

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Wiedeman 28E-432**

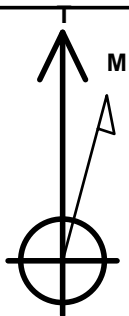
Surface Location: Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4762.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1348279.41	3198077.48	40.287250	-104.789970	

Original Well Elev WELL @ 4777.0ft (Original Well Elev)

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 948'FNL & 540'FWL, SEC.28	1.0	0.0	0.0	Point
BHL 377'FNL & 500'FEL, SEC.28	7260.0	585.2	4221.0	Point



Azimuths to True North
Magnetic North: 8.45°

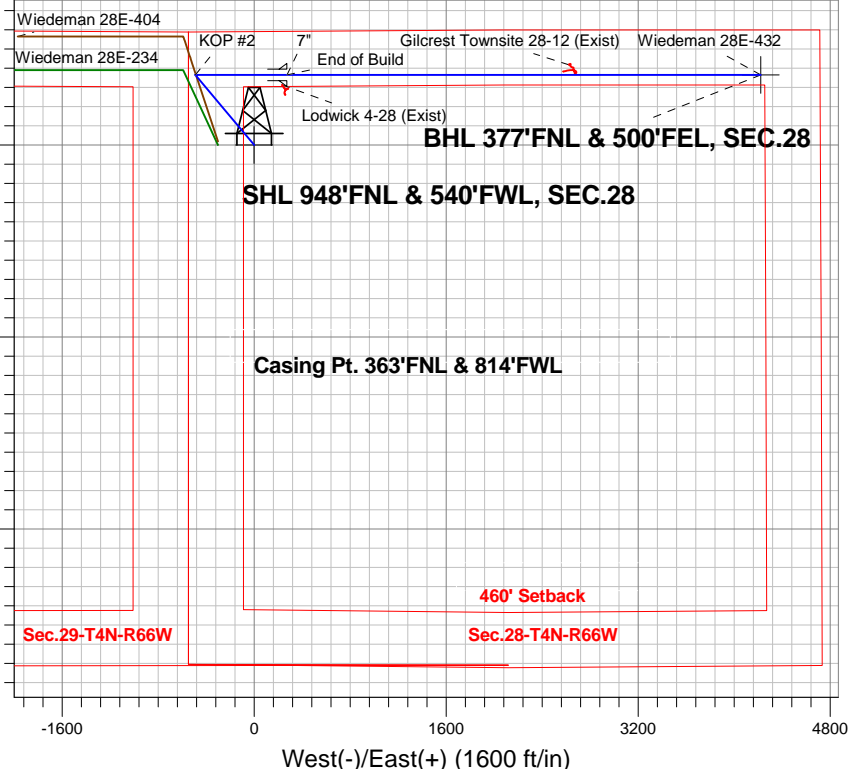
Magnetic Field
Strength: 52742.5nT
Dip Angle: 66.85°
Date: 7/25/2014
Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
1200.0	1200.0	KOP #1
6497.4	6557.8	KOP #2
7261.4	7758.1	End of Build

Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W
Wiedeman 28E-432
Plan #1 (7-25-14)

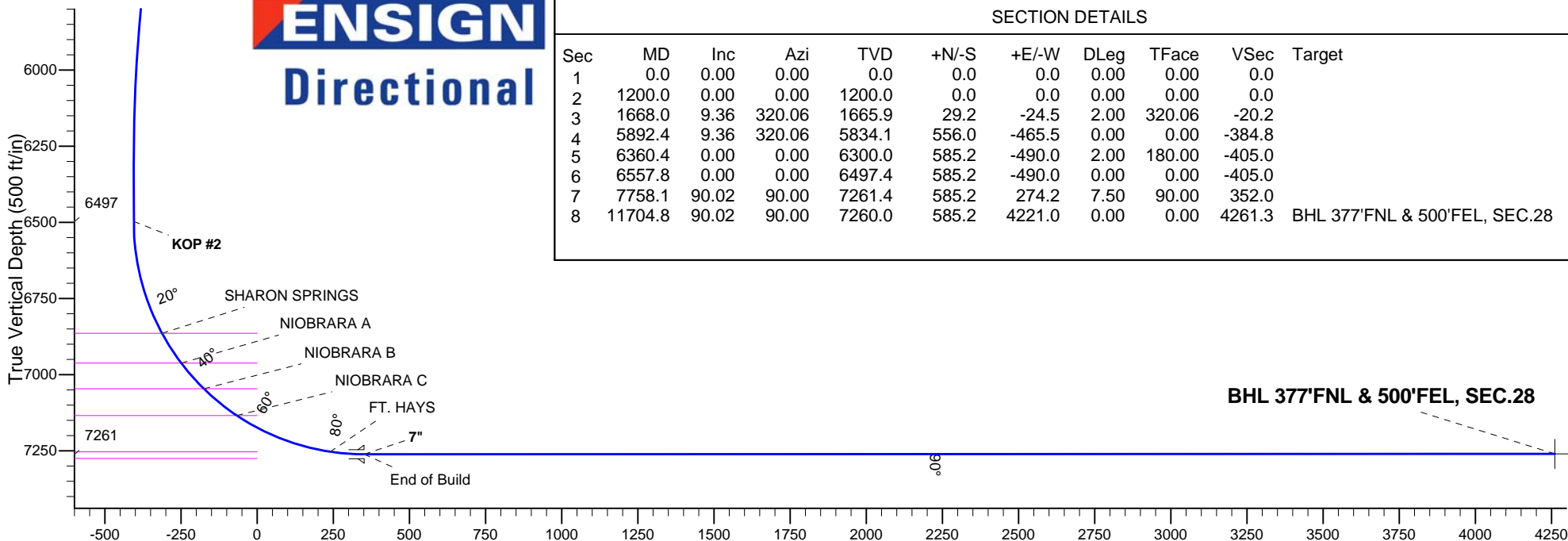
South(-)/North(+) (1600 ft/in)



ENSIGN
Directional

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1200.0	0.00	0.00	1200.0	0.0	0.0	0.00	0.00	0.0	
3	1668.0	9.36	320.06	1665.9	29.2	-24.5	2.00	320.06	-20.2	
4	5892.4	9.36	320.06	5834.1	556.0	-465.5	0.00	0.00	-384.8	
5	6360.4	0.00	0.00	6300.0	585.2	-490.0	2.00	180.00	-405.0	
6	6557.8	0.00	0.00	6497.4	585.2	-490.0	0.00	0.00	-405.0	
7	7758.1	90.02	90.00	7261.4	585.2	274.2	7.50	90.00	352.0	
8	11704.8	90.02	90.00	7260.0	585.2	4221.0	0.00	0.00	4261.3	BHL 377'FNL & 500'FEL, SEC.28



Vertical Section at 82.11° (500 ft/in)



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.28-T4N-R66W

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

Wiedeman 28E-432

Wellbore #1

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

Standard Planning Report

11 August, 2014

Database:	landmark	Local Co-ordinate Reference:	Well Wiedeman 28E-432
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4777.0ft (Original Well Elev)
Project:	SEC.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (Original Well Elev)
Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	North Reference:	True
Well:	Wiedeman 28E-432	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 28E-432					
Well Position	+N/-S	-29.2 ft	Northing:	1,348,279.41 ft	Latitude:	40.287250
	+E/-W	0.0 ft	Easting:	3,198,077.48 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	52,743

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	82.11

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,668.0	9.36	320.06	1,665.9	29.2	-24.5	2.00	2.00	0.00	320.06	
5,892.4	9.36	320.06	5,834.1	556.0	-465.5	0.00	0.00	0.00	0.00	
6,360.4	0.00	0.00	6,300.0	585.2	-490.0	2.00	-2.00	0.00	180.00	
6,557.8	0.00	0.00	6,497.4	585.2	-490.0	0.00	0.00	0.00	0.00	
7,758.1	90.02	90.00	7,261.4	585.2	274.2	7.50	7.50	0.00	90.00	
11,704.8	90.02	90.00	7,260.0	585.2	4,221.0	0.00	0.00	0.00	0.00	BHL 377°FNL & 500

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Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4777.0ft (Original Well Elev)
Project:	SEC.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (Original Well Elev)
Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	North Reference:	True
Well:	Wiedeman 28E-432	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
KOP #1									
1,300.0	2.00	320.06	1,300.0	1.3	-1.1	-0.9	2.00	2.00	0.00
1,400.0	4.00	320.06	1,399.8	5.4	-4.5	-3.7	2.00	2.00	0.00
1,500.0	6.00	320.06	1,499.5	12.0	-10.1	-8.3	2.00	2.00	0.00
1,600.0	8.00	320.06	1,598.7	21.4	-17.9	-14.8	2.00	2.00	0.00
1,668.0	9.36	320.06	1,665.9	29.2	-24.5	-20.2	2.00	2.00	0.00
1,700.0	9.36	320.06	1,697.5	33.2	-27.8	-23.0	0.00	0.00	0.00
1,800.0	9.36	320.06	1,796.2	45.7	-38.3	-31.6	0.00	0.00	0.00
1,900.0	9.36	320.06	1,894.8	58.2	-48.7	-40.3	0.00	0.00	0.00
2,000.0	9.36	320.06	1,993.5	70.6	-59.1	-48.9	0.00	0.00	0.00
2,100.0	9.36	320.06	2,092.2	83.1	-69.6	-57.5	0.00	0.00	0.00
2,200.0	9.36	320.06	2,190.8	95.6	-80.0	-66.1	0.00	0.00	0.00
2,300.0	9.36	320.06	2,289.5	108.0	-90.5	-74.8	0.00	0.00	0.00
2,400.0	9.36	320.06	2,388.2	120.5	-100.9	-83.4	0.00	0.00	0.00
2,500.0	9.36	320.06	2,486.8	133.0	-111.3	-92.0	0.00	0.00	0.00
2,600.0	9.36	320.06	2,585.5	145.4	-121.8	-100.7	0.00	0.00	0.00
2,700.0	9.36	320.06	2,684.2	157.9	-132.2	-109.3	0.00	0.00	0.00
2,800.0	9.36	320.06	2,782.9	170.4	-142.7	-117.9	0.00	0.00	0.00
2,900.0	9.36	320.06	2,881.5	182.9	-153.1	-126.5	0.00	0.00	0.00
3,000.0	9.36	320.06	2,980.2	195.3	-163.5	-135.2	0.00	0.00	0.00
3,100.0	9.36	320.06	3,078.9	207.8	-174.0	-143.8	0.00	0.00	0.00
3,200.0	9.36	320.06	3,177.5	220.3	-184.4	-152.4	0.00	0.00	0.00
3,300.0	9.36	320.06	3,276.2	232.7	-194.9	-161.1	0.00	0.00	0.00
3,400.0	9.36	320.06	3,374.9	245.2	-205.3	-169.7	0.00	0.00	0.00
3,500.0	9.36	320.06	3,473.5	257.7	-215.7	-178.3	0.00	0.00	0.00
3,600.0	9.36	320.06	3,572.2	270.1	-226.2	-186.9	0.00	0.00	0.00
3,700.0	9.36	320.06	3,670.9	282.6	-236.6	-195.6	0.00	0.00	0.00
3,735.6	9.36	320.06	3,706.0	287.0	-240.3	-198.6	0.00	0.00	0.00
PARKMAN									
3,800.0	9.36	320.06	3,769.5	295.1	-247.1	-204.2	0.00	0.00	0.00
3,900.0	9.36	320.06	3,868.2	307.5	-257.5	-212.8	0.00	0.00	0.00
4,000.0	9.36	320.06	3,966.9	320.0	-267.9	-221.5	0.00	0.00	0.00
4,100.0	9.36	320.06	4,065.5	332.5	-278.4	-230.1	0.00	0.00	0.00
4,200.0	9.36	320.06	4,164.2	344.9	-288.8	-238.7	0.00	0.00	0.00
4,300.0	9.36	320.06	4,262.9	357.4	-299.3	-247.3	0.00	0.00	0.00
4,391.3	9.36	320.06	4,353.0	368.8	-308.8	-255.2	0.00	0.00	0.00
SUSSEX									
4,400.0	9.36	320.06	4,361.6	369.9	-309.7	-256.0	0.00	0.00	0.00
4,500.0	9.36	320.06	4,460.2	382.3	-320.1	-264.6	0.00	0.00	0.00

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Site:	Wiedeman 4N66W28F - East Pad	North Reference:	True
	Sec.28-T4N-R66W		
Well:	Wiedeman 28E-432	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)
4,600.0	9.36	320.06	4,558.9	394.8	-330.6	-273.2	0.00	0.00	0.00
4,700.0	9.36	320.06	4,657.6	407.3	-341.0	-281.9	0.00	0.00	0.00
4,800.0	9.36	320.06	4,756.2	419.8	-351.5	-290.5	0.00	0.00	0.00
4,828.1	9.36	320.06	4,784.0	423.3	-354.4	-292.9	0.00	0.00	0.00
SHANNON									
4,900.0	9.36	320.06	4,854.9	432.2	-361.9	-299.1	0.00	0.00	0.00
5,000.0	9.36	320.06	4,953.6	444.7	-372.3	-307.8	0.00	0.00	0.00
5,100.0	9.36	320.06	5,052.2	457.2	-382.8	-316.4	0.00	0.00	0.00
5,200.0	9.36	320.06	5,150.9	469.6	-393.2	-325.0	0.00	0.00	0.00
5,300.0	9.36	320.06	5,249.6	482.1	-403.7	-333.6	0.00	0.00	0.00
5,400.0	9.36	320.06	5,348.2	494.6	-414.1	-342.3	0.00	0.00	0.00
5,500.0	9.36	320.06	5,446.9	507.0	-424.5	-350.9	0.00	0.00	0.00
5,600.0	9.36	320.06	5,545.6	519.5	-435.0	-359.5	0.00	0.00	0.00
5,700.0	9.36	320.06	5,644.3	532.0	-445.4	-368.2	0.00	0.00	0.00
5,800.0	9.36	320.06	5,742.9	544.4	-455.9	-376.8	0.00	0.00	0.00
5,892.4	9.36	320.06	5,834.1	556.0	-465.5	-384.8	0.00	0.00	0.00
5,900.0	9.21	320.06	5,841.6	556.9	-466.3	-385.4	2.00	-2.00	0.00
6,000.0	7.21	320.06	5,940.6	567.8	-475.5	-393.0	2.00	-2.00	0.00
6,100.0	5.21	320.06	6,040.0	576.1	-482.4	-398.7	2.00	-2.00	0.00
6,200.0	3.21	320.06	6,139.7	581.8	-487.1	-402.6	2.00	-2.00	0.00
6,300.0	1.21	320.06	6,239.6	584.7	-489.6	-404.7	2.00	-2.00	0.00
6,360.4	0.00	0.00	6,300.0	585.2	-490.0	-405.0	2.00	-2.00	0.00
6,400.0	0.00	0.00	6,339.6	585.2	-490.0	-405.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,439.6	585.2	-490.0	-405.0	0.00	0.00	0.00
6,557.8	0.00	0.00	6,497.4	585.2	-490.0	-405.0	0.00	0.00	0.00
KOP #2									
6,600.0	3.16	90.00	6,539.6	585.2	-488.8	-403.8	7.50	7.50	0.00
6,700.0	10.66	90.00	6,638.8	585.2	-476.8	-391.9	7.50	7.50	0.00
6,800.0	18.16	90.00	6,735.6	585.2	-451.9	-367.3	7.50	7.50	0.00
6,900.0	25.66	90.00	6,828.3	585.2	-414.6	-330.3	7.50	7.50	0.00
6,940.2	28.67	90.00	6,864.0	585.2	-396.3	-312.2	7.50	7.50	0.00
SHARON SPRINGS									
7,000.0	33.16	90.00	6,915.3	585.2	-365.6	-281.7	7.50	7.50	0.00
7,057.2	37.45	90.00	6,962.0	585.2	-332.5	-249.0	7.50	7.50	0.00
NIOBRARA A									
7,100.0	40.66	90.00	6,995.2	585.2	-305.5	-222.3	7.50	7.50	0.00
7,169.8	45.90	90.00	7,046.0	585.2	-257.7	-174.9	7.50	7.50	0.00
NIOBRARA B									
7,200.0	48.16	90.00	7,066.6	585.2	-235.6	-153.0	7.50	7.50	0.00
7,300.0	55.66	90.00	7,128.2	585.2	-157.0	-75.1	7.50	7.50	0.00
7,310.3	56.44	90.00	7,134.0	585.2	-148.4	-66.7	7.50	7.50	0.00
NIOBRARA C									
7,400.0	63.16	90.00	7,179.1	585.2	-70.9	10.1	7.50	7.50	0.00
7,500.0	70.66	90.00	7,218.3	585.2	21.0	101.2	7.50	7.50	0.00
7,600.0	78.16	90.00	7,245.1	585.2	117.2	196.5	7.50	7.50	0.00
7,644.6	81.51	90.00	7,253.0	585.2	161.1	240.0	7.50	7.50	0.00
FT. HAYS									
7,700.0	85.66	90.00	7,259.2	585.2	216.2	294.5	7.50	7.50	0.00
7,758.1	90.02	90.00	7,261.4	585.2	274.2	352.0	7.50	7.50	0.00
End of Build - 7"									
7,800.0	90.02	90.00	7,261.4	585.2	316.1	393.5	0.00	0.00	0.00

