

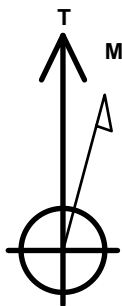
PETROLEUM DEVELOPMENT CORP DJ Basin

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 Latitude 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 2340'FNL & 1433'FEL, Sec.32	6757.0	-7064.7	-382.4	Point
LPL 817'FNL & 1385'FEL, Sec.29	6787.0	-265.6	-378.4	Point



Azimuths to True North
 Magnetic North: 8.00°

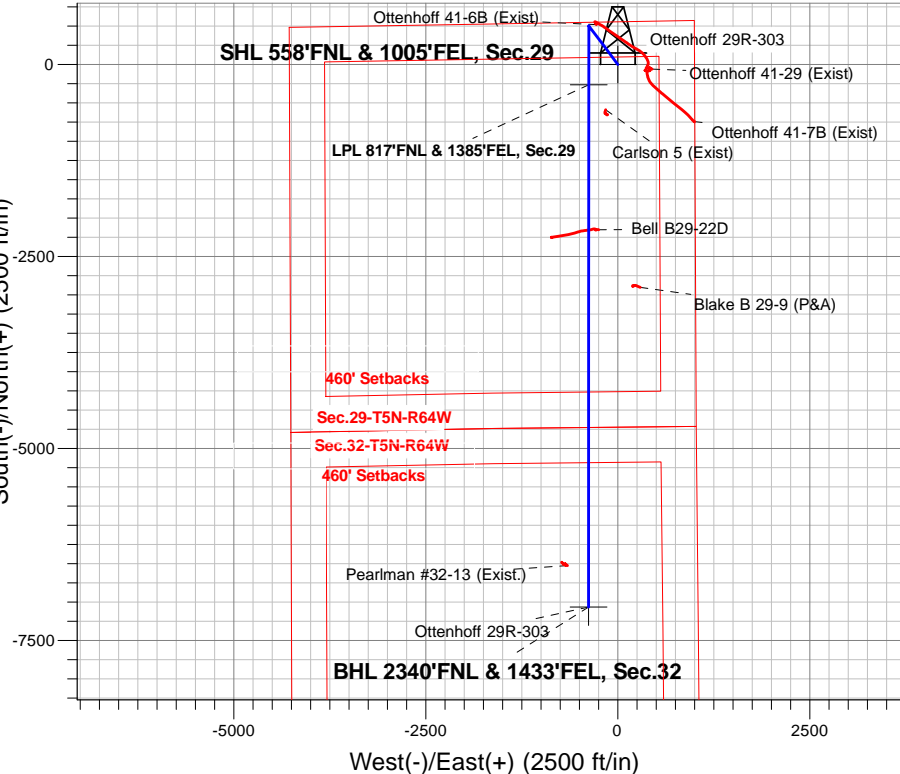
Magnetic Field
 Strength: 52547.3snT
 Dip Angle: 66.86°
 Date: 1/30/2017
 Model: IGRF2010

Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W
 Ottenhoff 29R-303
 Plan #2 (1-25-17)
 7:25, January 30 2017

ANNOTATIONS

TVD	MD	Annotation
1400.0	1400.0	KOP - Start Build 1.50
5339.9	5386.3	Start Drop -2.00
6023.2	6071.6	Start Build 7.50
6787.0	7274.8	Start DLS 0.50 TFO 64.99
6787.0	7276.1	Start 6797.9 hold at 7276.1 MD
6757.0	14073.9	TD at 14073.9

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

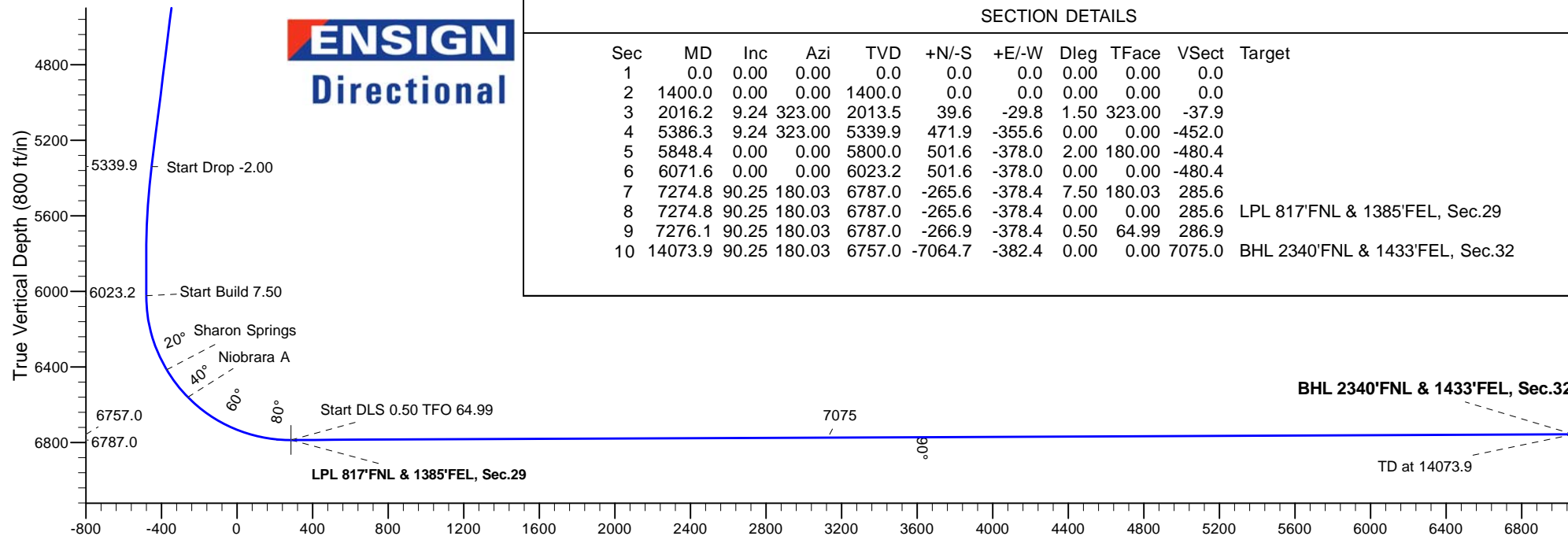


West(-)/East(+) (2500 ft/in)

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1400.0	0.00	0.00	1400.0	0.0	0.0	0.00	0.00	0.0	
3	2016.2	9.24	323.00	2013.5	39.6	-29.8	1.50	323.00	-37.9	
4	5386.3	9.24	323.00	5339.9	471.9	-355.6	0.00	0.00	-452.0	
5	5848.4	0.00	0.00	5800.0	501.6	-378.0	2.00	180.00	-480.4	
6	6071.6	0.00	0.00	6023.2	501.6	-378.0	0.00	0.00	-480.4	
7	7274.8	90.25	180.03	6787.0	-265.6	-378.4	7.50	180.03	285.6	
8	7274.8	90.25	180.03	6787.0	-265.6	-378.4	0.00	0.00	285.6	LPL 817'FNL & 1385'FEL, Sec.29
9	7276.1	90.25	180.03	6787.0	-266.9	-378.4	0.50	64.99	286.9	
10	14073.9	90.25	180.03	6757.0	-7064.7	-382.4	0.00	0.00	7075.0	BHL 2340'FNL & 1433'FEL, Sec.32

ENSIGN
 Directional



Vertical Section at 183.10° (800 ft/in)



PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.29-T5N-R64W

Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W

Ottenhoff 29R-303

Wellbore #1

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

Standard Planning Report

30 January, 2017

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 #2 (1-25-17)		

Project	SEC.29-T5N-R64W, Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

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

Well	Ottenhoff 29R-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	1/30/2017	8.00	66.86	52,547

Design	Plan #2 (1-25-17)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	183.10

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	
2,016.2	9.24	323.00	2,013.5	39.6	-29.8	1.50	1.50	0.00	323.00	
5,386.3	9.24	323.00	5,339.9	471.9	-355.6	0.00	0.00	0.00	0.00	
5,848.4	0.00	0.00	5,800.0	501.6	-378.0	2.00	-2.00	0.00	180.00	
6,071.6	0.00	0.00	6,023.2	501.6	-378.0	0.00	0.00	0.00	0.00	
7,274.8	90.25	180.03	6,787.0	-265.6	-378.4	7.50	7.50	0.00	180.03	
7,274.8	90.25	180.03	6,787.0	-265.6	-378.4	0.00	0.00	0.00	0.00	LPL 817°FNL & 1385'f
7,276.1	90.25	180.03	6,787.0	-266.9	-378.4	0.50	0.21	0.45	64.99	
14,073.9	90.25	180.03	6,757.0	-7,064.7	-382.4	0.00	0.00	0.00	0.00	BHL 2340°FNL & 143'f

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 #2 (1-25-17)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 1.50									
1,500.0	1.50	323.00	1,500.0	1.0	-0.8	-1.0	1.50	1.50	0.00
1,600.0	3.00	323.00	1,599.9	4.2	-3.2	-4.0	1.50	1.50	0.00
1,700.0	4.50	323.00	1,699.7	9.4	-7.1	-9.0	1.50	1.50	0.00
1,800.0	6.00	323.00	1,799.3	16.7	-12.6	-16.0	1.50	1.50	0.00
1,900.0	7.50	323.00	1,898.6	26.1	-19.7	-25.0	1.50	1.50	0.00
2,000.0	9.00	323.00	1,997.5	37.6	-28.3	-36.0	1.50	1.50	0.00
2,016.2	9.24	323.00	2,013.5	39.6	-29.8	-37.9	1.50	1.50	0.00
2,100.0	9.24	323.00	2,096.2	50.4	-37.9	-48.2	0.00	0.00	0.00
2,200.0	9.24	323.00	2,194.9	63.2	-47.6	-60.5	0.00	0.00	0.00
2,300.0	9.24	323.00	2,293.6	76.0	-57.3	-72.8	0.00	0.00	0.00
2,400.0	9.24	323.00	2,392.3	88.8	-66.9	-85.1	0.00	0.00	0.00
2,500.0	9.24	323.00	2,491.0	101.7	-76.6	-97.4	0.00	0.00	0.00
2,600.0	9.24	323.00	2,589.8	114.5	-86.3	-109.7	0.00	0.00	0.00
2,700.0	9.24	323.00	2,688.5	127.3	-95.9	-121.9	0.00	0.00	0.00
2,800.0	9.24	323.00	2,787.2	140.1	-105.6	-134.2	0.00	0.00	0.00
2,900.0	9.24	323.00	2,885.9	153.0	-115.3	-146.5	0.00	0.00	0.00
3,000.0	9.24	323.00	2,984.6	165.8	-124.9	-158.8	0.00	0.00	0.00
3,100.0	9.24	323.00	3,083.3	178.6	-134.6	-171.1	0.00	0.00	0.00
3,200.0	9.24	323.00	3,182.0	191.5	-144.3	-183.4	0.00	0.00	0.00
3,300.0	9.24	323.00	3,280.7	204.3	-153.9	-195.7	0.00	0.00	0.00
3,400.0	9.24	323.00	3,379.4	217.1	-163.6	-208.0	0.00	0.00	0.00
3,500.0	9.24	323.00	3,478.1	229.9	-173.3	-220.2	0.00	0.00	0.00
3,552.6	9.24	323.00	3,530.0	236.7	-178.4	-226.7	0.00	0.00	0.00
Parkman Sandstone									
3,600.0	9.24	323.00	3,576.8	242.8	-182.9	-232.5	0.00	0.00	0.00
3,700.0	9.24	323.00	3,675.5	255.6	-192.6	-244.8	0.00	0.00	0.00
3,800.0	9.24	323.00	3,774.2	268.4	-202.3	-257.1	0.00	0.00	0.00
3,900.0	9.24	323.00	3,872.9	281.2	-211.9	-269.4	0.00	0.00	0.00
4,000.0	9.24	323.00	3,971.6	294.1	-221.6	-281.7	0.00	0.00	0.00
4,100.0	9.24	323.00	4,070.3	306.9	-231.3	-294.0	0.00	0.00	0.00
4,200.0	9.24	323.00	4,169.0	319.7	-240.9	-306.2	0.00	0.00	0.00
4,231.4	9.24	323.00	4,200.0	323.8	-244.0	-310.1	0.00	0.00	0.00
Sussex Sandstone									
4,300.0	9.24	323.00	4,267.7	332.6	-250.6	-318.5	0.00	0.00	0.00
4,400.0	9.24	323.00	4,366.4	345.4	-260.3	-330.8	0.00	0.00	0.00
4,500.0	9.24	323.00	4,465.1	358.2	-269.9	-343.1	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 #2 (1-25-17)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,600.0	9.24	323.00	4,563.8	371.0	-279.6	-355.4	0.00	0.00	0.00
4,700.0	9.24	323.00	4,662.5	383.9	-289.3	-367.7	0.00	0.00	0.00
4,800.0	9.24	323.00	4,761.2	396.7	-298.9	-380.0	0.00	0.00	0.00
4,900.0	9.24	323.00	4,859.9	409.5	-308.6	-392.2	0.00	0.00	0.00
5,000.0	9.24	323.00	4,958.6	422.3	-318.3	-404.5	0.00	0.00	0.00
5,100.0	9.24	323.00	5,057.3	435.2	-327.9	-416.8	0.00	0.00	0.00
5,200.0	9.24	323.00	5,156.0	448.0	-337.6	-429.1	0.00	0.00	0.00
5,300.0	9.24	323.00	5,254.7	460.8	-347.3	-441.4	0.00	0.00	0.00
5,386.3	9.24	323.00	5,339.9	471.9	-355.6	-452.0	0.00	0.00	0.00
Start Drop -2.00									
5,400.0	8.97	323.00	5,353.4	473.6	-356.9	-453.6	2.00	-2.00	0.00
5,500.0	6.97	323.00	5,452.4	484.7	-365.3	-464.3	2.00	-2.00	0.00
5,600.0	4.97	323.00	5,551.9	493.0	-371.5	-472.2	2.00	-2.00	0.00
5,700.0	2.97	323.00	5,651.6	498.5	-375.7	-477.5	2.00	-2.00	0.00
5,800.0	0.97	323.00	5,751.6	501.3	-377.8	-480.1	2.00	-2.00	0.00
5,848.4	0.00	0.00	5,800.0	501.6	-378.0	-480.4	2.00	-2.00	0.00
5,900.0	0.00	0.00	5,851.6	501.6	-378.0	-480.4	0.00	0.00	0.00
6,000.0	0.00	0.00	5,951.6	501.6	-378.0	-480.4	0.00	0.00	0.00
6,071.6	0.00	0.00	6,023.2	501.6	-378.0	-480.4	0.00	0.00	0.00
Start Build 7.50									
6,100.0	2.13	180.03	6,051.6	501.1	-378.0	-479.9	7.50	7.50	0.00
6,200.0	9.63	180.03	6,151.0	490.8	-378.0	-469.7	7.50	7.50	0.00
6,300.0	17.13	180.03	6,248.2	467.7	-378.0	-446.6	7.50	7.50	0.00
6,400.0	24.63	180.03	6,341.6	432.1	-378.0	-411.0	7.50	7.50	0.00
6,483.0	30.86	180.03	6,415.0	393.4	-378.1	-372.4	7.50	7.50	0.00
Sharon Springs									
6,500.0	32.13	180.03	6,429.5	384.6	-378.1	-363.6	7.50	7.50	0.00
6,600.0	39.64	180.03	6,510.4	326.0	-378.1	-305.1	7.50	7.50	0.00
6,666.9	44.65	180.03	6,560.0	281.2	-378.1	-260.3	7.50	7.50	0.00
Niobrara A									
6,700.0	47.14	180.03	6,583.1	257.4	-378.1	-236.6	7.50	7.50	0.00
6,800.0	54.64	180.03	6,646.1	179.8	-378.2	-159.1	7.50	7.50	0.00
6,806.8	55.15	180.03	6,650.0	174.3	-378.2	-153.6	7.50	7.50	0.00
Niobrara B									
6,900.0	62.14	180.03	6,698.5	94.7	-378.2	-74.2	7.50	7.50	0.00
6,987.9	68.73	180.03	6,735.0	14.8	-378.2	5.7	7.50	7.50	0.00
Niobrara C									
7,000.0	69.64	180.03	6,739.3	3.5	-378.2	16.9	7.50	7.50	0.00
7,100.0	77.14	180.03	6,767.9	-92.2	-378.3	112.5	7.50	7.50	0.00
7,200.0	84.64	180.03	6,783.7	-190.9	-378.3	211.1	7.50	7.50	0.00
7,274.8	90.25	180.03	6,787.0	-265.6	-378.4	285.7	7.50	7.50	0.00
Start DLS 0.50 TFO 64.99									
7,276.1	90.25	180.03	6,787.0	-266.9	-378.4	287.0	0.51	0.22	0.46
Start 6797.9 hold at 7276.1 MD									
7,300.0	90.25	180.03	6,786.9	-290.8	-378.4	310.8	0.00	0.00	0.00
7,400.0	90.25	180.03	6,786.4	-390.8	-378.4	410.7	0.00	0.00	0.00
7,500.0	90.25	180.03	6,786.0	-490.8	-378.5	510.5	0.00	0.00	0.00
7,600.0	90.25	180.03	6,785.6	-590.8	-378.6	610.4	0.00	0.00	0.00
7,700.0	90.25	180.03	6,785.1	-690.8	-378.6	710.3	0.00	0.00	0.00
7,800.0	90.25	180.03	6,784.7	-790.8	-378.7	810.1	0.00	0.00	0.00
7,900.0	90.25	180.03	6,784.2	-890.8	-378.7	910.0	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 #2 (1-25-17)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,000.0	90.25	180.03	6,783.8	-990.8	-378.8	1,009.8	0.00	0.00	0.00
8,100.0	90.25	180.03	6,783.4	-1,090.8	-378.9	1,109.7	0.00	0.00	0.00
8,200.0	90.25	180.03	6,782.9	-1,190.8	-378.9	1,209.5	0.00	0.00	0.00
8,300.0	90.25	180.03	6,782.5	-1,290.8	-379.0	1,309.4	0.00	0.00	0.00
8,400.0	90.25	180.03	6,782.0	-1,390.8	-379.0	1,409.2	0.00	0.00	0.00
8,500.0	90.25	180.03	6,781.6	-1,490.8	-379.1	1,509.1	0.00	0.00	0.00
8,600.0	90.25	180.03	6,781.2	-1,590.8	-379.2	1,609.0	0.00	0.00	0.00
8,700.0	90.25	180.03	6,780.7	-1,690.8	-379.2	1,708.8	0.00	0.00	0.00
8,800.0	90.25	180.03	6,780.3	-1,790.8	-379.3	1,808.7	0.00	0.00	0.00
8,900.0	90.25	180.03	6,779.8	-1,890.8	-379.3	1,908.5	0.00	0.00	0.00
9,000.0	90.25	180.03	6,779.4	-1,990.8	-379.4	2,008.4	0.00	0.00	0.00
9,100.0	90.25	180.03	6,778.9	-2,090.8	-379.4	2,108.2	0.00	0.00	0.00
9,200.0	90.25	180.03	6,778.5	-2,190.8	-379.5	2,208.1	0.00	0.00	0.00
9,300.0	90.25	180.03	6,778.1	-2,290.8	-379.6	2,307.9	0.00	0.00	0.00
9,400.0	90.25	180.03	6,777.6	-2,390.8	-379.6	2,407.8	0.00	0.00	0.00
9,500.0	90.25	180.03	6,777.2	-2,490.8	-379.7	2,507.7	0.00	0.00	0.00
9,600.0	90.25	180.03	6,776.7	-2,590.8	-379.7	2,607.5	0.00	0.00	0.00
9,700.0	90.25	180.03	6,776.3	-2,690.8	-379.8	2,707.4	0.00	0.00	0.00
9,800.0	90.25	180.03	6,775.9	-2,790.8	-379.9	2,807.2	0.00	0.00	0.00
9,900.0	90.25	180.03	6,775.4	-2,890.8	-379.9	2,907.1	0.00	0.00	0.00
10,000.0	90.25	180.03	6,775.0	-2,990.8	-380.0	3,006.9	0.00	0.00	0.00
10,100.0	90.25	180.03	6,774.5	-3,090.8	-380.0	3,106.8	0.00	0.00	0.00
10,200.0	90.25	180.03	6,774.1	-3,190.8	-380.1	3,206.7	0.00	0.00	0.00
10,300.0	90.25	180.03	6,773.7	-3,290.8	-380.2	3,306.5	0.00	0.00	0.00
10,400.0	90.25	180.03	6,773.2	-3,390.8	-380.2	3,406.4	0.00	0.00	0.00
10,500.0	90.25	180.03	6,772.8	-3,490.8	-380.3	3,506.2	0.00	0.00	0.00
10,600.0	90.25	180.03	6,772.3	-3,590.8	-380.3	3,606.1	0.00	0.00	0.00
10,700.0	90.25	180.03	6,771.9	-3,690.8	-380.4	3,705.9	0.00	0.00	0.00
10,800.0	90.25	180.03	6,771.4	-3,790.8	-380.4	3,805.8	0.00	0.00	0.00
10,900.0	90.25	180.03	6,771.0	-3,890.8	-380.5	3,905.6	0.00	0.00	0.00
11,000.0	90.25	180.03	6,770.6	-3,990.8	-380.6	4,005.5	0.00	0.00	0.00
11,100.0	90.25	180.03	6,770.1	-4,090.8	-380.6	4,105.4	0.00	0.00	0.00
11,200.0	90.25	180.03	6,769.7	-4,190.8	-380.7	4,205.2	0.00	0.00	0.00
11,300.0	90.25	180.03	6,769.2	-4,290.8	-380.7	4,305.1	0.00	0.00	0.00
11,400.0	90.25	180.03	6,768.8	-4,390.8	-380.8	4,404.9	0.00	0.00	0.00
11,500.0	90.25	180.03	6,768.4	-4,490.8	-380.9	4,504.8	0.00	0.00	0.00
11,600.0	90.25	180.03	6,767.9	-4,590.8	-380.9	4,604.6	0.00	0.00	0.00
11,700.0	90.25	180.03	6,767.5	-4,690.8	-381.0	4,704.5	0.00	0.00	0.00
11,800.0	90.25	180.03	6,767.0	-4,790.8	-381.0	4,804.3	0.00	0.00	0.00
11,900.0	90.25	180.03	6,766.6	-4,890.8	-381.1	4,904.2	0.00	0.00	0.00
12,000.0	90.25	180.03	6,766.2	-4,990.8	-381.2	5,004.1	0.00	0.00	0.00
12,100.0	90.25	180.03	6,765.7	-5,090.8	-381.2	5,103.9	0.00	0.00	0.00
12,200.0	90.25	180.03	6,765.3	-5,190.8	-381.3	5,203.8	0.00	0.00	0.00
12,300.0	90.25	180.03	6,764.8	-5,290.8	-381.3	5,303.6	0.00	0.00	0.00
12,400.0	90.25	180.03	6,764.4	-5,390.8	-381.4	5,403.5	0.00	0.00	0.00
12,500.0	90.25	180.03	6,763.9	-5,490.8	-381.5	5,503.3	0.00	0.00	0.00
12,600.0	90.25	180.03	6,763.5	-5,590.7	-381.5	5,603.2	0.00	0.00	0.00
12,700.0	90.25	180.03	6,763.1	-5,690.7	-381.6	5,703.1	0.00	0.00	0.00
12,800.0	90.25	180.03	6,762.6	-5,790.7	-381.6	5,802.9	0.00	0.00	0.00
12,900.0	90.25	180.03	6,762.2	-5,890.7	-381.7	5,902.8	0.00	0.00	0.00
13,000.0	90.25	180.03	6,761.7	-5,990.7	-381.7	6,002.6	0.00	0.00	0.00
13,100.0	90.25	180.03	6,761.3	-6,090.7	-381.8	6,102.5	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 #2 (1-25-17)		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
13,200.0	90.25	180.03	6,760.9	-6,190.7	-381.9	6,202.3	0.00	0.00	0.00	
13,300.0	90.25	180.03	6,760.4	-6,290.7	-381.9	6,302.2	0.00	0.00	0.00	
13,400.0	90.25	180.03	6,760.0	-6,390.7	-382.0	6,402.0	0.00	0.00	0.00	
13,500.0	90.25	180.03	6,759.5	-6,490.7	-382.0	6,501.9	0.00	0.00	0.00	
13,600.0	90.25	180.03	6,759.1	-6,590.7	-382.1	6,601.8	0.00	0.00	0.00	
13,700.0	90.25	180.03	6,758.6	-6,690.7	-382.2	6,701.6	0.00	0.00	0.00	
13,800.0	90.25	180.03	6,758.2	-6,790.7	-382.2	6,801.5	0.00	0.00	0.00	
13,900.0	90.25	180.03	6,757.8	-6,890.7	-382.3	6,901.3	0.00	0.00	0.00	
14,000.0	90.25	180.03	6,757.3	-6,990.7	-382.3	7,001.2	0.00	0.00	0.00	
14,073.9	90.25	180.03	6,757.0	-7,064.6	-382.4	7,075.0	0.00	0.00	0.00	
TD at 14073.9										

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SHL 558'FNL & 1005'FE - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,381,166.87	3,259,689.57	40.375958	-104.567890
BHL 2340'FNL & 1433'F - plan hits target center - Point	0.00	0.00	6,757.0	-7,064.7	-382.4	1,374,098.85	3,259,381.49	40.356566	-104.569262
LPL 817'FNL & 1385'FEI - plan hits target center - Point	0.00	0.00	6,787.0	-265.6	-378.4	1,380,897.34	3,259,314.03	40.375229	-104.569248

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,552.6	3,530.0	Parkman Sandstone		0.00		
4,231.4	4,200.0	Sussex Sandstone		0.00		
6,483.0	6,415.0	Sharon Springs		0.00		
6,666.9	6,560.0	Niobrara A		0.00		
6,806.8	6,650.0	Niobrara B		0.00		
6,987.9	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 #2 (1-25-17)		

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
5,386.3	5,339.9	39.6	-29.8	Start Drop -2.00
6,071.6	6,023.2	471.9	-355.6	Start Build 7.50
7,274.8	6,787.0	501.6	-378.0	Start DLS 0.50 TFO 64.99
7,276.1	6,787.0	501.6	-378.0	Start 6797.9 hold at 7276.1 MD
14,073.9	6,757.0	-265.6	-378.4	TD at 14073.9



PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.29-T5N-R64W

Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W

Ottenhoff 29R-303

Wellbore #1

Plan #2 (1-25-17)

Anticollision Report

30 January, 2017



Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Reference	Plan #2 (1-25-17)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 800.0 ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.45 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	1/30/2017		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	14,073.8	Plan #2 (1-25-17) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Bell Pad SEC.29-T5N-R64W						
Bell B29-22D - Bell B29-22D - Bell B29-22D	9,159.3	6,849.5	113.3	39.4	1.533	CC, ES, SF
Existing Wells Sec.29-T5N-R64W						
Carlson 5 (Exist) - Wellbore #1 - Wellbore #1	7,613.8	6,769.6	214.8	174.2	5.289	CC, ES, SF
Ottenhoff 41-29 (Exist) - Wellbore #1 - Wellbore #1	188.0	161.0	362.4	361.7	546.133	CC
Ottenhoff 41-29 (Exist) - Wellbore #1 - Wellbore #1	400.0	369.6	363.1	361.4	205.441	ES
Ottenhoff 41-29 (Exist) - Wellbore #1 - Wellbore #1	4,500.0	4,476.5	798.1	773.1	31.979	SF
Ottenhoff 41-6B (Exist) - Wellbore #1 - Wellbore #1	6,106.3	6,150.3	100.1	59.4	2.457	CC, ES, SF
Ottenhoff 41-7B (Exist) - Wellbore #1 - Wellbore #1	862.0	850.2	392.8	388.9	99.950	CC
Ottenhoff 41-7B (Exist) - Wellbore #1 - Wellbore #1	1,000.0	985.0	393.2	388.5	83.939	ES
Ottenhoff 41-7B (Exist) - Wellbore #1 - Wellbore #1	2,100.0	2,034.2	505.4	494.7	47.220	SF
Pearlman #32-13 (Exist.) - Wellbore #1 - Wellbore #1	13,528.2	6,807.7	283.0	108.9	1.625	CC, ES, SF
Existing Wells Sec.29-T5N-R64W (GRID)						
Blake B 29-9 (P&A) - Wellbore #1 - Wellbore #1	9,905.2	6,741.2	655.9	566.8	7.362	CC, ES
Blake B 29-9 (P&A) - Wellbore #1 - Wellbore #1	10,000.0	6,742.8	662.7	571.5	7.262	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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W						
Ottenhoff 29M-203 - Wellbore #1 - Plan #2 (1-25-17)	200.0	200.0	75.2	74.4	91.077	CC, ES
Ottenhoff 29M-203 - Wellbore #1 - Plan #2 (1-25-17)	900.0	879.8	136.1	131.3	28.513	SF
Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)	766.3	767.3	45.1	41.2	11.435	CC
Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)	800.0	801.0	45.1	41.0	10.922	ES
Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)	14,074.3	14,180.6	724.1	384.5	2.133	SF
Ottenhoff 29M-423 - Wellbore #1 - Plan #2 (1-25-17)	400.0	400.0	60.2	58.3	31.226	CC, ES
Ottenhoff 29M-423 - Wellbore #1 - Plan #2 (1-25-17)	800.0	792.8	79.8	75.7	19.454	SF
Ottenhoff 29R-143 - Wellbore #1 - Plan #2 (1-25-17)	1,200.0	1,200.0	15.0	8.7	2.376	CC
Ottenhoff 29R-143 - Wellbore #1 - Plan #2 (1-25-17)	14,074.3	13,936.4	270.1	-30.3	0.899	Level 1, ES, SF
Ottenhoff 29R-203 - Wellbore #1 - Plan #2 (1-25-17)	1,400.0	1,400.0	14.8	7.3	1.987	CC
Ottenhoff 29R-203 - Wellbore #1 - Plan #2 (1-25-17)	14,074.3	13,986.6	256.0	-62.6	0.804	Level 1, ES, SF
Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)	1,000.0	1,000.0	30.1	24.9	5.752	CC, ES
Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)	14,074.3	14,062.0	475.8	139.7	1.416	Level 3, SF
Ottenhoff 29R-323 - Wellbore #1 - Plan #2 (1-25-17)	800.0	800.0	44.9	40.7	10.863	CC, ES
Ottenhoff 29R-323 - Wellbore #1 - Plan #2 (1-25-17)	14,074.3	14,067.7	670.7	331.8	1.979	SF
Ottenhoff 29R-423 - Wellbore #1 - Plan #2 (1-25-17)	1,400.0	1,399.0	29.8	22.4	4.012	CC, ES
Ottenhoff 29R-423 - Wellbore #1 - Plan #2 (1-25-17)	14,074.3	14,145.2	465.2	132.9	1.400	Level 3, SF
Ottenhoff 29U-243 - Wellbore #1 - Plan #2 (1-25-17)	400.0	400.0	59.9	58.0	31.083	CC, ES
Ottenhoff 29U-243 - Wellbore #1 - Plan #2 (1-25-17)	900.0	892.1	84.9	80.2	17.967	SF
Ottenhoff 29U-343 - Wellbore #1 - Plan #2 (1-25-17)	200.0	199.0	75.0	74.1	91.049	CC, ES
Ottenhoff 29U-343 - Wellbore #1 - Plan #2 (1-25-17)	900.0	881.1	129.9	125.0	26.525	SF

