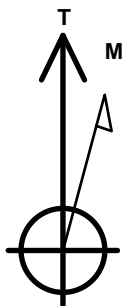


PETROLEUM DEVELOPMENT CORP DJ Basin

Well Name: **Wiedeman Federal 22H-332**
 Surface Location: Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W
 North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
 Ground Elevation: 4738.0
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.0 0.0 1351365.58 3202996.84 40.295612 -104.772246
 Original Well Elev WELL @ 4751.0ft (Original Well Elev)

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 2080'FSL, 238'FWL	1.0	0.0	0.0	Point
BHL 715'FSL, 500'FEL	7086.0	-1297.6	4605.5	Point



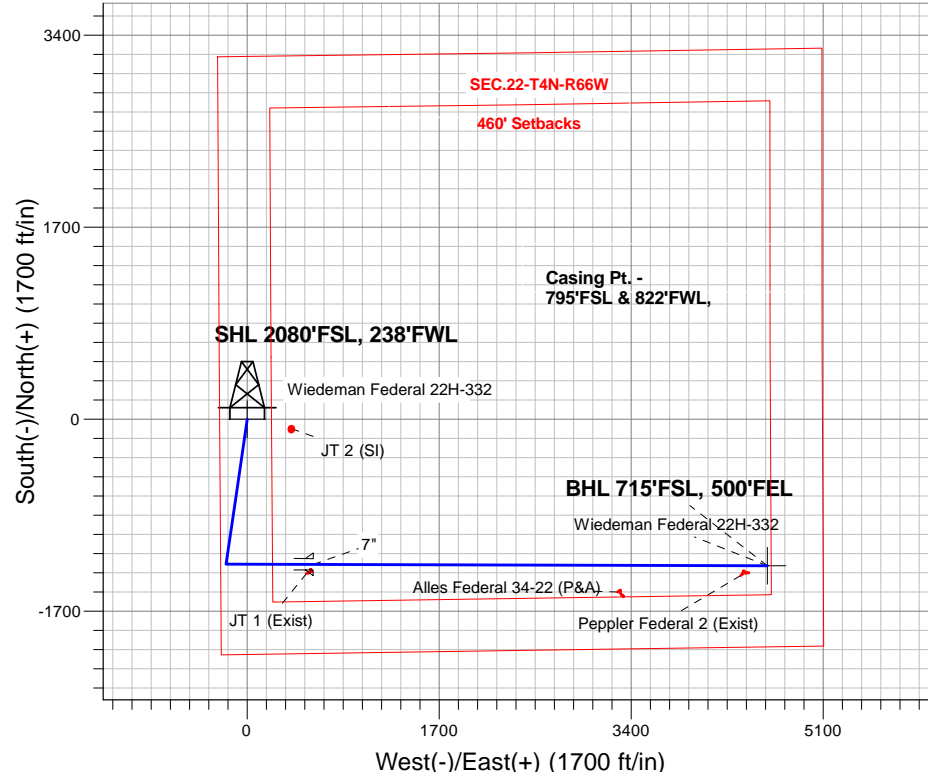
Azimuths to True North
 Magnetic North: 8.25°

Magnetic Field
 Strength: 52596.8snT
 Dip Angle: 66.81°
 Date: 1/4/2016
 Model: IGRF2010

Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W
 Wiedeman Federal 22H-332
 Plan #1 (12-28-15)
 7:15, January 04 2016

ANNOTATIONS

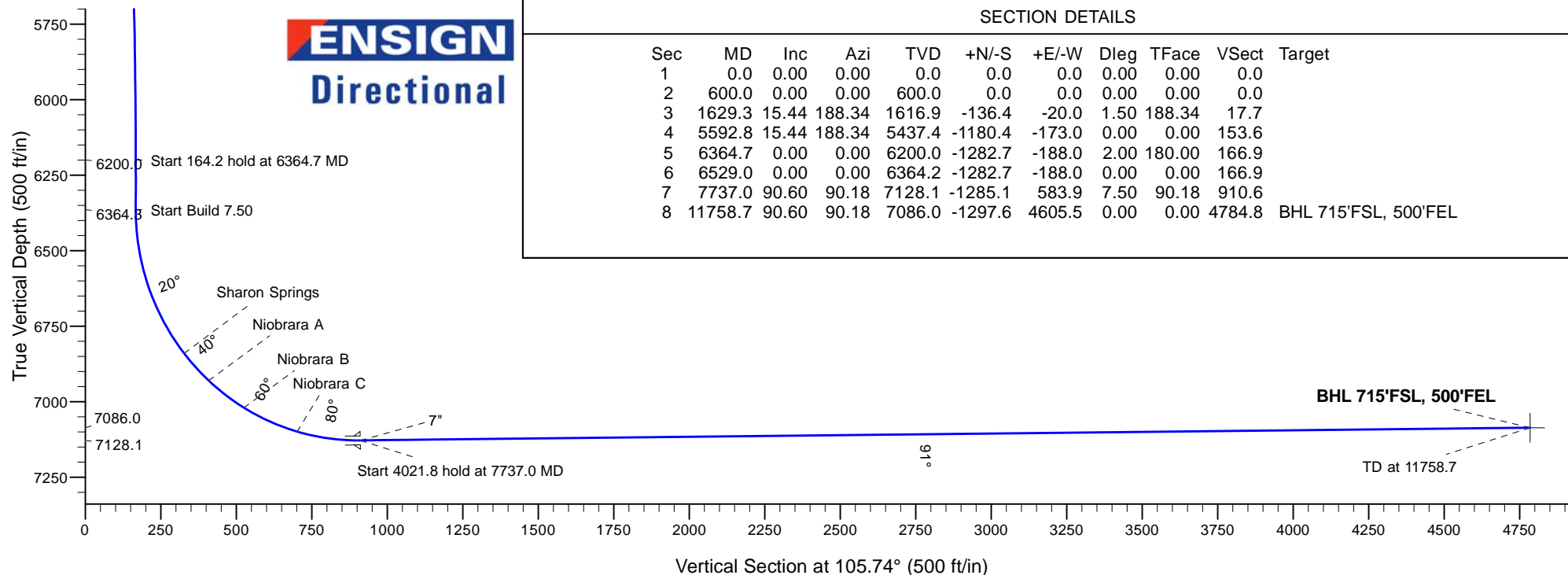
TVD	MD	Annotation
600.0	600.0	KOP - Start Build 1.50
5437.4	5592.8	Start Drop -2.00
6200.0	6364.7	Start 164.2 hold at 6364.7 MD
6364.2	6529.0	Start Build 7.50
7128.1	7737.0	Start 4021.8 hold at 7737.0 MD
7086.0	11758.7	TD at 11758.7



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	600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.0	
3	1629.3	15.44	188.34	1616.9	-136.4	-20.0	1.50	188.34	17.7	
4	5592.8	15.44	188.34	5437.4	-1180.4	-173.0	0.00	0.00	153.6	
5	6364.7	0.00	0.00	6200.0	-1282.7	-188.0	2.00	180.00	166.9	
6	6529.0	0.00	0.00	6364.2	-1282.7	-188.0	0.00	0.00	166.9	
7	7737.0	90.60	90.18	7128.1	-1285.1	583.9	7.50	90.18	910.6	
8	11758.7	90.60	90.18	7086.0	-1297.6	4605.5	0.00	0.00	4784.8	BHL 715'FSL, 500'FEL





PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.22-T4N-R66W

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

Wiedeman Federal 22H-332

Wellbore #1

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

Standard Planning Report

04 January, 2016

Database:	US_EDM	Local Co-ordinate Reference:	Well Wiedeman Federal 22H-332
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Project:	SEC.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	North Reference:	True
Well:	Wiedeman Federal 22H-332	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #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 22H-332					
Well Position	+N/-S	14.9 ft	Northing:	1,351,365.58 usft	Latitude:	40.295612
	+E/-W	0.0 ft	Easting:	3,202,996.84 usft	Longitude:	-104.772246
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,738.0 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	Plan #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	105.74

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	
600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,629.3	15.44	188.34	1,616.9	-136.4	-20.0	1.50	1.50	0.00	188.34	
5,592.8	15.44	188.34	5,437.4	-1,180.4	-173.0	0.00	0.00	0.00	0.00	
6,364.7	0.00	0.00	6,200.0	-1,282.7	-188.0	2.00	-2.00	0.00	180.00	
6,529.0	0.00	0.00	6,364.2	-1,282.7	-188.0	0.00	0.00	0.00	0.00	
7,737.0	90.60	90.18	7,128.1	-1,285.1	583.9	7.50	7.50	0.00	90.18	
11,758.7	90.60	90.18	7,086.0	-1,297.6	4,605.5	0.00	0.00	0.00	0.00	BHL 715'FSL, 500'FE

Database:	US_EDM	Local Co-ordinate Reference:	Well Wiedeman Federal 22H-332
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Project:	SEC.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	North Reference:	True
Well:	Wiedeman Federal 22H-332	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #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 2080'FSL, 238'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
KOP - Start Build 1.50									
700.0	1.50	188.34	700.0	-1.3	-0.2	0.2	1.50	1.50	0.00
800.0	3.00	188.34	799.9	-5.2	-0.8	0.7	1.50	1.50	0.00
900.0	4.50	188.34	899.7	-11.7	-1.7	1.5	1.50	1.50	0.00
1,000.0	6.00	188.34	999.3	-20.7	-3.0	2.7	1.50	1.50	0.00
1,100.0	7.50	188.34	1,098.6	-32.3	-4.7	4.2	1.50	1.50	0.00
1,200.0	9.00	188.34	1,197.5	-46.5	-6.8	6.1	1.50	1.50	0.00
1,300.0	10.50	188.34	1,296.1	-63.3	-9.3	8.2	1.50	1.50	0.00
1,400.0	12.00	188.34	1,394.2	-82.6	-12.1	10.7	1.50	1.50	0.00
1,500.0	13.50	188.34	1,491.7	-104.4	-15.3	13.6	1.50	1.50	0.00
1,600.0	15.00	188.34	1,588.6	-128.8	-18.9	16.8	1.50	1.50	0.00
1,629.3	15.44	188.34	1,616.9	-136.4	-20.0	17.7	1.50	1.50	0.00
1,700.0	15.44	188.34	1,685.0	-155.0	-22.7	20.2	0.00	0.00	0.00
1,800.0	15.44	188.34	1,781.4	-181.4	-26.6	23.6	0.00	0.00	0.00
1,900.0	15.44	188.34	1,877.8	-207.7	-30.4	27.0	0.00	0.00	0.00
2,000.0	15.44	188.34	1,974.2	-234.0	-34.3	30.5	0.00	0.00	0.00
2,100.0	15.44	188.34	2,070.6	-260.4	-38.2	33.9	0.00	0.00	0.00
2,200.0	15.44	188.34	2,167.0	-286.7	-42.0	37.3	0.00	0.00	0.00
2,300.0	15.44	188.34	2,263.4	-313.0	-45.9	40.7	0.00	0.00	0.00
2,400.0	15.44	188.34	2,359.8	-339.4	-49.7	44.2	0.00	0.00	0.00
2,500.0	15.44	188.34	2,456.2	-365.7	-53.6	47.6	0.00	0.00	0.00
2,600.0	15.44	188.34	2,552.6	-392.1	-57.5	51.0	0.00	0.00	0.00
2,700.0	15.44	188.34	2,649.0	-418.4	-61.3	54.4	0.00	0.00	0.00
2,800.0	15.44	188.34	2,745.3	-444.7	-65.2	57.9	0.00	0.00	0.00
2,900.0	15.44	188.34	2,841.7	-471.1	-69.0	61.3	0.00	0.00	0.00
3,000.0	15.44	188.34	2,938.1	-497.4	-72.9	64.7	0.00	0.00	0.00
3,100.0	15.44	188.34	3,034.5	-523.8	-76.8	68.1	0.00	0.00	0.00
3,200.0	15.44	188.34	3,130.9	-550.1	-80.6	71.6	0.00	0.00	0.00
3,300.0	15.44	188.34	3,227.3	-576.4	-84.5	75.0	0.00	0.00	0.00
3,400.0	15.44	188.34	3,323.7	-602.8	-88.4	78.4	0.00	0.00	0.00
3,500.0	15.44	188.34	3,420.1	-629.1	-92.2	81.9	0.00	0.00	0.00
3,600.0	15.44	188.34	3,516.5	-655.5	-96.1	85.3	0.00	0.00	0.00
3,700.0	15.44	188.34	3,612.9	-681.8	-99.9	88.7	0.00	0.00	0.00
3,747.9	15.44	188.34	3,659.0	-694.4	-101.8	90.4	0.00	0.00	0.00
Parkman									
3,800.0	15.44	188.34	3,709.3	-708.1	-103.8	92.1	0.00	0.00	0.00
3,900.0	15.44	188.34	3,805.6	-734.5	-107.7	95.6	0.00	0.00	0.00
4,000.0	15.44	188.34	3,902.0	-760.8	-111.5	99.0	0.00	0.00	0.00
4,100.0	15.44	188.34	3,998.4	-787.2	-115.4	102.4	0.00	0.00	0.00
4,200.0	15.44	188.34	4,094.8	-813.5	-119.2	105.8	0.00	0.00	0.00
4,300.0	15.44	188.34	4,191.2	-839.8	-123.1	109.3	0.00	0.00	0.00
4,400.0	15.44	188.34	4,287.6	-866.2	-127.0	112.7	0.00	0.00	0.00
4,451.2	15.44	188.34	4,337.0	-879.7	-128.9	114.5	0.00	0.00	0.00

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Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Project:	SEC.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	North Reference:	True
Well:	Wiedeman Federal 22H-332	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #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)
Sussex									
4,500.0	15.44	188.34	4,384.0	-892.5	-130.8	116.1	0.00	0.00	0.00
4,600.0	15.44	188.34	4,480.4	-918.9	-134.7	119.6	0.00	0.00	0.00
4,700.0	15.44	188.34	4,576.8	-945.2	-138.5	123.0	0.00	0.00	0.00
4,800.0	15.44	188.34	4,673.2	-971.5	-142.4	126.4	0.00	0.00	0.00
4,900.0	15.44	188.34	4,769.6	-997.9	-146.3	129.8	0.00	0.00	0.00
4,927.4	15.44	188.34	4,796.0	-1,005.1	-147.3	130.8	0.00	0.00	0.00
Shannon									
5,000.0	15.44	188.34	4,866.0	-1,024.2	-150.1	133.3	0.00	0.00	0.00
5,100.0	15.44	188.34	4,962.3	-1,050.6	-154.0	136.7	0.00	0.00	0.00
5,200.0	15.44	188.34	5,058.7	-1,076.9	-157.8	140.1	0.00	0.00	0.00
5,300.0	15.44	188.34	5,155.1	-1,103.2	-161.7	143.5	0.00	0.00	0.00
5,400.0	15.44	188.34	5,251.5	-1,129.6	-165.6	147.0	0.00	0.00	0.00
5,500.0	15.44	188.34	5,347.9	-1,155.9	-169.4	150.4	0.00	0.00	0.00
5,592.8	15.44	188.34	5,437.4	-1,180.4	-173.0	153.6	0.00	0.00	0.00
Start Drop -2.00									
5,600.0	15.29	188.34	5,444.3	-1,182.3	-173.3	153.8	2.00	-2.00	0.00
5,700.0	13.29	188.34	5,541.2	-1,206.7	-176.9	157.0	2.00	-2.00	0.00
5,800.0	11.29	188.34	5,638.9	-1,227.8	-180.0	159.7	2.00	-2.00	0.00
5,900.0	9.29	188.34	5,737.3	-1,245.4	-182.5	162.0	2.00	-2.00	0.00
6,000.0	7.29	188.34	5,836.2	-1,259.7	-184.6	163.9	2.00	-2.00	0.00
6,100.0	5.29	188.34	5,935.6	-1,270.6	-186.2	165.3	2.00	-2.00	0.00
6,200.0	3.29	188.34	6,035.3	-1,278.0	-187.3	166.3	2.00	-2.00	0.00
6,300.0	1.29	188.34	6,135.3	-1,281.9	-187.9	166.8	2.00	-2.00	0.00
6,364.7	0.00	188.34	6,200.0	-1,282.7	-188.0	166.9	2.00	-2.00	0.00
Start 164.2 hold at 6364.7 MD									
6,400.0	0.00	0.00	6,235.3	-1,282.7	-188.0	166.9	0.00	0.00	0.00
6,500.0	0.00	0.00	6,335.3	-1,282.7	-188.0	166.9	0.00	0.00	0.00
6,529.0	0.00	0.00	6,364.3	-1,282.7	-188.0	166.9	0.00	0.00	0.00
Start Build 7.50									
6,600.0	5.33	90.18	6,435.2	-1,282.7	-184.7	170.1	7.50	7.50	0.00
6,700.0	12.83	90.18	6,533.8	-1,282.7	-168.9	185.3	7.50	7.50	0.00
6,800.0	20.33	90.18	6,629.6	-1,282.8	-140.4	212.7	7.50	7.50	0.00
6,900.0	27.83	90.18	6,720.8	-1,282.9	-99.7	252.0	7.50	7.50	0.00
7,000.0	35.33	90.18	6,806.0	-1,283.1	-47.3	302.4	7.50	7.50	0.00
7,042.6	38.52	90.18	6,840.0	-1,283.2	-21.7	327.1	7.50	7.50	0.00
Sharon Springs									
7,100.0	42.83	90.18	6,883.5	-1,283.3	15.7	363.1	7.50	7.50	0.00
7,166.1	47.78	90.18	6,930.0	-1,283.4	62.6	408.3	7.50	7.50	0.00
Niobrara A									
7,200.0	50.33	90.18	6,952.2	-1,283.5	88.2	433.0	7.50	7.50	0.00
7,300.0	57.83	90.18	7,010.9	-1,283.8	169.2	511.0	7.50	7.50	0.00
7,317.5	59.14	90.18	7,020.0	-1,283.8	184.1	525.3	7.50	7.50	0.00
Niobrara B									
7,400.0	65.33	90.18	7,058.4	-1,284.0	257.1	595.6	7.50	7.50	0.00
7,500.0	72.83	90.18	7,094.1	-1,284.3	350.4	685.6	7.50	7.50	0.00
7,517.2	74.12	90.18	7,099.0	-1,284.4	366.9	701.5	7.50	7.50	0.00
Niobrara C									
7,600.0	80.33	90.18	7,117.3	-1,284.6	447.6	779.2	7.50	7.50	0.00
7,700.0	87.83	90.18	7,127.6	-1,284.9	547.0	875.0	7.50	7.50	0.00
7,737.0	90.60	90.18	7,128.1	-1,285.1	584.0	910.6	7.49	7.49	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Wiedeman Federal 22H-332
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Project:	SEC.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	North Reference:	True
Well:	Wiedeman Federal 22H-332	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #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)
Start 4021.8 hold at 7737.0 MD - 7"									
7,800.0	90.60	90.18	7,127.5	-1,285.3	647.0	971.3	0.00	0.00	0.00
7,900.0	90.60	90.18	7,126.4	-1,285.6	747.0	1,067.6	0.00	0.00	0.00
8,000.0	90.60	90.18	7,125.4	-1,285.9	847.0	1,163.9	0.00	0.00	0.00
8,100.0	90.60	90.18	7,124.3	-1,286.2	947.0	1,260.3	0.00	0.00	0.00
8,200.0	90.60	90.18	7,123.3	-1,286.5	1,047.0	1,356.6	0.00	0.00	0.00
8,300.0	90.60	90.18	7,122.2	-1,286.8	1,146.9	1,452.9	0.00	0.00	0.00
8,400.0	90.60	90.18	7,121.2	-1,287.1	1,246.9	1,549.3	0.00	0.00	0.00
8,500.0	90.60	90.18	7,120.1	-1,287.4	1,346.9	1,645.6	0.00	0.00	0.00
8,600.0	90.60	90.18	7,119.1	-1,287.7	1,446.9	1,741.9	0.00	0.00	0.00
8,700.0	90.60	90.18	7,118.0	-1,288.1	1,546.9	1,838.3	0.00	0.00	0.00
8,800.0	90.60	90.18	7,117.0	-1,288.4	1,646.9	1,934.6	0.00	0.00	0.00
8,900.0	90.60	90.18	7,115.9	-1,288.7	1,746.9	2,030.9	0.00	0.00	0.00
9,000.0	90.60	90.18	7,114.9	-1,289.0	1,846.9	2,127.3	0.00	0.00	0.00
9,100.0	90.60	90.18	7,113.8	-1,289.3	1,946.9	2,223.6	0.00	0.00	0.00
9,200.0	90.60	90.18	7,112.8	-1,289.6	2,046.9	2,319.9	0.00	0.00	0.00
9,300.0	90.60	90.18	7,111.7	-1,289.9	2,146.9	2,416.3	0.00	0.00	0.00
9,400.0	90.60	90.18	7,110.7	-1,290.2	2,246.9	2,512.6	0.00	0.00	0.00
9,500.0	90.60	90.18	7,109.7	-1,290.5	2,346.9	2,608.9	0.00	0.00	0.00
9,600.0	90.60	90.18	7,108.6	-1,290.9	2,446.9	2,705.2	0.00	0.00	0.00
9,700.0	90.60	90.18	7,107.6	-1,291.2	2,546.9	2,801.6	0.00	0.00	0.00
9,800.0	90.60	90.18	7,106.5	-1,291.5	2,646.9	2,897.9	0.00	0.00	0.00
9,900.0	90.60	90.18	7,105.5	-1,291.8	2,746.9	2,994.2	0.00	0.00	0.00
10,000.0	90.60	90.18	7,104.4	-1,292.1	2,846.8	3,090.6	0.00	0.00	0.00
10,100.0	90.60	90.18	7,103.4	-1,292.4	2,946.8	3,186.9	0.00	0.00	0.00
10,200.0	90.60	90.18	7,102.3	-1,292.7	3,046.8	3,283.2	0.00	0.00	0.00
10,300.0	90.60	90.18	7,101.3	-1,293.0	3,146.8	3,379.6	0.00	0.00	0.00
10,400.0	90.60	90.18	7,100.2	-1,293.4	3,246.8	3,475.9	0.00	0.00	0.00
10,500.0	90.60	90.18	7,099.2	-1,293.7	3,346.8	3,572.2	0.00	0.00	0.00
10,600.0	90.60	90.18	7,098.1	-1,294.0	3,446.8	3,668.6	0.00	0.00	0.00
10,700.0	90.60	90.18	7,097.1	-1,294.3	3,546.8	3,764.9	0.00	0.00	0.00
10,800.0	90.60	90.18	7,096.0	-1,294.6	3,646.8	3,861.2	0.00	0.00	0.00
10,900.0	90.60	90.18	7,095.0	-1,294.9	3,746.8	3,957.6	0.00	0.00	0.00
11,000.0	90.60	90.18	7,093.9	-1,295.2	3,846.8	4,053.9	0.00	0.00	0.00
11,100.0	90.60	90.18	7,092.9	-1,295.5	3,946.8	4,150.2	0.00	0.00	0.00
11,200.0	90.60	90.18	7,091.9	-1,295.8	4,046.8	4,246.5	0.00	0.00	0.00
11,300.0	90.60	90.18	7,090.8	-1,296.2	4,146.8	4,342.9	0.00	0.00	0.00
11,400.0	90.60	90.18	7,089.8	-1,296.5	4,246.8	4,439.2	0.00	0.00	0.00
11,500.0	90.60	90.18	7,088.7	-1,296.8	4,346.8	4,535.5	0.00	0.00	0.00
11,600.0	90.60	90.18	7,087.7	-1,297.1	4,446.8	4,631.9	0.00	0.00	0.00
11,700.0	90.60	90.18	7,086.6	-1,297.4	4,546.7	4,728.2	0.00	0.00	0.00
11,758.7	90.60	90.18	7,086.0	-1,297.6	4,605.4	4,784.7	0.00	0.00	0.00
TD at 11758.7 - BHL 715°FSL, 500°FEL									

