

# PETROLEUM DEVELOPMENT CORP DJ Basin

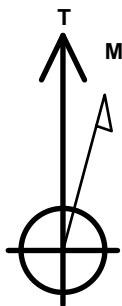
Well Name: **Ottenhoff 29M-203**

Surface Location: Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W  
North American Datum 1983 , US State Plane 1983 Colorado Northern Zone  
Ground Elevation: 4663.0

+N/-S +E/-W Northing Easting Latitude Longitude Slot  
0.0 0.0 1381166.78 3259614.34 40.375960 -104.568160  
RKB - 23' WELL @ 4686.0ft (RKB - 23')

## DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 556'FNL & 1080'FEL, Sec.29	1.0	0.0	0.0	Point
BHL 2340'FNL & 2602'FEL, Sec.32	6677.0	-7077.4	-1476.3	Point
LPL 819'FNL & 2553'FEL, Sec.29	6727.0	-288.5	-1471.1	Point



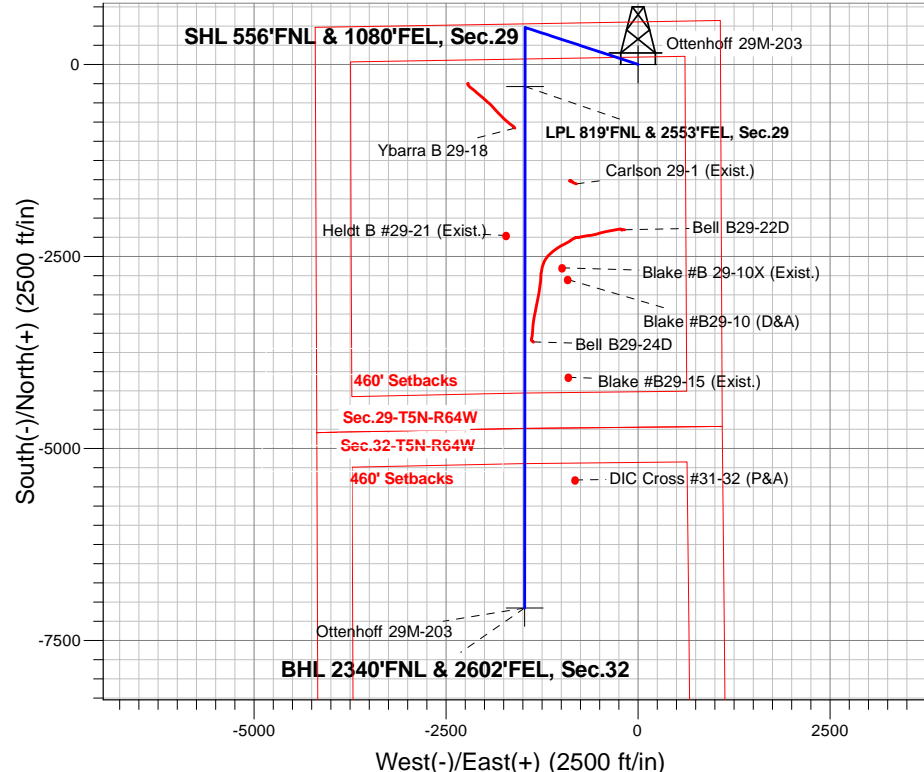
Azimuths to True North  
Magnetic North: 8.12°

Magnetic Field  
Strength: 52644.9snT  
Dip Angle: 66.90°  
Date: 2/26/2016  
Model: IGRF2010

Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W  
Ottenhoff 29M-203  
Plan #2 (1-25-17)  
13:22, January 27 2017