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 559- Bell Pad SEC.29-T5N-R64W - Bell B29-22D - Bell B29-22D - Bell B29-22D												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
8,400.0	6,782.0	6,849.3	6,786.0	40.6	21.4	-87.62	-2,150.1	-266.2	767.7	710.1	57.62	13.323	
8,500.0	6,781.6	6,849.4	6,786.0	42.6	21.4	-87.63	-2,150.1	-266.2	669.0	609.3	59.70	11.205	
8,600.0	6,781.2	6,849.4	6,786.0	44.7	21.4	-87.65	-2,150.1	-266.2	570.7	508.9	61.81	9.233	
8,700.0	6,780.7	6,849.4	6,786.1	46.8	21.4	-87.66	-2,150.1	-266.2	473.1	409.1	63.94	7.399	
8,800.0	6,780.3	6,849.5	6,786.1	49.0	21.4	-87.67	-2,150.1	-266.2	376.7	310.7	66.09	5.700	
8,900.0	6,779.8	6,849.5	6,786.1	51.1	21.4	-87.69	-2,150.1	-266.2	283.0	214.7	68.26	4.146	
9,000.0	6,779.4	6,849.5	6,786.1	53.3	21.4	-87.70	-2,150.1	-266.2	195.5	125.1	70.44	2.775	
9,100.0	6,778.9	6,849.5	6,786.2	55.5	21.4	-87.71	-2,150.1	-266.2	127.9	55.3	72.64	1.761	
9,159.3	6,778.7	6,849.5	6,786.2	56.8	21.4	-87.72	-2,150.1	-266.2	113.3	39.4	73.95	1.533	CC, ES, SF
9,200.0	6,778.5	6,849.6	6,786.2	57.7	21.4	-87.73	-2,150.1	-266.2	120.4	45.6	74.85	1.609	
9,300.0	6,778.1	6,849.6	6,786.2	59.9	21.4	-87.74	-2,150.1	-266.2	180.7	103.6	77.07	2.344	
9,400.0	6,777.6	6,849.6	6,786.2	62.1	21.4	-87.75	-2,150.1	-266.2	266.1	186.8	79.30	3.355	
9,500.0	6,777.2	6,849.6	6,786.3	64.4	21.4	-87.77	-2,150.1	-266.2	359.1	277.5	81.54	4.403	
9,600.0	6,776.7	6,849.7	6,786.3	66.6	21.4	-87.78	-2,150.1	-266.2	455.0	371.3	83.79	5.431	
9,700.0	6,776.3	6,849.7	6,786.3	68.9	21.4	-87.79	-2,150.1	-266.2	552.5	466.4	86.04	6.421	
9,800.0	6,775.9	6,849.7	6,786.3	71.1	21.4	-87.81	-2,150.1	-266.2	650.7	562.4	88.30	7.368	
9,900.0	6,775.4	6,849.7	6,786.4	73.4	21.4	-87.82	-2,150.1	-266.2	749.3	658.8	90.57	8.274	

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design		Existing Wells Sec.29-T5N-R64W - Carlson 5 (Exist) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft
Survey Program:		100-NS-GYRO-MS											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-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	666.4	0.28	2,342.015			
200.0	200.0	185.9	185.9	0.4	0.4	-168.00	-651.6	-138.5	666.2	665.4	0.79	838.960			
300.0	300.0	285.6	285.6	0.7	0.6	-168.01	-651.6	-138.4	666.1	664.8	1.27	523.423			
400.0	400.0	386.7	386.7	1.0	0.8	-168.05	-651.5	-137.9	665.9	664.2	1.79	372.072			
440.8	440.8	425.8	425.8	1.1	0.9	-168.05	-651.5	-137.8	665.9	663.9	1.98	335.644			
500.0	500.0	481.0	481.0	1.2	1.0	-168.05	-651.6	-137.9	666.0	663.8	2.25	295.847			
600.0	600.0	580.8	580.8	1.5	1.2	-168.06	-652.3	-137.9	666.8	664.1	2.69	247.560			
700.0	700.0	682.0	682.0	1.8	1.4	-168.09	-652.9	-137.7	667.3	664.1	3.17	210.827			
800.0	800.0	782.6	782.6	2.1	1.6	-168.08	-653.3	-137.9	667.7	664.0	3.66	182.324			
900.0	900.0	881.9	881.8	2.3	1.9	-168.10	-653.7	-137.8	668.1	663.9	4.19	159.311			
1,000.0	1,000.0	979.9	979.9	2.6	2.1	-168.12	-654.4	-137.7	668.7	664.0	4.74	141.000			
1,100.0	1,100.0	1,079.8	1,079.8	2.9	2.4	-168.15	-655.2	-137.5	669.5	664.2	5.31	126.144			
1,200.0	1,200.0	1,180.1	1,180.1	3.2	2.7	-168.17	-656.0	-137.4	670.3	664.4	5.88	113.966			
1,300.0	1,300.0	1,280.2	1,280.2	3.4	3.0	-168.20	-656.8	-137.2	671.0	664.5	6.46	103.868			
1,400.0	1,400.0	1,381.6	1,381.6	3.7	3.3	-168.22	-657.5	-137.1	671.6	664.6	7.04	95.338			
1,500.0	1,500.0	1,483.3	1,483.3	4.0	3.6	-131.32	-657.9	-136.8	672.9	665.2	7.63	88.202			
1,600.0	1,599.9	1,584.5	1,584.5	4.3	3.9	-131.53	-658.0	-137.0	675.6	667.5	8.13	83.079			
1,700.0	1,699.7	1,685.1	1,685.1	4.5	4.0	-131.82	-657.9	-137.9	680.0	671.4	8.55	79.531			
1,800.0	1,799.3	1,783.7	1,783.6	4.8	4.2	-132.25	-657.7	-138.6	686.1	677.1	8.98	76.366			
1,900.0	1,898.6	1,883.8	1,883.8	5.1	4.4	-132.85	-657.7	-139.0	694.1	684.7	9.44	73.523			
2,000.0	1,997.5	1,988.4	1,988.4	5.4	4.5	-133.62	-657.3	-139.3	703.6	693.8	9.88	71.212			
2,016.2	2,013.5	2,004.9	2,004.8	5.5	4.5	-133.75	-657.1	-139.4	705.3	695.3	9.95	70.864			
2,100.0	2,096.2	2,083.2	2,083.1	5.8	4.7	-134.43	-656.6	-140.0	714.2	703.9	10.34	69.049			
2,200.0	2,194.9	2,181.6	2,181.5	6.1	4.9	-135.24	-656.2	-141.0	725.5	714.6	10.86	66.785			
2,300.0	2,293.6	2,278.6	2,278.5	6.5	5.1	-136.03	-656.0	-141.9	736.9	725.5	11.41	64.585			
2,400.0	2,392.3	2,375.7	2,375.6	6.9	5.3	-136.83	-656.1	-142.4	748.7	736.7	11.99	62.432			
2,500.0	2,491.0	2,474.5	2,474.4	7.3	5.6	-137.64	-656.3	-142.5	760.8	748.2	12.60	60.363			
2,600.0	2,589.8	2,578.8	2,578.8	7.7	5.9	-138.47	-656.2	-142.8	772.8	759.6	13.18	58.640			
2,700.0	2,688.5	2,674.5	2,674.5	8.1	6.1	-139.21	-655.8	-142.9	784.5	770.8	13.72	57.196			
2,800.0	2,787.2	2,777.4	2,777.4	8.5	6.3	-139.99	-655.5	-142.8	796.6	782.3	14.26	55.859			
6,850.0	6,673.7	6,682.2	6,681.2	20.3	14.9	-29.93	-607.6	-164.6	776.1	754.7	21.36	36.330			
6,900.0	6,698.5	6,705.6	6,704.5	20.2	15.0	-34.71	-606.8	-164.4	733.7	711.8	21.96	33.409			
6,950.0	6,720.4	6,726.0	6,724.9	20.1	15.0	-40.61	-606.2	-164.2	690.3	666.9	23.39	29.509			
7,000.0	6,739.3	6,743.4	6,742.3	20.0	15.1	-47.73	-605.6	-164.0	645.9	620.3	25.62	25.208			
7,050.0	6,755.1	6,757.7	6,756.6	19.9	15.1	-56.03	-605.1	-163.9	601.0	572.6	28.39	21.171			
7,100.0	6,767.9	6,768.8	6,767.7	19.8	15.1	-65.13	-604.8	-163.8	555.8	524.6	31.20	17.814			
7,150.0	6,777.4	6,776.7	6,775.6	20.1	15.2	-74.34	-604.5	-163.7	510.7	477.1	33.54	15.224			
7,200.0	6,783.7	6,781.4	6,780.3	20.6	15.2	-82.83	-604.4	-163.7	466.0	430.9	35.15	13.259			
7,250.0	6,786.7	6,782.8	6,781.7	21.1	15.2	-89.94	-604.3	-163.6	422.3	386.2	36.07	11.707			
7,274.8	6,787.0	6,782.2	6,781.2	21.3	15.2	-92.83	-604.3	-163.7	401.2	364.8	36.36	11.033			
7,274.8	6,787.0	6,782.2	6,781.2	21.3	15.2	-92.83	-604.3	-163.7	401.2	364.8	36.36	11.033			
7,276.1	6,787.0	6,782.2	6,781.1	21.4	15.2	-92.83	-604.3	-163.7	400.1	363.7	36.37	10.999			
7,300.0	6,786.9	6,781.3	6,780.2	21.6	15.2	-92.59	-604.4	-163.7	380.1	343.5	36.58	10.391			
7,400.0	6,786.4	6,777.6	6,776.5	22.8	15.2	-91.60	-604.5	-163.7	303.0	265.3	37.70	8.038			
7,500.0	6,786.0	6,773.9	6,772.8	24.2	15.1	-90.61	-604.6	-163.7	243.1	204.1	38.98	6.236			
7,600.0	6,785.6	6,770.1	6,769.1	25.7	15.1	-89.62	-604.7	-163.8	215.3	174.9	40.40	5.328			
7,613.8	6,785.5	6,769.6	6,768.6	25.9	15.1	-89.48	-604.7	-163.8	214.8	174.2	40.61	5.289 CC, ES, SF			
7,700.0	6,785.1	6,766.4	6,765.3	27.3	15.1	-88.63	-604.8	-163.8	231.4	189.5	41.94	5.519			
7,800.0	6,784.7	6,762.7	6,761.6	29.0	15.1	-87.63	-605.0	-163.8	284.2	240.6	43.57	6.523			
7,900.0	6,784.2	6,759.0	6,757.9	30.8	15.1	-86.64	-605.1	-163.9	357.7	312.4	45.27	7.901			

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - Carlson 5 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
8,000.0	6,783.8	6,755.3	6,754.2	32.6	15.1	-85.66	-605.2	-163.9	441.7	394.6	47.03	9.391		
8,100.0	6,783.4	6,751.5	6,750.5	34.6	15.1	-84.67	-605.3	-163.9	531.2	482.4	48.84	10.876		
8,200.0	6,782.9	6,747.8	6,746.8	36.5	15.1	-83.69	-605.5	-164.0	623.9	573.2	50.69	12.310		
8,300.0	6,782.5	6,744.1	6,743.0	38.5	15.1	-82.71	-605.6	-164.0	718.6	666.0	52.55	13.673		

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - Ottenhoff 41-29 (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							
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	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	0.26	1,401.702		
188.0	188.0	161.0	161.0	0.4	0.3	102.40	-77.8	353.9	362.4	361.7	0.66	546.133	CC	
200.0	200.0	172.6	172.6	0.4	0.3	102.40	-77.8	353.9	362.4	361.7	0.72	503.643		
300.0	300.0	272.1	272.1	0.7	0.5	102.41	-77.9	354.2	362.7	361.4	1.22	298.064		
400.0	400.0	369.6	369.6	1.0	0.8	102.46	-78.3	354.6	363.1	361.4	1.77	205.441	ES	
500.0	500.0	468.1	468.1	1.2	1.1	102.59	-79.4	355.6	364.4	362.0	2.35	155.157		
600.0	600.0	566.7	566.6	1.5	1.4	102.70	-80.4	356.9	365.9	362.9	2.93	124.673		
700.0	700.0	665.2	665.2	1.8	1.7	102.80	-81.5	358.6	367.8	364.3	3.51	104.735		
800.0	800.0	763.3	763.3	2.1	2.0	102.77	-81.8	360.9	370.2	366.1	4.08	90.763		
900.0	900.0	862.3	862.2	2.3	2.3	102.73	-82.2	363.7	373.0	368.3	4.65	80.172		
1,000.0	1,000.0	963.6	963.5	2.6	2.6	102.70	-82.6	366.5	375.8	370.6	5.24	71.714		
1,100.0	1,100.0	1,063.7	1,063.5	2.9	2.9	102.68	-83.0	368.9	378.2	372.4	5.83	64.889		
1,200.0	1,200.0	1,164.4	1,164.2	3.2	3.3	102.70	-83.7	371.3	380.7	374.3	6.43	59.254		
1,300.0	1,300.0	1,263.9	1,263.7	3.4	3.6	102.73	-84.3	373.5	383.0	376.0	7.02	54.555		
1,400.0	1,400.0	1,365.6	1,365.3	3.7	3.9	102.73	-84.9	375.8	385.4	377.7	7.62	50.567		
1,500.0	1,500.0	1,465.6	1,465.3	4.0	4.2	139.82	-85.2	377.6	388.2	380.0	8.21	47.296		
1,600.0	1,599.9	1,564.9	1,564.6	4.3	4.5	140.14	-85.7	379.6	393.3	384.5	8.79	44.748		
1,700.0	1,699.7	1,664.9	1,664.6	4.5	4.9	140.67	-86.2	381.7	400.4	391.0	9.37	42.747		
1,800.0	1,799.3	1,763.7	1,763.4	4.8	5.2	141.31	-86.1	383.8	409.6	399.7	9.93	41.235		
1,900.0	1,898.6	1,862.8	1,862.4	5.1	5.5	142.09	-85.9	386.1	421.0	410.6	10.50	40.108		
2,000.0	1,997.5	1,960.9	1,960.5	5.4	5.8	143.03	-85.8	388.4	434.7	423.6	11.06	39.294		
2,016.2	2,013.5	1,976.6	1,976.2	5.5	5.8	143.18	-85.8	388.8	437.1	426.0	11.15	39.192		
2,100.0	2,096.2	2,060.4	2,059.9	5.8	6.1	144.10	-85.4	390.9	449.9	438.3	11.65	38.618		
2,200.0	2,194.9	2,158.5	2,158.0	6.1	6.4	145.09	-84.8	393.2	465.0	452.8	12.24	37.988		
2,300.0	2,293.6	2,255.3	2,254.8	6.5	6.7	146.01	-84.2	395.7	480.7	467.8	12.84	37.443		
2,400.0	2,392.3	2,352.8	2,352.3	6.9	7.0	146.86	-83.7	398.6	496.6	483.2	13.44	36.945		
2,500.0	2,491.0	2,452.6	2,452.0	7.3	7.3	147.70	-83.3	401.5	512.8	498.7	14.06	36.477		
2,600.0	2,589.8	2,551.8	2,551.2	7.7	7.6	148.47	-82.6	404.0	528.6	513.9	14.67	36.028		
2,700.0	2,688.5	2,651.6	2,650.9	8.1	7.9	149.21	-82.2	406.6	544.6	529.3	15.29	35.621		
2,800.0	2,787.2	2,754.3	2,753.6	8.5	8.2	149.95	-81.5	408.6	560.0	544.0	15.91	35.191		
2,900.0	2,885.9	2,854.3	2,853.6	8.9	8.6	150.69	-81.3	409.7	574.9	558.4	16.53	34.771		
3,000.0	2,984.6	2,954.6	2,954.0	9.3	8.9	151.43	-81.3	410.6	589.8	572.7	17.15	34.394		
3,100.0	3,083.3	3,053.9	3,053.2	9.8	9.2	152.09	-80.8	411.3	604.5	586.7	17.74	34.065		
3,200.0	3,182.0	3,152.8	3,152.1	10.2	9.4	152.70	-80.3	412.2	619.3	601.0	18.33	33.787		
3,300.0	3,280.7	3,252.9	3,252.2	10.6	9.7	153.29	-79.6	412.9	634.0	615.1	18.91	33.529		
3,400.0	3,379.4	3,352.9	3,352.2	11.0	9.9	153.87	-79.0	413.4	648.5	629.1	19.47	33.316		
3,500.0	3,478.1	3,451.2	3,450.5	11.5	10.2	154.40	-78.1	413.8	663.0	643.0	20.02	33.110		
3,600.0	3,576.8	3,548.0	3,547.2	11.9	10.4	154.96	-78.1	414.1	677.8	657.2	20.58	32.930		
3,700.0	3,675.5	3,644.7	3,644.0	12.3	10.7	155.55	-78.8	414.2	692.9	671.8	21.11	32.823		
3,800.0	3,774.2	3,741.3	3,740.6	12.8	10.9	156.14	-79.9	414.5	708.4	686.8	21.61	32.780		
3,900.0	3,872.9	3,839.0	3,838.3	13.2	11.1	156.74	-81.3	414.8	724.1	702.0	22.11	32.748		
4,000.0	3,971.6	3,941.9	3,941.1	13.7	11.3	157.33	-82.6	415.2	739.9	717.3	22.62	32.702		
4,100.0	4,070.3	4,053.6	4,052.8	14.1	11.5	157.71	-80.8	415.8	754.4	731.3	23.14	32.597		
4,200.0	4,169.0	4,167.1	4,166.2	14.6	11.7	157.94	-76.1	415.7	767.1	743.5	23.63	32.463		
4,300.0	4,267.7	4,278.1	4,277.1	15.0	11.8	158.06	-69.5	414.5	778.1	754.0	24.09	32.296		
4,400.0	4,366.4	4,381.0	4,379.7	15.4	11.9	158.18	-63.0	412.5	788.1	763.5	24.53	32.124		
4,500.0	4,465.1	4,476.5	4,475.1	15.9	12.0	158.34	-57.6	410.3	798.1	773.1	24.96	31.979	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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - Ottenhoff 41-6B (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error: 0.0 ft	
Survey Program: 488-NS-GYRO-MS													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							
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	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	0.28	1,318.703		
200.0	200.0	188.7	188.7	0.4	0.3	97.80	-50.3	367.6	371.0	370.3	0.72	515.382		
300.0	300.0	289.0	289.0	0.7	0.5	97.82	-50.4	367.4	370.8	369.7	1.16	320.111		
400.0	400.0	389.4	389.3	1.0	0.6	97.84	-50.6	367.0	370.5	368.9	1.60	232.017		
500.0	500.0	489.7	489.7	1.2	0.8	97.88	-50.7	366.6	370.1	368.0	2.04	181.778		
600.0	600.0	588.5	588.4	1.5	1.0	97.85	-50.5	366.3	369.8	367.3	2.51	147.290		
636.6	636.6	624.6	624.6	1.6	1.1	97.80	-50.2	366.4	369.8	367.1	2.68	137.750		
700.0	700.0	686.2	686.2	1.8	1.2	97.68	-49.4	366.6	369.9	366.9	2.95	125.254		
800.0	800.0	782.7	782.7	2.1	1.3	97.47	-48.2	367.7	370.9	367.5	3.35	110.622		
900.0	900.0	881.0	880.9	2.3	1.5	97.17	-46.5	369.6	372.6	368.8	3.81	97.896		
1,000.0	1,000.0	979.8	979.7	2.6	1.7	96.71	-43.8	372.0	374.7	370.4	4.29	87.412		
1,100.0	1,100.0	1,079.4	1,079.2	2.9	1.9	96.07	-39.9	374.7	376.9	372.1	4.82	78.181		
1,200.0	1,200.0	1,180.5	1,180.1	3.2	2.2	95.27	-34.8	377.5	379.2	373.8	5.38	70.462		
1,300.0	1,300.0	1,281.9	1,281.3	3.4	2.5	94.40	-29.2	379.9	381.0	375.1	5.96	63.972		
1,400.0	1,400.0	1,376.4	1,375.6	3.7	2.8	93.45	-23.1	382.6	383.5	377.0	6.52	58.811		
1,500.0	1,500.0	1,471.4	1,470.2	4.0	3.1	129.44	-15.9	386.8	388.4	381.3	7.08	54.824		
1,600.0	1,599.9	1,575.0	1,573.3	4.3	3.4	128.52	-7.2	391.4	395.0	387.3	7.68	51.456		
1,700.0	1,699.7	1,681.3	1,679.1	4.5	3.8	127.79	2.7	394.9	402.2	393.9	8.28	48.550		
1,800.0	1,799.3	1,793.6	1,790.6	4.8	4.1	126.98	16.1	395.7	408.3	399.4	8.92	45.789		
1,900.0	1,898.6	1,904.1	1,899.7	5.1	4.5	126.00	33.0	393.4	413.3	403.7	9.55	43.256		
2,000.0	1,997.5	2,019.0	2,013.0	5.4	4.9	125.24	51.5	387.5	417.0	406.7	10.22	40.807		
2,016.2	2,013.5	2,037.9	2,031.5	5.5	4.9	125.11	54.8	386.1	417.3	407.0	10.33	40.408		
2,100.0	2,096.2	2,134.6	2,126.2	5.8	5.2	124.35	72.7	377.0	417.7	406.8	10.91	38.277		
2,200.0	2,194.9	2,237.9	2,227.1	6.1	5.6	123.60	91.2	365.4	416.3	404.7	11.58	35.947		
2,300.0	2,293.6	2,340.5	2,327.3	6.5	5.9	122.85	109.6	353.1	414.3	402.0	12.26	33.786		
2,400.0	2,392.3	2,447.0	2,431.4	6.9	6.3	122.21	127.5	339.3	411.3	398.3	12.97	31.722		
2,500.0	2,491.0	2,558.4	2,540.1	7.3	6.6	121.68	145.0	322.6	406.1	392.4	13.69	29.672		
2,600.0	2,589.8	2,672.7	2,651.2	7.7	7.0	121.18	162.0	301.6	397.7	383.2	14.42	27.578		
2,700.0	2,688.5	2,782.8	2,757.4	8.1	7.3	120.62	178.3	277.9	385.9	370.7	15.15	25.478		
2,800.0	2,787.2	2,875.4	2,846.8	8.5	7.7	120.18	191.6	257.5	373.6	357.8	15.82	23.614		
2,900.0	2,885.9	2,980.3	2,948.3	8.9	8.0	119.90	205.1	234.8	361.6	345.1	16.54	21.868		
3,000.0	2,984.6	3,078.9	3,043.5	9.3	8.3	119.59	217.9	212.6	348.9	331.6	17.24	20.232		
3,100.0	3,083.3	3,172.3	3,134.0	9.8	8.7	119.33	229.8	192.6	337.0	319.1	17.94	18.787		
3,200.0	3,182.0	3,263.2	3,222.5	10.2	9.0	119.26	240.6	175.1	327.4	308.8	18.63	17.577		
3,300.0	3,280.7	3,353.0	3,310.6	10.6	9.3	119.48	249.9	160.4	320.4	301.1	19.30	16.599		
3,400.0	3,379.4	3,449.5	3,405.8	11.0	9.6	120.05	258.6	146.8	315.5	295.5	19.99	15.786		
3,500.0	3,478.1	3,556.7	3,511.2	11.5	9.9	120.40	269.7	131.0	310.2	289.4	20.72	14.970		
3,600.0	3,576.8	3,663.7	3,615.7	11.9	10.3	120.31	282.9	112.4	302.4	280.9	21.48	14.077		
3,700.0	3,675.5	3,769.3	3,718.4	12.3	10.7	120.12	296.0	91.8	292.5	270.3	22.25	13.146		
3,800.0	3,774.2	3,873.2	3,818.6	12.8	11.1	119.32	311.5	69.3	280.7	257.6	23.06	12.173		
3,900.0	3,872.9	3,971.9	3,913.3	13.2	11.5	118.08	328.0	46.8	268.1	244.2	23.88	11.225		
4,000.0	3,971.6	4,068.0	4,005.9	13.7	11.9	116.97	343.3	25.8	256.5	231.8	24.70	10.384		
4,100.0	4,070.3	4,165.8	4,100.4	14.1	12.3	115.96	358.1	5.6	246.0	220.5	25.52	9.638		
4,200.0	4,169.0	4,264.9	4,196.4	14.6	12.6	115.10	372.2	-14.4	235.8	209.5	26.34	8.953		
4,300.0	4,267.7	4,363.1	4,292.1	15.0	13.0	114.77	383.9	-33.6	226.0	198.8	27.12	8.331		
4,400.0	4,366.4	4,461.0	4,387.4	15.4	13.4	114.33	396.1	-52.1	216.8	188.9	27.92	7.767		
4,500.0	4,465.1	4,560.2	4,484.0	15.9	13.8	113.60	409.4	-70.5	208.2	179.5	28.74	7.246		
4,600.0	4,563.8	4,657.5	4,578.9	16.3	14.1	113.05	421.9	-87.9	200.2	170.6	29.54	6.776		
4,700.0	4,662.5	4,759.2	4,678.2	16.8	14.5	112.57	434.5	-105.6	192.5	162.1	30.37	6.340		
4,800.0	4,761.2	4,857.1	4,773.6	17.2	14.9	111.85	447.2	-123.2	184.5	153.3	31.20	5.915		

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - Ottenhoff 41-6B (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error: 0.0 ft	
Survey Program: 488-NS-GYRO-MS													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
4,900.0	4,859.9	4,957.3	4,871.5	17.7	15.3	111.15	460.1	-140.6	177.1	145.0	32.03	5.527		
5,000.0	4,958.6	5,059.1	4,970.7	18.1	15.7	110.14	473.6	-159.3	168.8	135.8	32.91	5.128		
5,100.0	5,057.3	5,158.8	5,067.6	18.6	16.0	108.98	486.8	-178.4	159.8	126.0	33.78	4.730		
5,200.0	5,156.0	5,256.8	5,163.3	19.0	16.4	108.27	498.5	-196.1	151.5	116.9	34.62	4.376		
5,300.0	5,254.7	5,355.6	5,260.2	19.5	16.8	108.31	508.6	-212.6	144.0	108.6	35.40	4.067		
5,386.3	5,339.9	5,440.6	5,343.8	19.9	17.1	109.09	515.9	-225.7	138.1	102.1	36.01	3.835		
5,400.0	5,353.4	5,454.2	5,357.2	19.9	17.1	109.23	517.0	-227.7	137.2	101.1	36.10	3.802		
5,500.0	5,452.4	5,553.3	5,455.0	20.3	17.5	109.38	525.2	-242.2	130.4	93.7	36.74	3.549		
5,600.0	5,551.9	5,651.7	5,552.0	20.5	17.8	108.02	533.6	-256.1	123.0	85.5	37.45	3.283		
5,700.0	5,651.6	5,749.0	5,648.4	20.8	18.2	105.83	540.8	-267.6	116.4	78.2	38.17	3.048		
5,800.0	5,751.6	5,847.1	5,745.8	21.0	18.5	103.01	546.3	-276.8	110.7	71.8	38.87	2.847		
5,848.4	5,800.0	5,894.6	5,793.1	21.1	18.6	64.34	548.4	-280.5	108.3	69.1	39.20	2.762		
5,900.0	5,851.6	5,945.4	5,843.8	21.2	18.8	62.59	550.4	-283.9	106.0	66.5	39.55	2.681		
6,000.0	5,951.6	6,044.5	5,942.7	21.4	19.1	59.75	553.3	-289.3	102.7	62.5	40.18	2.555		
6,071.6	6,023.2	6,115.8	6,013.9	21.5	19.3	58.19	554.6	-292.5	100.6	60.0	40.59	2.479		
6,100.0	6,051.6	6,144.0	6,042.1	21.6	19.4	-122.61	555.0	-293.6	100.2	59.4	40.73	2.459		
6,106.3	6,057.9	6,150.3	6,048.4	21.6	19.4	-122.84	555.0	-293.8	100.1	59.4	40.76	2.457	CC, ES, SF	
6,150.0	6,101.4	6,193.6	6,091.6	21.6	19.5	-124.90	555.3	-295.2	100.9	60.0	40.93	2.466		
6,200.0	6,151.0	6,242.9	6,140.9	21.6	19.6	-128.18	555.4	-296.5	104.0	63.0	40.99	2.536		
6,250.0	6,200.0	6,291.9	6,189.9	21.6	19.7	-132.15	555.2	-297.5	109.6	68.8	40.79	2.686		
6,300.0	6,248.2	6,340.3	6,238.3	21.6	19.8	-136.43	554.7	-298.3	118.0	77.7	40.33	2.927		
6,350.0	6,295.5	6,387.9	6,285.9	21.5	19.8	-140.67	554.0	-298.7	129.6	90.0	39.59	3.274		
6,400.0	6,341.6	6,434.4	6,332.4	21.4	19.9	-144.59	553.0	-299.0	144.5	105.9	38.57	3.747		
6,450.0	6,386.3	6,479.6	6,377.6	21.3	19.9	-148.05	552.0	-299.0	162.7	125.4	37.31	4.361		
6,500.0	6,429.5	6,523.5	6,421.5	21.2	19.9	-151.00	550.8	-298.8	184.2	148.3	35.89	5.132		
6,550.0	6,470.9	6,565.8	6,463.8	21.1	19.9	-153.45	549.6	-298.4	208.8	174.5	34.36	6.078		
6,600.0	6,510.4	6,606.6	6,504.6	21.0	19.9	-155.44	548.3	-297.9	236.4	203.7	32.73	7.224		
6,650.0	6,547.9	6,645.6	6,543.5	20.8	19.9	-157.02	547.0	-297.4	266.8	235.7	31.05	8.592		
6,700.0	6,583.1	6,682.4	6,580.3	20.7	19.9	-158.22	545.7	-296.9	299.7	270.4	29.35	10.212		
6,750.0	6,615.8	6,717.1	6,614.9	20.6	19.9	-159.07	544.4	-296.3	335.1	307.5	27.68	12.109		
6,800.0	6,646.1	6,749.4	6,647.3	20.4	19.9	-159.59	543.2	-295.7	372.8	346.7	26.07	14.301		
6,850.0	6,673.7	6,779.3	6,677.1	20.3	19.9	-159.77	541.9	-295.1	412.5	387.9	24.59	16.779		
6,900.0	6,698.5	6,806.6	6,704.4	20.2	19.9	-159.59	540.7	-294.5	454.1	430.8	23.31	19.483		
6,950.0	6,720.4	6,831.2	6,728.9	20.1	19.9	-158.99	539.6	-293.9	497.4	475.1	22.34	22.265		
7,000.0	6,739.3	6,852.9	6,750.6	20.0	19.9	-157.86	538.6	-293.3	542.3	520.4	21.82	24.847		
7,050.0	6,755.1	6,871.6	6,769.3	19.9	19.9	-156.00	537.7	-292.8	588.4	566.5	21.94	26.819		
7,100.0	6,767.9	6,887.7	6,785.3	19.8	19.9	-153.09	536.9	-292.3	635.7	612.7	22.91	27.746		
7,150.0	6,777.4	6,900.8	6,798.4	20.1	19.9	-148.39	536.2	-291.9	683.8	658.7	25.09	27.257		
7,200.0	6,783.7	6,910.5	6,808.1	20.6	19.9	-140.32	535.7	-291.6	732.7	703.7	29.00	25.261		
7,250.0	6,786.7	6,916.8	6,814.4	21.1	19.9	-125.37	535.3	-291.4	782.0	746.9	35.10	22.282		

