

PETROLEUM DEVELOPMENT CORP DJ Basin

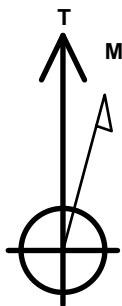
Well Name: **Wiedeman Federal 22G-302**

Surface Location: Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W
North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
Ground Elevation: 4737.0

+N/-S +E/-W Northing Easting Latitude Longitude Slot
0.0 0.0 1351470.86 3202996.81 40.295901 -104.772243
Original Well Elev WELL @ 4750.0ft (Original Well Elev)

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 2185'FSL, 240'FWL	1.0	0.0	0.0	Point
BHL 2444'FSL, 500'FEL	7090.0	326.5	4596.5	Point



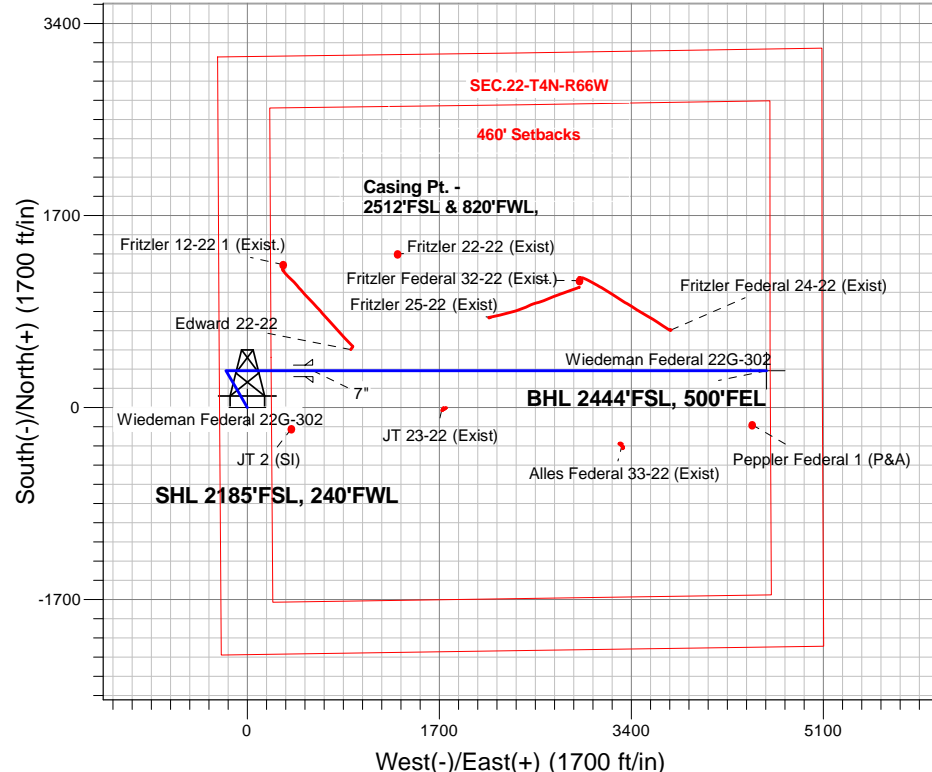
Azimuths to True North
Magnetic North: 8.25°

Magnetic Field
Strength: 52596.9snT
Dip Angle: 66.81°
Date: 1/4/2016
Model: IGRF2010

Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W
Wiedeman Federal 22G-302
Plsn #1 (12-28-15)
11:00, January 04 2016

ANNOTATIONS

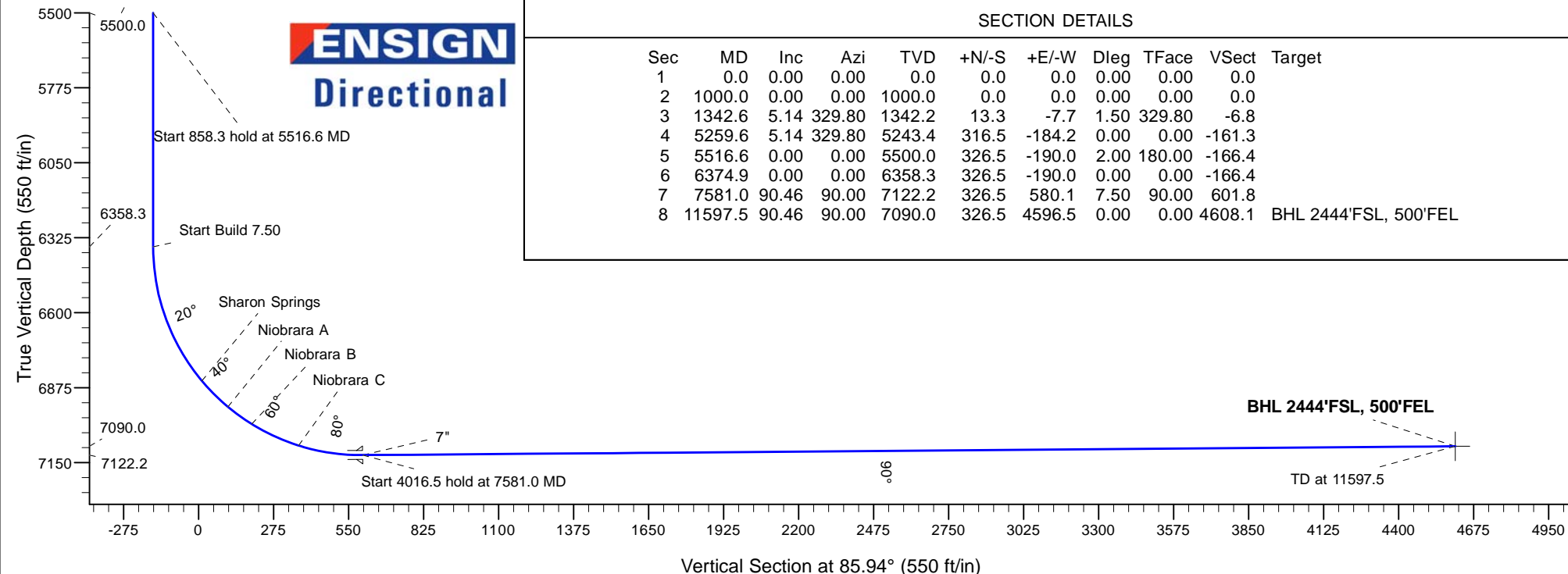
TVD	MD	Annotation
1000.0	1000.0	KOP - Start Build 1.50
5243.4	5259.6	Start Drop -2.00
5500.0	5516.6	Start 858.3 hold at 5516.6 MD
6358.3	6374.9	Start Build 7.50
7122.2	7581.0	Start 4016.5 hold at 7581.0 MD
7090.0	11597.5	TD at 11597.5



ENSIGN
Directional

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	
3	1342.6	5.14	329.80	1342.2	13.3	-7.7	1.50	329.80	-6.8	
4	5259.6	5.14	329.80	5243.4	316.5	-184.2	0.00	0.00	-161.3	
5	5516.6	0.00	0.00	5500.0	326.5	-190.0	2.00	180.00	-166.4	
6	6374.9	0.00	0.00	6358.3	326.5	-190.0	0.00	0.00	-166.4	
7	7581.0	90.46	90.00	7122.2	326.5	580.1	7.50	90.00	601.8	
8	11597.5	90.46	90.00	7090.0	326.5	4596.5	0.00	0.00	4608.1	BHL 2444'FSL, 500'FEL





PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.22-T4N-R66W

Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W

Wiedeman Federal 22G-302

Wellbore #1

Plan: Plsn #1 (12-28-15)

Standard Planning Report

04 January, 2016

Database:	US_EDM	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Project:	SEC.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	North Reference:	True
Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plsn #1 (12-28-15)		

Project	SEC.22-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 Federal 4N66W22G PAD Sec.22-T4N-R66W			
Site Position:		Northing:	1,351,350.65 usft	Latitude:	40.295571
From:	Lat/Long	Easting:	3,202,996.97 usft	Longitude:	-104.772246
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.47

Well	Wiedeman Federal 22G-302					
Well Position	+N/-S	120.2 ft	Northing:	1,351,470.86 usft	Latitude:	40.295901
	+E/-W	0.8 ft	Easting:	3,202,996.82 usft	Longitude:	-104.772243
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,737.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/4/2016	8.25	66.81	52,597

Design	Plsn #1 (12-28-15)			
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	85.94

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,342.6	5.14	329.80	1,342.2	13.3	-7.7	1.50	1.50	0.00	329.80	
5,259.6	5.14	329.80	5,243.4	316.5	-184.2	0.00	0.00	0.00	0.00	
5,516.6	0.00	0.00	5,500.0	326.5	-190.0	2.00	-2.00	0.00	180.00	
6,374.9	0.00	0.00	6,358.3	326.5	-190.0	0.00	0.00	0.00	0.00	
7,581.0	90.46	90.00	7,122.2	326.5	580.1	7.50	7.50	0.00	90.00	
11,597.5	90.46	90.00	7,090.0	326.5	4,596.5	0.00	0.00	0.00	0.00	BHL 2444'FSL, 500'FI

Database:	US_EDM	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Project:	SEC.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	North Reference:	True
Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plsn #1 (12-28-15)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
1.0	0.00	0.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00
SHL 2185'FSL, 240'FWL									
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 1.50									
1,100.0	1.50	329.80	1,100.0	1.1	-0.7	-0.6	1.50	1.50	0.00
1,200.0	3.00	329.80	1,199.9	4.5	-2.6	-2.3	1.50	1.50	0.00
1,300.0	4.50	329.80	1,299.7	10.2	-5.9	-5.2	1.50	1.50	0.00
1,342.6	5.14	329.80	1,342.2	13.3	-7.7	-6.8	1.50	1.50	0.00
1,400.0	5.14	329.80	1,399.3	17.7	-10.3	-9.0	0.00	0.00	0.00
1,500.0	5.14	329.80	1,498.9	25.5	-14.8	-13.0	0.00	0.00	0.00
1,600.0	5.14	329.80	1,598.5	33.2	-19.3	-16.9	0.00	0.00	0.00
1,700.0	5.14	329.80	1,698.1	40.9	-23.8	-20.9	0.00	0.00	0.00
1,800.0	5.14	329.80	1,797.7	48.7	-28.3	-24.8	0.00	0.00	0.00
1,900.0	5.14	329.80	1,897.3	56.4	-32.8	-28.8	0.00	0.00	0.00
2,000.0	5.14	329.80	1,996.9	64.2	-37.3	-32.7	0.00	0.00	0.00
2,100.0	5.14	329.80	2,096.5	71.9	-41.8	-36.6	0.00	0.00	0.00
2,200.0	5.14	329.80	2,196.1	79.7	-46.4	-40.6	0.00	0.00	0.00
2,300.0	5.14	329.80	2,295.7	87.4	-50.9	-44.5	0.00	0.00	0.00
2,400.0	5.14	329.80	2,395.3	95.1	-55.4	-48.5	0.00	0.00	0.00
2,500.0	5.14	329.80	2,494.9	102.9	-59.9	-52.4	0.00	0.00	0.00
2,600.0	5.14	329.80	2,594.5	110.6	-64.4	-56.4	0.00	0.00	0.00
2,700.0	5.14	329.80	2,694.1	118.4	-68.9	-60.3	0.00	0.00	0.00
2,800.0	5.14	329.80	2,793.7	126.1	-73.4	-64.3	0.00	0.00	0.00
2,900.0	5.14	329.80	2,893.3	133.8	-77.9	-68.2	0.00	0.00	0.00
3,000.0	5.14	329.80	2,992.9	141.6	-82.4	-72.2	0.00	0.00	0.00
3,100.0	5.14	329.80	3,092.5	149.3	-86.9	-76.1	0.00	0.00	0.00
3,200.0	5.14	329.80	3,192.1	157.1	-91.4	-80.1	0.00	0.00	0.00
3,300.0	5.14	329.80	3,291.7	164.8	-95.9	-84.0	0.00	0.00	0.00
3,400.0	5.14	329.80	3,391.3	172.6	-100.4	-87.9	0.00	0.00	0.00
3,500.0	5.14	329.80	3,490.9	180.3	-104.9	-91.9	0.00	0.00	0.00
3,600.0	5.14	329.80	3,590.5	188.0	-109.4	-95.8	0.00	0.00	0.00
3,668.8	5.14	329.80	3,659.0	193.4	-112.5	-98.5	0.00	0.00	0.00
Parkman									
3,700.0	5.14	329.80	3,690.1	195.8	-113.9	-99.8	0.00	0.00	0.00
3,800.0	5.14	329.80	3,789.7	203.5	-118.4	-103.7	0.00	0.00	0.00
3,900.0	5.14	329.80	3,889.3	211.3	-122.9	-107.7	0.00	0.00	0.00
4,000.0	5.14	329.80	3,988.9	219.0	-127.5	-111.6	0.00	0.00	0.00
4,100.0	5.14	329.80	4,088.5	226.8	-132.0	-115.6	0.00	0.00	0.00
4,200.0	5.14	329.80	4,188.1	234.5	-136.5	-119.5	0.00	0.00	0.00
4,300.0	5.14	329.80	4,287.7	242.2	-141.0	-123.5	0.00	0.00	0.00
4,349.5	5.14	329.80	4,337.0	246.1	-143.2	-125.4	0.00	0.00	0.00
Sussex									

