

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Wiedeman 28F-312**

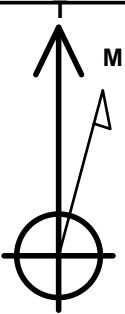
Surface Location: Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4762.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1348250.27	3198077.71	40.287170	-104.789970	
RKB - 15 WELL @ 4777.0ft (RKB - 15)						

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 978'FNL & 540'FWL, SEC.28	1.0	0.0	0.0	Point
BHL 735'FNL & 500'FEL, SEC.28	7117.0	259.0	4223.8	Point



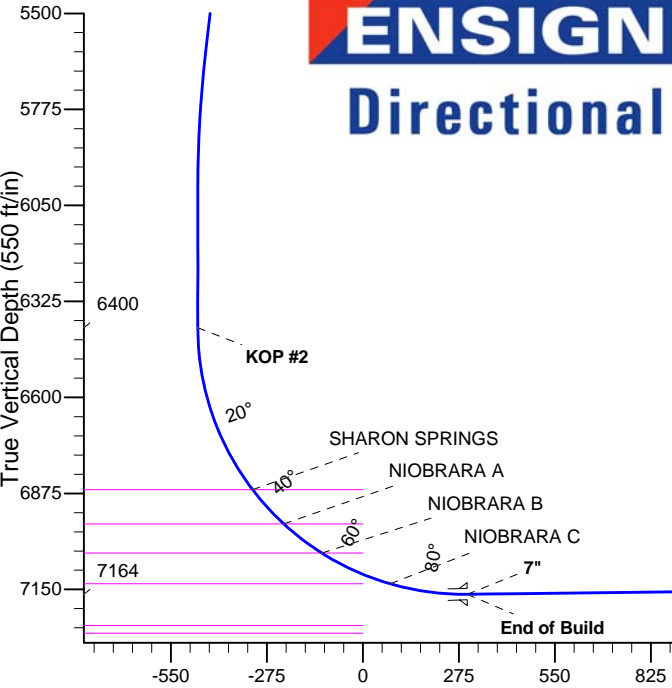
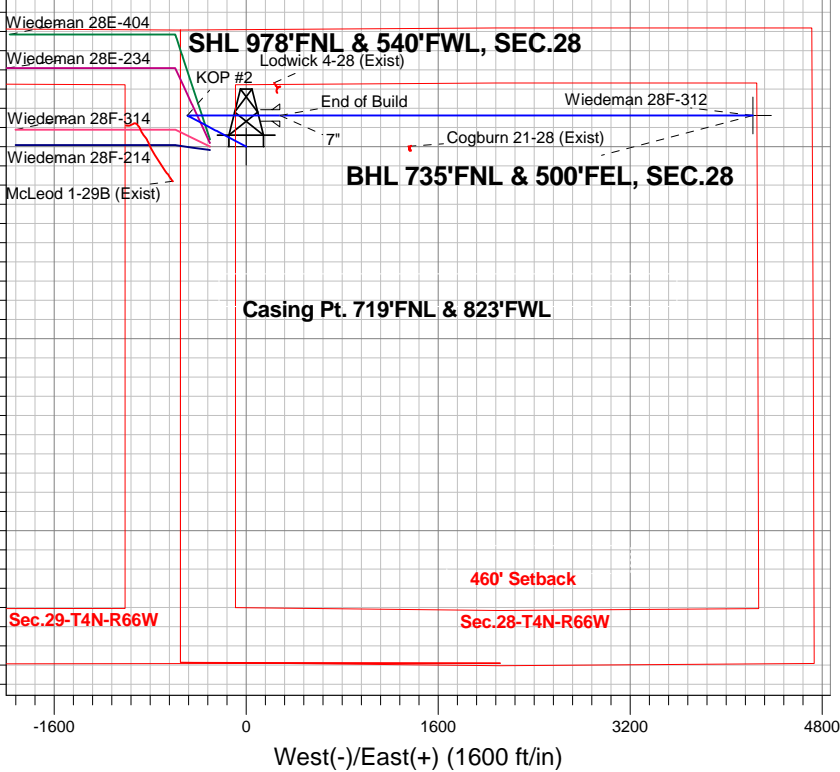
Azimuths to True North
 Magnetic North: 8.45°
 Magnetic Field
 Strength: 52742.5nT
 Dip Angle: 66.85°
 Date: 7/25/2014
 Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
1400.0	1400.0	KOP #1
6399.9	6435.0	KOP #2
7163.8	7644.1	End of Build

Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W
 Wiedeman 28F-312
 Plan #1 (7-25-14)

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



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	1400.0	0.00	0.00	1400.0	0.0	0.0	0.00	0.00	0.0	
3	1773.6	7.47	297.86	1772.5	11.4	-21.5	2.00	297.86	-20.8	
4	5661.5	7.47	297.86	5627.5	247.6	-468.5	0.00	0.00	-452.5	
5	6035.1	0.00	0.00	6000.0	259.0	-490.0	2.00	180.00	-473.2	
6	6435.0	0.00	0.00	6399.9	259.0	-490.0	0.00	0.00	-473.2	
7	7644.1	90.68	90.00	7163.8	259.0	283.0	7.50	90.00	298.3	
8	11585.2	90.68	90.00	7117.0	259.0	4223.8	0.00	0.00	4231.7	BHL 735'FNL & 500'FEL, SEC.28

BHL 735'FNL & 500'FEL, SEC.28

Vertical Section at 86.49° (550 ft/in)



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.28-T4N-R66W

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

Wiedeman 28F-312

Wellbore #1

Plan: Plan #1 (7-25-14)

Standard Planning Report

11 August, 2014

Database:	landmark	Local Co-ordinate Reference:	Well Wiedeman 28F-312
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Project:	SEC.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	North Reference:	True
Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (7-25-14)		

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 - East Pad Sec.28-T4N-R66W											
Site Position:						Northing:			1,348,308.56 ft			Latitude:			40.287330		
From:			Lat/Long			Easting:			3,198,077.24 ft			Longitude:			-104.789970		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.46 °		

Well	Wiedeman 28F-312					
Well Position	+N-S	-58.3 ft	Northing:	1,348,250.27 ft	Latitude:	40.287170
	+E-W	0.0 ft	Easting:	3,198,077.71 ft	Longitude:	-104.789970
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,762.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/25/2014	8.45	66.85	52,742

Design	Plan #1 (7-25-14)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	86.49

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,773.6	7.47	297.86	1,772.5	11.4	-21.5	2.00	2.00	0.00	297.86	
5,661.5	7.47	297.86	5,627.5	247.6	-468.5	0.00	0.00	0.00	0.00	
6,035.1	0.00	0.00	6,000.0	259.0	-490.0	2.00	-2.00	0.00	180.00	
6,435.0	0.00	0.00	6,399.9	259.0	-490.0	0.00	0.00	0.00	0.00	
7,644.1	90.68	90.00	7,163.8	259.0	283.0	7.50	7.50	0.00	90.00	
11,585.2	90.68	90.00	7,117.0	259.0	4,223.8	0.00	0.00	0.00	0.00	BHL 735'FNL & 50C

Database:	landmark	Local Co-ordinate Reference:	Well Wiedeman 28F-312
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Project:	SEC.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	North Reference:	True
Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (7-25-14)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
1,500.0	2.00	297.86	1,500.0	0.8	-1.5	-1.5	2.00	2.00	0.00
1,600.0	4.00	297.86	1,599.8	3.3	-6.2	-6.0	2.00	2.00	0.00
1,700.0	6.00	297.86	1,699.5	7.3	-13.9	-13.4	2.00	2.00	0.00
1,773.6	7.47	297.86	1,772.5	11.4	-21.5	-20.8	2.00	2.00	0.00
1,800.0	7.47	297.86	1,798.7	13.0	-24.5	-23.7	0.00	0.00	0.00
1,900.0	7.47	297.86	1,897.9	19.0	-36.0	-34.8	0.00	0.00	0.00
2,000.0	7.47	297.86	1,997.0	25.1	-47.5	-45.9	0.00	0.00	0.00
2,100.0	7.47	297.86	2,096.2	31.2	-59.0	-57.0	0.00	0.00	0.00
2,200.0	7.47	297.86	2,195.3	37.3	-70.5	-68.1	0.00	0.00	0.00
2,300.0	7.47	297.86	2,294.5	43.4	-82.0	-79.2	0.00	0.00	0.00
2,400.0	7.47	297.86	2,393.6	49.4	-93.5	-90.3	0.00	0.00	0.00
2,500.0	7.47	297.86	2,492.8	55.5	-105.0	-101.4	0.00	0.00	0.00
2,600.0	7.47	297.86	2,591.9	61.6	-116.5	-112.5	0.00	0.00	0.00
2,700.0	7.47	297.86	2,691.1	67.7	-128.0	-123.6	0.00	0.00	0.00
2,800.0	7.47	297.86	2,790.2	73.7	-139.5	-134.7	0.00	0.00	0.00
2,900.0	7.47	297.86	2,889.4	79.8	-151.0	-145.8	0.00	0.00	0.00
3,000.0	7.47	297.86	2,988.5	85.9	-162.5	-156.9	0.00	0.00	0.00
3,100.0	7.47	297.86	3,087.7	92.0	-174.0	-168.0	0.00	0.00	0.00
3,200.0	7.47	297.86	3,186.8	98.0	-185.5	-179.1	0.00	0.00	0.00
3,300.0	7.47	297.86	3,286.0	104.1	-197.0	-190.3	0.00	0.00	0.00
3,400.0	7.47	297.86	3,385.1	110.2	-208.5	-201.4	0.00	0.00	0.00
3,500.0	7.47	297.86	3,484.3	116.3	-220.0	-212.5	0.00	0.00	0.00
3,600.0	7.47	297.86	3,583.4	122.4	-231.5	-223.6	0.00	0.00	0.00
3,700.0	7.47	297.86	3,682.6	128.4	-243.0	-234.7	0.00	0.00	0.00
3,800.0	7.47	297.86	3,781.7	134.5	-254.5	-245.8	0.00	0.00	0.00
3,900.0	7.47	297.86	3,880.9	140.6	-266.0	-256.9	0.00	0.00	0.00
4,000.0	7.47	297.86	3,980.0	146.7	-277.5	-268.0	0.00	0.00	0.00
4,100.0	7.47	297.86	4,079.2	152.7	-289.0	-279.1	0.00	0.00	0.00
4,200.0	7.47	297.86	4,178.3	158.8	-300.5	-290.2	0.00	0.00	0.00
4,300.0	7.47	297.86	4,277.5	164.9	-312.0	-301.3	0.00	0.00	0.00
4,376.2	7.47	297.86	4,353.0	169.5	-320.7	-309.7	0.00	0.00	0.00
SUSSEX									
4,400.0	7.47	297.86	4,376.6	171.0	-323.5	-312.4	0.00	0.00	0.00
4,500.0	7.47	297.86	4,475.8	177.0	-335.0	-323.5	0.00	0.00	0.00
4,600.0	7.47	297.86	4,574.9	183.1	-346.5	-334.6	0.00	0.00	0.00
4,700.0	7.47	297.86	4,674.1	189.2	-357.9	-345.7	0.00	0.00	0.00

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Project:	SEC.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	North Reference:	True
Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (7-25-14)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,800.0	7.47	297.86	4,773.2	195.3	-369.4	-356.8	0.00	0.00	0.00
4,810.8	7.47	297.86	4,784.0	195.9	-370.7	-358.0	0.00	0.00	0.00
SHANNON									
4,900.0	7.47	297.86	4,872.4	201.4	-380.9	-367.9	0.00	0.00	0.00
5,000.0	7.47	297.86	4,971.5	207.4	-392.4	-379.0	0.00	0.00	0.00
5,100.0	7.47	297.86	5,070.7	213.5	-403.9	-390.1	0.00	0.00	0.00
5,200.0	7.47	297.86	5,169.8	219.6	-415.4	-401.2	0.00	0.00	0.00
5,300.0	7.47	297.86	5,269.0	225.7	-426.9	-412.3	0.00	0.00	0.00
5,400.0	7.47	297.86	5,368.1	231.7	-438.4	-423.4	0.00	0.00	0.00
5,500.0	7.47	297.86	5,467.3	237.8	-449.9	-434.5	0.00	0.00	0.00
5,600.0	7.47	297.86	5,566.5	243.9	-461.4	-445.6	0.00	0.00	0.00
5,661.5	7.47	297.86	5,627.5	247.6	-468.5	-452.5	0.00	0.00	0.00
5,700.0	6.70	297.86	5,665.6	249.9	-472.7	-456.5	2.00	-2.00	0.00
5,800.0	4.70	297.86	5,765.1	254.5	-481.5	-465.0	2.00	-2.00	0.00
5,900.0	2.70	297.86	5,864.9	257.5	-487.2	-470.5	2.00	-2.00	0.00
6,000.0	0.70	297.86	5,964.9	258.9	-489.8	-473.0	2.00	-2.00	0.00
6,035.1	0.00	0.00	6,000.0	259.0	-490.0	-473.2	2.00	-2.00	0.00
6,100.0	0.00	0.00	6,064.9	259.0	-490.0	-473.2	0.00	0.00	0.00
6,200.0	0.00	0.00	6,164.9	259.0	-490.0	-473.2	0.00	0.00	0.00
6,300.0	0.00	0.00	6,264.9	259.0	-490.0	-473.2	0.00	0.00	0.00
6,400.0	0.00	0.00	6,364.9	259.0	-490.0	-473.2	0.00	0.00	0.00
6,435.0	0.00	0.00	6,399.9	259.0	-490.0	-473.2	0.00	0.00	0.00
KOP #2									
6,500.0	4.87	90.00	6,464.8	259.0	-487.2	-470.5	7.50	7.50	0.00
6,600.0	12.37	90.00	6,563.6	259.0	-472.3	-455.5	7.50	7.50	0.00
6,700.0	19.87	90.00	6,659.6	259.0	-444.5	-427.8	7.50	7.50	0.00
6,800.0	27.37	90.00	6,751.1	259.0	-404.5	-387.8	7.50	7.50	0.00
6,900.0	34.87	90.00	6,836.7	259.0	-352.8	-336.3	7.50	7.50	0.00
6,933.8	37.41	90.00	6,864.0	259.0	-332.9	-316.4	7.50	7.50	0.00
SHARON SPRINGS									
7,000.0	42.37	90.00	6,914.8	259.0	-290.4	-274.0	7.50	7.50	0.00
7,066.7	47.38	90.00	6,962.0	259.0	-243.4	-227.1	7.50	7.50	0.00
NIOBRARA A									
7,100.0	49.87	90.00	6,984.0	259.0	-218.4	-202.1	7.50	7.50	0.00
7,200.0	57.37	90.00	7,043.3	259.0	-137.9	-121.8	7.50	7.50	0.00
7,205.1	57.75	90.00	7,046.0	259.0	-133.7	-117.6	7.50	7.50	0.00
NIOBRARA B									
7,300.0	64.87	90.00	7,091.5	259.0	-50.4	-34.5	7.50	7.50	0.00
7,400.0	72.37	90.00	7,128.0	259.0	42.6	58.4	7.50	7.50	0.00
7,420.8	73.94	90.00	7,134.0	259.0	62.6	78.3	7.50	7.50	0.00
NIOBRARA C									
7,500.0	79.87	90.00	7,151.9	259.0	139.6	155.2	7.50	7.50	0.00
7,600.0	87.37	90.00	7,163.0	259.0	238.9	254.4	7.50	7.50	0.00
7,644.1	90.68	90.00	7,163.8	259.0	283.0	298.4	7.50	7.50	0.00
End of Build - 7"									
7,700.0	90.68	90.00	7,163.1	259.0	338.9	354.1	0.00	0.00	0.00
7,800.0	90.68	90.00	7,161.9	259.0	438.9	454.0	0.00	0.00	0.00
7,900.0	90.68	90.00	7,160.7	259.0	538.9	553.8	0.00	0.00	0.00
8,000.0	90.68	90.00	7,159.5	259.0	638.9	653.6	0.00	0.00	0.00
8,100.0	90.68	90.00	7,158.4	259.0	738.9	753.4	0.00	0.00	0.00
8,200.0	90.68	90.00	7,157.2	259.0	838.9	853.2	0.00	0.00	0.00
8,300.0	90.68	90.00	7,156.0	259.0	938.9	953.0	0.00	0.00	0.00

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Site:	Wiedeman 4N66W28F - East Pad	North Reference:	True
	Sec.28-T4N-R66W		
Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (7-25-14)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,400.0	90.68	90.00	7,154.8	259.0	1,038.9	1,052.8	0.00	0.00	0.00
8,500.0	90.68	90.00	7,153.6	259.0	1,138.9	1,152.6	0.00	0.00	0.00
8,600.0	90.68	90.00	7,152.4	259.0	1,238.9	1,252.4	0.00	0.00	0.00
8,700.0	90.68	90.00	7,151.2	259.0	1,338.9	1,352.2	0.00	0.00	0.00
8,800.0	90.68	90.00	7,150.1	259.0	1,438.9	1,452.0	0.00	0.00	0.00
8,900.0	90.68	90.00	7,148.9	259.0	1,538.8	1,551.8	0.00	0.00	0.00
9,000.0	90.68	90.00	7,147.7	259.0	1,638.8	1,651.6	0.00	0.00	0.00
9,100.0	90.68	90.00	7,146.5	259.0	1,738.8	1,751.4	0.00	0.00	0.00
9,200.0	90.68	90.00	7,145.3	259.0	1,838.8	1,851.2	0.00	0.00	0.00
9,300.0	90.68	90.00	7,144.1	259.0	1,938.8	1,951.0	0.00	0.00	0.00
9,400.0	90.68	90.00	7,142.9	259.0	2,038.8	2,050.8	0.00	0.00	0.00
9,500.0	90.68	90.00	7,141.7	259.0	2,138.8	2,150.6	0.00	0.00	0.00
9,600.0	90.68	90.00	7,140.6	259.0	2,238.8	2,250.5	0.00	0.00	0.00
9,700.0	90.68	90.00	7,139.4	259.0	2,338.8	2,350.3	0.00	0.00	0.00
9,800.0	90.68	90.00	7,138.2	259.0	2,438.8	2,450.1	0.00	0.00	0.00
9,900.0	90.68	90.00	7,137.0	259.0	2,538.8	2,549.9	0.00	0.00	0.00
10,000.0	90.68	90.00	7,135.8	259.0	2,638.8	2,649.7	0.00	0.00	0.00
10,100.0	90.68	90.00	7,134.6	259.0	2,738.8	2,749.5	0.00	0.00	0.00
10,200.0	90.68	90.00	7,133.4	259.0	2,838.8	2,849.3	0.00	0.00	0.00
10,300.0	90.68	90.00	7,132.3	259.0	2,938.7	2,949.1	0.00	0.00	0.00
10,400.0	90.68	90.00	7,131.1	259.0	3,038.7	3,048.9	0.00	0.00	0.00
10,500.0	90.68	90.00	7,129.9	259.0	3,138.7	3,148.7	0.00	0.00	0.00
10,600.0	90.68	90.00	7,128.7	259.0	3,238.7	3,248.5	0.00	0.00	0.00
10,700.0	90.68	90.00	7,127.5	259.0	3,338.7	3,348.3	0.00	0.00	0.00
10,800.0	90.68	90.00	7,126.3	259.0	3,438.7	3,448.1	0.00	0.00	0.00
10,900.0	90.68	90.00	7,125.1	259.0	3,538.7	3,547.9	0.00	0.00	0.00
11,000.0	90.68	90.00	7,123.9	259.0	3,638.7	3,647.7	0.00	0.00	0.00
11,100.0	90.68	90.00	7,122.8	259.0	3,738.7	3,747.5	0.00	0.00	0.00
11,200.0	90.68	90.00	7,121.6	259.0	3,838.7	3,847.3	0.00	0.00	0.00
11,300.0	90.68	90.00	7,120.4	259.0	3,938.7	3,947.1	0.00	0.00	0.00
11,400.0	90.68	90.00	7,119.2	259.0	4,038.7	4,046.9	0.00	0.00	0.00
11,500.0	90.68	90.00	7,118.0	259.0	4,138.7	4,146.8	0.00	0.00	0.00
11,585.2	90.68	90.00	7,117.0	259.0	4,223.8	4,231.7	0.00	0.00	0.00

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,644.1	7,163.8	7"	7	7-1/2	

Database:	landmark	Local Co-ordinate Reference:	Well Wiedeman 28F-312
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Project:	SEC.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site:	Wiedeman 4N66W28F - East Pad	North Reference:	True
	Sec.28-T4N-R66W		
Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (7-25-14)		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,376.2	4,353.0	SUSSEX		0.00		
4,810.8	4,784.0	SHANNON		0.00		
6,933.8	6,864.0	SHARON SPRINGS		0.00		
7,066.7	6,962.0	NIOBRARA A		0.00		
7,205.1	7,046.0	NIOBRARA B		0.00		
7,420.8	7,134.0	NIOBRARA C		0.00		
	7,253.0	FT HAYS		0.00		
	7,275.0	CODELL		0.00		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,400.0	1,400.0	0.0	0.0	KOP #1
6,435.0	6,399.9	259.0	-490.0	KOP #2
7,644.1	7,163.8	259.0	283.0	End of Build



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.28-T4N-R66W

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

Wiedeman 28F-312

Wellbore #1

Plan #1 (7-25-14)