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - Ottenhoff 41-7B (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							
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	102.62	-86.7	387.3	397.1					
100.0	100.0	88.4	88.4	0.1	0.1	102.63	-86.8	387.2	396.8	396.6	0.26	1,521.708		
200.0	200.0	188.9	188.9	0.4	0.3	102.69	-87.1	387.0	396.7	396.0	0.68	587.014		
300.0	300.0	289.4	289.3	0.7	0.4	102.78	-87.7	386.6	396.4	395.3	1.09	363.428		
400.0	400.0	389.8	389.8	1.0	0.5	102.91	-88.5	386.0	396.0	394.5	1.51	263.006		
500.0	500.0	490.4	490.4	1.2	0.7	103.08	-89.5	385.2	395.5	393.5	1.93	204.621		
600.0	600.0	592.4	592.3	1.5	1.0	103.38	-91.3	383.9	394.6	392.1	2.50	158.139		
700.0	700.0	691.8	691.7	1.8	1.3	103.84	-94.1	382.0	393.4	390.4	3.05	129.146		
800.0	800.0	789.1	789.0	2.1	1.5	104.37	-97.5	380.6	392.9	389.3	3.59	109.484		
862.0	862.0	850.2	850.0	2.2	1.7	104.75	-100.0	379.8	392.8	388.9	3.93	99.950 CC		
900.0	900.0	887.7	887.4	2.3	1.8	105.02	-101.8	379.4	392.8	388.7	4.14	94.885		
1,000.0	1,000.0	985.0	984.6	2.6	2.1	105.84	-107.3	378.3	393.2	388.5	4.68	83.939 ES		
1,100.0	1,100.0	1,079.8	1,079.2	2.9	2.3	106.63	-113.0	378.1	394.8	389.5	5.21	75.706		
1,200.0	1,200.0	1,175.0	1,174.3	3.2	2.6	107.40	-118.8	379.2	397.6	391.9	5.74	69.224		
1,300.0	1,300.0	1,271.0	1,269.9	3.4	2.9	108.29	-125.9	381.0	401.7	395.4	6.27	64.022		
1,400.0	1,400.0	1,369.9	1,368.5	3.7	3.2	109.27	-133.9	383.2	406.4	399.6	6.83	59.522		
1,500.0	1,500.0	1,470.1	1,468.3	4.0	3.5	147.30	-142.1	385.4	412.3	404.8	7.49	55.080		
1,600.0	1,599.9	1,570.7	1,568.6	4.3	3.8	148.43	-150.0	387.4	420.3	412.3	8.03	52.353		
1,700.0	1,699.7	1,673.0	1,670.6	4.5	4.1	149.66	-157.4	389.2	430.3	421.7	8.55	50.304		
1,800.0	1,799.3	1,766.5	1,763.8	4.8	4.4	151.00	-165.2	390.4	442.8	433.7	9.09	48.734		
1,900.0	1,898.6	1,853.7	1,850.5	5.1	4.6	152.39	-173.8	392.6	459.6	450.0	9.61	47.830		
2,000.0	1,997.5	1,944.5	1,940.7	5.4	5.0	153.81	-183.3	396.7	481.0	470.9	10.14	47.423		
2,016.2	2,013.5	1,959.3	1,955.4	5.5	5.0	154.05	-184.9	397.4	484.8	474.6	10.23	47.399		
2,100.0	2,096.2	2,034.2	2,029.7	5.8	5.3	155.41	-194.0	401.1	505.4	494.7	10.70	47.220 SF		
2,200.0	2,194.9	2,115.1	2,109.7	6.1	5.6	156.87	-205.4	405.8	532.0	520.8	11.25	47.282		
2,300.0	2,293.6	2,196.0	2,189.2	6.5	5.9	158.25	-218.3	412.3	561.9	550.1	11.80	47.608		
2,400.0	2,392.3	2,279.0	2,270.6	6.9	6.3	159.52	-232.2	420.5	593.9	581.6	12.35	48.087		
2,500.0	2,491.0	2,359.6	2,349.5	7.3	6.7	160.56	-245.8	430.2	628.1	615.2	12.88	48.756		
2,600.0	2,589.8	2,435.0	2,422.9	7.7	7.0	161.31	-258.4	441.5	664.5	651.2	13.39	49.631		
2,700.0	2,688.5	2,520.3	2,505.8	8.1	7.4	161.96	-272.4	456.3	702.8	688.9	13.91	50.507		
2,800.0	2,787.2	2,606.8	2,589.6	8.5	7.9	162.55	-286.9	472.2	742.0	727.6	14.45	51.357		
2,900.0	2,885.9	2,689.1	2,669.2	8.9	8.3	163.09	-301.6	487.4	782.2	767.2	14.97	52.241		

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design		Existing Wells Sec.29-T5N-R64W - Pearlman #32-13 (Exist.) - Wellbore #1 - Wellbore #1											Offset Site Error:	0.0 ft
Survey Program:		100-NS-GYRO-MS											Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
12,800.0	6,762.6	6,800.0	6,798.9	140.2	17.2	90.09	-6,518.7	-665.2	781.2	624.0	157.22	4.969		
12,900.0	6,762.2	6,800.0	6,798.9	142.5	17.2	90.09	-6,518.7	-665.2	689.0	529.5	159.55	4.318		
13,000.0	6,761.7	6,801.4	6,800.2	144.8	17.2	90.37	-6,518.7	-665.2	599.2	437.4	161.87	3.702		
13,100.0	6,761.3	6,802.6	6,801.4	147.2	17.2	90.61	-6,518.8	-665.1	513.3	349.1	164.20	3.126		
13,200.0	6,760.9	6,803.7	6,802.6	149.5	17.2	90.85	-6,518.8	-665.1	433.4	266.9	166.52	2.603		
13,300.0	6,760.4	6,805.0	6,803.8	151.8	17.2	91.09	-6,518.8	-665.1	363.6	194.7	168.84	2.153		
13,400.0	6,760.0	6,806.2	6,805.0	154.2	17.2	91.34	-6,518.8	-665.0	310.7	139.6	171.16	1.815		
13,500.0	6,759.5	6,807.4	6,806.3	156.5	17.2	91.59	-6,518.8	-665.0	284.4	111.0	173.47	1.640		
13,528.2	6,759.4	6,807.7	6,806.6	157.1	17.2	91.66	-6,518.8	-665.0	283.0	108.9	174.13	1.625	CC, ES, SF	
13,600.0	6,759.1	6,808.6	6,807.5	158.8	17.2	91.84	-6,518.9	-664.9	292.0	116.2	175.79	1.661		
13,700.0	6,758.6	6,809.9	6,808.7	161.2	17.2	92.09	-6,518.9	-664.9	331.1	153.0	178.10	1.859		
13,800.0	6,758.2	6,811.1	6,810.0	163.5	17.2	92.35	-6,518.9	-664.9	392.4	212.0	180.40	2.175		
13,900.0	6,757.8	6,812.4	6,811.3	165.8	17.2	92.60	-6,518.9	-664.8	467.2	284.5	182.70	2.557		
14,000.0	6,757.3	6,813.7	6,812.5	168.2	17.2	92.86	-6,518.9	-664.8	550.1	365.1	185.00	2.974		
14,073.9	6,757.0	6,814.7	6,813.5	169.9	17.2	93.06	-6,519.0	-664.8	614.7	428.0	186.70	3.292		
14,074.3	6,757.0	6,814.7	6,813.5	169.9	17.2	93.06	-6,519.0	-664.8	615.0	428.3	186.70	3.294		

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W (GRID) - Blake B 29-9 (P&A) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (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		
9,500.0	6,777.2	6,734.6	6,733.0	64.4	16.0	-86.73	-2,896.0	275.0	770.9	691.0	79.89	9.650		
9,600.0	6,776.7	6,736.3	6,734.6	66.6	16.0	-86.87	-2,896.1	275.0	723.4	641.3	82.15	8.806		
9,700.0	6,776.3	6,737.9	6,736.3	68.9	16.0	-87.02	-2,896.1	275.1	687.2	602.8	84.42	8.141		
9,800.0	6,775.9	6,739.5	6,737.9	71.1	16.0	-87.16	-2,896.2	275.2	664.3	577.6	86.70	7.662		
9,900.0	6,775.4	6,741.2	6,739.5	73.4	16.0	-87.30	-2,896.2	275.3	655.9	567.0	88.98	7.372		
9,905.2	6,775.4	6,741.2	6,739.6	73.5	16.0	-87.31	-2,896.2	275.3	655.9	566.8	89.09	7.362 CC, ES		
10,000.0	6,775.0	6,742.8	6,741.2	75.6	16.1	-87.44	-2,896.2	275.3	662.7	571.5	91.26	7.262 SF		
10,100.0	6,774.5	6,744.4	6,742.8	77.9	16.1	-87.59	-2,896.3	275.4	684.2	590.7	93.55	7.314		
10,200.0	6,774.1	6,746.0	6,744.4	80.2	16.1	-87.73	-2,896.3	275.5	719.1	623.3	95.85	7.503		
10,300.0	6,773.7	6,747.7	6,746.0	82.5	16.1	-87.87	-2,896.3	275.6	765.6	667.4	98.15	7.800		

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-203 - Wellbore #1 - Plan #2 (1-25-17)											Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-89.44	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	0.28	273.232			
200.0	200.0	200.0	200.0	0.4	0.4	-89.44	0.7	-75.2	75.2	74.4	0.83	91.077	CC, ES		
300.0	300.0	298.1	298.1	0.7	0.7	-89.16	1.1	-76.4	76.5	75.1	1.36	56.063			
400.0	400.0	396.1	396.1	1.0	0.9	-88.36	2.3	-80.0	80.1	78.2	1.91	42.032			
500.0	500.0	493.9	493.6	1.2	1.2	-87.17	4.2	-86.0	86.3	83.9	2.46	35.106			
600.0	600.0	591.3	590.6	1.5	1.5	-85.78	7.0	-94.3	95.0	92.0	3.02	31.458			
700.0	700.0	688.1	686.8	1.8	1.9	-84.33	10.4	-104.8	106.2	102.6	3.59	29.575			
800.0	800.0	784.3	782.1	2.1	2.2	-82.92	14.6	-117.6	119.9	115.7	4.17	28.723			
900.0	900.0	879.8	876.2	2.3	2.7	-81.64	19.5	-132.6	136.1	131.3	4.77	28.513	SF		
1,000.0	1,000.0	974.5	969.2	2.6	3.1	-80.49	25.1	-149.6	154.8	149.4	5.39	28.714			
1,100.0	1,100.0	1,068.1	1,060.7	2.9	3.6	-79.49	31.3	-168.6	175.9	169.9	6.03	29.183			
1,200.0	1,200.0	1,160.8	1,150.7	3.2	4.1	-78.63	38.1	-189.5	199.5	192.8	6.69	29.828			
1,300.0	1,300.0	1,252.3	1,239.0	3.4	4.7	-77.89	45.5	-212.1	225.4	218.0	7.37	30.586			
1,400.0	1,400.0	1,342.5	1,325.6	3.7	5.3	-77.26	53.5	-236.4	253.6	245.5	8.07	31.416			
1,500.0	1,500.0	1,431.8	1,410.6	4.0	6.0	-39.58	62.0	-262.4	283.1	274.9	8.14	34.777			
1,600.0	1,599.9	1,521.5	1,495.3	4.3	6.7	-39.25	71.1	-290.3	312.9	304.1	8.73	35.850			
1,700.0	1,699.7	1,617.3	1,585.6	4.5	7.5	-39.21	81.1	-320.9	341.5	332.1	9.34	36.554			
1,800.0	1,799.3	1,713.6	1,676.3	4.8	8.3	-39.42	91.1	-351.6	368.2	358.2	9.97	36.945			
1,900.0	1,898.6	1,810.4	1,767.5	5.1	9.1	-39.84	101.2	-382.4	393.0	382.4	10.61	37.049			
2,000.0	1,997.5	1,907.6	1,859.0	5.4	10.0	-40.43	111.4	-413.4	415.9	404.6	11.27	36.904			
2,016.2	2,013.5	1,923.4	1,873.9	5.5	10.1	-40.55	113.0	-418.4	419.4	408.0	11.38	36.859			
2,100.0	2,096.2	2,005.0	1,950.8	5.8	10.8	-41.29	121.5	-444.5	437.6	425.6	11.96	36.598			
2,200.0	2,194.9	2,102.4	2,042.5	6.1	11.6	-42.09	131.7	-475.5	459.4	446.7	12.66	36.278			
2,300.0	2,293.6	2,199.8	2,134.3	6.5	12.5	-42.83	141.8	-506.6	481.2	467.8	13.38	35.956			
2,400.0	2,392.3	2,297.2	2,226.1	6.9	13.3	-43.50	152.0	-537.6	503.2	489.0	14.12	35.635			
2,500.0	2,491.0	2,394.6	2,317.8	7.3	14.2	-44.11	162.2	-568.7	525.2	510.3	14.87	35.319			
2,600.0	2,589.8	2,492.0	2,409.6	7.7	15.0	-44.68	172.3	-599.7	547.2	531.6	15.63	35.011			
2,700.0	2,688.5	2,589.4	2,501.3	8.1	15.9	-45.20	182.5	-630.8	569.3	552.9	16.40	34.713			
2,800.0	2,787.2	2,686.8	2,593.1	8.5	16.7	-45.68	192.6	-661.8	591.4	574.3	17.18	34.424			
2,900.0	2,885.9	2,784.2	2,684.9	8.9	17.6	-46.13	202.8	-692.9	613.6	595.6	17.97	34.147			
3,000.0	2,984.6	2,881.6	2,776.6	9.3	18.4	-46.54	213.0	-723.9	635.8	617.0	18.77	33.881			
3,100.0	3,083.3	2,979.0	2,868.4	9.8	19.2	-46.93	223.1	-755.0	658.0	638.5	19.57	33.626			
3,200.0	3,182.0	3,076.4	2,960.1	10.2	20.1	-47.29	233.3	-786.0	680.3	659.9	20.38	33.382			
3,300.0	3,280.7	3,173.8	3,051.9	10.6	20.9	-47.63	243.4	-817.1	702.6	681.4	21.20	33.149			
3,400.0	3,379.4	3,271.2	3,143.7	11.0	21.8	-47.95	253.6	-848.2	724.9	702.9	22.02	32.926			
3,500.0	3,478.1	3,368.6	3,235.4	11.5	22.6	-48.25	263.8	-879.2	747.2	724.4	22.84	32.713			
3,600.0	3,576.8	3,466.0	3,327.2	11.9	23.5	-48.54	273.9	-910.3	769.6	745.9	23.67	32.510			
3,700.0	3,675.5	3,563.4	3,418.9	12.3	24.4	-48.80	284.1	-941.3	791.9	767.4	24.51	32.317			

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error: 0.0 ft		
Survey Program: 0-MWD														Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
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	0.28	162.314			
200.0	200.0	201.0	201.0	0.4	0.4	-89.54	0.4	-45.1	45.1	44.3	0.83	54.464			
300.0	300.0	301.0	301.0	0.7	0.7	-89.54	0.4	-45.1	45.1	43.8	1.38	32.722			
400.0	400.0	401.0	401.0	1.0	1.0	-89.54	0.4	-45.1	45.1	43.2	1.93	23.386			
500.0	500.0	501.0	501.0	1.2	1.2	-89.54	0.4	-45.1	45.1	42.7	2.48	18.195			
600.0	600.0	601.0	601.0	1.5	1.5	-89.54	0.4	-45.1	45.1	42.1	3.03	14.890			
700.0	700.0	701.0	701.0	1.8	1.8	-89.54	0.4	-45.1	45.1	41.6	3.58	12.601			
766.3	766.3	767.3	767.3	2.0	2.0	-89.54	0.4	-45.1	45.1	41.2	3.95	11.435 CC			
800.0	800.0	801.0	801.0	2.1	2.1	-89.54	0.4	-45.1	45.1	41.0	4.13	10.922 ES			
900.0	900.0	900.0	900.0	2.3	2.3	-88.87	0.9	-46.3	46.3	41.7	4.67	9.921			
1,000.0	1,000.0	998.7	998.6	2.6	2.6	-87.09	2.5	-49.8	49.9	44.7	5.21	9.595			
1,100.0	1,100.0	1,097.2	1,096.9	2.9	2.9	-84.64	5.2	-55.6	56.0	50.3	5.75	9.750			
1,200.0	1,200.0	1,195.3	1,194.6	3.2	3.1	-82.00	9.0	-63.7	64.6	58.3	6.29	10.272			
1,300.0	1,300.0	1,292.9	1,291.5	3.4	3.5	-79.50	13.7	-74.0	75.8	69.0	6.84	11.075			
1,400.0	1,400.0	1,389.9	1,387.5	3.7	3.8	-77.30	19.5	-86.4	89.6	82.2	7.41	12.090			
1,500.0	1,500.0	1,486.3	1,482.6	4.0	4.1	-38.74	26.2	-100.9	104.9	97.0	7.92	13.247			
1,600.0	1,599.9	1,582.2	1,576.8	4.3	4.6	-38.09	33.9	-117.6	120.6	112.2	8.46	14.260			
1,700.0	1,699.7	1,677.7	1,670.0	4.5	5.0	-38.05	42.6	-136.2	136.8	127.8	9.01	15.184			
1,800.0	1,799.3	1,772.8	1,762.3	4.8	5.5	-38.41	52.1	-156.9	153.4	143.8	9.57	16.025			
1,900.0	1,898.6	1,868.8	1,854.9	5.1	6.0	-39.07	62.7	-179.8	170.2	160.1	10.15	16.771			
2,000.0	1,997.5	1,967.5	1,950.1	5.4	6.6	-40.09	73.8	-203.8	185.6	174.9	10.76	17.256			
2,016.2	2,013.5	1,983.5	1,965.5	5.5	6.7	-40.29	75.6	-207.7	187.9	177.1	10.86	17.309			
2,100.0	2,096.2	2,066.4	2,045.4	5.8	7.2	-41.39	85.0	-227.8	199.8	188.4	11.40	17.524			
2,200.0	2,194.9	2,165.3	2,140.6	6.1	7.9	-42.54	96.1	-251.8	214.1	202.0	12.07	17.734			
2,300.0	2,293.6	2,264.2	2,235.9	6.5	8.5	-43.55	107.2	-275.8	228.4	215.7	12.76	17.899			
2,400.0	2,392.3	2,363.1	2,331.2	6.9	9.1	-44.44	118.3	-299.8	242.8	229.4	13.47	18.029			
2,500.0	2,491.0	2,462.0	2,426.5	7.3	9.8	-45.23	129.5	-323.8	257.3	243.1	14.19	18.129			
2,600.0	2,589.8	2,560.9	2,521.8	7.7	10.5	-45.93	140.6	-347.9	271.8	256.8	14.93	18.206			
2,700.0	2,688.5	2,659.8	2,617.1	8.1	11.1	-46.56	151.7	-371.9	286.3	270.6	15.68	18.263			
2,800.0	2,787.2	2,758.7	2,712.4	8.5	11.8	-47.13	162.8	-395.9	300.9	284.4	16.44	18.304			
2,900.0	2,885.9	2,857.6	2,807.6	8.9	12.5	-47.65	174.0	-419.9	315.5	298.2	17.21	18.333			
3,000.0	2,984.6	2,956.4	2,902.9	9.3	13.1	-48.13	185.1	-443.9	330.1	312.1	17.99	18.352			
3,100.0	3,083.3	3,055.3	2,998.2	9.8	13.8	-48.56	196.2	-467.9	344.7	325.9	18.77	18.363			
3,200.0	3,182.0	3,154.2	3,093.5	10.2	14.5	-48.96	207.3	-491.9	359.3	339.8	19.56	18.367			
3,300.0	3,280.7	3,253.1	3,188.8	10.6	15.1	-49.33	218.4	-516.0	374.0	353.6	20.36	18.366			
3,400.0	3,379.4	3,352.0	3,284.1	11.0	15.8	-49.66	229.6	-540.0	388.7	367.5	21.17	18.361			
3,500.0	3,478.1	3,450.9	3,379.3	11.5	16.5	-49.98	240.7	-564.0	403.4	381.4	21.98	18.353			
3,600.0	3,576.8	3,549.8	3,474.6	11.9	17.2	-50.27	251.8	-588.0	418.1	395.3	22.79	18.342			
3,700.0	3,675.5	3,648.7	3,569.9	12.3	17.9	-50.54	262.9	-612.0	432.8	409.2	23.61	18.329			
3,800.0	3,774.2	3,747.6	3,665.2	12.8	18.5	-50.80	274.1	-636.0	447.5	423.1	24.44	18.314			
3,900.0	3,872.9	3,846.5	3,760.5	13.2	19.2	-51.04	285.2	-660.0	462.2	437.0	25.26	18.298			
4,000.0	3,971.6	3,945.4	3,855.8	13.7	19.9	-51.26	296.3	-684.1	477.0	450.9	26.09	18.282			
4,100.0	4,070.3	4,044.3	3,951.1	14.1	20.6	-51.47	307.4	-708.1	491.7	464.8	26.92	18.264			
4,200.0	4,169.0	4,143.1	4,046.3	14.6	21.3	-51.67	318.6	-732.1	506.5	478.7	27.76	18.246			
4,300.0	4,267.7	4,242.0	4,141.6	15.0	22.0	-51.85	329.7	-756.1	521.2	492.6	28.59	18.228			
4,400.0	4,366.4	4,340.9	4,236.9	15.4	22.6	-52.03	340.8	-780.1	536.0	506.5	29.43	18.210			
4,500.0	4,465.1	4,439.8	4,332.2	15.9	23.3	-52.20	351.9	-804.1	550.7	520.5	30.27	18.192			
4,600.0	4,563.8	4,538.7	4,427.5	16.3	24.0	-52.36	363.0	-828.1	565.5	534.4	31.12	18.174			
4,700.0	4,662.5	4,637.6	4,522.8	16.8	24.7	-52.51	374.2	-852.1	580.3	548.3	31.96	18.155			
4,800.0	4,761.2	4,736.5	4,618.0	17.2	25.4	-52.65	385.3	-876.2	595.1	562.2	32.81	18.137			

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
4,900.0	4,859.9	4,835.4	4,713.3	17.7	26.1	-52.79	396.4	-900.2	609.8	576.2	33.66	18.120			
5,000.0	4,958.6	4,934.3	4,808.6	18.1	26.8	-52.91	407.5	-924.2	624.6	590.1	34.51	18.102			
5,100.0	5,057.3	5,033.2	4,903.9	18.6	27.5	-53.04	418.7	-948.2	639.4	604.0	35.36	18.085			
5,200.0	5,156.0	5,132.1	4,999.2	19.0	28.1	-53.16	429.8	-972.2	654.2	618.0	36.21	18.068			
5,300.0	5,254.7	5,231.0	5,094.5	19.5	28.8	-53.27	440.9	-996.2	669.0	631.9	37.06	18.051			
5,386.3	5,339.9	5,328.5	5,188.6	19.9	29.4	-53.40	451.7	-1,019.4	681.3	643.5	37.83	18.013			
5,400.0	5,353.4	5,345.8	5,205.4	19.9	29.5	-53.46	453.4	-1,023.3	683.1	645.2	37.95	18.002			
5,500.0	5,452.4	5,472.5	5,329.0	20.3	30.1	-53.81	465.2	-1,048.7	694.9	656.2	38.72	17.947			
5,600.0	5,551.9	5,600.0	5,454.4	20.5	30.6	-54.04	474.7	-1,069.2	704.8	665.4	39.39	17.895			
5,700.0	5,651.6	5,728.2	5,581.4	20.8	31.0	-54.14	481.9	-1,084.7	712.8	672.9	39.93	17.850			
5,800.0	5,751.6	5,856.9	5,709.6	21.0	31.3	-54.12	486.7	-1,095.1	718.8	678.4	40.36	17.809			
5,848.4	5,800.0	5,919.4	5,772.0	21.1	31.4	-91.07	488.2	-1,098.2	720.9	680.4	40.53	17.786			
5,900.0	5,851.6	5,986.1	5,838.6	21.2	31.5	-90.99	489.1	-1,100.2	722.5	681.7	40.74	17.734			
6,000.0	5,951.6	6,100.0	5,952.6	21.4	31.7	-90.97	489.4	-1,100.8	722.9	681.8	41.15	17.570			
6,071.6	6,023.2	6,171.6	6,024.2	21.5	31.8	-90.97	489.4	-1,100.8	722.9	681.5	41.44	17.448			
6,100.0	6,051.6	6,199.8	6,052.4	21.6	31.8	89.04	489.3	-1,100.8	722.9	681.4	41.52	17.411			
6,150.0	6,101.4	6,249.1	6,101.6	21.6	31.9	89.14	487.1	-1,100.8	722.9	681.3	41.61	17.375			
6,200.0	6,151.0	6,298.4	6,150.6	21.6	31.9	89.25	481.8	-1,100.8	722.9	681.3	41.63	17.366			
6,250.0	6,200.0	6,347.8	6,199.3	21.6	31.9	89.35	473.2	-1,100.8	722.9	681.3	41.58	17.385			
6,300.0	6,248.2	6,397.3	6,247.3	21.6	31.9	89.47	461.6	-1,100.9	722.9	681.4	41.48	17.428			
6,350.0	6,295.5	6,446.8	6,294.6	21.5	31.8	89.58	446.8	-1,100.9	722.9	681.5	41.32	17.493			
6,400.0	6,341.6	6,496.5	6,341.0	21.4	31.8	89.69	428.9	-1,100.9	722.9	681.7	41.13	17.577			
6,440.2	6,377.6	6,536.5	6,377.4	21.4	31.7	89.79	412.4	-1,100.9	722.9	681.9	40.94	17.656			
6,450.0	6,386.3	6,546.3	6,386.1	21.3	31.7	89.81	408.0	-1,100.9	722.9	682.0	40.90	17.676			
6,500.0	6,429.5	6,596.1	6,429.9	21.2	31.6	89.93	384.2	-1,100.9	722.9	682.2	40.64	17.785			
6,550.0	6,470.9	6,646.1	6,472.2	21.1	31.6	90.05	357.5	-1,100.9	722.9	682.5	40.38	17.900			
6,600.0	6,510.4	6,696.1	6,512.6	21.0	31.5	90.16	328.1	-1,101.0	722.9	682.7	40.13	18.014			
6,650.0	6,547.9	6,746.3	6,551.1	20.8	31.4	90.28	296.0	-1,101.0	722.9	683.0	39.89	18.122			
6,700.0	6,583.1	6,796.5	6,587.5	20.7	31.2	90.40	261.3	-1,101.0	722.9	683.2	39.69	18.215			
6,750.0	6,615.8	6,846.9	6,621.7	20.6	31.1	90.51	224.3	-1,101.0	722.9	683.4	39.53	18.287			
6,800.0	6,646.1	6,897.3	6,653.3	20.4	31.0	90.63	185.1	-1,101.1	722.9	683.5	39.44	18.331			
6,850.0	6,673.7	6,947.9	6,682.4	20.3	30.9	90.74	143.7	-1,101.1	723.0	683.6	39.42	18.340			
6,900.0	6,698.5	6,998.5	6,708.7	20.2	30.8	90.84	100.4	-1,101.1	723.0	683.5	39.49	18.307			
6,950.0	6,720.4	7,049.3	6,732.1	20.1	30.8	90.95	55.5	-1,101.2	723.0	683.4	39.66	18.229			
7,000.0	6,739.3	7,100.1	6,752.5	20.0	30.7	91.05	8.9	-1,101.2	723.1	683.1	39.94	18.103			
7,050.0	6,755.1	7,151.0	6,769.8	19.9	30.6	91.14	-38.9	-1,101.2	723.1	682.8	40.33	17.928			
7,100.0	6,767.9	7,202.0	6,783.9	19.8	30.6	91.23	-87.9	-1,101.3	723.1	682.3	40.84	17.707			
7,150.0	6,777.4	7,253.0	6,794.7	20.1	30.6	91.32	-137.8	-1,101.3	723.2	681.7	41.46	17.443			
7,200.0	6,783.7	7,304.1	6,802.2	20.6	30.7	91.39	-188.4	-1,101.3	723.2	681.0	42.19	17.141			
7,250.0	6,786.7	7,355.4	6,806.2	21.1	30.7	91.47	-239.4	-1,101.4	723.3	680.2	43.03	16.809			
7,274.8	6,787.0	7,380.7	6,807.0	21.3	30.8	91.50	-264.8	-1,101.4	723.3	679.8	43.48	16.634			
7,274.8	6,787.0	7,380.7	6,807.0	21.3	30.8	91.50	-264.8	-1,101.4	723.3	679.8	43.48	16.634			
7,276.1	6,787.0	7,382.1	6,807.0	21.4	30.8	91.50	-266.1	-1,101.4	723.3	679.8	43.51	16.625			
7,300.0	6,786.9	7,406.3	6,806.9	21.6	30.8	91.51	-290.4	-1,101.4	723.3	679.3	43.94	16.461			
7,400.0	6,786.4	7,506.3	6,806.2	22.8	31.2	91.48	-390.4	-1,101.5	723.3	677.2	46.12	15.682			
7,500.0	6,786.0	7,606.3	6,805.5	24.2	31.8	91.46	-490.4	-1,101.6	723.3	674.6	48.66	14.864			
7,600.0	6,785.6	7,706.3	6,804.7	25.7	32.6	91.44	-590.4	-1,101.6	723.3	671.8	51.51	14.043			
7,700.0	6,785.1	7,806.3	6,804.0	27.3	33.6	91.41	-690.4	-1,101.7	723.3	668.7	54.61	13.245			
7,800.0	6,784.7	7,906.3	6,803.2	29.0	34.8	91.39	-790.4	-1,101.8	723.3	665.4	57.93	12.486			
7,900.0	6,784.2	8,006.3	6,802.5	30.8	36.2	91.37	-890.4	-1,101.9	723.3	661.9	61.43	11.775			

