08	4.949	
9,000.0	7,103.5	9,008.0	7,111.7	54.3	53.9	-90.92		568.6	1,208.2	510.1	401.9	108.18	4.715	
9,100.0	7,101.7	9,108.0	7,110.1	56.9	56.5	-90.94		568.6	1,308.1	510.1	396.8	113.33	4.501	
9,200.0	7,100.0	9,208.0	7,108.5	59.5	59.1	-90.96		568.6	1,408.1	510.1	391.6	118.52	4.304	
9,300.0	7,098.2	9,308.0	7,106.9	62.1	61.7	-90.98		568.6	1,508.1	510.1	386.4	123.74	4.122	
9,400.0	7,096.4	9,408.0	7,105.4	64.7	64.4	-91.00		568.6	1,608.1	510.1	381.1	129.00	3.954	
9,500.0	7,094.7	9,508.0	7,103.8	67.4	67.0	-91.03		568.6	1,708.1	510.1	375.8	134.29	3.799	
9,600.0	7,092.9	9,608.0	7,102.2	70.0	69.7	-91.05		568.6	1,808.1	510.1	370.5	139.61	3.654	
9,700.0	7,091.2	9,708.0	7,100.7	72.7	72.3	-91.07		568.6	1,908.1	510.1	365.2	144.94	3.519	
9,800.0	7,089.4	9,808.0	7,099.1	75.4	75.0	-91.09		568.6	2,008.1	510.1	359.8	150.30	3.394	
9,900.0	7,087.6	9,908.0	7,097.5	78.1	77.7	-91.11		568.6	2,108.0	510.1	354.5	155.67	3.277	
10,000.0	7,085.9	10,008.0	7,096.0	80.8	80.4	-91.13		568.6	2,208.0	510.1	349.1	161.06	3.167	

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 20H-332
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 20H-332	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 (8-22-14)	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						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,100.0	7,084.1	10,108.0	7,094.4	83.5	83.1	-91.16	568.6	2,308.0	510.1	343.7	166.47	3.064	
10,200.0	7,082.3	10,208.0	7,092.8	86.2	85.8	-91.18	568.6	2,408.0	510.1	338.3	171.88	2.968	
10,300.0	7,080.6	10,308.0	7,091.2	88.9	88.5	-91.20	568.6	2,508.0	510.1	332.8	177.31	2.877	
10,400.0	7,078.8	10,408.0	7,089.7	91.6	91.2	-91.22	568.6	2,608.0	510.1	327.4	182.75	2.791	
10,500.0	7,077.0	10,508.0	7,088.1	94.4	94.0	-91.24	568.6	2,708.0	510.1	321.9	188.20	2.711	
10,600.0	7,075.3	10,608.0	7,086.5	97.1	96.7	-91.26	568.6	2,808.0	510.2	316.5	193.66	2.634	
10,700.0	7,073.5	10,708.0	7,085.0	99.8	99.4	-91.28	568.6	2,907.9	510.2	311.0	199.13	2.562	
10,800.0	7,071.8	10,808.0	7,083.4	102.6	102.2	-91.31	568.6	3,007.9	510.2	305.6	204.61	2.493	
10,900.0	7,070.0	10,908.0	7,081.8	105.3	104.9	-91.33	568.6	3,107.9	510.2	300.1	210.09	2.428	
11,000.0	7,068.2	11,008.0	7,080.2	108.1	107.7	-91.35	568.6	3,207.9	510.2	294.6	215.58	2.367	