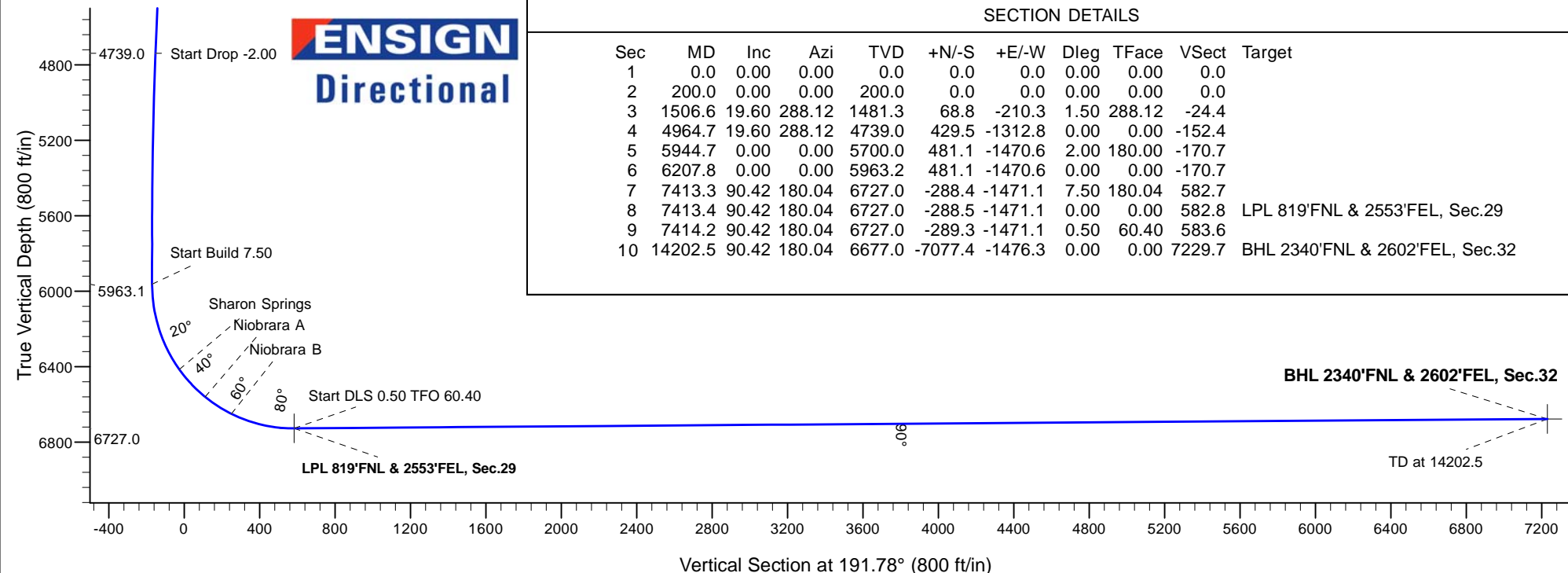
## ANNOTATIONS

TVD	MD	Annotation
200.0	200.0	KOP - Start Build 1.50
4739.0	4964.7	Start Drop -2.00
5963.1	6207.8	Start Build 7.50
6727.0	7413.4	Start DLS 0.50 TFO 60.40
6727.0	7414.2	Start 6788.3 hold at 7414.2 MD
6677.0	14202.5	TD at 14202.5



## 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	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	1506.6	19.60	288.12	1481.3	68.8	-210.3	1.50	288.12	-24.4	
4	4964.7	19.60	288.12	4739.0	429.5	-1312.8	0.00	0.00	-152.4	
5	5944.7	0.00	0.00	5700.0	481.1	-1470.6	2.00	180.00	-170.7	
6	6207.8	0.00	0.00	5963.2	481.1	-1470.6	0.00	0.00	-170.7	
7	7413.3	90.42	180.04	6727.0	-288.4	-1471.1	7.50	180.04	582.7	
8	7413.4	90.42	180.04	6727.0	-288.5	-1471.1	0.00	0.00	582.8	LPL 819'FNL & 2553'FEL, Sec.29
9	7414.2	90.42	180.04	6727.0	-289.3	-1471.1	0.50	60.40	583.6	
10	14202.5	90.42	180.04	6677.0	-7077.4	-1476.3	0.00	0.00	7229.7	BHL 2340'FNL & 2602'FEL, Sec.32