Database:	US_EDM	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Project:	SEC.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	North Reference:	True
Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plsn #1 (12-28-15)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,400.0	5.14	329.80	4,387.2	250.0	-145.5	-127.4	0.00	0.00	0.00
4,500.0	5.14	329.80	4,486.8	257.7	-150.0	-131.3	0.00	0.00	0.00
4,600.0	5.14	329.80	4,586.4	265.5	-154.5	-135.3	0.00	0.00	0.00
4,700.0	5.14	329.80	4,686.0	273.2	-159.0	-139.2	0.00	0.00	0.00
4,800.0	5.14	329.80	4,785.6	280.9	-163.5	-143.2	0.00	0.00	0.00
4,810.4	5.14	329.80	4,796.0	281.8	-164.0	-143.6	0.00	0.00	0.00
Shannon									
4,900.0	5.14	329.80	4,885.2	288.7	-168.0	-147.1	0.00	0.00	0.00
5,000.0	5.14	329.80	4,984.8	296.4	-172.5	-151.1	0.00	0.00	0.00
5,100.0	5.14	329.80	5,084.4	304.2	-177.0	-155.0	0.00	0.00	0.00
5,200.0	5.14	329.80	5,184.0	311.9	-181.5	-159.0	0.00	0.00	0.00
5,259.6	5.14	329.80	5,243.4	316.5	-184.2	-161.3	0.00	0.00	0.00
Start Drop -2.00									
5,300.0	4.33	329.80	5,283.7	319.4	-185.9	-162.8	2.00	-2.00	0.00
5,400.0	2.33	329.80	5,383.5	324.4	-188.8	-165.3	2.00	-2.00	0.00
5,500.0	0.33	329.80	5,483.4	326.4	-190.0	-166.4	2.00	-2.00	0.00
5,516.6	0.00	0.00	5,500.0	326.5	-190.0	-166.4	1.99	-1.99	0.00
Start 858.3 hold at 5516.6 MD									
5,600.0	0.00	0.00	5,583.4	326.5	-190.0	-166.4	0.00	0.00	0.00
5,700.0	0.00	0.00	5,683.4	326.5	-190.0	-166.4	0.00	0.00	0.00
5,800.0	0.00	0.00	5,783.4	326.5	-190.0	-166.4	0.00	0.00	0.00
5,900.0	0.00	0.00	5,883.4	326.5	-190.0	-166.4	0.00	0.00	0.00
6,000.0	0.00	0.00	5,983.4	326.5	-190.0	-166.4	0.00	0.00	0.00
6,100.0	0.00	0.00	6,083.4	326.5	-190.0	-166.4	0.00	0.00	0.00
6,200.0	0.00	0.00	6,183.4	326.5	-190.0	-166.4	0.00	0.00	0.00
6,300.0	0.00	0.00	6,283.4	326.5	-190.0	-166.4	0.00	0.00	0.00
6,374.9	0.00	0.00	6,358.3	326.5	-190.0	-166.4	0.00	0.00	0.00
Start Build 7.50									
6,400.0	1.88	90.00	6,383.4	326.5	-189.6	-166.0	7.51	7.51	0.00
6,500.0	9.38	90.00	6,482.9	326.5	-179.8	-156.2	7.50	7.50	0.00
6,600.0	16.88	90.00	6,580.2	326.5	-157.1	-133.5	7.50	7.50	0.00
6,700.0	24.38	90.00	6,673.7	326.5	-121.9	-98.4	7.50	7.50	0.00
6,800.0	31.88	90.00	6,761.8	326.5	-74.7	-51.4	7.50	7.50	0.00
6,900.0	39.38	90.00	6,843.1	326.5	-16.5	6.7	7.50	7.50	0.00
6,909.0	40.06	90.00	6,850.0	326.5	-10.8	12.4	7.50	7.50	0.00
Sharon Springs									
7,000.0	46.88	90.00	6,916.0	326.5	51.8	74.8	7.50	7.50	0.00
7,043.8	50.17	90.00	6,945.0	326.5	84.6	107.6	7.50	7.50	0.00
Niobrara A									
7,100.0	54.38	90.00	6,979.4	326.5	129.1	151.9	7.50	7.50	0.00
7,151.6	58.26	90.00	7,008.0	326.5	172.0	194.7	7.50	7.50	0.00
Niobrara B									
7,200.0	61.88	90.00	7,032.1	326.5	213.9	236.5	7.50	7.50	0.00
7,300.0	69.38	90.00	7,073.3	326.5	305.0	327.3	7.50	7.50	0.00
7,341.8	72.52	90.00	7,087.0	326.5	344.5	366.8	7.50	7.50	0.00
Niobrara C									
7,400.0	76.88	90.00	7,102.3	326.5	400.6	422.7	7.50	7.50	0.00
7,500.0	84.38	90.00	7,118.6	326.5	499.2	521.1	7.50	7.50	0.00
7,581.0	90.46	90.00	7,122.2	326.5	580.1	601.7	7.50	7.50	0.00
Start 4016.5 hold at 7581.0 MD - 7"									
7,600.0	90.46	90.00	7,122.1	326.5	599.1	620.7	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Project:	SEC.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	North Reference:	True
Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plsn #1 (12-28-15)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,700.0	90.46	90.00	7,121.3	326.5	699.1	720.4	0.00	0.00	0.00
7,800.0	90.46	90.00	7,120.5	326.5	799.1	820.2	0.00	0.00	0.00
7,900.0	90.46	90.00	7,119.7	326.5	899.1	919.9	0.00	0.00	0.00
8,000.0	90.46	90.00	7,118.9	326.5	999.1	1,019.7	0.00	0.00	0.00
8,100.0	90.46	90.00	7,118.1	326.5	1,099.0	1,119.4	0.00	0.00	0.00
8,200.0	90.46	90.00	7,117.3	326.5	1,199.0	1,219.2	0.00	0.00	0.00
8,300.0	90.46	90.00	7,116.5	326.5	1,299.0	1,318.9	0.00	0.00	0.00
8,400.0	90.46	90.00	7,115.7	326.5	1,399.0	1,418.7	0.00	0.00	0.00
8,500.0	90.46	90.00	7,114.9	326.5	1,499.0	1,518.4	0.00	0.00	0.00
8,600.0	90.46	90.00	7,114.1	326.5	1,599.0	1,618.1	0.00	0.00	0.00
8,700.0	90.46	90.00	7,113.3	326.5	1,699.0	1,717.9	0.00	0.00	0.00
8,800.0	90.46	90.00	7,112.5	326.5	1,799.0	1,817.6	0.00	0.00	0.00
8,900.0	90.46	90.00	7,111.7	326.5	1,899.0	1,917.4	0.00	0.00	0.00
9,000.0	90.46	90.00	7,110.9	326.5	1,999.0	2,017.1	0.00	0.00	0.00
9,100.0	90.46	90.00	7,110.1	326.5	2,099.0	2,116.9	0.00	0.00	0.00
9,200.0	90.46	90.00	7,109.2	326.5	2,199.0	2,216.6	0.00	0.00	0.00
9,300.0	90.46	90.00	7,108.4	326.5	2,299.0	2,316.4	0.00	0.00	0.00
9,400.0	90.46	90.00	7,107.6	326.5	2,399.0	2,416.1	0.00	0.00	0.00
9,500.0	90.46	90.00	7,106.8	326.5	2,499.0	2,515.9	0.00	0.00	0.00
9,600.0	90.46	90.00	7,106.0	326.5	2,599.0	2,615.6	0.00	0.00	0.00
9,700.0	90.46	90.00	7,105.2	326.5	2,699.0	2,715.3	0.00	0.00	0.00
9,800.0	90.46	90.00	7,104.4	326.5	2,799.0	2,815.1	0.00	0.00	0.00
9,900.0	90.46	90.00	7,103.6	326.5	2,899.0	2,914.8	0.00	0.00	0.00
10,000.0	90.46	90.00	7,102.8	326.5	2,999.0	3,014.6	0.00	0.00	0.00
10,100.0	90.46	90.00	7,102.0	326.5	3,099.0	3,114.3	0.00	0.00	0.00
10,200.0	90.46	90.00	7,101.2	326.5	3,199.0	3,214.1	0.00	0.00	0.00
10,300.0	90.46	90.00	7,100.4	326.5	3,299.0	3,313.8	0.00	0.00	0.00
10,400.0	90.46	90.00	7,099.6	326.5	3,399.0	3,413.6	0.00	0.00	0.00
10,500.0	90.46	90.00	7,098.8	326.5	3,499.0	3,513.3	0.00	0.00	0.00
10,600.0	90.46	90.00	7,098.0	326.5	3,599.0	3,613.1	0.00	0.00	0.00
10,700.0	90.46	90.00	7,097.2	326.5	3,699.0	3,712.8	0.00	0.00	0.00
10,800.0	90.46	90.00	7,096.4	326.5	3,799.0	3,812.5	0.00	0.00	0.00
10,900.0	90.46	90.00	7,095.6	326.5	3,899.0	3,912.3	0.00	0.00	0.00
11,000.0	90.46	90.00	7,094.8	326.5	3,999.0	4,012.0	0.00	0.00	0.00
11,100.0	90.46	90.00	7,094.0	326.5	4,099.0	4,111.8	0.00	0.00	0.00
11,200.0	90.46	90.00	7,093.2	326.5	4,198.9	4,211.5	0.00	0.00	0.00
11,300.0	90.46	90.00	7,092.4	326.5	4,298.9	4,311.3	0.00	0.00	0.00
11,400.0	90.46	90.00	7,091.6	326.5	4,398.9	4,411.0	0.00	0.00	0.00
11,500.0	90.46	90.00	7,090.8	326.5	4,498.9	4,510.8	0.00	0.00	0.00
11,597.5	90.46	90.00	7,090.0	326.5	4,596.4	4,608.0	0.00	0.00	0.00
TD at 11597.5 - BHL 2444'FSL, 500'FEL									

Database:	US_EDM	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Project:	SEC.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	North Reference:	True
Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plsn #1 (12-28-15)		

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SHL 2185'FSL, 240'FWL - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,351,470.87	3,202,996.82	40.295901	-104.772243
BHL 2444'FSL, 500'FEL - plan hits target center - Point	0.00	0.00	7,090.0	326.5	4,596.5	1,351,835.04	3,207,590.26	40.296796	-104.755765

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,581.0	7,122.2	7"	7	8-3/4

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,668.8	3,659.0	Parkman		0.00	
4,349.5	4,337.0	Sussex		0.00	
4,810.4	4,796.0	Shannon		0.00	
6,909.0	6,850.0	Sharon Springs		0.00	
7,043.8	6,945.0	Niobrara A		0.00	
7,151.6	7,008.0	Niobrara B		0.00	
7,341.8	7,087.0	Niobrara C		0.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,000.0	1,000.0	0.0	0.0	KOP - Start Build 1.50
5,259.6	5,243.4	316.5	-184.2	Start Drop -2.00
5,516.6	5,500.0	326.5	-190.0	Start 858.3 hold at 5516.6 MD
6,374.9	6,358.3	326.5	-190.0	Start Build 7.50
7,581.0	7,122.2	326.5	580.1	Start 4016.5 hold at 7581.0 MD
11,597.5	7,090.0	326.5	4,596.4	TD at 11597.5



PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.22-T4N-R66W

Wiedeman Federal 4N66W22G PAD

Sec.22-T4N-R66W

Wiedeman Federal 22G-302

Wellbore #1

Plsn #1 (12-28-15)

Anticollision Report

04 January, 2016



Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Reference	Plsn #1 (12-28-15)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 800.0 ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	1/4/2016		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,597.5	Plsn #1 (12-28-15) (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						
Edward Pad Sec.22-T4N-R66W						
Edward 22-22 - Edward 22-22 - Edward 22-22	7,921.6	7,232.8	193.7	144.1	3.900	CC, ES, SF
Fritzler 12-22 1 (Exist.) - Wellbore #1 - Wellbore #1						Out of range
Existing Wells - Sec.22-T4N-R66W						
Alles Federal 33-22 (Exist.) - Wellbore #1 - Wellbore #1	10,311.3	7,080.6	643.4	535.8	5.978	CC, ES
Alles Federal 33-22 (Exist.) - Wellbore #1 - Wellbore #1	10,400.0	7,082.9	649.5	539.4	5.899	SF
Fritzler 22-22 (Exist.) - Wellbore #1 - Wellbore #1						Out of range
JT 2 (SI) - Wellbore #1 - Wellbore #1	1,000.0	989.0	432.4	410.5	19.730	CC
JT 2 (SI) - Wellbore #1 - Wellbore #1	7,400.0	7,091.3	515.7	353.6	3.182	ES, SF
JT 23-22 (Exist.) - Wellbore #1 - Wellbore #1	8,723.3	7,097.8	350.6	284.2	5.281	CC, ES
JT 23-22 (Exist.) - Wellbore #1 - Wellbore #1	8,800.0	7,096.2	358.9	290.5	5.245	SF
Peppler Federal 1 (P&A) - Wellbore #1 - Wellbore #1	11,470.7	7,073.0	479.5	210.8	1.784	CC, ES
Peppler Federal 1 (P&A) - Wellbore #1 - Wellbore #1	11,500.0	7,072.8	480.4	210.8	1.782	SF
Fritzler Pad Sec.22-T4N-R66W						
Fritzler 25-22 (Exist.) - Fritzler 25-22 - Fritzler 25-22 Surve	9,152.0	7,211.2	470.2	386.8	5.637	CC, ES
Fritzler 25-22 (Exist.) - Fritzler 25-22 - Fritzler 25-22 Surve	9,200.0	7,210.8	472.7	387.9	5.579	SF
Fritzler Federal 24-22 (Exist.) - Fritzler 24-22 - Fritzler 24-	10,751.5	7,206.1	358.4	230.5	2.802	CC, ES
Fritzler Federal 24-22 (Exist.) - Fritzler 24-22 - Fritzler 24-	10,800.0	7,205.9	361.6	232.4	2.798	SF
Fritzler Federal 32-22 (Exist.) - Wellbore #1 - Wellbore #1	9,941.6	7,103.3	796.8	712.0	9.391	CC, ES
Fritzler Federal 32-22 (Exist.) - Wellbore #1 - Wellbore #1	10,000.0	7,102.8	799.0	712.5	9.241	SF

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W						
Wiedeman Federal 22G-232 - Wellbore #1 - Plan #1 (12-	1,000.0	1,000.0	15.3	11.0	3.584	CC, ES
Wiedeman Federal 22G-232 - Wellbore #1 - Plan #1 (12-	11,597.5	11,509.1	268.1	14.2	1.056	Level 2, SF
Wiedeman Federal 22H-212 - Wellbore #1 - Plan #1 (12-	1,000.0	1,000.0	45.2	40.9	10.579	CC, ES
Wiedeman Federal 22H-212 - Wellbore #1 - Plan #1 (12-	1,200.0	1,199.9	49.8	44.6	9.632	SF
Wiedeman Federal 22H-232 - Wellbore #1 - Plan #1 (12-	800.0	800.0	90.0	86.6	26.691	CC, ES
Wiedeman Federal 22H-232 - Wellbore #1 - Plan #1 (12-	1,100.0	1,092.5	102.5	97.9	22.272	SF
Wiedeman Federal 22H-302 - Wellbore #1 - Plan #1 (12-	1,000.0	1,000.0	60.1	55.8	14.076	CC, ES
Wiedeman Federal 22H-302 - Wellbore #1 - Plan #1 (12-	1,200.0	1,199.9	64.7	59.5	12.520	SF
Wiedeman Federal 22H-312 - Wellbore #1 - Plan #1 (12-	1,000.0	1,000.0	30.2	26.0	7.082	CC, ES
Wiedeman Federal 22H-312 - Wellbore #1 - Plan #1 (12-	11,597.5	11,605.0	520.5	260.0	1.998	SF
Wiedeman Federal 22H-332 - Wellbore #1 - Plan #1 (12-	566.3	567.3	105.3	103.0	45.318	CC
Wiedeman Federal 22H-332 - Wellbore #1 - Plan #1 (12-	600.0	600.0	105.3	102.8	42.587	ES
Wiedeman Federal 22H-332 - Wellbore #1 - Plan #1 (12-	1,100.0	1,084.9	138.0	133.4	30.247	SF
Wiedeman Federal 22H-402 - Wellbore #1 - Plan #1 (12-	1,000.0	1,000.0	75.1	70.8	17.575	CC, ES
Wiedeman Federal 22H-402 - Wellbore #1 - Plan #1 (12-	1,100.0	1,098.1	77.4	72.7	16.517	SF
Wiedeman Federal 22I-212 - Wellbore #1 - Plan #1 (12-2	366.3	367.3	120.2	118.8	84.415	CC
Wiedeman Federal 22I-212 - Wellbore #1 - Plan #1 (12-2	400.0	400.0	120.2	118.7	76.417	ES
Wiedeman Federal 22I-212 - Wellbore #1 - Plan #1 (12-2	1,000.0	978.3	165.6	161.5	39.870	SF
Wiedeman Federal 22I-302 - Wellbore #1 - Plan #1 (12-2	166.3	167.3	135.2	134.6	257.367	CC
Wiedeman Federal 22I-302 - Wellbore #1 - Plan #1 (12-2	200.0	200.0	135.2	134.5	200.460	ES
Wiedeman Federal 22I-302 - Wellbore #1 - Plan #1 (12-2	1,000.0	963.4	215.3	211.0	50.224	SF

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 828- Edward Pad Sec.22-T4N-R66W - Edward 22-22 - Edward 22-22 - Edward 22-22												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,150.0	7,007.1	7,150.2	7,045.9	17.1	21.8	-28.38	523.9	923.6	779.3	752.9	26.37	29.548	
7,200.0	7,032.1	7,172.4	7,068.1	17.6	21.8	-32.92	522.8	922.8	736.3	709.6	26.71	27.567	
7,250.0	7,054.2	7,192.0	7,087.6	18.2	21.8	-38.67	521.9	922.1	692.2	664.4	27.83	24.877	
7,300.0	7,073.3	7,208.2	7,103.8	18.8	21.9	-45.76	521.1	921.5	647.2	617.4	29.80	21.716	
7,350.0	7,089.4	7,221.7	7,117.3	19.6	21.9	-54.32	520.5	921.1	601.6	569.0	32.55	18.482	
7,400.0	7,102.3	7,232.3	7,127.9	20.4	21.9	-64.07	520.1	920.7	555.5	519.9	35.62	15.598	
7,450.0	7,112.1	7,240.0	7,135.5	21.3	21.9	-74.26	519.8	920.5	509.5	471.1	38.37	13.279	
7,500.0	7,118.6	7,244.6	7,140.2	22.2	21.9	-83.87	519.6	920.3	463.8	423.4	40.33	11.499	
7,550.0	7,121.9	7,246.2	7,141.8	23.2	21.9	-92.02	519.5	920.3	418.8	377.3	41.49	10.095	
7,581.0	7,122.2	7,245.7	7,141.2	23.8	21.9	-96.12	519.5	920.3	391.6	349.7	41.94	9.338	
7,600.0	7,122.1	7,245.0	7,140.5	24.2	21.9	-95.91	519.6	920.3	375.2	332.9	42.33	8.864	
7,700.0	7,121.3	7,241.2	7,136.8	26.3	21.9	-94.81	519.7	920.4	294.2	249.7	44.50	6.611	
7,800.0	7,120.5	7,237.4	7,133.0	28.5	21.9	-93.69	519.9	920.6	228.7	181.9	46.78	4.888	
7,900.0	7,119.7	7,233.6	7,129.2	30.8	21.9	-92.56	520.0	920.7	194.9	145.8	49.14	3.966	
7,921.6	7,119.5	7,232.8	7,128.3	31.4	21.9	-92.32	520.0	920.7	193.7	144.1	49.67	3.900	CC, ES, SF
8,000.0	7,118.9	7,229.7	7,125.3	33.2	21.9	-91.42	520.2	920.8	209.0	157.4	51.56	4.053	
8,100.0	7,118.1	7,225.8	7,121.4	35.7	21.9	-90.26	520.3	920.9	263.3	209.2	54.03	4.873	
8,200.0	7,117.3	7,221.8	7,117.4	38.2	21.9	-89.09	520.5	921.1	339.0	282.5	56.52	5.998	
8,300.0	7,116.5	7,217.8	7,113.4	40.7	21.9	-87.91	520.7	921.2	424.8	365.8	59.02	7.198	
8,400.0	7,115.7	7,213.8	7,109.4	43.3	21.9	-86.72	520.8	921.3	515.8	454.3	61.53	8.383	
8,500.0	7,114.9	7,209.7	7,105.3	45.9	21.9	-85.53	521.0	921.5	609.5	545.5	64.03	9.519	

