

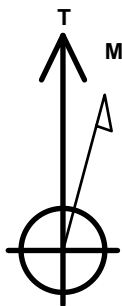
PETROLEUM DEVELOPMENT CORP DJ Basin

Well Name: **Ottenhoff 29R-203**

Surface Location: Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W
 North American Datum 1983 , US State Plane 1983 Colorado Northern Zone
 Ground Elevation: 4663.0
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.0 0.0 1381166.65 3259704.34 40.375957 -104.567837
 RKB - 23' WELL @ 4686.0ft (RKB - 23')

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 559'FNL & 990'FEL, Sec.29	1.0	0.0	0.0	Point
BHL 2340'FNL & 1195'FEL, Sec.32	6662.0	-7062.1	-159.4	Point
LPL 819'FNL & 1146'FEL, Sec.29	6707.0	-263.0	-154.1	Point



Azimuths to True North
 Magnetic North: 8.00°

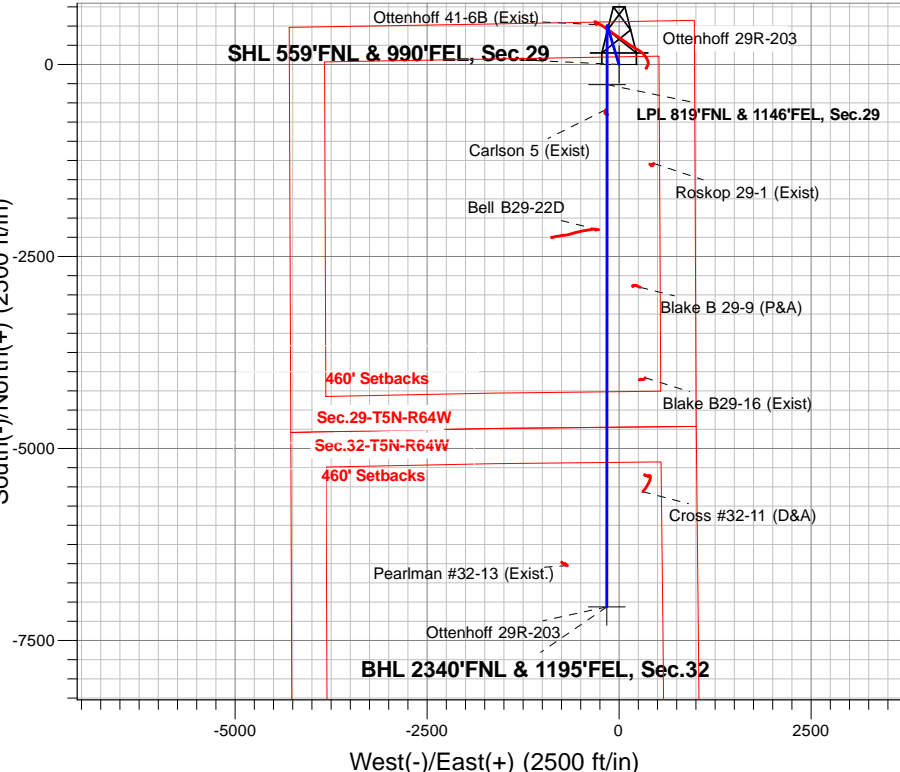
Magnetic Field
 Strength: 52547.3snT
 Dip Angle: 66.87°
 Date: 1/30/2017
 Model: IGRF2010

Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W
 Ottenhoff 29R-203
 Plan #2 (1-25-17)
 7:48, January 30 2017

ANNOTATIONS

TVD	MD	Annotation
2000.0	2000.0	KOP - Start Build 1.50
5445.7	5483.1	Start Drop -2.00
5890.0	5929.1	Start 53.1 hold at 5929.1 MD
5943.1	5982.2	Start Build 7.50
6707.0	7187.7	Start 6798.9 hold at 7187.7 MD
6662.0	13986.6	TD at 13986.6

South(-)/North(+) (2500 ft/in)

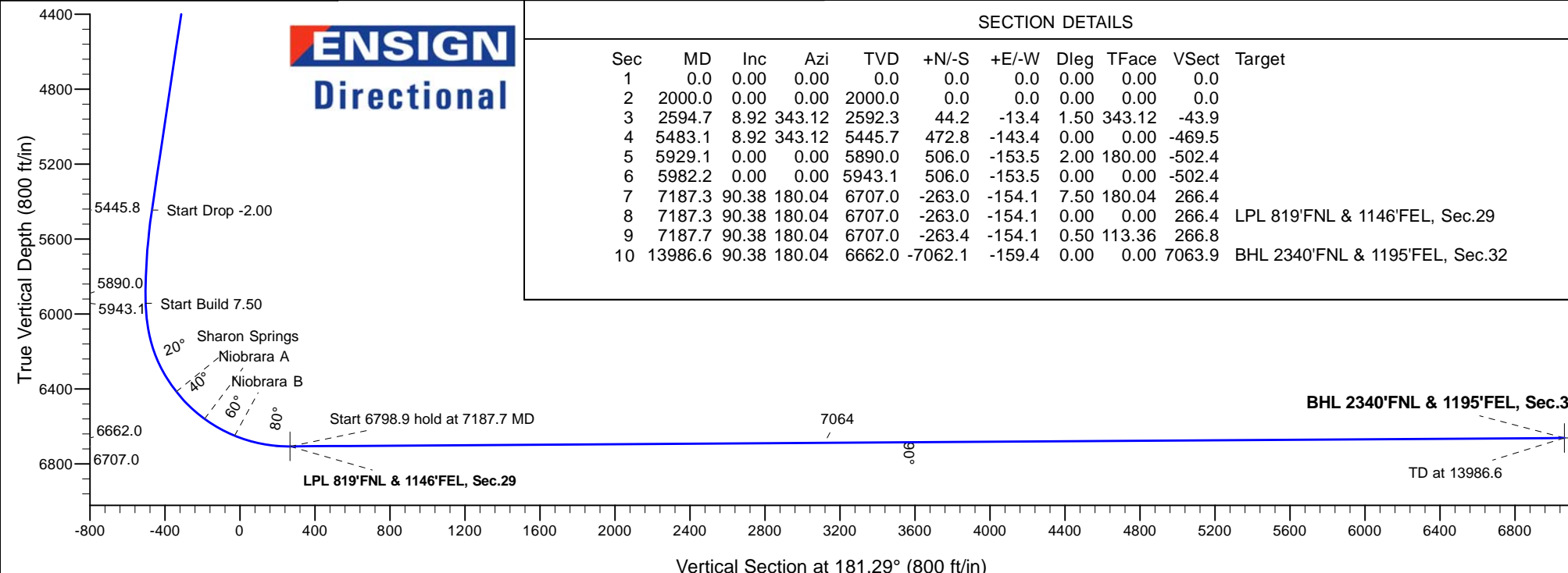


West(-)/East(+) (2500 ft/in)



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	2000.0	0.00	0.00	2000.0	0.0	0.0	0.00	0.00	0.0	
3	2594.7	8.92	343.12	2592.3	44.2	-13.4	1.50	343.12	-43.9	
4	5483.1	8.92	343.12	5445.7	472.8	-143.4	0.00	0.00	-469.5	
5	5929.1	0.00	0.00	5890.0	506.0	-153.5	2.00	180.00	-502.4	
6	5982.2	0.00	0.00	5943.1	506.0	-153.5	0.00	0.00	-502.4	
7	7187.3	90.38	180.04	6707.0	-263.0	-154.1	7.50	180.04	266.4	
8	7187.3	90.38	180.04	6707.0	-263.0	-154.1	0.00	0.00	266.4	LPL 819'FNL & 1146'FEL, Sec.29
9	7187.7	90.38	180.04	6707.0	-263.4	-154.1	0.50	113.36	266.8	
10	13986.6	90.38	180.04	6662.0	-7062.1	-159.4	0.00	0.00	7063.9	BHL 2340'FNL & 1195'FEL, Sec.32



Vertical Section at 181.29° (800 ft/in)



PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.29-T5N-R64W

Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W

Ottenhoff 29R-203

Wellbore #1

Plan: Plan #2 (1-25-17)

Standard Planning Report

30 January, 2017

Database:	US_EDM	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Project:	SEC.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	North Reference:	True
Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (1-25-17)		

Project	SEC.29-T5N-R64W, Weld County, CO		
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		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W			
Site Position:		Northing:	1,381,166.77 usft	Latitude:	40.375956
From:	Lat/Long	Easting:	3,259,749.48 usft	Longitude:	-104.567675
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.60

Well	Ottenhoff 29R-203					
Well Position	+N/-S	0.3 ft	Northing:	1,381,166.65 usft	Latitude:	40.375957
	+E/-W	-45.1 ft	Easting:	3,259,704.34 usft	Longitude:	-104.567837
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,663.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/30/2017	8.00	66.87	52,547

Design	Plan #2 (1-25-17)			
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	181.29

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	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,594.7	8.92	343.12	2,592.3	44.2	-13.4	1.50	1.50	0.00	343.12	
5,483.1	8.92	343.12	5,445.7	472.8	-143.4	0.00	0.00	0.00	0.00	
5,929.1	0.00	0.00	5,890.0	506.0	-153.5	2.00	-2.00	0.00	180.00	
5,982.2	0.00	0.00	5,943.1	506.0	-153.5	0.00	0.00	0.00	0.00	
7,187.3	90.38	180.04	6,707.0	-263.0	-154.1	7.50	7.50	0.00	180.04	
7,187.3	90.38	180.04	6,707.0	-263.0	-154.1	0.00	0.00	0.00	0.00	LPL 819'FNL & 1146'F
7,187.7	90.38	180.04	6,707.0	-263.4	-154.1	0.50	-0.20	0.46	113.36	
13,986.6	90.38	180.04	6,662.0	-7,062.1	-159.4	0.00	0.00	0.00	0.00	BHL 2340'FNL & 1195'F

Database:	US_EDM	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Project:	SEC.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	North Reference:	True
Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (1-25-17)		

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
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 1.50									
2,100.0	1.50	343.12	2,100.0	1.3	-0.4	-1.2	1.50	1.50	0.00
2,200.0	3.00	343.12	2,199.9	5.0	-1.5	-5.0	1.50	1.50	0.00
2,300.0	4.50	343.12	2,299.7	11.3	-3.4	-11.2	1.50	1.50	0.00
2,400.0	6.00	343.12	2,399.3	20.0	-6.1	-19.9	1.50	1.50	0.00
2,500.0	7.50	343.12	2,498.6	31.3	-9.5	-31.0	1.50	1.50	0.00
2,594.7	8.92	343.12	2,592.3	44.2	-13.4	-43.9	1.50	1.50	0.00
2,600.0	8.92	343.12	2,597.5	45.0	-13.7	-44.7	0.00	0.00	0.00
2,700.0	8.92	343.12	2,696.3	59.8	-18.2	-59.4	0.00	0.00	0.00
2,800.0	8.92	343.12	2,795.1	74.7	-22.7	-74.1	0.00	0.00	0.00
2,900.0	8.92	343.12	2,893.9	89.5	-27.2	-88.9	0.00	0.00	0.00
3,000.0	8.92	343.12	2,992.7	104.4	-31.7	-103.6	0.00	0.00	0.00
3,100.0	8.92	343.12	3,091.5	119.2	-36.2	-118.3	0.00	0.00	0.00
3,200.0	8.92	343.12	3,190.3	134.0	-40.7	-133.1	0.00	0.00	0.00
3,300.0	8.92	343.12	3,289.1	148.9	-45.2	-147.8	0.00	0.00	0.00
3,400.0	8.92	343.12	3,387.9	163.7	-49.7	-162.6	0.00	0.00	0.00
3,500.0	8.92	343.12	3,486.6	178.6	-54.2	-177.3	0.00	0.00	0.00
3,543.9	8.92	343.12	3,530.0	185.1	-56.1	-183.8	0.00	0.00	0.00
Parkman Sandstone									
3,600.0	8.92	343.12	3,585.4	193.4	-58.7	-192.0	0.00	0.00	0.00
3,700.0	8.92	343.12	3,684.2	208.2	-63.2	-206.8	0.00	0.00	0.00
3,800.0	8.92	343.12	3,783.0	223.1	-67.7	-221.5	0.00	0.00	0.00
3,900.0	8.92	343.12	3,881.8	237.9	-72.2	-236.2	0.00	0.00	0.00
4,000.0	8.92	343.12	3,980.6	252.8	-76.7	-251.0	0.00	0.00	0.00
4,100.0	8.92	343.12	4,079.4	267.6	-81.2	-265.7	0.00	0.00	0.00
4,200.0	8.92	343.12	4,178.2	282.4	-85.7	-280.4	0.00	0.00	0.00
4,222.1	8.92	343.12	4,200.0	285.7	-86.7	-283.7	0.00	0.00	0.00
Sussex Sandstone									
4,300.0	8.92	343.12	4,277.0	297.3	-90.2	-295.2	0.00	0.00	0.00
4,400.0	8.92	343.12	4,375.8	312.1	-94.7	-309.9	0.00	0.00	0.00
4,500.0	8.92	343.12	4,474.6	327.0	-99.2	-324.6	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Project:	SEC.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	North Reference:	True
Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (1-25-17)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,600.0	8.92	343.12	4,573.3	341.8	-103.7	-339.4	0.00	0.00	0.00
4,700.0	8.92	343.12	4,672.1	356.6	-108.2	-354.1	0.00	0.00	0.00
4,800.0	8.92	343.12	4,770.9	371.5	-112.7	-368.8	0.00	0.00	0.00
4,900.0	8.92	343.12	4,869.7	386.3	-117.2	-383.6	0.00	0.00	0.00
5,000.0	8.92	343.12	4,968.5	401.1	-121.7	-398.3	0.00	0.00	0.00
5,100.0	8.92	343.12	5,067.3	416.0	-126.2	-413.0	0.00	0.00	0.00
5,200.0	8.92	343.12	5,166.1	430.8	-130.7	-427.8	0.00	0.00	0.00
5,300.0	8.92	343.12	5,264.9	445.7	-135.2	-442.5	0.00	0.00	0.00
5,400.0	8.92	343.12	5,363.7	460.5	-139.7	-457.2	0.00	0.00	0.00
5,483.1	8.92	343.12	5,445.8	472.8	-143.4	-469.5	0.00	0.00	0.00
Start Drop -2.00									
5,500.0	8.58	343.12	5,462.5	475.3	-144.2	-471.9	2.00	-2.00	0.00
5,600.0	6.58	343.12	5,561.6	487.9	-148.0	-484.5	2.00	-2.00	0.00
5,700.0	4.58	343.12	5,661.1	497.2	-150.8	-493.7	2.00	-2.00	0.00
5,800.0	2.58	343.12	5,760.9	503.2	-152.7	-499.6	2.00	-2.00	0.00
5,900.0	0.58	343.12	5,860.9	505.9	-153.5	-502.3	2.00	-2.00	0.00
5,929.1	0.00	343.12	5,890.0	506.0	-153.5	-502.4	2.00	-2.00	0.00
Start 53.1 hold at 5929.1 MD									
5,982.2	0.00	0.00	5,943.1	506.0	-153.5	-502.4	0.00	0.00	0.00
Start Build 7.50									
6,000.0	1.33	180.04	5,960.9	505.8	-153.5	-502.2	7.49	7.49	0.00
6,100.0	8.83	180.04	6,060.4	496.9	-153.5	-493.3	7.50	7.50	0.00
6,200.0	16.33	180.04	6,157.9	475.2	-153.5	-471.6	7.50	7.50	0.00
6,300.0	23.83	180.04	6,251.8	440.9	-153.5	-437.3	7.50	7.50	0.00
6,400.0	31.33	180.04	6,340.3	394.6	-153.6	-391.0	7.50	7.50	0.00
6,490.9	38.15	180.04	6,415.0	342.8	-153.6	-339.2	7.50	7.50	0.00
Sharon Springs									
6,500.0	38.83	180.04	6,422.1	337.1	-153.6	-333.6	7.50	7.50	0.00
6,600.0	46.33	180.04	6,495.7	269.5	-153.7	-266.0	7.50	7.50	0.00
6,700.0	53.83	180.04	6,559.8	192.9	-153.7	-189.4	7.50	7.50	0.00
6,700.3	53.86	180.04	6,560.0	192.6	-153.7	-189.1	7.50	7.50	0.00
Niobrara A									
6,800.0	61.33	180.04	6,613.4	108.5	-153.8	-105.0	7.50	7.50	0.00
6,885.2	67.72	180.04	6,650.0	31.6	-153.9	-28.2	7.50	7.50	0.00
Niobrara B									
6,900.0	68.83	180.04	6,655.5	17.9	-153.9	-14.4	7.50	7.50	0.00
7,000.0	76.33	180.04	6,685.4	-77.5	-153.9	80.9	7.50	7.50	0.00
7,100.0	83.83	180.04	6,702.6	-175.9	-154.0	179.3	7.50	7.50	0.00
7,187.3	90.38	180.04	6,707.0	-263.0	-154.1	266.4	7.50	7.50	0.00
7,187.7	90.38	180.04	6,707.0	-263.4	-154.1	266.8	0.48	-0.19	0.44
Start 6798.9 hold at 7187.7 MD									
7,200.0	90.38	180.04	6,706.9	-275.7	-154.1	279.1	0.00	0.00	0.00
7,300.0	90.38	180.04	6,706.3	-375.7	-154.2	379.1	0.00	0.00	0.00
7,400.0	90.38	180.04	6,705.6	-475.7	-154.2	479.1	0.00	0.00	0.00
7,500.0	90.38	180.04	6,704.9	-575.7	-154.3	579.1	0.00	0.00	0.00
7,600.0	90.38	180.04	6,704.3	-675.7	-154.4	679.0	0.00	0.00	0.00
7,700.0	90.38	180.04	6,703.6	-775.7	-154.5	779.0	0.00	0.00	0.00
7,800.0	90.38	180.04	6,702.9	-875.7	-154.6	879.0	0.00	0.00	0.00
7,900.0	90.38	180.04	6,702.3	-975.7	-154.6	979.0	0.00	0.00	0.00
8,000.0	90.38	180.04	6,701.6	-1,075.7	-154.7	1,078.9	0.00	0.00	0.00
8,100.0	90.38	180.04	6,701.0	-1,175.7	-154.8	1,178.9	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Project:	SEC.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	North Reference:	True
Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (1-25-17)		

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)
8,200.0	90.38	180.04	6,700.3	-1,275.7	-154.9	1,278.9	0.00	0.00	0.00
8,300.0	90.38	180.04	6,699.6	-1,375.7	-155.0	1,378.9	0.00	0.00	0.00
8,400.0	90.38	180.04	6,699.0	-1,475.7	-155.0	1,478.8	0.00	0.00	0.00
8,500.0	90.38	180.04	6,698.3	-1,575.7	-155.1	1,578.8	0.00	0.00	0.00
8,600.0	90.38	180.04	6,697.7	-1,675.7	-155.2	1,678.8	0.00	0.00	0.00
8,700.0	90.38	180.04	6,697.0	-1,775.7	-155.3	1,778.7	0.00	0.00	0.00
8,800.0	90.38	180.04	6,696.3	-1,875.7	-155.3	1,878.7	0.00	0.00	0.00
8,900.0	90.38	180.04	6,695.7	-1,975.7	-155.4	1,978.7	0.00	0.00	0.00
9,000.0	90.38	180.04	6,695.0	-2,075.7	-155.5	2,078.7	0.00	0.00	0.00
9,100.0	90.38	180.04	6,694.3	-2,175.7	-155.6	2,178.6	0.00	0.00	0.00
9,200.0	90.38	180.04	6,693.7	-2,275.7	-155.7	2,278.6	0.00	0.00	0.00
9,300.0	90.38	180.04	6,693.0	-2,375.7	-155.7	2,378.6	0.00	0.00	0.00
9,400.0	90.38	180.04	6,692.4	-2,475.7	-155.8	2,478.6	0.00	0.00	0.00
9,500.0	90.38	180.04	6,691.7	-2,575.7	-155.9	2,578.5	0.00	0.00	0.00
9,600.0	90.38	180.04	6,691.0	-2,675.7	-156.0	2,678.5	0.00	0.00	0.00
9,700.0	90.38	180.04	6,690.4	-2,775.7	-156.1	2,778.5	0.00	0.00	0.00
9,800.0	90.38	180.04	6,689.7	-2,875.7	-156.1	2,878.5	0.00	0.00	0.00
9,900.0	90.38	180.04	6,689.0	-2,975.7	-156.2	2,978.4	0.00	0.00	0.00
10,000.0	90.38	180.04	6,688.4	-3,075.7	-156.3	3,078.4	0.00	0.00	0.00
10,100.0	90.38	180.04	6,687.7	-3,175.7	-156.4	3,178.4	0.00	0.00	0.00
10,200.0	90.38	180.04	6,687.1	-3,275.7	-156.4	3,278.4	0.00	0.00	0.00
10,300.0	90.38	180.04	6,686.4	-3,375.7	-156.5	3,378.3	0.00	0.00	0.00
10,400.0	90.38	180.04	6,685.7	-3,475.7	-156.6	3,478.3	0.00	0.00	0.00
10,500.0	90.38	180.04	6,685.1	-3,575.7	-156.7	3,578.3	0.00	0.00	0.00
10,600.0	90.38	180.04	6,684.4	-3,675.7	-156.8	3,678.3	0.00	0.00	0.00
10,700.0	90.38	180.04	6,683.8	-3,775.7	-156.8	3,778.2	0.00	0.00	0.00
10,800.0	90.38	180.04	6,683.1	-3,875.6	-156.9	3,878.2	0.00	0.00	0.00
10,900.0	90.38	180.04	6,682.4	-3,975.6	-157.0	3,978.2	0.00	0.00	0.00
11,000.0	90.38	180.04	6,681.8	-4,075.6	-157.1	4,078.2	0.00	0.00	0.00
11,100.0	90.38	180.04	6,681.1	-4,175.6	-157.2	4,178.1	0.00	0.00	0.00
11,200.0	90.38	180.04	6,680.4	-4,275.6	-157.2	4,278.1	0.00	0.00	0.00
11,300.0	90.38	180.04	6,679.8	-4,375.6	-157.3	4,378.1	0.00	0.00	0.00
11,400.0	90.38	180.04	6,679.1	-4,475.6	-157.4	4,478.0	0.00	0.00	0.00
11,500.0	90.38	180.04	6,678.5	-4,575.6	-157.5	4,578.0	0.00	0.00	0.00
11,600.0	90.38	180.04	6,677.8	-4,675.6	-157.5	4,678.0	0.00	0.00	0.00
11,700.0	90.38	180.04	6,677.1	-4,775.6	-157.6	4,778.0	0.00	0.00	0.00
11,800.0	90.38	180.04	6,676.5	-4,875.6	-157.7	4,877.9	0.00	0.00	0.00
11,900.0	90.38	180.04	6,675.8	-4,975.6	-157.8	4,977.9	0.00	0.00	0.00
12,000.0	90.38	180.04	6,675.1	-5,075.6	-157.9	5,077.9	0.00	0.00	0.00
12,100.0	90.38	180.04	6,674.5	-5,175.6	-157.9	5,177.9	0.00	0.00	0.00
12,200.0	90.38	180.04	6,673.8	-5,275.6	-158.0	5,277.8	0.00	0.00	0.00
12,300.0	90.38	180.04	6,673.2	-5,375.6	-158.1	5,377.8	0.00	0.00	0.00
12,400.0	90.38	180.04	6,672.5	-5,475.6	-158.2	5,477.8	0.00	0.00	0.00
12,500.0	90.38	180.04	6,671.8	-5,575.6	-158.2	5,577.8	0.00	0.00	0.00
12,600.0	90.38	180.04	6,671.2	-5,675.6	-158.3	5,677.7	0.00	0.00	0.00
12,700.0	90.38	180.04	6,670.5	-5,775.6	-158.4	5,777.7	0.00	0.00	0.00
12,800.0	90.38	180.04	6,669.9	-5,875.6	-158.5	5,877.7	0.00	0.00	0.00
12,900.0	90.38	180.04	6,669.2	-5,975.6	-158.6	5,977.7	0.00	0.00	0.00
13,000.0	90.38	180.04	6,668.5	-6,075.6	-158.6	6,077.6	0.00	0.00	0.00
13,100.0	90.38	180.04	6,667.9	-6,175.6	-158.7	6,177.6	0.00	0.00	0.00
13,200.0	90.38	180.04	6,667.2	-6,275.6	-158.8	6,277.6	0.00	0.00	0.00
13,300.0	90.38	180.04	6,666.5	-6,375.6	-158.9	6,377.6	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Project:	SEC.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	North Reference:	True
Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (1-25-17)		

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)
13,400.0	90.38	180.04	6,665.9	-6,475.6	-159.0	6,477.5	0.00	0.00	0.00
13,500.0	90.38	180.04	6,665.2	-6,575.6	-159.0	6,577.5	0.00	0.00	0.00
13,600.0	90.38	180.04	6,664.6	-6,675.6	-159.1	6,677.5	0.00	0.00	0.00
13,700.0	90.38	180.04	6,663.9	-6,775.6	-159.2	6,777.5	0.00	0.00	0.00
13,800.0	90.38	180.04	6,663.2	-6,875.6	-159.3	6,877.4	0.00	0.00	0.00
13,900.0	90.38	180.04	6,662.6	-6,975.6	-159.3	6,977.4	0.00	0.00	0.00
13,986.6	90.38	180.04	6,662.0	-7,062.1	-159.4	7,063.9	0.00	0.00	0.00
TD at 13986.6									

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 559'FNL & 990'FEL - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,381,166.66	3,259,704.34	40.375957	-104.567837
BHL 2340'FNL & 1195'FI - plan hits target center - Point	0.00	0.00	6,662.0	-7,062.1	-159.4	1,374,103.53	3,259,619.18	40.356572	-104.568409
LPL 819'FNL & 1146'FEI - plan hits target center - Point	0.00	0.00	6,707.0	-263.0	-154.1	1,380,902.04	3,259,553.04	40.375235	-104.568390

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,543.9	3,530.0	Parkman Sandstone		0.00	
4,222.1	4,200.0	Sussex Sandstone		0.00	
6,490.9	6,415.0	Sharon Springs		0.00	
6,700.3	6,560.0	Niobrara A		0.00	
6,885.2	6,650.0	Niobrara B		0.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
2,000.0	2,000.0	0.0	0.0	KOP - Start Build 1.50
5,483.1	5,445.7	44.2	-13.4	Start Drop -2.00
5,929.1	5,890.0	472.8	-143.4	Start 53.1 hold at 5929.1 MD
5,982.2	5,943.1	506.0	-153.5	Start Build 7.50
7,187.7	6,707.0	506.0	-153.5	Start 6798.9 hold at 7187.7 MD
13,986.6	6,662.0	-263.4	-154.1	TD at 13986.6



PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.29-T5N-R64W

Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W

Ottenhoff 29R-203

Wellbore #1

Plan #2 (1-25-17)

Anticollision Report

30 January, 2017



Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Reference	Plan #2 (1-25-17)		
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:	2.45 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	1/30/2017		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	13,986.6	Plan #2 (1-25-17) (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						
Bell Pad SEC.29-T5N-R64W						
Bell B29-22D - Bell B29-22D - Bell B29-22D	9,073.8	6,773.0	128.0	54.1	1.733	CC, ES, SF
Existing Wells Sec.29-T5N-R64W						
Carlson 5 (Exist) - Wellbore #1 - Wellbore #1	7,531.3	6,691.0	24.9	-15.4	0.618	Level 1, CC, ES, SF
Cross #32-11 (D&A) - Wellbore #1 - Wellbore #1	12,400.0	6,863.0	541.0	395.3	3.713	SF
Cross #32-11 (D&A) - Wellbore #1 - Wellbore #1	12,413.6	6,869.2	540.9	395.2	3.713	CC, ES
Ottenhoff 41-6B (Exist) - Wellbore #1 - Wellbore #1	4,719.2	4,748.3	75.4	48.6	2.815	CC, ES, SF
Pearlman #32-13 (Exist.) - Wellbore #1 - Wellbore #1	13,442.0	6,722.3	523.6	349.7	3.010	CC, ES
Pearlman #32-13 (Exist.) - Wellbore #1 - Wellbore #1	13,500.0	6,722.6	526.8	351.5	3.005	SF
Roskop 29-1 (Exist) - Wellbore #1 - Wellbore #1	8,217.3	6,678.9	602.5	399.2	2.963	CC, ES, SF
Existing Wells Sec.29-T5N-R64W (GRID)						
Blake B 29-9 (P&A) - Wellbore #1 - Wellbore #1	9,818.4	6,666.7	413.6	324.7	4.651	CC, ES
Blake B 29-9 (P&A) - Wellbore #1 - Wellbore #1	9,900.0	6,667.9	421.6	330.8	4.643	SF
Blake B29-16 (Exist) - Wellbore #1 - Wellbore #1	11,012.6	6,693.8	492.7	374.3	4.161	CC, ES
Blake B29-16 (Exist) - Wellbore #1 - Wellbore #1	11,100.0	6,691.5	500.4	380.0	4.155	SF

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W						
Ottenhoff 29M-203 - Wellbore #1 - Plan #2 (1-25-17)	200.0	200.0	90.0	89.2	108.958	CC, ES
Ottenhoff 29M-203 - Wellbore #1 - Plan #2 (1-25-17)	900.0	877.4	150.5	145.8	32.102	SF
Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)	766.3	767.3	59.9	56.0	15.176	CC
Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)	800.0	801.0	59.9	55.8	14.496	ES
Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)	1,100.0	1,096.2	70.7	65.0	12.322	SF
Ottenhoff 29M-423 - Wellbore #1 - Plan #2 (1-25-17)	400.0	400.0	75.0	73.0	38.889	CC, ES
Ottenhoff 29M-423 - Wellbore #1 - Plan #2 (1-25-17)	900.0	888.3	105.5	100.9	22.749	SF
Ottenhoff 29R-143 - Wellbore #1 - Plan #2 (1-25-17)	1,200.0	1,200.0	29.8	23.5	4.708	CC, ES
Ottenhoff 29R-143 - Wellbore #1 - Plan #2 (1-25-17)	13,986.6	13,933.9	470.9	132.6	1.392	Level 3, SF
Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)	1,000.0	1,000.0	44.9	39.6	8.575	CC, ES
Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)	13,986.6	14,060.0	706.9	367.7	2.084	SF
Ottenhoff 29R-303 - Wellbore #1 - Plan #2 (1-25-17)	1,400.0	1,400.0	14.8	7.3	1.987	CC
Ottenhoff 29R-303 - Wellbore #1 - Plan #2 (1-25-17)	13,986.6	14,072.0	256.0	-62.5	0.804	Level 1, ES, SF
Ottenhoff 29R-323 - Wellbore #1 - Plan #2 (1-25-17)	800.0	800.0	30.1	26.0	7.286	CC, ES
Ottenhoff 29R-323 - Wellbore #1 - Plan #2 (1-25-17)	13,986.6	14,067.7	437.1	101.1	1.301	Level 3, SF
Ottenhoff 29R-423 - Wellbore #1 - Plan #2 (1-25-17)	2,000.0	1,999.0	15.0	4.3	1.401	Level 3, CC
Ottenhoff 29R-423 - Wellbore #1 - Plan #2 (1-25-17)	2,100.0	2,099.0	15.5	4.2	1.372	Level 3, ES
Ottenhoff 29R-423 - Wellbore #1 - Plan #2 (1-25-17)	13,986.6	14,145.2	294.4	29.7	1.112	Level 2, SF
Ottenhoff 29U-243 - Wellbore #1 - Plan #2 (1-25-17)	400.0	400.0	45.1	43.2	23.420	CC, ES
Ottenhoff 29U-243 - Wellbore #1 - Plan #2 (1-25-17)	13,986.6	14,023.3	673.1	334.2	1.986	SF
Ottenhoff 29U-343 - Wellbore #1 - Plan #2 (1-25-17)	200.0	199.0	60.2	59.4	73.107	CC, ES
Ottenhoff 29U-343 - Wellbore #1 - Plan #2 (1-25-17)	800.0	787.0	100.6	96.4	23.940	SF