Anticollision Report

11 August, 2014



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (7-25-14)		
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 8/11/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,585.2	Plan #1 (7-25-14) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Existing Wells Sec.28-T4N-R66W						
Cogburn 21-28 (Exist) - Wellbore #1 - Wellbore #1	8,717.7	7,132.3	260.1	199.2	4.272	CC, ES, SF
Lodwick 4-28 (Exist) - Wellbore #1 - Wellbore #1	7,595.9	7,143.7	269.8	232.2	7.172	CC
Lodwick 4-28 (Exist) - Wellbore #1 - Wellbore #1	7,600.0	7,143.9	269.8	232.1	7.161	ES, SF
McLeod 1-29B (Exist) - Wellbore #1 - Wellbore #1	4,998.0	4,968.0	470.2	444.9	18.538	CC
McLeod 1-29B (Exist) - Wellbore #1 - Wellbore #1	5,000.0	4,969.9	470.2	444.8	18.528	ES
McLeod 1-29B (Exist) - Wellbore #1 - Wellbore #1	6,500.0	6,471.2	550.7	517.6	16.623	SF
Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W						
Wiedeman 28E-202 - Wellbore #1 - Plan #1 (8-07-14)	800.0	800.0	58.3	54.9	17.285	CC, ES
Wiedeman 28E-202 - Wellbore #1 - Plan #1 (8-07-14)	11,585.2	11,547.6	662.8	410.8	2.630	SF
Wiedeman 28E-432 - Wellbore #1 - Plan #1 (7-25-14)	1,200.0	1,200.0	29.1	24.0	5.638	CC, ES
Wiedeman 28E-432 - Wellbore #1 - Plan #1 (7-25-14)	11,585.2	11,704.8	383.0	147.9	1.629	SF
Wiedeman 28F-202 - Wellbore #1 - Plan #1 (8-07-14)	1,200.0	1,200.0	61.9	56.8	11.980	CC, ES
Wiedeman 28F-202 - Wellbore #1 - Plan #1 (8-07-14)	11,585.2	11,502.9	666.7	416.4	2.664	SF
Wiedeman 28F-412 - Wellbore #1 - Plan #1 (7-25-14)	1,400.0	1,400.0	29.1	23.1	4.802	CC, ES
Wiedeman 28F-412 - Wellbore #1 - Plan #1 (7-25-14)	11,585.2	11,680.0	386.9	150.8	1.639	SF
Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W						
Wiedeman 28E-234 - Wellbore #1 - Plan #1 (8-06-14)	366.3	367.3	302.7	301.3	212.541	CC
Wiedeman 28E-234 - Wellbore #1 - Plan #1 (8-06-14)	400.0	400.0	302.7	301.1	192.399	ES
Wiedeman 28E-234 - Wellbore #1 - Plan #1 (8-06-14)	6,400.0	6,403.4	407.3	372.9	11.857	SF
Wiedeman 28E-404 - Wellbore #1 - Plan #1 (8-07-14)	166.3	167.3	306.9	306.4	584.345	CC
Wiedeman 28E-404 - Wellbore #1 - Plan #1 (8-07-14)	200.0	200.0	306.9	306.2	455.129	ES
Wiedeman 28E-404 - Wellbore #1 - Plan #1 (8-07-14)	6,400.0	6,438.8	682.2	645.1	18.349	SF
Wiedeman 28F-214 - Wellbore #1 - Plan #1 (8-07-14)	2,131.2	2,102.8	262.8	253.5	28.519	CC
Wiedeman 28F-214 - Wellbore #1 - Plan #1 (8-07-14)	6,000.0	5,981.7	266.5	235.9	8.709	ES
Wiedeman 28F-214 - Wellbore #1 - Plan #1 (8-07-14)	6,500.0	6,462.7	272.7	240.3	8.405	SF
Wiedeman 28F-314 - Wellbore #1 - Plan #1 (8-07-14)	6,056.3	6,041.5	155.3	124.4	5.029	CC
Wiedeman 28F-314 - Wellbore #1 - Plan #1 (8-07-14)	6,412.0	6,397.2	155.4	123.2	4.824	ES, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.28-T4N-R66W - Cogburn 21-28 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													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	
7,800.0	7,161.9	7,162.6	7,161.5	26.0	12.8	97.33	-0.7	1,355.9	953.3	914.7	38.65	24.669		
7,900.0	7,160.7	7,159.3	7,158.1	28.1	12.8	96.61	-0.7	1,356.0	857.6	816.8	40.78	21.032		
8,000.0	7,159.5	7,155.9	7,154.8	30.3	12.8	95.88	-0.8	1,356.1	763.0	720.0	43.02	17.735		
8,100.0	7,158.4	7,152.6	7,151.5	32.7	12.8	95.15	-0.8	1,356.1	669.9	624.5	45.35	14.770		
8,200.0	7,157.2	7,149.2	7,148.1	35.0	12.8	94.42	-0.9	1,356.2	579.1	531.3	47.76	12.125		
8,300.0	7,156.0	7,145.8	7,144.7	37.5	12.8	93.67	-0.9	1,356.3	491.8	441.6	50.22	9.794		
8,400.0	7,154.8	7,142.5	7,141.4	40.0	12.8	92.94	-0.9	1,356.3	410.4	357.7	52.72	7.784		
8,500.0	7,153.6	7,139.2	7,138.1	42.5	12.8	92.22	-1.0	1,356.4	339.1	283.8	55.26	6.136		
8,600.0	7,152.4	7,136.0	7,134.9	45.1	12.8	91.51	-1.0	1,356.5	285.4	227.6	57.83	4.936		
8,700.0	7,151.2	7,132.9	7,131.7	47.7	12.8	90.81	-1.0	1,356.5	260.7	200.3	60.42	4.315		
8,717.7	7,151.0	7,132.3	7,131.2	48.1	12.8	90.69	-1.1	1,356.6	260.1	199.2	60.88	4.272 CC, ES, SF		
8,800.0	7,150.1	7,129.7	7,128.6	50.3	12.8	90.13	-1.1	1,356.6	272.8	209.8	63.02	4.328		
8,900.0	7,148.9	7,126.7	7,125.5	52.9	12.8	89.45	-1.1	1,356.7	317.6	251.9	65.64	4.838		
9,000.0	7,147.7	7,123.6	7,122.5	55.6	12.8	88.78	-1.2	1,356.7	383.8	315.5	68.26	5.622		
9,100.0	7,146.5	7,120.7	7,119.5	58.2	12.8	88.13	-1.2	1,356.8	462.3	391.4	70.90	6.520		
9,200.0	7,145.3	7,117.7	7,116.6	60.9	12.8	87.49	-1.2	1,356.8	547.8	474.3	73.53	7.450		
9,300.0	7,144.1	7,114.8	7,113.7	63.6	12.7	86.85	-1.3	1,356.9	637.5	561.4	76.16	8.370		
9,400.0	7,142.9	7,112.0	7,110.9	66.3	12.7	86.23	-1.3	1,356.9	729.9	651.1	78.80	9.263		
9,500.0	7,141.7	7,109.2	7,108.1	69.0	12.7	85.62	-1.3	1,357.0	824.1	742.7	81.43	10.120		
9,600.0	7,140.6	7,106.4	7,105.3	71.7	12.7	85.02	-1.4	1,357.0	919.5	835.4	84.06	10.938		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.28-T4N-R66W - Lodwick 4-28 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0ft
Reference	Offset	Semi Major Axis			Distance									Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+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	30.07	448.1	259.5	518.1					
100.0	100.0	83.2	83.2	0.1	0.1	30.08	448.0	259.5	517.7	517.5	0.22	2,322.620		
158.6	158.6	140.6	140.6	0.2	0.2	30.09	447.8	259.5	517.6	517.2	0.44	1,184.743		
200.0	200.0	180.5	180.5	0.3	0.3	30.09	447.9	259.5	517.6	517.1	0.59	878.542		
300.0	300.0	281.9	281.9	0.6	0.4	30.06	448.2	259.4	517.9	516.9	0.98	530.993		
400.0	400.0	382.4	382.4	0.8	0.6	30.03	448.3	259.2	517.8	516.4	1.42	365.545		
482.8	482.8	464.8	464.8	1.0	0.8	30.00	448.4	258.9	517.8	516.0	1.80	287.369		
500.0	500.0	481.9	481.9	1.0	0.9	29.99	448.5	258.8	517.8	515.9	1.88	275.061		
600.0	600.0	580.1	580.1	1.2	1.1	29.90	449.0	258.2	518.0	515.6	2.35	220.482		
700.0	700.0	682.2	682.2	1.5	1.4	29.79	449.7	257.5	518.2	515.4	2.83	183.102		
744.3	744.3	726.3	726.3	1.6	1.5	29.75	449.9	257.2	518.2	515.1	3.04	170.560		
800.0	800.0	780.4	780.4	1.7	1.6	29.72	450.1	256.9	518.3	515.0	3.29	157.301		
900.0	900.0	880.4	880.4	1.9	1.9	29.64	450.8	256.5	518.6	514.8	3.76	137.756		
1,000.0	1,000.0	979.7	979.7	2.1	2.1	29.49	451.7	255.5	519.0	514.7	4.24	122.265		
1,100.0	1,100.0	1,077.6	1,077.6	2.4	2.4	29.36	452.8	254.7	519.6	514.9	4.72	110.140		
1,200.0	1,200.0	1,177.7	1,177.7	2.6	2.6	29.26	454.1	254.4	520.5	515.3	5.18	100.566		
1,300.0	1,300.0	1,278.7	1,278.7	2.8	2.8	29.20	455.0	254.3	521.2	515.6	5.64	92.461		
1,400.0	1,400.0	1,378.3	1,378.3	3.0	3.1	29.11	455.9	253.9	521.9	515.8	6.10	85.509		
1,500.0	1,500.0	1,475.9	1,475.9	3.3	3.3	91.36	457.0	253.9	522.8	516.3	6.55	79.795		
1,600.0	1,599.8	1,578.1	1,578.0	3.5	3.6	91.83	458.4	253.6	524.0	517.0	7.02	74.648		
1,700.0	1,699.5	1,677.7	1,677.6	3.7	3.8	92.65	459.4	253.1	525.0	517.5	7.50	70.033		
1,800.0	1,798.7	1,775.3	1,775.3	3.9	4.1	93.83	460.5	252.9	526.6	518.6	7.98	65.968		
1,900.0	1,897.9	1,873.2	1,873.1	4.2	4.3	95.08	462.1	252.6	528.8	520.3	8.48	62.343		
2,000.0	1,997.0	1,971.4	1,971.3	4.5	4.5	96.35	463.8	252.5	531.5	522.5	8.99	59.125		
2,100.0	2,096.2	2,069.7	2,069.5	4.7	4.8	97.61	465.6	252.5	534.6	525.1	9.49	56.308		
2,200.0	2,195.3	2,169.8	2,169.6	5.0	5.0	98.91	467.3	252.9	538.1	528.1	10.01	53.759		
2,300.0	2,294.5	2,266.5	2,266.3	5.3	5.3	100.11	469.1	252.9	541.8	531.3	10.52	51.488		
2,400.0	2,393.6	2,365.3	2,365.1	5.6	5.5	101.37	471.1	253.6	546.3	535.3	11.03	49.513		
2,500.0	2,492.8	2,462.5	2,462.3	5.9	5.7	102.61	472.9	254.5	551.0	539.5	11.53	47.770		
2,600.0	2,591.9	2,560.8	2,560.6	6.2	5.9	103.83	475.1	255.6	556.5	544.4	12.05	46.194		
2,700.0	2,691.1	2,661.3	2,661.0	6.5	6.2	105.03	477.5	256.4	562.0	549.5	12.57	44.722		
2,800.0	2,790.2	2,761.5	2,761.3	6.8	6.4	106.25	479.3	257.4	567.6	554.5	13.09	43.365		
2,900.0	2,889.4	2,858.9	2,858.6	7.1	6.6	107.37	481.4	258.1	573.4	559.8	13.61	42.119		
3,000.0	2,988.5	2,958.2	2,957.8	7.4	6.9	108.48	483.9	259.0	579.8	565.7	14.15	40.989		
3,100.0	3,087.7	3,057.2	3,056.9	7.7	7.1	109.59	485.9	259.9	586.2	571.5	14.67	39.950		
3,200.0	3,186.8	3,153.2	3,152.8	8.0	7.3	110.65	488.1	261.0	593.1	577.9	15.19	39.053		
3,300.0	3,286.0	3,250.3	3,249.8	8.3	7.5	111.72	490.4	262.8	600.8	585.1	15.70	38.278		
3,400.0	3,385.1	3,350.9	3,350.4	8.7	7.8	112.81	492.8	264.7	608.7	592.5	16.20	37.571		
3,500.0	3,484.3	3,448.4	3,447.9	9.0	8.0	113.91	494.4	266.8	616.6	600.0	16.68	36.960		
3,600.0	3,583.4	3,544.2	3,543.6	9.3	8.1	115.03	495.8	269.7	625.4	608.3	17.14	36.489		
3,700.0	3,682.6	3,644.1	3,643.5	9.6	8.3	116.21	496.8	273.3	634.6	617.0	17.59	36.084		
3,800.0	3,781.7	3,745.2	3,744.4	9.9	8.5	117.39	497.5	276.7	643.6	625.6	18.03	35.708		
3,900.0	3,880.9	3,844.5	3,843.7	10.3	8.6	118.50	498.2	279.7	652.7	634.2	18.47	35.338		
4,000.0	3,980.0	3,945.7	3,944.9	10.6	8.8	119.56	499.3	282.5	662.0	643.0	18.93	34.963		
4,100.0	4,079.2	4,059.7	4,058.9	10.9	9.0	120.70	500.0	284.4	670.3	650.9	19.37	34.597		
4,200.0	4,178.3	4,176.9	4,176.1	11.2	9.1	121.86	498.9	283.5	676.0	656.3	19.72	34.285		
4,300.0	4,277.5	4,285.1	4,284.2	11.5	9.1	122.87	497.2	280.7	679.9	659.8	20.05	33.905		
4,400.0	4,376.6	4,388.8	4,387.9	11.9	9.2	123.82	495.2	277.1	683.1	662.7	20.40	33.481		
4,500.0	4,475.8	4,488.3	4,487.2	12.2	9.3	124.68	493.5	273.1	686.1	665.3	20.76	33.042		
4,600.0	4,574.9	4,579.3	4,578.2	12.5	9.4	125.45	492.4	269.8	689.9	668.7	21.14	32.637		
4,700.0	4,674.1	4,672.7	4,671.5	12.8	9.6	126.20	492.0	267.3	694.9	673.4	21.53	32.277		

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 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.28-T4N-R66W - Lodwick 4-28 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error: 0.0ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error: 0.0ft
Reference	Offset	Semi Major Axis		Distance		Warning							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
4,800.0	4,773.2	4,766.4	4,765.2	13.2	9.7	126.94	492.0	265.4	700.9	678.9	21.95	31.929	
4,900.0	4,872.4	4,861.1	4,859.9	13.5	9.9	127.61	493.1	263.8	707.7	685.3	22.41	31.574	
5,000.0	4,971.5	4,960.4	4,959.2	13.8	10.1	128.29	494.4	262.5	715.1	692.2	22.90	31.222	
5,100.0	5,070.7	5,058.5	5,057.2	14.1	10.4	128.97	495.4	261.2	722.4	699.0	23.39	30.886	
5,200.0	5,169.8	5,155.4	5,154.1	14.5	10.6	129.63	496.6	260.3	730.3	706.4	23.88	30.578	
5,300.0	5,269.0	5,253.3	5,252.0	14.8	10.8	130.29	497.7	259.6	738.4	714.0	24.38	30.285	
5,400.0	5,368.1	5,356.1	5,354.8	15.1	11.1	130.99	498.7	258.9	746.7	721.8	24.88	30.010	
5,500.0	5,467.3	5,455.3	5,454.1	15.5	11.3	131.66	499.2	257.8	754.5	729.1	25.36	29.753	
5,600.0	5,566.5	5,558.2	5,556.9	15.8	11.5	132.33	500.0	256.9	762.7	736.8	25.85	29.507	
5,700.0	5,665.6	5,664.0	5,662.7	16.1	11.8	132.98	501.2	254.6	769.7	743.3	26.33	29.226	
5,800.0	5,765.1	5,764.8	5,763.5	16.3	12.0	133.45	502.3	252.0	774.4	747.6	26.76	28.940	
5,900.0	5,864.9	5,859.5	5,858.1	16.5	12.2	133.70	503.2	249.8	777.0	749.8	27.16	28.611	
6,000.0	5,964.9	5,954.6	5,953.2	16.7	12.4	133.71	504.8	248.3	778.0	750.4	27.55	28.237	
6,100.0	6,064.9	6,053.6	6,052.1	16.8	12.7	71.40	506.9	246.8	777.4	749.4	28.06	27.707	
6,200.0	6,164.9	6,152.1	6,150.6	17.0	12.9	71.23	509.0	245.5	776.8	748.3	28.49	27.267	
6,300.0	6,264.9	6,249.5	6,248.0	17.2	13.2	71.03	511.4	244.3	776.5	747.6	28.92	26.852	
6,400.0	6,364.9	6,349.4	6,347.8	17.4	13.4	70.82	514.1	243.3	776.4	747.1	29.35	26.451	
6,500.0	6,464.8	6,450.2	6,448.6	17.5	13.7	-19.52	516.7	242.2	773.6	744.0	29.64	26.101	
6,600.0	6,563.6	6,550.4	6,548.8	17.5	13.9	-20.45	518.7	241.2	759.2	729.7	29.56	25.689	
6,700.0	6,659.6	6,646.0	6,644.4	17.5	14.2	-22.16	520.7	239.9	732.7	703.6	29.12	25.163	
6,800.0	6,751.1	6,736.5	6,734.9	17.4	14.4	-24.79	522.5	239.0	695.3	666.9	28.43	24.456	
6,900.0	6,836.7	6,822.9	6,821.2	17.4	14.6	-28.77	524.3	237.9	647.5	619.8	27.70	23.376	
7,000.0	6,914.8	6,898.9	6,897.1	17.3	14.8	-34.40	525.7	237.0	591.0	563.8	27.25	21.690	
7,100.0	6,984.0	6,969.1	6,967.4	17.4	15.0	-42.52	526.7	236.3	527.7	500.0	27.65	19.087	
7,200.0	7,043.3	7,027.4	7,025.7	17.7	15.2	-53.16	527.4	235.7	460.1	430.8	29.26	15.723	
7,300.0	7,091.5	7,073.7	7,072.0	18.3	15.3	-65.47	528.0	235.3	392.4	360.7	31.77	12.353	
7,400.0	7,128.0	7,109.3	7,107.5	19.3	15.4	-77.32	528.4	235.2	331.2	296.9	34.20	9.682	
7,500.0	7,151.9	7,133.2	7,131.4	20.6	15.4	-85.92	528.7	235.1	286.1	250.0	36.05	7.936	
7,595.9	7,162.8	7,143.7	7,142.0	22.2	15.5	-89.39	528.8	235.0	269.8	232.2	37.62	7.172 CC	
7,600.0	7,163.0	7,143.9	7,142.2	22.2	15.5	-89.43	528.8	235.0	269.8	232.1	37.68	7.161 ES, SF	
7,700.0	7,163.1	7,143.5	7,141.7	24.0	15.5	-89.02	528.8	235.0	289.1	249.6	39.48	7.324	
7,800.0	7,161.9	7,141.8	7,140.0	26.0	15.5	-88.66	528.8	235.0	338.2	296.7	41.44	8.160	
7,900.0	7,160.7	7,140.1	7,138.4	28.1	15.5	-88.30	528.8	235.0	406.3	362.8	43.55	9.331	
8,000.0	7,159.5	7,138.4	7,136.7	30.3	15.4	-87.95	528.7	235.1	485.7	439.9	45.76	10.613	
8,100.0	7,158.4	7,136.8	7,135.0	32.7	15.4	-87.59	528.7	235.1	571.5	523.4	48.07	11.890	
8,200.0	7,157.2	7,135.1	7,133.4	35.0	15.4	-87.24	528.7	235.1	661.3	610.9	50.44	13.112	
8,300.0	7,156.0	7,133.4	7,131.7	37.5	15.4	-86.89	528.7	235.1	753.7	700.9	52.87	14.257	
8,400.0	7,154.8	7,131.8	7,130.1	40.0	15.4	-86.54	528.7	235.1	847.8	792.5	55.34	15.321	
8,500.0	7,153.6	7,130.2	7,128.4	42.5	15.4	-86.20	528.6	235.1	943.2	885.3	57.85	16.304	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	Offset TVD Reference:	Offset Datum

