

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Peschel 20H-232**

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	1350663.28	3225067.12	40.293160	-104.693150	

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

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 920'FSL & 950'FWL	1.0	0.0	0.0	Point
BHL 809'FSL & 500'FEL	6986.0	-98.1	3785.5	Point



Azimuths to True North
 Magnetic North: 8.39°

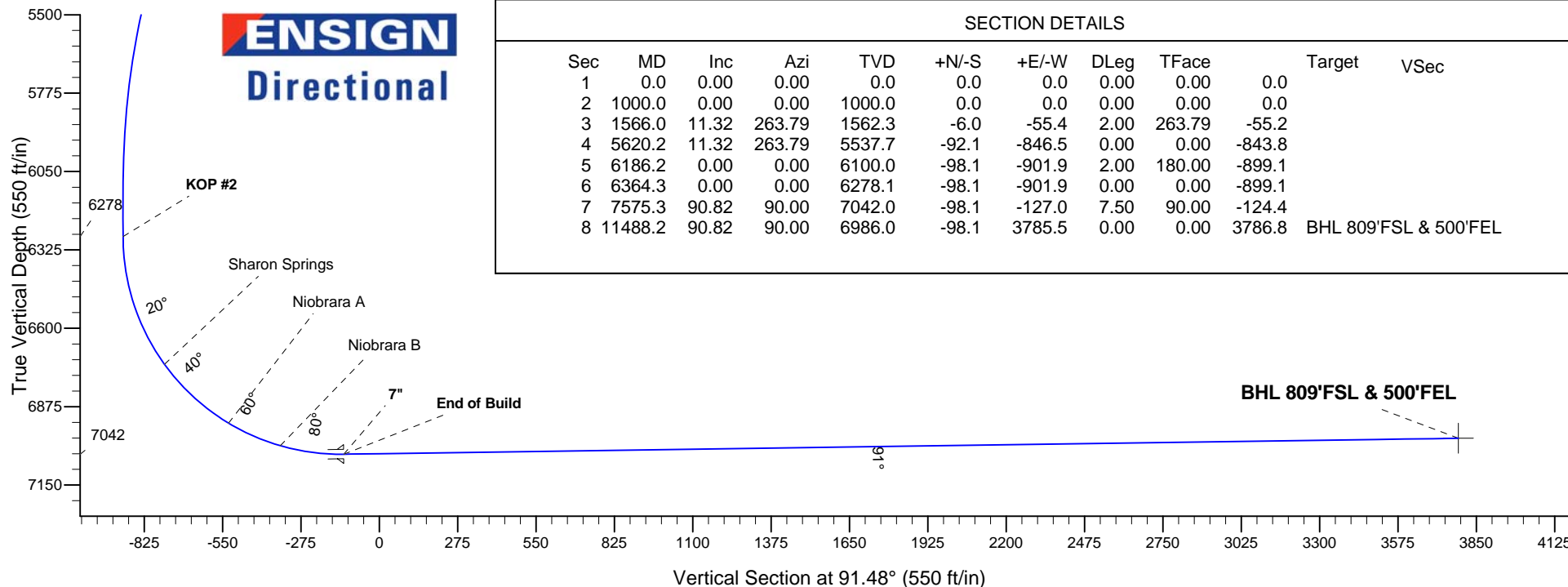
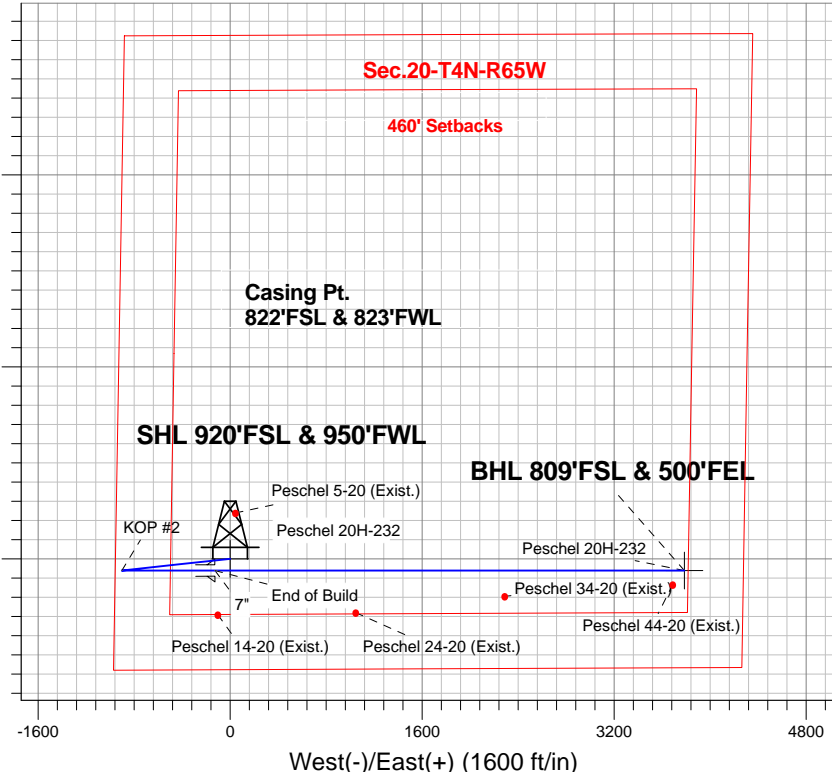
Magnetic Field
 Strength: 52745.9snT
 Dip Angle: 66.87°
 Date: 8/27/2014
 Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
1000.0	1000.0	KOP #1
6278.1	6364.3	KOP #2
7042.0	7575.3	End of Build

Peschel 4N65W20B Pad Sec.20-T4N-R65W
 Peschel 20H-232
 Plan #1 (8-22-14)
 15:32, August 28 2014

South(-)/North(+) (1600 ft/in)



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	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	
3	1566.0	11.32	263.79	1562.3	-6.0	-55.4	2.00	263.79	-55.2	
4	5620.2	11.32	263.79	5537.7	-92.1	-846.5	0.00	0.00	-843.8	
5	6186.2	0.00	0.00	6100.0	-98.1	-901.9	2.00	180.00	-899.1	
6	6364.3	0.00	0.00	6278.1	-98.1	-901.9	0.00	0.00	-899.1	
7	7575.3	90.82	90.00	7042.0	-98.1	-127.0	7.50	90.00	-124.4	
8	11488.2	90.82	90.00	6986.0	-98.1	3785.5	0.00	0.00	3786.8	BHL 809'FSL & 500'FEL



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.20-T4N-R65W

Peschel 4N65W20B Pad Sec.20-T4N-R65W

Peschel 20H-232

Wellbore #1

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

Standard Planning Report

28 August, 2014

Database:	Landmark	Local Co-ordinate Reference:	Well Peschel 20H-232
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-232	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-232					
Well Position	+N/-S	-178.5 ft	Northing:	1,350,663.28 ft	Latitude:	40.293160
	+E/-W	-2.8 ft	Easting:	3,225,067.12 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	91.48

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	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,566.0	11.32	263.79	1,562.3	-6.0	-55.4	2.00	2.00	0.00	263.79	
5,620.2	11.32	263.79	5,537.7	-92.1	-846.5	0.00	0.00	0.00	0.00	
6,186.2	0.00	0.00	6,100.0	-98.1	-901.9	2.00	-2.00	0.00	180.00	
6,364.3	0.00	0.00	6,278.1	-98.1	-901.9	0.00	0.00	0.00	0.00	
7,575.3	90.82	90.00	7,042.0	-98.1	-127.0	7.50	7.50	0.00	90.00	
11,488.2	90.82	90.00	6,986.0	-98.1	3,785.5	0.00	0.00	0.00	0.00	BHL 809'FSL & 50C

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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-232	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
KOP #1									
1,100.0	2.00	263.79	1,100.0	-0.2	-1.7	-1.7	2.00	2.00	0.00
1,200.0	4.00	263.79	1,199.8	-0.8	-6.9	-6.9	2.00	2.00	0.00
1,300.0	6.00	263.79	1,299.5	-1.7	-15.6	-15.6	2.00	2.00	0.00
1,400.0	8.00	263.79	1,398.7	-3.0	-27.7	-27.6	2.00	2.00	0.00
1,500.0	10.00	263.79	1,497.5	-4.7	-43.3	-43.1	2.00	2.00	0.00
1,566.0	11.32	263.79	1,562.3	-6.0	-55.4	-55.2	2.00	2.00	0.00
1,600.0	11.32	263.79	1,595.7	-6.7	-62.0	-61.8	0.00	0.00	0.00
1,700.0	11.32	263.79	1,693.7	-8.9	-81.6	-81.3	0.00	0.00	0.00
1,800.0	11.32	263.79	1,791.8	-11.0	-101.1	-100.7	0.00	0.00	0.00
1,900.0	11.32	263.79	1,889.8	-13.1	-120.6	-120.2	0.00	0.00	0.00
2,000.0	11.32	263.79	1,987.9	-15.2	-140.1	-139.6	0.00	0.00	0.00
2,100.0	11.32	263.79	2,085.9	-17.4	-159.6	-159.1	0.00	0.00	0.00
2,200.0	11.32	263.79	2,184.0	-19.5	-179.1	-178.6	0.00	0.00	0.00
2,300.0	11.32	263.79	2,282.0	-21.6	-198.6	-198.0	0.00	0.00	0.00
2,400.0	11.32	263.79	2,380.1	-23.7	-218.1	-217.5	0.00	0.00	0.00
2,500.0	11.32	263.79	2,478.2	-25.8	-237.7	-236.9	0.00	0.00	0.00
2,600.0	11.32	263.79	2,576.2	-28.0	-257.2	-256.4	0.00	0.00	0.00
2,700.0	11.32	263.79	2,674.3	-30.1	-276.7	-275.8	0.00	0.00	0.00
2,800.0	11.32	263.79	2,772.3	-32.2	-296.2	-295.3	0.00	0.00	0.00
2,900.0	11.32	263.79	2,870.4	-34.3	-315.7	-314.7	0.00	0.00	0.00
3,000.0	11.32	263.79	2,968.4	-36.5	-335.2	-334.2	0.00	0.00	0.00
3,100.0	11.32	263.79	3,066.5	-38.6	-354.7	-353.6	0.00	0.00	0.00
3,200.0	11.32	263.79	3,164.5	-40.7	-374.2	-373.1	0.00	0.00	0.00
3,300.0	11.32	263.79	3,262.6	-42.8	-393.8	-392.5	0.00	0.00	0.00
3,400.0	11.32	263.79	3,360.7	-45.0	-413.3	-412.0	0.00	0.00	0.00
3,500.0	11.32	263.79	3,458.7	-47.1	-432.8	-431.4	0.00	0.00	0.00
3,600.0	11.32	263.79	3,556.8	-49.2	-452.3	-450.9	0.00	0.00	0.00
3,700.0	11.32	263.79	3,654.8	-51.3	-471.8	-470.3	0.00	0.00	0.00
3,786.9	11.32	263.79	3,740.0	-53.2	-488.8	-487.2	0.00	0.00	0.00
Parkman									
3,800.0	11.32	263.79	3,752.9	-53.4	-491.3	-489.8	0.00	0.00	0.00
3,900.0	11.32	263.79	3,850.9	-55.6	-510.8	-509.2	0.00	0.00	0.00
4,000.0	11.32	263.79	3,949.0	-57.7	-530.3	-528.7	0.00	0.00	0.00
4,100.0	11.32	263.79	4,047.0	-59.8	-549.9	-548.1	0.00	0.00	0.00
4,200.0	11.32	263.79	4,145.1	-61.9	-569.4	-567.6	0.00	0.00	0.00
4,300.0	11.32	263.79	4,243.1	-64.1	-588.9	-587.0	0.00	0.00	0.00
4,400.0	11.32	263.79	4,341.2	-66.2	-608.4	-606.5	0.00	0.00	0.00
4,434.5	11.32	263.79	4,375.0	-66.9	-615.1	-613.2	0.00	0.00	0.00
Sussex									
4,500.0	11.32	263.79	4,439.3	-68.3	-627.9	-625.9	0.00	0.00	0.00
4,600.0	11.32	263.79	4,537.3	-70.4	-647.4	-645.4	0.00	0.00	0.00

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Site:	Peschel 4N65W20B Pad Sec.20-T4N-R65W	North Reference:	True
Well:	Peschel 20H-232	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	11.32	263.79	4,635.4	-72.5	-666.9	-664.8	0.00	0.00	0.00
4,800.0	11.32	263.79	4,733.4	-74.7	-686.4	-684.3	0.00	0.00	0.00
4,900.0	11.32	263.79	4,831.5	-76.8	-706.0	-703.7	0.00	0.00	0.00
5,000.0	11.32	263.79	4,929.5	-78.9	-725.5	-723.2	0.00	0.00	0.00
5,100.0	11.32	263.79	5,027.6	-81.0	-745.0	-742.6	0.00	0.00	0.00
5,200.0	11.32	263.79	5,125.6	-83.2	-764.5	-762.1	0.00	0.00	0.00
5,275.8	11.32	263.79	5,200.0	-84.8	-779.3	-776.8	0.00	0.00	0.00
Shannon									
5,300.0	11.32	263.79	5,223.7	-85.3	-784.0	-781.5	0.00	0.00	0.00
5,400.0	11.32	263.79	5,321.7	-87.4	-803.5	-801.0	0.00	0.00	0.00
5,500.0	11.32	263.79	5,419.8	-89.5	-823.0	-820.4	0.00	0.00	0.00
5,600.0	11.32	263.79	5,517.9	-91.6	-842.6	-839.9	0.00	0.00	0.00
5,620.2	11.32	263.79	5,537.7	-92.1	-846.5	-843.8	0.00	0.00	0.00
5,700.0	9.72	263.79	5,616.1	-93.6	-861.0	-858.3	2.00	-2.00	0.00
5,800.0	7.72	263.79	5,715.0	-95.3	-876.1	-873.3	2.00	-2.00	0.00
5,900.0	5.72	263.79	5,814.3	-96.6	-887.7	-884.9	2.00	-2.00	0.00
6,000.0	3.72	263.79	5,913.9	-97.4	-895.9	-893.1	2.00	-2.00	0.00
6,100.0	1.72	263.79	6,013.8	-98.0	-900.6	-897.8	2.00	-2.00	0.00
6,186.2	0.00	0.00	6,100.0	-98.1	-901.9	-899.1	2.00	-2.00	0.00
6,200.0	0.00	0.00	6,113.8	-98.1	-901.9	-899.1	0.00	0.00	0.00
6,300.0	0.00	0.00	6,213.8	-98.1	-901.9	-899.1	0.00	0.00	0.00
6,364.3	0.00	0.00	6,278.1	-98.1	-901.9	-899.1	0.00	0.00	0.00
KOP #2									
6,400.0	2.67	90.00	6,313.8	-98.1	-901.1	-898.2	7.49	7.49	0.00
6,500.0	10.17	90.00	6,413.1	-98.1	-889.9	-887.0	7.50	7.50	0.00
6,600.0	17.67	90.00	6,510.1	-98.1	-865.8	-863.0	7.50	7.50	0.00
6,700.0	25.17	90.00	6,603.1	-98.1	-829.3	-826.5	7.50	7.50	0.00
6,800.0	32.67	90.00	6,690.6	-98.1	-781.0	-778.2	7.50	7.50	0.00
6,842.9	35.89	90.00	6,726.0	-98.1	-756.8	-754.1	7.50	7.50	0.00
Sharon Springs									
6,900.0	40.17	90.00	6,771.0	-98.1	-721.7	-718.9	7.50	7.50	0.00
7,000.0	47.67	90.00	6,842.9	-98.1	-652.4	-649.6	7.50	7.50	0.00
7,100.0	55.17	90.00	6,905.2	-98.1	-574.2	-571.5	7.50	7.50	0.00
7,151.1	59.01	90.00	6,933.0	-98.1	-531.4	-528.6	7.50	7.50	0.00
Niobrara A									
7,200.0	62.67	90.00	6,956.8	-98.1	-488.6	-485.9	7.50	7.50	0.00
7,300.0	70.17	90.00	6,996.8	-98.1	-397.1	-394.4	7.50	7.50	0.00
7,349.3	73.87	90.00	7,012.0	-98.1	-350.2	-347.5	7.50	7.50	0.00
Niobrara B									
7,400.0	77.67	90.00	7,024.5	-98.1	-301.0	-298.4	7.50	7.50	0.00
7,500.0	85.17	90.00	7,039.4	-98.1	-202.2	-199.6	7.50	7.50	0.00
7,575.3	90.82	90.00	7,042.0	-98.1	-127.0	-124.4	7.50	7.50	0.00
End of Build - 7"									
7,600.0	90.82	90.00	7,041.6	-98.1	-102.3	-99.7	0.00	0.00	0.00
7,700.0	90.82	90.00	7,040.2	-98.1	-2.3	0.2	0.00	0.00	0.00
7,800.0	90.82	90.00	7,038.8	-98.1	97.7	100.2	0.00	0.00	0.00
7,900.0	90.82	90.00	7,037.4	-98.1	197.7	200.1	0.00	0.00	0.00
8,000.0	90.82	90.00	7,035.9	-98.1	297.7	300.1	0.00	0.00	0.00
8,100.0	90.82	90.00	7,034.5	-98.1	397.6	400.1	0.00	0.00	0.00
8,200.0	90.82	90.00	7,033.1	-98.1	497.6	500.0	0.00	0.00	0.00
8,300.0	90.82	90.00	7,031.6	-98.1	597.6	600.0	0.00	0.00	0.00
8,400.0	90.82	90.00	7,030.2	-98.1	697.6	699.9	0.00	0.00	0.00