# **PETROLEUM DEVELOPMENT CORP DJ Basin**

**SEC.29-T5N-R64W**

**Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W**

**Ottenhoff 29M-203**

**Wellbore #1**

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

## **Standard Planning Report**

**27 January, 2017**

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

<b>Project</b>	SEC.29-T5N-R64W, Weld County, CO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	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 29M-203					
Well Position	+N/-S	1.4 ft	Northing:	1,381,166.79 usft	Latitude:	40.375960
	+E/-W	-135.1 ft	Easting:	3,259,614.35 usft	Longitude:	-104.568160
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,663.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	2/26/2016	8.12	66.90	52,645

<b>Design</b>	Plan #2 (1-25-17)			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	191.78

<b>Plan Sections</b>										
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	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,506.6	19.60	288.12	1,481.3	68.8	-210.3	1.50	1.50	0.00	288.12	
4,964.7	19.60	288.12	4,739.0	429.5	-1,312.8	0.00	0.00	0.00	0.00	
5,944.7	0.00	0.00	5,700.0	481.1	-1,470.6	2.00	-2.00	0.00	180.00	
6,207.8	0.00	0.00	5,963.2	481.1	-1,470.6	0.00	0.00	0.00	0.00	
7,413.3	90.42	180.04	6,727.0	-288.4	-1,471.1	7.50	7.50	0.00	180.04	
7,413.4	90.42	180.04	6,727.0	-288.5	-1,471.1	0.00	0.00	0.00	0.00	LPL 819'FNL & 2553'I
7,414.2	90.42	180.04	6,727.0	-289.3	-1,471.1	0.50	0.25	0.43	60.40	
14,202.5	90.42	180.04	6,677.0	-7,077.4	-1,476.3	0.00	0.00	0.00	0.00	BHL 2340'FNL & 2602'I

