

PETROLEUM DEVELOPMENT CORP DJ Basin

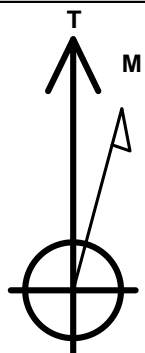
Well Name: **Ottenhoff 29R-303**

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 Longitude Slot
0.0 0.0 1381166.85 3259689.57 40.375958 -104.567890
RKB - 23' WELL @ 4686.0ft (RKB - 23')

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 558'FNL & 1005'FEL, Sec.29	1.0	0.0	0.0	Point
BHL 2633'FSL & 1433'FEL, Sec.32	6757.0	-7365.6	-379.6	Point



Azimuths to True North
Magnetic North: 8.12°

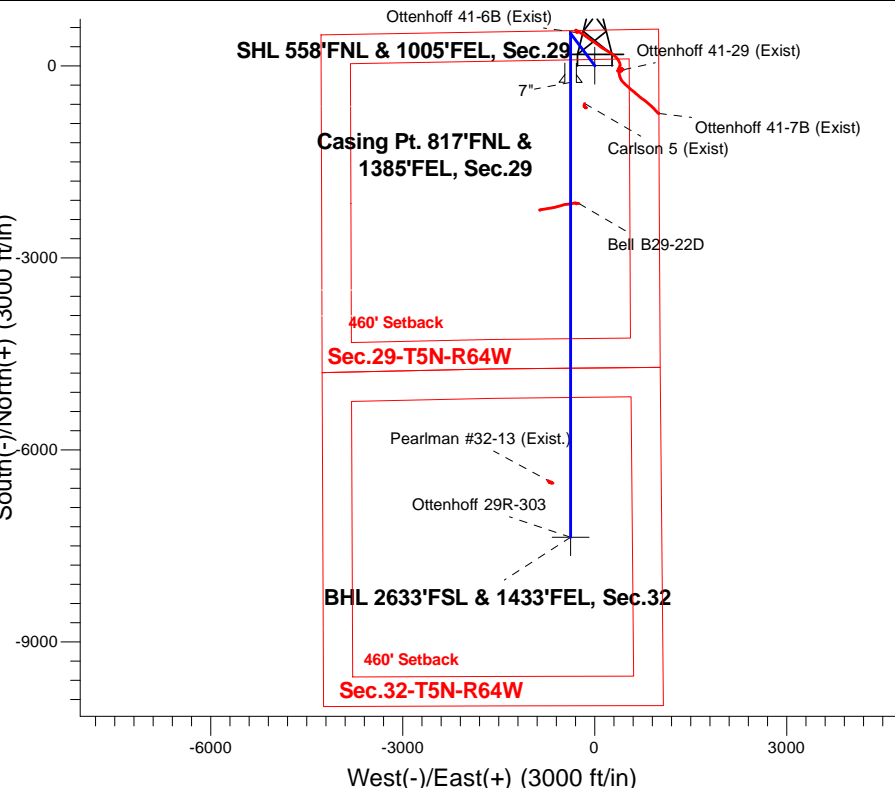
Magnetic Field
Strength: 52645.0snT
Dip Angle: 66.90°
Date: 2/26/2016
Model: IGRF2010

Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W
Ottenhoff 29R-303
Plan #1 (3-15-16)
15:41, March 17 2016

ANNOTATIONS

TVD	MD	Annotation
1400.0	1400.0	KOP - Start Build 1.50
5334.9	5382.2	Start Drop -2.00
6022.8	6072.2	KOP #2 - Start Build 7.50
6786.8	7275.4	Start 7106.5 hold at 7275.4 MD
6757.0	14381.9	TD at 14381.9

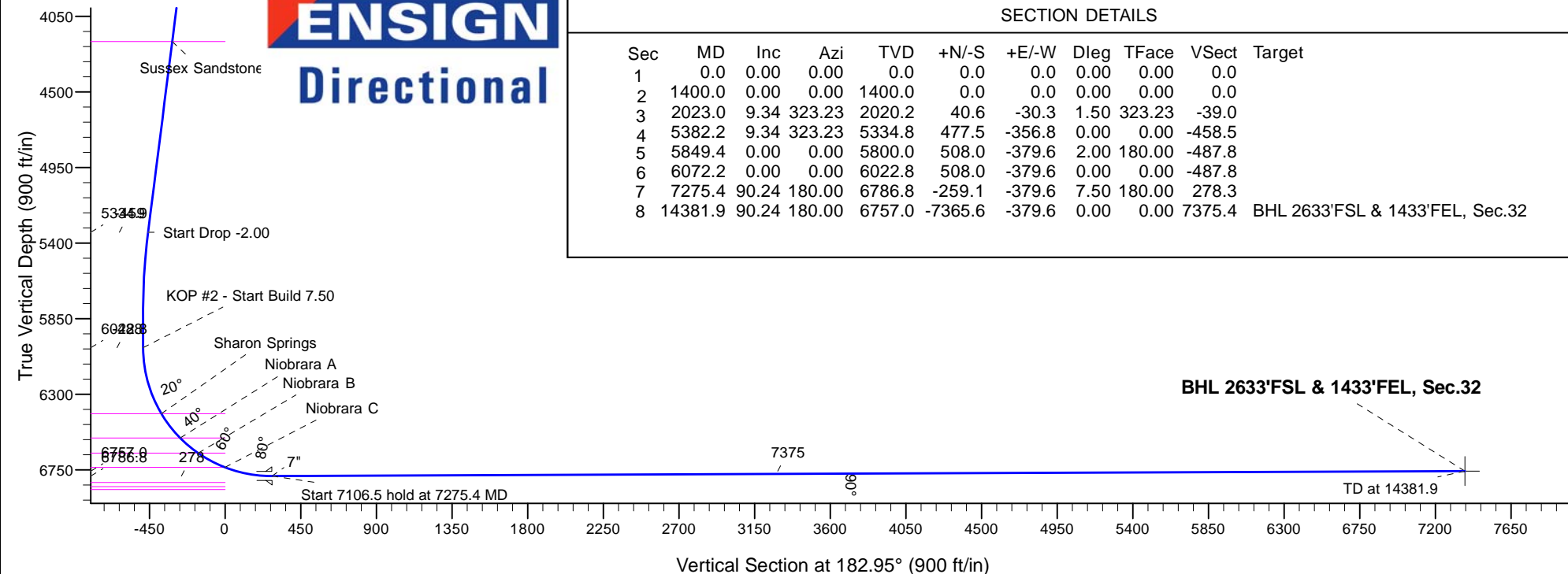
South(-)/North(+) (3000 ft/in)



ENSIGN
Directional

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1400.0	0.00	0.00	1400.0	0.0	0.0	0.00	0.00	0.0	
3	2023.0	9.34	323.23	2020.2	40.6	-30.3	1.50	323.23	-39.0	
4	5382.2	9.34	323.23	5334.8	477.5	-356.8	0.00	0.00	-458.5	
5	5849.4	0.00	0.00	5800.0	508.0	-379.6	2.00	180.00	-487.8	
6	6072.2	0.00	0.00	6022.8	508.0	-379.6	0.00	0.00	-487.8	
7	7275.4	90.24	180.00	6786.8	-259.1	-379.6	7.50	180.00	278.3	
8	14381.9	90.24	180.00	6757.0	-7365.6	-379.6	0.00	0.00	7375.4	BHL 2633'FSL & 1433'FEL, Sec.32





PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.29-T5N-R64W

Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W

Ottenhoff 29R-303

Wellbore #1

Plan: Plan #1 (3-15-16)

Standard Planning Report

17 March, 2016

Database:	US_EDM	Local Co-ordinate Reference:	Well Ottenhoff 29R-303
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-303	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-15-16)		

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-303					
Well Position	+N/-S	0.7 ft	Northing:	1,381,166.85 usft	Latitude:	40.375958
	+E/-W	-59.9 ft	Easting:	3,259,689.57 usft	Longitude:	-104.567890
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	2/26/2016	8.12	66.90	52,645

Design	Plan #1 (3-15-16)			
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	182.95

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,023.0	9.34	323.23	2,020.2	40.6	-30.3	1.50	1.50	0.00	323.23	
5,382.2	9.34	323.23	5,334.8	477.5	-356.8	0.00	0.00	0.00	0.00	
5,849.4	0.00	0.00	5,800.0	508.0	-379.6	2.00	-2.00	0.00	180.00	
6,072.2	0.00	0.00	6,022.8	508.0	-379.6	0.00	0.00	0.00	0.00	
7,275.4	90.24	180.00	6,786.8	-259.1	-379.6	7.50	7.50	0.00	180.00	
14,381.9	90.24	180.00	6,757.0	-7,365.6	-379.6	0.00	0.00	0.00	0.00	BHL 2633'FSL & 1433'

Database:	US_EDM	Local Co-ordinate Reference:	Well Ottenhoff 29R-303
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-303	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-15-16)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
1.0	0.00	0.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00
SHL 558'FNL & 1005'FEL, Sec.29									
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 1.50									
1,500.0	1.50	323.23	1,500.0	1.0	-0.8	-1.0	1.50	1.50	0.00
1,600.0	3.00	323.23	1,599.9	4.2	-3.1	-4.0	1.50	1.50	0.00
1,700.0	4.50	323.23	1,699.7	9.4	-7.0	-9.1	1.50	1.50	0.00
1,800.0	6.00	323.23	1,799.3	16.8	-12.5	-16.1	1.50	1.50	0.00
1,900.0	7.50	323.23	1,898.6	26.2	-19.6	-25.1	1.50	1.50	0.00
2,000.0	9.00	323.23	1,997.5	37.7	-28.1	-36.2	1.50	1.50	0.00
2,023.0	9.34	323.23	2,020.2	40.6	-30.3	-39.0	1.50	1.50	0.00
2,100.0	9.34	323.23	2,096.2	50.6	-37.8	-48.6	0.00	0.00	0.00
2,200.0	9.34	323.23	2,194.9	63.6	-47.5	-61.1	0.00	0.00	0.00
2,300.0	9.34	323.23	2,293.6	76.6	-57.3	-73.6	0.00	0.00	0.00
2,400.0	9.34	323.23	2,392.2	89.6	-67.0	-86.1	0.00	0.00	0.00
2,500.0	9.34	323.23	2,490.9	102.7	-76.7	-98.6	0.00	0.00	0.00
2,600.0	9.34	323.23	2,589.6	115.7	-86.4	-111.1	0.00	0.00	0.00
2,700.0	9.34	323.23	2,688.3	128.7	-96.1	-123.5	0.00	0.00	0.00
2,800.0	9.34	323.23	2,786.9	141.7	-105.9	-136.0	0.00	0.00	0.00
2,900.0	9.34	323.23	2,885.6	154.7	-115.6	-148.5	0.00	0.00	0.00
3,000.0	9.34	323.23	2,984.3	167.7	-125.3	-161.0	0.00	0.00	0.00
3,100.0	9.34	323.23	3,082.9	180.7	-135.0	-173.5	0.00	0.00	0.00
3,200.0	9.34	323.23	3,181.6	193.7	-144.7	-186.0	0.00	0.00	0.00
3,300.0	9.34	323.23	3,280.3	206.7	-154.5	-198.5	0.00	0.00	0.00
3,400.0	9.34	323.23	3,379.0	219.7	-164.2	-211.0	0.00	0.00	0.00
3,500.0	9.34	323.23	3,477.6	232.7	-173.9	-223.5	0.00	0.00	0.00
3,553.1	9.34	323.23	3,530.0	239.6	-179.1	-230.1	0.00	0.00	0.00
Parkman Sandstone									
3,600.0	9.34	323.23	3,576.3	245.7	-183.6	-236.0	0.00	0.00	0.00
3,700.0	9.34	323.23	3,675.0	258.7	-193.3	-248.4	0.00	0.00	0.00
3,800.0	9.34	323.23	3,773.7	271.7	-203.1	-260.9	0.00	0.00	0.00
3,900.0	9.34	323.23	3,872.3	284.8	-212.8	-273.4	0.00	0.00	0.00
4,000.0	9.34	323.23	3,971.0	297.8	-222.5	-285.9	0.00	0.00	0.00
4,100.0	9.34	323.23	4,069.7	310.8	-232.2	-298.4	0.00	0.00	0.00
4,200.0	9.34	323.23	4,168.4	323.8	-241.9	-310.9	0.00	0.00	0.00
4,232.1	9.34	323.23	4,200.0	327.9	-245.1	-314.9	0.00	0.00	0.00
Sussex Sandstone									
4,300.0	9.34	323.23	4,267.0	336.8	-251.7	-323.4	0.00	0.00	0.00

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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-303	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-15-16)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,400.0	9.34	323.23	4,365.7	349.8	-261.4	-335.9	0.00	0.00	0.00
4,500.0	9.34	323.23	4,464.4	362.8	-271.1	-348.4	0.00	0.00	0.00
4,600.0	9.34	323.23	4,563.0	375.8	-280.8	-360.9	0.00	0.00	0.00
4,700.0	9.34	323.23	4,661.7	388.8	-290.5	-373.3	0.00	0.00	0.00
4,800.0	9.34	323.23	4,760.4	401.8	-300.3	-385.8	0.00	0.00	0.00
4,900.0	9.34	323.23	4,859.1	414.8	-310.0	-398.3	0.00	0.00	0.00
5,000.0	9.34	323.23	4,957.7	427.8	-319.7	-410.8	0.00	0.00	0.00
5,100.0	9.34	323.23	5,056.4	440.8	-329.4	-423.3	0.00	0.00	0.00
5,200.0	9.34	323.23	5,155.1	453.8	-339.1	-435.8	0.00	0.00	0.00
5,300.0	9.34	323.23	5,253.8	466.9	-348.9	-448.3	0.00	0.00	0.00
5,382.2	9.34	323.23	5,334.9	477.5	-356.8	-458.6	0.00	0.00	0.00
Start Drop -2.00									
5,400.0	8.99	323.23	5,352.4	479.8	-358.5	-460.7	2.00	-2.00	0.00
5,500.0	6.99	323.23	5,451.5	491.0	-366.9	-471.4	2.00	-2.00	0.00
5,600.0	4.99	323.23	5,550.9	499.3	-373.1	-479.4	2.00	-2.00	0.00
5,700.0	2.99	323.23	5,650.7	504.9	-377.3	-484.8	2.00	-2.00	0.00
5,800.0	0.99	323.23	5,750.6	507.7	-379.3	-487.5	2.00	-2.00	0.00
5,849.4	0.00	0.00	5,800.0	508.0	-379.6	-487.8	2.00	-2.00	0.00
5,900.0	0.00	0.00	5,850.6	508.0	-379.6	-487.8	0.00	0.00	0.00
6,000.0	0.00	0.00	5,950.6	508.0	-379.6	-487.8	0.00	0.00	0.00
6,072.2	0.00	0.00	6,022.8	508.0	-379.6	-487.8	0.00	0.00	0.00
KOP #2 - Start Build 7.50									
6,100.0	2.08	180.00	6,050.6	507.5	-379.6	-487.3	7.49	7.49	0.00
6,200.0	9.58	180.00	6,150.0	497.3	-379.6	-477.1	7.50	7.50	0.00
6,300.0	17.08	180.00	6,247.2	474.3	-379.6	-454.1	7.50	7.50	0.00
6,400.0	24.58	180.00	6,340.6	438.8	-379.6	-418.6	7.50	7.50	0.00
6,484.1	30.89	180.00	6,415.0	399.7	-379.6	-379.6	7.50	7.50	0.00
Sharon Springs									
6,500.0	32.08	180.00	6,428.6	391.3	-379.6	-371.3	7.50	7.50	0.00
6,600.0	39.58	180.00	6,509.6	332.8	-379.6	-312.9	7.50	7.50	0.00
6,668.0	44.68	180.00	6,560.0	287.2	-379.6	-267.3	7.50	7.50	0.00
Niobrara A									
6,700.0	47.08	180.00	6,582.3	264.3	-379.6	-244.4	7.50	7.50	0.00
6,800.0	54.58	180.00	6,645.4	186.8	-379.6	-167.0	7.50	7.50	0.00
6,808.0	55.18	180.00	6,650.0	180.3	-379.6	-160.5	7.50	7.50	0.00
Niobrara B									
6,900.0	62.08	180.00	6,697.9	101.7	-379.6	-82.1	7.50	7.50	0.00
6,989.4	68.78	180.00	6,735.0	20.5	-379.6	-0.9	7.50	7.50	0.00
Niobrara C									
7,000.0	69.58	180.00	6,738.8	10.6	-379.6	9.0	7.50	7.50	0.00
7,100.0	77.08	180.00	6,767.4	-85.2	-379.6	104.6	7.50	7.50	0.00
7,200.0	84.58	180.00	6,783.4	-183.8	-379.6	203.1	7.50	7.50	0.00
7,275.4	90.24	180.00	6,786.8	-259.1	-379.6	278.3	7.50	7.50	0.00
Start 7106.5 hold at 7275.4 MD - 7"									
7,300.0	90.24	180.00	6,786.7	-283.7	-379.6	302.9	0.01	0.01	0.00
7,400.0	90.24	180.00	6,786.2	-383.7	-379.6	402.7	0.00	0.00	0.00
7,500.0	90.24	180.00	6,785.8	-483.7	-379.6	502.6	0.00	0.00	0.00
7,600.0	90.24	180.00	6,785.4	-583.7	-379.6	602.5	0.00	0.00	0.00
7,700.0	90.24	180.00	6,785.0	-683.7	-379.6	702.3	0.00	0.00	0.00
7,800.0	90.24	180.00	6,784.6	-783.7	-379.6	802.2	0.00	0.00	0.00
7,900.0	90.24	180.00	6,784.2	-883.7	-379.6	902.1	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Ottenhoff 29R-303
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-303	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-15-16)		

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)
8,000.0	90.24	180.00	6,783.7	-983.7	-379.6	1,001.9	0.00	0.00	0.00
8,100.0	90.24	180.00	6,783.3	-1,083.7	-379.6	1,101.8	0.00	0.00	0.00
8,200.0	90.24	180.00	6,782.9	-1,183.7	-379.6	1,201.7	0.00	0.00	0.00
8,300.0	90.24	180.00	6,782.5	-1,283.7	-379.6	1,301.5	0.00	0.00	0.00
8,400.0	90.24	180.00	6,782.1	-1,383.7	-379.6	1,401.4	0.00	0.00	0.00
8,500.0	90.24	180.00	6,781.6	-1,483.7	-379.6	1,501.3	0.00	0.00	0.00
8,600.0	90.24	180.00	6,781.2	-1,583.7	-379.6	1,601.1	0.00	0.00	0.00
8,700.0	90.24	180.00	6,780.8	-1,683.7	-379.6	1,701.0	0.00	0.00	0.00
8,800.0	90.24	180.00	6,780.4	-1,783.7	-379.6	1,800.9	0.00	0.00	0.00
8,900.0	90.24	180.00	6,780.0	-1,883.7	-379.6	1,900.7	0.00	0.00	0.00
9,000.0	90.24	180.00	6,779.5	-1,983.7	-379.6	2,000.6	0.00	0.00	0.00
9,100.0	90.24	180.00	6,779.1	-2,083.7	-379.6	2,100.5	0.00	0.00	0.00
9,200.0	90.24	180.00	6,778.7	-2,183.7	-379.6	2,200.3	0.00	0.00	0.00
9,300.0	90.24	180.00	6,778.3	-2,283.7	-379.6	2,300.2	0.00	0.00	0.00
9,400.0	90.24	180.00	6,777.9	-2,383.7	-379.6	2,400.1	0.00	0.00	0.00
9,500.0	90.24	180.00	6,777.4	-2,483.7	-379.6	2,499.9	0.00	0.00	0.00
9,600.0	90.24	180.00	6,777.0	-2,583.7	-379.6	2,599.8	0.00	0.00	0.00
9,700.0	90.24	180.00	6,776.6	-2,683.7	-379.6	2,699.7	0.00	0.00	0.00
9,800.0	90.24	180.00	6,776.2	-2,783.7	-379.6	2,799.5	0.00	0.00	0.00
9,900.0	90.24	180.00	6,775.8	-2,883.7	-379.6	2,899.4	0.00	0.00	0.00
10,000.0	90.24	180.00	6,775.4	-2,983.7	-379.6	2,999.3	0.00	0.00	0.00
10,100.0	90.24	180.00	6,774.9	-3,083.7	-379.6	3,099.1	0.00	0.00	0.00
10,200.0	90.24	180.00	6,774.5	-3,183.7	-379.6	3,199.0	0.00	0.00	0.00
10,300.0	90.24	180.00	6,774.1	-3,283.7	-379.6	3,298.9	0.00	0.00	0.00
10,400.0	90.24	180.00	6,773.7	-3,383.7	-379.6	3,398.7	0.00	0.00	0.00
10,500.0	90.24	180.00	6,773.3	-3,483.7	-379.6	3,498.6	0.00	0.00	0.00
10,600.0	90.24	180.00	6,772.8	-3,583.7	-379.6	3,598.5	0.00	0.00	0.00
10,700.0	90.24	180.00	6,772.4	-3,683.7	-379.6	3,698.3	0.00	0.00	0.00
10,800.0	90.24	180.00	6,772.0	-3,783.7	-379.6	3,798.2	0.00	0.00	0.00
10,900.0	90.24	180.00	6,771.6	-3,883.7	-379.6	3,898.1	0.00	0.00	0.00
11,000.0	90.24	180.00	6,771.2	-3,983.7	-379.6	3,997.9	0.00	0.00	0.00
11,100.0	90.24	180.00	6,770.7	-4,083.7	-379.6	4,097.8	0.00	0.00	0.00
11,200.0	90.24	180.00	6,770.3	-4,183.7	-379.6	4,197.7	0.00	0.00	0.00
11,300.0	90.24	180.00	6,769.9	-4,283.7	-379.6	4,297.5	0.00	0.00	0.00
11,400.0	90.24	180.00	6,769.5	-4,383.7	-379.6	4,397.4	0.00	0.00	0.00
11,500.0	90.24	180.00	6,769.1	-4,483.7	-379.6	4,497.3	0.00	0.00	0.00
11,600.0	90.24	180.00	6,768.7	-4,583.7	-379.6	4,597.1	0.00	0.00	0.00
11,700.0	90.24	180.00	6,768.2	-4,683.7	-379.6	4,697.0	0.00	0.00	0.00
11,800.0	90.24	180.00	6,767.8	-4,783.7	-379.6	4,796.9	0.00	0.00	0.00
11,900.0	90.24	180.00	6,767.4	-4,883.7	-379.6	4,896.7	0.00	0.00	0.00
12,000.0	90.24	180.00	6,767.0	-4,983.7	-379.6	4,996.6	0.00	0.00	0.00
12,100.0	90.24	180.00	6,766.6	-5,083.7	-379.6	5,096.5	0.00	0.00	0.00
12,200.0	90.24	180.00	6,766.1	-5,183.7	-379.6	5,196.3	0.00	0.00	0.00
12,300.0	90.24	180.00	6,765.7	-5,283.7	-379.6	5,296.2	0.00	0.00	0.00
12,400.0	90.24	180.00	6,765.3	-5,383.7	-379.6	5,396.1	0.00	0.00	0.00
12,500.0	90.24	180.00	6,764.9	-5,483.7	-379.6	5,495.9	0.00	0.00	0.00
12,600.0	90.24	180.00	6,764.5	-5,583.7	-379.6	5,595.8	0.00	0.00	0.00
12,700.0	90.24	180.00	6,764.0	-5,683.7	-379.6	5,695.7	0.00	0.00	0.00
12,800.0	90.24	180.00	6,763.6	-5,783.7	-379.6	5,795.5	0.00	0.00	0.00
12,900.0	90.24	180.00	6,763.2	-5,883.7	-379.6	5,895.4	0.00	0.00	0.00
13,000.0	90.24	180.00	6,762.8	-5,983.7	-379.6	5,995.3	0.00	0.00	0.00
13,100.0	90.24	180.00	6,762.4	-6,083.7	-379.6	6,095.1	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Ottenhoff 29R-303
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-303	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-15-16)		

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)	
13,200.0	90.24	180.00	6,762.0	-6,183.7	-379.6	6,195.0	0.00	0.00	0.00	
13,300.0	90.24	180.00	6,761.5	-6,283.7	-379.6	6,294.9	0.00	0.00	0.00	
13,400.0	90.24	180.00	6,761.1	-6,383.7	-379.6	6,394.7	0.00	0.00	0.00	
13,500.0	90.24	180.00	6,760.7	-6,483.7	-379.6	6,494.6	0.00	0.00	0.00	
13,600.0	90.24	180.00	6,760.3	-6,583.7	-379.6	6,594.5	0.00	0.00	0.00	
13,700.0	90.24	180.00	6,759.9	-6,683.7	-379.6	6,694.3	0.00	0.00	0.00	
13,800.0	90.24	180.00	6,759.4	-6,783.6	-379.6	6,794.2	0.00	0.00	0.00	
13,900.0	90.24	180.00	6,759.0	-6,883.6	-379.6	6,894.1	0.00	0.00	0.00	
14,000.0	90.24	180.00	6,758.6	-6,983.6	-379.6	6,993.9	0.00	0.00	0.00	
14,100.0	90.24	180.00	6,758.2	-7,083.6	-379.6	7,093.8	0.00	0.00	0.00	
14,200.0	90.24	180.00	6,757.8	-7,183.6	-379.6	7,193.7	0.00	0.00	0.00	
14,300.0	90.24	180.00	6,757.3	-7,283.6	-379.6	7,293.5	0.00	0.00	0.00	
14,381.9	90.24	180.00	6,757.0	-7,365.5	-379.6	7,375.3	0.00	0.00	0.00	
TD at 14381.9 - BHL 2633'FSL & 1433'FEL, Sec.32										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude		Longitude
- hit/miss target										
- Shape										
SHL 558'FNL & 1005'FE	0.00	0.00	1.0	0.0	0.0	1,381,166.87	3,259,689.57	40.375958		-104.567890
- plan hits target center										
- Point										
BHL 2633'FSL & 1433'FI	0.00	0.00	6,757.0	-7,365.6	-379.6	1,373,797.99	3,259,387.43	40.355740		-104.569252
- plan hits target center										
- Point										

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name		Casing Diameter (")	Hole Diameter (")
7,275.4	6,786.8	7"		7	8-3/4

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,553.1	3,530.0	Parkman Sandstone		0.00		
4,232.1	4,200.0	Sussex Sandstone		0.00		
6,484.1	6,415.0	Sharon Springs		0.00		
6,668.0	6,560.0	Niobrara A		0.00		
6,808.0	6,650.0	Niobrara B		0.00		
6,989.4	6,735.0	Niobrara C		0.00		

Database:	US_EDM	Local Co-ordinate Reference:	Well Ottenhoff 29R-303
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-303	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-15-16)		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,400.0	1,400.0	0.0	0.0	KOP - Start Build 1.50
5,382.2	5,334.9	477.5	-356.8	Start Drop -2.00
6,072.2	6,022.8	508.0	-379.6	KOP #2 - Start Build 7.50
7,275.4	6,786.8	-259.1	-379.6	Start 7106.5 hold at 7275.4 MD
14,381.9	6,757.0	-7,365.5	-379.6	TD at 14381.9



PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.29-T5N-R64W

Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W

Ottenhoff 29R-303

Wellbore #1

Plan #1 (3-15-16)