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Well:	Peschel 20H-232	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)
8,500.0	90.82	90.00	7,028.8	-98.1	797.6	799.9	0.00	0.00	0.00
8,600.0	90.82	90.00	7,027.3	-98.1	897.6	899.8	0.00	0.00	0.00
8,700.0	90.82	90.00	7,025.9	-98.1	997.6	999.8	0.00	0.00	0.00
8,800.0	90.82	90.00	7,024.5	-98.1	1,097.6	1,099.7	0.00	0.00	0.00
8,900.0	90.82	90.00	7,023.0	-98.1	1,197.6	1,199.7	0.00	0.00	0.00
9,000.0	90.82	90.00	7,021.6	-98.1	1,297.6	1,299.7	0.00	0.00	0.00
9,100.0	90.82	90.00	7,020.2	-98.1	1,397.5	1,399.6	0.00	0.00	0.00
9,200.0	90.82	90.00	7,018.7	-98.1	1,497.5	1,499.6	0.00	0.00	0.00
9,300.0	90.82	90.00	7,017.3	-98.1	1,597.5	1,599.5	0.00	0.00	0.00
9,400.0	90.82	90.00	7,015.9	-98.1	1,697.5	1,699.5	0.00	0.00	0.00
9,500.0	90.82	90.00	7,014.5	-98.1	1,797.5	1,799.4	0.00	0.00	0.00
9,600.0	90.82	90.00	7,013.0	-98.1	1,897.5	1,899.4	0.00	0.00	0.00
9,700.0	90.82	90.00	7,011.6	-98.1	1,997.5	1,999.4	0.00	0.00	0.00
9,800.0	90.82	90.00	7,010.2	-98.1	2,097.5	2,099.3	0.00	0.00	0.00
9,900.0	90.82	90.00	7,008.7	-98.1	2,197.5	2,199.3	0.00	0.00	0.00
10,000.0	90.82	90.00	7,007.3	-98.1	2,297.4	2,299.2	0.00	0.00	0.00
10,100.0	90.82	90.00	7,005.9	-98.1	2,397.4	2,399.2	0.00	0.00	0.00
10,200.0	90.82	90.00	7,004.4	-98.1	2,497.4	2,499.1	0.00	0.00	0.00
10,300.0	90.82	90.00	7,003.0	-98.1	2,597.4	2,599.1	0.00	0.00	0.00
10,400.0	90.82	90.00	7,001.6	-98.1	2,697.4	2,699.0	0.00	0.00	0.00
10,500.0	90.82	90.00	7,000.1	-98.1	2,797.4	2,799.0	0.00	0.00	0.00
10,600.0	90.82	90.00	6,998.7	-98.1	2,897.4	2,899.0	0.00	0.00	0.00
10,700.0	90.82	90.00	6,997.3	-98.1	2,997.4	2,998.9	0.00	0.00	0.00
10,800.0	90.82	90.00	6,995.8	-98.1	3,097.4	3,098.9	0.00	0.00	0.00
10,900.0	90.82	90.00	6,994.4	-98.1	3,197.4	3,198.8	0.00	0.00	0.00
11,000.0	90.82	90.00	6,993.0	-98.1	3,297.3	3,298.8	0.00	0.00	0.00
11,100.0	90.82	90.00	6,991.6	-98.1	3,397.3	3,398.7	0.00	0.00	0.00
11,200.0	90.82	90.00	6,990.1	-98.1	3,497.3	3,498.7	0.00	0.00	0.00
11,300.0	90.82	90.00	6,988.7	-98.1	3,597.3	3,598.6	0.00	0.00	0.00
11,400.0	90.82	90.00	6,987.3	-98.1	3,697.3	3,698.6	0.00	0.00	0.00
11,488.2	90.82	90.00	6,986.0	-98.1	3,785.5	3,786.8	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									
BHL 809'FSL & 500'F	0.00	0.00	6,986.0	-98.1	3,785.5	1,350,599.67	3,228,853.21	40.292890	-104.679580
- plan hits target center									
- Point									
SHL 920'FSL & 950'F	0.00	0.00	1.0	0.0	0.0	1,350,663.29	3,225,067.12	40.293160	-104.693150
- plan hits target center									
- Point									

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,575.3	7,042.0	7"	7	7-1/2

Database:	Landmark	Local Co-ordinate Reference:	Well Peschel 20H-232
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-232	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-22-14)		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,786.9	3,740.0	Parkman		0.00		
4,434.5	4,375.0	Sussex		0.00		
5,275.8	5,200.0	Shannon		0.00		
6,842.9	6,726.0	Sharon Springs		0.00		
7,151.1	6,933.0	Niobrara A		0.00		
7,349.3	7,012.0	Niobrara B		0.00		
	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			
		+N/-S (ft)	+E/-W (ft)	Comment	
1,000.0	1,000.0	0.0	0.0	KOP #1	
6,364.3	6,278.1	-6.0	-55.4	KOP #2	
7,575.3	7,042.0	-92.1	-846.5	End of Build	



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.20-T4N-R65W

Peschel 4N65W20B Pad Sec.20-T4N-R65W

Peschel 20H-232

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-232
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-232	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	11,488.2	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 14-20 (Exist.) - Wellbore #1 - Wellbore #1	7,599.1	7,027.9	368.2	202.5	2.222	CC, ES, SF
Peschel 24-20 (Exist.) - Wellbore #1 - Wellbore #1	8,748.5	7,027.2	350.0	159.6	1.838	CC, ES, SF
Peschel 34-20 (Exist.) - Wellbore #1 - Wellbore #1	9,990.1	7,039.4	215.1	-8.3	0.963	Level 1, CC
Peschel 34-20 (Exist.) - Wellbore #1 - Wellbore #1	10,000.0	7,039.3	215.3	-8.3	0.963	Level 1, ES, SF
Peschel 44-20 (Exist.) - Wellbore #1 - Wellbore #1	11,390.6	7,054.4	116.6	-145.5	0.445	Level 1, CC, ES, SF
Peschel 5-20 (Exist.) - Wellbore #1 - Wellbore #1	1,000.0	985.0	385.1	363.3	17.637	CC
Peschel 5-20 (Exist.) - Wellbore #1 - Wellbore #1	7,747.0	7,024.5	480.6	312.6	2.861	ES, SF
Peschel 4N65W20B Pad Sec.20-T4N-R65W						
Peschel 20H-202 - Wellbore #1 - Plan #1 (8-22-14)	1,000.0	999.0	58.4	54.1	13.671	CC, ES
Peschel 20H-202 - Wellbore #1 - Plan #1 (8-22-14)	11,488.2	11,492.1	561.0	314.6	2.277	SF
Peschel 20H-302 - Wellbore #1 - Plan #1 (8-22-14)	800.0	800.0	91.1	87.7	27.026	CC, ES
Peschel 20H-302 - Wellbore #1 - Plan #1 (8-22-14)	11,488.2	11,587.0	701.0	456.5	2.867	SF
Peschel 20H-332 - Wellbore #1 - Plan #1 (8-22-14)	1,000.0	1,000.0	29.1	24.9	6.825	CC
Peschel 20H-332 - Wellbore #1 - Plan #1 (8-22-14)	11,488.2	11,579.2	199.3	-32.9	0.858	Level 1, ES, SF
Peschel 20I-312 - Wellbore #1 - Plan #1 (8-25-14)	800.0	800.0	29.1	25.8	8.644	CC, ES
Peschel 20I-312 - Wellbore #1 - Plan #1 (8-25-14)	11,488.2	11,600.6	497.1	252.6	2.033	SF
Peschel 20I-402 - Wellbore #1 - Plan #1 (8-25-14)	500.0	500.0	58.3	56.3	28.815	CC, ES
Peschel 20I-402 - Wellbore #1 - Plan #1 (8-25-14)	11,488.2	11,706.4	761.3	523.4	3.200	SF

Offset Design	Existing wells Sec.20-T4N-R65W - Peschel 14-20 (Exist.) - Wellbore #1 - Wellbore #1											Offset Site Error:	0.0ft
Survey Program:	7341-UNKNOWN											Offset Well Error:	0.0ft
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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.0	0.0	0.0	0.0	0.0	0.0	-167.52	-466.3	-103.2	477.8				
100.0	100.0	85.0	85.0	0.1	1.7	-167.52	-466.3	-103.2	477.6	475.8	1.81	263.488	
200.0	200.0	185.0	185.0	0.3	3.7	-167.52	-466.3	-103.2	477.6	473.6	4.04	118.294	
300.0	300.0	285.0	285.0	0.6	5.7	-167.52	-466.3	-103.2	477.6	471.3	6.26	76.267	
400.0	400.0	385.0	385.0	0.8	7.7	-167.52	-466.3	-103.2	477.6	469.1	8.49	56.274	
500.0	500.0	485.0	485.0	1.0	9.7	-167.52	-466.3	-103.2	477.6	466.9	10.71	44.586	
600.0	600.0	585.0	585.0	1.2	11.7	-167.52	-466.3	-103.2	477.6	464.7	12.94	36.919	
700.0	700.0	685.0	685.0	1.5	13.7	-167.52	-466.3	-103.2	477.6	462.4	15.16	31.501	

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-232
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-232	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 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)					
800.0	800.0	785.0	785.0	1.7	15.7	-167.52	-466.3	-103.2	477.6	460.2	17.39	27.470				
900.0	900.0	885.0	885.0	1.9	17.7	-167.52	-466.3	-103.2	477.6	458.0	19.61	24.354				
1,000.0	1,000.0	985.0	985.0	2.1	19.7	-167.52	-466.3	-103.2	477.6	455.8	21.84	21.872				
1,100.0	1,100.0	1,085.0	1,085.0	2.3	21.7	-71.52	-466.3	-103.2	477.0	453.0	24.04	19.840				
1,200.0	1,199.8	1,184.8	1,184.8	2.5	23.7	-72.15	-466.3	-103.2	475.4	449.2	26.24	18.118				
1,300.0	1,299.5	1,284.5	1,284.5	2.8	25.7	-73.20	-466.3	-103.2	472.8	444.4	28.44	16.623				
1,400.0	1,398.7	1,383.7	1,383.7	3.0	27.7	-74.68	-466.3	-103.2	469.4	438.7	30.66	15.311				
1,500.0	1,497.5	1,482.5	1,482.5	3.3	29.6	-76.59	-466.3	-103.2	465.5	432.6	32.90	14.149				
1,600.0	1,595.7	1,580.7	1,580.7	3.6	31.6	-78.89	-466.3	-103.2	461.4	426.2	35.17	13.117				
1,700.0	1,693.7	1,678.7	1,678.7	3.9	33.6	-81.25	-466.3	-103.2	457.9	420.5	37.49	12.217				
1,800.0	1,791.8	1,776.8	1,776.8	4.3	35.5	-83.65	-466.3	-103.2	455.3	415.5	39.82	11.436				
1,900.0	1,889.8	1,874.8	1,874.8	4.7	37.5	-86.06	-466.3	-103.2	453.5	411.4	42.16	10.757				
2,000.0	1,987.9	1,972.9	1,972.9	5.1	39.5	-88.50	-466.3	-103.2	452.6	408.1	44.51	10.167				
2,061.7	2,048.4	2,033.4	2,033.4	5.3	40.7	-90.00	-466.3	-103.2	452.4	406.4	45.97	9.841				
2,100.0	2,085.9	2,070.9	2,070.9	5.5	41.4	-90.93	-466.3	-103.2	452.5	405.6	46.87	9.653				
2,200.0	2,184.0	2,169.0	2,169.0	5.9	43.4	-93.37	-466.3	-103.2	453.2	404.0	49.23	9.206				
2,300.0	2,282.0	2,267.0	2,267.0	6.3	45.3	-95.79	-466.3	-103.2	454.8	403.2	51.59	8.816				
2,400.0	2,380.1	2,365.1	2,365.1	6.7	47.3	-98.19	-466.3	-103.2	457.3	403.3	53.94	8.477				
2,500.0	2,478.2	2,463.2	2,463.2	7.1	49.3	-100.56	-466.3	-103.2	460.5	404.2	56.29	8.182				
2,600.0	2,576.2	2,561.2	2,561.2	7.5	51.2	-102.90	-466.3	-103.2	464.6	406.0	58.62	7.925				
2,700.0	2,674.3	2,659.3	2,659.3	7.9	53.2	-105.19	-466.3	-103.2	469.4	408.5	60.95	7.702				
2,800.0	2,772.3	2,757.3	2,757.3	8.4	55.1	-107.44	-466.3	-103.2	475.1	411.8	63.27	7.509				
2,900.0	2,870.4	2,855.4	2,855.4	8.8	57.1	-109.63	-466.3	-103.2	481.4	415.8	65.57	7.342				
3,000.0	2,968.4	2,953.4	2,953.4	9.2	59.1	-111.76	-466.3	-103.2	488.5	420.6	67.86	7.198				
3,100.0	3,066.5	3,051.5	3,051.5	9.6	61.0	-113.83	-466.3	-103.2	496.2	426.0	70.14	7.074				
3,200.0	3,164.5	3,149.5	3,149.5	10.1	63.0	-115.84	-466.3	-103.2	504.6	432.2	72.41	6.968				
3,300.0	3,262.6	3,247.6	3,247.6	10.5	65.0	-117.78	-466.3	-103.2	513.6	438.9	74.67	6.878				
3,400.0	3,360.7	3,345.7	3,345.7	10.9	66.9	-119.65	-466.3	-103.2	523.1	446.2	76.91	6.802				
3,500.0	3,458.7	3,443.7	3,443.7	11.4	68.9	-121.46	-466.3	-103.2	533.3	454.1	79.15	6.737				
3,600.0	3,556.8	3,541.8	3,541.8	11.8	70.8	-123.20	-466.3	-103.2	543.9	462.5	81.37	6.684				
3,700.0	3,654.8	3,639.8	3,639.8	12.2	72.8	-124.87	-466.3	-103.2	555.0	471.5	83.59	6.640				
3,800.0	3,752.9	3,737.9	3,737.9	12.7	74.8	-126.48	-466.3	-103.2	566.6	480.8	85.80	6.604				
3,900.0	3,850.9	3,835.9	3,835.9	13.1	76.7	-128.03	-466.3	-103.2	578.7	490.7	88.00	6.576				
4,000.0	3,949.0	3,934.0	3,934.0	13.6	78.7	-129.51	-466.3	-103.2	591.1	500.9	90.19	6.554				
4,100.0	4,047.0	4,032.0	4,032.0	14.0	80.6	-130.93	-466.3	-103.2	603.9	511.6	92.38	6.538				
4,200.0	4,145.1	4,130.1	4,130.1	14.4	82.6	-132.29	-466.3	-103.2	617.1	522.5	94.56	6.526				
4,300.0	4,243.1	4,228.1	4,228.1	14.9	84.6	-133.60	-466.3	-103.2	630.6	533.9	96.73	6.519				
4,400.0	4,341.2	4,326.2	4,326.2	15.3	86.5	-134.85	-466.3	-103.2	644.4	545.5	98.90	6.516				
4,500.0	4,439.3	4,424.3	4,424.3	15.7	88.5	-136.05	-466.3	-103.2	658.6	557.5	101.07	6.516				
4,600.0	4,537.3	4,522.3	4,522.3	16.2	90.4	-137.20	-466.3	-103.2	673.0	569.7	103.24	6.519				
4,700.0	4,635.4	4,620.4	4,620.4	16.6	92.4	-138.30	-466.3	-103.2	687.6	582.2	105.40	6.524				
4,800.0	4,733.4	4,718.4	4,718.4	17.1	94.4	-139.36	-466.3	-103.2	702.5	595.0	107.56	6.532				
4,900.0	4,831.5	4,816.5	4,816.5	17.5	96.3	-140.37	-466.3	-103.2	717.7	607.9	109.71	6.541				
5,000.0	4,929.5	4,914.5	4,914.5	17.9	98.3	-141.34	-466.3	-103.2	733.0	621.1	111.87	6.552				
5,100.0	5,027.6	5,012.6	5,012.6	18.4	100.3	-142.27	-466.3	-103.2	748.5	634.5	114.02	6.565				
5,200.0	5,125.6	5,110.6	5,110.6	18.8	102.2	-143.17	-466.3	-103.2	764.3	648.1	116.17	6.579				
5,300.0	5,223.7	5,208.7	5,208.7	19.3	104.2	-144.02	-466.3	-103.2	780.2	661.8	118.33	6.593				
5,400.0	5,321.7	5,306.7	5,306.7	19.7	106.1	-144.85	-466.3	-103.2	796.2	675.8	120.48	6.609				
5,500.0	5,419.8	5,404.8	5,404.8	20.1	108.1	-145.64	-466.3	-103.2	812.5	689.8	122.63	6.626				
5,600.0	5,517.9	5,502.9	5,502.9	20.6	110.1	-146.40	-466.3	-103.2	828.8	704.1	124.78	6.643				
5,700.0	5,616.1	5,601.1	5,601.1	21.0	112.0	-147.23	-466.3	-103.2	844.4	717.2	127.28	6.634				