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 559- Bell Pad SEC.29-T5N-R64W - Bell B29-22D - Bell B29-22D - Bell B29-22D													Offset Well Error:	0.0 ft
Reference Measured Depth (ft)	Vertical Depth (ft)	Offset Measured Depth (ft)	Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
8,300.0	6,699.6	6,774.8	6,711.4	39.9	21.2	92.20	-2,149.4	-283.4	784.3	727.2	57.13	13.729		
8,400.0	6,699.0	6,774.5	6,711.2	41.9	21.2	92.10	-2,149.4	-283.4	685.8	626.6	59.21	11.583		
8,500.0	6,698.3	6,774.3	6,711.0	44.0	21.2	92.00	-2,149.4	-283.4	587.9	526.6	61.33	9.586		
8,600.0	6,697.7	6,774.1	6,710.8	46.2	21.2	91.90	-2,149.4	-283.5	490.8	427.3	63.46	7.733		
8,700.0	6,697.0	6,773.9	6,710.5	48.3	21.2	91.80	-2,149.4	-283.5	395.1	329.5	65.62	6.021		
8,800.0	6,696.3	6,773.6	6,710.3	50.5	21.2	91.70	-2,149.4	-283.5	302.2	234.4	67.79	4.458		
8,900.0	6,695.7	6,773.4	6,710.1	52.7	21.2	91.60	-2,149.4	-283.5	215.8	145.8	69.98	3.084		
9,000.0	6,695.0	6,773.2	6,709.9	54.9	21.2	91.50	-2,149.4	-283.5	147.7	75.5	72.19	2.046		
9,073.8	6,694.5	6,773.0	6,709.7	56.5	21.2	91.42	-2,149.4	-283.5	128.0	54.1	73.82	1.733	CC, ES, SF	
9,100.0	6,694.3	6,773.0	6,709.6	57.1	21.2	91.40	-2,149.4	-283.5	130.6	56.2	74.40	1.755		
9,200.0	6,693.7	6,772.7	6,709.4	59.3	21.2	91.30	-2,149.4	-283.5	179.7	103.1	76.63	2.345		
9,300.0	6,693.0	6,772.5	6,709.2	61.6	21.2	91.20	-2,149.4	-283.5	259.9	181.0	78.86	3.295		
9,400.0	6,692.4	6,772.3	6,709.0	63.8	21.2	91.10	-2,149.4	-283.5	350.4	269.3	81.10	4.320		
9,500.0	6,691.7	6,772.1	6,708.7	66.1	21.2	91.00	-2,149.4	-283.5	445.0	361.6	83.35	5.338		
9,600.0	6,691.0	6,771.8	6,708.5	68.3	21.2	90.89	-2,149.4	-283.5	541.5	455.9	85.61	6.325		
9,700.0	6,690.4	6,771.6	6,708.3	70.6	21.2	90.79	-2,149.4	-283.5	639.1	551.3	87.87	7.273		
9,800.0	6,689.7	6,771.4	6,708.1	72.8	21.2	90.69	-2,149.4	-283.5	737.4	647.2	90.14	8.180		

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 Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - Carlson 5 (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)				
0.0	0.0	0.0	0.0	0.0	0.0	-166.75	-652.1	-153.5	670.1						
100.0	100.0	90.3	90.3	0.1	0.1	-166.76	-651.8	-153.4	669.6	669.3	0.28	2,351.275			
200.0	200.0	185.9	185.9	0.4	0.4	-166.76	-651.3	-153.3	669.1	668.3	0.79	842.623			
300.0	300.0	285.7	285.7	0.7	0.6	-166.77	-651.2	-153.2	669.0	667.7	1.27	525.623			
400.0	400.0	386.7	386.7	1.0	0.8	-166.80	-651.2	-152.7	668.8	667.0	1.79	373.650			
441.0	441.0	426.0	426.0	1.1	0.9	-166.81	-651.1	-152.6	668.7	666.8	1.98	336.919			
500.0	500.0	481.0	481.0	1.2	1.0	-166.81	-651.3	-152.6	668.9	666.7	2.25	297.126			
600.0	600.0	580.8	580.8	1.5	1.2	-166.82	-652.0	-152.7	669.6	666.9	2.69	248.613			
700.0	700.0	682.0	681.9	1.8	1.4	-166.85	-652.6	-152.5	670.2	667.0	3.17	211.732			
800.0	800.0	782.6	782.6	2.1	1.6	-166.84	-652.9	-152.7	670.6	666.9	3.66	183.104			
900.0	900.0	881.9	881.9	2.3	1.9	-166.86	-653.4	-152.6	671.0	666.8	4.19	159.990			
1,000.0	1,000.0	979.9	979.9	2.6	2.1	-166.88	-654.0	-152.4	671.6	666.8	4.74	141.598			
1,100.0	1,100.0	1,079.8	1,079.8	2.9	2.4	-166.91	-654.9	-152.2	672.4	667.0	5.31	126.679			
1,200.0	1,200.0	1,180.1	1,180.1	3.2	2.7	-166.94	-655.7	-152.1	673.1	667.2	5.88	114.448			
1,300.0	1,300.0	1,280.2	1,280.2	3.4	3.0	-166.96	-656.4	-152.0	673.8	667.4	6.46	104.307			
1,400.0	1,400.0	1,381.7	1,381.6	3.7	3.3	-166.99	-657.1	-151.8	674.4	667.4	7.04	95.738			
1,500.0	1,500.0	1,483.3	1,483.3	4.0	3.6	-167.02	-657.6	-151.6	674.8	667.2	7.63	88.408			
1,600.0	1,600.0	1,584.5	1,584.5	4.3	3.9	-167.00	-657.7	-151.8	675.0	666.8	8.14	82.884			
1,700.0	1,700.0	1,685.2	1,685.1	4.5	4.0	-166.93	-657.5	-152.7	675.0	666.4	8.57	78.793			
1,733.8	1,733.8	1,718.9	1,718.8	4.6	4.1	-166.90	-657.4	-153.0	675.0	666.3	8.71	77.482			
1,800.0	1,800.0	1,784.2	1,784.2	4.8	4.2	-166.86	-657.4	-153.4	675.0	666.0	9.00	74.970			
1,900.0	1,900.0	1,885.2	1,885.1	5.1	4.4	-166.83	-657.4	-153.8	675.1	665.6	9.46	71.385			
2,000.0	2,000.0	1,990.5	1,990.4	5.4	4.5	-166.80	-656.9	-154.1	674.7	664.9	9.88	68.265			
2,031.2	2,031.2	2,021.0	2,021.0	5.5	4.6	-149.91	-656.6	-154.3	674.6	664.6	10.02	67.346			
2,100.0	2,100.0	2,086.1	2,086.0	5.6	4.7	-149.90	-656.2	-154.8	675.3	665.0	10.31	65.511			
2,200.0	2,199.9	2,185.7	2,185.7	5.9	4.9	-149.95	-655.9	-155.8	678.6	667.9	10.78	62.975			
2,300.0	2,299.7	2,284.0	2,283.9	6.2	5.1	-150.10	-655.6	-156.7	684.3	673.0	11.26	60.757			
2,400.0	2,399.3	2,382.5	2,382.4	6.5	5.4	-150.38	-655.7	-157.2	692.4	680.7	11.78	58.782			
2,500.0	2,498.6	2,482.0	2,481.9	6.8	5.6	-150.77	-656.0	-157.3	703.0	690.6	12.32	57.073			
2,594.7	2,592.3	2,581.0	2,581.0	7.0	5.9	-151.22	-655.8	-157.5	714.7	702.0	12.78	55.932			
2,600.0	2,597.5	2,586.6	2,586.5	7.1	5.9	-151.25	-655.8	-157.5	715.4	702.6	12.81	55.869			
2,700.0	2,696.3	2,681.9	2,681.8	7.4	6.1	-151.80	-655.4	-157.6	728.7	715.4	13.29	54.815			
2,800.0	2,795.1	2,785.6	2,785.6	7.7	6.3	-152.39	-655.1	-157.6	742.2	728.4	13.80	53.799			
2,900.0	2,893.9	2,883.9	2,883.9	8.1	6.4	-152.93	-654.3	-157.5	755.2	741.0	14.24	53.047			
3,000.0	2,992.7	2,979.6	2,979.5	8.4	6.6	-153.41	-653.9	-157.8	768.6	753.9	14.71	52.236			
3,100.0	3,091.5	3,075.4	3,075.3	8.8	6.8	-153.86	-653.7	-158.3	782.5	767.3	15.25	51.307			
3,200.0	3,190.3	3,171.2	3,171.2	9.1	7.1	-154.33	-654.0	-158.5	796.8	781.0	15.80	50.430			
6,750.0	6,588.0	6,599.2	6,598.2	18.8	14.7	3.81	-610.0	-180.1	762.4	745.2	17.22	44.271			
6,800.0	6,613.4	6,623.1	6,622.2	18.8	14.8	4.51	-609.2	-179.9	718.6	702.8	15.76	45.584			
6,850.0	6,635.9	6,644.2	6,643.2	18.8	14.8	5.50	-608.5	-179.7	673.3	658.9	14.40	46.758			
6,900.0	6,655.5	6,662.3	6,661.2	18.9	14.9	6.95	-607.9	-179.5	626.7	613.4	13.25	47.299			
6,950.0	6,672.0	6,677.2	6,676.2	19.1	14.9	9.19	-607.4	-179.4	579.0	566.5	12.55	46.134			
7,000.0	6,685.4	6,689.0	6,688.0	19.3	14.9	13.00	-607.0	-179.3	530.5	517.6	12.82	41.365			
7,050.0	6,695.6	6,697.6	6,696.6	19.7	15.0	20.36	-606.7	-179.2	481.3	466.0	15.33	31.398			
7,100.0	6,702.6	6,703.0	6,702.0	20.0	15.0	37.79	-606.6	-179.1	431.6	408.5	23.11	18.675			
7,150.0	6,706.3	6,705.1	6,704.1	20.5	15.0	82.32	-606.5	-179.1	381.8	346.5	35.26	10.828			
7,187.3	6,707.0	6,704.5	6,703.5	20.9	15.0	119.06	-606.5	-179.1	344.6	313.4	31.25	11.029			
7,187.3	6,707.0	6,704.5	6,703.5	20.9	15.0	119.06	-606.5	-179.1	344.6	313.4	31.25	11.028			
7,187.7	6,707.0	6,704.5	6,703.5	20.9	15.0	119.04	-606.5	-179.1	344.2	312.9	31.26	11.012			
7,200.0	6,706.9	6,704.0	6,703.0	21.0	15.0	118.17	-606.5	-179.1	331.9	300.3	31.59	10.508			
7,300.0	6,706.3	6,700.1	6,699.1	22.1	15.0	110.61	-606.7	-179.2	232.4	197.8	34.56	6.724			

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 Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - Carlson 5 (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 (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
7,400.0	6,705.6	6,696.1	6,695.1	23.4	15.0	102.25	-606.8	-179.2	133.5	96.1	37.37	3.573		
7,500.0	6,704.9	6,692.2	6,691.2	24.9	14.9	93.35	-606.9	-179.2	39.9	0.3	39.69	1.006 Level 2		
7,531.3	6,704.7	6,691.0	6,689.9	25.4	14.9	90.52	-607.0	-179.3	24.9	-15.4	40.29	0.618 Level 1, CC, ES, SF		
7,600.0	6,704.3	6,688.3	6,687.2	26.5	14.9	84.32	-607.0	-179.3	73.1	31.8	41.29	1.770		
7,700.0	6,703.6	6,684.3	6,683.3	28.2	14.9	75.58	-607.2	-179.3	170.4	128.4	42.08	4.050		
7,800.0	6,702.9	6,680.4	6,679.4	30.0	14.9	67.50	-607.3	-179.3	269.7	227.5	42.16	6.397		
7,900.0	6,702.3	6,676.4	6,675.4	31.9	14.9	60.27	-607.4	-179.4	369.3	327.6	41.74	8.849		
8,000.0	6,701.6	6,672.5	6,671.5	33.8	14.9	53.97	-607.6	-179.4	469.0	428.0	41.03	11.433		
8,100.0	6,701.0	6,668.6	6,667.5	35.8	14.9	48.55	-607.7	-179.5	568.8	528.6	40.21	14.146		
8,200.0	6,700.3	6,664.6	6,663.6	37.8	14.9	43.92	-607.8	-179.5	668.7	629.3	39.41	16.965		
8,300.0	6,699.6	6,660.7	6,659.7	39.9	14.9	39.96	-608.0	-179.5	768.6	729.8	38.70	19.858		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - Cross #32-11 (D&A) - Wellbore #1 - Wellbore #1													Offset Site Error: 0.0 ft	
Survey Program: 527-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)			
11,800.0	6,676.5	6,576.1	6,571.9	118.9	16.8	-77.83	-5,386.6	408.4	772.9	639.9	133.01	5.811		
11,900.0	6,675.8	6,605.3	6,599.8	121.2	16.9	-80.54	-5,395.1	407.0	710.2	573.7	136.41	5.206		
12,000.0	6,675.1	6,648.3	6,640.5	123.5	17.0	-84.56	-5,408.5	403.6	655.1	515.2	139.91	4.683		
12,100.0	6,674.5	6,703.2	6,691.8	125.8	17.1	-89.79	-5,426.9	396.8	609.0	466.1	142.90	4.262		
12,200.0	6,673.8	6,739.5	6,725.2	128.2	17.2	-93.28	-5,439.8	391.1	573.9	428.8	145.10	3.955		
12,300.0	6,673.2	6,812.9	6,791.4	130.5	17.3	-100.38	-5,467.5	375.7	550.3	404.6	145.71	3.777		
12,400.0	6,672.5	6,863.0	6,835.4	132.8	17.4	-105.22	-5,488.0	363.8	541.0	395.3	145.70	3.713 SF		
12,413.6	6,672.4	6,869.2	6,840.9	133.1	17.4	-105.83	-5,490.6	362.2	540.9	395.2	145.66	3.713 CC, ES		
12,500.0	6,671.8	6,903.0	6,870.6	135.1	17.5	-109.10	-5,504.4	353.8	546.7	401.3	145.44	3.759		
12,600.0	6,671.2	6,944.6	6,907.3	137.5	17.5	-113.13	-5,520.7	343.1	567.2	422.7	144.41	3.927		
12,700.0	6,670.5	6,976.1	6,935.4	139.8	17.6	-116.17	-5,532.3	334.7	601.5	457.8	143.70	4.186		
12,800.0	6,669.9	7,006.1	6,962.3	142.1	17.7	-119.04	-5,542.8	326.7	648.0	505.2	142.75	4.539		
12,900.0	6,669.2	7,035.9	6,989.2	144.5	17.7	-121.85	-5,552.9	318.7	704.2	562.7	141.52	4.976		
13,000.0	6,668.5	7,065.0	7,015.5	146.8	17.8	-124.51	-5,562.6	310.9	768.1	628.0	140.12	5.481		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - Ottenhoff 41-6B (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:		0.0 ft
Survey Program: 488-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)				
0.0	0.0	0.0	0.0	0.0	0.0	98.05	-49.9	353.0	356.7						
100.0	100.0	88.3	88.3	0.1	0.1	98.05	-49.9	353.0	356.5	356.2	0.28	1,266.679			
200.0	200.0	188.6	188.6	0.4	0.3	98.06	-50.0	352.8	356.4	355.6	0.72	495.035			
300.0	300.0	289.0	289.0	0.7	0.5	98.08	-50.1	352.6	356.1	355.0	1.16	307.466			
400.0	400.0	389.3	389.3	1.0	0.6	98.11	-50.2	352.3	355.8	354.2	1.60	222.844			
500.0	500.0	489.6	489.6	1.2	0.8	98.15	-50.4	351.8	355.4	353.4	2.04	174.585			
600.0	600.0	588.4	588.4	1.5	1.0	98.11	-50.1	351.6	355.1	352.6	2.51	141.448			
638.0	638.0	626.0	626.0	1.6	1.1	98.06	-49.8	351.6	355.1	352.4	2.69	131.949			
700.0	700.0	686.3	686.3	1.8	1.2	97.94	-49.1	351.8	355.2	352.3	2.95	120.279			
800.0	800.0	782.9	782.9	2.1	1.3	97.72	-47.8	352.9	356.2	352.8	3.35	106.230			
900.0	900.0	881.3	881.2	2.3	1.5	97.41	-46.1	354.8	357.9	354.1	3.81	94.018			
1,000.0	1,000.0	980.2	980.1	2.6	1.7	96.93	-43.4	357.2	360.0	355.7	4.29	83.959			
1,100.0	1,100.0	1,079.8	1,079.6	2.9	1.9	96.26	-39.5	360.0	362.2	357.4	4.82	75.110			
1,200.0	1,200.0	1,180.9	1,180.5	3.2	2.2	95.42	-34.4	362.8	364.5	359.1	5.38	67.709			
1,300.0	1,300.0	1,282.2	1,281.6	3.4	2.5	94.51	-28.8	365.1	366.3	360.3	5.96	61.486			
1,400.0	1,400.0	1,376.9	1,376.1	3.7	2.8	93.53	-22.7	367.9	368.8	362.3	6.52	56.533			
1,500.0	1,500.0	1,472.1	1,470.9	4.0	3.1	92.38	-15.5	372.1	372.8	365.7	7.09	52.545			
1,600.0	1,600.0	1,575.4	1,573.7	4.3	3.4	91.03	-6.8	376.7	377.0	369.3	7.70	48.972			
1,700.0	1,700.0	1,681.1	1,678.9	4.5	3.8	89.54	3.0	380.2	380.3	372.0	8.32	45.732			
1,800.0	1,800.0	1,791.6	1,788.6	4.8	4.1	87.58	16.1	381.0	381.3	372.3	8.95	42.594			
1,900.0	1,900.0	1,899.8	1,895.5	5.1	4.5	85.06	32.7	378.7	380.2	370.6	9.58	39.684			
2,000.0	2,000.0	2,010.9	2,005.0	5.4	4.8	82.30	50.5	373.3	377.1	366.9	10.22	36.909			
2,100.0	2,100.0	2,122.4	2,114.3	5.6	5.2	96.18	70.7	363.6	371.4	360.6	10.84	34.266			
2,200.0	2,199.9	2,225.4	2,214.9	5.9	5.5	93.67	89.4	352.0	364.5	353.1	11.45	31.846			
2,300.0	2,299.7	2,325.6	2,312.7	6.2	5.9	91.58	107.2	340.2	357.6	345.6	12.05	29.684			
2,400.0	2,399.3	2,430.9	2,415.7	6.5	6.2	89.82	125.3	326.8	350.2	337.6	12.68	27.631			
2,500.0	2,498.6	2,539.5	2,521.6	6.8	6.6	88.54	142.4	310.9	340.9	327.6	13.32	25.595			
2,594.7	2,592.3	2,644.2	2,623.5	7.0	6.9	87.66	158.2	292.5	329.3	315.3	13.95	23.610			
2,600.0	2,597.5	2,650.0	2,629.2	7.1	6.9	87.61	159.0	291.4	328.5	314.6	13.98	23.498			
2,700.0	2,696.3	2,757.2	2,732.8	7.4	7.3	86.49	174.8	268.9	313.0	298.3	14.65	21.365			
2,800.0	2,795.1	2,854.7	2,826.7	7.7	7.6	85.27	189.1	247.1	296.3	281.0	15.30	19.361			
2,900.0	2,893.9	2,956.0	2,924.8	8.1	7.9	84.25	202.4	225.4	280.0	264.0	15.98	17.522			
3,000.0	2,992.7	3,054.9	3,020.3	8.4	8.2	83.09	215.1	203.3	262.7	246.0	16.66	15.770			
3,100.0	3,091.5	3,150.6	3,112.9	8.8	8.6	81.84	227.4	182.3	246.1	228.8	17.34	14.192			
3,200.0	3,190.3	3,244.6	3,204.3	9.1	8.9	80.86	238.8	163.7	231.2	213.1	18.03	12.823			
3,300.0	3,289.1	3,339.5	3,297.3	9.5	9.2	80.38	249.0	147.7	218.2	199.5	18.72	11.661			
3,400.0	3,387.9	3,436.4	3,392.8	9.9	9.5	80.55	257.8	133.8	206.9	187.5	19.41	10.658			
3,500.0	3,486.6	3,536.9	3,491.7	10.3	9.9	80.56	267.7	119.4	195.9	175.7	20.13	9.730			
3,600.0	3,585.4	3,639.4	3,592.0	10.7	10.2	79.54	280.2	102.1	183.6	162.8	20.88	8.796			
3,700.0	3,684.2	3,741.4	3,691.4	11.1	10.6	77.92	292.8	82.7	169.7	148.1	21.63	7.845			
3,800.0	3,783.0	3,840.6	3,787.3	11.5	11.0	75.09	306.7	61.8	155.0	132.6	22.39	6.922			
3,900.0	3,881.8	3,938.7	3,881.5	11.9	11.4	70.55	322.8	39.5	140.8	117.6	23.14	6.084			
4,000.0	3,980.6	4,036.7	3,975.7	12.3	11.8	65.25	338.8	17.7	127.9	104.0	23.86	5.361			
4,100.0	4,079.4	4,135.0	4,070.6	12.7	12.1	59.64	353.8	-2.8	116.5	92.0	24.52	4.752			
4,200.0	4,178.2	4,234.5	4,166.9	13.1	12.5	53.27	368.5	-23.1	106.4	81.3	25.12	4.237			
4,300.0	4,277.0	4,334.6	4,264.2	13.5	12.9	46.68	380.9	-42.9	96.1	70.4	25.64	3.747			
4,400.0	4,375.8	4,432.5	4,359.6	13.9	13.3	39.30	392.8	-61.5	87.3	61.3	26.05	3.352			
4,500.0	4,474.6	4,530.9	4,455.4	14.3	13.6	30.56	405.9	-79.8	81.6	55.3	26.34	3.098			
4,600.0	4,573.3	4,630.5	4,552.5	14.8	14.0	20.97	418.9	-98.0	77.8	51.3	26.54	2.931			
4,700.0	4,672.1	4,729.5	4,649.2	15.2	14.4	11.49	431.0	-115.0	75.5	48.8	26.76	2.822			
4,719.2	4,691.1	4,748.3	4,667.6	15.3	14.5	9.55	433.5	-118.4	75.4	48.6	26.80	2.815 CC, ES, SF			

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 Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - Ottenhoff 41-6B (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:		0.0 ft
Survey Program: 488-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	4,770.9	4,828.4	4,745.6	15.6	14.8	1.25	443.9	-132.9	76.4	49.3	27.04	2.824			
4,900.0	4,869.7	4,927.6	4,842.5	16.0	15.2	-8.08	456.7	-150.2	79.2	51.7	27.50	2.879			
5,000.0	4,968.5	5,025.8	4,938.3	16.5	15.5	-16.74	469.5	-167.8	84.4	56.3	28.13	3.001			
5,100.0	5,067.3	5,124.6	5,034.4	16.9	15.9	-24.69	482.7	-186.6	92.4	63.4	28.93	3.193			
5,200.0	5,166.1	5,225.6	5,132.8	17.3	16.3	-31.62	495.3	-205.4	100.9	71.1	29.84	3.383			
5,300.0	5,264.9	5,327.0	5,232.1	17.7	16.7	-37.71	506.2	-222.7	108.5	77.6	30.81	3.520			
5,400.0	5,363.7	5,428.9	5,332.3	18.2	17.0	-43.46	515.3	-238.7	114.8	82.9	31.85	3.605			
5,483.1	5,445.7	5,511.4	5,413.6	18.5	17.3	-47.73	522.0	-250.8	119.8	87.1	32.71	3.664			
5,500.0	5,462.5	5,528.2	5,430.2	18.6	17.4	-48.53	523.5	-253.3	121.0	88.1	32.87	3.680			
5,600.0	5,561.6	5,628.3	5,528.9	18.9	17.7	-52.23	532.0	-267.7	129.2	95.5	33.73	3.830			
5,700.0	5,661.1	5,732.3	5,631.8	19.2	18.1	-54.48	540.1	-280.6	137.7	103.3	34.47	3.996			
5,800.0	5,760.9	5,836.2	5,735.0	19.4	18.4	-55.68	546.1	-290.7	145.2	110.1	35.08	4.140			
5,900.0	5,860.9	5,939.6	5,838.0	19.6	18.8	-55.96	550.5	-298.3	152.0	116.4	35.57	4.273			
5,929.1	5,890.0	5,969.6	5,868.0	19.7	18.9	-72.74	551.6	-300.2	153.9	118.2	35.70	4.312			
5,982.2	5,943.1	6,024.1	5,922.3	19.8	19.0	-72.50	553.2	-303.1	157.1	121.2	35.95	4.370			
6,000.0	5,960.9	6,042.2	5,940.4	19.8	19.1	107.51	553.6	-304.0	158.1	122.1	36.01	4.392			
6,050.0	6,010.8	6,093.1	5,991.3	19.9	19.2	108.33	554.6	-306.3	161.5	125.4	36.07	4.477			
6,100.0	6,060.4	6,144.0	6,042.1	19.9	19.4	110.07	555.3	-308.4	165.6	129.6	35.99	4.602			
6,150.0	6,109.5	6,194.5	6,092.6	19.9	19.5	112.61	555.7	-310.0	170.7	135.0	35.76	4.775			
6,200.0	6,157.9	6,244.4	6,142.5	19.9	19.6	115.78	555.8	-311.3	177.2	141.9	35.38	5.010			
6,250.0	6,205.4	6,293.3	6,191.3	19.8	19.7	119.35	555.5	-312.3	185.6	150.8	34.78	5.335			
6,300.0	6,251.8	6,341.3	6,239.3	19.7	19.8	123.13	555.0	-313.0	196.2	162.1	34.03	5.765			
6,350.0	6,296.8	6,388.1	6,286.1	19.6	19.8	126.93	554.3	-313.5	209.4	176.3	33.12	6.322			
6,400.0	6,340.3	6,433.4	6,331.4	19.5	19.9	130.56	553.4	-313.7	225.6	193.5	32.05	7.037			
6,450.0	6,382.2	6,477.0	6,375.0	19.4	19.9	133.90	552.4	-313.7	244.9	214.0	30.85	7.936			
6,500.0	6,422.1	6,518.9	6,416.9	19.2	19.9	136.88	551.3	-313.6	267.4	237.8	29.57	9.043			
6,550.0	6,460.0	6,558.9	6,456.9	19.1	19.9	139.46	550.2	-313.2	293.0	264.8	28.22	10.385			
6,600.0	6,495.7	6,596.5	6,494.4	19.0	19.9	141.55	549.0	-312.8	321.8	294.9	26.85	11.983			
6,650.0	6,529.0	6,631.8	6,529.7	18.9	19.9	143.17	547.9	-312.4	353.5	328.0	25.51	13.854			
6,700.0	6,559.8	6,664.7	6,562.6	18.8	19.9	144.33	546.7	-311.9	387.9	363.6	24.26	15.991			
6,750.0	6,588.0	6,695.2	6,593.1	18.8	19.9	145.00	545.6	-311.4	424.8	401.6	23.15	18.350			
6,800.0	6,613.4	6,723.1	6,620.9	18.8	19.9	145.16	544.6	-311.0	463.9	441.6	22.28	20.824			
6,850.0	6,635.9	6,748.5	6,646.3	18.8	19.9	144.77	543.6	-310.5	505.1	483.4	21.75	23.221			
6,900.0	6,655.5	6,771.0	6,668.9	18.9	19.9	143.69	542.6	-310.1	548.1	526.4	21.72	25.236			
6,950.0	6,672.0	6,790.6	6,688.3	19.1	19.9	141.73	541.8	-309.7	592.6	570.3	22.34	26.523			
7,000.0	6,685.4	6,806.9	6,704.7	19.3	19.9	138.57	541.1	-309.3	638.5	614.7	23.81	26.817			
7,050.0	6,695.6	6,820.1	6,717.9	19.7	19.9	133.70	540.5	-309.0	685.5	659.2	26.30	26.064			
7,100.0	6,702.6	6,830.0	6,727.7	20.0	19.9	126.24	540.0	-308.7	733.4	703.4	29.95	24.486			
7,150.0	6,706.3	6,836.4	6,734.2	20.5	19.9	114.93	539.7	-308.5	781.9	747.3	34.58	22.614			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - Pearlman #32-13 (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)			
12,900.0	6,669.2	6,720.1	6,719.1	144.5	17.0	91.58	-6,517.3	-682.4	753.6	592.3	161.32	4.672		
13,000.0	6,668.5	6,720.5	6,719.4	146.8	17.0	91.62	-6,517.3	-682.4	685.2	521.6	163.64	4.187		
13,100.0	6,667.9	6,720.9	6,719.8	149.1	17.0	91.67	-6,517.3	-682.4	625.4	459.4	165.97	3.768		
13,200.0	6,667.2	6,721.3	6,720.2	151.5	17.0	91.71	-6,517.3	-682.4	576.8	408.5	168.30	3.427		
13,300.0	6,666.5	6,721.7	6,720.6	153.8	17.0	91.76	-6,517.3	-682.3	542.5	371.9	170.63	3.179		
13,400.0	6,665.9	6,722.2	6,721.1	156.1	17.0	91.80	-6,517.3	-682.3	525.3	352.3	172.96	3.037		
13,442.0	6,665.6	6,722.3	6,721.2	157.1	17.0	91.82	-6,517.3	-682.3	523.6	349.7	173.94	3.010 CC, ES		
13,500.0	6,665.2	6,722.6	6,721.5	158.5	17.0	91.85	-6,517.3	-682.3	526.8	351.5	175.29	3.005 SF		
13,600.0	6,664.6	6,723.0	6,721.9	160.8	17.0	91.89	-6,517.3	-682.3	546.9	369.3	177.62	3.079		
13,700.0	6,663.9	6,723.4	6,722.3	163.1	17.0	91.94	-6,517.3	-682.3	583.7	403.8	179.95	3.244		
13,800.0	6,663.2	6,723.9	6,722.8	165.5	17.0	91.99	-6,517.3	-682.3	634.3	452.0	182.29	3.480		
13,900.0	6,662.6	6,724.3	6,723.2	167.8	17.0	92.04	-6,517.3	-682.3	695.6	511.0	184.62	3.768		
13,986.6	6,662.0	6,724.7	6,723.6	169.8	17.0	92.08	-6,517.3	-682.3	755.4	568.8	186.63	4.048		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design		Existing Wells Sec.29-T5N-R64W - Roskop 29-1 (Exist) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft
Survey Program:		100-UNKNOWN											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
7,700.0	6,703.6	6,692.8	6,692.3	28.2	165.6	-90.86	-1,293.1	447.7	794.0	600.4	193.60	4.101			
7,800.0	6,702.9	6,690.2	6,689.6	30.0	165.6	-90.61	-1,293.2	447.7	732.8	537.4	195.36	3.751			
7,900.0	6,702.3	6,687.5	6,686.9	31.9	165.5	-90.35	-1,293.2	447.7	680.9	483.7	197.19	3.453			
8,000.0	6,701.6	6,684.8	6,684.2	33.8	165.5	-90.10	-1,293.3	447.6	640.4	441.4	199.08	3.217			
8,100.0	6,701.0	6,682.1	6,681.5	35.8	165.4	-89.84	-1,293.4	447.6	613.8	412.8	201.02	3.053			
8,200.0	6,700.3	6,679.4	6,678.8	37.8	165.4	-89.59	-1,293.4	447.6	602.7	399.8	202.99	2.969			
8,217.3	6,700.2	6,678.9	6,678.4	38.2	165.4	-89.54	-1,293.4	447.6	602.5	399.2	203.34	2.963	CC, ES, SF		
8,300.0	6,699.6	6,676.7	6,676.1	39.9	165.3	-89.33	-1,293.5	447.6	608.1	403.1	205.00	2.967			
8,400.0	6,699.0	6,674.0	6,673.4	41.9	165.3	-89.07	-1,293.5	447.5	629.6	422.5	207.04	3.041			
8,500.0	6,698.3	6,671.3	6,670.8	44.0	165.2	-88.82	-1,293.6	447.5	665.5	456.4	209.09	3.183			
8,600.0	6,697.7	6,668.6	6,668.1	46.2	165.2	-88.56	-1,293.6	447.5	713.7	502.5	211.17	3.380			
8,700.0	6,697.0	6,665.9	6,665.4	48.3	165.1	-88.31	-1,293.7	447.5	771.9	558.7	213.26	3.620			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design		Existing Wells Sec.29-T5N-R64W (GRID) - Blake B 29-9 (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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor					
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)						
9,200.0	6,693.7	6,658.0	6,656.5	59.3	15.8	-86.10	-2,894.1	256.6	743.9	669.0	74.90	9.932					
9,300.0	6,693.0	6,659.4	6,657.9	61.6	15.8	-86.30	-2,894.1	256.7	663.1	586.0	77.15	8.595					
9,400.0	6,692.4	6,660.8	6,659.3	63.8	15.8	-86.49	-2,894.2	256.7	588.3	508.9	79.41	7.408					
9,500.0	6,691.7	6,662.2	6,660.7	66.1	15.8	-86.69	-2,894.2	256.8	521.9	440.3	81.68	6.390					
9,600.0	6,691.0	6,663.6	6,662.1	68.3	15.8	-86.88	-2,894.2	256.9	467.7	383.8	83.95	5.571					
9,700.0	6,690.4	6,665.0	6,663.5	70.6	15.8	-87.08	-2,894.2	256.9	430.2	344.0	86.23	4.989					
9,800.0	6,689.7	6,666.4	6,664.9	72.8	15.8	-87.27	-2,894.3	257.0	414.0	325.5	88.51	4.677					
9,818.4	6,689.6	6,666.7	6,665.2	73.3	15.8	-87.31	-2,894.3	257.0	413.6	324.7	88.94	4.651 CC, ES					
9,900.0	6,689.0	6,667.9	6,666.3	75.1	15.8	-87.47	-2,894.3	257.1	421.6	330.8	90.80	4.643 SF					
10,000.0	6,688.4	6,669.3	6,667.7	77.4	15.8	-87.66	-2,894.3	257.1	451.7	358.6	93.10	4.852					
10,100.0	6,687.7	6,670.7	6,669.1	79.7	15.8	-87.86	-2,894.4	257.2	500.3	404.9	95.39	5.245					
10,200.0	6,687.1	6,672.1	6,670.5	82.0	15.9	-88.06	-2,894.4	257.3	562.7	465.0	97.69	5.760					
10,300.0	6,686.4	6,673.5	6,672.0	84.2	15.9	-88.25	-2,894.4	257.3	634.8	534.8	100.00	6.348					
10,400.0	6,685.7	6,674.9	6,673.4	86.5	15.9	-88.45	-2,894.5	257.4	713.6	611.3	102.30	6.975					
10,500.0	6,685.1	6,676.3	6,674.8	88.8	15.9	-88.64	-2,894.5	257.4	797.2	692.6	104.61	7.621					