Offset Design		Existing Wells Sec.28-T4N-R66W - McLeod 1-29B (Exist) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft	
Survey Program: 576-NS-GYRO-MS														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				
600.0	600.0	636.8	636.5	1.2	0.9	-79.96	174.0	-982.9	999.3	997.1	2.17	460.376				
700.0	700.0	740.1	739.7	1.5	1.2	-79.91	173.9	-977.7	994.3	991.7	2.67	372.111				
800.0	800.0	833.7	833.2	1.7	1.5	-79.83	174.6	-973.0	989.6	986.4	3.14	314.937				
900.0	900.0	932.8	932.1	1.9	1.7	-79.68	176.3	-968.4	985.3	981.7	3.63	271.759				
1,000.0	1,000.0	1,040.5	1,039.7	2.1	2.0	-79.48	178.8	-962.8	980.5	976.4	4.13	237.345				
1,100.0	1,100.0	1,144.2	1,143.1	2.4	2.3	-79.27	181.4	-956.6	975.2	970.5	4.63	210.579				
1,200.0	1,200.0	1,247.1	1,245.8	2.6	2.5	-79.04	184.0	-950.1	969.4	964.3	5.13	189.017				
1,300.0	1,300.0	1,348.8	1,347.2	2.8	2.8	-78.74	187.8	-943.2	963.5	957.8	5.62	171.346				
1,400.0	1,400.0	1,447.8	1,446.0	3.0	3.1	-78.43	191.7	-936.3	957.4	951.3	6.11	156.667				
1,500.0	1,500.0	1,543.3	1,541.2	3.3	3.3	-16.20	193.1	-930.4	950.0	943.5	6.54	145.288				
1,600.0	1,599.8	1,634.8	1,632.6	3.5	3.6	-16.27	193.3	-925.6	939.8	932.9	6.97	134.778				
1,700.0	1,699.5	1,729.4	1,727.1	3.7	3.8	-16.48	192.7	-921.6	927.2	919.8	7.40	125.254				
1,800.0	1,798.7	1,832.6	1,830.2	3.9	4.1	-16.81	191.1	-917.3	911.4	903.5	7.85	116.171				
1,900.0	1,897.9	1,934.6	1,932.0	4.2	4.3	-17.18	188.3	-912.8	894.1	885.8	8.30	107.727				
2,000.0	1,997.0	2,029.5	2,026.8	4.5	4.5	-17.58	185.1	-908.6	876.8	868.0	8.73	100.425				
2,100.0	2,096.2	2,122.3	2,119.5	4.7	4.7	-18.05	181.2	-905.2	860.1	850.9	9.15	94.045				
2,200.0	2,195.3	2,213.9	2,211.0	5.0	4.9	-18.56	176.9	-902.6	844.2	834.6	9.55	88.385				
2,300.0	2,294.5	2,311.2	2,308.2	5.3	5.1	-19.08	173.0	-900.4	828.9	818.9	9.98	83.063				
2,400.0	2,393.6	2,408.3	2,405.2	5.6	5.3	-19.54	170.2	-897.9	813.7	803.3	10.43	78.030				
2,500.0	2,492.8	2,512.5	2,509.3	5.9	5.6	-20.01	167.8	-895.1	798.5	787.6	10.91	73.181				
2,600.0	2,591.9	2,616.1	2,612.7	6.2	5.8	-20.62	163.8	-891.7	782.5	771.2	11.39	68.719				
2,700.0	2,691.1	2,715.9	2,712.4	6.5	6.0	-21.35	158.2	-888.2	766.3	754.4	11.85	64.679				
2,800.0	2,790.2	2,815.7	2,811.8	6.8	6.3	-22.22	151.2	-884.7	749.9	737.6	12.30	60.944				
2,900.0	2,889.4	2,915.0	2,910.7	7.1	6.5	-23.19	143.4	-881.2	733.7	721.0	12.77	57.475				
3,000.0	2,988.5	3,021.3	3,016.5	7.4	6.7	-24.36	134.0	-876.5	716.7	703.5	13.25	54.073				
3,100.0	3,087.7	3,120.0	3,114.6	7.7	6.9	-25.58	124.2	-871.8	699.6	685.8	13.74	50.925				
3,200.0	3,186.8	3,220.3	3,214.3	8.0	7.2	-26.89	114.2	-866.6	682.4	668.2	14.23	47.941				
3,300.0	3,286.0	3,323.3	3,316.7	8.3	7.4	-28.27	104.3	-860.7	665.0	650.3	14.75	45.080				
3,400.0	3,385.1	3,433.5	3,426.0	8.7	7.7	-29.89	93.1	-852.9	646.7	631.4	15.31	42.249				
3,500.0	3,484.3	3,536.3	3,527.8	9.0	8.0	-31.59	81.8	-843.7	627.1	611.2	15.86	39.539				
3,600.0	3,583.4	3,630.7	3,621.2	9.3	8.2	-33.27	71.0	-835.1	607.7	591.3	16.40	37.057				
3,700.0	3,682.6	3,715.4	3,705.0	9.6	8.5	-34.94	60.7	-828.1	590.0	573.1	16.92	34.876				
3,800.0	3,781.7	3,810.6	3,798.8	9.9	8.7	-37.12	46.7	-821.5	574.5	557.0	17.48	32.865				
3,900.0	3,880.9	3,907.9	3,894.4	10.3	8.9	-39.72	30.0	-814.0	559.6	541.5	18.07	30.961				
4,000.0	3,980.0	4,001.7	3,986.6	10.6	9.2	-42.28	14.5	-806.9	545.9	527.2	18.67	29.235				
4,100.0	4,079.2	4,098.4	4,082.1	10.9	9.4	-44.84	0.4	-800.2	533.7	514.4	19.29	27.665				
4,200.0	4,178.3	4,198.0	4,180.4	11.2	9.7	-47.57	-13.9	-793.0	522.1	502.1	19.94	26.188				
4,300.0	4,277.5	4,295.5	4,276.5	11.5	10.0	-50.44	-28.4	-785.1	511.2	490.6	20.59	24.826				
4,400.0	4,376.6	4,394.6	4,374.4	11.9	10.2	-53.25	-41.3	-777.6	501.4	480.1	21.26	23.582				
4,500.0	4,475.8	4,490.7	4,469.4	12.2	10.5	-56.06	-53.4	-770.0	492.3	470.4	21.93	22.452				
4,600.0	4,574.9	4,584.7	4,562.3	12.5	10.8	-58.97	-66.1	-762.5	485.0	462.4	22.60	21.461				
4,700.0	4,674.1	4,680.3	4,656.7	12.8	11.0	-62.05	-79.4	-755.0	479.4	456.1	23.28	20.592				
4,800.0	4,773.2	4,781.7	4,756.7	13.2	11.3	-65.48	-94.0	-746.2	475.1	451.1	24.00	19.796				
4,900.0	4,872.4	4,877.8	4,851.2	13.5	11.6	-68.90	-108.1	-736.6	471.5	446.8	24.70	19.091				
4,998.0	4,969.5	4,968.0	4,939.9	13.8	11.8	-72.23	-122.1	-727.3	470.2	444.9	25.36	18.538 CC				
5,000.0	4,971.5	4,969.9	4,941.7	13.8	11.9	-72.30	-122.4	-727.1	470.2	444.8	25.38	18.528 ES				
5,100.0	5,070.7	5,067.3	5,037.5	14.1	12.1	-75.83	-137.3	-717.6	471.2	445.1	26.06	18.077				
5,200.0	5,169.8	5,164.4	5,133.2	14.5	12.4	-79.20	-151.1	-708.7	473.4	446.7	26.73	17.710				
5,300.0	5,269.0	5,258.0	5,225.4	14.8	12.7	-82.47	-164.8	-699.7	477.5	450.1	27.37	17.445				
5,400.0	5,368.1	5,356.0	5,321.8	15.1	13.0	-85.85	-179.3	-690.3	483.3	455.3	28.00	17.261				
5,500.0	5,467.3	5,451.1	5,415.5	15.5	13.2	-88.98	-192.8	-681.4	490.6	462.0	28.61	17.150				

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 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.28-T4N-R66W - McLeod 1-29B (Exist) - Wellbore #1 - Wellbore #1														Offset Site Error:	0.0 ft
Survey Program: 576-NS-GYRO-MS														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			
5,600.0	5,566.5	5,550.9	5,514.0	15.8	13.5	-92.10	-206.5	-672.6	499.2	470.0	29.20	17.095			
5,700.0	5,665.6	5,665.6	5,627.6	16.1	13.8	-95.32	-218.9	-663.5	506.8	477.1	29.79	17.013			
5,800.0	5,765.1	5,770.7	5,732.1	16.3	14.1	-97.75	-227.0	-655.6	512.5	482.2	30.26	16.934			
5,900.0	5,864.9	5,868.2	5,829.2	16.5	14.4	-99.37	-233.7	-650.1	518.2	487.5	30.69	16.885			
6,000.0	5,964.9	5,968.5	5,929.3	16.7	14.7	-100.49	-240.0	-645.6	523.2	492.1	31.09	16.828			
6,100.0	6,064.9	6,064.3	6,024.7	16.8	14.9	-163.29	-246.3	-641.7	528.4	500.1	28.25	18.705			
6,200.0	6,164.9	6,162.5	6,122.6	17.0	15.2	-163.93	-253.4	-637.6	534.2	505.5	28.73	18.594			
6,300.0	6,264.9	6,265.4	6,225.1	17.2	15.5	-164.66	-260.9	-632.6	539.9	510.6	29.23	18.470			
6,400.0	6,364.9	6,365.6	6,324.9	17.4	15.7	-165.34	-267.5	-627.8	545.0	515.3	29.72	18.338			
6,500.0	6,464.8	6,471.2	6,430.2	17.5	16.0	104.09	-274.1	-623.6	550.7	517.6	33.13	16.623 SF			
6,600.0	6,563.6	6,581.3	6,540.2	17.5	16.3	104.84	-278.5	-620.7	557.8	524.4	33.42	16.693			
6,700.0	6,659.6	6,678.7	6,637.6	17.5	16.5	106.51	-281.2	-618.8	567.7	534.2	33.55	16.922			
6,800.0	6,751.1	6,773.8	6,732.6	17.4	16.8	108.90	-283.3	-617.5	582.7	549.2	33.53	17.376			
6,900.0	6,836.7	6,861.7	6,820.6	17.4	17.0	111.43	-284.7	-616.5	604.3	570.9	33.35	18.119			
7,000.0	6,914.8	6,940.6	6,899.4	17.3	17.2	113.54	-285.9	-615.6	634.5	601.5	33.07	19.189			
7,100.0	6,984.0	7,012.0	6,970.8	17.4	17.4	114.92	-287.0	-614.7	674.6	641.8	32.83	20.551			
7,200.0	7,043.3	7,074.7	7,033.5	17.7	17.6	115.23	-287.7	-613.9	724.8	692.0	32.85	22.067			
7,300.0	7,091.5	7,125.9	7,084.6	18.3	17.7	113.93	-287.9	-613.3	784.8	751.4	33.42	23.484			
7,400.0	7,128.0	7,163.6	7,122.4	19.3	17.8	110.42	-288.0	-612.9	853.8	819.0	34.81	24.527			
7,500.0	7,151.9	7,188.1	7,146.8	20.6	17.8	104.17	-288.1	-612.7	930.2	893.2	37.02	25.127			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (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	0.00	58.3	0.0	58.3					
100.0	100.0	100.0	100.0	0.1	0.1	0.00	58.3	0.0	58.3	58.1	0.22	259.276		
200.0	200.0	200.0	200.0	0.3	0.3	0.00	58.3	0.0	58.3	57.6	0.67	86.425		
300.0	300.0	300.0	300.0	0.6	0.6	0.00	58.3	0.0	58.3	57.2	1.12	51.855		
400.0	400.0	400.0	400.0	0.8	0.8	0.00	58.3	0.0	58.3	56.7	1.57	37.039		
500.0	500.0	500.0	500.0	1.0	1.0	0.00	58.3	0.0	58.3	56.3	2.02	28.808		
600.0	600.0	600.0	600.0	1.2	1.2	0.00	58.3	0.0	58.3	55.8	2.47	23.571		
700.0	700.0	700.0	700.0	1.5	1.5	0.00	58.3	0.0	58.3	55.4	2.92	19.944		
800.0	800.0	800.0	800.0	1.7	1.7	0.00	58.3	0.0	58.3	54.9	3.37	17.285 CC, ES		
900.0	900.0	898.2	898.2	1.9	1.9	-0.80	59.7	-0.8	59.8	56.0	3.81	15.668		
1,000.0	1,000.0	996.2	996.1	2.1	2.1	-2.97	64.1	-3.3	64.3	60.1	4.26	15.102		
1,100.0	1,100.0	1,093.8	1,093.2	2.4	2.4	-5.96	71.4	-7.4	72.1	67.3	4.71	15.295		
1,200.0	1,200.0	1,190.6	1,189.4	2.6	2.6	-9.19	81.4	-13.2	83.1	77.9	5.18	16.046		
1,300.0	1,300.0	1,286.6	1,284.2	2.8	2.9	-12.24	94.1	-20.4	97.6	91.9	5.67	17.201		
1,400.0	1,400.0	1,381.5	1,377.5	3.0	3.2	-14.90	109.4	-29.1	115.4	109.2	6.19	18.640		
1,500.0	1,500.0	1,479.7	1,473.7	3.3	3.5	45.33	126.6	-38.9	133.8	127.2	6.53	20.475		
1,600.0	1,599.8	1,578.4	1,570.4	3.5	3.9	44.80	143.8	-48.7	149.8	142.8	6.98	21.445		
1,700.0	1,699.5	1,677.5	1,667.4	3.7	4.2	45.23	161.1	-58.6	163.3	155.9	7.45	21.926		
1,800.0	1,798.7	1,776.8	1,764.7	3.9	4.6	46.44	178.5	-68.5	174.6	166.7	7.94	21.997		
1,900.0	1,897.9	1,876.1	1,862.0	4.2	5.0	47.82	195.9	-78.4	185.3	176.9	8.45	21.923		
2,000.0	1,997.0	1,975.4	1,959.3	4.5	5.4	49.05	213.2	-88.3	196.1	187.2	8.98	21.835		
2,100.0	2,096.2	2,074.8	2,056.6	4.7	5.8	50.15	230.6	-98.2	207.0	197.5	9.53	21.736		
2,200.0	2,195.3	2,174.1	2,153.9	5.0	6.2	51.15	248.0	-108.1	218.0	207.9	10.08	21.630		
2,300.0	2,294.5	2,273.4	2,251.2	5.3	6.6	52.04	265.4	-118.0	229.0	218.4	10.64	21.520		
2,400.0	2,393.6	2,372.7	2,348.5	5.6	7.1	52.86	282.7	-127.9	240.1	228.9	11.21	21.409		
2,500.0	2,492.8	2,472.1	2,445.8	5.9	7.5	53.60	300.1	-137.8	251.2	239.4	11.80	21.298		
2,600.0	2,591.9	2,571.4	2,543.1	6.2	7.9	54.28	317.5	-147.7	262.4	250.0	12.38	21.189		
2,700.0	2,691.1	2,670.7	2,640.4	6.5	8.3	54.90	334.8	-157.6	273.6	260.6	12.98	21.082		
2,800.0	2,790.2	2,770.1	2,737.7	6.8	8.7	55.48	352.2	-167.5	284.8	271.2	13.58	20.978		
2,900.0	2,889.4	2,869.4	2,835.0	7.1	9.2	56.01	369.6	-177.4	296.0	281.8	14.18	20.877		
3,000.0	2,988.5	2,968.7	2,932.3	7.4	9.6	56.50	387.0	-187.3	307.3	292.5	14.79	20.779		
3,100.0	3,087.7	3,068.1	3,029.6	7.7	10.0	56.96	404.3	-197.1	318.6	303.2	15.40	20.686		
3,200.0	3,186.8	3,167.4	3,126.9	8.0	10.5	57.39	421.7	-207.0	329.9	313.9	16.02	20.596		
3,300.0	3,286.0	3,266.7	3,224.1	8.3	10.9	57.78	439.1	-216.9	341.2	324.6	16.64	20.510		
3,400.0	3,385.1	3,366.0	3,321.4	8.7	11.3	58.16	456.4	-226.8	352.5	335.3	17.26	20.427		
3,500.0	3,484.3	3,465.4	3,418.7	9.0	11.7	58.51	473.8	-236.7	363.9	346.0	17.88	20.348		
3,600.0	3,583.4	3,564.7	3,516.0	9.3	12.2	58.83	491.2	-246.6	375.2	356.7	18.51	20.272		
3,700.0	3,682.6	3,664.0	3,613.3	9.6	12.6	59.14	508.6	-256.5	386.6	367.5	19.14	20.199		
3,800.0	3,781.7	3,763.4	3,710.6	9.9	13.0	59.43	525.9	-266.4	398.0	378.2	19.77	20.130		
3,900.0	3,880.9	3,862.7	3,807.9	10.3	13.5	59.71	543.3	-276.3	409.4	389.0	20.41	20.063		
4,000.0	3,980.0	3,962.0	3,905.2	10.6	13.9	59.97	560.7	-286.2	420.8	399.8	21.04	20.000		
4,100.0	4,079.2	4,061.4	4,002.5	10.9	14.3	60.22	578.0	-296.1	432.2	410.5	21.68	19.939		
4,200.0	4,178.3	4,160.7	4,099.8	11.2	14.8	60.45	595.4	-306.0	443.6	421.3	22.32	19.880		
4,300.0	4,277.5	4,260.0	4,197.1	11.5	15.2	60.67	612.8	-315.9	455.1	432.1	22.96	19.824		
4,400.0	4,376.6	4,359.3	4,294.4	11.9	15.6	60.88	630.2	-325.8	466.5	442.9	23.60	19.770		
4,500.0	4,475.8	4,458.7	4,391.7	12.2	16.1	61.08	647.5	-335.7	477.9	453.7	24.24	19.718		
4,600.0	4,574.9	4,558.0	4,489.0	12.5	16.5	61.28	664.9	-345.6	489.4	464.5	24.88	19.669		
4,700.0	4,674.1	4,657.3	4,586.3	12.8	16.9	61.46	682.3	-355.5	500.8	475.3	25.53	19.621		
4,800.0	4,773.2	4,756.7	4,683.6	13.2	17.4	61.63	699.6	-365.4	512.3	486.1	26.17	19.575		
4,900.0	4,872.4	4,856.0	4,780.9	13.5	17.8	61.80	717.0	-375.3	523.7	496.9	26.82	19.531		
5,000.0	4,971.5	4,955.3	4,878.2	13.8	18.2	61.96	734.4	-385.2	535.2	507.7	27.46	19.489		

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 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	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				
5,100.0	5,070.7	5,054.7	4,975.5	14.1	18.7	62.11	751.8	-395.1	546.7	518.6	28.11	19.448				
5,200.0	5,169.8	5,154.0	5,072.8	14.5	19.1	62.26	769.1	-405.0	558.1	529.4	28.76	19.408				
5,300.0	5,269.0	5,253.3	5,170.1	14.8	19.5	62.40	786.5	-414.9	569.6	540.2	29.41	19.370				
5,400.0	5,368.1	5,352.6	5,267.4	15.1	20.0	62.54	803.9	-424.8	581.1	551.0	30.06	19.334				
5,500.0	5,467.3	5,452.0	5,364.7	15.5	20.4	62.67	821.2	-434.7	592.6	561.9	30.71	19.299				
5,600.0	5,566.5	5,551.3	5,462.0	15.8	20.8	62.79	838.6	-444.6	604.1	572.7	31.36	19.264				
5,700.0	5,665.6	5,650.6	5,559.3	16.1	21.3	62.97	856.0	-454.5	615.7	583.7	31.99	19.245				
5,800.0	5,765.1	5,757.6	5,664.1	16.3	21.7	63.06	874.4	-465.0	628.3	595.8	32.52	19.324				
5,900.0	5,864.9	5,880.3	5,785.1	16.5	22.1	62.96	892.1	-475.0	639.7	606.8	32.95	19.414				
6,000.0	5,964.9	6,003.8	5,907.6	16.7	22.4	62.73	905.4	-482.6	649.0	615.8	33.30	19.493				
6,100.0	6,064.9	6,127.9	6,031.4	16.8	22.7	0.22	914.1	-487.5	655.9	620.7	35.23	18.619				
6,200.0	6,164.9	6,252.8	6,156.1	17.0	22.8	0.01	918.1	-489.8	659.1	623.5	35.65	18.490				
6,300.0	6,264.9	6,361.5	6,264.9	17.2	23.0	0.00	918.4	-490.0	659.4	623.4	36.00	18.318				
6,346.4	6,311.3	6,408.0	6,311.3	17.3	23.0	0.00	918.4	-490.0	659.4	623.2	36.15	18.240				
6,400.0	6,364.9	6,461.4	6,364.7	17.4	23.1	0.21	918.4	-487.6	659.4	623.1	36.29	18.168				
6,500.0	6,464.8	6,559.7	6,461.9	17.5	23.1	-88.79	918.4	-473.5	659.5	624.5	35.00	18.842				
6,600.0	6,563.6	6,656.4	6,555.0	17.5	23.1	-87.75	918.4	-447.6	659.9	624.7	35.19	18.750				
6,700.0	6,659.6	6,751.8	6,642.9	17.5	23.0	-86.75	918.4	-410.7	660.5	625.2	35.24	18.739				
6,800.0	6,751.1	6,845.8	6,724.4	17.4	22.9	-85.81	918.4	-363.9	661.2	626.0	35.21	18.777				
6,900.0	6,836.7	6,938.8	6,798.7	17.4	22.8	-84.94	918.4	-308.1	662.0	626.8	35.19	18.814				
7,000.0	6,914.8	7,030.8	6,865.0	17.3	22.6	-84.16	918.4	-244.5	662.8	627.6	35.29	18.782				
7,100.0	6,984.0	7,121.9	6,922.8	17.4	22.5	-83.47	918.4	-174.0	663.7	628.0	35.67	18.607				
7,200.0	7,043.3	7,212.3	6,971.3	17.7	22.4	-82.89	918.4	-97.9	664.5	628.0	36.46	18.224				
7,300.0	7,091.5	7,300.0	7,009.5	18.3	22.2	-82.43	918.4	-19.0	665.2	627.4	37.76	17.615				
7,400.0	7,128.0	7,391.5	7,039.5	19.3	22.1	-82.07	918.4	67.5	665.8	626.1	39.70	16.769				
7,500.0	7,151.9	7,480.6	7,058.5	20.6	22.0	-81.84	918.4	154.4	666.1	623.9	42.18	15.793				
7,600.0	7,163.0	7,569.5	7,067.3	22.2	22.9	-81.73	918.4	242.8	666.3	621.2	45.14	14.761				
7,700.0	7,163.1	7,665.2	7,067.6	24.0	24.7	-81.76	918.4	338.5	666.3	617.7	48.60	13.710				
7,800.0	7,161.9	7,765.2	7,067.2	26.0	26.7	-81.82	918.4	438.5	666.2	613.7	52.45	12.700				
7,900.0	7,160.7	7,865.2	7,066.7	28.1	28.8	-81.88	918.4	538.5	666.0	609.5	56.60	11.769				
8,000.0	7,159.5	7,965.2	7,066.3	30.3	31.0	-81.95	918.4	638.5	665.9	605.0	60.97	10.923				
8,100.0	7,158.4	8,065.2	7,065.8	32.7	33.3	-82.01	918.4	738.5	665.8	600.3	65.52	10.162				
8,200.0	7,157.2	8,165.1	7,065.3	35.0	35.7	-82.07	918.4	838.5	665.7	595.5	70.22	9.480				
8,300.0	7,156.0	8,265.1	7,064.9	37.5	38.1	-82.13	918.4	938.5	665.6	590.6	75.04	8.870				
8,400.0	7,154.8	8,365.1	7,064.4	40.0	40.6	-82.20	918.4	1,038.5	665.5	585.6	79.97	8.323				
8,500.0	7,153.6	8,465.1	7,064.0	42.5	43.1	-82.26	918.4	1,138.5	665.4	580.5	84.97	7.832				
8,600.0	7,152.4	8,565.1	7,063.5	45.1	45.6	-82.32	918.4	1,238.5	665.3	575.3	90.04	7.389				
8,700.0	7,151.2	8,665.1	7,063.1	47.7	48.2	-82.38	918.4	1,338.5	665.3	570.1	95.17	6.990				
8,800.0	7,150.1	8,765.1	7,062.6	50.3	50.8	-82.45	918.4	1,438.4	665.2	564.8	100.35	6.628				
8,900.0	7,148.9	8,865.1	7,062.2	52.9	53.4	-82.51	918.4	1,538.4	665.1	559.5	105.57	6.300				
9,000.0	7,147.7	8,965.1	7,061.7	55.6	56.1	-82.57	918.4	1,638.4	665.0	554.1	110.83	6.000				
9,100.0	7,146.5	9,065.1	7,061.3	58.2	58.7	-82.64	918.4	1,738.4	664.9	548.8	116.12	5.726				
9,200.0	7,145.3	9,165.1	7,060.8	60.9	61.4	-82.70	918.4	1,838.4	664.8	543.3	121.43	5.474				
9,300.0	7,144.1	9,265.1	7,060.4	63.6	64.0	-82.76	918.4	1,938.4	664.7	537.9	126.77	5.243				
9,400.0	7,142.9	9,365.1	7,059.9	66.3	66.7	-82.82	918.4	2,038.4	664.6	532.5	132.14	5.030				
9,500.0	7,141.7	9,465.1	7,059.5	69.0	69.4	-82.89	918.4	2,138.4	664.5	527.0	137.52	4.832				
9,600.0	7,140.6	9,565.1	7,059.0	71.7	72.1	-82.95	918.4	2,238.4	664.4	521.5	142.92	4.649				
9,700.0	7,139.4	9,665.1	7,058.5	74.4	74.8	-83.01	918.4	2,338.4	664.3	516.0	148.33	4.479				
9,800.0	7,138.2	9,765.1	7,058.1	77.2	77.6	-83.07	918.4	2,438.4	664.2	510.5	153.76	4.320				
9,900.0	7,137.0	9,865.1	7,057.6	79.9	80.3	-83.14	918.4	2,538.4	664.1	504.9	159.20	4.172				