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Edward Pad Sec.22-T4N-R66W - Edward 22-22 - Edward 22-22 - Edward 22-22													Offset Site Error:	0.0 ft
Survey Program: 828-Reference													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
8,600.0	7,114.1	7,205.5	7,101.1	48.5	21.8	-84.32	521.2	921.6	705.0	638.5	66.52	10.598		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Sec.22-T4N-R66W - Alles Federal 33-22 (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							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
9,900.0	7,103.6	7,069.6	7,068.0	83.8	12.6	88.10	-316.7	3,309.8	763.6	667.3	96.22	7.936		
10,000.0	7,102.8	7,072.3	7,070.7	86.5	12.6	88.34	-316.7	3,309.9	714.7	615.7	98.99	7.220		
10,100.0	7,102.0	7,074.9	7,073.4	89.3	12.6	88.58	-316.7	3,310.0	677.2	575.4	101.77	6.654		
10,200.0	7,101.2	7,077.6	7,076.0	92.0	12.6	88.82	-316.8	3,310.1	653.0	548.4	104.54	6.246		
10,300.0	7,100.4	7,080.3	7,078.7	94.8	12.6	89.05	-316.8	3,310.2	643.5	536.2	107.32	5.996		
10,311.3	7,100.3	7,080.6	7,079.0	95.1	12.6	89.08	-316.8	3,310.2	643.4	535.8	107.64	5.978 CC, ES		
10,400.0	7,099.6	7,082.9	7,081.4	97.6	12.6	89.29	-316.9	3,310.3	649.5	539.4	110.10	5.899 SF		
10,500.0	7,098.8	7,085.6	7,084.0	100.3	12.6	89.53	-316.9	3,310.4	670.5	557.6	112.88	5.940		
10,600.0	7,098.0	7,088.3	7,086.7	103.1	12.6	89.76	-317.0	3,310.5	705.2	589.5	115.66	6.097		
10,700.0	7,097.2	7,090.9	7,089.3	105.9	12.6	90.00	-317.0	3,310.6	751.6	633.2	118.45	6.346		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Sec.22-T4N-R66W - JT 2 (SI) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7388-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.0	0.0	0.0	0.0	0.0	0.0	115.93	-189.1	388.9	432.5					
100.0	100.0	89.0	89.0	0.1	1.8	115.93	-189.1	388.9	432.4	430.5	1.89	228.467		
200.0	200.0	189.0	189.0	0.3	3.8	115.93	-189.1	388.9	432.4	428.3	4.12	105.017		
300.0	300.0	289.0	289.0	0.6	5.8	115.93	-189.1	388.9	432.4	426.1	6.34	68.178		
400.0	400.0	389.0	389.0	0.8	7.8	115.93	-189.1	388.9	432.4	423.8	8.57	50.473		
500.0	500.0	489.0	489.0	1.0	9.8	115.93	-189.1	388.9	432.4	421.6	10.79	40.067		
600.0	600.0	589.0	589.0	1.2	11.8	115.93	-189.1	388.9	432.4	419.4	13.02	33.219		
700.0	700.0	689.0	689.0	1.5	13.8	115.93	-189.1	388.9	432.4	417.2	15.24	28.370		
800.0	800.0	789.0	789.0	1.7	15.8	115.93	-189.1	388.9	432.4	414.9	17.47	24.756		
900.0	900.0	889.0	889.0	1.9	17.8	115.93	-189.1	388.9	432.4	412.7	19.69	21.959		
1,000.0	1,000.0	989.0	989.0	2.1	19.8	115.93	-189.1	388.9	432.4	410.5	21.92	19.730 CC		
1,100.0	1,100.0	1,089.0	1,089.0	2.4	21.8	146.22	-189.1	388.9	433.5	409.3	24.13	17.962		
1,200.0	1,199.9	1,188.9	1,188.9	2.6	23.8	146.48	-189.1	388.9	436.7	410.4	26.33	16.585		
1,300.0	1,299.7	1,288.7	1,288.7	2.8	25.8	146.90	-189.1	388.9	442.2	413.7	28.52	15.507		
1,342.6	1,342.2	1,331.2	1,331.2	2.9	26.6	147.12	-189.1	388.9	445.2	415.8	29.44	15.123		
1,400.0	1,399.3	1,388.3	1,388.3	3.0	27.8	147.48	-189.1	388.9	449.6	418.8	30.71	14.639		
1,500.0	1,498.9	1,487.9	1,487.9	3.3	29.8	148.08	-189.1	388.9	457.1	424.2	32.92	13.886		
1,600.0	1,598.5	1,587.5	1,587.5	3.5	31.8	148.67	-189.1	388.9	464.8	429.6	35.14	13.228		
1,700.0	1,698.1	1,687.1	1,687.1	3.8	33.7	149.23	-189.1	388.9	472.5	435.1	37.35	12.649		
1,800.0	1,797.7	1,786.7	1,786.7	4.0	35.7	149.78	-189.1	388.9	480.2	440.6	39.57	12.135		
1,900.0	1,897.3	1,886.3	1,886.3	4.3	37.7	150.31	-189.1	388.9	488.0	446.2	41.79	11.677		
2,000.0	1,996.9	1,985.9	1,985.9	4.6	39.7	150.82	-189.1	388.9	495.8	451.8	44.01	11.266		
2,100.0	2,096.5	2,085.5	2,085.5	4.8	41.7	151.31	-189.1	388.9	503.6	457.4	46.22	10.895		
2,200.0	2,196.1	2,185.1	2,185.1	5.1	43.7	151.80	-189.1	388.9	511.5	463.1	48.44	10.559		
2,300.0	2,295.7	2,284.7	2,284.7	5.3	45.7	152.26	-189.1	388.9	519.4	468.8	50.66	10.252		
2,400.0	2,395.3	2,384.3	2,384.3	5.6	47.7	152.71	-189.1	388.9	527.4	474.5	52.88	9.972		
2,500.0	2,494.9	2,483.9	2,483.9	5.9	49.7	153.15	-189.1	388.9	535.3	480.2	55.10	9.716		
2,600.0	2,594.5	2,583.5	2,583.5	6.1	51.7	153.58	-189.1	388.9	543.4	486.0	57.32	9.479		
2,700.0	2,694.1	2,683.1	2,683.1	6.4	53.7	153.99	-189.1	388.9	551.4	491.9	59.54	9.261		
2,800.0	2,793.7	2,782.7	2,782.7	6.7	55.7	154.40	-189.1	388.9	559.5	497.7	61.76	9.059		
2,900.0	2,893.3	2,882.3	2,882.3	7.0	57.6	154.79	-189.1	388.9	567.6	503.6	63.98	8.871		
3,000.0	2,992.9	2,981.9	2,981.9	7.2	59.6	155.17	-189.1	388.9	575.7	509.5	66.20	8.696		
3,100.0	3,092.5	3,081.5	3,081.5	7.5	61.6	155.53	-189.1	388.9	583.8	515.4	68.42	8.533		
3,200.0	3,192.1	3,181.1	3,181.1	7.8	63.6	155.89	-189.1	388.9	592.0	521.4	70.64	8.381		
3,300.0	3,291.7	3,280.7	3,280.7	8.0	65.6	156.24	-189.1	388.9	600.2	527.4	72.86	8.238		
3,400.0	3,391.3	3,380.3	3,380.3	8.3	67.6	156.58	-189.1	388.9	608.4	533.3	75.08	8.104		
3,500.0	3,490.9	3,479.9	3,479.9	8.6	69.6	156.91	-189.1	388.9	616.7	539.4	77.30	7.978		
3,600.0	3,590.5	3,579.5	3,579.5	8.9	71.6	157.23	-189.1	388.9	624.9	545.4	79.51	7.859		
3,700.0	3,690.1	3,679.1	3,679.1	9.1	73.6	157.55	-189.1	388.9	633.2	551.5	81.73	7.747		
3,800.0	3,789.7	3,778.7	3,778.7	9.4	75.6	157.85	-189.1	388.9	641.5	557.5	83.95	7.641		
3,900.0	3,889.3	3,878.3	3,878.3	9.7	77.6	158.15	-189.1	388.9	649.8	563.6	86.17	7.541		
4,000.0	3,988.9	3,977.9	3,977.9	10.0	79.6	158.44	-189.1	388.9	658.1	569.7	88.39	7.446		
4,100.0	4,088.5	4,077.5	4,077.5	10.2	81.5	158.72	-189.1	388.9	666.5	575.9	90.61	7.356		
4,200.0	4,188.1	4,177.1	4,177.1	10.5	83.5	159.00	-189.1	388.9	674.8	582.0	92.82	7.270		
4,300.0	4,287.7	4,276.7	4,276.7	10.8	85.5	159.27	-189.1	388.9	683.2	588.2	95.04	7.188		
4,400.0	4,387.2	4,376.2	4,376.2	11.1	87.5	159.53	-189.1	388.9	691.6	594.3	97.26	7.111		
4,500.0	4,486.8	4,475.8	4,475.8	11.3	89.5	159.79	-189.1	388.9	700.0	600.5	99.48	7.037		
4,600.0	4,586.4	4,575.4	4,575.4	11.6	91.5	160.04	-189.1	388.9	708.4	606.7	101.70	6.966		
4,700.0	4,686.0	4,675.0	4,675.0	11.9	93.5	160.28	-189.1	388.9	716.8	612.9	103.91	6.898		
4,800.0	4,785.6	4,774.6	4,774.6	12.2	95.5	160.52	-189.1	388.9	725.3	619.1	106.13	6.834		
4,900.0	4,885.2	4,874.2	4,874.2	12.4	97.5	160.75	-189.1	388.9	733.7	625.4	108.35	6.772		

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Sec.22-T4N-R66W - JT 2 (SI) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7388-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
5,000.0	4,984.8	4,973.8	4,973.8	12.7	99.5	160.98	-189.1	388.9	742.2	631.6	110.57	6.713		
5,100.0	5,084.4	5,073.4	5,073.4	13.0	101.5	161.20	-189.1	388.9	750.7	637.9	112.78	6.656		
5,200.0	5,184.0	5,173.0	5,173.0	13.3	103.5	161.42	-189.1	388.9	759.2	644.2	115.00	6.601		
5,259.6	5,243.4	5,232.4	5,232.4	13.4	104.6	161.55	-189.1	388.9	764.2	647.9	116.32	6.570		
5,300.0	5,283.7	5,272.7	5,272.7	13.5	105.5	161.65	-189.1	388.9	767.4	650.1	117.32	6.541		
5,400.0	5,383.5	5,372.5	5,372.5	13.7	107.4	161.82	-189.1	388.9	772.9	653.2	119.68	6.458		
5,500.0	5,483.4	5,472.4	5,472.4	13.9	109.4	161.89	-189.1	388.9	775.1	653.2	121.91	6.358		
5,516.6	5,500.0	5,489.0	5,489.0	13.9	109.8	131.69	-189.1	388.9	775.2	651.6	123.59	6.272		
5,600.0	5,583.4	5,572.4	5,572.4	14.1	111.4	131.69	-189.1	388.9	775.2	649.8	125.40	6.181		
5,700.0	5,683.4	5,672.4	5,672.4	14.2	113.4	131.69	-189.1	388.9	775.2	647.6	127.60	6.075		
5,800.0	5,783.4	5,772.4	5,772.4	14.4	115.4	131.69	-189.1	388.9	775.2	645.4	129.79	5.972		
5,900.0	5,883.4	5,872.4	5,872.4	14.6	117.4	131.69	-189.1	388.9	775.2	643.2	131.99	5.873		
6,000.0	5,983.4	5,972.4	5,972.4	14.8	119.4	131.69	-189.1	388.9	775.2	641.0	134.19	5.777		
6,100.0	6,083.4	6,072.4	6,072.4	15.0	121.4	131.69	-189.1	388.9	775.2	638.8	136.39	5.684		
6,200.0	6,183.4	6,172.4	6,172.4	15.2	123.4	131.69	-189.1	388.9	775.2	636.6	138.59	5.593		
6,300.0	6,283.4	6,272.4	6,272.4	15.4	125.4	131.69	-189.1	388.9	775.2	634.4	140.79	5.506		
6,374.9	6,358.3	6,347.3	6,347.3	15.6	126.9	131.69	-189.1	388.9	775.2	632.7	142.43	5.442		
6,400.0	6,383.4	6,372.4	6,372.4	15.6	127.4	41.73	-189.1	388.9	774.9	633.1	141.75	5.467		
6,450.0	6,433.3	6,422.3	6,422.3	15.7	128.4	42.01	-189.1	388.9	772.4	630.0	142.46	5.422		
6,500.0	6,482.9	6,471.9	6,471.9	15.8	129.4	42.58	-189.1	388.9	767.6	624.7	142.84	5.374		
6,550.0	6,531.9	6,520.9	6,520.9	15.8	130.4	43.45	-189.1	388.9	760.4	617.4	142.93	5.320		
6,600.0	6,580.2	6,569.2	6,569.2	15.9	131.4	44.62	-189.1	388.9	750.9	608.1	142.78	5.259		
6,650.0	6,627.5	6,616.5	6,616.5	15.9	132.3	46.12	-189.1	388.9	739.3	596.8	142.48	5.189		
6,700.0	6,673.7	6,662.7	6,662.7	15.9	133.3	47.94	-189.1	388.9	725.7	583.5	142.16	5.105		
6,750.0	6,718.6	6,707.6	6,707.6	16.0	134.2	50.11	-189.1	388.9	710.3	568.4	141.93	5.005		
6,800.0	6,761.8	6,750.8	6,750.8	16.0	135.0	52.64	-189.1	388.9	693.3	551.4	141.96	4.884		
6,850.0	6,803.4	6,792.4	6,792.4	16.0	135.8	55.51	-189.1	388.9	675.1	532.7	142.39	4.741		
6,900.0	6,843.1	6,832.1	6,832.1	16.0	136.6	58.71	-189.1	388.9	655.8	512.5	143.31	4.576		
6,950.0	6,880.6	6,869.6	6,869.6	16.1	137.4	62.21	-189.1	388.9	636.0	491.2	144.79	4.393		
7,000.0	6,916.0	6,905.0	6,905.0	16.1	138.1	65.92	-189.1	388.9	616.0	469.2	146.76	4.197		
7,050.0	6,948.9	6,937.9	6,937.9	16.2	138.8	69.78	-189.1	388.9	596.2	447.1	149.10	3.999		
7,100.0	6,979.4	6,968.4	6,968.4	16.6	139.4	73.65	-189.1	388.9	577.3	425.7	151.60	3.808		
7,150.0	7,007.1	6,996.1	6,996.1	17.1	139.9	77.40	-189.1	388.9	559.8	405.8	154.05	3.634		
7,200.0	7,032.1	7,021.1	7,021.1	17.6	140.4	80.92	-189.1	388.9	544.4	388.2	156.26	3.484		
7,250.0	7,054.2	7,043.2	7,043.2	18.2	140.9	84.06	-189.1	388.9	531.7	373.6	158.15	3.362		
7,300.0	7,073.3	7,062.3	7,062.3	18.8	141.2	86.72	-189.1	388.9	522.3	362.7	159.70	3.271		
7,350.0	7,089.4	7,078.4	7,078.4	19.6	141.6	88.82	-189.1	388.9	516.9	355.9	160.98	3.211		
7,387.9	7,099.5	7,088.5	7,088.5	20.2	141.8	90.00	-189.1	388.9	515.6	353.7	161.84	3.186		
7,400.0	7,102.3	7,091.3	7,091.3	20.4	141.8	90.30	-189.1	388.9	515.7	353.6	162.09	3.182 ES, SF		
7,450.0	7,112.1	7,101.1	7,101.1	21.3	142.0	91.10	-189.1	388.9	519.1	356.0	163.14	3.182		
7,500.0	7,118.6	7,107.6	7,107.6	22.2	142.2	91.20	-189.1	388.9	527.2	363.0	164.19	3.211		
7,550.0	7,121.9	7,110.9	7,110.9	23.2	142.2	90.58	-189.1	388.9	539.9	374.6	165.24	3.267		
7,581.0	7,122.2	7,111.2	7,111.2	23.8	142.2	89.83	-189.1	388.9	549.9	384.0	165.86	3.315		
7,600.0	7,122.1	7,111.1	7,111.1	24.2	142.2	89.81	-189.1	388.9	556.8	390.5	166.24	3.349		
7,700.0	7,121.3	7,110.3	7,110.3	26.3	142.2	89.72	-189.1	388.9	601.7	433.4	168.34	3.574		
7,800.0	7,120.5	7,109.5	7,109.5	28.5	142.2	89.63	-189.1	388.9	658.8	488.3	170.55	3.863		
7,900.0	7,119.7	7,108.7	7,108.7	30.8	142.2	89.54	-189.1	388.9	725.3	552.5	172.86	4.196		
8,000.0	7,118.9	7,107.9	7,107.9	33.2	142.2	89.46	-189.1	388.9	798.8	623.6	175.24	4.558		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Sec.22-T4N-R66W - JT 23-22 (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)			
8,100.0	7,118.1	7,109.8	7,109.0	35.7	14.7	91.13	-24.3	1,722.2	715.1	664.8	50.31	14.215		
8,200.0	7,117.3	7,107.9	7,107.1	38.2	14.7	90.83	-24.3	1,722.2	629.9	577.0	52.81	11.927		
8,300.0	7,116.5	7,106.0	7,105.2	40.7	14.7	90.52	-24.2	1,722.2	549.6	494.3	55.35	9.929		
8,400.0	7,115.7	7,104.1	7,103.3	43.3	14.7	90.20	-24.2	1,722.3	476.9	419.0	57.93	8.233		
8,500.0	7,114.9	7,102.2	7,101.4	45.9	14.7	89.89	-24.2	1,722.3	415.7	355.2	60.53	6.868		
8,600.0	7,114.1	7,100.2	7,099.4	48.5	14.7	89.57	-24.1	1,722.3	371.7	308.5	63.15	5.886		
8,700.0	7,113.3	7,098.2	7,097.5	51.2	14.7	89.24	-24.1	1,722.3	351.4	285.6	65.78	5.342		
8,723.3	7,113.1	7,097.8	7,097.0	51.8	14.7	89.17	-24.1	1,722.3	350.6	284.2	66.40	5.281 CC, ES		
8,800.0	7,112.5	7,096.2	7,095.5	53.9	14.7	88.92	-24.1	1,722.3	358.9	290.5	68.43	5.245 SF		
8,900.0	7,111.7	7,094.3	7,093.5	56.5	14.7	88.60	-24.1	1,722.4	392.6	321.5	71.09	5.522		
9,000.0	7,110.9	7,092.3	7,091.6	59.2	14.7	88.28	-24.0	1,722.4	446.6	372.8	73.76	6.055		
9,100.0	7,110.1	7,090.4	7,089.6	61.9	14.7	87.97	-24.0	1,722.4	514.5	438.1	76.44	6.731		
9,200.0	7,109.2	7,088.5	7,087.7	64.6	14.7	87.65	-24.0	1,722.4	591.7	512.5	79.13	7.477		
9,300.0	7,108.4	7,086.5	7,085.8	67.3	14.7	87.34	-23.9	1,722.5	674.8	593.0	81.81	8.248		
9,400.0	7,107.6	7,084.6	7,083.9	70.1	14.7	87.03	-23.9	1,722.5	762.0	677.5	84.51	9.017		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Sec.22-T4N-R66W - Peppler Federal 1 (P&A) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7361-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
10,900.0	7,095.6	7,077.6	7,077.6	111.4	141.6	90.55	-153.0	4,469.7	745.4	492.4	252.92	2.947		
11,000.0	7,094.8	7,076.8	7,076.8	114.2	141.5	90.45	-153.0	4,469.7	671.9	416.2	255.69	2.628		
11,100.0	7,094.0	7,076.0	7,076.0	117.0	141.5	90.36	-153.0	4,469.7	606.1	347.6	258.45	2.345		
11,200.0	7,093.2	7,075.2	7,075.2	119.8	141.5	90.26	-153.0	4,469.7	550.6	289.4	261.22	2.108		
11,300.0	7,092.4	7,074.4	7,074.4	122.5	141.5	90.16	-153.0	4,469.7	508.9	245.0	263.98	1.928		
11,400.0	7,091.6	7,073.6	7,073.6	125.3	141.5	90.07	-153.0	4,469.7	484.6	217.9	266.75	1.817		
11,470.7	7,091.0	7,073.0	7,073.0	127.3	141.5	90.00	-153.0	4,469.7	479.5	210.8	268.71	1.784 CC, ES		
11,500.0	7,090.8	7,072.8	7,072.8	128.1	141.5	89.97	-153.0	4,469.7	480.4	210.8	269.52	1.782 SF		
11,597.5	7,090.0	7,072.0	7,072.0	130.8	141.4	89.88	-153.0	4,469.7	496.0	223.7	272.22	1.822		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 829- Fritzler Pad Sec.22-T4N-R66W - Fritzler 25-22 (Exist) - Fritzler 25-22 - Fritzler 25-22 Survey													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	
8,600.0	7,114.1	7,215.4	7,113.9	48.5	20.7	-90.52	796.7	2,151.0	725.1	656.5	68.62	10.567		
8,700.0	7,113.3	7,214.7	7,113.1	51.2	20.7	-90.43	796.7	2,151.0	652.2	580.9	71.27	9.151		
8,800.0	7,112.5	7,213.9	7,112.4	53.9	20.7	-90.33	796.7	2,151.0	587.3	513.4	73.94	7.944		
8,900.0	7,111.7	7,213.1	7,111.6	56.5	20.7	-90.24	796.7	2,151.0	533.5	456.9	76.62	6.963		
9,000.0	7,110.9	7,212.4	7,110.8	59.2	20.7	-90.15	796.7	2,151.0	494.2	414.9	79.31	6.231		
9,100.0	7,110.1	7,211.6	7,110.1	61.9	20.7	-90.05	796.7	2,151.0	473.1	391.1	82.01	5.769		
9,152.0	7,109.6	7,211.2	7,109.7	63.3	20.7	-90.00	796.7	2,151.0	470.2	386.8	83.42	5.637 CC, ES		
9,200.0	7,109.2	7,210.8	7,109.3	64.6	20.7	-89.96	796.7	2,151.0	472.7	387.9	84.72	5.579 SF		
9,300.0	7,108.4	7,210.1	7,108.5	67.3	20.7	-89.86	796.7	2,151.0	493.0	405.5	87.44	5.638		
9,400.0	7,107.6	7,209.3	7,107.7	70.1	20.7	-89.77	796.7	2,151.0	531.6	441.5	90.16	5.896		
9,500.0	7,106.8	7,208.5	7,107.0	72.8	20.7	-89.68	796.7	2,151.0	585.0	492.1	92.90	6.297		
9,600.0	7,106.0	7,207.7	7,106.2	75.5	20.7	-89.58	796.7	2,151.0	649.5	553.8	95.63	6.791		
9,700.0	7,105.2	7,206.9	7,105.4	78.3	20.7	-89.48	796.7	2,151.0	722.1	623.7	98.37	7.340		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 798- Fritzler Pad Sec.22-T4N-R66W - Fritzler Federal 24-22 (Exist) - Fritzler 24-22 - Fritzler 24-22													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	
10,100.0	7,102.0	7,209.0	7,098.5	89.3	22.2	-90.27	684.9	3,750.5	743.6	633.7	109.87	6.768		
10,200.0	7,101.2	7,208.5	7,098.1	92.0	22.2	-90.20	684.9	3,750.5	657.7	545.1	112.63	5.840		
10,300.0	7,100.4	7,208.1	7,097.6	94.8	22.1	-90.13	684.9	3,750.5	576.5	461.1	115.39	4.996		
10,400.0	7,099.6	7,207.6	7,097.2	97.6	22.1	-90.06	684.9	3,750.5	502.0	383.8	118.16	4.249		
10,500.0	7,098.8	7,207.2	7,096.7	100.3	22.1	-89.99	684.9	3,750.5	437.8	316.9	120.93	3.621		
10,600.0	7,098.0	7,206.8	7,096.3	103.1	22.1	-89.92	684.9	3,750.5	389.1	265.4	123.70	3.146		
10,700.0	7,097.2	7,206.4	7,095.9	105.9	22.1	-89.85	684.9	3,750.5	362.1	235.6	126.47	2.863		
10,751.5	7,096.8	7,206.1	7,095.7	107.3	22.1	-89.82	684.9	3,750.5	358.4	230.5	127.90	2.802 CC, ES		
10,800.0	7,096.4	7,205.9	7,095.5	108.6	22.1	-89.79	684.9	3,750.5	361.6	232.4	129.24	2.798 SF		
10,900.0	7,095.6	7,205.5	7,095.0	111.4	22.1	-89.72	684.9	3,750.5	387.9	255.9	132.02	2.938		
11,000.0	7,094.8	7,205.1	7,094.6	114.2	22.1	-89.66	684.9	3,750.5	436.1	301.3	134.80	3.235		
11,100.0	7,094.0	7,204.7	7,094.2	117.0	22.1	-89.59	684.9	3,750.5	499.9	362.3	137.58	3.633		
11,200.0	7,093.2	7,204.3	7,093.8	119.8	22.1	-89.53	684.9	3,750.5	574.1	433.7	140.36	4.090		
11,300.0	7,092.4	7,203.9	7,093.4	122.5	22.1	-89.46	684.9	3,750.5	655.2	512.0	143.14	4.577		
11,400.0	7,091.6	7,203.5	7,093.0	125.3	22.1	-89.40	684.9	3,750.5	740.9	595.0	145.92	5.078		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design													Fritzier Pad Sec.22-T4N-R66W - Fritzier Federal 32-22 (Exist.) - Wellbore #1 - Wellbore #1		Offset Site Error:		0.0 ft	
Survey Program: 7356-															Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning				
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre +N/-S	Offset Wellbore Centre +E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor						
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)							
9,900.0	7,103.6	7,103.6	7,103.6	83.8		-90.02	1,123.3	2,940.6	797.9	714.2	83.70	9.533						
9,941.6	7,103.3	7,103.3	7,103.3	84.9		-90.00	1,123.3	2,940.6	796.8	712.0	84.85	9.391	CC, ES					
10,000.0	7,102.8	7,102.8	7,102.8	86.5		-89.97	1,123.3	2,940.6	799.0	712.5	86.46	9.241	SF					