11,100.0	7,066.5	11,108.0	7,078.7	110.8	110.4	-91.37	568.6	3,307.9	510.2	289.1	221.07	2.308	
11,200.0	7,064.7	11,208.0	7,077.1	113.6	113.2	-91.39	568.6	3,407.9	510.2	283.6	226.57	2.252	
11,300.0	7,062.9	11,308.0	7,075.5	116.3	115.9	-91.41	568.6	3,507.9	510.2	278.1	232.08	2.198	
11,400.0	7,061.2	11,408.0	7,074.0	119.1	118.7	-91.44	568.6	3,607.9	510.2	272.6	237.59	2.147	
11,500.0	7,059.4	11,508.0	7,072.4	121.8	121.3	-91.46	568.6	3,707.8	510.2	267.2	243.02	2.099	
11,580.7	7,058.0	11,588.7	7,071.1	124.1	122.7	-91.47	568.6	3,788.5	510.2	263.6	246.65	2.069 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20H-332
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 20H-332	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 (8-22-14)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Peschel 4N65W20B Pad Sec.20-T4N-R65W - Peschel 20I-312 - Wellbore #1 - Plan #1 (8-25-14)													
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-180.00	-58.3	0.0	58.3				
100.0	100.0	100.0	100.0	0.1	0.1	-180.00	-58.3	0.0	58.3	58.1	0.22	259.331	
200.0	200.0	200.0	200.0	0.3	0.3	-180.00	-58.3	0.0	58.3	57.6	0.67	86.444	
300.0	300.0	300.0	300.0	0.6	0.6	-180.00	-58.3	0.0	58.3	57.2	1.12	51.866	
400.0	400.0	400.0	400.0	0.8	0.8	-180.00	-58.3	0.0	58.3	56.7	1.57	37.047	
500.0	500.0	500.0	500.0	1.0	1.0	-180.00	-58.3	0.0	58.3	56.3	2.02	28.815	
600.0	600.0	600.0	600.0	1.2	1.2	-180.00	-58.3	0.0	58.3	55.8	2.47	23.576	
700.0	700.0	700.0	700.0	1.5	1.5	-180.00	-58.3	0.0	58.3	55.4	2.92	19.949	
800.0	800.0	800.0	800.0	1.7	1.7	-180.00	-58.3	0.0	58.3	54.9	3.37	17.289 CC, ES	
900.0	900.0	898.9	898.9	1.9	1.9	-178.59	-59.2	-1.5	59.2	55.4	3.80	15.592	
1,000.0	1,000.0	997.6	997.4	2.1	2.1	-174.64	-61.9	-5.8	62.2	58.0	4.21	14.764	
1,100.0	1,100.0	1,095.8	1,095.3	2.4	2.3	-168.91	-66.3	-13.0	67.7	63.1	4.64	14.602	
1,200.0	1,200.0	1,193.3	1,192.1	2.6	2.5	-162.42	-72.4	-22.9	76.4	71.3	5.08	15.033	
1,300.0	1,300.0	1,289.9	1,287.5	2.8	2.8	-156.08	-80.2	-35.6	88.6	83.1	5.55	15.957	
1,400.0	1,400.0	1,385.4	1,381.3	3.0	3.1	-150.46	-89.5	-50.7	104.6	98.5	6.07	17.243	
1,500.0	1,500.0	1,481.4	1,475.1	3.3	3.4	-145.75	-100.4	-68.3	123.9	117.3	6.63	18.700	