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 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	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		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
							+N/-S (ft)	+E/-W (ft)							
10,000.0	7,135.8	9,965.1	7,057.2	82.6	83.0	-83.20	918.4	2,638.4	664.1	499.4	164.65	4.033			
10,100.0	7,134.6	10,065.1	7,056.7	85.4	85.7	-83.26	918.4	2,738.4	664.0	493.9	170.11	3.903			
10,200.0	7,133.4	10,165.1	7,056.3	88.1	88.5	-83.33	918.4	2,838.4	663.9	488.3	175.58	3.781			
10,300.0	7,132.3	10,265.1	7,055.8	90.9	91.2	-83.39	918.4	2,938.4	663.8	482.7	181.06	3.666			
10,400.0	7,131.1	10,365.1	7,055.4	93.6	94.0	-83.45	918.4	3,038.4	663.7	477.2	186.55	3.558			
10,500.0	7,129.9	10,465.1	7,054.9	96.4	96.7	-83.51	918.4	3,138.4	663.6	471.6	192.05	3.456			
10,600.0	7,128.7	10,565.1	7,054.5	99.1	99.5	-83.58	918.4	3,238.4	663.6	466.0	197.55	3.359			
10,700.0	7,127.5	10,665.1	7,054.0	101.9	102.2	-83.64	918.4	3,338.4	663.5	460.4	203.06	3.267			
10,800.0	7,126.3	10,765.1	7,053.6	104.7	105.0	-83.70	918.4	3,438.4	663.4	454.8	208.58	3.181			
10,900.0	7,125.1	10,865.1	7,053.1	107.4	107.7	-83.77	918.4	3,538.4	663.3	449.2	214.10	3.098			
11,000.0	7,123.9	10,965.1	7,052.6	110.2	110.5	-83.83	918.4	3,638.4	663.2	443.6	219.62	3.020			
11,100.0	7,122.8	11,065.1	7,052.2	113.0	113.3	-83.89	918.4	3,738.4	663.2	438.0	225.15	2.945			
11,200.0	7,121.6	11,165.1	7,051.7	115.7	116.0	-83.95	918.4	3,838.4	663.1	432.4	230.69	2.874			
11,300.0	7,120.4	11,265.1	7,051.3	118.5	118.8	-84.02	918.4	3,938.4	663.0	426.8	236.23	2.807			
11,400.0	7,119.2	11,365.1	7,050.8	121.3	121.6	-84.08	918.4	4,038.4	662.9	421.2	241.77	2.742			
11,500.0	7,118.0	11,465.1	7,050.4	124.1	124.3	-84.14	918.4	4,138.3	662.9	415.5	247.32	2.680			
11,563.3	7,117.3	11,528.4	7,050.1	125.8	126.1	-84.18	918.4	4,201.7	662.8	412.0	250.83	2.642			
11,585.2	7,117.0	11,547.6	7,050.0	126.4	126.6	-84.20	918.4	4,220.9	662.8	410.8	251.97	2.630 SF			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (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	0.00	29.1	0.0	29.1					
100.0	100.0	100.0	100.0	0.1	0.1	0.00	29.1	0.0	29.1	28.9	0.22	129.665		
200.0	200.0	200.0	200.0	0.3	0.3	0.00	29.1	0.0	29.1	28.5	0.67	43.222		
300.0	300.0	300.0	300.0	0.6	0.6	0.00	29.1	0.0	29.1	28.0	1.12	25.933		
400.0	400.0	400.0	400.0	0.8	0.8	0.00	29.1	0.0	29.1	27.6	1.57	18.524		
500.0	500.0	500.0	500.0	1.0	1.0	0.00	29.1	0.0	29.1	27.1	2.02	14.407		
600.0	600.0	600.0	600.0	1.2	1.2	0.00	29.1	0.0	29.1	26.7	2.47	11.788		
700.0	700.0	700.0	700.0	1.5	1.5	0.00	29.1	0.0	29.1	26.2	2.92	9.974		
800.0	800.0	800.0	800.0	1.7	1.7	0.00	29.1	0.0	29.1	25.8	3.37	8.644		
900.0	900.0	900.0	900.0	1.9	1.9	0.00	29.1	0.0	29.1	25.3	3.82	7.627		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	0.00	29.1	0.0	29.1	24.9	4.27	6.824		
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	0.00	29.1	0.0	29.1	24.4	4.72	6.175		
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	0.00	29.1	0.0	29.1	24.0	5.17	5.638 CC, ES		
1,300.0	1,300.0	1,299.2	1,299.2	2.8	2.8	-2.07	30.5	-1.1	30.5	24.9	5.61	5.432		
1,400.0	1,400.0	1,398.1	1,398.0	3.0	3.0	-7.28	34.4	-4.4	34.7	28.7	6.06	5.735		
1,500.0	1,500.0	1,496.8	1,496.2	3.3	3.3	50.30	40.9	-9.9	41.1	34.6	6.50	6.327		
1,600.0	1,599.8	1,595.1	1,593.9	3.5	3.5	48.25	50.0	-17.5	48.5	41.5	6.94	6.985		
1,700.0	1,699.5	1,693.6	1,691.2	3.7	3.8	47.88	61.6	-27.2	56.5	49.1	7.39	7.644		
1,800.0	1,798.7	1,793.4	1,789.6	3.9	4.0	49.50	74.0	-37.6	63.1	55.2	7.86	8.028		
1,900.0	1,897.9	1,893.2	1,888.1	4.2	4.3	51.49	86.5	-48.0	69.2	60.8	8.36	8.272		
2,000.0	1,997.0	1,993.0	1,986.5	4.5	4.6	53.15	98.9	-58.4	75.3	66.4	8.88	8.480		
2,100.0	2,096.2	2,092.7	2,085.0	4.7	5.0	54.56	111.3	-68.8	81.5	72.1	9.41	8.657		
2,200.0	2,195.3	2,192.5	2,183.5	5.0	5.3	55.77	123.8	-79.2	87.8	77.8	9.96	8.808		
2,300.0	2,294.5	2,292.3	2,281.9	5.3	5.6	56.82	136.2	-89.7	94.0	83.5	10.52	8.936		
2,400.0	2,393.6	2,392.1	2,380.4	5.6	6.0	57.74	148.7	-100.1	100.3	89.2	11.09	9.046		
2,500.0	2,492.8	2,491.9	2,478.8	5.9	6.3	58.54	161.1	-110.5	106.7	95.0	11.67	9.140		
2,600.0	2,591.9	2,591.7	2,577.3	6.2	6.7	59.26	173.6	-120.9	113.0	100.7	12.26	9.221		
2,700.0	2,691.1	2,691.5	2,675.8	6.5	7.0	59.90	186.0	-131.3	119.4	106.5	12.85	9.291		
2,800.0	2,790.2	2,791.3	2,774.2	6.8	7.4	60.48	198.4	-141.8	125.7	112.3	13.45	9.352		
2,900.0	2,889.4	2,891.1	2,872.7	7.1	7.7	61.00	210.9	-152.2	132.1	118.1	14.05	9.405		
3,000.0	2,988.5	2,990.8	2,971.2	7.4	8.1	61.48	223.3	-162.6	138.5	123.9	14.66	9.451		
3,100.0	3,087.7	3,090.6	3,069.6	7.7	8.4	61.91	235.8	-173.0	144.9	129.7	15.27	9.492		
3,200.0	3,186.8	3,190.4	3,168.1	8.0	8.8	62.30	248.2	-183.4	151.3	135.5	15.88	9.527		
3,300.0	3,286.0	3,290.2	3,266.5	8.3	9.2	62.66	260.7	-193.8	157.8	141.3	16.50	9.559		
3,400.0	3,385.1	3,390.0	3,365.0	8.7	9.5	63.00	273.1	-204.3	164.2	147.1	17.13	9.587		
3,500.0	3,484.3	3,489.8	3,463.5	9.0	9.9	63.31	285.5	-214.7	170.6	152.9	17.75	9.612		
3,600.0	3,583.4	3,589.6	3,561.9	9.3	10.3	63.59	298.0	-225.1	177.0	158.7	18.38	9.635		
3,700.0	3,682.6	3,689.4	3,660.4	9.6	10.6	63.86	310.4	-235.5	183.5	164.5	19.01	9.655		
3,800.0	3,781.7	3,789.2	3,758.8	9.9	11.0	64.11	322.9	-245.9	189.9	170.3	19.64	9.673		
3,900.0	3,880.9	3,888.9	3,857.3	10.3	11.4	64.34	335.3	-256.4	196.4	176.1	20.27	9.689		
4,000.0	3,980.0	3,988.7	3,955.8	10.6	11.7	64.56	347.7	-266.8	202.8	181.9	20.90	9.703		
4,100.0	4,079.2	4,088.5	4,054.2	10.9	12.1	64.76	360.2	-277.2	209.3	187.7	21.54	9.717		
4,200.0	4,178.3	4,188.3	4,152.7	11.2	12.5	64.96	372.6	-287.6	215.7	193.6	22.17	9.729		
4,300.0	4,277.5	4,288.1	4,251.1	11.5	12.8	65.14	385.1	-298.0	222.2	199.4	22.81	9.740		
4,400.0	4,376.6	4,387.9	4,349.6	11.9	13.2	65.31	397.5	-308.4	228.6	205.2	23.45	9.749		
4,500.0	4,475.8	4,487.7	4,448.1	12.2	13.6	65.47	410.0	-318.9	235.1	211.0	24.09	9.759		
4,600.0	4,574.9	4,587.5	4,546.5	12.5	13.9	65.62	422.4	-329.3	241.6	216.8	24.73	9.767		
4,700.0	4,674.1	4,687.3	4,645.0	12.8	14.3	65.76	434.8	-339.7	248.0	222.7	25.38	9.774		
4,800.0	4,773.2	4,787.0	4,743.4	13.2	14.7	65.90	447.3	-350.1	254.5	228.5	26.02	9.781		
4,900.0	4,872.4	4,886.8	4,841.9	13.5	15.1	66.03	459.7	-360.5	261.0	234.3	26.66	9.788		
5,000.0	4,971.5	4,986.6	4,940.4	13.8	15.4	66.16	472.2	-371.0	267.4	240.1	27.31	9.794		

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 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	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
5,100.0	5,070.7	5,086.4	5,038.8	14.1	15.8	66.27	484.6	-381.4	273.9	245.9	27.95	9.799	
5,200.0	5,169.8	5,186.2	5,137.3	14.5	16.2	66.39	497.0	-391.8	280.4	251.8	28.60	9.804	
5,300.0	5,269.0	5,286.0	5,235.7	14.8	16.6	66.49	509.5	-402.2	286.8	257.6	29.24	9.809	
5,400.0	5,368.1	5,385.8	5,334.2	15.1	16.9	66.60	521.9	-412.6	293.3	263.4	29.89	9.813	
5,500.0	5,467.3	5,485.6	5,432.7	15.5	17.3	66.70	534.4	-423.0	299.8	269.2	30.54	9.817	
5,600.0	5,566.5	5,585.4	5,531.1	15.8	17.7	66.79	546.8	-433.5	306.3	275.1	31.18	9.821	
5,700.0	5,665.6	5,685.1	5,629.6	16.1	18.0	66.89	559.3	-443.9	312.8	281.0	31.81	9.834	
5,800.0	5,765.1	5,784.8	5,727.9	16.3	18.4	66.61	571.7	-454.3	320.5	288.2	32.30	9.922	
5,900.0	5,864.9	5,884.2	5,826.0	16.5	18.8	65.82	584.1	-464.7	329.7	296.9	32.71	10.079	
6,000.0	5,964.9	5,992.1	5,932.7	16.7	19.1	64.63	596.2	-474.8	339.2	306.2	32.96	10.290	
6,100.0	6,064.9	6,101.3	6,041.2	16.8	19.4	1.24	605.4	-482.5	347.3	315.8	31.49	11.026	
6,200.0	6,164.9	6,211.2	6,150.9	17.0	19.6	0.41	611.4	-487.5	352.7	320.6	32.01	11.016	
6,300.0	6,264.9	6,321.6	6,261.2	17.2	19.8	0.03	614.1	-489.8	355.2	322.7	32.44	10.948	
6,400.0	6,364.9	6,425.3	6,364.9	17.4	19.9	0.00	614.3	-490.0	355.3	322.5	32.81	10.832	
6,445.1	6,409.9	6,470.3	6,409.9	17.4	20.0	-90.14	614.3	-490.0	355.3	321.1	34.23	10.382	
6,500.0	6,464.8	6,525.2	6,464.8	17.5	20.1	-90.44	614.3	-490.0	355.4	321.0	34.37	10.340	
6,600.0	6,563.6	6,625.4	6,564.9	17.5	20.2	-92.37	614.3	-487.0	355.7	321.3	34.32	10.364	
6,700.0	6,659.6	6,727.4	6,665.6	17.5	20.2	-94.38	614.3	-471.3	356.4	322.3	34.10	10.453	
6,800.0	6,751.1	6,831.2	6,765.0	17.4	20.2	-96.32	614.3	-441.6	357.5	323.8	33.79	10.581	
6,900.0	6,836.7	6,936.8	6,861.1	17.4	20.1	-98.16	614.3	-397.9	359.0	325.5	33.49	10.721	
7,000.0	6,914.8	7,044.2	6,951.6	17.3	20.0	-99.85	614.3	-340.3	360.7	327.4	33.31	10.830	
7,100.0	6,984.0	7,153.3	7,034.4	17.4	19.8	-101.37	614.3	-269.4	362.5	329.1	33.40	10.852	
7,200.0	7,043.3	7,264.0	7,107.2	17.7	19.7	-102.67	614.3	-186.2	364.3	330.3	33.96	10.726	
7,300.0	7,091.5	7,376.0	7,167.9	18.3	19.6	-103.74	614.3	-92.1	365.8	330.7	35.13	10.415	
7,400.0	7,128.0	7,489.2	7,214.6	19.3	19.8	-104.55	614.3	10.8	367.1	330.1	36.99	9.924	
7,500.0	7,151.9	7,603.2	7,245.8	20.6	20.8	-105.09	614.3	120.4	368.0	328.5	39.57	9.302	
7,600.0	7,163.0	7,717.7	7,260.3	22.2	22.6	-105.33	614.3	233.8	368.5	325.7	42.75	8.618	
7,700.0	7,163.1	7,822.8	7,261.4	24.0	24.4	-105.45	614.3	339.0	368.7	322.4	46.23	7.974	
7,800.0	7,161.9	7,922.8	7,261.3	26.0	26.4	-105.63	614.3	439.0	369.0	319.0	49.95	7.387	
7,900.0	7,160.7	8,022.8	7,261.3	28.1	28.5	-105.80	614.3	538.9	369.3	315.3	53.95	6.845	
8,000.0	7,159.5	8,122.8	7,261.3	30.3	30.7	-105.97	614.3	638.9	369.6	311.4	58.16	6.355	
8,100.0	7,158.4	8,222.8	7,261.2	32.7	33.0	-106.14	614.3	738.9	369.9	307.4	62.54	5.915	
8,200.0	7,157.2	8,322.8	7,261.2	35.0	35.4	-106.31	614.3	838.9	370.2	303.2	67.06	5.521	
8,300.0	7,156.0	8,422.8	7,261.1	37.5	37.8	-106.48	614.3	938.9	370.6	298.9	71.69	5.169	
8,400.0	7,154.8	8,522.8	7,261.1	40.0	40.3	-106.66	614.3	1,038.9	370.9	294.5	76.40	4.855	
8,500.0	7,153.6	8,622.8	7,261.1	42.5	42.8	-106.83	614.3	1,138.9	371.2	290.1	81.18	4.573	
8,600.0	7,152.4	8,722.8	7,261.0	45.1	45.4	-107.00	614.3	1,238.9	371.6	285.6	86.01	4.320	
8,700.0	7,151.2	8,822.8	7,261.0	47.7	48.0	-107.17	614.3	1,338.9	371.9	281.0	90.89	4.092	
8,800.0	7,150.1	8,922.8	7,261.0	50.3	50.6	-107.33	614.3	1,438.9	372.2	276.4	95.81	3.885	
8,900.0	7,148.9	9,022.8	7,260.9	52.9	53.2	-107.50	614.3	1,538.9	372.6	271.8	100.76	3.698	
9,000.0	7,147.7	9,122.8	7,260.9	55.6	55.8	-107.67	614.3	1,638.9	372.9	267.2	105.73	3.527	
9,100.0	7,146.5	9,222.7	7,260.9	58.2	58.5	-107.84	614.3	1,738.9	373.3	262.6	110.72	3.372	
9,200.0	7,145.3	9,322.7	7,260.8	60.9	61.2	-108.01	614.3	1,838.9	373.6	257.9	115.72	3.229	
9,300.0	7,144.1	9,422.7	7,260.8	63.6	63.8	-108.18	614.3	1,938.9	374.0	253.3	120.73	3.098	
9,400.0	7,142.9	9,522.7	7,260.8	66.3	66.5	-108.34	614.3	2,038.8	374.4	248.6	125.76	2.977	
9,500.0	7,141.7	9,622.7	7,260.7	69.0	69.2	-108.51	614.3	2,138.8	374.7	243.9	130.79	2.865	
9,600.0	7,140.6	9,722.7	7,260.7	71.7	71.9	-108.68	614.3	2,238.8	375.1	239.3	135.83	2.762	
9,700.0	7,139.4	9,822.7	7,260.7	74.4	74.7	-108.85	614.3	2,338.8	375.5	234.6	140.87	2.665	
9,800.0	7,138.2	9,922.7	7,260.6	77.2	77.4	-109.01	614.3	2,438.8	375.8	229.9	145.91	2.576	
9,900.0	7,137.0	10,022.7	7,260.6	79.9	80.1	-109.18	614.3	2,538.8	376.2	225.3	150.95	2.492	

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 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	Offset TVD Reference:	Offset Datum

Offset Design Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W - Wiedeman 28E-432 - Wellbore #1 - Plan #1 (7-25-14)													Offset Site Error: 0.0 ft
Survey Program: 0-MWD													Offset Well Error: 0.0 ft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.0	7,135.8	10,122.7	7,260.6	82.6	82.8	-109.34	614.3	2,638.8	376.6	220.6	155.99	2.414	
10,100.0	7,134.6	10,222.7	7,260.5	85.4	85.6	-109.51	614.3	2,738.8	377.0	215.9	161.02	2.341	
10,200.0	7,133.4	10,322.7	7,260.5	88.1	88.3	-109.67	614.3	2,838.8	377.4	211.3	166.06	2.272	
10,300.0	7,132.3	10,422.7	7,260.4	90.9	91.1	-109.84	614.3	2,938.8	377.7	206.7	171.09	2.208	
10,400.0	7,131.1	10,522.7	7,260.4	93.6	93.8	-110.00	614.3	3,038.8	378.1	202.0	176.11	2.147	
10,500.0	7,129.9	10,622.7	7,260.4	96.4	96.6	-110.17	614.3	3,138.8	378.5	197.4	181.13	2.090	
10,600.0	7,128.7	10,722.6	7,260.3	99.1	99.3	-110.33	614.3	3,238.8	378.9	192.8	186.15	2.036	
10,700.0	7,127.5	10,822.6	7,260.3	101.9	102.1	-110.49	614.3	3,338.8	379.3	188.2	191.16	1.984	
10,800.0	7,126.3	10,922.6	7,260.3	104.7	104.8	-110.65	614.3	3,438.8	379.7	183.6	196.16	1.936	
10,900.0	7,125.1	11,022.6	7,260.2	107.4	107.6	-110.82	614.3	3,538.7	380.1	179.0	201.16	1.890	
11,000.0	7,123.9	11,122.6	7,260.2	110.2	110.4	-110.98	614.3	3,638.7	380.6	174.4	206.14	1.846	
11,100.0	7,122.8	11,222.6	7,260.2	113.0	113.1	-111.14	614.3	3,738.7	381.0	169.8	211.12	1.804	
11,200.0	7,121.6	11,322.6	7,260.1	115.7	115.9	-111.30	614.3	3,838.7	381.4	165.3	216.09	1.765	
11,300.0	7,120.4	11,422.6	7,260.1	118.5	118.7	-111.46	614.3	3,938.7	381.8	160.7	221.06	1.727	
11,400.0	7,119.2	11,522.6	7,260.1	121.3	121.4	-111.62	614.3	4,038.7	382.2	156.2	226.01	1.691	
11,500.0	7,118.0	11,622.6	7,260.0	124.1	124.2	-111.78	614.3	4,138.7	382.7	151.7	230.95	1.657	
11,585.2	7,117.0	11,704.8	7,260.0	126.4	126.5	-111.92	614.3	4,221.0	383.0	147.9	235.09	1.629 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	Offset TVD Reference:	Offset Datum

