

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Wiedeman 28E-404**

Surface Location: Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

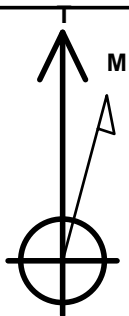
Ground Elevation: 4763.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1348306.14	3197775.96	40.287330	-104.791050	

Original Well Elev WELL @ 4778.0ft (Original Well Elev)

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 916'FNL & 240'FWL, SEC.28	1.0	0.0	0.0	Point
BHL 75'FNL & 2163'FEL, SEC.30	7278.0	875.5	-7727.6	Point



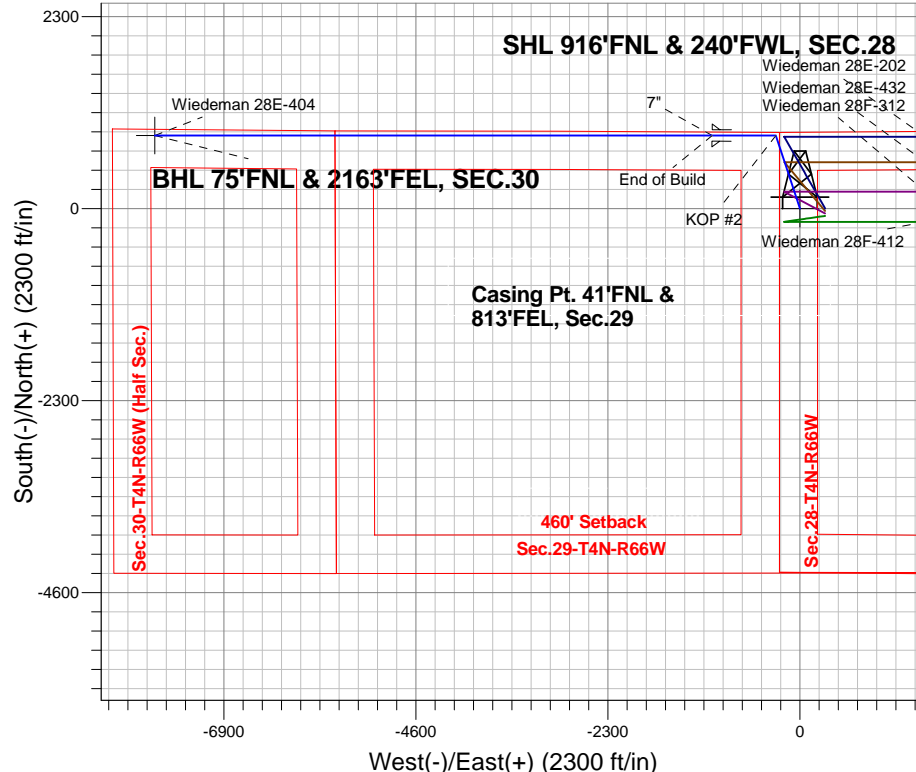
Azimuths to True North
Magnetic North: 8.44°

Magnetic Field
Strength: 52738.7srT
Dip Angle: 66.85°
Date: 8/7/2014
Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
200.0	200.0	KOP #1
6510.6	6583.5	KOP #2
7274.5	7783.1	End of Build

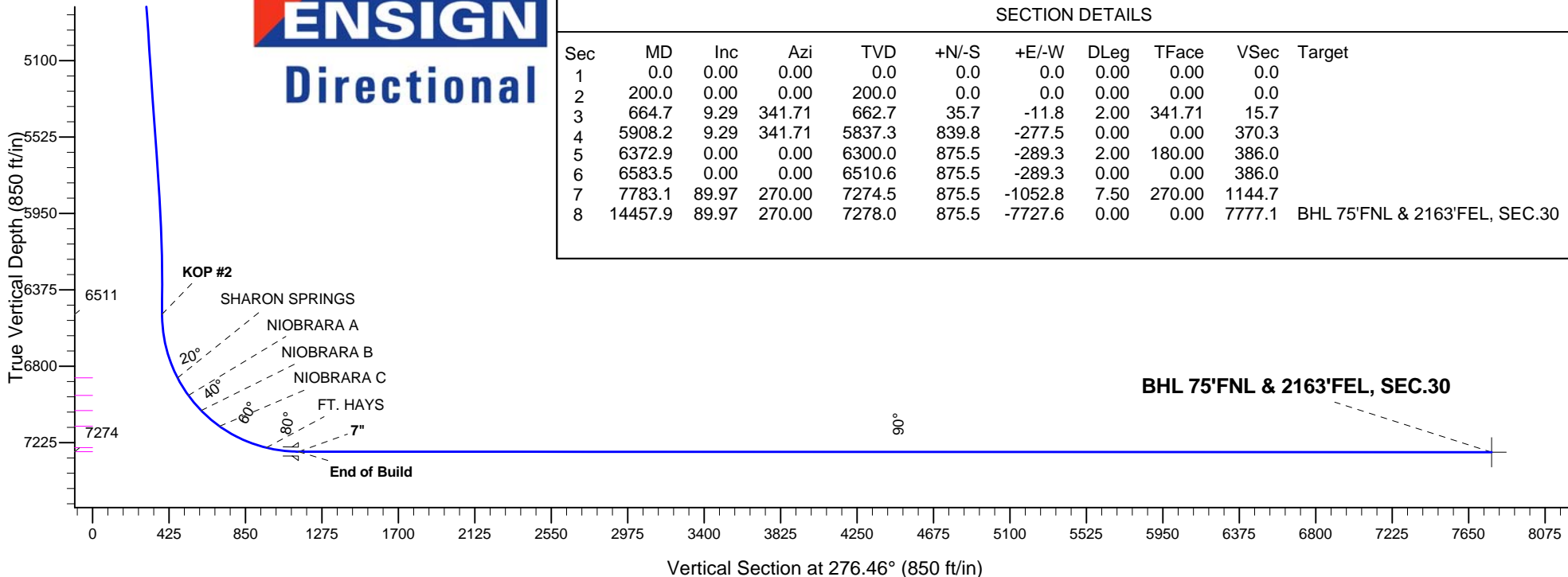
Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W
Wiedeman 28E-404
Plan #1 (8-07-14)



ENSIGN
Directional

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	664.7	9.29	341.71	662.7	35.7	-11.8	2.00	341.71	15.7	
4	5908.2	9.29	341.71	5837.3	839.8	-277.5	0.00	0.00	370.3	
5	6372.9	0.00	0.00	6300.0	875.5	-289.3	2.00	180.00	386.0	
6	6583.5	0.00	0.00	6510.6	875.5	-289.3	0.00	0.00	386.0	
7	7783.1	89.97	270.00	7274.5	875.5	-1052.8	7.50	270.00	1144.7	
8	14457.9	89.97	270.00	7278.0	875.5	-7727.6	0.00	0.00	7777.1	BHL 75'FNL & 2163'FEL, SEC.30





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.28-T4N-R66W

Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W

Wiedeman 28E-404

Wellbore #1

Plan: Plan #1 (8-07-14)

Standard Planning Report

11 August, 2014

Database:	landmark	Local Co-ordinate Reference:	Well Wiedeman 28E-404
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4778.0ft (Original Well Elev)
Project:	SEC.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site:	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W	North Reference:	True
Well:	Wiedeman 28E-404	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-07-14)		

Project	SEC.28-T4N-R66W, Weld County, 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						Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W											
Site Position:						Northing:			1,348,277.01 ft			Latitude:			40.287250		
From:			Lat/Long			Easting:			3,197,776.19ft			Longitude:			-104.791050		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.46 °		

Well	Wiedeman 28E-404					
Well Position	+N-S	29.1 ft	Northing:	1,348,306.14 ft	Latitude:	40.287330
	+E-W	0.0 ft	Easting:	3,197,775.96 ft	Longitude:	-104.791050
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,763.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/7/2014	8.45	66.85	52,739

Design	Plan #1 (8-07-14)			
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	276.46

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	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
664.7	9.29	341.71	662.7	35.7	-11.8	2.00	2.00	0.00	341.71	
5,908.2	9.29	341.71	5,837.3	839.8	-277.5	0.00	0.00	0.00	0.00	
6,372.9	0.00	0.00	6,300.0	875.5	-289.3	2.00	-2.00	0.00	180.00	
6,583.5	0.00	0.00	6,510.6	875.5	-289.3	0.00	0.00	0.00	0.00	
7,783.1	89.97	270.00	7,274.5	875.5	-1,052.8	7.50	7.50	0.00	270.00	
14,457.9	89.97	270.00	7,278.0	875.5	-7,727.6	0.00	0.00	0.00	0.00	BHL 75'FNL & 216°

Database:	landmark	Local Co-ordinate Reference:	Well Wiedeman 28E-404
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Project:	SEC.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site:	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W	North Reference:	True
Well:	Wiedeman 28E-404	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-07-14)		

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
KOP #1									
300.0	2.00	341.71	300.0	1.7	-0.5	0.7	2.00	2.00	0.00
400.0	4.00	341.71	399.8	6.6	-2.2	2.9	2.00	2.00	0.00
500.0	6.00	341.71	499.5	14.9	-4.9	6.6	2.00	2.00	0.00
600.0	8.00	341.71	598.7	26.5	-8.7	11.7	2.00	2.00	0.00
664.7	9.29	341.71	662.7	35.7	-11.8	15.7	2.00	2.00	0.00
700.0	9.29	341.71	697.5	41.1	-13.6	18.1	0.00	0.00	0.00
800.0	9.29	341.71	796.2	56.5	-18.7	24.9	0.00	0.00	0.00
900.0	9.29	341.71	894.9	71.8	-23.7	31.7	0.00	0.00	0.00
1,000.0	9.29	341.71	993.6	87.1	-28.8	38.4	0.00	0.00	0.00
1,100.0	9.29	341.71	1,092.3	102.5	-33.9	45.2	0.00	0.00	0.00
1,200.0	9.29	341.71	1,190.9	117.8	-38.9	51.9	0.00	0.00	0.00
1,300.0	9.29	341.71	1,289.6	133.1	-44.0	58.7	0.00	0.00	0.00
1,400.0	9.29	341.71	1,388.3	148.5	-49.1	65.5	0.00	0.00	0.00
1,500.0	9.29	341.71	1,487.0	163.8	-54.1	72.2	0.00	0.00	0.00
1,600.0	9.29	341.71	1,585.7	179.1	-59.2	79.0	0.00	0.00	0.00
1,700.0	9.29	341.71	1,684.4	194.5	-64.3	85.7	0.00	0.00	0.00
1,800.0	9.29	341.71	1,783.1	209.8	-69.3	92.5	0.00	0.00	0.00
1,900.0	9.29	341.71	1,881.7	225.1	-74.4	99.3	0.00	0.00	0.00
2,000.0	9.29	341.71	1,980.4	240.5	-79.5	106.0	0.00	0.00	0.00
2,100.0	9.29	341.71	2,079.1	255.8	-84.5	112.8	0.00	0.00	0.00
2,200.0	9.29	341.71	2,177.8	271.1	-89.6	119.6	0.00	0.00	0.00
2,300.0	9.29	341.71	2,276.5	286.5	-94.7	126.3	0.00	0.00	0.00
2,400.0	9.29	341.71	2,375.2	301.8	-99.7	133.1	0.00	0.00	0.00
2,500.0	9.29	341.71	2,473.9	317.1	-104.8	139.8	0.00	0.00	0.00
2,600.0	9.29	341.71	2,572.6	332.5	-109.9	146.6	0.00	0.00	0.00
2,700.0	9.29	341.71	2,671.2	347.8	-114.9	153.4	0.00	0.00	0.00
2,800.0	9.29	341.71	2,769.9	363.2	-120.0	160.1	0.00	0.00	0.00
2,900.0	9.29	341.71	2,868.6	378.5	-125.1	166.9	0.00	0.00	0.00
3,000.0	9.29	341.71	2,967.3	393.8	-130.1	173.6	0.00	0.00	0.00
3,100.0	9.29	341.71	3,066.0	409.2	-135.2	180.4	0.00	0.00	0.00
3,200.0	9.29	341.71	3,164.7	424.5	-140.3	187.2	0.00	0.00	0.00
3,300.0	9.29	341.71	3,263.4	439.8	-145.3	193.9	0.00	0.00	0.00
3,400.0	9.29	341.71	3,362.1	455.2	-150.4	200.7	0.00	0.00	0.00
3,500.0	9.29	341.71	3,460.7	470.5	-155.5	207.5	0.00	0.00	0.00
3,600.0	9.29	341.71	3,559.4	485.8	-160.5	214.2	0.00	0.00	0.00
3,700.0	9.29	341.71	3,658.1	501.2	-165.6	221.0	0.00	0.00	0.00
3,748.5	9.29	341.71	3,706.0	508.6	-168.1	224.3	0.00	0.00	0.00
PARKMAN									
3,800.0	9.29	341.71	3,756.8	516.5	-170.7	227.7	0.00	0.00	0.00
3,900.0	9.29	341.71	3,855.5	531.8	-175.7	234.5	0.00	0.00	0.00
4,000.0	9.29	341.71	3,954.2	547.2	-180.8	241.3	0.00	0.00	0.00
4,100.0	9.29	341.71	4,052.9	562.5	-185.9	248.0	0.00	0.00	0.00
4,200.0	9.29	341.71	4,151.6	577.8	-190.9	254.8	0.00	0.00	0.00
4,300.0	9.29	341.71	4,250.2	593.2	-196.0	261.5	0.00	0.00	0.00
4,400.0	9.29	341.71	4,348.9	608.5	-201.1	268.3	0.00	0.00	0.00
4,404.1	9.29	341.71	4,353.0	609.1	-201.3	268.6	0.00	0.00	0.00
SUSSEX									
4,500.0	9.29	341.71	4,447.6	623.8	-206.1	275.1	0.00	0.00	0.00

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Project:	SEC.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site:	Wiedeman 4N66W28F - West Pad	North Reference:	True
	Sec.28-T4N-R66W		
Well:	Wiedeman 28E-404	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-07-14)		

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)
4,600.0	9.29	341.71	4,546.3	639.2	-211.2	281.8	0.00	0.00	0.00
4,700.0	9.29	341.71	4,645.0	654.5	-216.3	288.6	0.00	0.00	0.00
4,800.0	9.29	341.71	4,743.7	669.9	-221.3	295.4	0.00	0.00	0.00
4,840.9	9.29	341.71	4,784.0	676.1	-223.4	298.1	0.00	0.00	0.00
SHANNON									
4,900.0	9.29	341.71	4,842.4	685.2	-226.4	302.1	0.00	0.00	0.00
5,000.0	9.29	341.71	4,941.1	700.5	-231.5	308.9	0.00	0.00	0.00
5,100.0	9.29	341.71	5,039.7	715.9	-236.5	315.6	0.00	0.00	0.00
5,200.0	9.29	341.71	5,138.4	731.2	-241.6	322.4	0.00	0.00	0.00
5,300.0	9.29	341.71	5,237.1	746.5	-246.7	329.2	0.00	0.00	0.00
5,400.0	9.29	341.71	5,335.8	761.9	-251.7	335.9	0.00	0.00	0.00
5,500.0	9.29	341.71	5,434.5	777.2	-256.8	342.7	0.00	0.00	0.00
5,600.0	9.29	341.71	5,533.2	792.5	-261.9	349.4	0.00	0.00	0.00
5,700.0	9.29	341.71	5,631.9	807.9	-267.0	356.2	0.00	0.00	0.00
5,800.0	9.29	341.71	5,730.5	823.2	-272.0	363.0	0.00	0.00	0.00
5,900.0	9.29	341.71	5,829.2	838.5	-277.1	369.7	0.00	0.00	0.00
5,908.2	9.29	341.71	5,837.3	839.8	-277.5	370.3	0.00	0.00	0.00
6,000.0	7.46	341.71	5,928.1	852.5	-281.7	375.9	2.00	-2.00	0.00
6,100.0	5.46	341.71	6,027.5	863.2	-285.2	380.6	2.00	-2.00	0.00
6,200.0	3.46	341.71	6,127.2	870.5	-287.7	383.8	2.00	-2.00	0.00
6,300.0	1.46	341.71	6,227.1	874.6	-289.0	385.6	2.00	-2.00	0.00
6,372.9	0.00	0.00	6,300.0	875.5	-289.3	386.0	2.00	-2.00	0.00
6,400.0	0.00	0.00	6,327.1	875.5	-289.3	386.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,427.1	875.5	-289.3	386.0	0.00	0.00	0.00
6,583.5	0.00	0.00	6,510.6	875.5	-289.3	386.0	0.00	0.00	0.00
KOP #2									
6,600.0	1.24	270.00	6,527.1	875.5	-289.5	386.2	7.52	7.52	0.00
6,700.0	8.74	270.00	6,626.6	875.5	-298.2	394.8	7.50	7.50	0.00
6,800.0	16.24	270.00	6,724.2	875.5	-319.8	416.3	7.50	7.50	0.00
6,900.0	23.74	270.00	6,818.1	875.5	-353.9	450.3	7.50	7.50	0.00
6,950.9	27.56	270.00	6,864.0	875.5	-376.0	472.2	7.50	7.50	0.00
SHARON SPRINGS									
7,000.0	31.24	270.00	6,906.8	875.5	-400.1	496.1	7.50	7.50	0.00
7,066.4	36.22	270.00	6,962.0	875.5	-437.0	532.7	7.50	7.50	0.00
NIOBRARA A									
7,100.0	38.74	270.00	6,988.6	875.5	-457.4	553.0	7.50	7.50	0.00
7,176.8	44.50	270.00	7,046.0	875.5	-508.3	603.7	7.50	7.50	0.00
NIOBRARA B									
7,200.0	46.24	270.00	7,062.3	875.5	-524.9	620.1	7.50	7.50	0.00
7,300.0	53.74	270.00	7,126.6	875.5	-601.4	696.1	7.50	7.50	0.00
7,312.7	54.69	270.00	7,134.0	875.5	-611.7	706.4	7.50	7.50	0.00
NIOBRARA C									
7,400.0	61.24	270.00	7,180.3	875.5	-685.7	779.9	7.50	7.50	0.00
7,500.0	68.74	270.00	7,222.5	875.5	-776.2	869.9	7.50	7.50	0.00
7,600.0	76.24	270.00	7,252.6	875.5	-871.5	964.6	7.50	7.50	0.00
7,601.8	76.37	270.00	7,253.0	875.5	-873.3	966.3	7.50	7.50	0.00
FT. HAYS									
7,700.0	83.74	270.00	7,269.9	875.5	-969.9	1,062.3	7.50	7.50	0.00
7,783.1	89.97	270.00	7,274.5	875.5	-1,052.9	1,144.7	7.50	7.50	0.00
End of Build - 7"									
7,800.0	89.97	270.00	7,274.5	875.5	-1,069.8	1,161.5	0.00	0.00	0.00