Anticollision Report

17 March, 2016



Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (3-15-16)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.0 ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	3/17/2016		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	14,381.9	Plan #1 (3-15-16) (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	9,166.5	6,849.7	113.5	53.0	1.877	CC, ES, SF
Existing Wells Sec.29-T5N-R64W						
Carlson 5 (Exist) - Wellbore #1 - Wellbore #1	7,621.1	6,769.4	215.8	182.6	6.494	CC, ES, SF
Ottenhoff 41-29 (Exist) - Wellbore #1 - Wellbore #1	188.0	161.0	362.4	361.8	669.016	CC
Ottenhoff 41-29 (Exist) - Wellbore #1 - Wellbore #1	300.0	272.1	362.7	361.7	365.130	ES
Ottenhoff 41-29 (Exist) - Wellbore #1 - Wellbore #1	7,200.0	6,740.9	825.2	793.8	26.272	SF
Ottenhoff 41-6B (Exist) - Wellbore #1 - Wellbore #1	6,112.6	6,155.6	98.2	65.0	2.953	CC, ES, SF
Ottenhoff 41-7B (Exist) - Wellbore #1 - Wellbore #1	861.9	850.2	392.8	389.6	122.438	CC
Ottenhoff 41-7B (Exist) - Wellbore #1 - Wellbore #1	1,000.0	985.0	393.2	389.4	102.821	ES
Ottenhoff 41-7B (Exist) - Wellbore #1 - Wellbore #1	2,100.0	2,034.2	505.4	496.7	57.852	SF
Pearlman #32-13 (Exist) - Wellbore #1 - Wellbore #1	13,535.2	6,808.9	285.5	143.2	2.007	CC, ES, SF
Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W						
Ottenhoff 29M-203 - Wellbore #1 - Plan #1 (3-14-16)	200.0	200.0	75.2	74.6	111.570	CC, ES
Ottenhoff 29M-203 - Wellbore #1 - Plan #1 (3-14-16)	900.0	879.9	135.9	132.0	34.909	SF
Ottenhoff 29M-323 - Wellbore #1 - Plan #1 (3-14-16)	766.3	767.3	45.1	41.9	14.008	CC
Ottenhoff 29M-323 - Wellbore #1 - Plan #1 (3-14-16)	800.0	801.0	45.1	41.8	13.380	ES
Ottenhoff 29M-323 - Wellbore #1 - Plan #1 (3-14-16)	14,381.9	14,502.0	724.1	435.2	2.506	SF
Ottenhoff 29M-423 - Wellbore #1 - Plan #1 (3-14-16)	400.0	400.0	60.2	58.6	38.251	CC, ES
Ottenhoff 29M-423 - Wellbore #1 - Plan #1 (3-14-16)	14,381.9	14,610.7	954.8	668.2	3.331	SF
Ottenhoff 29R-143 - Wellbore #1 - Plan #1 (3-14-16)	1,200.0	1,200.0	15.0	9.9	2.910	CC, ES
Ottenhoff 29R-143 - Wellbore #1 - Plan #1 (3-14-16)	14,381.9	14,247.2	270.2	14.7	1.057	Level 2, SF
Ottenhoff 29R-203 - Wellbore #1 - Plan #1 (3-14-16)	1,400.0	1,400.0	14.8	8.7	2.434	CC
Ottenhoff 29R-203 - Wellbore #1 - Plan #1 (3-14-16)	14,381.9	14,290.7	256.3	-14.8	0.945	Level 1, ES, SF
Ottenhoff 29R-243 - Wellbore #1 - Plan #1 (3-14-16)	1,000.0	1,000.0	30.1	25.8	7.046	CC, ES
Ottenhoff 29R-243 - Wellbore #1 - Plan #1 (3-14-16)	14,381.9	14,375.2	475.8	189.9	1.664	SF
Ottenhoff 29R-323 - Wellbore #1 - Plan #1 (3-15-16)	800.0	800.0	44.9	41.5	13.307	CC, ES
Ottenhoff 29R-323 - Wellbore #1 - Plan #1 (3-15-16)	14,381.9	14,363.3	670.7	382.3	2.326	SF
Ottenhoff 29R-423 - Wellbore #1 - Plan #1 (3-15-16)	1,400.0	1,399.0	29.8	23.7	4.915	CC, ES
Ottenhoff 29R-423 - Wellbore #1 - Plan #1 (3-15-16)	14,381.9	14,445.8	465.2	182.5	1.646	SF
Ottenhoff 29U-243 - Wellbore #1 - Plan #1 (3-15-16)	400.0	400.0	59.9	58.3	38.076	CC, ES
Ottenhoff 29U-243 - Wellbore #1 - Plan #1 (3-15-16)	14,381.9	14,315.2	916.1	628.9	3.190	SF
Ottenhoff 29U-343 - Wellbore #1 - Plan #1 (3-15-16)	200.0	199.0	75.0	74.3	111.535	CC, ES
Ottenhoff 29U-343 - Wellbore #1 - Plan #1 (3-15-16)	900.0	881.0	130.1	126.1	32.567	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-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design		Bell Pad SEC.29-T5N-R64W - Bell B29-22D - Bell B29-22D - Bell B29-22D											Offset Site Error:		0.0 ft
Survey Program: 559-													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
8,200.0	6,782.9	6,849.2	6,785.8	29.8	17.5	-87.47	-2,150.1	-266.3	973.1	929.4	43.69	22.275			
8,300.0	6,782.5	6,849.3	6,785.9	31.4	17.5	-87.50	-2,150.1	-266.2	873.9	828.5	45.33	19.279			
8,400.0	6,782.1	6,849.3	6,785.9	33.1	17.5	-87.52	-2,150.1	-266.2	774.8	727.8	47.00	16.486			
8,500.0	6,781.6	6,849.4	6,786.0	34.8	17.5	-87.55	-2,150.1	-266.2	676.0	627.4	48.69	13.883			
8,600.0	6,781.2	6,849.4	6,786.0	36.5	17.5	-87.58	-2,150.1	-266.2	577.7	527.3	50.41	11.459			
8,700.0	6,780.8	6,849.5	6,786.1	38.2	17.5	-87.60	-2,150.1	-266.2	480.1	427.9	52.15	9.205			
8,800.0	6,780.4	6,849.5	6,786.1	39.9	17.5	-87.63	-2,150.1	-266.2	383.6	329.7	53.91	7.116			
8,900.0	6,780.0	6,849.6	6,786.2	41.7	17.5	-87.65	-2,150.1	-266.2	289.6	233.9	55.68	5.201			
9,000.0	6,779.5	6,849.6	6,786.2	43.5	17.5	-87.68	-2,150.1	-266.2	201.4	144.0	57.46	3.506			
9,100.0	6,779.1	6,849.7	6,786.3	45.3	17.5	-87.70	-2,150.1	-266.2	131.5	72.2	59.25	2.219			
9,166.5	6,778.8	6,849.7	6,786.3	46.5	17.5	-87.72	-2,150.1	-266.2	113.5	53.0	60.45	1.877	CC, ES, SF		
9,200.0	6,778.7	6,849.7	6,786.3	47.1	17.5	-87.73	-2,150.1	-266.2	118.3	57.2	61.06	1.938			
9,300.0	6,778.3	6,849.8	6,786.4	48.9	17.5	-87.75	-2,150.1	-266.2	175.2	112.4	62.87	2.787			
9,400.0	6,777.9	6,849.8	6,786.5	50.7	17.5	-87.78	-2,150.1	-266.2	259.6	194.9	64.69	4.013			
9,500.0	6,777.4	6,849.9	6,786.5	52.5	17.5	-87.80	-2,150.1	-266.2	352.3	285.8	66.52	5.296			
9,600.0	6,777.0	6,849.9	6,786.6	54.3	17.5	-87.83	-2,150.1	-266.2	448.1	379.8	68.36	6.556			
9,700.0	6,776.6	6,850.0	6,786.6	56.2	17.5	-87.86	-2,150.1	-266.2	545.5	475.3	70.20	7.771			
9,800.0	6,776.2	6,850.0	6,786.7	58.0	17.5	-87.88	-2,150.1	-266.2	643.6	571.6	72.04	8.934			
9,900.0	6,775.8	6,850.1	6,786.7	59.8	17.5	-87.91	-2,150.1	-266.2	742.3	668.4	73.89	10.045			
10,000.0	6,775.4	6,850.1	6,786.8	61.7	17.5	-87.93	-2,150.1	-266.2	841.2	765.5	75.75	11.106			
10,100.0	6,774.9	6,850.2	6,786.8	63.5	17.5	-87.96	-2,150.1	-266.2	940.4	862.8	77.60	12.118			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	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							
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	-167.99	-652.5	-138.8	667.2					
100.0	100.0	90.3	90.3	0.1	0.1	-168.00	-652.1	-138.6	666.7	666.5	0.23	2,868.979		
200.0	200.0	185.9	185.9	0.3	0.3	-168.00	-651.6	-138.5	666.2	665.5	0.65	1,027.732		
300.0	300.0	285.6	285.6	0.6	0.5	-168.01	-651.6	-138.4	666.1	665.1	1.04	641.197		
400.0	400.0	386.7	386.7	0.8	0.7	-168.05	-651.5	-137.9	666.0	664.5	1.46	455.790		
440.8	440.8	425.8	425.8	0.9	0.7	-168.05	-651.5	-137.8	665.9	664.3	1.62	411.167		
500.0	500.0	481.0	481.0	1.0	0.8	-168.05	-651.6	-137.9	666.1	664.2	1.84	362.414		
600.0	600.0	580.8	580.8	1.2	1.0	-168.06	-652.3	-137.9	666.8	664.6	2.20	303.263		
700.0	700.0	682.0	682.0	1.5	1.1	-168.09	-652.9	-137.7	667.3	664.7	2.58	258.265		
800.0	800.0	782.6	782.6	1.7	1.3	-168.08	-653.3	-137.9	667.7	664.7	2.99	223.348		
900.0	900.0	881.9	881.8	1.9	1.5	-168.10	-653.7	-137.8	668.1	664.7	3.42	195.157		
1,000.0	1,000.0	979.9	979.9	2.1	1.7	-168.12	-654.4	-137.7	668.7	664.8	3.87	172.726		
1,100.0	1,100.0	1,079.8	1,079.8	2.4	2.0	-168.15	-655.2	-137.5	669.5	665.2	4.33	154.527		
1,200.0	1,200.0	1,180.1	1,180.1	2.6	2.2	-168.17	-656.0	-137.4	670.3	665.5	4.80	139.610		
1,300.0	1,300.0	1,280.2	1,280.2	2.8	2.5	-168.20	-656.8	-137.2	671.0	665.7	5.27	127.239		
1,400.0	1,400.0	1,381.6	1,381.6	3.0	2.7	-168.22	-657.5	-137.1	671.6	665.9	5.75	116.790		
1,500.0	1,500.0	1,483.3	1,483.3	3.3	3.0	-131.56	-657.9	-136.8	672.9	666.6	6.23	108.048		
1,600.0	1,599.9	1,584.5	1,584.5	3.5	3.2	-131.76	-658.0	-137.0	675.6	669.0	6.64	101.774		
1,700.0	1,699.7	1,685.1	1,685.1	3.7	3.3	-132.05	-657.9	-137.9	680.0	673.0	6.98	97.430		
1,800.0	1,799.3	1,783.7	1,783.6	3.9	3.4	-132.48	-657.7	-138.6	686.2	678.8	7.33	93.557		
1,900.0	1,898.6	1,883.8	1,883.8	4.2	3.6	-133.08	-657.7	-139.0	694.2	686.5	7.71	90.081		
2,000.0	1,997.5	1,988.4	1,988.4	4.4	3.7	-133.84	-657.3	-139.3	703.8	695.7	8.07	87.256		
2,100.0	2,096.2	2,083.1	2,083.1	4.7	3.8	-134.65	-656.6	-140.0	714.5	706.1	8.44	84.630		
2,200.0	2,194.9	2,181.5	2,181.5	5.0	4.0	-135.47	-656.2	-141.0	725.9	717.0	8.87	81.871		
2,300.0	2,293.6	2,278.5	2,278.5	5.3	4.1	-136.26	-656.0	-141.9	737.5	728.2	9.31	79.189		
2,400.0	2,392.2	2,375.5	2,375.5	5.6	4.4	-137.06	-656.1	-142.4	749.5	739.7	9.79	76.562		
2,500.0	2,490.9	2,474.3	2,474.3	6.0	4.6	-137.88	-656.3	-142.5	761.8	751.5	10.29	74.038		
2,600.0	2,589.6	2,578.6	2,578.6	6.3	4.8	-138.71	-656.2	-142.8	773.9	763.2	10.76	71.937		
2,700.0	2,688.3	2,674.3	2,674.3	6.6	4.9	-139.45	-655.8	-142.9	785.8	774.6	11.20	70.177		
2,800.0	2,786.9	2,777.2	2,777.2	6.9	5.1	-140.24	-655.5	-142.8	798.1	786.4	11.64	68.548		
2,900.0	2,885.6	2,876.3	2,876.2	7.3	5.2	-140.97	-654.8	-142.8	809.9	797.9	12.04	67.257		
3,000.0	2,984.3	2,972.2	2,972.1	7.6	5.4	-141.65	-654.2	-143.0	822.1	809.7	12.46	65.972		
3,100.0	3,082.9	3,067.5	3,067.4	8.0	5.6	-142.28	-654.1	-143.5	834.8	821.9	12.93	64.582		
3,200.0	3,181.6	3,162.6	3,162.5	8.3	5.8	-142.91	-654.3	-143.7	848.1	834.7	13.40	63.276		
3,300.0	3,280.3	3,259.8	3,259.8	8.7	6.0	-143.56	-654.9	-143.5	861.7	847.9	13.86	62.163		
3,400.0	3,379.0	3,363.0	3,362.9	9.0	6.1	-144.25	-655.4	-143.1	875.4	861.1	14.29	61.246		
3,500.0	3,477.6	3,462.7	3,462.6	9.4	6.2	-144.89	-655.4	-142.7	888.6	873.9	14.69	60.480		
3,600.0	3,576.3	3,566.0	3,565.9	9.8	6.4	-145.53	-655.2	-142.2	901.9	886.8	15.09	59.753		
3,700.0	3,675.0	3,663.9	3,663.9	10.1	6.5	-146.12	-654.6	-141.9	914.8	899.3	15.49	59.066		
3,800.0	3,773.7	3,762.2	3,762.1	10.5	6.6	-146.69	-654.3	-141.7	928.1	912.2	15.88	58.431		
3,900.0	3,872.3	3,864.0	3,863.9	10.8	6.8	-147.30	-653.7	-141.0	941.2	924.9	16.29	57.780		
4,000.0	3,971.0	3,966.9	3,966.8	11.2	6.9	-147.84	-652.8	-141.0	954.1	937.4	16.71	57.092		
4,100.0	4,069.7	4,070.6	4,070.5	11.6	7.1	-148.33	-651.4	-142.0	966.5	949.4	17.15	56.346		
4,200.0	4,168.4	4,169.5	4,169.4	11.9	7.3	-148.70	-649.9	-144.3	978.7	961.1	17.61	55.587		
4,300.0	4,267.0	4,272.7	4,272.5	12.3	7.5	-149.06	-648.4	-147.0	990.9	972.8	18.07	54.824		
4,400.0	4,365.9	4,372.4	4,372.4	12.7	7.7	-149.42	-647.7	-148.8	1003.1	984.9	18.53	54.077		
4,500.0	4,464.8	4,471.3	4,471.3	13.1	7.9	-149.78	-647.0	-150.6	1015.3	997.1	19.00	53.330		
4,600.0	4,563.7	4,570.2	4,570.2	13.5	8.1	-150.14	-646.3	-152.4	1027.5	1009.3	19.47	52.583		
4,700.0	4,662.6	4,669.1	4,669.1	13.9	8.3	-150.50	-645.6	-154.2	1039.7	1021.5	19.94	51.836		
4,800.0	4,761.5	4,768.0	4,768.0	14.3	8.5	-150.86	-644.9	-156.0	1051.9	1033.7	20.41	51.089		
4,900.0	4,860.4	4,866.9	4,866.9	14.7	8.7	-151.22	-644.2	-157.8	1064.1	1045.9	20.88	50.342		
5,000.0	4,959.3	4,965.8	4,965.8	15.1	8.9	-151.58	-643.5	-159.6	1076.3	1058.1	21.35	49.595		
5,100.0	5,058.2	5,064.7	5,064.7	15.5	9.1	-151.94	-642.8	-161.4	1088.5	1070.3	21.82	48.848		
5,200.0	5,157.1	5,163.6	5,163.6	15.9	9.3	-152.30	-642.1	-163.2	1100.7	1082.5	22.29	48.101		
5,300.0	5,256.0	5,262.5	5,262.5	16.3	9.5	-152.66	-641.4	-165.0	1112.9	1094.7	22.76	47.354		
5,400.0	5,354.9	5,361.4	5,361.4	16.7	9.7	-153.02	-640.7	-166.8	1125.1	1106.9	23.23	46.607		
5,500.0	5,453.8	5,460.3	5,460.3	17.1	9.9	-153.38	-640.0	-168.6	1137.3	1119.1	23.70	45.860		
5,600.0	5,552.7	5,559.2	5,559.2	17.5	10.1	-153.74	-639.3	-170.4	1149.5	1131.3	24.17	45.113		
5,700.0	5,651.6	5,658.1	5,658.1	17.9	10.3	-154.10	-638.6	-172.2	1161.7	1143.5	24.64	44.366		
5,800.0	5,750.5	5,757.0	5,757.0	18.3	10.5	-154.46	-637.9	-174.0	1173.9	1155.7	25.11	43.619		
5,900.0	5,849.4	5,855.9	5,855.9	18.7	10.7	-154.82	-637.2	-175.8	1186.1	1167.9	25.58	42.872		
6,000.0	5,948.3	5,954.8	5,954.8	19.1	10.9	-155.18	-636.5	-177.6	1198.3	1180.1	26.05	42.125		
6,100.0	6,047.2	6,053.7	6,053.7	19.5	11.1	-155.54	-635.8	-179.4	1210.5	1192.3	26.52	41.378		
6,200.0	6,146.1	6,152.6	6,152.6	19.9	11.3	-155.90	-635.1	-181.2	1222.7	1204.5	26.99	40.631		
6,300.0	6,245.0	6,251.5	6,251.5	20.3	11.5	-156.26	-634.4	-183.0	1234.9	1216.7	27.46	39.884		
6,400.0	6,343.9	6,350.4	6,350.4	20.7	11.7	-156.62	-633.7	-184.8	1247.1	1228.9	27.93	39.137		
6,500.0	6,442.8	6,449.3	6,449.3	21.1	11.9	-156.98	-633.0	-186.6	1259.3	1241.1	28.40	38.390		
6,600.0	6,541.7	6,548.2	6,548.2	21.5	12.1	-157.34	-632.3	-188.4	1271.5	1253.3	28.87	37.643		
6,700.0	6,640.6	6,647.1	6,647.1	21.9	12.3	-157.70	-631.6	-190.2	1283.7	1265.5	29.34	36.896		
6,800.0	6,739.5	6,746.0	6,746.0	22.3	12.5	-158.06	-630.9	-192.0	1295.9	1277.7	29.81	36.149		
6,900.0	6,838.4	6,844.9	6,844.9	22.7	12.7	-158.42	-630.2	-193.8	1308.1	1289.9	30.28	35.402		
7,000.0	6,937.3	6,943.8	6,943.8	23.1	12.9	-158.78	-629.5	-195.6	1320.3	1302.1	30.75	34.655		
7,100.0	7,036.2	7,042.7	7,042.7	23.5	13.1	-159.14	-628.8	-197.4	1332.5	1314.3	31.22	33.908		

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-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	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)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
7,200.0	6,783.4	6,781.3	6,780.2	16.8	12.4	-82.63	-604.4	-163.7	472.9	444.2	28.67	16.495		
7,300.0	6,786.7	6,781.3	6,780.2	17.6	12.4	-92.62	-604.4	-163.7	386.7	356.8	29.88	12.943		
7,400.0	6,786.2	6,777.6	6,776.5	18.6	12.4	-91.65	-604.5	-163.7	308.8	278.1	30.78	10.034		
7,500.0	6,785.8	6,773.9	6,772.8	19.7	12.4	-90.67	-604.6	-163.7	247.4	215.6	31.82	7.776		
7,600.0	6,785.4	6,770.2	6,769.1	21.0	12.4	-89.69	-604.7	-163.8	216.9	183.9	32.97	6.577		
7,621.1	6,785.3	6,769.4	6,768.4	21.2	12.4	-89.48	-604.7	-163.8	215.8	182.6	33.24	6.494 CC, ES, SF		
7,700.0	6,785.0	6,766.5	6,765.4	22.3	12.4	-88.70	-604.8	-163.8	229.8	195.6	34.22	6.715		
7,800.0	6,784.6	6,762.8	6,761.7	23.7	12.3	-87.72	-605.0	-163.8	280.3	244.7	35.55	7.885		
7,900.0	6,784.2	6,759.1	6,758.0	25.1	12.3	-86.74	-605.1	-163.9	352.5	315.6	36.94	9.544		
8,000.0	6,783.7	6,755.4	6,754.4	26.6	12.3	-85.77	-605.2	-163.9	435.9	397.5	38.38	11.358		
8,100.0	6,783.3	6,751.7	6,750.7	28.2	12.3	-84.79	-605.3	-163.9	525.0	485.2	39.85	13.175		
8,200.0	6,782.9	6,748.0	6,747.0	29.8	12.3	-83.82	-605.5	-164.0	617.5	576.1	41.36	14.931		
8,300.0	6,782.5	6,744.3	6,743.3	31.4	12.3	-82.85	-605.6	-164.0	712.0	669.1	42.88	16.603		
8,400.0	6,782.1	6,740.6	6,739.6	33.1	12.3	-81.88	-605.7	-164.0	807.8	763.4	44.42	18.184		
8,500.0	6,781.6	6,736.9	6,735.9	34.8	12.3	-80.92	-605.8	-164.1	904.5	858.5	45.97	19.674		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - Ottenhoff 41-29 (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	102.35	-77.6	354.4	363.8					
100.0	100.0	74.4	74.4	0.1	0.1	102.36	-77.6	354.2	362.7	362.4	0.21	1,717.088		
188.0	188.0	161.0	161.0	0.3	0.2	102.40	-77.8	353.9	362.4	361.8	0.54	669.016 CC		
200.0	200.0	172.6	172.6	0.3	0.3	102.40	-77.8	353.9	362.4	361.8	0.59	616.965		
300.0	300.0	272.1	272.1	0.6	0.4	102.41	-77.9	354.2	362.7	361.7	0.99	365.130 ES		
400.0	400.0	369.6	369.6	0.8	0.7	102.46	-78.3	354.6	363.1	361.7	1.44	251.666		
500.0	500.0	468.1	468.1	1.0	0.9	102.59	-79.4	355.6	364.4	362.5	1.92	190.068		
600.0	600.0	566.7	566.6	1.2	1.2	102.70	-80.4	356.9	365.9	363.5	2.40	152.724		
700.0	700.0	665.2	665.2	1.5	1.4	102.80	-81.5	358.6	367.8	365.0	2.87	128.301		
800.0	800.0	763.3	763.3	1.7	1.6	102.77	-81.8	360.9	370.2	366.8	3.33	111.185		
900.0	900.0	862.3	862.2	1.9	1.9	102.73	-82.2	363.7	373.0	369.2	3.80	98.211		
1,000.0	1,000.0	963.6	963.5	2.1	2.1	102.71	-82.6	366.5	375.8	371.5	4.28	87.850		
1,100.0	1,100.0	1,063.7	1,063.5	2.4	2.4	102.68	-83.0	368.9	378.2	373.5	4.76	79.490		
1,200.0	1,200.0	1,164.4	1,164.2	2.6	2.7	102.70	-83.7	371.3	380.7	375.5	5.25	72.586		
1,300.0	1,300.0	1,263.9	1,263.7	2.8	2.9	102.73	-84.3	373.5	383.0	377.3	5.73	66.830		
1,400.0	1,400.0	1,365.6	1,365.3	3.0	3.2	102.73	-84.9	375.8	385.4	379.1	6.22	61.944		
1,500.0	1,500.0	1,465.6	1,465.3	3.3	3.5	139.59	-85.2	377.6	388.2	381.5	6.70	57.937		
1,600.0	1,599.9	1,564.9	1,564.6	3.5	3.7	139.91	-85.7	379.6	393.3	386.1	7.17	54.814		
1,700.0	1,699.7	1,664.9	1,664.6	3.7	4.0	140.44	-86.2	381.7	400.4	392.7	7.65	52.359		
1,800.0	1,799.3	1,763.7	1,763.4	3.9	4.2	141.08	-86.1	383.8	409.5	401.4	8.11	50.504		
1,900.0	1,898.6	1,862.8	1,862.4	4.2	4.5	141.87	-85.9	386.1	421.0	412.4	8.57	49.119		
2,000.0	1,997.5	1,960.9	1,960.5	4.4	4.7	142.81	-85.8	388.4	434.6	425.5	9.03	48.118		
2,100.0	2,096.2	2,060.3	2,059.9	4.7	5.0	143.89	-85.4	390.9	449.9	440.4	9.51	47.306		
2,200.0	2,194.9	2,158.4	2,158.0	5.0	5.2	144.90	-84.8	393.2	465.1	455.1	9.99	46.544		
2,300.0	2,293.6	2,255.3	2,254.8	5.3	5.5	145.84	-84.2	395.7	480.9	470.4	10.48	45.885		
2,400.0	2,392.2	2,352.7	2,352.2	5.6	5.7	146.71	-83.7	398.6	496.9	486.0	10.97	45.284		
2,500.0	2,490.9	2,452.5	2,451.9	6.0	6.0	147.55	-83.3	401.5	513.2	501.7	11.48	44.718		
2,600.0	2,589.6	2,551.6	2,551.0	6.3	6.2	148.34	-82.7	404.0	529.1	517.2	11.98	44.175		
2,700.0	2,688.3	2,651.4	2,650.7	6.6	6.5	149.09	-82.2	406.6	545.3	532.8	12.48	43.683		
2,800.0	2,786.9	2,754.1	2,753.4	6.9	6.7	149.84	-81.5	408.6	560.8	547.8	12.99	43.164		
2,900.0	2,885.6	2,854.1	2,853.4	7.3	7.0	150.59	-81.3	409.7	575.9	562.4	13.50	42.655		
3,000.0	2,984.3	2,954.4	2,953.7	7.6	7.2	151.34	-81.3	410.6	591.0	577.0	14.00	42.200		
3,100.0	3,082.9	3,053.6	3,053.0	8.0	7.5	152.01	-80.8	411.3	605.7	591.2	14.49	41.803		
3,200.0	3,181.6	3,152.4	3,151.7	8.3	7.7	152.63	-80.3	412.2	620.7	605.7	14.97	41.468		
3,300.0	3,280.3	3,252.6	3,251.9	8.7	7.9	153.23	-79.6	412.9	635.5	620.1	15.44	41.159		
3,400.0	3,379.0	3,352.5	3,351.8	9.0	8.1	153.81	-79.0	413.4	650.2	634.3	15.90	40.903		
3,500.0	3,477.6	3,450.8	3,450.1	9.4	8.3	154.34	-78.1	413.8	664.8	648.5	16.35	40.656		
3,600.0	3,576.3	3,547.5	3,546.8	9.8	8.5	154.91	-78.1	414.1	679.8	663.0	16.81	40.441		
3,700.0	3,675.0	3,644.2	3,643.5	10.1	8.7	155.51	-78.8	414.2	695.1	677.8	17.24	40.315		
3,800.0	3,773.7	3,740.8	3,740.1	10.5	8.9	156.11	-79.9	414.5	710.7	693.0	17.65	40.268		
3,900.0	3,872.3	3,838.4	3,837.7	10.8	9.0	156.71	-81.3	414.8	726.6	708.6	18.06	40.234		
4,000.0	3,971.0	3,941.2	3,940.5	11.2	9.2	157.30	-82.6	415.2	742.5	724.0	18.48	40.184		
4,100.0	4,069.7	4,053.0	4,052.2	11.6	9.4	157.69	-80.9	415.8	757.2	738.3	18.90	40.060		
4,200.0	4,168.4	4,166.6	4,165.7	11.9	9.5	157.92	-76.2	415.7	770.1	750.8	19.30	39.900		
4,300.0	4,267.0	4,277.7	4,276.7	12.3	9.6	158.05	-69.6	414.6	781.2	761.5	19.68	39.699		
4,400.0	4,365.7	4,380.6	4,379.3	12.7	9.7	158.17	-63.0	412.5	791.3	771.3	20.04	39.492		
4,500.0	4,464.4	4,476.1	4,474.6	13.0	9.8	158.34	-57.6	410.3	801.5	781.1	20.38	39.319		
4,600.0	4,563.0	4,566.0	4,564.4	13.4	9.9	158.54	-53.4	408.5	812.5	791.8	20.73	39.197		
4,700.0	4,661.7	4,657.4	4,655.8	13.8	10.0	158.78	-50.4	407.2	824.8	803.7	21.08	39.124		
4,800.0	4,760.4	4,751.2	4,749.5	14.1	10.1	159.05	-47.8	406.4	837.7	816.3	21.44	39.066		
4,900.0	4,859.1	4,842.6	4,840.9	14.5	10.2	159.32	-46.0	405.9	851.4	829.6	21.82	39.012		

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-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - Ottenhoff 41-29 (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)			
5,000.0	4,957.7	4,934.3	4,932.5	14.9	10.4	159.62	-45.1	405.9	866.1	843.9	22.24	38.953		
5,100.0	5,056.4	5,029.0	5,027.3	15.2	10.6	159.91	-44.2	406.4	881.3	858.6	22.69	38.846		
5,200.0	5,155.1	5,117.4	5,115.7	15.6	10.8	160.18	-44.0	407.4	897.4	874.2	23.15	38.769		
5,300.0	5,253.8	5,207.8	5,206.0	16.0	11.0	160.44	-44.2	409.3	914.6	890.9	23.63	38.711		
5,400.0	5,352.4	5,312.6	5,310.9	16.3	11.3	160.74	-44.4	411.6	931.7	907.5	24.15	38.584		
5,500.0	5,451.5	5,410.5	5,408.7	16.6	11.6	161.04	-44.1	413.6	946.4	921.7	24.65	38.390		
5,600.0	5,550.9	5,502.1	5,500.2	16.8	11.8	161.26	-44.6	415.6	958.3	933.2	25.10	38.181		
5,700.0	5,650.7	5,605.6	5,603.7	17.0	12.0	161.44	-45.7	417.6	967.2	941.6	25.53	37.884		
5,800.0	5,750.6	5,700.3	5,698.4	17.2	12.2	161.52	-46.8	419.6	972.8	946.9	25.91	37.549		
5,900.0	5,850.6	5,803.9	5,802.0	17.4	12.5	124.77	-48.2	421.6	975.6	949.3	26.30	37.093		
6,000.0	5,950.6	5,908.0	5,906.0	17.5	12.7	124.75	-49.2	423.4	977.6	950.8	26.75	36.547		
6,100.0	6,050.6	6,007.3	6,005.3	17.7	13.0	-55.27	-50.0	425.1	979.1	952.0	27.15	36.061		
6,200.0	6,150.0	6,112.7	6,110.8	17.7	13.2	-56.06	-50.8	426.5	974.9	947.5	27.37	35.614		
6,300.0	6,247.2	6,207.9	6,205.9	17.7	13.5	-57.90	-51.2	427.8	963.5	936.0	27.49	35.053		
6,400.0	6,340.6	6,303.3	6,301.3	17.6	13.7	-60.84	-51.8	429.0	945.9	918.3	27.60	34.271		
6,500.0	6,428.6	6,393.1	6,391.2	17.4	13.9	-64.77	-52.3	430.0	923.2	895.4	27.82	33.189		
6,600.0	6,509.6	6,470.8	6,468.8	17.2	14.1	-69.32	-52.8	430.9	897.6	869.5	28.17	31.861		
6,700.0	6,582.3	6,541.3	6,539.3	16.9	14.3	-74.31	-53.4	431.9	871.6	843.0	28.67	30.399		
6,800.0	6,645.4	6,603.5	6,601.5	16.7	14.4	-79.31	-54.1	432.9	847.7	818.4	29.23	28.997		
6,900.0	6,697.9	6,656.7	6,654.7	16.5	14.5	-83.86	-54.8	433.9	828.5	798.8	29.77	27.827		
7,000.0	6,738.8	6,698.6	6,696.6	16.3	14.6	-87.38	-55.3	434.6	817.0	786.7	30.27	26.986		
7,064.7	6,758.8	6,717.3	6,715.2	16.2	14.7	-88.79	-55.6	434.9	814.7	784.1	30.62	26.606		
7,100.0	6,767.4	6,725.4	6,723.4	16.2	14.7	-89.29	-55.7	435.1	815.4	784.6	30.79	26.483		
7,200.0	6,783.4	6,740.9	6,738.9	16.8	14.7	-89.62	-55.9	435.5	825.2	793.8	31.41	26.272 SF		
7,300.0	6,786.7	6,745.2	6,743.1	17.6	14.7	-88.77	-56.0	435.6	846.5	814.4	32.15	26.332		
7,400.0	6,786.2	6,746.1	6,744.1	18.6	14.7	-88.84	-56.0	435.6	878.7	845.7	33.07	26.572		
7,500.0	6,785.8	6,747.1	6,745.0	19.7	14.7	-88.90	-56.0	435.6	920.7	886.6	34.14	26.970		
7,600.0	6,785.4	6,748.0	6,746.0	21.0	14.7	-88.97	-56.0	435.6	971.2	935.9	35.33	27.488		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	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	97.78	-50.3	367.8	371.4					
100.0	100.0	88.3	88.3	0.1	0.1	97.79	-50.3	367.7	371.2	370.9	0.23	1,615.413		
200.0	200.0	188.7	188.7	0.3	0.3	97.80	-50.3	367.6	371.0	370.4	0.59	631.344		
300.0	300.0	289.0	289.0	0.6	0.4	97.82	-50.4	367.4	370.8	369.9	0.95	392.137		
400.0	400.0	389.4	389.3	0.8	0.5	97.85	-50.6	367.0	370.5	369.2	1.30	284.221		
500.0	500.0	489.7	489.7	1.0	0.7	97.88	-50.7	366.6	370.1	368.4	1.66	222.678		
600.0	600.0	588.5	588.4	1.2	0.8	97.85	-50.5	366.3	369.8	367.7	2.05	180.430		
636.6	636.6	624.6	624.6	1.3	0.9	97.80	-50.2	366.4	369.8	367.6	2.19	168.743		
700.0	700.0	686.2	686.2	1.5	0.9	97.68	-49.4	366.6	369.9	367.5	2.41	153.436		
800.0	800.0	782.7	782.7	1.7	1.1	97.47	-48.2	367.7	370.9	368.1	2.74	135.512		
900.0	900.0	881.0	880.9	1.9	1.2	97.17	-46.5	369.6	372.6	369.5	3.11	119.923		
1,000.0	1,000.0	979.8	979.7	2.1	1.4	96.71	-43.8	372.0	374.7	371.2	3.50	107.080		
1,100.0	1,100.0	1,079.4	1,079.2	2.4	1.6	96.07	-39.9	374.7	376.9	373.0	3.94	95.771		
1,200.0	1,200.0	1,180.5	1,180.1	2.6	1.8	95.27	-34.8	377.5	379.2	374.8	4.39	86.315		
1,300.0	1,300.0	1,281.9	1,281.3	2.8	2.1	94.40	-29.2	379.9	381.0	376.2	4.86	78.366		
1,400.0	1,400.0	1,376.4	1,375.6	3.0	2.3	93.45	-23.1	382.6	383.5	378.2	5.32	72.043		
1,500.0	1,500.0	1,471.4	1,470.2	3.3	2.5	129.21	-15.9	386.8	388.4	382.6	5.78	67.158		
1,600.0	1,599.9	1,575.0	1,573.3	3.5	2.8	128.29	-7.2	391.4	395.0	388.7	6.27	63.030		
1,700.0	1,699.7	1,681.3	1,679.1	3.7	3.1	127.56	2.7	394.9	402.1	395.4	6.76	59.466		
1,800.0	1,799.3	1,793.6	1,790.6	3.9	3.4	126.76	16.0	395.7	408.2	401.0	7.28	56.079		
1,900.0	1,898.6	1,904.1	1,899.7	4.2	3.7	125.78	33.0	393.4	413.2	405.4	7.80	52.971		
2,000.0	1,997.5	2,019.0	2,013.0	4.4	4.0	125.02	51.5	387.5	416.8	408.5	8.34	49.965		
2,100.0	2,096.2	2,134.6	2,126.2	4.7	4.3	124.16	72.7	377.0	417.5	408.6	8.91	46.871		
2,200.0	2,194.9	2,237.9	2,227.1	5.0	4.6	123.43	91.2	365.4	416.2	406.7	9.45	44.019		
2,300.0	2,293.6	2,340.6	2,327.4	5.3	4.8	122.71	109.6	353.1	414.2	404.2	10.01	41.371		
2,400.0	2,392.2	2,447.0	2,431.4	5.6	5.1	122.10	127.5	339.3	411.3	400.7	10.59	38.843		
2,500.0	2,490.9	2,558.4	2,540.1	6.0	5.4	121.60	145.0	322.5	406.1	395.0	11.18	36.334		
2,600.0	2,589.6	2,672.8	2,651.3	6.3	5.7	121.13	162.0	301.6	397.7	385.9	11.78	33.769		
2,700.0	2,688.3	2,782.8	2,757.4	6.6	6.0	120.61	178.3	277.9	385.9	373.6	12.37	31.198		
2,800.0	2,786.9	2,875.5	2,846.8	6.9	6.2	120.20	191.6	257.4	373.7	360.8	12.92	28.916		
2,900.0	2,885.6	2,980.3	2,948.3	7.3	6.5	119.96	205.1	234.8	361.7	348.2	13.51	26.778		
3,000.0	2,984.3	3,079.0	3,043.6	7.6	6.8	119.70	217.9	212.6	349.0	334.9	14.09	24.776		
3,100.0	3,082.9	3,172.4	3,134.0	8.0	7.1	119.48	229.8	192.6	337.2	322.5	14.65	23.009		
3,200.0	3,181.6	3,263.2	3,222.5	8.3	7.3	119.44	240.6	175.1	327.6	312.4	15.22	21.529		
3,300.0	3,280.3	3,353.0	3,310.6	8.7	7.6	119.71	249.9	160.4	320.6	304.9	15.77	20.334		
3,400.0	3,379.0	3,449.5	3,405.7	9.0	7.8	120.31	258.6	146.8	315.8	299.4	16.32	19.343		
3,500.0	3,477.6	3,556.7	3,511.2	9.4	8.1	120.71	269.7	131.0	310.5	293.6	16.92	18.346		
3,600.0	3,576.3	3,663.8	3,615.8	9.8	8.4	120.67	282.9	112.4	302.8	285.2	17.55	17.255		
3,700.0	3,675.0	3,769.4	3,718.5	10.1	8.7	120.54	296.0	91.8	292.9	274.7	18.17	16.118		
3,800.0	3,773.7	3,873.4	3,818.8	10.5	9.1	119.81	311.6	69.2	281.0	262.2	18.83	14.926		
3,900.0	3,872.3	3,972.1	3,913.5	10.8	9.4	118.64	328.0	46.7	268.4	248.9	19.50	13.763		
4,000.0	3,971.0	4,068.2	4,006.1	11.2	9.7	117.61	343.3	25.8	256.8	236.6	20.17	12.732		
4,100.0	4,069.7	4,166.0	4,100.6	11.6	10.0	116.68	358.1	5.6	246.2	225.4	20.84	11.817		
4,200.0	4,168.4	4,265.0	4,196.5	11.9	10.3	115.91	372.2	-14.4	236.0	214.5	21.50	10.978		
4,300.0	4,267.0	4,363.2	4,292.1	12.3	10.6	115.68	383.9	-33.6	226.1	204.0	22.14	10.217		
4,400.0	4,365.7	4,461.2	4,387.5	12.7	10.9	115.32	396.1	-52.1	217.0	194.2	22.78	9.526		
4,500.0	4,464.4	4,560.3	4,484.1	13.0	11.2	114.70	409.4	-70.5	208.4	184.9	23.45	8.887		
4,600.0	4,563.0	4,657.6	4,579.0	13.4	11.5	114.26	421.9	-87.9	200.3	176.2	24.10	8.311		
4,700.0	4,661.7	4,759.3	4,678.3	13.8	11.8	113.89	434.5	-105.7	192.6	167.8	24.76	7.777		
4,800.0	4,760.4	4,857.2	4,773.7	14.1	12.1	113.30	447.3	-123.2	184.6	159.1	25.43	7.256		
4,900.0	4,859.1	4,957.4	4,871.6	14.5	12.5	112.72	460.2	-140.6	177.0	150.9	26.11	6.779		

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-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	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				
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)					
5,000.0	4,957.7	5,059.3	4,970.8	14.9	12.8	111.88	473.6	-159.3	168.6	141.8	26.82	6.288				
5,100.0	5,056.4	5,158.9	5,067.7	15.2	13.1	110.89	486.8	-178.4	159.6	132.0	27.53	5.797				
5,200.0	5,155.1	5,256.8	5,163.3	15.6	13.4	110.37	498.5	-196.1	151.2	123.0	28.20	5.362				
5,300.0	5,253.8	5,355.5	5,260.0	16.0	13.7	110.61	508.6	-212.6	143.7	114.9	28.82	4.985				
5,400.0	5,352.4	5,454.0	5,357.0	16.3	14.0	111.71	516.9	-227.6	137.1	107.7	29.37	4.667				
5,500.0	5,451.5	5,553.2	5,454.8	16.6	14.3	112.02	525.2	-242.1	130.2	100.4	29.88	4.359				
5,600.0	5,550.9	5,651.5	5,551.8	16.8	14.5	110.86	533.6	-256.1	122.6	92.2	30.45	4.027				
5,700.0	5,650.7	5,748.7	5,648.0	17.0	14.8	108.85	540.8	-267.6	115.8	84.7	31.04	3.730				
5,800.0	5,750.6	5,846.5	5,745.3	17.2	15.1	106.20	546.3	-276.8	109.8	78.2	31.62	3.472				
5,900.0	5,850.6	5,944.7	5,843.1	17.4	15.3	66.13	550.4	-283.9	104.7	72.5	32.19	3.253				
6,000.0	5,950.6	6,043.7	5,941.9	17.5	15.6	63.37	553.3	-289.3	101.1	68.3	32.73	3.088				
6,100.0	6,050.6	6,143.1	6,041.2	17.7	15.8	-118.91	554.9	-293.6	98.3	65.1	33.21	2.959				
6,112.6	6,063.2	6,155.6	6,053.7	17.7	15.8	-119.39	555.1	-294.0	98.2	65.0	33.26	2.953	CC, ES, SF			
6,200.0	6,150.0	6,242.0	6,140.0	17.7	16.0	-124.73	555.4	-296.5	101.4	67.9	33.52	3.024				
6,300.0	6,247.2	6,339.2	6,237.3	17.7	16.1	-133.60	554.7	-298.3	114.4	81.3	33.11	3.455				
6,400.0	6,340.6	6,433.3	6,331.3	17.6	16.2	-142.49	553.0	-299.0	139.9	108.1	31.74	4.408				
6,500.0	6,428.6	6,522.4	6,420.4	17.4	16.2	-149.49	550.8	-298.8	178.9	149.3	29.56	6.050				
6,600.0	6,509.6	6,605.6	6,503.5	17.2	16.2	-154.33	548.4	-297.9	230.6	203.6	26.96	8.551				
6,700.0	6,582.3	6,681.4	6,579.3	16.9	16.2	-157.36	545.8	-296.9	293.5	269.4	24.19	12.134				
6,800.0	6,645.4	6,748.4	6,646.3	16.7	16.2	-158.88	543.2	-295.8	366.4	344.9	21.50	17.037				
6,900.0	6,697.9	6,805.6	6,703.4	16.5	16.2	-158.96	540.8	-294.5	447.5	428.3	19.26	23.237				
7,000.0	6,738.8	6,852.0	6,749.7	16.3	16.2	-157.25	538.6	-293.4	535.6	517.5	18.07	29.645				
7,100.0	6,767.4	6,886.8	6,784.5	16.2	16.2	-152.47	536.9	-292.3	628.8	609.9	18.97	33.150				
7,200.0	6,783.4	6,909.7	6,807.3	16.8	16.2	-139.70	535.7	-291.6	725.8	701.9	23.91	30.360				
7,300.0	6,786.7	6,919.3	6,816.9	17.6	16.2	-113.75	535.2	-291.3	824.7	793.3	31.48	26.196				
7,400.0	6,786.2	6,925.1	6,822.7	18.6	16.2	-116.74	534.9	-291.1	924.1	892.3	31.84	29.028				