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design		Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W - Wiedeman Federal 22G-232 - Wellbore #1 -											Offset Site Error:		0.0 ft
Survey Program:		0-MWD											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-180.00	-15.3	0.0	15.3	15.3	0.00	N/A			
100.0	100.0	100.0	100.0	0.1	0.1	-180.00	-15.3	0.0	15.3	15.1	0.22	68.093			
200.0	200.0	200.0	200.0	0.3	0.3	-180.00	-15.3	0.0	15.3	14.6	0.67	22.698			
300.0	300.0	300.0	300.0	0.6	0.6	-180.00	-15.3	0.0	15.3	14.2	1.12	13.619			
400.0	400.0	400.0	400.0	0.8	0.8	-180.00	-15.3	0.0	15.3	13.7	1.57	9.728			
500.0	500.0	500.0	500.0	1.0	1.0	-180.00	-15.3	0.0	15.3	13.3	2.02	7.566			
600.0	600.0	600.0	600.0	1.2	1.2	-180.00	-15.3	0.0	15.3	12.8	2.47	6.190			
700.0	700.0	700.0	700.0	1.5	1.5	-180.00	-15.3	0.0	15.3	12.4	2.92	5.238			
800.0	800.0	800.0	800.0	1.7	1.7	-180.00	-15.3	0.0	15.3	11.9	3.37	4.540			
900.0	900.0	900.0	900.0	1.9	1.9	-180.00	-15.3	0.0	15.3	11.5	3.82	4.005			
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-180.00	-15.3	0.0	15.3	11.0	4.27	3.584 CC, ES			
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-152.09	-15.3	0.0	16.4	11.7	4.72	3.486			
1,200.0	1,199.9	1,199.9	1,199.9	2.6	2.6	-157.34	-15.3	0.0	20.0	14.8	5.17	3.872			
1,300.0	1,299.7	1,299.7	1,299.7	2.8	2.8	-162.84	-15.3	0.0	26.2	20.5	5.61	4.662			
1,342.6	1,342.2	1,342.2	1,342.2	2.9	2.9	-164.87	-15.3	0.0	29.6	23.8	5.80	5.103			
1,400.0	1,399.3	1,399.3	1,399.3	3.0	3.0	-167.09	-15.3	0.0	34.6	28.5	6.06	5.710			
1,500.0	1,498.9	1,498.9	1,498.9	3.3	3.3	-169.74	-15.3	0.0	43.4	36.9	6.51	6.667			
1,600.0	1,598.5	1,598.5	1,598.5	3.5	3.5	-171.49	-15.3	0.0	52.2	45.3	6.95	7.508			
1,700.0	1,698.1	1,698.1	1,698.1	3.8	3.7	-172.73	-15.3	0.0	61.1	53.7	7.40	8.251			
1,800.0	1,797.7	1,797.7	1,797.7	4.0	3.9	-173.66	-15.3	0.0	70.0	62.1	7.85	8.910			
1,900.0	1,897.3	1,897.3	1,897.3	4.3	4.2	-174.38	-15.3	0.0	78.9	70.6	8.30	9.499			
2,000.0	1,996.9	1,996.9	1,996.9	4.6	4.4	-174.95	-15.3	0.0	87.8	79.1	8.76	10.028			
2,100.0	2,096.5	2,096.5	2,096.5	4.8	4.6	-175.42	-15.3	0.0	96.7	87.5	9.21	10.505			
2,200.0	2,196.1	2,196.1	2,196.1	5.1	4.8	-175.81	-15.3	0.0	105.7	96.0	9.66	10.938			
2,300.0	2,295.7	2,295.7	2,295.7	5.3	5.0	-176.13	-15.3	0.0	114.6	104.5	10.11	11.332			
2,400.0	2,395.3	2,395.3	2,395.3	5.6	5.3	-176.41	-15.3	0.0	123.5	113.0	10.57	11.692			
2,500.0	2,494.9	2,494.9	2,494.9	5.9	5.5	-176.66	-15.3	0.0	132.5	121.5	11.02	12.022			
2,600.0	2,594.5	2,597.2	2,597.2	6.1	5.7	-176.55	-14.8	-1.1	140.5	129.0	11.47	12.247			
2,700.0	2,694.1	2,700.0	2,699.9	6.4	5.9	-175.76	-13.2	-4.8	146.5	134.6	11.92	12.289			
2,800.0	2,793.7	2,802.8	2,802.5	6.7	6.2	-174.34	-10.6	-11.0	150.5	138.1	12.37	12.161			
2,900.0	2,893.3	2,905.6	2,904.9	7.0	6.4	-172.28	-6.8	-19.8	152.6	139.8	12.84	11.889			
3,000.0	2,992.9	3,005.4	3,004.1	7.2	6.6	-169.98	-2.6	-29.5	154.0	140.7	13.31	11.577			
3,100.0	3,092.5	3,105.2	3,103.3	7.5	6.8	-167.74	1.5	-39.1	155.7	141.9	13.78	11.299			
3,200.0	3,192.1	3,205.0	3,202.6	7.8	7.1	-165.54	5.7	-48.8	157.6	143.3	14.26	11.049			
3,300.0	3,291.7	3,304.8	3,301.8	8.0	7.3	-163.40	9.9	-58.5	159.7	145.0	14.76	10.825			
3,400.0	3,391.3	3,404.6	3,401.1	8.3	7.6	-161.31	14.0	-68.2	162.1	146.8	15.26	10.624			
3,500.0	3,490.9	3,504.4	3,500.3	8.6	7.8	-159.29	18.2	-77.9	164.6	148.9	15.76	10.444			
3,600.0	3,590.5	3,604.2	3,599.6	8.9	8.1	-157.33	22.4	-87.6	167.4	151.1	16.27	10.284			
3,700.0	3,690.1	3,704.0	3,698.8	9.1	8.3	-155.44	26.5	-97.3	170.3	153.5	16.79	10.140			
3,800.0	3,789.7	3,803.8	3,798.0	9.4	8.6	-153.61	30.7	-107.0	173.4	156.1	17.32	10.013			
3,900.0	3,889.3	3,903.6	3,897.3	9.7	8.9	-151.85	34.9	-116.7	176.7	158.9	17.85	9.899			
4,000.0	3,988.9	4,003.4	3,996.5	10.0	9.1	-150.16	39.0	-126.4	180.2	161.8	18.39	9.798			
4,100.0	4,088.5	4,103.2	4,095.8	10.2	9.4	-148.53	43.2	-136.1	183.8	164.8	18.93	9.708			
4,200.0	4,188.1	4,203.0	4,195.0	10.5	9.7	-146.96	47.3	-145.7	187.5	168.0	19.47	9.628			
4,300.0	4,287.7	4,302.8	4,294.2	10.8	9.9	-145.46	51.5	-155.4	191.4	171.4	20.02	9.558			
4,400.0	4,387.2	4,402.6	4,393.5	11.1	10.2	-144.01	55.7	-165.1	195.4	174.8	20.57	9.497			
4,500.0	4,486.8	4,502.4	4,492.7	11.3	10.5	-142.63	59.8	-174.8	199.5	178.4	21.13	9.443			
4,600.0	4,586.4	4,600.0	4,589.9	11.6	10.7	-141.74	63.3	-182.9	204.2	182.5	21.63	9.437			
4,700.0	4,686.0	4,698.5	4,688.2	11.9	10.9	-141.77	65.5	-188.0	209.7	187.6	22.08	9.500			
4,800.0	4,785.6	4,796.2	4,785.9	12.2	11.1	-142.66	66.4	-190.0	216.2	193.7	22.48	9.619			
4,900.0	4,885.2	4,895.5	4,885.2	12.4	11.3	-144.04	66.4	-190.0	223.4	200.5	22.88	9.766			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	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															
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	4,984.8	4,995.1	4,984.8	12.7	11.5	-145.35	66.4	-190.0	230.7	207.4	23.30	9.904			
5,100.0	5,084.4	5,094.7	5,084.4	13.0	11.7	-146.57	66.4	-190.0	238.2	214.4	23.72	10.041			
5,200.0	5,184.0	5,194.3	5,184.0	13.3	11.9	-147.72	66.4	-190.0	245.7	221.6	24.14	10.177			
5,259.6	5,243.4	5,253.7	5,243.4	13.4	12.0	-148.37	66.4	-190.0	250.2	225.8	24.39	10.257			
5,300.0	5,283.7	5,294.0	5,283.7	13.5	12.1	-148.80	66.4	-190.0	253.1	228.5	24.56	10.304			
5,400.0	5,383.5	5,393.8	5,383.5	13.7	12.3	-149.52	66.4	-190.0	258.1	233.1	24.93	10.350			
5,500.0	5,483.4	5,493.7	5,483.4	13.9	12.5	-149.80	66.4	-190.0	260.1	234.8	25.29	10.283			
5,516.6	5,500.0	5,510.3	5,500.0	13.9	12.6	180.00	66.4	-190.0	260.1	234.6	25.51	10.195			
5,600.0	5,583.4	5,593.7	5,583.4	14.1	12.7	180.00	66.4	-190.0	260.1	234.3	25.84	10.065			
5,700.0	5,683.4	5,693.7	5,683.4	14.2	13.0	180.00	66.4	-190.0	260.1	233.9	26.26	9.905			
5,800.0	5,783.4	5,793.7	5,783.4	14.4	13.2	180.00	66.4	-190.0	260.1	233.4	26.68	9.750			
5,900.0	5,883.4	5,893.7	5,883.4	14.6	13.4	180.00	66.4	-190.0	260.1	233.0	27.10	9.599			
6,000.0	5,983.4	5,993.7	5,983.4	14.8	13.6	180.00	66.4	-190.0	260.1	232.6	27.52	9.453			
6,100.0	6,083.4	6,093.7	6,083.4	15.0	13.8	180.00	66.4	-190.0	260.1	232.2	27.94	9.311			
6,200.0	6,183.4	6,193.7	6,183.4	15.2	14.0	180.00	66.4	-190.0	260.1	231.8	28.36	9.172			
6,265.5	6,248.9	6,259.2	6,248.9	15.4	14.2	180.00	66.4	-190.0	260.1	231.5	28.63	9.084			
6,300.0	6,283.4	6,293.7	6,283.4	15.4	14.2	179.99	66.4	-190.0	260.1	231.3	28.78	9.038			
6,314.1	6,297.5	6,307.8	6,297.5	15.5	14.3	179.94	66.4	-189.7	260.1	231.3	28.84	9.020			
6,374.9	6,358.3	6,368.3	6,357.9	15.6	14.4	179.04	66.4	-185.7	260.2	231.1	29.10	8.940			
6,400.0	6,383.4	6,393.1	6,382.5	15.6	14.4	88.46	66.4	-182.6	260.2	231.2	29.00	8.974			
6,450.0	6,433.3	6,442.2	6,430.8	15.7	14.5	87.30	66.4	-174.2	260.4	231.3	29.11	8.945			
6,500.0	6,482.9	6,491.0	6,478.3	15.8	14.5	86.17	66.4	-162.9	260.7	231.5	29.21	8.924			
6,550.0	6,531.9	6,539.4	6,524.6	15.8	14.6	85.05	66.4	-148.6	261.1	231.8	29.30	8.910			
6,600.0	6,580.2	6,587.6	6,569.6	15.9	14.6	83.96	66.4	-131.5	261.6	232.2	29.39	8.900			
6,650.0	6,627.5	6,635.5	6,613.2	15.9	14.7	82.91	66.4	-111.8	262.1	232.7	29.48	8.892			
6,700.0	6,673.7	6,683.1	6,655.3	15.9	14.8	81.88	66.4	-89.5	262.8	233.2	29.58	8.883			
6,750.0	6,718.6	6,730.4	6,695.6	16.0	14.9	80.90	66.4	-64.8	263.5	233.8	29.70	8.869			
6,800.0	6,761.8	6,777.5	6,734.2	16.0	15.0	79.96	66.4	-37.7	264.2	234.3	29.86	8.848			
6,850.0	6,803.4	6,824.4	6,770.8	16.0	15.1	79.07	66.4	-8.5	265.0	234.9	30.05	8.816			
6,900.0	6,843.1	6,871.0	6,805.4	16.0	15.3	78.23	66.4	22.7	265.7	235.4	30.31	8.768			
6,950.0	6,880.6	6,917.5	6,837.9	16.1	15.5	77.44	66.4	55.9	266.5	235.9	30.64	8.700			
7,000.0	6,916.0	6,963.7	6,868.2	16.1	15.8	76.70	66.4	90.8	267.3	236.3	31.05	8.610			
7,050.0	6,948.9	7,009.8	6,896.3	16.2	16.2	76.02	66.4	127.3	268.1	236.5	31.56	8.494			
7,100.0	6,979.4	7,055.7	6,922.0	16.6	16.6	75.40	66.4	165.4	268.8	236.6	32.19	8.352			
7,150.0	7,007.1	7,100.0	6,944.6	17.1	17.0	74.85	66.4	203.5	269.5	236.6	32.92	8.188			
7,200.0	7,032.1	7,147.1	6,966.2	17.6	17.6	74.33	66.4	245.4	270.2	236.4	33.82	7.990			
7,250.0	7,054.2	7,192.7	6,984.5	18.2	18.2	73.88	66.4	287.0	270.8	235.9	34.83	7.774			
7,300.0	7,073.3	7,238.1	7,000.3	18.8	18.9	73.50	66.4	329.6	271.3	235.3	35.98	7.539			
7,350.0	7,089.4	7,283.4	7,013.5	19.6	19.6	73.18	66.4	373.0	271.7	234.5	37.26	7.292			
7,400.0	7,102.3	7,328.7	7,024.1	20.4	20.3	72.93	66.4	417.0	272.1	233.4	38.67	7.037			
7,450.0	7,112.1	7,374.0	7,032.1	21.3	21.2	72.74	66.4	461.5	272.4	232.2	40.19	6.778			
7,500.0	7,118.6	7,419.2	7,037.5	22.2	22.0	72.61	66.4	506.4	272.6	230.8	41.81	6.519			
7,550.0	7,121.9	7,464.3	7,040.1	23.2	22.9	72.55	66.4	551.5	272.7	229.1	43.52	6.265			
7,581.0	7,122.2	7,492.6	7,040.4	23.8	23.5	72.54	66.4	579.8	272.7	228.1	44.63	6.110			
7,600.0	7,122.1	7,511.6	7,040.4	24.2	23.9	72.56	66.4	598.8	272.7	227.3	45.38	6.008			
7,700.0	7,121.3	7,611.6	7,040.0	26.3	26.0	72.64	66.4	698.8	272.5	223.0	49.49	5.507			
7,800.0	7,120.5	7,711.6	7,039.6	28.5	28.3	72.72	66.4	798.7	272.4	218.6	53.82	5.061			
7,900.0	7,119.7	7,811.6	7,039.2	30.8	30.6	72.81	66.4	898.7	272.3	213.9	58.34	4.667			
8,000.0	7,118.9	7,911.6	7,038.8	33.2	33.0	72.89	66.4	998.7	272.2	209.2	62.99	4.320			
8,100.0	7,118.1	8,011.6	7,038.4	35.7	35.5	72.98	66.4	1,098.7	272.0	204.3	67.77	4.014			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design		Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W - Wiedeman Federal 22G-232 - Wellbore #1 -											Offset Site Error:		0.0 ft
Survey Program:		0-MWD											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
8,200.0	7,117.3	8,111.6	7,038.1	38.2	38.0	73.06	66.4	1,198.7	271.9	199.3	72.64	3.744			
8,300.0	7,116.5	8,211.6	7,037.7	40.7	40.6	73.14	66.4	1,298.7	271.8	194.2	77.58	3.503			
8,400.0	7,115.7	8,311.6	7,037.3	43.3	43.2	73.23	66.4	1,398.7	271.7	189.1	82.59	3.290			
8,500.0	7,114.9	8,411.6	7,036.9	45.9	45.8	73.31	66.4	1,498.7	271.5	183.9	87.65	3.098			
8,600.0	7,114.1	8,511.6	7,036.5	48.5	48.5	73.40	66.4	1,598.7	271.4	178.7	92.75	2.926			
8,700.0	7,113.3	8,611.6	7,036.1	51.2	51.1	73.48	66.4	1,698.7	271.3	173.4	97.90	2.771			
8,800.0	7,112.5	8,711.6	7,035.7	53.9	53.8	73.57	66.4	1,798.7	271.2	168.1	103.08	2.631			
8,900.0	7,111.7	8,811.6	7,035.4	56.5	56.5	73.65	66.4	1,898.7	271.1	162.8	108.28	2.503			
9,000.0	7,110.9	8,911.6	7,035.0	59.2	59.2	73.74	66.4	1,998.7	271.0	157.4	113.52	2.387			
9,100.0	7,110.1	9,011.6	7,034.6	61.9	61.9	73.82	66.4	2,098.7	270.8	152.1	118.78	2.280			
9,200.0	7,109.2	9,111.6	7,034.2	64.6	64.6	73.91	66.4	2,198.7	270.7	146.7	124.06	2.182			
9,300.0	7,108.4	9,211.6	7,033.8	67.3	67.3	73.99	66.4	2,298.7	270.6	141.3	129.35	2.092			
9,400.0	7,107.6	9,311.6	7,033.4	70.1	70.0	74.08	66.4	2,398.7	270.5	135.8	134.67	2.009			
9,500.0	7,106.8	9,411.6	7,033.1	72.8	72.8	74.16	66.4	2,498.7	270.4	130.4	140.00	1.931			
9,600.0	7,106.0	9,511.6	7,032.7	75.5	75.5	74.25	66.4	2,598.7	270.3	124.9	145.34	1.859			
9,700.0	7,105.2	9,611.6	7,032.3	78.3	78.3	74.34	66.4	2,698.7	270.1	119.4	150.70	1.793			
9,800.0	7,104.4	9,711.6	7,031.9	81.0	81.0	74.42	66.4	2,798.7	270.0	114.0	156.07	1.730			
9,900.0	7,103.6	9,811.6	7,031.5	83.8	83.8	74.51	66.4	2,898.7	269.9	108.5	161.45	1.672			
10,000.0	7,102.8	9,911.6	7,031.1	86.5	86.5	74.59	66.4	2,998.7	269.8	103.0	166.84	1.617			
10,100.0	7,102.0	10,011.6	7,030.8	89.3	89.3	74.68	66.4	3,098.7	269.7	97.5	172.24	1.566			
10,200.0	7,101.2	10,111.6	7,030.4	92.0	92.1	74.76	66.4	3,198.7	269.6	91.9	177.65	1.518			
10,300.0	7,100.4	10,211.6	7,030.0	94.8	94.8	74.85	66.4	3,298.7	269.5	86.4	183.07	1.472 Level 3			
10,400.0	7,099.6	10,311.6	7,029.6	97.6	97.6	74.94	66.4	3,398.7	269.4	80.9	188.50	1.429 Level 3			
10,500.0	7,098.8	10,411.6	7,029.2	100.3	100.4	75.02	66.4	3,498.7	269.3	75.3	193.94	1.388 Level 3			
10,600.0	7,098.0	10,511.6	7,028.8	103.1	103.1	75.11	66.4	3,598.7	269.2	69.8	199.38	1.350 Level 3			
10,700.0	7,097.2	10,611.6	7,028.5	105.9	105.9	75.19	66.4	3,698.7	269.0	64.2	204.83	1.314 Level 3			
10,800.0	7,096.4	10,711.6	7,028.1	108.6	108.7	75.28	66.4	3,798.7	268.9	58.7	210.29	1.279 Level 3			
10,900.0	7,095.6	10,811.6	7,027.7	111.4	111.5	75.37	66.4	3,898.7	268.8	53.1	215.75	1.246 Level 2			
11,000.0	7,094.8	10,911.6	7,027.3	114.2	114.2	75.45	66.4	3,998.7	268.7	47.5	221.22	1.215 Level 2			