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Well:	Wiedeman 28E-404	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-07-14)		

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)
7,900.0	89.97	270.00	7,274.6	875.5	-1,169.8	1,260.9	0.00	0.00	0.00
8,000.0	89.97	270.00	7,274.6	875.5	-1,269.8	1,360.3	0.00	0.00	0.00
8,100.0	89.97	270.00	7,274.7	875.5	-1,369.8	1,459.6	0.00	0.00	0.00
8,200.0	89.97	270.00	7,274.7	875.5	-1,469.8	1,559.0	0.00	0.00	0.00
8,300.0	89.97	270.00	7,274.8	875.5	-1,569.8	1,658.4	0.00	0.00	0.00
8,400.0	89.97	270.00	7,274.8	875.5	-1,669.8	1,757.7	0.00	0.00	0.00
8,500.0	89.97	270.00	7,274.9	875.5	-1,769.8	1,857.1	0.00	0.00	0.00
8,600.0	89.97	270.00	7,274.9	875.5	-1,869.8	1,956.5	0.00	0.00	0.00
8,700.0	89.97	270.00	7,275.0	875.5	-1,969.8	2,055.8	0.00	0.00	0.00
8,728.3	89.97	270.00	7,275.0	875.5	-1,998.1	2,083.9	0.00	0.00	0.00
CODELL									
8,800.0	89.97	270.00	7,275.0	875.5	-2,069.8	2,155.2	0.00	0.00	0.00
8,900.0	89.97	270.00	7,275.1	875.5	-2,169.8	2,254.5	0.00	0.00	0.00
9,000.0	89.97	270.00	7,275.1	875.5	-2,269.8	2,353.9	0.00	0.00	0.00
9,100.0	89.97	270.00	7,275.2	875.5	-2,369.8	2,453.3	0.00	0.00	0.00
9,200.0	89.97	270.00	7,275.2	875.5	-2,469.8	2,552.6	0.00	0.00	0.00
9,300.0	89.97	270.00	7,275.3	875.5	-2,569.8	2,652.0	0.00	0.00	0.00
9,400.0	89.97	270.00	7,275.4	875.5	-2,669.8	2,751.4	0.00	0.00	0.00
9,500.0	89.97	270.00	7,275.4	875.5	-2,769.8	2,850.7	0.00	0.00	0.00
9,600.0	89.97	270.00	7,275.5	875.5	-2,869.8	2,950.1	0.00	0.00	0.00
9,700.0	89.97	270.00	7,275.5	875.5	-2,969.8	3,049.5	0.00	0.00	0.00
9,800.0	89.97	270.00	7,275.6	875.5	-3,069.8	3,148.8	0.00	0.00	0.00
9,900.0	89.97	270.00	7,275.6	875.5	-3,169.8	3,248.2	0.00	0.00	0.00
10,000.0	89.97	270.00	7,275.7	875.5	-3,269.8	3,347.6	0.00	0.00	0.00
10,100.0	89.97	270.00	7,275.7	875.5	-3,369.8	3,446.9	0.00	0.00	0.00
10,200.0	89.97	270.00	7,275.8	875.5	-3,469.8	3,546.3	0.00	0.00	0.00
10,300.0	89.97	270.00	7,275.8	875.5	-3,569.8	3,645.6	0.00	0.00	0.00
10,400.0	89.97	270.00	7,275.9	875.5	-3,669.8	3,745.0	0.00	0.00	0.00
10,500.0	89.97	270.00	7,275.9	875.5	-3,769.8	3,844.4	0.00	0.00	0.00
10,600.0	89.97	270.00	7,276.0	875.5	-3,869.8	3,943.7	0.00	0.00	0.00
10,700.0	89.97	270.00	7,276.0	875.5	-3,969.8	4,043.1	0.00	0.00	0.00
10,800.0	89.97	270.00	7,276.1	875.5	-4,069.8	4,142.5	0.00	0.00	0.00
10,900.0	89.97	270.00	7,276.1	875.5	-4,169.8	4,241.8	0.00	0.00	0.00
11,000.0	89.97	270.00	7,276.2	875.5	-4,269.8	4,341.2	0.00	0.00	0.00
11,100.0	89.97	270.00	7,276.2	875.5	-4,369.8	4,440.6	0.00	0.00	0.00
11,200.0	89.97	270.00	7,276.3	875.5	-4,469.8	4,539.9	0.00	0.00	0.00
11,300.0	89.97	270.00	7,276.3	875.5	-4,569.8	4,639.3	0.00	0.00	0.00
11,400.0	89.97	270.00	7,276.4	875.5	-4,669.8	4,738.7	0.00	0.00	0.00
11,500.0	89.97	270.00	7,276.5	875.5	-4,769.8	4,838.0	0.00	0.00	0.00
11,600.0	89.97	270.00	7,276.5	875.5	-4,869.8	4,937.4	0.00	0.00	0.00
11,700.0	89.97	270.00	7,276.6	875.5	-4,969.8	5,036.7	0.00	0.00	0.00
11,800.0	89.97	270.00	7,276.6	875.5	-5,069.8	5,136.1	0.00	0.00	0.00
11,900.0	89.97	270.00	7,276.7	875.5	-5,169.8	5,235.5	0.00	0.00	0.00
12,000.0	89.97	270.00	7,276.7	875.5	-5,269.8	5,334.8	0.00	0.00	0.00
12,100.0	89.97	270.00	7,276.8	875.5	-5,369.8	5,434.2	0.00	0.00	0.00
12,200.0	89.97	270.00	7,276.8	875.5	-5,469.8	5,533.6	0.00	0.00	0.00
12,300.0	89.97	270.00	7,276.9	875.5	-5,569.8	5,632.9	0.00	0.00	0.00
12,400.0	89.97	270.00	7,276.9	875.5	-5,669.8	5,732.3	0.00	0.00	0.00
12,500.0	89.97	270.00	7,277.0	875.5	-5,769.8	5,831.7	0.00	0.00	0.00
12,600.0	89.97	270.00	7,277.0	875.5	-5,869.8	5,931.0	0.00	0.00	0.00
12,700.0	89.97	270.00	7,277.1	875.5	-5,969.8	6,030.4	0.00	0.00	0.00
12,800.0	89.97	270.00	7,277.1	875.5	-6,069.8	6,129.8	0.00	0.00	0.00

Database:	landmark	Local Co-ordinate Reference:	Well Wiedeman 28E-404
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4778.0ft (Original Well Elev)
Project:	SEC.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site:	Wiedeman 4N66W28F - West Pad	North Reference:	True
	Sec.28-T4N-R66W		
Well:	Wiedeman 28E-404	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-07-14)		

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)
12,900.0	89.97	270.00	7,277.2	875.5	-6,169.8	6,229.1	0.00	0.00	0.00
13,000.0	89.97	270.00	7,277.2	875.5	-6,269.8	6,328.5	0.00	0.00	0.00
13,100.0	89.97	270.00	7,277.3	875.5	-6,369.8	6,427.8	0.00	0.00	0.00
13,200.0	89.97	270.00	7,277.3	875.5	-6,469.8	6,527.2	0.00	0.00	0.00
13,300.0	89.97	270.00	7,277.4	875.5	-6,569.8	6,626.6	0.00	0.00	0.00
13,400.0	89.97	270.00	7,277.4	875.5	-6,669.8	6,725.9	0.00	0.00	0.00
13,500.0	89.97	270.00	7,277.5	875.5	-6,769.8	6,825.3	0.00	0.00	0.00
13,600.0	89.97	270.00	7,277.6	875.5	-6,869.8	6,924.7	0.00	0.00	0.00
13,700.0	89.97	270.00	7,277.6	875.5	-6,969.8	7,024.0	0.00	0.00	0.00
13,800.0	89.97	270.00	7,277.7	875.5	-7,069.8	7,123.4	0.00	0.00	0.00
13,900.0	89.97	270.00	7,277.7	875.5	-7,169.8	7,222.8	0.00	0.00	0.00
14,000.0	89.97	270.00	7,277.8	875.5	-7,269.8	7,322.1	0.00	0.00	0.00
14,100.0	89.97	270.00	7,277.8	875.5	-7,369.8	7,421.5	0.00	0.00	0.00
14,200.0	89.97	270.00	7,277.9	875.5	-7,469.8	7,520.9	0.00	0.00	0.00
14,300.0	89.97	270.00	7,277.9	875.5	-7,569.8	7,620.2	0.00	0.00	0.00
14,400.0	89.97	270.00	7,278.0	875.5	-7,669.8	7,719.6	0.00	0.00	0.00
14,457.9	89.97	270.00	7,278.0	875.5	-7,727.6	7,777.1	0.00	0.00	0.00

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,783.1	7,274.5	7"	7	7-1/2

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,748.5	3,706.0	PARKMAN			
4,404.1	4,353.0	SUSSEX			
4,840.9	4,784.0	SHANNON			
6,950.9	6,864.0	SHARON SPRINGS			
7,066.4	6,962.0	NIOBRARA A			
7,176.8	7,046.0	NIOBRARA B			
7,312.7	7,134.0	NIOBRARA C			
7,601.8	7,253.0	FT. HAYS			
8,728.3	7,275.0	CODELL			

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
200.0	200.0	0.0	0.0	KOP #1
6,583.5	6,510.6	875.5	-289.3	KOP #2
7,783.1	7,274.5	875.5	-1,052.9	End of Build



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.28-T4N-R66W

Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W

Wiedeman 28E-404

Wellbore #1

Plan #1 (8-07-14)

Anticollision Report

11 August, 2014



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-404
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4778.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-404	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 (8-07-14)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (8-07-14)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date 8/10/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	14,457.9	Plan #1 (8-07-14) (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						
Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W						
Wiedeman 28E-202 - Wellbore #1 - Plan #1 (8-07-14)	6,052.8	6,080.1	99.3	58.3	2.420	CC, ES, SF
Wiedeman 28E-432 - Wellbore #1 - Plan #1 (7-25-14)	200.0	199.0	302.7	302.0	450.429	CC
Wiedeman 28E-432 - Wellbore #1 - Plan #1 (7-25-14)	6,500.0	6,486.5	334.9	293.5	8.097	ES, SF
Wiedeman 28F-312 - Wellbore #1 - Plan #1 (7-25-14)	200.0	199.0	306.9	306.2	456.649	CC, ES
Wiedeman 28F-312 - Wellbore #1 - Plan #1 (7-25-14)	6,500.0	6,458.2	682.3	644.9	18.255	SF
Wiedeman 28F-412 - Wellbore #1 - Plan #1 (7-25-14)	200.0	199.0	313.7	313.1	466.832	CC, ES
Wiedeman 28F-412 - Wellbore #1 - Plan #1 (7-25-14)	5,800.0	5,757.3	984.8	954.7	32.775	SF
Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W						
Wiedeman 28E-234 - Wellbore #1 - Plan #1 (8-06-14)	200.0	200.0	29.1	28.5	43.222	CC, ES
Wiedeman 28E-234 - Wellbore #1 - Plan #1 (8-06-14)	14,457.9	14,233.7	371.1	47.6	1.147	Level 2, SF
Wiedeman 28F-214 - Wellbore #1 - Plan #1 (8-07-14)	200.0	200.0	87.4	86.8	129.665	CC, ES
Wiedeman 28F-214 - Wellbore #1 - Plan #1 (8-07-14)	14,457.9	14,205.5	953.2	546.0	2.341	SF
Wiedeman 28F-314 - Wellbore #1 - Plan #1 (8-07-14)	200.0	200.0	58.3	57.6	86.444	CC, ES
Wiedeman 28F-314 - Wellbore #1 - Plan #1 (8-07-14)	14,457.9	14,304.4	809.2	396.7	1.962	SF

Offset Design				Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W - Wiedeman 28E-202 - Wellbore #1 - Plan #1 (8-									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)				
0.0	0.0	0.0	0.0	0.0	0.0	90.00	0.0	301.3	301.3						
100.0	100.0	99.0	99.0	0.1	0.1	90.00	0.0	301.3	301.3	301.1	0.22	1,347.250			
200.0	200.0	199.0	199.0	0.3	0.3	90.00	0.0	301.3	301.3	300.6	0.67	448.336			
300.0	300.0	299.0	299.0	0.6	0.6	108.59	0.0	301.3	301.9	300.7	1.12	269.146			
400.0	399.8	398.8	398.8	0.8	0.8	109.49	0.0	301.3	303.6	302.0	1.58	192.488			
500.0	499.5	498.5	498.5	1.0	1.0	110.97	0.0	301.3	306.6	304.5	2.05	149.611			
600.0	598.7	597.7	597.7	1.3	1.2	112.97	0.0	301.3	311.2	308.6	2.55	122.177			
700.0	697.5	696.5	696.5	1.6	1.5	115.43	0.0	301.3	317.6	314.5	3.07	103.331			
800.0	796.2	795.2	795.2	2.0	1.7	117.98	0.0	301.3	324.9	321.3	3.61	90.009			
900.0	894.9	901.8	901.7	2.3	1.9	120.37	1.6	300.4	331.7	327.6	4.16	79.750			
1,000.0	993.6	1,009.7	1,009.5	2.7	2.2	122.20	6.7	297.5	336.5	331.8	4.71	71.404			

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 Wiedeman 28E-404
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4778.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-404	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 (8-07-14)	Offset TVD Reference:	Offset Datum

Offset Design		Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W - Wiedeman 28E-202 - Wellbore #1 - Plan #1 (8-										Offset Site Error:		0.0 ft
Survey Program: 0-MWD												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
1,100.0	1,092.3	1,118.4	1,117.7	3.1	2.4	123.49	15.3	292.6	338.9	333.6	5.28	64.215		
1,200.0	1,190.9	1,227.4	1,225.9	3.4	2.7	124.28	27.6	285.5	338.7	332.8	5.86	57.790		
1,300.0	1,289.6	1,336.6	1,333.4	3.8	3.0	124.59	43.5	276.5	335.8	329.3	6.47	51.901		
1,400.0	1,388.3	1,440.1	1,434.9	4.2	3.4	124.49	61.3	266.3	330.7	323.6	7.10	46.600		
1,500.0	1,487.0	1,540.0	1,532.8	4.5	3.7	124.36	78.8	256.4	325.3	317.6	7.73	42.105		
1,600.0	1,585.7	1,639.8	1,630.6	4.9	4.1	124.22	96.3	246.5	320.0	311.6	8.37	38.229		
1,700.0	1,684.4	1,739.7	1,728.4	5.3	4.5	124.08	113.7	236.5	314.6	305.6	9.02	34.873		
1,800.0	1,783.1	1,839.5	1,826.2	5.6	4.9	123.93	131.2	226.6	309.3	299.6	9.69	31.937		
1,900.0	1,881.7	1,939.4	1,924.0	6.0	5.3	123.78	148.7	216.6	304.0	293.6	10.35	29.357		
2,000.0	1,980.4	2,039.3	2,021.8	6.4	5.7	123.62	166.1	206.7	298.6	287.6	11.03	27.075		
2,100.0	2,079.1	2,139.1	2,119.6	6.8	6.1	123.45	183.6	196.7	293.3	281.6	11.71	25.046		
2,200.0	2,177.8	2,239.0	2,217.4	7.1	6.5	123.28	201.1	186.8	288.0	275.6	12.40	23.230		
2,300.0	2,276.5	2,338.8	2,315.2	7.5	6.9	123.10	218.5	176.8	282.7	269.6	13.09	21.598		
2,400.0	2,375.2	2,438.7	2,413.1	7.9	7.3	122.92	236.0	166.9	277.3	263.6	13.78	20.123		
2,500.0	2,473.9	2,538.5	2,510.9	8.2	7.8	122.73	253.4	156.9	272.0	257.5	14.48	18.784		
2,600.0	2,572.6	2,638.4	2,608.7	8.6	8.2	122.53	270.9	147.0	266.7	251.5	15.18	17.565		
2,700.0	2,671.2	2,738.2	2,706.5	9.0	8.6	122.32	288.4	137.0	261.4	245.5	15.89	16.450		
2,800.0	2,769.9	2,838.1	2,804.3	9.4	9.0	122.11	305.8	127.1	256.1	239.5	16.60	15.426		
2,900.0	2,868.6	2,937.9	2,902.1	9.7	9.5	121.89	323.3	117.1	250.8	233.5	17.31	14.483		
3,000.0	2,967.3	3,037.8	2,999.9	10.1	9.9	121.65	340.8	107.2	245.5	227.4	18.03	13.613		
3,100.0	3,066.0	3,137.7	3,097.7	10.5	10.3	121.41	358.2	97.2	240.2	221.4	18.75	12.807		
3,200.0	3,164.7	3,237.5	3,195.5	10.9	10.8	121.15	375.7	87.3	234.9	215.4	19.48	12.058		
3,300.0	3,263.4	3,337.4	3,293.4	11.2	11.2	120.88	393.1	77.3	229.6	209.4	20.21	11.361		
3,400.0	3,362.1	3,437.2	3,391.2	11.6	11.6	120.60	410.6	67.4	224.3	203.4	20.94	10.710		
3,500.0	3,460.7	3,537.1	3,489.0	12.0	12.1	120.31	428.1	57.4	219.0	197.4	21.68	10.102		
3,600.0	3,559.4	3,636.9	3,586.8	12.3	12.5	120.00	445.5	47.5	213.8	191.3	22.43	9.532		
3,700.0	3,658.1	3,736.8	3,684.6	12.7	12.9	119.68	463.0	37.5	208.5	185.3	23.17	8.997		
3,800.0	3,756.8	3,836.6	3,782.4	13.1	13.4	119.34	480.5	27.6	203.3	179.3	23.93	8.494		
3,900.0	3,855.5	3,936.5	3,880.2	13.5	13.8	118.98	497.9	17.6	198.0	173.3	24.69	8.021		
4,000.0	3,954.2	4,036.3	3,978.0	13.8	14.2	118.60	515.4	7.7	192.8	167.3	25.45	7.574		
4,100.0	4,052.9	4,136.2	4,075.8	14.2	14.7	118.21	532.8	-2.3	187.5	161.3	26.22	7.152		
4,200.0	4,151.6	4,236.1	4,173.6	14.6	15.1	117.78	550.3	-12.2	182.3	155.3	27.00	6.752		
4,300.0	4,250.2	4,335.9	4,271.5	15.0	15.5	117.34	567.8	-22.2	177.1	149.3	27.78	6.374		
4,400.0	4,348.9	4,435.8	4,369.3	15.3	16.0	116.87	585.2	-32.1	171.9	143.3	28.57	6.016		
4,500.0	4,447.6	4,535.6	4,467.1	15.7	16.4	116.36	602.7	-42.1	166.7	137.3	29.37	5.675		
4,600.0	4,546.3	4,635.5	4,564.9	16.1	16.8	115.83	620.2	-52.0	161.5	131.3	30.18	5.352		
4,700.0	4,645.0	4,735.3	4,662.7	16.4	17.3	115.26	637.6	-62.0	156.4	125.4	31.00	5.044		
4,800.0	4,743.7	4,835.2	4,760.5	16.8	17.7	114.65	655.1	-71.9	151.2	119.4	31.83	4.752		
4,900.0	4,842.4	4,935.0	4,858.3	17.2	18.1	114.00	672.6	-81.9	146.1	113.4	32.66	4.473		
5,000.0	4,941.1	5,034.9	4,956.1	17.6	18.6	113.30	690.0	-91.8	141.0	107.5	33.51	4.207		
5,100.0	5,039.7	5,134.7	5,053.9	17.9	19.0	112.54	707.5	-101.8	135.9	101.5	34.37	3.954		
5,200.0	5,138.4	5,234.6	5,151.8	18.3	19.4	111.73	724.9	-111.7	130.8	95.6	35.25	3.712		
5,300.0	5,237.1	5,334.4	5,249.6	18.7	19.9	110.86	742.4	-121.7	125.8	89.7	36.13	3.482		
5,400.0	5,335.8	5,434.3	5,347.4	19.1	20.3	109.91	759.9	-131.6	120.8	83.8	37.04	3.262		
5,500.0	5,434.5	5,534.2	5,445.2	19.4	20.8	108.88	777.3	-141.5	115.9	77.9	37.95	3.053		
5,600.0	5,533.2	5,634.0	5,543.0	19.8	21.2	107.76	794.8	-151.5	110.9	72.1	38.89	2.853		
5,700.0	5,631.9	5,733.6	5,640.5	20.2	21.6	106.57	812.2	-161.4	106.1	66.3	39.82	2.664		
5,800.0	5,730.5	5,831.8	5,737.2	20.6	22.0	106.40	827.4	-170.1	102.3	61.8	40.53	2.524		
5,900.0	5,829.2	5,930.1	5,834.5	20.9	22.2	107.92	839.7	-177.1	100.2	59.3	40.92	2.448		
6,000.0	5,928.1	6,028.3	5,932.0	21.2	22.5	110.38	849.2	-182.5	99.4	58.4	41.03	2.422		
6,052.8	5,980.6	6,080.1	5,983.7	21.4	22.6	111.62	853.0	-184.6	99.3	58.3	41.03	2.420 CC, ES, SF		