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design		Existing Wells Sec.29-T5N-R64W - Ottenhoff 41-7B (Exist) - Wellbore #1 - Wellbore #1												Offset Site Error:		0.0 ft
Survey Program:		482-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	102.62	-86.7	387.3	397.1							
100.0	100.0	88.4	88.4	0.1	0.1	102.64	-86.8	387.2	396.8	396.6	0.21	1,864.076				
200.0	200.0	188.9	188.9	0.3	0.2	102.69	-87.1	387.0	396.7	396.1	0.55	719.087				
300.0	300.0	289.4	289.3	0.6	0.3	102.78	-87.7	386.6	396.4	395.5	0.89	445.196				
400.0	400.0	389.8	389.8	0.8	0.4	102.91	-88.5	386.0	396.0	394.8	1.23	322.180				
500.0	500.0	490.4	490.4	1.0	0.6	103.08	-89.5	385.2	395.5	393.9	1.58	250.659				
600.0	600.0	592.4	592.3	1.2	0.8	103.38	-91.3	383.9	394.6	392.6	2.04	193.719				
700.0	700.0	691.8	691.7	1.5	1.0	103.84	-94.1	382.0	393.4	391.0	2.49	158.202				
800.0	800.0	789.1	789.0	1.7	1.2	104.37	-97.5	380.6	392.9	389.9	2.93	134.115				
861.9	861.9	850.2	849.9	1.8	1.4	104.75	-100.0	379.8	392.8	389.6	3.21	122.438 CC				
900.0	900.0	887.7	887.4	1.9	1.5	105.02	-101.8	379.4	392.8	389.4	3.38	116.230				
1,000.0	1,000.0	985.0	984.6	2.1	1.7	105.84	-107.4	378.3	393.2	389.4	3.82	102.821 ES				
1,100.0	1,100.0	1,079.8	1,079.2	2.4	1.9	106.63	-113.0	378.1	394.8	390.5	4.26	92.735				
1,200.0	1,200.0	1,175.0	1,174.3	2.6	2.1	107.40	-118.8	379.2	397.6	392.9	4.69	84.794				
1,300.0	1,300.0	1,271.0	1,269.9	2.8	2.4	108.29	-125.9	381.0	401.7	396.6	5.12	78.421				
1,400.0	1,400.0	1,369.9	1,368.5	3.0	2.6	109.27	-133.9	383.2	406.4	400.8	5.57	72.907				
1,500.0	1,500.0	1,470.1	1,468.3	3.3	2.9	147.07	-142.1	385.4	412.3	406.2	6.11	67.472				
1,600.0	1,599.9	1,570.7	1,568.6	3.5	3.1	148.20	-150.0	387.4	420.3	413.8	6.55	64.130				
1,700.0	1,699.7	1,673.0	1,670.6	3.7	3.3	149.43	-157.4	389.2	430.2	423.3	6.98	61.618				
1,800.0	1,799.3	1,766.5	1,763.8	3.9	3.6	150.78	-165.2	390.4	442.7	435.3	7.42	59.692				
1,900.0	1,898.6	1,853.6	1,850.5	4.2	3.8	152.17	-173.8	392.6	459.6	451.7	7.85	58.582				
2,000.0	1,997.5	1,944.5	1,940.7	4.4	4.0	153.59	-183.3	396.7	480.9	472.7	8.28	58.081				
2,100.0	2,096.2	2,034.2	2,029.7	4.7	4.3	155.19	-194.0	401.1	505.4	496.7	8.74	57.852 SF				
2,200.0	2,194.9	2,115.1	2,109.6	5.0	4.6	156.66	-205.4	405.8	532.2	523.0	9.18	57.943				
2,300.0	2,293.6	2,195.9	2,189.1	5.3	4.9	158.06	-218.3	412.3	562.2	552.5	9.63	58.356				
2,400.0	2,392.2	2,278.8	2,270.4	5.6	5.2	159.33	-232.2	420.5	594.4	584.3	10.08	58.955				
2,500.0	2,490.9	2,359.3	2,349.2	6.0	5.4	160.37	-245.8	430.2	628.7	618.1	10.52	59.786				
2,600.0	2,589.6	2,435.0	2,422.9	6.3	5.7	161.14	-258.4	441.5	665.3	654.3	10.93	60.864				
2,700.0	2,688.3	2,519.9	2,505.4	6.6	6.1	161.79	-272.3	456.3	703.7	692.3	11.36	61.951				
2,800.0	2,786.9	2,606.3	2,589.1	6.9	6.4	162.38	-286.8	472.1	743.1	731.3	11.79	63.002				
2,900.0	2,885.6	2,688.6	2,668.6	7.3	6.8	162.92	-301.5	487.3	783.3	771.1	12.22	64.093				
3,000.0	2,984.3	2,779.3	2,756.1	7.6	7.2	163.42	-317.6	505.2	824.5	811.8	12.66	65.121				
3,100.0	3,082.9	2,889.3	2,862.5	8.0	7.6	163.95	-336.3	526.0	864.7	851.6	13.12	65.891				
3,200.0	3,181.6	2,979.5	2,950.0	8.3	8.0	164.33	-350.6	542.2	903.6	890.0	13.55	66.663				
3,300.0	3,280.3	3,077.2	3,044.8	8.7	8.4	164.69	-366.0	560.1	942.7	928.7	14.01	67.301				
3,400.0	3,379.0	3,189.9	3,154.6	9.0	8.9	165.05	-382.7	579.6	980.5	966.0	14.48	67.715				

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	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)			
12,600.0	6,764.5	6,800.0	6,798.9	110.6	14.0	89.86	-6,518.7	-665.2	977.7	853.2	124.51	7.852		
12,700.0	6,764.0	6,800.0	6,798.9	112.5	14.0	89.86	-6,518.7	-665.2	882.6	756.1	126.41	6.982		
12,800.0	6,763.6	6,800.0	6,798.9	114.4	14.0	89.86	-6,518.7	-665.2	788.6	660.3	128.31	6.146		
12,900.0	6,763.2	6,801.1	6,800.0	116.3	14.0	90.09	-6,518.7	-665.2	696.3	566.1	130.21	5.348		
13,000.0	6,762.8	6,802.3	6,801.2	118.2	14.0	90.33	-6,518.8	-665.1	606.5	474.4	132.11	4.591		
13,100.0	6,762.4	6,803.6	6,802.4	120.1	14.0	90.57	-6,518.8	-665.1	520.4	386.4	134.01	3.883		
13,200.0	6,762.0	6,804.8	6,803.6	122.0	14.1	90.82	-6,518.8	-665.1	440.2	304.3	135.91	3.239		
13,300.0	6,761.5	6,806.0	6,804.9	123.9	14.1	91.07	-6,518.8	-665.0	369.9	232.0	137.80	2.684		
13,400.0	6,761.1	6,807.2	6,806.1	125.8	14.1	91.32	-6,518.8	-665.0	315.8	176.2	139.69	2.261		
13,500.0	6,760.7	6,808.5	6,807.4	127.7	14.1	91.57	-6,518.9	-665.0	287.6	146.0	141.59	2.031		
13,535.2	6,760.5	6,808.9	6,807.8	128.4	14.1	91.66	-6,518.9	-664.9	285.5	143.2	142.25	2.007	CC, ES, SF	
13,600.0	6,760.3	6,809.8	6,808.6	129.6	14.1	91.82	-6,518.9	-664.9	292.7	149.3	143.47	2.040		
13,700.0	6,759.9	6,811.0	6,809.9	131.5	14.1	92.08	-6,518.9	-664.9	329.6	184.3	145.36	2.268		
13,800.0	6,759.4	6,812.3	6,811.2	133.4	14.1	92.34	-6,518.9	-664.8	389.4	242.1	147.24	2.644		
13,900.0	6,759.0	6,813.6	6,812.5	135.3	14.1	92.60	-6,518.9	-664.8	463.2	314.1	149.12	3.106		
14,000.0	6,758.6	6,814.9	6,813.8	137.2	14.1	92.86	-6,519.0	-664.8	545.5	394.5	151.00	3.612		
14,100.0	6,758.2	6,816.3	6,815.1	139.1	14.1	93.13	-6,519.0	-664.7	632.8	480.0	152.87	4.140		
14,200.0	6,757.8	6,817.6	6,816.5	141.1	14.1	93.40	-6,519.0	-664.7	723.5	568.7	154.74	4.675		
14,300.0	6,757.3	6,819.0	6,817.8	143.0	14.1	93.67	-6,519.0	-664.7	816.3	659.7	156.60	5.212		
14,381.9	6,757.0	6,820.1	6,818.9	144.5	14.1	93.89	-6,519.1	-664.6	893.5	735.4	158.13	5.651		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-203 - Wellbore #1 - Plan #1 (3-14-16)													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	-75.2	75.2						
100.0	100.0	100.0	100.0	0.1	0.1	-89.44	0.7	-75.2	75.2	75.0	0.22	334.709	CC, ES		
200.0	200.0	200.0	200.0	0.3	0.3	-89.44	0.7	-75.2	75.2	74.6	0.67	111.570			
300.0	300.0	298.1	298.1	0.6	0.6	-89.15	1.1	-76.4	76.5	75.3	1.11	68.660			
400.0	400.0	396.2	396.1	0.8	0.8	-88.31	2.4	-80.0	80.1	78.6	1.56	51.463			
500.0	500.0	493.9	493.6	1.0	1.0	-87.07	4.4	-85.9	86.3	84.3	2.01	42.974			
600.0	600.0	591.3	590.6	1.2	1.3	-85.61	7.2	-94.2	94.9	92.4	2.46	38.505			
700.0	700.0	688.2	686.8	1.5	1.5	-84.08	10.8	-104.7	106.1	103.1	2.93	36.200			
800.0	800.0	784.4	782.1	1.7	1.8	-82.61	15.2	-117.4	119.8	116.3	3.41	35.160			
900.0	900.0	879.9	876.3	1.9	2.2	-81.26	20.3	-132.3	135.9	132.0	3.89	34.909	SF		
1,000.0	1,000.0	974.5	969.2	2.1	2.5	-80.06	26.1	-149.2	154.6	150.2	4.40	35.162			
1,100.0	1,100.0	1,068.2	1,060.8	2.4	2.9	-79.01	32.6	-168.1	175.7	170.8	4.92	35.745			
1,200.0	1,200.0	1,160.9	1,150.8	2.6	3.4	-78.11	39.8	-188.9	199.2	193.8	5.45	36.543			
1,300.0	1,300.0	1,252.4	1,239.1	2.8	3.9	-77.33	47.5	-211.5	225.1	219.1	6.01	37.480			
1,400.0	1,400.0	1,342.6	1,325.7	3.0	4.4	-76.67	55.8	-235.7	253.3	246.8	6.58	38.506			
1,500.0	1,500.0	1,431.9	1,410.7	3.3	4.9	-39.20	64.7	-261.5	282.8	276.2	6.65	42.554			
1,600.0	1,599.9	1,520.8	1,494.6	3.5	5.5	-38.84	74.2	-289.0	312.6	305.5	7.13	43.857			
1,700.0	1,699.7	1,616.5	1,584.7	3.7	6.1	-38.78	84.7	-319.7	341.5	333.9	7.63	44.774			
1,800.0	1,799.3	1,712.8	1,675.3	3.9	6.8	-38.96	95.3	-350.4	368.4	360.3	8.14	45.278			
1,900.0	1,898.6	1,809.5	1,766.3	4.2	7.5	-39.35	105.9	-381.4	393.4	384.7	8.66	45.425			
2,000.0	1,997.5	1,906.6	1,857.7	4.4	8.2	-39.92	116.5	-412.4	416.5	407.3	9.20	45.264			
2,100.0	2,096.2	2,004.0	1,949.4	4.7	8.8	-40.74	127.2	-443.6	438.2	428.5	9.76	44.890			
2,200.0	2,194.9	2,101.4	2,041.1	5.0	9.5	-41.54	137.9	-474.7	460.1	449.7	10.34	44.494			
2,300.0	2,293.6	2,198.8	2,132.7	5.3	10.2	-42.27	148.6	-505.9	482.0	471.0	10.93	44.094			
2,400.0	2,392.2	2,296.2	2,224.4	5.6	10.9	-42.93	159.3	-537.0	503.9	492.4	11.53	43.697			
2,500.0	2,490.9	2,393.6	2,316.1	6.0	11.6	-43.53	170.0	-568.2	526.0	513.8	12.15	43.306			
2,600.0	2,589.6	2,491.0	2,407.7	6.3	12.3	-44.09	180.7	-599.3	548.1	535.3	12.77	42.925			
2,700.0	2,688.3	2,588.4	2,499.4	6.6	13.0	-44.61	191.4	-630.5	570.2	556.8	13.40	42.555			
2,800.0	2,786.9	2,685.8	2,591.0	6.9	13.7	-45.08	202.1	-661.6	592.4	578.3	14.04	42.198			
2,900.0	2,885.6	2,783.2	2,682.7	7.3	14.4	-45.52	212.8	-692.8	614.6	599.9	14.68	41.855			
3,000.0	2,984.3	2,880.6	2,774.4	7.6	15.1	-45.93	223.5	-723.9	636.8	621.5	15.33	41.525			
3,100.0	3,082.9	2,978.0	2,866.0	8.0	15.8	-46.32	234.2	-755.0	659.1	643.1	15.99	41.210			
3,200.0	3,181.6	3,075.4	2,957.7	8.3	16.5	-46.68	244.9	-786.2	681.3	664.7	16.66	40.908			
3,300.0	3,280.3	3,172.8	3,049.3	8.7	17.2	-47.01	255.6	-817.3	703.7	686.3	17.32	40.619			
3,400.0	3,379.0	3,270.2	3,141.0	9.0	17.9	-47.33	266.3	-848.5	726.0	708.0	18.00	40.344			
3,500.0	3,477.6	3,367.6	3,232.7	9.4	18.6	-47.62	277.0	-879.6	748.3	729.7	18.67	40.081			
3,600.0	3,576.3	3,465.0	3,324.3	9.8	19.3	-47.90	287.7	-910.8	770.7	751.4	19.35	39.830			
3,700.0	3,675.0	3,562.4	3,416.0	10.1	20.0	-48.17	298.4	-941.9	793.1	773.1	20.03	39.590			
3,800.0	3,773.7	3,659.8	3,507.7	10.5	20.7	-48.41	309.1	-973.1	815.5	794.8	20.72	39.361			
3,900.0	3,872.3	3,757.2	3,599.3	10.8	21.4	-48.65	319.8	-1,004.2	837.9	816.5	21.41	39.142			
4,000.0	3,971.0	3,854.6	3,691.0	11.2	22.1	-48.87	330.5	-1,035.4	860.4	838.3	22.10	38.933			
4,100.0	4,069.7	3,952.0	3,782.6	11.6	22.8	-49.09	341.2	-1,066.5	882.8	860.0	22.79	38.733			
4,200.0	4,168.4	4,049.4	3,874.3	11.9	23.5	-49.29	351.9	-1,097.7	905.3	881.8	23.49	38.542			
4,300.0	4,267.0	4,146.8	3,966.0	12.3	24.2	-49.48	362.6	-1,128.8	927.7	903.5	24.19	38.359			
4,400.0	4,365.7	4,244.2	4,057.6	12.7	24.9	-49.66	373.3	-1,159.9	950.2	925.3	24.89	38.184			
4,500.0	4,464.4	4,341.6	4,149.3	13.0	25.6	-49.84	384.0	-1,191.1	972.7	947.1	25.59	38.016			
4,600.0	4,563.0	4,439.0	4,240.9	13.4	26.3	-50.00	394.7	-1,222.2	995.2	968.9	26.29	37.855			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-323 - Wellbore #1 - Plan #1 (3-14-16)													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	-89.54	0.4	-45.1	45.1	45.1	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	-89.54	0.4	-45.1	45.1	44.9	0.23	198.834		
200.0	200.0	201.0	201.0	0.3	0.3	-89.54	0.4	-45.1	45.1	44.5	0.68	66.718		
300.0	300.0	301.0	301.0	0.6	0.6	-89.54	0.4	-45.1	45.1	44.0	1.13	40.084		
400.0	400.0	401.0	401.0	0.8	0.8	-89.54	0.4	-45.1	45.1	43.6	1.58	28.648		
500.0	500.0	501.0	501.0	1.0	1.0	-89.54	0.4	-45.1	45.1	43.1	2.03	22.289		
600.0	600.0	601.0	601.0	1.2	1.2	-89.54	0.4	-45.1	45.1	42.7	2.47	18.240		
700.0	700.0	701.0	701.0	1.5	1.5	-89.54	0.4	-45.1	45.1	42.2	2.92	15.436		
766.3	766.3	767.3	767.3	1.6	1.6	-89.54	0.4	-45.1	45.1	41.9	3.22	14.008 CC		
800.0	800.0	801.0	801.0	1.7	1.7	-89.54	0.4	-45.1	45.1	41.8	3.37	13.380 ES		
900.0	900.0	900.0	900.0	1.9	1.9	-88.85	0.9	-46.3	46.3	42.5	3.81	12.150		
1,000.0	1,000.0	998.7	998.6	2.1	2.1	-87.02	2.6	-49.8	49.9	45.7	4.25	11.746		
1,100.0	1,100.0	1,097.2	1,096.9	2.4	2.3	-84.49	5.4	-55.6	56.0	51.3	4.69	11.931		
1,200.0	1,200.0	1,195.3	1,194.6	2.6	2.6	-81.77	9.2	-63.6	64.5	59.4	5.14	12.567		
1,300.0	1,300.0	1,292.9	1,291.6	2.8	2.8	-79.19	14.1	-73.8	75.7	70.1	5.59	13.547		
1,400.0	1,400.0	1,389.9	1,387.6	3.0	3.1	-76.93	20.0	-86.1	89.4	83.4	6.05	14.789		
1,500.0	1,500.0	1,486.3	1,482.6	3.3	3.4	-38.54	26.9	-100.6	104.7	98.3	6.46	16.202		
1,600.0	1,599.9	1,582.3	1,576.8	3.5	3.7	-37.84	34.8	-117.1	120.5	113.6	6.91	17.440		
1,700.0	1,699.7	1,677.8	1,670.1	3.7	4.1	-37.75	43.7	-135.7	136.6	129.3	7.36	18.569		
1,800.0	1,799.3	1,772.9	1,762.4	3.9	4.5	-38.07	53.6	-156.3	153.1	145.3	7.82	19.595		
1,900.0	1,898.6	1,868.4	1,854.6	4.2	4.9	-38.68	64.5	-179.0	170.0	161.7	8.29	20.514		
2,000.0	1,997.5	1,967.1	1,949.6	4.4	5.4	-39.65	76.0	-203.0	185.6	176.8	8.78	21.134		
2,100.0	2,096.2	2,066.0	2,044.8	4.7	5.9	-40.91	87.5	-227.1	199.9	190.6	9.31	21.472		
2,200.0	2,194.9	2,164.9	2,140.0	5.0	6.4	-42.04	99.1	-251.3	214.2	204.3	9.86	21.732		
2,300.0	2,293.6	2,263.8	2,235.2	5.3	7.0	-43.03	110.6	-275.4	228.6	218.2	10.42	21.938		
2,400.0	2,392.2	2,362.7	2,330.4	5.6	7.5	-43.91	122.2	-299.5	243.0	232.0	11.00	22.098		
2,500.0	2,490.9	2,461.6	2,425.6	6.0	8.0	-44.68	133.7	-323.6	257.5	245.9	11.59	22.222		
2,600.0	2,589.6	2,560.4	2,520.8	6.3	8.6	-45.38	145.3	-347.7	272.1	259.9	12.19	22.316		
2,700.0	2,688.3	2,659.3	2,616.0	6.6	9.1	-46.00	156.8	-371.8	286.6	273.8	12.80	22.386		
2,800.0	2,786.9	2,758.2	2,711.2	6.9	9.7	-46.56	168.4	-395.9	301.2	287.8	13.43	22.437		
2,900.0	2,885.6	2,857.1	2,806.4	7.3	10.2	-47.07	179.9	-420.1	315.9	301.8	14.06	22.472		
3,000.0	2,984.3	2,956.0	2,901.6	7.6	10.8	-47.54	191.5	-444.2	330.5	315.8	14.69	22.495		
3,100.0	3,082.9	3,054.9	2,996.8	8.0	11.3	-47.96	203.0	-468.3	345.2	329.8	15.34	22.508		
3,200.0	3,181.6	3,153.8	3,092.0	8.3	11.9	-48.35	214.6	-492.4	359.9	343.9	15.99	22.513		
3,300.0	3,280.3	3,252.7	3,187.2	8.7	12.4	-48.71	226.1	-516.5	374.6	357.9	16.64	22.511		
3,400.0	3,379.0	3,351.5	3,282.4	9.0	13.0	-49.05	237.7	-540.6	389.3	372.0	17.30	22.504		
3,500.0	3,477.6	3,450.4	3,377.6	9.4	13.5	-49.35	249.2	-564.7	404.0	386.1	17.96	22.494		
3,600.0	3,576.3	3,549.3	3,472.8	9.8	14.1	-49.64	260.8	-588.9	418.8	400.1	18.63	22.480		
3,700.0	3,675.0	3,648.2	3,568.1	10.1	14.7	-49.91	272.3	-613.0	433.5	414.2	19.30	22.463		
3,800.0	3,773.7	3,747.1	3,663.3	10.5	15.2	-50.16	283.9	-637.1	448.3	428.3	19.97	22.445		
3,900.0	3,872.3	3,846.0	3,758.5	10.8	15.8	-50.39	295.4	-661.2	463.0	442.4	20.65	22.425		
4,000.0	3,971.0	3,944.9	3,853.7	11.2	16.3	-50.61	307.0	-685.3	477.8	456.5	21.33	22.404		
4,100.0	4,069.7	4,043.7	3,948.9	11.6	16.9	-50.82	318.5	-709.4	492.6	470.6	22.01	22.382		
4,200.0	4,168.4	4,142.6	4,044.1	11.9	17.5	-51.01	330.1	-733.5	507.3	484.7	22.69	22.360		
4,300.0	4,267.0	4,241.5	4,139.3	12.3	18.0	-51.20	341.6	-757.6	522.1	498.8	23.38	22.337		
4,400.0	4,365.7	4,340.4	4,234.5	12.7	18.6	-51.37	353.2	-781.8	536.9	512.9	24.06	22.314		
4,500.0	4,464.4	4,439.3	4,329.7	13.0	19.2	-51.53	364.7	-805.9	551.7	527.0	24.75	22.291		
4,600.0	4,563.0	4,538.2	4,424.9	13.4	19.7	-51.69	376.3	-830.0	566.5	541.1	25.44	22.268		
4,700.0	4,661.7	4,637.1	4,520.1	13.8	20.3	-51.84	387.8	-854.1	581.3	555.2	26.13	22.246		
4,800.0	4,760.4	4,736.0	4,615.3	14.1	20.9	-51.98	399.4	-878.2	596.1	569.3	26.83	22.223		
4,900.0	4,859.1	4,834.8	4,710.5	14.5	21.4	-52.11	410.9	-902.3	611.0	583.4	27.52	22.201		

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-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-323 - Wellbore #1 - Plan #1 (3-14-16)											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	4,957.7	4,933.7	4,805.7	14.9	22.0	-52.24	422.5	-926.4	625.8	597.6	28.21	22.179			
5,100.0	5,056.4	5,032.6	4,900.9	15.2	22.6	-52.36	434.0	-950.6	640.6	611.7	28.91	22.157			
5,200.0	5,155.1	5,131.5	4,996.1	15.6	23.1	-52.47	445.6	-974.7	655.4	625.8	29.61	22.136			
5,300.0	5,253.8	5,230.4	5,091.3	16.0	23.7	-52.58	457.1	-998.8	670.2	639.9	30.31	22.115			
5,400.0	5,352.4	5,346.7	5,203.6	16.3	24.3	-52.78	470.2	-1,026.1	684.3	653.3	31.03	22.050			
5,500.0	5,451.5	5,473.5	5,327.2	16.6	24.7	-53.13	482.4	-1,051.5	696.0	664.4	31.67	21.981			
5,600.0	5,550.9	5,601.1	5,452.8	16.8	25.2	-53.35	492.2	-1,072.0	705.9	673.7	32.21	21.917			
5,700.0	5,650.7	5,729.4	5,579.9	17.0	25.5	-53.45	499.6	-1,087.5	713.8	681.2	32.65	21.863			
5,800.0	5,750.6	5,858.2	5,708.2	17.2	25.7	-53.43	504.6	-1,097.9	719.8	686.8	33.00	21.814			
5,900.0	5,850.6	5,987.5	5,837.3	17.4	25.9	-90.07	507.1	-1,103.0	723.6	690.3	33.30	21.729			
6,000.0	5,950.6	6,101.8	5,951.6	17.5	26.0	-90.05	507.4	-1,103.7	724.1	690.4	33.63	21.528			
6,100.0	6,050.6	6,201.7	6,051.6	17.7	26.2	89.99	507.3	-1,103.7	724.1	690.1	33.94	21.332			
6,107.3	6,057.9	6,209.0	6,058.9	17.7	26.2	90.00	507.2	-1,103.7	724.1	690.1	33.95	21.327			
6,200.0	6,150.0	6,301.9	6,151.3	17.7	26.2	90.18	499.6	-1,103.7	724.1	690.0	34.03	21.279			
6,300.0	6,247.2	6,402.3	6,249.5	17.7	26.2	90.37	478.8	-1,103.7	724.1	690.2	33.91	21.355			
6,400.0	6,340.6	6,503.0	6,344.4	17.6	26.1	90.56	445.3	-1,103.7	724.1	690.5	33.62	21.536			
6,500.0	6,428.6	6,604.1	6,434.4	17.4	26.0	90.74	399.3	-1,103.7	724.1	690.9	33.23	21.788			
6,600.0	6,509.6	6,705.5	6,517.7	17.2	25.8	90.90	341.8	-1,103.7	724.1	691.3	32.82	22.065			
6,700.0	6,582.3	6,807.1	6,592.9	16.9	25.6	91.05	273.5	-1,103.7	724.2	691.7	32.46	22.308			
6,800.0	6,645.4	6,908.9	6,658.4	16.7	25.4	91.18	195.6	-1,103.7	724.2	692.0	32.26	22.447			
6,900.0	6,697.9	7,011.0	6,713.2	16.5	25.3	91.29	109.6	-1,103.7	724.2	691.9	32.31	22.415			
7,000.0	6,738.8	7,113.3	6,756.1	16.3	25.1	91.38	16.8	-1,103.7	724.3	691.6	32.68	22.164			
7,100.0	6,767.4	7,215.7	6,786.2	16.2	25.0	91.44	-81.0	-1,103.7	724.3	690.9	33.41	21.681			
7,200.0	6,783.4	7,318.2	6,803.0	16.8	25.1	91.48	-182.0	-1,103.7	724.3	689.8	34.51	20.990			
7,300.0	6,786.7	7,420.1	6,806.5	17.6	25.2	91.49	-283.8	-1,103.7	724.3	688.3	35.96	20.142			
7,400.0	6,786.2	7,520.1	6,805.8	18.6	25.5	91.47	-383.8	-1,103.7	724.3	686.6	37.73	19.199			
7,500.0	6,785.8	7,620.1	6,805.1	19.7	25.9	91.44	-483.8	-1,103.7	724.3	684.5	39.79	18.205			
7,600.0	6,785.4	7,720.1	6,804.4	21.0	26.6	91.42	-583.8	-1,103.7	724.3	682.2	42.10	17.205			
7,700.0	6,785.0	7,820.1	6,803.7	22.3	27.4	91.40	-683.8	-1,103.7	724.3	679.7	44.62	16.233			
7,800.0	6,784.6	7,920.1	6,803.0	23.7	28.4	91.38	-783.8	-1,103.7	724.3	677.0	47.32	15.307			
7,900.0	6,784.2	8,020.1	6,802.3	25.1	29.5	91.36	-883.8	-1,103.7	724.3	674.1	50.16	14.438			
8,000.0	6,783.7	8,120.1	6,801.6	26.6	30.7	91.33	-983.8	-1,103.7	724.3	671.1	53.14	13.630			
8,100.0	6,783.3	8,220.1	6,800.9	28.2	32.0	91.31	-1,083.8	-1,103.7	724.3	668.0	56.22	12.884			
8,200.0	6,782.9	8,320.1	6,800.2	29.8	33.4	91.29	-1,183.8	-1,103.7	724.2	664.9	59.38	12.196			
8,300.0	6,782.5	8,420.1	6,799.5	31.4	34.9	91.27	-1,283.8	-1,103.7	724.2	661.6	62.63	11.565			
8,400.0	6,782.1	8,520.1	6,798.8	33.1	36.3	91.25	-1,383.8	-1,103.7	724.2	658.3	65.93	10.985			
8,500.0	6,781.6	8,620.1	6,798.1	34.8	37.9	91.22	-1,483.8	-1,103.7	724.2	654.9	69.29	10.452			
8,600.0	6,781.2	8,720.1	6,797.4	36.5	39.5	91.20	-1,583.8	-1,103.7	724.2	651.5	72.70	9.961			
8,700.0	6,780.8	8,820.1	6,796.7	38.2	41.1	91.18	-1,683.8	-1,103.7	724.2	648.1	76.15	9.510			
8,800.0	6,780.4	8,920.1	6,796.0	39.9	42.7	91.16	-1,783.8	-1,103.7	724.2	644.6	79.64	9.094			
8,900.0	6,780.0	9,020.1	6,795.3	41.7	44.3	91.14	-1,883.8	-1,103.7	724.2	641.0	83.16	8.709			
9,000.0	6,779.5	9,120.1	6,794.6	43.5	46.0	91.11	-1,983.8	-1,103.7	724.2	637.5	86.70	8.353			
9,100.0	6,779.1	9,220.1	6,793.9	45.3	47.7	91.09	-2,083.8	-1,103.7	724.2	633.9	90.27	8.022			
9,200.0	6,778.7	9,320.1	6,793.2	47.1	49.4	91.07	-2,183.8	-1,103.7	724.2	630.3	93.86	7.715			
9,300.0	6,778.3	9,420.1	6,792.5	48.9	51.1	91.05	-2,283.8	-1,103.7	724.2	626.7	97.47	7.430			
9,400.0	6,777.9	9,520.1	6,791.8	50.7	52.9	91.02	-2,383.8	-1,103.7	724.2	623.1	101.10	7.163			
9,500.0	6,777.4	9,620.1	6,791.1	52.5	54.6	91.00	-2,483.8	-1,103.7	724.2	619.4	104.74	6.914			
9,600.0	6,777.0	9,720.1	6,790.4	54.3	56.4	90.98	-2,583.8	-1,103.7	724.2	615.8	108.40	6.681			
9,700.0	6,776.6	9,820.1	6,789.7	56.2	58.2	90.96	-2,683.8	-1,103.7	724.2	612.1	112.07	6.462			
9,800.0	6,776.2	9,920.1	6,789.0	58.0	59.9	90.94	-2,783.8	-1,103.7	724.2	608.4	115.75	6.256			