Database:	US_EDM	Local Co-ordinate Reference:	Well Wiedeman Federal 22H-332
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Project:	SEC.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	North Reference:	True
Well:	Wiedeman Federal 22H-332	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #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 2080'FSL, 238'FWL - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,351,365.58	3,202,996.84	40.295612	-104.772246
BHL 715'FSL, 500'FEL - plan hits target center - Point	0.00	0.00	7,086.0	-1,297.6	4,605.5	1,350,105.89	3,207,612.59	40.292049	-104.755737

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,737.0	7,128.1	7"	7	8-3/4

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,747.9	3,659.0	Parkman		0.00	
4,451.2	4,337.0	Sussex		0.00	
4,927.4	4,796.0	Shannon		0.00	
7,042.6	6,840.0	Sharon Springs		0.00	
7,166.1	6,930.0	Niobrara A		0.00	
7,317.5	7,020.0	Niobrara B		0.00	
7,517.2	7,099.0	Niobrara C		0.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
600.0	600.0	0.0	0.0	KOP - Start Build 1.50
5,592.8	5,437.4	-136.4	-20.0	Start Drop -2.00
6,364.7	6,200.0	-1,180.4	-173.0	Start 164.2 hold at 6364.7 MD
6,529.0	6,364.2	-1,282.7	-188.0	Start Build 7.50
7,737.0	7,128.1	-1,282.7	-188.0	Start 4021.8 hold at 7737.0 MD
11,758.7	7,086.0	-1,285.1	583.9	TD at 11758.7



PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.22-T4N-R66W

Wiedeman Federal 4N66W22G PAD

Sec.22-T4N-R66W

Wiedeman Federal 22H-332

Wellbore #1

Plan #1 (12-28-15)

Anticollision Report

04 January, 2016



Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Reference	Plan #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	11,758.7	Plan #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						
Existing Wells - Sec.22-T4N-R66W						
Alles Federal 34-22 (P&A) - Wellbore #1 - Wellbore #1	10,434.7	7,083.2	234.5	126.8	2.177	CC, ES, SF
JT 1 (Exist) - Wellbore #1 - Wellbore #1	7,681.7	7,120.8	78.4	41.5	2.127	CC, ES, SF
JT 2 (SI) - Wellbore #1 - Wellbore #1	1,049.3	1,036.3	397.7	374.8	17.382	CC
JT 2 (SI) - Wellbore #1 - Wellbore #1	1,400.0	1,382.2	401.8	370.9	13.019	ES
JT 2 (SI) - Wellbore #1 - Wellbore #1	2,900.0	2,829.7	600.4	535.9	9.312	SF
Peppler Federal 2 (Exist) - Wellbore #1 - Wellbore #1	11,528.2	7,070.8	81.1	-58.3	0.581	Level 1, CC, ES, SF
Wiedeman 24-22 (Exist) - Wellbore #1 - Wellbore #1	8,800.8	7,105.4	85.3	22.0	1.348	Level 3, CC, ES, SF
Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W						
Wiedeman Federal 22G-232 - Wellbore #1 - Plan #1 (12-	600.0	599.0	90.0	87.5	36.428	CC, ES
Wiedeman Federal 22G-232 - Wellbore #1 - Plan #1 (12-	1,000.0	998.3	110.8	106.6	26.666	SF
Wiedeman Federal 22G-302 - Wellbore #1 - Plsn #1 (12-	600.0	599.0	105.3	102.8	42.623	CC, ES
Wiedeman Federal 22G-302 - Wellbore #1 - Plsn #1 (12-	1,100.0	1,094.7	138.8	134.2	30.293	SF
Wiedeman Federal 22H-212 - Wellbore #1 - Plan #1 (12-	600.0	599.0	60.1	57.6	24.334	CC, ES
Wiedeman Federal 22H-212 - Wellbore #1 - Plan #1 (12-	900.0	898.7	71.8	68.1	19.269	SF
Wiedeman Federal 22H-212 - Wellbore #1 - Plan #1 (12-	600.0	599.0	15.3	12.8	6.194	CC
Wiedeman Federal 22H-232 - Wellbore #1 - Plan #1 (12-	11,758.7	11,624.1	245.8	0.8	1.003	Level 2, ES, SF
Wiedeman Federal 22H-302 - Wellbore #1 - Plan #1 (12-	600.0	599.0	45.2	42.7	18.289	CC, ES
Wiedeman Federal 22H-302 - Wellbore #1 - Plan #1 (12-	11,758.7	11,648.0	690.2	428.3	2.636	SF
Wiedeman Federal 22H-312 - Wellbore #1 - Plan #1 (12-	600.0	599.0	75.0	72.6	30.380	CC, ES
Wiedeman Federal 22H-312 - Wellbore #1 - Plan #1 (12-	1,000.0	998.3	95.8	91.7	23.069	SF
Wiedeman Federal 22H-402 - Wellbore #1 - Plan #1 (12-	600.0	599.0	30.2	27.8	12.240	CC, ES
Wiedeman Federal 22H-402 - Wellbore #1 - Plan #1 (12-	11,758.7	11,778.1	484.0	232.6	1.925	SF
Wiedeman Federal 22I-212 - Wellbore #1 - Plan #1 (12-2	400.0	400.0	14.9	13.4	9.496	CC, ES
Wiedeman Federal 22I-212 - Wellbore #1 - Plan #1 (12-2	11,758.7	11,783.6	414.3	156.3	1.605	SF
Wiedeman Federal 22I-302 - Wellbore #1 - Plan #1 (12-2	200.0	200.0	29.9	29.2	44.310	CC, ES
Wiedeman Federal 22I-302 - Wellbore #1 - Plan #1 (12-2	11,758.7	11,936.1	635.0	372.7	2.421	SF

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Sec.22-T4N-R66W - Alles Federal 34-22 (P&A) - 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 (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
9,700.0	7,107.6	7,098.7	7,097.4	75.4	13.4	93.55	-1,528.0	3,280.6	771.0	683.8	87.23	8.839		
9,800.0	7,106.5	7,096.6	7,095.3	78.1	13.4	93.03	-1,528.0	3,280.6	676.5	586.4	90.02	7.514		
9,900.0	7,105.5	7,094.5	7,093.2	80.8	13.4	92.52	-1,528.0	3,280.6	583.7	490.9	92.82	6.289		
10,000.0	7,104.4	7,092.3	7,091.1	83.5	13.4	92.00	-1,528.0	3,280.7	493.8	398.2	95.61	5.165		
10,100.0	7,103.4	7,090.2	7,088.9	86.2	13.4	91.48	-1,528.0	3,280.7	408.6	310.2	98.40	4.152		
10,200.0	7,102.3	7,088.1	7,086.8	88.9	13.4	90.97	-1,528.0	3,280.7	331.7	230.5	101.19	3.278		
10,300.0	7,101.3	7,086.0	7,084.7	91.6	13.4	90.45	-1,527.9	3,280.7	270.4	166.4	103.98	2.600		
10,400.0	7,100.2	7,083.9	7,082.6	94.4	13.4	89.93	-1,527.9	3,280.7	237.0	130.3	106.76	2.220		
10,434.7	7,099.9	7,083.2	7,081.9	95.3	13.4	89.75	-1,527.9	3,280.7	234.5	126.8	107.72	2.177	CC, ES, SF	
10,500.0	7,099.2	7,081.8	7,080.5	97.1	13.4	89.42	-1,527.9	3,280.8	243.4	133.9	109.53	2.222		
10,600.0	7,098.1	7,079.7	7,078.4	99.8	13.4	88.90	-1,527.9	3,280.8	286.9	174.6	112.30	2.555		
10,700.0	7,097.1	7,077.5	7,076.3	102.6	13.4	88.38	-1,527.9	3,280.8	354.0	239.0	115.06	3.077		
10,800.0	7,096.0	7,075.4	7,074.1	105.3	13.4	87.87	-1,527.9	3,280.8	434.0	316.2	117.82	3.684		
10,900.0	7,095.0	7,073.3	7,072.0	108.1	13.4	87.35	-1,527.9	3,280.9	521.0	400.4	120.56	4.321		
11,000.0	7,093.9	7,071.2	7,069.9	110.8	13.4	86.84	-1,527.9	3,280.9	611.9	488.6	123.30	4.963		
11,100.0	7,092.9	7,069.1	7,067.8	113.6	13.4	86.32	-1,527.9	3,280.9	705.3	579.3	126.02	5.597		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Sec.22-T4N-R66W - JT 1 (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)				
4,800.0	4,673.2	4,670.6	4,670.3	21.4	9.2	-70.84	-1,347.8	558.7	795.7	765.9	29.80	26.705			
4,900.0	4,769.6	4,769.3	4,768.9	22.0	9.4	-72.50	-1,349.5	557.3	786.5	755.9	30.62	25.685			
5,000.0	4,866.0	4,866.9	4,866.6	22.5	9.5	-74.19	-1,350.9	555.7	777.8	746.3	31.45	24.728			
5,100.0	4,962.3	4,962.5	4,962.0	23.1	9.7	-75.90	-1,352.1	554.3	769.8	737.5	32.29	23.844			
5,200.0	5,058.7	5,057.6	5,057.2	23.6	9.9	-77.66	-1,352.9	553.3	762.9	729.7	33.12	23.031			
5,300.0	5,155.1	5,153.2	5,152.8	24.2	10.1	-79.50	-1,353.3	552.6	756.8	722.9	33.97	22.278			
5,400.0	5,251.5	5,248.7	5,248.3	24.7	10.3	-81.39	-1,353.4	552.1	751.8	717.0	34.83	21.588			
5,500.0	5,347.9	5,344.3	5,343.9	25.3	10.5	-83.30	-1,353.6	551.8	747.8	712.2	35.66	20.970			
5,592.8	5,437.4	5,433.5	5,433.1	25.8	10.7	-85.10	-1,353.8	551.5	745.0	708.6	36.41	20.461			
5,600.0	5,444.3	5,440.5	5,440.1	25.8	10.7	-85.23	-1,353.8	551.5	744.8	708.4	36.46	20.428			
5,700.0	5,541.2	5,537.4	5,537.0	26.2	10.9	-87.01	-1,354.1	551.2	742.8	705.8	37.05	20.049			
5,800.0	5,638.9	5,633.6	5,633.2	26.5	11.1	-88.53	-1,354.5	550.9	741.8	704.2	37.56	19.747			
5,865.3	5,703.1	5,696.1	5,695.7	26.7	11.1	-89.38	-1,355.1	550.9	741.6	703.8	37.85	19.593			
5,900.0	5,737.3	5,729.2	5,728.8	26.8	11.2	-89.78	-1,355.4	550.9	741.7	703.7	37.99	19.521			
6,000.0	5,836.2	5,826.5	5,826.0	27.1	11.3	-90.79	-1,356.5	551.3	742.3	703.9	38.35	19.356			
6,100.0	5,935.6	5,927.9	5,927.4	27.3	11.4	-91.63	-1,357.1	551.6	742.9	704.3	38.65	19.223			
6,200.0	6,035.3	6,028.1	6,027.7	27.5	11.5	-92.22	-1,357.1	551.9	743.4	704.5	38.89	19.115			
6,300.0	6,135.3	6,129.3	6,128.8	27.6	11.5	-92.53	-1,357.1	552.0	743.7	704.6	39.11	19.018			
6,364.7	6,200.0	6,193.9	6,193.4	27.7	11.6	-95.75	-1,357.1	552.1	743.8	716.3	27.55	27.001			
6,400.0	6,235.3	6,228.4	6,228.0	27.7	11.6	-95.74	-1,357.1	552.1	743.8	716.2	27.64	26.909			
6,500.0	6,335.3	6,326.5	6,326.1	27.8	11.8	-95.72	-1,356.8	552.5	744.2	716.3	27.91	26.664			
6,529.0	6,364.2	6,355.4	6,354.9	27.8	11.8	-95.70	-1,356.6	552.6	744.3	716.3	27.99	26.591			
6,550.0	6,385.3	6,376.3	6,375.9	27.8	11.8	-95.52	-1,356.5	552.7	744.1	704.5	39.59	18.794			
6,600.0	6,435.2	6,436.5	6,436.1	27.9	11.9	-95.56	-1,356.4	552.7	741.1	701.6	39.57	18.732			
6,650.0	6,484.7	6,504.1	6,503.6	27.9	12.0	-95.78	-1,357.5	551.1	733.8	694.4	39.40	18.625			
6,700.0	6,533.8	6,555.5	6,555.0	27.9	12.1	-96.06	-1,358.7	549.2	722.6	683.5	39.06	18.501			
6,750.0	6,582.2	6,605.8	6,605.2	28.0	12.2	-96.42	-1,359.9	547.0	708.1	669.5	38.55	18.369			
6,800.0	6,629.6	6,654.7	6,654.0	28.0	12.3	-96.84	-1,360.8	544.8	690.4	652.5	37.88	18.225			
6,850.0	6,675.9	6,700.0	6,699.3	28.0	12.4	-97.32	-1,361.3	542.7	669.5	632.5	37.04	18.074			
6,900.0	6,720.8	6,744.1	6,743.4	28.0	12.5	-97.89	-1,361.6	540.6	645.7	609.7	36.06	17.910			
6,950.0	6,764.3	6,784.9	6,784.1	28.0	12.6	-98.57	-1,361.7	538.9	619.3	584.4	34.92	17.736			
7,000.0	6,806.0	6,824.1	6,823.3	28.1	12.7	-99.41	-1,361.8	537.2	590.3	556.7	33.65	17.544			
7,050.0	6,845.8	6,861.6	6,860.7	28.1	12.8	-100.47	-1,361.8	535.8	558.8	526.6	32.26	17.324			
7,100.0	6,883.5	6,897.1	6,896.2	28.1	12.9	-101.81	-1,361.8	534.5	525.1	494.3	30.78	17.061			
7,150.0	6,919.1	6,930.0	6,929.1	28.1	13.0	-103.52	-1,361.9	533.3	489.1	459.9	29.24	16.727			
7,200.0	6,952.2	6,960.7	6,959.8	28.2	13.1	-105.75	-1,361.9	532.3	451.2	423.4	27.72	16.276			
7,250.0	6,982.9	6,989.1	6,988.2	28.2	13.1	-108.72	-1,362.1	531.5	411.4	385.1	26.33	15.625			
7,300.0	7,010.9	7,015.0	7,014.0	28.3	13.2	-112.70	-1,362.2	530.7	370.1	344.8	25.27	14.644			
7,350.0	7,036.1	7,038.2	7,037.2	28.4	13.2	-118.12	-1,362.4	530.2	327.5	302.6	24.88	13.163			
7,400.0	7,058.4	7,058.7	7,057.8	28.5	13.3	-125.49	-1,362.6	529.7	283.8	258.2	25.57	11.099			
7,450.0	7,077.8	7,076.6	7,075.6	28.7	13.3	-135.24	-1,362.8	529.3	239.4	211.8	27.63	8.666			
7,500.0	7,094.1	7,091.6	7,090.7	28.9	13.4	-151.16	-1,362.9	529.0	195.1	164.5	30.69	6.359			
7,550.0	7,107.3	7,103.7	7,102.7	29.1	13.4	-169.74	-1,363.1	528.8	152.0	118.5	33.58	4.528			
7,600.0	7,117.3	7,112.8	7,111.8	29.4	13.4	-190.49	-1,363.2	528.6	112.8	77.4	35.39	3.188			
7,650.0	7,124.1	7,118.7	7,117.8	29.7	13.4	-218.40	-1,363.2	528.5	84.5	48.1	36.33	2.325			
7,681.7	7,126.7	7,120.8	7,119.9	30.0	13.4	-259.41	-1,363.2	528.5	78.4	41.5	36.84	2.127 CC, ES, SF			
7,700.0	7,127.6	7,121.5	7,120.5	30.1	13.4	-309.70	-1,363.2	528.5	80.5	43.3	37.16	2.166			
7,737.0	7,128.1	7,121.4	7,120.4	30.5	13.4	-368.34	-1,363.2	528.5	95.9	57.9	37.95	2.526			
7,800.0	7,127.5	7,119.7	7,118.7	31.2	13.4	-457.10	-1,363.2	528.5	141.9	102.6	39.26	3.613			
7,900.0	7,126.4	7,116.9	7,116.0	32.5	13.4	-581.11	-1,363.2	528.5	231.9	190.5	41.40	5.600			
8,000.0	7,125.4	7,114.2	7,113.2	34.1	13.4	-738.09	-1,363.2	528.6	327.7	284.1	43.60	7.516			

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 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design													Existing Wells - Sec.22-T4N-R66W - JT 1 (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)							
8,100.0	7,124.3	7,111.3	7,110.4	35.9	13.4	81.06	-1,363.1	528.6	425.4	379.6	45.81	9.287						
8,200.0	7,123.3	7,108.4	7,107.5	37.9	13.4	79.00	-1,363.1	528.7	524.0	476.0	48.01	10.915						
8,300.0	7,122.2	7,105.5	7,104.5	40.0	13.4	76.93	-1,363.1	528.7	623.0	572.8	50.17	12.418						
8,400.0	7,121.2	7,102.5	7,101.5	42.3	13.4	74.86	-1,363.0	528.8	722.3	670.0	52.28	13.816						