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design		Existing Wells Sec.29-T5N-R64W (GRID) - Blake B29-16 (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)				
10,400.0	6,685.7	6,709.5	6,708.6	86.5	17.9	-91.04	-4,088.3	335.8	786.0	681.7	104.38	7.531			
10,500.0	6,685.1	6,706.9	6,706.1	88.8	17.9	-90.74	-4,088.3	335.8	710.9	604.2	106.67	6.665			
10,600.0	6,684.4	6,704.4	6,703.5	91.1	17.9	-90.44	-4,088.4	335.8	642.6	533.6	108.96	5.897			
10,700.0	6,683.8	6,701.8	6,700.9	93.4	17.9	-90.14	-4,088.4	335.7	583.5	472.2	111.26	5.244			
10,800.0	6,683.1	6,699.2	6,698.4	95.7	17.9	-89.85	-4,088.5	335.7	536.6	423.1	113.55	4.726			
10,900.0	6,682.4	6,696.7	6,695.8	98.0	17.9	-89.55	-4,088.5	335.7	505.4	389.6	115.85	4.363			
11,000.0	6,681.8	6,694.1	6,693.2	100.4	17.8	-89.25	-4,088.6	335.6	492.9	374.8	118.14	4.172			
11,012.6	6,681.7	6,693.8	6,692.9	100.6	17.8	-89.21	-4,088.6	335.6	492.7	374.3	118.43	4.161	CC, ES		
11,100.0	6,681.1	6,691.5	6,690.6	102.7	17.8	-88.95	-4,088.6	335.6	500.4	380.0	120.43	4.155	SF		
11,200.0	6,680.4	6,689.0	6,688.1	105.0	17.8	-88.65	-4,088.7	335.5	527.1	404.4	122.73	4.295			
11,300.0	6,679.8	6,686.4	6,685.5	107.3	17.8	-88.35	-4,088.7	335.5	570.4	445.4	125.02	4.562			
11,400.0	6,679.1	6,683.8	6,682.9	109.6	17.8	-88.05	-4,088.8	335.5	626.7	499.4	127.30	4.923			
11,500.0	6,678.5	6,681.2	6,680.4	111.9	17.8	-87.76	-4,088.8	335.4	693.0	563.4	129.59	5.347			
11,600.0	6,677.8	6,678.7	6,677.8	114.2	17.8	-87.46	-4,088.9	335.4	766.5	634.7	131.87	5.813			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-203 - Wellbore #1 - Plan #2 (1-25-17)													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	-89.31	1.1	-90.0	90.0					
100.0	100.0	100.0	100.0	0.1	0.1	-89.31	1.1	-90.0	90.0	89.7	0.28	326.875		
200.0	200.0	200.0	200.0	0.4	0.4	-89.31	1.1	-90.0	90.0	89.2	0.83	108.958	CC, ES	
300.0	300.0	297.8	297.8	0.7	0.7	-89.07	1.5	-91.2	91.2	89.9	1.36	66.943		
400.0	400.0	395.4	395.3	1.0	0.9	-88.40	2.6	-94.7	94.9	93.0	1.90	49.841		
500.0	500.0	492.8	492.5	1.2	1.2	-87.40	4.6	-100.7	101.0	98.6	2.45	41.208		
600.0	600.0	589.8	589.2	1.5	1.5	-86.18	7.3	-108.9	109.7	106.7	3.00	36.498		
700.0	700.0	686.4	685.0	1.8	1.9	-84.88	10.7	-119.4	120.8	117.2	3.56	33.918		
800.0	800.0	782.3	780.0	2.1	2.2	-83.58	14.9	-132.1	134.4	130.3	4.12	32.605		
900.0	900.0	877.4	873.9	2.3	2.6	-82.36	19.7	-146.9	150.5	145.8	4.69	32.102	SF	
1,000.0	1,000.0	971.7	966.5	2.6	3.1	-81.24	25.2	-163.8	169.1	163.9	5.26	32.139		
1,100.0	1,100.0	1,065.1	1,057.7	2.9	3.6	-80.24	31.4	-182.7	190.1	184.3	5.84	32.547		
1,200.0	1,200.0	1,157.4	1,147.4	3.2	4.1	-79.37	38.2	-203.4	213.6	207.1	6.43	33.217		
1,300.0	1,300.0	1,248.6	1,235.5	3.4	4.7	-78.60	45.6	-225.9	239.3	232.3	7.02	34.072		
1,400.0	1,400.0	1,338.6	1,321.9	3.7	5.3	-77.93	53.5	-250.1	267.4	259.8	7.63	35.060		
1,500.0	1,500.0	1,427.4	1,406.3	4.0	6.0	-77.36	61.9	-275.8	297.8	289.5	8.24	36.143		
1,600.0	1,600.0	1,515.4	1,489.6	4.3	6.7	-76.85	70.8	-303.1	330.3	321.4	8.86	37.290		
1,700.0	1,700.0	1,609.6	1,578.3	4.5	7.5	-76.39	80.6	-333.2	363.7	354.2	9.51	38.258		
1,800.0	1,800.0	1,703.8	1,667.1	4.8	8.2	-76.01	90.5	-363.2	397.2	387.0	10.16	39.101		
1,900.0	1,900.0	1,798.0	1,755.8	5.1	9.0	-75.69	100.3	-393.2	430.7	419.9	10.82	39.820		
2,000.0	2,000.0	1,892.2	1,844.6	5.4	9.8	-75.42	110.1	-423.3	464.2	452.7	11.48	40.439		
2,100.0	2,100.0	1,986.7	1,933.5	5.6	10.7	-58.00	120.0	-453.4	497.0	485.2	11.76	42.259		
2,200.0	2,199.9	2,081.6	2,022.9	5.9	11.5	-57.74	129.9	-483.6	528.5	516.1	12.39	42.662		
2,300.0	2,299.7	2,176.8	2,112.7	6.2	12.3	-57.72	139.8	-514.0	558.7	545.7	13.02	42.903		
2,400.0	2,399.3	2,272.4	2,202.7	6.5	13.1	-57.91	149.8	-544.5	587.7	574.0	13.67	42.997		
2,500.0	2,498.6	2,368.2	2,293.0	6.8	13.9	-58.27	159.8	-575.0	615.3	601.0	14.32	42.957		
2,594.7	2,592.3	2,459.1	2,378.6	7.0	14.7	-58.77	169.2	-604.0	640.4	625.4	14.96	42.798		
2,600.0	2,597.5	2,464.2	2,383.4	7.1	14.8	-58.82	169.8	-605.6	641.8	626.8	15.00	42.787		
2,700.0	2,696.3	2,560.2	2,473.9	7.4	15.6	-59.71	179.8	-636.2	667.8	652.1	15.69	42.563		
2,800.0	2,795.1	2,656.3	2,564.4	7.7	16.4	-60.54	189.8	-666.9	693.9	677.5	16.40	42.321		
2,900.0	2,893.9	2,752.3	2,654.8	8.1	17.3	-61.30	199.8	-697.5	720.2	703.1	17.12	42.066		
3,000.0	2,992.7	2,848.4	2,745.3	8.4	18.1	-62.02	209.8	-728.1	746.6	728.7	17.86	41.803		
3,100.0	3,091.5	2,944.4	2,835.8	8.8	18.9	-62.68	219.9	-758.7	773.1	754.5	18.61	41.535		
3,200.0	3,190.3	3,040.5	2,926.3	9.1	19.8	-63.31	229.9	-789.4	799.6	780.3	19.38	41.266		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	1.0	1.0	0.0	0.0	-89.31	0.7	-59.9	59.9	59.9	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	-89.31	0.7	-59.9	59.9	59.6	0.28	215.425		
200.0	200.0	201.0	201.0	0.4	0.4	-89.31	0.7	-59.9	59.9	59.1	0.83	72.285		
300.0	300.0	301.0	301.0	0.7	0.7	-89.31	0.7	-59.9	59.9	58.5	1.38	43.429		
400.0	400.0	401.0	401.0	1.0	1.0	-89.31	0.7	-59.9	59.9	58.0	1.93	31.038		
500.0	500.0	501.0	501.0	1.2	1.2	-89.31	0.7	-59.9	59.9	57.4	2.48	24.149		
600.0	600.0	601.0	601.0	1.5	1.5	-89.31	0.7	-59.9	59.9	56.9	3.03	19.762		
700.0	700.0	701.0	701.0	1.8	1.8	-89.31	0.7	-59.9	59.9	56.3	3.58	16.724		
766.3	766.3	767.3	767.3	2.0	2.0	-89.31	0.7	-59.9	59.9	56.0	3.95	15.176 CC		
800.0	800.0	801.0	801.0	2.1	2.1	-89.31	0.7	-59.9	59.9	55.8	4.13	14.496 ES		
900.0	900.0	900.0	900.0	2.3	2.3	-88.81	1.3	-61.1	61.1	56.4	4.67	13.083		
1,000.0	1,000.0	998.0	997.9	2.6	2.6	-87.45	2.9	-64.6	64.7	59.5	5.20	12.435		
1,100.0	1,100.0	1,096.2	1,095.9	2.9	2.9	-85.49	5.5	-70.3	70.7	65.0	5.74	12.322 SF		
1,200.0	1,200.0	1,193.9	1,193.2	3.2	3.1	-83.26	9.3	-78.3	79.2	73.0	6.28	12.619		
1,300.0	1,300.0	1,291.2	1,289.9	3.4	3.4	-81.03	14.0	-88.5	90.3	83.5	6.82	13.235		
1,400.0	1,400.0	1,387.8	1,385.5	3.7	3.8	-78.95	19.7	-100.9	103.9	96.6	7.37	14.100		
1,500.0	1,500.0	1,483.7	1,480.1	4.0	4.1	-77.12	26.4	-115.3	120.1	112.2	7.92	15.158		
1,600.0	1,600.0	1,578.7	1,573.3	4.3	4.5	-75.54	34.0	-131.7	138.8	130.3	8.48	16.366		
1,700.0	1,700.0	1,672.8	1,665.2	4.5	5.0	-74.20	42.4	-150.0	159.9	150.9	9.04	17.688		
1,800.0	1,800.0	1,765.8	1,755.5	4.8	5.5	-73.07	51.8	-170.1	183.5	173.9	9.61	19.096		
1,900.0	1,900.0	1,858.8	1,845.3	5.1	6.0	-72.12	62.0	-192.1	209.4	199.2	10.19	20.552		
2,000.0	2,000.0	1,955.2	1,938.2	5.4	6.6	-71.33	72.8	-215.5	236.0	225.2	10.78	21.892		
2,100.0	2,100.0	2,051.8	2,031.2	5.6	7.2	-53.74	83.7	-239.0	261.9	250.6	11.29	23.198		
2,200.0	2,199.9	2,148.7	2,124.7	5.9	7.8	-53.55	94.6	-262.5	286.3	274.4	11.87	24.119		
2,300.0	2,299.7	2,246.0	2,218.4	6.2	8.4	-53.77	105.5	-286.2	309.2	296.7	12.46	24.818		
2,400.0	2,399.3	2,343.6	2,312.4	6.5	9.0	-54.31	116.5	-309.9	330.6	317.6	13.06	25.321		
2,500.0	2,498.6	2,441.4	2,406.7	6.8	9.7	-55.12	127.5	-333.6	350.6	337.0	13.67	25.649		
2,594.7	2,592.3	2,534.1	2,496.0	7.0	10.3	-56.12	137.9	-356.1	368.4	354.1	14.27	25.813		
2,600.0	2,597.5	2,539.3	2,501.0	7.1	10.3	-56.19	138.5	-357.4	369.3	355.0	14.31	25.817		
2,700.0	2,696.3	2,637.2	2,595.4	7.4	11.0	-57.50	149.5	-381.2	387.6	372.6	14.97	25.892		
2,800.0	2,795.1	2,735.2	2,689.7	7.7	11.6	-58.70	160.5	-405.0	406.0	390.4	15.65	25.939		
2,900.0	2,893.9	2,833.1	2,784.1	8.1	12.3	-59.79	171.6	-428.7	424.6	408.2	16.35	25.963		
3,000.0	2,992.7	2,931.1	2,878.5	8.4	12.9	-60.79	182.6	-452.5	443.3	426.2	17.07	25.967		
3,100.0	3,091.5	3,029.0	2,972.9	8.8	13.6	-61.70	193.6	-476.3	462.1	444.3	17.81	25.955		
3,200.0	3,190.3	3,127.0	3,067.3	9.1	14.3	-62.55	204.6	-500.1	481.1	462.5	18.55	25.931		
3,300.0	3,289.1	3,224.9	3,161.6	9.5	15.0	-63.34	215.6	-523.9	500.1	480.8	19.31	25.896		
3,400.0	3,387.9	3,322.9	3,256.0	9.9	15.6	-64.06	226.7	-547.7	519.2	499.2	20.08	25.853		
3,500.0	3,486.6	3,420.8	3,350.4	10.3	16.3	-64.73	237.7	-571.4	538.4	517.6	20.87	25.804		
3,600.0	3,585.4	3,518.8	3,444.8	10.7	17.0	-65.36	248.7	-595.2	557.7	536.0	21.66	25.750		
3,700.0	3,684.2	3,616.7	3,539.1	11.1	17.6	-65.95	259.7	-619.0	577.0	554.6	22.46	25.692		
3,800.0	3,783.0	3,714.7	3,633.5	11.5	18.3	-66.50	270.7	-642.8	596.4	573.1	23.27	25.632		
3,900.0	3,881.8	3,812.6	3,727.9	11.9	19.0	-67.01	281.7	-666.6	615.8	591.7	24.08	25.571		
4,000.0	3,980.6	3,910.6	3,822.3	12.3	19.7	-67.49	292.8	-690.4	635.3	610.4	24.91	25.508		
4,100.0	4,079.4	4,008.5	3,916.6	12.7	20.3	-67.95	303.8	-714.2	654.8	629.1	25.73	25.445		
4,200.0	4,178.2	4,106.5	4,011.0	13.1	21.0	-68.37	314.8	-737.9	674.4	647.8	26.57	25.383		
4,300.0	4,277.0	4,204.4	4,105.4	13.5	21.7	-68.78	325.8	-761.7	694.0	666.5	27.41	25.320		
4,400.0	4,375.8	4,302.4	4,199.8	13.9	22.4	-69.16	336.8	-785.5	713.6	685.3	28.25	25.258		
4,500.0	4,474.6	4,400.3	4,294.2	14.3	23.1	-69.52	347.8	-809.3	733.2	704.1	29.10	25.198		
4,600.0	4,573.3	4,498.3	4,388.5	14.8	23.7	-69.86	358.9	-833.1	752.9	722.9	29.95	25.138		
4,700.0	4,672.1	4,596.2	4,482.9	15.2	24.4	-70.19	369.9	-856.9	772.6	741.8	30.81	25.079		
4,800.0	4,770.9	4,694.2	4,577.3	15.6	25.1	-70.50	380.9	-880.7	792.3	760.6	31.66	25.022		

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 Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design												Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)												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)																

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-423 - Wellbore #1 - Plan #2 (1-25-17)													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	-89.44	0.7	-74.9	75.0					
100.0	100.0	100.0	100.0	0.1	0.1	-89.44	0.7	-74.9	75.0	74.7	0.28	272.220		
200.0	200.0	200.0	200.0	0.4	0.4	-89.44	0.7	-74.9	75.0	74.1	0.83	90.740		
300.0	300.0	300.0	300.0	0.7	0.7	-89.44	0.7	-74.9	75.0	73.6	1.38	54.444		
400.0	400.0	400.0	400.0	1.0	1.0	-89.44	0.7	-74.9	75.0	73.0	1.93	38.889 CC, ES		
500.0	500.0	498.2	498.2	1.2	1.2	-89.11	1.2	-76.1	76.2	73.7	2.46	30.911		
600.0	600.0	596.2	596.1	1.5	1.5	-88.18	2.5	-79.7	79.8	76.8	3.00	26.600		
700.0	700.0	694.0	693.7	1.8	1.8	-86.80	4.8	-85.5	85.9	82.3	3.54	24.248		
800.0	800.0	791.4	790.7	2.1	2.1	-85.18	7.9	-93.7	94.4	90.4	4.09	23.103		
900.0	900.0	888.3	887.0	2.3	2.4	-83.48	11.9	-104.1	105.5	100.9	4.64	22.749 SF		
1,000.0	1,000.0	984.6	982.3	2.6	2.7	-81.84	16.7	-116.6	119.1	114.0	5.19	22.937		
1,100.0	1,100.0	1,080.1	1,076.5	2.9	3.1	-80.34	22.3	-131.3	135.3	129.5	5.76	23.504		
1,200.0	1,200.0	1,174.8	1,169.5	3.2	3.6	-79.01	28.8	-148.1	153.9	147.6	6.32	24.343		
1,300.0	1,300.0	1,268.5	1,261.0	3.4	4.0	-77.84	35.9	-166.7	175.0	168.1	6.90	25.375		
1,400.0	1,400.0	1,361.1	1,351.0	3.7	4.5	-76.84	43.8	-187.3	198.5	191.0	7.48	26.546		
1,500.0	1,500.0	1,452.7	1,439.4	4.0	5.1	-75.97	52.3	-209.5	224.3	216.2	8.06	27.817		
1,600.0	1,600.0	1,546.8	1,529.8	4.3	5.7	-75.22	61.7	-234.0	252.0	243.3	8.67	29.066		
1,700.0	1,700.0	1,642.8	1,622.0	4.5	6.4	-74.60	71.4	-259.1	279.9	270.6	9.28	30.155		
1,800.0	1,800.0	1,738.8	1,714.2	4.8	7.0	-74.10	81.0	-284.2	307.7	297.8	9.90	31.089		
1,900.0	1,900.0	1,834.9	1,806.3	5.1	7.7	-73.67	90.6	-309.3	335.6	325.1	10.52	31.898		
2,000.0	2,000.0	1,930.9	1,898.5	5.4	8.4	-73.32	100.2	-334.4	363.6	352.4	11.15	32.603		
2,100.0	2,100.0	2,027.1	1,990.9	5.6	9.0	-55.95	109.9	-359.5	390.8	379.2	11.55	33.827		
2,200.0	2,199.9	2,123.7	2,083.6	5.9	9.7	-55.80	119.6	-384.8	416.6	404.4	12.16	34.262		
2,300.0	2,299.7	2,220.6	2,176.6	6.2	10.4	-55.94	129.3	-410.1	441.0	428.2	12.77	34.529		
2,400.0	2,399.3	2,317.8	2,269.9	6.5	11.1	-56.33	139.0	-435.5	464.0	450.6	13.39	34.646		
2,500.0	2,498.6	2,415.1	2,363.4	6.8	11.8	-56.94	148.8	-461.0	485.7	471.7	14.03	34.625		
2,594.7	2,592.3	2,507.4	2,452.0	7.0	12.5	-57.69	158.0	-485.1	505.1	490.4	14.65	34.486		
2,600.0	2,597.5	2,512.6	2,457.0	7.1	12.5	-57.74	158.5	-486.4	506.1	491.5	14.68	34.475		
2,700.0	2,696.3	2,610.1	2,550.6	7.4	13.2	-58.83	168.3	-511.9	526.1	510.8	15.36	34.263		
2,800.0	2,795.1	2,707.6	2,644.2	7.7	13.9	-59.84	178.1	-537.4	546.3	530.3	16.05	34.041		
2,900.0	2,893.9	2,805.1	2,737.8	8.1	14.6	-60.78	187.9	-562.9	566.6	549.9	16.76	33.812		
3,000.0	2,992.7	2,902.6	2,831.4	8.4	15.3	-61.65	197.6	-588.4	587.1	569.6	17.48	33.580		
3,100.0	3,091.5	3,000.1	2,925.0	8.8	16.0	-62.46	207.4	-613.9	607.7	589.4	18.22	33.346		
3,200.0	3,190.3	3,097.6	3,018.6	9.1	16.7	-63.22	217.2	-639.3	628.3	609.4	18.98	33.114		
3,300.0	3,289.1	3,195.1	3,112.2	9.5	17.4	-63.94	226.9	-664.8	649.1	629.4	19.74	32.884		
3,400.0	3,387.9	3,292.6	3,205.8	9.9	18.2	-64.61	236.7	-690.3	670.0	649.5	20.52	32.659		
3,500.0	3,486.6	3,390.1	3,299.4	10.3	18.9	-65.23	246.5	-715.8	691.0	669.7	21.30	32.438		
3,600.0	3,585.4	3,487.6	3,393.0	10.7	19.6	-65.82	256.3	-741.3	712.0	689.9	22.10	32.223		
3,700.0	3,684.2	3,585.1	3,486.6	11.1	20.3	-66.38	266.0	-766.8	733.1	710.2	22.90	32.014		
3,800.0	3,783.0	3,682.6	3,580.2	11.5	21.0	-66.91	275.8	-792.3	754.3	730.6	23.71	31.812		
3,900.0	3,881.8	3,780.1	3,673.9	11.9	21.7	-67.41	285.6	-817.7	775.5	751.0	24.53	31.617		
4,000.0	3,980.6	3,877.6	3,767.5	12.3	22.4	-67.88	295.4	-843.2	796.8	771.4	25.35	31.428		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-143 - Wellbore #1 - Plan #2 (1-25-17)										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	-89.30	0.4	-29.8	29.8					
100.0	100.0	100.0	100.0	0.1	0.1	-89.30	0.4	-29.8	29.8	29.5	0.28	108.284		
200.0	200.0	200.0	200.0	0.4	0.4	-89.30	0.4	-29.8	29.8	29.0	0.83	36.095		
300.0	300.0	300.0	300.0	0.7	0.7	-89.30	0.4	-29.8	29.8	28.4	1.38	21.657		
400.0	400.0	400.0	400.0	1.0	1.0	-89.30	0.4	-29.8	29.8	27.9	1.93	15.469		
500.0	500.0	500.0	500.0	1.2	1.2	-89.30	0.4	-29.8	29.8	27.3	2.48	12.032		
600.0	600.0	600.0	600.0	1.5	1.5	-89.30	0.4	-29.8	29.8	26.8	3.03	9.844		
700.0	700.0	700.0	700.0	1.8	1.8	-89.30	0.4	-29.8	29.8	26.2	3.58	8.330		
800.0	800.0	800.0	800.0	2.1	2.1	-89.30	0.4	-29.8	29.8	25.7	4.13	7.219		
900.0	900.0	900.0	900.0	2.3	2.3	-89.30	0.4	-29.8	29.8	25.1	4.68	6.370		
1,000.0	1,000.0	1,000.0	1,000.0	2.6	2.6	-89.30	0.4	-29.8	29.8	24.6	5.23	5.699		
1,100.0	1,100.0	1,100.0	1,100.0	2.9	2.9	-89.30	0.4	-29.8	29.8	24.0	5.78	5.156		
1,200.0	1,200.0	1,200.0	1,200.0	3.2	3.2	-89.30	0.4	-29.8	29.8	23.5	6.33	4.708 CC, ES		
1,300.0	1,300.0	1,299.4	1,299.4	3.4	3.4	-87.78	1.2	-30.8	30.8	24.0	6.88	4.484		
1,400.0	1,400.0	1,398.6	1,398.5	3.7	3.7	-83.78	3.7	-33.8	34.0	26.6	7.41	4.586		
1,500.0	1,500.0	1,497.6	1,497.3	4.0	4.0	-78.60	7.8	-38.7	39.6	31.6	7.96	4.974		
1,600.0	1,600.0	1,596.2	1,595.5	4.3	4.3	-73.44	13.5	-45.5	47.7	39.2	8.50	5.617		
1,700.0	1,700.0	1,694.2	1,692.8	4.5	4.5	-68.98	20.9	-54.3	58.6	49.6	9.04	6.480		
1,800.0	1,800.0	1,791.6	1,789.3	4.8	4.9	-65.38	29.7	-64.9	72.2	62.6	9.59	7.523		
1,900.0	1,900.0	1,888.2	1,884.5	5.1	5.2	-62.58	40.1	-77.2	88.4	78.2	10.14	8.712		
2,000.0	2,000.0	1,984.6	1,979.1	5.4	5.6	-60.40	51.9	-91.3	107.1	96.4	10.70	10.009		
2,100.0	2,100.0	2,082.8	2,075.4	5.6	6.0	-42.13	64.4	-106.2	125.7	114.5	11.24	11.184		
2,200.0	2,199.9	2,181.4	2,172.0	5.9	6.4	-41.77	76.9	-121.2	142.4	130.6	11.79	12.078		
2,300.0	2,299.7	2,280.3	2,268.9	6.2	6.9	-42.11	89.5	-136.3	157.2	144.9	12.35	12.731		
2,400.0	2,399.3	2,379.4	2,366.1	6.5	7.3	-42.99	102.1	-151.3	170.1	157.2	12.91	13.174		
2,500.0	2,498.6	2,478.7	2,463.4	6.8	7.8	-44.32	114.8	-166.4	181.2	167.7	13.49	13.434		
2,594.7	2,592.3	2,572.9	2,555.7	7.0	8.2	-45.95	126.7	-180.7	190.1	176.1	14.05	13.531		
2,600.0	2,597.5	2,578.1	2,560.8	7.1	8.3	-46.06	127.4	-181.5	190.6	176.5	14.08	13.532		
2,700.0	2,696.3	2,677.5	2,658.2	7.4	8.7	-47.97	140.1	-196.6	199.3	184.6	14.71	13.547		
2,800.0	2,795.1	2,776.9	2,755.7	7.7	9.2	-49.72	152.7	-211.7	208.3	192.9	15.36	13.557		
2,900.0	2,893.9	2,876.3	2,853.1	8.1	9.7	-51.33	165.4	-226.8	217.4	201.4	16.03	13.562		
3,000.0	2,992.7	2,975.7	2,950.5	8.4	10.2	-52.81	178.0	-241.9	226.7	210.0	16.72	13.561		
3,100.0	3,091.5	3,075.1	3,048.0	8.8	10.7	-54.17	190.7	-257.0	236.2	218.8	17.42	13.556		
3,200.0	3,190.3	3,174.5	3,145.4	9.1	11.2	-55.42	203.3	-272.1	245.7	227.6	18.14	13.546		
3,300.0	3,289.1	3,273.9	3,242.8	9.5	11.7	-56.58	216.0	-287.2	255.4	236.5	18.87	13.533		
3,400.0	3,387.9	3,373.3	3,340.3	9.9	12.3	-57.65	228.6	-302.3	265.2	245.6	19.62	13.517		
3,500.0	3,486.6	3,472.7	3,437.7	10.3	12.8	-58.65	241.3	-317.4	275.0	254.7	20.38	13.498		
3,600.0	3,585.4	3,572.1	3,535.1	10.7	13.3	-59.58	253.9	-332.5	285.0	263.8	21.14	13.478		
3,700.0	3,684.2	3,671.5	3,632.6	11.1	13.8	-60.45	266.6	-347.7	295.0	273.0	21.92	13.456		
3,800.0	3,783.0	3,770.9	3,730.0	11.5	14.3	-61.26	279.2	-362.8	305.0	282.3	22.71	13.433		
3,900.0	3,881.8	3,870.3	3,827.4	11.9	14.8	-62.02	291.9	-377.9	315.1	291.6	23.50	13.409		
4,000.0	3,980.6	3,969.7	3,924.8	12.3	15.3	-62.73	304.5	-393.0	325.3	301.0	24.30	13.385		
4,100.0	4,079.4	4,069.1	4,022.3	12.7	15.9	-63.40	317.2	-408.1	335.5	310.4	25.11	13.361		
4,200.0	4,178.2	4,168.5	4,119.7	13.1	16.4	-64.02	329.8	-423.2	345.8	319.9	25.93	13.337		
4,300.0	4,277.0	4,267.9	4,217.1	13.5	16.9	-64.62	342.5	-438.3	356.1	329.3	26.75	13.313		
4,400.0	4,375.8	4,367.3	4,314.6	13.9	17.4	-65.18	355.1	-453.4	366.4	338.8	27.57	13.289		
4,500.0	4,474.6	4,466.7	4,412.0	14.3	18.0	-65.70	367.8	-468.5	376.8	348.4	28.40	13.265		
4,600.0	4,573.3	4,566.1	4,509.4	14.8	18.5	-66.20	380.4	-483.6	387.2	357.9	29.24	13.242		
4,700.0	4,672.1	4,665.5	4,606.9	15.2	19.0	-66.68	393.1	-498.7	397.6	367.5	30.08	13.220		
4,800.0	4,770.9	4,764.9	4,704.3	15.6	19.5	-67.13	405.7	-513.8	408.1	377.1	30.92	13.197		
4,900.0	4,869.7	4,864.3	4,801.7	16.0	20.1	-67.55	418.4	-528.9	418.5	386.8	31.76	13.176		