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 Wiedeman 28E-404
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4778.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-404	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 (8-07-14)	Offset TVD Reference:	Offset Datum

Offset Design Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W - Wiedeman 28E-202 - Wellbore #1 - Plan #1 (8-														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
6,100.0	6,027.5	6,126.4	6,029.8	21.5	22.7	112.68	855.7	-186.2	99.4	58.3	41.02	2.422			
6,200.0	6,127.2	6,224.3	6,127.7	21.7	22.8	114.75	859.3	-188.2	100.1	59.1	40.96	2.443			
6,300.0	6,227.1	6,322.8	6,226.1	21.9	22.9	116.52	860.1	-188.7	101.4	60.5	40.88	2.479			
6,400.0	6,327.1	6,420.2	6,323.5	22.0	23.1	98.69	860.1	-188.4	102.1	66.2	35.86	2.846			
6,500.0	6,427.1	6,507.8	6,410.8	22.1	23.1	98.11	860.1	-181.2	110.3	74.3	35.98	3.065			
6,600.0	6,527.1	6,592.7	6,494.0	22.3	23.1	-172.92	860.1	-164.7	129.8	87.9	41.91	3.097			
6,700.0	6,626.6	6,670.2	6,568.0	22.4	23.1	-173.97	860.1	-141.6	167.5	125.4	42.10	3.979			
6,800.0	6,724.2	6,735.3	6,628.0	22.7	23.0	-174.77	860.1	-116.6	224.9	183.4	41.57	5.412			
6,900.0	6,818.1	6,786.1	6,673.3	23.0	23.0	-175.12	860.1	-93.5	297.9	257.6	40.30	7.393			
7,000.0	6,906.8	6,823.0	6,705.1	23.3	22.9	-174.94	860.1	-74.9	382.4	344.1	38.36	9.970			
7,100.0	6,988.6	6,850.0	6,727.9	23.8	22.9	-174.02	860.1	-60.3	474.7	438.9	35.81	13.259			
7,200.0	7,062.3	6,861.2	6,737.2	24.4	22.9	-170.45	860.1	-54.0	571.9	539.3	32.61	17.538			
7,300.0	7,126.6	6,866.3	6,741.3	25.2	22.9	-135.43	860.1	-51.1	671.3	639.6	31.74	21.153			
7,400.0	7,180.3	6,864.2	6,739.6	26.1	22.9	-10.81	860.1	-52.3	771.2	742.8	28.38	27.173			
7,500.0	7,222.5	6,850.0	6,727.9	27.3	22.9	-4.40	860.1	-60.3	869.8	845.8	23.92	36.357			
7,600.0	7,252.6	6,850.0	6,727.9	28.7	22.9	-2.79	860.1	-60.3	965.7	945.1	20.60	46.873			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-404
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4778.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-404	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 (8-07-14)	Offset TVD Reference:	Offset Datum

Offset Design Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W - Wiedeman 28E-432 - Wellbore #1 - Plan #1 (7-													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	95.52	-29.1	301.3	302.7					
100.0	100.0	99.0	99.0	0.1	0.1	95.52	-29.1	301.3	302.7	302.5	0.22	1,353.539		
200.0	200.0	199.0	199.0	0.3	0.3	95.52	-29.1	301.3	302.7	302.0	0.67	450.429	CC	
300.0	300.0	299.0	299.0	0.6	0.6	114.10	-29.1	301.3	303.4	302.3	1.12	270.427		
400.0	399.8	398.8	398.8	0.8	0.8	114.95	-29.1	301.3	305.6	304.0	1.58	193.685		
500.0	499.5	498.5	498.5	1.0	1.0	116.34	-29.1	301.3	309.4	307.3	2.05	150.998		
600.0	598.7	597.7	597.7	1.3	1.2	118.22	-29.1	301.3	315.0	312.5	2.54	123.853		
700.0	697.5	696.5	696.5	1.6	1.5	120.53	-29.1	301.3	322.6	319.6	3.06	105.325		
800.0	796.2	795.2	795.2	2.0	1.7	122.92	-29.1	301.3	331.2	327.6	3.59	92.224		
900.0	894.9	893.9	893.9	2.3	1.9	125.18	-29.1	301.3	340.3	336.2	4.12	82.610		
1,000.0	993.6	992.6	992.6	2.7	2.1	127.32	-29.1	301.3	350.0	345.3	4.65	75.336		
1,100.0	1,092.3	1,091.3	1,091.3	3.1	2.3	129.35	-29.1	301.3	360.1	354.9	5.17	69.688		
1,200.0	1,190.9	1,189.9	1,189.9	3.4	2.6	131.27	-29.1	301.3	370.6	364.9	5.68	65.206		
1,300.0	1,289.6	1,300.8	1,300.7	3.8	2.8	133.18	-27.8	300.2	380.1	373.9	6.21	61.166		
1,400.0	1,388.3	1,413.9	1,413.7	4.2	3.1	134.77	-23.0	296.2	386.4	379.6	6.75	57.284		
1,500.0	1,487.0	1,527.8	1,527.1	4.5	3.3	136.07	-14.8	289.3	389.2	382.0	7.28	53.446		
1,600.0	1,585.7	1,642.0	1,640.2	4.9	3.6	137.10	-3.1	279.5	388.5	380.7	7.83	49.635		
1,700.0	1,684.4	1,745.1	1,742.0	5.3	3.9	137.89	9.7	268.8	385.3	377.0	8.36	46.104		
1,800.0	1,783.1	1,844.9	1,840.4	5.6	4.2	138.66	22.2	258.4	382.1	373.2	8.88	43.029		
1,900.0	1,881.7	1,944.7	1,938.9	6.0	4.5	139.44	34.6	247.9	378.9	369.5	9.40	40.303		
2,000.0	1,980.4	2,044.5	2,037.4	6.4	4.8	140.24	47.0	237.5	375.8	365.9	9.92	37.883		
2,100.0	2,079.1	2,144.3	2,135.9	6.8	5.1	141.04	59.5	227.1	372.8	362.4	10.44	35.709		
2,200.0	2,177.8	2,244.1	2,234.4	7.1	5.5	141.87	71.9	216.7	369.9	358.9	10.96	33.758		
2,300.0	2,276.5	2,344.0	2,332.9	7.5	5.8	142.70	84.4	206.2	367.0	355.5	11.47	31.998		
2,400.0	2,375.2	2,443.8	2,431.4	7.9	6.1	143.55	96.8	195.8	364.2	352.2	11.98	30.404		
2,500.0	2,473.9	2,543.6	2,529.8	8.2	6.5	144.41	109.3	185.4	361.5	349.0	12.49	28.954		
2,600.0	2,572.6	2,643.4	2,628.3	8.6	6.8	145.28	121.7	175.0	358.9	345.9	12.99	27.632		
2,700.0	2,671.2	2,743.2	2,726.8	9.0	7.2	146.16	134.2	164.6	356.3	342.8	13.49	26.422		
2,800.0	2,769.9	2,843.0	2,825.3	9.4	7.5	147.06	146.6	154.1	353.9	339.9	13.98	25.312		
2,900.0	2,868.6	2,942.8	2,923.8	9.7	7.9	147.97	159.1	143.7	351.5	337.0	14.47	24.289		
3,000.0	2,967.3	3,042.7	3,022.3	10.1	8.3	148.89	171.5	133.3	349.2	334.3	14.96	23.346		
3,100.0	3,066.0	3,142.5	3,120.8	10.5	8.6	149.83	183.9	122.9	347.0	331.6	15.44	22.473		
3,200.0	3,164.7	3,242.3	3,219.2	10.9	9.0	150.77	196.4	112.5	345.0	329.0	15.92	21.663		
3,300.0	3,263.4	3,342.1	3,317.7	11.2	9.3	151.73	208.8	102.0	343.0	326.6	16.40	20.911		
3,400.0	3,362.1	3,441.9	3,416.2	11.6	9.7	152.70	221.3	91.6	341.1	324.2	16.88	20.210		
3,500.0	3,460.7	3,541.7	3,514.7	12.0	10.1	153.67	233.7	81.2	339.3	321.9	17.35	19.556		
3,600.0	3,559.4	3,641.5	3,613.2	12.3	10.4	154.66	246.2	70.8	337.6	319.7	17.82	18.944		
3,700.0	3,658.1	3,741.4	3,711.7	12.7	10.8	155.66	258.6	60.4	336.0	317.7	18.29	18.370		
3,800.0	3,756.8	3,841.2	3,810.2	13.1	11.2	156.67	271.1	49.9	334.5	315.7	18.76	17.832		
3,900.0	3,855.5	3,941.0	3,908.6	13.5	11.5	157.68	283.5	39.5	333.1	313.8	19.22	17.326		
4,000.0	3,954.2	4,040.8	4,007.1	13.8	11.9	158.71	296.0	29.1	331.8	312.1	19.69	16.849		
4,100.0	4,052.9	4,140.6	4,105.6	14.2	12.3	159.74	308.4	18.7	330.6	310.4	20.16	16.398		
4,200.0	4,151.6	4,240.4	4,204.1	14.6	12.7	160.78	320.8	8.3	329.5	308.9	20.63	15.973		
4,300.0	4,250.2	4,340.2	4,302.6	15.0	13.0	161.82	333.3	-2.2	328.6	307.5	21.10	15.570		
4,400.0	4,348.9	4,440.1	4,401.1	15.3	13.4	162.87	345.7	-12.6	327.7	306.2	21.58	15.188		
4,500.0	4,447.6	4,539.9	4,499.6	15.7	13.8	163.93	358.2	-23.0	327.0	304.9	22.06	14.825		
4,600.0	4,546.3	4,639.7	4,598.1	16.1	14.1	164.99	370.6	-33.4	326.4	303.8	22.54	14.480		
4,700.0	4,645.0	4,739.5	4,696.5	16.4	14.5	166.05	383.1	-43.8	325.8	302.8	23.03	14.152		
4,800.0	4,743.7	4,839.3	4,795.0	16.8	14.9	167.12	395.5	-54.3	325.4	301.9	23.52	13.839		
4,900.0	4,842.4	4,939.1	4,893.5	17.2	15.3	168.19	408.0	-64.7	325.2	301.1	24.02	13.540		
5,000.0	4,941.1	5,038.9	4,992.0	17.6	15.6	169.26	420.4	-75.1	325.0	300.5	24.52	13.254		

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 Wiedeman 28E-404
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4778.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-404	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 (8-07-14)	Offset TVD Reference:	Offset Datum

Offset Design Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W - Wiedeman 28E-432 - Wellbore #1 - Plan #1 (7-														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		
5,100.0	5,039.7	5,138.8	5,090.5	17.9	16.0	170.33	432.8	-85.5	324.9	299.9	25.03	12.981			
5,103.0	5,042.7	5,141.7	5,093.4	18.0	16.0	170.36	433.2	-85.8	324.9	299.9	25.05	12.973			
5,200.0	5,138.4	5,238.6	5,189.0	18.3	16.4	171.40	445.3	-95.9	325.0	299.4	25.55	12.719			
5,300.0	5,237.1	5,338.4	5,287.5	18.7	16.7	172.47	457.7	-106.4	325.1	299.1	26.08	12.468			
5,400.0	5,335.8	5,438.2	5,385.9	19.1	17.1	173.54	470.2	-116.8	325.4	298.8	26.62	12.227			
5,500.0	5,434.5	5,538.0	5,484.4	19.4	17.5	174.60	482.6	-127.2	325.8	298.7	27.16	11.996			
5,600.0	5,533.2	5,637.8	5,582.9	19.8	17.9	175.67	495.1	-137.6	326.3	298.6	27.72	11.774			
5,700.0	5,631.9	5,737.6	5,681.4	20.2	18.2	176.73	507.5	-148.1	327.0	298.7	28.28	11.561			
5,800.0	5,730.5	5,837.5	5,779.9	20.6	18.6	177.78	520.0	-158.5	327.7	298.8	28.86	11.356			
5,900.0	5,829.2	5,932.9	5,874.1	20.9	18.9	178.77	531.7	-168.3	328.8	299.4	29.40	11.184			
6,000.0	5,928.1	6,023.1	5,963.4	21.2	19.2	179.55	540.8	-176.0	331.1	301.2	29.87	11.084			
6,100.0	6,027.5	6,113.2	6,053.2	21.5	19.4	-179.87	547.9	-181.9	332.9	302.6	30.25	11.002			
6,200.0	6,127.2	6,200.0	6,139.7	21.7	19.6	-179.48	552.6	-185.8	334.1	303.5	30.57	10.930			
6,300.0	6,227.1	6,293.7	6,233.3	21.9	19.7	-179.24	555.5	-188.2	334.8	303.9	30.83	10.857			
6,400.0	6,327.1	6,386.5	6,326.1	22.0	19.8	162.52	556.1	-188.7	334.9	293.8	41.07	8.155			
6,500.0	6,427.1	6,486.5	6,426.1	22.1	20.0	162.52	556.1	-188.7	334.9	293.5	41.36	8.097 ES, SF			
6,550.7	6,477.8	6,537.2	6,476.8	22.2	20.1	-107.53	556.1	-188.7	335.0	303.3	31.67	10.576			
6,600.0	6,527.1	6,583.1	6,522.7	22.3	20.1	-107.56	556.1	-188.3	335.1	303.2	31.86	10.517			
6,700.0	6,626.6	6,669.2	6,608.4	22.4	20.2	-109.57	556.1	-180.6	340.8	308.7	32.15	10.600			
6,800.0	6,724.2	6,750.0	6,687.6	22.7	20.2	-113.51	556.1	-164.7	356.9	324.6	32.33	11.039			
6,900.0	6,818.1	6,811.0	6,746.0	23.0	20.2	-116.70	556.1	-147.1	387.1	354.6	32.49	11.914			
7,000.0	6,906.8	6,860.7	6,792.5	23.3	20.2	-118.39	556.1	-129.4	433.7	401.1	32.65	13.284			
7,100.0	6,988.6	6,900.0	6,828.3	23.8	20.1	-117.83	556.1	-113.3	495.8	462.8	33.02	15.016			
7,200.0	7,062.3	6,919.7	6,845.9	24.4	20.1	-112.92	556.1	-104.6	570.2	535.9	34.24	16.652			
7,300.0	7,126.6	6,932.4	6,857.2	25.2	20.1	-104.22	556.1	-98.7	653.3	616.7	36.61	17.843			
7,400.0	7,180.3	6,936.5	6,860.8	26.1	20.1	-90.75	556.1	-96.7	741.8	702.3	39.51	18.775			
7,500.0	7,222.5	6,933.6	6,858.2	27.3	20.1	-73.82	556.1	-98.1	833.0	792.5	40.48	20.579			
7,600.0	7,252.6	6,924.9	6,850.6	28.7	20.1	-57.12	556.1	-102.2	924.5	886.8	37.71	24.516			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-404
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4778.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-404	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 (8-07-14)	Offset TVD Reference:	Offset Datum