COMPASS 5000.1 Build 74

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Sec.22-T4N-R66W - Peppler Federal 2 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
10,800.0	7,096.0	7,092.3	7,091.2	105.3	14.8	103.63	-1,378.4	4,374.3	732.4	617.0	115.43	6.345		
10,900.0	7,095.0	7,089.3	7,088.2	108.1	14.8	101.66	-1,378.3	4,374.3	633.1	514.1	119.07	5.318		
11,000.0	7,093.9	7,086.4	7,085.3	110.8	14.8	99.66	-1,378.2	4,374.4	534.2	411.5	122.62	4.356		
11,100.0	7,092.9	7,083.4	7,082.3	113.6	14.8	97.63	-1,378.2	4,374.4	435.6	309.5	126.08	3.455		
11,200.0	7,091.9	7,080.5	7,079.4	116.3	14.8	95.58	-1,378.1	4,374.5	337.9	208.5	129.42	2.611		
11,300.0	7,090.8	7,077.5	7,076.4	119.1	14.8	93.52	-1,378.0	4,374.6	242.1	109.4	132.64	1.825		
11,400.0	7,089.8	7,074.6	7,073.5	121.8	14.8	91.44	-1,378.0	4,374.6	151.6	15.9	135.70	1.117	Level 2	
11,500.0	7,088.7	7,071.6	7,070.5	124.6	14.8	89.36	-1,377.9	4,374.7	85.8	-52.8	138.61	0.619	Level 1	
11,528.2	7,088.4	7,070.8	7,069.7	125.4	14.8	88.78	-1,377.9	4,374.7	81.1	-58.3	139.40	0.581	Level 1, CC, ES, SF	
11,600.0	7,087.7	7,068.7	7,067.6	127.4	14.8	87.28	-1,377.9	4,374.7	108.3	-33.1	141.34	0.766	Level 1	
11,700.0	7,086.6	7,065.7	7,064.6	130.1	14.7	85.21	-1,377.8	4,374.8	189.9	46.0	143.90	1.320	Level 3	
11,758.7	7,086.0	7,064.0	7,062.9	131.7	14.7	84.00	-1,377.8	4,374.8	244.3	98.9	145.31	1.681		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Sec.22-T4N-R66W - Wiedeman 24-22 (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	7,124.3	7,116.1	7,115.3	35.9	13.3	96.88	-1,373.7	1,647.4	705.9	661.0	44.82	15.748		
8,200.0	7,123.3	7,114.6	7,113.7	37.9	13.3	95.87	-1,373.7	1,647.4	606.7	559.4	47.35	12.813		
8,300.0	7,122.2	7,113.1	7,112.2	40.0	13.3	94.85	-1,373.7	1,647.4	507.9	458.0	49.94	10.171		
8,400.0	7,121.2	7,111.6	7,110.7	42.3	13.3	93.83	-1,373.7	1,647.4	409.7	357.1	52.56	7.795		
8,500.0	7,120.1	7,110.0	7,109.1	44.6	13.3	92.80	-1,373.7	1,647.4	312.6	257.4	55.21	5.662		
8,600.0	7,119.1	7,108.5	7,107.6	47.0	13.3	91.78	-1,373.7	1,647.4	218.1	160.2	57.87	3.769		
8,700.0	7,118.0	7,107.0	7,106.1	49.4	13.3	90.75	-1,373.7	1,647.4	132.0	71.5	60.55	2.180		
8,800.0	7,117.0	7,105.4	7,104.6	51.9	13.3	89.72	-1,373.6	1,647.4	85.3	22.0	63.23	1.349 Level 3		
8,800.8	7,117.0	7,105.4	7,104.5	51.9	13.3	89.71	-1,373.6	1,647.4	85.3	22.0	63.25	1.348 Level 3, CC, ES, SF		
8,900.0	7,115.9	7,103.9	7,103.0	54.4	13.3	88.69	-1,373.6	1,647.4	130.8	64.9	65.91	1.985		
9,000.0	7,114.9	7,102.4	7,101.5	57.0	13.3	87.66	-1,373.6	1,647.4	216.7	148.1	68.59	3.159		
9,100.0	7,113.8	7,100.8	7,100.0	59.6	13.3	86.64	-1,373.6	1,647.4	311.1	239.9	71.25	4.367		
9,200.0	7,112.8	7,099.3	7,098.4	62.2	13.2	85.60	-1,373.6	1,647.4	408.2	334.3	73.90	5.524		
9,300.0	7,111.7	7,097.7	7,096.9	64.8	13.2	84.56	-1,373.6	1,647.5	506.4	429.9	76.52	6.618		
9,400.0	7,110.7	7,096.1	7,095.3	67.4	13.2	83.50	-1,373.6	1,647.5	605.2	526.1	79.13	7.648		
9,500.0	7,109.7	7,094.5	7,093.7	70.1	13.2	82.44	-1,373.6	1,647.5	704.3	622.6	81.70	8.621		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #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 22G-232 - 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	0.53	90.0	0.8	90.0					
100.0	100.0	99.0	99.0	0.1	0.1	0.53	90.0	0.8	90.0	89.8	0.22	402.350		
200.0	200.0	199.0	199.0	0.3	0.3	0.53	90.0	0.8	90.0	89.3	0.67	133.894		
300.0	300.0	299.0	299.0	0.6	0.6	0.53	90.0	0.8	90.0	88.9	1.12	80.229		
400.0	400.0	399.0	399.0	0.8	0.8	0.53	90.0	0.8	90.0	88.4	1.57	57.274		
500.0	500.0	499.0	499.0	1.0	1.0	0.53	90.0	0.8	90.0	88.0	2.02	44.532		
600.0	600.0	599.0	599.0	1.2	1.2	0.53	90.0	0.8	90.0	87.5	2.47	36.428 CC, ES		
700.0	700.0	699.0	699.0	1.4	1.5	172.30	90.0	0.8	91.3	88.4	2.89	31.530		
800.0	799.9	798.9	798.9	1.6	1.7	172.61	90.0	0.8	95.2	91.9	3.31	28.795		
900.0	899.7	898.7	898.7	1.8	1.9	173.07	90.0	0.8	101.7	97.9	3.73	27.286		
1,000.0	999.3	998.3	998.3	2.0	2.1	173.63	90.0	0.8	110.8	106.6	4.15	26.666 SF		
1,100.0	1,098.6	1,097.6	1,097.6	2.3	2.4	174.22	90.0	0.8	122.4	117.9	4.59	26.703		
1,200.0	1,197.5	1,196.5	1,196.5	2.6	2.6	174.81	90.0	0.8	136.7	131.7	5.02	27.234		
1,300.0	1,296.1	1,295.1	1,295.1	2.9	2.8	175.36	90.0	0.8	153.6	148.1	5.46	28.145		
1,400.0	1,394.2	1,393.2	1,393.2	3.2	3.0	175.86	90.0	0.8	173.1	167.2	5.90	29.350		
1,500.0	1,491.7	1,490.7	1,490.7	3.6	3.2	176.31	90.0	0.8	195.1	188.7	6.34	30.788		
1,600.0	1,588.6	1,587.6	1,587.6	4.1	3.5	176.70	90.0	0.8	219.6	212.9	6.78	32.412		
1,629.3	1,616.9	1,615.9	1,615.9	4.2	3.5	176.80	90.0	0.8	227.3	220.4	6.91	32.917		
1,700.0	1,685.0	1,684.0	1,684.0	4.6	3.7	177.05	90.0	0.8	246.1	238.9	7.23	34.033		
1,800.0	1,781.4	1,780.4	1,780.4	5.1	3.9	177.34	90.0	0.8	272.7	265.0	7.70	35.428		
1,900.0	1,877.8	1,876.8	1,876.8	5.6	4.1	177.57	90.0	0.8	299.3	291.1	8.17	36.643		
2,000.0	1,974.2	1,973.2	1,973.2	6.1	4.3	177.77	90.0	0.8	325.9	317.3	8.64	37.709		
2,100.0	2,070.6	2,069.6	2,069.6	6.6	4.5	177.94	90.0	0.8	352.5	343.4	9.12	38.651		
2,200.0	2,167.0	2,166.0	2,166.0	7.2	4.8	178.08	90.0	0.8	379.1	369.5	9.60	39.488		
2,300.0	2,263.4	2,262.4	2,262.4	7.7	5.0	178.21	90.0	0.8	405.7	395.6	10.08	40.236		
2,400.0	2,359.8	2,358.8	2,358.8	8.2	5.2	178.32	90.0	0.8	432.3	421.8	10.57	40.908		
2,500.0	2,456.2	2,455.2	2,455.2	8.8	5.4	178.42	90.0	0.8	458.9	447.9	11.06	41.515		
2,600.0	2,552.6	2,549.8	2,549.8	9.3	5.6	178.46	90.1	0.5	485.7	474.1	11.54	42.100		
2,700.0	2,649.0	2,642.5	2,642.5	9.8	5.8	178.28	91.0	-1.6	513.0	500.9	12.01	42.712		
2,800.0	2,745.3	2,734.8	2,734.6	10.4	6.0	177.88	92.8	-5.8	540.9	528.5	12.48	43.330		
2,900.0	2,841.7	2,826.5	2,826.1	10.9	6.2	177.30	95.5	-12.0	569.6	556.7	12.96	43.940		
3,000.0	2,938.1	2,918.1	2,917.2	11.5	6.4	176.56	99.0	-20.1	599.1	585.6	13.45	44.534		
3,100.0	3,034.5	3,013.2	3,011.8	12.0	6.6	175.80	103.0	-29.4	628.9	614.9	13.96	45.056		
3,200.0	3,130.9	3,108.3	3,106.4	12.6	6.9	175.10	106.9	-38.6	658.8	644.3	14.47	45.531		
3,300.0	3,227.3	3,203.5	3,201.0	13.1	7.1	174.46	110.9	-47.9	688.8	673.8	14.99	45.960		
3,400.0	3,323.7	3,298.6	3,295.6	13.7	7.3	173.88	114.9	-57.1	718.9	703.3	15.51	46.348		
3,500.0	3,420.1	3,393.7	3,390.2	14.2	7.6	173.34	118.9	-66.3	749.0	732.9	16.04	46.699		
3,600.0	3,516.5	3,488.8	3,484.8	14.8	7.8	172.84	122.8	-75.6	779.2	762.6	16.57	47.018		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design		Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W - Wiedeman Federal 22G-302 - 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	0.46	105.3	0.8	105.3						
100.0	100.0	99.0	99.0	0.1	0.1	0.46	105.3	0.8	105.3	105.1	0.22	470.782			
200.0	200.0	199.0	199.0	0.3	0.3	0.46	105.3	0.8	105.3	104.6	0.67	156.666			
300.0	300.0	299.0	299.0	0.6	0.6	0.46	105.3	0.8	105.3	104.2	1.12	93.874			
400.0	400.0	399.0	399.0	0.8	0.8	0.46	105.3	0.8	105.3	103.7	1.57	67.015			
500.0	500.0	499.0	499.0	1.0	1.0	0.46	105.3	0.8	105.3	103.3	2.02	52.106			
600.0	600.0	599.0	599.0	1.2	1.2	0.46	105.3	0.8	105.3	102.8	2.47	42.623 CC, ES			
700.0	700.0	699.0	699.0	1.4	1.5	172.21	105.3	0.8	106.6	103.7	2.89	36.817			
800.0	799.9	798.9	798.9	1.6	1.7	172.48	105.3	0.8	110.5	107.2	3.31	33.425			
900.0	899.7	898.7	898.7	1.8	1.9	172.89	105.3	0.8	117.0	113.2	3.73	31.392			
1,000.0	999.3	998.3	998.3	2.0	2.1	173.39	105.3	0.8	126.0	121.9	4.15	30.349			
1,100.0	1,098.6	1,094.7	1,094.7	2.3	2.3	173.65	106.3	0.2	138.8	134.2	4.58	30.293 SF			
1,200.0	1,197.5	1,190.0	1,190.0	2.6	2.6	173.48	109.4	-1.5	156.1	151.1	5.01	31.146			
1,300.0	1,296.1	1,284.1	1,283.8	2.9	2.8	173.01	114.4	-4.5	178.1	172.7	5.45	32.689			
1,400.0	1,394.2	1,378.1	1,377.5	3.2	3.0	172.39	121.3	-8.5	204.5	198.6	5.89	34.713			
1,500.0	1,491.7	1,473.7	1,472.7	3.6	3.2	171.91	128.7	-12.8	233.8	227.5	6.33	36.918			
1,600.0	1,588.6	1,568.5	1,567.1	4.1	3.5	171.60	136.0	-17.1	265.6	258.8	6.78	39.189			
1,629.3	1,616.9	1,596.1	1,594.6	4.2	3.5	171.54	138.2	-18.3	275.4	268.5	6.91	39.863			
1,700.0	1,685.0	1,662.7	1,660.9	4.6	3.7	171.45	143.3	-21.3	299.2	292.0	7.24	41.350			
1,800.0	1,781.4	1,756.8	1,754.7	5.1	3.9	171.35	150.6	-25.5	333.0	325.3	7.71	43.187			
1,900.0	1,877.8	1,850.9	1,848.4	5.6	4.2	171.27	157.9	-29.8	366.7	358.5	8.19	44.790			
2,000.0	1,974.2	1,945.1	1,942.2	6.1	4.4	171.21	165.2	-34.0	400.4	391.8	8.67	46.185			
2,100.0	2,070.6	2,039.2	2,035.9	6.6	4.7	171.15	172.5	-38.3	434.2	425.0	9.16	47.408			
2,200.0	2,167.0	2,133.3	2,129.7	7.2	4.9	171.10	179.8	-42.5	467.9	458.2	9.65	48.489			
2,300.0	2,263.4	2,227.5	2,223.5	7.7	5.2	171.06	187.1	-46.8	501.6	491.5	10.14	49.449			
2,400.0	2,359.8	2,321.6	2,317.2	8.2	5.4	171.02	194.4	-51.0	535.4	524.7	10.64	50.307			
2,500.0	2,456.2	2,415.8	2,411.0	8.8	5.7	170.99	201.6	-55.2	569.1	557.9	11.14	51.078			
2,600.0	2,552.6	2,509.9	2,504.8	9.3	5.9	170.96	208.9	-59.5	602.8	591.2	11.64	51.773			
2,700.0	2,649.0	2,604.0	2,598.5	9.8	6.2	170.94	216.2	-63.7	636.6	624.4	12.15	52.403			
2,800.0	2,745.3	2,698.2	2,692.3	10.4	6.4	170.91	223.5	-68.0	670.3	657.6	12.65	52.977			
2,900.0	2,841.7	2,792.3	2,786.0	10.9	6.7	170.89	230.8	-72.2	704.0	690.9	13.16	53.500			
3,000.0	2,938.1	2,886.5	2,879.8	11.5	6.9	170.87	238.1	-76.4	737.8	724.1	13.67	53.980			
3,100.0	3,034.5	2,980.6	2,973.6	12.0	7.2	170.86	245.4	-80.7	771.5	757.3	14.18	54.421			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #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 Depth (ft)	Vertical Depth Depth (ft)	Measured Depth Depth (ft)	Vertical Depth Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
0.0	0.0	0.0	0.0	0.0	0.0	0.53	60.1	0.6	60.1						
100.0	100.0	99.0	99.0	0.1	0.1	0.53	60.1	0.6	60.1	59.9	0.22	268.770			
200.0	200.0	199.0	199.0	0.3	0.3	0.53	60.1	0.6	60.1	59.4	0.67	89.441			
300.0	300.0	299.0	299.0	0.6	0.6	0.53	60.1	0.6	60.1	59.0	1.12	53.593			
400.0	400.0	399.0	399.0	0.8	0.8	0.53	60.1	0.6	60.1	58.5	1.57	38.259			
500.0	500.0	499.0	499.0	1.0	1.0	0.53	60.1	0.6	60.1	58.1	2.02	29.747			
600.0	600.0	599.0	599.0	1.2	1.2	0.53	60.1	0.6	60.1	57.6	2.47	24.334	CC, ES		
700.0	700.0	699.0	699.0	1.4	1.5	172.36	60.1	0.6	61.4	58.5	2.89	21.211			
800.0	799.9	798.9	798.9	1.6	1.7	172.81	60.1	0.6	65.3	62.0	3.31	19.757			
900.0	899.7	898.7	898.7	1.8	1.9	173.45	60.1	0.6	71.8	68.1	3.73	19.269	SF		
1,000.0	999.3	998.3	998.3	2.0	2.1	174.18	60.1	0.6	80.9	76.7	4.15	19.476			
1,100.0	1,098.6	1,097.6	1,097.6	2.3	2.4	174.90	60.1	0.6	92.6	88.0	4.59	20.194			
1,200.0	1,197.5	1,196.5	1,196.5	2.6	2.6	175.56	60.1	0.6	106.9	101.9	5.02	21.293			
1,300.0	1,296.1	1,295.1	1,295.1	2.9	2.8	176.15	60.1	0.6	123.8	118.3	5.46	22.684			
1,400.0	1,394.2	1,393.2	1,393.2	3.2	3.0	176.66	60.1	0.6	143.3	137.4	5.90	24.300			
1,500.0	1,491.7	1,494.6	1,494.6	3.6	3.2	176.98	59.0	0.1	164.2	157.9	6.32	26.005			
1,600.0	1,588.6	1,596.8	1,596.7	4.1	3.4	177.00	55.5	-1.5	185.3	178.6	6.71	27.598			
1,629.3	1,616.9	1,626.8	1,626.7	4.2	3.5	176.96	53.9	-2.1	191.5	184.6	6.83	28.020			
1,700.0	1,685.0	1,699.7	1,699.4	4.6	3.6	176.82	49.3	-4.1	205.7	198.6	7.14	28.830			
1,800.0	1,781.4	1,803.6	1,802.8	5.1	3.8	176.44	40.6	-7.9	223.8	216.2	7.58	29.515			
1,900.0	1,877.8	1,908.4	1,906.9	5.6	4.0	175.90	29.1	-12.8	239.3	231.3	8.05	29.743			
2,000.0	1,974.2	2,009.5	2,007.0	6.1	4.3	175.28	16.1	-18.5	252.9	244.3	8.52	29.677			
2,100.0	2,070.6	2,108.6	2,105.1	6.6	4.5	174.73	3.2	-24.0	266.3	257.3	9.01	29.570			
2,200.0	2,167.0	2,207.7	2,203.2	7.2	4.8	174.22	-9.8	-29.6	279.7	270.2	9.50	29.452			
2,300.0	2,263.4	2,306.7	2,301.2	7.7	5.0	173.77	-22.7	-35.2	293.2	283.2	10.00	29.318			
2,400.0	2,359.8	2,405.8	2,399.3	8.2	5.3	173.35	-35.6	-40.8	306.6	296.1	10.51	29.179			
2,500.0	2,456.2	2,504.9	2,497.3	8.8	5.6	172.97	-48.5	-46.4	320.1	309.1	11.02	29.037			
2,600.0	2,552.6	2,603.9	2,595.4	9.3	5.9	172.62	-61.4	-51.9	333.6	322.1	11.55	28.894			
2,700.0	2,649.0	2,703.0	2,693.5	9.8	6.2	172.29	-74.3	-57.5	347.1	335.1	12.07	28.751			
2,800.0	2,745.3	2,802.1	2,791.5	10.4	6.5	171.99	-87.2	-63.1	360.7	348.0	12.61	28.611			
2,900.0	2,841.7	2,901.1	2,889.6	10.9	6.8	171.72	-100.1	-68.7	374.2	361.0	13.14	28.473			
3,000.0	2,938.1	3,000.2	2,987.7	11.5	7.2	171.46	-113.0	-74.2	387.7	374.0	13.68	28.338			
3,100.0	3,034.5	3,099.2	3,085.7	12.0	7.5	171.22	-125.9	-79.8	401.3	387.0	14.23	28.208			
3,200.0	3,130.9	3,198.3	3,183.8	12.6	7.8	170.99	-138.8	-85.4	414.8	400.0	14.77	28.081			
3,300.0	3,227.3	3,297.4	3,281.8	13.1	8.1	170.78	-151.7	-91.0	428.4	413.0	15.32	27.958			
3,400.0	3,323.7	3,396.4	3,379.9	13.7	8.4	170.58	-164.7	-96.5	441.9	426.1	15.87	27.840			
3,500.0	3,420.1	3,495.5	3,478.0	14.2	8.8	170.40	-177.6	-102.1	455.5	439.1	16.43	27.726			
3,600.0	3,516.5	3,594.6	3,576.0	14.8	9.1	170.22	-190.5	-107.7	469.1	452.1	16.99	27.616			
3,700.0	3,612.9	3,693.6	3,674.1	15.3	9.4	170.05	-203.4	-113.3	482.6	465.1	17.54	27.510			
3,800.0	3,709.3	3,792.7	3,772.1	15.9	9.8	169.90	-216.3	-118.9	496.2	478.1	18.10	27.408			
3,900.0	3,805.6	3,891.8	3,870.2	16.4	10.1	169.75	-229.2	-124.4	509.8	491.1	18.67	27.310			
4,000.0	3,902.0	3,990.8	3,968.3	17.0	10.4	169.61	-242.1	-130.0	523.4	504.2	19.23	27.215			
4,100.0	3,998.4	4,089.9	4,066.3	17.5	10.8	169.48	-255.0	-135.6	537.0	517.2	19.80	27.124			
4,200.0	4,094.8	4,189.0	4,164.4	18.1	11.1	169.35	-267.9	-141.2	550.6	530.2	20.36	27.036			
4,300.0	4,191.2	4,288.0	4,262.5	18.6	11.5	169.23	-280.8	-146.7	564.2	543.2	20.93	26.952			
4,400.0	4,287.6	4,387.1	4,360.5	19.2	11.8	169.11	-293.7	-152.3	577.7	556.2	21.50	26.871			
4,500.0	4,384.0	4,486.2	4,458.6	19.7	12.1	169.00	-306.7	-157.9	591.3	569.3	22.07	26.792			
4,600.0	4,480.4	4,585.2	4,556.6	20.3	12.5	168.90	-319.6	-163.5	604.9	582.3	22.64	26.717			
4,700.0	4,576.8	4,684.3	4,654.7	20.8	12.8	168.80	-332.5	-169.1	618.5	595.3	23.22	26.644			
4,800.0	4,673.2	4,783.4	4,752.8	21.4	13.2	168.70	-345.4	-174.6	632.2	608.4	23.79	26.574			
4,900.0	4,769.6	4,872.6	4,841.2	22.0	13.4	168.64	-356.6	-179.5	646.2	621.9	24.32	26.567			

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 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #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										
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre +N/-S	+E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning				
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)						
5,000.0	4,866.0	4,954.5	4,922.6	22.5	13.6	168.66	-365.0	-183.1	662.6	637.8	24.80	26.711					
5,100.0	4,962.3	5,035.6	5,003.4	23.1	13.8	168.77	-371.2	-185.8	681.5	656.2	25.26	26.976					
5,200.0	5,058.7	5,115.8	5,083.5	23.6	14.0	168.96	-375.2	-187.5	702.8	677.1	25.70	27.349					
5,300.0	5,155.1	5,200.0	5,167.6	24.2	14.1	169.23	-377.2	-188.4	726.7	700.5	26.12	27.816					
5,400.0	5,251.5	5,282.9	5,250.5	24.7	14.3	169.55	-377.4	-188.4	752.6	726.0	26.54	28.355					
5,500.0	5,347.9	5,379.3	5,346.9	25.3	14.4	169.91	-377.4	-188.4	778.8	751.8	26.97	28.877					

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #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			
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	Angle (°)	+N/-S (ft)	+E/-W (ft)	Depth (ft)	Depth (ft)	Depth (ft)	Factor			
0.0	0.0	0.0	0.0	0.0	0.0	1.04	15.3	0.3	15.3	15.3	0.00	N/A			
100.0	100.0	99.0	99.0	0.1	0.1	1.04	15.3	0.3	15.3	15.1	0.22	68.409			
200.0	200.0	199.0	199.0	0.3	0.3	1.04	15.3	0.3	15.3	14.6	0.67	22.765			
300.0	300.0	299.0	299.0	0.6	0.6	1.04	15.3	0.3	15.3	14.2	1.12	13.641			
400.0	400.0	399.0	399.0	0.8	0.8	1.04	15.3	0.3	15.3	13.7	1.57	9.738			
500.0	500.0	499.0	499.0	1.0	1.0	1.04	15.3	0.3	15.3	13.3	2.02	7.571			
600.0	600.0	599.0	599.0	1.2	1.2	1.04	15.3	0.3	15.3	12.8	2.47	6.194 CC			
700.0	700.0	699.0	699.0	1.4	1.5	173.28	15.3	0.3	16.6	13.7	2.89	5.733			
800.0	799.9	798.9	798.9	1.6	1.7	174.56	15.3	0.3	20.5	17.2	3.31	6.203			
900.0	899.7	899.4	899.4	1.8	1.9	175.59	14.0	0.1	25.7	22.0	3.70	6.962			
1,000.0	999.3	1,000.0	999.9	2.0	2.1	176.14	10.1	-0.6	31.0	26.9	4.08	7.600			
1,100.0	1,098.6	1,100.7	1,100.4	2.3	2.3	176.41	3.6	-1.8	36.2	31.7	4.47	8.100			
1,200.0	1,197.5	1,201.6	1,200.9	2.6	2.5	176.51	-5.5	-3.3	41.4	36.5	4.88	8.492			
1,300.0	1,296.1	1,302.6	1,301.2	2.9	2.7	176.50	-17.2	-5.4	46.6	41.3	5.30	8.799			
1,400.0	1,394.2	1,403.8	1,401.3	3.2	3.0	176.41	-31.6	-7.9	51.8	46.1	5.73	9.037			
1,500.0	1,491.7	1,505.1	1,501.1	3.6	3.3	176.25	-48.6	-10.9	56.9	50.8	6.18	9.217			
1,600.0	1,588.6	1,606.5	1,600.6	4.1	3.6	176.06	-68.3	-14.3	62.0	55.4	6.64	9.348			
1,629.3	1,616.9	1,636.3	1,629.6	4.2	3.7	176.00	-74.5	-15.4	63.5	56.8	6.78	9.377			
1,700.0	1,685.0	1,708.1	1,699.6	4.6	4.0	175.79	-90.6	-18.2	66.5	59.3	7.13	9.328			
1,800.0	1,781.4	1,808.2	1,796.8	5.1	4.4	175.44	-114.0	-22.3	69.5	61.9	7.63	9.104			
1,900.0	1,877.8	1,908.2	1,893.9	5.6	4.9	175.12	-137.4	-26.4	72.5	64.4	8.15	8.893			
2,000.0	1,974.2	2,008.1	1,991.0	6.1	5.3	174.82	-160.7	-30.5	75.5	66.8	8.68	8.699			
2,100.0	2,070.6	2,108.1	2,088.1	6.6	5.8	174.54	-184.1	-34.5	78.5	69.3	9.22	8.521			
2,200.0	2,167.0	2,208.0	2,185.2	7.2	6.2	174.29	-207.5	-38.6	81.6	71.8	9.76	8.356			
2,300.0	2,263.4	2,308.0	2,282.3	7.7	6.7	174.05	-230.9	-42.7	84.6	74.3	10.31	8.205			
2,400.0	2,359.8	2,408.0	2,379.4	8.2	7.2	173.83	-254.3	-46.8	87.6	76.8	10.86	8.065			
2,500.0	2,456.2	2,507.9	2,476.5	8.8	7.7	173.63	-277.7	-50.9	90.6	79.2	11.42	7.936			
2,600.0	2,552.6	2,607.9	2,573.6	9.3	8.2	173.43	-301.1	-54.9	93.7	81.7	11.98	7.816			
2,700.0	2,649.0	2,707.8	2,670.7	9.8	8.6	173.25	-324.4	-59.0	96.7	84.1	12.55	7.705			
2,800.0	2,745.3	2,807.8	2,767.8	10.4	9.1	173.08	-347.8	-63.1	99.7	86.6	13.12	7.602			
2,900.0	2,841.7	2,907.7	2,864.9	10.9	9.6	172.92	-371.2	-67.2	102.8	89.1	13.69	7.506			
3,000.0	2,938.1	3,007.7	2,962.0	11.5	10.1	172.77	-394.6	-71.3	105.8	91.5	14.26	7.417			
3,100.0	3,034.5	3,107.6	3,059.1	12.0	10.6	172.63	-418.0	-75.4	108.8	94.0	14.84	7.333			
3,200.0	3,130.9	3,207.6	3,156.1	12.6	11.1	172.50	-441.4	-79.4	111.8	96.4	15.42	7.255			
3,300.0	3,227.3	3,307.5	3,253.2	13.1	11.6	172.37	-464.8	-83.5	114.9	98.9	16.00	7.181			
3,400.0	3,323.7	3,407.5	3,350.3	13.7	12.1	172.25	-488.2	-87.6	117.9	101.3	16.58	7.112			
3,500.0	3,420.1	3,507.4	3,447.4	14.2	12.6	172.14	-511.5	-91.7	120.9	103.8	17.16	7.047			
3,600.0	3,516.5	3,607.4	3,544.5	14.8	13.1	172.03	-534.9	-95.8	124.0	106.2	17.75	6.986			
3,700.0	3,612.9	3,707.4	3,641.6	15.3	13.6	171.92	-558.3	-99.9	127.0	108.7	18.33	6.929			
3,800.0	3,709.3	3,807.3	3,738.7	15.9	14.1	171.83	-581.7	-103.9	130.1	111.1	18.92	6.874			
3,900.0	3,805.6	3,907.3	3,835.8	16.4	14.6	171.73	-605.1	-108.0	133.1	113.6	19.51	6.822			
4,000.0	3,902.0	4,007.2	3,932.9	17.0	15.1	171.64	-628.5	-112.1	136.1	116.0	20.10	6.773			
4,100.0	3,998.4	4,107.2	4,030.0	17.5	15.6	171.56	-651.9	-116.2	139.2	118.5	20.69	6.727			
4,200.0	4,094.8	4,207.1	4,127.1	18.1	16.1	171.47	-675.3	-120.3	142.2	120.9	21.28	6.683			
4,300.0	4,191.2	4,307.1	4,224.2	18.6	16.6	171.39	-698.6	-124.4	145.2	123.4	21.87	6.641			
4,400.0	4,287.6	4,407.0	4,321.3	19.2	17.1	171.32	-722.0	-128.4	148.3	125.8	22.46	6.601			
4,500.0	4,384.0	4,507.0	4,418.4	19.7	17.6	171.25	-745.4	-132.5	151.3	128.2	23.05	6.563			
4,600.0	4,480.4	4,606.9	4,515.5	20.3	18.1	171.18	-768.8	-136.6	154.3	130.7	23.65	6.526			
4,700.0	4,576.8	4,706.9	4,612.5	20.8	18.6	171.11	-792.2	-140.7	157.4	133.1	24.24	6.492			
4,800.0	4,673.2	4,806.8	4,709.6	21.4	19.1	171.04	-815.6	-144.8	160.4	135.6	24.84	6.459			
4,900.0	4,769.6	4,906.8	4,806.7	22.0	19.6	170.98	-839.0	-148.9	163.5	138.0	25.43	6.427			