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-232
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-232	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 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)				
5,800.0	5,715.0	5,700.0	5,700.0	21.2	114.0	-147.91	-466.3	-103.2	857.3	727.5	129.79	6.605			
5,900.0	5,814.3	5,799.3	5,799.3	21.5	116.0	-148.43	-466.3	-103.2	867.3	735.0	132.22	6.559			
6,000.0	5,913.9	5,898.9	5,898.9	21.7	118.0	-148.78	-466.3	-103.2	874.3	739.7	134.56	6.497			
6,100.0	6,013.8	5,998.8	5,998.8	21.8	120.0	-148.99	-466.3	-103.2	878.4	741.6	136.81	6.420			
6,200.0	6,113.8	6,098.8	6,098.8	22.0	122.0	114.75	-466.3	-103.2	879.5	737.3	142.13	6.188			
6,300.0	6,213.8	6,198.8	6,198.8	22.1	124.0	114.75	-466.3	-103.2	879.5	735.2	144.27	6.096			
6,400.0	6,313.8	6,298.8	6,298.8	22.2	126.0	24.80	-466.3	-103.2	878.7	735.6	143.09	6.141			
6,500.0	6,413.1	6,398.1	6,398.1	22.2	128.0	25.43	-466.3	-103.2	868.6	725.2	143.40	6.057			
6,600.0	6,510.1	6,495.1	6,495.1	22.1	129.9	26.87	-466.3	-103.2	846.9	705.0	141.89	5.968			
6,700.0	6,603.1	6,588.1	6,588.1	21.9	131.8	29.26	-466.3	-103.2	814.1	675.2	138.96	5.859			
6,800.0	6,690.6	6,675.6	6,675.6	21.7	133.5	32.84	-466.3	-103.2	771.3	635.9	135.47	5.694			
6,900.0	6,771.0	6,756.0	6,756.0	21.4	135.1	37.93	-466.3	-103.2	719.8	586.8	132.98	5.413			
7,000.0	6,842.9	6,827.9	6,827.9	21.3	136.6	44.88	-466.3	-103.2	661.2	527.5	133.62	4.948			
7,100.0	6,905.2	6,890.2	6,890.2	21.3	137.8	53.85	-466.3	-103.2	597.9	458.8	139.05	4.300			
7,200.0	6,956.8	6,941.8	6,941.8	21.6	138.8	64.34	-466.3	-103.2	533.0	384.9	148.13	3.598			
7,300.0	6,996.8	6,981.8	6,981.8	22.1	139.6	74.86	-466.3	-103.2	471.1	314.3	156.81	3.004			
7,400.0	7,024.5	7,009.5	7,009.5	22.8	140.2	83.46	-466.3	-103.2	418.0	256.0	162.02	2.580			
7,500.0	7,039.4	7,024.4	7,024.4	23.9	140.5	88.70	-466.3	-103.2	381.3	217.0	164.32	2.320			
7,599.1	7,042.9	7,027.9	7,027.9	25.2	140.6	90.00	-466.3	-103.2	368.2	202.5	165.72	2.222 CC, ES, SF			
7,600.0	7,041.6	7,026.6	7,026.6	25.2	140.5	90.00	-466.3	-103.2	368.2	202.5	165.71	2.222			
7,700.0	7,040.2	7,025.2	7,025.2	26.7	140.5	89.78	-466.3	-103.2	381.8	214.6	167.19	2.284			
7,800.0	7,038.8	7,023.8	7,023.8	28.4	140.5	89.55	-466.3	-103.2	419.5	250.6	168.88	2.484			
7,900.0	7,037.4	7,022.4	7,022.4	30.3	140.4	89.33	-466.3	-103.2	475.5	304.8	170.72	2.785			
8,000.0	7,035.9	7,020.9	7,020.9	32.3	140.4	89.11	-466.3	-103.2	544.3	371.6	172.70	3.152			
8,100.0	7,034.5	7,019.5	7,019.5	34.4	140.4	88.88	-466.3	-103.2	621.6	446.9	174.78	3.557			
8,200.0	7,033.1	7,018.1	7,018.1	36.6	140.4	88.66	-466.3	-103.2	704.7	527.7	176.96	3.982			
8,300.0	7,031.6	7,016.6	7,016.6	38.9	140.3	88.44	-466.3	-103.2	791.7	612.5	179.20	4.418			
8,400.0	7,030.2	7,015.2	7,015.2	41.3	140.3	88.22	-466.3	-103.2	881.4	699.9	181.51	4.856			
8,500.0	7,028.8	7,013.8	7,013.8	43.7	140.3	87.99	-466.3	-103.2	973.2	789.3	183.87	5.293			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20H-232
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-232	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 24-20 (Exist.) - Wellbore #1 - Wellbore #1											Offset Site Error:	0.0 ft
Survey Program: 7362-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth 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		
7,900.0	7,037.4	7,039.4	7,039.4	30.3	140.8	91.99	-448.1	1,046.1	917.8	746.8	170.97	5.368		
8,000.0	7,035.9	7,037.9	7,037.9	32.3	140.8	91.75	-448.1	1,046.1	826.3	653.3	172.98	4.777		
8,100.0	7,034.5	7,036.5	7,036.5	34.4	140.7	91.52	-448.1	1,046.1	736.9	561.8	175.09	4.209		
8,200.0	7,033.1	7,035.1	7,035.1	36.6	140.7	91.28	-448.1	1,046.1	650.6	473.3	177.30	3.670		
8,300.0	7,031.6	7,033.6	7,033.6	38.9	140.7	91.05	-448.1	1,046.1	568.9	389.3	179.58	3.168		
8,400.0	7,030.2	7,032.2	7,032.2	41.3	140.6	90.82	-448.1	1,046.1	493.9	312.0	181.92	2.715		
8,500.0	7,028.8	7,030.8	7,030.8	43.7	140.6	90.58	-448.1	1,046.1	429.2	244.9	184.31	2.329		
8,600.0	7,027.3	7,029.3	7,029.3	46.2	140.6	90.35	-448.1	1,046.1	380.2	193.5	186.74	2.036		
8,700.0	7,025.9	7,027.9	7,027.9	48.6	140.6	90.11	-448.1	1,046.1	353.3	164.1	189.21	1.867		
8,748.5	7,025.2	7,027.2	7,027.2	49.9	140.5	90.00	-448.1	1,046.1	350.0	159.6	190.42	1.838 CC, ES, SF		
8,800.0	7,024.5	7,026.5	7,026.5	51.2	140.5	89.88	-448.1	1,046.1	353.7	162.0	191.70	1.845		
8,900.0	7,023.0	7,025.0	7,025.0	53.7	140.5	89.65	-448.1	1,046.1	381.3	187.1	194.23	1.963		
9,000.0	7,021.6	7,023.6	7,023.6	56.3	140.5	89.41	-448.1	1,046.1	430.9	234.2	196.77	2.190		
9,100.0	7,020.2	7,022.2	7,022.2	58.9	140.4	89.18	-448.1	1,046.1	496.0	296.6	199.33	2.488		
9,200.0	7,018.7	7,020.7	7,020.7	61.5	140.4	88.94	-448.1	1,046.1	571.2	369.3	201.90	2.829		
9,300.0	7,017.3	7,019.3	7,019.3	64.2	140.4	88.71	-448.1	1,046.1	653.1	448.6	204.49	3.194		
9,400.0	7,015.9	7,017.9	7,017.9	66.8	140.4	88.47	-448.1	1,046.1	739.5	532.4	207.09	3.571		
9,500.0	7,014.5	7,016.5	7,016.5	69.5	140.3	88.24	-448.1	1,046.1	828.9	619.2	209.70	3.953		
9,600.0	7,013.0	7,015.0	7,015.0	72.1	140.3	88.01	-448.1	1,046.1	920.5	708.2	212.31	4.336		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20H-232
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-232	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
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
9,100.0	7,020.2	7,052.2	7,052.2	58.9	141.0	93.39	-313.2	2,287.5	915.6	716.0	199.61	4.587	
9,200.0	7,018.7	7,050.7	7,050.7	61.5	141.0	93.01	-313.2	2,287.5	818.7	616.5	202.26	4.048	
9,300.0	7,017.3	7,049.3	7,049.3	64.2	141.0	92.63	-313.2	2,287.5	722.7	517.8	204.93	3.527	
9,400.0	7,015.9	7,047.9	7,047.9	66.8	141.0	92.25	-313.2	2,287.5	628.0	420.4	207.60	3.025	
9,500.0	7,014.5	7,046.5	7,046.5	69.5	140.9	91.87	-313.2	2,287.5	535.2	324.9	210.28	2.545	
9,600.0	7,013.0	7,045.0	7,045.0	72.1	140.9	91.49	-313.2	2,287.5	445.4	232.5	212.96	2.092	
9,700.0	7,011.6	7,043.6	7,043.6	74.8	140.9	91.11	-313.2	2,287.5	361.1	145.5	215.65	1.675	
9,800.0	7,010.2	7,042.2	7,042.2	77.5	140.8	90.72	-313.2	2,287.5	287.0	68.7	218.33	1.315	Level 3
9,900.0	7,008.7	7,040.7	7,040.7	80.2	140.8	90.34	-313.2	2,287.5	233.2	12.2	221.01	1.055	Level 2
9,990.1	7,007.4	7,039.4	7,039.4	82.6	140.8	90.00	-313.2	2,287.5	215.1	-8.3	223.43	0.963	Level 1, CC
10,000.0	7,007.3	7,039.3	7,039.3	82.9	140.8	89.96	-313.2	2,287.5	215.3	-8.3	223.69	0.963	Level 1, ES, SF
10,100.0	7,005.9	7,037.9	7,037.9	85.6	140.8	89.58	-313.2	2,287.5	241.6	15.2	226.37	1.067	Level 2
10,200.0	7,004.4	7,036.4	7,036.4	88.3	140.7	89.20	-313.2	2,287.5	300.6	71.5	229.04	1.312	Level 3
10,300.0	7,003.0	7,035.0	7,035.0	91.1	140.7	88.82	-313.2	2,287.5	377.3	145.5	231.71	1.628	
10,400.0	7,001.6	7,033.6	7,033.6	93.8	140.7	88.44	-313.2	2,287.5	462.9	228.5	234.38	1.975	
10,500.0	7,000.1	7,032.1	7,032.1	96.5	140.6	88.06	-313.2	2,287.5	553.4	316.4	237.03	2.335	
10,600.0	6,998.7	7,030.7	7,030.7	99.3	140.6	87.68	-313.2	2,287.5	646.7	407.0	239.68	2.698	
10,700.0	6,997.3	7,029.3	7,029.3	102.0	140.6	87.30	-313.2	2,287.5	741.7	499.4	242.32	3.061	
10,800.0	6,995.8	7,027.8	7,027.8	104.7	140.6	86.92	-313.2	2,287.5	837.9	593.0	244.96	3.421	
10,900.0	6,994.4	7,026.4	7,026.4	107.5	140.5	86.54	-313.2	2,287.5	934.9	687.3	247.58	3.776	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20H-232
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-232	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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
10,400.0	7,001.6	7,068.6	7,068.6	93.8	141.4	96.93	-214.7	3,687.9	997.3	763.8	233.50	4.271		
10,500.0	7,000.1	7,067.1	7,067.1	96.5	141.3	96.24	-214.7	3,687.9	898.1	661.6	236.51	3.797		
10,600.0	6,998.7	7,065.7	7,065.7	99.3	141.3	95.54	-214.7	3,687.9	799.1	559.6	239.49	3.337		
10,700.0	6,997.3	7,064.3	7,064.3	102.0	141.3	94.84	-214.7	3,687.9	700.3	457.9	242.45	2.888		
10,800.0	6,995.8	7,062.8	7,062.8	104.7	141.3	94.15	-214.7	3,687.9	601.9	356.6	245.38	2.453		
10,900.0	6,994.4	7,061.4	7,061.4	107.5	141.2	93.45	-214.7	3,687.9	504.2	255.9	248.29	2.031		
11,000.0	6,993.0	7,060.0	7,060.0	110.2	141.2	92.74	-214.7	3,687.9	407.6	156.4	251.17	1.623		
11,100.0	6,991.6	7,058.6	7,058.6	113.0	141.2	92.04	-214.7	3,687.9	313.1	59.1	254.01	1.233 Level 2		
11,200.0	6,990.1	7,057.1	7,057.1	115.8	141.1	91.34	-214.7	3,687.9	223.4	-33.4	256.83	0.870 Level 1		
11,300.0	6,988.7	7,055.7	7,055.7	118.5	141.1	90.64	-214.7	3,687.9	147.7	-112.0	259.61	0.569 Level 1		
11,390.6	6,987.4	7,054.4	7,054.4	121.0	141.1	90.00	-214.7	3,687.9	116.6	-145.5	262.10	0.445 Level 1, CC, ES, SF		
11,400.0	6,987.3	7,054.3	7,054.3	121.3	141.1	89.93	-214.7	3,687.9	117.0	-145.4	262.36	0.446 Level 1		
11,488.2	6,986.0	7,053.0	7,053.0	123.7	141.1	89.31	-214.7	3,687.9	152.1	-112.7	264.75	0.574 Level 1		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20H-232
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-232	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		Highside Toolface (°)	Distance		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)					
0.0	0.0	0.0	0.0	0.0	0.0	6.66	382.5	44.6	385.4				
100.0	100.0	85.0	85.0	0.1	1.7	6.66	382.5	44.6	385.1	383.3	1.81	212.471	
200.0	200.0	185.0	185.0	0.3	3.7	6.66	382.5	44.6	385.1	381.1	4.04	95.389	
300.0	300.0	285.0	285.0	0.6	5.7	6.66	382.5	44.6	385.1	378.9	6.26	61.500	
400.0	400.0	385.0	385.0	0.8	7.7	6.66	382.5	44.6	385.1	376.6	8.49	45.378	
500.0	500.0	485.0	485.0	1.0	9.7	6.66	382.5	44.6	385.1	374.4	10.71	35.953	
600.0	600.0	585.0	585.0	1.2	11.7	6.66	382.5	44.6	385.1	372.2	12.94	29.770	
700.0	700.0	685.0	685.0	1.5	13.7	6.66	382.5	44.6	385.1	370.0	15.16	25.402	
800.0	800.0	785.0	785.0	1.7	15.7	6.66	382.5	44.6	385.1	367.7	17.39	22.151	
900.0	900.0	885.0	885.0	1.9	17.7	6.66	382.5	44.6	385.1	365.5	19.61	19.638	
1,000.0	1,000.0	985.0	985.0	2.1	19.7	6.66	382.5	44.6	385.1	363.3	21.84	17.637 CC	
1,100.0	1,100.0	1,085.0	1,085.0	2.3	21.7	103.11	382.5	44.6	385.5	361.5	24.04	16.033	
1,200.0	1,199.8	1,184.8	1,184.8	2.5	23.7	103.84	382.5	44.6	386.7	360.5	26.24	14.737	
1,300.0	1,299.5	1,284.5	1,284.5	2.8	25.7	105.04	382.5	44.6	388.9	360.5	28.44	13.673	
1,400.0	1,398.7	1,383.7	1,383.7	3.0	27.7	106.68	382.5	44.6	392.3	361.6	30.65	12.797	
1,500.0	1,497.5	1,482.5	1,482.5	3.3	29.6	108.73	382.5	44.6	397.1	364.2	32.87	12.081	
1,600.0	1,595.7	1,580.7	1,580.7	3.6	31.6	111.15	382.5	44.6	403.6	368.5	35.09	11.501	
1,700.0	1,693.7	1,678.7	1,678.7	3.9	33.6	113.66	382.5	44.6	411.2	373.9	37.35	11.012	
1,800.0	1,791.8	1,776.8	1,776.8	4.3	35.5	116.08	382.5	44.6	419.6	380.0	39.60	10.596	
1,900.0	1,889.8	1,874.8	1,874.8	4.7	37.5	118.40	382.5	44.6	428.7	386.9	41.86	10.243	
2,000.0	1,987.9	1,972.9	1,972.9	5.1	39.5	120.62	382.5	44.6	438.6	394.4	44.11	9.941	
2,100.0	2,085.9	2,070.9	2,070.9	5.5	41.4	122.75	382.5	44.6	449.0	402.7	46.37	9.684	
2,200.0	2,184.0	2,169.0	2,169.0	5.9	43.4	124.78	382.5	44.6	460.1	411.5	48.61	9.465	
2,300.0	2,282.0	2,267.0	2,267.0	6.3	45.3	126.71	382.5	44.6	471.7	420.8	50.85	9.276	
2,400.0	2,380.1	2,365.1	2,365.1	6.7	47.3	128.55	382.5	44.6	483.8	430.7	53.08	9.115	
2,500.0	2,478.2	2,463.2	2,463.2	7.1	49.3	130.31	382.5	44.6	496.4	441.1	55.31	8.976	
2,600.0	2,576.2	2,561.2	2,561.2	7.5	51.2	131.97	382.5	44.6	509.5	452.0	57.53	8.857	
2,700.0	2,674.3	2,659.3	2,659.3	7.9	53.2	133.55	382.5	44.6	523.0	463.2	59.74	8.754	
2,800.0	2,772.3	2,757.3	2,757.3	8.4	55.1	135.06	382.5	44.6	536.8	474.9	61.95	8.665	
2,900.0	2,870.4	2,855.4	2,855.4	8.8	57.1	136.49	382.5	44.6	551.0	486.9	64.15	8.589	
3,000.0	2,968.4	2,953.4	2,953.4	9.2	59.1	137.84	382.5	44.6	565.5	499.2	66.35	8.524	
3,100.0	3,066.5	3,051.5	3,051.5	9.6	61.0	139.13	382.5	44.6	580.4	511.8	68.54	8.467	
3,200.0	3,164.5	3,149.5	3,149.5	10.1	63.0	140.36	382.5	44.6	595.5	524.7	70.73	8.418	
3,300.0	3,262.6	3,247.6	3,247.6	10.5	65.0	141.53	382.5	44.6	610.8	537.9	72.92	8.377	
3,400.0	3,360.7	3,345.7	3,345.7	10.9	66.9	142.63	382.5	44.6	626.4	551.3	75.10	8.341	
3,500.0	3,458.7	3,443.7	3,443.7	11.4	68.9	143.69	382.5	44.6	642.2	565.0	77.29	8.310	
3,600.0	3,556.8	3,541.8	3,541.8	11.8	70.8	144.70	382.5	44.6	658.3	578.8	79.46	8.284	
3,700.0	3,654.8	3,639.8	3,639.8	12.2	72.8	145.65	382.5	44.6	674.5	592.8	81.64	8.262	
3,800.0	3,752.9	3,737.9	3,737.9	12.7	74.8	146.57	382.5	44.6	690.9	607.1	83.82	8.243	
3,900.0	3,850.9	3,835.9	3,835.9	13.1	76.7	147.44	382.5	44.6	707.4	621.4	85.99	8.227	
4,000.0	3,949.0	3,934.0	3,934.0	13.6	78.7	148.27	382.5	44.6	724.1	636.0	88.16	8.214	
4,100.0	4,047.0	4,032.0	4,032.0	14.0	80.6	149.06	382.5	44.6	741.0	650.7	90.33	8.203	
4,200.0	4,145.1	4,130.1	4,130.1	14.4	82.6	149.82	382.5	44.6	758.0	665.5	92.50	8.194	
4,300.0	4,243.1	4,228.1	4,228.1	14.9	84.6	150.55	382.5	44.6	775.1	680.4	94.67	8.187	
4,400.0	4,341.2	4,326.2	4,326.2	15.3	86.5	151.24	382.5	44.6	792.3	695.5	96.84	8.182	
4,500.0	4,439.3	4,424.3	4,424.3	15.7	88.5	151.91	382.5	44.6	809.7	710.7	99.01	8.178	
4,600.0	4,537.3	4,522.3	4,522.3	16.2	90.4	152.55	382.5	44.6	827.1	725.9	101.18	8.175	
4,700.0	4,635.4	4,620.4	4,620.4	16.6	92.4	153.16	382.5	44.6	844.6	741.3	103.34	8.173	
4,800.0	4,733.4	4,718.4	4,718.4	17.1	94.4	153.74	382.5	44.6	862.3	756.8	105.51	8.172	
4,900.0	4,831.5	4,816.5	4,816.5	17.5	96.3	154.31	382.5	44.6	880.0	772.3	107.68	8.172	
5,000.0	4,929.5	4,914.5	4,914.5	17.9	98.3	154.85	382.5	44.6	897.8	787.9	109.85	8.173	