11,100.0	7,094.0	11,011.6	7,026.9	117.0	117.0	75.54	66.4	4,098.7	268.6	41.9	226.70	1.185 Level 2			
11,200.0	7,093.2	11,111.6	7,026.5	119.8	119.8	75.63	66.4	4,198.7	268.5	36.3	232.18	1.156 Level 2			
11,300.0	7,092.4	11,211.6	7,026.1	122.5	122.6	75.71	66.4	4,298.7	268.4	30.7	237.67	1.129 Level 2			
11,400.0	7,091.6	11,311.6	7,025.8	125.3	125.4	75.80	66.4	4,398.7	268.3	25.1	243.17	1.103 Level 2			
11,500.0	7,090.8	11,411.6	7,025.4	128.1	128.2	75.89	66.4	4,498.7	268.2	19.5	248.67	1.079 Level 2			
11,597.5	7,090.0	11,509.1	7,025.0	130.8	130.8	75.97	66.4	4,596.2	268.1	14.2	253.95	1.056 Level 2, SF			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design		Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W - Wiedeman Federal 22H-212 - Wellbore #1 -											Offset Site Error:		0.0 ft
Survey Program:		0-MWD											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-179.65	-45.2	-0.3	45.2						
100.0	100.0	100.0	100.0	0.1	0.1	-179.65	-45.2	-0.3	45.2	45.0	0.22	201.004			
200.0	200.0	200.0	200.0	0.3	0.3	-179.65	-45.2	-0.3	45.2	44.5	0.67	67.001			
300.0	300.0	300.0	300.0	0.6	0.6	-179.65	-45.2	-0.3	45.2	44.1	1.12	40.201			
400.0	400.0	400.0	400.0	0.8	0.8	-179.65	-45.2	-0.3	45.2	43.6	1.57	28.715			
500.0	500.0	500.0	500.0	1.0	1.0	-179.65	-45.2	-0.3	45.2	43.2	2.02	22.334			
600.0	600.0	600.0	600.0	1.2	1.2	-179.65	-45.2	-0.3	45.2	42.7	2.47	18.273			
700.0	700.0	700.0	700.0	1.5	1.5	-179.65	-45.2	-0.3	45.2	42.3	2.92	15.462			
800.0	800.0	800.0	800.0	1.7	1.7	-179.65	-45.2	-0.3	45.2	41.8	3.37	13.400			
900.0	900.0	900.0	900.0	1.9	1.9	-179.65	-45.2	-0.3	45.2	41.4	3.82	11.824			
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-179.65	-45.2	-0.3	45.2	40.9	4.27	10.579 CC, ES			
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-150.26	-45.2	-0.3	46.3	41.6	4.72	9.814			
1,200.0	1,199.9	1,199.9	1,199.9	2.6	2.6	-152.48	-45.2	-0.3	49.8	44.6	5.17	9.632 SF			
1,300.0	1,299.7	1,299.7	1,299.7	2.8	2.8	-155.56	-45.2	-0.3	55.6	50.0	5.61	9.913			
1,342.6	1,342.2	1,342.2	1,342.2	2.9	2.9	-156.98	-45.2	-0.3	58.9	53.1	5.80	10.153			
1,400.0	1,399.3	1,399.3	1,399.3	3.0	3.0	-158.79	-45.2	-0.3	63.7	57.6	6.06	10.508			
1,500.0	1,498.9	1,497.4	1,497.4	3.3	3.2	-160.77	-46.3	-0.8	73.2	66.7	6.48	11.285			
1,600.0	1,598.5	1,595.0	1,595.0	3.5	3.4	-161.29	-49.7	-2.3	84.8	77.9	6.88	12.311			
1,700.0	1,698.1	1,692.2	1,691.9	3.8	3.6	-160.84	-55.4	-4.7	98.4	91.2	7.29	13.495			
1,800.0	1,797.7	1,788.7	1,788.0	4.0	3.8	-159.81	-63.3	-8.1	114.2	106.5	7.71	14.808			
1,900.0	1,897.3	1,884.4	1,883.1	4.3	4.0	-158.45	-73.3	-12.4	132.1	124.0	8.14	16.231			
2,000.0	1,996.9	1,980.5	1,978.3	4.6	4.2	-156.96	-85.4	-17.7	152.0	143.5	8.58	17.726			
2,100.0	2,096.5	2,078.4	2,075.2	4.8	4.4	-155.72	-98.2	-23.2	172.4	163.4	9.02	19.117			
2,200.0	2,196.1	2,176.2	2,172.0	5.1	4.7	-154.73	-110.9	-28.7	192.9	183.4	9.47	20.374			
2,300.0	2,295.7	2,274.0	2,268.9	5.3	5.0	-153.94	-123.7	-34.2	213.4	203.5	9.92	21.509			
2,400.0	2,395.3	2,371.9	2,365.7	5.6	5.2	-153.28	-136.4	-39.7	234.0	223.6	10.38	22.541			
2,500.0	2,494.9	2,469.7	2,462.5	5.9	5.5	-152.74	-149.2	-45.2	254.5	243.7	10.84	23.478			
2,600.0	2,594.5	2,567.5	2,559.4	6.1	5.8	-152.27	-161.9	-50.7	275.1	263.8	11.31	24.334			
2,700.0	2,694.1	2,665.4	2,656.2	6.4	6.1	-151.87	-174.7	-56.2	295.7	284.0	11.77	25.117			
2,800.0	2,793.7	2,763.2	2,753.1	6.7	6.4	-151.52	-187.4	-61.7	316.4	304.1	12.25	25.836			
2,900.0	2,893.3	2,861.0	2,849.9	7.0	6.7	-151.21	-200.2	-67.2	337.0	324.3	12.72	26.498			
3,000.0	2,992.9	2,958.9	2,946.8	7.2	7.0	-150.94	-212.9	-72.8	357.6	344.4	13.19	27.108			
3,100.0	3,092.5	3,056.7	3,043.6	7.5	7.3	-150.70	-225.7	-78.3	378.3	364.6	13.67	27.673			
3,200.0	3,192.1	3,154.5	3,140.4	7.8	7.7	-150.48	-238.4	-83.8	398.9	384.8	14.15	28.197			
3,300.0	3,291.7	3,252.4	3,237.3	8.0	8.0	-150.28	-251.2	-89.3	419.6	404.9	14.63	28.685			
3,400.0	3,391.3	3,350.2	3,334.1	8.3	8.3	-150.11	-263.9	-94.8	440.2	425.1	15.11	29.139			
3,500.0	3,490.9	3,448.0	3,431.0	8.6	8.6	-149.95	-276.7	-100.3	460.9	445.3	15.59	29.563			
3,600.0	3,590.5	3,545.9	3,527.8	8.9	8.9	-149.80	-289.4	-105.8	481.6	465.5	16.07	29.959			
3,700.0	3,690.1	3,643.7	3,624.7	9.1	9.3	-149.66	-302.2	-111.3	502.2	485.7	16.56	30.331			
3,800.0	3,789.7	3,741.5	3,721.5	9.4	9.6	-149.54	-314.9	-116.8	522.9	505.9	17.04	30.680			
3,900.0	3,889.3	3,839.4	3,818.4	9.7	9.9	-149.42	-327.7	-122.3	543.6	526.0	17.53	31.009			
4,000.0	3,988.9	3,937.2	3,915.2	10.0	10.3	-149.32	-340.4	-127.8	564.2	546.2	18.02	31.318			
4,100.0	4,088.5	4,035.0	4,012.0	10.2	10.6	-149.22	-353.2	-133.3	584.9	566.4	18.50	31.610			
4,200.0	4,188.1	4,132.9	4,108.9	10.5	10.9	-149.13	-365.9	-138.8	605.6	586.6	18.99	31.886			
4,300.0	4,287.7	4,230.7	4,205.7	10.8	11.3	-149.04	-378.7	-144.4	626.3	606.8	19.48	32.148			
4,400.0	4,387.2	4,328.6	4,302.6	11.1	11.6	-148.96	-391.4	-149.9	647.0	627.0	19.97	32.395			
4,500.0	4,486.8	4,426.4	4,399.4	11.3	11.9	-148.88	-404.2	-155.4	667.6	647.2	20.46	32.630			
4,600.0	4,586.4	4,524.2	4,496.3	11.6	12.3	-148.81	-416.9	-160.9	688.3	667.4	20.95	32.854			
4,700.0	4,686.0	4,622.1	4,593.1	11.9	12.6	-148.75	-429.6	-166.4	709.0	687.6	21.44	33.066			
4,800.0	4,785.6	4,719.9	4,689.9	12.2	12.9	-148.68	-442.4	-171.9	729.7	707.8	21.93	33.268			
4,900.0	4,885.2	4,817.7	4,786.8	12.4	13.3	-148.62	-455.1	-177.4	750.4	728.0	22.43	33.461			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	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														
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
5,000.0	4,984.8	4,945.7	4,913.8	12.7	13.6	-148.62	-469.5	-183.6	769.3	746.3	22.96	33.511		
5,100.0	5,084.4	5,077.7	5,045.4	13.0	13.9	-148.79	-478.8	-187.6	784.0	760.6	23.47	33.408		
5,200.0	5,184.0	5,210.9	5,178.5	13.3	14.1	-149.13	-482.6	-189.2	794.5	770.6	23.97	33.147		
5,259.6	5,243.4	5,275.8	5,243.4	13.4	14.2	-149.34	-482.6	-189.3	799.2	774.9	24.24	32.967		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design		Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W - Wiedeman Federal 22H-232 - Wellbore #1 -											Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.0	0.0	0.0	0.0	0.0	0.0	-179.64	-90.0	-0.6	90.0					
100.0	100.0	100.0	100.0	0.1	0.1	-179.64	-90.0	-0.6	90.0	89.8	0.22	400.369		
200.0	200.0	200.0	200.0	0.3	0.3	-179.64	-90.0	-0.6	90.0	89.3	0.67	133.456		
300.0	300.0	300.0	300.0	0.6	0.6	-179.64	-90.0	-0.6	90.0	88.9	1.12	80.074		
400.0	400.0	400.0	400.0	0.8	0.8	-179.64	-90.0	-0.6	90.0	88.4	1.57	57.196		
500.0	500.0	500.0	500.0	1.0	1.0	-179.64	-90.0	-0.6	90.0	88.0	2.02	44.485		
600.0	600.0	600.0	600.0	1.2	1.2	-179.64	-90.0	-0.6	90.0	87.5	2.47	36.397		
700.0	700.0	700.0	700.0	1.5	1.5	-179.64	-90.0	-0.6	90.0	87.1	2.92	30.798		
800.0	800.0	800.0	800.0	1.7	1.7	-179.64	-90.0	-0.6	90.0	86.6	3.37	26.691	CC, ES	
900.0	900.0	897.7	897.7	1.9	1.9	-179.51	-91.2	-0.8	91.3	87.5	3.79	24.084		
1,000.0	1,000.0	995.3	995.2	2.1	2.1	-179.15	-94.9	-1.4	95.0	90.8	4.19	22.687		
1,100.0	1,100.0	1,092.5	1,092.2	2.4	2.2	-148.71	-101.0	-2.5	102.5	97.9	4.60	22.272	SF	
1,200.0	1,199.9	1,189.1	1,188.4	2.6	2.4	-148.94	-109.5	-4.0	114.6	109.6	5.02	22.837		
1,300.0	1,299.7	1,284.6	1,283.3	2.8	2.7	-149.48	-120.2	-5.8	131.4	126.0	5.44	24.146		
1,342.6	1,342.2	1,324.9	1,323.3	2.9	2.8	-149.75	-125.5	-6.8	140.0	134.4	5.63	24.888		
1,400.0	1,399.3	1,378.9	1,376.7	3.0	2.9	-150.16	-133.1	-8.1	152.5	146.7	5.87	25.974		
1,500.0	1,498.9	1,472.1	1,468.6	3.3	3.2	-150.62	-148.1	-10.7	176.2	169.9	6.31	27.936		
1,600.0	1,598.5	1,564.2	1,559.1	3.5	3.5	-150.84	-165.0	-13.7	202.2	195.4	6.75	29.962		
1,700.0	1,698.1	1,655.1	1,648.0	3.8	3.8	-150.90	-183.9	-16.9	230.4	223.3	7.19	32.031		
1,800.0	1,797.7	1,746.6	1,737.0	4.0	4.2	-150.85	-204.8	-20.6	260.8	253.1	7.65	34.090		
1,900.0	1,897.3	1,841.7	1,829.4	4.3	4.6	-150.79	-227.1	-24.5	291.7	283.5	8.11	35.946		
2,000.0	1,996.9	1,936.8	1,921.8	4.6	5.0	-150.74	-249.3	-28.4	322.5	313.9	8.58	37.597		
2,100.0	2,096.5	2,032.0	2,014.2	4.8	5.4	-150.70	-271.6	-32.3	353.4	344.3	9.05	39.050		
2,200.0	2,196.1	2,127.1	2,106.6	5.1	5.9	-150.67	-293.8	-36.1	384.2	374.7	9.52	40.342		
2,300.0	2,295.7	2,222.2	2,199.0	5.3	6.3	-150.64	-316.1	-40.0	415.1	405.1	10.00	41.495		
2,400.0	2,395.3	2,317.3	2,291.4	5.6	6.8	-150.61	-338.4	-43.9	445.9	435.4	10.49	42.530		
2,500.0	2,494.9	2,412.4	2,383.8	5.9	7.2	-150.59	-360.6	-47.8	476.8	465.8	10.97	43.463		
2,600.0	2,594.5	2,507.6	2,476.1	6.1	7.7	-150.57	-382.9	-51.7	507.6	496.2	11.46	44.308		
2,700.0	2,694.1	2,602.7	2,568.5	6.4	8.1	-150.55	-405.1	-55.6	538.5	526.6	11.95	45.076		
2,800.0	2,793.7	2,697.8	2,660.9	6.7	8.6	-150.54	-427.4	-59.5	569.4	556.9	12.44	45.777		
2,900.0	2,893.3	2,792.9	2,753.3	7.0	9.1	-150.53	-449.6	-63.3	600.2	587.3	12.93	46.419		
3,000.0	2,992.9	2,888.0	2,845.7	7.2	9.5	-150.51	-471.9	-67.2	631.1	617.6	13.42	47.008		
3,100.0	3,092.5	2,983.2	2,938.1	7.5	10.0	-150.50	-494.2	-71.1	661.9	648.0	13.92	47.552		
3,200.0	3,192.1	3,078.3	3,030.5	7.8	10.5	-150.49	-516.4	-75.0	692.8	678.4	14.42	48.054		
3,300.0	3,291.7	3,173.4	3,122.9	8.0	10.9	-150.48	-538.7	-78.9	723.6	708.7	14.91	48.520		
3,400.0	3,391.3	3,268.5	3,215.3	8.3	11.4	-150.47	-560.9	-82.8	754.5	739.1	15.41	48.953		
3,500.0	3,490.9	3,363.6	3,307.7	8.6	11.9	-150.47	-583.2	-86.7	785.4	769.4	15.91	49.355		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design														Offset Site Error:	0.0 ft
Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W - Wiedeman Federal 22H-302 - Wellbore #1 -														Offset Well Error:	0.0 ft
Survey Program: 0-MWD															
Reference		Offset		Semi Major Axis			Distance								Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
0.0	0.0	0.0	0.0	0.0	0.0	-179.73	-60.1	-0.3	60.1						
100.0	100.0	100.0	100.0	0.1	0.1	-179.73	-60.1	-0.3	60.1	59.9	0.22	267.438			
200.0	200.0	200.0	200.0	0.3	0.3	-179.73	-60.1	-0.3	60.1	59.4	0.67	89.146			
300.0	300.0	300.0	300.0	0.6	0.6	-179.73	-60.1	-0.3	60.1	59.0	1.12	53.488			
400.0	400.0	400.0	400.0	0.8	0.8	-179.73	-60.1	-0.3	60.1	58.5	1.57	38.205			
500.0	500.0	500.0	500.0	1.0	1.0	-179.73	-60.1	-0.3	60.1	58.1	2.02	29.715			
600.0	600.0	600.0	600.0	1.2	1.2	-179.73	-60.1	-0.3	60.1	57.6	2.47	24.313			
700.0	700.0	700.0	700.0	1.5	1.5	-179.73	-60.1	-0.3	60.1	57.2	2.92	20.572			
800.0	800.0	800.0	800.0	1.7	1.7	-179.73	-60.1	-0.3	60.1	56.7	3.37	17.829			
900.0	900.0	900.0	900.0	1.9	1.9	-179.73	-60.1	-0.3	60.1	56.3	3.82	15.732			
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-179.73	-60.1	-0.3	60.1	55.8	4.27	14.076 CC, ES			
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-150.15	-60.1	-0.3	61.2	56.5	4.72	12.978			
1,200.0	1,199.9	1,199.9	1,199.9	2.6	2.6	-151.86	-60.1	-0.3	64.7	59.5	5.17	12.520 SF			
1,300.0	1,299.7	1,298.0	1,298.0	2.8	2.8	-153.92	-61.3	-0.6	71.7	66.1	5.58	12.842			
1,342.6	1,342.2	1,339.6	1,339.6	2.9	2.9	-154.71	-62.6	-1.0	76.2	70.4	5.75	13.238			
1,400.0	1,399.3	1,395.5	1,395.4	3.0	3.0	-155.58	-64.9	-1.7	83.2	77.2	5.98	13.899			
1,500.0	1,498.9	1,492.3	1,492.1	3.3	3.1	-156.34	-70.9	-3.4	97.2	90.8	6.39	15.210			
1,600.0	1,598.5	1,588.6	1,587.9	3.5	3.3	-156.41	-79.1	-5.8	113.6	106.8	6.81	16.685			
1,700.0	1,698.1	1,684.0	1,682.7	3.8	3.5	-156.04	-89.5	-8.8	132.2	125.0	7.23	18.288			
1,800.0	1,797.7	1,778.5	1,776.3	4.0	3.7	-155.43	-102.1	-12.4	153.1	145.5	7.66	19.991			
1,900.0	1,897.3	1,873.5	1,870.1	4.3	4.0	-154.69	-116.8	-16.7	176.1	168.0	8.10	21.745			
2,000.0	1,996.9	1,970.7	1,965.9	4.6	4.3	-154.06	-132.3	-21.2	199.6	191.0	8.54	23.358			
2,100.0	2,096.5	2,067.9	2,061.8	4.8	4.6	-153.56	-147.8	-25.7	223.0	214.0	8.99	24.797			
2,200.0	2,196.1	2,165.1	2,157.6	5.1	4.9	-153.16	-163.3	-30.1	246.5	237.0	9.45	26.088			
2,300.0	2,295.7	2,262.3	2,253.5	5.3	5.2	-152.83	-178.7	-34.6	270.0	260.1	9.91	27.249			
2,400.0	2,395.3	2,359.5	2,349.3	5.6	5.5	-152.55	-194.2	-39.1	293.4	283.1	10.37	28.298			
2,500.0	2,494.9	2,456.7	2,445.2	5.9	5.8	-152.31	-209.7	-43.6	316.9	306.1	10.84	29.248			
2,600.0	2,594.5	2,553.9	2,541.0	6.1	6.2	-152.10	-225.2	-48.1	340.4	329.1	11.30	30.113			
2,700.0	2,694.1	2,651.1	2,636.9	6.4	6.5	-151.93	-240.7	-52.6	363.9	352.1	11.78	30.903			
2,800.0	2,793.7	2,748.3	2,732.7	6.7	6.9	-151.77	-256.1	-57.0	387.4	375.2	12.25	31.626			