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

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 1.50									
300.0	1.50	288.12	300.0	0.4	-1.2	-0.1	1.50	1.50	0.00
400.0	3.00	288.12	399.9	1.6	-5.0	-0.6	1.50	1.50	0.00
500.0	4.50	288.12	499.7	3.7	-11.2	-1.3	1.50	1.50	0.00
600.0	6.00	288.12	599.3	6.5	-19.9	-2.3	1.50	1.50	0.00
700.0	7.50	288.12	698.6	10.2	-31.1	-3.6	1.50	1.50	0.00
800.0	9.00	288.12	797.5	14.6	-44.7	-5.2	1.50	1.50	0.00
900.0	10.50	288.12	896.1	19.9	-60.8	-7.1	1.50	1.50	0.00
1,000.0	12.00	288.12	994.2	26.0	-79.3	-9.2	1.50	1.50	0.00
1,100.0	13.50	288.12	1,091.7	32.8	-100.3	-11.6	1.50	1.50	0.00
1,200.0	15.00	288.12	1,188.6	40.5	-123.7	-14.4	1.50	1.50	0.00
1,300.0	16.50	288.12	1,284.9	48.9	-149.5	-17.4	1.50	1.50	0.00
1,400.0	18.00	288.12	1,380.4	58.1	-177.7	-20.6	1.50	1.50	0.00
1,500.0	19.50	288.12	1,475.0	68.1	-208.2	-24.2	1.50	1.50	0.00
1,506.6	19.60	288.12	1,481.3	68.8	-210.3	-24.4	1.50	1.50	0.00
1,600.0	19.60	288.12	1,569.3	78.6	-240.1	-27.9	0.00	0.00	0.00
1,700.0	19.60	288.12	1,663.5	89.0	-272.0	-31.6	0.00	0.00	0.00
1,800.0	19.60	288.12	1,757.7	99.4	-303.9	-35.3	0.00	0.00	0.00
1,900.0	19.60	288.12	1,851.9	109.8	-335.8	-39.0	0.00	0.00	0.00
2,000.0	19.60	288.12	1,946.1	120.3	-367.6	-42.7	0.00	0.00	0.00
2,100.0	19.60	288.12	2,040.3	130.7	-399.5	-46.4	0.00	0.00	0.00
2,200.0	19.60	288.12	2,134.5	141.1	-431.4	-50.1	0.00	0.00	0.00
2,300.0	19.60	288.12	2,228.7	151.6	-463.3	-53.8	0.00	0.00	0.00
2,400.0	19.60	288.12	2,322.9	162.0	-495.2	-57.5	0.00	0.00	0.00
2,500.0	19.60	288.12	2,417.1	172.4	-527.0	-61.2	0.00	0.00	0.00
2,600.0	19.60	288.12	2,511.3	182.9	-558.9	-64.9	0.00	0.00	0.00
2,700.0	19.60	288.12	2,605.5	193.3	-590.8	-68.6	0.00	0.00	0.00
2,800.0	19.60	288.12	2,699.7	203.7	-622.7	-72.3	0.00	0.00	0.00
2,900.0	19.60	288.12	2,793.9	214.1	-654.6	-76.0	0.00	0.00	0.00
3,000.0	19.60	288.12	2,888.1	224.6	-686.5	-79.7	0.00	0.00	0.00
3,100.0	19.60	288.12	2,982.3	235.0	-718.3	-83.4	0.00	0.00	0.00
3,200.0	19.60	288.12	3,076.6	245.4	-750.2	-87.1	0.00	0.00	0.00
3,300.0	19.60	288.12	3,170.8	255.9	-782.1	-90.8	0.00	0.00	0.00
3,400.0	19.60	288.12	3,265.0	266.3	-814.0	-94.5	0.00	0.00	0.00
3,500.0	19.60	288.12	3,359.2	276.7	-845.9	-98.2	0.00	0.00	0.00
3,600.0	19.60	288.12	3,453.4	287.2	-877.7	-101.9	0.00	0.00	0.00
3,681.3	19.60	288.12	3,530.0	295.6	-903.7	-104.9	0.00	0.00	0.00
Parkman Sandstone									
3,700.0	19.60	288.12	3,547.6	297.6	-909.6	-105.6	0.00	0.00	0.00
3,800.0	19.60	288.12	3,641.8	308.0	-941.5	-109.3	0.00	0.00	0.00
3,900.0	19.60	288.12	3,736.0	318.4	-973.4	-113.0	0.00	0.00	0.00
4,000.0	19.60	288.12	3,830.2	328.9	-1,005.3	-116.7	0.00	0.00	0.00
4,100.0	19.60	288.12	3,924.4	339.3	-1,037.2	-120.4	0.00	0.00	0.00
4,200.0	19.60	288.12	4,018.6	349.7	-1,069.0	-124.1	0.00	0.00	0.00
4,300.0	19.60	288.12	4,112.8	360.2	-1,100.9	-127.8	0.00	0.00	0.00
4,392.5	19.60	288.12	4,200.0	369.8	-1,130.4	-131.2	0.00	0.00	0.00
Sussex Sandstone									
4,400.0	19.60	288.12	4,207.0	370.6	-1,132.8	-131.5	0.00	0.00	0.00
4,500.0	19.60	288.12	4,301.2	381.0	-1,164.7	-135.2	0.00	0.00	0.00