Offset Design Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W - Wiedeman 28F-202 - Wellbore #1 - Plan #1 (8-														Offset Site Error:	0.0ft
Survey Program: 0-MWD														Offset Well Error:	0.0ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning		
0.0	0.0	0.0	0.0	0.0	0.0	180.00	-61.9	0.0	61.9						
100.0	100.0	100.0	100.0	0.1	0.1	180.00	-61.9	0.0	61.9	61.7	0.22	275.539			
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-61.9	0.0	61.9	61.3	0.67	91.846			
300.0	300.0	300.0	300.0	0.6	0.6	180.00	-61.9	0.0	61.9	60.8	1.12	55.108			
400.0	400.0	400.0	400.0	0.8	0.8	180.00	-61.9	0.0	61.9	60.4	1.57	39.363			
500.0	500.0	500.0	500.0	1.0	1.0	180.00	-61.9	0.0	61.9	59.9	2.02	30.615			
600.0	600.0	600.0	600.0	1.2	1.2	180.00	-61.9	0.0	61.9	59.5	2.47	25.049			
700.0	700.0	700.0	700.0	1.5	1.5	180.00	-61.9	0.0	61.9	59.0	2.92	21.195			
800.0	800.0	800.0	800.0	1.7	1.7	180.00	-61.9	0.0	61.9	58.6	3.37	18.369			
900.0	900.0	900.0	900.0	1.9	1.9	180.00	-61.9	0.0	61.9	58.1	3.82	16.208			
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	180.00	-61.9	0.0	61.9	57.7	4.27	14.502			
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	180.00	-61.9	0.0	61.9	57.2	4.72	13.121			
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	180.00	-61.9	0.0	61.9	56.8	5.17	11.980 CC, ES			
1,300.0	1,300.0	1,298.7	1,298.7	2.8	2.8	-178.73	-62.9	-1.4	62.9	57.3	5.59	11.249			
1,400.0	1,400.0	1,397.2	1,397.1	3.0	3.0	-175.17	-65.8	-5.6	66.1	60.1	6.00	11.013			
1,500.0	1,500.0	1,495.3	1,494.8	3.3	3.2	-109.02	-70.6	-12.5	72.5	66.0	6.42	11.285			
1,600.0	1,599.8	1,592.9	1,591.7	3.5	3.4	-106.29	-77.3	-22.1	82.5	75.7	6.85	12.059			
1,700.0	1,699.5	1,692.1	1,689.9	3.7	3.6	-105.36	-85.1	-33.2	95.0	87.7	7.29	13.023			
1,800.0	1,798.7	1,791.2	1,788.0	3.9	3.9	-106.39	-92.9	-44.4	108.3	100.5	7.76	13.953			
1,900.0	1,897.9	1,890.2	1,886.1	4.2	4.2	-107.76	-100.7	-55.6	121.9	113.7	8.25	14.772			
2,000.0	1,997.0	1,989.2	1,984.2	4.5	4.4	-108.86	-108.5	-66.7	135.6	126.9	8.77	15.473			
2,100.0	2,096.2	2,088.2	2,082.3	4.7	4.7	-109.75	-116.3	-77.9	149.4	140.1	9.29	16.076			
2,200.0	2,195.3	2,187.3	2,180.4	5.0	5.0	-110.50	-124.1	-89.1	163.1	153.3	9.83	16.596			
2,300.0	2,294.5	2,286.3	2,278.5	5.3	5.3	-111.12	-131.9	-100.2	176.9	166.6	10.38	17.047			
2,400.0	2,393.6	2,385.3	2,376.6	5.6	5.6	-111.66	-139.7	-111.4	190.8	179.8	10.94	17.440			
2,500.0	2,492.8	2,484.3	2,474.6	5.9	6.0	-112.13	-147.5	-122.6	204.6	193.1	11.50	17.785			
2,600.0	2,591.9	2,583.4	2,572.7	6.2	6.3	-112.53	-155.3	-133.7	218.4	206.3	12.07	18.089			
2,700.0	2,691.1	2,682.4	2,670.8	6.5	6.6	-112.89	-163.1	-144.9	232.3	219.6	12.65	18.357			
2,800.0	2,790.2	2,781.4	2,768.9	6.8	6.9	-113.21	-170.9	-156.1	246.1	232.9	13.23	18.596			
2,900.0	2,889.4	2,880.4	2,867.0	7.1	7.2	-113.49	-178.7	-167.2	260.0	246.2	13.82	18.810			
3,000.0	2,988.5	2,979.5	2,965.1	7.4	7.6	-113.75	-186.5	-178.4	273.8	259.4	14.41	19.002			
3,100.0	3,087.7	3,078.5	3,063.2	7.7	7.9	-113.98	-194.3	-189.6	287.7	272.7	15.01	19.175			
3,200.0	3,186.8	3,177.5	3,161.2	8.0	8.2	-114.19	-202.1	-200.7	301.6	286.0	15.60	19.331			
3,300.0	3,286.0	3,276.6	3,259.3	8.3	8.5	-114.38	-209.9	-211.9	315.5	299.3	16.20	19.473			
3,400.0	3,385.1	3,375.6	3,357.4	8.7	8.9	-114.55	-217.7	-223.1	329.4	312.6	16.80	19.602			
3,500.0	3,484.3	3,474.6	3,455.5	9.0	9.2	-114.71	-225.5	-234.2	343.2	325.8	17.41	19.720			
3,600.0	3,583.4	3,573.6	3,553.6	9.3	9.5	-114.86	-233.3	-245.4	357.1	339.1	18.01	19.829			
3,700.0	3,682.6	3,672.7	3,651.7	9.6	9.9	-115.00	-241.1	-256.6	371.0	352.4	18.62	19.928			
3,800.0	3,781.7	3,771.7	3,749.8	9.9	10.2	-115.12	-248.8	-267.7	384.9	365.7	19.23	20.020			
3,900.0	3,880.9	3,870.7	3,847.8	10.3	10.6	-115.24	-256.6	-278.9	398.8	379.0	19.84	20.105			
4,000.0	3,980.0	3,969.7	3,945.9	10.6	10.9	-115.35	-264.4	-290.1	412.7	392.3	20.45	20.184			
4,100.0	4,079.2	4,068.8	4,044.0	10.9	11.2	-115.45	-272.2	-301.2	426.6	405.5	21.06	20.257			
4,200.0	4,178.3	4,167.8	4,142.1	11.2	11.6	-115.55	-280.0	-312.4	440.5	418.8	21.67	20.325			
4,300.0	4,277.5	4,266.8	4,240.2	11.5	11.9	-115.64	-287.8	-323.6	454.4	432.1	22.29	20.389			
4,400.0	4,376.6	4,365.9	4,338.3	11.9	12.2	-115.73	-295.6	-334.7	468.3	445.4	22.90	20.448			
4,500.0	4,475.8	4,464.9	4,436.4	12.2	12.6	-115.81	-303.4	-345.9	482.2	458.7	23.52	20.504			
4,600.0	4,574.9	4,563.9	4,534.4	12.5	12.9	-115.88	-311.2	-357.1	496.1	472.0	24.13	20.556			
4,700.0	4,674.1	4,662.9	4,632.5	12.8	13.3	-115.96	-319.0	-368.2	510.0	485.3	24.75	20.605			
4,800.0	4,773.2	4,762.0	4,730.6	13.2	13.6	-116.02	-326.8	-379.4	523.9	498.5	25.37	20.651			
4,900.0	4,872.4	4,861.0	4,828.7	13.5	13.9	-116.09	-334.6	-390.6	537.8	511.8	25.99	20.694			
5,000.0	4,971.5	4,960.0	4,926.8	13.8	14.3	-116.15	-342.4	-401.7	551.7	525.1	26.61	20.735			

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 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	Offset TVD Reference:	Offset Datum

Offset Design Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W - Wiedeman 28F-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		
5,100.0	5,070.7	5,059.0	5,024.9	14.1	14.6	-116.21	-350.2	-412.9	565.6	538.4	27.23	20.774		
5,200.0	5,169.8	5,158.1	5,123.0	14.5	15.0	-116.26	-358.0	-424.1	579.5	551.7	27.85	20.811		
5,300.0	5,269.0	5,257.1	5,221.0	14.8	15.3	-116.31	-365.8	-435.2	593.4	565.0	28.47	20.846		
5,400.0	5,368.1	5,356.1	5,319.1	15.1	15.7	-116.37	-373.6	-446.4	607.3	578.3	29.09	20.879		
5,500.0	5,467.3	5,455.1	5,417.2	15.5	16.0	-116.41	-381.4	-457.6	621.3	591.5	29.71	20.910		
5,600.0	5,566.5	5,555.6	5,516.7	15.8	16.3	-116.46	-389.3	-468.9	635.2	604.8	30.33	20.940		
5,700.0	5,665.6	5,669.7	5,630.1	16.1	16.6	-116.76	-396.7	-479.5	647.6	616.7	30.92	20.946		
5,800.0	5,765.1	5,784.4	5,744.5	16.3	16.9	-117.21	-401.6	-486.5	656.4	625.0	31.39	20.912		
5,900.0	5,864.9	5,899.6	5,859.5	16.5	17.0	-117.59	-403.8	-489.8	661.4	629.6	31.80	20.799		
6,000.0	5,964.9	6,004.9	5,964.9	16.7	17.2	-117.84	-404.0	-490.0	662.9	630.8	32.14	20.623		
6,100.0	6,064.9	6,104.9	6,064.9	16.8	17.4	-180.00	-404.0	-490.0	663.0	633.7	29.31	22.620		
6,200.0	6,164.9	6,204.9	6,164.9	17.0	17.5	-180.00	-404.0	-490.0	663.0	633.3	29.68	22.340		
6,300.0	6,264.9	6,304.9	6,264.9	17.2	17.7	-180.00	-404.0	-490.0	663.0	633.0	30.05	22.066		
6,349.5	6,314.4	6,354.4	6,314.4	17.3	17.7	180.00	-404.0	-490.0	663.0	632.8	30.23	21.932		
6,400.0	6,364.9	6,404.8	6,364.8	17.4	17.8	179.85	-404.0	-488.3	663.0	632.6	30.41	21.803		
6,500.0	6,464.8	6,503.4	6,462.4	17.5	17.8	88.96	-404.0	-475.3	663.1	629.4	33.69	19.683		
6,600.0	6,563.6	6,600.0	6,555.7	17.5	17.8	88.02	-404.0	-450.5	663.4	629.7	33.72	19.671		
6,700.0	6,659.6	6,696.5	6,645.0	17.5	17.7	87.12	-404.0	-414.3	663.9	630.2	33.63	19.738		
6,800.0	6,751.1	6,791.2	6,727.6	17.4	17.6	86.27	-404.0	-368.0	664.4	630.9	33.49	19.841		
6,900.0	6,836.7	6,884.9	6,803.0	17.4	17.5	85.49	-404.0	-312.5	665.1	631.7	33.39	19.918		
7,000.0	6,914.8	6,977.7	6,870.4	17.3	17.5	84.78	-404.0	-248.8	665.8	632.3	33.47	19.892		
7,100.0	6,984.0	7,069.6	6,929.2	17.4	17.5	84.16	-404.0	-178.1	666.5	632.6	33.86	19.681		
7,200.0	7,043.3	7,160.9	6,978.7	17.7	17.7	83.63	-404.0	-101.5	667.1	632.4	34.71	19.219		
7,300.0	7,091.5	7,250.0	7,017.9	18.3	18.2	83.21	-404.0	-21.6	667.7	631.6	36.10	18.498		
7,400.0	7,128.0	7,342.0	7,048.3	19.3	19.1	82.88	-404.0	65.3	668.2	630.0	38.12	17.528		
7,500.0	7,151.9	7,432.1	7,067.7	20.6	20.3	82.67	-404.0	153.1	668.5	627.8	40.68	16.431		
7,600.0	7,163.0	7,522.0	7,076.7	22.2	21.8	82.57	-404.0	242.5	668.6	624.9	43.71	15.297		
7,700.0	7,163.1	7,617.7	7,076.9	24.0	23.5	82.59	-404.0	338.3	668.6	621.4	47.22	14.161		
7,800.0	7,161.9	7,717.7	7,076.1	26.0	25.5	82.62	-404.0	438.3	668.5	617.4	51.14	13.073		
7,900.0	7,160.7	7,817.7	7,075.3	28.1	27.7	82.66	-404.0	538.3	668.5	613.1	55.35	12.078		
8,000.0	7,159.5	7,917.7	7,074.6	30.3	29.9	82.70	-404.0	638.3	668.4	608.7	59.78	11.181		
8,100.0	7,158.4	8,017.7	7,073.8	32.7	32.3	82.73	-404.0	738.3	668.4	604.0	64.39	10.380		
8,200.0	7,157.2	8,117.7	7,073.0	35.0	34.7	82.77	-404.0	838.2	668.3	599.2	69.15	9.665		
8,300.0	7,156.0	8,217.7	7,072.3	37.5	37.1	82.80	-404.0	938.2	668.3	594.3	74.02	9.029		
8,400.0	7,154.8	8,317.7	7,071.5	40.0	39.6	82.84	-404.0	1,038.2	668.2	589.3	78.98	8.461		
8,500.0	7,153.6	8,417.7	7,070.7	42.5	42.2	82.87	-404.0	1,138.2	668.2	584.2	84.02	7.952		
8,600.0	7,152.4	8,517.7	7,070.0	45.1	44.8	82.91	-404.0	1,238.2	668.1	579.0	89.13	7.496		
8,700.0	7,151.2	8,617.7	7,069.2	47.7	47.4	82.94	-404.0	1,338.2	668.1	573.8	94.29	7.085		
8,800.0	7,150.1	8,717.7	7,068.4	50.3	50.0	82.98	-404.0	1,438.2	668.0	568.5	99.50	6.714		
8,900.0	7,148.9	8,817.7	7,067.6	52.9	52.6	83.02	-404.0	1,538.2	668.0	563.2	104.74	6.377		
9,000.0	7,147.7	8,917.7	7,066.9	55.6	55.3	83.05	-404.0	1,638.2	667.9	557.9	110.02	6.071		
9,100.0	7,146.5	9,017.7	7,066.1	58.2	58.0	83.09	-404.0	1,738.2	667.9	552.5	115.33	5.791		
9,200.0	7,145.3	9,117.7	7,065.3	60.9	60.6	83.12	-404.0	1,838.2	667.8	547.2	120.66	5.535		
9,300.0	7,144.1	9,217.7	7,064.6	63.6	63.3	83.16	-404.0	1,938.2	667.8	541.8	126.02	5.299		
9,400.0	7,142.9	9,317.7	7,063.8	66.3	66.0	83.19	-404.0	2,038.2	667.7	536.3	131.39	5.082		
9,500.0	7,141.7	9,417.7	7,063.0	69.0	68.8	83.23	-404.0	2,138.2	667.7	530.9	136.79	4.881		
9,600.0	7,140.6	9,517.7	7,062.3	71.7	71.5	83.27	-404.0	2,238.2	667.6	525.4	142.20	4.695		
9,700.0	7,139.4	9,617.7	7,061.5	74.4	74.2	83.30	-404.0	2,338.2	667.6	520.0	147.62	4.522		
9,800.0	7,138.2	9,717.7	7,060.7	77.2	76.9	83.34	-404.0	2,438.2	667.5	514.5	153.05	4.361		
9,900.0	7,137.0	9,817.7	7,060.0	79.9	79.7	83.37	-404.0	2,538.2	667.5	509.0	158.50	4.211		

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 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W - Wiedeman 28F-202 - Wellbore #1 - Plan #1 (8-													Offset Well Error:	0.0 ft
Survey Program: 0-MWD														
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	7,135.8	9,917.7	7,059.2	82.6	82.4	83.41	-404.0	2,638.2	667.4	503.5	163.96	4.071		
10,100.0	7,134.6	10,017.7	7,058.4	85.4	85.2	83.44	-404.0	2,738.2	667.4	498.0	169.42	3.939		
10,200.0	7,133.4	10,117.7	7,057.7	88.1	87.9	83.48	-404.0	2,838.2	667.3	492.4	174.90	3.816		
10,300.0	7,132.3	10,217.7	7,056.9	90.9	90.7	83.52	-404.0	2,938.2	667.3	486.9	180.38	3.699		
10,400.0	7,131.1	10,317.7	7,056.1	93.6	93.4	83.55	-404.0	3,038.2	667.2	481.4	185.87	3.590		
10,500.0	7,129.9	10,417.7	7,055.4	96.4	96.2	83.59	-404.0	3,138.2	667.2	475.8	191.37	3.487		
10,600.0	7,128.7	10,517.7	7,054.6	99.1	98.9	83.62	-404.0	3,238.2	667.2	470.3	196.87	3.389		
10,700.0	7,127.5	10,617.7	7,053.8	101.9	101.7	83.66	-404.0	3,338.2	667.1	464.7	202.37	3.296		
10,800.0	7,126.3	10,717.7	7,053.1	104.7	104.5	83.69	-404.0	3,438.1	667.1	459.2	207.89	3.209		
10,900.0	7,125.1	10,817.7	7,052.3	107.4	107.2	83.73	-404.0	3,538.1	667.0	453.6	213.41	3.126		
11,000.0	7,123.9	10,917.7	7,051.5	110.2	110.0	83.77	-404.0	3,638.1	667.0	448.0	218.93	3.047		
11,100.0	7,122.8	11,017.7	7,050.8	113.0	112.8	83.80	-404.0	3,738.1	666.9	442.5	224.45	2.971		
11,200.0	7,121.6	11,117.7	7,050.0	115.7	115.6	83.84	-404.0	3,838.1	666.9	436.9	229.98	2.900		
11,300.0	7,120.4	11,217.7	7,049.2	118.5	118.3	83.87	-404.0	3,938.1	666.8	431.3	235.52	2.831		
11,400.0	7,119.2	11,317.7	7,048.4	121.3	121.1	83.91	-404.0	4,038.1	666.8	425.7	241.06	2.766		
11,500.0	7,118.0	11,417.7	7,047.7	124.1	123.7	83.94	-404.0	4,138.1	666.8	420.3	246.42	2.706		
11,585.2	7,117.0	11,502.9	7,047.0	126.4	125.2	83.98	-404.0	4,223.3	666.7	416.4	250.30	2.664 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	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							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	129.665		
200.0	200.0	200.0	200.0	0.3	0.3	-180.00	-29.1	0.0	29.1	28.5	0.67	43.222		
300.0	300.0	300.0	300.0	0.6	0.6	-180.00	-29.1	0.0	29.1	28.0	1.12	25.933		
400.0	400.0	400.0	400.0	0.8	0.8	-180.00	-29.1	0.0	29.1	27.6	1.57	18.524		
500.0	500.0	500.0	500.0	1.0	1.0	-180.00	-29.1	0.0	29.1	27.1	2.02	14.407		
600.0	600.0	600.0	600.0	1.2	1.2	-180.00	-29.1	0.0	29.1	26.7	2.47	11.788		
700.0	700.0	700.0	700.0	1.5	1.5	-180.00	-29.1	0.0	29.1	26.2	2.92	9.974		
800.0	800.0	800.0	800.0	1.7	1.7	-180.00	-29.1	0.0	29.1	25.8	3.37	8.644		
900.0	900.0	900.0	900.0	1.9	1.9	-180.00	-29.1	0.0	29.1	25.3	3.82	7.627		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-180.00	-29.1	0.0	29.1	24.9	4.27	6.824		
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-180.00	-29.1	0.0	29.1	24.4	4.72	6.175		
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-180.00	-29.1	0.0	29.1	24.0	5.17	5.638		
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-180.00	-29.1	0.0	29.1	23.5	5.62	5.187		
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-180.00	-29.1	0.0	29.1	23.1	6.07	4.802 CC, ES		
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	-120.79	-29.1	0.0	30.0	23.5	6.51	4.608		
1,600.0	1,599.8	1,599.8	1,599.8	3.5	3.5	-128.57	-29.1	0.0	33.0	26.0	6.95	4.749		
1,700.0	1,699.5	1,699.5	1,699.5	3.7	3.7	-138.53	-29.1	0.0	39.0	31.6	7.38	5.288		
1,800.0	1,798.7	1,798.7	1,798.7	3.9	3.9	-147.87	-29.1	0.0	48.7	40.9	7.81	6.242		
1,900.0	1,897.9	1,897.9	1,897.9	4.2	4.2	-154.46	-29.1	0.0	60.2	51.9	8.25	7.295		
2,000.0	1,997.0	1,997.0	1,997.0	4.5	4.4	-158.91	-29.1	0.0	72.1	63.5	8.69	8.300		
2,100.0	2,096.2	2,097.8	2,097.8	4.7	4.6	-161.20	-29.4	-1.7	83.5	74.3	9.13	9.146		
2,200.0	2,195.3	2,199.2	2,199.0	5.0	4.8	-161.17	-30.1	-6.9	92.8	83.3	9.56	9.713		
2,300.0	2,294.5	2,300.8	2,300.3	5.3	5.0	-159.46	-31.4	-15.6	100.2	90.2	10.01	10.012		
2,400.0	2,393.6	2,402.2	2,400.9	5.6	5.2	-156.35	-33.2	-27.9	105.8	95.3	10.48	10.094		
2,500.0	2,492.8	2,501.9	2,499.6	5.9	5.5	-152.98	-35.2	-41.3	111.0	100.1	10.98	10.112		
2,600.0	2,591.9	2,601.5	2,598.4	6.2	5.7	-149.92	-37.1	-54.7	116.6	105.1	11.50	10.143		
2,700.0	2,691.1	2,701.2	2,697.1	6.5	6.0	-147.15	-39.1	-68.1	122.5	110.5	12.04	10.180		
2,800.0	2,790.2	2,800.9	2,795.8	6.8	6.2	-144.64	-41.0	-81.5	128.7	116.1	12.59	10.222		
2,900.0	2,889.4	2,900.5	2,894.6	7.1	6.5	-142.36	-43.0	-94.9	135.1	121.9	13.16	10.267		
3,000.0	2,988.5	3,000.2	2,993.3	7.4	6.8	-140.29	-44.9	-108.3	141.7	127.9	13.73	10.314		
3,100.0	3,087.7	3,099.8	3,092.0	7.7	7.1	-138.40	-46.9	-121.7	148.4	134.1	14.32	10.361		
3,200.0	3,186.8	3,199.5	3,190.8	8.0	7.4	-136.68	-48.8	-135.1	155.3	140.4	14.92	10.409		
3,300.0	3,286.0	3,299.1	3,289.5	8.3	7.7	-135.11	-50.8	-148.5	162.3	146.8	15.52	10.456		
3,400.0	3,385.1	3,398.8	3,388.2	8.7	8.0	-133.66	-52.7	-161.9	169.5	153.3	16.14	10.502		
3,500.0	3,484.3	3,498.5	3,487.0	9.0	8.3	-132.34	-54.7	-175.3	176.7	159.9	16.75	10.548		
3,600.0	3,583.4	3,598.1	3,585.7	9.3	8.6	-131.12	-56.6	-188.7	184.0	166.6	17.37	10.592		
3,700.0	3,682.6	3,697.8	3,684.4	9.6	8.9	-129.99	-58.6	-202.2	191.4	173.4	18.00	10.636		
3,800.0	3,781.7	3,797.4	3,783.2	9.9	9.2	-128.95	-60.5	-215.6	198.9	180.2	18.62	10.678		
3,900.0	3,880.9	3,897.1	3,881.9	10.3	9.5	-127.98	-62.5	-229.0	206.4	187.1	19.26	10.719		
4,000.0	3,980.0	3,996.8	3,980.6	10.6	9.8	-127.08	-64.4	-242.4	214.0	194.1	19.89	10.758		
4,100.0	4,079.2	4,096.4	4,079.4	10.9	10.1	-126.25	-66.4	-255.8	221.6	201.1	20.52	10.797		
4,200.0	4,178.3	4,196.1	4,178.1	11.2	10.4	-125.46	-68.3	-269.2	229.3	208.1	21.16	10.834		
4,300.0	4,277.5	4,295.7	4,276.8	11.5	10.8	-124.73	-70.3	-282.6	237.0	215.2	21.80	10.870		
4,400.0	4,376.6	4,395.4	4,375.6	11.9	11.1	-124.05	-72.2	-296.0	244.7	222.3	22.44	10.905		
4,500.0	4,475.8	4,495.0	4,474.3	12.2	11.4	-123.41	-74.2	-309.4	252.5	229.4	23.09	10.938		
4,600.0	4,574.9	4,594.7	4,573.0	12.5	11.7	-122.80	-76.1	-322.8	260.3	236.6	23.73	10.971		
4,700.0	4,674.1	4,694.4	4,671.8	12.8	12.1	-122.23	-78.1	-336.2	268.2	243.8	24.37	11.002		
4,800.0	4,773.2	4,794.0	4,770.5	13.2	12.4	-121.70	-80.0	-349.6	276.0	251.0	25.02	11.032		
4,900.0	4,872.4	4,893.7	4,869.2	13.5	12.7	-121.19	-82.0	-363.0	283.9	258.2	25.67	11.062		
5,000.0	4,971.5	4,993.3	4,968.0	13.8	13.0	-120.71	-83.9	-376.4	291.8	265.5	26.31	11.090		