1,600.0	1,600.0	1,579.3	1,570.6	3.5	3.8	-56.19	-111.6	-86.6	143.3	136.4	6.89	20.804	
1,700.0	1,699.8	1,677.7	1,666.6	3.7	4.2	-54.66	-122.9	-104.9	161.0	153.7	7.33	21.961	
1,800.0	1,799.5	1,776.4	1,763.0	3.9	4.7	-54.33	-134.2	-123.3	176.7	168.9	7.79	22.675	
1,900.0	1,898.7	1,875.5	1,859.6	4.1	5.1	-54.91	-145.6	-141.8	190.4	182.1	8.28	22.989	
2,000.0	1,997.5	1,974.6	1,956.3	4.4	5.5	-56.23	-157.0	-160.3	202.2	193.4	8.81	22.947	
2,100.0	2,095.6	2,073.8	2,053.1	4.7	6.0	-58.21	-168.4	-178.7	212.3	202.9	9.40	22.595	
2,200.0	2,193.3	2,172.9	2,149.8	5.0	6.4	-60.67	-179.8	-197.2	221.4	211.4	10.05	22.035	
2,300.0	2,290.9	2,272.1	2,246.6	5.4	6.9	-62.99	-191.2	-215.7	230.9	220.2	10.75	21.488	
2,400.0	2,388.6	2,371.2	2,343.3	5.7	7.3	-65.12	-202.5	-234.2	240.8	229.3	11.48	20.973	
2,500.0	2,486.2	2,470.3	2,440.0	6.1	7.8	-67.08	-213.9	-252.7	250.9	238.7	12.24	20.494	
2,600.0	2,583.8	2,569.4	2,536.7	6.5	8.3	-68.89	-225.3	-271.1	261.3	248.3	13.03	20.052	
2,700.0	2,681.5	2,668.6	2,633.5	6.9	8.7	-70.56	-236.7	-289.6	272.0	258.2	13.85	19.646	
2,800.0	2,779.1	2,767.7	2,730.2	7.3	9.2	-72.11	-248.1	-308.1	282.9	268.2	14.68	19.275	
2,900.0	2,876.8	2,866.8	2,826.9	7.8	9.7	-73.54	-259.4	-326.6	293.9	278.4	15.52	18.937	
3,000.0	2,974.4	2,966.0	2,923.6	8.2	10.1	-74.87	-270.8	-345.0	305.2	288.8	16.38	18.629	
3,100.0	3,072.0	3,065.1	3,020.3	8.6	10.6	-76.10	-282.2	-363.5	316.5	299.3	17.25	18.349	
3,200.0	3,169.7	3,164.2	3,117.1	9.1	11.1	-77.24	-293.6	-382.0	328.1	309.9	18.13	18.094	
3,300.0	3,267.3	3,263.3	3,213.8	9.5	11.6	-78.31	-305.0	-400.5	339.7	320.7	19.02	17.862	
3,400.0	3,365.0	3,362.5	3,310.5	9.9	12.0	-79.31	-316.3	-419.0	351.4	331.5	19.91	17.650	
3,500.0	3,462.6	3,461.6	3,407.2	10.4	12.5	-80.24	-327.7	-437.4	363.3	342.5	20.81	17.456	
3,600.0	3,560.3	3,560.7	3,504.0	10.8	13.0	-81.12	-339.1	-455.9	375.2	353.5	21.71	17.279	
3,700.0	3,657.9	3,659.8	3,600.7	11.3	13.5	-81.94	-350.5	-474.4	387.2	364.6	22.62	17.117	
3,800.0	3,755.5	3,759.0	3,697.4	11.8	13.9	-82.71	-361.9	-492.9	399.3	375.8	23.53	16.968	
3,900.0	3,853.2	3,858.1	3,794.1	12.2	14.4	-83.43	-373.2	-511.3	411.5	387.0	24.45	16.830	
4,000.0	3,950.8	3,957.2	3,890.9	12.7	14.9	-84.12	-384.6	-529.8	423.7	398.3	25.36	16.704	