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-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-323 - Wellbore #1 - Plan #1 (3-14-16)													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)				
9,900.0	6,775.8	10,020.1	6,788.3	59.8	61.7	90.91	-2,883.8	-1,103.7	724.2	604.7	119.44	6.063			
10,000.0	6,775.4	10,120.1	6,787.6	61.7	63.5	90.89	-2,983.8	-1,103.7	724.2	601.0	123.14	5.881			
10,100.0	6,774.9	10,220.1	6,786.9	63.5	65.3	90.87	-3,083.8	-1,103.7	724.1	597.3	126.84	5.709			
10,200.0	6,774.5	10,320.1	6,786.2	65.4	67.1	90.85	-3,183.8	-1,103.7	724.1	593.6	130.56	5.546			
10,300.0	6,774.1	10,420.1	6,785.5	67.3	68.9	90.83	-3,283.8	-1,103.7	724.1	589.9	134.28	5.393			
10,400.0	6,773.7	10,520.1	6,784.8	69.1	70.8	90.80	-3,383.7	-1,103.7	724.1	586.1	138.01	5.247			
10,500.0	6,773.3	10,620.1	6,784.1	71.0	72.6	90.78	-3,483.7	-1,103.7	724.1	582.4	141.75	5.109			
10,600.0	6,772.8	10,720.1	6,783.4	72.9	74.4	90.76	-3,583.7	-1,103.7	724.1	578.6	145.49	4.977			
10,700.0	6,772.4	10,820.1	6,782.7	74.7	76.2	90.74	-3,683.7	-1,103.7	724.1	574.9	149.23	4.852			
10,800.0	6,772.0	10,920.1	6,782.0	76.6	78.1	90.72	-3,783.7	-1,103.7	724.1	571.1	152.98	4.733			
10,900.0	6,771.6	11,020.1	6,781.3	78.5	79.9	90.69	-3,883.7	-1,103.7	724.1	567.4	156.74	4.620			
11,000.0	6,771.2	11,120.1	6,780.7	80.4	81.8	90.67	-3,983.7	-1,103.7	724.1	563.6	160.50	4.512			
11,100.0	6,770.7	11,220.1	6,780.0	82.2	83.6	90.65	-4,083.7	-1,103.7	724.1	559.9	164.26	4.408			
11,200.0	6,770.3	11,320.1	6,779.3	84.1	85.5	90.63	-4,183.7	-1,103.7	724.1	556.1	168.03	4.309			
11,300.0	6,769.9	11,420.1	6,778.6	86.0	87.3	90.61	-4,283.7	-1,103.7	724.1	552.3	171.80	4.215			
11,400.0	6,769.5	11,520.1	6,777.9	87.9	89.2	90.58	-4,383.7	-1,103.7	724.1	548.5	175.57	4.124			
11,500.0	6,769.1	11,620.1	6,777.2	89.8	91.0	90.56	-4,483.7	-1,103.7	724.1	544.8	179.35	4.037			
11,600.0	6,768.7	11,720.1	6,776.5	91.7	92.9	90.54	-4,583.7	-1,103.7	724.1	541.0	183.12	3.954			
11,700.0	6,768.2	11,820.1	6,775.8	93.6	94.8	90.52	-4,683.7	-1,103.7	724.1	537.2	186.90	3.874			
11,800.0	6,767.8	11,920.1	6,775.1	95.4	96.6	90.49	-4,783.7	-1,103.7	724.1	533.4	190.69	3.797			
11,900.0	6,767.4	12,020.1	6,774.4	97.3	98.5	90.47	-4,883.7	-1,103.7	724.1	529.6	194.47	3.723			
12,000.0	6,767.0	12,120.1	6,773.7	99.2	100.4	90.45	-4,983.7	-1,103.7	724.1	525.8	198.26	3.652			
12,100.0	6,766.6	12,220.1	6,773.0	101.1	102.2	90.43	-5,083.7	-1,103.7	724.1	522.0	202.05	3.584			
12,200.0	6,766.1	12,320.1	6,772.3	103.0	104.1	90.41	-5,183.7	-1,103.7	724.1	518.2	205.84	3.518			
12,300.0	6,765.7	12,420.1	6,771.6	104.9	106.0	90.38	-5,283.7	-1,103.7	724.1	514.4	209.64	3.454			
12,400.0	6,765.3	12,520.1	6,770.9	106.8	107.9	90.36	-5,383.7	-1,103.7	724.1	510.7	213.43	3.393			
12,500.0	6,764.9	12,620.1	6,770.2	108.7	109.7	90.34	-5,483.7	-1,103.7	724.1	506.9	217.23	3.333			
12,600.0	6,764.5	12,720.1	6,769.5	110.6	111.6	90.32	-5,583.7	-1,103.7	724.1	503.1	221.03	3.276			
12,700.0	6,764.0	12,820.1	6,768.8	112.5	113.5	90.30	-5,683.7	-1,103.7	724.1	499.3	224.83	3.221			
12,800.0	6,763.6	12,920.1	6,768.1	114.4	115.4	90.27	-5,783.7	-1,103.7	724.1	495.4	228.63	3.167			
12,900.0	6,763.2	13,020.1	6,767.4	116.3	117.3	90.25	-5,883.7	-1,103.7	724.1	491.6	232.43	3.115			
13,000.0	6,762.8	13,120.1	6,766.7	118.2	119.2	90.23	-5,983.7	-1,103.7	724.1	487.8	236.24	3.065			
13,100.0	6,762.4	13,220.1	6,766.0	120.1	121.0	90.21	-6,083.7	-1,103.7	724.1	484.0	240.04	3.016			
13,200.0	6,762.0	13,320.1	6,765.3	122.0	122.9	90.19	-6,183.7	-1,103.7	724.1	480.2	243.85	2.969			
13,300.0	6,761.5	13,420.1	6,764.6	123.9	124.8	90.16	-6,283.7	-1,103.7	724.1	476.4	247.65	2.924			
13,400.0	6,761.1	13,520.1	6,763.9	125.8	126.7	90.14	-6,383.7	-1,103.7	724.1	472.6	251.46	2.879			
13,500.0	6,760.7	13,620.1	6,763.2	127.7	128.6	90.12	-6,483.7	-1,103.7	724.1	468.8	255.27	2.836			
13,600.0	6,760.3	13,720.1	6,762.5	129.6	130.5	90.10	-6,583.7	-1,103.7	724.1	465.0	259.08	2.795			
13,700.0	6,759.9	13,820.1	6,761.8	131.5	132.4	90.07	-6,683.7	-1,103.7	724.1	461.2	262.89	2.754			
13,800.0	6,759.4	13,920.1	6,761.1	133.4	134.3	90.05	-6,783.7	-1,103.7	724.1	457.4	266.71	2.715			
13,868.7	6,759.1	13,988.9	6,760.6	134.7	135.6	90.04	-6,852.4	-1,103.7	724.1	454.7	269.33	2.688			
13,900.0	6,759.0	14,020.1	6,760.4	135.3	136.2	90.03	-6,883.7	-1,103.7	724.1	453.6	270.52	2.677			
14,000.0	6,758.6	14,120.1	6,759.7	137.2	138.1	90.01	-6,983.6	-1,103.7	724.1	449.7	274.33	2.639			
14,100.0	6,758.2	14,220.1	6,759.0	139.1	139.9	89.99	-7,083.6	-1,103.7	724.1	445.9	278.15	2.603			
14,200.0	6,757.8	14,320.1	6,758.3	141.1	141.8	89.96	-7,183.6	-1,103.7	724.1	442.1	281.96	2.568			
14,300.0	6,757.3	14,420.1	6,757.6	143.0	143.7	89.94	-7,283.6	-1,103.7	724.1	438.3	285.78	2.534			
14,381.9	6,757.0	14,502.0	6,757.0	144.5	145.3	89.92	-7,365.6	-1,103.7	724.1	435.2	288.90	2.506 SF			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-423 - Wellbore #1 - Plan #1 (3-14-16)											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	-89.65	0.4	-60.2	60.2						
100.0	100.0	100.0	100.0	0.1	0.1	-89.65	0.4	-60.2	60.2	60.0	0.22	267.760			
200.0	200.0	200.0	200.0	0.3	0.3	-89.65	0.4	-60.2	60.2	59.5	0.67	89.253			
300.0	300.0	300.0	300.0	0.6	0.6	-89.65	0.4	-60.2	60.2	59.1	1.12	53.552			
400.0	400.0	400.0	400.0	0.8	0.8	-89.65	0.4	-60.2	60.2	58.6	1.57	38.251	CC, ES		
500.0	500.0	498.5	498.5	1.0	1.0	-89.21	0.8	-61.4	61.4	59.4	2.01	30.503			
600.0	600.0	596.9	596.8	1.2	1.2	-88.01	2.3	-64.9	65.0	62.6	2.45	26.520			
700.0	700.0	695.1	694.8	1.5	1.4	-86.28	4.6	-70.8	71.1	68.2	2.90	24.546			
800.0	800.0	792.8	792.1	1.7	1.7	-84.31	7.9	-78.9	79.7	76.4	3.35	23.804			
900.0	900.0	890.1	888.7	1.9	1.9	-82.33	12.0	-89.3	90.8	87.0	3.81	23.860			
1,000.0	1,000.0	986.7	984.4	2.1	2.2	-80.49	17.1	-101.9	104.5	100.2	4.28	24.444			
1,100.0	1,100.0	1,082.5	1,078.9	2.4	2.6	-78.86	23.0	-116.6	120.7	116.0	4.76	25.383			
1,200.0	1,200.0	1,177.5	1,172.2	2.6	2.9	-77.46	29.7	-133.4	139.5	134.2	5.25	26.556			
1,300.0	1,300.0	1,271.5	1,264.0	2.8	3.3	-76.28	37.1	-152.1	160.7	154.9	5.76	27.879			
1,400.0	1,400.0	1,364.5	1,354.3	3.0	3.7	-75.28	45.4	-172.6	184.3	178.0	6.29	29.293			
1,500.0	1,500.0	1,456.6	1,443.2	3.3	4.2	-37.65	54.3	-195.0	209.2	202.7	6.55	31.953			
1,600.0	1,599.9	1,551.4	1,534.2	3.5	4.7	-37.25	64.2	-219.7	234.1	227.1	7.02	33.349			
1,700.0	1,699.7	1,648.7	1,627.5	3.7	5.2	-37.26	74.4	-245.2	257.2	249.7	7.50	34.286			
1,800.0	1,799.3	1,746.4	1,721.2	3.9	5.8	-37.59	84.6	-270.8	278.2	270.2	7.99	34.815			
1,900.0	1,898.6	1,844.5	1,815.3	4.2	6.3	-38.18	94.9	-296.5	297.3	288.8	8.50	34.994			
2,000.0	1,997.5	1,942.9	1,909.7	4.4	6.9	-38.99	105.3	-322.3	314.4	305.4	9.02	34.872			
2,100.0	2,096.2	2,041.5	2,004.3	4.7	7.5	-40.04	115.6	-348.2	330.1	320.6	9.56	34.538			
2,200.0	2,194.9	2,140.0	2,098.8	5.0	8.1	-41.03	125.9	-374.0	346.0	335.9	10.12	34.189			
2,300.0	2,293.6	2,238.6	2,193.4	5.3	8.6	-41.94	136.3	-399.9	361.9	351.2	10.69	33.842			
2,400.0	2,392.2	2,337.2	2,288.0	5.6	9.2	-42.76	146.6	-425.7	377.9	366.6	11.28	33.500			
2,500.0	2,490.9	2,435.7	2,382.5	6.0	9.8	-43.53	157.0	-451.6	394.0	382.1	11.88	33.166			
2,600.0	2,589.6	2,534.3	2,477.1	6.3	10.4	-44.23	167.3	-477.4	410.1	397.6	12.49	32.842			
2,700.0	2,688.3	2,632.9	2,571.6	6.6	11.0	-44.88	177.6	-503.3	426.3	413.2	13.11	32.529			
2,800.0	2,786.9	2,731.5	2,666.2	6.9	11.6	-45.48	188.0	-529.1	442.6	428.8	13.73	32.228			
2,900.0	2,885.6	2,830.0	2,760.7	7.3	12.1	-46.04	198.3	-554.9	458.8	444.5	14.37	31.939			
3,000.0	2,984.3	2,928.6	2,855.3	7.6	12.7	-46.56	208.7	-580.8	475.2	460.2	15.01	31.662			
3,100.0	3,082.9	3,027.2	2,949.9	8.0	13.3	-47.04	219.0	-606.6	491.5	475.9	15.66	31.397			
3,200.0	3,181.6	3,125.7	3,044.4	8.3	13.9	-47.50	229.3	-632.5	507.9	491.6	16.31	31.145			
3,300.0	3,280.3	3,224.3	3,139.0	8.7	14.5	-47.92	239.7	-658.3	524.3	507.4	16.97	30.904			
3,400.0	3,379.0	3,322.9	3,233.5	9.0	15.1	-48.32	250.0	-684.2	540.8	523.2	17.63	30.674			
3,500.0	3,477.6	3,421.4	3,328.1	9.4	15.7	-48.70	260.4	-710.0	557.3	539.0	18.30	30.456			
3,600.0	3,576.3	3,520.0	3,422.6	9.8	16.3	-49.05	270.7	-735.9	573.8	554.8	18.97	30.247			
3,700.0	3,675.0	3,618.6	3,517.2	10.1	16.8	-49.39	281.0	-761.7	590.3	570.6	19.64	30.048			
3,800.0	3,773.7	3,717.1	3,611.8	10.5	17.4	-49.71	291.4	-787.5	606.8	586.5	20.32	29.858			
3,900.0	3,872.3	3,815.7	3,706.3	10.8	18.0	-50.01	301.7	-813.4	623.4	602.4	21.01	29.677			
4,000.0	3,971.0	3,914.3	3,800.9	11.2	18.6	-50.29	312.1	-839.2	639.9	618.2	21.69	29.504			
4,100.0	4,069.7	4,012.9	3,895.4	11.6	19.2	-50.56	322.4	-865.1	656.5	634.1	22.38	29.339			
4,200.0	4,168.4	4,111.4	3,990.0	11.9	19.8	-50.82	332.7	-890.9	673.1	650.0	23.07	29.181			
4,300.0	4,267.0	4,210.0	4,084.5	12.3	20.4	-51.06	343.1	-916.8	689.7	666.0	23.76	29.031			
4,400.0	4,365.7	4,308.6	4,179.1	12.7	21.0	-51.30	353.4	-942.6	706.3	681.9	24.45	28.886			
4,500.0	4,464.4	4,407.1	4,273.7	13.0	21.6	-51.52	363.8	-968.5	723.0	697.8	25.15	28.748			
4,600.0	4,563.0	4,505.7	4,368.2	13.4	22.2	-51.73	374.1	-994.3	739.6	713.8	25.85	28.616			
4,700.0	4,661.7	4,604.3	4,462.8	13.8	22.8	-51.93	384.4	-1,020.1	756.3	729.7	26.55	28.489			
4,800.0	4,760.4	4,702.8	4,557.3	14.1	23.4	-52.13	394.8	-1,046.0	772.9	745.7	27.25	28.368			
4,900.0	4,859.1	4,801.4	4,651.9	14.5	23.9	-52.31	405.1	-1,071.8	789.6	761.6	27.95	28.251			
5,000.0	4,957.7	4,900.0	4,746.4	14.9	24.5	-52.49	415.5	-1,097.7	806.3	777.6	28.65	28.139			

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-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-423 - Wellbore #1 - Plan #1 (3-14-16)											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)				
5,100.0	5,056.4	4,998.5	4,841.0	15.2	25.1	-52.66	425.8	-1,123.5	822.9	793.6	29.36	28.032			
5,200.0	5,155.1	5,097.1	4,935.6	15.6	25.7	-52.83	436.1	-1,149.4	839.6	809.6	30.06	27.929			
5,300.0	5,253.8	5,195.7	5,030.1	16.0	26.3	-52.99	446.5	-1,175.2	856.3	825.6	30.77	27.829			
5,400.0	5,352.4	5,294.3	5,124.7	16.3	26.9	-53.18	456.8	-1,201.1	873.1	841.6	31.48	27.737			
5,500.0	5,451.5	5,404.4	5,230.4	16.6	27.5	-53.50	468.3	-1,229.7	891.0	858.9	32.12	27.736			
5,600.0	5,550.9	5,543.3	5,365.0	16.8	28.1	-53.68	480.9	-1,261.3	907.6	874.9	32.72	27.740			
5,700.0	5,650.7	5,683.7	5,502.6	17.0	28.6	-53.74	491.2	-1,287.1	921.9	888.6	33.22	27.754			
5,800.0	5,750.6	5,825.4	5,642.8	17.2	29.0	-53.67	499.1	-1,306.7	933.6	900.0	33.61	27.782			
5,900.0	5,850.6	5,968.3	5,785.0	17.4	29.3	-90.22	504.4	-1,319.9	942.6	908.7	33.93	27.780			
6,000.0	5,950.6	6,112.3	5,928.7	17.5	29.5	-90.06	507.0	-1,326.6	947.3	913.0	34.29	27.625			
6,100.0	6,050.6	6,234.1	6,050.6	17.7	29.6	89.99	507.4	-1,327.4	947.9	913.2	34.62	27.382			
6,103.1	6,053.7	6,237.3	6,053.7	17.7	29.6	90.00	507.4	-1,327.4	947.9	913.2	34.62	27.378			
6,200.0	6,150.0	6,334.0	6,150.4	17.7	29.7	90.56	506.7	-1,327.4	947.9	913.2	34.66	27.349			
6,300.0	6,247.2	6,435.3	6,251.0	17.7	29.7	91.30	495.7	-1,327.4	948.1	913.6	34.47	27.503			
6,400.0	6,340.6	6,538.3	6,350.9	17.6	29.7	92.03	471.0	-1,327.4	948.5	914.3	34.12	27.794			
6,500.0	6,428.6	6,643.0	6,448.2	17.4	29.6	92.73	432.3	-1,327.4	948.9	915.3	33.68	28.178			
6,600.0	6,509.6	6,749.6	6,540.8	17.2	29.5	93.38	379.7	-1,327.4	949.5	916.3	33.20	28.599			
6,700.0	6,582.3	6,857.8	6,626.3	16.9	29.3	93.98	313.7	-1,327.4	950.2	917.4	32.79	28.980			
6,800.0	6,645.4	6,967.5	6,702.8	16.7	29.1	94.51	235.0	-1,327.4	950.8	918.3	32.53	29.229			
6,900.0	6,697.9	7,078.7	6,767.9	16.5	28.9	94.95	145.0	-1,327.4	951.4	918.9	32.52	29.255			
7,000.0	6,738.8	7,191.1	6,819.7	16.3	28.8	95.30	45.4	-1,327.4	951.9	919.1	32.84	28.991			
7,100.0	6,767.4	7,304.4	6,856.6	16.2	28.7	95.56	-61.6	-1,327.5	952.3	918.8	33.53	28.406			
7,200.0	6,783.4	7,418.3	6,877.4	16.8	28.7	95.70	-173.5	-1,327.5	952.6	918.0	34.61	27.525			
7,300.0	6,786.7	7,528.8	6,881.9	17.6	28.8	95.74	-283.8	-1,327.5	952.6	916.6	36.04	26.431			
7,400.0	6,786.2	7,628.8	6,881.8	18.6	29.0	95.75	-383.8	-1,327.5	952.7	914.9	37.75	25.233			
7,500.0	6,785.8	7,728.8	6,881.6	19.7	29.4	95.77	-483.8	-1,327.5	952.7	912.9	39.76	23.961			
7,600.0	6,785.4	7,828.8	6,881.5	21.0	29.9	95.79	-583.8	-1,327.5	952.7	910.7	42.02	22.674			
7,700.0	6,785.0	7,928.8	6,881.3	22.3	30.5	95.80	-683.8	-1,327.5	952.7	908.3	44.49	21.415			
7,800.0	6,784.6	8,028.8	6,881.2	23.7	31.3	95.82	-783.8	-1,327.5	952.8	905.6	47.14	20.211			
7,900.0	6,784.2	8,128.8	6,881.1	25.1	32.2	95.84	-883.8	-1,327.5	952.8	902.9	49.94	19.077			
8,000.0	6,783.7	8,228.8	6,880.9	26.6	33.2	95.85	-983.8	-1,327.5	952.8	900.0	52.88	18.020			
8,100.0	6,783.3	8,328.8	6,880.8	28.2	34.4	95.87	-1,083.8	-1,327.5	952.9	896.9	55.91	17.042			
8,200.0	6,782.9	8,428.8	6,880.6	29.8	35.6	95.89	-1,183.8	-1,327.5	952.9	893.8	59.04	16.139			
8,300.0	6,782.5	8,528.8	6,880.5	31.4	36.9	95.90	-1,283.8	-1,327.5	952.9	890.7	62.25	15.309			
8,400.0	6,782.1	8,628.8	6,880.4	33.1	38.3	95.92	-1,383.8	-1,327.5	952.9	887.4	65.52	14.545			
8,500.0	6,781.6	8,728.8	6,880.2	34.8	39.7	95.94	-1,483.8	-1,327.5	953.0	884.1	68.85	13.842			
8,600.0	6,781.2	8,828.8	6,880.1	36.5	41.2	95.95	-1,583.8	-1,327.5	953.0	880.8	72.22	13.195			
8,700.0	6,780.8	8,928.8	6,879.9	38.2	42.7	95.97	-1,683.8	-1,327.5	953.0	877.4	75.64	12.600			
8,800.0	6,780.4	9,028.8	6,879.8	39.9	44.3	95.99	-1,783.8	-1,327.5	953.1	874.0	79.09	12.050			
8,900.0	6,780.0	9,128.8	6,879.7	41.7	45.8	96.00	-1,883.8	-1,327.5	953.1	870.5	82.58	11.541			
9,000.0	6,779.5	9,228.8	6,879.5	43.5	47.5	96.02	-1,983.8	-1,327.5	953.1	867.0	86.10	11.071			
9,100.0	6,779.1	9,328.8	6,879.4	45.3	49.1	96.04	-2,083.8	-1,327.5	953.1	863.5	89.63	10.634			
9,200.0	6,778.7	9,428.8	6,879.2	47.1	50.7	96.05	-2,183.8	-1,327.5	953.2	860.0	93.20	10.228			
9,300.0	6,778.3	9,528.8	6,879.1	48.9	52.4	96.07	-2,283.8	-1,327.5	953.2	856.4	96.78	9.850			
9,400.0	6,777.9	9,628.8	6,879.0	50.7	54.1	96.09	-2,383.8	-1,327.5	953.2	852.9	100.37	9.497			
9,500.0	6,777.4	9,728.8	6,878.8	52.5	55.8	96.10	-2,483.8	-1,327.5	953.3	849.3	103.99	9.167			
9,600.0	6,777.0	9,828.8	6,878.7	54.3	57.5	96.12	-2,583.8	-1,327.5	953.3	845.7	107.61	8.858			
9,700.0	6,776.6	9,928.8	6,878.5	56.2	59.3	96.14	-2,683.8	-1,327.5	953.3	842.1	111.25	8.569			
9,800.0	6,776.2	10,028.8	6,878.4	58.0	61.0	96.15	-2,783.8	-1,327.5	953.4	838.5	114.90	8.297			
9,900.0	6,775.8	10,128.8	6,878.3	59.8	62.8	96.17	-2,883.8	-1,327.5	953.4	834.8	118.57	8.041			

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-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-423 - Wellbore #1 - Plan #1 (3-14-16)													Offset Site Error: 0.0 ft		
Survey Program: 0-MWD														Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
10,000.0	6,775.4	10,228.8	6,878.1	61.7	64.5	96.19	-2,983.8	-1,327.5	953.4	831.2	122.24	7.800			
10,100.0	6,774.9	10,328.8	6,878.0	63.5	66.3	96.20	-3,083.8	-1,327.5	953.4	827.5	125.92	7.572			
10,200.0	6,774.5	10,428.8	6,877.8	65.4	68.1	96.22	-3,183.8	-1,327.5	953.5	823.9	129.60	7.357			
10,300.0	6,774.1	10,528.8	6,877.7	67.3	69.9	96.24	-3,283.8	-1,327.5	953.5	820.2	133.30	7.153			
10,400.0	6,773.7	10,628.8	6,877.6	69.1	71.7	96.25	-3,383.8	-1,327.5	953.5	816.5	137.00	6.960			
10,500.0	6,773.3	10,728.8	6,877.4	71.0	73.5	96.27	-3,483.8	-1,327.5	953.6	812.9	140.70	6.777			
10,600.0	6,772.8	10,828.8	6,877.3	72.9	75.3	96.29	-3,583.8	-1,327.5	953.6	809.2	144.42	6.603			
10,700.0	6,772.4	10,928.8	6,877.2	74.7	77.1	96.30	-3,683.8	-1,327.5	953.6	805.5	148.13	6.438			
10,800.0	6,772.0	11,028.8	6,877.0	76.6	78.9	96.32	-3,783.8	-1,327.5	953.7	801.8	151.85	6.280			
10,900.0	6,771.6	11,128.8	6,876.9	78.5	80.7	96.34	-3,883.8	-1,327.5	953.7	798.1	155.58	6.130			
11,000.0	6,771.2	11,228.8	6,876.7	80.4	82.6	96.36	-3,983.8	-1,327.5	953.7	794.4	159.31	5.987			
11,100.0	6,770.7	11,328.8	6,876.6	82.2	84.4	96.37	-4,083.8	-1,327.5	953.8	790.7	163.04	5.850			
11,200.0	6,770.3	11,428.8	6,876.5	84.1	86.2	96.39	-4,183.8	-1,327.5	953.8	787.0	166.78	5.719			
11,300.0	6,769.9	11,528.8	6,876.3	86.0	88.1	96.41	-4,283.8	-1,327.5	953.8	783.3	170.52	5.594			
11,400.0	6,769.5	11,628.8	6,876.2	87.9	89.9	96.42	-4,383.8	-1,327.5	953.9	779.6	174.26	5.474			
11,500.0	6,769.1	11,728.8	6,876.0	89.8	91.8	96.44	-4,483.8	-1,327.5	953.9	775.9	178.01	5.359			
11,600.0	6,768.7	11,828.8	6,875.9	91.7	93.6	96.46	-4,583.8	-1,327.5	953.9	772.2	181.76	5.248			
11,700.0	6,768.2	11,928.8	6,875.8	93.6	95.5	96.47	-4,683.8	-1,327.5	953.9	768.4	185.51	5.142			
11,800.0	6,767.8	12,028.8	6,875.6	95.4	97.3	96.49	-4,783.8	-1,327.5	954.0	764.7	189.26	5.041			
11,900.0	6,767.4	12,128.8	6,875.5	97.3	99.2	96.51	-4,883.8	-1,327.5	954.0	761.0	193.02	4.943			
12,000.0	6,767.0	12,228.8	6,875.3	99.2	101.0	96.52	-4,983.8	-1,327.5	954.0	757.3	196.77	4.848			
12,100.0	6,766.6	12,328.8	6,875.2	101.1	102.9	96.54	-5,083.8	-1,327.5	954.1	753.5	200.53	4.758			
12,200.0	6,766.1	12,428.8	6,875.1	103.0	104.7	96.55	-5,183.8	-1,327.5	954.1	749.8	204.29	4.670			
12,300.0	6,765.7	12,528.8	6,874.9	104.9	106.6	96.57	-5,283.8	-1,327.5	954.1	746.1	208.06	4.586			
12,400.0	6,765.3	12,628.8	6,874.8	106.8	108.5	96.59	-5,383.8	-1,327.5	954.2	742.3	211.82	4.505			
12,500.0	6,764.9	12,728.8	6,874.6	108.7	110.3	96.60	-5,483.8	-1,327.5	954.2	738.6	215.59	4.426			
12,600.0	6,764.5	12,828.8	6,874.5	110.6	112.2	96.62	-5,583.8	-1,327.5	954.2	734.9	219.35	4.350			
12,700.0	6,764.0	12,928.8	6,874.4	112.5	114.1	96.64	-5,683.8	-1,327.5	954.3	731.1	223.12	4.277			
12,800.0	6,763.6	13,028.8	6,874.2	114.4	116.0	96.65	-5,783.8	-1,327.5	954.3	727.4	226.89	4.206			
12,900.0	6,763.2	13,128.8	6,874.1	116.3	117.8	96.67	-5,883.8	-1,327.5	954.3	723.7	230.66	4.137			
13,000.0	6,762.8	13,228.8	6,873.9	118.2	119.7	96.69	-5,983.8	-1,327.5	954.4	719.9	234.43	4.071			
13,100.0	6,762.4	13,328.8	6,873.8	120.1	121.6	96.70	-6,083.8	-1,327.5	954.4	716.2	238.20	4.007			
13,200.0	6,762.0	13,428.8	6,873.7	122.0	123.5	96.72	-6,183.8	-1,327.5	954.4	712.5	241.98	3.944			
13,300.0	6,761.5	13,528.8	6,873.5	123.9	125.3	96.74	-6,283.8	-1,327.5	954.5	708.7	245.75	3.884			
13,400.0	6,761.1	13,628.8	6,873.4	125.8	127.2	96.75	-6,383.8	-1,327.5	954.5	705.0	249.53	3.825			
13,500.0	6,760.7	13,728.8	6,873.2	127.7	129.1	96.77	-6,483.8	-1,327.5	954.5	701.2	253.30	3.768			
13,600.0	6,760.3	13,828.8	6,873.1	129.6	131.0	96.79	-6,583.8	-1,327.5	954.6	697.5	257.08	3.713			
13,700.0	6,759.9	13,928.8	6,873.0	131.5	132.9	96.80	-6,683.8	-1,327.5	954.6	693.7	260.86	3.659			
13,800.0	6,759.4	14,028.8	6,872.8	133.4	134.8	96.82	-6,783.8	-1,327.5	954.6	690.0	264.63	3.607			
13,900.0	6,759.0	14,128.8	6,872.7	135.3	136.6	96.84	-6,883.8	-1,327.5	954.7	686.2	268.41	3.557			
14,000.0	6,758.6	14,228.8	6,872.5	137.2	138.5	96.85	-6,983.8	-1,327.5	954.7	682.5	272.19	3.507			
14,100.0	6,758.2	14,328.8	6,872.4	139.1	140.4	96.87	-7,083.8	-1,327.5	954.7	678.8	275.97	3.460			
14,200.0	6,757.8	14,428.8	6,872.3	141.1	142.3	96.89	-7,183.8	-1,327.5	954.8	675.0	279.75	3.413			
14,300.0	6,757.3	14,528.8	6,872.1	143.0	144.2	96.90	-7,283.8	-1,327.5	954.8	671.3	283.53	3.368			
14,381.9	6,757.0	14,610.7	6,872.0	144.5	145.7	96.92	-7,365.8	-1,327.5	954.8	668.2	286.63	3.331 SF			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-143 - Wellbore #1 - Plan #1 (3-14-16)													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	-89.97	0.0	-15.0	15.0	15.0	0.00	N/A		
100.0	100.0	100.0	100.0	0.1	0.1	-89.97	0.0	-15.0	15.0	14.8	0.22	66.939		
200.0	200.0	200.0	200.0	0.3	0.3	-89.97	0.0	-15.0	15.0	14.4	0.67	22.313		
300.0	300.0	300.0	300.0	0.6	0.6	-89.97	0.0	-15.0	15.0	13.9	1.12	13.388		
400.0	400.0	400.0	400.0	0.8	0.8	-89.97	0.0	-15.0	15.0	13.5	1.57	9.563		
500.0	500.0	500.0	500.0	1.0	1.0	-89.97	0.0	-15.0	15.0	13.0	2.02	7.438		
600.0	600.0	600.0	600.0	1.2	1.2	-89.97	0.0	-15.0	15.0	12.6	2.47	6.085		
700.0	700.0	700.0	700.0	1.5	1.5	-89.97	0.0	-15.0	15.0	12.1	2.92	5.149		
800.0	800.0	800.0	800.0	1.7	1.7	-89.97	0.0	-15.0	15.0	11.7	3.37	4.463		
900.0	900.0	900.0	900.0	1.9	1.9	-89.97	0.0	-15.0	15.0	11.2	3.82	3.938		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-89.97	0.0	-15.0	15.0	10.8	4.27	3.523		
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-89.97	0.0	-15.0	15.0	10.3	4.72	3.188		
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-89.97	0.0	-15.0	15.0	9.9	5.17	2.910 CC, ES		
1,300.0	1,300.0	1,299.7	1,299.7	2.8	2.8	-86.96	0.9	-16.0	16.1	10.4	5.61	2.861		
1,400.0	1,400.0	1,399.2	1,399.1	3.0	3.0	-79.91	3.4	-19.0	19.3	13.3	6.06	3.190		
1,500.0	1,500.0	1,498.6	1,498.3	3.3	3.2	-37.42	7.6	-23.9	24.1	17.6	6.49	3.713		
1,600.0	1,599.9	1,597.8	1,597.1	3.5	3.5	-34.62	13.4	-30.8	29.3	22.4	6.92	4.231		
1,700.0	1,699.7	1,696.9	1,695.5	3.7	3.7	-33.52	21.0	-39.6	34.8	27.4	7.36	4.727		
1,800.0	1,799.3	1,795.8	1,793.4	3.9	4.0	-33.45	30.1	-50.3	40.5	32.7	7.80	5.195		
1,900.0	1,898.6	1,894.6	1,890.7	4.2	4.3	-34.03	40.9	-63.0	46.5	38.2	8.25	5.638		
2,000.0	1,997.5	1,993.5	1,987.8	4.4	4.6	-35.06	53.3	-77.5	52.6	43.9	8.71	6.046		
2,100.0	2,096.2	2,093.3	2,085.6	4.7	4.9	-36.66	66.3	-92.7	58.1	48.8	9.20	6.308		
2,200.0	2,194.9	2,193.1	2,183.4	5.0	5.3	-38.04	79.3	-108.0	63.4	53.7	9.72	6.527		
2,300.0	2,293.6	2,293.0	2,281.2	5.3	5.7	-39.20	92.3	-123.2	68.9	58.6	10.25	6.716		
2,400.0	2,392.2	2,392.8	2,379.0	5.6	6.0	-40.20	105.3	-138.4	74.3	63.5	10.80	6.880		
2,500.0	2,490.9	2,492.7	2,476.8	6.0	6.4	-41.05	118.3	-153.7	79.8	68.4	11.36	7.022		
2,600.0	2,589.6	2,592.5	2,574.7	6.3	6.8	-41.80	131.3	-168.9	85.3	73.3	11.93	7.145		
2,700.0	2,688.3	2,692.4	2,672.5	6.6	7.2	-42.46	144.2	-184.2	90.8	78.2	12.51	7.253		
2,800.0	2,786.9	2,792.2	2,770.3	6.9	7.6	-43.04	157.2	-199.4	96.3	83.2	13.10	7.346		
2,900.0	2,885.6	2,892.1	2,868.1	7.3	8.0	-43.56	170.2	-214.6	101.8	88.1	13.70	7.428		
3,000.0	2,984.3	2,991.9	2,965.9	7.6	8.4	-44.02	183.2	-229.9	107.3	93.0	14.31	7.500		
3,100.0	3,082.9	3,091.7	3,063.7	8.0	8.9	-44.44	196.2	-245.1	112.8	97.9	14.92	7.564		
3,200.0	3,181.6	3,191.6	3,161.5	8.3	9.3	-44.82	209.2	-260.4	118.4	102.8	15.53	7.620		
3,300.0	3,280.3	3,291.4	3,259.4	8.7	9.7	-45.17	222.2	-275.6	123.9	107.8	16.15	7.670		
3,400.0	3,379.0	3,391.3	3,357.2	9.0	10.1	-45.49	235.2	-290.8	129.5	112.7	16.78	7.715		
3,500.0	3,477.6	3,491.1	3,455.0	9.4	10.5	-45.78	248.2	-306.1	135.0	117.6	17.41	7.755		
3,600.0	3,576.3	3,591.0	3,552.8	9.8	11.0	-46.04	261.2	-321.3	140.5	122.5	18.04	7.790		
3,700.0	3,675.0	3,690.8	3,650.6	10.1	11.4	-46.29	274.2	-336.6	146.1	127.4	18.68	7.822		
3,800.0	3,773.7	3,790.6	3,748.4	10.5	11.8	-46.52	287.2	-351.8	151.7	132.3	19.32	7.851		
3,900.0	3,872.3	3,890.5	3,846.2	10.8	12.3	-46.73	300.2	-367.0	157.2	137.3	19.96	7.878		
4,000.0	3,971.0	3,990.3	3,944.1	11.2	12.7	-46.93	313.2	-382.3	162.8	142.2	20.60	7.901		
4,100.0	4,069.7	4,090.2	4,041.9	11.6	13.1	-47.12	326.2	-397.5	168.3	147.1	21.25	7.923		
4,200.0	4,168.4	4,190.0	4,139.7	11.9	13.5	-47.29	339.2	-412.8	173.9	152.0	21.89	7.942		
4,300.0	4,267.0	4,289.9	4,237.5	12.3	14.0	-47.46	352.2	-428.0	179.5	156.9	22.54	7.960		
4,400.0	4,365.7	4,389.7	4,335.3	12.7	14.4	-47.61	365.2	-443.2	185.0	161.8	23.20	7.977		
4,500.0	4,464.4	4,489.6	4,433.1	13.0	14.8	-47.75	378.2	-458.5	190.6	166.7	23.85	7.992		
4,600.0	4,563.0	4,589.4	4,530.9	13.4	15.3	-47.89	391.2	-473.7	196.2	171.7	24.50	8.006		
4,700.0	4,661.7	4,689.2	4,628.8	13.8	15.7	-48.02	404.2	-489.0	201.7	176.6	25.16	8.018		
4,800.0	4,760.4	4,789.1	4,726.6	14.1	16.1	-48.14	417.2	-504.2	207.3	181.5	25.82	8.030		
4,900.0	4,859.1	4,888.9	4,824.4	14.5	16.6	-48.25	430.2	-519.4	212.9	186.4	26.47	8.041		
5,000.0	4,957.7	4,988.8	4,922.2	14.9	17.0	-48.36	443.2	-534.7	218.4	191.3	27.13	8.051		