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Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	North Reference:	True
Well:	Wiedeman 28E-432	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)
7,900.0	90.02	90.00	7,261.3	585.2	416.1	492.5	0.00	0.00	0.00
8,000.0	90.02	90.00	7,261.3	585.2	516.1	591.6	0.00	0.00	0.00
8,100.0	90.02	90.00	7,261.3	585.2	616.1	690.6	0.00	0.00	0.00
8,200.0	90.02	90.00	7,261.2	585.2	716.1	789.7	0.00	0.00	0.00
8,300.0	90.02	90.00	7,261.2	585.2	816.1	888.8	0.00	0.00	0.00
8,400.0	90.02	90.00	7,261.2	585.2	916.1	987.8	0.00	0.00	0.00
8,500.0	90.02	90.00	7,261.1	585.2	1,016.1	1,086.9	0.00	0.00	0.00
8,600.0	90.02	90.00	7,261.1	585.2	1,116.1	1,185.9	0.00	0.00	0.00
8,700.0	90.02	90.00	7,261.0	585.2	1,216.1	1,285.0	0.00	0.00	0.00
8,800.0	90.02	90.00	7,261.0	585.2	1,316.1	1,384.0	0.00	0.00	0.00
8,900.0	90.02	90.00	7,261.0	585.2	1,416.1	1,483.1	0.00	0.00	0.00
9,000.0	90.02	90.00	7,260.9	585.2	1,516.1	1,582.1	0.00	0.00	0.00
9,100.0	90.02	90.00	7,260.9	585.2	1,616.1	1,681.2	0.00	0.00	0.00
9,200.0	90.02	90.00	7,260.9	585.2	1,716.1	1,780.2	0.00	0.00	0.00
9,300.0	90.02	90.00	7,260.8	585.2	1,816.1	1,879.3	0.00	0.00	0.00
9,400.0	90.02	90.00	7,260.8	585.2	1,916.1	1,978.3	0.00	0.00	0.00
9,500.0	90.02	90.00	7,260.8	585.2	2,016.1	2,077.4	0.00	0.00	0.00
9,600.0	90.02	90.00	7,260.7	585.2	2,116.1	2,176.4	0.00	0.00	0.00
9,700.0	90.02	90.00	7,260.7	585.2	2,216.1	2,275.5	0.00	0.00	0.00
9,800.0	90.02	90.00	7,260.7	585.2	2,316.1	2,374.5	0.00	0.00	0.00
9,900.0	90.02	90.00	7,260.6	585.2	2,416.1	2,473.6	0.00	0.00	0.00
10,000.0	90.02	90.00	7,260.6	585.2	2,516.1	2,572.6	0.00	0.00	0.00
10,100.0	90.02	90.00	7,260.6	585.2	2,616.1	2,671.7	0.00	0.00	0.00
10,200.0	90.02	90.00	7,260.5	585.2	2,716.1	2,770.8	0.00	0.00	0.00
10,300.0	90.02	90.00	7,260.5	585.2	2,816.1	2,869.8	0.00	0.00	0.00
10,400.0	90.02	90.00	7,260.5	585.2	2,916.1	2,968.9	0.00	0.00	0.00
10,500.0	90.02	90.00	7,260.4	585.2	3,016.1	3,067.9	0.00	0.00	0.00
10,600.0	90.02	90.00	7,260.4	585.2	3,116.1	3,167.0	0.00	0.00	0.00
10,700.0	90.02	90.00	7,260.4	585.2	3,216.1	3,266.0	0.00	0.00	0.00
10,800.0	90.02	90.00	7,260.3	585.2	3,316.1	3,365.1	0.00	0.00	0.00
10,900.0	90.02	90.00	7,260.3	585.2	3,416.1	3,464.1	0.00	0.00	0.00
11,000.0	90.02	90.00	7,260.2	585.2	3,516.1	3,563.2	0.00	0.00	0.00
11,100.0	90.02	90.00	7,260.2	585.2	3,616.1	3,662.2	0.00	0.00	0.00
11,200.0	90.02	90.00	7,260.2	585.2	3,716.1	3,761.3	0.00	0.00	0.00
11,300.0	90.02	90.00	7,260.1	585.2	3,816.1	3,860.3	0.00	0.00	0.00
11,400.0	90.02	90.00	7,260.1	585.2	3,916.1	3,959.4	0.00	0.00	0.00
11,500.0	90.02	90.00	7,260.1	585.2	4,016.1	4,058.4	0.00	0.00	0.00
11,600.0	90.02	90.00	7,260.0	585.2	4,116.1	4,157.5	0.00	0.00	0.00
11,700.0	90.02	90.00	7,260.0	585.2	4,216.1	4,256.5	0.00	0.00	0.00
11,704.8	90.02	90.00	7,260.0	585.2	4,221.0	4,261.3	0.00	0.00	0.00

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name		Casing Diameter (")	Hole Diameter (")
7,758.1	7,261.4	7"		7	7-1/2

Database:	landmark	Local Co-ordinate Reference:	Well Wiedeman 28E-432
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4777.0ft (Original Well Elev)
Project:	SEC.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (Original Well Elev)
Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	North Reference:	True
Well:	Wiedeman 28E-432	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 (°)	
3,735.6	3,706.0	PARKMAN				
4,391.3	4,353.0	SUSSEX				
4,828.1	4,784.0	SHANNON				
6,940.2	6,864.0	SHARON SPRINGS				
7,057.2	6,962.0	NIOBRARA A				
7,169.8	7,046.0	NIOBRARA B				
7,310.3	7,134.0	NIOBRARA C				
7,644.6	7,253.0	FT. HAYS				
	7,275.0	CODELL				

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,200.0	1,200.0	0.0	0.0	KOP #1
6,557.8	6,497.4	585.2	-490.0	KOP #2
7,758.1	7,261.4	585.2	274.2	End of Build



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.28-T4N-R66W

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

Wiedeman 28E-432

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 28E-432
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-432	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 8/10/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,704.8	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)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Existing Wells Sec.28-T4N-R66W						
Gilcrest Townsite 28-12 (Exist) - Wellbore #1 - Wellbore	10,107.3	7,239.2	84.9	-10.3	0.891	Level 1, CC, ES, SF
Lodwick 4-28 (Exist) - Wellbore #1 - Wellbore #1	7,718.3	7,244.9	84.7	46.4	2.211	CC, ES, SF
Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W						
Wiedeman 28E-202 - Wellbore #1 - Plan #1 (8-07-14)	800.0	800.0	29.1	25.8	8.641	CC, ES
Wiedeman 28E-202 - Wellbore #1 - Plan #1 (8-07-14)	11,704.8	11,546.7	369.5	155.6	1.727	SF
Wiedeman 28F-312 - Wellbore #1 - Plan #1 (7-25-14)	1,200.0	1,200.0	29.1	24.0	5.638	CC, ES
Wiedeman 28F-312 - Wellbore #1 - Plan #1 (7-25-14)	11,704.8	11,580.6	383.0	148.0	1.630	SF
Wiedeman 28F-412 - Wellbore #1 - Plan #1 (7-25-14)	1,200.0	1,200.0	58.3	53.1	11.275	CC, ES
Wiedeman 28F-412 - Wellbore #1 - Plan #1 (7-25-14)	11,704.8	11,677.0	714.8	462.7	2.835	SF
Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W						
Wiedeman 28E-234 - Wellbore #1 - Plan #1 (8-06-14)	6,366.9	6,350.7	107.6	75.0	3.297	CC
Wiedeman 28E-234 - Wellbore #1 - Plan #1 (8-06-14)	6,400.0	6,381.1	108.2	72.2	3.007	ES, SF
Wiedeman 28E-404 - Wellbore #1 - Plan #1 (8-07-14)	166.3	167.3	302.7	302.2	576.386	CC
Wiedeman 28E-404 - Wellbore #1 - Plan #1 (8-07-14)	6,500.0	6,513.5	334.9	293.5	8.090	ES, SF

Offset Design												
Existing Wells Sec.28-T4N-R66W - Gilcrest Townsite 28-12 (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
9,200.0	7,260.9	7,243.3	7,236.7	57.9	13.0	-93.45	670.0	2,623.5	911.3	840.9	70.48	12.931
9,300.0	7,260.8	7,242.9	7,236.2	60.6	13.0	-93.14	670.0	2,623.5	811.8	738.6	73.17	11.095
9,400.0	7,260.8	7,242.4	7,235.8	63.2	13.0	-92.83	670.0	2,623.5	712.4	636.6	75.88	9.389
9,500.0	7,260.8	7,242.0	7,235.3	65.9	13.0	-92.52	670.0	2,623.5	613.3	534.7	78.59	7.803
9,600.0	7,260.7	7,241.5	7,234.8	68.6	13.0	-92.22	670.1	2,623.5	514.4	433.1	81.32	6.326
9,700.0	7,260.7	7,241.0	7,234.4	71.3	13.0	-91.91	670.1	2,623.5	416.1	332.1	84.05	4.951
9,800.0	7,260.7	7,240.6	7,233.9	74.0	13.0	-91.60	670.1	2,623.5	318.9	232.1	86.78	3.674
9,900.0	7,260.6	7,240.1	7,233.5	76.8	13.0	-91.29	670.1	2,623.5	224.1	134.5	89.53	2.503
10,000.0	7,260.6	7,239.7	7,233.0	79.5	13.0	-90.99	670.1	2,623.5	136.9	44.6	92.27	1.483 Level 3
10,100.0	7,260.6	7,239.2	7,232.6	82.2	13.0	-90.68	670.1	2,623.5	85.2	-9.8	95.02	0.897 Level 1
10,107.3	7,260.6	7,239.2	7,232.5	82.4	13.0	-90.66	670.1	2,623.5	84.9	-10.3	95.22	0.891 Level 1, CC, ES, SF