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-232
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-232	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									
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
5,100.0	5,027.6	5,012.6	5,012.6	18.4	100.3	155.37	382.5	44.6	915.6	803.6	112.01	8.174	
5,200.0	5,125.6	5,110.6	5,110.6	18.8	102.2	155.87	382.5	44.6	933.6	819.4	114.18	8.176	
5,300.0	5,223.7	5,208.7	5,208.7	19.3	104.2	156.35	382.5	44.6	951.6	835.2	116.35	8.179	
5,400.0	5,321.7	5,306.7	5,306.7	19.7	106.1	156.81	382.5	44.6	969.6	851.1	118.51	8.182	
5,500.0	5,419.8	5,404.8	5,404.8	20.1	108.1	157.26	382.5	44.6	987.8	867.1	120.68	8.185	
6,700.0	6,603.1	6,588.1	6,588.1	21.9	131.8	-31.28	382.5	44.6	997.4	859.4	137.99	7.228	
6,800.0	6,690.6	6,675.6	6,675.6	21.7	133.5	-34.67	382.5	44.6	955.3	820.6	134.78	7.088	
6,900.0	6,771.0	6,756.0	6,756.0	21.4	135.1	-39.38	382.5	44.6	904.6	772.0	132.52	6.826	
7,000.0	6,842.9	6,827.9	6,827.9	21.3	136.6	-45.68	382.5	44.6	846.6	713.5	133.09	6.361	
7,100.0	6,905.2	6,890.2	6,890.2	21.3	137.8	-53.67	382.5	44.6	783.6	645.7	137.91	5.682	
7,200.0	6,956.8	6,941.8	6,941.8	21.6	138.8	-63.01	382.5	44.6	717.9	571.6	146.27	4.908	
7,300.0	6,996.8	6,981.8	6,981.8	22.1	139.6	-72.69	382.5	44.6	652.8	497.7	155.04	4.210	
7,400.0	7,024.5	7,009.5	7,009.5	22.8	140.2	-81.27	382.5	44.6	592.0	430.9	161.16	3.674	
7,500.0	7,039.4	7,024.4	7,024.4	23.9	140.5	-87.53	382.5	44.6	540.3	376.1	164.20	3.290	
7,600.0	7,041.6	7,026.6	7,026.6	25.2	140.5	-90.25	382.5	44.6	502.6	336.9	165.70	3.033	
7,700.0	7,040.2	7,025.2	7,025.2	26.7	140.5	-90.08	382.5	44.6	482.9	315.7	167.19	2.888	
7,747.0	7,039.5	7,024.5	7,024.5	27.5	140.5	-90.00	382.5	44.6	480.6	312.6	167.99	2.861	ES, SF
7,800.0	7,038.8	7,023.8	7,023.8	28.4	140.5	-89.91	382.5	44.6	483.5	314.7	168.88	2.863	
7,900.0	7,037.4	7,022.4	7,022.4	30.3	140.4	-89.74	382.5	44.6	504.4	333.7	170.73	2.954	
8,000.0	7,035.9	7,020.9	7,020.9	32.3	140.4	-89.57	382.5	44.6	543.1	370.4	172.71	3.145	
8,100.0	7,034.5	7,019.5	7,019.5	34.4	140.4	-89.40	382.5	44.6	596.3	421.5	174.80	3.411	
8,200.0	7,033.1	7,018.1	7,018.1	36.6	140.4	-89.23	382.5	44.6	660.5	483.5	176.98	3.732	
8,300.0	7,031.6	7,016.6	7,016.6	38.9	140.3	-89.06	382.5	44.6	732.7	553.4	179.24	4.088	
8,400.0	7,030.2	7,015.2	7,015.2	41.3	140.3	-88.89	382.5	44.6	810.8	629.2	181.56	4.466	
8,500.0	7,028.8	7,013.8	7,013.8	43.7	140.3	-88.72	382.5	44.6	893.3	709.4	183.93	4.857	
8,600.0	7,027.3	7,012.3	7,012.3	46.2	140.2	-88.55	382.5	44.6	979.0	792.7	186.34	5.254	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20H-232
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-232	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		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)					
0.0	0.0	0.0	0.0	0.0	0.0	2.74	58.3	2.8	58.4						
100.0	100.0	99.0	99.0	0.1	0.1	2.74	58.3	2.8	58.4	58.1	0.22	260.912			
200.0	200.0	199.0	199.0	0.3	0.3	2.74	58.3	2.8	58.4	57.7	0.67	86.826			
300.0	300.0	299.0	299.0	0.6	0.6	2.74	58.3	2.8	58.4	57.2	1.12	52.026			
400.0	400.0	399.0	399.0	0.8	0.8	2.74	58.3	2.8	58.4	56.8	1.57	37.140			
500.0	500.0	499.0	499.0	1.0	1.0	2.74	58.3	2.8	58.4	56.3	2.02	28.878			
600.0	600.0	599.0	599.0	1.2	1.2	2.74	58.3	2.8	58.4	55.9	2.47	23.622			
700.0	700.0	699.0	699.0	1.5	1.5	2.74	58.3	2.8	58.4	55.4	2.92	19.985			
800.0	800.0	799.0	799.0	1.7	1.7	2.74	58.3	2.8	58.4	55.0	3.37	17.319			
900.0	900.0	899.0	899.0	1.9	1.9	2.74	58.3	2.8	58.4	54.5	3.82	15.280			
1,000.0	1,000.0	999.0	999.0	2.1	2.1	2.74	58.3	2.8	58.4	54.1	4.27	13.671 CC, ES			
1,100.0	1,100.0	1,098.3	1,098.2	2.3	2.3	99.07	59.0	1.3	59.2	54.6	4.69	12.620			
1,200.0	1,199.8	1,197.5	1,197.3	2.5	2.6	99.35	61.1	-3.4	62.0	56.9	5.11	12.120			
1,300.0	1,299.5	1,296.6	1,296.0	2.8	2.8	99.75	64.6	-11.2	66.5	60.9	5.56	11.970			
1,400.0	1,398.7	1,395.5	1,394.3	3.0	3.0	100.21	69.5	-22.0	72.8	66.8	6.04	12.065			
1,500.0	1,497.5	1,494.3	1,491.8	3.3	3.3	100.67	75.8	-36.0	81.0	74.4	6.58	12.318			
1,600.0	1,595.7	1,592.8	1,588.6	3.6	3.6	101.03	83.5	-52.9	90.9	83.7	7.19	12.651			
1,700.0	1,693.7	1,692.0	1,685.5	3.9	4.0	100.54	92.2	-72.1	101.8	93.9	7.86	12.946			
1,800.0	1,791.8	1,791.4	1,782.6	4.3	4.3	100.09	101.0	-91.5	112.7	104.1	8.58	13.139			
1,900.0	1,889.8	1,890.8	1,879.7	4.7	4.7	99.71	109.8	-110.8	123.6	114.3	9.32	13.261			
2,000.0	1,987.9	1,990.2	1,976.8	5.1	5.1	99.40	118.5	-130.2	134.5	124.4	10.09	13.336			
2,100.0	2,085.9	2,089.6	2,073.9	5.5	5.5	99.13	127.3	-149.6	145.4	134.6	10.87	13.378			
2,200.0	2,184.0	2,189.0	2,171.0	5.9	6.0	98.91	136.1	-168.9	156.3	144.7	11.67	13.399			
2,300.0	2,282.0	2,288.4	2,268.1	6.3	6.4	98.71	144.8	-188.3	167.3	154.8	12.48	13.405			
2,400.0	2,380.1	2,387.8	2,365.2	6.7	6.8	98.53	153.6	-207.7	178.2	164.9	13.30	13.400			
2,500.0	2,478.2	2,487.2	2,462.3	7.1	7.3	98.38	162.4	-227.0	189.1	175.0	14.12	13.389			
2,600.0	2,576.2	2,586.6	2,559.4	7.5	7.7	98.24	171.1	-246.4	200.0	185.1	14.96	13.374			
2,700.0	2,674.3	2,686.0	2,656.5	7.9	8.1	98.12	179.9	-265.8	211.0	195.2	15.80	13.355			
2,800.0	2,772.3	2,785.4	2,753.6	8.4	8.6	98.01	188.7	-285.1	221.9	205.3	16.64	13.335			
2,900.0	2,870.4	2,884.8	2,850.7	8.8	9.0	97.91	197.5	-304.5	232.8	215.3	17.49	13.314			
3,000.0	2,968.4	2,984.2	2,947.8	9.2	9.5	97.82	206.2	-323.9	243.8	225.4	18.34	13.292			
3,100.0	3,066.5	3,083.6	3,044.9	9.6	9.9	97.73	215.0	-343.2	254.7	235.5	19.19	13.271			
3,200.0	3,164.5	3,183.0	3,142.0	10.1	10.4	97.66	223.8	-362.6	265.6	245.6	20.05	13.249			
3,300.0	3,262.6	3,282.4	3,239.1	10.5	10.8	97.59	232.5	-382.0	276.5	255.6	20.91	13.228			
3,400.0	3,360.7	3,381.8	3,336.2	10.9	11.3	97.52	241.3	-401.3	287.5	265.7	21.77	13.207			
3,500.0	3,458.7	3,481.2	3,433.3	11.4	11.8	97.46	250.1	-420.7	298.4	275.8	22.63	13.187			
3,600.0	3,556.8	3,580.6	3,530.4	11.8	12.2	97.40	258.9	-440.0	309.3	285.9	23.49	13.168			
3,700.0	3,654.8	3,680.0	3,627.5	12.2	12.7	97.35	267.6	-459.4	320.3	295.9	24.36	13.149			
3,800.0	3,752.9	3,779.4	3,724.6	12.7	13.1	97.30	276.4	-478.8	331.2	306.0	25.22	13.131			
3,900.0	3,850.9	3,878.8	3,821.7	13.1	13.6	97.26	285.2	-498.1	342.1	316.1	26.09	13.113			
4,000.0	3,949.0	3,978.2	3,918.8	13.6	14.0	97.21	293.9	-517.5	353.1	326.1	26.96	13.097			
4,100.0	4,047.0	4,077.6	4,015.9	14.0	14.5	97.17	302.7	-536.9	364.0	336.2	27.83	13.080			
4,200.0	4,145.1	4,177.0	4,113.0	14.4	15.0	97.13	311.5	-556.2	374.9	346.2	28.70	13.065			
4,300.0	4,243.1	4,276.4	4,210.1	14.9	15.4	97.10	320.3	-575.6	385.9	356.3	29.57	13.050			
4,400.0	4,341.2	4,375.8	4,307.2	15.3	15.9	97.06	329.0	-595.0	396.8	366.4	30.44	13.035			
4,500.0	4,439.3	4,475.2	4,404.3	15.7	16.3	97.03	337.8	-614.3	407.7	376.4	31.31	13.021			
4,600.0	4,537.3	4,574.6	4,501.4	16.2	16.8	97.00	346.6	-633.7	418.7	386.5	32.19	13.008			
4,700.0	4,635.4	4,674.0	4,598.5	16.6	17.3	96.97	355.3	-653.1	429.6	396.6	33.06	12.995			
4,800.0	4,733.4	4,773.4	4,695.6	17.1	17.7	96.95	364.1	-672.4	440.5	406.6	33.93	12.983			
4,900.0	4,831.5	4,872.8	4,792.7	17.5	18.2	96.92	372.9	-691.8	451.5	416.7	34.81	12.971			
5,000.0	4,929.5	4,972.2	4,889.8	17.9	18.7	96.90	381.7	-711.2	462.4	426.7	35.68	12.959			

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-232
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-232	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	5,027.6	5,071.6	4,986.9	18.4	19.1	96.87	96.87	390.4	-730.5	473.4	436.8	36.56	12.948	
5,200.0	5,125.6	5,171.0	5,084.0	18.8	19.6	96.85	96.85	399.2	-749.9	484.3	446.9	37.43	12.937	
5,300.0	5,223.7	5,270.4	5,181.1	19.3	20.0	96.83	96.83	408.0	-769.3	495.2	456.9	38.31	12.927	
5,400.0	5,321.7	5,369.8	5,278.2	19.7	20.5	96.81	96.81	416.7	-788.6	506.2	467.0	39.19	12.917	
5,500.0	5,419.8	5,469.2	5,375.3	20.1	21.0	96.79	96.79	425.5	-808.0	517.1	477.0	40.06	12.907	
5,600.0	5,517.9	5,568.6	5,472.4	20.6	21.4	96.77	96.77	434.3	-827.4	528.0	487.1	40.94	12.898	
5,700.0	5,616.1	5,674.7	5,576.4	21.0	21.8	96.92	96.92	443.1	-846.7	538.3	496.6	41.69	12.911	
5,800.0	5,715.0	5,782.4	5,682.6	21.2	22.1	97.09	97.09	450.4	-862.9	546.7	504.4	42.29	12.929	
5,900.0	5,814.3	5,890.4	5,789.6	21.5	22.4	97.21	97.21	456.0	-875.4	553.2	510.4	42.79	12.928	
6,000.0	5,913.9	5,998.5	5,897.4	21.7	22.6	97.29	97.29	460.0	-884.2	557.8	514.6	43.22	12.907	
6,100.0	6,013.8	6,106.8	6,005.5	21.8	22.8	97.34	97.34	462.3	-889.3	560.5	516.9	43.56	12.867	
6,200.0	6,113.8	6,214.1	6,112.8	22.0	23.0	1.14	1.14	463.0	-890.7	561.2	530.2	31.00	18.100	
6,300.0	6,213.8	6,314.1	6,212.8	22.1	23.1	1.14	1.14	463.0	-890.7	561.2	529.8	31.35	17.902	
6,400.0	6,313.8	6,413.6	6,312.3	22.2	23.2	-88.86	-88.86	463.0	-889.9	561.2	516.9	44.31	12.665	
6,500.0	6,413.1	6,512.2	6,410.2	22.2	23.2	-88.89	-88.89	463.0	-879.2	561.2	516.9	44.31	12.664	
6,600.0	6,510.1	6,610.8	6,506.0	22.1	23.1	-88.94	-88.94	463.0	-855.9	561.2	517.1	44.09	12.727	
6,700.0	6,603.1	6,709.5	6,598.0	21.9	22.9	-89.01	-89.01	463.0	-820.5	561.2	517.5	43.71	12.838	
6,800.0	6,690.6	6,808.3	6,684.8	21.7	22.7	-89.09	-89.09	463.0	-773.4	561.2	517.9	43.25	12.975	
6,900.0	6,771.0	6,907.2	6,764.9	21.4	22.4	-89.19	-89.19	463.0	-715.5	561.1	518.3	42.81	13.107	
7,000.0	6,842.9	7,006.2	6,836.9	21.3	22.3	-89.30	-89.30	463.0	-647.7	561.1	518.6	42.53	13.193	
7,100.0	6,905.2	7,105.4	6,899.6	21.3	22.2	-89.42	-89.42	463.0	-570.9	561.1	518.6	42.56	13.185	
7,200.0	6,956.8	7,204.7	6,952.0	21.6	22.3	-89.56	-89.56	463.0	-486.6	561.1	518.1	43.03	13.041	
7,300.0	6,996.8	7,304.3	6,993.0	22.1	22.6	-89.70	-89.70	463.0	-396.0	561.1	517.1	44.04	12.741	
7,400.0	7,024.5	7,404.0	7,022.0	22.8	23.2	-89.84	-89.84	463.0	-300.7	561.1	515.4	45.63	12.296	
7,500.0	7,039.4	7,503.8	7,038.3	23.9	24.1	-89.99	-89.99	463.0	-202.2	561.1	513.3	47.77	11.745	
7,528.1	7,041.3	7,532.0	7,040.6	24.3	24.5	-90.02	-90.02	463.0	-174.2	561.1	512.6	48.48	11.573	
7,600.0	7,041.6	7,603.9	7,041.8	25.2	25.3	-90.11	-90.11	463.0	-102.3	561.1	510.7	50.37	11.140	
7,700.0	7,040.2	7,703.9	7,040.3	26.7	26.8	-90.11	-90.11	463.0	-2.3	561.1	507.7	53.39	10.509	
7,800.0	7,038.8	7,803.9	7,038.9	28.4	28.4	-90.11	-90.11	463.0	97.7	561.1	504.3	56.81	9.876	
7,900.0	7,037.4	7,903.9	7,037.5	30.3	30.3	-90.11	-90.11	463.0	197.7	561.1	500.5	60.56	9.265	
8,000.0	7,035.9	8,003.9	7,036.0	32.3	32.3	-90.11	-90.11	463.0	297.7	561.1	496.5	64.58	8.688	
8,100.0	7,034.5	8,103.9	7,034.6	34.4	34.4	-90.11	-90.11	463.0	397.7	561.1	492.2	68.83	8.152	
8,200.0	7,033.1	8,203.9	7,033.2	36.6	36.6	-90.11	-90.11	463.0	497.7	561.1	487.8	73.25	7.659	
8,300.0	7,031.6	8,303.9	7,031.7	38.9	38.9	-90.11	-90.11	463.0	597.6	561.1	483.2	77.84	7.208	
8,400.0	7,030.2	8,403.9	7,030.3	41.3	41.3	-90.11	-90.11	463.0	697.6	561.1	478.5	82.55	6.797	
8,500.0	7,028.8	8,503.9	7,028.9	43.7	43.7	-90.11	-90.11	463.0	797.6	561.1	473.7	87.36	6.422	
8,600.0	7,027.3	8,603.9	7,027.5	46.2	46.1	-90.11	-90.11	463.0	897.6	561.1	468.8	92.27	6.081	
8,700.0	7,025.9	8,703.9	7,026.0	48.6	48.6	-90.11	-90.11	463.0	997.6	561.1	463.8	97.25	5.769	
8,800.0	7,024.5	8,803.9	7,024.6	51.2	51.1	-90.11	-90.11	463.0	1,097.6	561.1	458.8	102.30	5.484	
8,900.0	7,023.0	8,903.9	7,023.2	53.7	53.7	-90.11	-90.11	463.0	1,197.6	561.1	453.7	107.41	5.224	
9,000.0	7,021.6	9,003.9	7,021.7	56.3	56.3	-90.11	-90.11	463.0	1,297.6	561.1	448.5	112.56	4.985	
9,100.0	7,020.2	9,103.9	7,020.3	58.9	58.9	-90.11	-90.11	463.0	1,397.6	561.1	443.3	117.76	4.765	
9,200.0	7,018.7	9,203.9	7,018.9	61.5	61.5	-90.11	-90.11	463.0	1,497.5	561.1	438.1	122.99	4.562	
9,300.0	7,017.3	9,303.9	7,017.4	64.2	64.1	-90.11	-90.11	463.0	1,597.5	561.1	432.8	128.25	4.375	
9,400.0	7,015.9	9,403.9	7,016.0	66.8	66.8	-90.11	-90.11	463.0	1,697.5	561.1	427.5	133.55	4.201	
9,500.0	7,014.5	9,503.9	7,014.6	69.5	69.4	-90.11	-90.11	463.0	1,797.5	561.1	422.2	138.86	4.040	
9,600.0	7,013.0	9,603.9	7,013.1	72.1	72.1	-90.11	-90.11	463.0	1,897.5	561.1	416.8	144.21	3.891	
9,700.0	7,011.6	9,703.9	7,011.7	74.8	74.8	-90.11	-90.11	463.0	1,997.5	561.1	411.5	149.57	3.751	
9,800.0	7,010.2	9,803.9	7,010.3	77.5	77.5	-90.11	-90.11	463.0	2,097.5	561.1	406.1	154.95	3.621	
9,900.0	7,008.7	9,903.9	7,008.8	80.2	80.2	-90.11	-90.11	463.0	2,197.5	561.1	400.7	160.34	3.499	
10,000.0	7,007.3	10,003.9	7,007.4	82.9	82.9	-90.11	-90.11	463.0	2,297.5	561.0	395.3	165.75	3.385	