Offset Design Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W - Wiedeman 28F-312 - Wellbore #1 - Plan #1 (7-													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	100.95	-58.3	301.3	306.9					
100.0	100.0	99.0	99.0	0.1	0.1	100.95	-58.3	301.3	306.9	306.7	0.22	1,372.230		
200.0	200.0	199.0	199.0	0.3	0.3	100.95	-58.3	301.3	306.9	306.2	0.67	456.649	CC, ES	
300.0	300.0	299.0	299.0	0.6	0.6	119.50	-58.3	301.3	307.7	306.6	1.12	274.145		
400.0	399.8	398.8	398.8	0.8	0.8	120.30	-58.3	301.3	310.4	308.8	1.58	196.592		
500.0	499.5	498.5	498.5	1.0	1.0	121.59	-58.3	301.3	314.9	312.8	2.05	153.690		
600.0	598.7	597.7	597.7	1.3	1.2	123.32	-58.3	301.3	321.4	318.9	2.54	126.571		
700.0	697.5	696.5	696.5	1.6	1.5	125.45	-58.3	301.3	330.2	327.2	3.05	108.170		
800.0	796.2	795.2	795.2	2.0	1.7	127.65	-58.3	301.3	339.9	336.3	3.57	95.146		
900.0	894.9	893.9	893.9	2.3	1.9	129.72	-58.3	301.3	350.1	346.0	4.09	85.541		
1,000.0	993.6	992.6	992.6	2.7	2.1	131.68	-58.3	301.3	360.7	356.1	4.61	78.239		
1,100.0	1,092.3	1,091.3	1,091.3	3.1	2.3	133.53	-58.3	301.3	371.7	366.6	5.12	72.541		
1,200.0	1,190.9	1,189.9	1,189.9	3.4	2.6	135.27	-58.3	301.3	383.1	377.5	5.63	67.997		
1,300.0	1,289.6	1,288.6	1,288.6	3.8	2.8	136.91	-58.3	301.3	394.8	388.7	6.14	64.307		
1,400.0	1,388.3	1,387.3	1,387.3	4.2	3.0	138.46	-58.3	301.3	406.8	400.2	6.64	61.262		
1,500.0	1,487.0	1,500.7	1,500.6	4.5	3.3	140.14	-57.5	299.7	417.6	410.4	7.16	58.357		
1,600.0	1,585.7	1,616.9	1,616.7	4.9	3.5	141.83	-54.5	294.1	424.7	417.0	7.66	55.416		
1,700.0	1,684.4	1,733.5	1,732.7	5.3	3.8	143.54	-49.2	284.2	428.0	419.9	8.17	52.378		
1,800.0	1,783.1	1,838.8	1,837.2	5.6	4.0	145.12	-43.0	272.3	428.5	419.9	8.66	49.483		
1,900.0	1,881.7	1,938.1	1,935.7	6.0	4.3	146.61	-36.9	260.9	429.1	419.9	9.14	46.967		
2,000.0	1,980.4	2,037.5	2,034.2	6.4	4.6	148.10	-30.9	249.5	429.9	420.3	9.61	44.735		
2,100.0	2,079.1	2,136.9	2,132.7	6.8	4.8	149.58	-24.8	238.0	431.0	421.0	10.08	42.747		
2,200.0	2,177.8	2,236.2	2,231.2	7.1	5.1	151.06	-18.8	226.6	432.5	421.9	10.56	40.968		
2,300.0	2,276.5	2,335.6	2,329.8	7.5	5.4	152.52	-12.8	215.2	434.2	423.1	11.03	39.365		
2,400.0	2,375.2	2,435.0	2,428.3	7.9	5.7	153.97	-6.7	203.8	436.2	424.7	11.50	37.918		
2,500.0	2,473.9	2,534.3	2,526.8	8.2	6.0	155.41	-0.7	192.3	438.4	426.5	11.98	36.605		
2,600.0	2,572.6	2,633.7	2,625.3	8.6	6.3	156.83	5.3	180.9	441.0	428.5	12.45	35.411		
2,700.0	2,671.2	2,733.1	2,723.8	9.0	6.6	158.23	11.4	169.5	443.8	430.9	12.93	34.320		
2,800.0	2,769.9	2,832.4	2,822.4	9.4	6.9	159.62	17.4	158.1	446.9	433.5	13.41	33.321		
2,900.0	2,868.6	2,931.8	2,920.9	9.7	7.2	160.99	23.5	146.6	450.2	436.3	13.90	32.402		
3,000.0	2,967.3	3,031.1	3,019.4	10.1	7.5	162.33	29.5	135.2	453.8	439.5	14.38	31.555		
3,100.0	3,066.0	3,130.5	3,117.9	10.5	7.8	163.66	35.5	123.8	457.7	442.8	14.87	30.772		
3,200.0	3,164.7	3,229.9	3,216.4	10.9	8.1	164.96	41.6	112.4	461.8	446.4	15.37	30.046		
3,300.0	3,263.4	3,329.2	3,315.0	11.2	8.4	166.24	47.6	101.0	466.1	450.2	15.87	29.372		
3,400.0	3,362.1	3,428.6	3,413.5	11.6	8.7	167.49	53.7	89.5	470.7	454.3	16.37	28.744		
3,500.0	3,460.7	3,528.0	3,512.0	12.0	9.1	168.72	59.7	78.1	475.4	458.6	16.88	28.158		
3,600.0	3,559.4	3,627.3	3,610.5	12.3	9.4	169.93	65.7	66.7	480.4	463.0	17.40	27.611		
3,700.0	3,658.1	3,726.7	3,709.0	12.7	9.7	171.11	71.8	55.3	485.7	467.7	17.92	27.098		
3,800.0	3,756.8	3,826.1	3,807.6	13.1	10.0	172.26	77.8	43.8	491.1	472.6	18.45	26.616		
3,900.0	3,855.5	3,925.4	3,906.1	13.5	10.3	173.39	83.8	32.4	496.7	477.7	18.98	26.164		
4,000.0	3,954.2	4,024.8	4,004.6	13.8	10.7	174.49	89.9	21.0	502.5	483.0	19.52	25.739		
4,100.0	4,052.9	4,124.1	4,103.1	14.2	11.0	175.57	95.9	9.6	508.5	488.4	20.07	25.338		
4,200.0	4,151.6	4,223.5	4,201.6	14.6	11.3	176.63	102.0	-1.9	514.6	494.0	20.62	24.960		
4,300.0	4,250.2	4,322.9	4,300.2	15.0	11.6	177.66	108.0	-13.3	520.9	499.8	21.17	24.602		
4,400.0	4,348.9	4,422.2	4,398.7	15.3	11.9	178.66	114.0	-24.7	527.4	505.7	21.74	24.265		
4,500.0	4,447.6	4,521.6	4,497.2	15.7	12.3	179.64	120.1	-36.1	534.1	511.8	22.30	23.945		
4,600.0	4,546.3	4,621.0	4,595.7	16.1	12.6	-179.41	126.1	-47.6	540.9	518.0	22.88	23.643		
4,700.0	4,645.0	4,720.3	4,694.2	16.4	12.9	-178.48	132.1	-59.0	547.8	524.4	23.46	23.356		
4,800.0	4,743.7	4,819.7	4,792.8	16.8	13.2	-177.57	138.2	-70.4	554.9	530.9	24.04	23.085		
4,900.0	4,842.4	4,919.1	4,891.3	17.2	13.6	-176.68	144.2	-81.8	562.2	537.5	24.63	22.827		
5,000.0	4,941.1	5,018.4	4,989.8	17.6	13.9	-175.82	150.3	-93.3	569.5	544.3	25.22	22.582		

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 Wiedeman 28E-404
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4778.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-404	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 (8-07-14)	Offset TVD Reference:	Offset Datum

Offset Design Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W - Wiedeman 28F-312 - Wellbore #1 - Plan #1 (7-										Offset Site Error:		0.0 ft	
Survey Program: 0-MWD										Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,039.7	5,117.8	5,088.3	17.9	14.2	-174.98	156.3	-104.7	577.0	551.2	25.82	22.349	
5,200.0	5,138.4	5,217.1	5,186.8	18.3	14.5	-174.16	162.3	-116.1	584.6	558.2	26.42	22.127	
5,300.0	5,237.1	5,316.5	5,285.4	18.7	14.9	-173.36	168.4	-127.5	592.3	565.3	27.03	21.917	
5,400.0	5,335.8	5,415.9	5,383.9	19.1	15.2	-172.59	174.4	-138.9	600.2	572.5	27.64	21.717	
5,500.0	5,434.5	5,515.2	5,482.4	19.4	15.5	-171.83	180.5	-150.4	608.1	579.9	28.25	21.526	
5,600.0	5,533.2	5,614.6	5,580.9	19.8	15.8	-171.09	186.5	-161.8	616.2	587.3	28.87	21.344	
5,700.0	5,631.9	5,707.9	5,673.5	20.2	16.1	-170.44	192.0	-172.2	624.6	595.1	29.44	21.215	
5,800.0	5,730.5	5,800.0	5,765.1	20.6	16.3	-170.01	196.2	-180.2	634.7	604.8	29.93	21.207	
5,900.0	5,829.2	5,883.4	5,848.4	20.9	16.5	-169.81	198.8	-185.1	646.6	616.2	30.36	21.299	
6,000.0	5,928.1	5,971.0	5,935.8	21.2	16.6	-169.82	200.4	-188.1	658.9	628.1	30.77	21.413	
6,100.0	6,027.5	6,061.6	6,026.5	21.5	16.8	-169.96	200.7	-188.7	669.4	638.4	31.10	21.527	
6,200.0	6,127.2	6,161.3	6,126.2	21.7	16.9	-170.10	200.7	-188.7	677.1	645.7	31.42	21.552	
6,300.0	6,227.1	6,261.2	6,226.1	21.9	17.1	-170.18	200.7	-188.7	681.3	649.6	31.71	21.486	
6,400.0	6,327.1	6,361.2	6,326.1	22.0	17.3	171.52	200.7	-188.7	682.2	645.2	37.05	18.413	
6,454.9	6,381.9	6,416.1	6,380.9	22.1	17.4	171.52	200.7	-188.7	682.2	645.0	37.23	18.323	
6,500.0	6,427.1	6,458.2	6,423.0	22.1	17.4	171.49	200.7	-188.3	682.3	644.9	37.38	18.255 SF	
6,600.0	6,527.1	6,545.7	6,510.2	22.3	17.5	-99.13	200.7	-180.7	683.7	651.1	32.60	20.971	
6,700.0	6,626.6	6,628.2	6,591.1	22.4	17.5	-100.66	200.7	-164.4	688.8	656.0	32.77	21.019	
6,800.0	6,724.2	6,700.0	6,659.6	22.7	17.5	-102.67	200.7	-143.2	700.4	667.5	32.94	21.266	
6,900.0	6,818.1	6,757.4	6,712.8	23.0	17.5	-104.19	200.7	-121.7	721.2	688.0	33.19	21.733	
7,000.0	6,906.8	6,800.0	6,751.1	23.3	17.4	-104.43	200.7	-103.2	753.3	719.6	33.62	22.403	
7,100.0	6,988.6	6,830.3	6,777.8	23.8	17.4	-103.04	200.7	-88.7	797.1	762.7	34.38	23.181	
7,200.0	7,062.3	6,850.0	6,794.8	24.4	17.4	-99.76	200.7	-78.7	851.7	816.1	35.60	23.923	
7,300.0	7,126.6	6,850.0	6,794.8	25.2	17.4	-93.60	200.7	-78.7	915.4	878.1	37.34	24.515	
7,400.0	7,180.3	6,850.0	6,794.8	26.1	17.4	-86.18	200.7	-78.7	985.7	946.6	39.05	25.242	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-404
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4778.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-404	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 (8-07-14)	Offset TVD Reference:	Offset Datum

Offset Design		Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W - Wiedeman 28F-412 - Wellbore #1 - Plan #1 (7-										Offset Site Error:		0.0 ft
Survey Program: 0-MWD												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	106.18	-87.4	301.3	313.7					
100.0	100.0	99.0	99.0	0.1	0.1	106.18	-87.4	301.3	313.7	313.5	0.22	1,402.829		
200.0	200.0	199.0	199.0	0.3	0.3	106.18	-87.4	301.3	313.7	313.1	0.67	466.832	CC, ES	
300.0	300.0	299.0	299.0	0.6	0.6	124.71	-87.4	301.3	314.7	313.6	1.12	280.204		
400.0	399.8	398.8	398.8	0.8	0.8	125.44	-87.4	301.3	317.7	316.2	1.58	201.135		
500.0	499.5	498.5	498.5	1.0	1.0	126.61	-87.4	301.3	322.9	320.8	2.05	157.619		
600.0	598.7	597.7	597.7	1.3	1.2	128.18	-87.4	301.3	330.3	327.8	2.54	130.263		
700.0	697.5	696.5	696.5	1.6	1.5	130.12	-87.4	301.3	340.1	337.1	3.04	111.801		
800.0	796.2	795.2	795.2	2.0	1.7	132.12	-87.4	301.3	350.8	347.3	3.55	98.713		
900.0	894.9	893.9	893.9	2.3	1.9	134.01	-87.4	301.3	361.9	357.9	4.07	89.009		
1,000.0	993.6	992.6	992.6	2.7	2.1	135.78	-87.4	301.3	373.4	368.8	4.58	81.592		
1,100.0	1,092.3	1,091.3	1,091.3	3.1	2.3	137.44	-87.4	301.3	385.2	380.1	5.08	75.776		
1,200.0	1,190.9	1,189.9	1,189.9	3.4	2.6	139.01	-87.4	301.3	397.3	391.7	5.59	71.114		
1,300.0	1,289.6	1,288.6	1,288.6	3.8	2.8	140.48	-87.4	301.3	409.7	403.6	6.09	67.309		
1,400.0	1,388.3	1,387.3	1,387.3	4.2	3.0	141.87	-87.4	301.3	422.4	415.8	6.58	64.154		
1,500.0	1,487.0	1,486.0	1,486.0	4.5	3.2	143.18	-87.4	301.3	435.3	428.2	7.08	61.504		
1,600.0	1,585.7	1,584.7	1,584.7	4.9	3.4	144.41	-87.4	301.3	448.3	440.8	7.57	59.250		
1,700.0	1,684.4	1,683.4	1,683.4	5.3	3.7	145.57	-87.4	301.3	461.6	453.6	8.05	57.315		
1,800.0	1,783.1	1,782.1	1,782.1	5.6	3.9	146.67	-87.4	301.3	475.1	466.6	8.54	55.638		
1,900.0	1,881.7	1,880.7	1,880.7	6.0	4.1	147.70	-87.4	301.3	488.7	479.7	9.02	54.172		
2,000.0	1,980.4	1,979.4	1,979.4	6.4	4.3	148.68	-87.4	301.3	502.5	493.0	9.50	52.883		
2,100.0	2,079.1	2,088.3	2,088.3	6.8	4.6	149.82	-87.6	300.0	515.6	505.7	9.98	51.655		
2,200.0	2,177.8	2,199.9	2,199.8	7.1	4.8	151.28	-88.4	294.4	526.6	516.1	10.44	50.448		
2,300.0	2,276.5	2,311.1	2,310.5	7.5	5.0	153.03	-89.9	284.6	535.4	524.6	10.89	49.176		
2,400.0	2,375.2	2,418.2	2,416.8	7.9	5.3	155.00	-91.8	271.3	542.6	531.2	11.33	47.873		
2,500.0	2,473.9	2,516.4	2,514.0	8.2	5.5	156.84	-93.7	258.1	549.7	537.9	11.77	46.687		
2,600.0	2,572.6	2,614.6	2,611.3	8.6	5.7	158.63	-95.6	244.9	557.4	545.2	12.22	45.596		
2,700.0	2,671.2	2,712.7	2,708.5	9.0	6.0	160.37	-97.6	231.7	565.7	553.0	12.68	44.597		
2,800.0	2,769.9	2,810.9	2,805.7	9.4	6.3	162.06	-99.5	218.5	574.4	561.3	13.15	43.674		
2,900.0	2,868.6	2,909.0	2,903.0	9.7	6.5	163.70	-101.4	205.3	583.7	570.0	13.63	42.823		
3,000.0	2,967.3	3,007.2	3,000.2	10.1	6.8	165.29	-103.3	192.1	593.4	579.3	14.12	42.035		
3,100.0	3,066.0	3,105.3	3,097.5	10.5	7.1	166.83	-105.2	178.9	603.6	589.0	14.61	41.306		
3,200.0	3,164.7	3,203.5	3,194.7	10.9	7.4	168.32	-107.2	165.6	614.2	599.1	15.12	40.630		
3,300.0	3,263.4	3,301.6	3,292.0	11.2	7.7	169.75	-109.1	152.4	625.2	609.6	15.63	40.002		
3,400.0	3,362.1	3,399.8	3,389.2	11.6	8.0	171.14	-111.0	139.2	636.6	620.4	16.15	39.419		
3,500.0	3,460.7	3,497.9	3,486.4	12.0	8.3	172.48	-112.9	126.0	648.3	631.7	16.68	38.876		
3,600.0	3,559.4	3,596.1	3,583.7	12.3	8.6	173.77	-114.9	112.8	660.5	643.2	17.21	38.371		
3,700.0	3,658.1	3,694.2	3,680.9	12.7	8.9	175.02	-116.8	99.6	672.9	655.1	17.75	37.899		
3,800.0	3,756.8	3,792.4	3,778.2	13.1	9.2	176.22	-118.7	86.4	685.6	667.3	18.30	37.460		
3,900.0	3,855.5	3,890.5	3,875.4	13.5	9.5	177.38	-120.6	73.2	698.7	679.8	18.86	37.049		
4,000.0	3,954.2	3,988.7	3,972.6	13.8	9.8	178.49	-122.5	60.0	712.0	692.5	19.42	36.665		
4,100.0	4,052.9	4,086.8	4,069.9	14.2	10.1	179.57	-124.5	46.8	725.5	705.5	19.98	36.306		
4,200.0	4,151.6	4,185.0	4,167.1	14.6	10.4	-179.39	-126.4	33.6	739.3	718.8	20.55	35.970		
4,300.0	4,250.2	4,283.1	4,264.4	15.0	10.7	-178.40	-128.3	20.4	753.4	732.3	21.13	35.656		
4,400.0	4,348.9	4,381.3	4,361.6	15.3	11.0	-177.43	-130.2	7.2	767.7	745.9	21.71	35.361		
4,500.0	4,447.6	4,479.5	4,458.9	15.7	11.4	-176.51	-132.1	-6.0	782.1	759.8	22.29	35.084		
4,600.0	4,546.3	4,577.6	4,556.1	16.1	11.7	-175.61	-134.1	-19.2	796.8	773.9	22.88	34.825		
4,700.0	4,645.0	4,675.8	4,653.3	16.4	12.0	-174.75	-136.0	-32.4	811.7	788.2	23.47	34.581		
4,800.0	4,743.7	4,773.9	4,750.6	16.8	12.3	-173.92	-137.9	-45.6	826.7	802.6	24.07	34.352		
4,900.0	4,842.4	4,872.1	4,847.8	17.2	12.6	-173.12	-139.8	-58.8	841.9	817.2	24.66	34.137		
5,000.0	4,941.1	4,970.2	4,945.1	17.6	13.0	-172.34	-141.8	-72.0	857.3	832.0	25.26	33.934		

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 Wiedeman 28E-404
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4778.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-404	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 (8-07-14)	Offset TVD Reference:	Offset Datum

Offset Design Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W - Wiedeman 28F-412 - Wellbore #1 - Plan #1 (7-													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance										
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
5,100.0	5,039.7	5,068.4	5,042.3	17.9	13.3	-171.60	-143.7	-85.2	872.8	846.9	25.86	33.743		
5,200.0	5,138.4	5,166.5	5,139.5	18.3	13.6	-170.88	-145.6	-98.4	888.4	861.9	26.47	33.564		
5,300.0	5,237.1	5,264.7	5,236.8	18.7	13.9	-170.18	-147.5	-111.6	904.2	877.1	27.08	33.395		
5,400.0	5,335.8	5,362.8	5,334.0	19.1	14.3	-169.51	-149.4	-124.8	920.1	892.4	27.68	33.235		
5,500.0	5,434.5	5,461.0	5,431.3	19.4	14.6	-168.86	-151.4	-138.0	936.1	907.8	28.29	33.084		
5,600.0	5,533.2	5,559.1	5,528.5	19.8	14.9	-168.23	-153.3	-151.2	952.3	923.4	28.91	32.942		
5,700.0	5,631.9	5,657.5	5,626.0	20.2	15.2	-167.62	-155.2	-164.4	968.5	939.0	29.51	32.816		
5,800.0	5,730.5	5,757.3	5,725.1	20.6	15.5	-167.16	-156.8	-175.6	984.8	954.7	30.05	32.775 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-404
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4778.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-404	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 (8-07-14)	Offset TVD Reference:	Offset Datum