4,100.0	4,048.5	4,056.4	3,987.6	13.1	15.4	-84.76	-396.0	-548.3	435.9	409.7	26.28	16.587	
4,200.0	4,146.1	4,155.5	4,084.3	13.6	15.8	-85.37	-407.4	-566.8	448.3	421.1	27.20	16.479	
4,300.0	4,243.7	4,254.6	4,181.0	14.1	16.3	-85.95	-418.8	-585.2	460.6	432.5	28.12	16.379	
4,400.0	4,341.4	4,353.7	4,277.7	14.5	16.8	-86.50	-430.2	-603.7	473.1	444.0	29.05	16.286	
4,500.0	4,439.0	4,452.9	4,374.5	15.0	17.3	-87.02	-441.5	-622.2	485.5	455.5	29.97	16.199	
4,600.0	4,536.7	4,552.0	4,471.2	15.4	17.7	-87.51	-452.9	-640.7	498.0	467.1	30.90	16.118	
4,700.0	4,634.3	4,651.1	4,567.9	15.9	18.2	-87.98	-464.3	-659.2	510.5	478.7	31.82	16.043	
4,800.0	4,731.9	4,750.2	4,664.6	16.4	18.7	-88.43	-475.7	-677.6	523.1	490.3	32.75	15.973	
4,900.0	4,829.6	4,849.4	4,761.4	16.8	19.2	-88.85	-487.1	-696.1	535.7	502.0	33.68	15.907	
5,000.0	4,927.2	4,948.5	4,858.1	17.3	19.7	-89.26	-498.4	-714.6	548.3	513.7	34.60	15.845	

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 20H-332
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 20H-332	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 (8-22-14)	Offset TVD Reference:	Offset Datum

Offset Design Peschel 4N65W20B Pad Sec.20-T4N-R65W - Peschel 20I-312 - 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	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	5,024.9	5,047.6	4,954.8	17.8	20.1	-89.65	-89.65	-509.8	-733.1	560.9	525.4	35.53	15.787	
5,200.0	5,122.5	5,146.8	5,051.5	18.2	20.6	-90.02	-90.02	-521.2	-751.5	573.6	537.1	36.46	15.732	
5,300.0	5,220.1	5,245.9	5,148.3	18.7	21.1	-90.37	-90.37	-532.6	-770.0	586.3	548.9	37.39	15.681	
5,400.0	5,317.8	5,345.0	5,245.0	19.2	21.6	-90.71	-90.71	-544.0	-788.5	599.0	560.7	38.32	15.633	
5,500.0	5,415.4	5,444.1	5,341.7	19.7	22.1	-91.04	-91.04	-555.3	-807.0	611.7	572.5	39.25	15.587	
5,600.0	5,513.1	5,543.3	5,438.4	20.1	22.5	-91.35	-91.35	-566.7	-825.5	624.5	584.3	40.18	15.544	
5,700.0	5,610.7	5,642.4	5,535.1	20.6	23.0	-91.71	-91.71	-578.1	-843.9	637.3	596.2	41.10	15.507	
5,800.0	5,708.9	5,750.0	5,640.4	20.9	23.4	-92.06	-92.06	-590.0	-863.3	649.5	607.7	41.85	15.521	
5,900.0	5,807.7	5,863.5	5,752.1	21.2	23.8	-92.33	-92.33	-600.5	-880.3	659.8	617.3	42.49	15.527	