2,900.0	2,893.3	2,845.5	2,828.6	7.0	7.2	-151.63	-271.6	-61.5	410.9	398.2	12.73	32.290			
3,000.0	2,992.9	2,942.7	2,924.4	7.2	7.5	-151.51	-287.1	-66.0	434.4	421.2	13.20	32.902			
3,100.0	3,092.5	3,039.9	3,020.3	7.5	7.9	-151.39	-302.6	-70.5	457.9	444.3	13.68	33.468			
3,200.0	3,192.1	3,137.1	3,116.1	7.8	8.3	-151.29	-318.1	-75.0	481.4	467.3	14.16	33.992			
3,300.0	3,291.7	3,234.2	3,212.0	8.0	8.6	-151.20	-333.5	-79.4	505.0	490.3	14.65	34.479			
3,400.0	3,391.3	3,331.4	3,307.8	8.3	9.0	-151.12	-349.0	-83.9	528.5	513.3	15.13	34.932			
3,500.0	3,490.9	3,428.6	3,403.7	8.6	9.3	-151.04	-364.5	-88.4	552.0	536.4	15.61	35.355			
3,600.0	3,590.5	3,525.8	3,499.5	8.9	9.7	-150.97	-380.0	-92.9	575.5	559.4	16.10	35.750			
3,700.0	3,690.1	3,623.0	3,595.4	9.1	10.1	-150.91	-395.5	-97.4	599.0	582.4	16.58	36.121			
3,800.0	3,789.7	3,720.2	3,691.2	9.4	10.4	-150.85	-410.9	-101.9	622.5	605.5	17.07	36.468			
3,900.0	3,889.3	3,817.4	3,787.1	9.7	10.8	-150.79	-426.4	-106.3	646.0	628.5	17.56	36.795			
4,000.0	3,988.9	3,914.6	3,882.9	10.0	11.2	-150.74	-441.9	-110.8	669.6	651.5	18.05	37.103			
4,100.0	4,088.5	4,011.8	3,978.8	10.2	11.5	-150.70	-457.4	-115.3	693.1	674.5	18.53	37.393			
4,200.0	4,188.1	4,109.0	4,074.6	10.5	11.9	-150.65	-472.9	-119.8	716.6	697.6	19.02	37.667			
4,300.0	4,287.7	4,206.2	4,170.4	10.8	12.3	-150.61	-488.3	-124.3	740.1	720.6	19.51	37.927			
4,400.0	4,387.2	4,303.4	4,266.3	11.1	12.6	-150.57	-503.8	-128.7	763.6	743.6	20.00	38.173			
4,500.0	4,486.8	4,400.6	4,362.1	11.3	13.0	-150.53	-519.3	-133.2	787.1	766.6	20.50	38.406			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design		Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W - Wiedeman Federal 22H-312 - Wellbore #1 -											Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-179.47	-30.2	-0.3	30.2						
100.0	100.0	100.0	100.0	0.1	0.1	-179.47	-30.2	-0.3	30.2	30.0	0.22	134.552			
200.0	200.0	200.0	200.0	0.3	0.3	-179.47	-30.2	-0.3	30.2	29.6	0.67	44.851			
300.0	300.0	300.0	300.0	0.6	0.6	-179.47	-30.2	-0.3	30.2	29.1	1.12	26.910			
400.0	400.0	400.0	400.0	0.8	0.8	-179.47	-30.2	-0.3	30.2	28.7	1.57	19.222			
500.0	500.0	500.0	500.0	1.0	1.0	-179.47	-30.2	-0.3	30.2	28.2	2.02	14.950			
600.0	600.0	600.0	600.0	1.2	1.2	-179.47	-30.2	-0.3	30.2	27.8	2.47	12.232			
700.0	700.0	700.0	700.0	1.5	1.5	-179.47	-30.2	-0.3	30.2	27.3	2.92	10.350			
800.0	800.0	800.0	800.0	1.7	1.7	-179.47	-30.2	-0.3	30.2	26.9	3.37	8.970			
900.0	900.0	900.0	900.0	1.9	1.9	-179.47	-30.2	-0.3	30.2	26.4	3.82	7.915			
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-179.47	-30.2	-0.3	30.2	26.0	4.27	7.082 CC, ES			
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-150.49	-30.2	-0.3	31.4	26.7	4.72	6.649			
1,200.0	1,199.9	1,199.9	1,199.9	2.6	2.6	-153.64	-30.2	-0.3	34.8	29.7	5.17	6.745			
1,300.0	1,299.7	1,299.7	1,299.7	2.8	2.8	-157.69	-30.2	-0.3	40.8	35.2	5.61	7.271			
1,342.6	1,342.2	1,342.2	1,342.2	2.9	2.9	-159.44	-30.2	-0.3	44.1	38.3	5.80	7.608			
1,400.0	1,399.3	1,399.3	1,399.3	3.0	3.0	-161.55	-30.2	-0.3	49.0	42.9	6.06	8.085			
1,500.0	1,498.9	1,498.9	1,498.9	3.3	3.3	-164.37	-30.2	-0.3	57.6	51.1	6.51	8.845			
1,600.0	1,598.5	1,598.5	1,598.5	3.5	3.5	-166.46	-30.2	-0.3	66.2	59.3	6.96	9.520			
1,700.0	1,698.1	1,697.4	1,697.3	3.8	3.7	-167.17	-31.1	-1.2	75.5	68.1	7.39	10.218			
1,800.0	1,797.7	1,796.0	1,795.9	4.0	3.9	-166.15	-33.5	-4.1	85.7	77.9	7.80	10.993			
1,900.0	1,897.3	1,894.3	1,894.0	4.3	4.0	-163.99	-37.6	-8.9	97.1	88.9	8.22	11.815			
2,000.0	1,996.9	1,992.1	1,991.4	4.6	4.2	-161.12	-43.4	-15.5	109.9	101.2	8.66	12.692			
2,100.0	2,096.5	2,089.4	2,088.1	4.8	4.5	-157.87	-50.7	-24.0	124.1	115.0	9.11	13.634			
2,200.0	2,196.1	2,188.0	2,185.9	5.1	4.7	-154.90	-58.7	-33.4	139.4	129.8	9.57	14.566			
2,300.0	2,295.7	2,286.6	2,283.7	5.3	4.9	-152.52	-66.8	-42.8	154.9	144.9	10.04	15.431			
2,400.0	2,395.3	2,385.2	2,381.5	5.6	5.2	-150.57	-74.9	-52.2	170.6	160.1	10.51	16.230			
2,500.0	2,494.9	2,483.8	2,479.4	5.9	5.4	-148.95	-83.0	-61.6	186.5	175.5	10.99	16.968			
2,600.0	2,594.5	2,582.4	2,577.2	6.1	5.7	-147.59	-91.1	-71.0	202.6	191.1	11.48	17.649			
2,700.0	2,694.1	2,681.0	2,675.0	6.4	6.0	-146.42	-99.2	-80.4	218.7	206.7	11.96	18.277			
2,800.0	2,793.7	2,779.6	2,772.8	6.7	6.2	-145.42	-107.3	-89.8	234.9	222.4	12.45	18.858			
2,900.0	2,893.3	2,878.2	2,870.6	7.0	6.5	-144.54	-115.3	-99.2	251.1	238.2	12.95	19.396			
3,000.0	2,992.9	2,976.8	2,968.5	7.2	6.8	-143.78	-123.4	-108.6	267.4	254.0	13.44	19.895			
3,100.0	3,092.5	3,075.4	3,066.3	7.5	7.1	-143.10	-131.5	-118.0	283.8	269.8	13.94	20.359			
3,200.0	3,192.1	3,174.0	3,164.1	7.8	7.4	-142.49	-139.6	-127.4	300.1	285.7	14.44	20.790			
3,300.0	3,291.7	3,272.6	3,261.9	8.0	7.7	-141.95	-147.7	-136.8	316.6	301.6	14.94	21.192			
3,400.0	3,391.3	3,371.2	3,359.7	8.3	8.0	-141.46	-155.8	-146.1	333.0	317.6	15.44	21.568			
3,500.0	3,490.9	3,469.8	3,457.6	8.6	8.3	-141.01	-163.9	-155.5	349.4	333.5	15.94	21.920			
3,600.0	3,590.5	3,568.5	3,555.4	8.9	8.6	-140.61	-171.9	-164.9	365.9	349.5	16.45	22.250			
3,700.0	3,690.1	3,668.6	3,654.7	9.1	8.9	-140.24	-180.1	-174.5	382.4	365.4	16.95	22.557			
3,800.0	3,789.7	3,779.0	3,764.6	9.4	9.2	-140.11	-187.4	-182.9	397.0	379.6	17.45	22.755			
3,900.0	3,889.3	3,890.3	3,875.7	9.7	9.4	-140.38	-192.0	-188.2	408.7	390.8	17.93	22.795			
4,000.0	3,988.9	4,002.2	3,987.5	10.0	9.6	-141.03	-193.7	-190.3	417.5	399.1	18.40	22.689			
4,100.0	4,088.5	4,103.2	4,088.5	10.2	9.8	-141.79	-193.7	-190.3	424.5	405.7	18.85	22.526			
4,200.0	4,188.1	4,202.8	4,188.1	10.5	10.0	-142.53	-193.7	-190.3	431.6	412.3	19.29	22.370			
4,300.0	4,287.7	4,302.4	4,287.7	10.8	10.2	-143.24	-193.7	-190.3	438.8	419.0	19.74	22.224			
4,400.0	4,387.2	4,402.0	4,387.2	11.1	10.4	-143.93	-193.7	-190.3	446.0	425.8	20.19	22.089			
4,500.0	4,486.8	4,501.5	4,486.8	11.3	10.5	-144.59	-193.7	-190.3	453.3	432.6	20.64	21.963			
4,600.0	4,586.4	4,601.1	4,586.4	11.6	10.7	-145.24	-193.7	-190.3	460.6	439.5	21.08	21.845			
4,700.0	4,686.0	4,700.7	4,686.0	11.9	10.9	-145.86	-193.7	-190.3	468.0	446.5	21.53	21.735			
4,800.0	4,785.6	4,800.3	4,785.6	12.2	11.1	-146.47	-193.7	-190.3	475.4	453.5	21.98	21.632			
4,900.0	4,885.2	4,899.9	4,885.2	12.4	11.3	-147.05	-193.7	-190.3	482.9	460.5	22.43	21.536			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	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			
5,000.0	4,984.8	4,999.5	4,984.8	12.7	11.5	-147.62	-193.7	-190.3	490.5	467.6	22.87	21.445			
5,100.0	5,084.4	5,099.1	5,084.4	13.0	11.7	-148.17	-193.7	-190.3	498.1	474.8	23.32	21.361			
5,200.0	5,184.0	5,198.7	5,184.0	13.3	11.9	-148.71	-193.7	-190.3	505.7	482.0	23.76	21.281			
5,259.6	5,243.4	5,258.1	5,243.4	13.4	12.0	-149.02	-193.7	-190.3	510.3	486.3	24.03	21.236			
5,300.0	5,283.7	5,298.4	5,283.7	13.5	12.1	-149.24	-193.7	-190.3	513.2	489.0	24.21	21.194			
5,400.0	5,383.5	5,398.2	5,383.5	13.7	12.3	-149.62	-193.7	-190.3	518.2	493.6	24.61	21.053			
5,500.0	5,483.4	5,498.2	5,483.4	13.9	12.5	-149.77	-193.7	-190.3	520.2	495.2	24.99	20.818			
5,516.6	5,500.0	5,514.7	5,500.0	13.9	12.5	-179.97	-193.7	-190.3	520.2	494.7	25.50	20.401			
5,600.0	5,583.4	5,598.2	5,583.4	14.1	12.7	-179.97	-193.7	-190.3	520.2	494.4	25.82	20.147			
5,700.0	5,683.4	5,698.2	5,683.4	14.2	12.9	-179.97	-193.7	-190.3	520.2	494.0	26.23	19.835			
5,800.0	5,783.4	5,798.2	5,783.4	14.4	13.1	-179.97	-193.7	-190.3	520.2	493.6	26.64	19.532			
5,900.0	5,883.4	5,898.2	5,883.4	14.6	13.3	-179.97	-193.7	-190.3	520.2	493.2	27.04	19.237			
6,000.0	5,983.4	5,998.2	5,983.4	14.8	13.5	-179.97	-193.7	-190.3	520.2	492.8	27.45	18.949			
6,100.0	6,083.4	6,098.2	6,083.4	15.0	13.7	-179.97	-193.7	-190.3	520.2	492.4	27.86	18.670			
6,200.0	6,183.4	6,198.2	6,183.4	15.2	13.9	-179.97	-193.7	-190.3	520.2	492.0	28.28	18.398			
6,300.0	6,283.4	6,298.2	6,283.4	15.4	14.1	-179.97	-193.7	-190.3	520.2	491.5	28.69	18.133			
6,374.9	6,358.3	6,373.0	6,358.3	15.6	14.3	-179.97	-193.7	-190.3	520.2	491.2	29.00	17.939			
6,400.0	6,383.4	6,398.2	6,383.5	15.6	14.3	90.06	-193.7	-190.1	520.2	491.5	28.74	18.099			
6,450.0	6,433.3	6,448.2	6,433.4	15.7	14.4	90.12	-193.7	-187.4	520.2	491.3	28.91	17.994			
6,500.0	6,482.9	6,498.3	6,483.1	15.8	14.5	90.19	-193.7	-181.4	520.2	491.2	29.06	17.902			
6,550.0	6,531.9	6,548.4	6,532.4	15.8	14.6	90.25	-193.7	-172.2	520.2	491.0	29.19	17.821			
6,600.0	6,580.2	6,598.6	6,581.0	15.9	14.6	90.31	-193.7	-159.8	520.2	490.9	29.31	17.748			
6,650.0	6,627.5	6,648.8	6,628.7	15.9	14.7	90.37	-193.7	-144.2	520.2	490.8	29.43	17.677			
6,700.0	6,673.7	6,699.0	6,675.3	15.9	14.7	90.43	-193.7	-125.4	520.2	490.7	29.55	17.605			
6,750.0	6,718.6	6,749.3	6,720.6	16.0	14.8	90.49	-193.7	-103.7	520.2	490.6	29.69	17.524			
6,800.0	6,761.8	6,799.6	6,764.4	16.0	14.8	90.55	-193.7	-79.0	520.3	490.4	29.85	17.426			
6,850.0	6,803.4	6,849.9	6,806.5	16.0	14.9	90.60	-193.7	-51.4	520.3	490.2	30.07	17.303			
6,900.0	6,843.1	6,900.3	6,846.8	16.0	14.9	90.65	-193.7	-21.1	520.3	489.9	30.34	17.146			
6,950.0	6,880.6	6,950.7	6,884.9	16.1	15.1	90.70	-193.7	11.8	520.3	489.6	30.70	16.945			
7,000.0	6,916.0	7,001.2	6,920.9	16.1	15.3	90.74	-193.7	47.2	520.3	489.1	31.17	16.693			
7,050.0	6,948.9	7,051.6	6,954.4	16.2	15.6	90.78	-193.7	84.8	520.3	488.5	31.75	16.386			
7,100.0	6,979.4	7,102.1	6,985.4	16.6	15.9	90.82	-193.7	124.7	520.3	487.8	32.47	16.022			
7,150.0	7,007.1	7,152.6	7,013.7	17.1	16.4	90.86	-193.7	166.5	520.3	486.9	33.35	15.603			
7,200.0	7,032.1	7,203.1	7,039.2	17.6	16.9	90.89	-193.7	210.1	520.3	485.9	34.38	15.135			
7,250.0	7,054.2	7,253.7	7,061.8	18.2	17.5	90.92	-193.7	255.3	520.3	484.7	35.57	14.627			
7,300.0	7,073.3	7,304.2	7,081.3	18.8	18.2	90.94	-193.7	301.9	520.3	483.4	36.92	14.091			
7,350.0	7,089.4	7,354.8	7,097.7	19.6	19.0	90.96	-193.7	349.8	520.3	481.9	38.43	13.539			
7,400.0	7,102.3	7,405.4	7,110.9	20.4	19.8	90.97	-193.7	398.6	520.3	480.2	40.08	12.982			
7,450.0	7,112.1	7,456.0	7,120.9	21.3	20.7	90.98	-193.7	448.2	520.3	478.5	41.85	12.432			
7,500.0	7,118.6	7,506.5	7,127.5	22.2	21.7	90.99	-193.7	498.3	520.3	476.6	43.73	11.897			
7,550.0	7,121.9	7,557.1	7,130.9	23.2	22.7	90.99	-193.7	548.8	520.3	474.6	45.70	11.385			
7,577.4	7,122.3	7,584.9	7,131.3	23.7	23.3	90.99	-193.7	576.5	520.3	473.5	46.81	11.116			
7,581.0	7,122.2	7,588.5	7,131.3	23.8	23.3	90.99	-193.7	580.1	520.3	473.3	46.96	11.081			
7,600.0	7,122.1	7,607.5	7,131.1	24.2	23.7	91.00	-193.7	599.1	520.3	472.6	47.74	10.899			
7,700.0	7,121.3	7,707.5	7,130.5	26.3	25.9	91.01	-193.7	699.1	520.3	468.3	52.00	10.006			
7,800.0	7,120.5	7,807.5	7,129.9	28.5	28.2	91.03	-193.7	799.1	520.3	463.8	56.50	9.209			
7,900.0	7,119.7	7,907.5	7,129.2	30.8	30.5	91.05	-193.7	899.1	520.3	459.1	61.19	8.504			
8,000.0	7,118.9	8,007.5	7,128.6	33.2	32.9	91.07	-193.7	999.1	520.3	454.3	66.02	7.882			
8,100.0	7,118.1	8,107.5	7,128.0	35.7	35.4	91.09	-193.7	1,099.1	520.3	449.4	70.96	7.332			
8,200.0	7,117.3	8,207.5	7,127.4	38.2	37.9	91.11	-193.7	1,199.1	520.3	444.3	76.00	6.846			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	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			
8,300.0	7,116.5	8,307.5	7,126.7	40.7	40.5	91.13	-193.7	1,299.1	520.3	439.2	81.12	6.414			
8,400.0	7,115.7	8,407.5	7,126.1	43.3	43.1	91.15	-193.7	1,399.1	520.3	434.0	86.29	6.030			
8,500.0	7,114.9	8,507.5	7,125.5	45.9	45.7	91.17	-193.7	1,499.1	520.3	428.8	91.52	5.685			
8,600.0	7,114.1	8,607.5	7,124.8	48.5	48.4	91.19	-193.7	1,599.1	520.3	423.5	96.80	5.376			
8,700.0	7,113.3	8,707.5	7,124.2	51.2	51.0	91.21	-193.7	1,699.1	520.3	418.2	102.10	5.096			
8,800.0	7,112.5	8,807.5	7,123.6	53.9	53.7	91.23	-193.7	1,799.1	520.3	412.9	107.44	4.843			
8,900.0	7,111.7	8,907.5	7,123.0	56.5	56.4	91.25	-193.7	1,899.1	520.4	407.5	112.81	4.613			
9,000.0	7,110.9	9,007.5	7,122.3	59.2	59.1	91.26	-193.7	1,999.1	520.4	402.2	118.20	4.402			
9,100.0	7,110.1	9,107.5	7,121.7	61.9	61.8	91.28	-193.7	2,099.1	520.4	396.7	123.61	4.210			
9,200.0	7,109.2	9,207.5	7,121.1	64.6	64.5	91.30	-193.7	2,199.1	520.4	391.3	129.04	4.033			
9,300.0	7,108.4	9,307.5	7,120.4	67.3	67.2	91.32	-193.7	2,299.1	520.4	385.9	134.48	3.869			
9,400.0	7,107.6	9,407.5	7,119.8	70.1	70.0	91.34	-193.7	2,399.1	520.4	380.4	139.93	3.719			
9,500.0	7,106.8	9,507.5	7,119.2	72.8	72.7	91.36	-193.7	2,499.1	520.4	375.0	145.40	3.579			