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
8,000.0	6,783.8	8,106.3	6,801.8	32.6	37.7	91.34	-990.4	-1,101.9	723.3	658.3	65.08	11.115			
8,100.0	6,783.4	8,206.3	6,801.0	34.6	39.3	91.32	-1,090.4	-1,102.0	723.3	654.5	68.86	10.505			
8,200.0	6,782.9	8,306.3	6,800.3	36.5	41.0	91.30	-1,190.4	-1,102.1	723.3	650.6	72.75	9.944			
8,300.0	6,782.5	8,406.3	6,799.6	38.5	42.7	91.27	-1,290.4	-1,102.2	723.4	646.6	76.72	9.428			
8,400.0	6,782.0	8,506.3	6,798.8	40.6	44.6	91.25	-1,390.4	-1,102.2	723.4	642.6	80.78	8.955			
8,500.0	6,781.6	8,606.3	6,798.1	42.6	46.4	91.23	-1,490.4	-1,102.3	723.4	638.5	84.90	8.520			
8,600.0	6,781.2	8,706.3	6,797.4	44.7	48.4	91.20	-1,590.4	-1,102.4	723.4	634.3	89.08	8.120			
8,700.0	6,780.7	8,806.3	6,796.6	46.8	50.3	91.18	-1,690.4	-1,102.4	723.4	630.1	93.31	7.752			
8,800.0	6,780.3	8,906.3	6,795.9	49.0	52.3	91.16	-1,790.4	-1,102.5	723.4	625.8	97.59	7.413			
8,900.0	6,779.8	9,006.3	6,795.1	51.1	54.3	91.13	-1,890.4	-1,102.6	723.4	621.5	101.90	7.099			
9,000.0	6,779.4	9,106.3	6,794.4	53.3	56.4	91.11	-1,990.4	-1,102.7	723.4	617.2	106.24	6.809			
9,100.0	6,778.9	9,206.3	6,793.7	55.5	58.5	91.09	-2,090.3	-1,102.7	723.4	612.8	110.62	6.540			
9,200.0	6,778.5	9,306.3	6,792.9	57.7	60.5	91.06	-2,190.3	-1,102.8	723.4	608.4	115.02	6.290			
9,300.0	6,778.1	9,406.3	6,792.2	59.9	62.7	91.04	-2,290.3	-1,102.9	723.4	604.0	119.44	6.057			
9,400.0	6,777.6	9,506.3	6,791.5	62.1	64.8	91.02	-2,390.3	-1,103.0	723.5	599.6	123.89	5.840			
9,500.0	6,777.2	9,606.3	6,790.7	64.4	66.9	90.99	-2,490.3	-1,103.0	723.5	595.1	128.35	5.637			
9,600.0	6,776.7	9,706.3	6,790.0	66.6	69.1	90.97	-2,590.3	-1,103.1	723.5	590.6	132.83	5.447			
9,700.0	6,776.3	9,806.3	6,789.3	68.9	71.2	90.95	-2,690.3	-1,103.2	723.5	586.2	137.32	5.268			
9,800.0	6,775.9	9,906.3	6,788.5	71.1	73.4	90.92	-2,790.3	-1,103.3	723.5	581.7	141.83	5.101			
9,900.0	6,775.4	10,006.3	6,787.8	73.4	75.6	90.90	-2,890.3	-1,103.3	723.5	577.2	146.35	4.944			
10,000.0	6,775.0	10,106.3	6,787.0	75.6	77.8	90.88	-2,990.3	-1,103.4	723.5	572.6	150.89	4.795			
10,100.0	6,774.5	10,206.3	6,786.3	77.9	80.0	90.85	-3,090.3	-1,103.5	723.5	568.1	155.43	4.655			
10,200.0	6,774.1	10,306.3	6,785.6	80.2	82.2	90.83	-3,190.3	-1,103.6	723.5	563.6	159.98	4.523			
10,300.0	6,773.7	10,406.3	6,784.8	82.5	84.5	90.81	-3,290.3	-1,103.6	723.6	559.0	164.54	4.397			
10,400.0	6,773.2	10,506.3	6,784.1	84.7	86.7	90.78	-3,390.3	-1,103.7	723.6	554.5	169.11	4.279			
10,500.0	6,772.8	10,606.3	6,783.4	87.0	88.9	90.76	-3,490.3	-1,103.8	723.6	549.9	173.68	4.166			
10,600.0	6,772.3	10,706.3	6,782.6	89.3	91.2	90.74	-3,590.3	-1,103.9	723.6	545.3	178.26	4.059			
10,700.0	6,771.9	10,806.3	6,781.9	91.6	93.4	90.71	-3,690.3	-1,103.9	723.6	540.7	182.85	3.957			
10,800.0	6,771.4	10,906.3	6,781.2	93.9	95.7	90.69	-3,790.3	-1,104.0	723.6	536.2	187.45	3.860			
10,900.0	6,771.0	11,006.3	6,780.4	96.2	97.9	90.67	-3,890.3	-1,104.1	723.6	531.6	192.05	3.768			
11,000.0	6,770.6	11,106.3	6,779.7	98.5	100.2	90.64	-3,990.3	-1,104.2	723.6	527.0	196.65	3.680			
11,100.0	6,770.1	11,206.3	6,779.0	100.8	102.4	90.62	-4,090.3	-1,104.2	723.6	522.4	201.26	3.596			
11,200.0	6,769.7	11,306.3	6,778.2	103.1	104.7	90.60	-4,190.3	-1,104.3	723.7	517.8	205.87	3.515			
11,300.0	6,769.2	11,406.3	6,777.5	105.4	107.0	90.57	-4,290.3	-1,104.4	723.7	513.2	210.49	3.438			
11,400.0	6,768.8	11,506.3	6,776.7	107.7	109.2	90.55	-4,390.3	-1,104.5	723.7	508.6	215.11	3.364			
11,500.0	6,768.4	11,606.3	6,776.0	110.0	111.5	90.53	-4,490.3	-1,104.5	723.7	504.0	219.74	3.293			
11,600.0	6,767.9	11,706.3	6,775.3	112.3	113.8	90.50	-4,590.3	-1,104.6	723.7	499.3	224.36	3.226			
11,700.0	6,767.5	11,806.3	6,774.5	114.7	116.1	90.48	-4,690.3	-1,104.7	723.7	494.7	228.99	3.160			
11,800.0	6,767.0	11,906.3	6,773.8	117.0	118.4	90.46	-4,790.3	-1,104.7	723.7	490.1	233.63	3.098			
11,900.0	6,766.6	12,006.3	6,773.1	119.3	120.7	90.43	-4,890.3	-1,104.8	723.7	485.5	238.26	3.038			
12,000.0	6,766.2	12,106.3	6,772.3	121.6	122.9	90.41	-4,990.3	-1,104.9	723.8	480.9	242.90	2.980			
12,100.0	6,765.7	12,206.3	6,771.6	123.9	125.2	90.39	-5,090.3	-1,105.0	723.8	476.2	247.55	2.924			
12,200.0	6,765.3	12,306.3	6,770.9	126.2	127.5	90.36	-5,190.3	-1,105.0	723.8	471.6	252.19	2.870			
12,300.0	6,764.8	12,406.3	6,770.1	128.6	129.8	90.34	-5,290.2	-1,105.1	723.8	467.0	256.84	2.818			
12,400.0	6,764.4	12,506.3	6,769.4	130.9	132.1	90.32	-5,390.2	-1,105.2	723.8	462.3	261.48	2.768			
12,500.0	6,763.9	12,606.3	6,768.6	133.2	134.4	90.29	-5,490.2	-1,105.3	723.8	457.7	266.13	2.720			
12,600.0	6,763.5	12,706.3	6,767.9	135.5	136.7	90.27	-5,590.2	-1,105.3	723.8	453.1	270.79	2.673			
12,700.0	6,763.1	12,806.3	6,767.2	137.9	139.0	90.25	-5,690.2	-1,105.4	723.9	448.4	275.44	2.628			
12,800.0	6,762.6	12,906.3	6,766.4	140.2	141.3	90.22	-5,790.2	-1,105.5	723.9	443.8	280.10	2.584			
12,900.0	6,762.2	13,006.3	6,765.7	142.5	143.6	90.20	-5,890.2	-1,105.6	723.9	439.1	284.75	2.542			
13,000.0	6,761.7	13,106.3	6,765.0	144.8	146.0	90.18	-5,990.2	-1,105.6	723.9	434.5	289.41	2.501			

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
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)			
13,100.0	6,761.3	13,206.3	6,764.2	147.2	148.3	90.15	-6,090.2	-1,105.7	723.9	429.8	294.07	2.462		
13,200.0	6,760.9	13,306.3	6,763.5	149.5	150.6	90.13	-6,190.2	-1,105.8	723.9	425.2	298.73	2.423		
13,300.0	6,760.4	13,406.3	6,762.8	151.8	152.9	90.11	-6,290.2	-1,105.9	723.9	420.5	303.40	2.386		
13,400.0	6,760.0	13,506.3	6,762.0	154.2	155.2	90.08	-6,390.2	-1,105.9	724.0	415.9	308.06	2.350		
13,500.0	6,759.5	13,606.3	6,761.3	156.5	157.5	90.06	-6,490.2	-1,106.0	724.0	411.2	312.72	2.315		
13,600.0	6,759.1	13,706.3	6,760.5	158.8	159.8	90.04	-6,590.2	-1,106.1	724.0	406.6	317.39	2.281		
13,700.0	6,758.6	13,806.3	6,759.8	161.2	162.1	90.01	-6,690.2	-1,106.2	724.0	401.9	322.06	2.248		
13,800.0	6,758.2	13,906.3	6,759.1	163.5	164.5	89.99	-6,790.2	-1,106.2	724.0	397.3	326.73	2.216		
13,900.0	6,757.8	14,006.3	6,758.3	165.8	166.8	89.97	-6,890.2	-1,106.3	724.0	392.6	331.40	2.185		
14,000.0	6,757.3	14,106.3	6,757.6	168.2	169.1	89.94	-6,990.2	-1,106.4	724.0	388.0	336.07	2.154		
14,073.9	6,757.0	14,180.3	6,757.1	169.9	170.8	89.93	-7,064.1	-1,106.4	724.1	384.5	339.52	2.133		
14,074.3	6,757.0	14,180.6	6,757.1	169.9	170.8	89.93	-7,064.5	-1,106.4	724.1	384.5	339.53	2.133 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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-423 - Wellbore #1 - Plan #2 (1-25-17)											Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	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	59.9	0.28	218.579			
200.0	200.0	200.0	200.0	0.4	0.4	-89.65	0.4	-60.2	60.2	59.4	0.83	72.860			
300.0	300.0	300.0	300.0	0.7	0.7	-89.65	0.4	-60.2	60.2	58.8	1.38	43.716			
400.0	400.0	400.0	400.0	1.0	1.0	-89.65	0.4	-60.2	60.2	58.3	1.93	31.226	CC, ES		
500.0	500.0	498.5	498.5	1.2	1.2	-89.23	0.8	-61.4	61.4	58.9	2.46	24.906			
600.0	600.0	596.9	596.8	1.5	1.5	-88.07	2.2	-64.9	65.0	62.0	3.00	21.661			
700.0	700.0	695.1	694.8	1.8	1.8	-86.40	4.5	-70.8	71.1	67.6	3.55	20.055			
800.0	800.0	792.8	792.1	2.1	2.1	-84.51	7.6	-79.0	79.8	75.7	4.10	19.454	SF		
900.0	900.0	890.0	888.7	2.3	2.4	-82.61	11.6	-89.5	90.9	86.3	4.66	19.501			
1,000.0	1,000.0	986.6	984.3	2.6	2.7	-80.84	16.5	-102.2	104.7	99.4	5.24	19.978			
1,100.0	1,100.0	1,082.5	1,078.8	2.9	3.1	-79.28	22.1	-117.0	120.9	115.1	5.83	20.743			
1,200.0	1,200.0	1,177.5	1,172.1	3.2	3.6	-77.93	28.6	-133.8	139.6	133.2	6.44	21.697			
1,300.0	1,300.0	1,271.5	1,263.9	3.4	4.0	-76.79	35.8	-152.6	160.8	153.8	7.06	22.773			
1,400.0	1,400.0	1,364.4	1,354.2	3.7	4.6	-75.83	43.7	-173.3	184.5	176.8	7.71	23.922			
1,500.0	1,500.0	1,456.5	1,443.1	4.0	5.1	-38.00	52.4	-195.7	209.5	201.4	8.02	26.119			
1,600.0	1,599.9	1,551.9	1,534.7	4.3	5.7	-37.64	61.9	-220.6	234.2	225.6	8.60	27.240			
1,700.0	1,699.7	1,649.2	1,628.1	4.5	6.4	-37.69	71.6	-246.0	257.1	247.9	9.19	27.981			
1,800.0	1,799.3	1,747.0	1,722.0	4.8	7.1	-38.05	81.4	-271.6	277.9	268.1	9.79	28.394			
1,900.0	1,898.6	1,845.1	1,816.2	5.1	7.8	-38.67	91.3	-297.2	296.8	286.4	10.40	28.525			
2,000.0	1,997.5	1,943.5	1,910.7	5.4	8.5	-39.52	101.1	-322.9	313.7	302.7	11.04	28.413			
2,016.2	2,013.5	1,959.5	1,926.0	5.5	8.6	-39.67	102.7	-327.1	316.3	305.1	11.15	28.375			
2,100.0	2,096.2	2,042.1	2,005.3	5.8	9.1	-40.59	111.0	-348.7	329.4	317.7	11.71	28.141			
2,200.0	2,194.9	2,140.7	2,099.9	6.1	9.8	-41.60	120.9	-374.5	345.2	332.9	12.39	27.860			
2,300.0	2,293.6	2,239.2	2,194.6	6.5	10.5	-42.51	130.8	-400.2	361.2	348.1	13.09	27.581			
2,400.0	2,392.3	2,337.8	2,289.2	6.9	11.3	-43.35	140.7	-426.0	377.2	363.3	13.81	27.306			
2,500.0	2,491.0	2,436.4	2,383.8	7.3	12.0	-44.12	150.5	-451.8	393.2	378.7	14.54	27.038			
2,600.0	2,589.8	2,534.9	2,478.4	7.7	12.7	-44.83	160.4	-477.5	409.4	394.1	15.29	26.777			
2,700.0	2,688.5	2,633.5	2,573.1	8.1	13.4	-45.49	170.3	-503.3	425.5	409.5	16.04	26.525			
2,800.0	2,787.2	2,732.1	2,667.7	8.5	14.1	-46.10	180.2	-529.0	441.8	425.0	16.81	26.283			
2,900.0	2,885.9	2,830.7	2,762.3	8.9	14.8	-46.66	190.1	-554.8	458.1	440.5	17.58	26.050			
3,000.0	2,984.6	2,929.2	2,856.9	9.3	15.5	-47.19	199.9	-580.6	474.4	456.0	18.37	25.828			
3,100.0	3,083.3	3,027.8	2,951.6	9.8	16.2	-47.68	209.8	-606.3	490.7	471.6	19.16	25.615			
3,200.0	3,182.0	3,126.4	3,046.2	10.2	16.9	-48.14	219.7	-632.1	507.1	487.2	19.96	25.412			
3,300.0	3,280.7	3,224.9	3,140.8	10.6	17.7	-48.57	229.6	-657.9	523.6	502.8	20.76	25.218			
3,400.0	3,379.4	3,323.5	3,235.5	11.0	18.4	-48.98	239.5	-683.6	540.0	518.4	21.57	25.033			
3,500.0	3,478.1	3,422.1	3,330.1	11.5	19.1	-49.36	249.3	-709.4	556.5	534.1	22.39	24.857			
3,600.0	3,576.8	3,520.6	3,424.7	11.9	19.8	-49.71	259.2	-735.1	573.0	549.8	23.21	24.689			
3,700.0	3,675.5	3,619.2	3,519.3	12.3	20.5	-50.05	269.1	-760.9	589.5	565.5	24.03	24.528			
3,800.0	3,774.2	3,717.8	3,614.0	12.8	21.2	-50.37	279.0	-786.7	606.0	581.2	24.86	24.376			
3,900.0	3,872.9	3,816.3	3,708.6	13.2	22.0	-50.68	288.9	-812.4	622.6	596.9	25.70	24.230			
4,000.0	3,971.6	3,914.9	3,803.2	13.7	22.7	-50.96	298.7	-838.2	639.2	612.6	26.53	24.091			
4,100.0	4,070.3	4,013.5	3,897.8	14.1	23.4	-51.24	308.6	-864.0	655.8	628.4	27.37	23.958			
4,200.0	4,169.0	4,112.0	3,992.5	14.6	24.1	-51.50	318.5	-889.7	672.4	644.1	28.21	23.831			
4,300.0	4,267.7	4,210.6	4,087.1	15.0	24.8	-51.74	328.4	-915.5	689.0	659.9	29.06	23.709			
4,400.0	4,366.4	4,309.2	4,181.7	15.4	25.6	-51.98	338.3	-941.2	705.6	675.7	29.91	23.593			
4,500.0	4,465.1	4,407.7	4,276.4	15.9	26.3	-52.21	348.1	-967.0	722.2	691.5	30.76	23.482			
4,600.0	4,563.8	4,506.3	4,371.0	16.3	27.0	-52.42	358.0	-992.8	738.9	707.3	31.61	23.375			
4,700.0	4,662.5	4,604.9	4,465.6	16.8	27.7	-52.62	367.9	-1,018.5	755.5	723.1	32.46	23.273			
4,800.0	4,761.2	4,703.4	4,560.2	17.2	28.4	-52.82	377.8	-1,044.3	772.2	738.9	33.32	23.176			
4,900.0	4,859.9	4,802.0	4,654.9	17.7	29.2	-53.01	387.7	-1,070.1	788.9	754.7	34.18	23.082			

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design												Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-423 - Wellbore #1 - Plan #2 (1-25-17)												Offset Site Error:		0.0 ft	
Survey Program: 0-MWD																								Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning													
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor															
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)																

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-143 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
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	0.28	54.644		
200.0	200.0	200.0	200.0	0.4	0.4	-89.97	0.0	-15.0	15.0	14.2	0.83	18.215		
300.0	300.0	300.0	300.0	0.7	0.7	-89.97	0.0	-15.0	15.0	13.7	1.38	10.929		
400.0	400.0	400.0	400.0	1.0	1.0	-89.97	0.0	-15.0	15.0	13.1	1.93	7.806		
500.0	500.0	500.0	500.0	1.2	1.2	-89.97	0.0	-15.0	15.0	12.6	2.48	6.072		
600.0	600.0	600.0	600.0	1.5	1.5	-89.97	0.0	-15.0	15.0	12.0	3.03	4.968		
700.0	700.0	700.0	700.0	1.8	1.8	-89.97	0.0	-15.0	15.0	11.5	3.58	4.203		
800.0	800.0	800.0	800.0	2.1	2.1	-89.97	0.0	-15.0	15.0	10.9	4.13	3.643		
900.0	900.0	900.0	900.0	2.3	2.3	-89.97	0.0	-15.0	15.0	10.4	4.68	3.214		
1,000.0	1,000.0	1,000.0	1,000.0	2.6	2.6	-89.97	0.0	-15.0	15.0	9.8	5.23	2.876		
1,100.0	1,100.0	1,100.0	1,100.0	2.9	2.9	-89.97	0.0	-15.0	15.0	9.3	5.78	2.602		
1,200.0	1,200.0	1,200.0	1,200.0	3.2	3.2	-89.97	0.0	-15.0	15.0	8.7	6.33	2.376 CC		
1,300.0	1,300.0	1,299.7	1,299.7	3.4	3.4	-86.99	0.8	-16.0	16.1	9.2	6.88	2.337		
1,400.0	1,400.0	1,399.2	1,399.1	3.7	3.7	-80.04	3.3	-19.0	19.3	11.9	7.42	2.607		
1,500.0	1,500.0	1,498.6	1,498.3	4.0	4.0	-37.40	7.5	-24.0	24.1	16.2	7.95	3.036		
1,600.0	1,599.9	1,597.8	1,597.1	4.3	4.3	-34.69	13.3	-30.9	29.4	20.9	8.48	3.461		
1,700.0	1,699.7	1,696.9	1,695.5	4.5	4.6	-33.67	20.7	-39.8	34.9	25.8	9.01	3.867		
1,800.0	1,799.3	1,795.8	1,793.4	4.8	4.9	-33.68	29.8	-50.6	40.6	31.1	9.55	4.252		
1,900.0	1,898.6	1,894.5	1,890.7	5.1	5.2	-34.32	40.4	-63.3	46.6	36.5	10.10	4.616		
2,000.0	1,997.5	1,993.6	1,987.9	5.4	5.6	-35.43	52.7	-77.9	52.8	42.1	10.67	4.946		
2,016.2	2,013.5	2,009.7	2,003.7	5.5	5.7	-35.70	54.7	-80.4	53.6	42.9	10.76	4.984		
2,100.0	2,096.2	2,093.4	2,085.7	5.8	6.0	-37.10	65.4	-93.1	58.1	46.8	11.28	5.153		
2,200.0	2,194.9	2,193.2	2,183.6	6.1	6.5	-38.52	78.1	-108.3	63.5	51.6	11.91	5.329		
2,300.0	2,293.6	2,293.1	2,281.5	6.5	6.9	-39.72	90.8	-123.4	68.9	56.3	12.56	5.482		
2,400.0	2,392.3	2,392.9	2,379.3	6.9	7.4	-40.74	103.5	-138.6	74.3	61.1	13.23	5.614		
2,500.0	2,491.0	2,492.8	2,477.2	7.3	7.9	-41.62	116.2	-153.8	79.7	65.8	13.92	5.728		
2,600.0	2,589.8	2,592.6	2,575.1	7.7	8.3	-42.39	128.9	-168.9	85.2	70.6	14.62	5.827		
2,700.0	2,688.5	2,692.5	2,672.9	8.1	8.8	-43.07	141.6	-184.1	90.7	75.3	15.33	5.914		
2,800.0	2,787.2	2,792.3	2,770.8	8.5	9.3	-43.67	154.3	-199.3	96.1	80.1	16.05	5.989		
2,900.0	2,885.9	2,892.2	2,868.7	8.9	9.8	-44.20	167.0	-214.5	101.6	84.9	16.78	6.055		
3,000.0	2,984.6	2,992.0	2,966.5	9.3	10.3	-44.68	179.7	-229.6	107.1	89.6	17.53	6.113		
3,100.0	3,083.3	3,091.8	3,064.4	9.8	10.8	-45.12	192.4	-244.8	112.6	94.4	18.27	6.165		
3,200.0	3,182.0	3,191.7	3,162.2	10.2	11.3	-45.51	205.1	-260.0	118.2	99.1	19.03	6.210		
3,300.0	3,280.7	3,291.5	3,260.1	10.6	11.8	-45.87	217.8	-275.1	123.7	103.9	19.79	6.251		
3,400.0	3,379.4	3,391.4	3,358.0	11.0	12.3	-46.19	230.6	-290.3	129.2	108.6	20.55	6.286		
3,500.0	3,478.1	3,491.2	3,455.8	11.5	12.9	-46.49	243.3	-305.5	134.7	113.4	21.32	6.319		
3,600.0	3,576.8	3,591.1	3,553.7	11.9	13.4	-46.77	256.0	-320.7	140.3	118.2	22.10	6.347		
3,700.0	3,675.5	3,690.9	3,651.6	12.3	13.9	-47.03	268.7	-335.8	145.8	122.9	22.88	6.373		
3,800.0	3,774.2	3,790.8	3,749.4	12.8	14.4	-47.26	281.4	-351.0	151.3	127.7	23.66	6.397		
3,900.0	3,872.9	3,890.6	3,847.3	13.2	14.9	-47.48	294.1	-366.2	156.9	132.4	24.44	6.418		
4,000.0	3,971.6	3,990.4	3,945.2	13.7	15.5	-47.69	306.8	-381.3	162.4	137.2	25.23	6.437		
4,100.0	4,070.3	4,090.3	4,043.0	14.1	16.0	-47.88	319.5	-396.5	168.0	141.9	26.02	6.454		
4,200.0	4,169.0	4,190.1	4,140.9	14.6	16.5	-48.06	332.2	-411.7	173.5	146.7	26.81	6.470		
4,300.0	4,267.7	4,290.0	4,238.8	15.0	17.0	-48.23	344.9	-426.9	179.0	151.4	27.61	6.485		
4,400.0	4,366.4	4,389.8	4,336.6	15.4	17.5	-48.39	357.6	-442.0	184.6	156.2	28.41	6.498		
4,500.0	4,465.1	4,489.7	4,434.5	15.9	18.1	-48.54	370.3	-457.2	190.1	160.9	29.21	6.510		
4,600.0	4,563.8	4,589.5	4,532.3	16.3	18.6	-48.68	383.0	-472.4	195.7	165.7	30.01	6.521		
4,700.0	4,662.5	4,689.4	4,630.2	16.8	19.1	-48.81	395.7	-487.6	201.2	170.4	30.81	6.532		
4,800.0	4,761.2	4,788.2	4,728.1	17.2	19.7	-48.93	408.4	-502.7	206.8	175.2	31.61	6.541		
4,900.0	4,859.9	4,889.0	4,825.9	17.7	20.2	-49.05	421.2	-517.9	212.3	179.9	32.42	6.550		

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-143 - Wellbore #1 - Plan #2 (1-25-17)											Offset Site Error:		0.0 ft
Survey Program:		0-MWD											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
5,000.0	4,958.6	4,988.9	4,923.8	18.1	20.7	-49.17	433.9	-533.1	217.9	184.7	33.23	6.558			
5,100.0	5,057.3	5,088.7	5,021.7	18.6	21.2	-49.27	446.6	-548.2	223.5	189.4	34.03	6.566			
5,200.0	5,156.0	5,188.6	5,119.5	19.0	21.8	-49.38	459.3	-563.4	229.0	194.2	34.84	6.573			
5,300.0	5,254.7	5,294.5	5,223.6	19.5	22.3	-49.70	471.8	-578.4	233.4	197.8	35.67	6.543			
5,386.3	5,339.9	5,386.8	5,314.8	19.9	22.6	-50.44	480.7	-589.0	234.9	198.5	36.43	6.448			
5,400.0	5,353.4	5,401.4	5,329.3	19.9	22.6	-50.59	481.9	-590.5	234.9	198.4	36.55	6.428			
5,500.0	5,452.4	5,508.2	5,435.5	20.3	22.9	-51.62	489.6	-599.6	235.0	197.6	37.33	6.295			
5,600.0	5,551.9	5,614.9	5,541.9	20.5	23.2	-52.54	494.6	-605.6	234.3	196.3	38.01	6.164			
5,700.0	5,651.6	5,721.5	5,648.4	20.8	23.4	-53.35	497.1	-608.6	232.9	194.3	38.60	6.035			
5,800.0	5,751.6	5,824.7	5,751.6	21.0	23.6	-53.96	497.4	-608.9	231.2	192.1	39.08	5.916			
5,848.4	5,800.0	5,873.1	5,800.0	21.1	23.6	-91.04	497.4	-608.9	231.0	191.7	39.27	5.882			
5,900.0	5,851.6	5,924.7	5,851.6	21.2	23.7	-91.04	497.4	-608.9	231.0	191.5	39.48	5.851			
5,906.9	5,858.5	5,931.5	5,858.5	21.2	23.8	-91.04	497.4	-608.9	231.0	191.5	39.50	5.847			
6,000.0	5,951.6	6,023.8	5,950.5	21.4	23.8	-92.25	492.5	-608.9	231.1	191.1	40.05	5.772			
6,071.6	6,023.2	6,093.2	6,019.0	21.5	23.9	-94.96	481.6	-609.0	231.9	191.1	40.72	5.695			
6,100.0	6,051.6	6,120.2	6,045.3	21.6	23.8	83.64	475.6	-609.0	232.4	191.4	41.00	5.669			
6,150.0	6,101.4	6,167.2	6,090.7	21.6	23.8	81.25	463.1	-609.0	233.8	192.3	41.44	5.642			
6,200.0	6,151.0	6,213.8	6,134.7	21.6	23.8	78.94	447.9	-609.0	235.5	193.7	41.76	5.639			
6,250.0	6,200.0	6,259.8	6,177.2	21.6	23.7	76.72	430.4	-609.0	237.5	195.6	41.97	5.660			
6,300.0	6,248.2	6,305.4	6,218.2	21.6	23.6	74.59	410.5	-609.0	239.8	197.8	42.05	5.704			
6,350.0	6,295.5	6,350.0	6,257.1	21.5	23.5	72.59	388.6	-609.0	242.4	200.4	42.00	5.771			
6,400.0	6,341.6	6,395.2	6,295.1	21.4	23.4	70.65	364.3	-609.0	245.2	203.3	41.83	5.861			
6,450.0	6,386.3	6,439.5	6,331.0	21.3	23.3	68.85	338.2	-609.0	248.1	206.5	41.54	5.972			
6,500.0	6,429.5	6,483.4	6,365.0	21.2	23.2	67.17	310.4	-609.0	251.0	209.9	41.14	6.103			
6,550.0	6,470.9	6,527.0	6,397.1	21.1	23.1	65.60	280.9	-609.1	254.1	213.4	40.64	6.252			
6,600.0	6,510.4	6,570.3	6,427.2	21.0	22.9	64.16	249.8	-609.1	257.1	217.0	40.06	6.417			
6,650.0	6,547.9	6,613.3	6,455.4	20.8	22.8	62.83	217.3	-609.1	260.0	220.6	39.43	6.595			
6,700.0	6,583.1	6,656.1	6,481.5	20.7	22.7	61.62	183.5	-609.1	262.9	224.2	38.77	6.782			
6,750.0	6,615.8	6,700.0	6,506.3	20.6	22.6	60.50	147.3	-609.1	265.7	227.6	38.09	6.975			
6,800.0	6,646.1	6,740.9	6,527.6	20.4	22.5	59.54	112.3	-609.1	268.3	230.8	37.46	7.161			
6,850.0	6,673.7	6,783.0	6,547.4	20.3	22.4	58.67	75.2	-609.2	270.7	233.8	36.88	7.339			
6,900.0	6,698.5	6,825.0	6,565.1	20.2	22.3	57.91	37.1	-609.2	272.9	236.5	36.40	7.497			
6,950.0	6,720.4	6,866.8	6,580.7	20.1	22.2	57.25	-1.7	-609.2	274.8	238.8	36.04	7.626			
7,000.0	6,739.3	6,908.5	6,594.1	20.0	22.1	56.70	-41.2	-609.2	276.5	240.7	35.83	7.717			
7,050.0	6,755.1	6,950.0	6,605.2	19.9	22.1	56.25	-81.1	-609.3	277.9	242.1	35.80	7.762			
7,100.0	6,767.9	6,991.6	6,614.2	19.8	22.1	55.90	-121.7	-609.3	279.0	243.0	35.98	7.755			
7,150.0	6,777.4	7,033.0	6,620.9	20.1	22.1	55.65	-162.6	-609.3	279.8	243.4	36.36	7.695			
7,200.0	6,783.7	7,074.4	6,625.4	20.6	22.2	55.50	-203.8	-609.3	280.3	243.3	36.95	7.585			
7,250.0	6,786.7	7,112.3	6,627.3	21.1	22.4	55.39	-241.6	-609.3	280.7	243.0	37.70	7.444			
7,274.8	6,787.0	7,132.7	6,627.1	21.3	22.6	55.31	-262.0	-609.3	280.9	242.8	38.14	7.366			
7,274.8	6,787.0	7,132.7	6,627.1	21.3	22.6	55.31	-262.0	-609.3	280.9	242.8	38.14	7.366			
7,276.1	6,787.0	7,138.3	6,627.0	21.4	22.6	55.29	-266.5	-609.4	281.0	242.8	38.20	7.356			
7,300.0	6,786.9	7,162.1	6,627.0	21.6	22.8	55.30	-290.4	-609.4	280.9	242.3	38.62	7.274			
7,400.0	6,786.4	7,262.1	6,626.8	22.8	23.8	55.35	-390.4	-609.4	280.8	240.1	40.71	6.896			
7,500.0	6,786.0	7,362.1	6,626.7	24.2	25.1	55.40	-490.4	-609.5	280.6	237.5	43.09	6.513			
7,600.0	6,785.6	7,462.1	6,626.5	25.7	26.5	55.45	-590.4	-609.5	280.4	234.8	45.69	6.138			
7,700.0	6,785.1	7,562.1	6,626.4	27.3	28.1	55.50	-690.4	-609.6	280.3	231.8	48.48	5.781			
7,800.0	6,784.7	7,662.1	6,626.2	29.0	29.7	55.55	-790.4	-609.7	280.1	228.7	51.45	5.445			
7,900.0	6,784.2	7,762.1	6,626.1	30.8	31.5	55.60	-890.4	-609.7	279.9	225.4	54.55	5.132			
8,000.0	6,783.8	7,862.1	6,625.9	32.6	33.3	55.65	-990.4	-609.8	279.8	222.0	57.76	4.844			