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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 29M-203	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (1-25-17)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,600.0	19.60	288.12	4,395.4	391.5	-1,196.6	-138.9	0.00	0.00	0.00
4,700.0	19.60	288.12	4,489.6	401.9	-1,228.4	-142.6	0.00	0.00	0.00
4,800.0	19.60	288.12	4,583.8	412.3	-1,260.3	-146.3	0.00	0.00	0.00
4,900.0	19.60	288.12	4,678.1	422.7	-1,292.2	-150.0	0.00	0.00	0.00
4,964.7	19.60	288.12	4,739.0	429.5	-1,312.8	-152.4	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
5,000.0	18.89	288.12	4,772.3	433.1	-1,323.9	-153.6	2.00	-2.00	0.00
5,100.0	16.89	288.12	4,867.5	442.7	-1,353.1	-157.0	2.00	-2.00	0.00
5,200.0	14.89	288.12	4,963.7	451.2	-1,379.1	-160.1	2.00	-2.00	0.00
5,300.0	12.89	288.12	5,060.7	458.6	-1,401.9	-162.7	2.00	-2.00	0.00
5,400.0	10.89	288.12	5,158.6	465.0	-1,421.5	-165.0	2.00	-2.00	0.00
5,500.0	8.89	288.12	5,257.1	470.4	-1,437.9	-166.9	2.00	-2.00	0.00
5,600.0	6.89	288.12	5,356.1	474.7	-1,450.9	-168.4	2.00	-2.00	0.00
5,700.0	4.89	288.12	5,455.6	477.9	-1,460.7	-169.5	2.00	-2.00	0.00
5,800.0	2.89	288.12	5,555.4	480.0	-1,467.1	-170.3	2.00	-2.00	0.00
5,900.0	0.89	288.12	5,655.3	481.0	-1,470.3	-170.6	2.00	-2.00	0.00
5,944.7	0.00	0.00	5,700.0	481.1	-1,470.6	-170.7	2.00	-2.00	0.00
6,000.0	0.00	0.00	5,755.3	481.1	-1,470.6	-170.7	0.00	0.00	0.00
6,100.0	0.00	0.00	5,855.3	481.1	-1,470.6	-170.7	0.00	0.00	0.00
6,200.0	0.00	0.00	5,955.3	481.1	-1,470.6	-170.7	0.00	0.00	0.00
6,207.8	0.00	0.00	5,963.1	481.1	-1,470.6	-170.7	0.00	0.00	0.00
<b>Start Build 7.50</b>									
6,300.0	6.91	180.04	6,055.1	475.5	-1,470.6	-165.2	7.50	7.50	0.00
6,400.0	14.41	180.04	6,153.3	457.1	-1,470.6	-147.1	7.50	7.50	0.00
6,500.0	21.91	180.04	6,248.2	425.9	-1,470.6	-116.6	7.50	7.50	0.00
6,600.0	29.41	180.04	6,338.3	382.6	-1,470.7	-74.3	7.50	7.50	0.00
6,691.3	36.27	180.04	6,415.0	333.1	-1,470.7	-25.8	7.50	7.50	0.00
<b>Sharon Springs</b>									
6,700.0	36.91	180.04	6,422.0	328.0	-1,470.7	-20.7	7.50	7.50	0.00
6,800.0	44.42	180.04	6,497.8	262.8	-1,470.8	43.0	7.50	7.50	0.00
6,892.9	51.38	180.04	6,560.0	194.0	-1,470.8	110.5	7.50	7.50	0.00
<b>Niobrara A</b>									
6,900.0	51.92	180.04	6,564.4	188.4	-1,470.8	115.9	7.50	7.50	0.00
7,000.0	59.42	180.04	6,620.8	105.9	-1,470.9	196.7	7.50	7.50	0.00
7,061.8	64.05	180.04	6,650.0	51.5	-1,470.9	249.9	7.50	7.50	0.00
<b>Niobrara B</b>									
7,100.0	66.92	180.04	6,665.9	16.7	-1,470.9	284.0	7.50	7.50	0.00
7,200.0	74.42	180.04	6,698.9	-77.6	-1,471.0	376.3	7.50	7.50	0.00
7,300.0	81.92	180.04	6,719.4	-175.4	-1,471.1	472.1	7.50	7.50	0.00
7,400.0	89.42	180.04	6,727.0	-275.0	-1,471.1	569.6	7.50	7.50	0.00
7,413.3	90.42	180.04	6,727.0	-288.4	-1,471.1	582.7	7.50	7.50	0.00
7,413.4	90.42	180.04	6,727.0	-288.4	-1,471.1	582.8	0.00	0.00	0.00
<b>Start DLS 0.50 TFO 60.40</b>									
7,414.2	90.42	180.04	6,727.0	-289.2	-1,471.1	583.5	0.48	0.24	0.42
<b>Start 6788.3 hold at 7414.2 MD</b>									
7,500.0	90.42	180.04	6,726.4	-375.0	-1,471.2	667.5	0.00	0.00	0.00
7,600.0	90.42	180.04	6,725.6	-475.0	-1,471.3	765.5	0.00	0.00	0.00
7,700.0	90.42	180.04	6,724.9	-575.0	-1,471.4	863.4	0.00	0.00	0.00
7,800.0	90.42	180.04	6,724.2	-675.0	-1,471.4	961.3	0.00	0.00	0.00
7,900.0	90.42	180.04	6,723.4	-775.0	-1,471.5	1,059.2	0.00	0.00	0.00
8,000.0	90.42	180.04	6,722.7	-875.0	-1,471.6	1,157.1	0.00	0.00	0.00