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 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #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-232 - 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		
5,000.0	4,866.0	5,006.8	4,903.8	22.5	20.1	170.92	-862.4	-152.9	166.5	140.5	26.03	6.396		
5,100.0	4,962.3	5,106.7	5,000.9	23.1	20.6	170.86	-885.7	-157.0	169.5	142.9	26.63	6.367		
5,200.0	5,058.7	5,206.7	5,098.0	23.6	21.1	170.81	-909.1	-161.1	172.6	145.3	27.22	6.339		
5,300.0	5,155.1	5,306.6	5,195.1	24.2	21.6	170.75	-932.5	-165.2	175.6	147.8	27.82	6.312		
5,400.0	5,251.5	5,406.6	5,292.2	24.7	22.1	170.70	-955.9	-169.3	178.6	150.2	28.42	6.286		
5,500.0	5,347.9	5,506.5	5,389.3	25.3	22.6	170.65	-979.3	-173.3	181.7	152.7	29.02	6.261		
5,592.8	5,437.4	5,595.6	5,476.0	25.8	23.0	170.64	-999.6	-176.9	185.1	155.6	29.54	6.266		
5,600.0	5,444.3	5,600.0	5,480.3	25.8	23.0	170.65	-1,000.5	-177.1	185.5	155.9	29.58	6.272		
5,700.0	5,541.2	5,696.2	5,574.5	26.2	23.3	170.74	-1,019.5	-180.4	190.4	160.3	30.07	6.331		
5,800.0	5,638.9	5,789.9	5,666.9	26.5	23.6	170.83	-1,034.9	-183.1	195.0	164.5	30.50	6.395		
5,900.0	5,737.3	5,883.5	5,759.6	26.8	23.8	170.94	-1,047.4	-185.2	199.5	168.6	30.86	6.463		
6,000.0	5,836.2	5,976.9	5,852.5	27.1	24.0	171.05	-1,056.8	-186.9	203.7	172.5	31.16	6.535		
6,100.0	5,935.6	6,070.2	5,945.6	27.3	24.2	171.18	-1,063.2	-188.0	207.6	176.2	31.41	6.611		
6,200.0	6,035.3	6,163.5	6,038.8	27.5	24.3	171.31	-1,066.7	-188.6	211.3	179.7	31.58	6.691		
6,300.0	6,135.3	6,258.9	6,134.3	27.6	24.4	171.44	-1,067.3	-188.7	214.6	182.9	31.71	6.766		
6,364.7	6,200.0	6,323.7	6,199.0	27.7	24.5	-0.19	-1,067.3	-188.7	215.3	163.6	51.70	4.165		
6,400.0	6,235.3	6,358.9	6,234.3	27.7	24.5	-0.19	-1,067.3	-188.7	215.3	163.5	51.76	4.159		
6,463.2	6,298.5	6,422.2	6,297.5	27.7	24.6	-0.06	-1,067.3	-188.2	215.3	163.4	51.90	4.149		
6,500.0	6,335.3	6,458.9	6,334.1	27.8	24.6	0.52	-1,067.3	-186.0	215.3	163.3	52.02	4.139		
6,529.0	6,364.2	6,487.5	6,362.6	27.8	24.7	1.30	-1,067.3	-183.1	215.4	163.2	52.14	4.130		
6,550.0	6,385.3	6,508.3	6,383.1	27.8	24.7	-88.21	-1,067.3	-180.3	215.4	183.4	32.05	6.721		
6,600.0	6,435.2	6,557.2	6,431.3	27.9	24.7	-86.62	-1,067.3	-171.5	215.7	183.7	32.00	6.742		
6,650.0	6,484.7	6,605.8	6,478.5	27.9	24.7	-85.07	-1,067.3	-159.8	216.2	184.2	31.96	6.764		
6,700.0	6,533.8	6,654.1	6,524.4	27.9	24.8	-83.54	-1,067.3	-145.2	216.8	184.9	31.96	6.786		
6,750.0	6,582.2	6,702.0	6,569.1	28.0	24.8	-82.06	-1,067.3	-127.8	217.6	185.6	31.98	6.805		
6,800.0	6,629.6	6,750.0	6,612.7	28.0	24.8	-80.61	-1,067.3	-107.7	218.5	186.5	32.03	6.822		
6,850.0	6,675.9	6,796.9	6,653.9	28.0	24.8	-79.24	-1,067.3	-85.4	219.5	187.4	32.11	6.836		
6,900.0	6,720.8	6,843.9	6,693.8	28.0	24.8	-77.92	-1,067.3	-60.5	220.6	188.4	32.23	6.847		
6,950.0	6,764.3	6,890.6	6,731.8	28.0	24.9	-76.66	-1,067.3	-33.5	221.8	189.5	32.36	6.854		
7,000.0	6,806.0	6,937.1	6,768.0	28.1	24.9	-75.47	-1,067.3	-4.3	223.1	190.6	32.53	6.858		
7,050.0	6,845.8	6,983.3	6,802.1	28.1	24.9	-74.34	-1,067.3	26.9	224.4	191.6	32.75	6.852		
7,100.0	6,883.5	7,029.3	6,834.1	28.1	24.9	-73.30	-1,067.3	59.9	225.7	192.8	32.91	6.858		
7,150.0	6,919.1	7,075.1	6,864.0	28.1	25.0	-72.32	-1,067.3	94.6	227.0	193.8	33.18	6.841		
7,200.0	6,952.2	7,120.7	6,891.6	28.2	25.0	-71.43	-1,067.3	130.9	228.3	194.8	33.47	6.820		
7,250.0	6,982.9	7,166.1	6,916.9	28.2	25.1	-70.61	-1,067.3	168.6	229.5	195.7	33.81	6.787		
7,300.0	7,010.9	7,211.3	6,939.9	28.3	25.2	-69.87	-1,067.3	207.6	230.7	196.5	34.22	6.742		
7,350.0	7,036.1	7,256.5	6,960.4	28.4	25.3	-69.22	-1,067.3	247.8	231.8	197.1	34.69	6.681		
7,400.0	7,058.4	7,300.0	6,977.9	28.5	25.5	-68.66	-1,067.3	287.6	232.8	197.6	35.23	6.608		
7,450.0	7,077.8	7,346.3	6,994.1	28.7	25.6	-68.15	-1,067.3	331.0	233.8	197.8	35.91	6.510		
7,500.0	7,094.1	7,391.1	7,007.1	28.9	25.9	-67.73	-1,067.3	373.9	234.6	197.9	36.66	6.398		
7,550.0	7,107.3	7,435.8	7,017.6	29.1	26.1	-67.40	-1,067.3	417.3	235.3	197.7	37.53	6.269		
7,600.0	7,117.3	7,480.5	7,025.6	29.4	26.5	-67.14	-1,067.3	461.3	235.9	197.4	38.50	6.125		
7,650.0	7,124.1	7,525.1	7,030.9	29.7	26.9	-66.97	-1,067.3	505.6	236.3	196.7	39.59	5.969		
7,700.0	7,127.6	7,569.7	7,033.7	30.1	27.3	-66.88	-1,067.3	550.1	236.6	195.8	40.78	5.802		
7,737.0	7,128.1	7,602.8	7,034.1	30.5	27.7	-66.86	-1,067.3	583.1	236.8	195.0	41.73	5.673		
7,800.0	7,127.5	7,665.8	7,033.5	31.2	28.6	-66.90	-1,067.3	646.2	236.9	192.7	44.15	5.365		
7,900.0	7,126.4	7,765.8	7,032.7	32.5	30.2	-66.97	-1,067.3	746.2	237.1	188.9	48.19	4.921		
8,000.0	7,125.4	7,865.8	7,031.8	34.1	32.1	-67.04	-1,067.3	846.2	237.3	184.9	52.43	4.526		
8,100.0	7,124.3	7,965.8	7,030.9	35.9	34.2	-67.11	-1,067.3	946.2	237.5	180.7	56.85	4.179		
8,200.0	7,123.3	8,065.8	7,030.1	37.9	36.4	-67.18	-1,067.3	1,046.1	237.8	176.4	61.40	3.873		

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 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #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			
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
8,300.0	7,122.2	8,165.8	7,029.2	40.0	38.6	-67.24	-1,067.3	1,146.1	238.0	171.9	66.05	3.603			
8,400.0	7,121.2	8,265.8	7,028.3	42.3	41.0	-67.31	-1,067.3	1,246.1	238.2	167.4	70.79	3.365			
8,500.0	7,120.1	8,365.8	7,027.4	44.6	43.4	-67.38	-1,067.3	1,346.1	238.4	162.8	75.61	3.153			
8,600.0	7,119.1	8,465.8	7,026.6	47.0	45.9	-67.45	-1,067.3	1,446.1	238.6	158.2	80.48	2.965			
8,700.0	7,118.0	8,565.8	7,025.7	49.4	48.4	-67.51	-1,067.3	1,546.1	238.9	153.5	85.40	2.797			
8,800.0	7,117.0	8,665.8	7,024.8	51.9	51.0	-67.58	-1,067.3	1,646.1	239.1	148.7	90.37	2.646			
8,900.0	7,115.9	8,765.8	7,023.9	54.4	53.5	-67.65	-1,067.3	1,746.1	239.3	143.9	95.37	2.509			
9,000.0	7,114.9	8,865.8	7,023.1	57.0	56.1	-67.72	-1,067.3	1,846.1	239.5	139.1	100.40	2.386			
9,100.0	7,113.8	8,965.8	7,022.2	59.6	58.8	-67.78	-1,067.3	1,946.1	239.8	134.3	105.47	2.273			
9,200.0	7,112.8	9,065.8	7,021.3	62.2	61.4	-67.85	-1,067.3	2,046.1	240.0	129.4	110.55	2.171			
9,300.0	7,111.7	9,165.8	7,020.5	64.8	64.1	-67.92	-1,067.3	2,146.1	240.2	124.5	115.66	2.077			
9,400.0	7,110.7	9,265.8	7,019.6	67.4	66.7	-67.98	-1,067.3	2,246.1	240.4	119.6	120.79	1.990			
9,500.0	7,109.7	9,365.8	7,018.7	70.1	69.4	-68.05	-1,067.3	2,346.1	240.6	114.7	125.93	1.911			
9,600.0	7,108.6	9,465.8	7,017.8	72.7	72.1	-68.12	-1,067.3	2,446.1	240.9	109.8	131.09	1.837			
9,700.0	7,107.6	9,565.8	7,017.0	75.4	74.8	-68.18	-1,067.3	2,546.1	241.1	104.8	136.27	1.769			
9,800.0	7,106.5	9,665.8	7,016.1	78.1	77.5	-68.25	-1,067.3	2,646.1	241.3	99.9	141.46	1.706			
9,900.0	7,105.5	9,765.8	7,015.2	80.8	80.2	-68.31	-1,067.3	2,746.1	241.5	94.9	146.66	1.647			
10,000.0	7,104.4	9,865.8	7,014.3	83.5	82.9	-68.38	-1,067.3	2,846.1	241.8	89.9	151.88	1.592			
10,100.0	7,103.4	9,965.8	7,013.5	86.2	85.7	-68.44	-1,067.3	2,946.1	242.0	84.9	157.11	1.540			
10,200.0	7,102.3	10,065.8	7,012.6	88.9	88.4	-68.51	-1,067.3	3,046.1	242.2	79.9	162.34	1.492	Level 3		
10,300.0	7,101.3	10,165.8	7,011.7	91.6	91.1	-68.58	-1,067.3	3,146.1	242.4	74.9	167.59	1.447	Level 3		
10,400.0	7,100.2	10,265.8	7,010.9	94.4	93.9	-68.64	-1,067.3	3,246.1	242.7	69.8	172.84	1.404	Level 3		
10,500.0	7,099.2	10,365.8	7,010.0	97.1	96.6	-68.71	-1,067.3	3,346.0	242.9	64.8	178.10	1.364	Level 3		
10,600.0	7,098.1	10,465.8	7,009.1	99.8	99.3	-68.77	-1,067.3	3,446.0	243.1	59.8	183.38	1.326	Level 3		
10,700.0	7,097.1	10,565.8	7,008.2	102.6	102.1	-68.84	-1,067.3	3,546.0	243.4	54.7	188.66	1.290	Level 3		
10,800.0	7,096.0	10,665.8	7,007.4	105.3	104.9	-68.90	-1,067.3	3,646.0	243.6	49.6	193.94	1.256	Level 3		
10,900.0	7,095.0	10,765.8	7,006.5	108.1	107.6	-68.96	-1,067.3	3,746.0	243.8	44.6	199.24	1.224	Level 2		
11,000.0	7,093.9	10,865.8	7,005.6	110.8	110.4	-69.03	-1,067.3	3,846.0	244.0	39.5	204.54	1.193	Level 2		
11,100.0	7,092.9	10,965.8	7,004.7	113.6	113.1	-69.09	-1,067.3	3,946.0	244.3	34.4	209.84	1.164	Level 2		
11,200.0	7,091.9	11,065.8	7,003.9	116.3	115.9	-69.16	-1,067.3	4,046.0	244.5	29.3	215.16	1.136	Level 2		
11,300.0	7,090.8	11,165.8	7,003.0	119.1	118.7	-69.22	-1,067.3	4,146.0	244.7	24.2	220.48	1.110	Level 2		
11,400.0	7,089.8	11,265.8	7,002.1	121.8	121.4	-69.29	-1,067.3	4,246.0	245.0	19.2	225.80	1.085	Level 2		
11,500.0	7,088.7	11,365.8	7,001.3	124.6	124.2	-69.35	-1,067.3	4,346.0	245.2	14.0	231.14	1.061	Level 2		
11,600.0	7,087.7	11,465.8	7,000.4	127.4	127.0	-69.41	-1,067.3	4,446.0	245.4	8.9	236.47	1.038	Level 2		
11,700.0	7,086.6	11,565.8	6,999.5	130.1	129.7	-69.48	-1,067.3	4,546.0	245.6	3.8	241.82	1.016	Level 2		
11,758.7	7,086.0	11,624.1	6,999.0	131.7	131.4	-69.51	-1,067.3	4,604.3	245.8	0.8	244.94	1.003	Level 2, ES, SF		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design		Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W - Wiedeman Federal 22H-302 - 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	0.71	45.2	0.6	45.2								
100.0	100.0	99.0	99.0	0.1	0.1	0.71	45.2	0.6	45.2	45.0	0.22	202.005					
200.0	200.0	199.0	199.0	0.3	0.3	0.71	45.2	0.6	45.2	44.5	0.67	67.223					
300.0	300.0	299.0	299.0	0.6	0.6	0.71	45.2	0.6	45.2	44.1	1.12	40.280					
400.0	400.0	399.0	399.0	0.8	0.8	0.71	45.2	0.6	45.2	43.6	1.57	28.755					
500.0	500.0	499.0	499.0	1.0	1.0	0.71	45.2	0.6	45.2	43.2	2.02	22.358					
600.0	600.0	599.0	599.0	1.2	1.2	0.71	45.2	0.6	45.2	42.7	2.47	18.289 CC, ES					
700.0	700.0	699.0	699.0	1.4	1.5	172.58	45.2	0.6	46.5	43.6	2.89	16.054					
800.0	799.9	798.9	798.9	1.6	1.7	173.15	45.2	0.6	50.4	47.1	3.31	15.240					
900.0	899.7	898.7	898.7	1.8	1.9	173.93	45.2	0.6	56.9	53.1	3.73	15.264					
1,000.0	999.3	998.3	998.3	2.0	2.1	174.75	45.2	0.6	66.0	61.8	4.15	15.885					
1,100.0	1,098.6	1,097.6	1,097.6	2.3	2.4	175.53	45.2	0.6	77.7	73.1	4.59	16.944					
1,200.0	1,197.5	1,196.5	1,196.5	2.6	2.6	176.21	45.2	0.6	92.0	87.0	5.02	18.328					
1,300.0	1,296.1	1,297.8	1,297.8	2.9	2.8	176.68	44.0	0.2	107.7	102.3	5.43	19.826					
1,400.0	1,394.2	1,399.6	1,399.5	3.2	3.0	176.85	40.2	-0.9	123.4	117.6	5.82	21.192					
1,500.0	1,491.7	1,501.8	1,501.5	3.6	3.1	176.82	33.7	-2.8	139.1	132.9	6.23	22.343					
1,600.0	1,588.6	1,604.4	1,603.7	4.1	3.3	176.66	24.6	-5.4	154.8	148.2	6.64	23.306					
1,629.3	1,616.9	1,634.6	1,633.6	4.2	3.4	176.59	21.5	-6.3	159.4	152.7	6.77	23.554					
1,700.0	1,685.0	1,707.6	1,706.1	4.6	3.6	176.40	12.8	-8.8	169.9	162.8	7.09	23.968					
1,800.0	1,781.4	1,811.5	1,808.9	5.1	3.8	176.00	-1.7	-13.0	182.4	174.8	7.55	24.143					
1,900.0	1,877.8	1,912.1	1,908.1	5.6	4.1	175.55	-17.7	-17.6	193.0	185.0	8.03	24.031					
2,000.0	1,974.2	2,011.5	2,006.2	6.1	4.4	175.15	-33.5	-22.2	203.6	195.0	8.52	23.893					
2,100.0	2,070.6	2,111.0	2,104.2	6.6	4.7	174.78	-49.4	-26.8	214.1	205.1	9.01	23.755					
2,200.0	2,167.0	2,210.4	2,202.3	7.2	5.0	174.45	-65.2	-31.4	224.7	215.2	9.52	23.607					
2,300.0	2,263.4	2,309.8	2,300.3	7.7	5.3	174.15	-81.0	-36.0	235.3	225.3	10.03	23.459					
2,400.0	2,359.8	2,409.2	2,398.4	8.2	5.7	173.87	-96.9	-40.6	245.9	235.4	10.55	23.313					
2,500.0	2,456.2	2,508.7	2,496.4	8.8	6.0	173.62	-112.7	-45.2	256.5	245.4	11.07	23.170					
2,600.0	2,552.6	2,608.1	2,594.5	9.3	6.4	173.39	-128.5	-49.7	267.1	255.5	11.60	23.031					
2,700.0	2,649.0	2,707.5	2,692.5	9.8	6.7	173.18	-144.4	-54.3	277.7	265.6	12.13	22.896					
2,800.0	2,745.3	2,807.0	2,790.6	10.4	7.1	172.98	-160.2	-58.9	288.3	275.7	12.67	22.767					
2,900.0	2,841.7	2,906.4	2,888.6	10.9	7.4	172.79	-176.0	-63.5	299.0	285.8	13.20	22.643					
3,000.0	2,938.1	3,005.8	2,986.7	11.5	7.8	172.62	-191.9	-68.1	309.6	295.8	13.74	22.524					
3,100.0	3,034.5	3,105.3	3,084.8	12.0	8.1	172.46	-207.7	-72.7	320.2	305.9	14.29	22.410					
3,200.0	3,130.9	3,204.7	3,182.8	12.6	8.5	172.31	-223.5	-77.2	330.8	316.0	14.84	22.300					
3,300.0	3,227.3	3,304.1	3,280.9	13.1	8.9	172.17	-239.4	-81.8	341.5	326.1	15.38	22.196					
3,400.0	3,323.7	3,403.5	3,378.9	13.7	9.2	172.04	-255.2	-86.4	352.1	336.2	15.93	22.096					
3,500.0	3,420.1	3,503.0	3,477.0	14.2	9.6	171.91	-271.1	-91.0	362.7	346.2	16.49	22.001					
3,600.0	3,516.5	3,602.4	3,575.0	14.8	10.0	171.80	-286.9	-95.6	373.4	356.3	17.04	21.910					
3,700.0	3,612.9	3,701.8	3,673.1	15.3	10.4	171.69	-302.7	-100.2	384.0	366.4	17.60	21.822					
3,800.0	3,709.3	3,801.3	3,771.1	15.9	10.7	171.58	-318.6	-104.8	394.6	376.5	18.15	21.739					
3,900.0	3,805.6	3,900.7	3,869.2	16.4	11.1	171.48	-334.4	-109.3	405.3	386.6	18.71	21.659					
4,000.0	3,902.0	4,000.1	3,967.2	17.0	11.5	171.39	-350.2	-113.9	415.9	396.6	19.27	21.582					
4,100.0	3,998.4	4,099.6	4,065.3	17.5	11.9	171.30	-366.1	-118.5	426.5	406.7	19.83	21.509					
4,200.0	4,094.8	4,199.0	4,163.3	18.1	12.2	171.21	-381.9	-123.1	437.2	416.8	20.39	21.439					
4,300.0	4,191.2	4,298.4	4,261.4	18.6	12.6	171.13	-397.7	-127.7	447.8	426.9	20.95	21.371					
4,400.0	4,287.6	4,397.8	4,359.5	19.2	13.0	171.05	-413.6	-132.3	458.5	437.0	21.52	21.307					
4,500.0	4,384.0	4,497.3	4,457.5	19.7	13.4	170.98	-429.4	-136.9	469.1	447.0	22.08	21.245					
4,600.0	4,480.4	4,596.7	4,555.6	20.3	13.8	170.91	-445.2	-141.4	479.8	457.1	22.65	21.185					
4,700.0	4,576.8	4,696.1	4,653.6	20.8	14.1	170.84	-461.1	-146.0	490.4	467.2	23.21	21.128					
4,800.0	4,673.2	4,795.6	4,751.7	21.4	14.5	170.78	-476.9	-150.6	501.0	477.3	23.78	21.072					
4,900.0	4,769.6	4,895.0	4,849.7	22.0	14.9	170.71	-492.7	-155.2	511.7	487.3	24.34	21.019					