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-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design				Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-143 - Wellbore #1 - Plan #1 (3-14-16)										Offset Site Error:		0.0 ft
Survey Program: 0-MWD														Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor				
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)					
5,100.0	5,056.4	5,088.6	5,020.0	15.2	17.5	-48.47	456.2	-549.9	224.0	196.2	27.79	8.060				
5,200.0	5,155.1	5,188.5	5,117.8	15.6	17.9	-48.57	469.2	-565.2	229.6	201.1	28.45	8.069				
5,300.0	5,253.8	5,294.8	5,222.3	16.0	18.2	-48.91	482.0	-580.1	233.9	204.8	29.11	8.034				
5,400.0	5,352.4	5,401.8	5,328.1	16.3	18.5	-49.81	492.3	-592.2	235.2	205.4	29.83	7.887				
5,500.0	5,451.5	5,508.6	5,434.3	16.6	18.8	-50.83	500.0	-601.2	235.2	204.7	30.46	7.720				
5,600.0	5,550.9	5,615.4	5,540.8	16.8	19.0	-51.74	505.1	-607.3	234.5	203.4	31.02	7.558				
5,700.0	5,650.7	5,722.1	5,647.4	17.0	19.2	-52.54	507.7	-610.3	233.0	201.5	31.50	7.398				
5,800.0	5,750.6	5,825.3	5,750.6	17.2	19.3	-53.15	508.0	-610.6	231.3	199.4	31.90	7.251				
5,870.9	5,821.5	5,896.2	5,821.5	17.3	19.4	-53.30	508.0	-610.6	230.8	198.7	32.14	7.182				
5,900.0	5,850.6	5,925.3	5,850.6	17.4	19.5	-90.00	508.0	-610.6	231.0	198.8	32.21	7.172				
5,935.0	5,885.6	5,960.4	5,885.6	17.4	19.5	-90.08	507.7	-610.6	231.0	198.7	32.34	7.145				
6,000.0	5,950.6	6,024.9	5,950.0	17.5	19.5	-91.23	503.0	-610.6	231.1	198.4	32.69	7.070				
6,100.0	6,050.6	6,121.8	6,045.3	17.7	19.5	84.63	485.9	-610.6	232.1	198.6	33.49	6.931				
6,200.0	6,150.0	6,215.8	6,135.0	17.7	19.5	79.85	457.9	-610.6	234.9	200.7	34.13	6.881				
6,300.0	6,247.2	6,307.8	6,218.7	17.7	19.3	75.41	420.1	-610.6	239.0	204.6	34.39	6.949				
6,400.0	6,340.6	6,400.0	6,297.6	17.6	19.1	71.28	372.3	-610.6	244.2	210.0	34.24	7.132				
6,500.0	6,428.6	6,486.3	6,365.7	17.4	19.0	67.77	319.3	-610.6	250.1	216.4	33.70	7.421				
6,600.0	6,509.6	6,573.5	6,427.9	17.2	18.7	64.65	258.4	-610.6	256.1	223.3	32.83	7.801				
6,700.0	6,582.3	6,659.4	6,482.0	16.9	18.5	62.01	191.7	-610.6	262.1	230.3	31.78	8.248				
6,800.0	6,645.4	6,744.3	6,527.9	16.7	18.4	59.83	120.3	-610.6	267.6	236.9	30.70	8.717				
6,900.0	6,697.9	6,828.5	6,565.2	16.5	18.2	58.10	44.9	-610.6	272.4	242.6	29.81	9.138				
7,000.0	6,738.8	6,912.0	6,593.8	16.3	18.1	56.79	-33.5	-610.6	276.3	247.0	29.32	9.425				
7,100.0	6,767.4	6,995.1	6,613.7	16.2	18.0	55.91	-114.2	-610.6	279.1	249.7	29.39	9.494				
7,200.0	6,783.4	7,078.0	6,624.6	16.8	18.1	55.43	-196.3	-610.6	280.6	250.5	30.15	9.307				
7,300.0	6,786.7	7,165.3	6,626.9	17.6	18.5	55.33	-283.5	-610.6	280.9	249.4	31.55	8.903				
7,400.0	6,786.2	7,265.3	6,626.8	18.6	19.4	55.38	-383.5	-610.6	280.7	247.5	33.26	8.441				
7,500.0	6,785.8	7,365.3	6,626.6	19.7	20.4	55.43	-483.5	-610.6	280.6	245.4	35.18	7.975				
7,600.0	6,785.4	7,465.3	6,626.5	21.0	21.6	55.48	-583.5	-610.6	280.4	243.1	37.30	7.519				
7,700.0	6,785.0	7,565.3	6,626.3	22.3	22.9	55.52	-683.5	-610.6	280.3	240.7	39.57	7.082				
7,800.0	6,784.6	7,665.3	6,626.2	23.7	24.2	55.57	-783.5	-610.6	280.1	238.1	41.98	6.672				
7,900.0	6,784.2	7,765.3	6,626.1	25.1	25.7	55.62	-883.5	-610.6	280.0	235.4	44.51	6.290				
8,000.0	6,783.7	7,865.3	6,625.9	26.6	27.2	55.66	-983.5	-610.6	279.8	232.7	47.13	5.937				
8,100.0	6,783.3	7,965.3	6,625.8	28.2	28.7	55.71	-1,083.5	-610.6	279.6	229.8	49.83	5.612				
8,200.0	6,782.9	8,065.3	6,625.6	29.8	30.3	55.76	-1,183.5	-610.6	279.5	226.9	52.60	5.313				
8,300.0	6,782.5	8,165.3	6,625.5	31.4	31.9	55.81	-1,283.5	-610.6	279.3	223.9	55.43	5.039				
8,400.0	6,782.1	8,265.2	6,625.4	33.1	33.5	55.85	-1,383.5	-610.6	279.2	220.9	58.31	4.788				
8,500.0	6,781.6	8,365.2	6,625.2	34.8	35.2	55.90	-1,483.5	-610.6	279.0	217.8	61.24	4.556				
8,600.0	6,781.2	8,465.2	6,625.1	36.5	36.9	55.95	-1,583.5	-610.6	278.9	214.7	64.20	4.343				
8,700.0	6,780.8	8,565.2	6,624.9	38.2	38.6	56.00	-1,683.5	-610.6	278.7	211.5	67.20	4.147				
8,800.0	6,780.4	8,665.2	6,624.8	39.9	40.3	56.04	-1,783.5	-610.6	278.5	208.3	70.24	3.966				
8,900.0	6,780.0	8,765.2	6,624.7	41.7	42.1	56.09	-1,883.5	-610.6	278.4	205.1	73.29	3.798				
9,000.0	6,779.5	8,865.2	6,624.5	43.5	43.8	56.14	-1,983.5	-610.6	278.2	201.9	76.37	3.643				
9,100.0	6,779.1	8,965.2	6,624.4	45.3	45.6	56.19	-2,083.5	-610.6	278.1	198.6	79.48	3.499				
9,200.0	6,778.7	9,065.2	6,624.2	47.1	47.4	56.23	-2,183.5	-610.6	277.9	195.3	82.60	3.365				
9,300.0	6,778.3	9,165.2	6,624.1	48.9	49.2	56.28	-2,283.5	-610.6	277.8	192.0	85.74	3.240				
9,400.0	6,777.9	9,265.2	6,624.0	50.7	51.0	56.33	-2,383.5	-610.6	277.6	188.7	88.90	3.123				
9,500.0	6,777.4	9,365.2	6,623.8	52.5	52.8	56.38	-2,483.5	-610.6	277.5	185.4	92.07	3.014				
9,600.0	6,777.0	9,465.2	6,623.7	54.3	54.6	56.43	-2,583.5	-610.6	277.3	182.1	95.25	2.911				
9,700.0	6,776.6	9,565.2	6,623.5	56.2	56.4	56.47	-2,683.5	-610.6	277.1	178.7	98.45	2.815				
9,800.0	6,776.2	9,665.2	6,623.4	58.0	58.3	56.52	-2,783.5	-610.6	277.0	175.3	101.66	2.725				

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-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-143 - Wellbore #1 - Plan #1 (3-14-16)										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)			
9,900.0	6,775.8	9,765.2	6,623.3	59.8	60.1	56.57	-2,883.5	-610.6	276.8	172.0	104.88	2.640		
10,000.0	6,775.4	9,865.2	6,623.1	61.7	61.9	56.62	-2,983.5	-610.6	276.7	168.6	108.11	2.559		
10,100.0	6,774.9	9,965.2	6,623.0	63.5	63.8	56.67	-3,083.5	-610.6	276.5	165.2	111.35	2.483		
10,200.0	6,774.5	10,065.2	6,622.8	65.4	65.6	56.72	-3,183.5	-610.6	276.4	161.8	114.60	2.412		
10,300.0	6,774.1	10,165.2	6,622.7	67.3	67.5	56.76	-3,283.5	-610.6	276.2	158.4	117.86	2.344		
10,400.0	6,773.7	10,265.2	6,622.6	69.1	69.3	56.81	-3,383.5	-610.6	276.1	154.9	121.13	2.279		
10,500.0	6,773.3	10,365.2	6,622.4	71.0	71.2	56.86	-3,483.5	-610.6	275.9	151.5	124.40	2.218		
10,600.0	6,772.8	10,465.2	6,622.3	72.9	73.1	56.91	-3,583.5	-610.6	275.8	148.1	127.68	2.160		
10,700.0	6,772.4	10,565.2	6,622.1	74.7	74.9	56.96	-3,683.5	-610.6	275.6	144.6	130.97	2.104		
10,800.0	6,772.0	10,665.2	6,622.0	76.6	76.8	57.01	-3,783.5	-610.6	275.5	141.2	134.27	2.052		
10,900.0	6,771.6	10,765.2	6,621.9	78.5	78.7	57.06	-3,883.5	-610.6	275.3	137.7	137.57	2.001		
11,000.0	6,771.2	10,865.2	6,621.7	80.4	80.5	57.10	-3,983.5	-610.6	275.2	134.3	140.87	1.953		
11,100.0	6,770.7	10,965.2	6,621.6	82.2	82.4	57.15	-4,083.5	-610.6	275.0	130.8	144.19	1.907		
11,200.0	6,770.3	11,065.2	6,621.4	84.1	84.3	57.20	-4,183.5	-610.6	274.9	127.4	147.51	1.863		
11,300.0	6,769.9	11,165.2	6,621.3	86.0	86.2	57.25	-4,283.5	-610.6	274.7	123.9	150.83	1.821		
11,400.0	6,769.5	11,265.2	6,621.2	87.9	88.1	57.30	-4,383.5	-610.6	274.6	120.4	154.16	1.781		
11,500.0	6,769.1	11,365.2	6,621.0	89.8	89.9	57.35	-4,483.5	-610.6	274.4	116.9	157.50	1.742		
11,600.0	6,768.7	11,465.2	6,620.9	91.7	91.8	57.40	-4,583.5	-610.6	274.3	113.4	160.84	1.705		
11,700.0	6,768.2	11,565.2	6,620.7	93.6	93.7	57.45	-4,683.5	-610.6	274.1	109.9	164.19	1.669		
11,800.0	6,767.8	11,665.2	6,620.6	95.4	95.6	57.50	-4,783.5	-610.6	274.0	106.4	167.54	1.635		
11,900.0	6,767.4	11,765.2	6,620.5	97.3	97.5	57.55	-4,883.5	-610.6	273.8	102.9	170.89	1.602		
12,000.0	6,767.0	11,865.2	6,620.3	99.2	99.4	57.60	-4,983.5	-610.6	273.7	99.4	174.25	1.570		
12,100.0	6,766.6	11,965.2	6,620.2	101.1	101.3	57.65	-5,083.5	-610.6	273.5	95.9	177.62	1.540		
12,200.0	6,766.1	12,065.2	6,620.0	103.0	103.1	57.69	-5,183.5	-610.6	273.4	92.4	180.99	1.510		
12,300.0	6,765.7	12,165.2	6,619.9	104.9	105.0	57.74	-5,283.5	-610.6	273.2	88.8	184.36	1.482 Level 3		
12,400.0	6,765.3	12,265.2	6,619.8	106.8	106.9	57.79	-5,383.5	-610.6	273.1	85.3	187.74	1.454 Level 3		
12,500.0	6,764.9	12,365.2	6,619.6	108.7	108.8	57.84	-5,483.5	-610.6	272.9	81.8	191.12	1.428 Level 3		
12,600.0	6,764.5	12,465.2	6,619.5	110.6	110.7	57.89	-5,583.5	-610.6	272.8	78.3	194.51	1.402 Level 3		
12,700.0	6,764.0	12,565.2	6,619.4	112.5	112.6	57.94	-5,683.5	-610.6	272.6	74.7	197.90	1.378 Level 3		
12,800.0	6,763.6	12,665.2	6,619.2	114.4	114.5	57.99	-5,783.5	-610.6	272.5	71.2	201.29	1.354 Level 3		
12,900.0	6,763.2	12,765.2	6,619.1	116.3	116.4	58.04	-5,883.5	-610.6	272.3	67.6	204.69	1.330 Level 3		
13,000.0	6,762.8	12,865.2	6,618.9	118.2	118.3	58.09	-5,983.5	-610.6	272.2	64.1	208.09	1.308 Level 3		
13,100.0	6,762.4	12,965.2	6,618.8	120.1	120.2	58.14	-6,083.5	-610.6	272.0	60.5	211.50	1.286 Level 3		
13,200.0	6,762.0	13,065.2	6,618.7	122.0	122.1	58.19	-6,183.5	-610.6	271.9	57.0	214.91	1.265 Level 3		
13,300.0	6,761.5	13,165.2	6,618.5	123.9	124.0	58.24	-6,283.5	-610.6	271.7	53.4	218.33	1.245 Level 2		
13,400.0	6,761.1	13,265.2	6,618.4	125.8	125.9	58.29	-6,383.5	-610.6	271.6	49.8	221.74	1.225 Level 2		
13,500.0	6,760.7	13,365.2	6,618.2	127.7	127.8	58.34	-6,483.5	-610.6	271.4	46.3	225.17	1.205 Level 2		
13,600.0	6,760.3	13,465.2	6,618.1	129.6	129.7	58.39	-6,583.5	-610.6	271.3	42.7	228.59	1.187 Level 2		
13,700.0	6,759.9	13,565.2	6,618.0	131.5	131.6	58.44	-6,683.5	-610.6	271.1	39.1	232.02	1.169 Level 2		
13,800.0	6,759.4	13,665.2	6,617.8	133.4	133.5	58.49	-6,783.5	-610.6	271.0	35.5	235.45	1.151 Level 2		
13,900.0	6,759.0	13,765.2	6,617.7	135.3	135.4	58.54	-6,883.5	-610.6	270.9	32.0	238.89	1.134 Level 2		
14,000.0	6,758.6	13,865.2	6,617.5	137.2	137.3	58.59	-6,983.5	-610.6	270.7	28.4	242.33	1.117 Level 2		
14,100.0	6,758.2	13,965.2	6,617.4	139.1	139.2	58.64	-7,083.5	-610.6	270.6	24.8	245.77	1.101 Level 2		
14,200.0	6,757.8	14,065.2	6,617.3	141.1	141.1	58.70	-7,183.5	-610.6	270.4	21.2	249.22	1.085 Level 2		
14,300.0	6,757.3	14,165.2	6,617.1	143.0	143.0	58.75	-7,283.4	-610.6	270.3	17.6	252.67	1.070 Level 2		
14,381.9	6,757.0	14,247.2	6,617.0	144.5	144.6	58.79	-7,365.4	-610.6	270.2	14.7	255.50	1.057 Level 2, SF		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-203 - Wellbore #1 - Plan #1 (3-14-16)													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	91.38	-0.4	14.8	14.8	14.8	0.00	N/A		
100.0	100.0	100.0	100.0	0.1	0.1	91.38	-0.4	14.8	14.8	14.5	0.22	65.718		
200.0	200.0	200.0	200.0	0.3	0.3	91.38	-0.4	14.8	14.8	14.1	0.67	21.906		
300.0	300.0	300.0	300.0	0.6	0.6	91.38	-0.4	14.8	14.8	13.6	1.12	13.144		
400.0	400.0	400.0	400.0	0.8	0.8	91.38	-0.4	14.8	14.8	13.2	1.57	9.388		
500.0	500.0	500.0	500.0	1.0	1.0	91.38	-0.4	14.8	14.8	12.7	2.02	7.302		
600.0	600.0	600.0	600.0	1.2	1.2	91.38	-0.4	14.8	14.8	12.3	2.47	5.974		
700.0	700.0	700.0	700.0	1.5	1.5	91.38	-0.4	14.8	14.8	11.8	2.92	5.055		
800.0	800.0	800.0	800.0	1.7	1.7	91.38	-0.4	14.8	14.8	11.4	3.37	4.381		
900.0	900.0	900.0	900.0	1.9	1.9	91.38	-0.4	14.8	14.8	11.0	3.82	3.866		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	91.38	-0.4	14.8	14.8	10.5	4.27	3.459		
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	91.38	-0.4	14.8	14.8	10.1	4.72	3.129		
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	91.38	-0.4	14.8	14.8	9.6	5.17	2.857		
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	91.38	-0.4	14.8	14.8	9.2	5.62	2.629		
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	91.38	-0.4	14.8	14.8	8.7	6.07	2.434 CC		
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	131.92	-0.4	14.8	15.6	9.1	6.51	2.397		
1,600.0	1,599.9	1,599.9	1,599.9	3.5	3.5	140.99	-0.4	14.8	18.5	11.5	6.96	2.655		
1,700.0	1,699.7	1,699.7	1,699.7	3.7	3.7	150.86	-0.4	14.8	23.9	16.5	7.39	3.234		
1,800.0	1,799.3	1,799.3	1,799.3	3.9	3.9	158.76	-0.4	14.8	32.2	24.4	7.83	4.116		
1,900.0	1,898.6	1,898.6	1,898.6	4.2	4.2	164.34	-0.4	14.8	43.4	35.1	8.26	5.256		
2,000.0	1,997.5	1,997.5	1,997.5	4.4	4.4	168.17	-0.4	14.8	57.3	48.7	8.68	6.607		
2,100.0	2,096.2	2,097.8	2,097.8	4.7	4.6	170.30	0.8	14.4	72.2	63.1	9.12	7.913		
2,200.0	2,194.9	2,198.9	2,198.8	5.0	4.8	170.88	4.6	13.2	84.8	75.3	9.57	8.865		
2,300.0	2,293.6	2,300.4	2,300.1	5.3	5.1	170.53	10.9	11.3	95.2	85.2	10.02	9.496		
2,400.0	2,392.2	2,402.4	2,401.6	5.6	5.3	169.51	19.9	8.5	103.3	92.8	10.49	9.846		
2,500.0	2,490.9	2,504.6	2,503.1	6.0	5.5	167.90	31.5	5.0	109.1	98.1	10.96	9.953		
2,600.0	2,589.6	2,606.8	2,604.2	6.3	5.8	165.70	45.6	0.6	112.7	101.3	11.44	9.852		
2,700.0	2,688.3	2,706.6	2,702.9	6.6	6.0	163.36	60.5	-3.9	115.6	103.6	11.93	9.685		
2,800.0	2,786.9	2,806.5	2,801.5	6.9	6.3	161.13	75.5	-8.5	118.6	106.2	12.44	9.536		
2,900.0	2,885.6	2,906.3	2,900.1	7.3	6.6	159.02	90.4	-13.1	121.9	108.9	12.96	9.400		
3,000.0	2,984.3	3,006.2	2,998.7	7.6	6.9	157.02	105.3	-17.7	125.2	111.7	13.50	9.276		
3,100.0	3,082.9	3,106.0	3,097.3	8.0	7.2	155.13	120.2	-22.3	128.8	114.7	14.05	9.163		
3,200.0	3,181.6	3,205.9	3,196.0	8.3	7.5	153.34	135.1	-26.9	132.4	117.8	14.62	9.058		
3,300.0	3,280.3	3,305.7	3,294.6	8.7	7.8	151.64	150.1	-31.4	136.2	121.0	15.20	8.962		
3,400.0	3,379.0	3,405.6	3,393.2	9.0	8.1	150.04	165.0	-36.0	140.1	124.3	15.79	8.872		
3,500.0	3,477.6	3,505.4	3,491.8	9.4	8.4	148.53	179.9	-40.6	144.1	127.7	16.39	8.788		
3,600.0	3,576.3	3,605.3	3,590.4	9.8	8.7	147.10	194.8	-45.2	148.2	131.2	17.01	8.711		
3,700.0	3,675.0	3,705.1	3,689.1	10.1	9.1	145.75	209.7	-49.8	152.4	134.7	17.64	8.638		
3,800.0	3,773.7	3,805.0	3,787.7	10.5	9.4	144.47	224.7	-54.4	156.6	138.3	18.27	8.571		
3,900.0	3,872.3	3,904.8	3,886.3	10.8	9.7	143.25	239.6	-58.9	160.9	142.0	18.92	8.508		
4,000.0	3,971.0	4,004.7	3,984.9	11.2	10.1	142.11	254.5	-63.5	165.3	145.8	19.57	8.450		
4,100.0	4,069.7	4,104.5	4,083.6	11.6	10.4	141.02	269.4	-68.1	169.8	149.6	20.23	8.395		
4,200.0	4,168.4	4,204.4	4,182.2	11.9	10.7	139.98	284.3	-72.7	174.3	153.4	20.89	8.344		
4,300.0	4,267.0	4,304.2	4,280.8	12.3	11.1	139.01	299.3	-77.3	178.9	157.3	21.57	8.296		
4,400.0	4,365.7	4,404.1	4,379.4	12.7	11.4	138.07	314.2	-81.9	183.5	161.3	22.24	8.251		
4,500.0	4,464.4	4,503.9	4,478.0	13.0	11.7	137.19	329.1	-86.4	188.2	165.3	22.93	8.209		
4,600.0	4,563.0	4,603.8	4,576.7	13.4	12.1	136.35	344.0	-91.0	192.9	169.3	23.61	8.170		
4,700.0	4,661.7	4,703.6	4,675.3	13.8	12.4	135.55	359.0	-95.6	197.7	173.4	24.30	8.134		
4,800.0	4,760.4	4,803.5	4,773.9	14.1	12.8	134.78	373.9	-100.2	202.5	177.5	25.00	8.099		
4,900.0	4,859.1	4,903.3	4,872.5	14.5	13.1	134.05	388.8	-104.8	207.3	181.6	25.70	8.067		
5,000.0	4,957.7	5,003.2	4,971.2	14.9	13.5	133.36	403.7	-109.4	212.1	185.7	26.40	8.037		

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-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-203 - Wellbore #1 - Plan #1 (3-14-16)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,100.0	5,056.4	5,103.0	5,069.8	15.2	13.8	132.70	418.6	-113.9	217.0	189.9	27.10	8.009		
5,200.0	5,155.1	5,202.9	5,168.4	15.6	14.2	132.06	433.6	-118.5	221.9	194.1	27.81	7.982		
5,300.0	5,253.8	5,302.7	5,267.0	16.0	14.5	131.45	448.5	-123.1	226.9	198.4	28.51	7.957		
5,400.0	5,352.4	5,402.6	5,365.6	16.3	14.9	130.88	463.4	-127.7	231.8	202.6	29.22	7.932		
5,500.0	5,451.5	5,501.8	5,463.7	16.6	15.2	129.96	478.1	-132.2	235.3	205.4	29.90	7.869		
5,600.0	5,550.9	5,600.0	5,561.0	16.8	15.5	128.95	490.5	-136.0	237.5	207.0	30.48	7.791		
5,700.0	5,650.7	5,696.3	5,656.8	17.0	15.7	128.07	499.6	-138.8	238.6	207.6	30.97	7.703		
5,800.0	5,750.6	5,793.7	5,754.0	17.2	15.9	127.28	505.6	-140.6	238.7	207.3	31.40	7.603		
5,900.0	5,850.6	5,891.2	5,851.5	17.4	16.0	89.90	508.4	-141.5	238.1	206.3	31.77	7.495		
5,954.8	5,905.4	5,945.2	5,905.4	17.4	16.1	89.85	508.6	-141.6	238.0	206.1	31.95	7.449		
6,000.0	5,950.6	5,990.3	5,950.6	17.5	16.2	89.85	508.6	-141.6	238.0	205.9	32.10	7.414		
6,020.8	5,971.4	6,011.2	5,971.4	17.6	16.2	-90.04	508.1	-141.6	238.0	205.9	32.15	7.403		
6,100.0	6,050.6	6,089.8	6,049.7	17.7	16.3	-88.46	501.1	-141.6	238.1	205.9	32.19	7.396		
6,200.0	6,150.0	6,187.7	6,145.6	17.7	16.3	-86.00	481.2	-141.6	238.6	206.6	31.99	7.458		
6,300.0	6,247.2	6,284.5	6,237.0	17.7	16.1	-83.64	449.7	-141.6	239.5	207.9	31.61	7.578		
6,400.0	6,340.6	6,380.1	6,322.7	17.6	16.0	-81.41	407.4	-141.6	240.7	209.6	31.10	7.742		
6,500.0	6,428.6	6,474.7	6,401.6	17.4	15.8	-79.35	355.4	-141.6	242.2	211.7	30.52	7.936		
6,600.0	6,509.6	6,568.4	6,472.9	17.2	15.6	-77.50	294.7	-141.6	243.8	213.9	29.96	8.139		
6,700.0	6,582.3	6,661.2	6,535.7	16.9	15.4	-75.86	226.4	-141.6	245.5	216.0	29.48	8.327		
6,800.0	6,645.4	6,753.4	6,589.3	16.7	15.3	-74.47	151.5	-141.6	247.1	217.9	29.17	8.469		
6,900.0	6,697.9	6,845.0	6,633.3	16.5	15.4	-73.32	71.2	-141.6	248.5	219.4	29.12	8.533		
7,000.0	6,738.8	6,936.2	6,667.3	16.3	15.5	-72.44	-13.3	-141.6	249.7	220.3	29.39	8.495		
7,100.0	6,767.4	7,027.0	6,690.9	16.2	15.9	-71.82	-101.0	-141.6	250.5	220.5	30.01	8.346		
7,200.0	6,783.4	7,117.6	6,703.9	16.8	16.5	-71.48	-190.6	-141.6	251.0	220.0	31.01	8.094		
7,300.0	6,786.7	7,210.3	6,706.5	17.6	17.2	-71.38	-283.2	-141.6	251.2	218.8	32.39	7.755		
7,400.0	6,786.2	7,310.3	6,705.9	18.6	18.2	-71.34	-383.2	-141.6	251.2	217.1	34.16	7.354		
7,500.0	6,785.8	7,410.3	6,705.2	19.7	19.3	-71.29	-483.2	-141.6	251.3	215.1	36.22	6.938		
7,600.0	6,785.4	7,510.3	6,704.6	21.0	20.5	-71.25	-583.2	-141.6	251.4	212.8	38.51	6.527		
7,700.0	6,785.0	7,610.3	6,704.0	22.3	21.8	-71.20	-683.2	-141.6	251.4	210.4	41.00	6.132		
7,800.0	6,784.6	7,710.3	6,703.3	23.7	23.2	-71.16	-783.2	-141.6	251.5	207.8	43.66	5.760		
7,900.0	6,784.2	7,810.3	6,702.7	25.1	24.7	-71.11	-883.2	-141.6	251.6	205.1	46.45	5.415		
8,000.0	6,783.7	7,910.3	6,702.1	26.6	26.2	-71.07	-983.2	-141.6	251.6	202.3	49.36	5.098		
8,100.0	6,783.3	8,010.3	6,701.5	28.2	27.8	-71.02	-1,083.2	-141.6	251.7	199.3	52.35	4.808		
8,200.0	6,782.9	8,110.3	6,700.8	29.8	29.4	-70.98	-1,183.2	-141.6	251.8	196.3	55.43	4.542		
8,300.0	6,782.5	8,210.3	6,700.2	31.4	31.0	-70.93	-1,283.2	-141.6	251.8	193.3	58.57	4.300		
8,400.0	6,782.1	8,310.3	6,699.6	33.1	32.7	-70.89	-1,383.2	-141.6	251.9	190.1	61.76	4.079		
8,500.0	6,781.6	8,410.3	6,698.9	34.8	34.4	-70.84	-1,483.2	-141.6	252.0	187.0	65.00	3.876		
8,600.0	6,781.2	8,510.3	6,698.3	36.5	36.1	-70.80	-1,583.2	-141.6	252.0	183.8	68.28	3.691		
8,700.0	6,780.8	8,610.3	6,697.7	38.2	37.9	-70.75	-1,683.2	-141.6	252.1	180.5	71.59	3.521		
8,800.0	6,780.4	8,710.3	6,697.1	39.9	39.6	-70.71	-1,783.2	-141.6	252.2	177.2	74.94	3.365		
8,900.0	6,780.0	8,810.3	6,696.4	41.7	41.4	-70.66	-1,883.2	-141.6	252.2	173.9	78.30	3.221		
9,000.0	6,779.5	8,910.3	6,695.8	43.5	43.2	-70.62	-1,983.2	-141.6	252.3	170.6	81.69	3.088		
9,100.0	6,779.1	9,010.3	6,695.2	45.3	45.0	-70.57	-2,083.2	-141.6	252.4	167.3	85.10	2.966		
9,200.0	6,778.7	9,110.3	6,694.5	47.1	46.8	-70.53	-2,183.2	-141.6	252.5	163.9	88.53	2.852		
9,300.0	6,778.3	9,210.3	6,693.9	48.9	48.6	-70.48	-2,283.2	-141.6	252.5	160.6	91.97	2.746		
9,400.0	6,777.9	9,310.3	6,693.3	50.7	50.5	-70.44	-2,383.2	-141.6	252.6	157.2	95.42	2.647		
9,500.0	6,777.4	9,410.3	6,692.7	52.5	52.3	-70.39	-2,483.2	-141.6	252.7	153.8	98.88	2.555		
9,600.0	6,777.0	9,510.3	6,692.0	54.3	54.1	-70.35	-2,583.2	-141.6	252.7	150.4	102.36	2.469		
9,700.0	6,776.6	9,610.3	6,691.4	56.2	56.0	-70.30	-2,683.2	-141.6	252.8	147.0	105.84	2.389		
9,800.0	6,776.2	9,710.3	6,690.8	58.0	57.8	-70.26	-2,783.1	-141.6	252.9	143.5	109.33	2.313		