<b>Database:</b>	US_EDM	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-203
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Project:</b>	SEC.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Ottenhoff 29M-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	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)
8,100.0	90.42	180.04	6,721.9	-975.0	-1,471.7	1,255.0	0.00	0.00	0.00
8,200.0	90.42	180.04	6,721.2	-1,075.0	-1,471.7	1,352.9	0.00	0.00	0.00
8,300.0	90.42	180.04	6,720.5	-1,175.0	-1,471.8	1,450.8	0.00	0.00	0.00
8,400.0	90.42	180.04	6,719.7	-1,275.0	-1,471.9	1,548.7	0.00	0.00	0.00
8,500.0	90.42	180.04	6,719.0	-1,375.0	-1,472.0	1,646.6	0.00	0.00	0.00
8,600.0	90.42	180.04	6,718.3	-1,475.0	-1,472.0	1,744.5	0.00	0.00	0.00
8,700.0	90.42	180.04	6,717.5	-1,575.0	-1,472.1	1,842.4	0.00	0.00	0.00
8,800.0	90.42	180.04	6,716.8	-1,675.0	-1,472.2	1,940.3	0.00	0.00	0.00
8,900.0	90.42	180.04	6,716.1	-1,775.0	-1,472.3	2,038.2	0.00	0.00	0.00
9,000.0	90.42	180.04	6,715.3	-1,875.0	-1,472.3	2,136.1	0.00	0.00	0.00
9,100.0	90.42	180.04	6,714.6	-1,975.0	-1,472.4	2,234.0	0.00	0.00	0.00
9,200.0	90.42	180.04	6,713.8	-2,075.0	-1,472.5	2,331.9	0.00	0.00	0.00
9,300.0	90.42	180.04	6,713.1	-2,175.0	-1,472.6	2,429.9	0.00	0.00	0.00
9,400.0	90.42	180.04	6,712.4	-2,275.0	-1,472.6	2,527.8	0.00	0.00	0.00
9,500.0	90.42	180.04	6,711.6	-2,375.0	-1,472.7	2,625.7	0.00	0.00	0.00
9,600.0	90.42	180.04	6,710.9	-2,475.0	-1,472.8	2,723.6	0.00	0.00	0.00
9,700.0	90.42	180.04	6,710.2	-2,575.0	-1,472.9	2,821.5	0.00	0.00	0.00
9,800.0	90.42	180.04	6,709.4	-2,675.0	-1,472.9	2,919.4	0.00	0.00	0.00
9,900.0	90.42	180.04	6,708.7	-2,775.0	-1,473.0	3,017.3	0.00	0.00	0.00
10,000.0	90.42	180.04	6,708.0	-2,875.0	-1,473.1	3,115.2	0.00	0.00	0.00
10,100.0	90.42	180.04	6,707.2	-2,975.0	-1,473.2	3,213.1	0.00	0.00	0.00
10,200.0	90.42	180.04	6,706.5	-3,075.0	-1,473.2	3,311.0	0.00	0.00	0.00
10,300.0	90.42	180.04	6,705.7	-3,175.0	-1,473.3	3,408.9	0.00	0.00	0.00
10,400.0	90.42	180.04	6,705.0	-3,275.0	-1,473.4	3,506.8	0.00	0.00	0.00
10,500.0	90.42	180.04	6,704.3	-3,375.0	-1,473.5	3,604.7	0.00	0.00	0.00
10,600.0	90.42	180.04	6,703.5	-3,474.9	-1,473.5	3,702.6	0.00	0.00	0.00
10,700.0	90.42	180.04	6,702.8	-3,574.9	-1,473.6	3,800.5	0.00	0.00	0.00
10,800.0	90.42	180.04	6,702.1	-3,674.9	-1,473.7	3,898.4	0.00	0.00	0.00
10,900.0	90.42	180.04	6,701.3	-3,774.9	-1,473.8	3,996.3	0.00	0.00	0.00
11,000.0	90.42	180.04	6,700.6	-3,874.9	-1,473.9	4,094.2	0.00	0.00	0.00