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 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W - Wiedeman Federal 22H-302 - Wellbore #1 -													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical 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	4,866.0	4,994.4	4,947.8	22.5	15.3	170.66	-508.6	-159.8	522.3	497.4	24.91	20.968		
5,100.0	4,962.3	5,093.9	5,045.8	23.1	15.7	170.60	-524.4	-164.4	533.0	507.5	25.48	20.919		
5,200.0	5,058.7	5,193.3	5,143.9	23.6	16.1	170.54	-540.3	-168.9	543.6	517.6	26.05	20.871		
5,300.0	5,155.1	5,292.7	5,241.9	24.2	16.4	170.49	-556.1	-173.5	554.3	527.7	26.62	20.825		
5,400.0	5,251.5	5,389.7	5,337.6	24.7	16.8	170.44	-571.5	-178.0	565.0	537.8	27.18	20.789		
5,500.0	5,347.9	5,473.1	5,420.1	25.3	17.0	170.45	-583.3	-181.4	577.4	549.8	27.66	20.876		
5,592.8	5,437.4	5,549.9	5,496.3	25.8	17.2	170.52	-592.1	-184.0	591.4	563.3	28.09	21.054		
5,600.0	5,444.3	5,555.8	5,502.2	25.8	17.2	170.53	-592.7	-184.1	592.6	564.5	28.13	21.069		
5,700.0	5,541.2	5,638.0	5,584.1	26.2	17.4	170.69	-599.8	-186.2	608.6	580.0	28.58	21.292		
5,800.0	5,638.9	5,720.0	5,665.9	26.5	17.5	170.87	-604.6	-187.6	623.9	594.9	28.98	21.524		
5,900.0	5,737.3	5,800.0	5,745.9	26.8	17.7	171.05	-607.1	-188.3	638.4	609.1	29.33	21.769		
6,000.0	5,836.2	5,889.4	5,835.2	27.1	17.8	171.26	-607.6	-188.4	652.1	622.5	29.64	22.000		
6,100.0	5,935.6	5,988.8	5,934.6	27.3	17.9	171.43	-607.6	-188.4	663.0	633.0	29.92	22.157		
6,200.0	6,035.3	6,088.5	6,034.3	27.5	18.1	171.55	-607.6	-188.4	670.4	640.2	30.16	22.227		
6,300.0	6,135.3	6,188.4	6,134.3	27.6	18.2	171.61	-607.6	-188.4	674.3	644.0	30.36	22.210		
6,364.7	6,200.0	6,253.1	6,199.0	27.7	18.3	-0.04	-607.6	-188.4	675.1	629.6	45.42	14.861		
6,400.0	6,235.3	6,288.4	6,234.3	27.7	18.3	-0.04	-607.6	-188.4	675.1	629.5	45.51	14.834		
6,500.0	6,335.3	6,388.4	6,334.3	27.8	18.5	-0.04	-607.6	-188.4	675.1	629.3	45.73	14.761		
6,529.0	6,364.2	6,417.4	6,363.2	27.8	18.5	-0.04	-607.6	-188.4	675.1	629.3	45.80	14.740		
6,550.0	6,385.3	6,438.4	6,384.3	27.8	18.5	-90.22	-607.6	-188.2	675.1	644.0	31.10	21.709		
6,600.0	6,435.2	6,488.5	6,434.2	27.9	18.6	-90.24	-607.6	-185.5	675.1	643.8	31.25	21.603		
6,650.0	6,484.7	6,538.5	6,483.9	27.9	18.7	-90.26	-607.6	-179.4	675.1	643.7	31.38	21.515		
6,700.0	6,533.8	6,588.6	6,533.1	27.9	18.7	-90.28	-607.6	-170.2	675.1	643.6	31.48	21.443		
6,750.0	6,582.2	6,638.7	6,581.6	28.0	18.8	-90.30	-607.6	-157.7	675.2	643.6	31.57	21.383		
6,800.0	6,629.6	6,688.8	6,629.2	28.0	18.8	-90.31	-607.6	-142.0	675.2	643.6	31.65	21.332		
6,850.0	6,675.9	6,738.9	6,675.7	28.0	18.8	-90.33	-607.6	-123.3	675.3	643.5	31.73	21.284		
6,900.0	6,720.8	6,789.0	6,720.8	28.0	18.8	-90.34	-607.6	-101.5	675.3	643.5	31.81	21.230		
6,950.0	6,764.3	6,839.2	6,764.5	28.0	18.9	-90.35	-607.6	-76.9	675.4	643.5	31.91	21.164		
7,000.0	6,806.0	6,889.3	6,806.4	28.1	18.9	-90.36	-607.6	-49.4	675.5	643.4	32.05	21.074		
7,050.0	6,845.8	6,939.5	6,846.5	28.1	18.9	-90.37	-607.6	-19.2	675.6	643.3	32.25	20.949		
7,100.0	6,883.5	6,989.7	6,884.5	28.1	19.0	-90.37	-607.6	13.6	675.7	643.2	32.52	20.778		
7,150.0	6,919.1	7,039.9	6,920.3	28.1	19.0	-90.38	-607.6	48.8	675.8	642.9	32.89	20.550		
7,200.0	6,952.2	7,090.1	6,953.7	28.2	19.1	-90.38	-607.6	86.2	675.9	642.6	33.36	20.259		
7,250.0	6,982.9	7,140.3	6,984.5	28.2	19.1	-90.38	-607.6	125.8	676.0	642.1	33.98	19.897		
7,300.0	7,010.9	7,190.5	7,012.7	28.3	19.2	-90.38	-607.6	167.4	676.2	641.4	34.74	19.466		
7,350.0	7,036.1	7,240.7	7,038.2	28.4	19.4	-90.38	-607.6	210.7	676.3	640.7	35.65	18.970		
7,400.0	7,058.4	7,291.0	7,060.7	28.5	19.6	-90.38	-607.6	255.6	676.5	639.7	36.73	18.416		
7,450.0	7,077.8	7,341.2	7,080.2	28.7	19.9	-90.37	-607.6	301.8	676.6	638.6	37.98	17.816		
7,500.0	7,094.1	7,391.5	7,096.6	28.9	20.4	-90.37	-607.6	349.3	676.7	637.4	39.38	17.185		
7,550.0	7,107.3	7,441.7	7,109.9	29.1	21.0	-90.36	-607.6	397.7	676.9	636.0	40.93	16.538		
7,600.0	7,117.3	7,492.0	7,120.0	29.4	21.8	-90.35	-607.6	447.0	677.0	634.4	42.62	15.887		
7,650.0	7,124.1	7,542.2	7,126.8	29.7	22.6	-90.34	-607.6	496.7	677.2	632.8	44.42	15.246		
7,700.0	7,127.6	7,592.4	7,130.4	30.1	23.5	-90.32	-607.6	546.8	677.4	631.0	46.32	14.624		
7,737.0	7,128.1	7,629.6	7,130.9	30.5	24.2	-90.31	-607.6	584.0	677.5	629.7	47.77	14.181		
7,800.0	7,127.5	7,692.6	7,130.4	31.2	25.4	-90.33	-607.6	647.0	677.7	627.3	50.35	13.459		
7,900.0	7,126.4	7,792.6	7,129.6	32.5	27.6	-90.35	-607.6	747.0	678.0	623.3	54.65	12.405		
8,000.0	7,125.4	7,892.6	7,128.8	34.1	29.8	-90.38	-607.6	847.0	678.3	619.1	59.17	11.463		
8,100.0	7,124.3	7,992.6	7,128.1	35.9	32.1	-90.40	-607.6	947.0	678.6	614.7	63.87	10.625		
8,200.0	7,123.3	8,092.6	7,127.3	37.9	34.5	-90.42	-607.6	1,047.0	678.9	610.2	68.71	9.882		
8,300.0	7,122.2	8,192.6	7,126.5	40.0	37.0	-90.45	-607.6	1,147.0	679.2	605.6	73.65	9.222		

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 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design		Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W - Wiedeman Federal 22H-302 - 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)				
8,400.0	7,121.2	8,292.6	7,125.8	42.3	39.5	-90.47	-607.6	1,247.0	679.6	600.9	78.69	8.636			
8,500.0	7,120.1	8,392.6	7,125.0	44.6	42.1	-90.49	-607.6	1,347.0	679.9	596.1	83.80	8.113			
8,600.0	7,119.1	8,492.6	7,124.2	47.0	44.6	-90.52	-607.6	1,447.0	680.2	591.2	88.97	7.645			
8,700.0	7,118.0	8,592.6	7,123.5	49.4	47.2	-90.54	-607.6	1,547.0	680.5	586.3	94.19	7.225			
8,800.0	7,117.0	8,692.6	7,122.7	51.9	49.9	-90.56	-607.6	1,647.0	680.8	581.4	99.46	6.845			
8,900.0	7,115.9	8,792.6	7,121.9	54.4	52.5	-90.59	-607.6	1,747.0	681.1	576.4	104.76	6.502			
9,000.0	7,114.9	8,892.6	7,121.2	57.0	55.2	-90.61	-607.6	1,847.0	681.4	571.3	110.09	6.190			
9,100.0	7,113.8	8,992.6	7,120.4	59.6	57.8	-90.63	-607.6	1,947.0	681.8	566.3	115.45	5.905			
9,200.0	7,112.8	9,092.6	7,119.6	62.2	60.5	-90.66	-607.6	2,047.0	682.1	561.2	120.84	5.645			
9,300.0	7,111.7	9,192.6	7,118.9	64.8	63.2	-90.68	-607.6	2,147.0	682.4	556.1	126.24	5.405			
9,400.0	7,110.7	9,292.6	7,118.1	67.4	65.9	-90.70	-607.6	2,246.9	682.7	551.0	131.66	5.185			
9,500.0	7,109.7	9,392.6	7,117.3	70.1	68.6	-90.73	-607.6	2,346.9	683.0	545.9	137.10	4.982			
9,600.0	7,108.6	9,492.6	7,116.6	72.7	71.4	-90.75	-607.6	2,446.9	683.3	540.8	142.55	4.794			
9,700.0	7,107.6	9,592.6	7,115.8	75.4	74.1	-90.77	-607.6	2,546.9	683.6	535.6	148.01	4.619			
9,800.0	7,106.5	9,692.6	7,115.0	78.1	76.8	-90.79	-607.6	2,646.9	684.0	530.5	153.49	4.456			
9,900.0	7,105.5	9,792.6	7,114.2	80.8	79.6	-90.82	-607.6	2,746.9	684.3	525.3	158.97	4.304			
10,000.0	7,104.4	9,892.6	7,113.5	83.5	82.3	-90.84	-607.6	2,846.9	684.6	520.1	164.47	4.162			
10,100.0	7,103.4	9,992.6	7,112.7	86.2	85.1	-90.86	-607.6	2,946.9	684.9	514.9	169.97	4.030			
10,200.0	7,102.3	10,092.6	7,111.9	88.9	87.8	-90.89	-607.6	3,046.9	685.2	509.7	175.48	3.905			
10,300.0	7,101.3	10,192.6	7,111.2	91.6	90.6	-90.91	-607.6	3,146.9	685.5	504.5	180.99	3.788			
10,400.0	7,100.2	10,292.6	7,110.4	94.4	93.3	-90.93	-607.6	3,246.9	685.9	499.3	186.51	3.677			
10,500.0	7,099.2	10,392.6	7,109.6	97.1	96.1	-90.96	-607.6	3,346.9	686.2	494.1	192.04	3.573			
10,600.0	7,098.1	10,492.6	7,108.9	99.8	98.9	-90.98	-607.6	3,446.9	686.5	488.9	197.57	3.475			
10,700.0	7,097.1	10,592.6	7,108.1	102.6	101.6	-91.00	-607.6	3,546.9	686.8	483.7	203.11	3.381			
10,800.0	7,096.0	10,692.6	7,107.3	105.3	104.4	-91.02	-607.6	3,646.9	687.1	478.5	208.65	3.293			
10,900.0	7,095.0	10,792.6	7,106.6	108.1	107.2	-91.05	-607.6	3,746.9	687.4	473.2	214.19	3.209			
11,000.0	7,093.9	10,892.6	7,105.8	110.8	109.9	-91.07	-607.6	3,846.9	687.7	468.0	219.74	3.130			
11,100.0	7,092.9	10,992.6	7,105.0	113.6	112.7	-91.09	-607.6	3,946.9	688.1	462.8	225.29	3.054			
11,200.0	7,091.9	11,092.6	7,104.3	116.3	115.5	-91.11	-607.6	4,046.9	688.4	457.5	230.84	2.982			
11,300.0	7,090.8	11,192.6	7,103.5	119.1	118.3	-91.14	-607.6	4,146.9	688.7	452.3	236.40	2.913			
11,400.0	7,089.8	11,292.6	7,102.7	121.8	121.0	-91.16	-607.6	4,246.9	689.0	447.1	241.96	2.848			
11,500.0	7,088.7	11,392.6	7,102.0	124.6	123.8	-91.18	-607.6	4,346.9	689.3	441.8	247.52	2.785			
11,600.0	7,087.7	11,492.6	7,101.2	127.4	126.6	-91.21	-607.6	4,446.9	689.7	436.6	253.08	2.725			
11,700.0	7,086.6	11,592.6	7,100.4	130.1	129.4	-91.23	-607.6	4,546.9	690.0	431.3	258.65	2.668			
11,758.7	7,086.0	11,648.0	7,100.0	131.7	130.9	-91.24	-607.6	4,602.3	690.2	428.3	261.83	2.636 SF			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #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 (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft) +E/-W (ft)		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	0.43	75.0	0.6	75.1					
100.0	100.0	99.0	99.0	0.1	0.1	0.43	75.0	0.6	75.0	74.8	0.22	335.555		
200.0	200.0	199.0	199.0	0.3	0.3	0.43	75.0	0.6	75.0	74.4	0.67	111.666		
300.0	300.0	299.0	299.0	0.6	0.6	0.43	75.0	0.6	75.0	73.9	1.12	66.910		
400.0	400.0	399.0	399.0	0.8	0.8	0.43	75.0	0.6	75.0	73.5	1.57	47.765		
500.0	500.0	499.0	499.0	1.0	1.0	0.43	75.0	0.6	75.0	73.0	2.02	37.139		
600.0	600.0	599.0	599.0	1.2	1.2	0.43	75.0	0.6	75.0	72.6	2.47	30.380	CC, ES	
700.0	700.0	699.0	699.0	1.4	1.5	172.22	75.0	0.6	76.3	73.4	2.89	26.370		
800.0	799.9	798.9	798.9	1.6	1.7	172.59	75.0	0.6	80.2	76.9	3.31	24.275		
900.0	899.7	898.7	898.7	1.8	1.9	173.14	75.0	0.6	86.7	83.0	3.73	23.276		
1,000.0	999.3	998.3	998.3	2.0	2.1	173.78	75.0	0.6	95.8	91.7	4.15	23.069	SF	
1,100.0	1,098.6	1,097.6	1,097.6	2.3	2.4	174.44	75.0	0.6	107.5	102.9	4.59	23.446		
1,200.0	1,197.5	1,196.5	1,196.5	2.6	2.6	175.07	75.0	0.6	121.8	116.8	5.02	24.261		
1,300.0	1,296.1	1,295.1	1,295.1	2.9	2.8	175.66	75.0	0.6	138.7	133.2	5.46	25.412		
1,400.0	1,394.2	1,393.2	1,393.2	3.2	3.0	176.17	75.0	0.6	158.1	152.2	5.90	26.822		
1,500.0	1,491.7	1,490.7	1,490.7	3.6	3.2	176.62	75.0	0.6	180.2	173.8	6.34	28.438		
1,600.0	1,588.6	1,587.6	1,587.6	4.1	3.5	177.01	75.0	0.6	204.7	198.0	6.78	30.216		
1,629.3	1,616.9	1,616.5	1,616.5	4.2	3.5	177.10	75.0	0.5	212.4	205.5	6.90	30.769		
1,700.0	1,685.0	1,687.9	1,687.9	4.6	3.7	177.18	74.4	-0.2	230.5	223.3	7.22	31.938		
1,800.0	1,781.4	1,789.6	1,789.5	5.1	3.8	176.90	72.0	-3.0	254.6	246.9	7.65	33.264		
1,900.0	1,877.8	1,892.2	1,891.9	5.6	4.0	176.26	67.8	-7.9	276.8	268.7	8.10	34.160		
2,000.0	1,974.2	1,995.5	1,994.8	6.1	4.3	175.33	61.7	-14.9	297.1	288.6	8.57	34.672		
2,100.0	2,070.6	2,098.3	2,096.9	6.6	4.5	174.16	53.9	-24.0	315.8	306.7	9.06	34.863		
2,200.0	2,167.0	2,196.5	2,194.3	7.2	4.7	173.06	45.8	-33.4	333.9	324.3	9.56	34.932		
2,300.0	2,263.4	2,294.7	2,291.7	7.7	4.9	172.07	37.8	-42.7	352.1	342.0	10.07	34.955		
2,400.0	2,359.8	2,392.8	2,389.1	8.2	5.2	171.18	29.7	-52.1	370.4	359.8	10.60	34.944		
2,500.0	2,456.2	2,491.0	2,486.4	8.8	5.4	170.37	21.7	-61.4	388.8	377.6	11.14	34.905		
2,600.0	2,552.6	2,589.1	2,583.8	9.3	5.7	169.63	13.7	-70.8	407.2	395.5	11.69	34.844		
2,700.0	2,649.0	2,687.3	2,681.2	9.8	6.0	168.96	5.6	-80.1	425.7	413.5	12.25	34.767		
2,800.0	2,745.3	2,785.4	2,778.6	10.4	6.3	168.35	-2.4	-89.5	444.3	431.5	12.81	34.678		
2,900.0	2,841.7	2,883.6	2,875.9	10.9	6.5	167.78	-10.5	-98.8	462.9	449.5	13.39	34.581		
3,000.0	2,938.1	2,981.7	2,973.3	11.5	6.8	167.26	-18.5	-108.2	481.5	467.6	13.97	34.478		
3,100.0	3,034.5	3,079.9	3,070.7	12.0	7.1	166.77	-26.6	-117.5	500.2	485.7	14.55	34.372		
3,200.0	3,130.9	3,178.0	3,168.1	12.6	7.4	166.32	-34.6	-126.9	518.9	503.8	15.15	34.263		
3,300.0	3,227.3	3,276.2	3,265.4	13.1	7.7	165.90	-42.7	-136.3	537.7	521.9	15.74	34.153		
3,400.0	3,323.7	3,374.4	3,362.8	13.7	8.0	165.51	-50.7	-145.6	556.5	540.1	16.35	34.044		
3,500.0	3,420.1	3,472.5	3,460.2	14.2	8.3	165.15	-58.8	-155.0	575.3	558.3	16.95	33.936		
3,600.0	3,516.5	3,570.7	3,557.6	14.8	8.6	164.81	-66.8	-164.3	594.1	576.5	17.56	33.829		
3,700.0	3,612.9	3,667.2	3,653.3	15.3	8.9	164.50	-74.7	-173.5	612.9	594.8	18.17	33.741		
3,800.0	3,709.3	3,754.6	3,740.2	15.9	9.1	164.36	-80.8	-180.5	632.9	614.2	18.70	33.649		
3,900.0	3,805.6	3,841.3	3,826.7	16.4	9.3	164.43	-85.0	-185.5	654.5	635.3	19.19	34.103		
4,000.0	3,902.0	3,927.3	3,912.7	17.0	9.5	164.68	-87.6	-188.4	677.7	658.1	19.65	34.483		
4,100.0	3,998.4	4,012.4	3,997.7	17.5	9.6	165.10	-88.5	-189.4	702.6	682.5	20.09	34.977		
4,200.0	4,094.8	4,108.5	4,093.8	18.1	9.8	165.63	-88.5	-189.4	728.4	707.9	20.52	35.493		
4,300.0	4,191.2	4,204.9	4,190.2	18.6	10.0	166.13	-88.5	-189.4	754.3	733.3	20.97	35.979		
4,400.0	4,287.6	4,301.3	4,286.6	19.2	10.2	166.60	-88.5	-189.4	780.2	758.8	21.41	36.442		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design		Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W - Wiedeman Federal 22H-402 - 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	0.53	30.2	0.3	30.3						
100.0	100.0	99.0	99.0	0.1	0.1	0.53	30.2	0.3	30.2	30.0	0.22	135.190			
200.0	200.0	199.0	199.0	0.3	0.3	0.53	30.2	0.3	30.2	29.6	0.67	44.988			
300.0	300.0	299.0	299.0	0.6	0.6	0.53	30.2	0.3	30.2	29.1	1.12	26.957			
400.0	400.0	399.0	399.0	0.8	0.8	0.53	30.2	0.3	30.2	28.7	1.57	19.244			
500.0	500.0	499.0	499.0	1.0	1.0	0.53	30.2	0.3	30.2	28.2	2.02	14.963			
600.0	600.0	599.0	599.0	1.2	1.2	0.53	30.2	0.3	30.2	27.8	2.47	12.240	CC, ES		
700.0	700.0	699.0	699.0	1.4	1.5	172.51	30.2	0.3	31.5	28.6	2.89	10.892			
800.0	799.9	798.9	798.9	1.6	1.7	173.33	30.2	0.3	35.4	32.1	3.31	10.719			
900.0	899.7	898.7	898.7	1.8	1.9	174.36	30.2	0.3	41.9	38.2	3.73	11.254			
1,000.0	999.3	998.3	998.3	2.0	2.1	175.36	30.2	0.3	51.0	46.9	4.15	12.290			
1,100.0	1,098.6	1,099.2	1,099.2	2.3	2.3	176.05	29.0	0.0	61.5	57.0	4.56	13.495			
1,200.0	1,197.5	1,200.4	1,200.3	2.6	2.5	176.37	25.1	-0.9	72.0	67.0	4.94	14.559			
1,300.0	1,296.1	1,301.8	1,301.5	2.9	2.7	176.46	18.6	-2.4	82.4	77.1	5.34	15.430			
1,400.0	1,394.2	1,403.6	1,402.9	3.2	2.9	176.39	9.5	-4.5	92.9	87.1	5.75	16.141			
1,500.0	1,491.7	1,505.7	1,504.2	3.6	3.1	176.21	-2.3	-7.2	103.3	97.1	6.18	16.717			
1,600.0	1,588.6	1,608.0	1,605.4	4.1	3.4	175.95	-16.8	-10.5	113.7	107.0	6.62	17.180			
1,629.3	1,616.9	1,638.0	1,635.0	4.2	3.5	175.86	-21.6	-11.6	116.7	109.9	6.75	17.294			
1,700.0	1,685.0	1,710.7	1,706.6	4.6	3.7	175.61	-34.0	-14.5	123.4	116.3	7.08	17.417			
1,800.0	1,781.4	1,811.7	1,805.7	5.1	4.0	175.19	-53.0	-18.9	131.0	123.4	7.57	17.308			
1,900.0	1,877.8	1,911.4	1,903.5	5.6	4.4	174.80	-72.0	-23.2	138.5	130.4	8.07	17.166			
2,000.0	1,974.2	2,011.1	2,001.3	6.1	4.7	174.45	-91.0	-27.6	146.0	137.4	8.57	17.023			
2,100.0	2,070.6	2,110.8	2,099.1	6.6	5.1	174.13	-109.9	-31.9	153.4	144.3	9.09	16.879			
2,200.0	2,167.0	2,210.5	2,196.9	7.2	5.5	173.84	-128.9	-36.3	160.9	151.3	9.61	16.739			
2,300.0	2,263.4	2,310.2	2,294.7	7.7	5.9	173.58	-147.9	-40.6	168.4	158.3	10.14	16.603			
2,400.0	2,359.8	2,410.0	2,392.5	8.2	6.3	173.34	-166.8	-45.0	175.9	165.2	10.68	16.472			
2,500.0	2,456.2	2,509.7	2,490.3	8.8	6.7	173.12	-185.8	-49.4	183.4	172.2	11.22	16.348			
2,600.0	2,552.6	2,609.4	2,588.1	9.3	7.1	172.92	-204.8	-53.7	190.9	179.1	11.76	16.229			
2,700.0	2,649.0	2,709.1	2,685.9	9.8	7.5	172.73	-223.7	-58.1	198.4	186.1	12.31	16.116			
2,800.0	2,745.3	2,808.8	2,783.7	10.4	7.9	172.56	-242.7	-62.4	205.9	193.0	12.86	16.009			
2,900.0	2,841.7	2,908.5	2,881.5	10.9	8.3	172.40	-261.7	-66.8	213.4	200.0	13.41	15.907			
3,000.0	2,938.1	3,008.3	2,979.2	11.5	8.7	172.25	-280.6	-71.1	220.9	206.9	13.97	15.811			
3,100.0	3,034.5	3,108.0	3,077.0	12.0	9.1	172.11	-299.6	-75.5	228.4	213.8	14.53	15.719			
3,200.0	3,130.9	3,207.7	3,174.8	12.6	9.5	171.98	-318.6	-79.9	235.9	220.8	15.09	15.632			
3,300.0	3,227.3	3,307.4	3,272.6	13.1	10.0	171.86	-337.5	-84.2	243.4	227.7	15.65	15.550			
3,400.0	3,323.7	3,407.1	3,370.4	13.7	10.4	171.74	-356.5	-88.6	250.9	234.7	16.22	15.471			
3,500.0	3,420.1	3,506.8	3,468.2	14.2	10.8	171.63	-375.4	-92.9	258.4	241.6	16.78	15.397			
3,600.0	3,516.5	3,606.6	3,566.0	14.8	11.2	171.53	-394.4	-97.3	265.9	248.6	17.35	15.326			
3,700.0	3,612.9	3,706.3	3,663.8	15.3	11.7	171.43	-413.4	-101.7	273.4	255.5	17.92	15.259			
3,800.0	3,709.3	3,806.0	3,761.6	15.9	12.1	171.34	-432.3	-106.0	280.9	262.4	18.49	15.195			
3,900.0	3,805.6	3,905.7	3,859.4	16.4	12.5	171.25	-451.3	-110.4	288.4	269.4	19.06	15.134			
4,000.0	3,902.0	4,005.4	3,957.2	17.0	12.9	171.17	-470.3	-114.7	296.0	276.3	19.63	15.075			
4,100.0	3,998.4	4,105.1	4,055.0	17.5	13.4	171.09	-489.2	-119.1	303.5	283.3	20.20	15.019			
4,200.0	4,094.8	4,204.9	4,152.8	18.1	13.8	171.01	-508.2	-123.4	311.0	290.2	20.78	14.966			
4,300.0	4,191.2	4,304.6	4,250.6	18.6	14.2	170.94	-527.2	-127.8	318.5	297.1	21.35	14.915			
4,400.0	4,287.6	4,404.3	4,348.4	19.2	14.6	170.87	-546.1	-132.2	326.0	304.1	21.93	14.867			
4,500.0	4,384.0	4,504.0	4,446.2	19.7	15.1	170.81	-565.1	-136.5	333.5	311.0	22.50	14.820			
4,600.0	4,480.4	4,603.7	4,544.0	20.3	15.5	170.75	-584.1	-140.9	341.0	317.9	23.08	14.775			
4,700.0	4,576.8	4,703.4	4,641.8	20.8	15.9	170.69	-603.0	-145.2	348.5	324.9	23.66	14.732			
4,800.0	4,673.2	4,803.2	4,739.6	21.4	16.4	170.63	-622.0	-149.6	356.1	331.8	24.24	14.691			
4,900.0	4,769.6	4,902.9	4,837.4	22.0	16.8	170.58	-641.0	-153.9	363.6	338.8	24.82	14.651			