6,000.0	5,907.0	5,977.4	5,864.9	21.4	24.1	-92.53	-92.53	-608.7	-893.6	667.7	624.7	43.04	15.513	
6,100.0	6,006.6	6,091.7	5,978.6	21.6	24.3	-92.67	-92.67	-614.5	-903.0	673.3	629.8	43.50	15.478	
6,200.0	6,106.5	6,206.2	6,092.9	21.8	24.5	-92.76	-92.76	-617.9	-908.6	676.7	632.8	43.87	15.425	
6,300.0	6,206.5	6,319.8	6,206.5	21.9	24.6	-179.05	-179.05	-619.0	-910.3	677.7	644.5	33.23	20.395	
6,400.0	6,306.5	6,419.8	6,306.5	22.1	24.7	-179.05	-179.05	-619.0	-910.3	677.7	644.1	33.56	20.193	
6,500.0	6,406.5	6,520.5	6,407.1	22.2	24.8	90.95	90.95	-619.0	-909.0	677.7	633.1	44.62	15.187	
6,600.0	6,505.7	6,621.9	6,507.7	22.2	24.8	90.93	90.93	-619.0	-896.5	677.7	633.1	44.60	15.194	
6,700.0	6,602.4	6,723.4	6,605.8	22.1	24.7	90.90	90.90	-619.0	-870.7	677.7	633.3	44.36	15.278	
6,800.0	6,695.1	6,824.7	6,699.5	21.9	24.5	90.85	90.85	-619.0	-832.3	677.7	633.7	43.96	15.417	
6,900.0	6,782.0	6,926.0	6,787.2	21.7	24.2	90.79	90.79	-619.0	-781.8	677.7	634.2	43.48	15.584	
7,000.0	6,861.8	7,027.2	6,867.4	21.5	24.0	90.71	90.71	-619.0	-720.2	677.6	634.6	43.05	15.739	
7,100.0	6,933.1	7,128.2	6,938.7	21.4	23.7	90.63	90.63	-619.0	-648.7	677.6	634.8	42.80	15.831	
7,200.0	6,994.6	7,229.1	6,999.8	21.4	23.6	90.53	90.53	-619.0	-568.5	677.6	634.7	42.88	15.802	
7,300.0	7,045.3	7,329.9	7,049.8	21.7	23.5	90.42	90.42	-619.0	-481.1	677.6	634.2	43.42	15.604	
7,400.0	7,084.4	7,430.4	7,087.8	22.3	23.7	90.31	90.31	-619.0	-388.1	677.6	633.1	44.52	15.220	
7,500.0	7,111.1	7,530.8	7,113.2	23.2	24.1	90.19	90.19	-619.0	-291.1	677.6	631.4	46.19	14.668	
7,600.0	7,125.0	7,631.0	7,125.7	24.3	24.8	90.06	90.06	-619.0	-191.8	677.6	629.2	48.40	14.000	
7,630.9	7,126.8	7,661.9	7,126.9	24.7	25.1	90.01	90.01	-619.0	-160.9	677.6	628.4	49.19	13.776	
7,700.0	7,126.4	7,731.0	7,126.2	25.6	25.9	89.98	89.98	-619.0	-91.8	677.6	626.5	51.05	13.272	
7,800.0	7,124.6	7,831.0	7,124.4	27.2	27.2	89.98	89.98	-619.0	8.2	677.6	623.5	54.12	12.520	
7,900.0	7,122.9	7,931.0	7,122.7	28.9	28.8	89.98	89.98	-619.0	108.2	677.6	620.0	57.57	11.769	
8,000.0	7,121.1	8,031.0	7,120.9	30.8	30.6	89.98	89.98	-619.0	208.2	677.6	616.2	61.35	11.045	
8,100.0	7,119.4	8,131.0	7,119.2	32.8	32.6	89.98	89.98	-619.0	308.2	677.6	612.2	65.39	10.363	