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-143 - Wellbore #1 - Plan #2 (1-25-17)														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
8,100.0	6,783.4	7,962.1	6,625.8	34.6	35.2	55.70	-1,090.4	-609.8	279.6	218.5	61.08	4.578			
8,200.0	6,782.9	8,062.1	6,625.6	36.5	37.1	55.75	-1,190.4	-609.9	279.4	215.0	64.48	4.334			
8,300.0	6,782.5	8,162.1	6,625.5	38.5	39.1	55.80	-1,290.4	-610.0	279.3	211.3	67.95	4.110			
8,400.0	6,782.0	8,262.1	6,625.3	40.6	41.1	55.85	-1,390.4	-610.0	279.1	207.6	71.49	3.904			
8,500.0	6,781.6	8,362.1	6,625.2	42.6	43.2	55.90	-1,490.4	-610.1	279.0	203.9	75.08	3.715			
8,600.0	6,781.2	8,462.1	6,625.1	44.7	45.2	55.95	-1,590.4	-610.1	278.8	200.1	78.72	3.542			
8,700.0	6,780.7	8,562.1	6,624.9	46.8	47.3	56.00	-1,690.4	-610.2	278.6	196.2	82.40	3.382			
8,800.0	6,780.3	8,662.1	6,624.8	49.0	49.5	56.05	-1,790.4	-610.3	278.5	192.3	86.11	3.234			
8,900.0	6,779.8	8,762.1	6,624.6	51.1	51.6	56.10	-1,890.4	-610.3	278.3	188.4	89.86	3.097			
9,000.0	6,779.4	8,862.1	6,624.5	53.3	53.8	56.15	-1,990.4	-610.4	278.1	184.5	93.64	2.970			
9,100.0	6,778.9	8,962.1	6,624.3	55.5	55.9	56.20	-2,090.4	-610.4	278.0	180.5	97.45	2.853			
9,200.0	6,778.5	9,062.1	6,624.2	57.7	58.1	56.25	-2,190.4	-610.5	277.8	176.5	101.27	2.743			
9,300.0	6,778.1	9,162.1	6,624.0	59.9	60.3	56.30	-2,290.4	-610.6	277.6	172.5	105.13	2.641			
9,400.0	6,777.6	9,262.1	6,623.9	62.1	62.5	56.35	-2,390.4	-610.6	277.5	168.5	109.00	2.546			
9,500.0	6,777.2	9,362.1	6,623.7	64.4	64.7	56.40	-2,490.4	-610.7	277.3	164.4	112.89	2.457			
9,600.0	6,776.7	9,462.1	6,623.6	66.6	67.0	56.46	-2,590.4	-610.7	277.2	160.4	116.79	2.373			
9,700.0	6,776.3	9,562.1	6,623.4	68.9	69.2	56.51	-2,690.4	-610.8	277.0	156.3	120.71	2.295			
9,800.0	6,775.9	9,662.1	6,623.3	71.1	71.4	56.56	-2,790.4	-610.9	276.8	152.2	124.65	2.221			
9,900.0	6,775.4	9,762.1	6,623.1	73.4	73.7	56.61	-2,890.4	-610.9	276.7	148.1	128.60	2.151			
10,000.0	6,775.0	9,862.1	6,623.0	75.6	75.9	56.66	-2,990.4	-611.0	276.5	144.0	132.56	2.086			
10,100.0	6,774.5	9,962.1	6,622.8	77.9	78.2	56.71	-3,090.4	-611.0	276.4	139.8	136.53	2.024			
10,200.0	6,774.1	10,062.1	6,622.7	80.2	80.5	56.76	-3,190.4	-611.1	276.2	135.7	140.52	1.966			
10,300.0	6,773.7	10,162.1	6,622.6	82.5	82.7	56.81	-3,290.4	-611.2	276.0	131.5	144.52	1.910			
10,400.0	6,773.2	10,262.1	6,622.4	84.7	85.0	56.86	-3,390.4	-611.2	275.9	127.4	148.52	1.857			
10,500.0	6,772.8	10,362.1	6,622.3	87.0	87.3	56.91	-3,490.4	-611.3	275.7	123.2	152.54	1.808			
10,600.0	6,772.3	10,462.1	6,622.1	89.3	89.6	56.97	-3,590.4	-611.3	275.6	119.0	156.56	1.760			
10,700.0	6,771.9	10,562.1	6,622.0	91.6	91.8	57.02	-3,690.4	-611.4	275.4	114.8	160.60	1.715			
10,800.0	6,771.4	10,662.1	6,621.8	93.9	94.1	57.07	-3,790.4	-611.5	275.2	110.6	164.64	1.672			
10,900.0	6,771.0	10,762.1	6,621.7	96.2	96.4	57.12	-3,890.4	-611.5	275.1	106.4	168.69	1.631			
11,000.0	6,770.6	10,862.1	6,621.5	98.5	98.7	57.17	-3,990.4	-611.6	274.9	102.2	172.75	1.591			
11,100.0	6,770.1	10,962.1	6,621.4	100.8	101.0	57.22	-4,090.4	-611.6	274.8	97.9	176.81	1.554			
11,200.0	6,769.7	11,062.1	6,621.2	103.1	103.3	57.28	-4,190.4	-611.7	274.6	93.7	180.88	1.518			
11,300.0	6,769.2	11,162.1	6,621.1	105.4	105.6	57.33	-4,290.4	-611.8	274.4	89.5	184.96	1.484 Level 3			
11,400.0	6,768.8	11,262.1	6,620.9	107.7	107.9	57.38	-4,390.4	-611.8	274.3	85.2	189.05	1.451 Level 3			
11,500.0	6,768.4	11,362.1	6,620.8	110.0	110.2	57.43	-4,490.4	-611.9	274.1	81.0	193.14	1.419 Level 3			
11,600.0	6,767.9	11,462.1	6,620.6	112.3	112.5	57.48	-4,590.4	-611.9	274.0	76.7	197.24	1.389 Level 3			
11,700.0	6,767.5	11,562.1	6,620.5	114.7	114.8	57.53	-4,690.4	-612.0	273.8	72.5	201.35	1.360 Level 3			
11,800.0	6,767.0	11,662.1	6,620.3	117.0	117.2	57.59	-4,790.4	-612.1	273.7	68.2	205.46	1.332 Level 3			
11,900.0	6,766.6	11,762.1	6,620.2	119.3	119.5	57.64	-4,890.4	-612.1	273.5	63.9	209.58	1.305 Level 3			
12,000.0	6,766.2	11,862.1	6,620.1	121.6	121.8	57.69	-4,990.4	-612.2	273.3	59.6	213.70	1.279 Level 3			
12,100.0	6,765.7	11,962.1	6,619.9	123.9	124.1	57.74	-5,090.4	-612.2	273.2	55.4	217.83	1.254 Level 3			
12,200.0	6,765.3	12,062.1	6,619.8	126.2	126.4	57.80	-5,190.4	-612.3	273.0	51.1	221.97	1.230 Level 2			
12,300.0	6,764.8	12,162.1	6,619.6	128.6	128.7	57.85	-5,290.4	-612.4	272.9	46.8	226.11	1.207 Level 2			
12,400.0	6,764.4	12,262.1	6,619.5	130.9	131.0	57.90	-5,390.4	-612.4	272.7	42.5	230.25	1.184 Level 2			
12,500.0	6,763.9	12,362.1	6,619.3	133.2	133.4	57.95	-5,490.4	-612.5	272.6	38.2	234.40	1.163 Level 2			
12,600.0	6,763.5	12,462.1	6,619.2	135.5	135.7	58.01	-5,590.4	-612.5	272.4	33.8	238.56	1.142 Level 2			
12,700.0	6,763.1	12,562.1	6,619.0	137.9	138.0	58.06	-5,690.4	-612.6	272.3	29.5	242.72	1.122 Level 2			
12,800.0	6,762.6	12,662.1	6,618.9	140.2	140.3	58.11	-5,790.4	-612.7	272.1	25.2	246.89	1.102 Level 2			
12,900.0	6,762.2	12,762.1	6,618.7	142.5	142.7	58.16	-5,890.4	-612.7	271.9	20.9	251.06	1.083 Level 2			
13,000.0	6,761.7	12,862.1	6,618.6	144.8	145.0	58.22	-5,990.4	-612.8	271.8	16.5	255.24	1.065 Level 2			
13,100.0	6,761.3	12,962.1	6,618.4	147.2	147.3	58.27	-6,090.4	-612.8	271.6	12.2	259.42	1.047 Level 2			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-143 - Wellbore #1 - Plan #2 (1-25-17)														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance								
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning		
13,200.0	6,760.9	13,062.1	6,618.3	149.5	149.6	58.32	-6,190.4	-612.9	271.5	7.9	263.61	1.030	Level 2		
13,300.0	6,760.4	13,162.1	6,618.1	151.8	152.0	58.38	-6,290.4	-613.0	271.3	3.5	267.80	1.013	Level 2		
13,400.0	6,760.0	13,262.1	6,618.0	154.2	154.3	58.43	-6,390.4	-613.0	271.2	-0.8	272.00	0.997	Level 1		
13,500.0	6,759.5	13,362.1	6,617.8	156.5	156.6	58.48	-6,490.4	-613.1	271.0	-5.2	276.20	0.981	Level 1		
13,600.0	6,759.1	13,462.1	6,617.7	158.8	158.9	58.53	-6,590.4	-613.1	270.9	-9.5	280.41	0.966	Level 1		
13,700.0	6,758.6	13,562.1	6,617.6	161.2	161.3	58.59	-6,690.4	-613.2	270.7	-13.9	284.62	0.951	Level 1		
13,800.0	6,758.2	13,662.1	6,617.4	163.5	163.6	58.64	-6,790.4	-613.3	270.6	-18.3	288.83	0.937	Level 1		
13,900.0	6,757.8	13,762.1	6,617.3	165.8	165.9	58.69	-6,890.4	-613.3	270.4	-22.6	293.05	0.923	Level 1		
14,000.0	6,757.3	13,862.1	6,617.1	168.2	168.3	58.75	-6,990.4	-613.4	270.3	-27.0	297.28	0.909	Level 1		
14,073.9	6,757.0	13,936.1	6,617.0	169.9	170.0	58.79	-7,064.3	-613.4	270.1	-30.3	300.41	0.899	Level 1		
14,074.3	6,757.0	13,936.4	6,617.0	169.9	170.0	58.79	-7,064.7	-613.4	270.1	-30.3	300.42	0.899	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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-203 - Wellbore #1 - Plan #2 (1-25-17)											Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	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	0.28	53.647			
200.0	200.0	200.0	200.0	0.4	0.4	91.38	-0.4	14.8	14.8	13.9	0.83	17.882			
300.0	300.0	300.0	300.0	0.7	0.7	91.38	-0.4	14.8	14.8	13.4	1.38	10.729			
400.0	400.0	400.0	400.0	1.0	1.0	91.38	-0.4	14.8	14.8	12.8	1.93	7.664			
500.0	500.0	500.0	500.0	1.2	1.2	91.38	-0.4	14.8	14.8	12.3	2.48	5.961			
600.0	600.0	600.0	600.0	1.5	1.5	91.38	-0.4	14.8	14.8	11.7	3.03	4.877			
700.0	700.0	700.0	700.0	1.8	1.8	91.38	-0.4	14.8	14.8	11.2	3.58	4.127			
800.0	800.0	800.0	800.0	2.1	2.1	91.38	-0.4	14.8	14.8	10.6	4.13	3.576			
900.0	900.0	900.0	900.0	2.3	2.3	91.38	-0.4	14.8	14.8	10.1	4.68	3.156			
1,000.0	1,000.0	1,000.0	1,000.0	2.6	2.6	91.38	-0.4	14.8	14.8	9.5	5.23	2.824			
1,100.0	1,100.0	1,100.0	1,100.0	2.9	2.9	91.38	-0.4	14.8	14.8	9.0	5.78	2.555			
1,200.0	1,200.0	1,200.0	1,200.0	3.2	3.2	91.38	-0.4	14.8	14.8	8.4	6.33	2.332			
1,300.0	1,300.0	1,300.0	1,300.0	3.4	3.4	91.38	-0.4	14.8	14.8	7.9	6.88	2.146			
1,400.0	1,400.0	1,400.0	1,400.0	3.7	3.7	91.38	-0.4	14.8	14.8	7.3	7.43	1.987 CC			
1,500.0	1,500.0	1,500.0	1,500.0	4.0	4.0	132.14	-0.4	14.8	15.6	7.6	7.98	1.957			
1,600.0	1,599.9	1,599.9	1,599.9	4.3	4.3	141.17	-0.4	14.8	18.5	10.0	8.52	2.169			
1,700.0	1,699.7	1,699.7	1,699.7	4.5	4.5	150.99	-0.4	14.8	23.9	14.9	9.06	2.643			
1,800.0	1,799.3	1,799.3	1,799.3	4.8	4.8	158.85	-0.4	14.8	32.2	22.7	9.59	3.364			
1,900.0	1,898.6	1,898.6	1,898.6	5.1	5.1	164.41	-0.4	14.8	43.4	33.3	10.11	4.294			
2,000.0	1,997.5	1,997.5	1,997.5	5.4	5.4	168.22	-0.4	14.8	57.4	46.7	10.63	5.397			
2,016.2	2,013.5	2,013.7	2,013.7	5.5	5.4	168.70	-0.3	14.8	59.9	49.2	10.72	5.588			
2,100.0	2,096.2	2,097.9	2,097.8	5.8	5.6	170.32	0.8	14.4	72.1	60.9	11.17	6.450			
2,200.0	2,194.9	2,198.9	2,198.8	6.1	5.9	170.85	4.6	13.3	84.6	72.9	11.72	7.214			
2,300.0	2,293.6	2,300.4	2,300.1	6.5	6.2	170.46	10.9	11.3	94.8	82.5	12.28	7.717			
2,400.0	2,392.3	2,402.4	2,401.6	6.9	6.5	169.39	19.9	8.6	102.7	89.9	12.85	7.994			
2,500.0	2,491.0	2,504.6	2,503.1	7.3	6.8	167.72	31.5	5.1	108.4	95.0	13.42	8.074			
2,600.0	2,589.8	2,606.6	2,604.1	7.7	7.1	165.45	45.6	0.8	112.0	97.9	14.02	7.988			
2,700.0	2,688.5	2,706.5	2,702.7	8.1	7.4	163.06	60.4	-3.7	114.8	100.2	14.62	7.855			
2,800.0	2,787.2	2,806.3	2,801.3	8.5	7.7	160.80	75.3	-8.2	117.9	102.7	15.24	7.737			
2,900.0	2,885.9	2,906.1	2,900.0	8.9	8.1	158.65	90.1	-12.7	121.2	105.3	15.88	7.630			
3,000.0	2,984.6	3,006.0	2,998.6	9.3	8.4	156.62	104.9	-17.2	124.6	108.1	16.54	7.533			
3,100.0	3,083.3	3,105.8	3,097.3	9.8	8.8	154.69	119.7	-21.7	128.2	110.9	17.22	7.444			
3,200.0	3,182.0	3,205.7	3,195.9	10.2	9.2	152.88	134.5	-26.2	131.9	114.0	17.91	7.362			
3,300.0	3,280.7	3,305.5	3,294.5	10.6	9.5	151.16	149.3	-30.6	135.7	117.1	18.62	7.286			
3,400.0	3,379.4	3,405.4	3,393.2	11.0	9.9	149.54	164.2	-35.1	139.6	120.3	19.35	7.217			
3,500.0	3,478.1	3,505.2	3,491.8	11.5	10.3	148.01	179.0	-39.6	143.7	123.6	20.09	7.152			
3,600.0	3,576.8	3,605.1	3,590.5	11.9	10.7	146.56	193.8	-44.1	147.8	127.0	20.85	7.092			
3,700.0	3,675.5	3,704.9	3,689.1	12.3	11.1	145.20	208.6	-48.6	152.1	130.5	21.61	7.036			
3,800.0	3,774.2	3,804.8	3,787.7	12.8	11.5	143.91	223.4	-53.1	156.4	134.0	22.39	6.984			
3,900.0	3,872.9	3,904.6	3,886.4	13.2	11.9	142.68	238.2	-57.6	160.8	137.6	23.18	6.936			
4,000.0	3,971.6	4,004.5	3,985.0	13.7	12.3	141.53	253.1	-62.1	165.2	141.3	23.98	6.891			
4,100.0	4,070.3	4,104.3	4,083.6	14.1	12.7	140.43	267.9	-66.6	169.8	145.0	24.79	6.849			
4,200.0	4,169.0	4,204.2	4,182.3	14.6	13.1	139.39	282.7	-71.1	174.3	148.7	25.60	6.810			
4,300.0	4,267.7	4,304.0	4,280.9	15.0	13.5	138.41	297.5	-75.6	179.0	152.6	26.42	6.774			
4,400.0	4,366.4	4,403.8	4,379.6	15.4	13.9	137.47	312.3	-80.1	183.7	156.4	27.25	6.740			
4,500.0	4,465.1	4,503.7	4,478.2	15.9	14.4	136.59	327.1	-84.6	188.4	160.3	28.08	6.709			
4,600.0	4,563.8	4,603.5	4,576.8	16.3	14.8	135.74	342.0	-89.1	193.2	164.3	28.92	6.679			
4,700.0	4,662.5	4,703.4	4,675.5	16.8	15.2	134.94	356.8	-93.6	198.0	168.2	29.77	6.651			
4,800.0	4,761.2	4,803.2	4,774.1	17.2	15.6	134.17	371.6	-98.1	202.8	172.2	30.62	6.626			
4,900.0	4,859.9	4,903.1	4,872.8	17.7	16.0	133.44	386.4	-102.6	207.7	176.3	31.47	6.602			

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-203 - Wellbore #1 - Plan #2 (1-25-17)														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
5,000.0	4,958.6	5,002.9	4,971.4	18.1	16.5	132.75	401.2	-107.1	212.7	180.3	32.32	6.579			
5,100.0	5,057.3	5,102.8	5,070.0	18.6	16.9	132.08	416.0	-111.6	217.6	184.4	33.18	6.558			
5,200.0	5,156.0	5,202.6	5,168.7	19.0	17.3	131.45	430.9	-116.0	222.6	188.5	34.04	6.538			
5,300.0	5,254.7	5,302.5	5,267.3	19.5	17.7	130.84	445.7	-120.5	227.6	192.7	34.91	6.520			
5,386.3	5,339.9	5,388.6	5,352.4	19.9	18.1	130.34	458.5	-124.4	231.9	196.3	35.66	6.504			
5,400.0	5,353.4	5,402.3	5,365.9	19.9	18.2	130.27	460.5	-125.0	232.6	196.8	35.77	6.502			
5,500.0	5,452.4	5,501.6	5,464.1	20.3	18.6	129.37	475.2	-129.5	236.3	199.6	36.60	6.454			
5,600.0	5,551.9	5,600.0	5,561.6	20.5	18.9	128.36	487.6	-133.3	238.5	201.2	37.31	6.394			
5,700.0	5,651.6	5,696.3	5,657.5	20.8	19.2	127.48	496.6	-136.0	239.8	201.9	37.91	6.325			
5,800.0	5,751.6	5,793.9	5,754.8	21.0	19.4	126.69	502.6	-137.8	240.0	201.5	38.43	6.244			
5,848.4	5,800.0	5,841.2	5,802.1	21.1	19.5	89.34	504.4	-138.3	239.7	201.0	38.65	6.201			
5,900.0	5,851.6	5,891.6	5,852.4	21.2	19.6	89.09	505.4	-138.7	239.4	200.5	38.88	6.156			
5,953.1	5,904.7	5,943.8	5,904.7	21.3	19.7	89.03	505.6	-138.7	239.3	200.2	39.10	6.120			
6,000.0	5,951.6	5,990.8	5,951.6	21.4	19.8	89.04	505.6	-138.7	239.3	200.0	39.29	6.090			
6,071.6	6,023.2	6,062.5	6,023.2	21.5	19.9	90.04	501.4	-138.7	239.3	199.8	39.42	6.069			
6,071.7	6,023.3	6,062.6	6,023.3	21.5	19.9	90.04	501.4	-138.7	239.3	199.8	39.42	6.069			
6,100.0	6,051.6	6,090.7	6,051.1	21.6	19.9	-89.28	498.0	-138.7	239.3	199.9	39.41	6.072			
6,150.0	6,101.4	6,140.0	6,099.8	21.6	19.9	-88.04	489.4	-138.7	239.4	200.1	39.32	6.089			
6,200.0	6,151.0	6,189.1	6,147.4	21.6	19.9	-86.81	477.8	-138.8	239.6	200.5	39.17	6.118			
6,250.0	6,200.0	6,237.8	6,193.9	21.6	19.8	-85.61	463.3	-138.8	240.0	201.0	38.96	6.160			
6,300.0	6,248.2	6,286.2	6,239.1	21.6	19.7	-84.42	446.0	-138.8	240.4	201.7	38.70	6.212			
6,350.0	6,295.5	6,334.3	6,282.9	21.5	19.6	-83.27	425.9	-138.8	240.9	202.5	38.41	6.273			
6,400.0	6,341.6	6,382.2	6,325.0	21.4	19.5	-82.16	403.3	-138.8	241.5	203.4	38.08	6.342			
6,450.0	6,386.3	6,429.8	6,365.5	21.3	19.4	-81.08	378.2	-138.8	242.2	204.4	37.74	6.417			
6,500.0	6,429.5	6,477.1	6,404.1	21.2	19.3	-80.05	350.9	-138.8	242.9	205.5	37.39	6.497			
6,550.0	6,470.9	6,524.2	6,440.7	21.1	19.2	-79.07	321.3	-138.9	243.7	206.6	37.04	6.578			
6,600.0	6,510.4	6,571.1	6,475.3	21.0	19.1	-78.13	289.7	-138.9	244.5	207.8	36.71	6.659			
6,650.0	6,547.9	6,617.7	6,507.8	20.8	19.0	-77.25	256.2	-138.9	245.3	208.9	36.41	6.737			
6,700.0	6,583.1	6,664.2	6,538.0	20.7	18.9	-76.43	220.9	-138.9	246.1	209.9	36.14	6.809			
6,750.0	6,615.8	6,710.5	6,565.9	20.6	18.8	-75.67	184.0	-139.0	246.9	211.0	35.93	6.872			
6,800.0	6,646.1	6,756.6	6,591.5	20.4	18.8	-74.96	145.6	-139.0	247.7	211.9	35.78	6.922			
6,850.0	6,673.7	6,802.6	6,614.6	20.3	18.8	-74.32	105.9	-139.0	248.4	212.7	35.71	6.957			
6,900.0	6,698.5	6,850.0	6,635.9	20.2	18.8	-73.72	63.5	-139.1	249.1	213.4	35.73	6.973			
6,950.0	6,720.4	6,894.1	6,653.3	20.1	18.9	-73.23	23.1	-139.1	249.8	213.9	35.85	6.968			
7,000.0	6,739.3	6,939.7	6,668.8	20.0	19.0	-72.78	-19.8	-139.1	250.4	214.3	36.07	6.941			
7,050.0	6,755.1	6,985.2	6,681.7	19.9	19.3	-72.39	-63.4	-139.2	250.9	214.5	36.40	6.892			
7,100.0	6,767.9	7,030.6	6,692.0	19.8	19.5	-72.08	-107.7	-139.2	251.3	214.5	36.85	6.820			
7,150.0	6,777.4	7,075.9	6,699.6	20.1	19.9	-71.83	-152.4	-139.2	251.6	214.2	37.40	6.728			
7,200.0	6,783.7	7,121.3	6,704.6	20.6	20.2	-71.64	-197.4	-139.3	251.9	213.8	38.07	6.616			
7,250.0	6,786.7	7,166.5	6,706.9	21.1	20.7	-71.53	-242.6	-139.3	252.1	213.2	38.85	6.489			
7,274.8	6,787.0	7,189.1	6,707.0	21.3	20.9	-71.49	-265.2	-139.3	252.1	212.8	39.26	6.421			
7,274.8	6,787.0	7,189.1	6,707.0	21.3	20.9	-71.49	-265.2	-139.3	252.1	212.8	39.26	6.421			
7,276.1	6,787.0	7,190.5	6,707.0	21.4	20.9	-71.49	-266.5	-139.3	252.1	212.8	39.28	6.418			
7,300.0	6,786.9	7,214.4	6,706.8	21.6	21.1	-71.48	-290.5	-139.3	252.1	212.4	39.70	6.350			
7,400.0	6,786.4	7,314.4	6,706.2	22.8	22.3	-71.43	-390.5	-139.4	252.2	210.3	41.89	6.019			
7,500.0	6,786.0	7,414.4	6,705.5	24.2	23.6	-71.38	-490.5	-139.5	252.2	207.8	44.43	5.676			
7,600.0	6,785.6	7,514.4	6,704.8	25.7	25.1	-71.34	-590.5	-139.6	252.3	205.0	47.26	5.338			
7,700.0	6,785.1	7,614.4	6,704.2	27.3	26.8	-71.29	-690.5	-139.6	252.3	202.0	50.33	5.014			
7,800.0	6,784.7	7,714.4	6,703.5	29.0	28.5	-71.24	-790.4	-139.7	252.4	198.8	53.59	4.709			
7,900.0	6,784.2	7,814.4	6,702.8	30.8	30.3	-71.19	-890.4	-139.8	252.4	195.4	57.02	4.427			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well 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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-203 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program:		0-MWD											Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
8,000.0	6,783.8	7,914.4	6,702.2	32.6	32.2	-71.14	-990.4	-139.9	252.5	191.9	60.59	4.167		
8,100.0	6,783.4	8,014.4	6,701.5	34.6	34.1	-71.09	-1,090.4	-140.0	252.5	188.3	64.26	3.930		
8,200.0	6,782.9	8,114.4	6,700.9	36.5	36.1	-71.04	-1,190.4	-140.0	252.6	184.5	68.03	3.713		
8,300.0	6,782.5	8,214.4	6,700.2	38.5	38.1	-70.99	-1,290.4	-140.1	252.6	180.7	71.88	3.514		
8,400.0	6,782.0	8,314.4	6,699.5	40.6	40.2	-70.94	-1,390.4	-140.2	252.7	176.9	75.80	3.334		
8,500.0	6,781.6	8,414.4	6,698.9	42.6	42.2	-70.90	-1,490.4	-140.3	252.7	173.0	79.77	3.168		
8,600.0	6,781.2	8,514.4	6,698.2	44.7	44.4	-70.85	-1,590.4	-140.4	252.8	169.0	83.79	3.017		
8,700.0	6,780.7	8,614.4	6,697.6	46.8	46.5	-70.80	-1,690.4	-140.4	252.8	165.0	87.85	2.878		
8,800.0	6,780.3	8,714.4	6,696.9	49.0	48.6	-70.75	-1,790.4	-140.5	252.9	161.0	91.95	2.750		
8,900.0	6,779.8	8,814.4	6,696.2	51.1	50.8	-70.70	-1,890.4	-140.6	253.0	156.9	96.07	2.633		
9,000.0	6,779.4	8,914.4	6,695.6	53.3	53.0	-70.65	-1,990.4	-140.7	253.0	152.8	100.23	2.524		
9,100.0	6,778.9	9,014.4	6,694.9	55.5	55.2	-70.60	-2,090.4	-140.7	253.1	148.7	104.40	2.424		
9,200.0	6,778.5	9,114.4	6,694.2	57.7	57.4	-70.56	-2,190.4	-140.8	253.1	144.5	108.60	2.331		
9,300.0	6,778.1	9,214.4	6,693.6	59.9	59.7	-70.51	-2,290.4	-140.9	253.2	140.4	112.81	2.244		
9,400.0	6,777.6	9,314.4	6,692.9	62.1	61.9	-70.46	-2,390.4	-141.0	253.2	136.2	117.03	2.164		
9,500.0	6,777.2	9,414.4	6,692.3	64.4	64.1	-70.41	-2,490.4	-141.1	253.3	132.0	121.28	2.089		
9,600.0	6,776.7	9,514.4	6,691.6	66.6	66.4	-70.36	-2,590.4	-141.1	253.3	127.8	125.53	2.018		
9,700.0	6,776.3	9,614.4	6,690.9	68.9	68.6	-70.31	-2,690.4	-141.2	253.4	123.6	129.79	1.952		
9,800.0	6,775.9	9,714.4	6,690.3	71.1	70.9	-70.26	-2,790.4	-141.3	253.5	119.4	134.06	1.891		
9,900.0	6,775.4	9,814.4	6,689.6	73.4	73.2	-70.22	-2,890.4	-141.4	253.5	115.2	138.34	1.832		
10,000.0	6,775.0	9,914.4	6,689.0	75.6	75.4	-70.17	-2,990.4	-141.5	253.6	110.9	142.63	1.778		
10,100.0	6,774.5	10,014.4	6,688.3	77.9	77.7	-70.12	-3,090.4	-141.5	253.6	106.7	146.92	1.726		
10,200.0	6,774.1	10,114.4	6,687.6	80.2	80.0	-70.07	-3,190.4	-141.6	253.7	102.5	151.22	1.678		
10,300.0	6,773.7	10,214.4	6,687.0	82.5	82.3	-70.02	-3,290.4	-141.7	253.7	98.2	155.53	1.631		
10,400.0	6,773.2	10,314.4	6,686.3	84.7	84.6	-69.97	-3,390.4	-141.8	253.8	94.0	159.84	1.588		
10,500.0	6,772.8	10,414.4	6,685.6	87.0	86.9	-69.93	-3,490.4	-141.8	253.8	89.7	164.15	1.546		
10,600.0	6,772.3	10,514.4	6,685.0	89.3	89.2	-69.88	-3,590.4	-141.9	253.9	85.4	168.46	1.507		
10,700.0	6,771.9	10,614.4	6,684.3	91.6	91.5	-69.83	-3,690.4	-142.0	254.0	81.2	172.78	1.470 Level 3		
10,800.0	6,771.4	10,714.4	6,683.7	93.9	93.8	-69.78	-3,790.4	-142.1	254.0	76.9	177.10	1.434 Level 3		
10,900.0	6,771.0	10,814.4	6,683.0	96.2	96.1	-69.73	-3,890.4	-142.2	254.1	72.7	181.42	1.400 Level 3		
11,000.0	6,770.6	10,914.4	6,682.3	98.5	98.4	-69.69	-3,990.4	-142.2	254.1	68.4	185.75	1.368 Level 3		
11,100.0	6,770.1	11,014.4	6,681.7	100.8	100.7	-69.64	-4,090.4	-142.3	254.2	64.1	190.08	1.337 Level 3		
11,200.0	6,769.7	11,114.4	6,681.0	103.1	103.0	-69.59	-4,190.4	-142.4	254.3	59.9	194.40	1.308 Level 3		
11,300.0	6,769.2	11,214.4	6,680.3	105.4	105.3	-69.54	-4,290.4	-142.5	254.3	55.6	198.73	1.280 Level 3		
11,400.0	6,768.8	11,314.4	6,679.7	107.7	107.6	-69.49	-4,390.4	-142.5	254.4	51.3	203.06	1.253 Level 3		
11,500.0	6,768.4	11,414.4	6,679.0	110.0	109.9	-69.44	-4,490.4	-142.6	254.4	47.0	207.39	1.227 Level 2		
11,600.0	6,767.9	11,514.4	6,678.4	112.3	112.2	-69.40	-4,590.4	-142.7	254.5	42.8	211.72	1.202 Level 2		
11,700.0	6,767.5	11,614.4	6,677.7	114.7	114.6	-69.35	-4,690.4	-142.8	254.6	38.5	216.05	1.178 Level 2		
11,800.0	6,767.0	11,714.4	6,677.0	117.0	116.9	-69.30	-4,790.3	-142.9	254.6	34.2	220.38	1.155 Level 2		
11,900.0	6,766.6	11,814.4	6,676.4	119.3	119.2	-69.25	-4,890.3	-142.9	254.7	30.0	224.71	1.133 Level 2		
12,000.0	6,766.2	11,914.4	6,675.7	121.6	121.5	-69.20	-4,990.3	-143.0	254.7	25.7	229.04	1.112 Level 2		
12,100.0	6,765.7	12,014.4	6,675.1	123.9	123.9	-69.16	-5,090.3	-143.1	254.8	21.4	233.37	1.092 Level 2		
12,200.0	6,765.3	12,114.4	6,674.4	126.2	126.2	-69.11	-5,190.3	-143.2	254.9	17.2	237.70	1.072 Level 2		
12,300.0	6,764.8	12,214.4	6,673.7	128.6	128.5	-69.06	-5,290.3	-143.3	254.9	12.9	242.02	1.053 Level 2		
12,400.0	6,764.4	12,314.4	6,673.1	130.9	130.8	-69.01	-5,390.3	-143.3	255.0	8.6	246.35	1.035 Level 2		
12,500.0	6,763.9	12,414.4	6,672.4	133.2	133.2	-68.96	-5,490.3	-143.4	255.0	4.4	250.68	1.017 Level 2		
12,600.0	6,763.5	12,514.4	6,671.7	135.5	135.5	-68.92	-5,590.3	-143.5	255.1	0.1	255.00	1.000 Level 2		
12,700.0	6,763.1	12,614.4	6,671.1	137.9	137.8	-68.87	-5,690.3	-143.6	255.2	-4.2	259.33	0.984 Level 1		
12,800.0	6,762.6	12,714.4	6,670.4	140.2	140.1	-68.82	-5,790.3	-143.6	255.2	-8.4	263.65	0.968 Level 1		
12,900.0	6,762.2	12,814.4	6,669.8	142.5	142.5	-68.77	-5,890.3	-143.7	255.3	-12.7	267.97	0.953 Level 1		
13,000.0	6,761.7	12,914.4	6,669.1	144.8	144.8	-68.73	-5,990.3	-143.8	255.3	-17.0	272.29	0.938 Level 1		