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 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design		Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W - Wiedeman Federal 22H-402 - 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)				
5,000.0	4,866.0	5,002.6	4,935.2	22.5	17.2	170.52	-659.9	-158.3	371.1	345.7	25.39	14.613			
5,100.0	4,962.3	5,102.3	5,033.0	23.1	17.7	170.47	-678.9	-162.7	378.6	352.6	25.97	14.577			
5,200.0	5,058.7	5,202.0	5,130.8	23.6	18.1	170.42	-697.9	-167.0	386.1	359.6	26.55	14.542			
5,300.0	5,155.1	5,301.7	5,228.6	24.2	18.5	170.38	-716.8	-171.4	393.6	366.5	27.13	14.508			
5,400.0	5,251.5	5,401.5	5,326.4	24.7	19.0	170.33	-735.8	-175.7	401.2	373.4	27.71	14.475			
5,500.0	5,347.9	5,490.8	5,414.3	25.3	19.3	170.33	-751.9	-179.4	409.7	381.5	28.24	14.508			
5,592.8	5,437.4	5,571.7	5,494.1	25.8	19.5	170.40	-764.1	-182.2	420.3	391.6	28.69	14.651			
5,600.0	5,444.3	5,577.9	5,500.3	25.8	19.5	170.41	-765.0	-182.4	421.2	392.5	28.73	14.664			
5,700.0	5,541.2	5,664.6	5,586.3	26.2	19.7	170.58	-775.5	-184.9	433.7	404.5	29.18	14.862			
5,800.0	5,638.9	5,751.0	5,672.3	26.5	19.9	170.76	-783.5	-186.7	445.7	416.1	29.58	15.065			
5,900.0	5,737.3	5,837.1	5,758.3	26.8	20.1	170.94	-788.9	-187.9	457.1	427.2	29.93	15.275			
6,000.0	5,836.2	5,923.0	5,844.1	27.1	20.2	171.13	-791.8	-188.6	468.0	437.8	30.22	15.490			
6,100.0	5,935.6	6,013.5	5,934.6	27.3	20.3	171.33	-792.3	-188.7	478.3	447.8	30.46	15.700			
6,200.0	6,035.3	6,113.3	6,034.3	27.5	20.4	171.48	-792.3	-188.7	485.7	455.0	30.67	15.834			
6,300.0	6,135.3	6,213.2	6,134.3	27.6	20.5	171.56	-792.3	-188.7	489.6	458.8	30.84	15.874			
6,364.7	6,200.0	6,277.9	6,199.0	27.7	20.6	-0.08	-792.3	-188.7	490.4	442.6	47.78	10.262			
6,400.0	6,235.3	6,313.2	6,234.3	27.7	20.7	-0.08	-792.3	-188.7	490.4	442.5	47.86	10.246			
6,500.0	6,335.3	6,413.2	6,334.3	27.8	20.8	-0.08	-792.3	-188.7	490.4	442.3	48.06	10.202			
6,529.0	6,364.2	6,442.1	6,363.2	27.8	20.8	-0.08	-792.3	-188.7	490.4	442.2	48.12	10.189			
6,550.0	6,385.3	6,463.2	6,384.3	27.8	20.8	-90.30	-792.3	-188.7	490.4	458.8	31.55	15.541			
6,600.0	6,435.2	6,513.1	6,434.2	27.9	20.9	-90.65	-792.3	-188.7	490.4	458.6	31.76	15.441			
6,650.0	6,484.7	6,562.9	6,484.0	27.9	21.0	-91.36	-792.3	-188.6	490.5	458.5	32.01	15.323			
6,700.0	6,533.8	6,613.6	6,534.6	27.9	21.0	-92.17	-792.3	-186.1	490.7	458.4	32.27	15.206			
6,750.0	6,582.2	6,664.8	6,585.5	28.0	21.1	-92.98	-792.4	-180.1	491.0	458.5	32.50	15.105			
6,800.0	6,629.6	6,716.6	6,636.3	28.0	21.1	-93.79	-792.5	-170.6	491.3	458.6	32.71	15.018			
6,850.0	6,675.9	6,768.8	6,686.9	28.0	21.2	-94.57	-792.6	-157.6	491.7	458.8	32.90	14.947			
6,900.0	6,720.8	6,821.5	6,736.9	28.0	21.2	-95.35	-792.8	-141.0	492.2	459.2	33.06	14.890			
6,950.0	6,764.3	6,874.7	6,786.1	28.0	21.2	-96.10	-792.9	-120.7	492.7	459.5	33.20	14.842			
7,000.0	6,806.0	6,928.4	6,834.2	28.1	21.3	-96.82	-793.2	-96.9	493.3	460.0	33.33	14.798			
7,050.0	6,845.8	6,982.7	6,881.0	28.1	21.3	-97.52	-793.4	-69.4	493.9	460.4	33.48	14.752			
7,100.0	6,883.5	7,037.4	6,926.1	28.1	21.3	-98.18	-793.7	-38.4	494.5	460.8	33.65	14.692			
7,150.0	6,919.1	7,092.6	6,969.2	28.1	21.3	-98.81	-794.0	-4.0	495.1	461.2	33.89	14.610			
7,200.0	6,952.2	7,148.2	7,010.0	28.2	21.4	-99.40	-794.4	33.8	495.6	461.4	34.20	14.491			
7,250.0	6,982.9	7,204.3	7,048.3	28.2	21.4	-99.95	-794.8	74.8	496.2	461.5	34.64	14.324			
7,300.0	7,010.9	7,260.8	7,083.7	28.3	21.5	-100.45	-795.2	118.8	496.7	461.4	35.23	14.100			
7,350.0	7,036.1	7,317.6	7,115.9	28.4	21.6	-100.91	-795.6	165.6	497.1	461.1	35.99	13.814			
7,400.0	7,058.4	7,374.8	7,144.7	28.5	21.8	-101.31	-796.1	215.0	497.5	460.5	36.94	13.466			
7,450.0	7,077.8	7,432.3	7,169.9	28.7	22.0	-101.66	-796.6	266.6	497.7	459.6	38.11	13.061			
7,500.0	7,094.1	7,490.0	7,191.2	28.9	22.3	-101.95	-797.1	320.3	497.9	458.4	39.49	12.608			
7,550.0	7,107.3	7,548.0	7,208.4	29.1	22.7	-102.18	-797.6	375.5	498.0	456.9	41.09	12.121			
7,600.0	7,117.3	7,606.1	7,221.5	29.4	23.3	-102.35	-798.2	432.1	498.0	455.1	42.89	11.611			
7,650.0	7,124.1	7,664.2	7,230.2	29.7	24.0	-102.47	-798.7	489.6	497.8	452.9	44.86	11.096			
7,700.0	7,127.6	7,722.5	7,234.5	30.1	24.9	-102.52	-799.2	547.7	497.5	450.5	46.99	10.588			
7,737.0	7,128.1	7,763.3	7,235.0	30.5	25.6	-102.53	-799.6	588.5	497.3	448.7	48.60	10.233			
7,800.0	7,127.5	7,826.3	7,235.0	31.2	26.7	-102.62	-800.2	651.6	497.0	446.0	51.09	9.729			
7,900.0	7,126.4	7,926.3	7,235.0	32.5	28.7	-102.75	-801.2	751.5	496.7	441.4	55.24	8.991			
8,000.0	7,125.4	8,026.3	7,235.0	34.1	30.8	-102.88	-802.1	851.5	496.3	436.7	59.60	8.327			
8,100.0	7,124.3	8,126.3	7,235.0	35.9	33.1	-103.02	-803.0	951.5	495.9	431.8	64.13	7.733			
8,200.0	7,123.3	8,226.3	7,235.0	37.9	35.4	-103.15	-804.0	1,051.5	495.5	426.7	68.79	7.204			
8,300.0	7,122.2	8,326.3	7,235.0	40.0	37.8	-103.29	-804.9	1,151.5	495.1	421.6	73.55	6.732			

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 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design		Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W - Wiedeman Federal 22H-402 - 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)				
8,400.0	7,121.2	8,426.3	7,235.0	42.3	40.3	-103.42	-805.9	1,251.5	494.8	416.4	78.40	6.311			
8,500.0	7,120.1	8,526.3	7,235.0	44.6	42.8	-103.56	-806.8	1,351.5	494.4	411.1	83.32	5.934			
8,600.0	7,119.1	8,626.3	7,235.0	47.0	45.4	-103.69	-807.8	1,451.5	494.0	405.8	88.29	5.596			
8,700.0	7,118.0	8,726.3	7,235.0	49.4	47.9	-103.83	-808.7	1,551.4	493.7	400.4	93.31	5.291			
8,800.0	7,117.0	8,826.3	7,235.0	51.9	50.5	-103.96	-809.6	1,651.4	493.3	394.9	98.37	5.015			
8,900.0	7,115.9	8,926.3	7,235.0	54.4	53.2	-104.10	-810.6	1,751.4	493.0	389.5	103.46	4.765			
9,000.0	7,114.9	9,026.2	7,235.0	57.0	55.8	-104.24	-811.5	1,851.4	492.6	384.0	108.57	4.537			
9,100.0	7,113.8	9,126.2	7,235.0	59.6	58.5	-104.37	-812.5	1,951.4	492.2	378.5	113.70	4.329			
9,200.0	7,112.8	9,226.2	7,235.0	62.2	61.1	-104.51	-813.4	2,051.4	491.9	373.0	118.86	4.139			
9,300.0	7,111.7	9,326.2	7,235.0	64.8	63.8	-104.64	-814.4	2,151.4	491.6	367.5	124.02	3.963			
9,400.0	7,110.7	9,426.2	7,235.0	67.4	66.5	-104.78	-815.3	2,251.4	491.2	362.0	129.20	3.802			
9,500.0	7,109.7	9,526.2	7,235.0	70.1	69.2	-104.92	-816.2	2,351.3	490.9	356.5	134.39	3.653			
9,600.0	7,108.6	9,626.2	7,235.0	72.7	71.9	-105.06	-817.2	2,451.3	490.5	350.9	139.58	3.514			
9,700.0	7,107.6	9,726.2	7,235.0	75.4	74.6	-105.19	-818.1	2,551.3	490.2	345.4	144.79	3.386			
9,800.0	7,106.5	9,826.2	7,235.0	78.1	77.4	-105.33	-819.1	2,651.3	489.9	339.9	149.99	3.266			
9,900.0	7,105.5	9,926.2	7,235.0	80.8	80.1	-105.47	-820.0	2,751.3	489.5	334.3	155.20	3.154			
10,000.0	7,104.4	10,026.2	7,235.0	83.5	82.8	-105.61	-821.0	2,851.3	489.2	328.8	160.41	3.050			
10,100.0	7,103.4	10,126.2	7,235.0	86.2	85.6	-105.74	-821.9	2,951.3	488.9	323.3	165.62	2.952			
10,200.0	7,102.3	10,226.2	7,235.0	88.9	88.3	-105.88	-822.8	3,051.3	488.6	317.7	170.83	2.860			
10,300.0	7,101.3	10,326.1	7,235.0	91.6	91.1	-106.02	-823.8	3,151.3	488.2	312.2	176.03	2.774			
10,400.0	7,100.2	10,426.1	7,235.0	94.4	93.8	-106.16	-824.7	3,251.2	487.9	306.7	181.24	2.692			
10,500.0	7,099.2	10,526.1	7,235.0	97.1	96.6	-106.30	-825.7	3,351.2	487.6	301.2	186.45	2.615			
10,600.0	7,098.1	10,626.1	7,235.0	99.8	99.3	-106.44	-826.6	3,451.2	487.3	295.6	191.65	2.543			
10,700.0	7,097.1	10,726.1	7,235.0	102.6	102.1	-106.58	-827.6	3,551.2	487.0	290.1	196.85	2.474			
10,800.0	7,096.0	10,826.1	7,235.0	105.3	104.9	-106.72	-828.5	3,651.2	486.7	284.6	202.04	2.409			
10,900.0	7,095.0	10,926.1	7,235.0	108.1	107.6	-106.86	-829.4	3,751.2	486.4	279.2	207.23	2.347			
11,000.0	7,093.9	11,026.1	7,235.0	110.8	110.4	-107.00	-830.4	3,851.2	486.1	273.7	212.42	2.288			
11,100.0	7,092.9	11,126.1	7,235.0	113.6	113.2	-107.14	-831.3	3,951.2	485.8	268.2	217.60	2.233			
11,200.0	7,091.9	11,226.1	7,235.0	116.3	115.9	-107.28	-832.3	4,051.1	485.5	262.7	222.77	2.179			
11,300.0	7,090.8	11,326.1	7,235.0	119.1	118.7	-107.42	-833.2	4,151.1	485.2	257.3	227.94	2.129			
11,400.0	7,089.8	11,426.1	7,235.0	121.8	121.5	-107.56	-834.2	4,251.1	484.9	251.8	233.10	2.080			
11,500.0	7,088.7	11,526.1	7,235.0	124.6	124.3	-107.70	-835.1	4,351.1	484.6	246.4	238.26	2.034			
11,600.0	7,087.7	11,626.1	7,235.0	127.4	127.1	-107.84	-836.0	4,451.1	484.4	240.9	243.41	1.990			
11,700.0	7,086.6	11,726.0	7,235.0	130.1	129.8	-107.98	-837.0	4,551.1	484.1	235.5	248.55	1.948			
11,747.8	7,086.1	11,773.8	7,235.0	131.4	131.2	-108.05	-837.4	4,598.8	483.9	232.9	251.00	1.928			
11,758.7	7,086.0	11,778.1	7,235.0	131.7	131.3	-108.05	-837.5	4,603.1	484.0	232.6	251.40	1.925 SF			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #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	0.0	0.0	0.0	0.0	-180.00	-14.9	0.0	14.9	14.9	0.00	N/A			
100.0	100.0	100.0	100.0	0.1	0.1	-180.00	-14.9	0.0	14.9	14.7	0.22	66.472			
200.0	200.0	200.0	200.0	0.3	0.3	-180.00	-14.9	0.0	14.9	14.3	0.67	22.157			
300.0	300.0	300.0	300.0	0.6	0.6	-180.00	-14.9	0.0	14.9	13.8	1.12	13.294			
400.0	400.0	400.0	400.0	0.8	0.8	-180.00	-14.9	0.0	14.9	13.4	1.57	9.496	CC, ES		
500.0	500.0	499.6	499.6	1.0	1.0	-179.49	-16.2	-0.1	16.2	14.2	2.00	8.133			
600.0	600.0	599.0	599.0	1.2	1.2	-178.36	-20.1	-0.6	20.1	17.7	2.41	8.352			
700.0	700.0	698.3	698.0	1.4	1.4	-5.83	-26.5	-1.3	25.3	22.5	2.81	9.019			
800.0	799.9	797.5	796.7	1.6	1.6	-5.43	-35.5	-2.3	30.5	27.3	3.20	9.536			
900.0	899.7	896.5	895.1	1.8	1.9	-5.29	-47.0	-3.6	35.7	32.1	3.61	9.884			
1,000.0	999.3	995.4	992.9	2.0	2.2	-5.31	-61.0	-5.1	40.8	36.8	4.03	10.118			
1,100.0	1,098.6	1,094.1	1,090.3	2.3	2.5	-5.43	-77.4	-7.0	45.9	41.4	4.47	10.269			
1,200.0	1,197.5	1,192.7	1,187.0	2.6	2.9	-5.63	-96.4	-9.1	51.0	46.1	4.92	10.360			
1,300.0	1,296.1	1,291.2	1,283.2	2.9	3.3	-5.89	-117.8	-11.5	56.1	50.7	5.39	10.403			
1,400.0	1,394.2	1,389.6	1,378.6	3.2	3.7	-6.19	-141.6	-14.1	61.1	55.2	5.87	10.407			
1,500.0	1,491.7	1,487.8	1,473.2	3.6	4.2	-6.51	-167.9	-17.0	66.1	59.7	6.37	10.377			
1,600.0	1,588.6	1,586.0	1,567.0	4.1	4.8	-6.87	-196.5	-20.2	71.1	64.2	6.88	10.329			
1,629.3	1,616.9	1,614.6	1,594.3	4.2	4.9	-6.97	-205.3	-21.2	72.5	65.5	7.04	10.304			
1,700.0	1,685.0	1,683.9	1,659.9	4.6	5.4	-7.18	-227.4	-23.7	76.6	69.2	7.43	10.319			
1,800.0	1,781.4	1,781.5	1,751.6	5.1	6.0	-7.31	-260.6	-27.4	84.6	76.6	7.99	10.593			
1,900.0	1,877.8	1,881.0	1,844.6	5.6	6.7	-7.33	-295.6	-31.3	94.0	85.4	8.57	10.970			
2,000.0	1,974.2	1,980.6	1,937.7	6.1	7.3	-7.35	-330.7	-35.2	103.4	94.2	9.16	11.291			
2,100.0	2,070.6	2,080.1	2,030.8	6.6	8.0	-7.36	-365.9	-39.1	112.8	103.0	9.75	11.565			
2,200.0	2,167.0	2,179.7	2,123.9	7.2	8.7	-7.37	-401.0	-43.0	122.1	111.8	10.35	11.802			
2,300.0	2,263.4	2,279.2	2,216.9	7.7	9.4	-7.38	-436.1	-46.9	131.5	120.6	10.95	12.007			
2,400.0	2,359.8	2,378.8	2,310.0	8.2	10.1	-7.39	-471.2	-50.8	140.9	129.3	11.56	12.187			
2,500.0	2,456.2	2,478.4	2,403.1	8.8	10.8	-7.40	-506.3	-54.7	150.3	138.1	12.17	12.345			
2,600.0	2,552.6	2,577.9	2,496.2	9.3	11.5	-7.41	-541.4	-58.6	159.6	146.9	12.79	12.485			
2,700.0	2,649.0	2,677.5	2,589.3	9.8	12.2	-7.41	-576.5	-62.6	169.0	155.6	13.40	12.610			
2,800.0	2,745.3	2,777.0	2,682.3	10.4	12.9	-7.42	-611.6	-66.5	178.4	164.4	14.02	12.723			
2,900.0	2,841.7	2,876.6	2,775.4	10.9	13.6	-7.43	-646.8	-70.4	187.8	173.1	14.64	12.824			
3,000.0	2,938.1	2,976.2	2,868.5	11.5	14.3	-7.43	-681.9	-74.3	197.2	181.9	15.27	12.915			
3,100.0	3,034.5	3,075.7	2,961.6	12.0	15.0	-7.43	-717.0	-78.2	206.5	190.6	15.89	12.998			
3,200.0	3,130.9	3,175.3	3,054.7	12.6	15.7	-7.44	-752.1	-82.1	215.9	199.4	16.51	13.074			
3,300.0	3,227.3	3,274.8	3,147.7	13.1	16.4	-7.44	-787.2	-86.0	225.3	208.1	17.14	13.143			
3,400.0	3,323.7	3,374.4	3,240.8	13.7	17.1	-7.44	-822.3	-89.9	234.7	216.9	17.77	13.207			
3,500.0	3,420.1	3,474.0	3,333.9	14.2	17.8	-7.45	-857.4	-93.8	244.0	225.6	18.40	13.266			
3,600.0	3,516.5	3,573.5	3,427.0	14.8	18.5	-7.45	-892.5	-97.8	253.4	234.4	19.03	13.320			
3,700.0	3,612.9	3,673.1	3,520.1	15.3	19.2	-7.45	-927.7	-101.7	262.8	243.1	19.66	13.370			
3,800.0	3,709.3	3,772.6	3,613.1	15.9	19.9	-7.46	-962.8	-105.6	272.2	251.9	20.29	13.417			
3,900.0	3,805.6	3,872.2	3,706.2	16.4	20.6	-7.46	-997.9	-109.5	281.5	260.6	20.92	13.460			
4,000.0	3,902.0	3,971.8	3,799.3	17.0	21.3	-7.46	-1,033.0	-113.4	290.9	269.4	21.55	13.501			
4,100.0	3,998.4	4,071.3	3,892.4	17.5	22.0	-7.46	-1,068.1	-117.3	300.3	278.1	22.18	13.539			
4,200.0	4,094.8	4,170.9	3,985.4	18.1	22.7	-7.46	-1,103.2	-121.2	309.7	286.9	22.81	13.574			
4,300.0	4,191.2	4,270.4	4,078.5	18.6	23.4	-7.47	-1,138.3	-125.1	319.1	295.6	23.45	13.608			
4,400.0	4,287.6	4,370.0	4,171.6	19.2	24.1	-7.47	-1,173.4	-129.0	328.4	304.4	24.08	13.639			
4,500.0	4,384.0	4,469.6	4,264.7	19.7	24.8	-7.47	-1,208.6	-133.0	337.8	313.1	24.71	13.669			
4,600.0	4,480.4	4,569.1	4,357.8	20.3	25.5	-7.47	-1,243.7	-136.9	347.2	321.8	25.35	13.696			
4,700.0	4,576.8	4,668.7	4,450.8	20.8	26.2	-7.47	-1,278.8	-140.8	356.6	330.6	25.98	13.723			
4,800.0	4,673.2	4,768.2	4,543.9	21.4	26.9	-7.47	-1,313.9	-144.7	365.9	339.3	26.62	13.748			
4,900.0	4,769.6	4,867.8	4,637.0	22.0	27.6	-7.47	-1,349.0	-148.6	375.3	348.1	27.25	13.771			