8,200.0	7,117.6	8,231.0	7,117.4	35.0	34.7	89.98	89.98	-619.0	408.1	677.6	608.0	69.64	9.729	
8,300.0	7,115.8	8,331.0	7,115.6	37.2	36.9	89.98	89.98	-619.0	508.1	677.6	603.5	74.08	9.147	
8,400.0	7,114.1	8,431.0	7,113.9	39.5	39.2	89.98	89.98	-619.0	608.1	677.6	598.9	78.67	8.613	
8,500.0	7,112.3	8,531.0	7,112.1	41.9	41.5	89.98	89.98	-619.0	708.1	677.6	594.2	83.39	8.126	
8,600.0	7,110.5	8,631.0	7,110.3	44.3	43.9	89.98	89.98	-619.0	808.1	677.6	589.4	88.21	7.682	
8,700.0	7,108.8	8,731.0	7,108.6	46.7	46.4	89.98	89.98	-619.0	908.1	677.6	584.5	93.12	7.277	
8,800.0	7,107.0	8,831.0	7,106.8	49.2	48.9	89.98	89.98	-619.0	1,008.1	677.6	579.5	98.10	6.907	
8,900.0	7,105.3	8,931.0	7,105.1	51.8	51.4	89.98	89.98	-619.0	1,108.0	677.6	574.4	103.15	6.569	
9,000.0	7,103.5	9,031.0	7,103.3	54.3	54.0	89.98	89.98	-619.0	1,208.0	677.6	569.3	108.26	6.259	
9,100.0	7,101.7	9,131.0	7,101.5	56.9	56.6	89.98	89.98	-619.0	1,308.0	677.6	564.2	113.41	5.975	
9,200.0	7,100.0	9,231.0	7,099.8	59.5	59.1	89.98	89.98	-619.0	1,408.0	677.6	559.0	118.60	5.713	
9,300.0	7,098.2	9,331.0	7,098.0	62.1	61.8	89.98	89.98	-619.0	1,508.0	677.6	553.8	123.84	5.472	
9,400.0	7,096.4	9,431.0	7,096.2	64.7	64.4	89.98	89.98	-619.0	1,608.0	677.6	548.5	129.10	5.249	
9,500.0	7,094.7	9,531.0	7,094.5	67.4	67.0	89.98	89.98	-619.0	1,707.9	677.6	543.2	134.39	5.042	
9,600.0	7,092.9	9,631.0	7,092.7	70.0	69.7	89.98	89.98	-619.0	1,807.9	677.6	537.9	139.71	4.850	
9,700.0	7,091.2	9,731.0	7,091.0	72.7	72.4	89.98	89.98	-619.0	1,907.9	677.6	532.6	145.05	4.672	
9,800.0	7,089.4	9,831.0	7,089.2	75.4	75.1	89.98	89.98	-619.0	2,007.9	677.6	527.2	150.41	4.505	
9,900.0	7,087.6	9,931.0	7,087.4	78.1	77.7	89.98	89.98	-619.0	2,107.9	677.6	521.8	155.79	4.350	
10,000.0	7,085.9	10,031.0	7,085.7	80.8	80.4	89.98	89.98	-619.0	2,207.9	677.6	516.4	161.18	4.204	

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

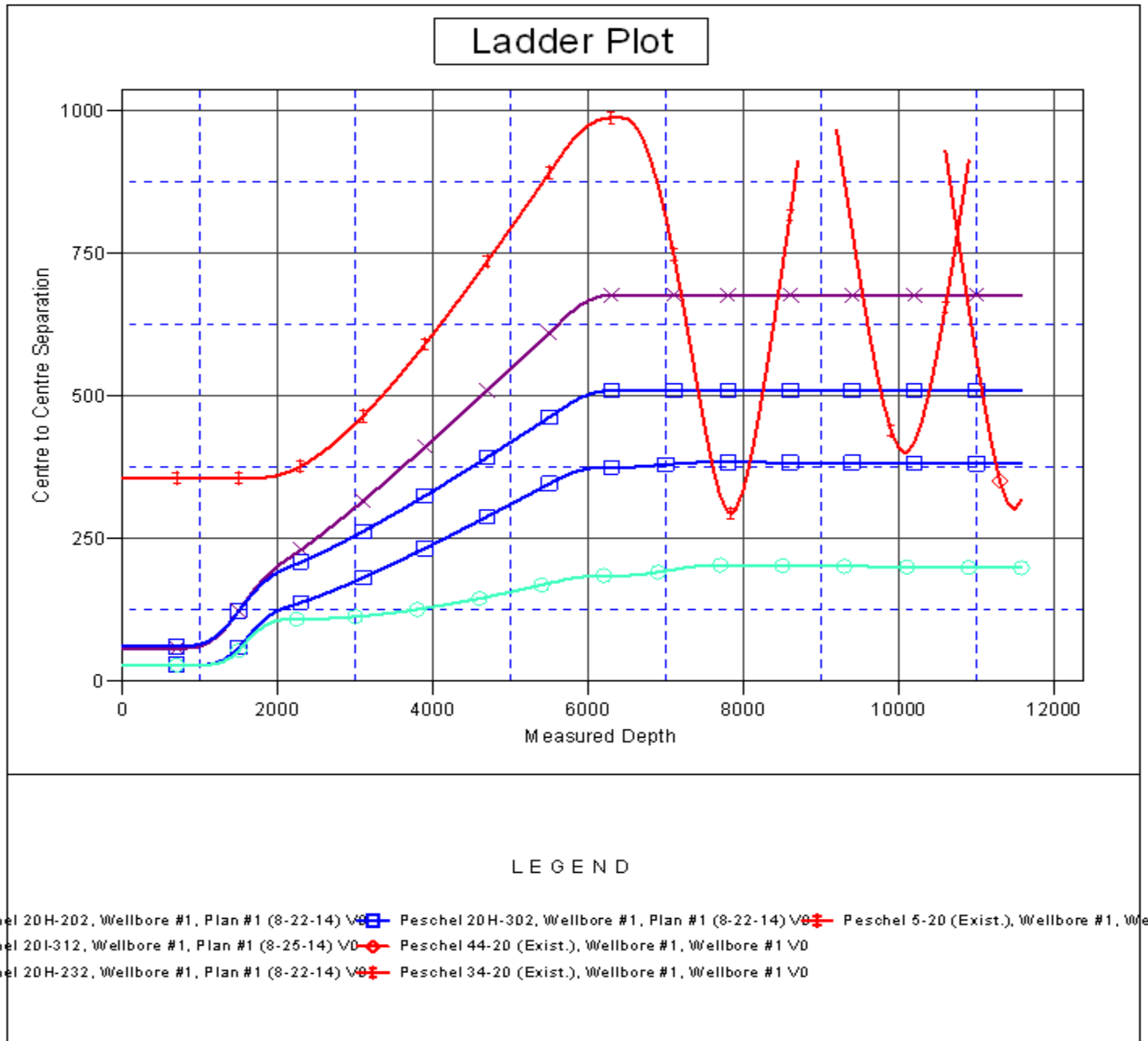
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20H-332
Project:	SEC.20-T4N-R65W	TVD Reference:	WELL @ 4817.0ft (RKB - 15')
Reference Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	MD Reference:	WELL @ 4817.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Peschel 20H-332	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 (8-22-14)	Offset TVD Reference:	Offset Datum