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-432
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-432	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 - Gilcrest Townsite 28-12 (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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)		
10,200.0	7,260.5	7,238.8	7,232.1	85.0	13.0	-90.37	670.1	2,623.5	125.6	27.9	97.77	1.285	Level 3
10,300.0	7,260.5	7,238.3	7,231.7	87.7	13.0	-90.06	670.1	2,623.5	210.5	110.0	100.53	2.094	
10,400.0	7,260.5	7,237.9	7,231.2	90.4	13.0	-89.76	670.1	2,623.5	304.7	201.4	103.28	2.950	
10,500.0	7,260.4	7,237.4	7,230.7	93.2	13.0	-89.45	670.1	2,623.5	401.7	295.7	106.04	3.788	
10,600.0	7,260.4	7,236.9	7,230.3	95.9	13.0	-89.14	670.1	2,623.5	499.9	391.1	108.79	4.595	
10,700.0	7,260.4	7,236.5	7,229.8	98.7	13.0	-88.84	670.1	2,623.5	598.7	487.1	111.55	5.367	
10,800.0	7,260.3	7,236.0	7,229.4	101.5	13.0	-88.53	670.1	2,623.5	697.8	583.5	114.30	6.105	
10,900.0	7,260.3	7,235.6	7,228.9	104.2	13.0	-88.22	670.1	2,623.5	797.1	680.1	117.06	6.810	
11,000.0	7,260.2	7,235.1	7,228.5	107.0	13.0	-87.91	670.1	2,623.5	896.6	776.8	119.81	7.484	
11,100.0	7,260.2	7,234.7	7,228.0	109.7	13.0	-87.61	670.1	2,623.5	996.2	873.7	122.56	8.129	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-432
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-432	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:	0.0 ft
Survey Program: 100-NS-GYRO-MS														Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis 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	31.77	419.0	259.5	493.1						
100.0	100.0	83.1	83.1	0.1	0.1	31.78	418.8	259.5	492.7	492.5	0.22	2,211.619			
158.4	158.4	140.4	140.4	0.2	0.2	31.79	418.7	259.5	492.6	492.2	0.44	1,128.901			
200.0	200.0	180.6	180.6	0.3	0.3	31.79	418.8	259.5	492.6	492.1	0.59	835.917			
300.0	300.0	281.9	281.9	0.6	0.4	31.76	419.1	259.4	492.9	491.9	0.98	505.321			
400.0	400.0	382.5	382.5	0.8	0.6	31.73	419.2	259.2	492.8	491.4	1.42	347.874			
496.1	496.1	478.1	478.1	1.0	0.9	31.68	419.3	258.8	492.8	490.9	1.86	264.306			
500.0	500.0	482.0	482.0	1.0	0.9	31.68	419.3	258.8	492.8	490.9	1.88	261.733			
600.0	600.0	580.3	580.3	1.2	1.1	31.59	419.9	258.2	492.9	490.6	2.35	209.768			
700.0	700.0	682.3	682.3	1.5	1.4	31.48	420.6	257.5	493.1	490.3	2.83	174.220			
747.9	747.9	729.9	729.9	1.6	1.5	31.43	420.7	257.1	493.1	490.0	3.06	161.392			
800.0	800.0	780.6	780.6	1.7	1.6	31.40	420.9	256.9	493.2	489.9	3.30	149.664			
900.0	900.0	880.7	880.7	1.9	1.9	31.31	421.6	256.5	493.5	489.7	3.77	131.059			
1,000.0	1,000.0	980.0	980.0	2.1	2.1	31.16	422.6	255.5	493.8	489.6	4.25	116.313			
1,100.0	1,100.0	1,078.0	1,077.9	2.4	2.4	31.01	423.7	254.7	494.4	489.7	4.72	104.774			
1,200.0	1,200.0	1,178.0	1,178.0	2.6	2.6	30.91	424.9	254.4	495.3	490.1	5.18	95.677			
1,300.0	1,300.0	1,279.0	1,279.0	2.8	2.8	70.97	425.8	254.3	495.4	489.8	5.64	87.917			
1,400.0	1,399.8	1,378.5	1,378.4	3.0	3.1	71.47	426.8	253.9	494.3	488.3	6.10	81.084			
1,500.0	1,499.5	1,476.0	1,475.9	3.3	3.3	72.38	427.8	253.9	492.5	486.0	6.56	75.131			
1,600.0	1,598.7	1,577.5	1,577.5	3.5	3.6	73.70	429.2	253.6	490.0	482.9	7.05	69.499			
1,700.0	1,697.5	1,676.3	1,676.3	3.8	3.8	75.35	430.2	253.1	486.4	478.8	7.57	64.277			
1,800.0	1,796.2	1,773.8	1,773.7	4.1	4.0	77.08	431.3	252.9	483.3	475.2	8.10	59.657			
1,900.0	1,894.8	1,871.3	1,871.2	4.4	4.3	78.78	432.9	252.6	480.9	472.2	8.65	55.602			
2,000.0	1,993.5	1,969.3	1,969.2	4.7	4.5	80.51	434.6	252.5	479.2	470.0	9.21	52.048			
2,100.0	2,092.2	2,067.1	2,066.9	5.0	4.8	82.26	436.4	252.5	478.1	468.4	9.76	48.967			
2,200.0	2,190.8	2,166.8	2,166.6	5.3	5.0	84.08	438.1	252.9	477.7	467.3	10.33	46.227			
2,260.4	2,250.5	2,226.0	2,225.9	5.5	5.2	85.14	439.2	252.8	477.5	466.8	10.68	44.714			
2,300.0	2,289.5	2,263.5	2,263.3	5.7	5.2	85.82	439.9	252.9	477.6	466.7	10.90	43.806			
2,400.0	2,388.2	2,361.6	2,361.4	6.0	5.5	87.60	441.9	253.6	478.6	467.1	11.47	41.730			
2,500.0	2,486.8	2,458.8	2,458.6	6.3	5.7	89.41	443.7	254.5	480.1	468.0	12.03	39.914			
2,600.0	2,585.5	2,557.0	2,556.8	6.7	5.9	91.19	445.9	255.6	482.5	469.9	12.60	38.305			
2,700.0	2,684.2	2,656.7	2,656.5	7.0	6.1	92.95	448.2	256.4	485.2	472.0	13.17	36.836			
2,800.0	2,782.9	2,756.5	2,756.2	7.4	6.4	94.75	450.1	257.4	488.2	474.5	13.75	35.512			
2,900.0	2,881.5	2,854.3	2,854.0	7.7	6.6	96.45	452.2	258.0	491.6	477.3	14.33	34.312			
3,000.0	2,980.2	2,952.8	2,952.5	8.1	6.9	98.11	454.6	258.9	495.8	480.9	14.91	33.252			
3,100.0	3,078.9	3,051.7	3,051.3	8.5	7.1	99.79	456.6	259.8	500.2	484.7	15.49	32.297			
3,200.0	3,177.5	3,147.7	3,147.3	8.8	7.3	101.39	458.9	260.9	505.4	489.3	16.05	31.483			
3,300.0	3,276.2	3,244.4	3,243.9	9.2	7.5	102.98	461.2	262.7	511.6	495.0	16.61	30.805			
3,400.0	3,374.9	3,343.8	3,343.3	9.6	7.8	104.59	463.5	264.5	518.3	501.1	17.16	30.208			
3,500.0	3,473.5	3,440.8	3,440.3	9.9	8.0	106.19	465.1	266.6	525.3	507.6	17.68	29.708			
3,600.0	3,572.2	3,535.5	3,534.9	10.3	8.1	107.77	466.5	269.5	533.5	515.3	18.18	29.349			
3,700.0	3,670.9	3,633.9	3,633.3	10.7	8.3	109.42	467.6	272.9	542.4	523.8	18.66	29.073			
3,800.0	3,769.5	3,734.2	3,733.5	11.0	8.5	111.08	468.3	276.3	551.6	532.5	19.13	28.838			
3,900.0	3,868.2	3,833.8	3,833.1	11.4	8.6	112.66	469.0	279.4	560.9	541.3	19.60	28.615			
4,000.0	3,966.9	3,934.1	3,933.3	11.8	8.8	114.17	470.0	282.2	570.5	550.4	20.09	28.398			
4,100.0	4,065.5	4,043.2	4,042.4	12.1	9.0	115.75	470.9	284.3	579.4	558.9	20.56	28.187			
4,200.0	4,164.2	4,157.4	4,156.6	12.5	9.1	117.46	470.0	283.9	586.3	565.4	20.92	28.021			
4,300.0	4,262.9	4,264.7	4,263.8	12.9	9.1	119.05	468.4	281.3	591.4	570.1	21.26	27.813			
4,400.0	4,361.6	4,368.3	4,367.3	13.2	9.2	120.60	466.4	277.9	595.9	574.3	21.61	27.570			
4,500.0	4,460.2	4,468.3	4,467.2	13.6	9.3	122.04	464.7	273.9	600.2	578.3	21.98	27.313			
4,600.0	4,558.9	4,562.4	4,561.3	14.0	9.4	123.35	463.3	270.4	605.2	582.9	22.35	27.077			

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-432
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-432	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:	0.0 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	
4,700.0	4,657.6	4,655.9	4,654.7	14.4	9.5	124.55	462.9	267.7	611.5	588.7	22.74	26.887		
4,800.0	4,756.2	4,751.2	4,750.0	14.7	9.7	125.73	462.8	265.7	618.8	595.6	23.16	26.716		
4,900.0	4,854.9	4,847.2	4,846.0	15.1	9.9	126.80	463.8	264.0	626.8	603.2	23.62	26.535		
5,000.0	4,953.6	4,945.0	4,943.8	15.5	10.1	127.83	465.1	262.7	635.4	611.3	24.11	26.359		
5,100.0	5,052.2	5,043.3	5,042.0	15.9	10.3	128.86	466.1	261.4	644.3	619.7	24.59	26.198		
5,200.0	5,150.9	5,139.8	5,138.5	16.2	10.5	129.83	467.2	260.4	653.6	628.6	25.08	26.063		
5,300.0	5,249.6	5,237.1	5,235.9	16.6	10.8	130.79	468.4	259.7	663.5	637.9	25.58	25.943		
5,400.0	5,348.2	5,337.0	5,335.7	17.0	11.0	131.76	469.4	259.1	673.7	647.6	26.07	25.844		
5,500.0	5,446.9	5,437.4	5,436.1	17.4	11.3	132.74	470.0	258.0	683.6	657.1	26.54	25.759		
5,600.0	5,545.6	5,537.5	5,536.3	17.7	11.5	133.68	470.7	257.2	693.9	666.9	27.01	25.692		
5,700.0	5,644.3	5,645.0	5,643.7	18.1	11.7	134.63	471.8	255.1	703.3	675.8	27.49	25.582		
5,800.0	5,742.9	5,745.1	5,743.7	18.5	11.9	135.49	473.0	252.5	712.2	684.3	27.95	25.482		
5,900.0	5,841.6	5,841.0	5,839.7	18.9	12.1	136.32	473.8	250.2	721.5	693.1	28.40	25.403		
6,000.0	5,940.6	5,937.0	5,935.6	19.1	12.4	137.08	475.3	248.5	730.0	701.2	28.83	25.317		
6,100.0	6,040.0	6,036.0	6,034.6	19.4	12.6	137.59	477.4	247.1	736.2	706.9	29.28	25.148		
6,200.0	6,139.7	6,135.0	6,133.5	19.6	12.9	137.88	479.5	245.7	740.0	710.3	29.70	24.916		
6,300.0	6,239.6	6,233.7	6,232.2	19.7	13.1	137.92	481.8	244.5	741.3	711.2	30.11	24.623		
6,400.0	6,339.6	6,333.4	6,331.9	19.9	13.4	97.82	484.5	243.5	740.5	709.2	31.27	23.680		
6,500.0	6,439.6	6,433.6	6,432.1	20.0	13.6	97.63	487.1	242.4	739.0	707.3	31.68	23.323		
6,600.0	6,539.6	6,533.0	6,531.4	20.2	13.9	7.51	489.2	241.4	736.6	705.3	31.31	23.527		
6,700.0	6,638.8	6,633.7	6,632.0	20.2	14.2	7.61	491.3	240.1	723.1	692.0	31.13	23.231		
6,800.0	6,735.6	6,728.2	6,726.6	20.2	14.4	8.01	493.2	239.1	697.2	666.7	30.42	22.919		
6,900.0	6,828.3	6,822.3	6,820.6	20.1	14.6	8.77	495.1	237.9	658.8	629.6	29.22	22.547		
7,000.0	6,915.3	6,906.4	6,904.6	20.0	14.9	10.03	496.7	236.9	609.0	581.5	27.56	22.100		
7,100.0	6,995.2	6,985.9	6,984.2	19.9	15.1	12.14	497.8	236.1	548.7	523.2	25.55	21.480		
7,200.0	7,066.6	7,054.8	7,053.0	19.7	15.2	15.56	498.6	235.5	479.0	455.6	23.41	20.463		
7,300.0	7,128.2	7,114.7	7,112.9	19.6	15.4	21.42	499.3	235.2	401.4	379.7	21.77	18.439		
7,400.0	7,179.1	7,165.3	7,163.6	19.6	15.5	32.14	499.9	234.9	317.5	295.2	22.38	14.188		
7,500.0	7,218.3	7,204.1	7,202.3	19.8	15.6	51.00	500.2	234.7	230.0	202.2	27.80	8.273		
7,600.0	7,245.1	7,230.3	7,228.6	20.8	15.7	75.05	500.4	234.5	144.7	109.9	34.85	4.153		
7,700.0	7,259.2	7,243.8	7,242.0	22.3	15.7	89.62	500.5	234.4	86.6	48.7	37.95	2.282		
7,718.3	7,260.4	7,244.9	7,243.2	22.6	15.7	90.48	500.6	234.4	84.7	46.4	38.29	2.211 CC, ES, SF		
7,800.0	7,261.4	7,245.3	7,243.6	24.0	15.7	90.11	500.6	234.4	117.6	78.0	39.68	2.964		
7,900.0	7,261.3	7,244.6	7,242.9	25.9	15.7	89.66	500.5	234.4	200.4	158.9	41.56	4.823		
8,000.0	7,261.3	7,244.0	7,242.2	28.0	15.7	89.21	500.5	234.4	294.1	250.5	43.60	6.747		
8,100.0	7,261.3	7,243.3	7,241.6	30.2	15.7	88.76	500.5	234.4	391.0	345.2	45.75	8.546		
8,200.0	7,261.2	7,242.6	7,240.9	32.5	15.7	88.31	500.5	234.4	489.1	441.1	47.99	10.190		
8,300.0	7,261.2	7,242.0	7,240.2	34.9	15.7	87.86	500.5	234.4	587.8	537.5	50.31	11.683		
8,400.0	7,261.2	7,241.3	7,239.6	37.3	15.7	87.41	500.5	234.4	686.9	634.2	52.70	13.036		
8,500.0	7,261.1	7,240.6	7,238.9	39.8	15.7	86.96	500.5	234.5	786.3	731.1	55.12	14.263		
8,600.0	7,261.1	7,240.0	7,238.2	42.3	15.7	86.51	500.5	234.5	885.7	828.1	57.59	15.380		
8,700.0	7,261.0	7,239.3	7,237.6	44.8	15.7	86.06	500.5	234.5	985.3	925.2	60.09	16.398		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-432
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-432	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			
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	129.610			
200.0	200.0	200.0	200.0	0.3	0.3	0.00	29.1	0.0	29.1	28.5	0.67	43.203			
300.0	300.0	300.0	300.0	0.6	0.6	0.00	29.1	0.0	29.1	28.0	1.12	25.922			
400.0	400.0	400.0	400.0	0.8	0.8	0.00	29.1	0.0	29.1	27.6	1.57	18.516			
500.0	500.0	500.0	500.0	1.0	1.0	0.00	29.1	0.0	29.1	27.1	2.02	14.401			
600.0	600.0	600.0	600.0	1.2	1.2	0.00	29.1	0.0	29.1	26.7	2.47	11.783			
700.0	700.0	700.0	700.0	1.5	1.5	0.00	29.1	0.0	29.1	26.2	2.92	9.970			
800.0	800.0	800.0	800.0	1.7	1.7	0.00	29.1	0.0	29.1	25.8	3.37	8.641	CC, ES		
900.0	900.0	899.1	899.1	1.9	1.9	-1.59	30.6	-0.8	30.6	26.8	3.82	8.028			
1,000.0	1,000.0	997.9	997.8	2.1	2.1	-5.51	35.1	-3.4	35.3	31.0	4.26	8.278			
1,100.0	1,100.0	1,096.3	1,095.8	2.4	2.4	-10.13	42.4	-7.6	43.3	38.6	4.72	9.176			
1,200.0	1,200.0	1,194.0	1,192.8	2.6	2.6	-14.27	52.6	-13.4	54.8	49.6	5.19	10.562			
1,300.0	1,300.0	1,291.0	1,288.6	2.8	2.9	22.81	65.6	-20.8	68.2	62.5	5.62	12.129			
1,400.0	1,399.8	1,387.8	1,383.7	3.0	3.2	21.31	81.3	-29.7	81.7	75.6	6.07	13.467			
1,500.0	1,499.5	1,487.1	1,481.0	3.3	3.5	20.78	98.7	-39.6	93.4	86.9	6.52	14.334			
1,600.0	1,598.7	1,586.7	1,578.6	3.5	3.9	21.07	116.1	-49.6	101.9	94.9	6.98	14.610			
1,700.0	1,697.5	1,686.6	1,676.4	3.8	4.3	21.98	133.6	-59.5	107.3	99.9	7.45	14.400			
1,800.0	1,796.2	1,786.5	1,774.2	4.1	4.7	22.99	151.1	-69.5	112.1	104.1	7.96	14.075			
1,900.0	1,894.8	1,886.3	1,872.0	4.4	5.1	23.92	168.5	-79.4	116.8	108.3	8.48	13.772			
2,000.0	1,993.5	1,986.2	1,969.8	4.7	5.5	24.78	186.0	-89.4	121.6	112.6	9.01	13.493			
2,100.0	2,092.2	2,086.1	2,067.7	5.0	5.9	25.57	203.5	-99.3	126.4	116.8	9.55	13.235			
2,200.0	2,190.8	2,185.9	2,165.5	5.3	6.3	26.30	220.9	-109.3	131.2	121.1	10.09	12.995			
2,300.0	2,289.5	2,285.8	2,263.3	5.7	6.7	26.98	238.4	-119.2	136.0	125.4	10.65	12.773			
2,400.0	2,388.2	2,385.7	2,361.1	6.0	7.1	27.62	255.9	-129.2	140.9	129.7	11.21	12.566			
2,500.0	2,486.8	2,485.5	2,459.0	6.3	7.5	28.21	273.3	-139.1	145.7	134.0	11.78	12.374			
2,600.0	2,585.5	2,585.4	2,556.8	6.7	8.0	28.76	290.8	-149.1	150.6	138.3	12.35	12.195			
2,700.0	2,684.2	2,685.3	2,654.6	7.0	8.4	29.28	308.2	-159.0	155.5	142.6	12.93	12.028			
2,800.0	2,782.9	2,785.2	2,752.4	7.4	8.8	29.77	325.7	-169.0	160.4	146.9	13.52	11.871			
2,900.0	2,881.5	2,885.0	2,850.3	7.7	9.2	30.22	343.2	-178.9	165.4	151.3	14.10	11.725			
3,000.0	2,980.2	2,984.9	2,948.1	8.1	9.7	30.65	360.6	-188.9	170.3	155.6	14.70	11.587			
3,100.0	3,078.9	3,084.8	3,045.9	8.5	10.1	31.06	378.1	-198.8	175.2	159.9	15.29	11.458			
3,200.0	3,177.5	3,184.6	3,143.8	8.8	10.5	31.45	395.6	-208.8	180.2	164.3	15.89	11.337			
3,300.0	3,276.2	3,284.5	3,241.6	9.2	11.0	31.81	413.0	-218.7	185.2	168.7	16.50	11.223			
3,400.0	3,374.9	3,384.4	3,339.4	9.6	11.4	32.16	430.5	-228.7	190.1	173.0	17.10	11.115			
3,500.0	3,473.5	3,484.2	3,437.2	9.9	11.8	32.48	448.0	-238.6	195.1	177.4	17.71	11.014			
3,600.0	3,572.2	3,584.1	3,535.1	10.3	12.3	32.80	465.4	-248.6	200.1	181.7	18.33	10.917			
3,700.0	3,670.9	3,684.0	3,632.9	10.7	12.7	33.09	482.9	-258.5	205.0	186.1	18.94	10.826			
3,800.0	3,769.5	3,783.9	3,730.7	11.0	13.1	33.37	500.4	-268.5	210.0	190.5	19.56	10.740			
3,900.0	3,868.2	3,883.7	3,828.5	11.4	13.6	33.64	517.8	-278.4	215.0	194.9	20.17	10.658			
4,000.0	3,966.9	3,983.6	3,926.4	11.8	14.0	33.90	535.3	-288.4	220.0	199.2	20.80	10.581			
4,100.0	4,065.5	4,083.5	4,024.2	12.1	14.4	34.14	552.8	-298.3	225.0	203.6	21.42	10.507			
4,200.0	4,164.2	4,183.3	4,122.0	12.5	14.9	34.38	570.2	-308.3	230.0	208.0	22.04	10.436			
4,300.0	4,262.9	4,283.2	4,219.8	12.9	15.3	34.60	587.7	-318.2	235.0	212.4	22.67	10.369			
4,400.0	4,361.6	4,383.1	4,317.7	13.2	15.7	34.82	605.2	-328.2	240.1	216.8	23.29	10.305			
4,500.0	4,460.2	4,483.0	4,415.5	13.6	16.2	35.03	622.6	-338.1	245.1	221.2	23.92	10.244			
4,600.0	4,558.9	4,582.8	4,513.3	14.0	16.6	35.22	640.1	-348.1	250.1	225.5	24.55	10.186			
4,700.0	4,657.6	4,682.7	4,611.1	14.4	17.0	35.41	657.6	-358.0	255.1	229.9	25.18	10.130			
4,800.0	4,756.2	4,782.6	4,709.0	14.7	17.5	35.60	675.0	-368.0	260.1	234.3	25.82	10.077			
4,900.0	4,854.9	4,882.4	4,806.8	15.1	17.9	35.77	692.5	-377.9	265.2	238.7	26.45	10.025			
5,000.0	4,953.6	4,982.3	4,904.6	15.5	18.3	35.94	710.0	-387.9	270.2	243.1	27.08	9.976			