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-232
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-232	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	7,005.9	10,103.9	7,006.0	85.6	85.6	-90.11	463.0	2,397.5	561.0	389.9	171.17	3.278					
10,200.0	7,004.4	10,203.9	7,004.6	88.3	88.3	-90.11	463.0	2,497.4	561.0	384.4	176.61	3.177					
10,300.0	7,003.0	10,303.9	7,003.1	91.1	91.0	-90.11	463.0	2,597.4	561.0	379.0	182.05	3.082					
10,400.0	7,001.6	10,403.9	7,001.7	93.8	93.7	-90.11	463.0	2,697.4	561.0	373.5	187.51	2.992					
10,500.0	7,000.1	10,503.9	7,000.3	96.5	96.5	-90.11	463.0	2,797.4	561.0	368.1	192.98	2.907					
10,600.0	6,998.7	10,603.9	6,998.8	99.3	99.2	-90.11	463.0	2,897.4	561.0	362.6	198.45	2.827					
10,700.0	6,997.3	10,703.9	6,997.4	102.0	102.0	-90.11	463.0	2,997.4	561.0	357.1	203.93	2.751					
10,800.0	6,995.8	10,803.9	6,996.0	104.7	104.7	-90.11	463.0	3,097.4	561.0	351.6	209.42	2.679					
10,900.0	6,994.4	10,903.9	6,994.5	107.5	107.4	-90.11	463.0	3,197.4	561.0	346.1	214.91	2.611					
11,000.0	6,993.0	11,003.9	6,993.1	110.2	110.2	-90.11	463.0	3,297.4	561.0	340.6	220.41	2.545					
11,100.0	6,991.6	11,103.9	6,991.7	113.0	112.9	-90.11	463.0	3,397.4	561.0	335.1	225.92	2.483					
11,200.0	6,990.1	11,203.9	6,990.2	115.8	115.7	-90.11	463.0	3,497.3	561.0	329.6	231.43	2.424					
11,300.0	6,988.7	11,303.9	6,988.8	118.5	118.5	-90.11	463.0	3,597.3	561.0	324.1	236.95	2.368					
11,400.0	6,987.3	11,403.9	6,987.4	121.3	121.2	-90.11	463.0	3,697.3	561.0	318.6	242.43	2.314					
11,488.2	6,986.0	11,492.1	6,986.1	123.7	122.7	-90.11	463.0	3,785.5	561.0	314.6	246.40	2.277 SF					

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20H-232
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-232	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	1.75	1.75	91.1	2.8	91.1				
100.0	100.0	100.0	100.0	0.1	0.1	1.75	1.75	91.1	2.8	91.1	90.9	0.22	405.395	
200.0	200.0	200.0	200.0	0.3	0.3	1.75	1.75	91.1	2.8	91.1	90.4	0.67	135.132	
300.0	300.0	300.0	300.0	0.6	0.6	1.75	1.75	91.1	2.8	91.1	90.0	1.12	81.079	
400.0	400.0	400.0	400.0	0.8	0.8	1.75	1.75	91.1	2.8	91.1	89.5	1.57	57.914	
500.0	500.0	500.0	500.0	1.0	1.0	1.75	1.75	91.1	2.8	91.1	89.1	2.02	45.044	
600.0	600.0	600.0	600.0	1.2	1.2	1.75	1.75	91.1	2.8	91.1	88.6	2.47	36.854	
700.0	700.0	700.0	700.0	1.5	1.5	1.75	1.75	91.1	2.8	91.1	88.2	2.92	31.184	
800.0	800.0	800.0	800.0	1.7	1.7	1.75	1.75	91.1	2.8	91.1	87.7	3.37	27.026 CC, ES	
900.0	900.0	898.5	898.5	1.9	1.9	0.82	0.82	91.9	1.3	91.9	88.1	3.81	24.122	
1,000.0	1,000.0	996.8	996.6	2.1	2.1	-1.87	-1.87	94.4	-3.1	94.5	90.3	4.25	22.248	
1,100.0	1,100.0	1,094.7	1,094.2	2.3	2.3	91.08	91.08	98.5	-10.4	99.3	94.6	4.69	21.179	
1,200.0	1,199.8	1,192.3	1,191.1	2.5	2.6	88.50	88.50	104.3	-20.5	106.3	101.2	5.13	20.720	
1,300.0	1,299.5	1,289.5	1,287.1	2.8	2.9	86.61	86.61	111.7	-33.5	115.4	109.8	5.61	20.588	
1,400.0	1,398.7	1,386.3	1,382.2	3.0	3.2	85.33	85.33	120.6	-49.2	126.5	120.4	6.13	20.647	
1,500.0	1,497.5	1,485.0	1,478.7	3.3	3.5	84.91	84.91	130.7	-67.1	138.8	132.1	6.71	20.691	
1,600.0	1,595.7	1,584.2	1,575.7	3.6	3.9	85.84	85.84	141.0	-85.2	150.9	143.5	7.35	20.514	
1,700.0	1,693.7	1,683.4	1,672.7	3.9	4.3	87.04	87.04	151.3	-103.3	163.0	154.9	8.05	20.248	
1,800.0	1,791.8	1,782.6	1,769.7	4.3	4.7	88.07	88.07	161.5	-121.4	175.1	166.3	8.77	19.960	
1,900.0	1,889.8	1,881.8	1,866.8	4.7	5.1	88.96	88.96	171.8	-139.5	187.3	177.7	9.52	19.669	
2,000.0	1,987.9	1,981.0	1,963.8	5.1	5.5	89.75	89.75	182.0	-157.6	199.5	189.2	10.29	19.389	
2,100.0	2,085.9	2,080.3	2,060.8	5.5	6.0	90.45	90.45	192.3	-175.7	211.7	200.7	11.07	19.124	
2,200.0	2,184.0	2,179.5	2,157.8	5.9	6.4	91.07	91.07	202.5	-193.7	224.0	212.2	11.87	18.877	
2,300.0	2,282.0	2,278.7	2,254.8	6.3	6.8	91.62	91.62	212.8	-211.8	236.3	223.7	12.67	18.648	
2,400.0	2,380.1	2,377.9	2,351.8	6.7	7.3	92.12	92.12	223.0	-229.9	248.7	235.2	13.49	18.437	
2,500.0	2,478.2	2,477.1	2,448.8	7.1	7.7	92.57	92.57	233.3	-248.0	261.0	246.7	14.31	18.243	
2,600.0	2,576.2	2,576.3	2,545.8	7.5	8.2	92.99	92.99	243.6	-266.1	273.4	258.2	15.13	18.064	
2,700.0	2,674.3	2,675.6	2,642.9	7.9	8.6	93.36	93.36	253.8	-284.2	285.7	269.8	15.96	17.898	
2,800.0	2,772.3	2,774.8	2,739.9	8.4	9.0	93.71	93.71	264.1	-302.3	298.1	281.3	16.80	17.746	
2,900.0	2,870.4	2,874.0	2,836.9	8.8	9.5	94.03	94.03	274.3	-320.3	310.5	292.9	17.64	17.605	
3,000.0	2,968.4	2,973.2	2,933.9	9.2	9.9	94.32	94.32	284.6	-338.4	322.9	304.4	18.48	17.475	
3,100.0	3,066.5	3,072.4	3,030.9	9.6	10.4	94.59	94.59	294.8	-356.5	335.3	316.0	19.32	17.353	
3,200.0	3,164.5	3,171.6	3,127.9	10.1	10.8	94.84	94.84	305.1	-374.6	347.7	327.6	20.17	17.241	
3,300.0	3,262.6	3,270.8	3,224.9	10.5	11.3	95.08	95.08	315.3	-392.7	360.2	339.1	21.02	17.136	
3,400.0	3,360.7	3,370.1	3,321.9	10.9	11.7	95.30	95.30	325.6	-410.8	372.6	350.7	21.87	17.039	
3,500.0	3,458.7	3,469.3	3,419.0	11.4	12.2	95.50	95.50	335.9	-428.9	385.0	362.3	22.72	16.947	
3,600.0	3,556.8	3,568.5	3,516.0	11.8	12.6	95.69	95.69	346.1	-446.9	397.4	373.9	23.57	16.862	
3,700.0	3,654.8	3,667.7	3,613.0	12.2	13.1	95.88	95.88	356.4	-465.0	409.9	385.5	24.43	16.781	
3,800.0	3,752.9	3,766.9	3,710.0	12.7	13.5	96.05	96.05	366.6	-483.1	422.3	397.0	25.28	16.706	
3,900.0	3,850.9	3,866.1	3,807.0	13.1	14.0	96.21	96.21	376.9	-501.2	434.8	408.6	26.14	16.635	
4,000.0	3,949.0	3,965.3	3,904.0	13.6	14.4	96.36	96.36	387.1	-519.3	447.2	420.2	26.99	16.568	
4,100.0	4,047.0	4,064.6	4,001.0	14.0	14.9	96.50	96.50	397.4	-537.4	459.7	431.8	27.85	16.505	
4,200.0	4,145.1	4,163.8	4,098.0	14.4	15.3	96.64	96.64	407.7	-555.4	472.1	443.4	28.71	16.445	
4,300.0	4,243.1	4,263.0	4,195.1	14.9	15.8	96.76	96.76	417.9	-573.5	484.6	455.0	29.57	16.389	
4,400.0	4,341.2	4,362.2	4,292.1	15.3	16.3	96.89	96.89	428.2	-591.6	497.1	466.6	30.43	16.335	
4,500.0	4,439.3	4,461.4	4,389.1	15.7	16.7	97.00	97.00	438.4	-609.7	509.5	478.2	31.29	16.284	
4,600.0	4,537.3	4,560.6	4,486.1	16.2	17.2	97.11	97.11	448.7	-627.8	522.0	489.8	32.15	16.236	
4,700.0	4,635.4	4,659.9	4,583.1	16.6	17.6	97.22	97.22	458.9	-645.9	534.5	501.4	33.01	16.190	
4,800.0	4,733.4	4,759.1	4,680.1	17.1	18.1	97.32	97.32	469.2	-664.0	546.9	513.0	33.87	16.146	
4,900.0	4,831.5	4,858.3	4,777.1	17.5	18.5	97.41	97.41	479.4	-682.0	559.4	524.7	34.74	16.104	
5,000.0	4,929.5	4,957.5	4,874.1	17.9	19.0	97.51	97.51	489.7	-700.1	571.9	536.3	35.60	16.065	

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-232
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-232	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	5,027.6	5,056.7	4,971.2	18.4	19.4	97.59	97.59	500.0	-718.2	584.3	547.9	36.46	16.026	
5,200.0	5,125.6	5,155.9	5,068.2	18.8	19.9	97.68	97.68	510.2	-736.3	596.8	559.5	37.32	15.990	
5,300.0	5,223.7	5,255.1	5,165.2	19.3	20.3	97.76	97.76	520.5	-754.4	609.3	571.1	38.19	15.955	
5,400.0	5,321.7	5,354.4	5,262.2	19.7	20.8	97.84	97.84	530.7	-772.5	621.8	582.7	39.05	15.922	
5,500.0	5,419.8	5,453.6	5,359.2	20.1	21.3	97.91	97.91	541.0	-790.6	634.2	594.3	39.92	15.890	
5,600.0	5,517.9	5,552.8	5,456.2	20.6	21.7	97.98	97.98	551.2	-808.6	646.7	605.9	40.78	15.859	
5,700.0	5,616.1	5,652.0	5,553.2	21.0	22.2	98.15	98.15	561.5	-826.7	659.0	617.4	41.60	15.841	
5,800.0	5,715.0	5,757.5	5,656.5	21.2	22.6	98.09	98.09	572.1	-845.5	670.7	628.4	42.29	15.857	
5,900.0	5,814.3	5,869.1	5,766.5	21.5	23.0	97.94	97.94	581.5	-862.0	680.2	637.4	42.86	15.870	
6,000.0	5,913.9	5,981.3	5,877.7	21.7	23.3	97.75	97.75	588.8	-874.9	687.5	644.2	43.32	15.870	
6,100.0	6,013.8	6,093.9	5,989.7	21.8	23.5	97.52	97.52	594.0	-884.0	692.5	648.8	43.70	15.849	
6,200.0	6,113.8	6,206.8	6,102.5	22.0	23.7	1.04	1.04	597.0	-889.3	695.3	663.3	32.00	21.726	
6,300.0	6,213.8	6,318.1	6,213.8	22.1	23.8	0.92	0.92	597.8	-890.7	696.0	663.6	32.36	21.506	
6,400.0	6,313.8	6,418.1	6,313.8	22.2	23.9	-89.15	-89.15	597.8	-890.7	696.0	651.5	44.48	15.646	
6,500.0	6,413.1	6,517.4	6,413.0	22.2	24.0	-89.96	-89.96	597.8	-889.4	695.9	651.3	44.53	15.628	
6,504.0	6,417.1	6,521.4	6,417.1	22.2	24.0	-90.00	-90.00	597.8	-889.2	695.9	651.4	44.52	15.630	
6,600.0	6,510.1	6,617.4	6,512.2	22.1	24.0	-90.94	-90.94	597.8	-877.1	696.0	651.6	44.32	15.702	
6,700.0	6,603.1	6,719.0	6,610.5	21.9	23.9	-91.90	-91.90	597.8	-851.4	696.3	652.3	43.93	15.850	
6,800.0	6,690.6	6,822.3	6,705.9	21.7	23.7	-92.84	-92.84	597.8	-812.2	696.7	653.3	43.42	16.048	
6,900.0	6,771.0	6,927.2	6,796.6	21.4	23.5	-93.74	-93.74	597.8	-759.6	697.4	654.5	42.88	16.262	
7,000.0	6,842.9	7,033.8	6,880.4	21.3	23.2	-94.58	-94.58	597.8	-693.9	698.1	655.7	42.47	16.439	
7,100.0	6,905.2	7,142.0	6,955.3	21.3	23.0	-95.33	-95.33	597.8	-616.0	698.9	656.6	42.33	16.513	
7,200.0	6,956.8	7,251.6	7,019.3	21.6	22.9	-96.00	-96.00	597.8	-527.1	699.7	657.1	42.63	16.413	
7,300.0	6,996.8	7,362.5	7,070.3	22.1	23.1	-96.55	-96.55	597.8	-428.7	700.5	656.9	43.53	16.091	
7,400.0	7,024.5	7,474.5	7,106.9	22.8	23.5	-96.98	-96.98	597.8	-322.9	701.1	656.0	45.09	15.549	
7,500.0	7,039.4	7,587.3	7,127.8	23.9	24.4	-97.28	-97.28	597.8	-212.2	701.5	654.3	47.28	14.839	
7,600.0	7,041.6	7,698.8	7,132.2	25.2	25.6	-97.42	-97.42	597.8	-100.9	701.7	651.8	49.97	14.044	
7,700.0	7,040.2	7,798.8	7,130.7	26.7	27.0	-97.41	-97.41	597.8	-0.9	701.7	648.8	52.95	13.253	
7,800.0	7,038.8	7,898.8	7,129.1	28.4	28.6	-97.39	-97.39	597.8	99.1	701.7	645.4	56.33	12.458	
7,900.0	7,037.4	7,998.8	7,127.5	30.3	30.4	-97.38	-97.38	597.8	199.1	701.7	641.7	60.03	11.689	
8,000.0	7,035.9	8,098.8	7,125.9	32.3	32.4	-97.37	-97.37	597.8	299.1	701.7	637.7	64.01	10.962	
8,100.0	7,034.5	8,198.8	7,124.4	34.4	34.5	-97.36	-97.36	597.8	399.1	701.6	633.4	68.21	10.287	
8,200.0	7,033.1	8,298.8	7,122.8	36.6	36.7	-97.35	-97.35	597.8	499.0	701.6	629.0	72.59	9.666	
8,300.0	7,031.6	8,398.8	7,121.2	38.9	39.0	-97.34	-97.34	597.8	599.0	701.6	624.5	77.13	9.097	
8,400.0	7,030.2	8,498.8	7,119.7	41.3	41.3	-97.33	-97.33	597.8	699.0	701.6	619.8	81.79	8.577	
8,500.0	7,028.8	8,598.8	7,118.1	43.7	43.7	-97.32	-97.32	597.8	799.0	701.6	615.0	86.57	8.104	
8,600.0	7,027.3	8,698.8	7,116.5	46.2	46.1	-97.30	-97.30	597.8	899.0	701.5	610.1	91.43	7.673	
8,700.0	7,025.9	8,798.8	7,114.9	48.6	48.6	-97.29	-97.29	597.8	999.0	701.5	605.2	96.37	7.279	
8,800.0	7,024.5	8,898.8	7,113.4	51.2	51.2	-97.28	-97.28	597.8	1,099.0	701.5	600.1	101.38	6.920	
8,900.0	7,023.0	8,998.8	7,111.8	53.7	53.7	-97.27	-97.27	597.8	1,199.0	701.5	595.0	106.44	6.590	
9,000.0	7,021.6	9,098.8	7,110.2	56.3	56.3	-97.26	-97.26	597.8	1,298.9	701.5	589.9	111.56	6.288	
9,100.0	7,020.2	9,198.8	7,108.7	58.9	58.9	-97.25	-97.25	597.8	1,398.9	701.5	584.7	116.71	6.010	
9,200.0	7,018.7	9,298.8	7,107.1	61.5	61.5	-97.24	-97.24	597.8	1,498.9	701.4	579.5	121.90	5.754	
9,300.0	7,017.3	9,398.8	7,105.5	64.2	64.1	-97.23	-97.23	597.8	1,598.9	701.4	574.3	127.13	5.517	
9,400.0	7,015.9	9,498.8	7,104.0	66.8	66.8	-97.21	-97.21	597.8	1,698.9	701.4	569.0	132.38	5.298	
9,500.0	7,014.5	9,598.8	7,102.4	69.5	69.4	-97.20	-97.20	597.8	1,798.9	701.4	563.7	137.66	5.095	
9,600.0	7,013.0	9,698.8	7,100.8	72.1	72.1	-97.19	-97.19	597.8	1,898.9	701.4	558.4	142.96	4.906	
9,700.0	7,011.6	9,798.8	7,099.2	74.8	74.8	-97.18	-97.18	597.8	1,998.9	701.3	553.1	148.29	4.730	
9,800.0	7,010.2	9,898.8	7,097.7	77.5	77.4	-97.17	-97.17	597.8	2,098.8	701.3	547.7	153.63	4.565	
9,900.0	7,008.7	9,998.8	7,096.1	80.2	80.1	-97.16	-97.16	597.8	2,198.8	701.3	542.3	158.98	4.411	
10,000.0	7,007.3	10,098.8	7,094.5	82.9	82.8	-97.15	-97.15	597.8	2,298.8	701.3	536.9	164.35	4.267	