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-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-203 - Wellbore #1 - Plan #1 (3-14-16)										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)			
9,900.0	6,775.8	9,810.3	6,690.2	59.8	59.7	-70.21	-2,883.1	-141.6	252.9	140.1	112.82	2.242		
10,000.0	6,775.4	9,910.3	6,689.5	61.7	61.5	-70.17	-2,983.1	-141.6	253.0	136.7	116.33	2.175		
10,100.0	6,774.9	10,010.3	6,688.9	63.5	63.4	-70.12	-3,083.1	-141.6	253.1	133.3	119.83	2.112		
10,200.0	6,774.5	10,110.3	6,688.3	65.4	65.2	-70.08	-3,183.1	-141.6	253.2	129.8	123.35	2.052		
10,300.0	6,774.1	10,210.3	6,687.6	67.3	67.1	-70.04	-3,283.1	-141.6	253.2	126.4	126.86	1.996		
10,400.0	6,773.7	10,310.3	6,687.0	69.1	69.0	-69.99	-3,383.1	-141.6	253.3	122.9	130.38	1.943		
10,500.0	6,773.3	10,410.3	6,686.4	71.0	70.9	-69.95	-3,483.1	-141.6	253.4	119.5	133.91	1.892		
10,600.0	6,772.8	10,510.3	6,685.8	72.9	72.7	-69.90	-3,583.1	-141.6	253.4	116.0	137.44	1.844		
10,700.0	6,772.4	10,610.3	6,685.1	74.7	74.6	-69.86	-3,683.1	-141.6	253.5	112.6	140.96	1.798		
10,800.0	6,772.0	10,710.3	6,684.5	76.6	76.5	-69.81	-3,783.1	-141.6	253.6	109.1	144.50	1.755		
10,900.0	6,771.6	10,810.3	6,683.9	78.5	78.4	-69.77	-3,883.1	-141.6	253.7	105.6	148.03	1.714		
11,000.0	6,771.2	10,910.3	6,683.2	80.4	80.2	-69.72	-3,983.1	-141.6	253.7	102.2	151.56	1.674		
11,100.0	6,770.7	11,010.3	6,682.6	82.2	82.1	-69.68	-4,083.1	-141.6	253.8	98.7	155.10	1.636		
11,200.0	6,770.3	11,110.3	6,682.0	84.1	84.0	-69.64	-4,183.1	-141.6	253.9	95.2	158.64	1.600		
11,300.0	6,769.9	11,210.3	6,681.4	86.0	85.9	-69.59	-4,283.1	-141.6	254.0	91.8	162.18	1.566		
11,400.0	6,769.5	11,310.3	6,680.7	87.9	87.8	-69.55	-4,383.1	-141.6	254.0	88.3	165.72	1.533		
11,500.0	6,769.1	11,410.3	6,680.1	89.8	89.7	-69.50	-4,483.1	-141.6	254.1	84.8	169.25	1.501		
11,600.0	6,768.7	11,510.3	6,679.5	91.7	91.6	-69.46	-4,583.1	-141.6	254.2	81.4	172.80	1.471 Level 3		
11,700.0	6,768.2	11,610.3	6,678.8	93.6	93.5	-69.41	-4,683.1	-141.6	254.2	77.9	176.34	1.442 Level 3		
11,800.0	6,767.8	11,710.3	6,678.2	95.4	95.4	-69.37	-4,783.1	-141.6	254.3	74.4	179.88	1.414 Level 3		
11,900.0	6,767.4	11,810.3	6,677.6	97.3	97.3	-69.33	-4,883.1	-141.6	254.4	71.0	183.42	1.387 Level 3		
12,000.0	6,767.0	11,910.3	6,677.0	99.2	99.1	-69.28	-4,983.1	-141.6	254.5	67.5	186.96	1.361 Level 3		
12,100.0	6,766.6	12,010.3	6,676.3	101.1	101.0	-69.24	-5,083.1	-141.6	254.5	64.0	190.50	1.336 Level 3		
12,200.0	6,766.1	12,110.3	6,675.7	103.0	102.9	-69.19	-5,183.1	-141.6	254.6	60.6	194.04	1.312 Level 3		
12,300.0	6,765.7	12,210.3	6,675.1	104.9	104.8	-69.15	-5,283.1	-141.6	254.7	57.1	197.58	1.289 Level 3		
12,400.0	6,765.3	12,310.3	6,674.4	106.8	106.7	-69.11	-5,383.1	-141.6	254.8	53.6	201.12	1.267 Level 3		
12,500.0	6,764.9	12,410.3	6,673.8	108.7	108.6	-69.06	-5,483.1	-141.6	254.8	50.2	204.66	1.245 Level 2		
12,600.0	6,764.5	12,510.3	6,673.2	110.6	110.5	-69.02	-5,583.1	-141.6	254.9	46.7	208.20	1.224 Level 2		
12,700.0	6,764.0	12,610.3	6,672.6	112.5	112.4	-68.97	-5,683.1	-141.6	255.0	43.3	211.74	1.204 Level 2		
12,800.0	6,763.6	12,710.3	6,671.9	114.4	114.3	-68.93	-5,783.1	-141.6	255.1	39.8	215.27	1.185 Level 2		
12,900.0	6,763.2	12,810.3	6,671.3	116.3	116.2	-68.89	-5,883.1	-141.6	255.1	36.3	218.81	1.166 Level 2		
13,000.0	6,762.8	12,910.3	6,670.7	118.2	118.1	-68.84	-5,983.1	-141.6	255.2	32.9	222.35	1.148 Level 2		
13,100.0	6,762.4	13,010.3	6,670.0	120.1	120.1	-68.80	-6,083.1	-141.6	255.3	29.4	225.88	1.130 Level 2		
13,200.0	6,762.0	13,110.3	6,669.4	122.0	122.0	-68.75	-6,183.1	-141.6	255.4	26.0	229.41	1.113 Level 2		
13,300.0	6,761.5	13,210.3	6,668.8	123.9	123.9	-68.71	-6,283.1	-141.6	255.4	22.5	232.95	1.097 Level 2		
13,400.0	6,761.1	13,310.3	6,668.2	125.8	125.8	-68.67	-6,383.1	-141.6	255.5	19.0	236.48	1.081 Level 2		
13,500.0	6,760.7	13,410.3	6,667.5	127.7	127.7	-68.62	-6,483.1	-141.6	255.6	15.6	240.01	1.065 Level 2		
13,600.0	6,760.3	13,510.3	6,666.9	129.6	129.6	-68.58	-6,583.1	-141.6	255.7	12.1	243.54	1.050 Level 2		
13,700.0	6,759.9	13,610.3	6,666.3	131.5	131.5	-68.54	-6,683.1	-141.6	255.7	8.7	247.07	1.035 Level 2		
13,800.0	6,759.4	13,710.3	6,665.6	133.4	133.4	-68.49	-6,783.1	-141.6	255.8	5.2	250.60	1.021 Level 2		
13,900.0	6,759.0	13,810.3	6,665.0	135.3	135.3	-68.45	-6,883.1	-141.6	255.9	1.8	254.12	1.007 Level 2		
14,000.0	6,758.6	13,910.3	6,664.4	137.2	137.2	-68.41	-6,983.1	-141.6	256.0	-1.7	257.65	0.994 Level 1		
14,100.0	6,758.2	14,010.3	6,663.8	139.1	139.1	-68.36	-7,083.1	-141.6	256.1	-5.1	261.17	0.980 Level 1		
14,200.0	6,757.8	14,110.3	6,663.1	141.1	141.0	-68.32	-7,183.1	-141.6	256.1	-8.6	264.70	0.968 Level 1		
14,300.0	6,757.3	14,210.3	6,662.5	143.0	142.9	-68.27	-7,283.0	-141.6	256.2	-12.0	268.22	0.955 Level 1		
14,342.6	6,757.2	14,252.9	6,662.2	143.8	143.7	-68.26	-7,325.6	-141.6	256.2	-13.5	269.72	0.950 Level 1		
14,381.9	6,757.0	14,290.7	6,662.0	144.5	144.5	-68.24	-7,363.4	-141.6	256.3	-14.8	271.07	0.945 Level 1, ES, SF		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-243 - Wellbore #1 - Plan #1 (3-14-16)													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	-89.99	0.0	-30.1	30.1						
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-30.1	30.1	29.9	0.22	133.877			
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-30.1	30.1	29.4	0.67	44.626			
300.0	300.0	300.0	300.0	0.6	0.6	-89.99	0.0	-30.1	30.1	29.0	1.12	26.775			
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-30.1	30.1	28.5	1.57	19.125			
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-30.1	30.1	28.1	2.02	14.875			
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	0.0	-30.1	30.1	27.6	2.47	12.171			
700.0	700.0	700.0	700.0	1.5	1.5	-89.99	0.0	-30.1	30.1	27.2	2.92	10.298			
800.0	800.0	800.0	800.0	1.7	1.7	-89.99	0.0	-30.1	30.1	26.7	3.37	8.925			
900.0	900.0	900.0	900.0	1.9	1.9	-89.99	0.0	-30.1	30.1	26.3	3.82	7.875			
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-89.99	0.0	-30.1	30.1	25.8	4.27	7.046 CC, ES			
1,100.0	1,100.0	1,099.3	1,099.3	2.4	2.4	-88.74	0.7	-31.2	31.2	26.5	4.71	6.622			
1,200.0	1,200.0	1,198.5	1,198.4	2.6	2.6	-85.49	2.7	-34.5	34.6	29.5	5.15	6.721			
1,300.0	1,300.0	1,297.4	1,297.1	2.8	2.8	-81.32	6.1	-39.9	40.5	34.9	5.59	7.241			
1,400.0	1,400.0	1,395.9	1,395.2	3.0	3.0	-77.20	10.8	-47.5	49.0	42.9	6.04	8.109			
1,500.0	1,500.0	1,494.0	1,492.7	3.3	3.3	-37.53	16.8	-57.2	59.0	52.6	6.47	9.126			
1,600.0	1,599.9	1,591.9	1,589.5	3.5	3.5	-36.18	24.1	-69.0	69.6	62.7	6.91	10.075			
1,700.0	1,699.7	1,689.4	1,685.7	3.7	3.8	-35.80	32.7	-82.8	80.5	73.2	7.35	10.956			
1,800.0	1,799.3	1,786.7	1,781.1	3.9	4.1	-36.04	42.5	-98.7	91.8	84.0	7.80	11.772			
1,900.0	1,898.6	1,883.6	1,875.7	4.2	4.5	-36.68	53.6	-116.6	103.4	95.1	8.25	12.526			
2,000.0	1,997.5	1,982.5	1,971.9	4.4	4.9	-37.75	65.7	-136.2	114.5	105.8	8.73	13.119			
2,100.0	2,096.2	2,082.0	2,068.6	4.7	5.3	-39.23	78.0	-155.9	124.3	115.1	9.24	13.453			
2,200.0	2,194.9	2,181.5	2,165.4	5.0	5.7	-40.53	90.2	-175.7	134.2	124.4	9.78	13.725			
2,300.0	2,293.6	2,280.9	2,262.1	5.3	6.2	-41.65	102.4	-195.5	144.1	133.7	10.32	13.952			
2,400.0	2,392.2	2,380.4	2,358.8	5.6	6.6	-42.62	114.7	-215.2	154.0	143.1	10.89	14.141			
2,500.0	2,490.9	2,479.9	2,455.5	6.0	7.1	-43.48	126.9	-235.0	164.0	152.5	11.47	14.299			
2,600.0	2,589.6	2,579.3	2,552.3	6.3	7.6	-44.24	139.1	-254.7	174.0	161.9	12.06	14.430			
2,700.0	2,688.3	2,678.8	2,649.0	6.6	8.0	-44.92	151.4	-274.5	184.0	171.3	12.65	14.540			
2,800.0	2,786.9	2,778.3	2,745.7	6.9	8.5	-45.52	163.6	-294.2	194.0	180.8	13.26	14.631			
2,900.0	2,885.6	2,877.8	2,842.4	7.3	9.0	-46.07	175.8	-314.0	204.1	190.2	13.88	14.706			
3,000.0	2,984.3	2,977.2	2,939.1	7.6	9.4	-46.56	188.1	-333.7	214.2	199.7	14.50	14.769			
3,100.0	3,082.9	3,076.7	3,035.9	8.0	9.9	-47.01	200.3	-353.5	224.3	209.2	15.13	14.822			
3,200.0	3,181.6	3,176.2	3,132.6	8.3	10.4	-47.43	212.5	-373.2	234.4	218.7	15.77	14.866			
3,300.0	3,280.3	3,275.7	3,229.3	8.7	10.9	-47.80	224.8	-393.0	244.6	228.1	16.41	14.902			
3,400.0	3,379.0	3,375.1	3,326.0	9.0	11.4	-48.15	237.0	-412.7	254.7	237.6	17.06	14.932			
3,500.0	3,477.6	3,474.6	3,422.8	9.4	11.9	-48.47	249.2	-432.5	264.8	247.1	17.71	14.957			
3,600.0	3,576.3	3,574.1	3,519.5	9.8	12.4	-48.77	261.5	-452.2	275.0	256.6	18.36	14.977			
3,700.0	3,675.0	3,673.6	3,616.2	10.1	12.8	-49.05	273.7	-472.0	285.2	266.1	19.02	14.994			
3,800.0	3,773.7	3,773.0	3,712.9	10.5	13.3	-49.30	285.9	-491.7	295.3	275.6	19.68	15.008			
3,900.0	3,872.3	3,872.5	3,809.6	10.8	13.8	-49.54	298.2	-511.5	305.5	285.2	20.34	15.019			
4,000.0	3,971.0	3,972.0	3,906.4	11.2	14.3	-49.77	310.4	-531.2	315.7	294.7	21.01	15.027			
4,100.0	4,069.7	4,071.4	4,003.1	11.6	14.8	-49.98	322.6	-551.0	325.9	304.2	21.67	15.034			
4,200.0	4,168.4	4,170.9	4,099.8	11.9	15.3	-50.18	334.9	-570.7	336.0	313.7	22.34	15.039			
4,300.0	4,267.0	4,270.4	4,196.5	12.3	15.8	-50.36	347.1	-590.5	346.2	323.2	23.02	15.043			
4,400.0	4,365.7	4,369.9	4,293.3	12.7	16.3	-50.54	359.3	-610.2	356.4	332.7	23.69	15.045			
4,500.0	4,464.4	4,469.3	4,390.0	13.0	16.8	-50.70	371.6	-630.0	366.6	342.3	24.37	15.047			
4,600.0	4,563.0	4,568.8	4,486.7	13.4	17.3	-50.86	383.8	-649.7	376.8	351.8	25.04	15.047			
4,700.0	4,661.7	4,668.3	4,583.4	13.8	17.8	-51.01	396.0	-669.5	387.0	361.3	25.72	15.047			
4,800.0	4,760.4	4,767.8	4,680.1	14.1	18.3	-51.15	408.3	-689.2	397.2	370.8	26.40	15.046			
4,900.0	4,859.1	4,867.2	4,776.9	14.5	18.8	-51.28	420.5	-709.0	407.4	380.4	27.08	15.045			
5,000.0	4,957.7	4,966.7	4,873.6	14.9	19.3	-51.41	432.7	-728.7	417.6	389.9	27.76	15.043			

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-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-243 - Wellbore #1 - Plan #1 (3-14-16)											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)				
5,100.0	5,056.4	5,066.2	4,970.3	15.2	19.8	-51.53	445.0	-748.5	427.9	399.4	28.45	15.041			
5,200.0	5,155.1	5,165.7	5,067.0	15.6	20.3	-51.65	457.2	-768.2	438.1	408.9	29.13	15.038			
5,300.0	5,253.8	5,270.4	5,168.9	16.0	20.7	-51.78	469.9	-788.8	448.1	418.3	29.82	15.024			
5,400.0	5,352.4	5,385.7	5,281.9	16.3	21.2	-52.16	482.1	-808.5	455.4	424.9	30.53	14.919			
5,500.0	5,451.5	5,501.3	5,396.0	16.6	21.5	-52.64	491.9	-824.3	460.8	429.7	31.13	14.804			
5,600.0	5,550.9	5,617.2	5,511.0	16.8	21.8	-52.99	499.3	-836.2	464.8	433.2	31.64	14.693			
5,700.0	5,650.7	5,733.2	5,626.6	17.0	22.0	-53.22	504.2	-844.2	467.5	435.5	32.06	14.582			
5,800.0	5,750.6	5,849.3	5,742.6	17.2	22.2	-53.34	506.7	-848.2	468.9	436.5	32.40	14.472			
5,900.0	5,850.6	5,957.3	5,850.6	17.4	22.3	-90.12	507.0	-848.6	469.1	436.4	32.69	14.347			
6,000.0	5,950.6	6,057.3	5,950.6	17.5	22.4	-90.12	507.0	-848.6	469.1	436.0	33.02	14.203			
6,100.0	6,050.6	6,156.8	6,049.9	17.7	22.5	89.29	501.7	-848.6	469.1	435.7	33.40	14.043			
6,200.0	6,150.0	6,255.2	6,146.6	17.7	22.5	88.31	483.9	-848.6	469.3	435.6	33.64	13.949			
6,300.0	6,247.2	6,352.6	6,239.3	17.7	22.4	87.37	454.2	-848.6	469.5	435.9	33.66	13.950			
6,400.0	6,340.6	6,450.0	6,327.5	17.6	22.3	86.47	412.9	-848.6	469.9	436.5	33.49	14.034			
6,500.0	6,428.6	6,544.9	6,407.6	17.4	22.1	85.64	362.3	-848.6	470.4	437.2	33.18	14.179			
6,600.0	6,509.6	6,639.8	6,480.9	17.2	21.9	84.88	302.0	-848.6	470.9	438.1	32.80	14.358			
6,700.0	6,582.3	6,734.1	6,545.8	16.9	21.7	84.21	233.7	-848.6	471.5	439.0	32.44	14.533			
6,800.0	6,645.4	6,827.9	6,601.4	16.7	21.6	83.63	158.3	-848.6	472.0	439.8	32.21	14.653			
6,900.0	6,697.9	6,921.1	6,647.2	16.5	21.4	83.16	77.1	-848.6	472.4	440.2	32.20	14.669			
7,000.0	6,738.8	7,014.1	6,682.7	16.3	21.3	82.80	-8.7	-848.6	472.8	440.3	32.52	14.540			
7,100.0	6,767.4	7,106.7	6,707.4	16.2	21.2	82.55	-97.9	-848.6	473.0	439.8	33.21	14.246			
7,200.0	6,783.4	7,200.0	6,721.2	16.8	21.2	82.42	-190.1	-848.6	473.2	438.9	34.30	13.795			
7,217.7	6,784.9	7,215.6	6,722.4	16.9	21.3	82.40	-205.6	-848.6	473.2	438.7	34.55	13.698			
7,300.0	6,786.7	7,293.2	6,724.0	17.6	21.4	82.39	-283.3	-848.6	473.2	437.5	35.76	13.232			
7,400.0	6,786.2	7,393.2	6,723.3	18.6	21.9	82.36	-383.3	-848.6	473.3	435.7	37.57	12.595			
7,500.0	6,785.8	7,493.2	6,722.7	19.7	22.6	82.33	-483.3	-848.6	473.3	433.6	39.66	11.932			
7,600.0	6,785.4	7,593.2	6,722.0	21.0	23.5	82.30	-583.3	-848.6	473.3	431.3	42.00	11.270			
7,700.0	6,785.0	7,693.2	6,721.3	22.3	24.6	82.27	-683.3	-848.6	473.3	428.8	44.53	10.629			
7,800.0	6,784.6	7,793.2	6,720.7	23.7	25.9	82.24	-783.3	-848.6	473.4	426.1	47.24	10.021			
7,900.0	6,784.2	7,893.2	6,720.0	25.1	27.2	82.21	-883.3	-848.6	473.4	423.3	50.09	9.451			
8,000.0	6,783.7	7,993.2	6,719.4	26.6	28.6	82.18	-983.3	-848.6	473.4	420.4	53.06	8.923			
8,100.0	6,783.3	8,093.2	6,718.7	28.2	30.0	82.16	-1,083.3	-848.6	473.5	417.3	56.13	8.435			
8,200.0	6,782.9	8,193.2	6,718.0	29.8	31.5	82.13	-1,183.3	-848.6	473.5	414.2	59.29	7.986			
8,300.0	6,782.5	8,293.2	6,717.4	31.4	33.1	82.10	-1,283.3	-848.6	473.5	411.0	62.52	7.575			
8,400.0	6,782.1	8,393.2	6,716.7	33.1	34.7	82.07	-1,383.3	-848.6	473.6	407.8	65.81	7.196			
8,500.0	6,781.6	8,493.2	6,716.0	34.8	36.3	82.04	-1,483.3	-848.6	473.6	404.5	69.15	6.849			
8,600.0	6,781.2	8,593.2	6,715.4	36.5	37.9	82.01	-1,583.3	-848.6	473.7	401.1	72.54	6.530			
8,700.0	6,780.8	8,693.2	6,714.7	38.2	39.6	81.98	-1,683.3	-848.6	473.7	397.7	75.97	6.235			
8,800.0	6,780.4	8,793.2	6,714.0	39.9	41.3	81.95	-1,783.3	-848.6	473.7	394.3	79.43	5.964			
8,900.0	6,780.0	8,893.2	6,713.4	41.7	43.0	81.92	-1,883.3	-848.6	473.8	390.8	82.92	5.713			
9,000.0	6,779.5	8,993.2	6,712.7	43.5	44.7	81.89	-1,983.2	-848.6	473.8	387.4	86.44	5.481			
9,100.0	6,779.1	9,093.2	6,712.1	45.3	46.5	81.86	-2,083.2	-848.6	473.8	383.8	89.98	5.266			
9,200.0	6,778.7	9,193.2	6,711.4	47.1	48.2	81.83	-2,183.2	-848.6	473.9	380.3	93.54	5.066			
9,300.0	6,778.3	9,293.2	6,710.7	48.9	50.0	81.80	-2,283.2	-848.6	473.9	376.8	97.11	4.880			
9,400.0	6,777.9	9,393.2	6,710.1	50.7	51.8	81.77	-2,383.2	-848.6	473.9	373.2	100.71	4.706			
9,500.0	6,777.4	9,493.2	6,709.4	52.5	53.5	81.75	-2,483.2	-848.6	474.0	369.6	104.32	4.544			
9,600.0	6,777.0	9,593.2	6,708.7	54.3	55.3	81.72	-2,583.2	-848.6	474.0	366.1	107.94	4.391			
9,700.0	6,776.6	9,693.2	6,708.1	56.2	57.1	81.69	-2,683.2	-848.6	474.0	362.5	111.57	4.249			
9,800.0	6,776.2	9,793.2	6,707.4	58.0	58.9	81.66	-2,783.2	-848.6	474.1	358.9	115.21	4.115			
9,900.0	6,775.8	9,893.2	6,706.8	59.8	60.8	81.63	-2,883.2	-848.6	474.1	355.2	118.87	3.989			

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-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-243 - Wellbore #1 - Plan #1 (3-14-16)													Offset Site Error: 0.0 ft		
Survey Program: 0-MWD														Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
10,000.0	6,775.4	9,993.2	6,706.1	61.7	62.6	81.60	-2,983.2	-848.6	474.1	351.6	122.53	3.870			
10,100.0	6,774.9	10,093.2	6,705.4	63.5	64.4	81.57	-3,083.2	-848.6	474.2	348.0	126.19	3.758			
10,200.0	6,774.5	10,193.2	6,704.8	65.4	66.2	81.54	-3,183.2	-848.6	474.2	344.3	129.87	3.651			
10,300.0	6,774.1	10,293.2	6,704.1	67.3	68.1	81.51	-3,283.2	-848.6	474.2	340.7	133.55	3.551			
10,400.0	6,773.7	10,393.2	6,703.4	69.1	69.9	81.48	-3,383.2	-848.6	474.3	337.0	137.24	3.456			
10,500.0	6,773.3	10,493.2	6,702.8	71.0	71.8	81.45	-3,483.2	-848.6	474.3	333.4	140.93	3.366			
10,600.0	6,772.8	10,593.2	6,702.1	72.9	73.6	81.42	-3,583.2	-848.6	474.4	329.7	144.63	3.280			
10,700.0	6,772.4	10,693.2	6,701.4	74.7	75.5	81.40	-3,683.2	-848.6	474.4	326.1	148.33	3.198			
10,800.0	6,772.0	10,793.2	6,700.8	76.6	77.3	81.37	-3,783.2	-848.6	474.4	322.4	152.04	3.121			
10,900.0	6,771.6	10,893.2	6,700.1	78.5	79.2	81.34	-3,883.2	-848.6	474.5	318.7	155.75	3.046			
11,000.0	6,771.2	10,993.2	6,699.5	80.4	81.0	81.31	-3,983.2	-848.6	474.5	315.0	159.46	2.976			
11,100.0	6,770.7	11,093.2	6,698.8	82.2	82.9	81.28	-4,083.2	-848.7	474.5	311.4	163.18	2.908			
11,200.0	6,770.3	11,193.2	6,698.1	84.1	84.8	81.25	-4,183.2	-848.7	474.6	307.7	166.90	2.844			
11,300.0	6,769.9	11,293.2	6,697.5	86.0	86.6	81.22	-4,283.2	-848.7	474.6	304.0	170.62	2.782			
11,400.0	6,769.5	11,393.2	6,696.8	87.9	88.5	81.19	-4,383.2	-848.7	474.7	300.3	174.34	2.723			
11,500.0	6,769.1	11,493.2	6,696.1	89.8	90.4	81.16	-4,483.2	-848.7	474.7	296.6	178.07	2.666			
11,600.0	6,768.7	11,593.2	6,695.5	91.7	92.3	81.13	-4,583.2	-848.7	474.7	292.9	181.80	2.611			
11,700.0	6,768.2	11,693.2	6,694.8	93.6	94.1	81.10	-4,683.2	-848.7	474.8	289.2	185.53	2.559			
11,800.0	6,767.8	11,793.2	6,694.2	95.4	96.0	81.07	-4,783.2	-848.7	474.8	285.5	189.26	2.509			
11,900.0	6,767.4	11,893.2	6,693.5	97.3	97.9	81.05	-4,883.2	-848.7	474.8	281.8	193.00	2.460			
12,000.0	6,767.0	11,993.2	6,692.8	99.2	99.8	81.02	-4,983.2	-848.7	474.9	278.2	196.73	2.414			
12,100.0	6,766.6	12,093.2	6,692.2	101.1	101.6	80.99	-5,083.2	-848.7	474.9	274.5	200.47	2.369			
12,200.0	6,766.1	12,193.2	6,691.5	103.0	103.5	80.96	-5,183.2	-848.7	475.0	270.8	204.21	2.326			
12,300.0	6,765.7	12,293.2	6,690.8	104.9	105.4	80.93	-5,283.2	-848.7	475.0	267.1	207.95	2.284			
12,400.0	6,765.3	12,393.2	6,690.2	106.8	107.3	80.90	-5,383.2	-848.7	475.0	263.3	211.69	2.244			
12,500.0	6,764.9	12,493.2	6,689.5	108.7	109.2	80.87	-5,483.2	-848.7	475.1	259.6	215.43	2.205			
12,600.0	6,764.5	12,593.2	6,688.8	110.6	111.1	80.84	-5,583.2	-848.7	475.1	255.9	219.17	2.168			
12,700.0	6,764.0	12,693.2	6,688.2	112.5	113.0	80.81	-5,683.2	-848.7	475.2	252.2	222.92	2.132			
12,800.0	6,763.6	12,793.2	6,687.5	114.4	114.9	80.78	-5,783.2	-848.7	475.2	248.5	226.66	2.096			
12,900.0	6,763.2	12,893.2	6,686.9	116.3	116.8	80.75	-5,883.2	-848.7	475.2	244.8	230.41	2.063			
13,000.0	6,762.8	12,993.2	6,686.2	118.2	118.6	80.73	-5,983.1	-848.7	475.3	241.1	234.15	2.030			
13,100.0	6,762.4	13,093.2	6,685.5	120.1	120.5	80.70	-6,083.1	-848.7	475.3	237.4	237.90	1.998			
13,200.0	6,762.0	13,193.2	6,684.9	122.0	122.4	80.67	-6,183.1	-848.7	475.3	233.7	241.64	1.967			
13,300.0	6,761.5	13,293.2	6,684.2	123.9	124.3	80.64	-6,283.1	-848.7	475.4	230.0	245.39	1.937			
13,400.0	6,761.1	13,393.2	6,683.5	125.8	126.2	80.61	-6,383.1	-848.7	475.4	226.3	249.14	1.908			
13,500.0	6,760.7	13,493.2	6,682.9	127.7	128.1	80.58	-6,483.1	-848.7	475.5	222.6	252.89	1.880			
13,600.0	6,760.3	13,593.2	6,682.2	129.6	130.0	80.55	-6,583.1	-848.7	475.5	218.9	256.64	1.853			
13,700.0	6,759.9	13,693.2	6,681.6	131.5	131.9	80.52	-6,683.1	-848.7	475.5	215.2	260.38	1.826			
13,800.0	6,759.4	13,793.2	6,680.9	133.4	133.8	80.49	-6,783.1	-848.7	475.6	211.5	264.13	1.801			
13,900.0	6,759.0	13,893.2	6,680.2	135.3	135.7	80.46	-6,883.1	-848.7	475.6	207.7	267.88	1.776			
14,000.0	6,758.6	13,993.2	6,679.6	137.2	137.6	80.44	-6,983.1	-848.7	475.7	204.0	271.63	1.751			
14,100.0	6,758.2	14,093.2	6,678.9	139.1	139.5	80.41	-7,083.1	-848.7	475.7	200.3	275.38	1.727			
14,200.0	6,757.8	14,193.2	6,678.2	141.1	141.4	80.38	-7,183.1	-848.7	475.8	196.6	279.13	1.704			
14,300.0	6,757.3	14,293.2	6,677.6	143.0	143.3	80.35	-7,283.1	-848.7	475.8	192.9	282.88	1.682			
14,381.9	6,757.0	14,375.2	6,677.0	144.5	144.9	80.32	-7,365.1	-848.7	475.8	189.9	285.95	1.664 SF			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design				Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-323 - Wellbore #1 - Plan #1 (3-15-16)										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	90.91	-0.7	44.9	44.9							
100.0	100.0	100.0	100.0	0.1	0.1	90.91	-0.7	44.9	44.9	44.6	0.22	199.602				
200.0	200.0	200.0	200.0	0.3	0.3	90.91	-0.7	44.9	44.9	44.2	0.67	66.534				
300.0	300.0	300.0	300.0	0.6	0.6	90.91	-0.7	44.9	44.9	43.7	1.12	39.920				
400.0	400.0	400.0	400.0	0.8	0.8	90.91	-0.7	44.9	44.9	43.3	1.57	28.515				
500.0	500.0	500.0	500.0	1.0	1.0	90.91	-0.7	44.9	44.9	42.8	2.02	22.178				
600.0	600.0	600.0	600.0	1.2	1.2	90.91	-0.7	44.9	44.9	42.4	2.47	18.146				
700.0	700.0	700.0	700.0	1.5	1.5	90.91	-0.7	44.9	44.9	41.9	2.92	15.354				
800.0	800.0	800.0	800.0	1.7	1.7	90.91	-0.7	44.9	44.9	41.5	3.37	13.307	CC, ES			
900.0	900.0	899.5	899.5	1.9	1.9	89.43	0.5	45.4	45.4	41.6	3.82	11.898				
1,000.0	1,000.0	998.8	998.7	2.1	2.1	85.21	3.9	47.1	47.3	43.0	4.26	11.090				
1,100.0	1,100.0	1,097.9	1,097.6	2.4	2.4	78.95	9.7	49.9	50.9	46.2	4.71	10.800				
1,200.0	1,200.0	1,196.6	1,195.9	2.6	2.6	71.68	17.8	53.8	56.8	51.6	5.17	10.988				
1,300.0	1,300.0	1,294.8	1,293.4	2.8	2.8	64.44	28.1	58.8	65.5	59.8	5.64	11.609				
1,400.0	1,400.0	1,392.3	1,389.9	3.0	3.1	57.95	40.6	64.8	77.1	71.0	6.12	12.591				
1,500.0	1,500.0	1,489.1	1,485.4	3.3	3.4	89.84	55.1	71.8	91.7	85.1	6.54	14.016				
1,600.0	1,599.9	1,586.1	1,580.6	3.5	3.7	87.07	71.7	79.8	108.7	101.7	7.00	15.518				
1,700.0	1,699.7	1,684.6	1,677.2	3.7	4.1	86.06	89.0	88.2	126.1	118.6	7.48	16.869				
1,800.0	1,799.3	1,783.1	1,773.8	3.9	4.4	86.30	106.3	96.5	143.4	135.4	7.96	18.004				
1,900.0	1,898.6	1,881.5	1,870.4	4.2	4.8	87.37	123.6	104.8	160.5	152.1	8.47	18.943				
2,000.0	1,997.5	1,979.9	1,966.8	4.4	5.2	89.04	140.9	113.2	177.7	168.7	9.01	19.711				
2,100.0	2,096.2	2,078.1	2,063.2	4.7	5.5	91.11	158.2	121.5	195.0	185.5	9.59	20.344				
2,200.0	2,194.9	2,176.4	2,159.5	5.0	5.9	92.92	175.4	129.8	212.6	202.4	10.18	20.885				
2,300.0	2,293.6	2,274.6	2,255.9	5.3	6.3	94.45	192.7	138.2	230.4	219.6	10.79	21.350				
2,400.0	2,392.2	2,372.9	2,352.2	5.6	6.7	95.76	209.9	146.5	248.3	236.9	11.41	21.752				
2,500.0	2,490.9	2,471.1	2,448.6	6.0	7.1	96.89	227.2	154.8	266.3	254.2	12.05	22.101				
2,600.0	2,589.6	2,569.3	2,545.0	6.3	7.5	97.88	244.5	163.1	284.4	271.7	12.69	22.405				
2,700.0	2,688.3	2,667.6	2,641.3	6.6	7.9	98.75	261.7	171.5	302.5	289.2	13.34	22.671				
2,800.0	2,786.9	2,765.8	2,737.7	6.9	8.3	99.53	279.0	179.8	320.7	306.7	14.00	22.906				
2,900.0	2,885.6	2,864.1	2,834.0	7.3	8.7	100.22	296.2	188.1	339.0	324.3	14.67	23.115				
3,000.0	2,984.3	2,962.3	2,930.4	7.6	9.1	100.83	313.5	196.4	357.3	342.0	15.34	23.300				
3,100.0	3,082.9	3,060.5	3,026.7	8.0	9.5	101.39	330.7	204.8	375.7	359.7	16.01	23.466				
3,200.0	3,181.6	3,158.8	3,123.1	8.3	9.9	101.90	348.0	213.1	394.0	377.4	16.69	23.615				
3,300.0	3,280.3	3,257.0	3,219.4	8.7	10.3	102.36	365.3	221.4	412.5	395.1	17.37	23.750				
3,400.0	3,379.0	3,355.3	3,315.8	9.0	10.7	102.78	382.5	229.7	430.9	412.8	18.05	23.871				
3,500.0	3,477.6	3,453.5	3,412.1	9.4	11.1	103.17	399.8	238.1	449.3	430.6	18.74	23.982				
3,600.0	3,576.3	3,551.7	3,508.5	9.8	11.6	103.53	417.0	246.4	467.8	448.4	19.42	24.083				
3,700.0	3,675.0	3,650.0	3,604.8	10.1	12.0	103.86	434.3	254.7	486.3	466.2	20.11	24.176				
3,800.0	3,773.7	3,748.2	3,701.2	10.5	12.4	104.16	451.6	263.0	504.8	484.0	20.81	24.261				
3,900.0	3,872.3	3,855.3	3,806.4	10.8	12.8	104.53	469.7	271.8	522.8	501.3	21.49	24.332				
4,000.0	3,971.0	3,969.4	3,919.1	11.2	13.1	105.19	485.4	279.3	538.3	516.1	22.15	24.303				
4,100.0	4,069.7	4,084.0	4,032.9	11.6	13.4	106.15	497.0	285.0	550.9	528.1	22.79	24.170				
4,200.0	4,168.4	4,198.7	4,147.4	11.9	13.6	107.39	504.6	288.6	560.9	537.5	23.42	23.950				
4,300.0	4,267.0	4,313.2	4,261.8	12.3	13.8	108.91	508.1	290.3	568.4	544.4	24.02	23.664				
4,400.0	4,365.7	4,417.1	4,365.7	12.7	13.9	110.49	508.3	290.4	574.1	549.5	24.58	23.354				
4,500.0	4,464.4	4,515.8	4,464.4	13.0	14.1	111.98	508.3	290.4	580.0	554.9	25.14	23.073				
4,600.0	4,563.0	4,614.5	4,563.0	13.4	14.2	113.43	508.3	290.4	586.4	560.7	25.69	22.828				
4,700.0	4,661.7	4,713.1	4,661.7	13.8	14.4	114.85	508.3	290.4	593.1	566.9	26.23	22.614				
4,800.0	4,760.4	4,811.8	4,760.4	14.1	14.5	116.25	508.3	290.4	600.2	573.4	26.76	22.429				
4,900.0	4,859.1	4,910.5	4,859.1	14.5	14.7	117.60	508.3	290.4	607.6	580.3	27.28	22.271				
5,000.0	4,957.7	5,009.2	4,957.7	14.9	14.8	118.93	508.3	290.4	615.4	587.6	27.80	22.138				

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-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-323 - Wellbore #1 - Plan #1 (3-15-16)													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)				
5,100.0	5,056.4	5,107.8	5,056.4	15.2	15.0	120.22	508.3	290.4	623.5	595.2	28.31	22.026			
5,200.0	5,155.1	5,206.5	5,155.1	15.6	15.2	121.48	508.3	290.4	631.9	603.1	28.81	21.935			
5,300.0	5,253.8	5,305.2	5,253.8	16.0	15.3	122.71	508.3	290.4	640.6	611.3	29.30	21.862			
5,400.0	5,352.4	5,403.9	5,352.4	16.3	15.5	123.93	508.3	290.4	649.6	619.8	29.79	21.804			
5,500.0	5,451.5	5,502.9	5,451.5	16.6	15.6	125.06	508.3	290.4	657.5	627.2	30.23	21.746			
5,600.0	5,550.9	5,602.3	5,550.9	16.8	15.8	125.89	508.3	290.4	663.6	632.9	30.64	21.653			
5,700.0	5,650.7	5,702.1	5,650.7	17.0	16.0	126.44	508.3	290.4	667.7	636.6	31.02	21.522			
5,800.0	5,750.6	5,802.0	5,750.6	17.2	16.1	126.71	508.3	290.4	669.7	638.4	31.37	21.351			
5,900.0	5,850.6	5,902.0	5,850.6	17.4	16.3	89.98	508.3	290.4	670.0	638.3	31.70	21.138			
6,000.0	5,950.6	6,002.0	5,950.6	17.5	16.5	89.98	508.3	290.4	670.0	637.9	32.05	20.906			
6,062.3	6,012.9	6,064.3	6,012.9	17.6	16.6	-90.08	508.3	290.4	670.0	637.7	32.26	20.768			
6,100.0	6,050.6	6,102.0	6,050.6	17.7	16.6	-89.96	507.1	290.4	670.0	637.6	32.37	20.697			
6,200.0	6,150.0	6,201.8	6,149.6	17.7	16.7	-89.80	495.0	290.4	670.0	637.5	32.47	20.637			
6,300.0	6,247.2	6,301.3	6,245.9	17.7	16.6	-89.63	470.2	290.4	670.0	637.7	32.35	20.711			
6,400.0	6,340.6	6,400.6	6,338.0	17.6	16.5	-89.47	433.2	290.4	670.0	638.0	32.07	20.894			
6,500.0	6,428.6	6,499.7	6,424.3	17.4	16.3	-89.32	384.7	290.4	670.0	638.4	31.68	21.150			
6,600.0	6,509.6	6,598.6	6,503.4	17.2	16.1	-89.19	325.6	290.4	670.1	638.8	31.26	21.433			
6,700.0	6,582.3	6,697.2	6,574.2	16.9	15.8	-89.06	256.9	290.4	670.1	639.2	30.91	21.679			
6,800.0	6,645.4	6,795.7	6,635.4	16.7	15.6	-88.95	179.8	290.4	670.1	639.4	30.72	21.815			
6,900.0	6,697.9	6,894.1	6,686.1	16.5	15.5	-88.86	95.6	290.4	670.1	639.3	30.78	21.772			
7,000.0	6,738.8	6,992.3	6,725.5	16.3	15.5	-88.79	5.7	290.4	670.1	639.0	31.17	21.499			
7,100.0	6,767.4	7,090.5	6,753.1	16.2	15.8	-88.74	-88.4	290.4	670.2	638.2	31.93	20.985			
7,200.0	6,783.4	7,188.5	6,768.4	16.8	16.4	-88.71	-185.2	290.4	670.2	637.1	33.08	20.260			
7,300.0	6,786.7	7,287.0	6,771.5	17.6	17.2	-88.70	-283.6	290.4	670.2	635.6	34.57	19.384			
7,400.0	6,786.2	7,387.0	6,770.8	18.6	18.2	-88.68	-383.6	290.4	670.2	633.7	36.42	18.401			
7,500.0	6,785.8	7,487.0	6,770.2	19.7	19.3	-88.66	-483.6	290.4	670.2	631.6	38.56	17.382			
7,600.0	6,785.4	7,587.0	6,769.6	21.0	20.5	-88.65	-583.6	290.4	670.2	629.2	40.94	16.370			
7,700.0	6,785.0	7,687.0	6,768.9	22.3	21.8	-88.63	-683.6	290.4	670.2	626.7	43.53	15.395			
7,800.0	6,784.6	7,787.0	6,768.3	23.7	23.2	-88.61	-783.6	290.4	670.2	623.9	46.30	14.475			
7,900.0	6,784.2	7,887.0	6,767.7	25.1	24.6	-88.59	-883.6	290.4	670.2	621.0	49.21	13.619			
8,000.0	6,783.7	7,987.0	6,767.1	26.6	26.2	-88.57	-983.6	290.4	670.2	618.0	52.24	12.829			
8,100.0	6,783.3	8,087.0	6,766.4	28.2	27.7	-88.56	-1,083.6	290.4	670.2	614.8	55.37	12.104			
8,200.0	6,782.9	8,187.0	6,765.8	29.8	29.3	-88.54	-1,183.6	290.4	670.2	611.6	58.59	11.440			
8,300.0	6,782.5	8,287.0	6,765.2	31.4	31.0	-88.52	-1,283.6	290.4	670.2	608.3	61.87	10.832			
8,400.0	6,782.1	8,387.0	6,764.5	33.1	32.7	-88.50	-1,383.6	290.4	670.2	605.0	65.22	10.276			
8,500.0	6,781.6	8,487.0	6,763.9	34.8	34.4	-88.49	-1,483.6	290.4	670.2	601.6	68.62	9.768			
8,600.0	6,781.2	8,587.0	6,763.3	36.5	36.1	-88.47	-1,583.6	290.4	670.2	598.2	72.06	9.301			
8,700.0	6,780.8	8,687.0	6,762.7	38.2	37.8	-88.45	-1,683.6	290.4	670.2	594.7	75.54	8.873			
8,800.0	6,780.4	8,787.0	6,762.0	39.9	39.6	-88.43	-1,783.6	290.4	670.2	591.2	79.05	8.478			
8,900.0	6,780.0	8,887.0	6,761.4	41.7	41.3	-88.41	-1,883.6	290.4	670.3	587.7	82.60	8.115			
9,000.0	6,779.5	8,987.0	6,760.8	43.5	43.1	-88.40	-1,983.6	290.4	670.3	584.1	86.16	7.779			
9,100.0	6,779.1	9,087.0	6,760.2	45.3	44.9	-88.38	-2,083.6	290.4	670.3	580.5	89.75	7.468			
9,200.0	6,778.7	9,187.0	6,759.5	47.1	46.7	-88.36	-2,183.6	290.4	670.3	576.9	93.36	7.179			
9,300.0	6,778.3	9,287.0	6,758.9	48.9	48.5	-88.34	-2,283.6	290.4	670.3	573.3	96.99	6.911			
9,400.0	6,777.9	9,387.0	6,758.3	50.7	50.4	-88.32	-2,383.6	290.4	670.3	569.7	100.63	6.661			
9,500.0	6,777.4	9,487.0	6,757.6	52.5	52.2	-88.31	-2,483.6	290.4	670.3	566.0	104.29	6.427			
9,600.0	6,777.0	9,587.0	6,757.0	54.3	54.0	-88.29	-2,583.6	290.4	670.3	562.3	107.96	6.209			
9,700.0	6,776.6	9,687.0	6,756.4	56.2	55.9	-88.27	-2,683.6	290.4	670.3	558.7	111.64	6.004			
9,800.0	6,776.2	9,787.0	6,755.8	58.0	57.7	-88.25	-2,783.6	290.4	670.3	555.0	115.33	5.812			
9,900.0	6,775.8	9,887.0	6,755.1	59.8	59.6	-88.23	-2,883.6	290.4	670.3	551.3	119.03	5.632			