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 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
5,000.0	4,866.0	4,967.3	4,730.1	22.5	28.4	-7.48	-1,384.1	-152.5	384.7	356.8	27.89	13.794			
5,100.0	4,962.3	5,066.9	4,823.2	23.1	29.1	-7.48	-1,419.2	-156.4	394.1	365.5	28.52	13.815			
5,200.0	5,058.7	5,166.5	4,916.2	23.6	29.8	-7.48	-1,454.3	-160.3	403.5	374.3	29.16	13.836			
5,300.0	5,155.1	5,266.0	5,009.3	24.2	30.5	-7.48	-1,489.5	-164.2	412.8	383.0	29.80	13.855			
5,400.0	5,251.5	5,369.1	5,105.7	24.7	31.2	-7.48	-1,525.7	-168.3	422.1	391.7	30.44	13.868			
5,500.0	5,347.9	5,486.2	5,216.3	25.3	31.8	-7.53	-1,563.9	-172.5	428.6	397.6	31.09	13.787			
5,592.8	5,437.4	5,595.2	5,320.7	25.8	32.2	-7.62	-1,595.3	-176.0	431.1	399.4	31.68	13.607			
5,600.0	5,444.3	5,603.7	5,328.8	25.8	32.2	-7.63	-1,597.6	-176.3	431.1	399.4	31.72	13.590			
5,700.0	5,541.2	5,721.3	5,442.7	26.2	32.7	-7.76	-1,626.7	-179.5	431.5	399.2	32.26	13.375			
5,800.0	5,638.9	5,838.9	5,557.7	26.5	33.1	-7.88	-1,651.2	-182.3	431.2	398.5	32.72	13.177			
5,900.0	5,737.3	5,956.5	5,673.6	26.8	33.4	-7.99	-1,671.0	-184.5	430.3	397.2	33.11	12.996			
6,000.0	5,836.2	6,074.0	5,790.1	27.1	33.7	-8.09	-1,686.0	-186.1	428.8	395.4	33.42	12.829			
6,100.0	5,935.6	6,191.4	5,907.1	27.3	33.9	-8.18	-1,696.2	-187.3	426.6	393.0	33.66	12.675			
6,200.0	6,035.3	6,308.7	6,024.2	27.5	34.0	-8.26	-1,701.7	-187.9	423.9	390.1	33.82	12.534			
6,300.0	6,135.3	6,419.8	6,135.3	27.6	34.1	-8.33	-1,702.7	-188.0	420.8	386.9	33.90	12.411			
6,364.7	6,200.0	6,484.5	6,200.0	27.7	34.2	180.00	-1,702.7	-188.0	420.0	358.6	61.47	6.834			
6,400.0	6,235.3	6,519.8	6,235.3	27.7	34.2	180.00	-1,702.7	-188.0	420.0	358.5	61.52	6.827			
6,445.0	6,280.3	6,564.8	6,280.3	27.7	34.2	179.99	-1,702.7	-187.9	420.0	358.5	61.59	6.820			
6,500.0	6,335.3	6,619.6	6,335.0	27.8	34.3	179.62	-1,702.7	-185.2	420.1	358.4	61.64	6.814			
6,529.0	6,364.2	6,648.2	6,363.5	27.8	34.3	179.22	-1,702.7	-182.3	420.1	358.4	61.65	6.814			
6,550.0	6,385.3	6,668.9	6,384.0	27.8	34.3	88.69	-1,702.7	-179.5	420.1	385.5	34.63	12.131			
6,600.0	6,435.2	6,717.8	6,432.1	27.9	34.3	87.88	-1,702.7	-170.6	420.3	385.4	34.92	12.036			
6,650.0	6,484.7	6,766.4	6,479.2	27.9	34.4	87.07	-1,702.7	-158.9	420.5	385.3	35.19	11.948			
6,700.0	6,533.8	6,814.6	6,525.1	27.9	34.4	86.28	-1,702.7	-144.2	420.8	385.4	35.45	11.871			
6,750.0	6,582.2	6,862.4	6,569.7	28.0	34.4	85.51	-1,702.7	-126.9	421.2	385.5	35.68	11.804			
6,800.0	6,629.6	6,909.9	6,612.8	28.0	34.4	84.76	-1,702.7	-106.9	421.6	385.7	35.89	11.747			
6,850.0	6,675.9	6,957.2	6,654.3	28.0	34.4	84.03	-1,702.7	-84.4	422.0	386.0	36.07	11.701			
6,900.0	6,720.8	7,004.1	6,694.1	28.0	34.4	83.33	-1,702.7	-59.6	422.5	386.3	36.23	11.662			
6,950.0	6,764.3	7,050.0	6,731.5	28.0	34.4	82.67	-1,702.7	-33.0	423.0	386.7	36.38	11.629			
7,000.0	6,806.0	7,097.1	6,768.2	28.1	34.5	82.03	-1,702.7	-3.4	423.6	387.1	36.53	11.594			
7,050.0	6,845.8	7,143.3	6,802.3	28.1	34.5	81.42	-1,702.7	27.7	424.1	387.4	36.71	11.555			
7,100.0	6,883.5	7,189.2	6,834.2	28.1	34.5	80.85	-1,702.7	60.7	424.7	387.8	36.93	11.501			
7,150.0	6,919.1	7,234.9	6,864.1	28.1	34.5	80.32	-1,702.7	95.4	425.2	388.0	37.20	11.432			
7,200.0	6,952.2	7,280.5	6,891.6	28.2	34.6	79.83	-1,702.7	131.6	425.8	388.2	37.56	11.337			
7,250.0	6,982.9	7,325.8	6,916.9	28.2	34.7	79.38	-1,702.7	169.2	426.2	388.2	38.02	11.211			
7,300.0	7,010.9	7,371.0	6,939.8	28.3	34.7	78.97	-1,702.7	208.2	426.7	388.1	38.62	11.049			
7,350.0	7,036.1	7,416.1	6,960.3	28.4	34.8	78.61	-1,702.7	248.3	427.1	387.7	39.37	10.849			
7,400.0	7,058.4	7,461.0	6,978.4	28.5	34.9	78.29	-1,702.7	289.4	427.5	387.2	40.28	10.613			
7,450.0	7,077.8	7,505.8	6,994.0	28.7	35.0	78.01	-1,702.7	331.5	427.8	386.4	41.36	10.341			
7,500.0	7,094.1	7,550.0	7,006.9	28.9	35.2	77.78	-1,702.7	373.7	428.0	385.4	42.62	10.042			
7,550.0	7,107.3	7,595.2	7,017.6	29.1	35.3	77.59	-1,702.7	417.6	428.2	384.1	44.07	9.716			
7,600.0	7,117.3	7,639.8	7,025.5	29.4	35.5	77.45	-1,702.7	461.5	428.2	382.6	45.67	9.377			
7,650.0	7,124.1	7,684.4	7,030.9	29.7	35.8	77.36	-1,702.7	505.7	428.3	380.8	47.42	9.031			
7,700.0	7,127.6	7,728.9	7,033.7	30.1	36.0	77.32	-1,702.7	550.2	428.2	378.9	49.30	8.685			
7,737.0	7,128.1	7,761.9	7,034.1	30.5	36.2	77.32	-1,702.7	583.1	428.1	377.3	50.76	8.434			
7,800.0	7,127.5	7,824.9	7,033.6	31.2	36.7	77.33	-1,702.7	646.2	427.9	374.7	53.16	8.049			
7,900.0	7,126.4	7,924.9	7,032.7	32.5	37.6	77.34	-1,702.7	746.2	427.5	370.4	57.18	7.477			
8,000.0	7,125.4	8,024.9	7,031.8	34.1	38.7	77.35	-1,702.7	846.2	427.2	365.8	61.43	6.954			
8,100.0	7,124.3	8,124.9	7,030.9	35.9	40.1	77.37	-1,702.7	946.1	426.8	361.0	65.86	6.481			
8,200.0	7,123.3	8,224.9	7,030.1	37.9	41.7	77.38	-1,702.7	1,046.1	426.5	356.1	70.44	6.055			

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 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #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			
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
8,300.0	7,122.2	8,324.9	7,029.2	40.0	43.4	77.39	-1,702.7	1,146.1	426.2	351.0	75.15	5.671			
8,400.0	7,121.2	8,424.9	7,028.3	42.3	45.3	77.41	-1,702.7	1,246.1	425.8	345.9	79.95	5.326			
8,500.0	7,120.1	8,524.9	7,027.5	44.6	47.4	77.42	-1,702.7	1,346.1	425.5	340.6	84.84	5.015			
8,600.0	7,119.1	8,624.9	7,026.6	47.0	49.5	77.44	-1,702.7	1,446.1	425.1	335.3	89.80	4.734			
8,700.0	7,118.0	8,724.9	7,025.7	49.4	51.8	77.45	-1,702.7	1,546.1	424.8	330.0	94.81	4.480			
8,800.0	7,117.0	8,824.9	7,024.8	51.9	54.1	77.46	-1,702.7	1,646.1	424.5	324.6	99.88	4.249			
8,900.0	7,115.9	8,924.9	7,024.0	54.4	56.4	77.48	-1,702.7	1,746.1	424.1	319.1	104.99	4.039			
9,000.0	7,114.9	9,024.9	7,023.1	57.0	58.9	77.49	-1,702.7	1,846.1	423.8	313.6	110.14	3.847			
9,100.0	7,113.8	9,124.9	7,022.2	59.6	61.3	77.51	-1,702.7	1,946.1	423.4	308.1	115.32	3.672			
9,200.0	7,112.8	9,224.9	7,021.4	62.2	63.8	77.52	-1,702.7	2,046.1	423.1	302.5	120.53	3.510			
9,300.0	7,111.7	9,324.9	7,020.5	64.8	66.3	77.53	-1,702.7	2,146.1	422.7	297.0	125.77	3.361			
9,400.0	7,110.7	9,424.9	7,019.6	67.4	68.9	77.55	-1,702.7	2,246.1	422.4	291.4	131.02	3.224			
9,500.0	7,109.7	9,524.9	7,018.7	70.1	71.5	77.56	-1,702.7	2,346.1	422.1	285.8	136.30	3.097			
9,600.0	7,108.6	9,624.9	7,017.9	72.7	74.1	77.58	-1,702.7	2,446.1	421.7	280.1	141.59	2.978			
9,700.0	7,107.6	9,724.9	7,017.0	75.4	76.7	77.59	-1,702.7	2,546.1	421.4	274.5	146.90	2.868			
9,800.0	7,106.5	9,824.9	7,016.1	78.1	79.3	77.60	-1,702.7	2,646.1	421.0	268.8	152.22	2.766			
9,900.0	7,105.5	9,924.9	7,015.2	80.8	81.9	77.62	-1,702.7	2,746.1	420.7	263.1	157.56	2.670			
10,000.0	7,104.4	10,024.9	7,014.4	83.5	84.6	77.63	-1,702.7	2,846.1	420.3	257.4	162.91	2.580			
10,100.0	7,103.4	10,124.9	7,013.5	86.2	87.2	77.65	-1,702.7	2,946.1	420.0	251.7	168.26	2.496			
10,200.0	7,102.3	10,224.9	7,012.6	88.9	89.9	77.66	-1,702.7	3,046.1	419.7	246.0	173.63	2.417			
10,300.0	7,101.3	10,324.9	7,011.8	91.6	92.6	77.67	-1,702.7	3,146.0	419.3	240.3	179.01	2.343			
10,400.0	7,100.2	10,424.9	7,010.9	94.4	95.3	77.69	-1,702.7	3,246.0	419.0	234.6	184.39	2.272			
10,500.0	7,099.2	10,524.9	7,010.0	97.1	98.0	77.70	-1,702.7	3,346.0	418.6	228.9	189.78	2.206			
10,600.0	7,098.1	10,624.9	7,009.1	99.8	100.7	77.72	-1,702.7	3,446.0	418.3	223.1	195.18	2.143			
10,700.0	7,097.1	10,724.9	7,008.3	102.6	103.4	77.73	-1,702.7	3,546.0	418.0	217.4	200.58	2.084			
10,800.0	7,096.0	10,824.9	7,007.4	105.3	106.1	77.75	-1,702.7	3,646.0	417.6	211.6	205.99	2.027			
10,900.0	7,095.0	10,924.9	7,006.5	108.1	108.8	77.76	-1,702.7	3,746.0	417.3	205.9	211.40	1.974			
11,000.0	7,093.9	11,024.9	7,005.6	110.8	111.6	77.77	-1,702.7	3,846.0	416.9	200.1	216.82	1.923			
11,100.0	7,092.9	11,124.9	7,004.8	113.6	114.3	77.79	-1,702.7	3,946.0	416.6	194.3	222.25	1.874			
11,200.0	7,091.9	11,224.9	7,003.9	116.3	117.0	77.80	-1,702.7	4,046.0	416.2	188.6	227.68	1.828			
11,300.0	7,090.8	11,324.9	7,003.0	119.1	119.8	77.82	-1,702.7	4,146.0	415.9	182.8	233.11	1.784			
11,400.0	7,089.8	11,424.9	7,002.2	121.8	122.5	77.83	-1,702.7	4,246.0	415.6	177.0	238.55	1.742			
11,500.0	7,088.7	11,524.9	7,001.3	124.6	125.2	77.85	-1,702.7	4,346.0	415.2	171.2	243.99	1.702			
11,600.0	7,087.7	11,624.9	7,000.4	127.4	128.0	77.86	-1,702.7	4,446.0	414.9	165.4	249.43	1.663			
11,700.0	7,086.6	11,724.9	6,999.5	130.1	130.7	77.88	-1,702.7	4,546.0	414.5	159.7	254.88	1.626			
11,758.7	7,086.0	11,783.6	6,999.0	131.7	132.3	77.88	-1,702.7	4,604.7	414.3	156.3	258.08	1.605 SF			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Offset Design													Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W - Wiedeman Federal 22I-302 - 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					
Depth (ft)	Depth (ft)	Depth (ft)	Depth (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	-29.9	-0.3	29.9								
100.0	100.0	100.0	100.0	0.1	0.1	-179.47	-29.9	-0.3	29.9	29.7	0.22	132.931					
200.0	200.0	200.0	200.0	0.3	0.3	-179.47	-29.9	-0.3	29.9	29.2	0.67	44.310	CC, ES				
300.0	300.0	299.2	299.2	0.6	0.5	-179.25	-31.2	-0.4	31.2	30.1	1.10	28.346					
400.0	400.0	398.3	398.2	0.8	0.7	-178.72	-35.0	-0.8	35.1	33.5	1.53	22.962					
500.0	500.0	497.1	496.8	1.0	1.0	-178.04	-41.4	-1.4	41.5	39.5	1.97	21.099					
600.0	600.0	595.5	594.8	1.2	1.2	-177.39	-50.2	-2.3	50.6	48.1	2.42	20.916					
700.0	700.0	693.5	692.2	1.4	1.5	-5.26	-61.6	-3.4	60.9	58.0	2.84	21.461					
800.0	799.9	791.3	789.0	1.6	1.8	-5.03	-75.3	-4.8	71.1	67.9	3.25	21.899					
900.0	899.7	888.8	885.1	1.8	2.2	-4.94	-91.5	-6.4	81.3	77.6	3.68	22.117					
1,000.0	999.3	986.1	980.6	2.0	2.5	-4.95	-110.1	-8.2	91.5	87.3	4.12	22.194					
1,100.0	1,098.6	1,083.2	1,075.3	2.3	3.0	-5.02	-131.0	-10.3	101.6	97.0	4.58	22.172					
1,200.0	1,197.5	1,180.0	1,169.3	2.6	3.4	-5.14	-154.3	-12.6	111.6	106.5	5.05	22.079					
1,300.0	1,296.1	1,276.5	1,262.3	2.9	3.9	-5.29	-179.8	-15.1	121.5	116.0	5.54	21.930					
1,400.0	1,394.2	1,372.9	1,354.5	3.2	4.5	-5.47	-207.7	-17.8	131.3	125.3	6.04	21.753					
1,500.0	1,491.7	1,469.0	1,445.7	3.6	5.1	-5.67	-237.7	-20.8	141.1	134.5	6.56	21.521					
1,600.0	1,588.6	1,564.8	1,536.0	4.1	5.7	-5.89	-270.0	-24.0	150.8	143.7	7.09	21.263					
1,629.3	1,616.9	1,592.9	1,562.2	4.2	5.9	-5.96	-279.8	-25.0	153.6	146.3	7.25	21.185					
1,700.0	1,685.0	1,660.4	1,625.1	4.6	6.3	-6.11	-304.3	-27.4	161.0	153.3	7.65	21.041					
1,800.0	1,781.4	1,758.9	1,716.3	5.1	7.0	-6.28	-341.3	-31.1	172.8	164.5	8.24	20.972					
1,900.0	1,877.8	1,858.2	1,808.3	5.6	7.8	-6.43	-378.6	-34.7	184.6	175.7	8.83	20.895					
2,000.0	1,974.2	1,957.5	1,900.2	6.1	8.5	-6.57	-415.9	-38.4	196.4	187.0	9.44	20.811					
2,100.0	2,070.6	2,056.8	1,992.2	6.6	9.2	-6.68	-453.2	-42.1	208.2	198.2	10.05	20.725					
2,200.0	2,167.0	2,156.1	2,084.1	7.2	10.0	-6.79	-490.5	-45.8	220.1	209.4	10.66	20.639					
2,300.0	2,263.4	2,255.4	2,176.1	7.7	10.7	-6.88	-527.8	-49.5	231.9	220.6	11.28	20.554					
2,400.0	2,359.8	2,354.7	2,268.0	8.2	11.4	-6.97	-565.1	-53.2	243.7	231.8	11.90	20.472					
2,500.0	2,456.2	2,454.0	2,360.0	8.8	12.2	-7.04	-602.5	-56.9	255.5	243.0	12.53	20.394					
2,600.0	2,552.6	2,553.3	2,451.9	9.3	12.9	-7.11	-639.8	-60.5	267.4	254.2	13.16	20.318					
2,700.0	2,649.0	2,652.6	2,543.9	9.8	13.6	-7.18	-677.1	-64.2	279.2	265.4	13.79	20.247					
2,800.0	2,745.3	2,751.9	2,635.8	10.4	14.4	-7.24	-714.4	-67.9	291.0	276.6	14.42	20.178					
2,900.0	2,841.7	2,851.2	2,727.8	10.9	15.1	-7.29	-751.7	-71.6	302.8	287.8	15.06	20.113					
3,000.0	2,938.1	2,950.5	2,819.7	11.5	15.9	-7.34	-789.0	-75.3	314.7	299.0	15.69	20.052					
3,100.0	3,034.5	3,049.8	2,911.7	12.0	16.6	-7.39	-826.3	-79.0	326.5	310.2	16.33	19.993					
3,200.0	3,130.9	3,149.1	3,003.6	12.6	17.4	-7.43	-863.6	-82.7	338.3	321.4	16.97	19.937					
3,300.0	3,227.3	3,248.4	3,095.6	13.1	18.1	-7.47	-900.9	-86.3	350.2	332.6	17.61	19.884					
3,400.0	3,323.7	3,347.7	3,187.5	13.7	18.8	-7.51	-938.2	-90.0	362.0	343.7	18.25	19.834					
3,500.0	3,420.1	3,447.0	3,279.5	14.2	19.6	-7.55	-975.5	-93.7	373.8	354.9	18.89	19.787					
3,600.0	3,516.5	3,546.3	3,371.4	14.8	20.3	-7.58	-1,012.8	-97.4	385.7	366.1	19.54	19.741					
3,700.0	3,612.9	3,645.6	3,463.4	15.3	21.1	-7.61	-1,050.1	-101.1	397.5	377.3	20.18	19.698					
3,800.0	3,709.3	3,744.9	3,555.3	15.9	21.8	-7.64	-1,087.4	-104.8	409.3	388.5	20.82	19.657					
3,900.0	3,805.6	3,844.2	3,647.3	16.4	22.6	-7.67	-1,124.7	-108.5	421.1	399.7	21.47	19.617					
4,000.0	3,902.0	3,943.5	3,739.2	17.0	23.3	-7.69	-1,162.0	-112.1	433.0	410.9	22.11	19.580					
4,100.0	3,998.4	4,042.8	3,831.2	17.5	24.0	-7.72	-1,199.3	-115.8	444.8	422.0	22.76	19.544					
4,200.0	4,094.8	4,142.1	3,923.1	18.1	24.8	-7.74	-1,236.6	-119.5	456.6	433.2	23.41	19.510					
4,300.0	4,191.2	4,241.4	4,015.1	18.6	25.5	-7.77	-1,273.9	-123.2	468.5	444.4	24.05	19.477					
4,400.0	4,287.6	4,340.7	4,107.0	19.2	26.3	-7.79	-1,311.3	-126.9	480.3	455.6	24.70	19.446					
4,500.0	4,384.0	4,440.0	4,199.0	19.7	27.0	-7.81	-1,348.6	-130.6	492.1	466.8	25.35	19.416					
4,600.0	4,480.4	4,539.3	4,290.9	20.3	27.8	-7.83	-1,385.9	-134.3	504.0	478.0	25.99	19.387					
4,700.0	4,576.8	4,638.6	4,382.9	20.8	28.5	-7.84	-1,423.2	-137.9	515.8	489.1	26.64	19.360					
4,800.0	4,673.2	4,737.9	4,474.8	21.4	29.3	-7.86	-1,460.5	-141.6	527.6	500.3	27.29	19.333					
4,900.0	4,769.6	4,837.2	4,566.8	22.0	30.0	-7.88	-1,497.8	-145.3	539.5	511.5	27.94	19.308					