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-232
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-232	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		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	7,005.9	10,198.8	7,093.0	85.6	85.5	-97.13	597.8	2,398.8	701.3	531.5	169.74	4.131	
10,200.0	7,004.4	10,298.8	7,091.4	88.3	88.3	-97.12	597.8	2,498.8	701.3	526.1	175.14	4.004	
10,300.0	7,003.0	10,398.8	7,089.8	91.1	91.0	-97.11	597.8	2,598.8	701.2	520.7	180.54	3.884	
10,400.0	7,001.6	10,498.8	7,088.2	93.8	93.7	-97.10	597.8	2,698.8	701.2	515.3	185.96	3.771	
10,500.0	7,000.1	10,598.8	7,086.7	96.5	96.4	-97.09	597.8	2,798.8	701.2	509.8	191.39	3.664	
10,600.0	6,998.7	10,698.8	7,085.1	99.3	99.2	-97.08	597.8	2,898.7	701.2	504.4	196.83	3.562	
10,700.0	6,997.3	10,798.8	7,083.5	102.0	101.9	-97.07	597.8	2,998.7	701.2	498.9	202.27	3.466	
10,800.0	6,995.8	10,898.8	7,082.0	104.7	104.7	-97.06	597.8	3,098.7	701.1	493.4	207.72	3.375	
10,900.0	6,994.4	10,998.8	7,080.4	107.5	107.4	-97.04	597.8	3,198.7	701.1	487.9	213.18	3.289	
11,000.0	6,993.0	11,098.8	7,078.8	110.2	110.1	-97.03	597.8	3,298.7	701.1	482.5	218.65	3.207	
11,100.0	6,991.6	11,198.8	7,077.3	113.0	112.9	-97.02	597.8	3,398.7	701.1	477.0	224.12	3.128	
11,200.0	6,990.1	11,298.8	7,075.7	115.8	115.7	-97.01	597.8	3,498.7	701.1	471.5	229.59	3.054	
11,300.0	6,988.7	11,398.8	7,074.1	118.5	118.4	-97.00	597.8	3,598.7	701.1	466.0	235.07	2.982	
11,400.0	6,987.3	11,498.8	7,072.5	121.3	121.2	-96.99	597.8	3,698.6	701.0	460.5	240.56	2.914	
11,488.2	6,986.0	11,587.0	7,071.2	123.7	122.7	-96.98	597.8	3,786.9	701.0	456.5	244.52	2.867 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20H-232
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-232	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-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 (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	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		
900.0	900.0	900.0	900.0	1.9	1.9	0.00	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	0.00	29.1	0.0	29.1	24.9	4.27	6.825 CC		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.4	99.59	29.1	0.0	29.4	24.7	4.71	6.245		
1,200.0	1,199.8	1,199.8	1,199.8	2.5	2.6	109.23	29.1	0.0	30.7	25.6	5.13	5.980		
1,300.0	1,299.5	1,299.5	1,299.5	2.8	2.8	122.90	29.1	0.0	34.6	29.0	5.57	6.211		
1,400.0	1,398.7	1,398.7	1,398.7	3.0	3.0	136.68	29.1	0.0	42.5	36.5	5.99	7.082		
1,500.0	1,497.5	1,497.5	1,497.5	3.3	3.3	147.78	29.1	0.0	54.9	48.5	6.41	8.565		
1,600.0	1,595.7	1,597.7	1,597.6	3.6	3.5	155.11	29.3	-1.7	70.3	63.5	6.82	10.304		
1,700.0	1,693.7	1,698.9	1,698.7	3.9	3.7	158.82	29.6	-6.9	84.1	76.9	7.25	11.609		
1,800.0	1,791.8	1,801.0	1,800.5	4.3	3.9	160.44	30.2	-15.8	95.1	87.4	7.69	12.368		
1,900.0	1,889.8	1,903.8	1,902.5	4.7	4.1	160.76	31.0	-28.4	103.0	94.9	8.15	12.635		
2,000.0	1,987.9	2,007.0	2,004.4	5.1	4.4	160.08	32.1	-44.7	107.8	99.1	8.64	12.472		
2,100.0	2,085.9	2,110.3	2,105.7	5.5	4.7	158.48	33.4	-64.6	109.5	100.3	9.17	11.943		
2,200.0	2,184.0	2,210.7	2,203.7	5.9	5.0	156.34	34.8	-86.2	109.4	99.6	9.72	11.246		
2,235.5	2,218.8	2,246.2	2,238.4	6.0	5.2	155.58	35.3	-93.9	109.4	99.4	9.93	11.010		
2,300.0	2,282.0	2,310.6	2,301.3	6.3	5.4	154.20	36.2	-107.8	109.4	99.1	10.31	10.605		
2,400.0	2,380.1	2,410.5	2,398.8	6.7	5.8	152.06	37.6	-129.3	109.6	98.6	10.94	10.015		
2,500.0	2,478.2	2,510.4	2,496.4	7.1	6.2	149.93	39.0	-150.8	109.9	98.3	11.60	9.474		
2,600.0	2,576.2	2,610.3	2,593.9	7.5	6.5	147.82	40.4	-172.3	110.4	98.1	12.29	8.979		
2,700.0	2,674.3	2,710.3	2,691.5	7.9	7.0	145.73	41.8	-193.9	111.0	98.0	13.02	8.526		
2,800.0	2,772.3	2,810.2	2,789.1	8.4	7.4	143.66	43.2	-215.4	111.8	98.0	13.78	8.112		
2,900.0	2,870.4	2,910.1	2,886.6	8.8	7.8	141.63	44.6	-236.9	112.7	98.1	14.57	7.736		
3,000.0	2,968.4	3,010.0	2,984.2	9.2	8.2	139.63	46.0	-258.5	113.7	98.4	15.38	7.393		
3,100.0	3,066.5	3,109.9	3,081.7	9.6	8.7	137.67	47.4	-280.0	114.9	98.7	16.23	7.082		
3,200.0	3,164.5	3,209.8	3,179.3	10.1	9.1	135.75	48.8	-301.5	116.3	99.2	17.10	6.800		
3,300.0	3,262.6	3,309.8	3,276.9	10.5	9.5	133.88	50.2	-323.1	117.7	99.7	17.98	6.545		
3,400.0	3,360.7	3,409.7	3,374.4	10.9	10.0	132.05	51.6	-344.6	119.3	100.4	18.89	6.314		
3,500.0	3,458.7	3,509.6	3,472.0	11.4	10.4	130.28	53.0	-366.1	121.0	101.2	19.82	6.105		
3,600.0	3,556.8	3,609.5	3,569.5	11.8	10.9	128.55	54.4	-387.7	122.8	102.0	20.75	5.916		
3,700.0	3,654.8	3,709.4	3,667.1	12.2	11.3	126.88	55.8	-409.2	124.7	103.0	21.70	5.745		
3,800.0	3,752.9	3,809.3	3,764.7	12.7	11.8	125.25	57.2	-430.7	126.7	104.1	22.66	5.591		
3,900.0	3,850.9	3,909.3	3,862.2	13.1	12.3	123.68	58.6	-452.2	128.8	105.2	23.63	5.451		
4,000.0	3,949.0	4,009.2	3,959.8	13.6	12.7	122.16	60.0	-473.8	131.0	106.4	24.61	5.325		
4,100.0	4,047.0	4,109.1	4,057.3	14.0	13.2	120.70	61.4	-495.3	133.3	107.8	25.59	5.211		
4,200.0	4,145.1	4,209.0	4,154.9	14.4	13.6	119.28	62.8	-516.8	135.7	109.2	26.57	5.108		
4,300.0	4,243.1	4,308.9	4,252.4	14.9	14.1	117.91	64.2	-538.4	138.2	110.6	27.55	5.015		
4,400.0	4,341.2	4,408.8	4,350.0	15.3	14.6	116.60	65.6	-559.9	140.7	112.2	28.54	4.931		
4,500.0	4,439.3	4,508.8	4,447.6	15.7	15.0	115.32	67.0	-581.4	143.3	113.8	29.53	4.855		
4,600.0	4,537.3	4,608.7	4,545.1	16.2	15.5	114.10	68.4	-603.0	146.0	115.5	30.51	4.786		
4,700.0	4,635.4	4,708.6	4,642.7	16.6	15.9	112.92	69.8	-624.5	148.8	117.3	31.50	4.723		
4,800.0	4,733.4	4,808.5	4,740.2	17.1	16.4	111.78	71.2	-646.0	151.6	119.1	32.48	4.666		
4,900.0	4,831.5	4,908.4	4,837.8	17.5	16.9	110.69	72.7	-667.6	154.4	121.0	33.46	4.615		

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-232
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-232	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-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
5,000.0	4,929.5	5,008.3	4,935.4	17.9	17.4	109.63		74.1	-689.1	157.3	122.9	34.44	4.568	
5,100.0	5,027.6	5,108.3	5,032.9	18.4	17.8	108.61		75.5	-710.6	160.3	124.9	35.42	4.526	
5,200.0	5,125.6	5,208.2	5,130.5	18.8	18.3	107.64		76.9	-732.1	163.3	126.9	36.39	4.488	
5,300.0	5,223.7	5,308.1	5,228.0	19.3	18.8	106.69		78.3	-753.7	166.4	129.0	37.36	4.453	
5,400.0	5,321.7	5,408.0	5,325.6	19.7	19.2	105.78		79.7	-775.2	169.5	131.2	38.33	4.422	
5,500.0	5,419.8	5,507.9	5,423.2	20.1	19.7	104.91		81.1	-796.7	172.6	133.3	39.30	4.393	
5,600.0	5,517.9	5,607.8	5,520.7	20.6	20.2	104.06		82.5	-818.3	175.8	135.6	40.26	4.368	
5,700.0	5,616.1	5,707.6	5,618.2	21.0	20.6	103.03		83.9	-839.5	178.8	137.7	41.15	4.345	
5,800.0	5,715.0	5,807.2	5,716.0	21.2	20.9	101.86		85.1	-858.0	181.3	139.4	41.82	4.334	
5,900.0	5,814.3	5,907.0	5,814.6	21.5	21.2	100.73		86.1	-873.1	183.2	140.8	42.41	4.320	
6,000.0	5,913.9	6,006.8	5,913.8	21.7	21.4	99.63		86.8	-884.8	184.6	141.7	42.90	4.303	
6,100.0	6,013.8	6,106.9	6,013.5	21.8	21.6	98.54		87.3	-893.0	185.5	142.2	43.30	4.283	
6,200.0	6,113.8	6,207.0	6,113.5	22.0	21.8	1.27		87.7	-897.8	185.8	156.5	29.29	6.343	
6,300.0	6,213.8	6,307.3	6,213.8	22.1	21.9	0.86		87.7	-899.1	185.9	156.2	29.63	6.272	
6,400.0	6,313.8	6,407.3	6,313.8	22.2	22.1	-89.39		87.7	-899.1	185.9	141.7	44.16	4.209	
6,426.6	6,340.4	6,433.9	6,340.4	22.2	22.1	-89.92		87.7	-899.1	185.8	141.6	44.20	4.205	
6,500.0	6,413.1	6,507.1	6,413.6	22.2	22.2	-92.31		87.7	-897.4	186.0	141.7	44.29	4.199	
6,600.0	6,510.1	6,608.2	6,513.7	22.1	22.2	-95.69		87.7	-884.1	186.8	142.7	44.10	4.235	
6,700.0	6,603.1	6,710.9	6,612.7	21.9	22.0	-98.95		87.7	-857.2	188.2	144.5	43.62	4.314	
6,800.0	6,690.6	6,815.1	6,708.6	21.7	21.8	-102.03		87.7	-816.5	190.1	147.2	42.91	4.430	
6,900.0	6,771.0	6,920.8	6,799.3	21.4	21.6	-104.87		87.7	-762.4	192.3	150.3	42.08	4.570	
7,000.0	6,842.9	7,028.0	6,882.7	21.3	21.4	-107.40		87.7	-695.2	194.8	153.5	41.30	4.717	
7,100.0	6,905.2	7,136.6	6,956.8	21.3	21.4	-109.59		87.7	-616.0	197.3	156.6	40.74	4.843	
7,200.0	6,956.8	7,246.4	7,019.5	21.6	21.5	-111.40		87.7	-526.0	199.6	159.0	40.61	4.917	
7,300.0	6,996.8	7,357.2	7,069.1	22.1	22.0	-112.82		87.7	-427.0	201.6	160.6	41.08	4.908	
7,400.0	7,024.5	7,468.9	7,104.1	22.8	22.9	-113.82		87.7	-321.0	203.2	160.9	42.27	4.806	
7,500.0	7,039.4	7,581.1	7,123.3	23.9	24.1	-114.41		87.7	-210.6	204.1	159.9	44.17	4.621	
7,600.0	7,041.6	7,691.0	7,126.6	25.2	25.5	-114.56		87.7	-100.8	204.3	157.7	46.66	4.379	
7,700.0	7,040.2	7,791.0	7,124.8	26.7	27.0	-114.48		87.7	-0.8	204.2	154.7	49.49	4.125	
7,800.0	7,038.8	7,891.0	7,123.0	28.4	28.7	-114.39		87.7	99.2	204.0	151.4	52.68	3.873	
7,900.0	7,037.4	7,991.0	7,121.3	30.3	30.6	-114.31		87.7	199.1	203.9	147.7	56.17	3.630	
8,000.0	7,035.9	8,091.0	7,119.5	32.3	32.7	-114.22		87.7	299.1	203.8	143.9	59.90	3.402	
8,100.0	7,034.5	8,191.0	7,117.7	34.4	34.8	-114.14		87.7	399.1	203.6	139.8	63.84	3.190	
8,200.0	7,033.1	8,291.0	7,116.0	36.6	37.0	-114.05		87.7	499.1	203.5	135.5	67.95	2.995	
8,300.0	7,031.6	8,391.0	7,114.2	38.9	39.3	-113.97		87.7	599.1	203.4	131.2	72.20	2.816	
8,400.0	7,030.2	8,491.0	7,112.5	41.3	41.6	-113.88		87.7	699.1	203.2	126.6	76.58	2.654	
8,500.0	7,028.8	8,591.0	7,110.7	43.7	44.1	-113.80		87.7	799.0	203.1	122.0	81.06	2.506	
8,600.0	7,027.3	8,691.0	7,108.9	46.2	46.5	-113.71		87.7	899.0	203.0	117.3	85.62	2.370	
8,700.0	7,025.9	8,791.0	7,107.2	48.6	49.0	-113.63		87.7	999.0	202.8	112.6	90.27	2.247	
8,800.0	7,024.5	8,891.0	7,105.4	51.2	51.5	-113.54		87.7	1,099.0	202.7	107.7	94.97	2.134	
8,900.0	7,023.0	8,990.9	7,103.6	53.7	54.1	-113.45		87.7	1,199.0	202.6	102.8	99.74	2.031	
9,000.0	7,021.6	9,090.9	7,101.9	56.3	56.7	-113.37		87.7	1,299.0	202.4	97.9	104.55	1.936	
9,100.0	7,020.2	9,190.9	7,100.1	58.9	59.3	-113.28		87.7	1,399.0	202.3	92.9	109.41	1.849	
9,200.0	7,018.7	9,290.9	7,098.4	61.5	61.9	-113.20		87.7	1,498.9	202.2	87.9	114.31	1.769	
9,300.0	7,017.3	9,390.9	7,096.6	64.2	64.5	-113.11		87.7	1,598.9	202.0	82.8	119.24	1.694	
9,400.0	7,015.9	9,490.9	7,094.8	66.8	67.1	-113.02		87.7	1,698.9	201.9	77.7	124.20	1.626	
9,500.0	7,014.5	9,590.9	7,093.1	69.5	69.8	-112.94		87.7	1,798.9	201.8	72.6	129.20	1.562	
9,600.0	7,013.0	9,690.9	7,091.3	72.1	72.5	-112.85		87.7	1,898.9	201.6	67.4	134.22	1.502	
9,700.0	7,011.6	9,790.9	7,089.5	74.8	75.2	-112.76		87.7	1,998.9	201.5	62.2	139.26	1.447 Level 3	
9,800.0	7,010.2	9,890.9	7,087.8	77.5	77.8	-112.68		87.7	2,098.8	201.4	57.0	144.33	1.395 Level 3	
9,900.0	7,008.7	9,990.9	7,086.0	80.2	80.5	-112.59		87.7	2,198.8	201.3	51.8	149.42	1.347 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-232
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-232	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-332 - 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)					
10,000.0	7,007.3	10,090.9	7,084.3	82.9	83.2	-112.50	87.7	2,298.8	201.1	46.6	154.53	1.302	Level 3
10,100.0	7,005.9	10,190.9	7,082.5	85.6	86.0	-112.41	87.7	2,398.8	201.0	41.3	159.65	1.259	Level 3
10,200.0	7,004.4	10,290.9	7,080.7	88.3	88.7	-112.33	87.7	2,498.8	200.9	36.1	164.79	1.219	Level 2
10,300.0	7,003.0	10,390.9	7,079.0	91.1	91.4	-112.24	87.7	2,598.8	200.7	30.8	169.95	1.181	Level 2
10,400.0	7,001.6	10,490.9	7,077.2	93.8	94.1	-112.15	87.7	2,698.7	200.6	25.5	175.12	1.146	Level 2
10,500.0	7,000.1	10,590.9	7,075.4	96.5	96.8	-112.06	87.7	2,798.7	200.5	20.2	180.31	1.112	Level 2
10,600.0	6,998.7	10,690.9	7,073.7	99.3	99.6	-111.98	87.7	2,898.7	200.4	14.9	185.51	1.080	Level 2
10,700.0	6,997.3	10,790.9	7,071.9	102.0	102.3	-111.89	87.7	2,998.7	200.2	9.5	190.72	1.050	Level 2
10,800.0	6,995.8	10,890.9	7,070.2	104.7	105.1	-111.80	87.7	3,098.7	200.1	4.2	195.95	1.021	Level 2
10,900.0	6,994.4	10,990.9	7,068.4	107.5	107.8	-111.71	87.7	3,198.7	200.0	-1.2	201.19	0.994	Level 1
11,000.0	6,993.0	11,090.9	7,066.6	110.2	110.6	-111.62	87.7	3,298.6	199.9	-6.6	206.43	0.968	Level 1
11,100.0	6,991.6	11,190.9	7,064.9	113.0	113.3	-111.54	87.7	3,398.6	199.7	-11.9	211.69	0.944	Level 1
11,200.0	6,990.1	11,290.9	7,063.1	115.8	116.1	-111.45	87.7	3,498.6	199.6	-17.3	216.96	0.920	Level 1
11,300.0	6,988.7	11,390.9	7,061.3	118.5	118.8	-111.36	87.7	3,598.6	199.5	-22.7	222.24	0.898	Level 1
11,400.0	6,987.3	11,490.9	7,059.6	121.3	121.6	-111.27	87.7	3,698.6	199.4	-28.2	227.53	0.876	Level 1
11,488.2	6,986.0	11,579.2	7,058.0	123.7	124.0	-111.19	87.7	3,786.8	199.3	-32.9	232.20	0.858	Level 1, ES, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20H-232
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-232	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	-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 CC, ES	
900.0	900.0	899.4	899.4	1.9	1.9	-177.20	-30.0	-1.5	30.1	26.3	3.80	7.921	
1,000.0	1,000.0	998.6	998.5	2.1	2.1	-169.86	-32.8	-5.9	33.3	29.1	4.21	7.905	
1,100.0	1,100.0	1,097.5	1,096.9	2.3	2.3	-66.55	-37.2	-13.1	38.9	34.3	4.63	8.396	
1,200.0	1,199.8	1,196.0	1,194.8	2.5	2.5	-62.53	-43.5	-23.3	46.0	41.0	5.05	9.117	
1,300.0	1,299.5	1,294.3	1,291.8	2.8	2.8	-60.68	-51.5	-36.2	54.4	48.9	5.49	9.910	
1,400.0	1,398.7	1,392.2	1,388.0	3.0	3.1	-60.23	-61.1	-51.9	63.9	57.9	5.97	10.703	
1,500.0	1,497.5	1,490.9	1,484.4	3.3	3.5	-60.94	-72.3	-70.1	73.9	67.4	6.50	11.372	
1,600.0	1,595.7	1,590.5	1,581.5	3.6	3.9	-63.40	-83.8	-88.7	82.7	75.6	7.11	11.633	
1,700.0	1,693.7	1,690.0	1,678.7	3.9	4.3	-65.91	-95.2	-107.2	91.3	83.5	7.78	11.737	
1,800.0	1,791.8	1,789.6	1,775.8	4.3	4.7	-67.98	-106.6	-125.8	100.0	91.6	8.49	11.788	
1,900.0	1,889.8	1,889.1	1,872.9	4.7	5.1	-69.72	-118.0	-144.3	108.9	99.7	9.23	11.803	
2,000.0	1,987.9	1,988.7	1,970.1	5.1	5.6	-71.20	-129.5	-162.9	117.8	107.8	9.99	11.795	
2,100.0	2,085.9	2,088.3	2,067.2	5.5	6.0	-72.47	-140.9	-181.4	126.8	116.1	10.77	11.773	
2,200.0	2,184.0	2,187.8	2,164.4	5.9	6.5	-73.56	-152.3	-200.0	135.9	124.3	11.57	11.743	
2,300.0	2,282.0	2,287.4	2,261.5	6.3	7.0	-74.52	-163.8	-218.6	145.0	132.6	12.38	11.709	
2,400.0	2,380.1	2,386.9	2,358.7	6.7	7.4	-75.37	-175.2	-237.1	154.2	140.9	13.21	11.672	
2,500.0	2,478.2	2,486.5	2,455.8	7.1	7.9	-76.12	-186.6	-255.7	163.3	149.3	14.04	11.635	
2,600.0	2,576.2	2,586.0	2,552.9	7.5	8.3	-76.80	-198.1	-274.2	172.5	157.6	14.87	11.598	
2,700.0	2,674.3	2,685.6	2,650.1	7.9	8.8	-77.40	-209.5	-292.8	181.7	166.0	15.72	11.562	
2,800.0	2,772.3	2,785.2	2,747.2	8.4	9.3	-77.95	-220.9	-311.3	191.0	174.4	16.57	11.528	
2,900.0	2,870.4	2,884.7	2,844.4	8.8	9.8	-78.44	-232.3	-329.9	200.2	182.8	17.42	11.494	
3,000.0	2,968.4	2,984.3	2,941.5	9.2	10.2	-78.89	-243.8	-348.5	209.5	191.2	18.27	11.463	
3,100.0	3,066.5	3,083.8	3,038.6	9.6	10.7	-79.31	-255.2	-367.0	218.8	199.6	19.13	11.433	
3,200.0	3,164.5	3,183.4	3,135.8	10.1	11.2	-79.69	-266.6	-385.6	228.0	208.0	20.00	11.404	
3,300.0	3,262.6	3,282.9	3,232.9	10.5	11.7	-80.04	-278.1	-404.1	237.3	216.5	20.86	11.377	
3,400.0	3,360.7	3,382.5	3,330.1	10.9	12.1	-80.36	-289.5	-422.7	246.6	224.9	21.73	11.352	
3,500.0	3,458.7	3,482.1	3,427.2	11.4	12.6	-80.66	-300.9	-441.2	255.9	233.3	22.59	11.327	
3,600.0	3,556.8	3,581.6	3,524.4	11.8	13.1	-80.94	-312.4	-459.8	265.3	241.8	23.46	11.305	
3,700.0	3,654.8	3,681.2	3,621.5	12.2	13.6	-81.20	-323.8	-478.4	274.6	250.2	24.34	11.283	
3,800.0	3,752.9	3,780.7	3,718.6	12.7	14.0	-81.44	-335.2	-496.9	283.9	258.7	25.21	11.262	
3,900.0	3,850.9	3,880.3	3,815.8	13.1	14.5	-81.67	-346.7	-515.5	293.2	267.2	26.08	11.243	
4,000.0	3,949.0	3,979.8	3,912.9	13.6	15.0	-81.89	-358.1	-534.0	302.6	275.6	26.96	11.224	
4,100.0	4,047.0	4,079.4	4,010.1	14.0	15.5	-82.09	-369.5	-552.6	311.9	284.1	27.83	11.207	
4,200.0	4,145.1	4,179.0	4,107.2	14.4	15.9	-82.28	-380.9	-571.1	321.3	292.5	28.71	11.190	
4,300.0	4,243.1	4,278.5	4,204.4	14.9	16.4	-82.45	-392.4	-589.7	330.6	301.0	29.59	11.174	
4,400.0	4,341.2	4,378.1	4,301.5	15.3	16.9	-82.62	-403.8	-608.3	340.0	309.5	30.47	11.159	
4,500.0	4,439.3	4,477.6	4,398.6	15.7	17.4	-82.78	-415.2	-626.8	349.3	318.0	31.34	11.144	
4,600.0	4,537.3	4,577.2	4,495.8	16.2	17.9	-82.93	-426.7	-645.4	358.7	326.4	32.22	11.130	
4,700.0	4,635.4	4,676.7	4,592.9	16.6	18.3	-83.08	-438.1	-663.9	368.0	334.9	33.10	11.117	
4,800.0	4,733.4	4,776.3	4,690.1	17.1	18.8	-83.21	-449.5	-682.5	377.4	343.4	33.98	11.105	
4,900.0	4,831.5	4,875.9	4,787.2	17.5	19.3	-83.34	-461.0	-701.0	386.7	351.9	34.87	11.093	
5,000.0	4,929.5	4,975.4	4,884.3	17.9	19.8	-83.47	-472.4	-719.6	396.1	360.4	35.75	11.081	