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-432
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-432	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						
Measured Depth	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Minimum	Separation	Warning
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor	
5,100.0	5,052.2	5,082.2	5,002.5	15.9	18.8	36.11	727.4	-397.8	275.2	247.5	27.72	9.929	
5,200.0	5,150.9	5,182.0	5,100.3	16.2	19.2	36.26	744.9	-407.8	280.3	251.9	28.36	9.884	
5,300.0	5,249.6	5,281.9	5,198.1	16.6	19.7	36.42	762.4	-417.7	285.3	256.3	28.99	9.841	
5,400.0	5,348.2	5,381.8	5,295.9	17.0	20.1	36.56	779.8	-427.7	290.3	260.7	29.63	9.799	
5,500.0	5,446.9	5,481.7	5,393.8	17.4	20.5	36.70	797.3	-437.6	295.4	265.1	30.27	9.758	
5,600.0	5,545.6	5,581.5	5,491.6	17.7	21.0	36.84	814.8	-447.6	300.4	269.5	30.91	9.720	
5,700.0	5,644.3	5,681.4	5,589.4	18.1	21.4	36.97	832.2	-457.5	305.5	273.9	31.55	9.682	
5,800.0	5,742.9	5,788.2	5,694.2	18.5	21.8	37.19	850.1	-467.7	309.8	277.6	32.20	9.621	
5,900.0	5,841.6	5,898.8	5,803.4	18.9	22.1	37.74	865.3	-476.3	310.9	278.0	32.86	9.462	
6,000.0	5,940.6	6,009.4	5,913.2	19.1	22.4	38.39	876.7	-482.9	310.2	276.8	33.42	9.282	
6,100.0	6,040.0	6,119.8	6,023.3	19.4	22.6	38.97	884.5	-487.3	308.8	274.9	33.91	9.108	
6,200.0	6,139.7	6,230.1	6,133.5	19.6	22.8	39.48	888.6	-489.6	306.9	272.5	34.33	8.940	
6,300.0	6,239.6	6,336.3	6,239.6	19.7	22.9	39.87	889.2	-490.0	304.5	269.8	34.68	8.781	
6,387.3	6,326.9	6,423.6	6,326.9	19.8	23.1	40.05	889.2	-489.7	303.7	268.8	34.96	8.689	
6,400.0	6,339.6	6,436.2	6,339.6	19.9	23.1	0.16	889.2	-489.2	304.0	264.9	39.14	7.768	
6,500.0	6,439.6	6,534.9	6,437.5	20.0	23.1	2.22	889.2	-478.2	304.3	265.2	39.03	7.796	
6,600.0	6,539.6	6,629.5	6,529.4	20.2	23.1	-83.73	889.2	-456.0	306.0	269.3	36.70	8.337	
6,700.0	6,638.8	6,721.1	6,615.1	20.2	23.1	-79.47	889.2	-423.8	309.5	272.0	37.57	8.239	
6,800.0	6,735.6	6,810.4	6,694.4	20.2	23.0	-75.50	889.2	-382.7	314.5	276.4	38.11	8.253	
6,900.0	6,828.3	6,900.0	6,768.5	20.1	22.8	-71.81	889.2	-332.5	320.6	282.3	38.30	8.370	
7,000.0	6,915.3	6,983.4	6,831.9	20.0	22.7	-68.67	889.2	-278.3	327.1	289.0	38.16	8.574	
7,100.0	6,995.2	7,067.6	6,889.4	19.9	22.6	-65.86	889.2	-216.8	333.9	296.1	37.80	8.833	
7,200.0	7,066.6	7,150.0	6,938.8	19.7	22.5	-63.49	889.2	-151.0	340.5	303.1	37.39	9.106	
7,300.0	7,128.2	7,232.6	6,981.0	19.6	22.3	-61.51	889.2	-80.0	346.5	309.4	37.14	9.330	
7,400.0	7,179.1	7,313.8	7,014.7	19.6	22.2	-59.94	889.2	-6.2	351.7	314.4	37.25	9.441	
7,500.0	7,218.3	7,394.4	7,040.2	19.8	22.1	-58.78	889.2	70.2	355.8	317.8	37.92	9.382	
7,600.0	7,245.1	7,474.6	7,057.5	20.8	22.0	-57.99	889.2	148.5	358.6	319.3	39.28	9.130	
7,700.0	7,259.2	7,550.0	7,066.2	22.3	22.5	-57.60	889.2	223.4	360.2	318.9	41.29	8.723	
7,800.0	7,261.4	7,641.9	7,067.7	24.0	24.2	-57.51	889.2	315.2	360.5	316.4	44.12	8.171	
7,900.0	7,261.3	7,741.9	7,067.3	25.9	26.2	-57.45	889.2	415.2	360.7	313.4	47.32	7.623	
8,000.0	7,261.3	7,841.9	7,066.8	28.0	28.3	-57.40	889.2	515.2	360.9	310.2	50.76	7.110	
8,100.0	7,261.3	7,941.9	7,066.4	30.2	30.5	-57.34	889.2	615.2	361.1	306.7	54.41	6.638	
8,200.0	7,261.2	8,041.9	7,065.9	32.5	32.8	-57.28	889.2	715.2	361.4	303.2	58.21	6.208	
8,300.0	7,261.2	8,141.9	7,065.5	34.9	35.1	-57.23	889.2	815.2	361.6	299.5	62.15	5.818	
8,400.0	7,261.2	8,241.9	7,065.0	37.3	37.5	-57.17	889.2	915.2	361.8	295.6	66.19	5.467	
8,500.0	7,261.1	8,341.9	7,064.5	39.8	40.0	-57.12	889.2	1,015.2	362.1	291.7	70.32	5.149	
8,600.0	7,261.1	8,441.9	7,064.1	42.3	42.5	-57.06	889.2	1,115.2	362.3	287.8	74.51	4.862	
8,700.0	7,261.0	8,541.9	7,063.6	44.8	45.1	-57.01	889.2	1,215.2	362.5	283.7	78.77	4.602	
8,800.0	7,261.0	8,641.9	7,063.2	47.4	47.6	-56.95	889.2	1,315.2	362.7	279.7	83.08	4.366	
8,900.0	7,261.0	8,741.9	7,062.7	50.0	50.2	-56.89	889.2	1,415.2	363.0	275.6	87.42	4.152	
9,000.0	7,260.9	8,841.9	7,062.3	52.6	52.8	-56.84	889.2	1,515.2	363.2	271.4	91.80	3.956	
9,100.0	7,260.9	8,941.9	7,061.8	55.2	55.4	-56.78	889.3	1,615.2	363.4	267.2	96.21	3.778	
9,200.0	7,260.9	9,041.9	7,061.4	57.9	58.1	-56.73	889.3	1,715.2	363.7	263.0	100.64	3.614	
9,300.0	7,260.8	9,141.9	7,060.9	60.6	60.8	-56.67	889.3	1,815.2	363.9	258.8	105.09	3.463	
9,400.0	7,260.8	9,241.9	7,060.5	63.2	63.4	-56.62	889.3	1,915.2	364.1	254.6	109.56	3.324	
9,500.0	7,260.8	9,341.9	7,060.0	65.9	66.1	-56.56	889.3	2,015.2	364.4	250.3	114.04	3.195	
9,600.0	7,260.7	9,441.9	7,059.6	68.6	68.8	-56.51	889.3	2,115.2	364.6	246.0	118.54	3.076	
9,700.0	7,260.7	9,541.9	7,059.1	71.3	71.5	-56.45	889.3	2,215.2	364.8	241.8	123.04	2.965	
9,800.0	7,260.7	9,641.9	7,058.6	74.0	74.2	-56.40	889.3	2,315.2	365.1	237.5	127.56	2.862	
9,900.0	7,260.6	9,741.9	7,058.2	76.8	76.9	-56.34	889.3	2,415.2	365.3	233.2	132.08	2.766	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-432
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-432	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											
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	7,260.6	9,841.9	7,057.7	79.5	79.6	-56.29	889.3	2,515.2	365.5	228.9	136.60	2.676			
10,100.0	7,260.6	9,941.9	7,057.3	82.2	82.4	-56.24	889.3	2,615.2	365.7	224.6	141.13	2.592			
10,200.0	7,260.5	10,041.9	7,056.8	85.0	85.1	-56.18	889.3	2,715.2	366.0	220.3	145.67	2.512			
10,300.0	7,260.5	10,141.9	7,056.4	87.7	87.8	-56.13	889.3	2,815.2	366.2	216.0	150.21	2.438			
10,400.0	7,260.5	10,241.9	7,055.9	90.4	90.6	-56.07	889.3	2,915.2	366.5	211.7	154.74	2.368			
10,500.0	7,260.4	10,341.9	7,055.5	93.2	93.3	-56.02	889.3	3,015.2	366.7	207.4	159.29	2.302			
10,600.0	7,260.4	10,441.9	7,055.0	95.9	96.1	-55.96	889.3	3,115.2	366.9	203.1	163.83	2.240			
10,700.0	7,260.4	10,541.9	7,054.6	98.7	98.8	-55.91	889.3	3,215.2	367.2	198.8	168.37	2.181			
10,800.0	7,260.3	10,641.9	7,054.1	101.5	101.6	-55.86	889.3	3,315.2	367.4	194.5	172.91	2.125			
10,900.0	7,260.3	10,741.9	7,053.7	104.2	104.3	-55.80	889.3	3,415.2	367.6	190.2	177.45	2.072			
11,000.0	7,260.2	10,841.9	7,053.2	107.0	107.1	-55.75	889.3	3,515.2	367.9	185.9	181.99	2.021			
11,100.0	7,260.2	10,941.9	7,052.7	109.7	109.9	-55.69	889.3	3,615.2	368.1	181.6	186.53	1.973			
11,200.0	7,260.2	11,041.9	7,052.3	112.5	112.6	-55.64	889.3	3,715.2	368.3	177.3	191.07	1.928			
11,300.0	7,260.1	11,141.9	7,051.8	115.3	115.4	-55.59	889.3	3,815.2	368.6	173.0	195.61	1.884			
11,400.0	7,260.1	11,241.9	7,051.4	118.0	118.2	-55.53	889.3	3,915.2	368.8	168.7	200.14	1.843			
11,500.0	7,260.1	11,341.9	7,050.9	120.8	120.9	-55.48	889.3	4,015.2	369.1	164.4	204.67	1.803			
11,600.0	7,260.0	11,441.9	7,050.5	123.6	123.7	-55.43	889.3	4,115.2	369.3	160.1	209.20	1.765			
11,700.0	7,260.0	11,541.9	7,050.0	126.4	126.5	-55.37	889.3	4,215.2	369.5	155.8	213.73	1.729			
11,704.8	7,260.0	11,546.7	7,050.0	126.5	126.6	-55.37	889.3	4,220.0	369.5	155.6	213.95	1.727 SF			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-432
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-432	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-312 - 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							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 CC, ES			
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-142.15	-29.1	0.0	30.5	24.9	5.62	5.432			
1,400.0	1,399.8	1,399.8	1,399.8	3.0	3.0	-147.40	-29.1	0.0	34.8	28.7	6.06	5.743			
1,500.0	1,499.5	1,500.4	1,500.4	3.3	3.3	-151.91	-28.3	-1.6	41.3	34.8	6.49	6.358			
1,600.0	1,598.7	1,601.1	1,601.0	3.5	3.5	-153.87	-25.8	-6.2	48.7	41.8	6.91	7.042			
1,700.0	1,697.5	1,702.1	1,701.5	3.8	3.7	-154.11	-21.7	-14.1	56.8	49.4	7.36	7.717			
1,800.0	1,796.2	1,802.8	1,801.5	4.1	3.9	-152.37	-16.0	-24.9	63.4	55.5	7.84	8.082			
1,900.0	1,894.8	1,902.6	1,900.4	4.4	4.2	-150.40	-9.9	-36.3	69.4	61.1	8.35	8.322			
2,000.0	1,993.5	2,002.4	1,999.4	4.7	4.5	-148.75	-3.9	-47.8	75.6	66.7	8.87	8.526			
2,100.0	2,092.2	2,102.2	2,098.3	5.0	4.7	-147.35	2.2	-59.3	81.8	72.4	9.40	8.700			
2,200.0	2,190.8	2,202.0	2,197.3	5.3	5.0	-146.15	8.3	-70.8	88.0	78.1	9.95	8.847			
2,300.0	2,289.5	2,301.8	2,296.2	5.7	5.3	-145.11	14.3	-82.2	94.3	83.8	10.51	8.972			
2,400.0	2,388.2	2,401.5	2,395.1	6.0	5.6	-144.19	20.4	-93.7	100.6	89.5	11.08	9.079			
2,500.0	2,486.8	2,501.3	2,494.1	6.3	5.9	-143.39	26.4	-105.2	107.0	95.3	11.66	9.170			
2,600.0	2,585.5	2,601.1	2,593.0	6.7	6.2	-142.68	32.5	-116.6	113.3	101.1	12.25	9.249			
2,700.0	2,684.2	2,700.9	2,692.0	7.0	6.5	-142.04	38.6	-128.1	119.7	106.8	12.84	9.317			
2,800.0	2,782.9	2,800.7	2,790.9	7.4	6.8	-141.46	44.6	-139.6	126.0	112.6	13.44	9.376			
2,900.0	2,881.5	2,900.5	2,889.9	7.7	7.1	-140.94	50.7	-151.1	132.4	118.4	14.05	9.427			
3,000.0	2,980.2	3,000.3	2,988.8	8.1	7.4	-140.47	56.8	-162.5	138.8	124.2	14.66	9.472			
3,100.0	3,078.9	3,100.1	3,087.7	8.5	7.7	-140.04	62.8	-174.0	145.2	130.0	15.27	9.512			
3,200.0	3,177.5	3,199.9	3,186.7	8.8	8.0	-139.65	68.9	-185.5	151.6	135.8	15.89	9.546			
3,300.0	3,276.2	3,299.6	3,285.6	9.2	8.3	-139.29	75.0	-197.0	158.1	141.6	16.50	9.577			
3,400.0	3,374.9	3,399.4	3,384.6	9.6	8.7	-138.96	81.0	-208.4	164.5	147.4	17.13	9.604			
3,500.0	3,473.5	3,499.2	3,483.5	9.9	9.0	-138.65	87.1	-219.9	170.9	153.2	17.75	9.628			
3,600.0	3,572.2	3,599.0	3,582.4	10.3	9.3	-138.36	93.2	-231.4	177.4	159.0	18.38	9.650			
3,700.0	3,670.9	3,698.8	3,681.4	10.7	9.6	-138.10	99.2	-242.8	183.8	164.8	19.01	9.669			
3,800.0	3,769.5	3,798.6	3,780.3	11.0	9.9	-137.85	105.3	-254.3	190.2	170.6	19.64	9.686			
3,900.0	3,868.2	3,898.4	3,879.3	11.4	10.2	-137.62	111.3	-265.8	196.7	176.4	20.27	9.702			
4,000.0	3,966.9	3,998.2	3,978.2	11.8	10.6	-137.40	117.4	-277.3	203.1	182.2	20.91	9.716			
4,100.0	4,065.5	4,098.0	4,077.2	12.1	10.9	-137.20	123.5	-288.7	209.6	188.0	21.54	9.729			
4,200.0	4,164.2	4,197.7	4,176.1	12.5	11.2	-137.01	129.5	-300.2	216.0	193.9	22.18	9.740			
4,300.0	4,262.9	4,297.5	4,275.0	12.9	11.5	-136.83	135.6	-311.7	222.5	199.7	22.82	9.750			
4,400.0	4,361.6	4,397.3	4,374.0	13.2	11.9	-136.66	141.7	-323.1	228.9	205.5	23.46	9.760			
4,500.0	4,460.2	4,497.1	4,472.9	13.6	12.2	-136.50	147.7	-334.6	235.4	211.3	24.10	9.769			
4,600.0	4,558.9	4,596.9	4,571.9	14.0	12.5	-136.34	153.8	-346.1	241.9	217.1	24.74	9.777			
4,700.0	4,657.6	4,696.7	4,670.8	14.4	12.8	-136.20	159.9	-357.6	248.3	223.0	25.38	9.784			
4,800.0	4,756.2	4,796.5	4,769.7	14.7	13.2	-136.06	165.9	-369.0	254.8	228.8	26.03	9.790			
4,900.0	4,854.9	4,896.3	4,868.7	15.1	13.5	-135.93	172.0	-380.5	261.3	234.6	26.67	9.797			
5,000.0	4,953.6	4,996.1	4,967.6	15.5	13.8	-135.81	178.0	-392.0	267.7	240.4	27.31	9.802			