Offset Design		Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W - Wiedeman 28E-234 - Wellbore #1 - Plan #1 (8										Offset Site Error:		0.0 ft
Survey Program: 0-MWD												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
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	CC, ES	
300.0	300.0	300.0	300.0	0.6	0.6	-162.72	-29.1	0.0	30.8	29.7	1.13	27.244		
400.0	399.8	399.8	399.8	0.8	0.8	-165.18	-29.1	0.0	35.8	34.2	1.59	22.508		
500.0	499.5	500.9	500.9	1.0	1.0	-167.31	-27.5	-0.7	42.7	40.6	2.05	20.810		
600.0	598.7	602.2	602.0	1.3	1.2	-168.38	-22.7	-3.0	49.6	47.1	2.51	19.783		
700.0	697.5	703.8	703.2	1.6	1.5	-168.74	-14.5	-6.8	56.4	53.4	2.97	18.966		
800.0	796.2	804.9	803.6	2.0	1.8	-168.22	-3.4	-11.9	60.7	57.3	3.45	17.588		
900.0	894.9	904.8	902.7	2.3	2.0	-167.57	8.2	-17.3	64.4	60.5	3.95	16.325		
1,000.0	993.6	1,004.7	1,001.8	2.7	2.3	-167.00	19.8	-22.7	68.1	63.7	4.45	15.322		
1,100.0	1,092.3	1,104.7	1,100.9	3.1	2.6	-166.48	31.4	-28.0	71.9	66.9	4.95	14.507		
1,200.0	1,190.9	1,204.6	1,200.0	3.4	3.0	-166.01	43.0	-33.4	75.6	70.1	5.46	13.833		
1,300.0	1,289.6	1,304.5	1,299.1	3.8	3.3	-165.59	54.6	-38.8	79.3	73.3	5.98	13.267		
1,400.0	1,388.3	1,404.5	1,398.2	4.2	3.6	-165.21	66.2	-44.2	83.0	76.5	6.49	12.787		
1,500.0	1,487.0	1,504.4	1,497.3	4.5	3.9	-164.86	77.8	-49.6	86.8	79.8	7.01	12.373		
1,600.0	1,585.7	1,604.3	1,596.4	4.9	4.2	-164.54	89.4	-54.9	90.5	83.0	7.53	12.013		
1,700.0	1,684.4	1,704.2	1,695.5	5.3	4.5	-164.24	101.0	-60.3	94.2	86.2	8.06	11.697		
1,800.0	1,783.1	1,804.2	1,794.6	5.6	4.9	-163.96	112.6	-65.7	98.0	89.4	8.58	11.418		
1,900.0	1,881.7	1,904.1	1,893.7	6.0	5.2	-163.71	124.2	-71.1	101.7	92.6	9.11	11.170		
2,000.0	1,980.4	2,004.0	1,992.9	6.4	5.5	-163.48	135.8	-76.4	105.5	95.8	9.63	10.948		
2,100.0	2,079.1	2,104.0	2,092.0	6.8	5.8	-163.26	147.4	-81.8	109.2	99.1	10.16	10.747		
2,200.0	2,177.8	2,203.9	2,191.1	7.1	6.1	-163.05	159.0	-87.2	113.0	102.3	10.69	10.566		
2,300.0	2,276.5	2,303.8	2,290.2	7.5	6.5	-162.86	170.6	-92.6	116.7	105.5	11.22	10.401		
2,400.0	2,375.2	2,403.7	2,389.3	7.9	6.8	-162.68	182.2	-97.9	120.5	108.7	11.75	10.250		
2,500.0	2,473.9	2,503.7	2,488.4	8.2	7.1	-162.51	193.8	-103.3	124.2	111.9	12.28	10.112		
2,600.0	2,572.6	2,603.6	2,587.5	8.6	7.4	-162.35	205.4	-108.7	128.0	115.2	12.82	9.985		
2,700.0	2,671.2	2,703.5	2,686.6	9.0	7.7	-162.20	217.0	-114.1	131.7	118.4	13.35	9.868		
2,800.0	2,769.9	2,803.5	2,785.7	9.4	8.1	-162.06	228.6	-119.5	135.5	121.6	13.88	9.759		
2,900.0	2,868.6	2,903.4	2,884.8	9.7	8.4	-161.92	240.2	-124.8	139.2	124.8	14.42	9.659		
3,000.0	2,967.3	3,003.3	2,983.9	10.1	8.7	-161.80	251.8	-130.2	143.0	128.0	14.95	9.565		
3,100.0	3,066.0	3,103.2	3,083.0	10.5	9.0	-161.68	263.4	-135.6	146.8	131.3	15.49	9.477		
3,200.0	3,164.7	3,203.2	3,182.1	10.9	9.4	-161.56	275.0	-141.0	150.5	134.5	16.02	9.395		
3,300.0	3,263.4	3,303.1	3,281.3	11.2	9.7	-161.45	286.6	-146.3	154.3	137.7	16.56	9.318		
3,400.0	3,362.1	3,403.0	3,380.4	11.6	10.0	-161.35	298.2	-151.7	158.0	140.9	17.09	9.246		
3,500.0	3,460.7	3,503.0	3,479.5	12.0	10.3	-161.25	309.8	-157.1	161.8	144.2	17.63	9.178		
3,600.0	3,559.4	3,602.9	3,578.6	12.3	10.7	-161.16	321.4	-162.5	165.5	147.4	18.16	9.114		
3,700.0	3,658.1	3,702.8	3,677.7	12.7	11.0	-161.07	333.0	-167.9	169.3	150.6	18.70	9.054		
3,800.0	3,756.8	3,802.7	3,776.8	13.1	11.3	-160.98	344.6	-173.2	173.1	153.8	19.24	8.996		
3,900.0	3,855.5	3,902.7	3,875.9	13.5	11.6	-160.90	356.2	-178.6	176.8	157.1	19.77	8.942		
4,000.0	3,954.2	4,002.6	3,975.0	13.8	12.0	-160.82	367.8	-184.0	180.6	160.3	20.31	8.891		
4,100.0	4,052.9	4,102.5	4,074.1	14.2	12.3	-160.74	379.4	-189.4	184.3	163.5	20.85	8.842		
4,200.0	4,151.6	4,202.5	4,173.2	14.6	12.6	-160.67	391.0	-194.7	188.1	166.7	21.39	8.796		
4,300.0	4,250.2	4,302.4	4,272.3	15.0	12.9	-160.60	402.6	-200.1	191.9	169.9	21.92	8.752		
4,400.0	4,348.9	4,402.3	4,371.4	15.3	13.3	-160.53	414.2	-205.5	195.6	173.2	22.46	8.709		
4,500.0	4,447.6	4,502.3	4,470.5	15.7	13.6	-160.47	425.8	-210.9	199.4	176.4	23.00	8.669		
4,600.0	4,546.3	4,602.2	4,569.6	16.1	13.9	-160.40	437.4	-216.3	203.2	179.6	23.54	8.631		
4,700.0	4,645.0	4,702.1	4,668.8	16.4	14.2	-160.34	449.0	-221.6	206.9	182.8	24.08	8.594		
4,800.0	4,743.7	4,802.0	4,767.9	16.8	14.6	-160.29	460.6	-227.0	210.7	186.1	24.62	8.559		
4,900.0	4,842.4	4,902.0	4,867.0	17.2	14.9	-160.23	472.2	-232.4	214.5	189.3	25.16	8.525		
5,000.0	4,941.1	5,001.9	4,966.1	17.6	15.2	-160.18	483.8	-237.8	218.2	192.5	25.69	8.493		

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 Wiedeman 28E-404
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4778.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-404	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 (8-07-14)	Offset TVD Reference:	Offset Datum

Offset Design		Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W - Wiedeman 28E-234 - Wellbore #1 - Plan #1 (8										Offset Site Error:		0.0 ft
Survey Program: 0-MWD												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Minimum	Separation	Warning	
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor		
5,100.0	5,039.7	5,101.8	5,065.2	17.9	15.5	-160.12	495.4	-243.1	222.0	195.7	26.23	8.462		
5,200.0	5,138.4	5,201.8	5,164.3	18.3	15.9	-160.07	507.0	-248.5	225.7	199.0	26.77	8.432		
5,300.0	5,237.1	5,301.7	5,263.4	18.7	16.2	-160.02	518.6	-253.9	229.5	202.2	27.31	8.403		
5,400.0	5,335.8	5,401.6	5,362.5	19.1	16.5	-159.98	530.2	-259.3	233.3	205.4	27.85	8.376		
5,500.0	5,434.5	5,501.5	5,461.6	19.4	16.8	-159.93	541.8	-264.6	237.0	208.6	28.39	8.349		
5,600.0	5,533.2	5,601.5	5,560.7	19.8	17.2	-159.89	553.4	-270.0	240.8	211.9	28.93	8.324		
5,700.0	5,631.9	5,701.4	5,659.8	20.2	17.5	-159.84	565.1	-275.4	244.6	215.1	29.47	8.299		
5,800.0	5,730.5	5,800.0	5,757.6	20.6	17.8	-159.81	576.4	-280.7	248.4	218.4	30.00	8.282		
5,900.0	5,829.2	5,892.0	5,849.2	20.9	18.0	-160.01	585.1	-284.7	254.4	224.0	30.41	8.364		
6,000.0	5,928.1	5,984.3	5,941.2	21.2	18.2	-160.43	591.0	-287.4	261.8	231.1	30.76	8.512		
6,100.0	6,027.5	6,076.3	6,033.2	21.5	18.3	-160.87	594.3	-289.0	268.9	237.9	31.02	8.669		
6,200.0	6,127.2	6,170.4	6,127.2	21.7	18.5	-161.34	595.0	-289.3	275.5	244.3	31.24	8.818		
6,300.0	6,227.1	6,270.3	6,227.1	21.9	18.6	-161.65	595.0	-289.3	279.6	248.1	31.49	8.879		
6,400.0	6,327.1	6,370.3	6,327.1	22.0	18.8	-179.99	595.0	-289.4	280.5	241.0	39.43	7.113		
6,420.3	6,347.4	6,390.6	6,347.4	22.0	18.8	-179.88	595.0	-289.9	280.5	241.0	39.48	7.104		
6,500.0	6,427.1	6,469.5	6,426.0	22.1	19.0	-178.42	595.0	-297.0	280.6	241.0	39.55	7.094		
6,600.0	6,527.1	6,565.3	6,519.7	22.3	19.2	-84.47	595.0	-316.5	281.9	248.3	33.55	8.401		
6,700.0	6,626.6	6,657.6	6,607.0	22.4	19.6	-79.80	595.0	-346.2	285.2	250.3	34.90	8.173		
6,800.0	6,724.2	6,747.5	6,688.0	22.7	19.9	-75.45	595.0	-385.1	290.2	253.9	36.31	7.994		
6,900.0	6,818.1	6,835.4	6,762.2	23.0	20.4	-71.48	595.0	-432.0	296.4	258.8	37.67	7.870		
7,000.0	6,906.8	6,921.5	6,829.3	23.3	20.9	-67.95	595.0	-486.0	303.4	264.5	38.89	7.801		
7,100.0	6,988.6	7,006.1	6,888.9	23.8	21.6	-64.87	595.0	-546.0	310.6	270.7	39.92	7.780		
7,200.0	7,062.3	7,089.4	6,940.7	24.4	22.4	-62.25	595.0	-611.2	317.7	276.9	40.79	7.788		
7,300.0	7,126.6	7,171.7	6,984.6	25.2	23.3	-60.08	595.0	-680.7	324.2	282.7	41.54	7.804		
7,400.0	7,180.3	7,250.0	7,019.2	26.1	24.4	-58.40	595.0	-750.9	329.9	287.7	42.22	7.815		
7,500.0	7,222.5	7,333.9	7,048.1	27.3	25.7	-57.04	595.0	-829.6	334.6	291.5	43.06	7.770		
7,600.0	7,252.6	7,414.2	7,067.5	28.7	27.1	-56.13	595.0	-907.5	337.9	293.9	44.05	7.672		
7,700.0	7,269.9	7,494.2	7,078.7	30.3	28.6	-55.61	595.0	-986.7	339.9	294.6	45.33	7.498		
7,800.0	7,274.5	7,576.0	7,081.5	32.1	30.2	-55.46	595.0	-1,068.4	340.5	293.2	47.25	7.205		
7,900.0	7,274.6	7,676.0	7,080.8	34.1	32.4	-55.36	595.0	-1,168.4	340.9	290.0	50.87	6.701		
8,000.0	7,274.6	7,776.0	7,080.1	36.2	34.6	-55.26	595.0	-1,268.4	341.3	286.7	54.63	6.248		
8,100.0	7,274.7	7,876.0	7,079.4	38.4	36.9	-55.15	595.0	-1,368.4	341.8	283.3	58.51	5.841		
8,200.0	7,274.7	7,976.0	7,078.7	40.6	39.2	-55.05	595.0	-1,468.4	342.2	279.7	62.47	5.477		
8,300.0	7,274.8	8,076.0	7,078.0	42.9	41.7	-54.95	595.0	-1,568.4	342.6	276.1	66.51	5.151		
8,400.0	7,274.8	8,176.0	7,077.3	45.3	44.1	-54.84	595.0	-1,668.4	343.1	272.4	70.61	4.858		
8,500.0	7,274.9	8,276.0	7,076.6	47.8	46.7	-54.74	595.0	-1,768.4	343.5	268.7	74.76	4.595		
8,600.0	7,274.9	8,376.0	7,075.9	50.3	49.2	-54.64	595.0	-1,868.4	343.9	265.0	78.94	4.357		
8,700.0	7,275.0	8,476.0	7,075.2	52.8	51.8	-54.54	595.0	-1,968.4	344.4	261.2	83.16	4.141		
8,800.0	7,275.0	8,576.0	7,074.5	55.3	54.4	-54.44	595.0	-2,068.4	344.8	257.4	87.40	3.945		
8,900.0	7,275.1	8,676.0	7,073.8	57.9	57.0	-54.34	595.0	-2,168.4	345.2	253.6	91.65	3.767		
9,000.0	7,275.1	8,776.0	7,073.1	60.5	59.6	-54.24	595.0	-2,268.4	345.7	249.7	95.93	3.603		
9,100.0	7,275.2	8,876.0	7,072.4	63.1	62.3	-54.13	595.0	-2,368.4	346.1	245.9	100.21	3.454		
9,200.0	7,275.2	8,976.0	7,071.7	65.7	64.9	-54.03	595.0	-2,468.4	346.5	242.0	104.51	3.316		
9,300.0	7,275.3	9,076.0	7,071.0	68.4	67.6	-53.93	595.0	-2,568.3	347.0	238.2	108.81	3.189		
9,400.0	7,275.4	9,176.0	7,070.3	71.0	70.3	-53.83	595.0	-2,668.3	347.4	234.3	113.11	3.072		
9,500.0	7,275.4	9,276.0	7,069.6	73.7	73.0	-53.73	595.0	-2,768.3	347.9	230.5	117.42	2.963		
9,600.0	7,275.5	9,376.0	7,068.9	76.4	75.7	-53.63	595.0	-2,868.3	348.3	226.6	121.73	2.861		
9,700.0	7,275.5	9,476.0	7,068.2	79.1	78.4	-53.54	595.0	-2,968.3	348.8	222.7	126.04	2.767		
9,800.0	7,275.6	9,576.0	7,067.5	81.8	81.1	-53.44	595.0	-3,068.3	349.2	218.9	130.35	2.679		
9,900.0	7,275.6	9,675.9	7,066.8	84.5	83.9	-53.34	595.0	-3,168.3	349.7	215.0	134.66	2.597		

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 Wiedeman 28E-404
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4778.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-404	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 (8-07-14)	Offset TVD Reference:	Offset Datum