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 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	Offset TVD Reference:	Offset Datum

Offset Design Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W - Wiedeman 28F-412 - Wellbore #1 - Plan #1 (7- Survey Program: 0-MWD														Offset Site Error:	0.0 ft
Reference Offset Semi Major Axis														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	5,070.7	5,093.0	5,066.7	14.1	13.4	-120.26	-85.9	-389.8	299.7	272.8	26.96	11.117			
5,200.0	5,169.8	5,192.6	5,165.4	14.5	13.7	-119.83	-87.8	-403.2	307.7	280.1	27.61	11.144			
5,300.0	5,269.0	5,292.3	5,264.2	14.8	14.0	-119.42	-89.8	-416.6	315.6	287.4	28.26	11.169			
5,400.0	5,368.1	5,392.0	5,362.9	15.1	14.4	-119.03	-91.7	-430.1	323.6	294.7	28.91	11.194			
5,500.0	5,467.3	5,491.6	5,461.6	15.5	14.7	-118.66	-93.7	-443.5	331.6	302.0	29.56	11.218			
5,600.0	5,566.5	5,591.3	5,560.4	15.8	15.0	-118.30	-95.6	-456.9	339.6	309.4	30.21	11.241			
5,700.0	5,665.6	5,691.8	5,660.0	16.1	15.3	-118.05	-97.5	-470.0	347.4	316.6	30.83	11.270			
5,800.0	5,765.1	5,793.3	5,761.0	16.3	15.6	-117.95	-99.0	-480.1	353.5	322.2	31.29	11.299			
5,900.0	5,864.9	5,895.0	5,862.5	16.5	15.8	-117.89	-100.0	-486.7	357.5	325.8	31.69	11.282			
6,000.0	5,964.9	5,996.8	5,964.2	16.7	16.0	-117.86	-100.4	-489.8	359.3	327.3	32.02	11.220			
6,100.0	6,064.9	6,097.5	6,064.9	16.8	16.1	-180.00	-100.4	-490.0	359.4	331.6	27.81	12.924			
6,200.0	6,164.9	6,197.5	6,164.9	17.0	16.3	-180.00	-100.4	-490.0	359.4	331.2	28.21	12.741			
6,300.0	6,264.9	6,297.5	6,264.9	17.2	16.5	-180.00	-100.4	-490.0	359.4	330.8	28.61	12.562			
6,400.0	6,364.9	6,397.5	6,364.9	17.4	16.6	-180.00	-100.4	-490.0	359.4	330.4	29.02	12.388			
6,445.0	6,409.9	6,442.5	6,409.9	17.4	16.7	90.14	-100.4	-490.0	359.4	325.9	33.56	10.710			
6,500.0	6,464.8	6,497.4	6,464.8	17.5	16.8	90.44	-100.4	-490.0	359.5	325.7	33.75	10.651			
6,600.0	6,563.6	6,597.6	6,564.9	17.5	17.0	92.34	-100.4	-487.0	359.7	325.8	33.98	10.587			
6,700.0	6,659.6	6,699.6	6,665.6	17.5	17.0	94.33	-100.4	-471.3	360.5	326.5	34.03	10.593			
6,800.0	6,751.1	6,803.4	6,765.0	17.4	17.0	96.25	-100.4	-441.6	361.6	327.7	33.94	10.655			
6,900.0	6,836.7	6,909.1	6,861.1	17.4	16.9	98.07	-100.4	-397.9	363.1	329.3	33.79	10.746			
7,000.0	6,914.8	7,016.4	6,951.6	17.3	16.9	99.74	-100.4	-340.3	364.8	331.1	33.69	10.827			
7,100.0	6,984.0	7,125.5	7,034.4	17.4	17.0	101.24	-100.4	-269.4	366.5	332.7	33.82	10.837			
7,200.0	7,043.3	7,236.2	7,107.2	17.7	17.3	102.53	-100.4	-186.2	368.3	333.9	34.38	10.713			
7,300.0	7,091.5	7,348.2	7,167.9	18.3	17.9	103.59	-100.4	-92.2	369.8	334.3	35.53	10.408			
7,400.0	7,128.0	7,461.4	7,214.6	19.3	18.9	104.39	-100.4	10.8	371.1	333.7	37.43	9.916			
7,500.0	7,151.9	7,575.4	7,245.8	20.6	20.4	104.92	-100.4	120.4	372.0	331.9	40.05	9.287			
7,600.0	7,163.0	7,689.9	7,260.3	22.2	22.2	105.17	-100.4	233.8	372.4	329.1	43.31	8.598			
7,700.0	7,163.1	7,795.1	7,261.4	24.0	24.1	105.29	-100.4	339.0	372.6	325.8	46.85	7.953			
7,800.0	7,161.9	7,895.0	7,261.3	26.0	26.0	105.46	-100.4	439.0	372.9	322.3	50.63	7.367			
7,900.0	7,160.7	7,995.0	7,261.3	28.1	28.2	105.63	-100.4	538.9	373.2	318.6	54.67	6.828			
8,000.0	7,159.5	8,095.0	7,261.3	30.3	30.4	105.80	-100.4	638.9	373.6	314.6	58.92	6.341			
8,100.0	7,158.4	8,195.0	7,261.2	32.7	32.7	105.97	-100.4	738.9	373.9	310.5	63.33	5.903			
8,200.0	7,157.2	8,295.0	7,261.2	35.0	35.1	106.14	-100.4	838.9	374.2	306.3	67.88	5.512			
8,300.0	7,156.0	8,395.0	7,261.1	37.5	37.5	106.31	-100.4	938.9	374.5	302.0	72.54	5.163			
8,400.0	7,154.8	8,495.0	7,261.1	40.0	40.0	106.47	-100.4	1,038.9	374.8	297.6	77.27	4.851			
8,500.0	7,153.6	8,595.0	7,261.1	42.5	42.6	106.64	-100.4	1,138.9	375.2	293.1	82.08	4.571			
8,600.0	7,152.4	8,695.0	7,261.0	45.1	45.1	106.81	-100.4	1,238.9	375.5	288.6	86.94	4.319			
8,700.0	7,151.2	8,795.0	7,261.0	47.7	47.7	106.98	-100.4	1,338.9	375.8	284.0	91.84	4.092			
8,800.0	7,150.1	8,895.0	7,261.0	50.3	50.3	107.15	-100.4	1,438.9	376.2	279.4	96.78	3.887			
8,900.0	7,148.9	8,995.0	7,260.9	52.9	53.0	107.32	-100.4	1,538.9	376.5	274.8	101.75	3.700			
9,000.0	7,147.7	9,095.0	7,260.9	55.6	55.6	107.48	-100.4	1,638.9	376.9	270.1	106.74	3.531			
9,100.0	7,146.5	9,195.0	7,260.9	58.2	58.3	107.65	-100.4	1,738.9	377.2	265.5	111.75	3.375			
9,200.0	7,145.3	9,295.0	7,260.8	60.9	61.0	107.82	-100.4	1,838.9	377.6	260.8	116.78	3.233			
9,300.0	7,144.1	9,394.9	7,260.8	63.6	63.7	107.98	-100.4	1,938.9	377.9	256.1	121.82	3.102			
9,400.0	7,142.9	9,494.9	7,260.8	66.3	66.4	108.15	-100.4	2,038.8	378.3	251.4	126.87	2.982			
9,500.0	7,141.7	9,594.9	7,260.7	69.0	69.1	108.31	-100.4	2,138.8	378.6	246.7	131.92	2.870			
9,600.0	7,140.6	9,694.9	7,260.7	71.7	71.8	108.48	-100.4	2,238.8	379.0	242.0	136.98	2.767			
9,700.0	7,139.4	9,794.9	7,260.7	74.4	74.5	108.64	-100.4	2,338.8	379.4	237.3	142.04	2.671			
9,800.0	7,138.2	9,894.9	7,260.6	77.2	77.2	108.81	-100.4	2,438.8	379.7	232.6	147.10	2.581			
9,900.0	7,137.0	9,994.9	7,260.6	79.9	80.0	108.97	-100.4	2,538.8	380.1	227.9	152.17	2.498			

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 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	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				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	7,135.8	10,094.9	7,260.6	82.6	82.7	109.14	-100.4	2,638.8	380.5	223.3	157.23	2.420						
10,100.0	7,134.6	10,194.9	7,260.5	85.4	85.5	109.30	-100.4	2,738.8	380.9	218.6	162.29	2.347						
10,200.0	7,133.4	10,294.9	7,260.5	88.1	88.2	109.46	-100.4	2,838.8	381.3	213.9	167.35	2.278						
10,300.0	7,132.3	10,394.9	7,260.4	90.9	91.0	109.63	-100.4	2,938.8	381.6	209.2	172.40	2.214						
10,400.0	7,131.1	10,494.9	7,260.4	93.6	93.7	109.79	-100.4	3,038.8	382.0	204.6	177.45	2.153						
10,500.0	7,129.9	10,594.9	7,260.4	96.4	96.5	109.95	-100.4	3,138.8	382.4	199.9	182.50	2.095						
10,600.0	7,128.7	10,694.9	7,260.3	99.1	99.2	110.11	-100.4	3,238.8	382.8	195.3	187.54	2.041						
10,700.0	7,127.5	10,794.9	7,260.3	101.9	102.0	110.28	-100.4	3,338.8	383.2	190.6	192.57	1.990						
10,800.0	7,126.3	10,894.8	7,260.3	104.7	104.8	110.44	-100.4	3,438.8	383.6	186.0	197.60	1.941						
10,900.0	7,125.1	10,994.8	7,260.2	107.4	107.5	110.60	-100.4	3,538.7	384.0	181.4	202.62	1.895						
11,000.0	7,123.9	11,094.8	7,260.2	110.2	110.3	110.76	-100.4	3,638.7	384.4	176.8	207.64	1.851						
11,100.0	7,122.8	11,194.8	7,260.2	113.0	113.1	110.92	-100.4	3,738.7	384.8	172.2	212.64	1.810						
11,200.0	7,121.6	11,294.8	7,260.1	115.7	115.8	111.08	-100.4	3,838.7	385.2	167.6	217.64	1.770						
11,300.0	7,120.4	11,394.8	7,260.1	118.5	118.6	111.24	-100.4	3,938.7	385.7	163.0	222.63	1.732						
11,400.0	7,119.2	11,494.8	7,260.1	121.3	121.4	111.40	-100.4	4,038.7	386.1	158.5	227.61	1.696						
11,500.0	7,118.0	11,594.8	7,260.0	124.1	124.2	111.56	-100.4	4,138.7	386.5	153.9	232.58	1.662						
11,585.2	7,117.0	11,680.0	7,260.0	126.4	125.7	111.69	-100.4	4,223.9	386.9	150.8	236.05	1.639 SF						

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	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	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	1.0	1.0	0.0	0.0	-84.47	29.1	-301.3	302.7					
100.0	100.0	101.0	101.0	0.1	0.1	-84.47	29.1	-301.3	302.7	302.5	0.23	1,333.450		
200.0	200.0	201.0	201.0	0.3	0.3	-84.47	29.1	-301.3	302.7	302.0	0.68	447.437		
300.0	300.0	301.0	301.0	0.6	0.6	-84.47	29.1	-301.3	302.7	301.6	1.13	268.819		
366.3	366.3	367.3	367.3	0.7	0.7	-84.47	29.1	-301.3	302.7	301.3	1.42	212.541 CC		
400.0	400.0	400.0	400.0	0.8	0.8	-84.47	29.1	-301.3	302.7	301.1	1.57	192.399 ES		
500.0	500.0	495.8	495.8	1.0	1.0	-84.21	30.6	-302.0	303.6	301.6	2.01	150.739		
600.0	600.0	590.5	590.4	1.2	1.2	-83.45	34.9	-304.0	306.1	303.7	2.46	124.598		
700.0	700.0	684.8	684.3	1.5	1.4	-82.22	42.0	-307.3	310.6	307.7	2.90	106.953		
800.0	800.0	779.1	778.0	1.7	1.7	-80.56	51.9	-311.8	316.9	313.6	3.36	94.448		
900.0	900.0	878.3	876.4	1.9	2.0	-78.70	63.4	-317.2	324.4	320.6	3.81	85.093		
1,000.0	1,000.0	977.5	974.7	2.1	2.3	-76.93	74.9	-322.5	332.1	327.9	4.27	77.801		
1,100.0	1,100.0	1,076.6	1,073.1	2.4	2.6	-75.24	86.4	-327.8	340.2	335.4	4.73	71.918		
1,200.0	1,200.0	1,175.8	1,171.5	2.6	2.9	-73.62	97.9	-333.2	348.5	343.3	5.20	67.085		
1,300.0	1,300.0	1,275.0	1,269.8	2.8	3.2	-72.09	109.4	-338.5	357.1	351.5	5.66	63.051		
1,400.0	1,400.0	1,374.2	1,368.2	3.0	3.5	-70.62	120.9	-343.9	366.0	359.8	6.14	59.639		
1,500.0	1,500.0	1,473.5	1,466.7	3.3	3.8	-7.10	132.5	-349.2	373.3	366.6	6.77	55.108		
1,600.0	1,599.8	1,573.1	1,565.5	3.5	4.1	-5.83	144.0	-354.6	377.4	370.2	7.24	52.118		
1,700.0	1,699.5	1,672.8	1,664.3	3.7	4.4	-4.64	155.6	-359.9	378.2	370.5	7.70	49.097		
1,800.0	1,798.7	1,772.4	1,763.2	3.9	4.8	-3.49	167.2	-365.3	375.8	367.6	8.16	46.030		
1,900.0	1,897.9	1,872.1	1,862.0	4.2	5.1	-2.33	178.8	-370.6	372.6	364.0	8.64	43.125		
2,000.0	1,997.0	1,971.8	1,960.9	4.5	5.4	-1.16	190.3	-376.0	369.5	360.4	9.12	40.541		
2,100.0	2,096.2	2,071.4	2,059.7	4.7	5.7	0.04	201.9	-381.4	366.7	357.1	9.59	38.230		
2,200.0	2,195.3	2,171.1	2,158.5	5.0	6.0	1.26	213.5	-386.7	363.9	353.9	10.07	36.157		
2,300.0	2,294.5	2,270.7	2,257.4	5.3	6.4	2.49	225.0	-392.1	361.4	350.8	10.54	34.288		
2,400.0	2,393.6	2,370.4	2,356.2	5.6	6.7	3.75	236.6	-397.5	359.0	348.0	11.01	32.598		
2,500.0	2,492.8	2,470.1	2,455.1	5.9	7.0	5.01	248.2	-402.8	356.8	345.3	11.49	31.064		
2,600.0	2,591.9	2,569.7	2,553.9	6.2	7.3	6.29	259.7	-408.2	354.8	342.8	11.96	29.668		
2,700.0	2,691.1	2,669.4	2,652.7	6.5	7.6	7.59	271.3	-413.5	352.9	340.5	12.43	28.392		
2,800.0	2,790.2	2,769.0	2,751.6	6.8	8.0	8.90	282.9	-418.9	351.3	338.4	12.90	27.223		
2,900.0	2,889.4	2,868.7	2,850.4	7.1	8.3	10.22	294.5	-424.3	349.8	336.4	13.38	26.150		
3,000.0	2,988.5	2,968.4	2,949.3	7.4	8.6	11.55	306.0	-429.6	348.5	334.6	13.85	25.163		
3,100.0	3,087.7	3,068.0	3,048.1	7.7	8.9	12.89	317.6	-435.0	347.4	333.1	14.32	24.251		
3,200.0	3,186.8	3,167.7	3,146.9	8.0	9.3	14.24	329.2	-440.4	346.5	331.7	14.80	23.408		
3,300.0	3,286.0	3,267.3	3,245.8	8.3	9.6	15.60	340.7	-445.7	345.8	330.5	15.28	22.627		
3,400.0	3,385.1	3,367.0	3,344.6	8.7	9.9	16.96	352.3	-451.1	345.2	329.5	15.76	21.902		
3,500.0	3,484.3	3,466.7	3,443.5	9.0	10.2	18.32	363.9	-456.5	344.9	328.7	16.25	21.228		
3,600.0	3,583.4	3,566.3	3,542.3	9.3	10.5	19.68	375.5	-461.8	344.8	328.1	16.74	20.600		
3,613.6	3,596.9	3,579.9	3,555.8	9.3	10.6	19.87	377.0	-462.5	344.8	328.0	16.81	20.517		
3,700.0	3,682.6	3,666.0	3,641.1	9.6	10.9	21.05	387.0	-467.2	344.9	327.6	17.23	20.014		
3,800.0	3,781.7	3,765.6	3,740.0	9.9	11.2	22.41	398.6	-472.5	345.1	327.4	17.73	19.466		
3,900.0	3,880.9	3,865.3	3,838.8	10.3	11.5	23.77	410.2	-477.9	345.6	327.4	18.23	18.954		
4,000.0	3,980.0	3,965.0	3,937.7	10.6	11.8	25.13	421.7	-483.3	346.3	327.5	18.74	18.474		
4,100.0	4,079.2	4,064.6	4,036.5	10.9	12.2	26.48	433.3	-488.6	347.1	327.9	19.26	18.024		
4,200.0	4,178.3	4,164.3	4,135.4	11.2	12.5	27.82	444.9	-494.0	348.2	328.4	19.78	17.601		
4,300.0	4,277.5	4,263.9	4,234.2	11.5	12.8	29.15	456.4	-499.4	349.4	329.1	20.31	17.205		
4,400.0	4,376.6	4,363.6	4,333.0	11.9	13.1	30.48	468.0	-504.7	350.8	330.0	20.84	16.832		
4,500.0	4,475.8	4,463.3	4,431.9	12.2	13.5	31.79	479.6	-510.1	352.4	331.1	21.39	16.480		
4,600.0	4,574.9	4,562.9	4,530.7	12.5	13.8	33.09	491.2	-515.4	354.2	332.3	21.93	16.150		
4,700.0	4,674.1	4,662.6	4,629.6	12.8	14.1	34.37	502.7	-520.8	356.2	333.7	22.49	15.839		
4,800.0	4,773.2	4,762.2	4,728.4	13.2	14.4	35.65	514.3	-526.2	358.4	335.3	23.05	15.545		