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-432
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-432	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-312 - Wellbore #1 - Plan #1 (7-								Offset Site Error:		0.0 ft
Survey Program: 0-MWD												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Minimum	Separation	Warning	
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor		
5,100.0	5,052.2	5,095.8	5,066.6	15.9	14.1	-135.69	184.1	-403.5	274.2	246.2	27.96	9.807		
5,200.0	5,150.9	5,195.6	5,165.5	16.2	14.5	-135.58	190.2	-414.9	280.7	252.1	28.60	9.812		
5,300.0	5,249.6	5,295.4	5,264.5	16.6	14.8	-135.47	196.2	-426.4	287.1	257.9	29.25	9.816		
5,400.0	5,348.2	5,395.2	5,363.4	17.0	15.1	-135.37	202.3	-437.9	293.6	263.7	29.90	9.820		
5,500.0	5,446.9	5,495.0	5,462.3	17.4	15.4	-135.27	208.4	-449.3	300.1	269.5	30.55	9.824		
5,600.0	5,545.6	5,594.8	5,561.3	17.7	15.8	-135.18	214.4	-460.8	306.6	275.4	31.19	9.828		
5,700.0	5,644.3	5,693.2	5,658.9	18.1	16.1	-135.12	220.3	-472.0	313.1	281.3	31.82	9.840		
5,800.0	5,742.9	5,788.7	5,753.9	18.5	16.3	-135.47	224.9	-480.6	320.7	288.4	32.31	9.925		
5,900.0	5,841.6	5,883.8	5,848.8	18.9	16.5	-136.32	228.0	-486.5	329.6	296.9	32.71	10.076		
6,000.0	5,940.6	5,978.6	5,943.4	19.1	16.6	-137.50	229.6	-489.5	338.6	305.6	32.98	10.265		
6,100.0	6,040.0	6,075.1	6,040.0	19.4	16.8	-138.69	229.9	-490.0	346.4	313.2	33.20	10.433		
6,200.0	6,139.7	6,174.8	6,139.7	19.6	17.0	-139.55	229.9	-490.0	351.9	318.5	33.44	10.523		
6,300.0	6,239.6	6,274.7	6,239.6	19.7	17.1	-139.99	229.9	-490.0	354.9	321.2	33.71	10.528		
6,400.0	6,339.6	6,374.7	6,339.6	19.9	17.3	180.00	229.9	-490.0	355.3	322.6	32.71	10.863		
6,461.8	6,401.4	6,436.6	6,401.4	20.0	17.4	180.00	229.9	-490.0	355.3	322.4	32.94	10.788		
6,500.0	6,439.6	6,474.7	6,439.6	20.0	17.5	179.83	229.9	-489.0	355.3	322.3	33.09	10.739		
6,600.0	6,539.6	6,573.4	6,537.5	20.2	17.5	88.16	229.9	-477.5	355.5	321.2	34.35	10.349		
6,700.0	6,638.8	6,670.4	6,631.5	20.2	17.5	86.18	229.9	-454.0	356.1	322.0	34.17	10.422		
6,800.0	6,735.6	6,765.9	6,720.5	20.2	17.5	84.29	229.9	-419.4	357.1	323.2	33.90	10.537		
6,900.0	6,828.3	6,860.2	6,803.4	20.1	17.4	82.50	229.9	-374.7	358.4	324.8	33.60	10.669		
7,000.0	6,915.3	6,953.3	6,879.3	20.0	17.3	80.86	229.9	-320.8	360.0	326.6	33.36	10.789		
7,100.0	6,995.2	7,045.3	6,947.3	19.9	17.3	79.38	229.9	-258.9	361.6	328.3	33.31	10.854		
7,200.0	7,066.6	7,136.5	7,006.9	19.7	17.5	78.08	229.9	-189.9	363.2	329.6	33.57	10.820		
7,300.0	7,128.2	7,226.9	7,057.4	19.6	17.8	76.98	229.9	-115.0	364.8	330.5	34.25	10.651		
7,400.0	7,179.1	7,316.7	7,098.5	19.6	18.4	76.08	229.9	-35.2	366.1	330.7	35.43	10.332		
7,500.0	7,218.3	7,406.0	7,129.8	19.8	19.4	75.40	229.9	48.4	367.2	330.0	37.18	9.878		
7,600.0	7,245.1	7,495.0	7,151.0	20.8	20.6	74.93	229.9	134.7	368.0	328.5	39.46	9.326		
7,700.0	7,259.2	7,583.7	7,162.1	22.3	22.0	74.69	229.9	222.7	368.4	326.2	42.22	8.727		
7,800.0	7,261.4	7,676.0	7,163.4	24.0	23.6	74.59	229.9	315.0	368.6	323.2	45.40	8.118		
7,900.0	7,261.3	7,776.0	7,162.2	25.9	25.5	74.41	229.9	414.9	368.9	319.8	49.06	7.519		
8,000.0	7,261.3	7,876.0	7,161.0	28.0	27.6	74.24	229.9	514.9	369.2	316.2	53.00	6.966		
8,100.0	7,261.3	7,976.0	7,159.8	30.2	29.8	74.07	229.9	614.9	369.5	312.4	57.17	6.464		
8,200.0	7,261.2	8,076.0	7,158.6	32.5	32.1	73.90	229.9	714.9	369.8	308.3	61.52	6.012		
8,300.0	7,261.2	8,176.0	7,157.5	34.9	34.5	73.73	229.9	814.9	370.2	304.2	66.01	5.608		
8,400.0	7,261.2	8,276.0	7,156.3	37.3	36.9	73.56	229.9	914.9	370.5	299.9	70.61	5.247		
8,500.0	7,261.1	8,376.0	7,155.1	39.8	39.4	73.38	229.9	1,014.9	370.8	295.5	75.30	4.924		
8,600.0	7,261.1	8,476.0	7,153.9	42.3	41.9	73.21	229.9	1,114.9	371.2	291.1	80.07	4.635		
8,700.0	7,261.0	8,576.0	7,152.7	44.8	44.5	73.04	229.9	1,214.8	371.5	286.6	84.89	4.376		
8,800.0	7,261.0	8,676.0	7,151.5	47.4	47.0	72.87	229.9	1,314.8	371.8	282.1	89.76	4.142		
8,900.0	7,261.0	8,776.0	7,150.3	50.0	49.6	72.71	229.9	1,414.8	372.2	277.5	94.67	3.931		
9,000.0	7,260.9	8,876.0	7,149.2	52.6	52.3	72.54	229.9	1,514.8	372.5	272.9	99.61	3.739		
9,100.0	7,260.9	8,975.9	7,148.0	55.2	54.9	72.37	229.9	1,614.8	372.9	268.3	104.58	3.565		
9,200.0	7,260.9	9,075.9	7,146.8	57.9	57.6	72.20	229.9	1,714.8	373.2	263.6	109.56	3.406		
9,300.0	7,260.8	9,175.9	7,145.6	60.6	60.3	72.03	229.9	1,814.8	373.6	259.0	114.57	3.261		
9,400.0	7,260.8	9,275.9	7,144.4	63.2	62.9	71.86	229.9	1,914.7	373.9	254.3	119.58	3.127		
9,500.0	7,260.8	9,375.9	7,143.2	65.9	65.6	71.69	229.9	2,014.7	374.3	249.7	124.60	3.004		
9,600.0	7,260.7	9,475.9	7,142.0	68.6	68.3	71.53	229.9	2,114.7	374.6	245.0	129.63	2.890		
9,700.0	7,260.7	9,575.9	7,140.8	71.3	71.1	71.36	229.9	2,214.7	375.0	240.3	134.67	2.785		
9,800.0	7,260.7	9,675.9	7,139.7	74.0	73.8	71.19	229.9	2,314.7	375.4	235.7	139.71	2.687		
9,900.0	7,260.6	9,775.9	7,138.5	76.8	76.5	71.03	229.9	2,414.7	375.7	231.0	144.75	2.596		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-432
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-432	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-312 - Wellbore #1 - Plan #1 (7-		Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft		
Reference		Offset		Semi Major Axis			Distance							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	7,260.6	9,875.9	7,137.3	79.5	79.2	70.86	229.9	2,514.7	376.1	226.3	149.79	2.511				
10,100.0	7,260.6	9,975.9	7,136.1	82.2	82.0	70.70	229.9	2,614.6	376.5	221.7	154.83	2.432				
10,200.0	7,260.5	10,075.9	7,134.9	85.0	84.7	70.53	229.9	2,714.6	376.9	217.0	159.87	2.357				
10,300.0	7,260.5	10,175.9	7,133.7	87.7	87.5	70.37	229.9	2,814.6	377.3	212.4	164.90	2.288				
10,400.0	7,260.5	10,275.9	7,132.5	90.4	90.2	70.20	229.9	2,914.6	377.7	207.7	169.93	2.222				
10,500.0	7,260.4	10,375.9	7,131.4	93.2	93.0	70.04	229.9	3,014.6	378.0	203.1	174.96	2.161				
10,600.0	7,260.4	10,475.8	7,130.2	95.9	95.7	69.87	229.9	3,114.6	378.4	198.5	179.98	2.103				
10,700.0	7,260.4	10,575.8	7,129.0	98.7	98.5	69.71	229.9	3,214.6	378.8	193.8	185.00	2.048				
10,800.0	7,260.3	10,675.8	7,127.8	101.5	101.2	69.55	229.9	3,314.5	379.2	189.2	190.01	1.996				
10,900.0	7,260.3	10,775.8	7,126.6	104.2	104.0	69.38	229.9	3,414.5	379.6	184.6	195.02	1.947				
11,000.0	7,260.2	10,875.8	7,125.4	107.0	106.8	69.22	229.9	3,514.5	380.0	180.0	200.01	1.900				
11,100.0	7,260.2	10,975.8	7,124.2	109.7	109.5	69.06	229.9	3,614.5	380.5	175.5	205.00	1.856				
11,200.0	7,260.2	11,075.8	7,123.0	112.5	112.3	68.90	229.9	3,714.5	380.9	170.9	209.98	1.814				
11,300.0	7,260.1	11,175.8	7,121.9	115.3	115.1	68.74	229.9	3,814.5	381.3	166.3	214.96	1.774				
11,400.0	7,260.1	11,275.8	7,120.7	118.0	117.9	68.57	229.9	3,914.5	381.7	161.8	219.92	1.736				
11,500.0	7,260.1	11,375.8	7,119.5	120.8	120.6	68.41	229.9	4,014.5	382.1	157.2	224.88	1.699				
11,600.0	7,260.0	11,475.8	7,118.3	123.6	123.4	68.25	229.9	4,114.4	382.6	152.7	229.82	1.665				
11,700.0	7,260.0	11,575.8	7,117.1	126.4	126.2	68.09	229.9	4,214.4	383.0	148.2	234.76	1.631				
11,704.8	7,260.0	11,580.6	7,117.1	126.5	126.3	68.08	229.9	4,219.3	383.0	148.0	235.00	1.630 SF				