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 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #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		
5,000.0	4,866.0	4,936.5	4,658.7	22.5	30.8	-7.90	-1,535.1	-149.0	551.3	522.7	28.59	19.283			
5,100.0	4,962.3	5,035.8	4,750.7	23.1	31.5	-7.91	-1,572.4	-152.7	563.1	533.9	29.24	19.260			
5,200.0	5,058.7	5,135.1	4,842.6	23.6	32.2	-7.93	-1,609.7	-156.4	574.9	545.1	29.89	19.237			
5,300.0	5,155.1	5,234.4	4,934.6	24.2	33.0	-7.94	-1,647.0	-160.1	586.8	556.2	30.54	19.215			
5,400.0	5,251.5	5,333.7	5,026.5	24.7	33.7	-7.95	-1,684.3	-163.7	598.6	567.4	31.19	19.194			
5,500.0	5,347.9	5,433.0	5,118.5	25.3	34.5	-7.97	-1,721.6	-167.4	610.4	578.6	31.84	19.174			
5,592.8	5,437.4	5,550.4	5,228.1	25.8	35.1	-8.00	-1,763.5	-171.6	619.5	587.1	32.49	19.069			
5,600.0	5,444.3	5,559.6	5,236.7	25.8	35.2	-8.01	-1,766.6	-171.9	620.1	587.6	32.53	19.060			
5,700.0	5,541.2	5,686.9	5,357.6	26.2	35.8	-8.08	-1,806.5	-175.8	627.3	594.2	33.11	18.947			
5,800.0	5,638.9	5,814.7	5,480.5	26.5	36.3	-8.15	-1,841.2	-179.3	633.6	600.0	33.60	18.853			
5,900.0	5,737.3	5,942.9	5,605.3	26.8	36.7	-8.20	-1,870.5	-182.1	638.8	604.8	34.02	18.779			
6,000.0	5,836.2	6,071.4	5,731.6	27.1	37.1	-8.25	-1,894.2	-184.5	643.1	608.7	34.35	18.722			
6,100.0	5,935.6	6,200.2	5,859.1	27.3	37.4	-8.28	-1,912.3	-186.3	646.3	611.7	34.60	18.680			
6,200.0	6,035.3	6,329.2	5,987.5	27.5	37.7	-8.30	-1,924.7	-187.5	648.5	613.8	34.76	18.658			
6,300.0	6,135.3	6,458.3	6,116.4	27.6	37.8	-8.31	-1,931.4	-188.2	649.7	614.9	34.84	18.650			
6,364.7	6,200.0	6,542.0	6,200.0	27.7	37.9	-179.98	-1,932.6	-188.3	649.9	584.7	65.21	9.967			
6,400.0	6,235.3	6,577.2	6,235.3	27.7	37.9	-179.98	-1,932.6	-188.3	649.9	584.7	65.27	9.958			
6,500.0	6,335.3	6,677.2	6,335.3	27.8	38.0	-179.98	-1,932.6	-188.3	649.9	584.5	65.42	9.935			
6,529.0	6,364.2	6,706.2	6,364.2	27.8	38.0	-179.98	-1,932.6	-188.3	649.9	584.5	65.46	9.929			
6,550.0	6,385.3	6,727.2	6,385.3	27.8	38.0	89.85	-1,932.6	-188.0	649.9	614.5	35.38	18.369			
6,600.0	6,435.2	6,777.2	6,435.2	27.9	38.1	89.85	-1,932.6	-185.0	649.9	614.4	35.51	18.302			
6,650.0	6,484.7	6,827.3	6,484.8	27.9	38.1	89.85	-1,932.6	-178.7	649.9	614.3	35.62	18.246			
6,700.0	6,533.8	6,877.3	6,533.9	27.9	38.1	89.85	-1,932.6	-169.2	649.9	614.2	35.70	18.201			
6,750.0	6,582.2	6,927.3	6,582.3	28.0	38.1	89.85	-1,932.6	-156.5	649.8	614.0	35.78	18.164			
6,800.0	6,629.6	6,977.3	6,629.7	28.0	38.1	89.85	-1,932.6	-140.6	649.8	613.9	35.84	18.132			
6,850.0	6,675.9	7,027.3	6,676.0	28.0	38.2	89.86	-1,932.6	-121.7	649.7	613.8	35.89	18.102			
6,900.0	6,720.8	7,077.3	6,720.9	28.0	38.2	89.86	-1,932.6	-99.8	649.6	613.7	35.95	18.069			
6,950.0	6,764.3	7,127.3	6,764.4	28.0	38.2	89.87	-1,932.6	-75.0	649.6	613.5	36.03	18.027			
7,000.0	6,806.0	7,177.4	6,806.1	28.1	38.2	89.87	-1,932.6	-47.5	649.5	613.3	36.15	17.968			
7,050.0	6,845.8	7,227.4	6,845.9	28.1	38.2	89.88	-1,932.6	-17.2	649.4	613.1	36.31	17.886			
7,100.0	6,883.5	7,277.4	6,883.6	28.1	38.2	89.88	-1,932.6	15.6	649.3	612.8	36.53	17.772			
7,150.0	6,919.1	7,327.4	6,919.2	28.1	38.3	89.89	-1,932.6	50.7	649.2	612.3	36.84	17.620			
7,200.0	6,952.2	7,377.4	6,952.3	28.2	38.3	89.90	-1,932.6	88.2	649.1	611.8	37.26	17.421			
7,250.0	6,982.9	7,427.4	6,983.0	28.2	38.3	89.90	-1,932.6	127.7	648.9	611.1	37.79	17.172			
7,300.0	7,010.9	7,477.4	7,010.9	28.3	38.4	89.91	-1,932.6	169.1	648.8	610.3	38.46	16.871			
7,350.0	7,036.1	7,527.4	7,036.1	28.4	38.5	89.92	-1,932.6	212.3	648.7	609.4	39.27	16.518			
7,400.0	7,058.4	7,577.4	7,058.5	28.5	38.6	89.93	-1,932.6	257.0	648.5	608.3	40.24	16.118			
7,450.0	7,077.8	7,627.4	7,077.8	28.7	38.7	89.94	-1,932.6	303.1	648.4	607.0	41.36	15.677			
7,500.0	7,094.1	7,677.4	7,094.1	28.9	38.8	89.95	-1,932.6	350.4	648.2	605.6	42.63	15.206			
7,550.0	7,107.3	7,727.4	7,107.3	29.1	38.9	89.96	-1,932.6	398.6	648.1	604.0	44.05	14.713			
7,600.0	7,117.3	7,777.4	7,117.3	29.4	39.1	89.97	-1,932.6	447.6	647.9	602.3	45.60	14.209			
7,650.0	7,124.1	7,827.4	7,124.0	29.7	39.3	89.98	-1,932.6	497.1	647.8	600.5	47.27	13.703			
7,700.0	7,127.6	7,877.4	7,127.5	30.1	39.6	89.99	-1,932.6	547.0	647.6	598.6	49.04	13.205			
7,737.0	7,128.1	7,914.4	7,128.0	30.5	39.8	90.00	-1,932.6	583.9	647.5	597.1	50.41	12.846			
7,800.0	7,127.5	7,977.4	7,127.4	31.2	40.2	90.00	-1,932.6	647.0	647.3	594.5	52.85	12.249			
7,900.0	7,126.4	8,077.4	7,126.4	32.5	41.0	90.00	-1,932.6	747.0	647.0	590.1	56.95	11.362			
8,000.0	7,125.4	8,177.4	7,125.4	34.1	41.9	90.01	-1,932.6	847.0	646.7	585.4	61.28	10.553			
8,100.0	7,124.3	8,277.4	7,124.4	35.9	43.1	90.01	-1,932.6	947.0	646.4	580.6	65.81	9.822			
8,200.0	7,123.3	8,377.4	7,123.4	37.9	44.4	90.02	-1,932.6	1,047.0	646.1	575.6	70.50	9.165			
8,300.0	7,122.2	8,477.4	7,122.4	40.0	45.9	90.02	-1,932.6	1,147.0	645.8	570.5	75.31	8.575			

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

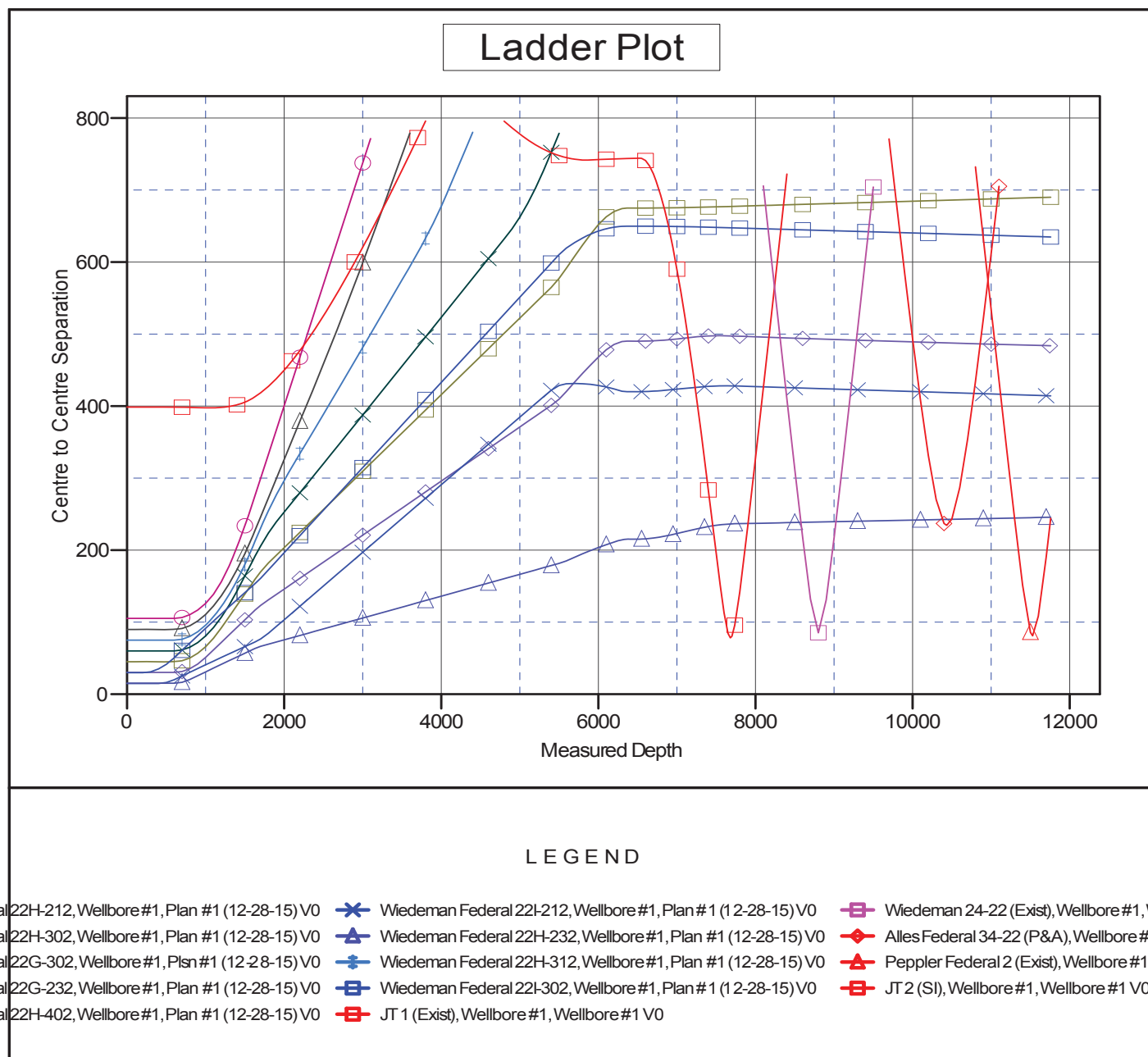
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #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								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			
8,400.0	7,121.2	8,577.4	7,121.4	42.3	47.6	90.03	-1,932.6	1,246.9	645.4	565.2	80.23	8.045			
8,500.0	7,120.1	8,677.4	7,120.4	44.6	49.5	90.03	-1,932.6	1,346.9	645.1	559.9	85.23	7.569			
8,600.0	7,119.1	8,777.4	7,119.5	47.0	51.5	90.04	-1,932.6	1,446.9	644.8	554.5	90.31	7.140			
8,700.0	7,118.0	8,877.4	7,118.5	49.4	53.6	90.04	-1,932.6	1,546.9	644.5	549.1	95.44	6.753			
8,800.0	7,117.0	8,977.4	7,117.5	51.9	55.7	90.04	-1,932.6	1,646.9	644.2	543.6	100.63	6.402			
8,900.0	7,115.9	9,077.4	7,116.5	54.4	58.0	90.05	-1,932.6	1,746.9	643.9	538.0	105.86	6.082			
9,000.0	7,114.9	9,177.4	7,115.5	57.0	60.3	90.05	-1,932.6	1,846.9	643.6	532.4	111.13	5.791			
9,100.0	7,113.8	9,277.4	7,114.5	59.6	62.7	90.06	-1,932.6	1,946.9	643.3	526.8	116.44	5.525			
9,200.0	7,112.8	9,377.4	7,113.5	62.2	65.1	90.06	-1,932.6	2,046.9	643.0	521.2	121.77	5.280			
9,300.0	7,111.7	9,477.4	7,112.5	64.8	67.6	90.07	-1,932.6	2,146.9	642.6	515.5	127.12	5.055			
9,400.0	7,110.7	9,577.4	7,111.5	67.4	70.1	90.07	-1,932.6	2,246.9	642.3	509.8	132.50	4.848			
9,500.0	7,109.7	9,677.4	7,110.5	70.1	72.6	90.08	-1,932.6	2,346.9	642.0	504.1	137.89	4.656			
9,600.0	7,108.6	9,777.4	7,109.5	72.7	75.1	90.08	-1,932.6	2,446.9	641.7	498.4	143.30	4.478			
9,700.0	7,107.6	9,877.4	7,108.5	75.4	77.7	90.09	-1,932.6	2,546.9	641.4	492.7	148.73	4.312			
9,800.0	7,106.5	9,977.4	7,107.5	78.1	80.3	90.09	-1,932.6	2,646.9	641.1	486.9	154.17	4.158			
9,900.0	7,105.5	10,077.4	7,106.5	80.8	82.9	90.10	-1,932.6	2,746.9	640.8	481.1	159.63	4.014			
10,000.0	7,104.4	10,177.4	7,105.5	83.5	85.5	90.10	-1,932.6	2,846.9	640.5	475.4	165.09	3.879			
10,100.0	7,103.4	10,277.4	7,104.5	86.2	88.1	90.11	-1,932.6	2,946.9	640.2	469.6	170.56	3.753			
10,200.0	7,102.3	10,377.4	7,103.5	88.9	90.8	90.11	-1,932.6	3,046.8	639.8	463.8	176.05	3.634			
10,300.0	7,101.3	10,477.4	7,102.5	91.6	93.4	90.12	-1,932.6	3,146.8	639.5	458.0	181.54	3.523			
10,400.0	7,100.2	10,577.4	7,101.5	94.4	96.1	90.12	-1,932.6	3,246.8	639.2	452.2	187.04	3.418			
10,500.0	7,099.2	10,677.4	7,100.6	97.1	98.7	90.12	-1,932.6	3,346.8	638.9	446.4	192.54	3.318			
10,600.0	7,098.1	10,777.4	7,099.6	99.8	101.4	90.13	-1,932.6	3,446.8	638.6	440.5	198.05	3.224			
10,700.0	7,097.1	10,877.4	7,098.6	102.6	104.1	90.13	-1,932.6	3,546.8	638.3	434.7	203.57	3.135			
10,800.0	7,096.0	10,977.4	7,097.6	105.3	106.8	90.14	-1,932.6	3,646.8	638.0	428.9	209.10	3.051			
10,900.0	7,095.0	11,077.4	7,096.6	108.1	109.5	90.14	-1,932.6	3,746.8	637.7	423.0	214.62	2.971			
11,000.0	7,093.9	11,177.4	7,095.6	110.8	112.2	90.15	-1,932.6	3,846.8	637.3	417.2	220.15	2.895			
11,100.0	7,092.9	11,277.4	7,094.6	113.6	114.9	90.15	-1,932.6	3,946.8	637.0	411.3	225.69	2.823			
11,200.0	7,091.9	11,377.4	7,093.6	116.3	117.6	90.16	-1,932.6	4,046.8	636.7	405.5	231.23	2.754			
11,300.0	7,090.8	11,477.4	7,092.6	119.1	120.4	90.16	-1,932.6	4,146.8	636.4	399.6	236.78	2.688			
11,400.0	7,089.8	11,577.4	7,091.6	121.8	123.1	90.17	-1,932.6	4,246.8	636.1	393.8	242.32	2.625			
11,500.0	7,088.7	11,677.4	7,090.6	124.6	125.8	90.17	-1,932.6	4,346.8	635.8	387.9	247.87	2.565			
11,600.0	7,087.7	11,777.4	7,089.6	127.4	128.5	90.18	-1,932.6	4,446.8	635.5	382.1	253.43	2.508			
11,700.0	7,086.6	11,877.4	7,088.6	130.1	131.3	90.18	-1,932.6	4,546.8	635.2	376.2	258.98	2.453			
11,758.7	7,086.0	11,936.1	7,088.0	131.7	132.9	90.18	-1,932.6	4,605.5	635.0	372.7	262.24	2.421 SF			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4751.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

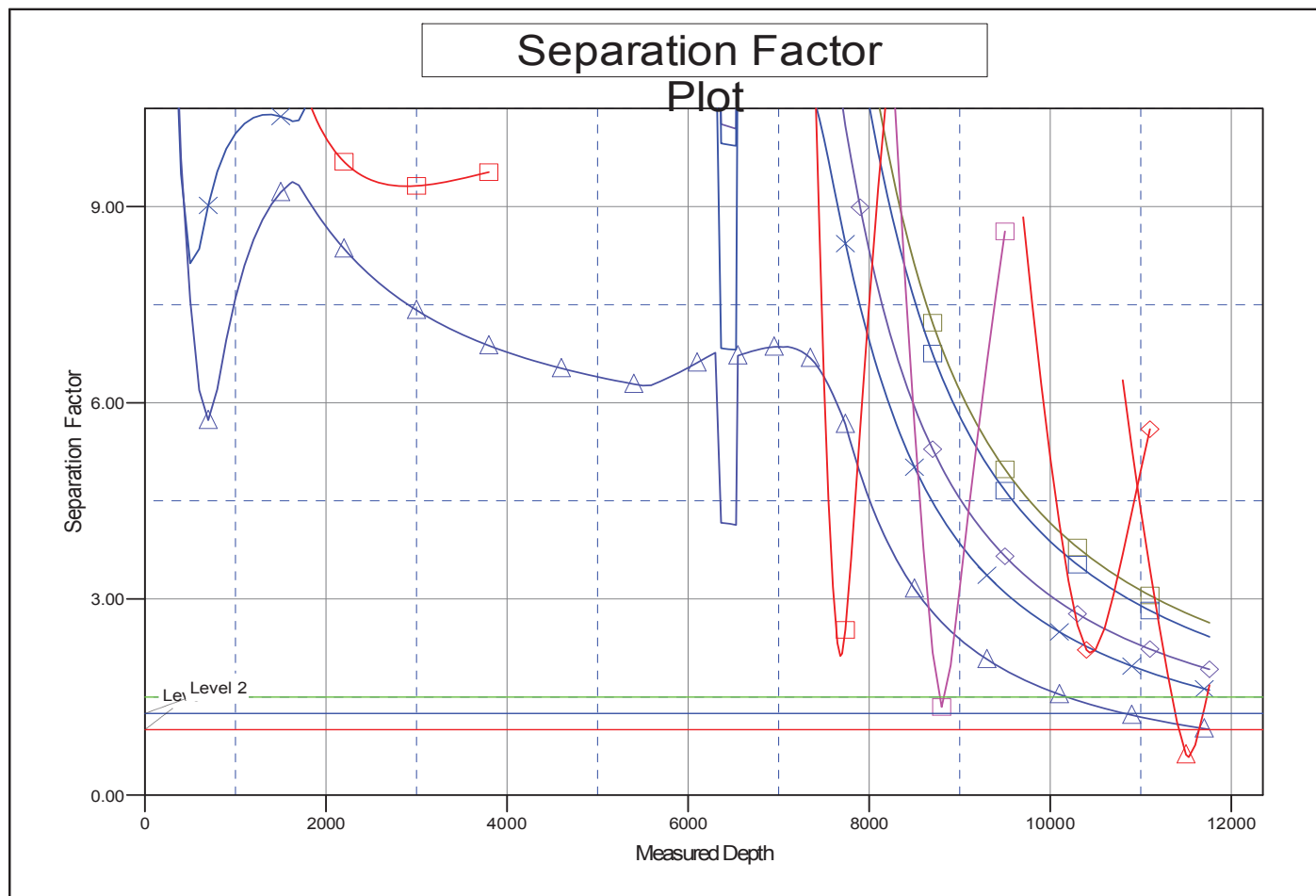
Coordinates are relative to: Wiedeman Federal 22H-332
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.47°



Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 22H-332
Project:	SEC.22-T4N-R66W	TVD Reference:	WELL @ 4751.0ft (Original Well Elev)
Reference Site:	Wiedeman Federal 4N66W22G PAD Sec.22-T4N-R66W	MD Reference:	WELL @ 4751.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Wiedeman Federal 22H-332	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:	Plan #1 (12-28-15)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4751.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: Wiedeman Federal 22H-332
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.47°



LEGEND

ral22H-212, Wellbore #1, Plan #1 (12-28-15) V0	✕ Wiedeman Federal 22H-212, Wellbore #1, Plan #1 (12-28-15) V0	■ Wiedeman 24-22 (Exist), Wellbore #1, V0
ral22H-302, Wellbore #1, Plan #1 (12-28-15) V0	▲ Wiedeman Federal 22H-232, Wellbore #1, Plan #1 (12-28-15) V0	◆ Alles Federal 34-22 (P&A), Wellbore #1, V0
ral22G-302, Wellbore #1, Plsn #1 (12-28-15) V0	◆ Wiedeman Federal 22H-312, Wellbore #1, Plan #1 (12-28-15) V0	▲ Peppler Federal 2 (Exist), Wellbore #1, V0
ral22G-232, Wellbore #1, Plan #1 (12-28-15) V0	■ Wiedeman Federal 22H-302, Wellbore #1, Plan #1 (12-28-15) V0	● JT 2 (SI), Wellbore #1, Wellbore #1 V0
ral22H-402, Wellbore #1, Plan #1 (12-28-15) V0	● JT 1 (Exist), Wellbore #1, Wellbore #1 V0	