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-203 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
13,100.0	6,761.3	13,014.4	6,668.4	147.2	147.1	-68.68	-6,090.3	-143.9	255.4	-21.2	276.61	0.923	Level 1	
13,200.0	6,760.9	13,114.4	6,667.8	149.5	149.5	-68.63	-6,190.3	-144.0	255.5	-25.5	280.93	0.909	Level 1	
13,300.0	6,760.4	13,214.4	6,667.1	151.8	151.8	-68.58	-6,290.3	-144.0	255.5	-29.7	285.25	0.896	Level 1	
13,400.0	6,760.0	13,314.4	6,666.4	154.2	154.1	-68.54	-6,390.3	-144.1	255.6	-34.0	289.56	0.883	Level 1	
13,500.0	6,759.5	13,414.4	6,665.8	156.5	156.5	-68.49	-6,490.3	-144.2	255.7	-38.2	293.88	0.870	Level 1	
13,600.0	6,759.1	13,514.4	6,665.1	158.8	158.8	-68.44	-6,590.3	-144.3	255.7	-42.5	298.19	0.858	Level 1	
13,700.0	6,758.6	13,614.4	6,664.5	161.2	161.1	-68.39	-6,690.3	-144.4	255.8	-46.7	302.50	0.846	Level 1	
13,800.0	6,758.2	13,714.4	6,663.8	163.5	163.5	-68.35	-6,790.3	-144.4	255.8	-51.0	306.81	0.834	Level 1	
13,900.0	6,757.8	13,814.4	6,663.1	165.8	165.8	-68.30	-6,890.3	-144.5	255.9	-55.2	311.12	0.823	Level 1	
14,000.0	6,757.3	13,914.4	6,662.5	168.2	168.1	-68.25	-6,990.3	-144.6	256.0	-59.5	315.42	0.812	Level 1	
14,039.2	6,757.2	13,953.6	6,662.2	169.1	169.0	-68.23	-7,029.5	-144.6	256.0	-61.1	317.11	0.807	Level 1	
14,073.9	6,757.0	13,986.6	6,662.0	169.9	169.8	-68.22	-7,062.5	-144.6	256.0	-62.5	318.57	0.804	Level 1	
14,074.3	6,757.0	13,986.6	6,662.0	169.9	169.8	-68.22	-7,062.5	-144.6	256.0	-62.6	318.57	0.804	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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)											Offset Site Error:		0.0 ft
Survey Program:		0-MWD											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance								
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
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	29.8	0.28	109.288			
200.0	200.0	200.0	200.0	0.4	0.4	-89.99	0.0	-30.1	30.1	29.3	0.83	36.429			
300.0	300.0	300.0	300.0	0.7	0.7	-89.99	0.0	-30.1	30.1	28.7	1.38	21.858			
400.0	400.0	400.0	400.0	1.0	1.0	-89.99	0.0	-30.1	30.1	28.2	1.93	15.613			
500.0	500.0	500.0	500.0	1.2	1.2	-89.99	0.0	-30.1	30.1	27.6	2.48	12.143			
600.0	600.0	600.0	600.0	1.5	1.5	-89.99	0.0	-30.1	30.1	27.1	3.03	9.935			
700.0	700.0	700.0	700.0	1.8	1.8	-89.99	0.0	-30.1	30.1	26.5	3.58	8.407			
800.0	800.0	800.0	800.0	2.1	2.1	-89.99	0.0	-30.1	30.1	26.0	4.13	7.286			
900.0	900.0	900.0	900.0	2.3	2.3	-89.99	0.0	-30.1	30.1	25.4	4.68	6.429			
1,000.0	1,000.0	1,000.0	1,000.0	2.6	2.6	-89.99	0.0	-30.1	30.1	24.9	5.23	5.752 CC, ES			
1,100.0	1,100.0	1,099.3	1,099.3	2.9	2.9	-88.77	0.7	-31.2	31.2	25.4	5.77	5.407			
1,200.0	1,200.0	1,198.5	1,198.4	3.2	3.1	-85.57	2.7	-34.5	34.6	28.3	6.31	5.491			
1,300.0	1,300.0	1,297.4	1,297.1	3.4	3.4	-81.48	6.0	-40.0	40.5	33.7	6.85	5.918			
1,400.0	1,400.0	1,395.9	1,395.2	3.7	3.7	-77.44	10.6	-47.6	49.0	41.6	7.40	6.630			
1,500.0	1,500.0	1,494.0	1,492.6	4.0	4.0	-37.61	16.5	-57.4	59.1	51.2	7.92	7.462			
1,600.0	1,599.9	1,591.9	1,589.5	4.3	4.3	-36.33	23.7	-69.3	69.7	61.2	8.46	8.239			
1,700.0	1,699.7	1,689.4	1,685.7	4.5	4.7	-36.01	32.1	-83.2	80.6	71.6	9.00	8.961			
1,800.0	1,799.3	1,786.6	1,781.1	4.8	5.1	-36.29	41.8	-99.2	91.9	82.4	9.55	9.630			
1,900.0	1,898.6	1,883.5	1,875.7	5.1	5.5	-36.98	52.6	-117.2	103.6	93.5	10.11	10.248			
2,000.0	1,997.5	1,982.7	1,972.2	5.4	6.0	-38.13	64.5	-136.8	114.6	103.9	10.69	10.716			
2,016.2	2,013.5	1,998.8	1,987.8	5.5	6.1	-38.37	66.4	-139.9	116.2	105.4	10.79	10.767			
2,100.0	2,096.2	2,082.2	2,068.9	5.8	6.5	-39.65	76.4	-156.4	124.4	113.0	11.32	10.983			
2,200.0	2,194.9	2,181.7	2,165.7	6.1	7.0	-40.96	88.3	-176.1	134.2	122.2	11.97	11.204			
2,300.0	2,293.6	2,281.1	2,262.5	6.5	7.6	-42.10	100.2	-195.8	144.0	131.4	12.65	11.388			
2,400.0	2,392.3	2,380.6	2,359.3	6.9	8.1	-43.09	112.1	-215.5	153.9	140.6	13.34	11.542			
2,500.0	2,491.0	2,480.1	2,456.1	7.3	8.7	-43.96	124.0	-235.2	163.9	149.8	14.04	11.671			
2,600.0	2,589.8	2,579.6	2,552.8	7.7	9.2	-44.73	135.9	-254.8	173.9	159.1	14.76	11.778			
2,700.0	2,688.5	2,679.0	2,649.6	8.1	9.8	-45.41	147.8	-274.5	183.9	168.4	15.50	11.867			
2,800.0	2,787.2	2,778.5	2,746.4	8.5	10.4	-46.03	159.7	-294.2	193.9	177.7	16.24	11.942			
2,900.0	2,885.9	2,878.0	2,843.2	8.9	10.9	-46.58	171.6	-313.9	204.0	187.0	16.99	12.004			
3,000.0	2,984.6	2,977.5	2,940.0	9.3	11.5	-47.09	183.5	-333.6	214.1	196.3	17.76	12.056			
3,100.0	3,083.3	3,076.9	3,036.7	9.8	12.1	-47.54	195.4	-353.2	224.2	205.6	18.53	12.099			
3,200.0	3,182.0	3,176.4	3,133.5	10.2	12.7	-47.96	207.3	-372.9	234.3	215.0	19.30	12.135			
3,300.0	3,280.7	3,275.9	3,230.3	10.6	13.3	-48.34	219.2	-392.6	244.4	224.3	20.09	12.165			
3,400.0	3,379.4	3,375.4	3,327.1	11.0	13.9	-48.70	231.1	-412.3	254.5	233.6	20.88	12.191			
3,500.0	3,478.1	3,474.8	3,423.9	11.5	14.5	-49.02	243.0	-432.0	264.6	243.0	21.67	12.211			
3,600.0	3,576.8	3,574.3	3,520.6	11.9	15.1	-49.32	254.9	-451.6	274.8	252.3	22.47	12.229			
3,700.0	3,675.5	3,673.8	3,617.4	12.3	15.7	-49.61	266.8	-471.3	284.9	261.6	23.27	12.243			
3,800.0	3,774.2	3,773.2	3,714.2	12.8	16.2	-49.87	278.7	-491.0	295.1	271.0	24.08	12.254			
3,900.0	3,872.9	3,872.7	3,811.0	13.2	16.8	-50.11	290.6	-510.7	305.2	280.3	24.89	12.264			
4,000.0	3,971.6	3,972.2	3,907.8	13.7	17.4	-50.34	302.4	-530.4	315.4	289.7	25.70	12.271			
4,100.0	4,070.3	4,071.7	4,004.5	14.1	18.0	-50.55	314.3	-550.0	325.6	299.0	26.52	12.277			
4,200.0	4,169.0	4,171.1	4,101.3	14.6	18.6	-50.75	326.2	-569.7	335.7	308.4	27.34	12.282			
4,300.0	4,267.7	4,270.6	4,198.1	15.0	19.2	-50.94	338.1	-589.4	345.9	317.8	28.16	12.285			
4,400.0	4,366.4	4,370.1	4,294.9	15.4	19.8	-51.12	350.0	-609.1	356.1	327.1	28.98	12.288			
4,500.0	4,465.1	4,469.6	4,391.7	15.9	20.4	-51.29	361.9	-628.8	366.3	336.5	29.81	12.289			
4,600.0	4,563.8	4,569.0	4,488.4	16.3	21.0	-51.45	373.8	-648.4	376.5	345.8	30.63	12.290			
4,700.0	4,662.5	4,668.5	4,585.2	16.8	21.6	-51.60	385.7	-668.1	386.7	355.2	31.46	12.290			
4,800.0	4,761.2	4,768.0	4,682.0	17.2	22.2	-51.74	397.6	-687.8	396.8	364.6	32.29	12.290			
4,900.0	4,859.9	4,867.5	4,778.8	17.7	22.8	-51.88	409.5	-707.5	407.0	373.9	33.12	12.289			

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
5,000.0	4,958.6	4,966.9	4,875.6	18.1	23.4	-52.01	421.4	-727.2	417.2	383.3	33.96	12.288		
5,100.0	5,057.3	5,066.4	4,972.3	18.6	24.1	-52.13	433.3	-746.8	427.4	392.6	34.79	12.286		
5,200.0	5,156.0	5,165.9	5,069.1	19.0	24.7	-52.25	445.2	-766.5	437.6	402.0	35.63	12.285		
5,300.0	5,254.7	5,269.9	5,170.3	19.5	25.3	-52.38	457.6	-786.9	447.7	411.2	36.47	12.276		
5,386.3	5,339.9	5,369.3	5,267.7	19.9	25.7	-52.67	468.0	-804.2	454.4	417.2	37.22	12.209		
5,400.0	5,353.4	5,385.1	5,283.2	19.9	25.8	-52.75	469.5	-806.7	455.2	417.9	37.33	12.194		
5,500.0	5,452.4	5,500.7	5,397.3	20.3	26.2	-53.23	479.1	-822.5	460.6	422.6	38.06	12.101		
5,600.0	5,551.9	5,616.5	5,512.2	20.5	26.5	-53.59	486.3	-834.5	464.7	426.0	38.69	12.011		
5,700.0	5,651.6	5,732.4	5,627.8	20.8	26.8	-53.82	491.1	-842.5	467.4	428.2	39.21	11.921		
5,800.0	5,751.6	5,848.5	5,743.8	21.0	27.0	-53.94	493.5	-846.4	468.8	429.2	39.63	11.831		
5,848.4	5,800.0	5,904.7	5,800.0	21.1	27.1	-90.95	493.8	-846.9	469.0	429.2	39.80	11.783		
5,900.0	5,851.6	5,956.3	5,851.6	21.2	27.2	-90.95	493.8	-846.9	469.0	429.0	40.00	11.725		
6,000.0	5,951.6	6,056.3	5,951.6	21.4	27.3	-90.95	493.8	-846.9	469.0	428.6	40.40	11.608		
6,071.6	6,023.2	6,127.2	6,022.4	21.5	27.4	-91.23	491.5	-846.9	469.0	428.3	40.72	11.518		
6,100.0	6,051.6	6,155.1	6,050.1	21.6	27.4	88.47	488.8	-846.9	469.1	428.2	40.85	11.482		
6,150.0	6,101.4	6,204.0	6,098.5	21.6	27.4	88.01	481.7	-846.9	469.2	428.1	41.03	11.436		
6,200.0	6,151.0	6,252.7	6,146.1	21.6	27.4	87.55	471.5	-846.9	469.3	428.2	41.13	11.410		
6,250.0	6,200.0	6,301.2	6,192.8	21.6	27.4	87.11	458.4	-846.9	469.5	428.3	41.17	11.404		
6,300.0	6,248.2	6,350.0	6,238.9	21.6	27.3	86.67	442.3	-846.9	469.7	428.5	41.14	11.416		
6,350.0	6,295.5	6,397.5	6,282.6	21.5	27.3	86.26	423.8	-846.9	469.9	428.8	41.05	11.446		
6,400.0	6,341.6	6,445.3	6,325.4	21.4	27.2	85.86	402.4	-846.9	470.1	429.2	40.91	11.490		
6,450.0	6,386.3	6,493.0	6,366.7	21.3	27.1	85.48	378.5	-847.0	470.4	429.6	40.73	11.547		
6,500.0	6,429.5	6,540.5	6,406.2	21.2	27.0	85.12	352.2	-847.0	470.6	430.1	40.52	11.614		
6,550.0	6,470.9	6,587.9	6,443.9	21.1	26.9	84.78	323.5	-847.0	470.9	430.6	40.29	11.688		
6,600.0	6,510.4	6,635.1	6,479.6	21.0	26.8	84.46	292.7	-847.0	471.1	431.1	40.04	11.764		
6,650.0	6,547.9	6,682.1	6,513.3	20.8	26.7	84.16	259.8	-847.0	471.3	431.5	39.81	11.839		
6,700.0	6,583.1	6,729.1	6,544.8	20.7	26.5	83.89	225.1	-847.0	471.6	432.0	39.60	11.908		
6,750.0	6,615.8	6,775.9	6,574.0	20.6	26.4	83.64	188.5	-847.1	471.8	432.4	39.43	11.965		
6,800.0	6,646.1	6,822.6	6,600.9	20.4	26.3	83.42	150.3	-847.1	472.0	432.7	39.32	12.004		
6,850.0	6,673.7	6,869.2	6,625.4	20.3	26.2	83.23	110.6	-847.1	472.2	432.9	39.28	12.022		
6,900.0	6,698.5	6,915.8	6,647.3	20.2	26.1	83.06	69.6	-847.1	472.4	433.0	39.32	12.012		
6,950.0	6,720.4	6,962.2	6,666.7	20.1	26.0	82.92	27.4	-847.1	472.5	433.0	39.47	11.971		
7,000.0	6,739.3	7,008.7	6,683.5	20.0	26.0	82.81	-15.9	-847.2	472.6	432.9	39.73	11.897		
7,050.0	6,755.1	7,055.0	6,697.6	19.9	25.9	82.73	-60.1	-847.2	472.7	432.6	40.10	11.788		
7,100.0	6,767.9	7,100.0	6,708.7	19.8	25.9	82.67	-103.7	-847.2	472.8	432.2	40.59	11.647		
7,150.0	6,777.4	7,147.7	6,717.6	20.1	25.9	82.65	-150.5	-847.2	472.8	431.6	41.22	11.469		
7,200.0	6,783.7	7,194.0	6,723.5	20.6	26.0	82.65	-196.5	-847.3	472.8	430.8	41.97	11.266		
7,250.0	6,786.7	7,240.4	6,726.5	21.1	26.1	82.68	-242.7	-847.3	472.8	429.9	42.82	11.040		
7,274.8	6,787.0	7,263.3	6,727.0	21.3	26.2	82.71	-265.7	-847.3	472.7	429.5	43.29	10.921		
7,274.8	6,787.0	7,263.3	6,727.0	21.3	26.2	82.71	-265.7	-847.3	472.7	429.5	43.29	10.921		
7,276.1	6,787.0	7,264.6	6,727.0	21.4	26.2	82.71	-266.9	-847.3	472.7	429.4	43.31	10.915		
7,283.6	6,787.0	7,271.6	6,727.0	21.4	26.2	82.71	-273.9	-847.3	472.7	429.3	43.44	10.882		
7,300.0	6,786.9	7,287.7	6,726.9	21.6	26.3	82.71	-290.1	-847.3	472.7	429.0	43.73	10.811		
7,400.0	6,786.4	7,387.7	6,726.2	22.8	26.9	82.67	-390.1	-847.4	472.8	426.8	45.95	10.289		
7,500.0	6,786.0	7,487.7	6,725.4	24.2	27.7	82.64	-490.1	-847.4	472.8	424.3	48.53	9.744		
7,600.0	6,785.6	7,587.7	6,724.7	25.7	28.9	82.60	-590.1	-847.5	472.9	421.5	51.40	9.200		
7,700.0	6,785.1	7,687.7	6,724.0	27.3	30.2	82.57	-690.1	-847.5	472.9	418.4	54.52	8.674		
7,800.0	6,784.7	7,787.7	6,723.2	29.0	31.7	82.53	-790.1	-847.6	472.9	415.1	57.85	8.175		
7,900.0	6,784.2	7,887.7	6,722.5	30.8	33.3	82.50	-890.1	-847.7	473.0	411.6	61.35	7.709		
8,000.0	6,783.8	7,987.7	6,721.7	32.6	35.0	82.46	-990.1	-847.7	473.0	408.0	65.00	7.277		

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
8,100.0	6,783.4	8,087.7	6,721.0	34.6	36.8	82.43	-1,090.1	-847.8	473.1	404.3	68.77	6.878			
8,200.0	6,782.9	8,187.7	6,720.3	36.5	38.6	82.39	-1,190.0	-847.9	473.1	400.5	72.65	6.512			
8,300.0	6,782.5	8,287.7	6,719.5	38.5	40.5	82.36	-1,290.0	-847.9	473.1	396.5	76.61	6.176			
8,400.0	6,782.0	8,387.7	6,718.8	40.6	42.5	82.32	-1,390.0	-848.0	473.2	392.5	80.65	5.867			
8,500.0	6,781.6	8,487.7	6,718.1	42.6	44.5	82.28	-1,490.0	-848.0	473.2	388.5	84.75	5.584			
8,600.0	6,781.2	8,587.7	6,717.3	44.7	46.5	82.25	-1,590.0	-848.1	473.3	384.4	88.91	5.323			
8,700.0	6,780.7	8,687.7	6,716.6	46.8	48.5	82.21	-1,690.0	-848.2	473.3	380.2	93.11	5.083			
8,800.0	6,780.3	8,787.7	6,715.9	49.0	50.6	82.18	-1,790.0	-848.2	473.4	376.0	97.36	4.862			
8,900.0	6,779.8	8,887.7	6,715.1	51.1	52.7	82.14	-1,890.0	-848.3	473.4	371.8	101.64	4.658			
9,000.0	6,779.4	8,987.7	6,714.4	53.3	54.8	82.11	-1,990.0	-848.3	473.4	367.5	105.95	4.469			
9,100.0	6,778.9	9,087.7	6,713.6	55.5	56.9	82.07	-2,090.0	-848.4	473.5	363.2	110.29	4.293			
9,200.0	6,778.5	9,187.7	6,712.9	57.7	59.1	82.04	-2,190.0	-848.5	473.5	358.9	114.65	4.130			
9,300.0	6,778.1	9,287.7	6,712.2	59.9	61.2	82.00	-2,290.0	-848.5	473.6	354.5	119.04	3.978			
9,400.0	6,777.6	9,387.7	6,711.4	62.1	63.4	81.97	-2,390.0	-848.6	473.6	350.2	123.44	3.837			
9,500.0	6,777.2	9,487.7	6,710.7	64.4	65.6	81.93	-2,490.0	-848.6	473.7	345.8	127.86	3.704			
9,600.0	6,776.7	9,587.7	6,710.0	66.6	67.8	81.90	-2,590.0	-848.7	473.7	341.4	132.30	3.580			
9,700.0	6,776.3	9,687.7	6,709.2	68.9	70.0	81.86	-2,690.0	-848.8	473.7	337.0	136.75	3.464			
9,800.0	6,775.9	9,787.7	6,708.5	71.1	72.2	81.83	-2,790.0	-848.8	473.8	332.6	141.22	3.355			
9,900.0	6,775.4	9,887.7	6,707.8	73.4	74.4	81.79	-2,890.0	-848.9	473.8	328.1	145.69	3.252			
10,000.0	6,775.0	9,987.7	6,707.0	75.6	76.7	81.76	-2,990.0	-848.9	473.9	323.7	150.17	3.155			
10,100.0	6,774.5	10,087.7	6,706.3	77.9	78.9	81.72	-3,090.0	-849.0	473.9	319.2	154.67	3.064			
10,200.0	6,774.1	10,187.7	6,705.6	80.2	81.1	81.68	-3,190.0	-849.1	474.0	314.8	159.17	2.978			
10,300.0	6,773.7	10,287.7	6,704.8	82.5	83.4	81.65	-3,290.0	-849.1	474.0	310.3	163.68	2.896			
10,400.0	6,773.2	10,387.7	6,704.1	84.7	85.7	81.61	-3,390.0	-849.2	474.0	305.8	168.20	2.818			
10,500.0	6,772.8	10,487.7	6,703.3	87.0	87.9	81.58	-3,490.0	-849.3	474.1	301.4	172.72	2.745			
10,600.0	6,772.3	10,587.7	6,702.6	89.3	90.2	81.54	-3,590.0	-849.3	474.1	296.9	177.25	2.675			
10,700.0	6,771.9	10,687.7	6,701.9	91.6	92.4	81.51	-3,690.0	-849.4	474.2	292.4	181.78	2.608			
10,800.0	6,771.4	10,787.7	6,701.1	93.9	94.7	81.47	-3,790.0	-849.4	474.2	287.9	186.32	2.545			
10,900.0	6,771.0	10,887.7	6,700.4	96.2	97.0	81.44	-3,890.0	-849.5	474.3	283.4	190.87	2.485			
11,000.0	6,770.6	10,987.7	6,699.7	98.5	99.3	81.40	-3,990.0	-849.6	474.3	278.9	195.41	2.427			
11,100.0	6,770.1	11,087.7	6,698.9	100.8	101.6	81.37	-4,090.0	-849.6	474.4	274.4	199.96	2.372			
11,200.0	6,769.7	11,187.7	6,698.2	103.1	103.8	81.33	-4,190.0	-849.7	474.4	269.9	204.52	2.320			
11,300.0	6,769.2	11,287.7	6,697.5	105.4	106.1	81.30	-4,289.9	-849.7	474.5	265.4	209.08	2.269			
11,400.0	6,768.8	11,387.7	6,696.7	107.7	108.4	81.26	-4,389.9	-849.8	474.5	260.9	213.64	2.221			
11,500.0	6,768.4	11,487.7	6,696.0	110.0	110.7	81.23	-4,489.9	-849.9	474.6	256.4	218.20	2.175			
11,600.0	6,767.9	11,587.7	6,695.2	112.3	113.0	81.19	-4,589.9	-849.9	474.6	251.8	222.76	2.130			
11,700.0	6,767.5	11,687.7	6,694.5	114.7	115.3	81.16	-4,689.9	-850.0	474.6	247.3	227.33	2.088			
11,800.0	6,767.0	11,787.7	6,693.8	117.0	117.6	81.12	-4,789.9	-850.0	474.7	242.8	231.90	2.047			
11,900.0	6,766.6	11,887.7	6,693.0	119.3	119.9	81.09	-4,889.9	-850.1	474.7	238.3	236.47	2.008			
12,000.0	6,766.2	11,987.7	6,692.3	121.6	122.2	81.05	-4,989.9	-850.2	474.8	233.7	241.05	1.970			
12,100.0	6,765.7	12,087.7	6,691.6	123.9	124.5	81.02	-5,089.9	-850.2	474.8	229.2	245.62	1.933			
12,200.0	6,765.3	12,187.7	6,690.8	126.2	126.8	80.98	-5,189.9	-850.3	474.9	224.7	250.20	1.898			
12,300.0	6,764.8	12,287.7	6,690.1	128.6	129.1	80.95	-5,289.9	-850.3	474.9	220.2	254.77	1.864			
12,400.0	6,764.4	12,387.7	6,689.4	130.9	131.4	80.91	-5,389.9	-850.4	475.0	215.6	259.35	1.831			
12,500.0	6,763.9	12,487.7	6,688.6	133.2	133.8	80.88	-5,489.9	-850.5	475.0	211.1	263.93	1.800			
12,600.0	6,763.5	12,587.7	6,687.9	135.5	136.1	80.84	-5,589.9	-850.5	475.1	206.6	268.51	1.769			
12,700.0	6,763.1	12,687.7	6,687.2	137.9	138.4	80.81	-5,689.9	-850.6	475.1	202.0	273.09	1.740			
12,800.0	6,762.6	12,787.7	6,686.4	140.2	140.7	80.77	-5,789.9	-850.7	475.2	197.5	277.68	1.711			
12,900.0	6,762.2	12,887.7	6,685.7	142.5	143.0	80.74	-5,889.9	-850.7	475.2	193.0	282.26	1.684			
13,000.0	6,761.7	12,987.7	6,684.9	144.8	145.3	80.70	-5,989.9	-850.8	475.3	188.4	286.84	1.657			
13,100.0	6,761.3	13,087.7	6,684.2	147.2	147.6	80.67	-6,089.9	-850.8	475.3	183.9	291.43	1.631			