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-232
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-232	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		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)			
5,100.0	5,027.6	5,075.0	4,981.5	18.4	20.3	-83.59	-483.8	-738.2	405.5	368.8	36.63	11.070	
5,200.0	5,125.6	5,174.5	5,078.6	18.8	20.8	-83.70	-495.2	-756.7	414.8	377.3	37.51	11.059	
5,300.0	5,223.7	5,274.1	5,175.8	19.3	21.2	-83.81	-506.7	-775.3	424.2	385.8	38.39	11.049	
5,400.0	5,321.7	5,373.6	5,272.9	19.7	21.7	-83.91	-518.1	-793.8	433.6	394.3	39.28	11.039	
5,500.0	5,419.8	5,473.2	5,370.1	20.1	22.2	-84.01	-529.5	-812.4	442.9	402.8	40.16	11.030	
5,600.0	5,517.9	5,572.8	5,467.2	20.6	22.7	-84.10	-541.0	-831.0	452.3	411.3	41.04	11.021	
5,700.0	5,616.1	5,672.3	5,564.3	21.0	23.2	-84.21	-552.4	-849.5	461.8	419.9	41.87	11.031	
5,800.0	5,715.0	5,780.2	5,669.9	21.2	23.5	-84.07	-563.9	-868.2	470.8	428.4	42.47	11.087	
5,900.0	5,814.3	5,889.2	5,777.5	21.5	23.9	-83.87	-573.4	-883.6	478.3	435.3	42.97	11.131	
6,000.0	5,913.9	5,998.7	5,886.0	21.7	24.1	-83.63	-580.8	-895.6	484.2	440.8	43.39	11.159	
6,100.0	6,013.8	6,108.4	5,995.2	21.8	24.3	-83.32	-586.0	-904.1	488.4	444.7	43.71	11.174	
6,200.0	6,113.8	6,218.3	6,105.1	22.0	24.5	-179.18	-589.0	-909.0	491.0	457.9	33.15	14.814	
6,300.0	6,213.8	6,327.1	6,213.8	22.1	24.6	-179.02	-589.8	-910.3	491.8	458.3	33.51	14.675	
6,343.9	6,257.7	6,371.0	6,257.7	22.1	24.7	91.03	-589.8	-910.3	491.8	447.5	44.29	11.105	
6,400.0	6,313.8	6,427.1	6,313.8	22.2	24.7	91.07	-589.8	-910.3	491.8	447.4	44.41	11.074	
6,500.0	6,413.1	6,527.7	6,414.3	22.2	24.8	92.17	-589.8	-908.6	492.1	447.8	44.32	11.102	
6,600.0	6,510.1	6,630.3	6,516.0	22.1	24.8	93.43	-589.8	-894.8	492.6	448.7	43.97	11.204	
6,700.0	6,603.1	6,734.5	6,616.4	21.9	24.7	94.63	-589.8	-867.1	493.4	449.9	43.43	11.360	
6,800.0	6,690.6	6,840.3	6,713.4	21.7	24.4	95.76	-589.8	-825.3	494.3	451.5	42.79	11.551	
6,900.0	6,771.0	6,947.5	6,804.9	21.4	24.2	96.79	-589.8	-769.6	495.2	453.1	42.16	11.748	
7,000.0	6,842.9	7,056.1	6,888.8	21.3	23.9	97.69	-589.8	-700.7	496.2	454.6	41.68	11.906	
7,100.0	6,905.2	7,166.0	6,962.8	21.3	23.7	98.46	-589.8	-619.6	497.2	455.6	41.54	11.969	
7,200.0	6,956.8	7,276.9	7,024.9	21.6	23.5	99.07	-589.8	-527.9	498.0	456.1	41.90	11.887	
7,300.0	6,996.8	7,388.6	7,073.5	22.1	23.6	99.52	-589.8	-427.4	498.6	455.7	42.88	11.628	
7,400.0	7,024.5	7,500.9	7,107.0	22.8	24.0	99.78	-589.8	-320.3	499.0	454.5	44.55	11.201	
7,500.0	7,039.4	7,613.4	7,124.5	23.9	24.7	99.85	-589.8	-209.3	499.1	452.2	46.86	10.650	
7,600.0	7,041.6	7,722.0	7,126.4	25.2	25.8	99.78	-589.8	-100.8	499.0	449.4	49.62	10.057	
7,700.0	7,040.2	7,822.0	7,124.6	26.7	27.1	99.74	-589.9	-0.8	498.9	446.4	52.59	9.487	
7,800.0	7,038.8	7,922.0	7,122.8	28.4	28.6	99.70	-589.9	99.2	498.9	442.9	55.96	8.915	
7,900.0	7,037.4	8,022.0	7,121.1	30.3	30.4	99.66	-589.9	199.1	498.8	439.2	59.66	8.362	
8,000.0	7,035.9	8,122.0	7,119.3	32.3	32.4	99.63	-589.9	299.1	498.8	435.2	63.62	7.840	
8,100.0	7,034.5	8,222.0	7,117.6	34.4	34.5	99.59	-589.9	399.1	498.7	430.9	67.81	7.354	
8,200.0	7,033.1	8,322.0	7,115.8	36.6	36.7	99.55	-589.9	499.1	498.7	426.5	72.19	6.908	
8,300.0	7,031.6	8,422.0	7,114.0	38.9	39.0	99.51	-589.9	599.1	498.6	421.9	76.72	6.500	
8,400.0	7,030.2	8,522.0	7,112.3	41.3	41.3	99.48	-589.9	699.1	498.6	417.2	81.37	6.127	
8,500.0	7,028.8	8,622.0	7,110.5	43.7	43.7	99.44	-589.9	799.0	498.5	412.4	86.13	5.788	
8,600.0	7,027.3	8,722.0	7,108.7	46.2	46.2	99.40	-589.9	899.0	498.5	407.5	90.99	5.478	
8,700.0	7,025.9	8,822.0	7,107.0	48.6	48.7	99.36	-589.9	999.0	498.4	402.5	95.92	5.196	
8,800.0	7,024.5	8,922.0	7,105.2	51.2	51.2	99.33	-589.9	1,099.0	498.4	397.4	100.91	4.938	
8,900.0	7,023.0	9,022.0	7,103.5	53.7	53.7	99.29	-589.9	1,199.0	498.3	392.3	105.97	4.702	
9,000.0	7,021.6	9,122.0	7,101.7	56.3	56.3	99.25	-589.9	1,299.0	498.3	387.2	111.07	4.486	
9,100.0	7,020.2	9,222.0	7,099.9	58.9	58.9	99.21	-589.9	1,398.9	498.2	382.0	116.21	4.287	
9,200.0	7,018.7	9,322.0	7,098.2	61.5	61.5	99.17	-589.9	1,498.9	498.2	376.8	121.40	4.104	
9,300.0	7,017.3	9,422.0	7,096.4	64.2	64.2	99.14	-589.9	1,598.9	498.1	371.5	126.61	3.934	
9,400.0	7,015.9	9,522.0	7,094.6	66.8	66.8	99.10	-589.9	1,698.9	498.1	366.2	131.86	3.777	
9,500.0	7,014.5	9,622.0	7,092.9	69.5	69.5	99.06	-589.9	1,798.9	498.0	360.9	137.13	3.632	
9,600.0	7,013.0	9,722.0	7,091.1	72.1	72.1	99.02	-589.9	1,898.9	497.9	355.5	142.42	3.496	
9,700.0	7,011.6	9,822.0	7,089.4	74.8	74.8	98.99	-589.9	1,998.8	497.9	350.2	147.74	3.370	
9,800.0	7,010.2	9,922.0	7,087.6	77.5	77.5	98.95	-589.9	2,098.8	497.8	344.8	153.07	3.252	
9,900.0	7,008.7	10,021.9	7,085.8	80.2	80.2	98.91	-589.9	2,198.8	497.8	339.4	158.42	3.142	
10,000.0	7,007.3	10,121.9	7,084.1	82.9	82.9	98.87	-589.9	2,298.8	497.7	334.0	163.79	3.039	

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-232
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-232	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		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	7,005.9	10,221.9	7,082.3	85.6	85.6	98.84	-589.9	2,398.8	497.7	328.5	169.17	2.942					
10,200.0	7,004.4	10,321.9	7,080.5	88.3	88.3	98.80	-589.9	2,498.8	497.6	323.1	174.56	2.851					
10,300.0	7,003.0	10,421.9	7,078.8	91.1	91.1	98.76	-589.9	2,598.8	497.6	317.6	179.96	2.765					
10,400.0	7,001.6	10,521.9	7,077.0	93.8	93.8	98.72	-589.9	2,698.7	497.6	312.2	185.38	2.684					
10,500.0	7,000.1	10,621.9	7,075.3	96.5	96.5	98.68	-589.9	2,798.7	497.5	306.7	190.81	2.607					
10,600.0	6,998.7	10,721.9	7,073.5	99.3	99.2	98.65	-589.9	2,898.7	497.5	301.2	196.24	2.535					
10,700.0	6,997.3	10,821.9	7,071.7	102.0	102.0	98.61	-589.9	2,998.7	497.4	295.7	201.68	2.466					
10,800.0	6,995.8	10,921.9	7,070.0	104.7	104.7	98.57	-589.9	3,098.7	497.4	290.2	207.13	2.401					
10,900.0	6,994.4	11,021.9	7,068.2	107.5	107.5	98.53	-589.9	3,198.7	497.3	284.7	212.59	2.339					
11,000.0	6,993.0	11,121.9	7,066.4	110.2	110.2	98.50	-589.9	3,298.6	497.3	279.2	218.06	2.280					
11,100.0	6,991.6	11,221.9	7,064.7	113.0	113.0	98.46	-589.9	3,398.6	497.2	273.7	223.53	2.224					
11,200.0	6,990.1	11,321.9	7,062.9	115.8	115.7	98.42	-589.9	3,498.6	497.2	268.2	229.01	2.171					
11,300.0	6,988.7	11,421.9	7,061.1	118.5	118.5	98.38	-589.9	3,598.6	497.1	262.6	234.49	2.120					
11,400.0	6,987.3	11,521.9	7,059.4	121.3	121.2	98.34	-589.9	3,698.6	497.1	257.1	239.98	2.071					
11,461.5	6,986.4	11,583.4	7,058.3	123.0	122.9	98.32	-589.9	3,760.1	497.0	253.7	243.36	2.042					
11,488.2	6,986.0	11,600.6	7,058.0	123.7	123.4	98.31	-589.9	3,777.2	497.1	252.6	244.56	2.033 SF					