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-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-323 - Wellbore #1 - Plan #1 (3-15-16)											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)				
10,000.0	6,775.4	9,987.0	6,754.5	61.7	61.4	-88.22	-2,983.6	290.4	670.3	547.6	122.73	5.462			
10,100.0	6,774.9	10,087.0	6,753.9	63.5	63.3	-88.20	-3,083.5	290.4	670.3	543.9	126.45	5.301			
10,200.0	6,774.5	10,187.0	6,753.2	65.4	65.1	-88.18	-3,183.5	290.4	670.3	540.2	130.17	5.150			
10,300.0	6,774.1	10,287.0	6,752.6	67.3	67.0	-88.16	-3,283.5	290.4	670.3	536.4	133.90	5.006			
10,400.0	6,773.7	10,387.0	6,752.0	69.1	68.9	-88.15	-3,383.5	290.4	670.3	532.7	137.64	4.870			
10,500.0	6,773.3	10,487.0	6,751.4	71.0	70.7	-88.13	-3,483.5	290.4	670.4	529.0	141.38	4.742			
10,600.0	6,772.8	10,587.0	6,750.7	72.9	72.6	-88.11	-3,583.5	290.4	670.4	525.2	145.12	4.619			
10,700.0	6,772.4	10,687.0	6,750.1	74.7	74.5	-88.09	-3,683.5	290.4	670.4	521.5	148.87	4.503			
10,800.0	6,772.0	10,787.0	6,749.5	76.6	76.4	-88.07	-3,783.5	290.4	670.4	517.8	152.63	4.392			
10,900.0	6,771.6	10,887.0	6,748.8	78.5	78.2	-88.06	-3,883.5	290.4	670.4	514.0	156.38	4.287			
11,000.0	6,771.2	10,987.0	6,748.2	80.4	80.1	-88.04	-3,983.5	290.4	670.4	510.2	160.14	4.186			
11,100.0	6,770.7	11,087.0	6,747.6	82.2	82.0	-88.02	-4,083.5	290.4	670.4	506.5	163.91	4.090			
11,200.0	6,770.3	11,187.0	6,747.0	84.1	83.9	-88.00	-4,183.5	290.4	670.4	502.7	167.68	3.998			
11,300.0	6,769.9	11,287.0	6,746.3	86.0	85.8	-87.98	-4,283.5	290.4	670.4	499.0	171.45	3.910			
11,400.0	6,769.5	11,387.0	6,745.7	87.9	87.7	-87.97	-4,383.5	290.4	670.4	495.2	175.22	3.826			
11,500.0	6,769.1	11,487.0	6,745.1	89.8	89.5	-87.95	-4,483.5	290.4	670.4	491.4	179.00	3.745			
11,600.0	6,768.7	11,587.0	6,744.4	91.7	91.4	-87.93	-4,583.5	290.4	670.4	487.7	182.78	3.668			
11,700.0	6,768.2	11,687.0	6,743.8	93.6	93.3	-87.91	-4,683.5	290.4	670.4	483.9	186.56	3.594			
11,800.0	6,767.8	11,787.0	6,743.2	95.4	95.2	-87.89	-4,783.5	290.4	670.5	480.1	190.34	3.522			
11,900.0	6,767.4	11,887.0	6,742.6	97.3	97.1	-87.88	-4,883.5	290.4	670.5	476.3	194.13	3.454			
12,000.0	6,767.0	11,987.0	6,741.9	99.2	99.0	-87.86	-4,983.5	290.4	670.5	472.6	197.91	3.388			
12,100.0	6,766.6	12,087.0	6,741.3	101.1	100.9	-87.84	-5,083.5	290.4	670.5	468.8	201.70	3.324			
12,200.0	6,766.1	12,187.0	6,740.7	103.0	102.8	-87.82	-5,183.5	290.4	670.5	465.0	205.49	3.263			
12,300.0	6,765.7	12,287.0	6,740.0	104.9	104.7	-87.81	-5,283.5	290.4	670.5	461.2	209.28	3.204			
12,400.0	6,765.3	12,387.0	6,739.4	106.8	106.6	-87.79	-5,383.5	290.4	670.5	457.4	213.08	3.147			
12,500.0	6,764.9	12,487.0	6,738.8	108.7	108.5	-87.77	-5,483.5	290.4	670.5	453.6	216.87	3.092			
12,600.0	6,764.5	12,587.0	6,738.2	110.6	110.4	-87.75	-5,583.5	290.4	670.5	449.8	220.67	3.039			
12,700.0	6,764.0	12,687.0	6,737.5	112.5	112.3	-87.73	-5,683.5	290.4	670.5	446.1	224.47	2.987			
12,800.0	6,763.6	12,787.0	6,736.9	114.4	114.2	-87.72	-5,783.5	290.4	670.5	442.3	228.26	2.938			
12,900.0	6,763.2	12,887.0	6,736.3	116.3	116.1	-87.70	-5,883.5	290.4	670.5	438.5	232.06	2.889			
13,000.0	6,762.8	12,987.0	6,735.6	118.2	118.0	-87.68	-5,983.5	290.4	670.6	434.7	235.86	2.843			
13,100.0	6,762.4	13,087.0	6,735.0	120.1	119.9	-87.66	-6,083.5	290.4	670.6	430.9	239.67	2.798			
13,200.0	6,762.0	13,187.0	6,734.4	122.0	121.8	-87.64	-6,183.5	290.4	670.6	427.1	243.47	2.754			
13,300.0	6,761.5	13,287.0	6,733.8	123.9	123.7	-87.63	-6,283.5	290.4	670.6	423.3	247.27	2.712			
13,400.0	6,761.1	13,387.0	6,733.1	125.8	125.6	-87.61	-6,383.5	290.4	670.6	419.5	251.08	2.671			
13,500.0	6,760.7	13,487.0	6,732.5	127.7	127.5	-87.59	-6,483.5	290.4	670.6	415.7	254.88	2.631			
13,600.0	6,760.3	13,587.0	6,731.9	129.6	129.4	-87.57	-6,583.5	290.4	670.6	411.9	258.69	2.592			
13,700.0	6,759.9	13,687.0	6,731.2	131.5	131.3	-87.56	-6,683.5	290.4	670.6	408.1	262.49	2.555			
13,800.0	6,759.4	13,787.0	6,730.6	133.4	133.2	-87.54	-6,783.5	290.4	670.6	404.3	266.30	2.518			
13,900.0	6,759.0	13,887.0	6,730.0	135.3	135.1	-87.52	-6,883.5	290.4	670.6	400.5	270.11	2.483			
14,000.0	6,758.6	13,987.0	6,729.4	137.2	137.1	-87.50	-6,983.5	290.4	670.6	396.7	273.92	2.448			
14,100.0	6,758.2	14,087.0	6,728.7	139.1	139.0	-87.48	-7,083.5	290.4	670.7	392.9	277.73	2.415			
14,200.0	6,757.8	14,187.0	6,728.1	141.1	140.9	-87.47	-7,183.5	290.4	670.7	389.1	281.53	2.382			
14,300.0	6,757.3	14,287.0	6,727.5	143.0	142.8	-87.45	-7,283.5	290.4	670.7	385.3	285.34	2.350			
14,346.5	6,757.1	14,333.6	6,727.2	143.8	143.7	-87.44	-7,330.0	290.4	670.7	383.6	287.12	2.336			
14,381.9	6,757.0	14,363.3	6,727.0	144.5	144.2	-87.43	-7,359.8	290.4	670.7	382.3	288.36	2.326 SF			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-423 - Wellbore #1 - Plan #1 (3-15-16)											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	90.70	-0.4	29.8	29.8						
100.0	100.0	99.0	99.0	0.1	0.1	90.70	-0.4	29.8	29.8	29.6	0.22	133.313			
200.0	200.0	199.0	199.0	0.3	0.3	90.70	-0.4	29.8	29.8	29.1	0.67	44.364			
300.0	300.0	299.0	299.0	0.6	0.6	90.70	-0.4	29.8	29.8	28.7	1.12	26.583			
400.0	400.0	399.0	399.0	0.8	0.8	90.70	-0.4	29.8	29.8	28.2	1.57	18.977			
500.0	500.0	499.0	499.0	1.0	1.0	90.70	-0.4	29.8	29.8	27.8	2.02	14.755			
600.0	600.0	599.0	599.0	1.2	1.2	90.70	-0.4	29.8	29.8	27.3	2.47	12.070			
700.0	700.0	699.0	699.0	1.5	1.5	90.70	-0.4	29.8	29.8	26.9	2.92	10.212			
800.0	800.0	799.0	799.0	1.7	1.7	90.70	-0.4	29.8	29.8	26.4	3.37	8.849			
900.0	900.0	899.0	899.0	1.9	1.9	90.70	-0.4	29.8	29.8	26.0	3.82	7.807			
1,000.0	1,000.0	999.0	999.0	2.1	2.1	90.70	-0.4	29.8	29.8	25.5	4.27	6.985			
1,100.0	1,100.0	1,099.0	1,099.0	2.4	2.4	90.70	-0.4	29.8	29.8	25.1	4.72	6.320			
1,200.0	1,200.0	1,199.0	1,199.0	2.6	2.6	90.70	-0.4	29.8	29.8	24.6	5.17	5.770			
1,300.0	1,300.0	1,299.0	1,299.0	2.8	2.8	90.70	-0.4	29.8	29.8	24.2	5.62	5.308			
1,400.0	1,400.0	1,399.0	1,399.0	3.0	3.0	90.70	-0.4	29.8	29.8	23.7	6.07	4.915 CC, ES			
1,500.0	1,500.0	1,499.0	1,499.0	3.3	3.3	129.40	-0.4	29.8	30.6	24.1	6.51	4.703			
1,600.0	1,599.9	1,598.9	1,598.9	3.5	3.5	134.61	-0.4	29.8	33.3	26.3	6.95	4.783			
1,700.0	1,699.7	1,698.7	1,698.7	3.7	3.7	141.57	-0.4	29.8	38.1	30.7	7.39	5.159			
1,800.0	1,799.3	1,798.3	1,798.3	3.9	3.9	148.65	-0.4	29.8	45.7	37.8	7.83	5.834			
1,900.0	1,898.6	1,897.6	1,897.6	4.2	4.2	154.84	-0.4	29.8	56.1	47.8	8.26	6.788			
2,000.0	1,997.5	1,996.5	1,996.5	4.4	4.4	159.81	-0.4	29.8	69.3	60.6	8.68	7.984			
2,100.0	2,096.2	2,095.2	2,095.2	4.7	4.6	163.57	-0.4	29.8	84.7	75.6	9.12	9.285			
2,200.0	2,194.9	2,193.9	2,193.9	5.0	4.8	166.19	-0.4	29.8	100.4	90.8	9.57	10.491			
2,300.0	2,293.6	2,292.6	2,292.6	5.3	5.0	168.10	-0.4	29.8	116.2	106.2	10.02	11.601			
2,400.0	2,392.2	2,391.2	2,391.2	5.6	5.3	169.55	-0.4	29.8	132.2	121.7	10.47	12.622			
2,500.0	2,490.9	2,489.9	2,489.9	6.0	5.5	170.69	-0.4	29.8	148.2	137.3	10.93	13.563			
2,600.0	2,589.6	2,591.1	2,591.1	6.3	5.7	171.33	0.7	29.9	163.6	152.2	11.39	14.365			
2,700.0	2,688.3	2,693.1	2,693.0	6.6	5.9	171.20	4.5	30.2	177.3	165.4	11.85	14.960			
2,800.0	2,786.9	2,795.4	2,795.1	6.9	6.2	170.44	11.0	30.8	189.3	177.0	12.32	15.367			
2,900.0	2,885.6	2,898.0	2,897.3	7.3	6.4	169.15	20.3	31.6	199.7	186.9	12.79	15.610			
3,000.0	2,984.3	3,000.7	2,999.3	7.6	6.6	167.38	32.3	32.6	208.6	195.3	13.28	15.709			
3,100.0	3,082.9	3,103.4	3,100.9	8.0	6.9	165.15	47.0	33.9	216.2	202.4	13.79	15.684			
3,200.0	3,181.6	3,204.5	3,200.6	8.3	7.1	162.58	64.0	35.3	222.8	208.5	14.31	15.570			
3,300.0	3,280.3	3,303.8	3,298.4	8.7	7.4	160.11	81.0	36.8	229.6	214.8	14.85	15.460			
3,400.0	3,379.0	3,403.1	3,396.2	9.0	7.7	157.78	98.1	38.2	236.9	221.4	15.42	15.365			
3,500.0	3,477.6	3,502.4	3,494.0	9.4	8.0	155.60	115.1	39.7	244.4	228.4	16.00	15.282			
3,600.0	3,576.3	3,601.7	3,591.8	9.8	8.3	153.55	132.2	41.1	252.4	235.8	16.59	15.209			
3,700.0	3,675.0	3,700.9	3,689.6	10.1	8.6	151.62	149.2	42.6	260.6	243.4	17.21	15.145			
3,800.0	3,773.7	3,800.2	3,787.4	10.5	8.9	149.81	166.3	44.0	269.1	251.3	17.83	15.089			
3,900.0	3,872.3	3,899.5	3,885.2	10.8	9.2	148.12	183.3	45.5	277.8	259.4	18.47	15.040			
4,000.0	3,971.0	3,998.8	3,983.0	11.2	9.5	146.53	200.4	47.0	286.8	267.7	19.12	14.998			
4,100.0	4,069.7	4,098.1	4,080.8	11.6	9.8	145.03	217.4	48.4	296.0	276.2	19.78	14.961			
4,200.0	4,168.4	4,197.4	4,178.6	11.9	10.2	143.63	234.5	49.9	305.4	284.9	20.45	14.929			
4,300.0	4,267.0	4,296.7	4,276.4	12.3	10.5	142.31	251.5	51.3	314.9	293.8	21.13	14.902			
4,400.0	4,365.7	4,396.0	4,374.2	12.7	10.8	141.06	268.6	52.8	324.6	302.8	21.82	14.880			
4,500.0	4,464.4	4,495.2	4,472.0	13.0	11.2	139.89	285.6	54.2	334.5	312.0	22.51	14.860			
4,600.0	4,563.0	4,594.5	4,569.8	13.4	11.5	138.79	302.7	55.7	344.5	321.3	23.20	14.845			
4,700.0	4,661.7	4,693.8	4,667.6	13.8	11.8	137.75	319.7	57.2	354.6	330.6	23.90	14.832			
4,800.0	4,760.4	4,793.1	4,765.4	14.1	12.2	136.77	336.8	58.6	364.8	340.2	24.61	14.822			
4,900.0	4,859.1	4,892.4	4,863.2	14.5	12.5	135.84	353.8	60.1	375.1	349.8	25.32	14.815			
5,000.0	4,957.7	4,991.7	4,961.0	14.9	12.9	134.96	370.9	61.5	385.5	359.4	26.03	14.810			

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-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-423 - Wellbore #1 - Plan #1 (3-15-16)													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)			
5,100.0	5,056.4	5,091.0	5,058.8	15.2	13.2	134.13	387.9	63.0	396.0	369.2	26.74	14.806		
5,200.0	5,155.1	5,190.3	5,156.6	15.6	13.6	133.34	405.0	64.4	406.5	379.1	27.46	14.805		
5,300.0	5,253.8	5,289.5	5,254.4	16.0	13.9	132.59	422.0	65.9	417.2	389.0	28.18	14.805		
5,400.0	5,352.4	5,388.8	5,352.2	16.3	14.3	131.89	439.1	67.3	427.8	398.9	28.90	14.805		
5,500.0	5,451.5	5,488.2	5,450.0	16.6	14.7	131.12	456.1	68.8	437.1	407.5	29.58	14.773		
5,600.0	5,550.9	5,587.6	5,548.1	16.8	15.0	130.05	472.9	70.2	444.1	413.9	30.24	14.689		
5,700.0	5,650.7	5,687.7	5,647.1	17.0	15.3	129.01	486.9	71.4	449.1	418.3	30.77	14.592		
5,800.0	5,750.6	5,788.2	5,747.1	17.2	15.5	128.05	497.5	72.3	451.8	420.6	31.24	14.463		
5,900.0	5,850.6	5,889.1	5,847.7	17.4	15.7	90.43	504.6	72.9	452.6	420.9	31.65	14.300		
6,000.0	5,950.6	5,990.4	5,948.9	17.5	15.9	89.98	508.2	73.3	452.8	420.8	32.03	14.140		
6,100.0	6,050.6	6,091.0	6,049.6	17.7	16.1	-90.14	508.6	73.3	452.9	420.5	32.36	13.995		
6,200.0	6,150.0	6,191.1	6,149.6	17.7	16.2	-91.20	506.9	73.3	453.0	420.4	32.62	13.886		
6,300.0	6,247.2	6,292.6	6,250.1	17.7	16.2	-92.45	493.4	73.3	453.3	420.6	32.67	13.877		
6,400.0	6,340.6	6,395.4	6,349.2	17.6	16.2	-93.65	466.2	73.3	453.8	421.3	32.50	13.963		
6,500.0	6,428.6	6,499.6	6,444.9	17.4	16.0	-94.80	425.3	73.3	454.5	422.3	32.17	14.127		
6,600.0	6,509.6	6,605.1	6,535.3	17.2	15.8	-95.87	371.1	73.3	455.3	423.5	31.74	14.342		
6,700.0	6,582.3	6,711.8	6,618.3	16.9	15.6	-96.83	304.1	73.3	456.1	424.8	31.32	14.566		
6,800.0	6,645.4	6,819.8	6,691.9	16.7	15.5	-97.67	225.2	73.3	457.0	426.0	31.00	14.741		
6,900.0	6,697.9	6,928.8	6,754.2	16.5	15.4	-98.38	135.9	73.3	457.8	426.9	30.92	14.803		
7,000.0	6,738.8	7,038.6	6,803.5	16.3	15.6	-98.92	37.9	73.3	458.4	427.2	31.20	14.695		
7,100.0	6,767.4	7,149.1	6,838.4	16.2	16.0	-99.31	-66.8	73.3	458.9	427.0	31.90	14.386		
7,200.0	6,783.4	7,260.0	6,857.9	16.8	16.6	-99.52	-175.9	73.3	459.2	426.1	33.07	13.885		
7,300.0	6,786.7	7,367.9	6,862.0	17.6	17.4	-99.57	-283.7	73.3	459.3	424.6	34.64	13.258		
7,400.0	6,786.2	7,467.9	6,862.0	18.6	18.3	-99.62	-383.7	73.3	459.3	422.9	36.48	12.591		
7,500.0	6,785.8	7,567.9	6,862.0	19.7	19.4	-99.67	-483.7	73.3	459.4	420.8	38.60	11.903		
7,600.0	6,785.4	7,667.9	6,862.0	21.0	20.6	-99.72	-583.7	73.3	459.5	418.5	40.95	11.219		
7,700.0	6,785.0	7,767.9	6,862.0	22.3	21.9	-99.77	-683.7	73.3	459.6	416.0	43.51	10.561		
7,800.0	6,784.6	7,867.9	6,862.0	23.7	23.3	-99.82	-783.7	73.3	459.6	413.4	46.24	9.940		
7,900.0	6,784.2	7,967.9	6,862.0	25.1	24.8	-99.88	-883.7	73.3	459.7	410.6	49.11	9.361		
8,000.0	6,783.7	8,067.9	6,862.0	26.6	26.3	-99.93	-983.7	73.3	459.8	407.7	52.10	8.826		
8,100.0	6,783.3	8,167.9	6,862.0	28.2	27.8	-99.98	-1,083.7	73.3	459.8	404.7	55.18	8.334		
8,200.0	6,782.9	8,267.9	6,862.0	29.8	29.4	-100.03	-1,183.7	73.3	459.9	401.6	58.34	7.883		
8,300.0	6,782.5	8,367.9	6,862.0	31.4	31.1	-100.08	-1,283.7	73.3	460.0	398.4	61.58	7.470		
8,400.0	6,782.1	8,467.9	6,862.0	33.1	32.8	-100.13	-1,383.7	73.3	460.1	395.2	64.87	7.092		
8,500.0	6,781.6	8,567.9	6,862.0	34.8	34.5	-100.18	-1,483.7	73.3	460.1	391.9	68.21	6.746		
8,600.0	6,781.2	8,667.9	6,862.0	36.5	36.2	-100.24	-1,583.7	73.3	460.2	388.6	71.60	6.428		
8,700.0	6,780.8	8,767.9	6,862.0	38.2	37.9	-100.29	-1,683.7	73.3	460.3	385.3	75.02	6.136		
8,800.0	6,780.4	8,867.9	6,862.0	39.9	39.7	-100.34	-1,783.7	73.3	460.4	381.9	78.47	5.866		
8,900.0	6,780.0	8,967.9	6,862.0	41.7	41.5	-100.39	-1,883.7	73.3	460.4	378.5	81.95	5.618		
9,000.0	6,779.5	9,067.9	6,862.0	43.5	43.2	-100.44	-1,983.7	73.3	460.5	375.1	85.46	5.389		
9,100.0	6,779.1	9,167.9	6,862.0	45.3	45.0	-100.49	-2,083.7	73.3	460.6	371.6	88.99	5.176		
9,200.0	6,778.7	9,267.9	6,862.0	47.1	46.8	-100.54	-2,183.7	73.3	460.7	368.1	92.53	4.978		
9,300.0	6,778.3	9,367.9	6,862.0	48.9	48.7	-100.59	-2,283.7	73.3	460.7	364.6	96.09	4.795		
9,400.0	6,777.9	9,467.9	6,862.0	50.7	50.5	-100.65	-2,383.7	73.3	460.8	361.2	99.67	4.624		
9,500.0	6,777.4	9,567.9	6,862.0	52.5	52.3	-100.70	-2,483.7	73.3	460.9	357.6	103.26	4.464		
9,600.0	6,777.0	9,667.9	6,862.0	54.3	54.1	-100.75	-2,583.7	73.3	461.0	354.1	106.86	4.314		
9,700.0	6,776.6	9,767.9	6,862.0	56.2	56.0	-100.80	-2,683.7	73.3	461.1	350.6	110.47	4.174		
9,800.0	6,776.2	9,867.9	6,862.0	58.0	57.8	-100.85	-2,783.7	73.3	461.1	347.0	114.09	4.042		
9,900.0	6,775.8	9,967.9	6,862.0	59.8	59.7	-100.90	-2,883.7	73.3	461.2	343.5	117.71	3.918		
10,000.0	6,775.4	10,067.9	6,862.0	61.7	61.5	-100.95	-2,983.7	73.3	461.3	339.9	121.35	3.801		

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-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-423 - Wellbore #1 - Plan #1 (3-15-16)													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)			
10,100.0	6,774.9	10,167.9	6,862.0	63.5	63.4	-101.00	-3,083.7	73.3	461.4	336.4	124.99	3.691		
10,200.0	6,774.5	10,267.9	6,862.0	65.4	65.2	-101.05	-3,183.7	73.3	461.5	332.8	128.64	3.587		
10,300.0	6,774.1	10,367.9	6,862.0	67.3	67.1	-101.11	-3,283.7	73.3	461.5	329.2	132.29	3.489		
10,400.0	6,773.7	10,467.9	6,862.0	69.1	69.0	-101.16	-3,383.7	73.3	461.6	325.7	135.95	3.396		
10,500.0	6,773.3	10,567.9	6,862.0	71.0	70.9	-101.21	-3,483.7	73.3	461.7	322.1	139.61	3.307		
10,600.0	6,772.8	10,667.9	6,862.0	72.9	72.7	-101.26	-3,583.7	73.3	461.8	318.5	143.27	3.223		
10,700.0	6,772.4	10,767.9	6,862.0	74.7	74.6	-101.31	-3,683.7	73.3	461.9	314.9	146.94	3.143		
10,800.0	6,772.0	10,867.9	6,862.0	76.6	76.5	-101.36	-3,783.7	73.3	461.9	311.3	150.61	3.067		
10,900.0	6,771.6	10,967.9	6,862.0	78.5	78.4	-101.41	-3,883.7	73.3	462.0	307.7	154.29	2.995		
11,000.0	6,771.2	11,067.9	6,862.0	80.4	80.2	-101.46	-3,983.7	73.3	462.1	304.1	157.97	2.925		
11,100.0	6,770.7	11,167.9	6,862.0	82.2	82.1	-101.51	-4,083.7	73.3	462.2	300.5	161.65	2.859		
11,200.0	6,770.3	11,267.9	6,862.0	84.1	84.0	-101.56	-4,183.7	73.3	462.3	296.9	165.33	2.796		
11,300.0	6,769.9	11,367.9	6,862.0	86.0	85.9	-101.62	-4,283.7	73.3	462.4	293.3	169.01	2.736		
11,400.0	6,769.5	11,467.9	6,862.0	87.9	87.8	-101.67	-4,383.7	73.3	462.4	289.7	172.69	2.678		
11,500.0	6,769.1	11,567.9	6,862.0	89.8	89.7	-101.72	-4,483.7	73.3	462.5	286.1	176.38	2.622		
11,600.0	6,768.7	11,667.9	6,862.0	91.7	91.6	-101.77	-4,583.7	73.3	462.6	282.5	180.07	2.569		
11,700.0	6,768.2	11,767.9	6,862.0	93.6	93.5	-101.82	-4,683.7	73.3	462.7	278.9	183.76	2.518		
11,800.0	6,767.8	11,867.9	6,862.0	95.4	95.4	-101.87	-4,783.7	73.3	462.8	275.3	187.45	2.469		
11,900.0	6,767.4	11,967.9	6,862.0	97.3	97.3	-101.92	-4,883.7	73.3	462.9	271.7	191.13	2.422		
12,000.0	6,767.0	12,067.9	6,862.0	99.2	99.1	-101.97	-4,983.7	73.3	463.0	268.1	194.83	2.376		
12,100.0	6,766.6	12,167.9	6,862.0	101.1	101.0	-102.02	-5,083.7	73.3	463.0	264.5	198.52	2.333		
12,200.0	6,766.1	12,267.9	6,862.0	103.0	102.9	-102.07	-5,183.7	73.3	463.1	260.9	202.21	2.290		
12,300.0	6,765.7	12,367.9	6,862.0	104.9	104.8	-102.12	-5,283.7	73.3	463.2	257.3	205.90	2.250		
12,400.0	6,765.3	12,467.9	6,862.0	106.8	106.7	-102.17	-5,383.7	73.3	463.3	253.7	209.59	2.211		
12,500.0	6,764.9	12,567.9	6,862.0	108.7	108.6	-102.22	-5,483.7	73.3	463.4	250.1	213.28	2.173		
12,600.0	6,764.5	12,667.9	6,862.0	110.6	110.5	-102.27	-5,583.7	73.3	463.5	246.5	216.98	2.136		
12,700.0	6,764.0	12,767.9	6,862.0	112.5	112.4	-102.33	-5,683.7	73.3	463.6	242.9	220.67	2.101		
12,800.0	6,763.6	12,867.9	6,862.0	114.4	114.3	-102.38	-5,783.7	73.3	463.7	239.3	224.36	2.067		
12,900.0	6,763.2	12,967.9	6,862.0	116.3	116.2	-102.43	-5,883.7	73.3	463.8	235.7	228.05	2.034		
13,000.0	6,762.8	13,067.9	6,862.0	118.2	118.1	-102.48	-5,983.7	73.3	463.8	232.1	231.74	2.002		
13,100.0	6,762.4	13,167.9	6,862.0	120.1	120.0	-102.53	-6,083.7	73.3	463.9	228.5	235.44	1.971		
13,200.0	6,762.0	13,267.9	6,862.0	122.0	122.0	-102.58	-6,183.7	73.3	464.0	224.9	239.13	1.941		
13,300.0	6,761.5	13,367.9	6,862.0	123.9	123.9	-102.63	-6,283.7	73.3	464.1	221.3	242.82	1.911		
13,400.0	6,761.1	13,467.9	6,862.0	125.8	125.8	-102.68	-6,383.7	73.3	464.2	217.7	246.51	1.883		
13,500.0	6,760.7	13,567.9	6,862.0	127.7	127.7	-102.73	-6,483.7	73.3	464.3	214.1	250.20	1.856		
13,600.0	6,760.3	13,667.9	6,862.0	129.6	129.6	-102.78	-6,583.7	73.3	464.4	210.5	253.89	1.829		
13,700.0	6,759.9	13,767.8	6,862.0	131.5	131.5	-102.83	-6,683.7	73.3	464.5	206.9	257.58	1.803		
13,800.0	6,759.4	13,867.8	6,862.0	133.4	133.4	-102.88	-6,783.6	73.3	464.6	203.3	261.26	1.778		
13,900.0	6,759.0	13,967.8	6,862.0	135.3	135.3	-102.93	-6,883.6	73.3	464.7	199.7	264.95	1.754		
14,000.0	6,758.6	14,067.8	6,862.0	137.2	137.2	-102.98	-6,983.6	73.3	464.8	196.1	268.64	1.730		
14,100.0	6,758.2	14,167.8	6,862.0	139.1	139.1	-103.03	-7,083.6	73.3	464.9	192.5	272.32	1.707		
14,200.0	6,757.8	14,267.8	6,862.0	141.1	141.0	-103.08	-7,183.6	73.3	465.0	189.0	276.01	1.685		
14,300.0	6,757.3	14,367.8	6,862.0	143.0	142.9	-103.13	-7,283.6	73.3	465.1	185.4	279.69	1.663		
14,342.2	6,757.2	14,410.1	6,862.0	143.8	143.7	-103.15	-7,325.9	73.3	465.1	183.8	281.25	1.654		
14,381.9	6,757.0	14,445.8	6,862.0	144.5	144.4	-103.17	-7,361.6	73.3	465.2	182.5	282.64	1.646 SF		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29U-243 - Wellbore #1 - Plan #1 (3-15-16)											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	-0.7	59.9	59.9						
100.0	100.0	100.0	100.0	0.1	0.1	90.69	-0.7	59.9	59.9	59.7	0.22	266.534			
200.0	200.0	200.0	200.0	0.3	0.3	90.69	-0.7	59.9	59.9	59.2	0.67	88.845			
300.0	300.0	300.0	300.0	0.6	0.6	90.69	-0.7	59.9	59.9	58.8	1.12	53.307			
400.0	400.0	400.0	400.0	0.8	0.8	90.69	-0.7	59.9	59.9	58.3	1.57	38.076	CC, ES		
500.0	500.0	498.9	498.9	1.0	1.0	89.79	0.2	60.8	60.8	58.8	2.02	30.136			
600.0	600.0	597.7	597.7	1.2	1.2	87.25	3.0	63.4	63.5	61.0	2.46	25.802			
700.0	700.0	696.3	696.0	1.5	1.5	83.50	7.7	67.7	68.3	65.3	2.91	23.435			
800.0	800.0	794.4	793.7	1.7	1.7	79.08	14.2	73.7	75.3	72.0	3.38	22.312			
900.0	900.0	892.1	890.7	1.9	2.0	74.53	22.5	81.4	85.0	81.1	3.86	22.035			
1,000.0	1,000.0	989.0	986.7	2.1	2.2	70.24	32.6	90.7	97.3	92.9	4.35	22.352			
1,100.0	1,100.0	1,085.3	1,081.6	2.4	2.6	66.43	44.3	101.5	112.3	107.4	4.86	23.090			
1,200.0	1,200.0	1,180.6	1,175.2	2.6	2.9	63.15	57.6	113.9	130.0	124.6	5.39	24.119			
1,300.0	1,300.0	1,277.0	1,269.4	2.8	3.3	60.38	72.6	127.7	150.0	144.1	5.94	25.279			
1,400.0	1,400.0	1,374.7	1,364.8	3.0	3.7	58.21	87.9	141.9	170.5	164.1	6.49	26.286			
1,500.0	1,500.0	1,472.4	1,460.3	3.3	4.1	93.36	103.2	156.0	191.3	184.7	6.62	28.894			
1,600.0	1,599.9	1,570.2	1,555.8	3.5	4.5	92.71	118.6	170.2	212.3	205.2	7.09	29.936			
1,700.0	1,699.7	1,667.9	1,651.3	3.7	5.0	92.77	133.9	184.4	233.4	225.8	7.57	30.826			
1,800.0	1,799.3	1,765.6	1,746.7	3.9	5.4	93.37	149.2	198.5	254.6	246.6	8.06	31.573			
1,900.0	1,898.6	1,863.0	1,841.9	4.2	5.8	94.38	164.5	212.6	276.1	267.6	8.58	32.191			
2,000.0	1,997.5	1,960.3	1,936.9	4.4	6.2	95.69	179.7	226.7	298.0	288.9	9.12	32.691			
2,100.0	2,096.2	2,057.3	2,031.7	4.7	6.7	97.37	194.9	240.8	320.3	310.7	9.69	33.072			
2,200.0	2,194.9	2,154.3	2,126.5	5.0	7.1	98.91	210.1	254.9	342.9	332.7	10.28	33.372			
2,300.0	2,293.6	2,251.4	2,221.3	5.3	7.6	100.26	225.4	268.9	365.7	354.8	10.88	33.615			
2,400.0	2,392.2	2,348.4	2,316.1	5.6	8.0	101.45	240.6	283.0	388.7	377.2	11.50	33.812			
2,500.0	2,490.9	2,445.4	2,410.9	6.0	8.4	102.50	255.8	297.1	411.8	399.7	12.12	33.974			
2,600.0	2,589.6	2,542.4	2,505.7	6.3	8.9	103.45	271.0	311.1	435.0	422.2	12.75	34.107			
2,700.0	2,688.3	2,639.5	2,600.5	6.6	9.3	104.30	286.2	325.2	458.3	444.9	13.39	34.218			
2,800.0	2,786.9	2,736.5	2,695.2	6.9	9.7	105.07	301.4	339.3	481.7	467.7	14.04	34.311			
2,900.0	2,885.6	2,833.5	2,790.0	7.3	10.2	105.77	316.6	353.3	505.2	490.5	14.69	34.389			
3,000.0	2,984.3	2,930.6	2,884.8	7.6	10.6	106.40	331.8	367.4	528.8	513.4	15.35	34.455			
3,100.0	3,082.9	3,027.6	2,979.6	8.0	11.1	106.98	347.0	381.5	552.4	536.4	16.00	34.512			
3,200.0	3,181.6	3,124.6	3,074.4	8.3	11.5	107.52	362.3	395.5	576.0	559.3	16.67	34.561			
3,300.0	3,280.3	3,221.6	3,169.2	8.7	12.0	108.01	377.5	409.6	599.7	582.4	17.33	34.604			
3,400.0	3,379.0	3,318.7	3,264.0	9.0	12.4	108.47	392.7	423.7	623.4	605.5	18.00	34.641			
3,500.0	3,477.6	3,415.7	3,358.8	9.4	12.8	108.89	407.9	437.7	647.2	628.6	18.67	34.673			
3,600.0	3,576.3	3,512.7	3,453.6	9.8	13.3	109.28	423.1	451.8	671.0	651.7	19.34	34.702			
3,700.0	3,675.0	3,609.8	3,548.4	10.1	13.7	109.64	438.3	465.9	694.8	674.8	20.01	34.727			
3,800.0	3,773.7	3,706.8	3,643.1	10.5	14.2	109.98	453.5	479.9	718.7	698.0	20.68	34.749			
3,900.0	3,872.3	3,818.1	3,752.1	10.8	14.6	110.38	470.5	495.6	742.1	720.7	21.38	34.713			
4,000.0	3,971.0	3,943.7	3,875.9	11.2	15.0	110.99	486.1	510.0	762.3	740.3	22.06	34.556			
4,100.0	4,069.7	4,070.7	4,001.8	11.6	15.3	111.79	497.9	520.9	779.0	756.2	22.73	34.272			
4,200.0	4,168.4	4,198.5	4,129.1	11.9	15.6	112.78	505.5	528.0	792.1	768.7	23.38	33.881			
4,300.0	4,267.0	4,326.6	4,257.2	12.3	15.8	113.97	509.0	531.3	801.7	777.7	24.00	33.405			
4,400.0	4,365.7	4,435.1	4,365.7	12.7	15.9	115.10	509.3	531.5	808.7	784.2	24.57	32.912			
4,500.0	4,464.4	4,533.8	4,464.4	13.0	16.1	116.12	509.3	531.5	815.8	790.7	25.13	32.467			
4,600.0	4,563.0	4,632.5	4,563.0	13.4	16.2	117.12	509.3	531.5	823.2	797.5	25.68	32.057			
4,700.0	4,661.7	4,731.2	4,661.7	13.8	16.3	118.11	509.3	531.5	830.8	804.6	26.23	31.678			
4,800.0	4,760.4	4,829.8	4,760.4	14.1	16.5	119.08	509.3	531.5	838.6	811.9	26.77	31.330			
4,900.0	4,859.1	4,928.5	4,859.1	14.5	16.6	120.03	509.3	531.5	846.7	819.4	27.31	31.009			
5,000.0	4,957.7	5,027.2	4,957.7	14.9	16.7	120.96	509.3	531.5	855.1	827.2	27.84	30.714			