9,600.0	7,106.0	9,607.5	7,118.6	75.5	75.5	91.38	-193.7	2,599.1	520.4	369.5	150.88	3.449			
9,700.0	7,105.2	9,707.5	7,117.9	78.3	78.2	91.40	-193.7	2,699.1	520.4	364.0	156.37	3.328			
9,800.0	7,104.4	9,807.5	7,117.3	81.0	81.0	91.42	-193.7	2,799.1	520.4	358.5	161.87	3.215			
9,900.0	7,103.6	9,907.5	7,116.7	83.8	83.7	91.44	-193.7	2,899.1	520.4	353.0	167.37	3.109			
10,000.0	7,102.8	10,007.5	7,116.1	86.5	86.5	91.46	-193.7	2,999.1	520.4	347.5	172.88	3.010			
10,100.0	7,102.0	10,107.5	7,115.4	89.3	89.2	91.48	-193.7	3,099.1	520.4	342.0	178.40	2.917			
10,200.0	7,101.2	10,207.5	7,114.8	92.0	92.0	91.49	-193.7	3,199.1	520.4	336.5	183.92	2.829			
10,300.0	7,100.4	10,307.5	7,114.2	94.8	94.8	91.51	-193.7	3,299.1	520.4	331.0	189.45	2.747			
10,400.0	7,099.6	10,407.5	7,113.5	97.6	97.5	91.53	-193.7	3,399.1	520.4	325.4	194.99	2.669			
10,500.0	7,098.8	10,507.5	7,112.9	100.3	100.3	91.55	-193.7	3,499.1	520.4	319.9	200.52	2.595			
10,600.0	7,098.0	10,607.5	7,112.3	103.1	103.1	91.57	-193.7	3,599.1	520.4	314.4	206.07	2.526			
10,700.0	7,097.2	10,707.5	7,111.7	105.9	105.9	91.59	-193.7	3,699.1	520.4	308.8	211.61	2.459			
10,800.0	7,096.4	10,807.5	7,111.0	108.6	108.6	91.61	-193.7	3,799.1	520.4	303.3	217.16	2.397			
10,900.0	7,095.6	10,907.5	7,110.4	111.4	111.4	91.63	-193.7	3,899.1	520.4	297.7	222.71	2.337			
11,000.0	7,094.8	11,007.5	7,109.8	114.2	114.2	91.65	-193.7	3,999.1	520.4	292.2	228.27	2.280			
11,100.0	7,094.0	11,107.5	7,109.1	117.0	117.0	91.67	-193.7	4,099.0	520.4	286.6	233.82	2.226			
11,200.0	7,093.2	11,207.5	7,108.5	119.8	119.8	91.69	-193.7	4,199.0	520.5	281.1	239.38	2.174			
11,300.0	7,092.4	11,307.5	7,107.9	122.5	122.5	91.71	-193.7	4,299.0	520.5	275.5	244.95	2.125			
11,400.0	7,091.6	11,407.5	7,107.3	125.3	125.3	91.73	-193.7	4,399.0	520.5	270.0	250.51	2.078			
11,500.0	7,090.8	11,507.5	7,106.6	128.1	128.0	91.74	-193.7	4,499.0	520.5	264.5	256.00	2.033			
11,597.5	7,090.0	11,605.0	7,106.0	130.8	129.8	91.76	-193.7	4,596.6	520.5	260.0	260.48	1.998 SF			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design		Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W - Wiedeman Federal 22H-332 - Wellbore #1 -											Offset Site Error:		0.0 ft
Survey Program:		0-MWD											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	1.0	1.0	0.0	0.0	-179.54	-105.3	-0.8	105.3	105.3	0.00	N/A			
100.0	100.0	101.0	101.0	0.1	0.1	-179.54	-105.3	-0.8	105.3	105.1	0.23	463.794			
200.0	200.0	201.0	201.0	0.3	0.3	-179.54	-105.3	-0.8	105.3	104.6	0.68	155.625			
300.0	300.0	301.0	301.0	0.6	0.6	-179.54	-105.3	-0.8	105.3	104.2	1.13	93.499			
400.0	400.0	401.0	401.0	0.8	0.8	-179.54	-105.3	-0.8	105.3	103.7	1.58	66.823			
500.0	500.0	501.0	501.0	1.0	1.0	-179.54	-105.3	-0.8	105.3	103.3	2.03	51.990			
566.3	566.3	567.3	567.3	1.2	1.2	-179.54	-105.3	-0.8	105.3	103.0	2.32	45.318 CC			
600.0	600.0	600.0	600.0	1.2	1.2	-179.54	-105.3	-0.8	105.3	102.8	2.47	42.587 ES			
700.0	700.0	698.3	698.3	1.5	1.4	-179.45	-106.5	-1.0	106.6	103.7	2.89	36.858			
800.0	800.0	795.5	795.4	1.7	1.6	-179.19	-110.2	-1.6	110.4	107.1	3.29	33.508			
900.0	900.0	892.4	892.1	1.9	1.8	-178.79	-116.4	-2.5	116.7	113.0	3.71	31.474			
1,000.0	1,000.0	989.0	988.3	2.1	2.0	-178.30	-124.9	-3.7	125.6	121.4	4.13	30.384			
1,100.0	1,100.0	1,084.9	1,083.6	2.4	2.2	-147.75	-135.7	-5.3	138.0	133.4	4.56	30.247 SF			
1,200.0	1,199.9	1,179.8	1,177.6	2.6	2.5	-147.81	-148.7	-7.2	155.1	150.1	5.00	31.028			
1,300.0	1,299.7	1,273.4	1,269.9	2.8	2.8	-148.15	-163.9	-9.4	176.8	171.3	5.44	32.503			
1,342.6	1,342.2	1,312.8	1,308.7	2.9	2.9	-148.35	-170.9	-10.5	187.4	181.8	5.63	33.303			
1,400.0	1,399.3	1,365.5	1,360.3	3.0	3.1	-148.70	-180.9	-11.9	202.6	196.7	5.88	34.451			
1,500.0	1,498.9	1,456.2	1,449.1	3.3	3.5	-149.14	-199.8	-14.7	231.0	224.6	6.33	36.494			
1,600.0	1,598.5	1,545.7	1,536.1	3.5	3.8	-149.41	-220.5	-17.7	261.5	254.8	6.78	38.571			
1,700.0	1,698.1	1,634.2	1,621.6	3.8	4.2	-149.56	-243.0	-21.0	294.3	287.1	7.24	40.643			
1,800.0	1,797.7	1,728.4	1,712.4	4.0	4.7	-149.66	-267.8	-24.7	328.0	320.3	7.71	42.541			
1,900.0	1,897.3	1,822.5	1,803.1	4.3	5.2	-149.74	-292.6	-28.3	361.8	353.6	8.18	44.207			
2,000.0	1,996.9	1,916.6	1,893.9	4.6	5.7	-149.81	-317.4	-31.9	395.5	386.8	8.66	45.663			
2,100.0	2,096.5	2,010.8	1,984.6	4.8	6.2	-149.87	-342.2	-35.6	429.2	420.1	9.14	46.944			
2,200.0	2,196.1	2,104.9	2,075.3	5.1	6.7	-149.92	-366.9	-39.2	463.0	453.3	9.63	48.078			
2,300.0	2,295.7	2,199.1	2,166.1	5.3	7.1	-149.96	-391.7	-42.8	496.7	486.6	10.12	49.088			
2,400.0	2,395.3	2,293.2	2,256.8	5.6	7.7	-150.00	-416.5	-46.5	530.4	519.8	10.61	49.992			
2,500.0	2,494.9	2,387.3	2,347.6	5.9	8.2	-150.03	-441.3	-50.1	564.1	553.0	11.10	50.806			
2,600.0	2,594.5	2,481.5	2,438.3	6.1	8.7	-150.06	-466.1	-53.7	597.9	586.3	11.60	51.541			
2,700.0	2,694.1	2,575.6	2,529.1	6.4	9.2	-150.09	-490.9	-57.4	631.6	619.5	12.10	52.209			
2,800.0	2,793.7	2,669.7	2,619.8	6.7	9.7	-150.11	-515.7	-61.0	665.3	652.7	12.60	52.818			
2,900.0	2,893.3	2,763.9	2,710.5	7.0	10.2	-150.13	-540.5	-64.6	699.1	686.0	13.10	53.374			
3,000.0	2,992.9	2,858.0	2,801.3	7.2	10.7	-150.15	-565.3	-68.3	732.8	719.2	13.60	53.885			
3,100.0	3,092.5	2,952.2	2,892.0	7.5	11.2	-150.17	-590.1	-71.9	766.5	752.4	14.10	54.355			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design														Offset Site Error:	0.0 ft
Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W - Wiedeman Federal 22H-402 - Wellbore #1 -														Offset Well Error:	0.0 ft
Survey Program: 0-MWD															
Reference		Offset		Semi Major Axis			Distance								Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
0.0	0.0	0.0	0.0	0.0	0.0	-179.57	-75.1	-0.6	75.1						
100.0	100.0	100.0	100.0	0.1	0.1	-179.57	-75.1	-0.6	75.1	74.8	0.22	333.917			
200.0	200.0	200.0	200.0	0.3	0.3	-179.57	-75.1	-0.6	75.1	74.4	0.67	111.306			
300.0	300.0	300.0	300.0	0.6	0.6	-179.57	-75.1	-0.6	75.1	73.9	1.12	66.783			
400.0	400.0	400.0	400.0	0.8	0.8	-179.57	-75.1	-0.6	75.1	73.5	1.57	47.702			
500.0	500.0	500.0	500.0	1.0	1.0	-179.57	-75.1	-0.6	75.1	73.0	2.02	37.102			
600.0	600.0	600.0	600.0	1.2	1.2	-179.57	-75.1	-0.6	75.1	72.6	2.47	30.356			
700.0	700.0	700.0	700.0	1.5	1.5	-179.57	-75.1	-0.6	75.1	72.1	2.92	25.686			
800.0	800.0	800.0	800.0	1.7	1.7	-179.57	-75.1	-0.6	75.1	71.7	3.37	22.261			
900.0	900.0	900.0	900.0	1.9	1.9	-179.57	-75.1	-0.6	75.1	71.2	3.82	19.642			
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-179.57	-75.1	-0.6	75.1	70.8	4.27	17.575 CC, ES			
1,100.0	1,100.0	1,098.1	1,098.1	2.4	2.3	-149.64	-76.3	-0.8	77.4	72.7	4.69	16.517 SF			
1,200.0	1,199.9	1,195.8	1,195.7	2.6	2.5	-150.34	-79.9	-1.7	84.6	79.5	5.09	16.625			
1,300.0	1,299.7	1,292.8	1,292.5	2.8	2.7	-151.27	-86.0	-3.1	96.5	91.0	5.50	17.555			
1,342.6	1,342.2	1,333.9	1,333.5	2.9	2.8	-151.68	-89.3	-3.8	103.0	97.3	5.67	18.156			
1,400.0	1,399.3	1,388.9	1,388.3	3.0	2.9	-152.19	-94.3	-5.0	112.7	106.8	5.91	19.071			
1,500.0	1,498.9	1,484.2	1,482.9	3.3	3.1	-152.66	-104.9	-7.4	131.6	125.2	6.33	20.776			
1,600.0	1,598.5	1,578.6	1,576.4	3.5	3.3	-152.77	-117.7	-10.4	152.8	146.0	6.76	22.592			
1,700.0	1,698.1	1,671.9	1,668.5	3.8	3.6	-152.63	-132.5	-13.8	176.2	169.0	7.20	24.490			
1,800.0	1,797.7	1,764.9	1,759.8	4.0	3.9	-152.34	-149.4	-17.6	202.0	194.3	7.64	26.437			
1,900.0	1,897.3	1,861.3	1,854.3	4.3	4.2	-152.05	-167.7	-21.9	228.5	220.4	8.09	28.246			
2,000.0	1,996.9	1,957.7	1,948.9	4.6	4.5	-151.82	-186.1	-26.1	255.1	246.5	8.55	29.845			
2,100.0	2,096.5	2,054.1	2,043.4	4.8	4.9	-151.63	-204.4	-30.3	281.6	272.6	9.01	31.271			
2,200.0	2,196.1	2,150.5	2,138.0	5.1	5.2	-151.48	-222.8	-34.5	308.2	298.7	9.47	32.541			
2,300.0	2,295.7	2,246.9	2,232.5	5.3	5.6	-151.35	-241.1	-38.7	334.7	324.8	9.94	33.679			
2,400.0	2,395.3	2,343.3	2,327.1	5.6	6.0	-151.24	-259.4	-42.9	361.3	350.9	10.41	34.703			
2,500.0	2,494.9	2,439.7	2,421.6	5.9	6.4	-151.14	-277.8	-47.1	387.8	377.0	10.89	35.629			
2,600.0	2,594.5	2,536.1	2,516.2	6.1	6.8	-151.06	-296.1	-51.4	414.4	403.0	11.36	36.469			
2,700.0	2,694.1	2,632.5	2,610.7	6.4	7.2	-150.99	-314.4	-55.6	441.0	429.1	11.84	37.235			
2,800.0	2,793.7	2,728.9	2,705.3	6.7	7.5	-150.92	-332.8	-59.8	467.5	455.2	12.32	37.935			
2,900.0	2,893.3	2,825.3	2,799.9	7.0	7.9	-150.86	-351.1	-64.0	494.1	481.3	12.81	38.577			
3,000.0	2,992.9	2,921.7	2,894.4	7.2	8.3	-150.81	-369.4	-68.2	520.6	507.3	13.29	39.168			
3,100.0	3,092.5	3,018.2	2,989.0	7.5	8.7	-150.77	-387.8	-72.4	547.2	533.4	13.78	39.713			
3,200.0	3,192.1	3,114.6	3,083.5	7.8	9.1	-150.72	-406.1	-76.6	573.8	559.5	14.27	40.217			
3,300.0	3,291.7	3,211.0	3,178.1	8.0	9.6	-150.68	-424.5	-80.8	600.3	585.6	14.76	40.685			
3,400.0	3,391.3	3,307.4	3,272.6	8.3	10.0	-150.65	-442.8	-85.1	626.9	611.6	15.24	41.121			
3,500.0	3,490.9	3,403.8	3,367.2	8.6	10.4	-150.62	-461.1	-89.3	653.4	637.7	15.74	41.526			
3,600.0	3,590.5	3,500.2	3,461.7	8.9	10.8	-150.59	-479.5	-93.5	680.0	663.8	16.23	41.906			
3,700.0	3,690.1	3,596.6	3,556.3	9.1	11.2	-150.56	-497.8	-97.7	706.6	689.8	16.72	42.261			
3,800.0	3,789.7	3,693.0	3,650.8	9.4	11.6	-150.53	-516.1	-101.9	733.1	715.9	17.21	42.593			
3,900.0	3,889.3	3,789.4	3,745.4	9.7	12.0	-150.51	-534.5	-106.1	759.7	742.0	17.71	42.906			
4,000.0	3,988.9	3,885.8	3,839.9	10.0	12.4	-150.49	-552.8	-110.3	786.2	768.0	18.20	43.201			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design													Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W - Wiedeman Federal 22I-212 - Wellbore #1 - P		Offset Site Error:	0.0 ft
Survey Program: 0-MWD															Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor				
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)					
0.0	0.0	1.0	1.0	0.0	0.0	-179.60	-120.2	-0.8	120.2	120.2	0.00	N/A				
100.0	100.0	101.0	101.0	0.1	0.1	-179.60	-120.2	-0.8	120.2	120.0	0.23	529.606				
200.0	200.0	201.0	201.0	0.3	0.3	-179.60	-120.2	-0.8	120.2	119.6	0.68	177.708				
300.0	300.0	301.0	301.0	0.6	0.6	-179.60	-120.2	-0.8	120.2	119.1	1.13	106.767				
366.3	366.3	367.3	367.3	0.7	0.7	-179.60	-120.2	-0.8	120.2	118.8	1.42	84.415 CC				
400.0	400.0	400.0	400.0	0.8	0.8	-179.60	-120.2	-0.8	120.2	118.7	1.57	76.417 ES				
500.0	500.0	497.9	497.9	1.0	1.0	-179.54	-121.5	-1.0	121.5	119.5	1.99	60.977				
600.0	600.0	594.7	594.6	1.2	1.2	-179.37	-125.2	-1.4	125.3	122.9	2.40	52.192				
700.0	700.0	691.3	691.0	1.5	1.4	-179.10	-131.3	-2.1	131.7	128.8	2.82	46.631				
800.0	800.0	787.5	786.8	1.7	1.6	-178.77	-139.7	-3.0	140.5	137.2	3.26	43.140				
900.0	900.0	883.2	881.9	1.9	1.8	-178.40	-150.6	-4.2	151.8	148.1	3.70	41.030				
1,000.0	1,000.0	978.3	976.1	2.1	2.1	-178.01	-163.6	-5.7	165.6	161.5	4.15	39.870 SF				
1,100.0	1,100.0	1,072.5	1,069.0	2.4	2.4	-147.51	-178.9	-7.4	183.0	178.4	4.58	39.937				
1,200.0	1,199.9	1,165.4	1,160.2	2.6	2.8	-147.54	-196.2	-9.3	204.9	199.9	5.03	40.712				
1,300.0	1,299.7	1,256.6	1,249.4	2.8	3.1	-147.78	-215.3	-11.4	231.3	225.8	5.49	42.166				
1,342.6	1,342.2	1,294.9	1,286.8	2.9	3.3	-147.92	-223.9	-12.4	243.9	238.2	5.68	42.954				
1,400.0	1,399.3	1,346.1	1,336.4	3.0	3.5	-148.24	-236.1	-13.7	261.7	255.8	5.94	44.074				
1,500.0	1,498.9	1,434.1	1,421.5	3.3	4.0	-148.68	-258.5	-16.2	294.6	288.2	6.39	46.064				
1,600.0	1,598.5	1,520.7	1,504.7	3.5	4.4	-148.98	-282.5	-18.9	329.6	322.7	6.86	48.056				
1,700.0	1,698.1	1,605.9	1,586.0	3.8	4.9	-149.19	-307.8	-21.7	366.7	359.4	7.32	50.082				
1,800.0	1,797.7	1,689.5	1,665.2	4.0	5.4	-149.33	-334.5	-24.7	405.8	398.0	7.79	52.101				
1,900.0	1,897.3	1,771.6	1,742.3	4.3	5.9	-149.42	-362.3	-27.8	446.9	438.7	8.26	54.114				
2,000.0	1,996.9	1,860.5	1,825.4	4.6	6.5	-149.48	-393.7	-31.3	489.3	480.5	8.75	55.923				
2,100.0	2,096.5	1,951.1	1,910.1	4.8	7.1	-149.53	-425.6	-34.9	531.7	522.5	9.24	57.534				
2,200.0	2,196.1	2,041.6	1,994.8	5.1	7.7	-149.57	-457.6	-38.4	574.1	564.4	9.74	58.956				
2,300.0	2,295.7	2,132.2	2,079.4	5.3	8.4	-149.61	-489.5	-42.0	616.5	606.3	10.24	60.218				
2,400.0	2,395.3	2,222.8	2,164.1	5.6	9.0	-149.64	-521.4	-45.5	658.9	648.2	10.74	61.345				
2,500.0	2,494.9	2,313.3	2,248.8	5.9	9.6	-149.67	-553.4	-49.1	701.3	690.1	11.25	62.356				
2,600.0	2,594.5	2,403.9	2,333.4	6.1	10.3	-149.69	-585.3	-52.6	743.7	732.0	11.76	63.267				
2,700.0	2,694.1	2,494.4	2,418.1	6.4	10.9	-149.71	-617.3	-56.2	786.1	773.9	12.27	64.091				