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 Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-143 - Wellbore #1 - Plan #2 (1-25-17)											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	4,968.5	4,963.8	4,899.2	16.5	20.6	-67.96	431.0	-544.0	429.0	396.4	32.61	13.155			
5,100.0	5,067.3	5,063.2	4,996.6	16.9	21.1	-68.35	443.7	-559.1	439.5	406.1	33.46	13.134			
5,200.0	5,166.1	5,162.6	5,094.0	17.3	21.6	-68.71	456.3	-574.2	450.1	415.7	34.32	13.114			
5,300.0	5,264.9	5,270.9	5,200.4	17.7	22.2	-69.16	469.6	-590.1	460.0	424.8	35.19	13.072			
5,400.0	5,363.7	5,385.4	5,313.4	18.2	22.6	-69.92	480.9	-603.6	467.1	431.0	36.07	12.950			
5,483.1	5,445.7	5,480.5	5,407.9	18.5	22.9	-70.78	488.2	-612.3	470.6	433.8	36.80	12.789			
5,500.0	5,462.5	5,499.8	5,427.2	18.6	22.9	-70.99	489.4	-613.7	471.1	434.1	36.94	12.752			
5,600.0	5,561.6	5,614.3	5,541.2	18.9	23.2	-72.11	494.9	-620.3	472.8	435.1	37.68	12.550			
5,700.0	5,661.1	5,728.6	5,655.5	19.2	23.4	-73.09	497.5	-623.4	472.6	434.3	38.32	12.335			
5,800.0	5,760.9	5,834.0	5,760.9	19.4	23.6	-73.80	497.8	-623.7	471.1	432.2	38.85	12.125			
5,900.0	5,860.9	5,934.0	5,860.9	19.6	23.8	-74.11	497.8	-623.7	470.3	431.0	39.29	11.969			
5,924.0	5,884.8	5,957.7	5,884.6	19.7	23.8	-74.16	497.5	-623.7	470.3	430.9	39.38	11.942			
5,929.1	5,890.0	5,962.8	5,889.7	19.7	23.8	-91.05	497.3	-623.7	470.3	430.9	39.41	11.935			
5,982.2	5,943.1	6,015.0	5,941.8	19.8	23.8	-91.48	493.8	-623.7	470.4	430.7	39.63	11.870			
6,000.0	5,960.9	6,032.4	5,959.1	19.8	23.8	88.25	491.9	-623.7	470.4	430.7	39.70	11.851			
6,050.0	6,010.8	6,081.1	6,007.2	19.9	23.9	87.65	484.3	-623.7	470.6	430.8	39.85	11.809			
6,100.0	6,060.4	6,129.5	6,054.4	19.9	23.8	87.05	473.7	-623.7	470.8	430.9	39.93	11.790			
6,150.0	6,109.5	6,177.6	6,100.5	19.9	23.8	86.47	460.3	-623.7	471.1	431.1	39.95	11.792			
6,200.0	6,157.9	6,225.4	6,145.5	19.9	23.7	85.91	444.1	-623.7	471.4	431.5	39.90	11.813			
6,250.0	6,205.4	6,273.0	6,189.2	19.8	23.7	85.36	425.2	-623.8	471.7	431.9	39.80	11.853			
6,300.0	6,251.8	6,320.3	6,231.3	19.7	23.6	84.84	403.8	-623.8	472.1	432.5	39.64	11.909			
6,350.0	6,296.8	6,367.3	6,271.9	19.6	23.5	84.33	379.9	-623.8	472.5	433.1	39.45	11.978			
6,400.0	6,340.3	6,414.2	6,310.7	19.5	23.4	83.85	353.7	-623.8	472.9	433.7	39.22	12.058			
6,450.0	6,382.2	6,460.8	6,347.7	19.4	23.2	83.40	325.3	-623.8	473.3	434.4	38.97	12.146			
6,500.0	6,422.1	6,507.3	6,382.7	19.2	23.1	82.98	294.8	-623.8	473.7	435.0	38.71	12.237			
6,550.0	6,460.0	6,553.6	6,415.8	19.1	23.0	82.58	262.4	-623.8	474.1	435.7	38.47	12.326			
6,600.0	6,495.7	6,600.0	6,446.8	19.0	22.9	82.21	227.9	-623.9	474.5	436.3	38.24	12.409			
6,650.0	6,529.0	6,645.6	6,475.3	18.9	22.7	81.88	192.2	-623.9	474.9	436.9	38.06	12.479			
6,700.0	6,559.8	6,691.5	6,501.7	18.8	22.6	81.57	154.8	-623.9	475.3	437.3	37.93	12.531			
6,750.0	6,588.0	6,737.2	6,525.7	18.8	22.5	81.30	115.9	-623.9	475.6	437.7	37.87	12.558			
6,800.0	6,613.4	6,782.8	6,547.3	18.8	22.4	81.07	75.7	-623.9	475.9	438.0	37.90	12.556			
6,850.0	6,635.9	6,828.3	6,566.4	18.8	22.3	80.87	34.4	-624.0	476.1	438.1	38.03	12.520			
6,900.0	6,655.5	6,873.7	6,583.1	18.9	22.2	80.70	-7.9	-624.0	476.4	438.1	38.27	12.447			
6,950.0	6,672.0	6,919.1	6,597.1	19.1	22.1	80.57	-51.0	-624.0	476.5	437.9	38.62	12.337			
7,000.0	6,685.4	6,964.5	6,608.6	19.3	22.1	80.48	-94.9	-624.0	476.6	437.5	39.10	12.190			
7,050.0	6,695.6	7,009.8	6,617.4	19.7	22.1	80.43	-139.3	-624.1	476.7	437.0	39.71	12.006			
7,100.0	6,702.6	7,055.1	6,623.6	20.0	22.2	80.41	-184.1	-624.1	476.7	436.3	40.43	11.792			
7,150.0	6,706.3	7,100.0	6,627.1	20.5	22.4	80.42	-228.9	-624.1	476.7	435.4	41.26	11.553			
7,150.2	6,706.3	7,100.0	6,627.1	20.5	22.4	80.42	-228.9	-624.1	476.7	435.4	41.26	11.552			
7,187.3	6,707.0	7,132.2	6,627.1	20.9	22.6	80.35	-261.1	-624.1	476.8	434.8	41.94	11.368			
7,187.3	6,707.0	7,132.2	6,627.1	20.9	22.6	80.35	-261.1	-624.1	476.8	434.8	41.94	11.368			
7,187.7	6,707.0	7,132.5	6,627.1	20.9	22.6	80.35	-261.5	-624.1	476.8	434.8	41.95	11.366			
7,200.0	6,706.9	7,147.4	6,627.0	21.0	22.7	80.35	-275.3	-624.1	476.8	434.6	42.18	11.303			
7,300.0	6,706.3	7,247.4	6,626.8	22.1	23.6	80.41	-375.3	-624.2	476.7	432.3	44.40	10.737			
7,400.0	6,705.6	7,347.4	6,626.7	23.4	24.9	80.47	-475.3	-624.2	476.6	429.6	46.98	10.143			
7,500.0	6,704.9	7,447.4	6,626.5	24.9	26.3	80.53	-575.3	-624.3	476.5	426.6	49.87	9.554			
7,600.0	6,704.3	7,547.4	6,626.4	26.5	27.8	80.59	-675.3	-624.4	476.4	423.4	53.01	8.986			
7,700.0	6,703.6	7,647.4	6,626.3	28.2	29.5	80.65	-775.3	-624.4	476.3	419.9	56.36	8.450			
7,800.0	6,702.9	7,747.4	6,626.1	30.0	31.2	80.71	-875.3	-624.5	476.2	416.3	59.88	7.951			
7,900.0	6,702.3	7,847.4	6,626.0	31.9	33.0	80.77	-975.3	-624.5	476.1	412.5	63.56	7.491			

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 Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-143 - Wellbore #1 - Plan #2 (1-25-17)											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)				
8,000.0	6,701.6	7,947.4	6,625.8	33.8	34.9	80.84	-1,075.3	-624.6	476.0	408.6	67.35	7.067			
8,100.0	6,701.0	8,047.4	6,625.7	35.8	36.8	80.90	-1,175.3	-624.7	475.9	404.6	71.25	6.679			
8,200.0	6,700.3	8,147.4	6,625.5	37.8	38.8	80.96	-1,275.3	-624.7	475.8	400.5	75.23	6.324			
8,300.0	6,699.6	8,247.4	6,625.4	39.9	40.8	81.02	-1,375.3	-624.8	475.7	396.4	79.29	5.999			
8,400.0	6,699.0	8,347.4	6,625.2	41.9	42.9	81.08	-1,475.3	-624.8	475.6	392.2	83.41	5.701			
8,500.0	6,698.3	8,447.4	6,625.1	44.0	44.9	81.14	-1,575.3	-624.9	475.5	387.9	87.59	5.428			
8,600.0	6,697.7	8,547.4	6,624.9	46.2	47.0	81.20	-1,675.3	-625.0	475.4	383.6	91.81	5.178			
8,700.0	6,697.0	8,647.4	6,624.8	48.3	49.1	81.26	-1,775.3	-625.0	475.3	379.2	96.08	4.947			
8,800.0	6,696.3	8,747.4	6,624.6	50.5	51.3	81.32	-1,875.3	-625.1	475.2	374.8	100.38	4.734			
8,900.0	6,695.7	8,847.4	6,624.5	52.7	53.4	81.38	-1,975.3	-625.1	475.1	370.4	104.72	4.537			
9,000.0	6,695.0	8,947.4	6,624.3	54.9	55.6	81.44	-2,075.3	-625.2	475.0	365.9	109.08	4.354			
9,100.0	6,694.3	9,047.4	6,624.2	57.1	57.8	81.51	-2,175.3	-625.3	474.9	361.4	113.47	4.185			
9,200.0	6,693.7	9,147.4	6,624.0	59.3	60.0	81.57	-2,275.3	-625.3	474.8	356.9	117.88	4.028			
9,300.0	6,693.0	9,247.4	6,623.9	61.6	62.2	81.63	-2,375.3	-625.4	474.7	352.4	122.31	3.881			
9,400.0	6,692.4	9,347.4	6,623.8	63.8	64.4	81.69	-2,475.3	-625.4	474.6	347.8	126.76	3.744			
9,500.0	6,691.7	9,447.4	6,623.6	66.1	66.6	81.75	-2,575.3	-625.5	474.5	343.3	131.23	3.616			
9,600.0	6,691.0	9,547.4	6,623.5	68.3	68.9	81.81	-2,675.3	-625.6	474.4	338.7	135.71	3.496			
9,700.0	6,690.4	9,647.4	6,623.3	70.6	71.1	81.87	-2,775.3	-625.6	474.3	334.1	140.21	3.383			
9,800.0	6,689.7	9,747.4	6,623.2	72.8	73.4	81.93	-2,875.3	-625.7	474.2	329.5	144.71	3.277			
9,900.0	6,689.0	9,847.4	6,623.0	75.1	75.6	82.00	-2,975.3	-625.7	474.2	324.9	149.23	3.177			
10,000.0	6,688.4	9,947.4	6,622.9	77.4	77.9	82.06	-3,075.3	-625.8	474.1	320.3	153.76	3.083			
10,100.0	6,687.7	10,047.4	6,622.7	79.7	80.1	82.12	-3,175.3	-625.9	474.0	315.7	158.30	2.994			
10,200.0	6,687.1	10,147.4	6,622.6	82.0	82.4	82.18	-3,275.3	-625.9	473.9	311.0	162.85	2.910			
10,300.0	6,686.4	10,247.4	6,622.4	84.2	84.7	82.24	-3,375.3	-626.0	473.8	306.4	167.41	2.830			
10,400.0	6,685.7	10,347.4	6,622.3	86.5	86.9	82.30	-3,475.3	-626.0	473.7	301.7	171.97	2.755			
10,500.0	6,685.1	10,447.4	6,622.1	88.8	89.2	82.36	-3,575.3	-626.1	473.6	297.1	176.54	2.683			
10,600.0	6,684.4	10,547.4	6,622.0	91.1	91.5	82.42	-3,675.3	-626.2	473.5	292.4	181.12	2.614			
10,700.0	6,683.8	10,647.4	6,621.8	93.4	93.8	82.49	-3,775.3	-626.2	473.4	287.7	185.70	2.549			
10,800.0	6,683.1	10,747.4	6,621.7	95.7	96.1	82.55	-3,875.3	-626.3	473.4	283.1	190.29	2.488			
10,900.0	6,682.4	10,847.4	6,621.5	98.0	98.4	82.61	-3,975.3	-626.3	473.3	278.4	194.89	2.428			
11,000.0	6,681.8	10,947.4	6,621.4	100.4	100.7	82.67	-4,075.3	-626.4	473.2	273.7	199.49	2.372			
11,100.0	6,681.1	11,047.4	6,621.3	102.7	103.0	82.73	-4,175.3	-626.5	473.1	269.0	204.09	2.318			
11,200.0	6,680.4	11,147.4	6,621.1	105.0	105.3	82.79	-4,275.3	-626.5	473.0	264.3	208.70	2.266			
11,300.0	6,679.8	11,247.4	6,621.0	107.3	107.6	82.86	-4,375.3	-626.6	472.9	259.6	213.32	2.217			
11,400.0	6,679.1	11,347.4	6,620.8	109.6	109.9	82.92	-4,475.3	-626.6	472.9	254.9	217.94	2.170			
11,500.0	6,678.5	11,447.3	6,620.7	111.9	112.2	82.98	-4,575.3	-626.7	472.8	250.2	222.56	2.124			
11,600.0	6,677.8	11,547.3	6,620.5	114.2	114.5	83.04	-4,675.3	-626.8	472.7	245.5	227.19	2.081			
11,700.0	6,677.1	11,647.3	6,620.4	116.6	116.8	83.10	-4,775.3	-626.8	472.6	240.8	231.82	2.039			
11,800.0	6,676.5	11,747.3	6,620.2	118.9	119.1	83.16	-4,875.3	-626.9	472.5	236.1	236.45	1.998			
11,900.0	6,675.8	11,847.3	6,620.1	121.2	121.4	83.23	-4,975.3	-626.9	472.5	231.4	241.09	1.960			
12,000.0	6,675.1	11,947.3	6,619.9	123.5	123.7	83.29	-5,075.3	-627.0	472.4	226.7	245.72	1.922			
12,100.0	6,674.5	12,047.3	6,619.8	125.8	126.1	83.35	-5,175.3	-627.1	472.3	221.9	250.37	1.886			
12,200.0	6,673.8	12,147.3	6,619.6	128.2	128.4	83.41	-5,275.3	-627.1	472.2	217.2	255.01	1.852			
12,300.0	6,673.2	12,247.3	6,619.5	130.5	130.7	83.47	-5,375.3	-627.2	472.1	212.5	259.66	1.818			
12,400.0	6,672.5	12,347.3	6,619.3	132.8	133.0	83.53	-5,475.3	-627.2	472.1	207.8	264.31	1.786			
12,500.0	6,671.8	12,447.3	6,619.2	135.1	135.3	83.60	-5,575.3	-627.3	472.0	203.0	268.96	1.755			
12,600.0	6,671.2	12,547.3	6,619.0	137.5	137.7	83.66	-5,675.3	-627.4	471.9	198.3	273.62	1.725			
12,700.0	6,670.5	12,647.3	6,618.9	139.8	140.0	83.72	-5,775.3	-627.4	471.8	193.6	278.27	1.696			
12,800.0	6,669.9	12,747.3	6,618.8	142.1	142.3	83.78	-5,875.2	-627.5	471.8	188.8	282.93	1.667			
12,900.0	6,669.2	12,847.3	6,618.6	144.5	144.6	83.84	-5,975.2	-627.5	471.7	184.1	287.60	1.640			
13,000.0	6,668.5	12,947.3	6,618.5	146.8	147.0	83.91	-6,075.2	-627.6	471.6	179.4	292.26	1.614			

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 Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-143 - Wellbore #1 - Plan #2 (1-25-17)													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		
13,100.0	6,667.9	13,047.3	6,618.3	149.1	149.3	83.97	-6,175.2	-627.7	471.5	174.6	296.92	1.588		
13,200.0	6,667.2	13,147.3	6,618.2	151.5	151.6	84.03	-6,275.2	-627.7	471.5	169.9	301.59	1.563		
13,300.0	6,666.5	13,247.3	6,618.0	153.8	153.9	84.09	-6,375.2	-627.8	471.4	165.1	306.26	1.539		
13,400.0	6,665.9	13,347.3	6,617.9	156.1	156.3	84.15	-6,475.2	-627.8	471.3	160.4	310.93	1.516		
13,500.0	6,665.2	13,447.3	6,617.7	158.5	158.6	84.22	-6,575.2	-627.9	471.3	155.7	315.60	1.493	Level 3	
13,600.0	6,664.6	13,547.3	6,617.6	160.8	160.9	84.28	-6,675.2	-628.0	471.2	150.9	320.28	1.471	Level 3	
13,700.0	6,663.9	13,647.3	6,617.4	163.1	163.3	84.34	-6,775.2	-628.0	471.1	146.2	324.95	1.450	Level 3	
13,800.0	6,663.2	13,747.3	6,617.3	165.5	165.6	84.40	-6,875.2	-628.1	471.1	141.4	329.63	1.429	Level 3	
13,900.0	6,662.6	13,847.3	6,617.1	167.8	167.9	84.46	-6,975.2	-628.1	471.0	136.7	334.31	1.409	Level 3	
13,986.6	6,662.0	13,933.9	6,617.0	169.8	169.9	84.52	-7,061.8	-628.2	470.9	132.6	338.36	1.392	Level 3, SF	

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)													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	-89.54	0.4	-44.9	44.9						
100.0	100.0	100.0	100.0	0.1	0.1	-89.54	0.4	-44.9	44.9	44.6	0.28	162.925			
200.0	200.0	200.0	200.0	0.4	0.4	-89.54	0.4	-44.9	44.9	44.0	0.83	54.308			
300.0	300.0	300.0	300.0	0.7	0.7	-89.54	0.4	-44.9	44.9	43.5	1.38	32.585			
400.0	400.0	400.0	400.0	1.0	1.0	-89.54	0.4	-44.9	44.9	42.9	1.93	23.275			
500.0	500.0	500.0	500.0	1.2	1.2	-89.54	0.4	-44.9	44.9	42.4	2.48	18.103			
600.0	600.0	600.0	600.0	1.5	1.5	-89.54	0.4	-44.9	44.9	41.8	3.03	14.811			
700.0	700.0	700.0	700.0	1.8	1.8	-89.54	0.4	-44.9	44.9	41.3	3.58	12.533			
800.0	800.0	800.0	800.0	2.1	2.1	-89.54	0.4	-44.9	44.9	40.7	4.13	10.862			
900.0	900.0	900.0	900.0	2.3	2.3	-89.54	0.4	-44.9	44.9	40.2	4.68	9.584			
1,000.0	1,000.0	1,000.0	1,000.0	2.6	2.6	-89.54	0.4	-44.9	44.9	39.6	5.23	8.575 CC, ES			
1,100.0	1,100.0	1,099.0	1,099.0	2.9	2.9	-88.72	1.0	-46.0	46.0	40.2	5.77	7.967			
1,200.0	1,200.0	1,197.8	1,197.7	3.2	3.1	-86.50	3.0	-49.2	49.4	43.1	6.31	7.831			
1,300.0	1,300.0	1,296.4	1,296.1	3.4	3.4	-83.42	6.3	-54.7	55.2	48.3	6.84	8.064			
1,400.0	1,400.0	1,394.6	1,393.9	3.7	3.7	-80.08	10.9	-62.3	63.5	56.1	7.39	8.601			
1,500.0	1,500.0	1,492.3	1,490.9	4.0	4.0	-76.90	16.7	-72.0	74.4	66.5	7.93	9.389			
1,600.0	1,600.0	1,589.3	1,586.9	4.3	4.3	-74.10	23.8	-83.7	88.0	79.5	8.48	10.381			
1,700.0	1,700.0	1,685.5	1,681.9	4.5	4.7	-71.75	32.1	-97.4	104.1	95.1	9.03	11.535			
1,800.0	1,800.0	1,780.9	1,775.5	4.8	5.1	-69.82	41.5	-112.9	122.8	113.2	9.58	12.817			
1,900.0	1,900.0	1,875.3	1,867.7	5.1	5.5	-68.24	52.0	-130.3	144.0	133.8	10.14	14.199			
2,000.0	2,000.0	1,972.1	1,961.8	5.4	5.9	-66.95	63.6	-149.4	166.8	156.1	10.71	15.572			
2,100.0	2,100.0	2,069.6	2,056.7	5.6	6.4	-49.14	75.2	-168.7	188.9	177.7	11.24	16.800			
2,200.0	2,199.9	2,167.4	2,151.9	5.9	7.0	-48.92	86.9	-188.1	209.3	197.5	11.81	17.725			
2,300.0	2,299.7	2,265.7	2,247.4	6.2	7.5	-49.22	98.7	-207.5	228.1	215.7	12.38	18.421			
2,400.0	2,399.3	2,364.1	2,343.2	6.5	8.0	-49.94	110.5	-227.0	245.2	232.2	12.96	18.915			
2,500.0	2,498.6	2,462.7	2,439.2	6.8	8.6	-51.00	122.3	-246.5	260.7	247.2	13.56	19.231			
2,594.7	2,592.3	2,556.3	2,530.2	7.0	9.1	-52.29	133.5	-265.0	274.1	259.9	14.14	19.382			
2,600.0	2,597.5	2,561.5	2,535.3	7.1	9.1	-52.37	134.1	-266.0	274.8	260.6	14.17	19.386			
2,700.0	2,696.3	2,660.3	2,631.4	7.4	9.7	-53.95	145.9	-285.6	288.3	273.5	14.82	19.452			
2,800.0	2,795.1	2,759.0	2,727.5	7.7	10.3	-55.38	157.7	-305.1	302.1	286.6	15.49	19.499			
2,900.0	2,893.9	2,857.8	2,823.6	8.1	10.8	-56.68	169.5	-324.7	316.0	299.8	16.18	19.532			
3,000.0	2,992.7	2,956.6	2,919.7	8.4	11.4	-57.88	181.3	-344.2	330.1	313.2	16.88	19.550			
3,100.0	3,091.5	3,055.4	3,015.8	8.8	12.0	-58.98	193.1	-363.7	344.3	326.7	17.60	19.557			
3,200.0	3,190.3	3,154.2	3,111.9	9.1	12.6	-59.99	205.0	-383.3	358.6	340.2	18.34	19.554			
3,300.0	3,289.1	3,252.9	3,208.0	9.5	13.1	-60.93	216.8	-402.8	373.0	353.9	19.09	19.543			
3,400.0	3,387.9	3,351.7	3,304.1	9.9	13.7	-61.79	228.6	-422.4	387.5	367.6	19.85	19.525			
3,500.0	3,486.6	3,450.5	3,400.2	10.3	14.3	-62.59	240.4	-441.9	402.1	381.4	20.62	19.502			
3,600.0	3,585.4	3,549.3	3,496.3	10.7	14.9	-63.34	252.2	-461.5	416.7	395.3	21.40	19.475			
3,700.0	3,684.2	3,648.1	3,592.4	11.1	15.5	-64.04	264.0	-481.0	431.4	409.2	22.19	19.445			
3,800.0	3,783.0	3,746.8	3,688.5	11.5	16.1	-64.69	275.9	-500.5	446.2	423.2	22.99	19.413			
3,900.0	3,881.8	3,845.6	3,784.6	11.9	16.7	-65.29	287.7	-520.1	461.0	437.2	23.79	19.379			
4,000.0	3,980.6	3,944.4	3,880.7	12.3	17.3	-65.86	299.5	-539.6	475.9	451.3	24.60	19.343			
4,100.0	4,079.4	4,043.2	3,976.8	12.7	17.9	-66.40	311.3	-559.2	490.8	465.4	25.42	19.307			
4,200.0	4,178.2	4,142.0	4,072.9	13.1	18.5	-66.90	323.1	-578.7	505.8	479.5	26.25	19.270			
4,300.0	4,277.0	4,240.7	4,169.0	13.5	19.1	-67.38	334.9	-598.3	520.8	493.7	27.08	19.233			
4,400.0	4,375.8	4,339.5	4,265.1	13.9	19.7	-67.83	346.7	-617.8	535.8	507.9	27.91	19.197			
4,500.0	4,474.6	4,438.3	4,361.2	14.3	20.2	-68.25	358.6	-637.3	550.9	522.1	28.75	19.160			
4,600.0	4,573.3	4,537.1	4,457.3	14.8	20.8	-68.65	370.4	-656.9	566.0	536.4	29.59	19.124			
4,700.0	4,672.1	4,635.9	4,553.4	15.2	21.4	-69.03	382.2	-676.4	581.1	550.6	30.44	19.089			
4,800.0	4,770.9	4,734.6	4,649.5	15.6	22.0	-69.40	394.0	-696.0	596.2	564.9	31.29	19.054			
4,900.0	4,869.7	4,833.4	4,745.6	16.0	22.6	-69.74	405.8	-715.5	611.4	579.2	32.14	19.019			