Offset Design		Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W - Wiedeman 28E-234 - Wellbore #1 - Plan #1 (8										Offset Site Error:		0.0 ft
Survey Program: 0-MWD												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
10,000.0	7,275.7	9,775.9	7,066.1	87.2	86.6	-53.24	595.0	-3,268.3	350.1	211.1	138.97	2.519		
10,100.0	7,275.7	9,875.9	7,065.4	89.9	89.3	-53.14	595.0	-3,368.3	350.6	207.3	143.27	2.447		
10,200.0	7,275.8	9,975.9	7,064.7	92.6	92.1	-53.04	595.0	-3,468.3	351.0	203.4	147.57	2.379		
10,300.0	7,275.8	10,075.9	7,064.0	95.4	94.8	-52.95	595.0	-3,568.3	351.5	199.6	151.86	2.314		
10,400.0	7,275.9	10,175.9	7,063.3	98.1	97.6	-52.85	595.0	-3,668.3	351.9	195.8	156.15	2.254		
10,500.0	7,275.9	10,275.9	7,062.6	100.8	100.3	-52.75	595.0	-3,768.3	352.4	191.9	160.43	2.196		
10,600.0	7,276.0	10,375.9	7,061.9	103.6	103.1	-52.65	595.0	-3,868.3	352.8	188.1	164.71	2.142		
10,700.0	7,276.0	10,475.9	7,061.2	106.3	105.8	-52.56	595.0	-3,968.3	353.3	184.3	168.98	2.091		
10,800.0	7,276.1	10,575.9	7,060.5	109.1	108.6	-52.46	595.0	-4,068.3	353.7	180.5	173.25	2.042		
10,900.0	7,276.1	10,675.9	7,059.9	111.8	111.3	-52.36	595.0	-4,168.3	354.2	176.7	177.50	1.995		
11,000.0	7,276.2	10,775.9	7,059.2	114.6	114.1	-52.27	595.0	-4,268.3	354.7	172.9	181.75	1.951		
11,100.0	7,276.2	10,875.9	7,058.5	117.3	116.9	-52.17	595.0	-4,368.3	355.1	169.1	186.00	1.909		
11,200.0	7,276.3	10,975.9	7,057.8	120.1	119.6	-52.08	595.0	-4,468.3	355.6	165.3	190.23	1.869		
11,300.0	7,276.3	11,075.9	7,057.1	122.8	122.4	-51.98	595.0	-4,568.2	356.0	161.6	194.46	1.831		
11,400.0	7,276.4	11,175.9	7,056.4	125.6	125.2	-51.89	595.0	-4,668.2	356.5	157.8	198.68	1.794		
11,500.0	7,276.5	11,275.9	7,055.7	128.4	127.9	-51.79	595.0	-4,768.2	357.0	154.1	202.89	1.759		
11,600.0	7,276.5	11,375.9	7,055.0	131.1	130.7	-51.70	595.0	-4,868.2	357.4	150.3	207.10	1.726		
11,700.0	7,276.6	11,475.9	7,054.3	133.9	133.5	-51.60	595.0	-4,968.2	357.9	146.6	211.29	1.694		
11,800.0	7,276.6	11,575.9	7,053.6	136.7	136.3	-51.51	595.0	-5,068.2	358.4	142.9	215.48	1.663		
11,900.0	7,276.7	11,675.9	7,052.9	139.4	139.1	-51.42	595.0	-5,168.2	358.8	139.2	219.66	1.634		
12,000.0	7,276.7	11,775.9	7,052.2	142.2	141.8	-51.32	595.0	-5,268.2	359.3	135.5	223.83	1.605		
12,100.0	7,276.8	11,875.9	7,051.5	145.0	144.6	-51.23	595.0	-5,368.2	359.8	131.8	227.99	1.578		
12,200.0	7,276.8	11,975.9	7,050.8	147.8	147.4	-51.14	595.0	-5,468.2	360.2	128.1	232.14	1.552		
12,300.0	7,276.9	12,075.9	7,050.1	150.5	150.2	-51.04	595.0	-5,568.2	360.7	124.4	236.29	1.527		
12,400.0	7,276.9	12,175.9	7,049.4	153.3	153.0	-50.95	595.0	-5,668.2	361.2	120.8	240.42	1.502		
12,500.0	7,277.0	12,275.9	7,048.7	156.1	155.7	-50.86	595.0	-5,768.2	361.7	117.1	244.55	1.479	Level 3	
12,600.0	7,277.0	12,375.9	7,048.0	158.9	158.5	-50.77	595.0	-5,868.2	362.1	113.5	248.66	1.456	Level 3	
12,700.0	7,277.1	12,475.9	7,047.3	161.7	161.3	-50.67	595.0	-5,968.2	362.6	109.8	252.77	1.435	Level 3	
12,800.0	7,277.1	12,575.9	7,046.6	164.4	164.1	-50.58	595.0	-6,068.2	363.1	106.2	256.87	1.414	Level 3	
12,900.0	7,277.2	12,675.9	7,045.9	167.2	166.9	-50.49	595.0	-6,168.2	363.6	102.6	260.96	1.393	Level 3	
13,000.0	7,277.2	12,775.9	7,045.2	170.0	169.7	-50.40	595.0	-6,268.2	364.0	99.0	265.04	1.374	Level 3	
13,100.0	7,277.3	12,875.9	7,044.5	172.8	172.5	-50.31	595.0	-6,368.2	364.5	95.4	269.11	1.355	Level 3	
13,200.0	7,277.3	12,975.9	7,043.8	175.6	175.3	-50.22	595.0	-6,468.1	365.0	91.8	273.18	1.336	Level 3	
13,300.0	7,277.4	13,075.9	7,043.1	178.4	178.0	-50.13	595.0	-6,568.1	365.5	88.3	277.23	1.318	Level 3	
13,400.0	7,277.4	13,175.9	7,042.4	181.1	180.8	-50.04	595.0	-6,668.1	366.0	84.7	281.27	1.301	Level 3	
13,500.0	7,277.5	13,275.8	7,041.7	183.9	183.6	-49.95	595.0	-6,768.1	366.5	81.1	285.31	1.284	Level 3	
13,600.0	7,277.6	13,375.8	7,041.0	186.7	186.4	-49.86	595.0	-6,868.1	366.9	77.6	289.33	1.268	Level 3	
13,700.0	7,277.6	13,475.8	7,040.3	189.5	189.2	-49.77	595.0	-6,968.1	367.4	74.1	293.35	1.253	Level 3	
13,800.0	7,277.7	13,575.8	7,039.6	192.3	192.0	-49.68	595.0	-7,068.1	367.9	70.6	297.36	1.237	Level 2	
13,900.0	7,277.7	13,675.8	7,038.9	195.1	194.8	-49.59	595.0	-7,168.1	368.4	67.0	301.35	1.222	Level 2	
14,000.0	7,277.8	13,775.8	7,038.2	197.9	197.6	-49.50	595.0	-7,268.1	368.9	63.5	305.34	1.208	Level 2	
14,100.0	7,277.8	13,875.8	7,037.5	200.7	200.4	-49.42	595.0	-7,368.1	369.4	60.0	309.32	1.194	Level 2	
14,200.0	7,277.9	13,975.8	7,036.8	203.5	203.2	-49.33	595.0	-7,468.1	369.9	56.6	313.29	1.181	Level 2	
14,300.0	7,277.9	14,075.8	7,036.1	206.3	206.0	-49.24	595.0	-7,568.1	370.4	53.1	317.25	1.167	Level 2	
14,400.0	7,278.0	14,175.8	7,035.4	209.0	208.8	-49.15	595.0	-7,668.1	370.8	49.6	321.20	1.155	Level 2	
14,457.9	7,278.0	14,233.7	7,035.0	210.7	210.4	-49.10	595.0	-7,725.9	371.1	47.6	323.48	1.147	Level 2, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-404
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4778.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-404	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 (8-07-14)	Offset TVD Reference:	Offset Datum

Offset Design		Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W - Wiedeman 28F-214 - Wellbore #1 - Plan #1 (8										Offset Site Error:		0.0 ft
Survey Program: 0-MWD												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-180.00	-87.4	0.0	87.4					
100.0	100.0	100.0	100.0	0.1	0.1	-180.00	-87.4	0.0	87.4	87.2	0.22	388.996	CC, ES	
200.0	200.0	200.0	200.0	0.3	0.3	-180.00	-87.4	0.0	87.4	86.8	0.67	129.665		
300.0	300.0	300.0	300.0	0.6	0.6	-162.06	-87.4	0.0	89.1	88.0	1.13	78.793		
400.0	399.8	399.8	399.8	0.8	0.8	-163.01	-87.4	0.0	94.1	92.5	1.59	59.098		
500.0	499.5	499.5	499.5	1.0	1.0	-164.39	-87.4	0.0	102.5	100.4	2.06	49.854		
600.0	598.7	598.7	598.7	1.3	1.2	-165.97	-87.4	0.0	114.2	111.7	2.52	45.332		
700.0	697.5	697.5	697.5	1.6	1.5	-167.59	-87.4	0.0	129.3	126.3	2.98	43.337		
800.0	796.2	796.2	796.2	2.0	1.7	-168.96	-87.4	0.0	145.1	141.7	3.44	42.148		
900.0	894.9	894.9	894.9	2.3	1.9	-170.06	-87.4	0.0	161.0	157.1	3.90	41.229		
1,000.0	993.6	993.6	993.6	2.7	2.1	-170.96	-87.4	0.0	176.9	172.5	4.37	40.498		
1,100.0	1,092.3	1,092.3	1,092.3	3.1	2.3	-171.72	-87.4	0.0	192.9	188.1	4.83	39.905		
1,200.0	1,190.9	1,190.9	1,190.9	3.4	2.6	-172.35	-87.4	0.0	208.9	203.6	5.30	39.414		
1,300.0	1,289.6	1,289.6	1,289.6	3.8	2.8	-172.90	-87.4	0.0	224.9	219.1	5.77	39.001		
1,400.0	1,388.3	1,388.3	1,388.3	4.2	3.0	-173.38	-87.4	0.0	240.9	234.7	6.23	38.650		
1,500.0	1,487.0	1,487.0	1,487.0	4.5	3.2	-173.79	-87.4	0.0	257.0	250.3	6.70	38.346		
1,600.0	1,585.7	1,585.7	1,585.7	4.9	3.5	-174.16	-87.4	0.0	273.1	265.9	7.17	38.082		
1,700.0	1,684.4	1,684.4	1,684.4	5.3	3.7	-174.48	-87.4	0.0	289.1	281.5	7.64	37.850		
1,800.0	1,783.1	1,783.1	1,783.1	5.6	3.9	-174.78	-87.4	0.0	305.2	297.1	8.11	37.644		
1,900.0	1,881.7	1,885.2	1,885.2	6.0	4.1	-174.83	-87.3	-1.3	320.9	312.3	8.58	37.413		
2,000.0	1,980.4	1,988.4	1,988.3	6.4	4.3	-174.30	-86.6	-6.1	335.2	326.2	9.04	37.075		
2,100.0	2,079.1	2,091.6	2,091.1	6.8	4.6	-173.24	-85.3	-14.7	348.4	338.9	9.52	36.588		
2,200.0	2,177.8	2,191.8	2,190.7	7.1	4.8	-171.86	-83.8	-25.7	360.8	350.8	10.02	36.024		
2,300.0	2,276.5	2,290.7	2,288.9	7.5	5.0	-170.58	-82.2	-36.7	373.4	362.9	10.52	35.490		
2,400.0	2,375.2	2,389.5	2,387.2	7.9	5.3	-169.37	-80.6	-47.7	386.1	375.1	11.04	34.986		
2,500.0	2,473.9	2,488.4	2,485.4	8.2	5.5	-168.24	-79.0	-58.8	399.0	387.5	11.56	34.512		
2,600.0	2,572.6	2,587.3	2,583.6	8.6	5.8	-167.19	-77.5	-69.8	412.1	400.0	12.09	34.068		
2,700.0	2,671.2	2,686.1	2,681.9	9.0	6.0	-166.19	-75.9	-80.8	425.2	412.6	12.64	33.651		
2,800.0	2,769.9	2,785.0	2,780.1	9.4	6.3	-165.26	-74.3	-91.9	438.5	425.3	13.18	33.261		
2,900.0	2,868.6	2,883.9	2,878.3	9.7	6.5	-164.38	-72.7	-102.9	451.9	438.1	13.74	32.895		
3,000.0	2,967.3	2,982.7	2,976.6	10.1	6.8	-163.56	-71.2	-113.9	465.4	451.1	14.30	32.552		
3,100.0	3,066.0	3,081.6	3,074.8	10.5	7.1	-162.78	-69.6	-125.0	478.9	464.1	14.86	32.231		
3,200.0	3,164.7	3,180.5	3,173.1	10.9	7.4	-162.04	-68.0	-136.0	492.6	477.2	15.43	31.930		
3,300.0	3,263.4	3,279.3	3,271.3	11.2	7.6	-161.34	-66.4	-147.0	506.3	490.3	16.00	31.647		
3,400.0	3,362.1	3,378.2	3,369.5	11.6	7.9	-160.68	-64.9	-158.1	520.1	503.6	16.57	31.382		
3,500.0	3,460.7	3,477.1	3,467.8	12.0	8.2	-160.05	-63.3	-169.1	534.0	516.9	17.15	31.132		
3,600.0	3,559.4	3,575.9	3,566.0	12.3	8.5	-159.46	-61.7	-180.1	547.9	530.2	17.73	30.897		
3,700.0	3,658.1	3,674.8	3,664.2	12.7	8.8	-158.89	-60.1	-191.2	561.9	543.6	18.32	30.676		
3,800.0	3,756.8	3,773.7	3,762.5	13.1	9.1	-158.35	-58.6	-202.2	576.0	557.1	18.90	30.468		
3,900.0	3,855.5	3,872.6	3,860.7	13.5	9.3	-157.84	-57.0	-213.2	590.1	570.6	19.49	30.271		
4,000.0	3,954.2	3,971.4	3,959.0	13.8	9.6	-157.35	-55.4	-224.3	604.2	584.1	20.08	30.086		
4,100.0	4,052.9	4,070.3	4,057.2	14.2	9.9	-156.88	-53.9	-235.3	618.4	597.7	20.67	29.910		
4,200.0	4,151.6	4,169.2	4,155.4	14.6	10.2	-156.44	-52.3	-246.3	632.6	611.3	21.27	29.744		
4,300.0	4,250.2	4,268.0	4,253.7	15.0	10.5	-156.01	-50.7	-257.4	646.8	624.9	21.86	29.587		
4,400.0	4,348.9	4,366.9	4,351.9	15.3	10.8	-155.60	-49.1	-268.4	661.1	638.6	22.46	29.438		
4,500.0	4,447.6	4,465.2	4,449.7	15.7	11.0	-155.29	-47.7	-278.5	675.4	652.4	22.99	29.376		
4,600.0	4,546.3	4,563.3	4,547.6	16.1	11.2	-155.27	-46.7	-285.3	689.9	666.4	23.47	29.392		
4,700.0	4,645.0	4,661.3	4,645.5	16.4	11.4	-155.53	-46.2	-288.8	704.5	680.6	23.91	29.462		
4,800.0	4,743.7	4,759.5	4,743.7	16.8	11.6	-156.01	-46.1	-289.3	719.2	694.9	24.32	29.569		
4,900.0	4,842.4	4,858.2	4,842.4	17.2	11.8	-156.52	-46.1	-289.3	734.0	709.3	24.75	29.664		
5,000.0	4,941.1	4,956.9	4,941.1	17.6	12.0	-157.02	-46.1	-289.3	748.9	723.7	25.17	29.749		

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 Wiedeman 28E-404
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4778.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-404	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 (8-07-14)	Offset TVD Reference:	Offset Datum

Offset Design		Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W - Wiedeman 28F-214 - Wellbore #1 - Plan #1 (8										Offset Site Error:		0.0 ft
Survey Program: 0-MWD												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Minimum	Separation	Warning	
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor		
5,100.0	5,039.7	5,055.6	5,039.7	17.9	12.2	-157.49	-46.1	-289.3	763.8	738.2	25.60	29.832		
5,200.0	5,138.4	5,154.3	5,138.4	18.3	12.4	-157.94	-46.1	-289.3	778.8	752.8	26.03	29.914		
5,300.0	5,237.1	5,252.9	5,237.1	18.7	12.6	-158.38	-46.1	-289.3	793.8	767.3	26.47	29.993		
5,400.0	5,335.8	5,351.6	5,335.8	19.1	12.8	-158.80	-46.1	-289.3	808.9	782.0	26.90	30.070		
5,500.0	5,434.5	5,450.3	5,434.5	19.4	12.9	-159.20	-46.1	-289.3	824.0	796.6	27.33	30.144		
5,600.0	5,533.2	5,549.0	5,533.2	19.8	13.1	-159.60	-46.1	-289.3	839.1	811.4	27.77	30.217		
5,700.0	5,631.9	5,647.7	5,631.9	20.2	13.3	-159.97	-46.1	-289.3	854.3	826.1	28.21	30.288		
5,800.0	5,730.5	5,746.4	5,730.5	20.6	13.5	-160.34	-46.1	-289.3	869.5	840.9	28.64	30.357		
5,900.0	5,829.2	5,845.1	5,829.2	20.9	13.7	-160.69	-46.1	-289.3	884.8	855.7	29.08	30.424		
6,000.0	5,928.1	5,944.0	5,928.1	21.2	13.9	-161.08	-46.1	-289.3	898.7	869.1	29.52	30.438		
6,100.0	6,027.5	6,043.3	6,027.5	21.5	14.1	-161.38	-46.1	-289.3	909.3	879.4	29.91	30.401		
6,200.0	6,127.2	6,143.0	6,127.2	21.7	14.3	-161.58	-46.1	-289.3	916.7	886.4	30.27	30.284		
6,300.0	6,227.1	6,242.9	6,227.1	21.9	14.6	-161.69	-46.1	-289.3	920.8	890.2	30.60	30.093		
6,400.0	6,327.1	6,342.9	6,327.1	22.0	14.8	-180.00	-46.1	-289.4	921.6	886.5	35.11	26.247		
6,420.3	6,347.4	6,363.2	6,347.4	22.0	14.8	-179.96	-46.1	-289.9	921.6	886.5	35.18	26.195		
6,500.0	6,427.1	6,442.2	6,426.0	22.1	15.0	-179.52	-46.1	-297.0	921.7	886.2	35.44	26.005		
6,600.0	6,527.1	6,537.9	6,519.7	22.3	15.3	-88.31	-46.1	-316.5	922.1	890.0	32.04	28.782		
6,700.0	6,626.6	6,630.2	6,607.0	22.4	15.8	-86.87	-46.1	-346.2	923.1	890.3	32.80	28.144		
6,800.0	6,724.2	6,720.1	6,688.0	22.7	16.3	-85.48	-46.1	-385.1	924.7	890.9	33.73	27.416		
6,900.0	6,818.1	6,808.0	6,762.2	23.0	16.9	-84.18	-46.1	-432.0	926.6	891.8	34.83	26.603		
7,000.0	6,906.8	6,894.1	6,829.3	23.3	17.6	-82.97	-46.1	-486.0	928.9	892.7	36.14	25.701		
7,100.0	6,988.6	6,978.7	6,888.8	23.8	18.5	-81.88	-46.1	-546.0	931.3	893.6	37.69	24.709		
7,200.0	7,062.3	7,062.0	6,940.7	24.4	19.6	-80.90	-46.1	-611.2	933.6	894.1	39.49	23.640		
7,300.0	7,126.6	7,144.3	6,984.6	25.2	20.8	-80.07	-46.1	-680.7	935.9	894.3	41.59	22.503		
7,400.0	7,180.3	7,225.7	7,020.4	26.1	22.1	-79.38	-46.1	-753.8	937.9	893.9	44.00	21.315		
7,500.0	7,222.5	7,306.5	7,048.1	27.3	23.6	-78.84	-46.1	-829.6	939.5	892.8	46.72	20.112		
7,600.0	7,252.6	7,386.8	7,067.5	28.7	25.2	-78.45	-46.1	-907.5	940.7	891.0	49.73	18.916		
7,700.0	7,269.9	7,466.8	7,078.7	30.3	26.9	-78.23	-46.1	-986.7	941.4	888.4	53.00	17.763		
7,800.0	7,274.5	7,548.6	7,081.5	32.1	28.7	-78.17	-46.1	-1,068.4	941.7	885.1	56.57	16.646		
7,900.0	7,274.6	7,648.6	7,080.8	34.1	31.0	-78.13	-46.1	-1,168.4	941.8	880.9	60.95	15.451		
8,000.0	7,274.6	7,748.6	7,080.1	36.2	33.3	-78.08	-46.1	-1,268.4	942.0	876.5	65.50	14.382		
8,100.0	7,274.7	7,848.6	7,079.4	38.4	35.7	-78.04	-46.1	-1,368.4	942.1	871.9	70.18	13.425		
8,200.0	7,274.7	7,948.6	7,078.7	40.6	38.2	-77.99	-46.1	-1,468.4	942.3	867.3	74.96	12.570		
8,300.0	7,274.8	8,048.6	7,078.0	42.9	40.7	-77.95	-46.1	-1,568.4	942.4	862.6	79.84	11.804		
8,400.0	7,274.8	8,148.6	7,077.3	45.3	43.3	-77.90	-46.1	-1,668.4	942.6	857.8	84.78	11.117		
8,500.0	7,274.9	8,248.6	7,076.6	47.8	45.9	-77.86	-46.1	-1,768.4	942.7	853.0	89.79	10.499		
8,600.0	7,274.9	8,348.6	7,075.9	50.3	48.5	-77.81	-46.1	-1,868.4	942.9	848.1	94.85	9.941		
8,700.0	7,275.0	8,448.6	7,075.2	52.8	51.1	-77.77	-46.1	-1,968.4	943.1	843.1	99.96	9.435		
8,800.0	7,275.0	8,548.6	7,074.5	55.3	53.8	-77.72	-46.1	-2,068.4	943.2	838.1	105.09	8.975		
8,900.0	7,275.1	8,648.6	7,073.8	57.9	56.4	-77.68	-46.1	-2,168.4	943.4	833.1	110.26	8.556		
9,000.0	7,275.1	8,748.6	7,073.1	60.5	59.1	-77.64	-46.1	-2,268.4	943.5	828.1	115.46	8.172		
9,100.0	7,275.2	8,848.6	7,072.4	63.1	61.8	-77.59	-46.1	-2,368.4	943.7	823.0	120.68	7.820		
9,200.0	7,275.2	8,948.6	7,071.7	65.7	64.5	-77.55	-46.1	-2,468.4	943.9	818.0	125.92	7.496		
9,300.0	7,275.3	9,048.6	7,071.0	68.4	67.2	-77.50	-46.1	-2,568.3	944.0	812.9	131.17	7.197		
9,400.0	7,275.4	9,148.6	7,070.3	71.0	69.9	-77.46	-46.1	-2,668.3	944.2	807.8	136.44	6.920		
9,500.0	7,275.4	9,248.6	7,069.6	73.7	72.6	-77.41	-46.1	-2,768.3	944.4	802.6	141.72	6.663		
9,600.0	7,275.5	9,348.6	7,068.9	76.4	75.4	-77.37	-46.1	-2,868.3	944.5	797.5	147.02	6.425		
9,700.0	7,275.5	9,448.6	7,068.2	79.1	78.1	-77.32	-46.1	-2,968.3	944.7	792.4	152.32	6.202		
9,800.0	7,275.6	9,548.6	7,067.5	81.8	80.8	-77.28	-46.1	-3,068.3	944.9	787.2	157.64	5.994		
9,900.0	7,275.6	9,648.6	7,066.8	84.5	83.6	-77.24	-46.1	-3,168.3	945.0	782.1	162.96	5.799		