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22G-302
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4750.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4750.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22G-302	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plsn #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design														Offset Site Error:	0.0 ft
Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W - Wiedeman Federal 22I-302 - Wellbore #1 - P														Offset Well Error:	0.0 ft
Survey Program: 0-MWD															
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	1.0	1.0	0.0	0.0	-179.53	-135.2	-1.1	135.2						
100.0	100.0	101.0	101.0	0.1	0.1	-179.53	-135.2	-1.1	135.2	134.9	0.23	595.409			
166.3	166.3	167.3	167.3	0.3	0.3	-179.53	-135.2	-1.1	135.2	134.6	0.53	257.367 CC			
200.0	200.0	200.0	200.0	0.3	0.3	-179.53	-135.2	-1.1	135.2	134.5	0.67	200.460 ES			
300.0	300.0	297.5	297.5	0.6	0.5	-179.48	-136.4	-1.2	136.5	135.4	1.10	124.489			
400.0	400.0	394.0	393.9	0.8	0.7	-179.35	-140.1	-1.6	140.3	138.7	1.52	92.437			
500.0	500.0	490.2	489.9	1.0	0.9	-179.14	-146.1	-2.2	146.6	144.6	1.95	75.027			
600.0	600.0	586.0	585.4	1.2	1.2	-178.88	-154.6	-3.0	155.4	153.0	2.40	64.735			
700.0	700.0	681.4	680.1	1.5	1.5	-178.58	-165.3	-4.1	166.7	163.8	2.86	58.350			
800.0	800.0	776.1	773.9	1.7	1.8	-178.27	-178.3	-5.4	180.4	177.1	3.32	54.310			
900.0	900.0	870.2	866.7	1.9	2.1	-177.96	-193.5	-6.9	196.6	192.8	3.80	51.766			
1,000.0	1,000.0	963.4	958.3	2.1	2.5	-177.67	-210.8	-8.6	215.3	211.0	4.29	50.224 SF			
1,100.0	1,100.0	1,055.5	1,048.4	2.4	2.8	-147.17	-230.1	-10.5	237.3	232.7	4.67	50.841			
1,200.0	1,199.9	1,146.0	1,136.3	2.6	3.3	-147.13	-251.1	-12.6	263.9	258.7	5.13	51.432			
1,300.0	1,299.7	1,234.6	1,222.0	2.8	3.7	-147.26	-273.7	-14.8	294.8	289.2	5.59	52.715			
1,342.6	1,342.2	1,271.7	1,257.7	2.9	3.9	-147.34	-283.8	-15.8	309.2	303.4	5.79	53.428			
1,400.0	1,399.3	1,321.2	1,305.2	3.0	4.2	-147.62	-297.8	-17.2	329.6	323.5	6.05	54.448			
1,500.0	1,498.9	1,406.3	1,386.4	3.3	4.7	-148.01	-323.2	-19.7	366.7	360.1	6.52	56.246			
1,600.0	1,598.5	1,489.9	1,465.5	3.5	5.2	-148.31	-349.9	-22.3	405.8	398.8	6.99	58.074			
1,700.0	1,698.1	1,571.9	1,542.6	3.8	5.7	-148.53	-377.7	-25.1	447.0	439.5	7.46	59.919			
1,800.0	1,797.7	1,652.4	1,617.6	4.0	6.3	-148.69	-406.6	-27.9	490.0	482.1	7.93	61.773			
1,900.0	1,897.3	1,738.5	1,697.4	4.3	6.9	-148.82	-438.9	-31.1	534.5	526.1	8.43	63.445			
2,000.0	1,996.9	1,828.0	1,780.3	4.6	7.5	-148.93	-472.5	-34.5	579.2	570.2	8.92	64.911			
2,100.0	2,096.5	1,917.5	1,863.1	4.8	8.2	-149.03	-506.2	-37.8	623.8	614.4	9.42	66.193			
2,200.0	2,196.1	2,006.9	1,946.0	5.1	8.9	-149.12	-539.8	-41.1	668.4	658.5	9.93	67.322			
2,300.0	2,295.7	2,096.4	2,028.9	5.3	9.5	-149.19	-573.4	-44.4	713.0	702.6	10.44	68.321			
2,400.0	2,395.3	2,185.9	2,111.7	5.6	10.2	-149.26	-607.0	-47.7	757.7	746.7	10.95	69.210			

Reference Depths are relative to WELL @ 4750.0ft (Original Well Elev)	Coordinates are relative to: Wiedeman Federal 22G-302
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: 0.47°



Reference Depths are relative to WELL @ 4750.0ft (Original Well Elev)	Coordinates are relative to: Wiedeman Federal 22G-302
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: 0.47°