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 Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)													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	4,968.5	4,932.2	4,841.7	16.5	23.2	-70.07	417.6	-735.1	626.5	593.5	33.00	18.986		
5,100.0	5,067.3	5,031.0	4,937.9	16.9	23.8	-70.38	429.4	-754.6	641.7	607.9	33.86	18.953		
5,200.0	5,166.1	5,129.8	5,034.0	17.3	24.4	-70.67	441.3	-774.1	657.0	622.2	34.72	18.921		
5,300.0	5,264.9	5,228.5	5,130.1	17.7	25.0	-70.96	453.1	-793.7	672.2	636.6	35.59	18.889		
5,400.0	5,363.7	5,351.1	5,249.8	18.2	25.6	-71.39	466.6	-816.0	685.9	649.4	36.50	18.789		
5,483.1	5,445.7	5,455.2	5,352.3	18.5	26.0	-71.91	476.0	-831.5	694.4	657.2	37.26	18.637		
5,500.0	5,462.5	5,476.5	5,373.3	18.6	26.1	-72.06	477.6	-834.3	695.9	658.5	37.41	18.602		
5,600.0	5,561.6	5,602.4	5,498.2	18.9	26.5	-72.82	485.9	-848.0	702.9	664.7	38.18	18.410		
5,700.0	5,661.1	5,728.7	5,624.1	19.2	26.8	-73.42	491.4	-857.0	707.2	668.3	38.84	18.208		
5,800.0	5,760.9	5,855.2	5,750.5	19.4	27.0	-73.85	493.9	-861.3	708.8	669.4	39.39	17.992		
5,900.0	5,860.9	5,965.6	5,860.9	19.6	27.2	-74.07	494.2	-861.7	708.3	668.5	39.82	17.786		
5,929.1	5,890.0	5,994.7	5,890.0	19.7	27.2	-90.96	494.2	-861.7	708.3	668.3	39.93	17.736		
5,982.2	5,943.1	6,047.8	5,943.1	19.8	27.3	-90.96	494.2	-861.7	708.3	668.1	40.14	17.643		
6,000.0	5,960.9	6,065.6	5,960.9	19.8	27.3	89.02	494.2	-861.7	708.3	668.1	40.20	17.618		
6,050.0	6,010.8	6,114.9	6,010.1	19.9	27.4	89.12	492.7	-861.7	708.2	667.9	40.31	17.569		
6,100.0	6,060.4	6,164.2	6,059.2	19.9	27.4	89.24	488.1	-861.7	708.2	667.9	40.35	17.550		
6,150.0	6,109.5	6,213.6	6,108.0	19.9	27.4	89.35	480.3	-861.7	708.2	667.9	40.33	17.561		
6,200.0	6,157.9	6,263.1	6,156.3	19.9	27.4	89.47	469.3	-861.7	708.2	667.9	40.24	17.598		
6,250.0	6,205.4	6,312.8	6,203.9	19.8	27.4	89.59	455.2	-861.7	708.2	668.1	40.10	17.659		
6,300.0	6,251.8	6,362.5	6,250.5	19.7	27.3	89.71	438.0	-861.7	708.1	668.2	39.92	17.741		
6,350.0	6,296.8	6,412.3	6,296.0	19.6	27.2	89.83	417.8	-861.7	708.1	668.4	39.69	17.840		
6,400.0	6,340.3	6,462.2	6,340.2	19.5	27.2	89.96	394.6	-861.7	708.1	668.7	39.45	17.952		
6,450.0	6,382.2	6,512.2	6,382.8	19.4	27.1	90.08	368.5	-861.7	708.1	668.9	39.19	18.071		
6,500.0	6,422.1	6,562.3	6,423.7	19.2	26.9	90.21	339.7	-861.7	708.1	669.2	38.93	18.191		
6,524.4	6,440.9	6,586.7	6,443.0	19.2	26.9	90.27	324.6	-861.7	708.1	669.3	38.80	18.248		
6,550.0	6,460.0	6,612.5	6,462.8	19.1	26.8	90.33	308.1	-861.8	708.1	669.4	38.68	18.307		
6,600.0	6,495.7	6,662.8	6,499.7	19.0	26.7	90.45	274.0	-861.8	708.1	669.7	38.47	18.409		
6,650.0	6,529.0	6,713.2	6,534.4	18.9	26.6	90.57	237.4	-861.8	708.1	669.8	38.30	18.491		
6,700.0	6,559.8	6,763.7	6,566.6	18.8	26.5	90.69	198.5	-861.8	708.1	669.9	38.19	18.544		
6,750.0	6,588.0	6,814.3	6,596.3	18.8	26.3	90.81	157.6	-861.8	708.1	670.0	38.15	18.561		
6,800.0	6,613.4	6,865.0	6,623.2	18.8	26.2	90.92	114.6	-861.9	708.2	669.9	38.21	18.534		
6,850.0	6,635.9	6,915.8	6,647.3	18.8	26.1	91.03	69.9	-861.9	708.2	669.8	38.36	18.460		
6,900.0	6,655.5	6,966.6	6,668.4	18.9	26.0	91.13	23.7	-861.9	708.2	669.6	38.62	18.335		
6,950.0	6,672.0	7,017.6	6,686.4	19.1	26.0	91.23	-24.0	-861.9	708.2	669.2	39.00	18.157		
7,000.0	6,685.4	7,068.6	6,701.2	19.3	25.9	91.32	-72.9	-862.0	708.2	668.7	39.50	17.929		
7,050.0	6,695.6	7,119.8	6,712.7	19.7	25.9	91.41	-122.7	-862.0	708.2	668.1	40.12	17.655		
7,100.0	6,702.6	7,171.0	6,720.9	20.0	26.0	91.49	-173.2	-862.0	708.2	667.4	40.85	17.338		
7,150.0	6,706.3	7,222.2	6,725.7	20.5	26.1	91.57	-224.2	-862.0	708.3	666.6	41.69	16.989		
7,187.3	6,707.0	7,260.5	6,727.0	20.9	26.2	91.62	-262.4	-862.1	708.3	665.9	42.38	16.712		
7,187.3	6,707.0	7,260.5	6,727.0	20.9	26.2	91.62	-262.4	-862.1	708.3	665.9	42.38	16.712		
7,187.7	6,707.0	7,260.9	6,727.0	20.9	26.2	91.62	-262.9	-862.1	708.3	665.9	42.39	16.709		
7,200.0	6,706.9	7,273.5	6,727.0	21.0	26.2	91.63	-275.5	-862.1	708.3	665.7	42.59	16.628		
7,300.0	6,706.3	7,373.5	6,726.3	22.1	26.8	91.62	-375.4	-862.1	708.2	663.5	44.77	15.821		
7,400.0	6,705.6	7,473.5	6,725.5	23.4	27.6	91.61	-475.4	-862.2	708.2	660.9	47.32	14.966		
7,500.0	6,704.9	7,573.5	6,724.8	24.9	28.7	91.61	-575.4	-862.2	708.2	658.0	50.19	14.110		
7,600.0	6,704.3	7,673.5	6,724.1	26.5	30.0	91.60	-675.4	-862.3	708.2	654.9	53.32	13.282		
7,700.0	6,703.6	7,773.5	6,723.3	28.2	31.5	91.60	-775.4	-862.4	708.2	651.5	56.67	12.497		
7,800.0	6,702.9	7,873.5	6,722.6	30.0	33.1	91.59	-875.4	-862.4	708.1	647.9	60.20	11.764		
7,900.0	6,702.3	7,973.5	6,721.8	31.9	34.8	91.58	-975.4	-862.5	708.1	644.2	63.87	11.086		
8,000.0	6,701.6	8,073.5	6,721.1	33.8	36.5	91.58	-1,075.4	-862.6	708.1	640.4	67.68	10.462		

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 Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)											Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
8,100.0	6,701.0	8,173.5	6,720.4	35.8	38.4	91.57	-1,175.4	-862.6	708.1	636.5	71.59	9.890			
8,200.0	6,700.3	8,273.5	6,719.6	37.8	40.3	91.57	-1,275.4	-862.7	708.1	632.5	75.60	9.366			
8,300.0	6,699.6	8,373.5	6,718.9	39.9	42.2	91.56	-1,375.4	-862.7	708.0	628.4	79.67	8.887			
8,400.0	6,699.0	8,473.5	6,718.2	41.9	44.2	91.55	-1,475.4	-862.8	708.0	624.2	83.82	8.447			
8,500.0	6,698.3	8,573.5	6,717.4	44.0	46.2	91.55	-1,575.4	-862.9	708.0	620.0	88.02	8.044			
8,600.0	6,697.7	8,673.5	6,716.7	46.2	48.2	91.54	-1,675.4	-862.9	708.0	615.7	92.27	7.673			
8,700.0	6,697.0	8,773.5	6,716.0	48.3	50.3	91.54	-1,775.4	-863.0	708.0	611.4	96.56	7.332			
8,800.0	6,696.3	8,873.5	6,715.2	50.5	52.4	91.53	-1,875.4	-863.0	707.9	607.1	100.88	7.017			
8,900.0	6,695.7	8,973.5	6,714.5	52.7	54.5	91.52	-1,975.4	-863.1	707.9	602.7	105.24	6.727			
9,000.0	6,695.0	9,073.5	6,713.8	54.9	56.6	91.52	-2,075.4	-863.2	707.9	598.3	109.63	6.457			
9,100.0	6,694.3	9,173.5	6,713.0	57.1	58.8	91.51	-2,175.4	-863.2	707.9	593.8	114.04	6.207			
9,200.0	6,693.7	9,273.5	6,712.3	59.3	60.9	91.51	-2,275.4	-863.3	707.9	589.4	118.48	5.975			
9,300.0	6,693.0	9,373.5	6,711.5	61.6	63.1	91.50	-2,375.4	-863.3	707.8	584.9	122.93	5.758			
9,400.0	6,692.4	9,473.5	6,710.8	63.8	65.3	91.49	-2,475.4	-863.4	707.8	580.4	127.40	5.556			
9,500.0	6,691.7	9,573.5	6,710.1	66.1	67.5	91.49	-2,575.4	-863.5	707.8	575.9	131.89	5.367			
9,600.0	6,691.0	9,673.5	6,709.3	68.3	69.7	91.48	-2,675.4	-863.5	707.8	571.4	136.40	5.189			
9,700.0	6,690.4	9,773.5	6,708.6	70.6	71.9	91.48	-2,775.4	-863.6	707.8	566.9	140.91	5.023			
9,800.0	6,689.7	9,873.5	6,707.9	72.8	74.1	91.47	-2,875.4	-863.6	707.7	562.3	145.44	4.866			
9,900.0	6,689.0	9,973.5	6,707.1	75.1	76.3	91.46	-2,975.4	-863.7	707.7	557.8	149.98	4.719			
10,000.0	6,688.4	10,073.5	6,706.4	77.4	78.6	91.46	-3,075.4	-863.8	707.7	553.2	154.52	4.580			
10,100.0	6,687.7	10,173.5	6,705.7	79.7	80.8	91.45	-3,175.4	-863.8	707.7	548.6	159.08	4.449			
10,200.0	6,687.1	10,273.5	6,704.9	82.0	83.1	91.45	-3,275.4	-863.9	707.7	544.0	163.65	4.324			
10,300.0	6,686.4	10,373.5	6,704.2	84.2	85.3	91.44	-3,375.4	-864.0	707.7	539.4	168.22	4.207			
10,400.0	6,685.7	10,473.5	6,703.4	86.5	87.6	91.43	-3,475.4	-864.0	707.6	534.8	172.80	4.095			
10,500.0	6,685.1	10,573.5	6,702.7	88.8	89.9	91.43	-3,575.4	-864.1	707.6	530.2	177.38	3.989			
10,600.0	6,684.4	10,673.5	6,702.0	91.1	92.1	91.42	-3,675.4	-864.1	707.6	525.6	181.98	3.888			
10,700.0	6,683.8	10,773.5	6,701.2	93.4	94.4	91.42	-3,775.3	-864.2	707.6	521.0	186.57	3.792			
10,800.0	6,683.1	10,873.5	6,700.5	95.7	96.7	91.41	-3,875.3	-864.3	707.6	516.4	191.18	3.701			
10,900.0	6,682.4	10,973.5	6,699.8	98.0	98.9	91.40	-3,975.3	-864.3	707.5	511.8	195.78	3.614			
11,000.0	6,681.8	11,073.5	6,699.0	100.4	101.2	91.40	-4,075.3	-864.4	707.5	507.1	200.39	3.531			
11,100.0	6,681.1	11,173.5	6,698.3	102.7	103.5	91.39	-4,175.3	-864.4	707.5	502.5	205.01	3.451			
11,200.0	6,680.4	11,273.5	6,697.6	105.0	105.8	91.39	-4,275.3	-864.5	707.5	497.8	209.63	3.375			
11,300.0	6,679.8	11,373.5	6,696.8	107.3	108.1	91.38	-4,375.3	-864.6	707.5	493.2	214.25	3.302			
11,400.0	6,679.1	11,473.5	6,696.1	109.6	110.4	91.37	-4,475.3	-864.6	707.4	488.6	218.88	3.232			
11,500.0	6,678.5	11,573.5	6,695.4	111.9	112.7	91.37	-4,575.3	-864.7	707.4	483.9	223.51	3.165			
11,600.0	6,677.8	11,673.5	6,694.6	114.2	115.0	91.36	-4,675.3	-864.7	707.4	479.3	228.14	3.101			
11,700.0	6,677.1	11,773.5	6,693.9	116.6	117.3	91.36	-4,775.3	-864.8	707.4	474.6	232.78	3.039			
11,800.0	6,676.5	11,873.5	6,693.1	118.9	119.6	91.35	-4,875.3	-864.9	707.4	469.9	237.41	2.979			
11,900.0	6,675.8	11,973.5	6,692.4	121.2	121.9	91.34	-4,975.3	-864.9	707.3	465.3	242.05	2.922			
12,000.0	6,675.1	12,073.5	6,691.7	123.5	124.2	91.34	-5,075.3	-865.0	707.3	460.6	246.70	2.867			
12,100.0	6,674.5	12,173.5	6,690.9	125.8	126.5	91.33	-5,175.3	-865.0	707.3	456.0	251.34	2.814			
12,200.0	6,673.8	12,273.5	6,690.2	128.2	128.8	91.33	-5,275.3	-865.1	707.3	451.3	255.99	2.763			
12,300.0	6,673.2	12,373.5	6,689.5	130.5	131.1	91.32	-5,375.3	-865.2	707.3	446.6	260.64	2.714			
12,400.0	6,672.5	12,473.5	6,688.7	132.8	133.4	91.31	-5,475.3	-865.2	707.2	442.0	265.29	2.666			
12,500.0	6,671.8	12,573.5	6,688.0	135.1	135.7	91.31	-5,575.3	-865.3	707.2	437.3	269.94	2.620			
12,600.0	6,671.2	12,673.5	6,687.3	137.5	138.0	91.30	-5,675.3	-865.4	707.2	432.6	274.60	2.575			
12,700.0	6,670.5	12,773.5	6,686.5	139.8	140.4	91.30	-5,775.3	-865.4	707.2	427.9	279.25	2.532			
12,800.0	6,669.9	12,873.5	6,685.8	142.1	142.7	91.29	-5,875.3	-865.5	707.2	423.3	283.91	2.491			
12,900.0	6,669.2	12,973.5	6,685.0	144.5	145.0	91.29	-5,975.3	-865.5	707.1	418.6	288.57	2.451			
13,000.0	6,668.5	13,073.5	6,684.3	146.8	147.3	91.28	-6,075.3	-865.6	707.1	413.9	293.23	2.412			
13,100.0	6,667.9	13,173.5	6,683.6	149.1	149.6	91.27	-6,175.3	-865.7	707.1	409.2	297.89	2.374			

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 Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)													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		
13,200.0	6,667.2	13,273.5	6,682.8	151.5	152.0	91.27	-6,275.3	-865.7	707.1	404.5	302.55	2.337		
13,300.0	6,666.5	13,373.5	6,682.1	153.8	154.3	91.26	-6,375.3	-865.8	707.1	399.9	307.22	2.302		
13,400.0	6,665.9	13,473.5	6,681.4	156.1	156.6	91.26	-6,475.3	-865.8	707.1	395.2	311.88	2.267		
13,500.0	6,665.2	13,573.5	6,680.6	158.5	158.9	91.25	-6,575.3	-865.9	707.0	390.5	316.55	2.234		
13,600.0	6,664.6	13,673.5	6,679.9	160.8	161.2	91.24	-6,675.3	-866.0	707.0	385.8	321.22	2.201		
13,700.0	6,663.9	13,773.5	6,679.2	163.1	163.6	91.24	-6,775.3	-866.0	707.0	381.1	325.88	2.169		
13,800.0	6,663.2	13,873.5	6,678.4	165.5	165.9	91.23	-6,875.3	-866.1	707.0	376.4	330.55	2.139		
13,900.0	6,662.6	13,973.5	6,677.7	167.8	168.2	91.23	-6,975.3	-866.1	707.0	371.7	335.22	2.109		
13,986.6	6,662.0	14,060.0	6,677.1	169.8	170.2	91.22	-7,061.8	-866.2	706.9	367.7	339.27	2.084 SF		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-303 - Wellbore #1 - Plan #2 (1-25-17)													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)			
0.0	0.0	0.0	0.0	0.0	0.0	-88.62	0.4	-14.8	14.8	14.8	0.00	N/A		
100.0	100.0	100.0	100.0	0.1	0.1	-88.62	0.4	-14.8	14.8	14.5	0.28	53.647		
200.0	200.0	200.0	200.0	0.4	0.4	-88.62	0.4	-14.8	14.8	13.9	0.83	17.882		
300.0	300.0	300.0	300.0	0.7	0.7	-88.62	0.4	-14.8	14.8	13.4	1.38	10.729		
400.0	400.0	400.0	400.0	1.0	1.0	-88.62	0.4	-14.8	14.8	12.8	1.93	7.664		
500.0	500.0	500.0	500.0	1.2	1.2	-88.62	0.4	-14.8	14.8	12.3	2.48	5.961		
600.0	600.0	600.0	600.0	1.5	1.5	-88.62	0.4	-14.8	14.8	11.7	3.03	4.877		
700.0	700.0	700.0	700.0	1.8	1.8	-88.62	0.4	-14.8	14.8	11.2	3.58	4.127		
800.0	800.0	800.0	800.0	2.1	2.1	-88.62	0.4	-14.8	14.8	10.6	4.13	3.576		
900.0	900.0	900.0	900.0	2.3	2.3	-88.62	0.4	-14.8	14.8	10.1	4.68	3.156		
1,000.0	1,000.0	1,000.0	1,000.0	2.6	2.6	-88.62	0.4	-14.8	14.8	9.5	5.23	2.824		
1,100.0	1,100.0	1,100.0	1,100.0	2.9	2.9	-88.62	0.4	-14.8	14.8	9.0	5.78	2.555		
1,200.0	1,200.0	1,200.0	1,200.0	3.2	3.2	-88.62	0.4	-14.8	14.8	8.4	6.33	2.332		
1,300.0	1,300.0	1,300.0	1,300.0	3.4	3.4	-88.62	0.4	-14.8	14.8	7.9	6.88	2.146		
1,400.0	1,400.0	1,400.0	1,400.0	3.7	3.7	-88.62	0.4	-14.8	14.8	7.3	7.43	1.987 CC		
1,500.0	1,500.0	1,499.7	1,499.7	4.0	4.0	-84.87	1.4	-15.6	15.6	7.6	7.98	1.957		
1,600.0	1,600.0	1,599.3	1,599.2	4.3	4.3	-75.86	4.5	-17.9	18.5	9.9	8.52	2.167		
1,700.0	1,700.0	1,698.7	1,698.4	4.5	4.5	-66.06	9.7	-21.8	23.9	14.8	9.07	2.635		
1,800.0	1,800.0	1,797.6	1,796.9	4.8	4.8	-58.21	16.9	-27.2	32.2	22.5	9.62	3.345		
1,900.0	1,900.0	1,896.0	1,894.6	5.1	5.1	-52.65	26.0	-34.1	43.3	33.1	10.17	4.255		
2,000.0	2,000.0	1,993.7	1,991.3	5.4	5.4	-48.84	37.1	-42.5	57.1	46.4	10.72	5.326		
2,100.0	2,100.0	2,092.3	2,088.6	5.6	5.8	-29.80	49.7	-52.0	71.7	60.4	11.26	6.369		
2,200.0	2,199.9	2,191.5	2,186.6	5.9	6.1	-29.19	62.5	-61.6	84.2	72.4	11.80	7.132		
2,300.0	2,299.7	2,291.0	2,284.7	6.2	6.5	-29.50	75.2	-71.2	94.4	82.0	12.34	7.644		
2,400.0	2,399.3	2,390.6	2,383.1	6.5	6.9	-30.49	88.0	-80.8	102.3	89.4	12.89	7.936		
2,500.0	2,498.6	2,490.4	2,481.6	6.8	7.2	-32.06	100.8	-90.5	108.1	94.6	13.44	8.039		
2,594.7	2,592.3	2,585.0	2,575.0	7.0	7.6	-34.10	112.9	-99.6	111.6	97.6	13.97	7.985		
2,600.0	2,597.5	2,590.3	2,580.2	7.1	7.6	-34.23	113.6	-100.1	111.7	97.7	14.01	7.978		
2,700.0	2,696.3	2,690.1	2,678.7	7.4	8.0	-36.62	126.4	-109.8	114.6	100.0	14.61	7.844		
2,800.0	2,795.1	2,790.0	2,777.3	7.7	8.5	-38.90	139.2	-119.4	117.7	102.4	15.23	7.725		
2,900.0	2,893.9	2,889.8	2,875.8	8.1	8.9	-41.06	152.0	-129.1	120.9	105.0	15.87	7.618		
3,000.0	2,992.7	2,989.7	2,974.4	8.4	9.3	-43.10	164.8	-138.7	124.3	107.8	16.53	7.520		
3,100.0	3,091.5	3,089.5	3,072.9	8.8	9.7	-45.03	177.6	-148.4	127.9	110.7	17.21	7.431		
3,200.0	3,190.3	3,189.4	3,171.5	9.1	10.1	-46.86	190.4	-158.0	131.6	113.7	17.90	7.350		
3,300.0	3,289.1	3,289.2	3,270.0	9.5	10.6	-48.58	203.3	-167.7	135.4	116.8	18.61	7.275		
3,400.0	3,387.9	3,389.0	3,368.6	9.9	11.0	-50.21	216.1	-177.3	139.3	120.0	19.33	7.205		
3,500.0	3,486.6	3,488.9	3,467.1	10.3	11.4	-51.75	228.9	-187.0	143.4	123.3	20.07	7.141		
3,600.0	3,585.4	3,588.7	3,565.7	10.7	11.9	-53.20	241.7	-196.6	147.5	126.7	20.83	7.082		
3,700.0	3,684.2	3,688.6	3,664.2	11.1	12.3	-54.57	254.5	-206.3	151.7	130.1	21.59	7.026		
3,800.0	3,783.0	3,788.4	3,762.8	11.5	12.7	-55.87	267.3	-215.9	156.0	133.7	22.37	6.975		
3,900.0	3,881.8	3,888.3	3,861.3	11.9	13.2	-57.10	280.1	-225.6	160.4	137.3	23.16	6.927		
4,000.0	3,980.6	3,988.1	3,959.9	12.3	13.6	-58.26	292.9	-235.2	164.9	140.9	23.95	6.883		
4,100.0	4,079.4	4,088.0	4,058.4	12.7	14.1	-59.36	305.7	-244.9	169.4	144.6	24.76	6.841		
4,200.0	4,178.2	4,187.8	4,157.0	13.1	14.5	-60.40	318.5	-254.5	174.0	148.4	25.57	6.802		
4,300.0	4,277.0	4,287.7	4,255.5	13.5	14.9	-61.39	331.3	-264.2	178.6	152.2	26.39	6.767		
4,400.0	4,375.8	4,387.5	4,354.1	13.9	15.4	-62.33	344.1	-273.8	183.3	156.1	27.22	6.733		
4,500.0	4,474.6	4,487.4	4,452.6	14.3	15.8	-63.22	356.9	-283.5	188.0	160.0	28.05	6.702		
4,600.0	4,573.3	4,587.2	4,551.2	14.8	16.3	-64.07	369.8	-293.1	192.8	163.9	28.89	6.672		
4,700.0	4,672.1	4,687.0	4,649.7	15.2	16.7	-64.88	382.6	-302.8	197.6	167.9	29.74	6.645		
4,800.0	4,770.9	4,786.9	4,748.3	15.6	17.2	-65.64	395.4	-312.4	202.5	171.9	30.58	6.620		
4,900.0	4,869.7	4,886.7	4,846.8	16.0	17.6	-66.38	408.2	-322.1	207.3	175.9	31.43	6.596		

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 Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-303 - Wellbore #1 - Plan #2 (1-25-17)											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	4,968.5	4,986.6	4,945.4	16.5	18.1	-67.07	421.0	-331.7	212.3	180.0	32.29	6.573			
5,100.0	5,067.3	5,086.4	5,043.9	16.9	18.5	-67.74	433.8	-341.4	217.2	184.1	33.15	6.553			
5,200.0	5,166.1	5,186.3	5,142.5	17.3	19.0	-68.38	446.6	-351.0	222.2	188.2	34.01	6.533			
5,300.0	5,264.9	5,286.1	5,241.0	17.7	19.4	-68.99	459.4	-360.7	227.2	192.3	34.87	6.515			
5,400.0	5,363.7	5,386.0	5,339.6	18.2	19.9	-69.57	472.2	-370.4	232.2	196.5	35.74	6.497			
5,483.1	5,445.7	5,473.5	5,426.2	18.5	20.2	-70.31	482.4	-378.0	235.6	199.2	36.43	6.466			
5,500.0	5,462.5	5,491.3	5,443.8	18.6	20.2	-70.52	484.2	-379.4	236.1	199.5	36.57	6.456			
5,600.0	5,561.6	5,596.7	5,548.6	18.9	20.5	-71.64	493.1	-386.1	238.5	201.2	37.29	6.396			
5,700.0	5,661.1	5,702.0	5,653.7	19.2	20.8	-72.63	499.0	-390.5	239.8	201.9	37.92	6.323			
5,800.0	5,760.9	5,807.3	5,758.8	19.4	21.0	-73.48	501.7	-392.6	239.9	201.5	38.47	6.238			
5,900.0	5,860.9	5,909.3	5,860.9	19.6	21.2	-74.06	502.0	-392.8	239.3	200.4	38.92	6.149			
5,929.1	5,890.0	5,938.4	5,890.0	19.7	21.2	-90.97	502.0	-392.8	239.3	200.3	39.04	6.129			
5,982.2	5,943.1	5,991.5	5,943.1	19.8	21.4	-90.97	502.0	-392.8	239.3	200.0	39.26	6.095			
6,000.0	5,960.9	6,009.3	5,960.9	19.8	21.4	89.04	502.0	-392.8	239.3	200.0	39.32	6.086			
6,050.0	6,010.8	6,059.2	6,010.8	19.9	21.5	89.71	502.0	-392.8	239.3	199.8	39.42	6.070			
6,062.6	6,023.3	6,071.7	6,023.3	19.9	21.5	90.00	502.0	-392.8	239.3	199.8	39.42	6.070			
6,100.0	6,060.4	6,109.0	6,060.6	19.9	21.6	90.94	501.0	-392.8	239.3	199.9	39.39	6.075			
6,150.0	6,109.5	6,159.2	6,110.6	19.9	21.6	92.18	496.9	-392.8	239.4	200.1	39.29	6.094			
6,200.0	6,157.9	6,209.7	6,160.5	19.9	21.6	93.43	489.5	-392.8	239.7	200.6	39.12	6.127			
6,250.0	6,205.4	6,260.6	6,210.2	19.8	21.6	94.65	478.7	-392.8	240.1	201.2	38.90	6.171			
6,300.0	6,251.8	6,311.8	6,259.4	19.7	21.6	95.86	464.5	-392.8	240.5	201.9	38.62	6.228			
6,350.0	6,296.8	6,363.4	6,307.9	19.6	21.5	97.04	446.9	-392.8	241.1	202.8	38.30	6.294			
6,400.0	6,340.3	6,415.3	6,355.4	19.5	21.4	98.19	425.9	-392.8	241.7	203.8	37.96	6.369			
6,450.0	6,382.2	6,467.6	6,401.7	19.4	21.3	99.31	401.6	-392.8	242.5	204.9	37.59	6.451			
6,500.0	6,422.1	6,520.3	6,446.5	19.2	21.2	100.38	373.9	-392.8	243.2	206.0	37.21	6.537			
6,550.0	6,460.0	6,573.3	6,489.6	19.1	21.0	101.40	343.0	-392.8	244.1	207.2	36.84	6.624			
6,600.0	6,495.7	6,626.7	6,530.7	19.0	20.9	102.36	309.0	-392.9	244.9	208.4	36.50	6.711			
6,650.0	6,529.0	6,680.4	6,569.5	18.9	20.7	103.27	271.9	-392.9	245.8	209.6	36.19	6.792			
6,700.0	6,559.8	6,734.4	6,605.9	18.8	20.6	104.12	232.0	-392.9	246.7	210.7	35.94	6.863			
6,750.0	6,588.0	6,788.7	6,639.5	18.8	20.5	104.90	189.4	-392.9	247.5	211.8	35.76	6.921			
6,800.0	6,613.4	6,843.2	6,670.1	18.8	20.3	105.61	144.2	-392.9	248.4	212.7	35.68	6.961			
6,850.0	6,635.9	6,898.1	6,697.6	18.8	20.2	106.25	96.8	-393.0	249.1	213.4	35.69	6.980			
6,900.0	6,655.5	6,953.1	6,721.6	18.9	20.1	106.81	47.3	-393.0	249.8	214.0	35.83	6.973			
6,950.0	6,672.0	7,008.4	6,742.2	19.1	20.0	107.30	-4.0	-393.0	250.5	214.4	36.10	6.938			
7,000.0	6,685.4	7,063.8	6,759.0	19.3	19.8	107.70	-56.8	-393.0	251.0	214.5	36.51	6.876			
7,050.0	6,695.6	7,119.4	6,771.9	19.7	19.9	108.03	-110.9	-393.1	251.5	214.4	37.05	6.787			
7,100.0	6,702.6	7,175.1	6,780.9	20.0	20.3	108.28	-165.8	-393.1	251.8	214.1	37.73	6.674			
7,150.0	6,706.3	7,230.9	6,785.9	20.5	20.9	108.44	-221.4	-393.1	252.0	213.5	38.54	6.538			
7,187.3	6,707.0	7,272.6	6,787.0	20.9	21.3	108.50	-263.0	-393.1	252.1	212.9	39.23	6.426			
7,187.3	6,707.0	7,272.6	6,787.0	20.9	21.3	108.50	-263.0	-393.1	252.1	212.9	39.23	6.426			
7,187.7	6,707.0	7,273.0	6,787.0	20.9	21.3	108.50	-263.5	-393.1	252.1	212.9	39.24	6.425			
7,200.0	6,706.9	7,285.5	6,787.0	21.0	21.4	108.51	-275.9	-393.1	252.1	212.7	39.42	6.394			
7,300.0	6,706.3	7,385.5	6,786.5	22.1	22.6	108.56	-375.9	-393.2	252.1	210.6	41.55	6.068			
7,400.0	6,705.6	7,485.5	6,786.1	23.4	24.0	108.61	-475.9	-393.3	252.2	208.2	44.05	5.726			
7,500.0	6,704.9	7,585.5	6,785.6	24.9	25.5	108.66	-575.9	-393.3	252.3	205.4	46.83	5.386			
7,600.0	6,704.3	7,685.5	6,785.2	26.5	27.1	108.71	-675.9	-393.4	252.3	202.4	49.87	5.059			
7,700.0	6,703.6	7,785.5	6,784.7	28.2	28.8	108.76	-775.9	-393.4	252.4	199.3	53.11	4.752			
7,800.0	6,702.9	7,885.5	6,784.3	30.0	30.5	108.80	-875.9	-393.5	252.4	195.9	56.51	4.466			
7,900.0	6,702.3	7,985.5	6,783.9	31.9	32.4	108.85	-975.9	-393.6	252.5	192.4	60.06	4.203			
8,000.0	6,701.6	8,085.5	6,783.4	33.8	34.3	108.90	-1,075.9	-393.6	252.5	188.8	63.72	3.963			