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-432
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-432	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 (7-25-14)													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	
0.0	0.0	0.0	0.0	0.0	0.0	180.00	-58.3	0.0	58.3					
100.0	100.0	100.0	100.0	0.1	0.1	180.00	-58.3	0.0	58.3	58.1	0.22	259.331		
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-58.3	0.0	58.3	57.6	0.67	86.444		
300.0	300.0	300.0	300.0	0.6	0.6	180.00	-58.3	0.0	58.3	57.2	1.12	51.866		
400.0	400.0	400.0	400.0	0.8	0.8	180.00	-58.3	0.0	58.3	56.7	1.57	37.047		
500.0	500.0	500.0	500.0	1.0	1.0	180.00	-58.3	0.0	58.3	56.3	2.02	28.815		
600.0	600.0	600.0	600.0	1.2	1.2	180.00	-58.3	0.0	58.3	55.8	2.47	23.576		
700.0	700.0	700.0	700.0	1.5	1.5	180.00	-58.3	0.0	58.3	55.4	2.92	19.949		
800.0	800.0	800.0	800.0	1.7	1.7	180.00	-58.3	0.0	58.3	54.9	3.37	17.289		
900.0	900.0	900.0	900.0	1.9	1.9	180.00	-58.3	0.0	58.3	54.5	3.82	15.255		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	180.00	-58.3	0.0	58.3	54.0	4.27	13.649		
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	180.00	-58.3	0.0	58.3	53.6	4.72	12.349		
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	180.00	-58.3	0.0	58.3	53.1	5.17	11.275 CC, ES		
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-141.12	-58.3	0.0	59.6	54.0	5.62	10.620		
1,400.0	1,399.8	1,399.8	1,399.8	3.0	3.0	-144.02	-58.3	0.0	63.8	57.7	6.06	10.532		
1,500.0	1,499.5	1,499.5	1,499.5	3.3	3.3	-148.07	-58.3	0.0	71.0	64.5	6.50	10.935		
1,600.0	1,598.7	1,598.7	1,598.7	3.5	3.5	-152.49	-58.3	0.0	81.7	74.7	6.93	11.779		
1,700.0	1,697.5	1,697.5	1,697.5	3.8	3.7	-156.69	-58.3	0.0	95.7	88.3	7.37	12.983		
1,800.0	1,796.2	1,796.2	1,796.2	4.1	3.9	-160.02	-58.3	0.0	110.8	103.0	7.82	14.171		
1,900.0	1,894.8	1,894.8	1,894.8	4.4	4.1	-162.54	-58.3	0.0	126.2	118.0	8.27	15.259		
2,000.0	1,993.5	1,993.5	1,993.5	4.7	4.4	-164.51	-58.3	0.0	141.8	133.1	8.73	16.253		
2,100.0	2,092.2	2,093.7	2,093.7	5.0	4.6	-165.57	-58.5	-1.5	157.1	148.0	9.17	17.128		
2,200.0	2,190.8	2,194.4	2,194.3	5.3	4.8	-165.32	-59.2	-6.5	171.4	161.8	9.62	17.822		
2,300.0	2,289.5	2,295.2	2,294.7	5.7	5.0	-164.04	-60.5	-15.0	184.7	174.6	10.08	18.323		
2,400.0	2,388.2	2,395.9	2,394.6	6.0	5.2	-161.95	-62.2	-27.0	197.2	186.6	10.57	18.660		
2,500.0	2,486.8	2,494.8	2,492.6	6.3	5.4	-159.71	-64.2	-40.3	209.6	198.5	11.08	18.918		
2,600.0	2,585.5	2,593.7	2,590.6	6.7	5.7	-157.73	-66.1	-53.6	222.3	210.7	11.61	19.150		
2,700.0	2,684.2	2,692.6	2,688.6	7.0	5.9	-155.96	-68.0	-66.9	235.2	223.1	12.15	19.356		
2,800.0	2,782.9	2,791.5	2,786.6	7.4	6.2	-154.38	-70.0	-80.2	248.4	235.6	12.71	19.541		
2,900.0	2,881.5	2,890.4	2,884.6	7.7	6.5	-152.96	-71.9	-93.5	261.6	248.4	13.28	19.705		
3,000.0	2,980.2	2,989.3	2,982.6	8.1	6.8	-151.67	-73.8	-106.9	275.1	261.2	13.86	19.852		
3,100.0	3,078.9	3,088.3	3,080.6	8.5	7.0	-150.51	-75.8	-120.2	288.6	274.2	14.44	19.984		
3,200.0	3,177.5	3,187.2	3,178.6	8.8	7.3	-149.45	-77.7	-133.5	302.3	287.3	15.04	20.103		
3,300.0	3,276.2	3,286.1	3,276.6	9.2	7.6	-148.48	-79.6	-146.8	316.1	300.4	15.64	20.209		
3,400.0	3,374.9	3,385.0	3,374.6	9.6	7.9	-147.59	-81.6	-160.1	329.9	313.6	16.25	20.306		
3,500.0	3,473.5	3,483.9	3,472.5	9.9	8.2	-146.77	-83.5	-173.4	343.8	326.9	16.86	20.394		
3,600.0	3,572.2	3,582.8	3,570.5	10.3	8.5	-146.02	-85.5	-186.7	357.8	340.3	17.48	20.474		
3,700.0	3,670.9	3,681.7	3,668.5	10.7	8.8	-145.32	-87.4	-200.0	371.8	353.7	18.10	20.547		
3,800.0	3,769.5	3,780.6	3,766.5	11.0	9.1	-144.68	-89.3	-213.3	385.9	367.2	18.72	20.613		
3,900.0	3,868.2	3,879.6	3,864.5	11.4	9.4	-144.08	-91.3	-226.6	400.0	380.7	19.35	20.675		
4,000.0	3,966.9	3,978.5	3,962.5	11.8	9.8	-143.52	-93.2	-239.9	414.2	394.2	19.98	20.731		
4,100.0	4,065.5	4,077.4	4,060.5	12.1	10.1	-142.99	-95.1	-253.2	428.4	407.8	20.61	20.784		
4,200.0	4,164.2	4,176.3	4,158.5	12.5	10.4	-142.51	-97.1	-266.5	442.6	421.4	21.25	20.832		
4,300.0	4,262.9	4,275.2	4,256.5	12.9	10.7	-142.05	-99.0	-279.8	456.9	435.0	21.88	20.877		
4,400.0	4,361.6	4,374.1	4,354.5	13.2	11.0	-141.62	-100.9	-293.1	471.2	448.6	22.52	20.919		
4,500.0	4,460.2	4,473.0	4,452.5	13.6	11.3	-141.21	-102.9	-306.4	485.5	462.3	23.16	20.958		
4,600.0	4,558.9	4,572.0	4,550.5	14.0	11.7	-140.83	-104.8	-319.7	499.8	476.0	23.81	20.995		
4,700.0	4,657.6	4,670.9	4,648.5	14.4	12.0	-140.47	-106.8	-333.1	514.2	489.7	24.45	21.029		
4,800.0	4,756.2	4,769.8	4,746.5	14.7	12.3	-140.13	-108.7	-346.4	528.6	503.5	25.10	21.061		
4,900.0	4,854.9	4,868.7	4,844.5	15.1	12.6	-139.80	-110.6	-359.7	542.9	517.2	25.74	21.091		
5,000.0	4,953.6	4,967.6	4,942.5	15.5	13.0	-139.50	-112.6	-373.0	557.4	531.0	26.39	21.119		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-432
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-432	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		
5,100.0	5,052.2	5,066.5	5,040.5	15.9	13.3	-139.20	-114.5	-386.3	571.8	544.7	27.04	21.146		
5,200.0	5,150.9	5,165.4	5,138.5	16.2	13.6	-138.93	-116.4	-399.6	586.2	558.5	27.69	21.172		
5,300.0	5,249.6	5,264.3	5,236.5	16.6	13.9	-138.66	-118.4	-412.9	600.7	572.3	28.34	21.196		
5,400.0	5,348.2	5,363.3	5,334.5	17.0	14.3	-138.41	-120.3	-426.2	615.1	586.1	28.99	21.218		
5,500.0	5,446.9	5,462.2	5,432.4	17.4	14.6	-138.17	-122.2	-439.5	629.6	600.0	29.64	21.240		
5,600.0	5,545.6	5,561.1	5,530.4	17.7	14.9	-137.95	-124.2	-452.8	644.1	613.8	30.30	21.260		
5,700.0	5,644.3	5,660.8	5,629.2	18.1	15.3	-137.73	-126.1	-466.2	658.6	627.6	30.94	21.284		
5,800.0	5,742.9	5,764.0	5,731.8	18.5	15.5	-137.73	-127.8	-477.5	672.7	641.1	31.51	21.345		
5,900.0	5,841.6	5,867.3	5,834.8	18.9	15.7	-138.04	-128.9	-485.3	686.1	654.1	32.02	21.425		
6,000.0	5,940.6	5,970.7	5,938.1	19.1	15.9	-138.68	-129.5	-489.3	697.5	665.0	32.44	21.503		
6,100.0	6,040.0	6,072.6	6,040.0	19.4	16.1	-139.33	-129.6	-490.0	705.8	673.0	32.79	21.524		
6,200.0	6,139.7	6,172.3	6,139.7	19.6	16.2	-139.78	-129.6	-490.0	711.4	678.2	33.12	21.477		
6,300.0	6,239.6	6,272.2	6,239.6	19.7	16.4	-140.02	-129.6	-490.0	714.3	680.9	33.44	21.364		
6,400.0	6,339.6	6,372.2	6,339.6	19.9	16.6	180.00	-129.6	-490.0	714.8	682.9	31.84	22.450		
6,500.0	6,439.6	6,472.2	6,439.6	20.0	16.8	180.00	-129.6	-490.0	714.8	682.6	32.21	22.190		
6,542.0	6,481.6	6,514.2	6,481.6	20.1	16.8	90.04	-129.6	-490.0	714.8	680.5	34.25	20.867		
6,600.0	6,539.6	6,572.2	6,539.6	20.2	16.9	90.00	-129.6	-488.8	714.8	680.4	34.43	20.759		
6,700.0	6,638.8	6,672.2	6,638.8	20.2	17.0	90.00	-129.6	-476.8	714.8	680.2	34.57	20.675		
6,800.0	6,735.6	6,772.2	6,735.6	20.2	17.0	90.00	-129.6	-451.9	714.8	680.2	34.56	20.681		
6,900.0	6,828.3	6,872.2	6,828.3	20.1	17.0	90.00	-129.6	-414.6	714.8	680.3	34.46	20.743		
7,000.0	6,915.3	6,972.2	6,915.3	20.0	16.9	90.00	-129.6	-365.6	714.8	680.4	34.35	20.808		
7,100.0	6,995.2	7,072.2	6,995.2	19.9	16.9	90.00	-129.6	-305.5	714.8	680.4	34.36	20.803		
7,200.0	7,066.6	7,172.2	7,066.6	19.7	17.1	90.00	-129.6	-235.6	714.8	680.1	34.64	20.635		
7,300.0	7,128.2	7,272.2	7,128.3	19.6	17.4	90.00	-129.6	-157.0	714.8	679.4	35.35	20.221		
7,400.0	7,179.1	7,372.2	7,179.1	19.6	18.1	90.00	-129.6	-70.9	714.8	678.2	36.62	19.517		
7,500.0	7,218.3	7,472.2	7,218.3	19.8	19.0	90.00	-129.6	21.0	714.8	676.3	38.53	18.550		
7,600.0	7,245.1	7,572.2	7,245.1	20.8	20.3	90.00	-129.6	117.2	714.8	673.7	41.06	17.406		
7,700.0	7,259.2	7,672.2	7,259.2	22.3	21.9	90.00	-129.6	216.2	714.8	670.7	44.13	16.197		
7,800.0	7,261.4	7,772.2	7,261.4	24.0	23.6	90.00	-129.6	316.1	714.8	667.2	47.61	15.013		
7,900.0	7,261.3	7,872.2	7,261.3	25.9	25.6	90.00	-129.6	416.1	714.8	663.3	51.45	13.892		
8,000.0	7,261.3	7,972.2	7,261.3	28.0	27.7	90.00	-129.6	516.1	714.8	659.2	55.59	12.858		
8,100.0	7,261.3	8,072.2	7,261.3	30.2	29.9	90.00	-129.6	616.1	714.8	654.8	59.97	11.920		
8,200.0	7,261.2	8,172.2	7,261.2	32.5	32.2	90.00	-129.6	716.1	714.8	650.3	64.54	11.076		
8,300.0	7,261.2	8,272.2	7,261.2	34.9	34.5	90.00	-129.6	816.1	714.8	645.5	69.26	10.320		
8,400.0	7,261.2	8,372.2	7,261.2	37.3	37.0	90.00	-129.6	916.1	714.8	640.7	74.11	9.645		
8,500.0	7,261.1	8,472.2	7,261.1	39.8	39.5	90.00	-129.6	1,016.1	714.8	635.7	79.06	9.041		
8,600.0	7,261.1	8,572.2	7,261.1	42.3	42.0	90.00	-129.6	1,116.1	714.8	630.7	84.09	8.500		
8,700.0	7,261.0	8,672.2	7,261.0	44.8	44.5	90.00	-129.6	1,216.1	714.8	625.6	89.20	8.014		
8,800.0	7,261.0	8,772.2	7,261.0	47.4	47.1	90.00	-129.6	1,316.1	714.8	620.4	94.36	7.575		
8,900.0	7,261.0	8,872.2	7,261.0	50.0	49.7	90.00	-129.6	1,416.1	714.8	615.2	99.57	7.179		
9,000.0	7,260.9	8,972.2	7,260.9	52.6	52.4	90.00	-129.6	1,516.1	714.8	610.0	104.82	6.819		
9,100.0	7,260.9	9,072.2	7,260.9	55.2	55.0	90.00	-129.6	1,616.1	714.8	604.7	110.11	6.492		
9,200.0	7,260.9	9,172.2	7,260.9	57.9	57.7	90.00	-129.6	1,716.1	714.8	599.4	115.43	6.192		
9,300.0	7,260.8	9,272.2	7,260.8	60.6	60.4	90.00	-129.6	1,816.1	714.8	594.0	120.77	5.918		
9,400.0	7,260.8	9,372.2	7,260.8	63.2	63.1	90.00	-129.6	1,916.1	714.8	588.6	126.14	5.666		
9,500.0	7,260.8	9,472.2	7,260.8	65.9	65.8	90.00	-129.6	2,016.1	714.8	583.3	131.53	5.434		
9,600.0	7,260.7	9,572.2	7,260.7	68.6	68.5	90.00	-129.6	2,116.1	714.8	577.8	136.94	5.220		
9,700.0	7,260.7	9,672.2	7,260.7	71.3	71.2	90.00	-129.6	2,216.1	714.8	572.4	142.36	5.021		
9,800.0	7,260.7	9,772.2	7,260.7	74.0	73.9	90.00	-129.6	2,316.1	714.8	567.0	147.80	4.836		
9,900.0	7,260.6	9,872.2	7,260.6	76.8	76.6	90.00	-129.6	2,416.1	714.8	561.5	153.25	4.664		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-432
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-432	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 (7-25-14)														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance		Warning									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
10,000.0	7,260.6	9,972.2	7,260.6	79.5	79.4	90.00	-129.6	2,516.1	714.8	556.1	158.72	4.504			
10,100.0	7,260.6	10,072.2	7,260.6	82.2	82.1	90.00	-129.6	2,616.1	714.8	550.6	164.19	4.353			
10,200.0	7,260.5	10,172.2	7,260.5	85.0	84.8	90.00	-129.6	2,716.1	714.8	545.1	169.67	4.213			
10,300.0	7,260.5	10,272.2	7,260.5	87.7	87.6	90.00	-129.6	2,816.1	714.8	539.6	175.16	4.081			
10,400.0	7,260.5	10,372.2	7,260.5	90.4	90.3	90.00	-129.6	2,916.1	714.8	534.1	180.66	3.957			
10,500.0	7,260.4	10,472.2	7,260.4	93.2	93.1	90.00	-129.6	3,016.1	714.8	528.6	186.16	3.840			
10,600.0	7,260.4	10,572.2	7,260.4	95.9	95.8	90.00	-129.6	3,116.1	714.8	523.1	191.67	3.729			
10,700.0	7,260.4	10,672.2	7,260.4	98.7	98.6	90.00	-129.6	3,216.1	714.8	517.6	197.19	3.625			
10,800.0	7,260.3	10,772.2	7,260.3	101.5	101.4	90.00	-129.6	3,316.1	714.8	512.1	202.71	3.526			
10,900.0	7,260.3	10,872.2	7,260.3	104.2	104.1	90.00	-129.6	3,416.1	714.8	506.5	208.24	3.433			
11,000.0	7,260.2	10,972.2	7,260.2	107.0	106.9	90.00	-129.6	3,516.1	714.8	501.0	213.77	3.344			
11,100.0	7,260.2	11,072.2	7,260.2	109.7	109.7	90.00	-129.6	3,616.1	714.8	495.5	219.31	3.259			
11,200.0	7,260.2	11,172.2	7,260.2	112.5	112.4	90.00	-129.6	3,716.1	714.8	489.9	224.85	3.179			
11,300.0	7,260.1	11,272.2	7,260.1	115.3	115.2	90.00	-129.6	3,816.1	714.8	484.4	230.39	3.102			
11,400.0	7,260.1	11,372.2	7,260.1	118.0	118.0	90.00	-129.6	3,916.1	714.8	478.8	235.94	3.030			
11,500.0	7,260.1	11,472.2	7,260.1	120.8	120.8	90.00	-129.6	4,016.1	714.8	473.3	241.49	2.960			
11,600.0	7,260.0	11,572.2	7,260.0	123.6	123.5	90.00	-129.6	4,116.1	714.8	467.7	247.04	2.893			
11,700.0	7,260.0	11,672.2	7,260.0	126.4	126.6	90.00	-129.6	4,216.1	714.8	462.9	251.87	2.838			
11,704.8	7,260.0	11,677.0	7,260.0	126.5	125.7	90.00	-129.6	4,221.0	714.8	462.7	252.10	2.835 SF			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-432
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-432	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 (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	1,327.255			
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	267.570			
366.3	366.3	367.3	367.3	0.7	0.7	-90.00	0.0	-301.3	301.3	299.9	1.42	211.553			
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-301.3	301.3	299.7	1.57	191.505			
500.0	500.0	496.7	496.7	1.0	1.0	-89.72	1.5	-302.0	302.0	300.0	2.02	149.883			
600.0	600.0	592.2	592.1	1.2	1.2	-88.90	5.8	-304.0	304.2	301.7	2.46	123.730			
700.0	700.0	687.3	686.8	1.5	1.5	-87.57	13.1	-307.4	308.0	305.1	2.91	105.955			
800.0	800.0	782.5	781.4	1.7	1.7	-85.77	23.1	-312.0	313.5	310.1	3.36	93.270			
900.0	900.0	881.7	879.7	1.9	2.0	-83.78	34.6	-317.3	319.9	316.1	3.82	83.789			
1,000.0	1,000.0	980.9	978.1	2.1	2.3	-81.86	46.1	-322.7	326.8	322.5	4.27	76.450			
1,100.0	1,100.0	1,080.0	1,076.5	2.4	2.6	-80.03	57.6	-328.0	334.0	329.2	4.73	70.586			
1,200.0	1,200.0	1,179.2	1,174.8	2.6	2.9	-78.28	69.2	-333.4	341.5	336.3	5.19	65.814			
1,300.0	1,300.0	1,278.6	1,273.4	2.8	3.2	-36.75	80.7	-338.7	347.9	342.0	5.84	59.564			
1,400.0	1,399.8	1,378.3	1,372.2	3.0	3.5	-35.58	92.3	-344.1	351.7	345.4	6.33	55.572			
1,500.0	1,499.5	1,478.1	1,471.3	3.3	3.8	-34.78	103.9	-349.4	352.8	346.0	6.82	51.739			
1,600.0	1,598.7	1,578.1	1,570.4	3.5	4.1	-34.34	115.5	-354.8	351.0	343.7	7.31	48.005			
1,700.0	1,697.5	1,678.0	1,669.5	3.8	4.4	-34.21	127.1	-360.2	346.6	338.8	7.82	44.323			
1,800.0	1,796.2	1,777.8	1,768.5	4.1	4.8	-34.12	138.7	-365.6	341.5	333.1	8.35	40.912			
1,900.0	1,894.8	1,877.7	1,867.6	4.4	5.1	-34.03	150.3	-370.9	336.3	327.4	8.88	37.877			
2,000.0	1,993.5	1,977.6	1,966.6	4.7	5.4	-33.93	161.9	-376.3	331.2	321.8	9.42	35.166			
2,100.0	2,092.2	2,077.4	2,065.7	5.0	5.7	-33.83	173.4	-381.7	326.1	316.1	9.96	32.733			
2,200.0	2,190.8	2,177.3	2,164.7	5.3	6.1	-33.73	185.0	-387.1	321.0	310.4	10.51	30.541			
2,300.0	2,289.5	2,277.2	2,263.8	5.7	6.4	-33.62	196.6	-392.4	315.8	304.8	11.06	28.559			
2,400.0	2,388.2	2,377.0	2,362.8	6.0	6.7	-33.51	208.2	-397.8	310.7	299.1	11.61	26.759			
2,500.0	2,486.8	2,476.9	2,461.8	6.3	7.0	-33.40	219.8	-403.2	305.6	293.4	12.17	25.119			
2,600.0	2,585.5	2,576.8	2,560.9	6.7	7.3	-33.28	231.4	-408.6	300.5	287.8	12.72	23.619			
2,700.0	2,684.2	2,676.6	2,659.9	7.0	7.7	-33.16	243.0	-413.9	295.4	282.1	13.28	22.243			
2,800.0	2,782.9	2,776.5	2,759.0	7.4	8.0	-33.04	254.6	-419.3	290.2	276.4	13.84	20.977			
2,900.0	2,881.5	2,876.4	2,858.0	7.7	8.3	-32.91	266.2	-424.7	285.1	270.7	14.39	19.809			
3,000.0	2,980.2	2,976.2	2,957.1	8.1	8.6	-32.78	277.8	-430.1	280.0	265.1	14.95	18.727			
3,100.0	3,078.9	3,076.1	3,056.1	8.5	9.0	-32.64	289.4	-435.4	274.9	259.4	15.51	17.723			
3,200.0	3,177.5	3,176.0	3,155.2	8.8	9.3	-32.49	301.0	-440.8	269.8	253.7	16.07	16.789			
3,300.0	3,276.2	3,275.8	3,254.2	9.2	9.6	-32.34	312.6	-446.2	264.7	248.1	16.63	15.919			
3,400.0	3,374.9	3,375.7	3,353.3	9.6	9.9	-32.19	324.2	-451.6	259.6	242.4	17.19	15.105			
3,500.0	3,473.5	3,475.6	3,452.3	9.9	10.3	-32.02	335.8	-456.9	254.5	236.7	17.74	14.344			
3,600.0	3,572.2	3,575.4	3,551.4	10.3	10.6	-31.86	347.4	-462.3	249.4	231.1	18.30	13.629			
3,700.0	3,670.9	3,675.3	3,650.4	10.7	10.9	-31.68	359.0	-467.7	244.3	225.4	18.85	12.958			
3,800.0	3,769.5	3,775.2	3,749.4	11.0	11.2	-31.50	370.6	-473.1	239.2	219.8	19.41	12.325			
3,900.0	3,868.2	3,875.0	3,848.5	11.4	11.5	-31.31	382.2	-478.4	234.1	214.1	19.96	11.729			
4,000.0	3,966.9	3,974.9	3,947.5	11.8	11.9	-31.11	393.7	-483.8	229.0	208.5	20.51	11.166			
4,100.0	4,065.5	4,074.8	4,046.6	12.1	12.2	-30.90	405.3	-489.2	223.9	202.9	21.06	10.633			
4,200.0	4,164.2	4,174.6	4,145.6	12.5	12.5	-30.68	416.9	-494.6	218.8	197.2	21.61	10.128			
4,300.0	4,262.9	4,274.5	4,244.7	12.9	12.8	-30.45	428.5	-499.9	213.8	191.6	22.15	9.650			
4,400.0	4,361.6	4,374.4	4,343.7	13.2	13.2	-30.21	440.1	-505.3	208.7	186.0	22.69	9.195			
4,500.0	4,460.2	4,474.2	4,442.8	13.6	13.5	-29.96	451.7	-510.7	203.6	180.4	23.24	8.763			
4,600.0	4,558.9	4,574.1	4,541.8	14.0	13.8	-29.69	463.3	-516.0	198.5	174.8	23.77	8.351			
4,700.0	4,657.6	4,674.0	4,640.9	14.4	14.1	-29.42	474.9	-521.4	193.5	169.2	24.31	7.959			
4,800.0	4,756.2	4,773.8	4,739.9	14.7	14.5	-29.12	486.5	-526.8	188.4	163.6	24.84	7.585			
4,900.0	4,854.9	4,873.7	4,838.9	15.1	14.8	-28.81	498.1	-532.2	183.3	158.0	25.37	7.228			