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 Wiedeman 28E-404
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4778.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-404	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 (8-07-14)	Offset TVD Reference:	Offset Datum

Offset Design		Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W - Wiedeman 28F-214 - Wellbore #1 - Plan #1 (8										Offset Site Error:		0.0 ft
Survey Program: 0-MWD												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
10,000.0	7,275.7	9,748.6	7,066.1	87.2	86.3	-77.19	-46.1	-3,268.3	945.2	776.9	168.29	5.617		
10,100.0	7,275.7	9,848.6	7,065.4	89.9	89.1	-77.15	-46.1	-3,368.3	945.4	771.7	173.62	5.445		
10,200.0	7,275.8	9,948.6	7,064.7	92.6	91.8	-77.10	-46.1	-3,468.3	945.5	766.6	178.96	5.283		
10,300.0	7,275.8	10,048.6	7,064.0	95.4	94.6	-77.06	-46.1	-3,568.3	945.7	761.4	184.30	5.131		
10,400.0	7,275.9	10,148.6	7,063.3	98.1	97.3	-77.01	-46.1	-3,668.3	945.9	756.2	189.65	4.987		
10,500.0	7,275.9	10,248.6	7,062.6	100.8	100.1	-76.97	-46.1	-3,768.3	946.0	751.0	195.00	4.851		
10,600.0	7,276.0	10,348.6	7,061.9	103.6	102.9	-76.93	-46.1	-3,868.3	946.2	745.8	200.36	4.723		
10,700.0	7,276.0	10,448.6	7,061.2	106.3	105.6	-76.88	-46.1	-3,968.3	946.4	740.7	205.72	4.600		
10,800.0	7,276.1	10,548.6	7,060.5	109.1	108.4	-76.84	-46.1	-4,068.3	946.5	735.5	211.08	4.484		
10,900.0	7,276.1	10,648.5	7,059.8	111.8	111.2	-76.79	-46.1	-4,168.3	946.7	730.3	216.44	4.374		
11,000.0	7,276.2	10,748.5	7,059.1	114.6	114.0	-76.75	-46.1	-4,268.3	946.9	725.1	221.80	4.269		
11,100.0	7,276.2	10,848.5	7,058.4	117.3	116.7	-76.70	-46.1	-4,368.3	947.1	719.9	227.17	4.169		
11,200.0	7,276.3	10,948.5	7,057.7	120.1	119.5	-76.66	-46.1	-4,468.2	947.2	714.7	232.53	4.074		
11,300.0	7,276.3	11,048.5	7,057.0	122.8	122.3	-76.62	-46.1	-4,568.2	947.4	709.5	237.90	3.982		
11,400.0	7,276.4	11,148.5	7,056.3	125.6	125.1	-76.57	-46.1	-4,668.2	947.6	704.3	243.27	3.895		
11,500.0	7,276.5	11,248.5	7,055.6	128.4	127.8	-76.53	-46.1	-4,768.2	947.8	699.1	248.64	3.812		
11,600.0	7,276.5	11,348.5	7,054.9	131.1	130.6	-76.48	-46.1	-4,868.2	947.9	693.9	254.00	3.732		
11,700.0	7,276.6	11,448.5	7,054.2	133.9	133.4	-76.44	-46.1	-4,968.2	948.1	688.7	259.37	3.655		
11,800.0	7,276.6	11,548.5	7,053.5	136.7	136.2	-76.40	-46.1	-5,068.2	948.3	683.5	264.74	3.582		
11,900.0	7,276.7	11,648.5	7,052.9	139.4	139.0	-76.35	-46.1	-5,168.2	948.5	678.3	270.11	3.511		
12,000.0	7,276.7	11,748.5	7,052.2	142.2	141.8	-76.31	-46.1	-5,268.2	948.6	673.2	275.48	3.444		
12,100.0	7,276.8	11,848.5	7,051.5	145.0	144.6	-76.26	-46.1	-5,368.2	948.8	668.0	280.85	3.378		
12,200.0	7,276.8	11,948.5	7,050.8	147.8	147.3	-76.22	-46.1	-5,468.2	949.0	662.8	286.22	3.316		
12,300.0	7,276.9	12,048.5	7,050.1	150.5	150.1	-76.18	-46.1	-5,568.2	949.2	657.6	291.59	3.255		
12,400.0	7,276.9	12,148.5	7,049.4	153.3	152.9	-76.13	-46.1	-5,668.2	949.4	652.4	296.96	3.197		
12,500.0	7,277.0	12,248.5	7,048.7	156.1	155.7	-76.09	-46.1	-5,768.2	949.5	647.2	302.32	3.141		
12,600.0	7,277.0	12,348.5	7,048.0	158.9	158.5	-76.04	-46.1	-5,868.2	949.7	642.0	307.69	3.087		
12,700.0	7,277.1	12,448.5	7,047.3	161.7	161.3	-76.00	-46.1	-5,968.2	949.9	636.8	313.05	3.034		
12,800.0	7,277.1	12,548.5	7,046.6	164.4	164.1	-75.96	-46.1	-6,068.2	950.1	631.7	318.42	2.984		
12,900.0	7,277.2	12,648.5	7,045.9	167.2	166.9	-75.91	-46.1	-6,168.2	950.3	626.5	323.78	2.935		
13,000.0	7,277.2	12,748.5	7,045.2	170.0	169.7	-75.87	-46.1	-6,268.2	950.5	621.3	329.14	2.888		
13,100.0	7,277.3	12,848.5	7,044.5	172.8	172.5	-75.82	-46.1	-6,368.2	950.6	616.1	334.51	2.842		
13,200.0	7,277.3	12,948.5	7,043.8	175.6	175.2	-75.78	-46.1	-6,468.1	950.8	611.0	339.87	2.798		
13,300.0	7,277.4	13,048.5	7,043.1	178.4	178.0	-75.74	-46.1	-6,568.1	951.0	605.8	345.22	2.755		
13,400.0	7,277.4	13,148.5	7,042.4	181.1	180.8	-75.69	-46.1	-6,668.1	951.2	600.6	350.58	2.713		
13,500.0	7,277.5	13,248.5	7,041.7	183.9	183.6	-75.65	-46.1	-6,768.1	951.4	595.4	355.94	2.673		
13,600.0	7,277.6	13,348.5	7,041.0	186.7	186.4	-75.60	-46.1	-6,868.1	951.6	590.3	361.29	2.634		
13,700.0	7,277.6	13,448.5	7,040.3	189.5	189.2	-75.56	-46.1	-6,968.1	951.8	585.1	366.65	2.596		
13,800.0	7,277.7	13,548.5	7,039.6	192.3	192.0	-75.52	-46.1	-7,068.1	951.9	579.9	372.00	2.559		
13,900.0	7,277.7	13,648.5	7,038.9	195.1	194.8	-75.47	-46.1	-7,168.1	952.1	574.8	377.35	2.523		
14,000.0	7,277.8	13,748.5	7,038.2	197.9	197.6	-75.43	-46.1	-7,268.1	952.3	569.6	382.70	2.488		
14,100.0	7,277.8	13,848.5	7,037.5	200.7	200.4	-75.39	-46.1	-7,368.1	952.5	564.5	388.05	2.455		
14,200.0	7,277.9	13,948.5	7,036.8	203.5	203.2	-75.34	-46.1	-7,468.1	952.7	559.3	393.39	2.422		
14,300.0	7,277.9	14,048.5	7,036.1	206.3	206.0	-75.30	-46.1	-7,568.1	952.9	554.1	398.74	2.390		
14,400.0	7,278.0	14,148.4	7,035.4	209.0	208.8	-75.26	-46.1	-7,668.1	953.1	549.0	404.08	2.359		
14,457.9	7,278.0	14,205.5	7,035.0	210.7	210.4	-75.23	-46.1	-7,725.1	953.2	546.0	407.15	2.341 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-404
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4778.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-404	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 (8-07-14)	Offset TVD Reference:	Offset Datum

Offset Design		Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W - Wiedeman 28F-314 - Wellbore #1 - Plan #1 (8										Offset Site Error:		0.0 ft
Survey Program: 0-MWD												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
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	CC, ES	
300.0	300.0	300.0	300.0	0.6	0.6	-162.23	-58.3	0.0	59.9	58.8	1.13	53.018		
400.0	399.8	399.8	399.8	0.8	0.8	-163.61	-58.3	0.0	65.0	63.4	1.59	40.797		
500.0	499.5	499.5	499.5	1.0	1.0	-165.49	-58.3	0.0	73.4	71.3	2.05	35.697		
600.0	598.7	598.7	598.7	1.3	1.2	-167.49	-58.3	0.0	85.2	82.7	2.52	33.824		
700.0	697.5	697.5	697.5	1.6	1.5	-169.36	-58.3	0.0	100.3	97.4	2.98	33.660		
800.0	796.2	796.2	796.2	2.0	1.7	-170.83	-58.3	0.0	116.3	112.8	3.44	33.805		
900.0	894.9	894.9	894.9	2.3	1.9	-171.95	-58.3	0.0	132.2	128.3	3.90	33.905		
1,000.0	993.6	993.6	993.6	2.7	2.1	-172.82	-58.3	0.0	148.2	143.9	4.36	33.977		
1,100.0	1,092.3	1,092.3	1,092.3	3.1	2.3	-173.52	-58.3	0.0	164.3	159.4	4.83	34.031		
1,200.0	1,190.9	1,190.9	1,190.9	3.4	2.6	-174.10	-58.3	0.0	180.3	175.0	5.29	34.072		
1,300.0	1,289.6	1,289.6	1,289.6	3.8	2.8	-174.59	-58.3	0.0	196.4	190.6	5.76	34.103		
1,400.0	1,388.3	1,388.3	1,388.3	4.2	3.0	-175.00	-58.3	0.0	212.5	206.3	6.23	34.128		
1,500.0	1,487.0	1,487.0	1,487.0	4.5	3.2	-175.35	-58.3	0.0	228.6	221.9	6.69	34.148		
1,600.0	1,585.7	1,585.7	1,585.7	4.9	3.5	-175.66	-58.3	0.0	244.7	237.5	7.16	34.164		
1,700.0	1,684.4	1,689.6	1,689.6	5.3	3.7	-175.70	-57.7	-1.3	259.9	252.3	7.64	34.044		
1,800.0	1,783.1	1,795.0	1,794.8	5.6	3.9	-175.12	-55.4	-6.0	272.9	264.8	8.11	33.650		
1,900.0	1,881.7	1,900.7	1,900.2	6.0	4.1	-173.98	-51.4	-14.2	283.6	275.0	8.60	32.980		
2,000.0	1,980.4	2,003.8	2,002.5	6.4	4.4	-172.42	-46.0	-25.3	292.4	283.3	9.10	32.119		
2,100.0	2,079.1	2,103.1	2,101.0	6.8	4.6	-170.91	-40.6	-36.5	301.0	291.4	9.62	31.305		
2,200.0	2,177.8	2,202.4	2,199.5	7.1	4.9	-169.48	-35.1	-47.7	309.9	299.7	10.14	30.555		
2,300.0	2,276.5	2,301.7	2,298.1	7.5	5.2	-168.14	-29.6	-59.0	318.9	308.2	10.68	29.865		
2,400.0	2,375.2	2,401.1	2,396.6	7.9	5.4	-166.86	-24.2	-70.2	328.0	316.8	11.22	29.228		
2,500.0	2,473.9	2,500.4	2,495.1	8.2	5.7	-165.66	-18.7	-81.4	337.4	325.6	11.78	28.641		
2,600.0	2,572.6	2,599.7	2,593.7	8.6	6.0	-164.52	-13.3	-92.6	346.8	334.5	12.34	28.098		
2,700.0	2,671.2	2,699.0	2,692.2	9.0	6.3	-163.45	-7.8	-103.9	356.4	343.5	12.92	27.596		
2,800.0	2,769.9	2,798.3	2,790.7	9.4	6.6	-162.42	-2.3	-115.1	366.1	352.6	13.49	27.131		
2,900.0	2,868.6	2,897.7	2,889.3	9.7	6.8	-161.46	3.1	-126.3	375.9	361.9	14.08	26.699		
3,000.0	2,967.3	2,997.0	2,987.8	10.1	7.1	-160.54	8.6	-137.6	385.9	371.2	14.67	26.299		
3,100.0	3,066.0	3,096.3	3,086.3	10.5	7.4	-159.66	14.0	-148.8	395.9	380.6	15.27	25.927		
3,200.0	3,164.7	3,195.6	3,184.9	10.9	7.7	-158.84	19.5	-160.0	406.0	390.1	15.87	25.581		
3,300.0	3,263.4	3,294.9	3,283.4	11.2	8.0	-158.05	24.9	-171.2	416.2	399.7	16.48	25.258		
3,400.0	3,362.1	3,394.3	3,381.9	11.6	8.3	-157.29	30.4	-182.5	426.4	409.4	17.09	24.957		
3,500.0	3,460.7	3,493.6	3,480.5	12.0	8.6	-156.58	35.9	-193.7	436.8	419.1	17.70	24.676		
3,600.0	3,559.4	3,592.9	3,579.0	12.3	8.9	-155.90	41.3	-204.9	447.2	428.8	18.32	24.413		
3,700.0	3,658.1	3,692.2	3,677.5	12.7	9.3	-155.24	46.8	-216.2	457.6	438.7	18.94	24.166		
3,800.0	3,756.8	3,791.5	3,776.1	13.1	9.6	-154.62	52.2	-227.4	468.1	448.6	19.56	23.935		
3,900.0	3,855.5	3,890.9	3,874.6	13.5	9.9	-154.02	57.7	-238.6	478.7	458.5	20.18	23.717		
4,000.0	3,954.2	3,990.2	3,973.1	13.8	10.2	-153.45	63.1	-249.9	489.3	468.5	20.81	23.513		
4,100.0	4,052.9	4,089.5	4,071.7	14.2	10.5	-152.91	68.6	-261.1	500.0	478.5	21.44	23.320		
4,200.0	4,151.6	4,187.3	4,168.7	14.6	10.8	-152.41	73.9	-272.0	510.7	488.6	22.05	23.160		
4,300.0	4,250.2	4,281.7	4,262.6	15.0	11.0	-152.20	78.0	-280.4	522.2	499.6	22.56	23.146		
4,400.0	4,348.9	4,375.9	4,356.7	15.3	11.2	-152.32	80.7	-286.1	534.6	511.6	23.02	23.224		
4,500.0	4,447.6	4,469.8	4,450.4	15.7	11.4	-152.74	82.1	-288.9	548.0	524.6	23.43	23.387		
4,600.0	4,546.3	4,565.6	4,546.3	16.1	11.5	-153.43	82.3	-289.3	562.3	538.5	23.82	23.610		
4,700.0	4,645.0	4,664.3	4,645.0	16.4	11.7	-154.15	82.3	-289.3	576.8	552.6	24.22	23.821		
4,800.0	4,743.7	4,763.0	4,743.7	16.8	11.9	-154.83	82.3	-289.3	591.5	566.8	24.62	24.019		
4,900.0	4,842.4	4,861.7	4,842.4	17.2	12.1	-155.47	82.3	-289.3	606.1	581.1	25.03	24.212		
5,000.0	4,941.1	4,960.4	4,941.1	17.6	12.3	-156.09	82.3	-289.3	620.9	595.5	25.45	24.400		

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 Wiedeman 28E-404
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4778.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-404	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 (8-07-14)	Offset TVD Reference:	Offset Datum