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 Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-303 - Wellbore #1 - Plan #2 (1-25-17)											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	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	6,701.0	8,185.5	6,783.0	35.8	36.2	108.95	-1,175.9	-393.7	252.6	185.1	67.48	3.743			
8,200.0	6,700.3	8,285.5	6,782.5	37.8	38.2	109.00	-1,275.9	-393.7	252.6	181.3	71.32	3.542			
8,300.0	6,699.6	8,385.5	6,782.1	39.9	40.3	109.05	-1,375.9	-393.8	252.7	177.4	75.23	3.359			
8,400.0	6,699.0	8,485.5	6,781.7	41.9	42.3	109.10	-1,475.9	-393.9	252.7	173.5	79.19	3.191			
8,500.0	6,698.3	8,585.5	6,781.2	44.0	44.4	109.15	-1,575.9	-393.9	252.8	169.6	83.20	3.038			
8,600.0	6,697.7	8,685.5	6,780.8	46.2	46.5	109.19	-1,675.9	-394.0	252.8	165.6	87.26	2.898			
8,700.0	6,697.0	8,785.5	6,780.3	48.3	48.7	109.24	-1,775.9	-394.0	252.9	161.5	91.35	2.768			
8,800.0	6,696.3	8,885.5	6,779.9	50.5	50.8	109.29	-1,875.9	-394.1	252.9	157.5	95.47	2.649			
8,900.0	6,695.7	8,985.5	6,779.5	52.7	53.0	109.34	-1,975.9	-394.1	253.0	153.4	99.62	2.540			
9,000.0	6,695.0	9,085.5	6,779.0	54.9	55.2	109.39	-2,075.9	-394.2	253.1	149.3	103.79	2.438			
9,100.0	6,694.3	9,185.5	6,778.6	57.1	57.4	109.44	-2,175.9	-394.3	253.1	145.1	107.98	2.344			
9,200.0	6,693.7	9,285.5	6,778.1	59.3	59.6	109.49	-2,275.9	-394.3	253.2	141.0	112.19	2.257			
9,300.0	6,693.0	9,385.5	6,777.7	61.6	61.8	109.53	-2,375.9	-394.4	253.2	136.8	116.42	2.175			
9,400.0	6,692.4	9,485.5	6,777.2	63.8	64.0	109.58	-2,475.9	-394.4	253.3	132.6	120.66	2.099			
9,500.0	6,691.7	9,585.5	6,776.8	66.1	66.3	109.63	-2,575.9	-394.5	253.3	128.4	124.91	2.028			
9,600.0	6,691.0	9,685.5	6,776.4	68.3	68.5	109.68	-2,675.9	-394.6	253.4	124.2	129.17	1.962			
9,700.0	6,690.4	9,785.5	6,775.9	70.6	70.8	109.73	-2,775.9	-394.6	253.4	120.0	133.44	1.899			
9,800.0	6,689.7	9,885.5	6,775.5	72.8	73.0	109.78	-2,875.9	-394.7	253.5	115.8	137.72	1.841			
9,900.0	6,689.0	9,985.5	6,775.0	75.1	75.3	109.83	-2,975.9	-394.7	253.6	111.5	142.01	1.786			
10,000.0	6,688.4	10,085.5	6,774.6	77.4	77.6	109.87	-3,075.9	-394.8	253.6	107.3	146.30	1.734			
10,100.0	6,687.7	10,185.5	6,774.2	79.7	79.8	109.92	-3,175.9	-394.9	253.7	103.1	150.60	1.684			
10,200.0	6,687.1	10,285.5	6,773.7	82.0	82.1	109.97	-3,275.9	-394.9	253.7	98.8	154.90	1.638			
10,300.0	6,686.4	10,385.5	6,773.3	84.2	84.4	110.02	-3,375.9	-395.0	253.8	94.6	159.21	1.594			
10,400.0	6,685.7	10,485.5	6,772.8	86.5	86.7	110.07	-3,475.9	-395.0	253.8	90.3	163.52	1.552			
10,500.0	6,685.1	10,585.5	6,772.4	88.8	89.0	110.12	-3,575.9	-395.1	253.9	86.1	167.83	1.513			
10,600.0	6,684.4	10,685.5	6,772.0	91.1	91.3	110.16	-3,675.9	-395.2	254.0	81.8	172.15	1.475 Level 3			
10,700.0	6,683.8	10,785.5	6,771.5	93.4	93.6	110.21	-3,775.9	-395.2	254.0	77.5	176.47	1.439 Level 3			
10,800.0	6,683.1	10,885.5	6,771.1	95.7	95.9	110.26	-3,875.9	-395.3	254.1	73.3	180.80	1.405 Level 3			
10,900.0	6,682.4	10,985.5	6,770.6	98.0	98.2	110.31	-3,975.9	-395.3	254.1	69.0	185.12	1.373 Level 3			
11,000.0	6,681.8	11,085.5	6,770.2	100.4	100.5	110.36	-4,075.9	-395.4	254.2	64.7	189.45	1.342 Level 3			
11,100.0	6,681.1	11,185.5	6,769.7	102.7	102.8	110.40	-4,175.9	-395.4	254.2	60.5	193.77	1.312 Level 3			
11,200.0	6,680.4	11,285.5	6,769.3	105.0	105.1	110.45	-4,275.9	-395.5	254.3	56.2	198.10	1.284 Level 3			
11,300.0	6,679.8	11,385.5	6,768.9	107.3	107.4	110.50	-4,375.9	-395.6	254.4	51.9	202.43	1.257 Level 3			
11,400.0	6,679.1	11,485.5	6,768.4	109.6	109.7	110.55	-4,475.9	-395.6	254.4	47.7	206.76	1.231 Level 2			
11,500.0	6,678.5	11,585.5	6,768.0	111.9	112.0	110.60	-4,575.9	-395.7	254.5	43.4	211.09	1.206 Level 2			
11,600.0	6,677.8	11,685.5	6,767.5	114.2	114.3	110.64	-4,675.9	-395.7	254.5	39.1	215.42	1.182 Level 2			
11,700.0	6,677.1	11,785.5	6,767.1	116.6	116.6	110.69	-4,775.9	-395.8	254.6	34.9	219.75	1.159 Level 2			
11,800.0	6,676.5	11,885.5	6,766.7	118.9	119.0	110.74	-4,875.9	-395.9	254.7	30.6	224.08	1.136 Level 2			
11,900.0	6,675.8	11,985.5	6,766.2	121.2	121.3	110.79	-4,975.9	-395.9	254.7	26.3	228.41	1.115 Level 2			
12,000.0	6,675.1	12,085.5	6,765.8	123.5	123.6	110.84	-5,075.9	-396.0	254.8	22.0	232.74	1.095 Level 2			
12,100.0	6,674.5	12,185.5	6,765.3	125.8	125.9	110.88	-5,175.9	-396.0	254.8	17.8	237.06	1.075 Level 2			
12,200.0	6,673.8	12,285.5	6,764.9	128.2	128.2	110.93	-5,275.9	-396.1	254.9	13.5	241.39	1.056 Level 2			
12,300.0	6,673.2	12,385.5	6,764.4	130.5	130.6	110.98	-5,375.9	-396.2	255.0	9.2	245.72	1.038 Level 2			
12,400.0	6,672.5	12,485.5	6,764.0	132.8	132.9	111.03	-5,475.9	-396.2	255.0	5.0	250.05	1.020 Level 2			
12,500.0	6,671.8	12,585.5	6,763.6	135.1	135.2	111.08	-5,575.9	-396.3	255.1	0.7	254.37	1.003 Level 2			
12,600.0	6,671.2	12,685.5	6,763.1	137.5	137.5	111.12	-5,675.9	-396.3	255.1	-3.6	258.70	0.986 Level 1			
12,700.0	6,670.5	12,785.5	6,762.7	139.8	139.8	111.17	-5,775.9	-396.4	255.2	-7.8	263.02	0.970 Level 1			
12,800.0	6,669.9	12,885.5	6,762.2	142.1	142.2	111.22	-5,875.9	-396.4	255.3	-12.1	267.34	0.955 Level 1			
12,900.0	6,669.2	12,985.5	6,761.8	144.5	144.5	111.27	-5,975.9	-396.5	255.3	-16.3	271.66	0.940 Level 1			
13,000.0	6,668.5	13,085.5	6,761.4	146.8	146.8	111.31	-6,075.9	-396.6	255.4	-20.6	275.98	0.925 Level 1			
13,100.0	6,667.9	13,185.5	6,760.9	149.1	149.2	111.36	-6,175.9	-396.6	255.5	-24.8	280.30	0.911 Level 1			

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 Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-303 - Wellbore #1 - Plan #2 (1-25-17)											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)				
13,200.0	6,667.2	13,285.5	6,760.5	151.5	151.5	111.41	-6,275.9	-396.7	255.5	-29.1	284.62	0.898			
13,300.0	6,666.5	13,385.5	6,760.0	153.8	153.8	111.46	-6,375.9	-396.7	255.6	-33.4	288.93	0.885			
13,400.0	6,665.9	13,485.5	6,759.6	156.1	156.2	111.51	-6,475.9	-396.8	255.6	-37.6	293.25	0.872			
13,500.0	6,665.2	13,585.5	6,759.2	158.5	158.5	111.55	-6,575.9	-396.9	255.7	-41.9	297.56	0.859			
13,600.0	6,664.6	13,685.5	6,758.7	160.8	160.8	111.60	-6,675.9	-396.9	255.8	-46.1	301.87	0.847			
13,700.0	6,663.9	13,785.5	6,758.3	163.1	163.1	111.65	-6,775.9	-397.0	255.8	-50.3	306.18	0.836			
13,800.0	6,663.2	13,885.5	6,757.8	165.5	165.5	111.70	-6,875.9	-397.0	255.9	-54.6	310.49	0.824			
13,900.0	6,662.6	13,985.5	6,757.4	167.8	167.8	111.74	-6,975.9	-397.1	256.0	-58.8	314.79	0.813			
13,986.6	6,662.0	14,072.0	6,757.0	169.8	169.8	111.78	-7,062.4	-397.1	256.0	-62.5	318.52	0.804			
													Level 1, ES, SF		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-323 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:		0.0 ft	
Survey Program: 0-MWD														Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor				
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)					
0.0	0.0	0.0	0.0	0.0	0.0	90.69	-0.4	30.1	30.1							
100.0	100.0	100.0	100.0	0.1	0.1	90.69	-0.4	30.1	30.1	29.8	0.28	109.295				
200.0	200.0	200.0	200.0	0.4	0.4	90.69	-0.4	30.1	30.1	29.3	0.83	36.432				
300.0	300.0	300.0	300.0	0.7	0.7	90.69	-0.4	30.1	30.1	28.7	1.38	21.859				
400.0	400.0	400.0	400.0	1.0	1.0	90.69	-0.4	30.1	30.1	28.2	1.93	15.614				
500.0	500.0	500.0	500.0	1.2	1.2	90.69	-0.4	30.1	30.1	27.6	2.48	12.144				
600.0	600.0	600.0	600.0	1.5	1.5	90.69	-0.4	30.1	30.1	27.1	3.03	9.936				
700.0	700.0	700.0	700.0	1.8	1.8	90.69	-0.4	30.1	30.1	26.5	3.58	8.407				
800.0	800.0	800.0	800.0	2.1	2.1	90.69	-0.4	30.1	30.1	26.0	4.13	7.286 CC, ES				
900.0	900.0	899.6	899.6	2.3	2.3	88.49	0.8	30.7	30.7	26.0	4.68	6.557				
1,000.0	1,000.0	999.2	999.1	2.6	2.6	82.41	4.3	32.4	32.7	27.4	5.22	6.251				
1,100.0	1,100.0	1,098.4	1,098.1	2.9	2.9	73.93	10.1	35.2	36.6	30.9	5.77	6.347				
1,200.0	1,200.0	1,197.2	1,196.5	3.2	3.2	65.00	18.2	39.1	43.3	36.9	6.33	6.832				
1,300.0	1,300.0	1,295.5	1,294.1	3.4	3.5	57.07	28.5	44.1	52.8	45.9	6.90	7.661				
1,400.0	1,400.0	1,393.2	1,390.8	3.7	3.8	50.69	41.0	50.1	65.4	57.9	7.47	8.761				
1,500.0	1,500.0	1,490.1	1,486.3	4.0	4.2	45.79	55.6	57.2	80.9	72.9	8.04	10.062				
1,600.0	1,600.0	1,586.7	1,581.2	4.3	4.6	42.07	72.2	65.2	99.1	90.5	8.62	11.494				
1,700.0	1,700.0	1,684.8	1,677.3	4.5	5.0	39.40	89.6	73.6	118.2	109.0	9.21	12.838				
1,800.0	1,800.0	1,782.8	1,773.4	4.8	5.4	37.47	107.0	82.0	137.5	127.7	9.79	14.038				
1,900.0	1,900.0	1,880.8	1,869.5	5.1	5.9	36.01	124.5	90.5	156.8	146.5	10.38	15.110				
2,000.0	2,000.0	1,978.9	1,965.6	5.4	6.3	34.88	141.9	98.9	176.3	165.3	10.97	16.072				
2,100.0	2,100.0	2,077.1	2,061.9	5.6	6.8	50.92	159.3	107.3	195.0	183.6	11.40	17.104				
2,200.0	2,199.9	2,175.6	2,158.5	5.9	7.3	50.77	176.8	115.8	212.1	200.1	11.98	17.705				
2,300.0	2,299.7	2,274.4	2,255.3	6.2	7.8	51.16	194.3	124.3	227.6	215.0	12.56	18.112				
2,400.0	2,399.3	2,373.3	2,352.3	6.5	8.2	51.98	211.9	132.8	241.5	228.3	13.16	18.348				
2,500.0	2,498.6	2,472.4	2,449.5	6.8	8.7	53.18	229.5	141.3	253.8	240.1	13.77	18.435				
2,594.7	2,592.3	2,566.3	2,541.5	7.0	9.2	54.64	246.2	149.3	264.3	249.9	14.37	18.395				
2,600.0	2,597.5	2,571.5	2,546.6	7.1	9.2	54.73	247.1	149.8	264.9	250.5	14.40	18.389				
2,700.0	2,696.3	2,670.6	2,643.8	7.4	9.7	56.48	264.7	158.3	275.4	260.4	15.07	18.282				
2,800.0	2,795.1	2,769.7	2,740.9	7.7	10.2	58.10	282.3	166.8	286.3	270.5	15.75	18.177				
2,900.0	2,893.9	2,868.8	2,838.1	8.1	10.7	59.60	299.9	175.3	297.3	280.8	16.45	18.073				
3,000.0	2,992.7	2,967.9	2,935.2	8.4	11.2	61.00	317.5	183.8	308.5	291.3	17.16	17.973				
3,100.0	3,091.5	3,067.0	3,032.4	8.8	11.7	62.29	335.1	192.3	319.9	302.0	17.90	17.874				
3,200.0	3,190.3	3,166.1	3,129.5	9.1	12.3	63.50	352.7	200.8	331.4	312.8	18.64	17.778				
3,300.0	3,289.1	3,265.2	3,226.7	9.5	12.8	64.62	370.3	209.4	343.1	323.7	19.40	17.685				
3,400.0	3,387.9	3,364.3	3,323.8	9.9	13.3	65.68	387.9	217.9	354.9	334.7	20.17	17.596				
3,500.0	3,486.6	3,463.4	3,421.0	10.3	13.8	66.66	405.5	226.4	366.8	345.8	20.95	17.509				
3,600.0	3,585.4	3,562.5	3,518.1	10.7	14.3	67.58	423.1	234.9	378.8	357.0	21.74	17.426				
3,700.0	3,684.2	3,661.6	3,615.3	11.1	14.8	68.45	440.7	243.4	390.9	368.3	22.53	17.346				
3,800.0	3,783.0	3,760.7	3,712.4	11.5	15.3	69.26	458.3	251.9	403.0	379.7	23.34	17.269				
3,900.0	3,881.8	3,870.9	3,820.7	11.9	15.8	70.20	476.7	260.8	414.3	390.1	24.14	17.161				
4,000.0	3,980.6	3,984.9	3,933.5	12.3	16.2	71.39	491.8	268.1	422.2	397.3	24.94	16.927				
4,100.0	4,079.4	4,099.0	4,046.9	12.7	16.5	72.85	503.0	273.5	426.9	401.2	25.75	16.577				
4,200.0	4,178.2	4,212.9	4,160.5	13.1	16.8	74.59	510.0	276.9	428.4	401.9	26.56	16.129				
4,300.0	4,277.0	4,326.1	4,273.7	13.5	17.0	76.63	512.9	278.3	427.0	399.6	27.38	15.597				
4,400.0	4,375.8	4,428.2	4,375.8	13.9	17.2	78.70	513.0	278.4	423.7	395.6	28.17	15.042				
4,500.0	4,474.6	4,527.0	4,474.6	14.3	17.4	80.75	513.0	278.4	420.9	392.0	28.97	14.530				
4,600.0	4,573.3	4,625.8	4,573.3	14.8	17.5	82.82	513.0	278.4	418.7	388.9	29.77	14.065				
4,700.0	4,672.1	4,724.6	4,672.1	15.2	17.7	84.91	513.0	278.4	417.0	386.5	30.57	13.644				
4,800.0	4,770.9	4,823.4	4,770.9	15.6	17.9	87.01	513.0	278.4	415.9	384.6	31.36	13.264				
4,900.0	4,869.7	4,922.1	4,869.7	16.0	18.1	89.12	513.0	278.4	415.4	383.2	32.14	12.923				

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 Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-323 - Wellbore #1 - Plan #2 (1-25-17)													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		
4,941.5	4,910.7	4,963.2	4,910.7	16.2	18.2	90.00	513.0	278.4	415.3	382.9	32.47	12.793		
5,000.0	4,968.5	5,020.9	4,968.5	16.5	18.3	91.24	513.0	278.4	415.4	382.5	32.92	12.620		
5,100.0	5,067.3	5,119.7	5,067.3	16.9	18.5	93.35	513.0	278.4	416.1	382.4	33.68	12.352		
5,200.0	5,166.1	5,218.5	5,166.1	17.3	18.7	95.45	513.0	278.4	417.3	382.8	34.44	12.117		
5,300.0	5,264.9	5,317.3	5,264.9	17.7	18.9	97.53	513.0	278.4	419.0	383.9	35.18	11.912		
5,400.0	5,363.7	5,416.1	5,363.7	18.2	19.1	99.60	513.0	278.4	421.4	385.5	35.90	11.737		
5,483.1	5,445.7	5,498.2	5,445.7	18.5	19.2	101.30	513.0	278.4	423.7	387.2	36.49	11.611		
5,500.0	5,462.5	5,514.9	5,462.5	18.6	19.3	101.64	513.0	278.4	424.3	387.7	36.61	11.589		
5,600.0	5,561.6	5,614.0	5,561.6	18.9	19.5	103.42	513.0	278.4	427.1	389.9	37.20	11.482		
5,700.0	5,661.1	5,713.5	5,661.1	19.2	19.7	104.72	513.0	278.4	429.5	391.8	37.74	11.381		
5,800.0	5,760.9	5,813.3	5,760.9	19.4	19.9	105.55	513.0	278.4	431.2	392.9	38.23	11.279		
5,900.0	5,860.9	5,913.3	5,860.9	19.6	20.1	105.92	513.0	278.4	431.9	393.2	38.66	11.171		
5,929.1	5,890.0	5,942.4	5,890.0	19.7	20.1	89.07	513.0	278.4	431.9	393.2	38.78	11.139		
5,982.2	5,943.1	5,995.5	5,943.1	19.8	20.2	89.07	513.0	278.4	431.9	392.9	39.00	11.076		
6,000.0	5,960.9	6,013.3	5,960.9	19.8	20.3	-91.00	513.0	278.4	432.0	392.9	39.07	11.055		
6,050.0	6,010.8	6,063.2	6,010.8	19.9	20.4	-91.37	513.0	278.4	432.0	392.8	39.23	11.012		
6,100.0	6,060.4	6,113.9	6,060.4	19.9	20.5	-91.93	511.2	278.4	432.1	392.8	39.32	10.991		
6,150.0	6,109.5	6,164.8	6,112.1	19.9	20.5	-92.49	506.0	278.4	432.3	393.0	39.33	10.992		
6,200.0	6,157.9	6,216.1	6,162.6	19.9	20.5	-93.03	497.3	278.4	432.5	393.2	39.27	11.013		
6,250.0	6,205.4	6,267.6	6,212.6	19.8	20.5	-93.56	485.2	278.4	432.7	393.6	39.15	11.052		
6,300.0	6,251.8	6,319.4	6,262.0	19.7	20.4	-94.08	469.7	278.4	433.0	394.0	38.98	11.107		
6,350.0	6,296.8	6,371.5	6,310.6	19.6	20.3	-94.58	450.7	278.3	433.3	394.5	38.76	11.177		
6,400.0	6,340.3	6,423.9	6,357.9	19.5	20.2	-95.06	428.4	278.3	433.6	395.1	38.51	11.259		
6,450.0	6,382.2	6,476.5	6,403.8	19.4	20.1	-95.52	402.7	278.3	433.9	395.7	38.23	11.349		
6,500.0	6,422.1	6,529.4	6,448.1	19.2	19.9	-95.96	373.7	278.3	434.2	396.3	37.94	11.444		
6,550.0	6,460.0	6,582.6	6,490.5	19.1	19.8	-96.36	341.6	278.3	434.6	396.9	37.66	11.539		
6,600.0	6,495.7	6,636.0	6,530.7	19.0	19.6	-96.74	306.5	278.2	434.9	397.5	37.40	11.628		
6,650.0	6,529.0	6,689.6	6,568.5	18.9	19.5	-97.09	268.5	278.2	435.2	398.0	37.18	11.706		
6,700.0	6,559.8	6,743.4	6,603.6	18.8	19.3	-97.41	227.8	278.2	435.5	398.5	37.02	11.766		
6,750.0	6,588.0	6,797.4	6,636.0	18.8	19.2	-97.69	184.5	278.1	435.8	398.9	36.93	11.802		
6,800.0	6,613.4	6,851.6	6,665.2	18.8	19.1	-97.94	138.9	278.1	436.1	399.1	36.93	11.807		
6,850.0	6,635.9	6,905.9	6,691.2	18.8	19.0	-98.15	91.3	278.1	436.3	399.2	37.05	11.776		
6,900.0	6,655.5	6,960.3	6,713.9	18.9	19.0	-98.32	41.7	278.0	436.5	399.2	37.28	11.707		
6,950.0	6,672.0	7,014.9	6,732.9	19.1	19.1	-98.45	-9.3	278.0	436.6	399.0	37.65	11.597		
7,000.0	6,685.4	7,069.5	6,748.3	19.3	19.3	-98.55	-61.7	277.9	436.7	398.6	38.15	11.448		
7,050.0	6,695.6	7,124.2	6,759.9	19.7	19.6	-98.60	-115.1	277.9	436.8	398.0	38.78	11.263		
7,100.0	6,702.6	7,178.8	6,767.7	20.0	20.0	-98.62	-169.3	277.9	436.8	397.2	39.55	11.044		
7,150.0	6,706.3	7,233.5	6,771.5	20.5	20.5	-98.59	-223.8	277.8	436.8	396.3	40.44	10.800		
7,187.1	6,707.0	7,273.4	6,771.9	20.9	20.9	-98.55	-263.6	277.8	436.7	395.6	41.15	10.612		
7,187.3	6,707.0	7,273.5	6,771.9	20.9	20.9	-98.55	-263.8	277.8	436.7	395.6	41.16	10.611		
7,187.3	6,707.0	7,273.5	6,771.9	20.9	20.9	-98.55	-263.8	277.8	436.7	395.6	41.16	10.611		
7,187.7	6,707.0	7,273.9	6,771.9	20.9	20.9	-98.55	-264.2	277.8	436.7	395.6	41.16	10.610		
7,200.0	6,706.9	7,286.2	6,771.9	21.0	21.0	-98.55	-276.5	277.8	436.7	395.4	41.34	10.563		
7,300.0	6,706.3	7,386.2	6,771.2	22.1	22.1	-98.55	-376.5	277.7	436.7	393.2	43.55	10.028		
7,400.0	6,705.6	7,486.2	6,770.5	23.4	23.5	-98.55	-476.5	277.6	436.7	390.6	46.15	9.464		
7,500.0	6,704.9	7,586.2	6,769.9	24.9	24.9	-98.55	-576.5	277.6	436.7	387.7	49.05	8.904		
7,600.0	6,704.3	7,686.2	6,769.2	26.5	26.5	-98.55	-676.5	277.5	436.7	384.5	52.20	8.366		
7,700.0	6,703.6	7,786.2	6,768.6	28.2	28.2	-98.55	-776.5	277.4	436.7	381.2	55.57	7.859		
7,800.0	6,702.9	7,886.2	6,767.9	30.0	30.0	-98.55	-876.5	277.3	436.8	377.6	59.11	7.388		
7,900.0	6,702.3	7,986.2	6,767.2	31.9	31.9	-98.55	-976.5	277.3	436.8	374.0	62.80	6.954		

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Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-323 - Wellbore #1 - Plan #2 (1-25-17)													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)				
8,000.0	6,701.6	8,086.2	6,766.6	33.8	33.8	-98.55	-1,076.5	277.2	436.8	370.2	66.61	6.557			
8,100.0	6,701.0	8,186.2	6,765.9	35.8	35.7	-98.55	-1,176.5	277.1	436.8	366.2	70.52	6.193			
8,200.0	6,700.3	8,286.2	6,765.2	37.8	37.8	-98.55	-1,276.5	277.0	436.8	362.3	74.52	5.861			
8,300.0	6,699.6	8,386.2	6,764.6	39.9	39.8	-98.55	-1,376.4	277.0	436.8	358.2	78.59	5.558			
8,400.0	6,699.0	8,486.2	6,763.9	41.9	41.9	-98.55	-1,476.4	276.9	436.8	354.1	82.73	5.280			
8,500.0	6,698.3	8,586.2	6,763.3	44.0	44.0	-98.55	-1,576.4	276.8	436.8	349.9	86.91	5.026			
8,600.0	6,697.7	8,686.2	6,762.6	46.2	46.1	-98.55	-1,676.4	276.8	436.8	345.7	91.14	4.793			
8,700.0	6,697.0	8,786.2	6,761.9	48.3	48.3	-98.55	-1,776.4	276.7	436.8	341.4	95.41	4.578			
8,800.0	6,696.3	8,886.2	6,761.3	50.5	50.4	-98.55	-1,876.4	276.6	436.8	337.1	99.72	4.380			
8,900.0	6,695.7	8,986.2	6,760.6	52.7	52.6	-98.55	-1,976.4	276.5	436.8	332.8	104.05	4.198			
9,000.0	6,695.0	9,086.2	6,760.0	54.9	54.8	-98.55	-2,076.4	276.5	436.8	328.4	108.42	4.029			
9,100.0	6,694.3	9,186.2	6,759.3	57.1	57.0	-98.55	-2,176.4	276.4	436.8	324.0	112.80	3.873			
9,200.0	6,693.7	9,286.2	6,758.6	59.3	59.2	-98.55	-2,276.4	276.3	436.8	319.6	117.21	3.727			
9,300.0	6,693.0	9,386.2	6,758.0	61.6	61.5	-98.55	-2,376.4	276.2	436.8	315.2	121.63	3.591			
9,400.0	6,692.4	9,486.2	6,757.3	63.8	63.7	-98.55	-2,476.4	276.2	436.8	310.8	126.08	3.465			
9,500.0	6,691.7	9,586.2	6,756.6	66.1	65.9	-98.55	-2,576.4	276.1	436.9	306.3	130.53	3.347			
9,600.0	6,691.0	9,686.2	6,756.0	68.3	68.2	-98.55	-2,676.4	276.0	436.9	301.9	135.00	3.236			
9,700.0	6,690.4	9,786.2	6,755.3	70.6	70.5	-98.55	-2,776.4	276.0	436.9	297.4	139.49	3.132			
9,800.0	6,689.7	9,886.2	6,754.7	72.8	72.7	-98.55	-2,876.4	275.9	436.9	292.9	143.98	3.034			
9,900.0	6,689.0	9,986.2	6,754.0	75.1	75.0	-98.55	-2,976.4	275.8	436.9	288.4	148.48	2.942			
10,000.0	6,688.4	10,086.2	6,753.3	77.4	77.3	-98.55	-3,076.4	275.7	436.9	283.9	153.00	2.855			
10,100.0	6,687.7	10,186.2	6,752.7	79.7	79.5	-98.55	-3,176.4	275.7	436.9	279.4	157.52	2.774			
10,200.0	6,687.1	10,286.2	6,752.0	82.0	81.8	-98.55	-3,276.4	275.6	436.9	274.8	162.05	2.696			
10,300.0	6,686.4	10,386.2	6,751.4	84.2	84.1	-98.55	-3,376.4	275.5	436.9	270.3	166.58	2.623			
10,400.0	6,685.7	10,486.2	6,750.7	86.5	86.4	-98.55	-3,476.4	275.4	436.9	265.8	171.13	2.553			
10,500.0	6,685.1	10,586.2	6,750.0	88.8	88.7	-98.55	-3,576.4	275.4	436.9	261.2	175.68	2.487			
10,600.0	6,684.4	10,686.2	6,749.4	91.1	91.0	-98.55	-3,676.4	275.3	436.9	256.7	180.23	2.424			
10,700.0	6,683.8	10,786.2	6,748.7	93.4	93.3	-98.55	-3,776.4	275.2	436.9	252.1	184.79	2.364			
10,800.0	6,683.1	10,886.2	6,748.0	95.7	95.6	-98.55	-3,876.4	275.2	436.9	247.6	189.35	2.307			
10,900.0	6,682.4	10,986.2	6,747.4	98.0	97.9	-98.55	-3,976.4	275.1	436.9	243.0	193.92	2.253			
11,000.0	6,681.8	11,086.2	6,746.7	100.4	100.2	-98.55	-4,076.4	275.0	436.9	238.4	198.49	2.201			
11,100.0	6,681.1	11,186.2	6,746.1	102.7	102.5	-98.55	-4,176.4	274.9	436.9	233.9	203.07	2.152			
11,200.0	6,680.4	11,286.2	6,745.4	105.0	104.8	-98.55	-4,276.4	274.9	437.0	229.3	207.65	2.104			
11,300.0	6,679.8	11,386.2	6,744.7	107.3	107.1	-98.55	-4,376.4	274.8	437.0	224.7	212.23	2.059			
11,400.0	6,679.1	11,486.2	6,744.1	109.6	109.4	-98.55	-4,476.4	274.7	437.0	220.1	216.82	2.015			
11,500.0	6,678.5	11,586.2	6,743.4	111.9	111.8	-98.55	-4,576.4	274.7	437.0	215.6	221.41	1.974			
11,600.0	6,677.8	11,686.2	6,742.8	114.2	114.1	-98.55	-4,676.4	274.6	437.0	211.0	226.00	1.934			
11,700.0	6,677.1	11,786.2	6,742.1	116.6	116.4	-98.55	-4,776.4	274.5	437.0	206.4	230.60	1.895			
11,800.0	6,676.5	11,886.2	6,741.4	118.9	118.7	-98.55	-4,876.4	274.4	437.0	201.8	235.19	1.858			
11,900.0	6,675.8	11,986.2	6,740.8	121.2	121.0	-98.55	-4,976.4	274.4	437.0	197.2	239.79	1.822			
12,000.0	6,675.1	12,086.2	6,740.1	123.5	123.4	-98.55	-5,076.4	274.3	437.0	192.6	244.39	1.788			
12,100.0	6,674.5	12,186.2	6,739.4	125.8	125.7	-98.55	-5,176.4	274.2	437.0	188.0	249.00	1.755			
12,200.0	6,673.8	12,286.2	6,738.8	128.2	128.0	-98.55	-5,276.4	274.1	437.0	183.4	253.60	1.723			
12,300.0	6,673.2	12,386.2	6,738.1	130.5	130.3	-98.55	-5,376.4	274.1	437.0	178.8	258.21	1.692			
12,400.0	6,672.5	12,486.2	6,737.5	132.8	132.7	-98.55	-5,476.4	274.0	437.0	174.2	262.82	1.663			
12,500.0	6,671.8	12,586.2	6,736.8	135.1	135.0	-98.55	-5,576.4	273.9	437.0	169.6	267.43	1.634			
12,600.0	6,671.2	12,686.2	6,736.1	137.5	137.3	-98.55	-5,676.4	273.9	437.0	165.0	272.04	1.606			
12,700.0	6,670.5	12,786.2	6,735.5	139.8	139.6	-98.55	-5,776.4	273.8	437.0	160.4	276.66	1.580			
12,800.0	6,669.9	12,886.2	6,734.8	142.1	142.0	-98.55	-5,876.3	273.7	437.0	155.8	281.27	1.554			
12,900.0	6,669.2	12,986.2	6,734.2	144.5	144.3	-98.55	-5,976.3	273.6	437.1	151.2	285.89	1.529			
13,000.0	6,668.5	13,086.2	6,733.5	146.8	146.6	-98.55	-6,076.3	273.6	437.1	146.6	290.51	1.504			