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-432
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-432	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
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)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning		
5,000.0	4,953.6	4,973.6	4,938.0	15.5	15.1	-28.48	509.7	-537.5	178.3	152.4	25.89	6.886			
5,100.0	5,052.2	5,073.4	5,037.0	15.9	15.4	-28.14	521.3	-542.9	173.3	146.8	26.41	6.559			
5,200.0	5,150.9	5,173.3	5,136.1	16.2	15.8	-27.77	532.9	-548.3	168.2	141.3	26.93	6.247			
5,300.0	5,249.6	5,273.2	5,235.1	16.6	16.1	-27.38	544.5	-553.7	163.2	135.7	27.44	5.947			
5,400.0	5,348.2	5,373.1	5,334.2	17.0	16.4	-26.97	556.1	-559.0	158.2	130.2	27.94	5.660			
5,500.0	5,446.9	5,472.9	5,433.2	17.4	16.7	-26.52	567.7	-564.4	153.2	124.7	28.44	5.384			
5,600.0	5,545.6	5,572.8	5,532.3	17.7	17.1	-26.05	579.3	-569.8	148.1	119.2	28.94	5.119			
5,700.0	5,644.3	5,672.7	5,631.3	18.1	17.4	-25.55	590.9	-575.2	143.2	113.7	29.42	4.865			
5,800.0	5,742.9	5,772.5	5,730.4	18.5	17.7	-25.01	602.5	-580.5	138.2	108.3	29.90	4.621			
5,900.0	5,841.6	5,876.0	5,833.2	18.9	18.0	-24.88	612.9	-585.4	131.9	101.5	30.39	4.341			
6,000.0	5,940.6	5,979.2	5,936.1	19.1	18.2	-25.39	619.9	-588.6	124.7	93.8	30.90	4.035			
6,100.0	6,040.0	6,082.3	6,039.1	19.4	18.4	-26.38	623.6	-590.3	117.9	86.5	31.42	3.753			
6,200.0	6,139.7	6,183.9	6,140.7	19.6	18.5	-27.81	624.2	-590.6	111.8	79.9	31.96	3.499			
6,300.0	6,239.6	6,283.8	6,240.6	19.7	18.7	-28.72	624.2	-590.6	108.4	76.0	32.40	3.347			
6,366.9	6,306.5	6,350.7	6,307.5	19.8	18.8	-28.96	624.2	-590.6	107.6	75.0	32.65	3.297 CC			
6,400.0	6,339.6	6,381.1	6,337.9	19.9	18.8	-68.87	624.2	-590.9	108.2	72.2	35.98	3.007 ES, SF			
6,500.0	6,439.6	6,468.8	6,425.2	20.0	19.0	-70.19	624.2	-598.2	116.0	79.9	36.17	3.208			
6,600.0	6,539.6	6,550.0	6,504.9	20.2	19.2	-162.40	624.2	-613.9	135.8	102.0	33.75	4.023			
6,700.0	6,638.8	6,629.6	6,580.9	20.2	19.5	-165.14	624.2	-637.4	175.4	141.7	33.75	5.198			
6,800.0	6,735.6	6,692.8	6,639.3	20.2	19.7	-167.00	624.2	-661.6	234.4	201.3	33.09	7.084			
6,900.0	6,828.3	6,741.7	6,682.9	20.1	19.9	-167.72	624.2	-683.6	308.7	276.9	31.75	9.721			
7,000.0	6,915.3	6,776.7	6,713.3	20.0	20.1	-167.07	624.2	-701.0	394.1	364.3	29.78	13.231			
7,100.0	6,995.2	6,800.0	6,733.0	19.9	20.2	-164.21	624.2	-713.4	487.0	459.7	27.29	17.844			
7,200.0	7,066.6	6,811.9	6,743.0	19.7	20.3	-154.36	624.2	-720.0	584.4	559.5	24.84	23.526			
7,300.0	7,128.2	6,815.8	6,746.2	19.6	20.3	-93.69	624.2	-722.2	683.9	648.9	34.95	19.566			
7,400.0	7,179.1	6,812.8	6,743.7	19.6	20.3	-22.06	624.2	-720.4	783.5	756.9	26.53	29.527			
7,500.0	7,218.3	6,800.0	6,733.0	19.8	20.2	-10.24	624.2	-713.4	881.6	860.5	21.15	41.680			
7,600.0	7,245.1	6,800.0	6,733.0	20.8	20.2	-6.70	624.2	-713.4	977.1	958.5	18.66	52.362			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-432
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-432	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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning		
0.0	0.0	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	1,333.449			
166.3	166.3	167.3	167.3	0.3	0.3	-84.47	29.1	-301.3	302.7	302.2	0.53	576.386 CC			
200.0	200.0	200.0	200.0	0.3	0.3	-84.47	29.1	-301.3	302.7	302.0	0.67	448.930			
300.0	300.0	296.8	296.8	0.6	0.6	-84.19	30.7	-301.8	303.4	302.3	1.12	271.365			
400.0	400.0	392.5	392.3	0.8	0.8	-83.37	35.3	-303.3	305.5	303.9	1.57	194.962			
500.0	500.0	487.7	487.2	1.0	1.0	-82.02	42.9	-305.8	309.1	307.1	2.02	152.950			
600.0	600.0	582.3	581.2	1.2	1.3	-80.22	53.3	-309.3	314.5	312.0	2.48	126.811			
700.0	700.0	676.7	674.5	1.5	1.6	-78.00	66.7	-313.7	321.8	318.9	2.95	109.219			
800.0	800.0	775.4	771.9	1.7	1.9	-75.60	81.8	-318.7	330.3	326.9	3.41	96.812			
900.0	900.0	874.1	869.3	1.9	2.3	-73.33	97.0	-323.7	339.4	335.5	3.87	87.627			
1,000.0	1,000.0	972.8	966.7	2.1	2.6	-71.17	112.1	-328.7	349.0	344.7	4.33	80.514			
1,100.0	1,100.0	1,071.5	1,064.1	2.4	3.0	-69.13	127.2	-333.7	359.0	354.3	4.80	74.870			
1,200.0	1,200.0	1,170.2	1,161.5	2.6	3.3	-67.20	142.4	-338.7	369.5	364.3	5.26	70.298			
1,300.0	1,300.0	1,269.1	1,259.1	2.8	3.7	-25.47	157.5	-343.7	378.9	372.7	6.13	61.809			
1,400.0	1,399.8	1,368.4	1,357.1	3.0	4.0	-23.99	172.8	-348.8	385.3	378.7	6.63	58.094			
1,500.0	1,499.5	1,468.0	1,455.5	3.3	4.4	-22.79	188.0	-353.8	388.8	381.7	7.13	54.499			
1,600.0	1,598.7	1,567.8	1,553.9	3.5	4.8	-21.81	203.3	-358.9	389.2	381.6	7.63	50.982			
1,700.0	1,697.5	1,667.6	1,652.4	3.8	5.2	-21.03	218.7	-363.9	386.6	378.5	8.14	47.494			
1,800.0	1,796.2	1,767.4	1,750.9	4.1	5.5	-20.27	234.0	-369.0	383.3	374.7	8.66	44.257			
1,900.0	1,894.8	1,867.3	1,849.4	4.4	5.9	-19.49	249.3	-374.0	380.1	371.0	9.18	41.393			
2,000.0	1,993.5	1,967.1	1,947.9	4.7	6.3	-18.70	264.6	-379.1	377.0	367.3	9.70	38.848			
2,100.0	2,092.2	2,066.9	2,046.4	5.0	6.6	-17.90	279.9	-384.2	374.0	363.7	10.22	36.576			
2,200.0	2,190.8	2,166.7	2,144.9	5.3	7.0	-17.08	295.2	-389.2	371.0	360.3	10.74	34.538			
2,300.0	2,289.5	2,266.5	2,243.5	5.7	7.4	-16.25	310.5	-394.3	368.1	356.8	11.26	32.702			
2,400.0	2,388.2	2,366.3	2,342.0	6.0	7.7	-15.41	325.8	-399.3	365.3	353.5	11.77	31.041			
2,500.0	2,486.8	2,466.1	2,440.5	6.3	8.1	-14.55	341.1	-404.4	362.5	350.3	12.28	29.534			
2,600.0	2,585.5	2,566.0	2,539.0	6.7	8.5	-13.69	356.4	-409.4	359.9	347.1	12.78	28.161			
2,700.0	2,684.2	2,665.8	2,637.5	7.0	8.9	-12.81	371.7	-414.5	357.3	344.0	13.28	26.906			
2,800.0	2,782.9	2,765.6	2,736.0	7.4	9.2	-11.91	387.0	-419.6	354.8	341.0	13.78	25.756			
2,900.0	2,881.5	2,865.4	2,834.5	7.7	9.6	-11.01	402.3	-424.6	352.4	338.1	14.27	24.698			
3,000.0	2,980.2	2,965.2	2,933.0	8.1	10.0	-10.09	417.6	-429.7	350.1	335.3	14.76	23.723			
3,100.0	3,078.9	3,065.0	3,031.5	8.5	10.3	-9.16	432.9	-434.7	347.9	332.6	15.24	22.822			
3,200.0	3,177.5	3,164.8	3,130.0	8.8	10.7	-8.22	448.2	-439.8	345.8	330.0	15.73	21.987			
3,300.0	3,276.2	3,264.7	3,228.5	9.2	11.1	-7.27	463.6	-444.9	343.7	327.5	16.20	21.211			
3,400.0	3,374.9	3,364.5	3,327.0	9.6	11.5	-6.31	478.9	-449.9	341.8	325.1	16.68	20.490			
3,500.0	3,473.5	3,464.3	3,425.5	9.9	11.8	-5.33	494.2	-455.0	339.9	322.8	17.15	19.816			
3,600.0	3,572.2	3,564.1	3,524.0	10.3	12.2	-4.35	509.5	-460.0	338.2	320.6	17.63	19.187			
3,700.0	3,670.9	3,663.9	3,622.5	10.7	12.6	-3.35	524.8	-465.1	336.6	318.5	18.10	18.598			
3,800.0	3,769.5	3,763.7	3,721.0	11.0	13.0	-2.35	540.1	-470.1	335.0	316.5	18.57	18.046			
3,900.0	3,868.2	3,863.5	3,819.5	11.4	13.3	-1.34	555.4	-475.2	333.6	314.6	19.03	17.526			
4,000.0	3,966.9	3,963.4	3,918.0	11.8	13.7	-0.32	570.7	-480.3	332.3	312.8	19.50	17.037			
4,100.0	4,065.5	4,063.2	4,016.5	12.1	14.1	0.71	586.0	-485.3	331.1	311.1	19.97	16.576			
4,200.0	4,164.2	4,163.0	4,115.0	12.5	14.4	1.75	601.3	-490.4	329.9	309.5	20.44	16.140			
4,300.0	4,262.9	4,262.8	4,213.5	12.9	14.8	2.79	616.6	-495.4	328.9	308.0	20.91	15.728			
4,400.0	4,361.6	4,362.6	4,312.0	13.2	15.2	3.84	631.9	-500.5	328.0	306.7	21.39	15.338			
4,500.0	4,460.2	4,462.4	4,410.5	13.6	15.6	4.89	647.2	-505.5	327.3	305.4	21.87	14.967			
4,600.0	4,558.9	4,562.3	4,509.0	14.0	15.9	5.95	662.5	-510.6	326.6	304.2	22.35	14.615			
4,700.0	4,657.6	4,662.1	4,607.6	14.4	16.3	7.01	677.8	-515.7	326.0	303.2	22.83	14.279			
4,800.0	4,756.2	4,761.9	4,706.1	14.7	16.7	8.08	693.2	-520.7	325.6	302.3	23.32	13.960			
4,900.0	4,854.9	4,861.7	4,804.6	15.1	17.1	9.15	708.5	-525.8	325.3	301.4	23.82	13.655			