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20H-232
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-232	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-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	-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 CC, ES	
600.0	600.0	598.7	598.6	1.2	1.2	-178.75	-59.4	-1.3	59.4	57.0	2.45	24.274	
700.0	700.0	697.1	696.9	1.5	1.4	-175.28	-62.7	-5.2	63.0	60.1	2.86	21.974	
800.0	800.0	795.1	794.5	1.7	1.6	-170.34	-68.1	-11.6	69.3	66.0	3.30	20.988	
900.0	900.0	892.3	891.1	1.9	1.9	-164.84	-75.6	-20.5	78.8	75.1	3.77	20.931	
1,000.0	1,000.0	988.7	986.4	2.1	2.2	-159.54	-85.1	-31.8	91.9	87.6	4.27	21.517	
1,100.0	1,100.0	1,084.3	1,080.2	2.3	2.5	-59.16	-96.6	-45.3	107.7	103.0	4.65	23.134	
1,200.0	1,199.8	1,180.1	1,173.8	2.5	2.9	-56.72	-110.1	-61.3	124.8	119.7	5.10	24.476	
1,300.0	1,299.5	1,278.8	1,269.9	2.8	3.3	-55.81	-124.5	-78.3	141.1	135.5	5.57	25.322	
1,400.0	1,398.7	1,377.7	1,366.3	3.0	3.7	-56.15	-139.0	-95.5	155.3	149.3	6.07	25.578	
1,500.0	1,497.5	1,476.9	1,462.8	3.3	4.2	-57.42	-153.5	-112.6	167.8	161.1	6.62	25.323	
1,600.0	1,595.7	1,576.1	1,559.4	3.6	4.7	-59.47	-168.0	-129.8	178.6	171.4	7.24	24.663	
1,700.0	1,693.7	1,675.3	1,656.1	3.9	5.1	-61.60	-182.5	-146.9	189.3	181.4	7.91	23.921	
1,800.0	1,791.8	1,774.5	1,752.7	4.3	5.6	-63.50	-197.0	-164.1	200.2	191.6	8.62	23.232	
1,900.0	1,889.8	1,873.6	1,849.3	4.7	6.1	-65.20	-211.5	-181.2	211.4	202.0	9.35	22.600	
2,000.0	1,987.9	1,972.8	1,945.9	5.1	6.5	-66.73	-226.0	-198.4	222.7	212.6	10.11	22.025	
2,100.0	2,085.9	2,072.0	2,042.5	5.5	7.0	-68.11	-240.5	-215.5	234.1	223.2	10.89	21.505	
2,200.0	2,184.0	2,171.2	2,139.1	5.9	7.5	-69.37	-255.0	-232.7	245.7	234.0	11.68	21.036	
2,300.0	2,282.0	2,270.4	2,235.7	6.3	8.0	-70.51	-269.5	-249.8	257.3	244.9	12.48	20.614	
2,400.0	2,380.1	2,369.6	2,332.4	6.7	8.5	-71.55	-284.0	-267.0	269.1	255.8	13.30	20.233	
2,500.0	2,478.2	2,468.8	2,429.0	7.1	9.0	-72.50	-298.5	-284.1	280.9	266.8	14.13	19.889	
2,600.0	2,576.2	2,568.0	2,525.6	7.5	9.5	-73.38	-313.0	-301.3	292.9	277.9	14.96	19.578	
2,700.0	2,674.3	2,667.2	2,622.2	7.9	9.9	-74.19	-327.5	-318.4	304.8	289.0	15.80	19.295	
2,800.0	2,772.3	2,766.4	2,718.8	8.4	10.4	-74.93	-342.0	-335.6	316.9	300.2	16.64	19.038	
2,900.0	2,870.4	2,865.6	2,815.4	8.8	10.9	-75.62	-356.5	-352.8	328.9	311.4	17.49	18.804	
3,000.0	2,968.4	2,964.8	2,912.0	9.2	11.4	-76.27	-371.0	-369.9	341.1	322.7	18.35	18.589	
3,100.0	3,066.5	3,063.9	3,008.7	9.6	11.9	-76.87	-385.5	-387.1	353.2	334.0	19.20	18.392	
3,200.0	3,164.5	3,163.1	3,105.3	10.1	12.4	-77.43	-400.0	-404.2	365.4	345.4	20.07	18.212	
3,300.0	3,262.6	3,262.3	3,201.9	10.5	12.9	-77.95	-414.5	-421.4	377.7	356.7	20.93	18.045	
3,400.0	3,360.7	3,361.5	3,298.5	10.9	13.4	-78.44	-429.1	-438.5	389.9	368.1	21.79	17.891	
3,500.0	3,458.7	3,460.7	3,395.1	11.4	13.9	-78.90	-443.6	-455.7	402.2	379.5	22.66	17.748	
3,600.0	3,556.8	3,559.9	3,491.7	11.8	14.3	-79.33	-458.1	-472.8	414.5	391.0	23.53	17.616	
3,700.0	3,654.8	3,659.1	3,588.4	12.2	14.8	-79.74	-472.6	-490.0	426.8	402.4	24.40	17.493	
3,800.0	3,752.9	3,758.3	3,685.0	12.7	15.3	-80.13	-487.1	-507.1	439.2	413.9	25.27	17.378	
3,900.0	3,850.9	3,857.5	3,781.6	13.1	15.8	-80.49	-501.6	-524.3	451.6	425.4	26.15	17.271	
4,000.0	3,949.0	3,956.7	3,878.2	13.6	16.3	-80.84	-516.1	-541.5	464.0	436.9	27.02	17.170	
4,100.0	4,047.0	4,055.9	3,974.8	14.0	16.8	-81.16	-530.6	-558.6	476.4	448.5	27.90	17.076	
4,200.0	4,145.1	4,155.1	4,071.4	14.4	17.3	-81.47	-545.1	-575.8	488.8	460.0	28.77	16.987	
4,300.0	4,243.1	4,254.3	4,168.0	14.9	17.8	-81.77	-559.6	-592.9	501.2	471.6	29.65	16.904	
4,400.0	4,341.2	4,353.4	4,264.7	15.3	18.3	-82.05	-574.1	-610.1	513.6	483.1	30.53	16.826	
4,500.0	4,439.3	4,452.6	4,361.3	15.7	18.8	-82.31	-588.6	-627.2	526.1	494.7	31.41	16.752	
4,600.0	4,537.3	4,551.8	4,457.9	16.2	19.3	-82.57	-603.1	-644.4	538.6	506.3	32.29	16.682	
4,700.0	4,635.4	4,651.0	4,554.5	16.6	19.8	-82.81	-617.6	-661.5	551.0	517.9	33.17	16.615	
4,800.0	4,733.4	4,750.2	4,651.1	17.1	20.2	-83.05	-632.1	-678.7	563.5	529.5	34.05	16.552	
4,900.0	4,831.5	4,849.4	4,747.7	17.5	20.7	-83.27	-646.6	-695.8	576.0	541.1	34.93	16.493	
5,000.0	4,929.5	4,948.6	4,844.3	17.9	21.2	-83.48	-661.1	-713.0	588.5	552.7	35.81	16.436	

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-232
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-232	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-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	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	5,027.6	5,047.8	4,941.0	18.4	21.7	-83.69	-83.69	-675.6	-730.2	601.0	564.4	36.69	16.382	
5,200.0	5,125.6	5,147.0	5,037.6	18.8	22.2	-83.88	-83.88	-690.1	-747.3	613.6	576.0	37.57	16.331	
5,300.0	5,223.7	5,246.2	5,134.2	19.3	22.7	-84.07	-84.07	-704.6	-764.5	626.1	587.6	38.45	16.282	
5,400.0	5,321.7	5,345.4	5,230.8	19.7	23.2	-84.25	-84.25	-719.1	-781.6	638.6	599.3	39.33	16.235	
5,500.0	5,419.8	5,444.6	5,327.4	20.1	23.7	-84.42	-84.42	-733.6	-798.8	651.1	610.9	40.22	16.191	
5,600.0	5,517.9	5,543.8	5,424.0	20.6	24.2	-84.59	-84.59	-748.1	-815.9	663.7	622.6	41.10	16.148	
5,700.0	5,616.1	5,642.9	5,520.6	21.0	24.7	-84.86	-84.86	-762.6	-833.1	676.3	634.4	41.94	16.127	
5,800.0	5,715.0	5,742.1	5,617.2	21.2	25.2	-84.90	-84.90	-777.1	-850.2	689.3	646.7	42.63	16.169	
5,900.0	5,814.3	5,852.7	5,725.2	21.5	25.6	-84.66	-84.66	-792.7	-868.6	702.1	658.9	43.20	16.251	
6,000.0	5,913.9	5,970.5	5,841.0	21.7	26.0	-84.32	-84.32	-806.4	-884.8	712.8	669.1	43.65	16.330	
6,100.0	6,013.8	6,089.0	5,958.3	21.8	26.3	-83.91	-83.91	-817.1	-897.5	721.3	677.3	44.00	16.392	
6,200.0	6,113.8	6,208.1	6,076.9	22.0	26.5	-179.64	-179.64	-824.7	-906.5	727.5	691.8	35.75	20.350	
6,300.0	6,213.8	6,327.9	6,196.4	22.1	26.7	-179.23	-179.23	-829.1	-911.7	731.3	695.0	36.21	20.196	
6,400.0	6,313.8	6,445.2	6,313.8	22.2	26.8	90.94	90.94	-830.3	-913.1	732.3	687.6	44.72	16.373	
6,500.0	6,413.1	6,544.5	6,413.1	22.2	26.9	91.79	91.79	-830.3	-913.1	732.6	687.9	44.66	16.402	
6,600.0	6,510.1	6,645.3	6,513.7	22.1	27.0	93.42	93.42	-830.3	-910.5	733.6	689.3	44.29	16.563	
6,700.0	6,603.1	6,750.5	6,617.7	21.9	27.0	95.11	95.11	-830.3	-894.8	735.3	691.6	43.70	16.826	
6,800.0	6,690.6	6,859.3	6,721.8	21.7	26.8	96.73	96.73	-830.3	-863.6	737.5	694.5	42.97	17.164	
6,900.0	6,771.0	6,971.8	6,823.7	21.4	26.6	98.26	98.26	-830.3	-816.2	740.1	697.9	42.20	17.538	
7,000.0	6,842.9	7,088.0	6,920.5	21.3	26.2	99.65	99.65	-830.3	-752.0	743.0	701.5	41.54	17.886	
7,100.0	6,905.2	7,207.8	7,008.9	21.3	25.9	100.87	100.87	-830.3	-671.3	745.8	704.7	41.17	18.118	
7,200.0	6,956.8	7,331.0	7,085.5	21.6	25.6	101.88	101.88	-830.3	-575.0	748.4	707.1	41.30	18.124	
7,300.0	6,996.8	7,456.9	7,146.8	22.1	25.4	102.64	102.64	-830.3	-465.2	750.5	708.4	42.11	17.821	
7,400.0	7,024.5	7,584.8	7,189.7	22.8	25.4	103.13	103.13	-830.3	-344.8	751.9	708.1	43.74	17.189	
7,500.0	7,039.4	7,714.0	7,212.1	23.9	25.7	103.33	103.33	-830.3	-217.8	752.5	706.3	46.15	16.305	
7,584.9	7,043.0	7,815.4	7,215.1	25.0	26.3	103.23	103.23	-830.3	-116.5	752.2	703.6	48.58	15.484	
7,600.0	7,041.6	7,830.5	7,215.0	25.2	26.4	103.32	103.32	-830.3	-101.4	752.4	703.5	48.98	15.363	
7,700.0	7,040.2	7,930.5	7,214.4	26.7	27.4	103.38	103.38	-830.3	-1.4	752.6	700.8	51.87	14.510	
7,800.0	7,038.8	8,030.5	7,213.9	28.4	28.8	103.45	103.45	-830.3	98.6	752.9	697.7	55.15	13.650	
7,900.0	7,037.4	8,130.5	7,213.3	30.3	30.5	103.52	103.52	-830.3	198.6	753.1	694.3	58.76	12.816	
8,000.0	7,035.9	8,230.5	7,212.8	32.3	32.4	103.58	103.58	-830.3	298.6	753.3	690.6	62.63	12.027	
8,100.0	7,034.5	8,330.5	7,212.3	34.4	34.5	103.65	103.65	-830.3	398.6	753.5	686.8	66.73	11.292	
8,200.0	7,033.1	8,430.5	7,211.7	36.6	36.7	103.71	103.71	-830.3	498.6	753.7	682.7	71.00	10.615	
8,300.0	7,031.6	8,530.5	7,211.2	38.9	39.0	103.78	103.78	-830.3	598.6	753.9	678.5	75.43	9.995	
8,400.0	7,030.2	8,630.5	7,210.6	41.3	41.3	103.84	103.84	-830.3	698.6	754.1	674.1	79.98	9.429	
8,500.0	7,028.8	8,730.5	7,210.1	43.7	43.7	103.91	103.91	-830.3	798.6	754.3	669.7	84.63	8.913	
8,600.0	7,027.3	8,830.5	7,209.6	46.2	46.2	103.97	103.97	-830.3	898.6	754.5	665.2	89.38	8.442	
8,700.0	7,025.9	8,930.5	7,209.0	48.6	48.6	104.04	104.04	-830.3	998.6	754.8	660.6	94.19	8.013	
8,800.0	7,024.5	9,030.5	7,208.5	51.2	51.2	104.11	104.11	-830.3	1,098.6	755.0	655.9	99.07	7.621	
8,900.0	7,023.0	9,130.5	7,207.9	53.7	53.7	104.17	104.17	-830.3	1,198.6	755.2	651.2	104.00	7.262	
9,000.0	7,021.6	9,230.5	7,207.4	56.3	56.3	104.24	104.24	-830.3	1,298.6	755.4	646.5	108.97	6.932	
9,100.0	7,020.2	9,330.5	7,206.9	58.9	58.9	104.30	104.30	-830.3	1,398.5	755.6	641.7	113.98	6.629	
9,200.0	7,018.7	9,430.5	7,206.3	61.5	61.5	104.37	104.37	-830.3	1,498.5	755.9	636.8	119.03	6.350	
9,300.0	7,017.3	9,530.4	7,205.8	64.2	64.1	104.43	104.43	-830.3	1,598.5	756.1	632.0	124.11	6.092	
9,400.0	7,015.9	9,630.4	7,205.2	66.8	66.8	104.50	104.50	-830.3	1,698.5	756.3	627.1	129.21	5.853	
9,500.0	7,014.5	9,730.4	7,204.7	69.5	69.4	104.56	104.56	-830.3	1,798.5	756.5	622.2	134.33	5.632	
9,600.0	7,013.0	9,830.4	7,204.2	72.1	72.1	104.63	104.63	-830.3	1,898.5	756.8	617.3	139.47	5.426	
9,700.0	7,011.6	9,930.4	7,203.6	74.8	74.8	104.69	104.69	-830.3	1,998.5	757.0	612.4	144.63	5.234	
9,800.0	7,010.2	10,030.4	7,203.1	77.5	77.5	104.76	104.76	-830.3	2,098.5	757.2	607.4	149.81	5.055	
9,900.0	7,008.7	10,130.4	7,202.5	80.2	80.2	104.82	104.82	-830.3	2,198.5	757.4	602.5	154.99	4.887	
10,000.0	7,007.3	10,230.4	7,202.0	82.9	82.9	104.89	104.89	-830.3	2,298.5	757.7	597.5	160.19	4.730	

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-232
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-232	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-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		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
10,100.0	7,005.9	10,330.4	7,201.4	85.6	85.6	104.95	-830.3	2,398.5	757.9	592.5	165.40	4.582	
10,200.0	7,004.4	10,430.4	7,200.9	88.3	88.3	105.02	-830.3	2,498.5	758.1	587.5	170.62	4.444	
10,300.0	7,003.0	10,530.4	7,200.4	91.1	91.0	105.08	-830.3	2,598.5	758.4	582.5	175.84	4.313	
10,400.0	7,001.6	10,630.4	7,199.8	93.8	93.7	105.15	-830.3	2,698.5	758.6	577.5	181.07	4.190	
10,500.0	7,000.1	10,730.4	7,199.3	96.5	96.5	105.21	-830.3	2,798.5	758.8	572.5	186.31	4.073	
10,600.0	6,998.7	10,830.4	7,198.7	99.3	99.2	105.28	-830.3	2,898.5	759.1	567.5	191.55	3.963	
10,700.0	6,997.3	10,930.4	7,198.2	102.0	101.9	105.34	-830.3	2,998.5	759.3	562.5	196.80	3.858	
10,800.0	6,995.8	11,030.4	7,197.7	104.7	104.7	105.41	-830.3	3,098.5	759.5	557.5	202.04	3.759	
10,900.0	6,994.4	11,130.4	7,197.1	107.5	107.4	105.47	-830.3	3,198.5	759.8	552.5	207.30	3.665	
11,000.0	6,993.0	11,230.4	7,196.6	110.2	110.2	105.54	-830.3	3,298.4	760.0	547.5	212.55	3.576	
11,100.0	6,991.6	11,330.4	7,196.0	113.0	112.9	105.60	-830.3	3,398.4	760.3	542.5	217.81	3.490	
11,200.0	6,990.1	11,430.4	7,195.5	115.8	115.7	105.67	-830.3	3,498.4	760.5	537.4	223.07	3.409	
11,300.0	6,988.7	11,530.4	7,195.0	118.5	118.4	105.73	-830.3	3,598.4	760.7	532.4	228.33	3.332	
11,400.0	6,987.3	11,630.4	7,194.4	121.3	121.2	105.80	-830.3	3,698.4	761.0	527.4	233.59	3.258	
11,438.0	6,986.7	11,668.4	7,194.2	122.3	122.2	105.82	-830.3	3,736.4	761.1	525.5	235.59	3.231	
11,488.2	6,986.0	11,706.4	7,194.0	123.7	123.3	105.84	-830.3	3,774.5	761.3	523.4	237.92	3.200 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Peschel 20H-232
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-232	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')

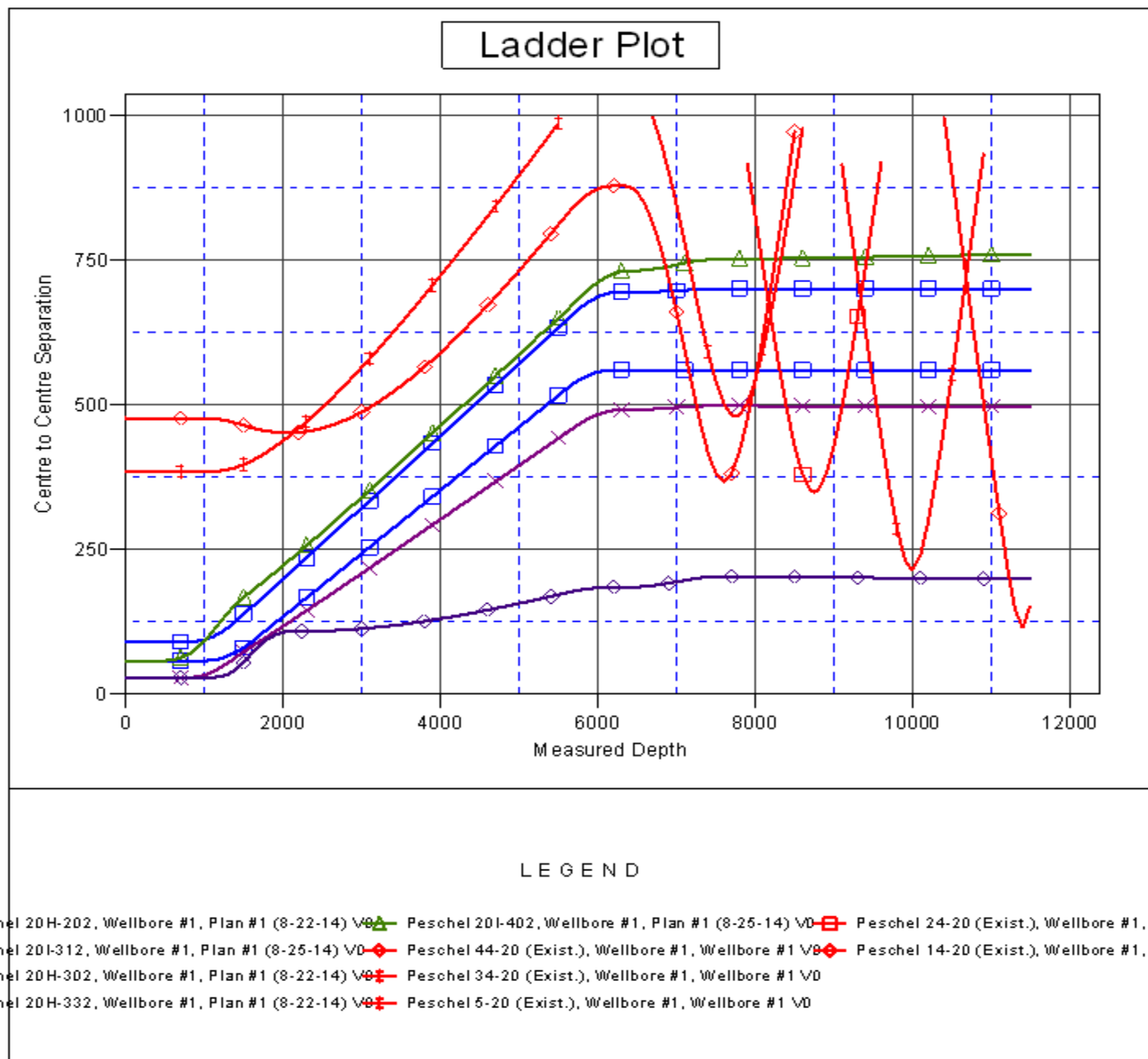
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Peschel 20H-232

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-232
Project:	SEC.20-T4N-R65W	TVD Reference:	WELL @ 4817.0ft (RKB - 15')
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Site Error:	0.0ft	North Reference:	True
Reference Well:	Peschel 20H-232	Survey Calculation Method:	Minimum Curvature
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