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 Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-323 - Wellbore #1 - Plan #2 (1-25-17)													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		
13,100.0	6,667.9	13,186.2	6,732.8	149.1	149.0	-98.55	-6,176.3	273.5	437.1	141.9	295.13	1.481	Level 3	
13,200.0	6,667.2	13,286.2	6,732.2	151.5	151.3	-98.55	-6,276.3	273.4	437.1	137.3	299.75	1.458	Level 3	
13,300.0	6,666.5	13,386.2	6,731.5	153.8	153.6	-98.55	-6,376.3	273.3	437.1	132.7	304.37	1.436	Level 3	
13,400.0	6,665.9	13,486.2	6,730.8	156.1	156.0	-98.55	-6,476.3	273.3	437.1	128.1	308.99	1.415	Level 3	
13,500.0	6,665.2	13,586.2	6,730.2	158.5	158.3	-98.55	-6,576.3	273.2	437.1	123.5	313.62	1.394	Level 3	
13,600.0	6,664.6	13,686.2	6,729.5	160.8	160.6	-98.55	-6,676.3	273.1	437.1	118.9	318.24	1.373	Level 3	
13,700.0	6,663.9	13,786.2	6,728.9	163.1	163.0	-98.55	-6,776.3	273.1	437.1	114.2	322.87	1.354	Level 3	
13,800.0	6,663.2	13,886.2	6,728.2	165.5	165.3	-98.55	-6,876.3	273.0	437.1	109.6	327.49	1.335	Level 3	
13,900.0	6,662.6	13,986.2	6,727.5	167.8	167.6	-98.55	-6,976.3	272.9	437.1	105.0	332.12	1.316	Level 3	
13,950.1	6,662.2	14,036.3	6,727.2	169.0	168.8	-98.55	-7,026.4	272.9	437.1	102.7	334.44	1.307	Level 3	
13,986.6	6,662.0	14,067.7	6,727.0	169.8	169.5	-98.55	-7,057.8	272.8	437.1	101.1	336.01	1.301	Level 3, SF	

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-423 - Wellbore #1 - Plan #2 (1-25-17)											Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	90.03	0.0	15.0	15.1	15.1	0.00	N/A			
100.0	100.0	99.0	99.0	0.1	0.1	90.03	0.0	15.0	15.0	14.8	0.27	54.918			
200.0	200.0	199.0	199.0	0.4	0.4	90.03	0.0	15.0	15.0	14.2	0.82	18.276			
300.0	300.0	299.0	299.0	0.7	0.7	90.03	0.0	15.0	15.0	13.7	1.37	10.951			
400.0	400.0	399.0	399.0	1.0	1.0	90.03	0.0	15.0	15.0	13.1	1.92	7.817			
500.0	500.0	499.0	499.0	1.2	1.2	90.03	0.0	15.0	15.0	12.6	2.48	6.078			
600.0	600.0	599.0	599.0	1.5	1.5	90.03	0.0	15.0	15.0	12.0	3.03	4.972			
700.0	700.0	699.0	699.0	1.8	1.8	90.03	0.0	15.0	15.0	11.5	3.58	4.207			
800.0	800.0	799.0	799.0	2.1	2.1	90.03	0.0	15.0	15.0	10.9	4.13	3.645			
900.0	900.0	899.0	899.0	2.3	2.3	90.03	0.0	15.0	15.0	10.4	4.68	3.216			
1,000.0	1,000.0	999.0	999.0	2.6	2.6	90.03	0.0	15.0	15.0	9.8	5.23	2.878			
1,100.0	1,100.0	1,099.0	1,099.0	2.9	2.9	90.03	0.0	15.0	15.0	9.3	5.78	2.603			
1,200.0	1,200.0	1,199.0	1,199.0	3.2	3.2	90.03	0.0	15.0	15.0	8.7	6.33	2.377			
1,300.0	1,300.0	1,299.0	1,299.0	3.4	3.4	90.03	0.0	15.0	15.0	8.2	6.88	2.187			
1,400.0	1,400.0	1,399.0	1,399.0	3.7	3.7	90.03	0.0	15.0	15.0	7.6	7.43	2.025			
1,500.0	1,500.0	1,499.0	1,499.0	4.0	4.0	90.03	0.0	15.0	15.0	7.1	7.98	1.885			
1,600.0	1,600.0	1,599.0	1,599.0	4.3	4.3	90.03	0.0	15.0	15.0	6.5	8.53	1.763			
1,700.0	1,700.0	1,699.0	1,699.0	4.5	4.5	90.03	0.0	15.0	15.0	6.0	9.08	1.656			
1,800.0	1,800.0	1,799.0	1,799.0	4.8	4.8	90.03	0.0	15.0	15.0	5.4	9.63	1.562			
1,900.0	1,900.0	1,899.0	1,899.0	5.1	5.1	90.03	0.0	15.0	15.0	4.9	10.18	1.477	Level 3		
2,000.0	2,000.0	1,999.0	1,999.0	5.4	5.4	90.03	0.0	15.0	15.0	4.3	10.74	1.401	Level 3, CC		
2,100.0	2,100.0	2,099.0	2,099.0	5.6	5.6	111.54	0.0	15.0	15.5	4.2	11.28	1.372	Level 3, ES		
2,200.0	2,199.9	2,198.9	2,198.9	5.9	5.9	123.69	0.0	15.0	17.3	5.5	11.83	1.463	Level 3		
2,300.0	2,299.7	2,298.7	2,298.7	6.2	6.2	138.20	0.0	15.0	21.6	9.3	12.36	1.750			
2,400.0	2,399.3	2,398.3	2,398.3	6.5	6.5	150.23	0.0	15.0	29.1	16.2	12.89	2.259			
2,500.0	2,498.6	2,497.6	2,497.6	6.8	6.7	158.60	0.0	15.0	39.8	26.4	13.40	2.966			
2,594.7	2,592.3	2,592.3	2,592.3	7.0	7.0	163.21	1.1	15.1	51.7	37.8	13.88	3.726			
2,600.0	2,597.5	2,597.6	2,597.6	7.1	7.0	163.38	1.2	15.2	52.4	38.5	13.91	3.768			
2,700.0	2,696.3	2,698.1	2,698.0	7.4	7.3	165.21	5.1	15.5	64.3	49.9	14.46	4.448			
2,800.0	2,795.1	2,799.1	2,798.8	7.7	7.6	165.26	11.6	16.1	74.1	59.1	15.01	4.938			
2,900.0	2,893.9	2,900.4	2,899.7	8.1	7.9	164.18	20.9	16.9	81.9	66.3	15.58	5.255			
3,000.0	2,992.7	3,002.0	3,000.5	8.4	8.1	162.18	32.8	18.0	87.6	71.4	16.16	5.419			
3,100.0	3,091.5	3,103.6	3,101.1	8.8	8.4	159.31	47.4	19.3	91.4	74.6	16.75	5.454			
3,200.0	3,190.3	3,204.4	3,200.5	9.1	8.7	155.64	64.3	20.9	93.7	76.3	17.37	5.393			
3,300.0	3,289.1	3,304.2	3,298.8	9.5	9.1	151.99	81.4	22.4	96.1	78.1	18.02	5.333			
3,400.0	3,387.9	3,404.0	3,397.1	9.9	9.4	148.53	98.6	24.0	98.8	80.2	18.69	5.289			
3,500.0	3,486.6	3,503.8	3,495.4	10.3	9.8	145.27	115.8	25.5	101.9	82.6	19.39	5.258			
3,600.0	3,585.4	3,603.6	3,593.6	10.7	10.1	142.21	132.9	27.1	105.4	85.2	20.11	5.239			
3,700.0	3,684.2	3,703.4	3,691.9	11.1	10.5	139.35	150.1	28.7	109.0	88.2	20.86	5.228			
3,800.0	3,783.0	3,803.2	3,790.2	11.5	10.9	136.68	167.2	30.2	113.0	91.4	21.62	5.225			
3,900.0	3,881.8	3,902.9	3,888.5	11.9	11.3	134.20	184.4	31.8	117.2	94.8	22.41	5.229			
4,000.0	3,980.6	4,002.7	3,986.8	12.3	11.7	131.89	201.5	33.3	121.5	98.3	23.21	5.237			
4,100.0	4,079.4	4,102.5	4,085.1	12.7	12.1	129.74	218.7	34.9	126.1	102.1	24.03	5.249			
4,200.0	4,178.2	4,202.3	4,183.4	13.1	12.5	127.75	235.9	36.4	130.8	106.0	24.85	5.264			
4,300.0	4,277.0	4,302.1	4,281.7	13.5	12.9	125.90	253.0	38.0	135.7	110.0	25.69	5.282			
4,400.0	4,375.8	4,401.9	4,380.0	13.9	13.3	124.17	270.2	39.5	140.7	114.2	26.54	5.302			
4,500.0	4,474.6	4,501.7	4,478.2	14.3	13.7	122.57	287.3	41.1	145.8	118.5	27.39	5.324			
4,600.0	4,573.3	4,601.5	4,576.5	14.8	14.1	121.08	304.5	42.7	151.1	122.8	28.25	5.348			
4,700.0	4,672.1	4,701.3	4,674.8	15.2	14.5	119.68	321.7	44.2	156.4	127.3	29.12	5.372			
4,800.0	4,770.9	4,801.0	4,773.1	15.6	15.0	118.38	338.8	45.8	161.8	131.8	29.99	5.397			
4,900.0	4,869.7	4,900.8	4,871.4	16.0	15.4	117.17	356.0	47.3	167.3	136.5	30.86	5.422			

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 Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-423 - Wellbore #1 - Plan #2 (1-25-17)													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	4,968.5	5,000.6	4,969.7	16.5	15.8	116.03	373.1	48.9	172.9	141.1	31.73	5.448		
5,100.0	5,067.3	5,100.4	5,068.0	16.9	16.3	114.96	390.3	50.4	178.5	145.9	32.61	5.474		
5,200.0	5,166.1	5,200.2	5,166.3	17.3	16.7	113.96	407.4	52.0	184.2	150.7	33.49	5.499		
5,300.0	5,264.9	5,300.0	5,264.6	17.7	17.1	113.02	424.6	53.5	189.9	155.5	34.37	5.525		
5,400.0	5,363.7	5,399.8	5,362.9	18.2	17.6	112.13	441.8	55.1	195.7	160.4	35.26	5.551		
5,483.1	5,445.7	5,482.7	5,444.5	18.5	17.9	111.44	456.0	56.4	200.5	164.6	35.99	5.572		
5,500.0	5,462.5	5,499.6	5,461.1	18.6	18.0	111.31	458.9	56.7	201.5	165.4	36.14	5.577		
5,600.0	5,561.6	5,599.4	5,559.6	18.9	18.4	110.15	475.6	58.2	206.6	169.6	36.91	5.596		
5,700.0	5,661.1	5,699.6	5,658.8	19.2	18.8	108.99	489.2	59.4	210.4	172.8	37.56	5.602		
5,800.0	5,760.9	5,799.9	5,758.6	19.4	19.0	107.88	499.3	60.3	213.0	174.9	38.12	5.588		
5,900.0	5,860.9	5,900.4	5,858.9	19.6	19.3	106.83	506.0	60.9	214.4	175.8	38.60	5.554		
5,929.1	5,890.0	5,929.7	5,888.2	19.7	19.4	89.65	507.3	61.0	214.6	175.8	38.73	5.540		
5,982.2	5,943.1	5,983.2	5,941.6	19.8	19.5	89.23	508.9	61.2	214.7	175.8	38.96	5.512		
6,000.0	5,960.9	6,001.1	5,959.5	19.8	19.5	-90.95	509.2	61.2	214.7	175.7	39.03	5.502		
6,050.0	6,010.8	6,051.3	6,009.8	19.9	19.6	-91.77	509.5	61.2	214.8	175.6	39.20	5.481		
6,100.0	6,060.4	6,101.0	6,059.4	19.9	19.7	-93.35	509.5	61.2	215.1	175.8	39.34	5.468		
6,150.0	6,109.5	6,150.4	6,108.8	19.9	19.8	-95.71	509.4	61.2	215.9	176.4	39.45	5.471		
6,200.0	6,157.9	6,201.1	6,159.5	19.9	19.9	-98.34	507.0	61.2	217.1	177.7	39.45	5.503		
6,250.0	6,205.4	6,252.6	6,210.6	19.8	19.9	-100.91	501.2	61.2	218.9	179.5	39.35	5.562		
6,300.0	6,251.8	6,304.8	6,262.0	19.7	19.9	-103.42	491.8	61.2	221.0	181.9	39.13	5.648		
6,350.0	6,296.8	6,357.8	6,313.3	19.6	19.9	-105.84	478.6	61.2	223.5	184.7	38.81	5.760		
6,400.0	6,340.3	6,411.6	6,364.3	19.5	19.8	-108.16	461.7	61.2	226.4	188.0	38.38	5.899		
6,450.0	6,382.2	6,466.2	6,414.8	19.4	19.7	-110.36	440.8	61.2	229.6	191.7	37.86	6.063		
6,500.0	6,422.1	6,521.6	6,464.3	19.2	19.6	-112.44	416.1	61.2	232.9	195.6	37.26	6.250		
6,550.0	6,460.0	6,577.8	6,512.6	19.1	19.4	-114.39	387.4	61.2	236.4	199.8	36.60	6.459		
6,600.0	6,495.7	6,634.8	6,559.3	19.0	19.3	-116.19	354.7	61.1	239.9	204.0	35.90	6.684		
6,650.0	6,529.0	6,692.6	6,604.0	18.9	19.2	-117.85	318.1	61.1	243.5	208.3	35.19	6.920		
6,700.0	6,559.8	6,751.1	6,646.3	18.8	19.0	-119.36	277.7	61.1	247.0	212.5	34.49	7.161		
6,750.0	6,588.0	6,810.4	6,685.9	18.8	19.0	-120.71	233.6	61.1	250.3	216.5	33.85	7.396		
6,800.0	6,613.4	6,870.4	6,722.4	18.8	18.9	-121.92	186.0	61.0	253.5	220.2	33.30	7.613		
6,850.0	6,635.9	6,931.0	6,755.3	18.8	18.9	-122.96	135.1	61.0	256.4	223.5	32.86	7.801		
6,900.0	6,655.5	6,992.2	6,784.4	18.9	19.0	-123.85	81.3	61.0	258.9	226.3	32.59	7.946		
6,950.0	6,672.0	7,053.9	6,809.2	19.1	19.1	-124.59	24.8	60.9	261.1	228.6	32.50	8.034		
7,000.0	6,685.4	7,116.0	6,829.5	19.3	19.4	-125.17	-33.9	60.9	262.9	230.3	32.63	8.056		
7,050.0	6,695.6	7,178.4	6,845.1	19.7	19.7	-125.60	-94.3	60.8	264.2	231.2	32.99	8.009		
7,100.0	6,702.6	7,241.1	6,855.7	20.0	20.2	-125.87	-156.1	60.8	265.1	231.5	33.59	7.893		
7,150.0	6,706.3	7,303.9	6,861.2	20.5	20.7	-125.99	-218.6	60.8	265.5	231.1	34.41	7.715		
7,182.2	6,707.0	7,343.4	6,862.0	20.8	21.1	-125.98	-258.1	60.7	265.5	230.4	35.05	7.574		
7,187.3	6,707.0	7,348.5	6,862.0	20.9	21.1	-125.99	-263.2	60.7	265.5	230.3	35.14	7.555		
7,187.3	6,707.0	7,348.5	6,862.0	20.9	21.1	-125.99	-263.2	60.7	265.5	230.3	35.14	7.555		
7,187.7	6,707.0	7,348.9	6,862.0	20.9	21.1	-125.99	-263.6	60.7	265.5	230.3	35.14	7.554		
7,200.0	6,706.9	7,361.2	6,862.0	21.0	21.2	-126.00	-275.9	60.7	265.5	230.2	35.32	7.518		
7,300.0	6,706.3	7,461.2	6,862.0	22.1	22.3	-126.12	-375.9	60.7	265.9	228.7	37.24	7.142		
7,400.0	6,705.6	7,561.2	6,862.0	23.4	23.6	-126.23	-475.9	60.6	266.3	226.8	39.49	6.745		
7,500.0	6,704.9	7,661.2	6,862.0	24.9	25.0	-126.34	-575.9	60.5	266.7	224.7	41.98	6.354		
7,600.0	6,704.3	7,761.2	6,862.0	26.5	26.6	-126.46	-675.9	60.4	267.1	222.4	44.67	5.980		
7,700.0	6,703.6	7,861.2	6,862.0	28.2	28.3	-126.57	-775.9	60.4	267.5	220.0	47.52	5.630		
7,800.0	6,702.9	7,961.2	6,862.0	30.0	30.1	-126.68	-875.9	60.3	267.9	217.4	50.50	5.305		
7,900.0	6,702.3	8,061.2	6,862.0	31.9	31.9	-126.80	-975.9	60.2	268.3	214.7	53.59	5.007		
8,000.0	6,701.6	8,161.2	6,862.0	33.8	33.8	-126.91	-1,075.9	60.1	268.7	211.9	56.77	4.733		

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 Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-423 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
8,100.0	6,701.0	8,261.2	6,862.0	35.8	35.8	-127.02	-1,175.9	60.1	269.1	209.1	60.03	4.483		
8,200.0	6,700.3	8,361.2	6,862.0	37.8	37.8	-127.13	-1,275.9	60.0	269.5	206.2	63.34	4.255		
8,300.0	6,699.6	8,461.2	6,862.0	39.9	39.9	-127.25	-1,375.9	59.9	269.9	203.2	66.70	4.047		
8,400.0	6,699.0	8,561.2	6,862.0	41.9	41.9	-127.36	-1,475.9	59.8	270.3	200.2	70.11	3.856		
8,500.0	6,698.3	8,661.2	6,862.0	44.0	44.0	-127.47	-1,575.9	59.8	270.7	197.2	73.55	3.681		
8,600.0	6,697.7	8,761.2	6,862.0	46.2	46.2	-127.58	-1,675.9	59.7	271.1	194.1	77.01	3.521		
8,700.0	6,697.0	8,861.2	6,862.0	48.3	48.3	-127.69	-1,775.9	59.6	271.5	191.0	80.50	3.373		
8,800.0	6,696.3	8,961.2	6,862.0	50.5	50.5	-127.80	-1,875.9	59.5	272.0	187.9	84.01	3.237		
8,900.0	6,695.7	9,061.2	6,862.0	52.7	52.7	-127.91	-1,975.8	59.5	272.4	184.8	87.53	3.112		
9,000.0	6,695.0	9,161.2	6,862.0	54.9	54.9	-128.02	-2,075.8	59.4	272.8	181.7	91.07	2.995		
9,100.0	6,694.3	9,261.1	6,862.0	57.1	57.1	-128.12	-2,175.8	59.3	273.2	178.6	94.62	2.887		
9,200.0	6,693.7	9,361.1	6,862.0	59.3	59.3	-128.23	-2,275.8	59.3	273.6	175.4	98.17	2.787		
9,300.0	6,693.0	9,461.1	6,862.0	61.6	61.5	-128.34	-2,375.8	59.2	274.0	172.3	101.73	2.694		
9,400.0	6,692.4	9,561.1	6,862.0	63.8	63.8	-128.45	-2,475.8	59.1	274.4	169.1	105.30	2.606		
9,500.0	6,691.7	9,661.1	6,862.0	66.1	66.0	-128.56	-2,575.8	59.0	274.8	166.0	108.87	2.525		
9,600.0	6,691.0	9,761.1	6,862.0	68.3	68.3	-128.66	-2,675.8	59.0	275.3	162.8	112.44	2.448		
9,700.0	6,690.4	9,861.1	6,862.0	70.6	70.5	-128.77	-2,775.8	58.9	275.7	159.7	116.01	2.376		
9,800.0	6,689.7	9,961.1	6,862.0	72.8	72.8	-128.88	-2,875.8	58.8	276.1	156.5	119.58	2.309		
9,900.0	6,689.0	10,061.1	6,862.0	75.1	75.1	-128.98	-2,975.8	58.7	276.5	153.4	123.15	2.245		
10,000.0	6,688.4	10,161.1	6,862.0	77.4	77.4	-129.09	-3,075.8	58.7	276.9	150.2	126.72	2.185		
10,100.0	6,687.7	10,261.1	6,862.0	79.7	79.6	-129.19	-3,175.8	58.6	277.4	147.1	130.29	2.129		
10,200.0	6,687.1	10,361.1	6,862.0	82.0	81.9	-129.30	-3,275.8	58.5	277.8	143.9	133.86	2.075		
10,300.0	6,686.4	10,461.1	6,862.0	84.2	84.2	-129.40	-3,375.8	58.4	278.2	140.8	137.42	2.024		
10,400.0	6,685.7	10,561.1	6,862.0	86.5	86.5	-129.51	-3,475.8	58.4	278.6	137.7	140.98	1.976		
10,500.0	6,685.1	10,661.1	6,862.0	88.8	88.8	-129.61	-3,575.8	58.3	279.1	134.5	144.54	1.931		
10,600.0	6,684.4	10,761.1	6,862.0	91.1	91.1	-129.72	-3,675.8	58.2	279.5	131.4	148.09	1.887		
10,700.0	6,683.8	10,861.1	6,862.0	93.4	93.4	-129.82	-3,775.8	58.2	279.9	128.3	151.64	1.846		
10,800.0	6,683.1	10,961.1	6,862.0	95.7	95.7	-129.92	-3,875.8	58.1	280.3	125.2	155.18	1.807		
10,900.0	6,682.4	11,061.1	6,862.0	98.0	98.0	-130.03	-3,975.8	58.0	280.8	122.1	158.72	1.769		
11,000.0	6,681.8	11,161.1	6,862.0	100.4	100.3	-130.13	-4,075.8	57.9	281.2	119.0	162.25	1.733		
11,100.0	6,681.1	11,261.1	6,862.0	102.7	102.6	-130.23	-4,175.8	57.9	281.6	115.9	165.77	1.699		
11,200.0	6,680.4	11,361.1	6,862.0	105.0	104.9	-130.33	-4,275.8	57.8	282.1	112.8	169.30	1.666		
11,300.0	6,679.8	11,461.1	6,862.0	107.3	107.3	-130.43	-4,375.8	57.7	282.5	109.7	172.81	1.635		
11,400.0	6,679.1	11,561.1	6,862.0	109.6	109.6	-130.54	-4,475.8	57.6	282.9	106.6	176.32	1.605		
11,500.0	6,678.5	11,661.1	6,862.0	111.9	111.9	-130.64	-4,575.8	57.6	283.4	103.5	179.82	1.576		
11,600.0	6,677.8	11,761.1	6,862.0	114.2	114.2	-130.74	-4,675.8	57.5	283.8	100.5	183.32	1.548		
11,700.0	6,677.1	11,861.1	6,862.0	116.6	116.5	-130.84	-4,775.8	57.4	284.2	97.4	186.81	1.521		
11,800.0	6,676.5	11,961.1	6,862.0	118.9	118.8	-130.94	-4,875.8	57.3	284.7	94.4	190.30	1.496 Level 3		
11,900.0	6,675.8	12,061.1	6,862.0	121.2	121.2	-131.04	-4,975.8	57.3	285.1	91.3	193.77	1.471 Level 3		
12,000.0	6,675.1	12,161.1	6,862.0	123.5	123.5	-131.14	-5,075.8	57.2	285.5	88.3	197.25	1.448 Level 3		
12,100.0	6,674.5	12,261.1	6,862.0	125.8	125.8	-131.24	-5,175.8	57.1	286.0	85.3	200.71	1.425 Level 3		
12,200.0	6,673.8	12,361.1	6,862.0	128.2	128.1	-131.33	-5,275.8	57.1	286.4	82.3	204.17	1.403 Level 3		
12,300.0	6,673.2	12,461.1	6,862.0	130.5	130.5	-131.43	-5,375.8	57.0	286.9	79.2	207.62	1.382 Level 3		
12,400.0	6,672.5	12,561.1	6,862.0	132.8	132.8	-131.53	-5,475.8	56.9	287.3	76.2	211.06	1.361 Level 3		
12,500.0	6,671.8	12,661.1	6,862.0	135.1	135.1	-131.63	-5,575.8	56.8	287.8	73.3	214.50	1.342 Level 3		
12,600.0	6,671.2	12,761.1	6,862.0	137.5	137.4	-131.73	-5,675.8	56.8	288.2	70.3	217.93	1.322 Level 3		
12,700.0	6,670.5	12,861.1	6,862.0	139.8	139.8	-131.82	-5,775.8	56.7	288.6	67.3	221.35	1.304 Level 3		
12,800.0	6,669.9	12,961.1	6,862.0	142.1	142.1	-131.92	-5,875.8	56.6	289.1	64.3	224.77	1.286 Level 3		
12,900.0	6,669.2	13,061.1	6,862.0	144.5	144.4	-132.02	-5,975.8	56.5	289.5	61.4	228.18	1.269 Level 3		
13,000.0	6,668.5	13,161.1	6,862.0	146.8	146.8	-132.12	-6,075.8	56.5	290.0	58.4	231.58	1.252 Level 3		
13,100.0	6,667.9	13,261.1	6,862.0	149.1	149.1	-132.21	-6,175.8	56.4	290.4	55.5	234.98	1.236 Level 2		

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 Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-423 - Wellbore #1 - Plan #2 (1-25-17)														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance								
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning		
13,200.0	6,667.2	13,361.1	6,862.0	151.5	151.4	-132.31	-6,275.8	56.3	290.9	52.5	238.36	1.220	Level 2		
13,300.0	6,666.5	13,461.1	6,862.0	153.8	153.8	-132.40	-6,375.8	56.2	291.3	49.6	241.74	1.205	Level 2		
13,400.0	6,665.9	13,561.1	6,862.0	156.1	156.1	-132.50	-6,475.8	56.2	291.8	46.7	245.12	1.190	Level 2		
13,500.0	6,665.2	13,661.1	6,862.0	158.5	158.4	-132.59	-6,575.7	56.1	292.2	43.7	248.48	1.176	Level 2		
13,600.0	6,664.6	13,761.1	6,862.0	160.8	160.8	-132.69	-6,675.7	56.0	292.7	40.8	251.84	1.162	Level 2		
13,700.0	6,663.9	13,861.0	6,862.0	163.1	163.1	-132.78	-6,775.7	55.9	293.1	37.9	255.19	1.149	Level 2		
13,800.0	6,663.2	13,961.0	6,862.0	165.5	165.4	-132.88	-6,875.7	55.9	293.6	35.0	258.54	1.136	Level 2		
13,900.0	6,662.6	14,061.0	6,862.0	167.8	167.8	-132.97	-6,975.7	55.8	294.0	32.2	261.88	1.123	Level 2		
13,986.6	6,662.0	14,145.2	6,862.0	169.8	169.7	-133.05	-7,059.9	55.7	294.4	29.7	264.72	1.112	Level 2, SF		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29U-243 - Wellbore #1 - Plan #2 (1-25-17)													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	90.46	-0.4	45.1	45.1						
100.0	100.0	100.0	100.0	0.1	0.1	90.46	-0.4	45.1	45.1	44.9	0.28	163.937			
200.0	200.0	200.0	200.0	0.4	0.4	90.46	-0.4	45.1	45.1	44.3	0.83	54.646			
300.0	300.0	300.0	300.0	0.7	0.7	90.46	-0.4	45.1	45.1	43.8	1.38	32.787			
400.0	400.0	400.0	400.0	1.0	1.0	90.46	-0.4	45.1	45.1	43.2	1.93	23.420	CC, ES		
500.0	500.0	499.2	499.2	1.2	1.2	89.27	0.6	46.0	46.0	43.5	2.47	18.620			
600.0	600.0	598.3	598.2	1.5	1.5	85.96	3.4	48.6	48.8	45.7	3.02	16.170			
700.0	700.0	697.0	696.7	1.8	1.8	81.24	8.2	52.9	53.7	50.1	3.57	15.038			
800.0	800.0	795.4	794.7	2.1	2.1	75.97	14.7	58.9	61.0	56.9	4.13	14.765			
900.0	900.0	893.3	891.9	2.3	2.4	70.87	23.1	66.6	71.0	66.3	4.70	15.092			
1,000.0	1,000.0	990.5	988.2	2.6	2.8	66.34	33.2	75.9	83.7	78.4	5.28	15.843			
1,100.0	1,100.0	1,087.0	1,083.3	2.9	3.1	62.53	45.1	86.7	99.2	93.3	5.87	16.893			
1,200.0	1,200.0	1,182.6	1,177.1	3.2	3.6	59.41	58.6	99.1	117.3	110.9	6.46	18.151			
1,300.0	1,300.0	1,278.7	1,271.1	3.4	4.0	56.87	73.7	112.9	137.9	130.8	7.07	19.509			
1,400.0	1,400.0	1,376.4	1,366.4	3.7	4.5	54.93	89.3	127.2	159.0	151.3	7.67	20.720			
1,500.0	1,500.0	1,474.0	1,461.7	4.0	5.0	53.45	104.9	141.4	180.2	171.9	8.28	21.769			
1,600.0	1,600.0	1,571.6	1,557.0	4.3	5.6	52.28	120.4	155.7	201.5	192.6	8.88	22.682			
1,700.0	1,700.0	1,669.2	1,652.3	4.5	6.1	51.33	136.0	170.0	222.9	213.4	9.49	23.482			
1,800.0	1,800.0	1,766.9	1,747.6	4.8	6.6	50.55	151.6	184.2	244.3	234.2	10.10	24.188			
1,900.0	1,900.0	1,864.5	1,842.9	5.1	7.2	49.89	167.2	198.5	265.7	255.0	10.71	24.814			
2,000.0	2,000.0	1,962.1	1,938.3	5.4	7.7	49.33	182.8	212.8	287.2	275.9	11.32	25.375			
2,100.0	2,100.0	2,059.9	2,033.7	5.6	8.2	65.66	198.4	227.1	308.2	296.6	11.58	26.605			
2,200.0	2,199.9	2,157.9	2,129.4	5.9	8.8	65.59	214.1	241.4	328.1	316.0	12.18	26.947			
2,300.0	2,299.7	2,256.0	2,225.2	6.2	9.3	65.91	229.7	255.7	347.0	334.3	12.78	27.159			
2,400.0	2,399.3	2,354.2	2,321.1	6.5	9.9	66.56	245.4	270.1	364.9	351.5	13.39	27.256			
2,500.0	2,498.6	2,452.5	2,417.0	6.8	10.4	67.51	261.1	284.4	381.9	367.9	14.02	27.246			
2,594.7	2,592.3	2,545.5	2,507.8	7.0	10.9	68.64	275.9	298.0	397.3	382.7	14.64	27.146			
2,600.0	2,597.5	2,550.7	2,512.9	7.1	11.0	68.72	276.8	298.8	398.1	383.5	14.67	27.138			
2,700.0	2,696.3	2,648.8	2,608.7	7.4	11.5	70.20	292.4	313.1	414.2	398.8	15.35	26.985			
2,800.0	2,795.1	2,747.0	2,704.5	7.7	12.1	71.56	308.1	327.5	430.5	414.4	16.05	26.827			
2,900.0	2,893.9	2,845.2	2,800.4	8.1	12.6	72.82	323.8	341.8	447.0	430.2	16.76	26.668			
3,000.0	2,992.7	2,943.3	2,896.2	8.4	13.2	74.00	339.5	356.2	463.7	446.2	17.49	26.509			
3,100.0	3,091.5	3,041.5	2,992.0	8.8	13.7	75.09	355.1	370.5	480.6	462.3	18.24	26.352			
3,200.0	3,190.3	3,139.6	3,087.9	9.1	14.3	76.11	370.8	384.9	497.6	478.6	18.99	26.198			
3,300.0	3,289.1	3,237.8	3,183.7	9.5	14.8	77.06	386.5	399.2	514.8	495.0	19.76	26.048			
3,400.0	3,387.9	3,336.0	3,279.5	9.9	15.4	77.95	402.2	413.5	532.1	511.6	20.54	25.903			
3,500.0	3,486.6	3,434.1	3,375.4	10.3	16.0	78.79	417.8	427.9	549.6	528.2	21.33	25.762			
3,600.0	3,585.4	3,532.3	3,471.2	10.7	16.5	79.57	433.5	442.2	567.1	545.0	22.13	25.627			
3,700.0	3,684.2	3,630.4	3,567.0	11.1	17.1	80.31	449.2	456.6	584.8	561.8	22.93	25.498			
3,800.0	3,783.0	3,728.6	3,662.9	11.5	17.6	81.00	464.9	470.9	602.5	578.7	23.74	25.373			
3,900.0	3,881.8	3,846.7	3,778.5	11.9	18.2	81.85	482.4	487.0	619.0	594.4	24.59	25.169			
4,000.0	3,980.6	3,970.1	3,900.3	12.3	18.6	82.87	497.1	500.4	631.8	606.4	25.43	24.844			
4,100.0	4,079.4	4,094.2	4,023.5	12.7	19.0	84.06	507.9	510.3	640.9	614.6	26.27	24.400			
4,200.0	4,178.2	4,218.4	4,147.3	13.1	19.3	85.41	514.7	516.6	646.3	619.2	27.09	23.857			
4,300.0	4,277.0	4,342.3	4,271.2	13.5	19.5	86.95	517.6	519.2	648.1	620.2	27.90	23.225			
4,400.0	4,375.8	4,446.9	4,375.8	13.9	19.7	88.38	517.7	519.3	647.5	618.9	28.67	22.588			
4,500.0	4,474.6	4,545.7	4,474.6	14.3	19.8	89.74	517.7	519.3	647.3	617.9	29.42	21.999			
4,519.5	4,493.8	4,564.9	4,493.8	14.4	19.9	90.00	517.7	519.3	647.3	617.7	29.57	21.889			
4,600.0	4,573.3	4,644.5	4,573.3	14.8	20.0	91.09	517.7	519.3	647.4	617.2	30.18	21.452			
4,700.0	4,672.1	4,743.2	4,672.1	15.2	20.1	92.45	517.7	519.3	647.9	616.9	30.93	20.944			
4,800.0	4,770.9	4,842.0	4,770.9	15.6	20.3	93.80	517.7	519.3	648.7	617.0	31.69	20.473			