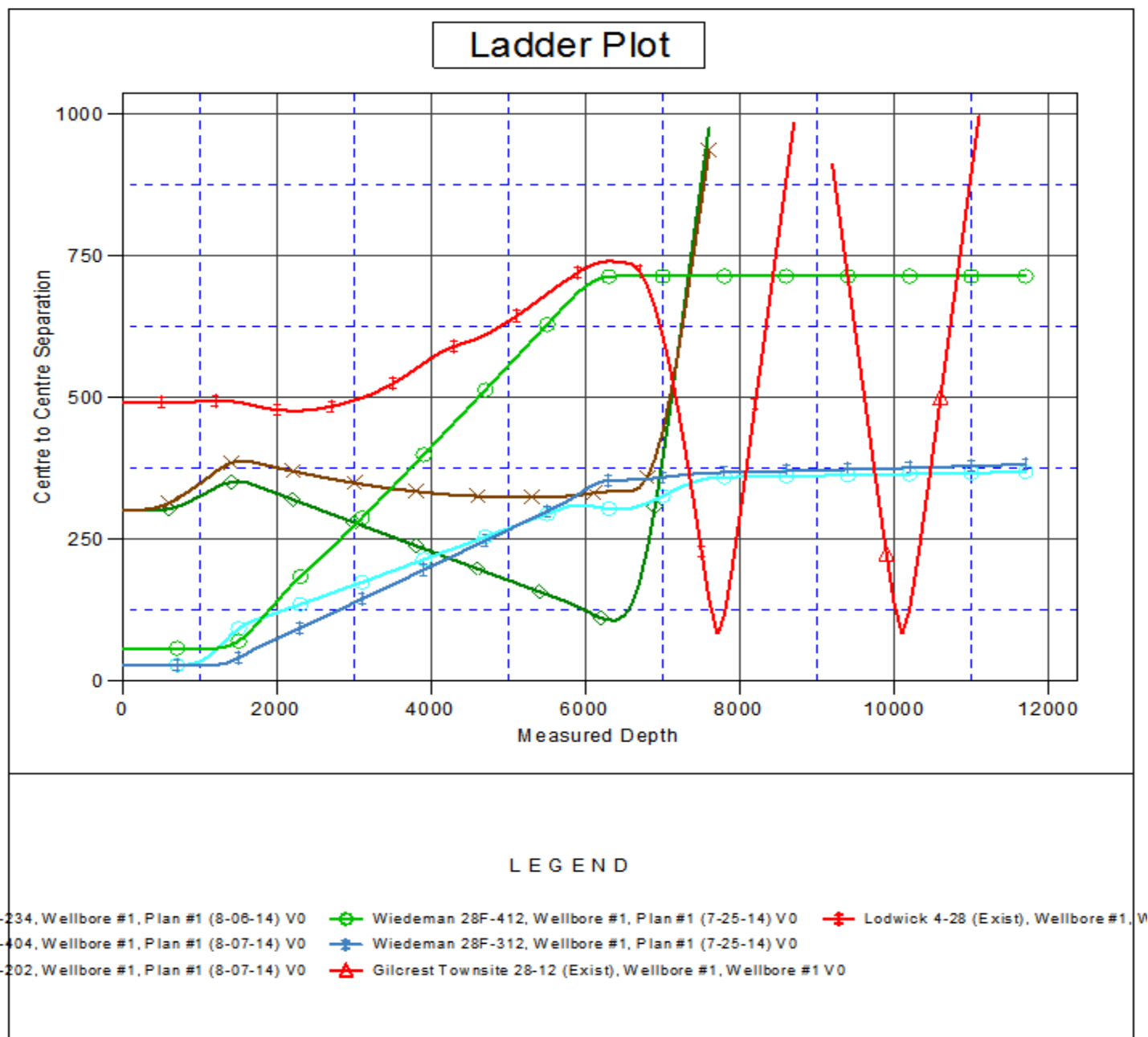
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-432
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-432	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							
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	4,953.6	4,961.5	4,903.1	15.5	17.4	10.22	723.8	-530.8	325.0	300.7	24.32	13.364		
5,100.0	5,052.2	5,061.3	5,001.6	15.9	17.8	11.29	739.1	-535.9	324.9	300.1	24.83	13.086		
5,141.7	5,093.4	5,102.9	5,042.6	16.0	18.0	11.73	745.4	-538.0	324.9	299.9	25.05	12.973		
5,200.0	5,150.9	5,161.1	5,100.1	16.2	18.2	12.36	754.4	-540.9	324.9	299.6	25.35	12.819		
5,300.0	5,249.6	5,261.0	5,198.6	16.6	18.5	13.43	769.7	-546.0	325.1	299.2	25.87	12.564		
5,400.0	5,348.2	5,360.8	5,297.1	17.0	18.9	14.50	785.0	-551.1	325.3	298.9	26.41	12.319		
5,500.0	5,446.9	5,460.6	5,395.6	17.4	19.3	15.57	800.3	-556.1	325.7	298.7	26.95	12.083		
5,600.0	5,545.6	5,560.4	5,494.1	17.7	19.7	16.63	815.6	-561.2	326.1	298.6	27.50	11.858		
5,700.0	5,644.3	5,660.2	5,592.6	18.1	20.0	17.69	830.9	-566.2	326.7	298.6	28.07	11.641		
5,800.0	5,742.9	5,760.0	5,691.1	18.5	20.4	18.75	846.2	-571.3	327.4	298.8	28.64	11.432		
5,900.0	5,841.6	5,859.8	5,789.6	18.9	20.8	19.80	861.5	-576.4	328.2	299.0	29.22	11.233		
6,000.0	5,940.6	5,966.4	5,894.8	19.1	21.1	20.80	877.3	-581.6	330.5	300.7	29.73	11.114		
6,100.0	6,040.0	6,079.3	6,006.9	19.4	21.4	21.60	890.4	-585.9	332.6	302.4	30.17	11.022		
6,200.0	6,139.7	6,192.5	6,119.7	19.6	21.7	22.13	899.3	-588.8	334.0	303.5	30.54	10.938		
6,300.0	6,239.6	6,305.7	6,232.8	19.7	21.9	22.41	903.9	-590.4	334.8	304.0	30.84	10.857		
6,400.0	6,339.6	6,413.5	6,340.6	19.9	22.0	-17.48	904.6	-590.6	334.9	293.8	41.11	8.148		
6,500.0	6,439.6	6,513.5	6,440.6	20.0	22.1	-17.48	904.6	-590.6	334.9	293.5	41.40	8.090 ES, SF		
6,541.3	6,480.9	6,554.8	6,481.9	20.1	22.2	-107.55	904.6	-590.6	335.1	303.4	31.65	10.586		
6,600.0	6,539.6	6,610.0	6,537.0	20.2	22.3	-107.69	904.6	-591.1	335.4	303.6	31.82	10.540		
6,700.0	6,638.8	6,695.1	6,621.8	20.2	22.4	-110.04	904.6	-598.8	342.4	310.6	31.76	10.782		
6,800.0	6,735.6	6,770.9	6,696.1	20.2	22.6	-113.80	904.6	-613.5	360.3	328.8	31.47	11.447		
6,900.0	6,828.3	6,833.2	6,755.9	20.1	22.7	-117.08	904.6	-631.1	392.8	361.7	31.06	12.647		
7,000.0	6,915.3	6,880.9	6,800.5	20.0	22.9	-118.43	904.6	-647.8	441.7	411.0	30.66	14.407		
7,100.0	6,995.2	6,914.7	6,831.5	19.9	23.0	-116.97	904.6	-661.3	505.7	475.1	30.62	16.518		
7,200.0	7,066.6	6,936.3	6,851.0	19.7	23.1	-111.96	904.6	-670.7	581.6	550.1	31.50	18.465		
7,300.0	7,128.2	6,950.0	6,863.2	19.6	23.1	-102.97	904.6	-676.9	665.7	632.0	33.65	19.785		
7,400.0	7,179.1	6,950.0	6,863.2	19.6	23.1	-88.34	904.6	-676.9	754.7	718.2	36.50	20.675		
7,500.0	7,218.3	6,950.0	6,863.2	19.8	23.1	-71.82	904.6	-676.9	846.1	808.5	37.58	22.513		
7,600.0	7,245.1	6,950.0	6,863.2	20.8	23.1	-56.44	904.6	-676.9	937.7	901.7	35.95	26.081		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-432
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Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-432	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 (Original Well Elev) Coordinates are relative to: Wiedeman 28E-432
 Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
 Central Meridian is -105.500000 ° Grid Convergence at Surface is: 0.46°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-432
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4777.0ft (Original Well Elev)
Reference Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4777.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wiedeman 28E-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
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