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
13,200.0	6,760.9	13,187.7	6,683.5	149.5	150.0	80.63	-6,189.9	-850.9	475.4	179.4	296.01	1.606		
13,300.0	6,760.4	13,287.7	6,682.7	151.8	152.3	80.60	-6,289.9	-851.0	475.4	174.8	300.60	1.582		
13,400.0	6,760.0	13,387.7	6,682.0	154.2	154.6	80.56	-6,389.9	-851.0	475.5	170.3	305.18	1.558		
13,500.0	6,759.5	13,487.7	6,681.3	156.5	156.9	80.53	-6,489.9	-851.1	475.5	165.8	309.77	1.535		
13,600.0	6,759.1	13,587.7	6,680.5	158.8	159.3	80.49	-6,589.9	-851.1	475.6	161.2	314.35	1.513		
13,700.0	6,758.6	13,687.7	6,679.8	161.2	161.6	80.46	-6,689.9	-851.2	475.6	156.7	318.94	1.491 Level 3		
13,800.0	6,758.2	13,787.7	6,679.1	163.5	163.9	80.42	-6,789.9	-851.3	475.7	152.2	323.52	1.470 Level 3		
13,900.0	6,757.8	13,887.7	6,678.3	165.8	166.2	80.39	-6,889.9	-851.3	475.7	147.6	328.11	1.450 Level 3		
14,000.0	6,757.3	13,987.7	6,677.6	168.2	168.5	80.35	-6,989.9	-851.4	475.8	143.1	332.70	1.430 Level 3		
14,073.9	6,757.0	14,061.7	6,677.0	169.9	170.3	80.33	-7,063.8	-851.4	475.8	139.7	336.09	1.416 Level 3		
14,074.3	6,757.0	14,062.0	6,677.0	169.9	170.3	80.33	-7,064.1	-851.4	475.8	139.7	336.10	1.416 Level 3, 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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-323 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
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	0.28	162.940		
200.0	200.0	200.0	200.0	0.4	0.4	90.91	-0.7	44.9	44.9	44.0	0.83	54.313		
300.0	300.0	300.0	300.0	0.7	0.7	90.91	-0.7	44.9	44.9	43.5	1.38	32.588		
400.0	400.0	400.0	400.0	1.0	1.0	90.91	-0.7	44.9	44.9	42.9	1.93	23.277		
500.0	500.0	500.0	500.0	1.2	1.2	90.91	-0.7	44.9	44.9	42.4	2.48	18.104		
600.0	600.0	600.0	600.0	1.5	1.5	90.91	-0.7	44.9	44.9	41.8	3.03	14.813		
700.0	700.0	700.0	700.0	1.8	1.8	90.91	-0.7	44.9	44.9	41.3	3.58	12.534		
800.0	800.0	800.0	800.0	2.1	2.1	90.91	-0.7	44.9	44.9	40.7	4.13	10.863 CC, ES		
900.0	900.0	899.5	899.5	2.3	2.3	89.43	0.4	45.4	45.4	40.8	4.68	9.713		
1,000.0	1,000.0	998.8	998.7	2.6	2.6	85.22	3.9	47.1	47.3	42.1	5.22	9.054		
1,100.0	1,100.0	1,097.9	1,097.6	2.9	2.9	78.96	9.7	49.9	50.9	45.1	5.77	8.818		
1,200.0	1,200.0	1,196.6	1,195.9	3.2	3.2	71.70	17.8	53.8	56.8	50.5	6.33	8.972		
1,300.0	1,300.0	1,294.8	1,293.4	3.4	3.5	64.46	28.1	58.8	65.5	58.6	6.91	9.479		
1,400.0	1,400.0	1,392.3	1,389.9	3.7	3.8	57.98	40.5	64.8	77.1	69.6	7.50	10.281		
1,500.0	1,500.0	1,489.1	1,485.3	4.0	4.2	90.11	55.1	71.8	91.7	83.7	8.01	11.446		
1,600.0	1,599.9	1,585.9	1,580.4	4.3	4.5	87.33	71.7	79.9	108.8	100.2	8.58	12.683		
1,700.0	1,699.7	1,684.3	1,676.9	4.5	5.0	86.29	89.2	88.3	126.5	117.3	9.16	13.810		
1,800.0	1,799.3	1,782.8	1,773.4	4.8	5.4	86.49	106.7	96.8	144.0	134.2	9.76	14.760		
1,900.0	1,898.6	1,881.2	1,869.9	5.1	5.9	87.53	124.2	105.3	161.4	151.0	10.38	15.546		
2,000.0	1,997.5	1,979.5	1,966.2	5.4	6.3	89.16	141.6	113.7	178.8	167.8	11.04	16.192		
2,016.2	2,013.5	1,995.4	1,981.8	5.5	6.4	89.47	144.4	115.1	181.6	170.5	11.15	16.285		
2,100.0	2,096.2	2,077.7	2,062.5	5.8	6.8	91.18	159.1	122.1	196.4	184.7	11.74	16.724		
2,200.0	2,194.9	2,175.9	2,158.8	6.1	7.3	92.91	176.5	130.6	214.2	201.8	12.47	17.180		
2,300.0	2,293.6	2,274.1	2,255.1	6.5	7.8	94.38	193.9	139.0	232.2	219.0	13.21	17.572		
2,400.0	2,392.3	2,372.3	2,351.4	6.9	8.2	95.63	211.4	147.4	250.3	236.3	13.98	17.911		
2,500.0	2,491.0	2,470.5	2,447.6	7.3	8.7	96.72	228.8	155.9	268.5	253.8	14.75	18.204		
2,600.0	2,589.8	2,568.8	2,543.9	7.7	9.2	97.67	246.3	164.3	286.8	271.3	15.54	18.460		
2,700.0	2,688.5	2,667.0	2,640.2	8.1	9.7	98.50	263.7	172.7	305.2	288.8	16.33	18.684		
2,800.0	2,787.2	2,765.2	2,736.5	8.5	10.2	99.24	281.1	181.2	323.6	306.4	17.14	18.882		
2,900.0	2,885.9	2,863.4	2,832.8	8.9	10.7	99.90	298.6	189.6	342.0	324.1	17.95	19.057		
3,000.0	2,984.6	2,961.6	2,929.0	9.3	11.2	100.49	316.0	198.0	360.5	341.8	18.76	19.213		
3,100.0	3,083.3	3,059.8	3,025.3	9.8	11.7	101.03	333.5	206.5	379.1	359.5	19.59	19.352		
3,200.0	3,182.0	3,158.0	3,121.6	10.2	12.2	101.51	350.9	214.9	397.6	377.2	20.41	19.477		
3,300.0	3,280.7	3,256.2	3,217.9	10.6	12.7	101.96	368.4	223.4	416.2	394.9	21.25	19.590		
3,400.0	3,379.4	3,354.4	3,314.2	11.0	13.2	102.36	385.8	231.8	434.8	412.7	22.08	19.692		
3,500.0	3,478.1	3,452.6	3,410.4	11.5	13.7	102.73	403.2	240.2	453.4	430.5	22.92	19.785		
3,600.0	3,576.8	3,550.9	3,506.7	11.9	14.2	103.07	420.7	248.7	472.1	448.3	23.76	19.869		
3,700.0	3,675.5	3,649.1	3,603.0	12.3	14.7	103.39	438.1	257.1	490.7	466.1	24.60	19.947		
3,800.0	3,774.2	3,747.3	3,699.3	12.8	15.2	103.68	455.6	265.5	509.4	483.9	25.45	20.018		
3,900.0	3,872.9	3,855.3	3,805.3	13.2	15.7	104.04	473.9	274.4	527.5	501.2	26.28	20.073		
4,000.0	3,971.6	3,969.7	3,918.4	13.7	16.1	104.70	489.7	282.0	542.9	515.8	27.09	20.043		
4,100.0	4,070.3	4,084.7	4,032.7	14.1	16.5	105.65	501.4	287.7	555.5	527.6	27.88	19.926		
4,200.0	4,169.0	4,199.9	4,147.5	14.6	16.8	106.88	509.0	291.4	565.4	536.7	28.65	19.736		
4,300.0	4,267.7	4,314.9	4,262.5	15.0	17.0	108.39	512.5	293.0	572.7	543.3	29.38	19.491		
4,400.0	4,366.4	4,418.8	4,366.4	15.4	17.2	109.94	512.7	293.2	578.2	548.1	30.07	19.225		
4,500.0	4,465.1	4,517.5	4,465.1	15.9	17.3	111.41	512.7	293.2	583.9	553.1	30.76	18.985		
4,600.0	4,563.8	4,616.2	4,563.8	16.3	17.5	112.84	512.7	293.2	590.0	558.6	31.43	18.772		
4,700.0	4,662.5	4,714.9	4,662.5	16.8	17.7	114.25	512.7	293.2	596.5	564.4	32.09	18.586		
4,800.0	4,761.2	4,813.6	4,761.2	17.2	17.9	115.62	512.7	293.2	603.4	570.6	32.75	18.424		
4,900.0	4,859.9	4,912.3	4,859.9	17.7	18.1	116.97	512.7	293.2	610.5	577.2	33.39	18.284		

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-323 - Wellbore #1 - Plan #2 (1-25-17)											Offset Site Error:		0.0 ft
Survey Program:		0-MWD											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
5,000.0	4,958.6	5,011.0	4,958.6	18.1	18.3	118.28	512.7	293.2	618.1	584.0	34.03	18.164			
5,100.0	5,057.3	5,109.7	5,057.3	18.6	18.4	119.57	512.7	293.2	625.9	591.3	34.65	18.062			
5,200.0	5,156.0	5,208.4	5,156.0	19.0	18.6	120.82	512.7	293.2	634.1	598.8	35.27	17.977			
5,300.0	5,254.7	5,307.1	5,254.7	19.5	18.8	122.03	512.7	293.2	642.5	606.6	35.88	17.907			
5,386.3	5,339.9	5,392.3	5,339.9	19.9	19.0	123.06	512.7	293.2	650.1	613.7	36.40	17.859			
5,400.0	5,353.4	5,405.8	5,353.4	19.9	19.0	123.24	512.7	293.2	651.3	614.8	36.48	17.851			
5,500.0	5,452.4	5,504.9	5,452.4	20.3	19.2	124.37	512.7	293.2	659.0	622.0	37.03	17.796			
5,600.0	5,551.9	5,604.3	5,551.9	20.5	19.4	125.20	512.7	293.2	665.0	627.4	37.54	17.715			
5,700.0	5,651.6	5,704.1	5,651.6	20.8	19.6	125.75	512.7	293.2	669.0	631.0	38.00	17.604			
5,800.0	5,751.6	5,804.0	5,751.6	21.0	19.8	126.02	512.7	293.2	671.0	632.6	38.43	17.461			
5,848.4	5,800.0	5,852.4	5,800.0	21.1	19.9	89.05	512.7	293.2	671.2	632.6	38.62	17.381			
5,900.0	5,851.6	5,904.0	5,851.6	21.2	20.1	89.05	512.7	293.2	671.2	632.4	38.83	17.286			
6,000.0	5,951.6	6,004.0	5,951.6	21.4	20.3	89.05	512.7	293.2	671.2	632.0	39.26	17.097			
6,071.6	6,023.2	6,075.8	6,023.4	21.5	20.4	89.07	512.5	293.2	671.2	631.7	39.56	16.966			
6,100.0	6,051.6	6,104.6	6,052.2	21.6	20.4	-90.91	511.4	293.2	671.2	631.6	39.66	16.926			
6,150.0	6,101.4	6,155.3	6,102.7	21.6	20.5	-90.83	506.8	293.2	671.2	631.5	39.75	16.887			
6,200.0	6,151.0	6,205.9	6,152.6	21.6	20.5	-90.73	498.9	293.1	671.2	631.4	39.77	16.877			
6,250.0	6,200.0	6,256.5	6,201.9	21.6	20.5	-90.64	487.8	293.1	671.2	631.5	39.73	16.895			
6,300.0	6,248.2	6,306.9	6,250.3	21.6	20.4	-90.54	473.4	293.1	671.2	631.5	39.62	16.939			
6,350.0	6,295.5	6,357.3	6,297.5	21.5	20.3	-90.44	455.9	293.1	671.2	631.7	39.47	17.005			
6,400.0	6,341.6	6,407.6	6,343.4	21.4	20.2	-90.34	435.3	293.1	671.1	631.9	39.27	17.090			
6,450.0	6,386.3	6,457.8	6,387.7	21.3	20.1	-90.24	411.8	293.1	671.1	632.1	39.04	17.191			
6,500.0	6,429.5	6,508.0	6,430.4	21.2	20.0	-90.13	385.5	293.1	671.1	632.3	38.79	17.302			
6,550.0	6,470.9	6,558.0	6,471.2	21.1	19.8	-90.03	356.5	293.0	671.1	632.6	38.53	17.418			
6,600.0	6,510.4	6,608.0	6,509.9	21.0	19.7	-89.92	324.9	293.0	671.1	632.8	38.27	17.534			
6,650.0	6,547.9	6,657.9	6,546.5	20.8	19.6	-89.82	290.9	293.0	671.1	633.0	38.04	17.641			
6,700.0	6,583.1	6,707.7	6,580.6	20.7	19.4	-89.71	254.7	293.0	671.1	633.2	37.85	17.732			
6,750.0	6,615.8	6,757.4	6,612.3	20.6	19.3	-89.61	216.4	292.9	671.1	633.4	37.70	17.800			
6,800.0	6,646.1	6,807.1	6,641.4	20.4	19.2	-89.51	176.2	292.9	671.1	633.5	37.62	17.837			
6,850.0	6,673.7	6,856.7	6,667.8	20.3	19.1	-89.41	134.2	292.9	671.1	633.5	37.62	17.837			
6,894.6	6,695.9	6,900.8	6,688.9	20.2	19.0	-89.32	95.4	292.8	671.1	633.4	37.70	17.800			
6,900.0	6,698.5	6,906.2	6,691.4	20.2	19.0	-89.31	90.7	292.8	671.1	633.4	37.72	17.792			
6,950.0	6,720.4	6,955.6	6,712.0	20.1	19.0	-89.22	45.8	292.8	671.1	633.2	37.91	17.700			
7,000.0	6,739.3	7,005.0	6,729.7	20.0	19.0	-89.13	-0.3	292.8	671.1	632.9	38.22	17.558			
7,050.0	6,755.1	7,054.3	6,744.4	19.9	19.2	-89.04	-47.4	292.7	671.1	632.4	38.64	17.365			
7,100.0	6,767.9	7,103.5	6,756.0	19.8	19.5	-88.96	-95.2	292.7	671.1	631.9	39.19	17.126			
7,150.0	6,777.4	7,152.7	6,764.4	20.1	19.8	-88.88	-143.7	292.6	671.1	631.2	39.84	16.843			
7,200.0	6,783.7	7,201.8	6,769.8	20.6	20.2	-88.81	-192.5	292.6	671.1	630.5	40.61	16.524			
7,250.0	6,786.7	7,250.9	6,772.0	21.1	20.7	-88.74	-241.5	292.6	671.1	629.6	41.49	16.175			
7,274.8	6,787.0	7,275.3	6,771.9	21.3	20.9	-88.71	-265.9	292.5	671.1	629.2	41.94	16.002			
7,274.8	6,787.0	7,275.3	6,771.9	21.3	20.9	-88.71	-265.9	292.5	671.1	629.2	41.94	16.002			
7,276.1	6,787.0	7,276.7	6,771.9	21.4	20.9	-88.71	-267.3	292.5	671.1	629.1	41.96	15.994			
7,300.0	6,786.9	7,300.6	6,771.8	21.6	21.1	-88.71	-291.2	292.5	671.1	628.7	42.35	15.846			
7,400.0	6,786.4	7,400.6	6,771.1	22.8	22.3	-88.69	-391.2	292.5	671.1	626.4	44.63	15.037			
7,500.0	6,786.0	7,500.6	6,770.4	24.2	23.7	-88.67	-491.2	292.4	671.1	623.8	47.27	14.198			
7,600.0	6,785.6	7,600.6	6,769.8	25.7	25.1	-88.65	-591.2	292.3	671.1	620.9	50.20	13.366			
7,700.0	6,785.1	7,700.6	6,769.1	27.3	26.8	-88.63	-691.2	292.2	671.1	617.7	53.40	12.567			
7,800.0	6,784.7	7,800.6	6,768.5	29.0	28.5	-88.61	-791.2	292.2	671.0	614.2	56.80	11.814			
7,900.0	6,784.2	7,900.6	6,767.8	30.8	30.3	-88.60	-891.2	292.1	671.0	610.7	60.38	11.114			
8,000.0	6,783.8	8,000.6	6,767.1	32.6	32.1	-88.58	-991.2	292.0	671.0	606.9	64.10	10.469			

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-323 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error: 0.0 ft		
Survey Program: 0-MWD														Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
8,100.0	6,783.4	8,100.6	6,766.5	34.6	34.1	-88.56	-1,091.2	291.9	671.0	603.1	67.94	9.877			
8,200.0	6,782.9	8,200.6	6,765.8	36.5	36.0	-88.54	-1,191.2	291.9	671.0	599.1	71.88	9.335			
8,300.0	6,782.5	8,300.6	6,765.2	38.5	38.0	-88.52	-1,291.2	291.8	671.0	595.1	75.92	8.839			
8,400.0	6,782.0	8,400.6	6,764.5	40.6	40.1	-88.50	-1,391.2	291.7	671.0	591.0	80.02	8.385			
8,500.0	6,781.6	8,500.6	6,763.8	42.6	42.2	-88.48	-1,491.2	291.7	671.0	586.8	84.19	7.970			
8,600.0	6,781.2	8,600.6	6,763.2	44.7	44.3	-88.46	-1,591.2	291.6	671.0	582.6	88.41	7.590			
8,700.0	6,780.7	8,700.6	6,762.5	46.8	46.4	-88.45	-1,691.2	291.5	671.0	578.3	92.67	7.240			
8,800.0	6,780.3	8,800.6	6,761.8	49.0	48.6	-88.43	-1,791.2	291.4	671.0	574.0	96.98	6.919			
8,900.0	6,779.8	8,900.6	6,761.2	51.1	50.7	-88.41	-1,891.1	291.4	671.0	569.6	101.32	6.622			
9,000.0	6,779.4	9,000.6	6,760.5	53.3	52.9	-88.39	-1,991.1	291.3	670.9	565.3	105.69	6.348			
9,100.0	6,778.9	9,100.6	6,759.9	55.5	55.1	-88.37	-2,091.1	291.2	670.9	560.9	110.09	6.095			
9,200.0	6,778.5	9,200.6	6,759.2	57.7	57.3	-88.35	-2,191.1	291.2	670.9	556.4	114.51	5.859			
9,300.0	6,778.1	9,300.6	6,758.5	59.9	59.6	-88.33	-2,291.1	291.1	670.9	552.0	118.95	5.640			
9,400.0	6,777.6	9,400.6	6,757.9	62.1	61.8	-88.31	-2,391.1	291.0	670.9	547.5	123.42	5.436			
9,500.0	6,777.2	9,500.6	6,757.2	64.4	64.0	-88.29	-2,491.1	290.9	670.9	543.0	127.90	5.246			
9,600.0	6,776.7	9,600.6	6,756.6	66.6	66.3	-88.28	-2,591.1	290.9	670.9	538.5	132.39	5.068			
9,700.0	6,776.3	9,700.6	6,755.9	68.9	68.5	-88.26	-2,691.1	290.8	670.9	534.0	136.90	4.901			
9,800.0	6,775.9	9,800.6	6,755.2	71.1	70.8	-88.24	-2,791.1	290.7	670.9	529.5	141.42	4.744			
9,900.0	6,775.4	9,900.6	6,754.6	73.4	73.0	-88.22	-2,891.1	290.6	670.9	524.9	145.95	4.597			
10,000.0	6,775.0	10,000.6	6,753.9	75.6	75.3	-88.20	-2,991.1	290.6	670.9	520.4	150.49	4.458			
10,100.0	6,774.5	10,100.6	6,753.2	77.9	77.6	-88.18	-3,091.1	290.5	670.9	515.8	155.04	4.327			
10,200.0	6,774.1	10,200.6	6,752.6	80.2	79.9	-88.16	-3,191.1	290.4	670.9	511.3	159.60	4.203			
10,300.0	6,773.7	10,300.6	6,751.9	82.5	82.2	-88.14	-3,291.1	290.4	670.9	506.7	164.17	4.086			
10,400.0	6,773.2	10,400.6	6,751.3	84.7	84.4	-88.12	-3,391.1	290.3	670.9	502.1	168.74	3.976			
10,500.0	6,772.8	10,500.6	6,750.6	87.0	86.7	-88.11	-3,491.1	290.2	670.8	497.5	173.32	3.870			
10,600.0	6,772.3	10,600.6	6,749.9	89.3	89.0	-88.09	-3,591.1	290.1	670.8	492.9	177.91	3.771			
10,700.0	6,771.9	10,700.6	6,749.3	91.6	91.3	-88.07	-3,691.1	290.1	670.8	488.3	182.50	3.676			
10,800.0	6,771.4	10,800.6	6,748.6	93.9	93.6	-88.05	-3,791.1	290.0	670.8	483.7	187.10	3.585			
10,900.0	6,771.0	10,900.6	6,748.0	96.2	95.9	-88.03	-3,891.1	289.9	670.8	479.1	191.70	3.499			
11,000.0	6,770.6	11,000.6	6,747.3	98.5	98.2	-88.01	-3,991.1	289.8	670.8	474.5	196.31	3.417			
11,100.0	6,770.1	11,100.6	6,746.6	100.8	100.5	-87.99	-4,091.1	289.8	670.8	469.9	200.92	3.339			
11,200.0	6,769.7	11,200.6	6,746.0	103.1	102.8	-87.97	-4,191.1	289.7	670.8	465.3	205.54	3.264			
11,300.0	6,769.2	11,300.6	6,745.3	105.4	105.2	-87.96	-4,291.1	289.6	670.8	460.6	210.15	3.192			
11,400.0	6,768.8	11,400.6	6,744.6	107.7	107.5	-87.94	-4,391.1	289.6	670.8	456.0	214.78	3.123			
11,500.0	6,768.4	11,500.6	6,744.0	110.0	109.8	-87.92	-4,491.1	289.5	670.8	451.4	219.40	3.057			
11,600.0	6,767.9	11,600.6	6,743.3	112.3	112.1	-87.90	-4,591.1	289.4	670.8	446.8	224.03	2.994			
11,700.0	6,767.5	11,700.6	6,742.7	114.7	114.4	-87.88	-4,691.1	289.3	670.8	442.1	228.66	2.934			
11,800.0	6,767.0	11,800.6	6,742.0	117.0	116.7	-87.86	-4,791.1	289.3	670.8	437.5	233.29	2.875			
11,900.0	6,766.6	11,900.6	6,741.3	119.3	119.0	-87.84	-4,891.1	289.2	670.8	432.8	237.93	2.819			
12,000.0	6,766.2	12,000.6	6,740.7	121.6	121.4	-87.82	-4,991.1	289.1	670.8	428.2	242.56	2.765			
12,100.0	6,765.7	12,100.6	6,740.0	123.9	123.7	-87.80	-5,091.1	289.0	670.8	423.5	247.20	2.713			
12,200.0	6,765.3	12,200.6	6,739.4	126.2	126.0	-87.79	-5,191.1	289.0	670.7	418.9	251.85	2.663			
12,300.0	6,764.8	12,300.6	6,738.7	128.6	128.3	-87.77	-5,291.1	288.9	670.7	414.3	256.49	2.615			
12,400.0	6,764.4	12,400.6	6,738.0	130.9	130.7	-87.75	-5,391.1	288.8	670.7	409.6	261.13	2.569			
12,500.0	6,763.9	12,500.6	6,737.4	133.2	133.0	-87.73	-5,491.1	288.8	670.7	405.0	265.78	2.524			
12,600.0	6,763.5	12,600.6	6,736.7	135.5	135.3	-87.71	-5,591.1	288.7	670.7	400.3	270.43	2.480			
12,700.0	6,763.1	12,700.6	6,736.0	137.9	137.6	-87.69	-5,691.1	288.6	670.7	395.6	275.08	2.438			
12,800.0	6,762.6	12,800.6	6,735.4	140.2	140.0	-87.67	-5,791.1	288.5	670.7	391.0	279.73	2.398			
12,900.0	6,762.2	12,900.6	6,734.7	142.5	142.3	-87.65	-5,891.1	288.5	670.7	386.3	284.38	2.358			
13,000.0	6,761.7	13,000.6	6,734.1	144.8	144.6	-87.63	-5,991.0	288.4	670.7	381.7	289.04	2.320			
13,100.0	6,761.3	13,100.6	6,733.4	147.2	147.0	-87.62	-6,091.0	288.3	670.7	377.0	293.69	2.284			

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-323 - Wellbore #1 - Plan #2 (1-25-17)										Offset Site Error:		0.0 ft
Survey Program:		0-MWD										Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
13,200.0	6,760.9	13,200.6	6,732.7	149.5	149.3	-87.60	-6,191.0	288.2	670.7	372.4	298.35	2.248		
13,300.0	6,760.4	13,300.6	6,732.1	151.8	151.6	-87.58	-6,291.0	288.2	670.7	367.7	303.01	2.213		
13,400.0	6,760.0	13,400.6	6,731.4	154.2	154.0	-87.56	-6,391.0	288.1	670.7	363.0	307.66	2.180		
13,500.0	6,759.5	13,500.6	6,730.8	156.5	156.3	-87.54	-6,491.0	288.0	670.7	358.4	312.32	2.147		
13,600.0	6,759.1	13,600.6	6,730.1	158.8	158.6	-87.52	-6,591.0	288.0	670.7	353.7	316.98	2.116		
13,700.0	6,758.6	13,700.6	6,729.4	161.2	161.0	-87.50	-6,691.0	287.9	670.7	349.0	321.64	2.085		
13,800.0	6,758.2	13,800.6	6,728.8	163.5	163.3	-87.48	-6,791.0	287.8	670.7	344.4	326.31	2.055		
13,900.0	6,757.8	13,900.6	6,728.1	165.8	165.6	-87.47	-6,891.0	287.7	670.7	339.7	330.97	2.026		
14,000.0	6,757.3	14,000.6	6,727.4	168.2	168.0	-87.45	-6,991.0	287.7	670.7	335.0	335.63	1.998		
14,052.0	6,757.1	14,052.5	6,727.1	169.4	169.2	-87.44	-7,043.0	287.6	670.7	332.6	338.06	1.984		
14,073.9	6,757.0	14,067.7	6,727.0	169.9	169.5	-87.43	-7,058.1	287.6	670.7	331.8	338.92	1.979		
14,074.3	6,757.0	14,067.7	6,727.0	169.9	169.5	-87.43	-7,058.1	287.6	670.7	331.8	338.93	1.979 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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-423 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
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	29.5	0.27	108.827		
200.0	200.0	199.0	199.0	0.4	0.4	90.70	-0.4	29.8	29.8	29.0	0.82	36.215		
300.0	300.0	299.0	299.0	0.7	0.7	90.70	-0.4	29.8	29.8	28.4	1.37	21.700		
400.0	400.0	399.0	399.0	1.0	1.0	90.70	-0.4	29.8	29.8	27.9	1.92	15.491		
500.0	500.0	499.0	499.0	1.2	1.2	90.70	-0.4	29.8	29.8	27.3	2.48	12.045		
600.0	600.0	599.0	599.0	1.5	1.5	90.70	-0.4	29.8	29.8	26.8	3.03	9.853		
700.0	700.0	699.0	699.0	1.8	1.8	90.70	-0.4	29.8	29.8	26.2	3.58	8.336		
800.0	800.0	799.0	799.0	2.1	2.1	90.70	-0.4	29.8	29.8	25.7	4.13	7.224		
900.0	900.0	899.0	899.0	2.3	2.3	90.70	-0.4	29.8	29.8	25.1	4.68	6.373		
1,000.0	1,000.0	999.0	999.0	2.6	2.6	90.70	-0.4	29.8	29.8	24.6	5.23	5.702		
1,100.0	1,100.0	1,099.0	1,099.0	2.9	2.9	90.70	-0.4	29.8	29.8	24.0	5.78	5.159		
1,200.0	1,200.0	1,199.0	1,199.0	3.2	3.2	90.70	-0.4	29.8	29.8	23.5	6.33	4.710		
1,300.0	1,300.0	1,299.0	1,299.0	3.4	3.4	90.70	-0.4	29.8	29.8	22.9	6.88	4.333		
1,400.0	1,400.0	1,399.0	1,399.0	3.7	3.7	90.70	-0.4	29.8	29.8	22.4	7.43	4.012 CC, ES		
1,500.0	1,500.0	1,499.0	1,499.0	4.0	4.0	129.63	-0.4	29.8	30.6	22.7	7.98	3.840		
1,600.0	1,599.9	1,598.9	1,598.9	4.3	4.3	134.81	-0.4	29.8	33.3	24.8	8.52	3.906		
1,700.0	1,699.7	1,698.7	1,698.7	4.5	4.5	141.74	-0.4	29.8	38.2	29.1	9.06	4.215		
1,800.0	1,799.3	1,798.3	1,798.3	4.8	4.8	148.79	-0.4	29.8	45.7	36.1	9.59	4.767		
1,900.0	1,898.6	1,897.6	1,897.6	5.1	5.1	154.95	-0.4	29.8	56.1	46.0	10.12	5.547		
2,000.0	1,997.5	1,996.5	1,996.5	5.4	5.4	159.90	-0.4	29.8	69.4	58.8	10.64	6.524		
2,016.2	2,013.5	2,012.5	2,012.5	5.5	5.4	160.59	-0.4	29.8	71.8	61.1	10.72	6.698		
2,100.0	2,096.2	2,095.2	2,095.2	5.8	5.6	163.62	-0.4	29.8	84.6	73.5	11.18	7.573		
2,200.0	2,194.9	2,193.9	2,193.9	6.1	5.9	166.21	-0.4	29.8	100.2	88.4	11.72	8.543		
2,300.0	2,293.6	2,292.6	2,292.6	6.5	6.2	168.10	-0.4	29.8	115.8	103.6	12.28	9.436		
2,400.0	2,392.3	2,391.3	2,391.3	6.9	6.4	169.54	-0.4	29.8	131.6	118.8	12.83	10.258		
2,500.0	2,491.0	2,490.0	2,490.0	7.3	6.7	170.67	-0.4	29.8	147.4	134.0	13.39	11.015		
2,600.0	2,589.8	2,591.2	2,591.2	7.7	7.0	171.31	0.7	29.9	162.6	148.7	13.95	11.660		
2,700.0	2,688.5	2,693.1	2,693.1	8.1	7.3	171.16	4.5	30.3	176.2	161.7	14.52	12.138		
2,800.0	2,787.2	2,795.5	2,795.2	8.5	7.6	170.37	11.0	30.8	188.1	173.0	15.09	12.465		
2,900.0	2,885.9	2,898.0	2,897.3	8.9	7.8	169.05	20.3	31.7	198.4	182.7	15.67	12.660		
3,000.0	2,984.6	3,000.6	2,999.2	9.3	8.1	167.25	32.3	32.8	207.2	191.0	16.27	12.739		
3,100.0	3,083.3	3,103.2	3,100.7	9.8	8.4	164.99	47.0	34.1	214.8	197.9	16.89	12.720		
3,200.0	3,182.0	3,204.3	3,200.4	10.2	8.7	162.37	63.9	35.6	221.4	203.9	17.53	12.629		
3,300.0	3,280.7	3,303.6	3,298.2	10.6	9.1	159.85	81.0	37.2	228.2	210.0	18.20	12.542		
3,400.0	3,379.4	3,402.9	3,395.9	11.0	9.4	157.48	98.0	38.7	235.4	216.6	18.89	12.467		
3,500.0	3,478.1	3,502.1	3,493.7	11.5	9.8	155.25	115.1	40.3	243.0	223.4	19.60	12.402		
3,600.0	3,576.8	3,601.4	3,591.5	11.9	10.1	153.16	132.2	41.8	251.0	230.7	20.33	12.346		
3,700.0	3,675.5	3,700.7	3,689.3	12.3	10.5	151.20	149.3	43.4	259.3	238.2	21.08	12.298		
3,800.0	3,774.2	3,800.0	3,787.1	12.8	10.9	149.36	166.3	44.9	267.8	246.0	21.85	12.257		
3,900.0	3,872.9	3,899.2	3,884.9	13.2	11.2	147.64	183.4	46.5	276.6	254.0	22.64	12.221		
4,000.0	3,971.6	3,998.5	3,982.6	13.7	11.6	146.02	200.5	48.0	285.7	262.2	23.43	12.191		
4,100.0	4,070.3	4,097.8	4,080.4	14.1	12.0	144.50	217.5	49.6	294.9	270.7	24.24	12.165		
4,200.0	4,169.0	4,197.1	4,178.2	14.6	12.4	143.08	234.6	51.1	304.4	279.3	25.07	12.143		
4,300.0	4,267.7	4,296.3	4,276.0	15.0	12.8	141.74	251.7	52.7	314.0	288.1	25.90	12.126		
4,400.0	4,366.4	4,395.6	4,373.8	15.4	13.3	140.48	268.7	54.2	323.8	297.1	26.74	12.112		
4,500.0	4,465.1	4,494.9	4,471.6	15.9	13.7	139.30	285.8	55.8	333.7	306.2	27.58	12.100		
4,600.0	4,563.8	4,594.2	4,569.3	16.3	14.1	138.18	302.9	57.3	343.8	315.4	28.43	12.092		
4,700.0	4,662.5	4,693.4	4,667.1	16.8	14.5	137.13	320.0	58.9	354.0	324.7	29.29	12.086		
4,800.0	4,761.2	4,792.7	4,764.9	17.2	14.9	136.14	337.0	60.4	364.3	334.1	30.15	12.082		
4,900.0	4,859.9	4,892.0	4,862.7	17.7	15.4	135.20	354.1	62.0	374.7	343.7	31.02	12.080		