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-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29U-243 - Wellbore #1 - Plan #1 (3-15-16)													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)			
5,100.0	5,056.4	5,125.9	5,056.4	15.2	16.9	121.88	509.3	531.5	863.6	835.2	28.37	30.443		
5,200.0	5,155.1	5,224.5	5,155.1	15.6	17.0	122.78	509.3	531.5	872.4	843.5	28.89	30.194		
5,300.0	5,253.8	5,323.2	5,253.8	16.0	17.1	123.66	509.3	531.5	881.3	851.9	29.41	29.965		
5,400.0	5,352.4	5,421.9	5,352.4	16.3	17.3	124.54	509.3	531.5	890.5	860.6	29.93	29.749		
5,500.0	5,451.5	5,520.9	5,451.5	16.6	17.4	125.40	509.3	531.5	898.5	868.1	30.42	29.534		
5,600.0	5,550.9	5,620.4	5,550.9	16.8	17.6	126.03	509.3	531.5	904.6	873.8	30.87	29.304		
5,700.0	5,650.7	5,720.1	5,650.7	17.0	17.7	126.45	509.3	531.5	908.7	877.5	31.27	29.058		
5,800.0	5,750.6	5,820.0	5,750.6	17.2	17.9	126.66	509.3	531.5	910.8	879.2	31.63	28.791		
5,900.0	5,850.6	5,920.0	5,850.6	17.4	18.0	89.92	509.3	531.5	911.1	879.1	31.96	28.503		
6,000.0	5,950.6	6,020.1	5,950.6	17.5	18.2	89.92	509.2	531.5	911.1	878.8	32.31	28.201		
6,034.1	5,984.7	6,054.2	5,984.7	17.6	18.2	-90.02	508.1	531.5	911.1	878.7	32.41	28.112		
6,100.0	6,050.6	6,119.6	6,049.8	17.7	18.3	-89.64	501.7	531.5	911.1	878.5	32.56	27.983		
6,200.0	6,150.0	6,217.6	6,145.7	17.7	18.2	-88.99	481.8	531.5	911.2	878.6	32.59	27.957		
6,300.0	6,247.2	6,314.5	6,237.2	17.7	18.1	-88.37	450.2	531.5	911.4	879.0	32.43	28.103		
6,400.0	6,340.6	6,410.1	6,322.9	17.6	18.0	-87.77	407.9	531.5	911.8	879.6	32.12	28.387		
6,500.0	6,428.6	6,504.8	6,401.9	17.4	17.8	-87.22	355.9	531.5	912.1	880.4	31.72	28.759		
6,600.0	6,509.6	6,600.0	6,474.2	17.2	17.5	-86.71	294.0	531.5	912.6	881.3	31.30	29.158		
6,700.0	6,582.3	6,691.4	6,535.9	16.9	17.3	-86.26	226.6	531.5	913.0	882.1	30.96	29.491		
6,800.0	6,645.4	6,783.6	6,589.6	16.7	17.1	-85.87	151.7	531.5	913.4	882.7	30.78	29.675		
6,900.0	6,697.9	6,875.3	6,633.5	16.5	16.9	-85.54	71.4	531.5	913.8	883.0	30.85	29.621		
7,000.0	6,738.8	6,966.4	6,667.4	16.3	16.7	-85.29	-13.2	531.5	914.2	882.9	31.23	29.270		
7,100.0	6,767.4	7,057.3	6,691.0	16.2	16.7	-85.10	-100.9	531.5	914.4	882.4	31.97	28.605		
7,200.0	6,783.4	7,150.0	6,704.1	16.8	17.0	-85.00	-192.6	531.5	914.6	881.5	33.07	27.655		
7,216.6	6,784.8	7,162.9	6,705.0	16.9	17.1	-84.99	-205.5	531.5	914.6	881.3	33.29	27.476		
7,300.0	6,786.7	7,240.7	6,706.5	17.6	17.7	-84.97	-283.2	531.5	914.6	880.1	34.51	26.502		
7,400.0	6,786.2	7,340.7	6,705.8	18.6	18.7	-84.96	-383.2	531.5	914.6	878.3	36.34	25.170		
7,500.0	6,785.8	7,440.7	6,705.2	19.7	19.8	-84.94	-483.2	531.5	914.6	876.2	38.45	23.787		
7,600.0	6,785.4	7,540.7	6,704.6	21.0	21.0	-84.93	-583.2	531.5	914.6	873.8	40.82	22.409		
7,700.0	6,785.0	7,640.7	6,703.9	22.3	22.3	-84.92	-683.2	531.5	914.7	871.3	43.39	21.081		
7,800.0	6,784.6	7,740.7	6,703.3	23.7	23.6	-84.90	-783.2	531.5	914.7	868.5	46.14	19.826		
7,900.0	6,784.2	7,840.7	6,702.7	25.1	25.1	-84.89	-883.2	531.5	914.7	865.7	49.03	18.656		
8,000.0	6,783.7	7,940.7	6,702.1	26.6	26.6	-84.88	-983.2	531.5	914.7	862.7	52.04	17.576		
8,100.0	6,783.3	8,040.7	6,701.4	28.2	28.1	-84.86	-1,083.2	531.5	914.7	859.6	55.16	16.584		
8,200.0	6,782.9	8,140.7	6,700.8	29.8	29.7	-84.85	-1,183.2	531.5	914.8	856.4	58.36	15.676		
8,300.0	6,782.5	8,240.7	6,700.2	31.4	31.3	-84.84	-1,283.2	531.5	914.8	853.2	61.63	14.844		
8,400.0	6,782.1	8,340.7	6,699.5	33.1	33.0	-84.82	-1,383.2	531.5	914.8	849.8	64.96	14.083		
8,500.0	6,781.6	8,440.7	6,698.9	34.8	34.7	-84.81	-1,483.2	531.5	914.8	846.5	68.34	13.386		
8,600.0	6,781.2	8,540.7	6,698.3	36.5	36.4	-84.80	-1,583.2	531.5	914.8	843.1	71.77	12.747		
8,700.0	6,780.8	8,640.7	6,697.7	38.2	38.1	-84.79	-1,683.2	531.5	914.9	839.6	75.23	12.160		
8,800.0	6,780.4	8,740.7	6,697.0	39.9	39.8	-84.77	-1,783.2	531.5	914.9	836.1	78.73	11.620		
8,900.0	6,780.0	8,840.7	6,696.4	41.7	41.6	-84.76	-1,883.2	531.5	914.9	832.6	82.26	11.122		
9,000.0	6,779.5	8,940.7	6,695.8	43.5	43.4	-84.75	-1,983.2	531.5	914.9	829.1	85.81	10.662		
9,100.0	6,779.1	9,040.7	6,695.1	45.3	45.1	-84.73	-2,083.2	531.5	914.9	825.5	89.39	10.236		
9,200.0	6,778.7	9,140.7	6,694.5	47.1	46.9	-84.72	-2,183.2	531.5	915.0	822.0	92.98	9.840		
9,300.0	6,778.3	9,240.7	6,693.9	48.9	48.7	-84.71	-2,283.2	531.5	915.0	818.4	96.60	9.472		
9,400.0	6,777.9	9,340.7	6,693.3	50.7	50.5	-84.69	-2,383.2	531.5	915.0	814.8	100.22	9.129		
9,500.0	6,777.4	9,440.7	6,692.6	52.5	52.4	-84.68	-2,483.2	531.5	915.0	811.1	103.87	8.810		
9,600.0	6,777.0	9,540.7	6,692.0	54.3	54.2	-84.67	-2,583.2	531.5	915.0	807.5	107.52	8.510		
9,700.0	6,776.6	9,640.7	6,691.4	56.2	56.0	-84.65	-2,683.1	531.5	915.1	803.9	111.19	8.230		
9,800.0	6,776.2	9,740.7	6,690.7	58.0	57.8	-84.64	-2,783.1	531.5	915.1	800.2	114.86	7.967		

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-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29U-243 - Wellbore #1 - Plan #1 (3-15-16)													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			
9,900.0	6,775.8	9,840.7	6,690.1	59.8	59.7	-84.63	-2,883.1	531.5	915.1	796.5	118.55	7.719			
10,000.0	6,775.4	9,940.7	6,689.5	61.7	61.5	-84.62	-2,983.1	531.5	915.1	792.9	122.24	7.486			
10,100.0	6,774.9	10,040.7	6,688.9	63.5	63.4	-84.60	-3,083.1	531.5	915.1	789.2	125.94	7.266			
10,200.0	6,774.5	10,140.7	6,688.2	65.4	65.2	-84.59	-3,183.1	531.5	915.2	785.5	129.65	7.059			
10,300.0	6,774.1	10,240.7	6,687.6	67.3	67.1	-84.58	-3,283.1	531.5	915.2	781.8	133.37	6.862			
10,400.0	6,773.7	10,340.7	6,687.0	69.1	69.0	-84.56	-3,383.1	531.5	915.2	778.1	137.09	6.676			
10,500.0	6,773.3	10,440.7	6,686.3	71.0	70.8	-84.55	-3,483.1	531.5	915.2	774.4	140.81	6.500			
10,600.0	6,772.8	10,540.7	6,685.7	72.9	72.7	-84.54	-3,583.1	531.5	915.2	770.7	144.54	6.332			
10,700.0	6,772.4	10,640.7	6,685.1	74.7	74.6	-84.52	-3,683.1	531.5	915.3	767.0	148.28	6.173			
10,800.0	6,772.0	10,740.7	6,684.5	76.6	76.4	-84.51	-3,783.1	531.5	915.3	763.3	152.02	6.021			
10,900.0	6,771.6	10,840.7	6,683.8	78.5	78.3	-84.50	-3,883.1	531.5	915.3	759.5	155.76	5.876			
11,000.0	6,771.2	10,940.7	6,683.2	80.4	80.2	-84.49	-3,983.1	531.5	915.3	755.8	159.51	5.738			
11,100.0	6,770.7	11,040.7	6,682.6	82.2	82.1	-84.47	-4,083.1	531.5	915.3	752.1	163.26	5.607			
11,200.0	6,770.3	11,140.7	6,681.9	84.1	83.9	-84.46	-4,183.1	531.5	915.4	748.3	167.01	5.481			
11,300.0	6,769.9	11,240.7	6,681.3	86.0	85.8	-84.45	-4,283.1	531.5	915.4	744.6	170.77	5.360			
11,400.0	6,769.5	11,340.7	6,680.7	87.9	87.7	-84.43	-4,383.1	531.5	915.4	740.9	174.53	5.245			
11,500.0	6,769.1	11,440.6	6,680.1	89.8	89.6	-84.42	-4,483.1	531.5	915.4	737.1	178.29	5.134			
11,600.0	6,768.7	11,540.6	6,679.4	91.7	91.5	-84.41	-4,583.1	531.5	915.4	733.4	182.05	5.028			
11,700.0	6,768.2	11,640.6	6,678.8	93.6	93.4	-84.39	-4,683.1	531.5	915.5	729.6	185.82	4.927			
11,800.0	6,767.8	11,740.6	6,678.2	95.4	95.3	-84.38	-4,783.1	531.5	915.5	725.9	189.58	4.829			
11,900.0	6,767.4	11,840.6	6,677.5	97.3	97.1	-84.37	-4,883.1	531.5	915.5	722.1	193.35	4.735			
12,000.0	6,767.0	11,940.6	6,676.9	99.2	99.0	-84.35	-4,983.1	531.5	915.5	718.4	197.13	4.644			
12,100.0	6,766.6	12,040.6	6,676.3	101.1	100.9	-84.34	-5,083.1	531.5	915.5	714.6	200.90	4.557			
12,200.0	6,766.1	12,140.6	6,675.7	103.0	102.8	-84.33	-5,183.1	531.5	915.6	710.9	204.68	4.473			
12,300.0	6,765.7	12,240.6	6,675.0	104.9	104.7	-84.32	-5,283.1	531.5	915.6	707.1	208.45	4.392			
12,400.0	6,765.3	12,340.6	6,674.4	106.8	106.6	-84.30	-5,383.1	531.5	915.6	703.4	212.23	4.314			
12,500.0	6,764.9	12,440.6	6,673.8	108.7	108.5	-84.29	-5,483.1	531.5	915.6	699.6	216.01	4.239			
12,600.0	6,764.5	12,540.6	6,673.1	110.6	110.4	-84.28	-5,583.1	531.5	915.6	695.9	219.79	4.166			
12,700.0	6,764.0	12,640.6	6,672.5	112.5	112.3	-84.26	-5,683.1	531.5	915.7	692.1	223.57	4.096			
12,800.0	6,763.6	12,740.6	6,671.9	114.4	114.2	-84.25	-5,783.1	531.5	915.7	688.3	227.35	4.028			
12,900.0	6,763.2	12,840.6	6,671.3	116.3	116.1	-84.24	-5,883.1	531.5	915.7	684.6	231.14	3.962			
13,000.0	6,762.8	12,940.6	6,670.6	118.2	118.0	-84.22	-5,983.1	531.5	915.7	680.8	234.92	3.898			
13,100.0	6,762.4	13,040.6	6,670.0	120.1	119.9	-84.21	-6,083.1	531.5	915.8	677.0	238.71	3.836			
13,200.0	6,762.0	13,140.6	6,669.4	122.0	121.8	-84.20	-6,183.1	531.5	915.8	673.3	242.49	3.776			
13,300.0	6,761.5	13,240.6	6,668.8	123.9	123.7	-84.19	-6,283.1	531.5	915.8	669.5	246.28	3.718			
13,400.0	6,761.1	13,340.6	6,668.1	125.8	125.6	-84.17	-6,383.1	531.5	915.8	665.7	250.07	3.662			
13,500.0	6,760.7	13,440.6	6,667.5	127.7	127.5	-84.16	-6,483.1	531.5	915.8	662.0	253.86	3.608			
13,600.0	6,760.3	13,540.6	6,666.9	129.6	129.4	-84.15	-6,583.1	531.5	915.9	658.2	257.65	3.555			
13,700.0	6,759.9	13,640.6	6,666.2	131.5	131.3	-84.13	-6,683.1	531.5	915.9	654.4	261.44	3.503			
13,800.0	6,759.4	13,740.6	6,665.6	133.4	133.2	-84.12	-6,783.1	531.5	915.9	650.7	265.23	3.453			
13,900.0	6,759.0	13,840.6	6,665.0	135.3	135.1	-84.11	-6,883.1	531.5	915.9	646.9	269.02	3.405			
14,000.0	6,758.6	13,940.6	6,664.4	137.2	137.0	-84.09	-6,983.1	531.5	915.9	643.1	272.81	3.357			
14,100.0	6,758.2	14,040.6	6,663.7	139.1	138.9	-84.08	-7,083.1	531.5	916.0	639.4	276.61	3.311			
14,200.0	6,757.8	14,140.6	6,663.1	141.1	140.8	-84.07	-7,183.0	531.5	916.0	635.6	280.40	3.267			
14,300.0	6,757.3	14,240.6	6,662.5	143.0	142.7	-84.05	-7,283.0	531.5	916.0	631.8	284.19	3.223			
14,345.0	6,757.2	14,285.7	6,662.2	143.8	143.6	-84.05	-7,328.1	531.5	916.0	630.1	285.90	3.204			
14,381.9	6,757.0	14,315.2	6,662.0	144.5	144.2	-84.05	-7,357.6	531.5	916.1	628.9	287.16	3.190 SF			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29U-343 - Wellbore #1 - Plan #1 (3-15-16)													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	90.83	-1.1	74.9	75.0					
100.0	100.0	99.0	99.0	0.1	0.1	90.83	-1.1	74.9	75.0	74.7	0.22	335.161		
200.0	200.0	199.0	199.0	0.3	0.3	90.83	-1.1	74.9	75.0	74.3	0.67	111.535	CC, ES	
300.0	300.0	297.5	297.5	0.6	0.6	90.25	-0.3	75.9	76.0	74.8	1.11	68.194		
400.0	400.0	395.8	395.7	0.8	0.8	88.60	1.9	79.0	79.1	77.5	1.56	50.723		
500.0	500.0	493.9	493.6	1.0	1.0	86.11	5.7	84.0	84.3	82.3	2.01	41.879		
600.0	600.0	591.5	590.8	1.2	1.3	83.13	11.0	91.0	92.0	89.5	2.48	37.038		
700.0	700.0	688.7	687.4	1.5	1.5	79.97	17.7	99.9	102.1	99.1	2.97	34.380		
800.0	800.0	785.2	782.9	1.7	1.8	76.88	25.8	110.7	114.8	111.3	3.47	33.047		
900.0	900.0	881.0	877.4	1.9	2.2	74.03	35.3	123.3	130.1	126.1	3.99	32.567	SF	
1,000.0	1,000.0	975.9	970.6	2.1	2.5	71.49	46.1	137.7	148.0	143.5	4.53	32.652		
1,100.0	1,100.0	1,069.9	1,062.4	2.4	2.9	69.28	58.2	153.8	168.4	163.4	5.09	33.121		
1,200.0	1,200.0	1,162.8	1,152.7	2.6	3.4	67.37	71.4	171.4	191.4	185.8	5.65	33.850		
1,300.0	1,300.0	1,256.5	1,243.1	2.8	3.8	65.73	86.1	190.9	216.7	210.4	6.24	34.713		
1,400.0	1,400.0	1,352.9	1,336.2	3.0	4.3	64.36	101.4	211.2	242.5	235.7	6.84	35.434		
1,500.0	1,500.0	1,449.4	1,429.2	3.3	4.8	99.91	116.6	231.5	268.7	262.0	6.71	40.066		
1,600.0	1,599.9	1,545.8	1,522.1	3.5	5.3	99.35	131.9	251.9	295.4	288.2	7.18	41.110		
1,700.0	1,699.7	1,642.0	1,615.0	3.7	5.9	99.28	147.2	272.2	322.4	314.7	7.67	42.033		
1,800.0	1,799.3	1,738.1	1,707.6	3.9	6.4	99.59	162.4	292.4	349.9	341.7	8.17	42.837		
1,900.0	1,898.6	1,833.9	1,800.0	4.2	6.9	100.19	177.6	312.6	377.9	369.2	8.68	43.525		
2,000.0	1,997.5	1,929.3	1,892.1	4.4	7.4	101.01	192.8	332.8	406.5	397.3	9.22	44.099		
2,100.0	2,096.2	2,024.5	1,983.9	4.7	7.9	102.25	207.9	352.9	435.6	425.8	9.79	44.513		
2,200.0	2,194.9	2,119.7	2,075.7	5.0	8.4	103.44	222.9	372.9	464.9	454.5	10.37	44.814		
2,300.0	2,293.6	2,214.9	2,167.6	5.3	9.0	104.48	238.0	393.0	494.4	483.4	10.98	45.040		
2,400.0	2,392.2	2,310.1	2,259.4	5.6	9.5	105.40	253.1	413.1	524.0	512.4	11.59	45.209		
2,500.0	2,490.9	2,405.3	2,351.2	6.0	10.0	106.23	268.2	433.2	553.7	541.5	12.21	45.334		
2,600.0	2,589.6	2,500.5	2,443.0	6.3	10.5	106.97	283.3	453.2	583.6	570.7	12.85	45.426		
2,700.0	2,688.3	2,595.7	2,534.8	6.6	11.0	107.64	298.4	473.3	613.5	600.0	13.49	45.491		
2,800.0	2,786.9	2,690.8	2,626.6	6.9	11.6	108.25	313.5	493.4	643.4	629.3	14.13	45.537		
2,900.0	2,885.6	2,786.0	2,718.4	7.3	12.1	108.81	328.6	513.5	673.5	658.7	14.78	45.568		
3,000.0	2,984.3	2,881.2	2,810.3	7.6	12.6	109.32	343.7	533.6	703.6	688.1	15.43	45.587		
3,100.0	3,082.9	2,976.4	2,902.1	8.0	13.1	109.78	358.8	553.6	733.7	717.6	16.09	45.597		
3,200.0	3,181.6	3,071.6	2,993.9	8.3	13.7	110.21	373.9	573.7	763.9	747.1	16.75	45.600		
3,300.0	3,280.3	3,166.8	3,085.7	8.7	14.2	110.61	389.0	593.8	794.1	776.7	17.42	45.597		
3,400.0	3,379.0	3,262.0	3,177.5	9.0	14.7	110.98	404.1	613.9	824.3	806.3	18.08	45.591		
3,500.0	3,477.6	3,357.2	3,269.3	9.4	15.2	111.32	419.2	633.9	854.6	835.9	18.75	45.581		
3,600.0	3,576.3	3,452.4	3,361.1	9.8	15.8	111.64	434.3	654.0	884.9	865.5	19.42	45.568		
3,700.0	3,675.0	3,551.4	3,456.7	10.1	16.3	111.95	450.0	674.9	915.2	895.1	20.10	45.532		
3,800.0	3,773.7	3,687.7	3,589.1	10.5	16.9	112.44	469.3	700.6	943.1	922.2	20.85	45.240		
3,900.0	3,872.3	3,826.8	3,725.7	10.8	17.3	113.07	485.2	721.7	966.8	945.2	21.57	44.822		
4,000.0	3,971.0	3,968.3	3,865.8	11.2	17.7	113.84	497.2	737.7	986.2	963.9	22.28	44.272		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4686.0ft (RKB - 23')

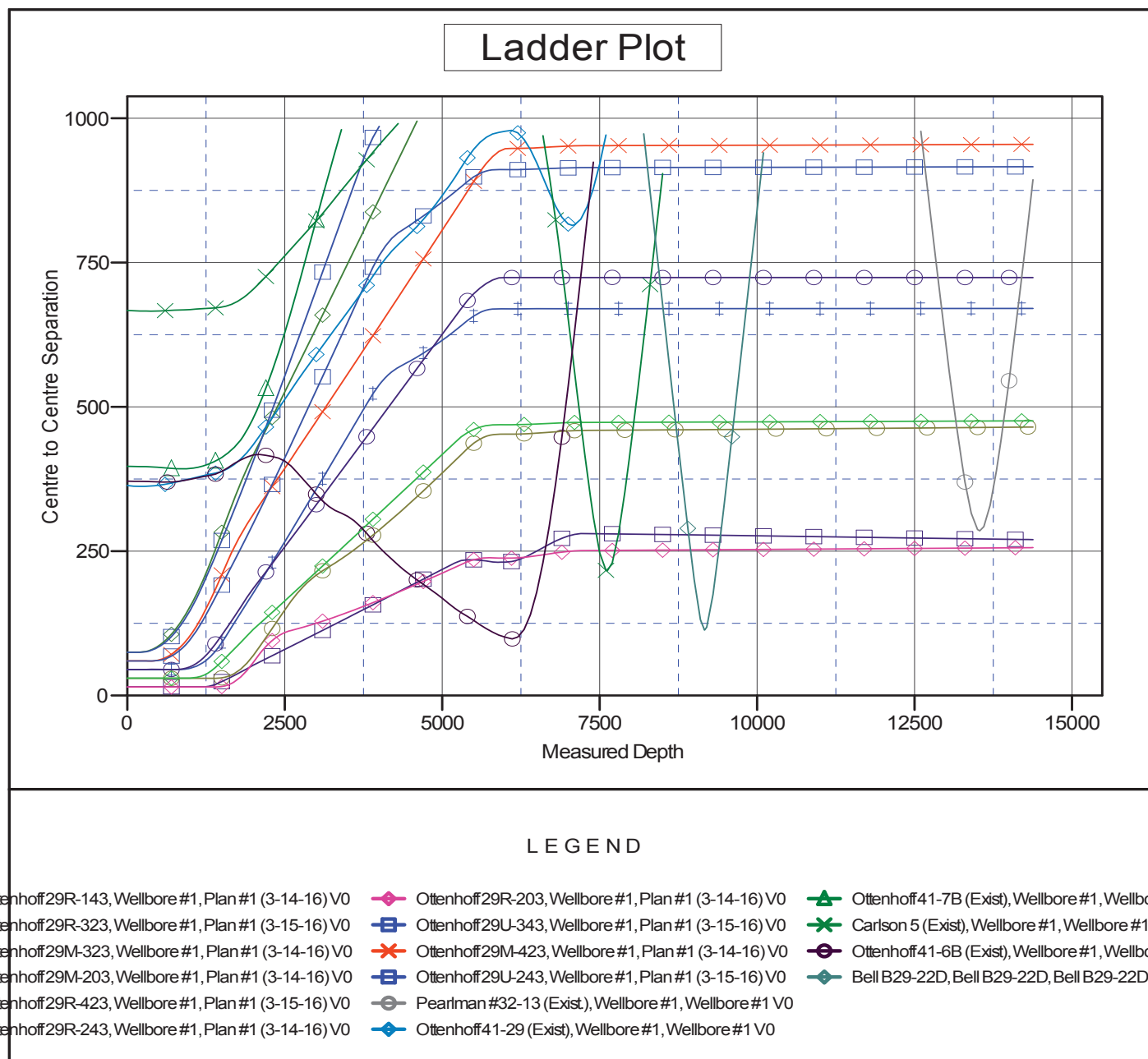
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000

Coordinates are relative to: Ottenhoff 29R-303

Coordinate System is US State Plane 1983, Colorado Northern Zone

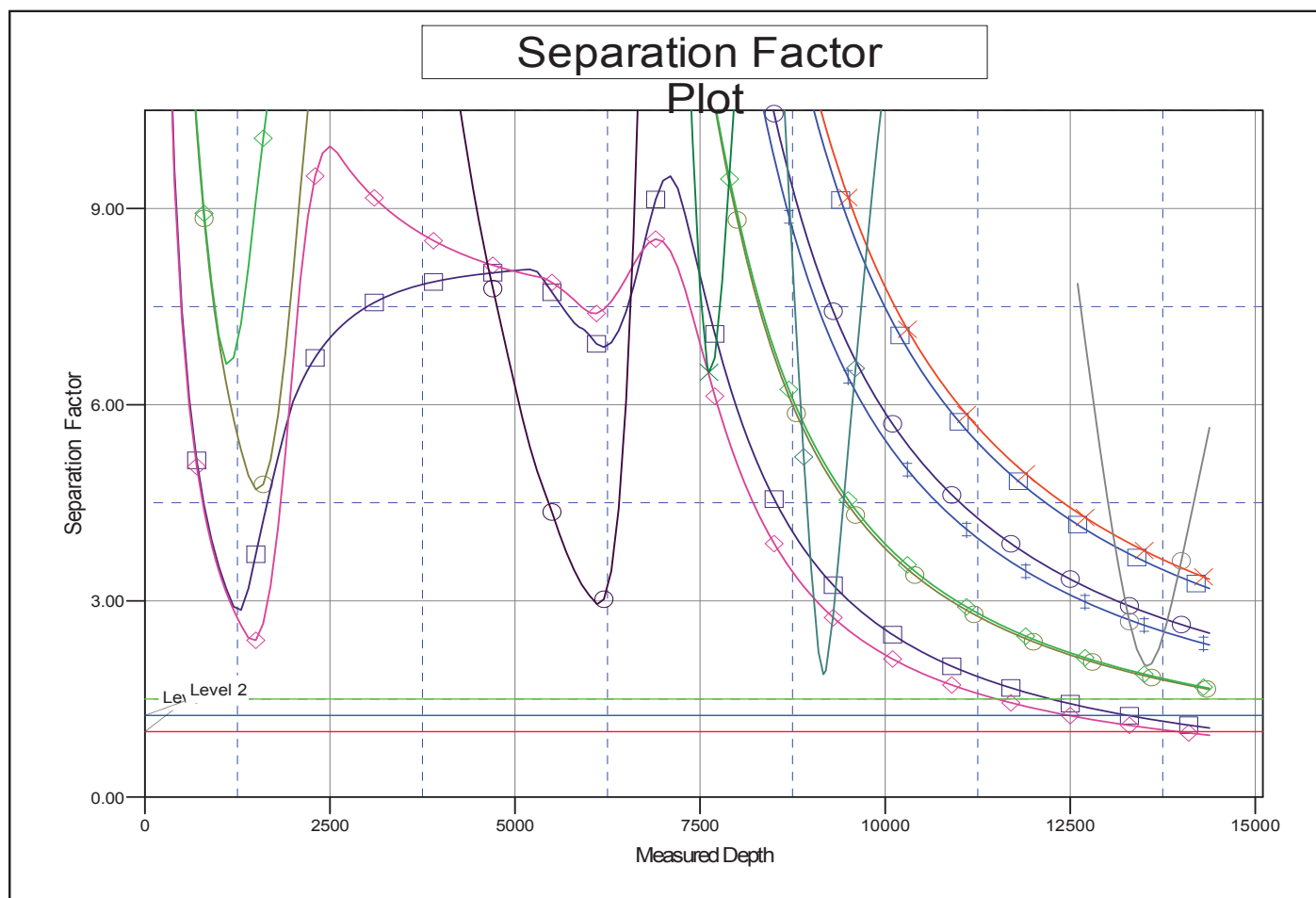
Grid Convergence at Surface is: 0.60°



Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-15-16)	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-303
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.60°



LEGEND

Ottenhoff 29R-143, Wellbore #1, Plan #1 (3-14-16) V0	Ottenhoff 29R-203, Wellbore #1, Plan #1 (3-14-16) V0	Ottenhoff 41-7B (Exist), Wellbore #1, Wellbore #1 V0
Ottenhoff 29R-323, Wellbore #1, Plan #1 (3-15-16) V0	Ottenhoff 29U-343, Wellbore #1, Plan #1 (3-15-16) V0	Carlson 5 (Exist), Wellbore #1, Wellbore #1 V0
Ottenhoff 29M-323, Wellbore #1, Plan #1 (3-14-16) V0	Ottenhoff 29M-423, Wellbore #1, Plan #1 (3-14-16) V0	Ottenhoff 41-6B (Exist), Wellbore #1, Wellbore #1 V0
Ottenhoff 29M-203, Wellbore #1, Plan #1 (3-14-16) V0	Ottenhoff 29U-243, Wellbore #1, Plan #1 (3-15-16) V0	Bell B29-22D, Bell B29-22D, Bell B29-22D V0
Ottenhoff 29R-423, Wellbore #1, Plan #1 (3-15-16) V0	Pearlman #32-13 (Exist), Wellbore #1, Wellbore #1 V0	
Ottenhoff 29R-243, Wellbore #1, Plan #1 (3-14-16) V0	Ottenhoff 41-29 (Exist), Wellbore #1, Wellbore #1 V0	