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 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	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		
4,900.0	4,872.4	4,861.9	4,827.2	13.5	14.8	36.90	525.9	-531.5	360.7	337.1	23.63	15.268			
5,000.0	4,971.5	4,961.6	4,926.1	13.8	15.1	38.14	537.4	-536.9	363.2	339.0	24.20	15.008			
5,100.0	5,070.7	5,061.2	5,024.9	14.1	15.4	39.36	549.0	-542.3	365.9	341.1	24.79	14.762			
5,200.0	5,169.8	5,160.9	5,123.8	14.5	15.7	40.57	560.6	-547.6	368.7	343.4	25.38	14.529			
5,300.0	5,269.0	5,260.5	5,222.6	14.8	16.0	41.75	572.2	-553.0	371.7	345.8	25.98	14.310			
5,400.0	5,368.1	5,360.2	5,321.4	15.1	16.4	42.92	583.7	-558.3	374.9	348.3	26.58	14.104			
5,500.0	5,467.3	5,459.9	5,420.3	15.5	16.7	44.06	595.3	-563.7	378.2	351.0	27.19	13.909			
5,600.0	5,566.5	5,559.5	5,519.1	15.8	17.0	45.19	606.9	-569.1	381.7	353.9	27.81	13.725			
5,700.0	5,665.6	5,659.2	5,618.0	16.1	17.3	46.29	618.4	-574.4	385.5	357.0	28.41	13.566			
5,800.0	5,765.1	5,758.9	5,716.8	16.3	17.7	47.13	630.0	-579.8	391.3	362.4	28.91	13.534			
5,900.0	5,864.9	5,871.7	5,828.9	16.5	18.0	47.67	641.7	-585.2	398.2	368.8	29.34	13.572			
6,000.0	5,964.9	5,987.4	5,944.3	16.7	18.2	47.89	649.5	-588.8	403.5	373.8	29.69	13.593			
6,100.0	6,064.9	6,103.5	6,060.3	16.8	18.4	-14.31	653.1	-590.5	406.7	373.4	33.30	12.213			
6,200.0	6,164.9	6,209.1	6,165.9	17.0	18.5	-14.31	653.3	-590.6	407.0	373.3	33.64	12.096			
6,300.0	6,264.9	6,309.1	6,265.9	17.2	18.7	-14.31	653.3	-590.6	407.0	373.0	33.99	11.972			
6,335.9	6,300.8	6,345.0	6,301.8	17.2	18.8	-14.31	653.3	-590.6	407.0	372.8	34.12	11.927			
6,400.0	6,364.9	6,403.4	6,360.2	17.4	18.9	-14.47	653.3	-591.8	407.3	372.9	34.35	11.857 SF			
6,500.0	6,464.8	6,490.1	6,446.3	17.5	19.0	-105.88	653.3	-601.5	411.0	379.7	31.35	13.111			
6,600.0	6,563.6	6,569.3	6,523.5	17.5	19.3	-108.82	653.3	-618.9	422.7	391.4	31.28	13.512			
6,700.0	6,659.6	6,636.1	6,587.0	17.5	19.5	-111.90	653.3	-639.7	446.1	415.0	31.06	14.361			
6,800.0	6,751.1	6,688.5	6,635.4	17.4	19.7	-113.70	653.3	-659.8	484.1	453.3	30.83	15.702			
6,900.0	6,836.7	6,726.6	6,669.6	17.4	19.8	-113.26	653.3	-676.5	537.2	506.3	30.81	17.433			
7,000.0	6,914.8	6,750.0	6,690.2	17.3	19.9	-109.73	653.3	-687.6	603.4	572.1	31.35	19.249			
7,100.0	6,984.0	6,766.6	6,704.6	17.4	20.0	-103.31	653.3	-695.8	679.8	647.2	32.60	20.852			
7,200.0	7,043.3	6,772.1	6,709.4	17.7	20.1	-92.94	653.3	-698.7	763.0	728.5	34.41	22.171			
7,300.0	7,091.5	6,770.4	6,707.9	18.3	20.0	-79.46	653.3	-697.8	850.0	814.4	35.66	23.836			
7,400.0	7,128.0	6,750.0	6,690.2	19.3	19.9	-63.45	653.3	-687.6	938.7	903.9	34.80	26.979			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	Offset TVD Reference:	Offset Datum

Offset Design		Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W - Wiedeman 28E-404 - 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	1.0	1.0	0.0	0.0	-79.05	58.3	-301.3	306.9					
100.0	100.0	101.0	101.0	0.1	0.1	-79.05	58.3	-301.3	306.9	306.7	0.23	1,351.863		
166.3	166.3	167.3	167.3	0.3	0.3	-79.05	58.3	-301.3	306.9	306.4	0.53	584.345 CC		
200.0	200.0	200.0	200.0	0.3	0.3	-79.05	58.3	-301.3	306.9	306.2	0.67	455.129 ES		
300.0	300.0	295.9	295.9	0.6	0.6	-78.79	59.8	-301.8	307.7	306.6	1.12	275.513		
400.0	400.0	390.7	390.6	0.8	0.8	-78.03	64.3	-303.3	310.2	308.6	1.57	198.179		
500.0	500.0	485.1	484.6	1.0	1.0	-76.79	71.7	-305.8	314.5	312.5	2.02	155.934		
600.0	600.0	578.8	577.7	1.2	1.3	-75.14	82.0	-309.2	320.7	318.2	2.47	129.797		
700.0	700.0	672.3	670.1	1.5	1.6	-73.11	95.2	-313.5	329.1	326.1	2.93	112.225		
800.0	800.0	770.9	767.5	1.7	1.9	-70.90	110.3	-318.5	338.7	335.3	3.40	99.704		
900.0	900.0	869.6	864.9	1.9	2.2	-68.81	125.4	-323.5	348.8	345.0	3.86	90.271		
1,000.0	1,000.0	968.3	962.3	2.1	2.6	-66.83	140.6	-328.5	359.4	355.0	4.34	82.832		
1,100.0	1,100.0	1,067.0	1,059.7	2.4	2.9	-64.97	155.7	-333.5	370.4	365.5	4.82	76.831		
1,200.0	1,200.0	1,165.7	1,157.1	2.6	3.3	-63.22	170.8	-338.5	381.7	376.4	5.31	71.901		
1,300.0	1,300.0	1,264.4	1,254.5	2.8	3.7	-61.57	186.0	-343.5	393.4	387.6	5.80	67.785		
1,400.0	1,400.0	1,363.1	1,351.9	3.0	4.0	-60.01	201.1	-348.5	405.3	399.0	6.30	64.304		
1,500.0	1,500.0	1,461.9	1,449.4	3.3	4.4	3.60	216.3	-353.5	415.9	408.8	7.06	58.900		
1,600.0	1,599.8	1,561.1	1,547.3	3.5	4.8	5.04	231.5	-358.5	423.2	415.7	7.54	56.144		
1,700.0	1,699.5	1,660.4	1,645.3	3.7	5.1	6.48	246.7	-363.6	427.3	419.3	8.01	53.373		
1,800.0	1,798.7	1,759.8	1,743.4	3.9	5.5	7.96	261.9	-368.6	428.4	419.9	8.47	50.570		
1,900.0	1,897.9	1,859.1	1,841.4	4.2	5.9	9.45	277.2	-373.6	428.8	419.9	8.95	47.920		
2,000.0	1,997.0	1,958.5	1,939.5	4.5	6.2	10.95	292.4	-378.7	429.5	420.1	9.43	45.575		
2,100.0	2,096.2	2,057.9	2,037.5	4.7	6.6	12.43	307.6	-383.7	430.6	420.7	9.90	43.488		
2,200.0	2,195.3	2,157.2	2,135.6	5.0	7.0	13.91	322.9	-388.7	431.9	421.5	10.38	41.624		
2,300.0	2,294.5	2,256.6	2,233.7	5.3	7.3	15.38	338.1	-393.8	433.5	422.6	10.85	39.950		
2,400.0	2,393.6	2,356.0	2,331.7	5.6	7.7	16.83	353.4	-398.8	435.3	424.0	11.32	38.441		
2,500.0	2,492.8	2,455.3	2,429.8	5.9	8.1	18.27	368.6	-403.8	437.5	425.7	11.80	37.074		
2,600.0	2,591.9	2,554.7	2,527.8	6.2	8.4	19.70	383.8	-408.9	439.9	427.7	12.28	35.833		
2,700.0	2,691.1	2,654.1	2,625.9	6.5	8.8	21.11	399.1	-413.9	442.7	429.9	12.76	34.700		
2,800.0	2,790.2	2,753.4	2,724.0	6.8	9.2	22.51	414.3	-418.9	445.6	432.4	13.24	33.664		
2,900.0	2,889.4	2,852.8	2,822.0	7.1	9.6	23.88	429.5	-424.0	448.9	435.2	13.72	32.714		
3,000.0	2,988.5	2,952.1	2,920.1	7.4	9.9	25.24	444.8	-429.0	452.4	438.2	14.21	31.838		
3,100.0	3,087.7	3,051.5	3,018.1	7.7	10.3	26.57	460.0	-434.0	456.1	441.4	14.70	31.030		
3,200.0	3,186.8	3,150.9	3,116.2	8.0	10.7	27.88	475.2	-439.1	460.1	444.9	15.20	30.282		
3,300.0	3,286.0	3,250.2	3,214.3	8.3	11.0	29.17	490.5	-444.1	464.4	448.7	15.69	29.587		
3,400.0	3,385.1	3,349.6	3,312.3	8.7	11.4	30.43	505.7	-449.2	468.8	452.6	16.20	28.942		
3,500.0	3,484.3	3,449.0	3,410.4	9.0	11.8	31.67	521.0	-454.2	473.5	456.8	16.71	28.340		
3,600.0	3,583.4	3,548.3	3,508.4	9.3	12.2	32.89	536.2	-459.2	478.4	461.2	17.22	27.777		
3,700.0	3,682.6	3,647.7	3,606.5	9.6	12.5	34.08	551.4	-464.3	483.6	465.8	17.74	27.251		
3,800.0	3,781.7	3,747.1	3,704.6	9.9	12.9	35.24	566.7	-469.3	488.9	470.6	18.27	26.758		
3,900.0	3,880.9	3,846.4	3,802.6	10.3	13.3	36.38	581.9	-474.3	494.4	475.6	18.80	26.295		
4,000.0	3,980.0	3,945.8	3,900.7	10.6	13.6	37.49	597.1	-479.4	500.2	480.8	19.34	25.860		
4,100.0	4,079.2	4,045.1	3,998.7	10.9	14.0	38.58	612.4	-484.4	506.1	486.2	19.88	25.450		
4,200.0	4,178.3	4,144.5	4,096.8	11.2	14.4	39.65	627.6	-489.4	512.2	491.7	20.43	25.064		
4,300.0	4,277.5	4,243.9	4,194.8	11.5	14.7	40.69	642.9	-494.5	518.4	497.4	20.99	24.700		
4,400.0	4,376.6	4,343.2	4,292.9	11.9	15.1	41.70	658.1	-499.5	524.8	503.3	21.55	24.355		
4,500.0	4,475.8	4,442.6	4,391.0	12.2	15.5	42.69	673.3	-504.5	531.4	509.3	22.12	24.030		
4,600.0	4,574.9	4,542.0	4,489.0	12.5	15.9	43.65	688.6	-509.6	538.2	515.5	22.69	23.722		
4,700.0	4,674.1	4,641.3	4,587.1	12.8	16.2	44.59	703.8	-514.6	545.1	521.8	23.26	23.430		
4,800.0	4,773.2	4,740.7	4,685.1	13.2	16.6	45.51	719.0	-519.6	552.1	528.3	23.85	23.153		
4,900.0	4,872.4	4,840.1	4,783.2	13.5	17.0	46.40	734.3	-524.7	559.3	534.9	24.43	22.891		

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 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	Offset TVD Reference:	Offset Datum

Offset Design Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W - Wiedeman 28E-404 - 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		
5,000.0	4,971.5	4,939.4	4,881.3	13.8	17.3	47.28	749.5	-529.7	566.6	541.6	25.02	22.642		
5,100.0	5,070.7	5,038.8	4,979.3	14.1	17.7	48.12	764.8	-534.7	574.0	548.4	25.62	22.405		
5,200.0	5,169.8	5,138.1	5,077.4	14.5	18.1	48.95	780.0	-539.8	581.6	555.4	26.22	22.180		
5,300.0	5,269.0	5,237.5	5,175.4	14.8	18.5	49.76	795.2	-544.8	589.3	562.5	26.83	21.967		
5,400.0	5,368.1	5,336.9	5,273.5	15.1	18.8	50.54	810.5	-549.9	597.1	569.6	27.43	21.763		
5,500.0	5,467.3	5,436.2	5,371.6	15.5	19.2	51.31	825.7	-554.9	605.0	576.9	28.05	21.570		
5,600.0	5,566.5	5,535.6	5,469.6	15.8	19.6	52.05	840.9	-559.9	613.0	584.3	28.66	21.385		
5,700.0	5,665.6	5,635.0	5,567.7	16.1	19.9	52.81	856.2	-565.0	621.2	592.0	29.26	21.230		
5,800.0	5,765.1	5,734.3	5,665.7	16.3	20.3	53.46	871.4	-570.0	631.3	601.5	29.76	21.216		
5,900.0	5,864.9	5,833.5	5,763.7	16.5	20.7	53.87	886.6	-575.0	643.4	613.2	30.20	21.305		
6,000.0	5,964.9	5,939.6	5,868.4	16.7	21.1	54.05	902.7	-580.3	657.4	626.8	30.60	21.486		
6,100.0	6,064.9	6,068.1	5,995.8	16.8	21.4	-8.24	918.4	-585.5	670.0	634.0	35.96	18.631		
6,200.0	6,164.9	6,197.9	6,125.1	17.0	21.7	-8.40	928.7	-588.9	678.2	641.8	36.44	18.612		
6,300.0	6,264.9	6,328.3	6,255.4	17.2	21.9	-8.47	933.5	-590.5	682.0	645.1	36.84	18.511		
6,400.0	6,364.9	6,438.8	6,365.9	17.4	22.0	-8.48	933.8	-590.6	682.2	645.1	37.18	18.349 SF		
6,401.4	6,366.3	6,440.2	6,367.3	17.4	22.0	-98.48	933.8	-590.6	682.2	650.1	32.15	21.218		
6,500.0	6,464.8	6,538.7	6,465.8	17.5	22.2	-98.68	933.8	-590.6	682.7	650.2	32.45	21.039		
6,600.0	6,563.6	6,630.2	6,557.3	17.5	22.3	-99.71	933.8	-592.0	685.4	652.8	32.54	21.063		
6,700.0	6,659.6	6,708.3	6,634.8	17.5	22.4	-101.58	933.8	-600.8	693.1	660.7	32.46	21.352		
6,800.0	6,751.1	6,773.7	6,698.8	17.4	22.6	-103.48	933.8	-614.2	708.6	676.3	32.32	21.928		
6,900.0	6,836.7	6,824.6	6,747.7	17.4	22.7	-104.51	933.8	-628.3	734.4	702.2	32.23	22.783		
7,000.0	6,914.8	6,861.4	6,782.4	17.3	22.8	-104.05	933.8	-640.6	771.8	739.4	32.40	23.820		
7,100.0	6,984.0	6,885.7	6,804.9	17.4	22.9	-101.74	933.8	-649.6	820.8	787.8	33.02	24.860		
7,200.0	7,043.3	6,900.0	6,818.1	17.7	23.0	-97.47	933.8	-655.2	879.8	845.7	34.16	25.760		
7,300.0	7,091.5	6,900.0	6,818.1	18.3	23.0	-90.71	933.8	-655.2	946.8	911.1	35.69	26.531		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	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		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor				
				(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)								
0.0	0.0	1.0	1.0	0.0	0.0	-95.52	-29.1	-301.3	302.7							
100.0	100.0	101.0	101.0	0.1	0.1	-95.52	-29.1	-301.3	302.7	302.5	0.23	1,333.452				
200.0	200.0	201.0	201.0	0.3	0.3	-95.52	-29.1	-301.3	302.7	302.0	0.68	447.437				
300.0	300.0	301.0	301.0	0.6	0.6	-95.52	-29.1	-301.3	302.7	301.6	1.13	268.820				
400.0	400.0	401.0	401.0	0.8	0.8	-95.52	-29.1	-301.3	302.7	301.1	1.58	192.124				
500.0	500.0	501.0	501.0	1.0	1.0	-95.52	-29.1	-301.3	302.7	300.7	2.03	149.477				
600.0	600.0	601.0	601.0	1.2	1.2	-95.52	-29.1	-301.3	302.7	300.2	2.47	122.324				
700.0	700.0	701.0	701.0	1.5	1.5	-95.52	-29.1	-301.3	302.7	299.8	2.92	103.519				
800.0	800.0	801.0	801.0	1.7	1.7	-95.52	-29.1	-301.3	302.7	299.3	3.37	89.726				
900.0	900.0	901.0	901.0	1.9	1.9	-95.52	-29.1	-301.3	302.7	298.9	3.82	79.176				
1,000.0	1,000.0	1,001.0	1,001.0	2.1	2.1	-95.52	-29.1	-301.3	302.7	298.4	4.27	70.846				
1,100.0	1,100.0	1,101.0	1,101.0	2.4	2.4	-95.52	-29.1	-301.3	302.7	298.0	4.72	64.102				
1,200.0	1,200.0	1,201.0	1,201.0	2.6	2.6	-95.52	-29.1	-301.3	302.7	297.5	5.17	58.530				
1,300.0	1,300.0	1,301.0	1,301.0	2.8	2.8	-95.52	-29.1	-301.3	302.7	297.1	5.62	53.850				
1,400.0	1,400.0	1,401.0	1,401.0	3.0	3.0	-95.52	-29.1	-301.3	302.7	296.6	6.07	49.863				
1,500.0	1,500.0	1,501.0	1,501.0	3.3	3.3	-33.58	-29.1	-301.3	301.3	294.7	6.51	46.268				
1,600.0	1,599.8	1,600.8	1,600.8	3.5	3.5	-34.19	-29.1	-301.3	296.9	290.0	6.94	42.776				
1,700.0	1,699.5	1,700.5	1,700.5	3.7	3.7	-35.24	-29.1	-301.3	289.7	282.4	7.37	39.317				
1,800.0	1,798.7	1,799.7	1,799.7	3.9	3.9	-36.75	-29.1	-301.3	279.9	272.1	7.80	35.877				
1,900.0	1,897.9	1,890.7	1,890.7	4.2	4.1	-38.16	-28.9	-302.7	271.1	262.9	8.22	32.962				
2,000.0	1,997.0	1,982.3	1,982.1	4.5	4.3	-39.45	-28.3	-307.0	265.4	256.8	8.65	30.701				
2,100.0	2,096.2	2,074.1	2,073.7	4.7	4.5	-40.57	-27.3	-314.3	262.9	253.8	9.08	28.965				
2,131.2	2,127.1	2,102.8	2,102.3	4.8	4.6	-40.88	-26.9	-317.1	262.8	253.5	9.21	28.519	CC			
2,200.0	2,195.3	2,169.8	2,168.8	5.0	4.7	-41.53	-25.8	-324.5	263.2	253.6	9.53	27.628				
2,300.0	2,294.5	2,269.7	2,268.1	5.3	5.0	-42.50	-24.2	-335.7	263.9	253.9	9.99	26.411				
2,400.0	2,393.6	2,369.6	2,367.3	5.6	5.2	-43.45	-22.6	-346.8	264.8	254.3	10.47	25.289				
2,500.0	2,492.8	2,469.5	2,466.6	5.9	5.5	-44.41	-21.1	-358.0	265.7	254.7	10.96	24.251				
2,600.0	2,591.9	2,569.4	2,565.9	6.2	5.7	-45.35	-19.5	-369.1	266.7	255.2	11.45	23.292				
2,700.0	2,691.1	2,669.3	2,665.1	6.5	6.0	-46.29	-17.9	-380.3	267.7	255.8	11.95	22.403				
2,800.0	2,790.2	2,769.2	2,764.4	6.8	6.2	-47.22	-16.3	-391.4	268.9	256.4	12.46	21.578				
2,900.0	2,889.4	2,869.1	2,863.6	7.1	6.5	-48.14	-14.7	-402.6	270.1	257.1	12.98	20.811				
3,000.0	2,988.5	2,969.0	2,962.9	7.4	6.8	-49.05	-13.1	-413.7	271.3	257.8	13.50	20.098				
3,100.0	3,087.7	3,068.9	3,062.2	7.7	7.1	-49.96	-11.5	-424.9	272.7	258.6	14.03	19.434				
3,200.0	3,186.8	3,168.8	3,161.4	8.0	7.3	-50.85	-9.9	-436.0	274.1	259.5	14.57	18.815				
3,300.0	3,286.0	3,268.7	3,260.7	8.3	7.6	-51.74	-8.3	-447.2	275.5	260.4	15.11	18.236				
3,400.0	3,385.1	3,368.6	3,360.0	8.7	7.9	-52.62	-6.7	-458.3	277.1	261.4	15.66	17.695				
3,500.0	3,484.3	3,468.5	3,459.2	9.0	8.2	-53.48	-5.1	-469.5	278.7	262.5	16.21	17.188				
3,600.0	3,583.4	3,568.4	3,558.5	9.3	8.5	-54.34	-3.6	-480.6	280.3	263.6	16.77	16.713				
3,700.0	3,682.6	3,668.3	3,657.7	9.6	8.8	-55.19	-2.0	-491.7	282.1	264.7	17.34	16.267				
3,800.0	3,781.7	3,768.2	3,757.0	9.9	9.0	-56.02	-0.4	-502.9	283.8	265.9	17.91	15.849				
3,900.0	3,880.9	3,868.1	3,856.3	10.3	9.3	-56.85	1.2	-514.0	285.7	267.2	18.49	15.455				
4,000.0	3,980.0	3,968.0	3,955.5	10.6	9.6	-57.66	2.8	-525.2	287.6	268.5	19.07	15.084				
4,100.0	4,079.2	4,067.9	4,054.8	10.9	9.9	-58.47	4.4	-536.3	289.6	269.9	19.65	14.735				
4,200.0	4,178.3	4,167.8	4,154.0	11.2	10.2	-59.26	6.0	-547.5	291.6	271.3	20.24	14.406				
4,300.0	4,277.5	4,267.7	4,253.3	11.5	10.5	-60.04	7.6	-558.6	293.6	272.8	20.83	14.095				
4,400.0	4,376.6	4,367.6	4,352.6	11.9	10.8	-60.81	9.2	-569.8	295.8	274.3	21.43	13.801				
4,500.0	4,475.8	4,473.7	4,458.2	12.2	11.1	-61.77	10.7	-580.5	297.2	275.1	22.02	13.495				
4,600.0	4,574.9	4,581.7	4,565.9	12.5	11.3	-63.25	11.7	-587.5	296.0	273.3	22.62	13.085				
4,700.0	4,674.1	4,689.0	4,673.2	12.8	11.5	-65.29	12.1	-590.5	292.3	269.1	23.23	12.581				
4,800.0	4,773.2	4,790.1	4,774.2	13.2	11.7	-67.66	12.1	-590.6	287.1	263.3	23.85	12.039				
4,900.0	4,872.4	4,889.2	4,873.4	13.5	11.8	-70.08	12.1	-590.6	282.4	257.9	24.48	11.535				