Offset Design Peschel 4N65W20B Pad Sec.20-T4N-R65W - Peschel 20I-312 - 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		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,100.0	7,084.1	10,131.0	7,083.9	83.5	83.1	89.98	-619.0	2,307.9	677.6	511.0	166.59	4.068	
10,200.0	7,082.3	10,231.0	7,082.1	86.2	85.9	89.98	-619.0	2,407.8	677.6	505.6	172.01	3.939	
10,300.0	7,080.6	10,331.0	7,080.4	88.9	88.6	89.98	-619.0	2,507.8	677.6	500.2	177.44	3.819	
10,400.0	7,078.8	10,431.0	7,078.6	91.6	91.3	89.98	-619.0	2,607.8	677.6	494.7	182.89	3.705	
10,500.0	7,077.0	10,531.0	7,076.9	94.4	94.0	89.98	-619.0	2,707.8	677.6	489.3	188.34	3.598	
10,600.0	7,075.3	10,631.0	7,075.1	97.1	96.8	89.98	-619.0	2,807.8	677.6	483.8	193.81	3.496	
10,700.0	7,073.5	10,731.0	7,073.3	99.8	99.5	89.98	-619.0	2,907.8	677.6	478.3	199.28	3.400	
10,800.0	7,071.8	10,831.0	7,071.6	102.6	102.2	89.98	-619.0	3,007.7	677.6	472.8	204.76	3.309	
10,900.0	7,070.0	10,931.0	7,069.8	105.3	105.0	89.98	-619.0	3,107.7	677.6	467.4	210.25	3.223	
11,000.0	7,068.2	11,031.0	7,068.0	108.1	107.7	89.98	-619.0	3,207.7	677.6	461.9	215.74	3.141	
11,100.0	7,066.5	11,131.0	7,066.3	110.8	110.5	89.98	-619.0	3,307.7	677.6	456.4	221.24	3.063	
11,200.0	7,064.7	11,231.0	7,064.5	113.6	113.2	89.98	-619.0	3,407.7	677.6	450.9	226.74	2.988	
11,300.0	7,062.9	11,331.0	7,062.8	116.3	116.0	89.98	-619.0	3,507.7	677.6	445.4	232.25	2.918	
11,400.0	7,061.2	11,431.0	7,061.0	119.1	118.7	89.98	-619.0	3,607.7	677.6	439.8	237.77	2.850	
11,500.0	7,059.4	11,531.0	7,059.2	121.8	121.5	89.98	-619.0	3,707.6	677.6	434.3	243.29	2.785	
11,543.9	7,058.6	11,574.9	7,058.5	123.1	122.7	89.98	-619.0	3,751.6	677.6	431.9	245.72	2.758	
11,580.7	7,058.0	11,600.6	7,058.0	124.1	123.4	89.98	-619.0	3,777.2	677.7	430.3	247.44	2.739 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20H-332
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 20H-332	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 (8-22-14)	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 20H-332
 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 20H-332
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