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 Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29U-243 - Wellbore #1 - Plan #2 (1-25-17)													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)				
4,900.0	4,869.7	4,940.8	4,869.7	16.0	20.5	95.15	517.7	519.3	650.0	617.5	32.44	20.036			
5,000.0	4,968.5	5,039.6	4,968.5	16.5	20.6	96.49	517.7	519.3	651.5	618.4	33.19	19.632			
5,100.0	5,067.3	5,138.4	5,067.3	16.9	20.8	97.82	517.7	519.3	653.5	619.6	33.93	19.259			
5,200.0	5,166.1	5,237.2	5,166.1	17.3	21.0	99.15	517.7	519.3	655.8	621.1	34.67	18.915			
5,300.0	5,264.9	5,336.0	5,264.9	17.7	21.2	100.47	517.7	519.3	658.5	623.1	35.41	18.598			
5,400.0	5,363.7	5,434.8	5,363.7	18.2	21.3	101.77	517.7	519.3	661.5	625.4	36.14	18.306			
5,483.1	5,445.7	5,516.9	5,445.7	18.5	21.5	102.85	517.7	519.3	664.3	627.6	36.74	18.082			
5,500.0	5,462.5	5,533.6	5,462.5	18.6	21.5	103.07	517.7	519.3	664.9	628.0	36.86	18.040			
5,600.0	5,561.6	5,632.7	5,561.6	18.9	21.7	104.23	517.7	519.3	668.0	630.5	37.48	17.823			
5,700.0	5,661.1	5,732.2	5,661.1	19.2	21.9	105.08	517.7	519.3	670.5	632.4	38.05	17.623			
5,800.0	5,760.9	5,832.0	5,760.9	19.4	22.1	105.62	517.7	519.3	672.1	633.6	38.55	17.436			
5,900.0	5,860.9	5,932.0	5,860.9	19.6	22.2	105.86	517.7	519.3	672.9	633.9	38.99	17.257			
5,929.1	5,890.0	5,961.1	5,890.0	19.7	22.3	89.00	517.7	519.3	672.9	633.8	39.11	17.207			
5,982.2	5,943.1	6,014.2	5,943.1	19.8	22.4	89.00	517.7	519.3	672.9	633.6	39.32	17.112			
6,000.0	5,960.9	6,032.3	5,961.1	19.8	22.4	-91.04	517.5	519.3	672.9	633.5	39.39	17.084			
6,050.0	6,010.8	6,083.1	6,011.9	19.9	22.5	-91.04	514.6	519.3	672.9	633.4	39.51	17.032			
6,100.0	6,060.4	6,133.9	6,062.3	19.9	22.5	-91.03	508.4	519.3	672.9	633.4	39.56	17.012			
6,150.0	6,109.5	6,184.7	6,112.2	19.9	22.5	-91.02	498.8	519.3	672.9	633.4	39.54	17.021			
6,200.0	6,157.9	6,235.5	6,161.3	19.9	22.5	-91.00	485.9	519.3	672.9	633.5	39.45	17.056			
6,250.0	6,205.4	6,286.2	6,209.4	19.8	22.4	-90.98	469.8	519.3	672.9	633.6	39.32	17.116			
6,300.0	6,251.8	6,337.0	6,256.3	19.7	22.3	-90.95	450.6	519.3	672.9	633.8	39.13	17.197			
6,350.0	6,296.8	6,387.7	6,301.9	19.6	22.2	-90.92	428.2	519.3	672.9	634.0	38.91	17.295			
6,400.0	6,340.3	6,438.4	6,345.8	19.5	22.1	-90.89	403.0	519.3	672.9	634.3	38.66	17.407			
6,450.0	6,382.2	6,489.1	6,388.0	19.4	21.9	-90.85	374.8	519.2	672.9	634.5	38.40	17.526			
6,500.0	6,422.1	6,539.7	6,428.1	19.2	21.8	-90.81	344.0	519.2	672.9	634.8	38.13	17.646			
6,550.0	6,460.0	6,590.3	6,466.1	19.1	21.6	-90.76	310.6	519.2	672.9	635.0	37.88	17.762			
6,600.0	6,495.7	6,640.9	6,501.8	19.0	21.4	-90.72	274.8	519.2	672.9	635.2	37.67	17.864			
6,650.0	6,529.0	6,691.4	6,535.0	18.9	21.3	-90.66	236.7	519.1	672.9	635.4	37.50	17.946			
6,700.0	6,559.8	6,741.9	6,565.6	18.8	21.1	-90.61	196.6	519.1	672.9	635.5	37.39	17.998			
6,750.0	6,588.0	6,792.4	6,593.5	18.8	21.0	-90.55	154.5	519.1	672.9	635.5	37.35	18.014			
6,800.0	6,613.4	6,842.8	6,618.5	18.8	20.8	-90.49	110.8	519.1	672.9	635.5	37.41	17.986			
6,850.0	6,635.9	6,893.1	6,640.5	18.8	20.7	-90.43	65.5	519.0	672.9	635.3	37.57	17.910			
6,900.0	6,655.5	6,943.4	6,659.5	18.9	20.6	-90.37	18.9	519.0	672.9	635.0	37.84	17.782			
6,950.0	6,672.0	6,993.7	6,675.4	19.1	20.5	-90.30	-28.7	519.0	672.9	634.6	38.23	17.601			
7,000.0	6,685.4	7,043.9	6,688.1	19.3	20.5	-90.24	-77.3	518.9	672.9	634.1	38.74	17.369			
7,035.3	6,692.9	7,079.3	6,695.1	19.6	20.5	-90.19	-112.1	518.9	672.9	633.7	39.18	17.173			
7,050.0	6,695.6	7,094.0	6,697.6	19.7	20.5	-90.17	-126.5	518.9	672.9	633.5	39.37	17.091			
7,100.0	6,702.6	7,144.1	6,703.8	20.0	20.8	-90.10	-176.2	518.9	672.9	632.7	40.12	16.773			
7,150.0	6,706.3	7,194.2	6,706.8	20.5	21.2	-90.04	-226.2	518.8	672.9	631.9	40.97	16.421			
7,187.3	6,707.0	7,231.5	6,706.9	20.9	21.5	-89.99	-263.5	518.8	672.9	631.2	41.66	16.149			
7,187.3	6,707.0	7,231.5	6,706.9	20.9	21.5	-89.99	-263.5	518.8	672.9	631.2	41.67	16.149			
7,187.7	6,707.0	7,231.9	6,706.9	20.9	21.5	-89.99	-263.9	518.8	672.9	631.2	41.67	16.147			
7,200.0	6,706.9	7,244.2	6,706.8	21.0	21.6	-89.99	-276.2	518.8	672.9	631.0	41.86	16.073			
7,300.0	6,706.3	7,344.2	6,706.2	22.1	22.7	-89.99	-376.2	518.7	672.9	628.9	43.99	15.296			
7,400.0	6,705.6	7,444.2	6,705.5	23.4	24.0	-89.99	-476.2	518.6	672.9	626.3	46.58	14.446			
7,500.0	6,704.9	7,544.2	6,704.9	24.9	25.5	-89.99	-576.2	518.6	672.9	623.4	49.48	13.598			
7,600.0	6,704.3	7,644.2	6,704.2	26.5	27.1	-89.99	-676.2	518.5	672.9	620.2	52.65	12.781			
7,700.0	6,703.6	7,744.2	6,703.5	28.2	28.7	-89.99	-776.2	518.4	672.9	616.9	56.03	12.010			
7,800.0	6,702.9	7,844.2	6,702.9	30.0	30.5	-89.99	-876.2	518.3	672.9	613.3	59.59	11.292			

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 Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29U-243 - Wellbore #1 - Plan #2 (1-25-17)										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)			
7,900.0	6,702.3	7,944.2	6,702.2	31.9	32.3	-89.99	-976.2	518.2	672.9	609.6	63.30	10.631		
8,000.0	6,701.6	8,044.2	6,701.5	33.8	34.2	-89.99	-1,076.2	518.2	672.9	605.8	67.13	10.024		
8,100.0	6,701.0	8,144.2	6,700.9	35.8	36.1	-89.99	-1,176.2	518.1	672.9	601.8	71.07	9.468		
8,200.0	6,700.3	8,244.2	6,700.2	37.8	38.1	-89.99	-1,276.2	518.0	672.9	597.8	75.10	8.961		
8,300.0	6,699.6	8,344.2	6,699.6	39.9	40.2	-89.99	-1,376.2	517.9	672.9	593.7	79.20	8.497		
8,400.0	6,699.0	8,444.2	6,698.9	41.9	42.2	-89.99	-1,476.2	517.9	672.9	589.5	83.36	8.072		
8,500.0	6,698.3	8,544.2	6,698.2	44.0	44.3	-89.99	-1,576.2	517.8	672.9	585.3	87.58	7.683		
8,600.0	6,697.7	8,644.2	6,697.6	46.2	46.4	-89.99	-1,676.2	517.7	672.9	581.1	91.85	7.327		
8,700.0	6,697.0	8,744.2	6,696.9	48.3	48.5	-89.99	-1,776.2	517.6	672.9	576.8	96.15	6.998		
8,800.0	6,696.3	8,844.2	6,696.3	50.5	50.7	-89.99	-1,876.2	517.6	672.9	572.4	100.49	6.696		
8,900.0	6,695.7	8,944.2	6,695.6	52.7	52.8	-89.99	-1,976.2	517.5	672.9	568.0	104.87	6.417		
9,000.0	6,695.0	9,044.2	6,694.9	54.9	55.0	-89.99	-2,076.2	517.4	672.9	563.7	109.27	6.158		
9,100.0	6,694.3	9,144.2	6,694.3	57.1	57.2	-89.99	-2,176.2	517.3	672.9	559.2	113.69	5.919		
9,200.0	6,693.7	9,244.2	6,693.6	59.3	59.4	-89.99	-2,276.2	517.3	672.9	554.8	118.14	5.696		
9,300.0	6,693.0	9,344.2	6,692.9	61.6	61.6	-89.99	-2,376.2	517.2	672.9	550.3	122.60	5.489		
9,400.0	6,692.4	9,444.2	6,692.3	63.8	63.8	-89.99	-2,476.2	517.1	672.9	545.8	127.09	5.295		
9,500.0	6,691.7	9,544.2	6,691.6	66.1	66.1	-89.99	-2,576.2	517.0	672.9	541.3	131.58	5.114		
9,600.0	6,691.0	9,644.2	6,691.0	68.3	68.3	-89.99	-2,676.2	517.0	672.9	536.8	136.09	4.945		
9,700.0	6,690.4	9,744.2	6,690.3	70.6	70.6	-89.99	-2,776.2	516.9	672.9	532.3	140.62	4.786		
9,800.0	6,689.7	9,844.2	6,689.6	72.8	72.8	-89.99	-2,876.2	516.8	672.9	527.8	145.15	4.636		
9,900.0	6,689.0	9,944.2	6,689.0	75.1	75.1	-89.99	-2,976.2	516.7	672.9	523.2	149.70	4.495		
10,000.0	6,688.4	10,044.2	6,688.3	77.4	77.3	-89.99	-3,076.2	516.7	672.9	518.7	154.25	4.363		
10,100.0	6,687.7	10,144.2	6,687.7	79.7	79.6	-89.99	-3,176.2	516.6	672.9	514.1	158.82	4.237		
10,200.0	6,687.1	10,244.2	6,687.0	82.0	81.9	-89.99	-3,276.2	516.5	673.0	509.6	163.39	4.119		
10,300.0	6,686.4	10,344.2	6,686.3	84.2	84.2	-89.99	-3,376.2	516.4	673.0	505.0	167.97	4.006		
10,400.0	6,685.7	10,444.2	6,685.7	86.5	86.4	-89.99	-3,476.2	516.4	673.0	500.4	172.55	3.900		
10,500.0	6,685.1	10,544.2	6,685.0	88.8	88.7	-89.99	-3,576.2	516.3	673.0	495.8	177.14	3.799		
10,600.0	6,684.4	10,644.2	6,684.3	91.1	91.0	-89.99	-3,676.2	516.2	673.0	491.2	181.74	3.703		
10,700.0	6,683.8	10,744.2	6,683.7	93.4	93.3	-89.99	-3,776.2	516.1	673.0	486.6	186.34	3.611		
10,800.0	6,683.1	10,844.2	6,683.0	95.7	95.6	-89.99	-3,876.2	516.1	673.0	482.0	190.95	3.524		
10,900.0	6,682.4	10,944.2	6,682.4	98.0	97.9	-89.99	-3,976.2	516.0	673.0	477.4	195.56	3.441		
11,000.0	6,681.8	11,044.2	6,681.7	100.4	100.2	-89.99	-4,076.2	515.9	673.0	472.8	200.18	3.362		
11,100.0	6,681.1	11,144.2	6,681.0	102.7	102.5	-89.99	-4,176.2	515.8	673.0	468.2	204.80	3.286		
11,200.0	6,680.4	11,244.2	6,680.4	105.0	104.8	-89.99	-4,276.2	515.7	673.0	463.6	209.42	3.214		
11,300.0	6,679.8	11,344.2	6,679.7	107.3	107.1	-89.99	-4,376.1	515.7	673.0	458.9	214.05	3.144		
11,400.0	6,679.1	11,444.2	6,679.1	109.6	109.4	-89.99	-4,476.1	515.6	673.0	454.3	218.67	3.078		
11,500.0	6,678.5	11,544.2	6,678.4	111.9	111.7	-89.99	-4,576.1	515.5	673.0	449.7	223.31	3.014		
11,600.0	6,677.8	11,644.2	6,677.7	114.2	114.1	-89.99	-4,676.1	515.4	673.0	445.0	227.94	2.952		
11,700.0	6,677.1	11,744.2	6,677.1	116.6	116.4	-89.99	-4,776.1	515.4	673.0	440.4	232.58	2.894		
11,800.0	6,676.5	11,844.2	6,676.4	118.9	118.7	-89.99	-4,876.1	515.3	673.0	435.8	237.22	2.837		
11,900.0	6,675.8	11,944.2	6,675.8	121.2	121.0	-89.99	-4,976.1	515.2	673.0	431.1	241.87	2.783		
12,000.0	6,675.1	12,044.2	6,675.1	123.5	123.3	-90.00	-5,076.1	515.1	673.0	426.5	246.51	2.730		
12,100.0	6,674.5	12,144.2	6,674.4	125.8	125.6	-90.00	-5,176.1	515.1	673.0	421.8	251.16	2.680		
12,200.0	6,673.8	12,244.2	6,673.8	128.2	128.0	-90.00	-5,276.1	515.0	673.0	417.2	255.81	2.631		
12,300.0	6,673.2	12,344.2	6,673.1	130.5	130.3	-90.00	-5,376.1	514.9	673.0	412.5	260.46	2.584		
12,400.0	6,672.5	12,444.2	6,672.4	132.8	132.6	-90.00	-5,476.1	514.8	673.0	407.9	265.11	2.539		
12,500.0	6,671.8	12,544.2	6,671.8	135.1	134.9	-90.00	-5,576.1	514.8	673.0	403.2	269.77	2.495		
12,600.0	6,671.2	12,644.2	6,671.1	137.5	137.2	-90.00	-5,676.1	514.7	673.0	398.6	274.42	2.452		
12,700.0	6,670.5	12,744.2	6,670.5	139.8	139.6	-90.00	-5,776.1	514.6	673.0	393.9	279.08	2.412		
12,800.0	6,669.9	12,844.2	6,669.8	142.1	141.9	-90.00	-5,876.1	514.5	673.0	389.3	283.74	2.372		
12,900.0	6,669.2	12,944.2	6,669.1	144.5	144.2	-90.00	-5,976.1	514.5	673.0	384.6	288.40	2.334		

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 Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29U-243 - Wellbore #1 - Plan #2 (1-25-17)													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		
13,000.0	6,668.5	13,044.2	6,668.5	146.8	146.5	-90.00	-6,076.1	514.4	673.0	380.0	293.06	2.297		
13,100.0	6,667.9	13,144.2	6,667.8	149.1	148.9	-90.00	-6,176.1	514.3	673.0	375.3	297.73	2.261		
13,200.0	6,667.2	13,244.2	6,667.2	151.5	151.2	-90.00	-6,276.1	514.2	673.0	370.6	302.39	2.226		
13,300.0	6,666.5	13,344.2	6,666.5	153.8	153.5	-90.00	-6,376.1	514.2	673.0	366.0	307.06	2.192		
13,400.0	6,665.9	13,444.2	6,665.8	156.1	155.9	-90.00	-6,476.1	514.1	673.0	361.3	311.73	2.159		
13,500.0	6,665.2	13,544.2	6,665.2	158.5	158.2	-90.00	-6,576.1	514.0	673.0	356.7	316.39	2.127		
13,600.0	6,664.6	13,644.2	6,664.5	160.8	160.5	-90.00	-6,676.1	513.9	673.0	352.0	321.06	2.096		
13,700.0	6,663.9	13,744.2	6,663.8	163.1	162.9	-90.00	-6,776.1	513.9	673.0	347.3	325.73	2.066		
13,800.0	6,663.2	13,844.2	6,663.2	165.5	165.2	-90.00	-6,876.1	513.8	673.1	342.6	330.40	2.037		
13,900.0	6,662.6	13,944.2	6,662.5	167.8	167.5	-90.00	-6,976.1	513.7	673.1	338.0	335.07	2.009		
13,949.3	6,662.2	13,993.5	6,662.2	168.9	168.7	-90.00	-7,025.4	513.7	673.1	335.7	337.38	1.995		
13,986.6	6,662.0	14,023.3	6,662.0	169.8	169.4	-90.00	-7,055.2	513.6	673.1	334.2	338.94	1.986 SF		

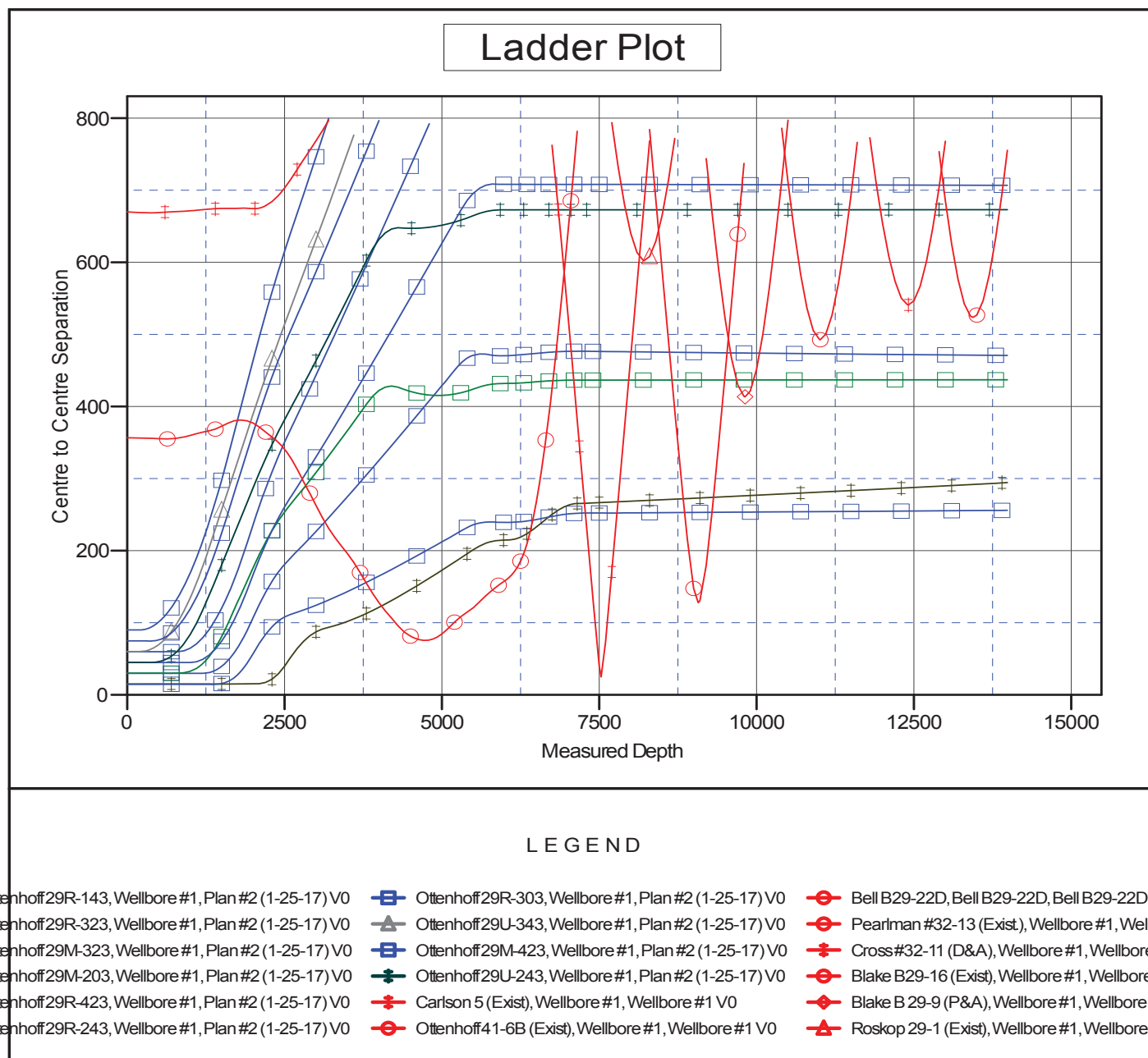
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29U-343 - Wellbore #1 - Plan #2 (1-25-17)													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	90.69	-0.7	60.2	60.2					
100.0	100.0	99.0	99.0	0.1	0.1	90.69	-0.7	60.2	60.2	59.9	0.27	219.688		
200.0	200.0	199.0	199.0	0.4	0.4	90.69	-0.7	60.2	60.2	59.4	0.82	73.107 CC, ES		
300.0	300.0	297.8	297.8	0.7	0.7	89.97	0.0	61.2	61.2	59.8	1.37	44.808		
400.0	400.0	396.4	396.3	1.0	1.0	87.91	2.3	64.2	64.3	62.4	1.91	33.633		
500.0	500.0	494.8	494.5	1.2	1.2	84.89	6.2	69.2	69.6	67.2	2.47	28.217		
600.0	600.0	592.7	592.0	1.5	1.5	81.38	11.6	76.2	77.4	74.3	3.03	25.495		
700.0	700.0	690.2	688.8	1.8	1.9	77.80	18.4	85.1	87.7	84.0	3.61	24.263		
800.0	800.0	787.0	784.7	2.1	2.2	74.45	26.7	95.9	100.6	96.4	4.20	23.940 SF		
900.0	900.0	883.1	879.4	2.3	2.7	71.47	36.4	108.5	116.1	111.3	4.80	24.206		
1,000.0	1,000.0	978.3	972.9	2.6	3.1	68.91	47.4	122.9	134.2	128.8	5.40	24.863		
1,100.0	1,100.0	1,072.5	1,064.9	2.9	3.6	66.74	59.7	138.9	155.0	148.9	6.01	25.786		
1,200.0	1,200.0	1,165.7	1,155.4	3.2	4.1	64.93	73.2	156.5	178.2	171.6	6.63	26.892		
1,300.0	1,300.0	1,258.9	1,245.4	3.4	4.7	63.40	88.0	175.8	203.8	196.5	7.25	28.098		
1,400.0	1,400.0	1,355.3	1,338.3	3.7	5.3	62.14	103.7	196.2	230.1	222.2	7.89	29.178		
1,500.0	1,500.0	1,451.6	1,431.1	4.0	5.9	61.14	119.4	216.7	256.5	248.0	8.52	30.108		
1,600.0	1,600.0	1,548.0	1,524.0	4.3	6.6	60.33	135.1	237.1	283.0	273.9	9.16	30.911		
1,700.0	1,700.0	1,644.4	1,616.9	4.5	7.2	59.65	150.8	257.5	309.5	299.7	9.79	31.610		
1,800.0	1,800.0	1,740.7	1,709.7	4.8	7.9	59.09	166.5	278.0	336.1	325.7	10.43	32.224		
1,900.0	1,900.0	1,837.1	1,802.6	5.1	8.5	58.60	182.1	298.4	362.7	351.6	11.07	32.767		
2,000.0	2,000.0	1,933.5	1,895.4	5.4	9.1	58.18	197.8	318.8	389.3	377.6	11.71	33.251		
2,100.0	2,100.0	2,029.9	1,988.4	5.6	9.8	74.48	213.5	339.3	415.6	403.8	11.79	35.247		
2,200.0	2,199.9	2,126.6	2,081.5	5.9	10.5	74.27	229.3	359.8	441.2	428.8	12.40	35.587		
2,300.0	2,299.7	2,223.3	2,174.8	6.2	11.1	74.38	245.0	380.3	466.1	453.1	13.01	35.823		
2,400.0	2,399.3	2,320.2	2,268.0	6.5	11.8	74.74	260.8	400.9	490.4	476.8	13.64	35.962		
2,500.0	2,498.6	2,417.0	2,361.3	6.8	12.4	75.34	276.5	421.4	514.2	499.9	14.28	36.008		
2,594.7	2,592.3	2,508.6	2,449.6	7.0	13.0	76.09	291.5	440.8	536.2	521.3	14.91	35.968		
2,600.0	2,597.5	2,513.7	2,454.5	7.1	13.1	76.15	292.3	441.9	537.4	522.5	14.94	35.963		
2,700.0	2,696.3	2,610.3	2,547.6	7.4	13.7	77.32	308.0	462.4	560.6	545.0	15.63	35.863		
2,800.0	2,795.1	2,707.0	2,640.8	7.7	14.4	78.39	323.8	482.9	584.0	567.7	16.34	35.741		
2,900.0	2,893.9	2,803.6	2,733.9	8.1	15.0	79.38	339.5	503.4	607.6	590.6	17.07	35.605		
3,000.0	2,992.7	2,900.3	2,827.1	8.4	15.7	80.29	355.2	523.9	631.4	613.6	17.81	35.457		
3,100.0	3,091.5	2,996.9	2,920.2	8.8	16.4	81.15	371.0	544.4	655.3	636.7	18.56	35.303		
3,200.0	3,190.3	3,093.6	3,013.3	9.1	17.0	81.94	386.7	564.9	679.3	660.0	19.33	35.145		
3,300.0	3,289.1	3,190.3	3,106.5	9.5	17.7	82.67	402.4	585.4	703.4	683.3	20.11	34.987		
3,400.0	3,387.9	3,286.9	3,199.6	9.9	18.3	83.36	418.2	605.9	727.7	706.8	20.89	34.828		
3,500.0	3,486.6	3,383.6	3,292.7	10.3	19.0	84.01	433.9	626.4	752.0	730.3	21.69	34.672		
3,600.0	3,585.4	3,480.2	3,385.9	10.7	19.7	84.61	449.6	646.9	776.4	753.9	22.49	34.518		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4686.0ft (RKB - 23')
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: Ottenhoff 29R-203
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.60°



Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4686.0ft (RKB - 23')
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: Ottenhoff 29R-203
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.60°