Offset Design Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W - Wiedeman 28F-314 - Wellbore #1 - Plan #1 (8														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
5,100.0	5,039.7	5,059.1	5,039.7	17.9	12.5	-156.68	82.3	-289.3	635.7	609.9	25.86	24.582			
5,200.0	5,138.4	5,157.8	5,138.4	18.3	12.7	-157.24	82.3	-289.3	650.6	624.4	26.28	24.759			
5,300.0	5,237.1	5,256.5	5,237.1	18.7	12.8	-157.78	82.3	-289.3	665.6	638.9	26.70	24.931			
5,400.0	5,335.8	5,355.1	5,335.8	19.1	13.0	-158.29	82.3	-289.3	680.6	653.5	27.12	25.098			
5,500.0	5,434.5	5,453.8	5,434.5	19.4	13.2	-158.78	82.3	-289.3	695.6	668.1	27.54	25.260			
5,600.0	5,533.2	5,552.5	5,533.2	19.8	13.4	-159.25	82.3	-289.3	710.7	682.8	27.96	25.417			
5,700.0	5,631.9	5,651.2	5,631.9	20.2	13.6	-159.70	82.3	-289.3	725.9	697.5	28.39	25.570			
5,800.0	5,730.5	5,749.9	5,730.5	20.6	13.8	-160.14	82.3	-289.3	741.1	712.3	28.82	25.718			
5,900.0	5,829.2	5,848.6	5,829.2	20.9	14.0	-160.55	82.3	-289.3	756.3	727.1	29.25	25.861			
6,000.0	5,928.1	5,947.5	5,928.1	21.2	14.2	-161.00	82.3	-289.3	770.2	740.5	29.67	25.956			
6,100.0	6,027.5	6,046.8	6,027.5	21.5	14.4	-161.34	82.3	-289.3	780.9	750.8	30.05	25.986			
6,200.0	6,127.2	6,146.5	6,127.2	21.7	14.6	-161.56	82.3	-289.3	788.2	757.8	30.40	25.931			
6,300.0	6,227.1	6,246.4	6,227.1	21.9	14.8	-161.69	82.3	-289.3	792.3	761.6	30.72	25.792			
6,400.0	6,327.1	6,346.4	6,327.1	22.0	15.0	-180.00	82.3	-289.3	793.2	757.8	35.41	22.403			
6,464.0	6,391.1	6,410.4	6,391.1	22.1	15.2	-180.00	82.3	-289.3	793.2	757.6	35.63	22.259			
6,500.0	6,427.1	6,446.4	6,427.1	22.1	15.2	-179.99	82.3	-289.4	793.2	757.4	35.76	22.181			
6,600.0	6,527.1	6,545.6	6,525.8	22.3	15.5	-89.40	82.3	-297.8	793.2	761.3	31.94	24.838			
6,700.0	6,626.6	6,642.9	6,620.9	22.4	15.8	-88.50	82.3	-318.3	793.5	760.9	32.59	24.350			
6,800.0	6,724.2	6,738.8	6,711.2	22.7	16.3	-87.63	82.3	-350.2	793.9	760.5	33.41	23.761			
6,900.0	6,818.1	6,833.3	6,795.7	23.0	16.8	-86.80	82.3	-392.5	794.4	760.0	34.43	23.074			
7,000.0	6,906.8	6,926.6	6,873.4	23.3	17.5	-86.03	82.3	-444.2	795.1	759.4	35.68	22.283			
7,100.0	6,988.6	7,018.9	6,943.4	23.8	18.3	-85.33	82.3	-504.1	795.9	758.6	37.21	21.390			
7,200.0	7,062.3	7,110.2	7,005.1	24.4	19.3	-84.70	82.3	-571.4	796.6	757.6	39.05	20.398			
7,300.0	7,126.6	7,200.0	7,057.5	25.2	20.5	-84.17	82.3	-644.2	797.3	756.1	41.25	19.331			
7,400.0	7,180.3	7,290.6	7,101.3	26.1	21.9	-83.71	82.3	-723.5	798.0	754.1	43.85	18.197			
7,500.0	7,222.5	7,379.9	7,135.1	27.3	23.4	-83.36	82.3	-806.1	798.6	751.7	46.83	17.053			
7,600.0	7,252.6	7,468.9	7,158.9	28.7	25.1	-83.12	82.3	-891.8	799.0	748.8	50.14	15.934			
7,700.0	7,269.9	7,557.6	7,172.6	30.3	27.0	-82.97	82.3	-979.4	799.2	745.5	53.74	14.870			
7,800.0	7,274.5	7,647.3	7,176.1	32.1	28.9	-82.93	82.3	-1,068.9	799.3	741.7	57.61	13.873			
7,900.0	7,274.6	7,747.3	7,175.2	34.1	31.2	-82.86	82.3	-1,168.9	799.4	737.3	62.05	12.883			
8,000.0	7,274.6	7,847.3	7,174.3	36.2	33.5	-82.79	82.3	-1,268.9	799.5	732.9	66.64	11.997			
8,100.0	7,274.7	7,947.3	7,173.5	38.4	35.9	-82.73	82.3	-1,368.9	799.6	728.3	71.38	11.203			
8,200.0	7,274.7	8,047.2	7,172.6	40.6	38.4	-82.66	82.3	-1,468.9	799.7	723.5	76.22	10.493			
8,300.0	7,274.8	8,147.2	7,171.7	42.9	40.9	-82.60	82.3	-1,568.9	799.9	718.7	81.15	9.856			
8,400.0	7,274.8	8,247.2	7,170.9	45.3	43.5	-82.53	82.3	-1,668.9	800.0	713.8	86.16	9.285			
8,500.0	7,274.9	8,347.2	7,170.0	47.8	46.0	-82.47	82.3	-1,768.9	800.1	708.9	91.23	8.770			
8,600.0	7,274.9	8,447.2	7,169.1	50.3	48.6	-82.40	82.3	-1,868.9	800.2	703.9	96.35	8.305			
8,700.0	7,275.0	8,547.2	7,168.2	52.8	51.3	-82.34	82.3	-1,968.8	800.4	698.8	101.52	7.884			
8,800.0	7,275.0	8,647.2	7,167.4	55.3	53.9	-82.27	82.3	-2,068.8	800.5	693.8	106.72	7.501			
8,900.0	7,275.1	8,747.2	7,166.5	57.9	56.6	-82.20	82.3	-2,168.8	800.6	688.6	111.95	7.151			
9,000.0	7,275.1	8,847.2	7,165.6	60.5	59.2	-82.14	82.3	-2,268.8	800.7	683.5	117.21	6.831			
9,100.0	7,275.2	8,947.2	7,164.7	63.1	61.9	-82.07	82.3	-2,368.8	800.9	678.4	122.50	6.538			
9,200.0	7,275.2	9,047.2	7,163.9	65.7	64.6	-82.01	82.3	-2,468.8	801.0	673.2	127.80	6.267			
9,300.0	7,275.3	9,147.2	7,163.0	68.4	67.3	-81.94	82.3	-2,568.8	801.1	668.0	133.13	6.018			
9,400.0	7,275.4	9,247.2	7,162.1	71.0	70.0	-81.88	82.3	-2,668.8	801.2	662.8	138.47	5.787			
9,500.0	7,275.4	9,347.2	7,161.3	73.7	72.7	-81.81	82.3	-2,768.8	801.4	657.6	143.82	5.572			
9,600.0	7,275.5	9,447.2	7,160.4	76.4	75.5	-81.75	82.3	-2,868.8	801.5	652.3	149.18	5.373			
9,700.0	7,275.5	9,547.2	7,159.5	79.1	78.2	-81.68	82.3	-2,968.8	801.6	647.1	154.55	5.187			
9,800.0	7,275.6	9,647.2	7,158.6	81.8	80.9	-81.61	82.3	-3,068.8	801.8	641.8	159.93	5.013			
9,900.0	7,275.6	9,747.2	7,157.8	84.5	83.7	-81.55	82.3	-3,168.7	801.9	636.6	165.33	4.851			

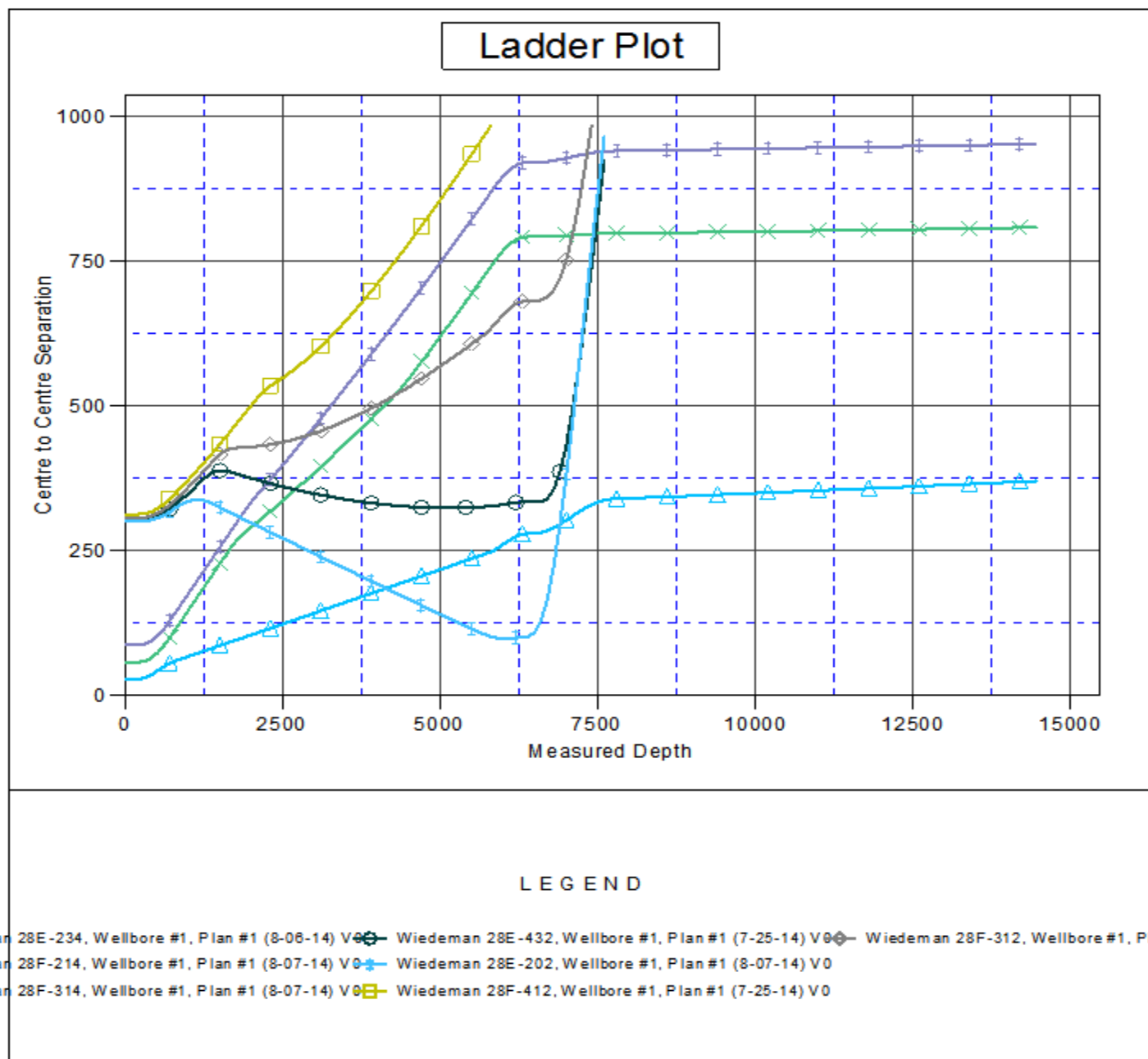
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-404
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4778.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-404	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 (8-07-14)	Offset TVD Reference:	Offset Datum

Offset Design		Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W - Wiedeman 28F-314 - Wellbore #1 - Plan #1 (8										Offset Site Error:		0.0 ft
Survey Program: 0-MWD												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
10,000.0	7,275.7	9,847.2	7,156.9	87.2	86.4	-81.48	82.3	-3,268.7	802.1	631.3	170.72	4.698		
10,100.0	7,275.7	9,947.2	7,156.0	89.9	89.2	-81.42	82.3	-3,368.7	802.2	626.1	176.13	4.555		
10,200.0	7,275.8	10,047.2	7,155.1	92.6	91.9	-81.35	82.3	-3,468.7	802.3	620.8	181.53	4.420		
10,300.0	7,275.8	10,147.2	7,154.3	95.4	94.7	-81.29	82.3	-3,568.7	802.5	615.5	186.95	4.292		
10,400.0	7,275.9	10,247.2	7,153.4	98.1	97.4	-81.22	82.3	-3,668.7	802.6	610.2	192.36	4.172		
10,500.0	7,275.9	10,347.1	7,152.5	100.8	100.2	-81.16	82.3	-3,768.7	802.8	605.0	197.79	4.059		
10,600.0	7,276.0	10,447.1	7,151.7	103.6	103.0	-81.09	82.3	-3,868.7	802.9	599.7	203.21	3.951		
10,700.0	7,276.0	10,547.1	7,150.8	106.3	105.7	-81.03	82.3	-3,968.7	803.0	594.4	208.64	3.849		
10,800.0	7,276.1	10,647.1	7,149.9	109.1	108.5	-80.96	82.3	-4,068.7	803.2	589.1	214.07	3.752		
10,900.0	7,276.1	10,747.1	7,149.0	111.8	111.3	-80.90	82.3	-4,168.7	803.3	583.8	219.50	3.660		
11,000.0	7,276.2	10,847.1	7,148.2	114.6	114.0	-80.83	82.3	-4,268.7	803.5	578.6	224.93	3.572		
11,100.0	7,276.2	10,947.1	7,147.3	117.3	116.8	-80.77	82.3	-4,368.7	803.6	573.3	230.36	3.489		
11,200.0	7,276.3	11,047.1	7,146.4	120.1	119.6	-80.70	82.3	-4,468.6	803.8	568.0	235.80	3.409		
11,300.0	7,276.3	11,147.1	7,145.5	122.8	122.4	-80.64	82.3	-4,568.6	803.9	562.7	241.24	3.333		
11,400.0	7,276.4	11,247.1	7,144.7	125.6	125.1	-80.57	82.3	-4,668.6	804.1	557.4	246.67	3.260		
11,500.0	7,276.5	11,347.1	7,143.8	128.4	127.9	-80.51	82.3	-4,768.6	804.2	552.1	252.11	3.190		
11,600.0	7,276.5	11,447.1	7,142.9	131.1	130.7	-80.44	82.3	-4,868.6	804.4	546.8	257.55	3.123		
11,700.0	7,276.6	11,547.1	7,142.1	133.9	133.5	-80.38	82.3	-4,968.6	804.5	541.6	262.98	3.059		
11,800.0	7,276.6	11,647.1	7,141.2	136.7	136.3	-80.31	82.3	-5,068.6	804.7	536.3	268.42	2.998		
11,900.0	7,276.7	11,747.1	7,140.3	139.4	139.0	-80.25	82.3	-5,168.6	804.9	531.0	273.86	2.939		
12,000.0	7,276.7	11,847.1	7,139.4	142.2	141.8	-80.18	82.3	-5,268.6	805.0	525.7	279.29	2.882		
12,100.0	7,276.8	11,947.1	7,138.6	145.0	144.6	-80.12	82.3	-5,368.6	805.2	520.4	284.73	2.828		
12,200.0	7,276.8	12,047.1	7,137.7	147.8	147.4	-80.05	82.3	-5,468.6	805.3	515.2	290.17	2.775		
12,300.0	7,276.9	12,147.1	7,136.8	150.5	150.2	-79.99	82.3	-5,568.6	805.5	509.9	295.60	2.725		
12,400.0	7,276.9	12,247.1	7,135.9	153.3	153.0	-79.92	82.3	-5,668.5	805.7	504.6	301.03	2.676		
12,500.0	7,277.0	12,347.1	7,135.1	156.1	155.8	-79.86	82.3	-5,768.5	805.8	499.3	306.47	2.629		
12,600.0	7,277.0	12,447.1	7,134.2	158.9	158.6	-79.79	82.3	-5,868.5	806.0	494.1	311.90	2.584		
12,700.0	7,277.1	12,547.1	7,133.3	161.7	161.3	-79.73	82.3	-5,968.5	806.1	488.8	317.33	2.540		
12,800.0	7,277.1	12,647.1	7,132.5	164.4	164.1	-79.66	82.3	-6,068.5	806.3	483.6	322.76	2.498		
12,900.0	7,277.2	12,747.0	7,131.6	167.2	166.9	-79.60	82.3	-6,168.5	806.5	478.3	328.19	2.457		
13,000.0	7,277.2	12,847.0	7,130.7	170.0	169.7	-79.53	82.3	-6,268.5	806.6	473.0	333.61	2.418		
13,100.0	7,277.3	12,947.0	7,129.8	172.8	172.5	-79.47	82.3	-6,368.5	806.8	467.8	339.04	2.380		
13,200.0	7,277.3	13,047.0	7,129.0	175.6	175.3	-79.41	82.3	-6,468.5	807.0	462.5	344.46	2.343		
13,300.0	7,277.4	13,147.0	7,128.1	178.4	178.1	-79.34	82.3	-6,568.5	807.2	457.3	349.89	2.307		
13,400.0	7,277.4	13,247.0	7,127.2	181.1	180.9	-79.28	82.3	-6,668.5	807.3	452.0	355.31	2.272		
13,500.0	7,277.5	13,347.0	7,126.3	183.9	183.7	-79.21	82.3	-6,768.5	807.5	446.8	360.72	2.239		
13,600.0	7,277.6	13,447.0	7,125.5	186.7	186.5	-79.15	82.3	-6,868.4	807.7	441.5	366.14	2.206		
13,700.0	7,277.6	13,547.0	7,124.6	189.5	189.3	-79.08	82.3	-6,968.4	807.9	436.3	371.56	2.174		
13,800.0	7,277.7	13,647.0	7,123.7	192.3	192.1	-79.02	82.3	-7,068.4	808.0	431.1	376.97	2.143		
13,900.0	7,277.7	13,747.0	7,122.9	195.1	194.9	-78.95	82.3	-7,168.4	808.2	425.8	382.38	2.114		
14,000.0	7,277.8	13,847.0	7,122.0	197.9	197.7	-78.89	82.3	-7,268.4	808.4	420.6	387.79	2.085		
14,100.0	7,277.8	13,947.0	7,121.1	200.7	200.5	-78.83	82.3	-7,368.4	808.6	415.4	393.20	2.056		
14,200.0	7,277.9	14,047.0	7,120.2	203.5	203.2	-78.76	82.3	-7,468.4	808.7	410.1	398.60	2.029		
14,300.0	7,277.9	14,147.0	7,119.4	206.3	206.0	-78.70	82.3	-7,568.4	808.9	404.9	404.01	2.002		
14,400.0	7,278.0	14,247.0	7,118.5	209.0	208.8	-78.63	82.3	-7,668.4	809.1	399.7	409.41	1.976		
14,457.9	7,278.0	14,304.4	7,118.0	210.7	210.4	-78.60	82.3	-7,725.8	809.2	396.7	412.51	1.962 SF		

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Reference Site:	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-404	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 (8-07-14)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4778.0ft (Original Well Elev) Coordinates are relative to: Wiedeman 28E-404
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.46°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-404
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4778.0ft (Original Well Elev)
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