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 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	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
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		
5,000.0	4,971.5	4,988.4	4,972.5	13.8	12.0	-72.58	12.1	-590.6	278.2	253.1	25.12	11.077			
5,100.0	5,070.7	5,087.5	5,071.7	14.1	12.2	-75.15	12.1	-590.6	274.6	248.8	25.75	10.663			
5,200.0	5,169.8	5,186.7	5,170.8	14.5	12.4	-77.78	12.1	-590.6	271.5	245.1	26.38	10.292			
5,300.0	5,269.0	5,285.8	5,270.0	14.8	12.6	-80.47	12.1	-590.6	269.0	242.0	27.01	9.962			
5,400.0	5,368.1	5,385.0	5,369.1	15.1	12.8	-83.20	12.1	-590.6	267.2	239.5	27.62	9.673			
5,500.0	5,467.3	5,484.1	5,468.3	15.5	13.0	-85.95	12.1	-590.6	265.9	237.7	28.23	9.422			
5,600.0	5,566.5	5,583.3	5,567.5	15.8	13.2	-88.73	12.1	-590.6	265.3	236.5	28.82	9.207			
5,646.6	5,612.7	5,629.5	5,613.7	15.9	13.3	-90.00	12.1	-590.6	265.3	236.2	29.08	9.122			
5,700.0	5,665.6	5,682.5	5,666.6	16.1	13.4	-91.47	12.1	-590.6	265.3	236.0	29.38	9.033			
5,800.0	5,765.1	5,782.0	5,766.1	16.3	13.6	-93.60	12.1	-590.6	265.8	236.0	29.83	8.911			
5,900.0	5,864.9	5,881.8	5,865.9	16.5	13.8	-95.00	12.1	-590.6	266.3	236.0	30.23	8.807			
6,000.0	5,964.9	5,981.7	5,965.9	16.7	14.0	-95.64	12.1	-590.6	266.5	235.9	30.61	8.709 ES			
6,100.0	6,064.9	6,081.7	6,065.9	16.8	14.2	-157.83	12.1	-590.6	266.6	239.6	26.99	9.877			
6,200.0	6,164.9	6,181.7	6,165.9	17.0	14.4	-157.83	12.1	-590.6	266.6	239.2	27.41	9.725			
6,300.0	6,264.9	6,281.7	6,265.9	17.2	14.6	-157.83	12.1	-590.6	266.6	238.7	27.84	9.577			
6,335.9	6,300.7	6,317.6	6,301.7	17.2	14.7	-157.83	12.1	-590.6	266.6	238.6	27.99	9.525			
6,400.0	6,364.9	6,376.0	6,360.2	17.4	14.8	-157.59	12.1	-591.8	267.1	238.8	28.25	9.455			
6,500.0	6,464.8	6,462.7	6,446.3	17.5	15.1	114.44	12.1	-601.5	272.7	240.3	32.45	8.405 SF			
6,600.0	6,563.6	6,542.0	6,523.5	17.5	15.4	118.57	12.1	-618.9	290.0	257.5	32.58	8.901			
6,700.0	6,659.6	6,608.8	6,587.0	17.5	15.7	122.71	12.1	-639.7	323.2	290.7	32.43	9.964			
6,800.0	6,751.1	6,661.1	6,635.4	17.4	15.9	125.03	12.1	-659.8	373.9	341.8	32.08	11.655			
6,900.0	6,836.7	6,700.0	6,670.3	17.4	16.1	124.58	12.1	-676.9	440.4	408.7	31.77	13.863			
7,000.0	6,914.8	6,724.7	6,691.9	17.3	16.3	120.14	12.1	-688.6	519.2	487.3	31.92	16.267			
7,100.0	6,984.0	6,739.2	6,704.6	17.4	16.4	110.69	12.1	-695.8	606.3	573.5	32.82	18.475			
7,200.0	7,043.3	6,750.0	6,713.8	17.7	16.5	95.89	12.1	-701.4	698.3	664.3	34.02	20.528			
7,300.0	7,091.5	6,750.0	6,713.8	18.3	16.5	74.93	12.1	-701.4	792.5	759.0	33.52	23.645			
7,400.0	7,128.0	6,735.4	6,701.2	19.3	16.4	53.21	12.1	-693.9	886.8	857.2	29.62	29.938			
7,500.0	7,151.9	6,722.9	6,690.4	20.6	16.3	38.54	12.1	-687.7	979.5	954.0	25.47	38.461			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	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	1.0	1.0	0.0	0.0	-90.00	0.0	-301.3	301.3						
100.0	100.0	101.0	101.0	0.1	0.1	-90.00	0.0	-301.3	301.3	301.1	0.23	1,327.256			
200.0	200.0	201.0	201.0	0.3	0.3	-90.00	0.0	-301.3	301.3	300.6	0.68	445.358			
300.0	300.0	301.0	301.0	0.6	0.6	-90.00	0.0	-301.3	301.3	300.2	1.13	267.571			
400.0	400.0	401.0	401.0	0.8	0.8	-90.00	0.0	-301.3	301.3	299.7	1.58	191.231			
500.0	500.0	501.0	501.0	1.0	1.0	-90.00	0.0	-301.3	301.3	299.3	2.03	148.782			
600.0	600.0	601.0	601.0	1.2	1.2	-90.00	0.0	-301.3	301.3	298.8	2.47	121.756			
700.0	700.0	701.0	701.0	1.5	1.5	-90.00	0.0	-301.3	301.3	298.4	2.92	103.038			
800.0	800.0	801.0	801.0	1.7	1.7	-90.00	0.0	-301.3	301.3	297.9	3.37	89.309			
900.0	900.0	901.0	901.0	1.9	1.9	-90.00	0.0	-301.3	301.3	297.5	3.82	78.808			
1,000.0	1,000.0	1,001.0	1,001.0	2.1	2.1	-90.00	0.0	-301.3	301.3	297.0	4.27	70.517			
1,100.0	1,100.0	1,101.0	1,101.0	2.4	2.4	-90.00	0.0	-301.3	301.3	296.6	4.72	63.804			
1,200.0	1,200.0	1,201.0	1,201.0	2.6	2.6	-90.00	0.0	-301.3	301.3	296.1	5.17	58.259			
1,300.0	1,300.0	1,301.0	1,301.0	2.8	2.8	-90.00	0.0	-301.3	301.3	295.7	5.62	53.600			
1,400.0	1,400.0	1,401.0	1,401.0	3.0	3.0	-90.00	0.0	-301.3	301.3	295.2	6.07	49.631			
1,500.0	1,500.0	1,501.0	1,501.0	3.3	3.3	-28.03	0.0	-301.3	299.8	293.3	6.51	46.041			
1,600.0	1,599.8	1,600.0	1,600.0	3.5	3.5	-28.55	0.0	-301.3	295.2	288.2	6.94	42.542			
1,700.0	1,699.5	1,692.2	1,692.2	3.7	3.7	-29.24	0.7	-302.6	289.0	281.6	7.34	39.376			
1,800.0	1,798.7	1,783.8	1,783.7	3.9	3.9	-29.97	2.6	-306.6	282.7	275.0	7.74	36.548			
1,900.0	1,897.9	1,875.8	1,875.4	4.2	4.1	-30.49	5.8	-313.2	278.5	270.4	8.15	34.158			
2,000.0	1,997.0	1,968.5	1,967.5	4.5	4.3	-30.73	10.3	-322.6	277.1	268.6	8.58	32.292			
2,100.0	2,096.2	2,068.5	2,066.7	4.7	4.5	-30.85	15.8	-333.9	277.0	267.9	9.04	30.650			
2,200.0	2,195.3	2,168.5	2,165.9	5.0	4.8	-30.97	21.3	-345.2	276.8	267.3	9.50	29.143			
2,300.0	2,294.5	2,268.5	2,265.1	5.3	5.1	-31.10	26.8	-356.5	276.6	266.7	9.97	27.756			
2,400.0	2,393.6	2,368.5	2,364.3	5.6	5.3	-31.22	32.3	-367.8	276.5	266.0	10.44	26.482			
2,500.0	2,492.8	2,468.5	2,463.5	5.9	5.6	-31.34	37.8	-379.1	276.3	265.4	10.92	25.301			
2,600.0	2,591.9	2,568.5	2,562.7	6.2	5.9	-31.46	43.3	-390.4	276.2	264.8	11.41	24.212			
2,700.0	2,691.1	2,668.5	2,661.9	6.5	6.2	-31.59	48.8	-401.7	276.0	264.1	11.90	23.203			
2,800.0	2,790.2	2,768.5	2,761.1	6.8	6.5	-31.71	54.3	-413.0	275.9	263.5	12.39	22.267			
2,900.0	2,889.4	2,868.5	2,860.3	7.1	6.8	-31.84	59.8	-424.3	275.7	262.8	12.89	21.397			
3,000.0	2,988.5	2,968.5	2,959.5	7.4	7.1	-31.96	65.3	-435.6	275.6	262.2	13.39	20.586			
3,100.0	3,087.7	3,068.5	3,058.7	7.7	7.4	-32.08	70.8	-447.0	275.4	261.5	13.89	19.830			
3,200.0	3,186.8	3,168.5	3,157.9	8.0	7.7	-32.21	76.3	-458.3	275.3	260.9	14.39	19.123			
3,300.0	3,286.0	3,268.5	3,257.2	8.3	8.0	-32.33	81.8	-469.6	275.1	260.2	14.90	18.462			
3,400.0	3,385.1	3,368.5	3,356.4	8.7	8.3	-32.46	87.3	-480.9	275.0	259.5	15.41	17.841			
3,500.0	3,484.3	3,468.5	3,455.6	9.0	8.6	-32.58	92.8	-492.2	274.8	258.9	15.92	17.257			
3,600.0	3,583.4	3,568.5	3,554.8	9.3	8.9	-32.71	98.3	-503.5	274.7	258.2	16.44	16.708			
3,700.0	3,682.6	3,668.5	3,654.0	9.6	9.2	-32.83	103.8	-514.8	274.5	257.6	16.96	16.191			
3,800.0	3,781.7	3,768.5	3,753.2	9.9	9.5	-32.96	109.2	-526.1	274.4	256.9	17.47	15.702			
3,900.0	3,880.9	3,868.5	3,852.4	10.3	9.8	-33.08	114.7	-537.4	274.2	256.3	17.99	15.241			
4,000.0	3,980.0	3,968.5	3,951.6	10.6	10.1	-33.21	120.2	-548.7	274.1	255.6	18.52	14.803			
4,100.0	4,079.2	4,068.5	4,050.8	10.9	10.4	-33.33	125.7	-560.0	274.0	254.9	19.04	14.389			
4,200.0	4,178.3	4,169.4	4,150.9	11.2	10.7	-33.46	131.3	-571.4	273.8	254.3	19.56	13.995			
4,300.0	4,277.5	4,278.1	4,259.1	11.5	11.0	-33.87	136.2	-581.5	271.7	251.7	20.08	13.533			
4,400.0	4,376.6	4,386.5	4,367.3	11.9	11.2	-34.76	139.3	-587.8	266.5	245.9	20.60	12.934			
4,500.0	4,475.8	4,494.3	4,474.9	12.2	11.4	-36.19	140.6	-590.5	258.2	237.0	21.15	12.208			
4,600.0	4,574.9	4,595.3	4,575.9	12.5	11.6	-37.98	140.6	-590.6	247.8	226.1	21.71	11.417			
4,700.0	4,674.1	4,694.4	4,675.1	12.8	11.8	-39.90	140.6	-590.6	237.7	215.4	22.30	10.659			
4,800.0	4,773.2	4,793.6	4,774.2	13.2	11.9	-41.99	140.6	-590.6	227.8	204.9	22.91	9.946			
4,900.0	4,872.4	4,892.7	4,873.4	13.5	12.1	-44.26	140.6	-590.6	218.3	194.8	23.53	9.275			
5,000.0	4,971.5	4,991.9	4,972.5	13.8	12.3	-46.74	140.6	-590.6	209.1	184.9	24.18	8.648			

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

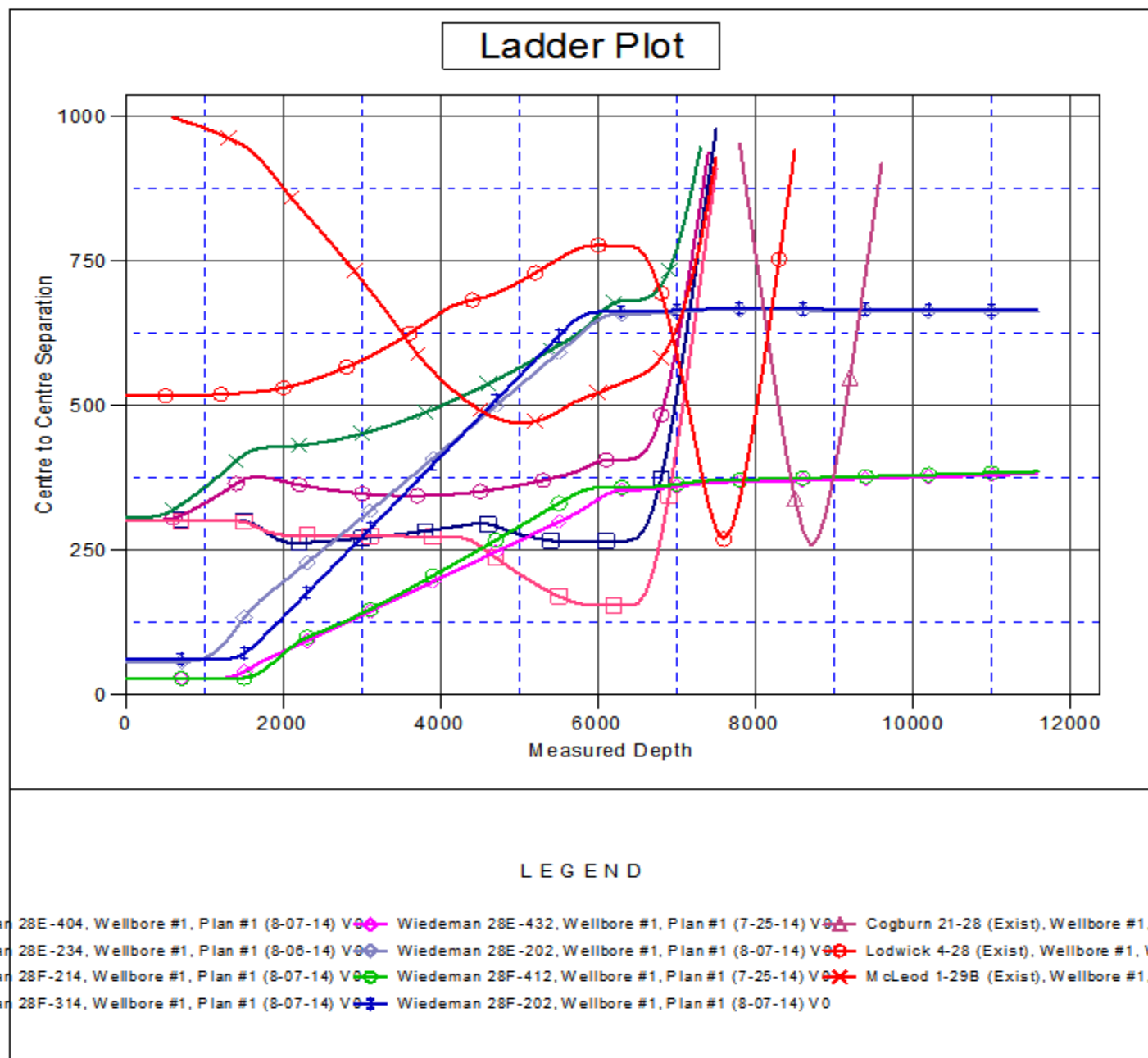
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	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							
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	5,070.7	5,091.0	5,071.7	14.1	12.5	-49.44	140.6	-590.6	200.4	175.5	24.85	8.064		
5,200.0	5,169.8	5,190.2	5,170.8	14.5	12.7	-52.37	140.6	-590.6	192.2	166.6	25.54	7.523		
5,300.0	5,269.0	5,289.3	5,270.0	14.8	12.9	-55.55	140.6	-590.6	184.5	158.2	26.25	7.026		
5,400.0	5,368.1	5,388.5	5,369.1	15.1	13.1	-58.99	140.6	-590.6	177.4	150.4	26.98	6.574		
5,500.0	5,467.3	5,487.6	5,468.3	15.5	13.3	-62.70	140.6	-590.6	171.0	143.3	27.72	6.168		
5,600.0	5,566.5	5,586.8	5,567.5	15.8	13.5	-66.68	140.6	-590.6	165.4	136.9	28.47	5.809		
5,700.0	5,665.6	5,686.0	5,666.6	16.1	13.7	-70.80	140.6	-590.6	160.7	131.6	29.19	5.506		
5,800.0	5,765.1	5,785.5	5,766.1	16.3	13.9	-74.13	140.6	-590.6	157.7	128.0	29.78	5.297		
5,900.0	5,864.9	5,885.3	5,865.9	16.5	14.1	-76.38	140.6	-590.6	156.1	125.8	30.27	5.157		
6,000.0	5,964.9	5,985.2	5,965.9	16.7	14.3	-77.43	140.6	-590.6	155.4	124.7	30.68	5.066		
6,056.3	6,021.2	6,041.5	6,022.2	16.8	14.4	-77.61	140.6	-590.6	155.3	124.4	30.88	5.029 CC		
6,100.0	6,064.9	6,085.2	6,065.9	16.8	14.5	-139.64	140.6	-590.6	155.4	128.0	27.35	5.680		
6,200.0	6,164.9	6,185.2	6,165.9	17.0	14.7	-139.64	140.6	-590.6	155.4	127.6	27.78	5.594		
6,300.0	6,264.9	6,285.2	6,265.9	17.2	14.9	-139.64	140.6	-590.6	155.4	127.2	28.20	5.510		
6,400.0	6,364.9	6,385.2	6,365.9	17.4	15.1	-139.64	140.6	-590.6	155.4	126.7	28.62	5.428		
6,412.0	6,376.9	6,397.2	6,377.9	17.4	15.1	130.37	140.6	-590.6	155.4	123.2	32.22	4.824 ES, SF		
6,500.0	6,464.8	6,478.7	6,459.3	17.5	15.3	131.27	140.6	-592.1	158.3	125.8	32.43	4.880		
6,600.0	6,563.6	6,562.2	6,542.2	17.5	15.5	135.79	140.6	-601.7	176.9	144.6	32.24	5.486		
6,700.0	6,659.6	6,635.1	6,613.4	17.5	15.8	141.09	140.6	-617.6	214.9	183.3	31.59	6.803		
6,800.0	6,751.1	6,700.0	6,675.2	17.4	16.1	145.36	140.6	-637.3	272.3	241.7	30.57	8.907		
6,900.0	6,836.7	6,738.4	6,710.9	17.4	16.3	145.53	140.6	-651.4	345.3	315.7	29.63	11.657		
7,000.0	6,914.8	6,769.2	6,739.0	17.3	16.4	142.95	140.6	-664.0	429.9	400.9	29.00	14.823		
7,100.0	6,984.0	6,788.3	6,756.1	17.4	16.5	134.80	140.6	-672.4	522.0	492.4	29.62	17.625		
7,200.0	7,043.3	6,800.0	6,766.5	17.7	16.6	115.75	140.6	-677.7	618.5	585.9	32.60	18.970		
7,300.0	7,091.5	6,800.0	6,766.5	18.3	16.6	76.33	140.6	-677.7	716.8	683.2	33.58	21.348		
7,400.0	7,128.0	6,800.0	6,766.5	19.3	16.6	42.93	140.6	-677.7	815.0	788.7	26.31	30.976		
7,500.0	7,151.9	6,783.2	6,751.5	20.6	16.5	25.10	140.6	-670.1	911.5	890.9	20.55	44.354		

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Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (7-25-14)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4777.0ft (RKB - 15)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Wiedeman 28F-312
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 28F-312
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (RKB - 15)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (RKB - 15)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28F-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
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