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-423 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
5,000.0	4,958.6	4,991.3	4,960.5	18.1	15.8	134.31	371.2	63.5	385.2	353.3	31.89	12.080		
5,100.0	5,057.3	5,090.5	5,058.3	18.6	16.2	133.47	388.2	65.0	395.8	363.0	32.76	12.081		
5,200.0	5,156.0	5,189.8	5,156.0	19.0	16.7	132.68	405.3	66.6	406.5	372.8	33.64	12.083		
5,300.0	5,254.7	5,289.1	5,253.8	19.5	17.1	131.92	422.4	68.1	417.2	382.7	34.52	12.087		
5,386.3	5,339.9	5,374.7	5,338.2	19.9	17.5	131.30	437.1	69.5	426.5	391.2	35.27	12.091		
5,400.0	5,353.4	5,388.4	5,351.6	19.9	17.5	131.22	439.4	69.7	428.0	392.6	35.40	12.091		
5,500.0	5,452.4	5,487.7	5,449.4	20.3	18.0	130.46	456.5	71.2	437.4	401.2	36.23	12.072		
5,600.0	5,551.9	5,587.3	5,547.6	20.5	18.4	129.40	473.3	72.8	444.7	407.7	37.03	12.011		
5,700.0	5,651.6	5,687.7	5,647.0	20.8	18.7	128.36	487.4	74.0	449.9	412.2	37.69	11.938		
5,800.0	5,751.6	5,788.5	5,747.2	21.0	19.0	127.40	498.0	75.0	452.8	414.5	38.25	11.837		
5,848.4	5,800.0	5,837.5	5,796.1	21.1	19.1	89.96	501.9	75.4	453.4	414.9	38.49	11.778		
5,900.0	5,851.6	5,889.7	5,848.2	21.2	19.3	89.55	505.1	75.6	453.7	414.9	38.75	11.707		
6,000.0	5,951.6	5,991.3	5,949.7	21.4	19.5	89.10	508.7	76.0	454.0	414.8	39.22	11.578		
6,071.6	6,023.2	6,063.8	6,022.2	21.5	19.6	89.05	509.1	76.0	454.1	414.6	39.51	11.491		
6,100.0	6,051.6	6,092.1	6,050.6	21.6	19.7	-91.04	509.1	76.0	454.1	414.5	39.62	11.460		
6,150.0	6,101.4	6,142.0	6,100.5	21.6	19.8	-91.48	509.1	76.0	454.2	414.3	39.81	11.407		
6,200.0	6,151.0	6,192.8	6,151.1	21.6	19.9	-92.10	507.3	76.0	454.3	414.4	39.94	11.375		
6,250.0	6,200.0	6,243.8	6,201.9	21.6	19.9	-92.72	502.1	76.0	454.5	414.5	40.00	11.364		
6,300.0	6,248.2	6,295.2	6,252.5	21.6	19.9	-93.32	493.4	76.0	454.8	414.8	39.98	11.374		
6,350.0	6,295.5	6,346.9	6,302.8	21.5	19.9	-93.91	481.2	76.0	455.1	415.2	39.91	11.403		
6,400.0	6,341.6	6,399.0	6,352.5	21.4	19.8	-94.49	465.6	76.0	455.4	415.6	39.77	11.451		
6,450.0	6,386.3	6,451.4	6,401.3	21.3	19.7	-95.05	446.5	76.0	455.8	416.2	39.58	11.515		
6,500.0	6,429.5	6,504.2	6,448.9	21.2	19.6	-95.58	423.9	76.0	456.2	416.8	39.35	11.593		
6,550.0	6,470.9	6,557.2	6,495.2	21.1	19.5	-96.09	397.9	75.9	456.6	417.5	39.09	11.681		
6,600.0	6,510.4	6,610.6	6,539.8	21.0	19.4	-96.58	368.6	75.9	457.0	418.2	38.81	11.775		
6,650.0	6,547.9	6,664.3	6,582.5	20.8	19.2	-97.03	336.0	75.9	457.4	418.9	38.54	11.869		
6,700.0	6,583.1	6,718.3	6,623.0	20.7	19.1	-97.46	300.4	75.9	457.9	419.6	38.28	11.960		
6,750.0	6,615.8	6,772.6	6,661.1	20.6	19.0	-97.85	261.7	75.8	458.3	420.2	38.06	12.039		
6,800.0	6,646.1	6,827.1	6,696.4	20.4	18.9	-98.20	220.3	75.8	458.7	420.8	37.90	12.101		
6,850.0	6,673.7	6,881.8	6,728.9	20.3	18.9	-98.52	176.3	75.8	459.0	421.2	37.82	12.138		
6,900.0	6,698.5	6,936.7	6,758.2	20.2	18.9	-98.79	129.8	75.8	459.3	421.5	37.83	12.143		
6,950.0	6,720.4	6,991.8	6,784.2	20.1	19.0	-99.03	81.2	75.7	459.6	421.7	37.95	12.112		
7,000.0	6,739.3	7,047.1	6,806.7	20.0	19.1	-99.22	30.8	75.7	459.9	421.7	38.19	12.041		
7,050.0	6,755.1	7,102.5	6,825.5	19.9	19.3	-99.37	-21.3	75.7	460.1	421.5	38.58	11.926		
7,100.0	6,767.9	7,157.9	6,840.5	19.8	19.6	-99.48	-74.7	75.6	460.2	421.1	39.10	11.769		
7,150.0	6,777.4	7,213.5	6,851.6	20.1	20.0	-99.54	-129.1	75.6	460.3	420.5	39.77	11.572		
7,200.0	6,783.7	7,269.0	6,858.8	20.6	20.4	-99.55	-184.2	75.6	460.3	419.7	40.58	11.342		
7,250.0	6,786.7	7,324.6	6,861.9	21.1	20.9	-99.53	-239.6	75.5	460.2	418.7	41.52	11.085		
7,272.6	6,787.0	7,348.6	6,862.0	21.3	21.1	-99.51	-263.7	75.5	460.2	418.2	41.96	10.968		
7,274.8	6,787.0	7,350.8	6,862.0	21.3	21.1	-99.51	-265.9	75.5	460.2	418.2	42.00	10.958		
7,274.8	6,787.0	7,350.8	6,862.0	21.3	21.1	-99.51	-265.9	75.5	460.2	418.2	42.00	10.958		
7,276.1	6,787.0	7,352.2	6,862.0	21.4	21.1	-99.51	-267.2	75.5	460.2	418.2	42.02	10.952		
7,300.0	6,786.9	7,376.1	6,862.0	21.6	21.3	-99.52	-291.1	75.5	460.2	417.8	42.43	10.847		
7,400.0	6,786.4	7,476.1	6,862.0	22.8	22.4	-99.57	-391.1	75.4	460.3	415.6	44.65	10.308		
7,500.0	6,786.0	7,576.1	6,862.0	24.2	23.8	-99.63	-491.1	75.3	460.3	413.1	47.26	9.740		
7,600.0	6,785.6	7,676.1	6,862.0	25.7	25.2	-99.68	-591.1	75.3	460.4	410.2	50.17	9.177		
7,700.0	6,785.1	7,776.1	6,862.0	27.3	26.8	-99.74	-691.1	75.2	460.4	407.1	53.32	8.636		
7,800.0	6,784.7	7,876.1	6,862.0	29.0	28.5	-99.79	-791.1	75.1	460.5	403.8	56.67	8.126		
7,900.0	6,784.2	7,976.1	6,862.0	30.8	30.3	-99.85	-891.1	75.0	460.6	400.4	60.20	7.651		
8,000.0	6,783.8	8,076.1	6,862.0	32.6	32.2	-99.90	-991.1	75.0	460.6	396.8	63.86	7.213		

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-423 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:		0.0 ft	
Survey Program: 0-MWD														Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor				
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)					
8,100.0	6,783.4	8,176.1	6,862.0	34.6	34.1	-99.95	-1,091.1	74.9	460.7	393.0	67.65	6.810				
8,200.0	6,782.9	8,276.1	6,862.0	36.5	36.1	-100.01	-1,191.1	74.8	460.7	389.2	71.53	6.441				
8,300.0	6,782.5	8,376.1	6,862.0	38.5	38.1	-100.06	-1,291.1	74.7	460.8	385.3	75.50	6.104				
8,400.0	6,782.0	8,476.1	6,862.0	40.6	40.2	-100.12	-1,391.1	74.7	460.9	381.3	79.54	5.794				
8,500.0	6,781.6	8,576.1	6,862.0	42.6	42.2	-100.17	-1,491.1	74.6	460.9	377.3	83.64	5.511				
8,600.0	6,781.2	8,676.1	6,862.0	44.7	44.4	-100.23	-1,591.1	74.5	461.0	373.2	87.79	5.251				
8,700.0	6,780.7	8,776.1	6,862.0	46.8	46.5	-100.28	-1,691.1	74.5	461.1	369.1	91.98	5.013				
8,800.0	6,780.3	8,876.1	6,862.0	49.0	48.6	-100.34	-1,791.1	74.4	461.1	364.9	96.21	4.793				
8,900.0	6,779.8	8,976.1	6,862.0	51.1	50.8	-100.39	-1,891.1	74.3	461.2	360.7	100.48	4.590				
9,000.0	6,779.4	9,076.1	6,862.0	53.3	53.0	-100.44	-1,991.1	74.2	461.3	356.5	104.78	4.402				
9,100.0	6,778.9	9,176.1	6,862.0	55.5	55.2	-100.50	-2,091.1	74.2	461.3	352.2	109.10	4.229				
9,200.0	6,778.5	9,276.1	6,862.0	57.7	57.4	-100.55	-2,191.1	74.1	461.4	348.0	113.44	4.067				
9,300.0	6,778.1	9,376.1	6,862.0	59.9	59.6	-100.61	-2,291.1	74.0	461.5	343.7	117.80	3.917				
9,400.0	6,777.6	9,476.1	6,862.0	62.1	61.9	-100.66	-2,391.1	73.9	461.5	339.3	122.19	3.777				
9,500.0	6,777.2	9,576.1	6,862.0	64.4	64.1	-100.71	-2,491.1	73.9	461.6	335.0	126.58	3.647				
9,600.0	6,776.7	9,676.1	6,862.0	66.6	66.4	-100.77	-2,591.1	73.8	461.7	330.7	130.99	3.524				
9,700.0	6,776.3	9,776.1	6,862.0	68.9	68.6	-100.82	-2,691.1	73.7	461.7	326.3	135.41	3.410				
9,800.0	6,775.9	9,876.1	6,862.0	71.1	70.9	-100.88	-2,791.1	73.6	461.8	322.0	139.85	3.302				
9,900.0	6,775.4	9,976.1	6,862.0	73.4	73.1	-100.93	-2,891.1	73.6	461.9	317.6	144.29	3.201				
10,000.0	6,775.0	10,076.1	6,862.0	75.6	75.4	-100.99	-2,991.1	73.5	461.9	313.2	148.74	3.106				
10,100.0	6,774.5	10,176.1	6,862.0	77.9	77.7	-101.04	-3,091.1	73.4	462.0	308.8	153.20	3.016				
10,200.0	6,774.1	10,276.1	6,862.0	80.2	80.0	-101.09	-3,191.1	73.4	462.1	304.4	157.67	2.931				
10,300.0	6,773.7	10,376.1	6,862.0	82.5	82.3	-101.15	-3,291.1	73.3	462.2	300.0	162.14	2.850				
10,400.0	6,773.2	10,476.1	6,862.0	84.7	84.6	-101.20	-3,391.1	73.2	462.2	295.6	166.62	2.774				
10,500.0	6,772.8	10,576.1	6,862.0	87.0	86.8	-101.26	-3,491.1	73.1	462.3	291.2	171.10	2.702				
10,600.0	6,772.3	10,676.1	6,862.0	89.3	89.1	-101.31	-3,591.1	73.1	462.4	286.8	175.59	2.633				
10,700.0	6,771.9	10,776.0	6,862.0	91.6	91.4	-101.36	-3,691.1	73.0	462.4	282.4	180.08	2.568				
10,800.0	6,771.4	10,876.0	6,862.0	93.9	93.7	-101.42	-3,791.1	72.9	462.5	277.9	184.57	2.506				
10,900.0	6,771.0	10,976.0	6,862.0	96.2	96.0	-101.47	-3,891.1	72.8	462.6	273.5	189.07	2.447				
11,000.0	6,770.6	11,076.0	6,862.0	98.5	98.4	-101.52	-3,991.1	72.8	462.7	269.1	193.57	2.390				
11,100.0	6,770.1	11,176.0	6,862.0	100.8	100.7	-101.58	-4,091.1	72.7	462.7	264.7	198.08	2.336				
11,200.0	6,769.7	11,276.0	6,862.0	103.1	103.0	-101.63	-4,191.1	72.6	462.8	260.2	202.58	2.285				
11,300.0	6,769.2	11,376.0	6,862.0	105.4	105.3	-101.69	-4,291.1	72.5	462.9	255.8	207.09	2.235				
11,400.0	6,768.8	11,476.0	6,862.0	107.7	107.6	-101.74	-4,391.1	72.5	463.0	251.4	211.60	2.188				
11,500.0	6,768.4	11,576.0	6,862.0	110.0	109.9	-101.79	-4,491.1	72.4	463.0	246.9	216.12	2.143				
11,600.0	6,767.9	11,676.0	6,862.0	112.3	112.2	-101.85	-4,591.1	72.3	463.1	242.5	220.63	2.099				
11,700.0	6,767.5	11,776.0	6,862.0	114.7	114.5	-101.90	-4,691.1	72.3	463.2	238.0	225.14	2.057				
11,800.0	6,767.0	11,876.0	6,862.0	117.0	116.9	-101.96	-4,791.1	72.2	463.3	233.6	229.66	2.017				
11,900.0	6,766.6	11,976.0	6,862.0	119.3	119.2	-102.01	-4,891.1	72.1	463.3	229.2	234.17	1.979				
12,000.0	6,766.2	12,076.0	6,862.0	121.6	121.5	-102.06	-4,991.1	72.0	463.4	224.7	238.69	1.942				
12,100.0	6,765.7	12,176.0	6,862.0	123.9	123.8	-102.12	-5,091.1	72.0	463.5	220.3	243.21	1.906				
12,200.0	6,765.3	12,276.0	6,862.0	126.2	126.2	-102.17	-5,191.1	71.9	463.6	215.9	247.72	1.871				
12,300.0	6,764.8	12,376.0	6,862.0	128.6	128.5	-102.22	-5,291.1	71.8	463.7	211.4	252.24	1.838				
12,400.0	6,764.4	12,476.0	6,862.0	130.9	130.8	-102.28	-5,391.1	71.7	463.7	207.0	256.76	1.806				
12,500.0	6,763.9	12,576.0	6,862.0	133.2	133.1	-102.33	-5,491.1	71.7	463.8	202.5	261.28	1.775				
12,600.0	6,763.5	12,676.0	6,862.0	135.5	135.5	-102.39	-5,591.1	71.6	463.9	198.1	265.80	1.745				
12,700.0	6,763.1	12,776.0	6,862.0	137.9	137.8	-102.44	-5,691.1	71.5	464.0	193.7	270.31	1.716				
12,800.0	6,762.6	12,876.0	6,862.0	140.2	140.1	-102.49	-5,791.1	71.4	464.1	189.2	274.83	1.689				
12,900.0	6,762.2	12,976.0	6,862.0	142.5	142.4	-102.55	-5,891.1	71.4	464.1	184.8	279.35	1.661				
13,000.0	6,761.7	13,076.0	6,862.0	144.8	144.8	-102.60	-5,991.1	71.3	464.2	180.4	283.87	1.635				
13,100.0	6,761.3	13,176.0	6,862.0	147.2	147.1	-102.65	-6,091.1	71.2	464.3	175.9	288.38	1.610				

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-423 - Wellbore #1 - Plan #2 (1-25-17)														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance								
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning		
13,200.0	6,760.9	13,276.0	6,862.0	149.5	149.4	-102.71	-6,191.1	71.1	464.4	171.5	292.90	1.585			
13,300.0	6,760.4	13,376.0	6,862.0	151.8	151.8	-102.76	-6,291.1	71.1	464.5	167.1	297.41	1.562			
13,400.0	6,760.0	13,476.0	6,862.0	154.2	154.1	-102.81	-6,391.1	71.0	464.6	162.6	301.93	1.539			
13,500.0	6,759.5	13,576.0	6,862.0	156.5	156.4	-102.87	-6,491.1	70.9	464.6	158.2	306.44	1.516			
13,600.0	6,759.1	13,676.0	6,862.0	158.8	158.8	-102.92	-6,591.1	70.9	464.7	153.8	310.95	1.495	Level 3		
13,700.0	6,758.6	13,776.0	6,862.0	161.2	161.1	-102.97	-6,691.1	70.8	464.8	149.3	315.46	1.473	Level 3		
13,800.0	6,758.2	13,876.0	6,862.0	163.5	163.4	-103.03	-6,791.1	70.7	464.9	144.9	319.98	1.453	Level 3		
13,900.0	6,757.8	13,976.0	6,862.0	165.8	165.8	-103.08	-6,891.1	70.6	465.0	140.5	324.49	1.433	Level 3		
14,000.0	6,757.3	14,076.0	6,862.0	168.2	168.1	-103.13	-6,991.1	70.6	465.1	136.1	328.99	1.414	Level 3		
14,038.3	6,757.2	14,114.3	6,862.0	169.0	169.0	-103.15	-7,029.3	70.5	465.1	134.4	330.72	1.406	Level 3		
14,073.9	6,757.0	14,145.2	6,862.0	169.9	169.7	-103.17	-7,060.3	70.5	465.1	132.9	332.22	1.400	Level 3		
14,074.3	6,757.0	14,145.2	6,862.0	169.9	169.7	-103.17	-7,060.3	70.5	465.2	132.9	332.23	1.400	Level 3, 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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29U-243 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program:		0-MWD											Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	90.69	-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	59.6	0.28	217.579		
200.0	200.0	200.0	200.0	0.4	0.4	90.69	-0.7	59.9	59.9	59.1	0.83	72.526		
300.0	300.0	300.0	300.0	0.7	0.7	90.69	-0.7	59.9	59.9	58.5	1.38	43.516		
400.0	400.0	400.0	400.0	1.0	1.0	90.69	-0.7	59.9	59.9	58.0	1.93	31.083 CC, ES		
500.0	500.0	498.9	498.9	1.2	1.2	89.78	0.2	60.8	60.8	58.3	2.47	24.598		
600.0	600.0	597.8	597.7	1.5	1.5	87.24	3.1	63.4	63.5	60.5	3.01	21.055		
700.0	700.0	696.3	696.0	1.8	1.8	83.46	7.8	67.7	68.2	64.7	3.57	19.118		
800.0	800.0	794.5	793.8	2.1	2.1	79.01	14.3	73.6	75.3	71.1	4.14	18.197		
900.0	900.0	892.1	890.7	2.3	2.4	74.44	22.6	81.3	84.9	80.2	4.72	17.967 SF		
1,000.0	1,000.0	989.1	986.7	2.6	2.8	70.12	32.7	90.5	97.2	91.8	5.33	18.223		
1,100.0	1,100.0	1,085.3	1,081.6	2.9	3.1	66.28	44.5	101.3	112.2	106.2	5.96	18.822		
1,200.0	1,200.0	1,180.7	1,175.2	3.2	3.6	62.98	57.9	113.6	129.9	123.3	6.61	19.660		
1,300.0	1,300.0	1,276.6	1,269.0	3.4	4.0	60.18	73.0	127.4	150.0	142.8	7.27	20.625		
1,400.0	1,400.0	1,374.2	1,364.3	3.7	4.5	57.98	88.6	141.6	170.8	162.9	7.95	21.473		
1,500.0	1,500.0	1,471.9	1,459.7	4.0	5.0	93.33	104.2	155.9	191.9	183.8	8.11	23.648		
1,600.0	1,599.9	1,569.6	1,555.1	4.3	5.6	92.65	119.8	170.2	213.1	204.4	8.69	24.526		
1,700.0	1,699.7	1,667.3	1,650.4	4.5	6.1	92.69	135.4	184.5	234.5	225.2	9.28	25.275		
1,800.0	1,799.3	1,764.9	1,745.7	4.8	6.6	93.27	150.9	198.7	256.0	246.1	9.88	25.905		
1,900.0	1,898.6	1,862.3	1,840.8	5.1	7.1	94.25	166.5	213.0	277.8	267.3	10.51	26.425		
2,000.0	1,997.5	1,959.5	1,935.7	5.4	7.7	95.54	182.0	227.2	299.9	288.8	11.17	26.845		
2,016.2	2,013.5	1,975.2	1,951.0	5.5	7.8	95.77	184.5	229.4	303.6	292.3	11.28	26.904		
2,100.0	2,096.2	2,056.5	2,030.4	5.8	8.2	97.19	197.5	241.3	322.5	310.6	11.87	27.164		
2,200.0	2,194.9	2,153.5	2,125.1	6.1	8.8	98.68	213.0	255.5	345.3	332.7	12.59	27.417		
2,300.0	2,293.6	2,250.5	2,219.8	6.5	9.3	99.99	228.5	269.7	368.3	354.9	13.33	27.622		
2,400.0	2,392.3	2,347.5	2,314.5	6.9	9.8	101.15	244.0	283.9	391.4	377.3	14.08	27.789		
2,500.0	2,491.0	2,444.5	2,409.2	7.3	10.4	102.17	259.5	298.0	414.7	399.8	14.85	27.926		
2,600.0	2,589.8	2,541.5	2,503.9	7.7	10.9	103.09	274.9	312.2	438.1	422.5	15.62	28.039		
2,700.0	2,688.5	2,638.5	2,598.6	8.1	11.5	103.91	290.4	326.4	461.6	445.2	16.41	28.132		
2,800.0	2,787.2	2,735.5	2,693.3	8.5	12.0	104.66	305.9	340.6	485.1	467.9	17.20	28.211		
2,900.0	2,885.9	2,832.5	2,788.0	8.9	12.6	105.33	321.4	354.7	508.8	490.8	17.99	28.277		
3,000.0	2,984.6	2,929.5	2,882.7	9.3	13.1	105.95	336.9	368.9	532.5	513.7	18.79	28.333		
3,100.0	3,083.3	3,026.5	2,977.3	9.8	13.7	106.51	352.4	383.1	556.3	536.7	19.60	28.381		
3,200.0	3,182.0	3,123.5	3,072.0	10.2	14.2	107.03	367.9	397.3	580.1	559.6	20.41	28.422		
3,300.0	3,280.7	3,220.4	3,166.7	10.6	14.7	107.50	383.4	411.4	603.9	582.7	21.22	28.458		
3,400.0	3,379.4	3,317.4	3,261.4	11.0	15.3	107.94	398.8	425.6	627.8	605.7	22.04	28.488		
3,500.0	3,478.1	3,414.4	3,356.1	11.5	15.8	108.35	414.3	439.8	651.7	628.8	22.85	28.515		
3,600.0	3,576.8	3,511.4	3,450.8	11.9	16.4	108.73	429.8	454.0	675.6	652.0	23.67	28.539		
3,700.0	3,675.5	3,608.4	3,545.5	12.3	16.9	109.09	445.3	468.1	699.6	675.1	24.50	28.560		
3,800.0	3,774.2	3,705.4	3,640.2	12.8	17.5	109.42	460.8	482.3	723.6	698.3	25.32	28.578		
3,900.0	3,872.9	3,818.5	3,750.8	13.2	18.1	109.81	478.2	498.2	747.0	720.8	26.18	28.539		
4,000.0	3,971.6	3,944.6	3,875.1	13.7	18.5	110.42	494.0	512.7	767.1	740.1	27.01	28.400		
4,100.0	4,070.3	4,072.1	4,001.5	14.1	18.9	111.22	505.9	523.6	783.7	755.8	27.83	28.158		
4,200.0	4,169.0	4,200.4	4,129.4	14.6	19.3	112.20	513.6	530.7	796.6	768.0	28.63	27.826		

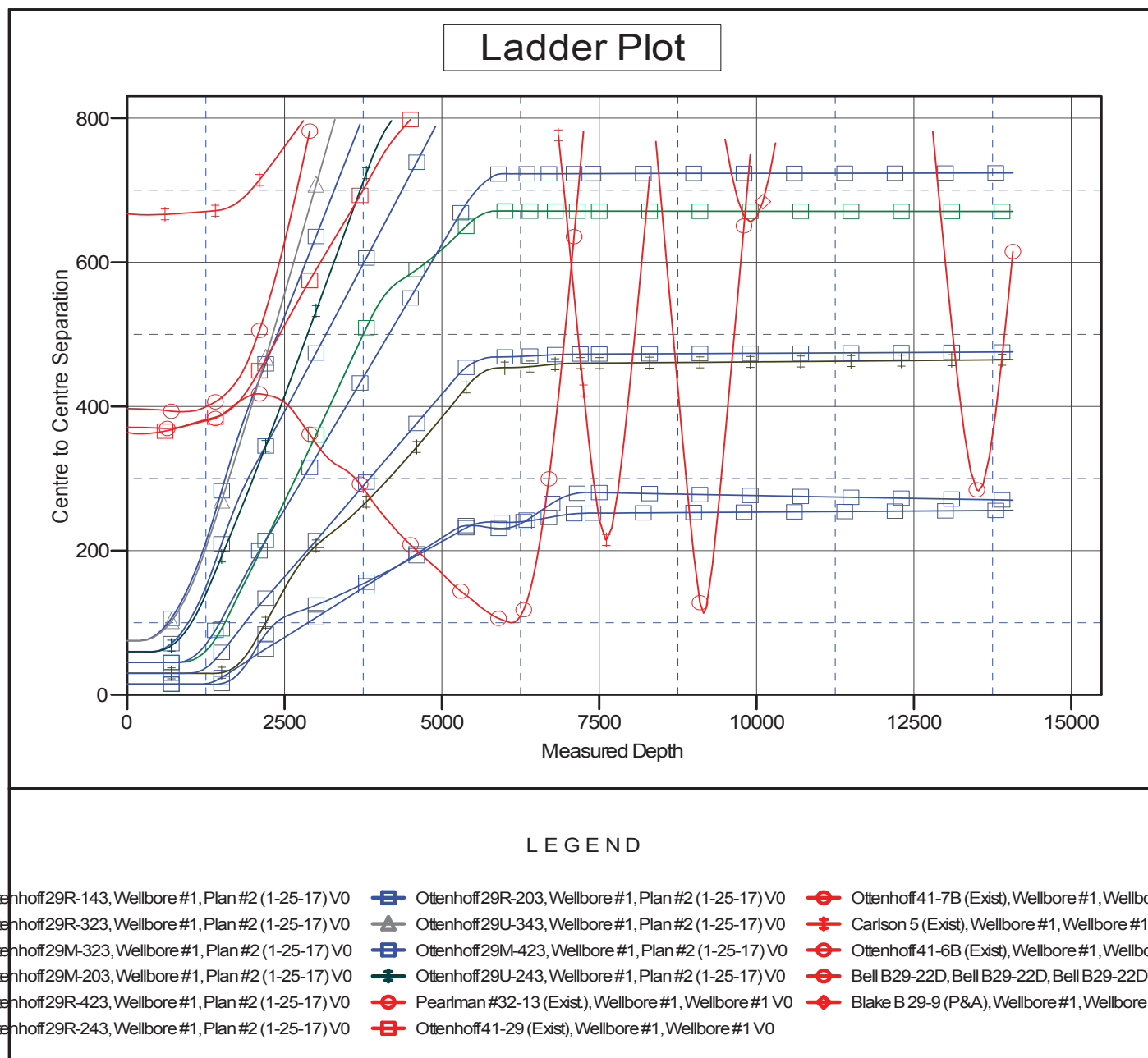
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-303
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29R-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29U-343 - Wellbore #1 - Plan #2 (1-25-17)														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance								Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
0.0	0.0	0.0	0.0	0.0	0.0	90.83	-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	0.27	273.601			
200.0	200.0	199.0	199.0	0.4	0.4	90.83	-1.1	74.9	75.0	74.1	0.82	91.049 CC, ES			
300.0	300.0	297.5	297.5	0.7	0.7	90.25	-0.3	75.9	76.0	74.6	1.36	55.658			
400.0	400.0	395.8	395.7	1.0	1.0	88.57	2.0	78.9	79.0	77.1	1.91	41.385			
500.0	500.0	493.9	493.6	1.2	1.2	86.05	5.8	83.9	84.3	81.8	2.47	34.156			
600.0	600.0	591.6	590.9	1.5	1.5	83.02	11.1	90.9	91.9	88.8	3.04	30.194			
700.0	700.0	688.8	687.4	1.8	1.9	79.81	17.9	99.7	102.0	98.3	3.64	28.016			
800.0	800.0	785.3	783.0	2.1	2.2	76.67	26.2	110.4	114.6	110.4	4.26	26.922			
900.0	900.0	881.1	877.5	2.3	2.6	73.77	35.8	123.0	129.9	125.0	4.90	26.525 SF			
1,000.0	1,000.0	976.0	970.7	2.6	3.1	71.19	46.8	137.3	147.7	142.2	5.56	26.591			
1,100.0	1,100.0	1,070.0	1,062.5	2.9	3.6	68.94	59.0	153.2	168.2	161.9	6.24	26.970			
1,200.0	1,200.0	1,162.9	1,152.8	3.2	4.1	67.01	72.4	170.7	191.1	184.2	6.93	27.563			
1,300.0	1,300.0	1,255.9	1,242.5	3.4	4.7	65.34	87.2	189.9	216.5	208.8	7.65	28.288			
1,400.0	1,400.0	1,352.2	1,335.3	3.7	5.3	63.94	102.9	210.4	242.7	234.3	8.40	28.901			
1,500.0	1,500.0	1,448.6	1,428.2	4.0	5.9	99.69	118.5	230.8	269.2	260.9	8.22	32.749			
1,600.0	1,599.9	1,544.9	1,521.0	4.3	6.6	99.10	134.2	251.2	296.1	287.3	8.80	33.632			
1,700.0	1,699.7	1,641.0	1,613.6	4.5	7.2	99.01	149.9	271.6	323.5	314.1	9.40	34.410			
1,800.0	1,799.3	1,737.0	1,706.1	4.8	7.8	99.30	165.5	292.0	351.3	341.2	10.01	35.086			
1,900.0	1,898.6	1,832.7	1,798.3	5.1	8.5	99.88	181.1	312.3	379.5	368.9	10.64	35.663			
2,000.0	1,997.5	1,928.1	1,890.3	5.4	9.1	100.68	196.6	332.5	408.4	397.1	11.30	36.141			
2,016.2	2,013.5	1,943.5	1,905.1	5.5	9.2	100.82	199.1	335.7	413.1	401.7	11.41	36.209			
2,100.0	2,096.2	2,023.3	1,982.0	5.8	9.8	101.91	212.1	352.7	437.7	425.7	12.00	36.483			
2,200.0	2,194.9	2,118.4	2,073.6	6.1	10.4	103.06	227.6	372.8	467.2	454.5	12.72	36.735			
2,300.0	2,293.6	2,213.6	2,165.3	6.5	11.0	104.07	243.1	393.0	496.9	483.4	13.46	36.925			
2,400.0	2,392.3	2,308.7	2,257.0	6.9	11.7	104.97	258.6	413.2	526.7	512.5	14.21	37.068			
2,500.0	2,491.0	2,403.9	2,348.7	7.3	12.3	105.77	274.1	433.4	556.6	541.6	14.97	37.174			
2,600.0	2,589.8	2,499.0	2,440.4	7.7	13.0	106.49	289.5	453.5	586.6	570.8	15.75	37.253			
2,700.0	2,688.5	2,594.2	2,532.1	8.1	13.6	107.15	305.0	473.7	616.6	600.1	16.53	37.310			
2,800.0	2,787.2	2,689.3	2,623.7	8.5	14.3	107.74	320.5	493.9	646.8	629.5	17.32	37.350			
2,900.0	2,885.9	2,784.4	2,715.4	8.9	14.9	108.27	336.0	514.1	677.0	658.9	18.11	37.377			
3,000.0	2,984.6	2,879.6	2,807.1	9.3	15.6	108.77	351.5	534.3	707.2	688.3	18.91	37.395			
3,100.0	3,083.3	2,974.7	2,898.8	9.8	16.2	109.22	367.0	554.4	737.5	717.8	19.72	37.405			
3,200.0	3,182.0	3,069.9	2,990.5	10.2	16.9	109.64	382.5	574.6	767.8	747.3	20.53	37.408			
3,300.0	3,280.7	3,165.0	3,082.2	10.6	17.5	110.02	398.0	594.8	798.2	776.9	21.34	37.408			

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	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (1-25-17)	Offset TVD Reference:	Offset Datum

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

Coordinates are relative to: Ottenhoff 29R-303
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.60°



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