11,100.0	90.42	180.04	6,699.8	-3,974.9	-1,473.9	4,192.2	0.00	0.00	0.00
11,200.0	90.42	180.04	6,699.1	-4,074.9	-1,474.0	4,290.1	0.00	0.00	0.00
11,300.0	90.42	180.04	6,698.4	-4,174.9	-1,474.1	4,388.0	0.00	0.00	0.00
11,400.0	90.42	180.04	6,697.6	-4,274.9	-1,474.2	4,485.9	0.00	0.00	0.00
11,500.0	90.42	180.04	6,696.9	-4,374.9	-1,474.2	4,583.8	0.00	0.00	0.00
11,600.0	90.42	180.04	6,696.2	-4,474.9	-1,474.3	4,681.7	0.00	0.00	0.00
11,700.0	90.42	180.04	6,695.4	-4,574.9	-1,474.4	4,779.6	0.00	0.00	0.00
11,800.0	90.42	180.04	6,694.7	-4,674.9	-1,474.5	4,877.5	0.00	0.00	0.00
11,900.0	90.42	180.04	6,694.0	-4,774.9	-1,474.5	4,975.4	0.00	0.00	0.00
12,000.0	90.42	180.04	6,693.2	-4,874.9	-1,474.6	5,073.3	0.00	0.00	0.00
12,100.0	90.42	180.04	6,692.5	-4,974.9	-1,474.7	5,171.2	0.00	0.00	0.00
12,200.0	90.42	180.04	6,691.7	-5,074.9	-1,474.8	5,269.1	0.00	0.00	0.00
12,300.0	90.42	180.04	6,691.0	-5,174.9	-1,474.8	5,367.0	0.00	0.00	0.00
12,400.0	90.42	180.04	6,690.3	-5,274.9	-1,474.9	5,464.9	0.00	0.00	0.00
12,500.0	90.42	180.04	6,689.5	-5,374.9	-1,475.0	5,562.8	0.00	0.00	0.00
12,600.0	90.42	180.04	6,688.8	-5,474.9	-1,475.1	5,660.7	0.00	0.00	0.00
12,700.0	90.42	180.04	6,688.1	-5,574.9	-1,475.1	5,758.6	0.00	0.00	0.00
12,800.0	90.42	180.04	6,687.3	-5,674.9	-1,475.2	5,856.6	0.00	0.00	0.00
12,900.0	90.42	180.04	6,686.6	-5,774.9	-1,475.3	5,954.5	0.00	0.00	0.00
13,000.0	90.42	180.04	6,685.9	-5,874.9	-1,475.4	6,052.4	0.00	0.00	0.00
13,100.0	90.42	180.04	6,685.1	-5,974.9	-1,475.4	6,150.3	0.00	0.00	0.00
13,200.0	90.42	180.04	6,684.4	-6,074.9	-1,475.5	6,248.2	0.00	0.00	0.00

<b>Database:</b>	US_EDM	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-203
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Project:</b>	SEC.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Ottenhoff 29M-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	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)
13,300.0	90.42	180.04	6,683.6	-6,174.9	-1,475.6	6,346.1	0.00	0.00	0.00
13,400.0	90.42	180.04	6,682.9	-6,274.9	-1,475.7	6,444.0	0.00	0.00	0.00
13,500.0	90.42	180.04	6,682.2	-6,374.9	-1,475.7	6,541.9	0.00	0.00	0.00
13,600.0	90.42	180.04	6,681.4	-6,474.9	-1,475.8	6,639.8	0.00	0.00	0.00
13,700.0	90.42	180.04	6,680.7	-6,574.9	-1,475.9	6,737.7	0.00	0.00	0.00
13,800.0	90.42	180.04	6,680.0	-6,674.9	-1,476.0	6,835.6	0.00	0.00	0.00
13,900.0	90.42	180.04	6,679.2	-6,774.9	-1,476.0	6,933.5	0.00	0.00	0.00
14,000.0	90.42	180.04	6,678.5	-6,874.9	-1,476.1	7,031.4	0.00	0.00	0.00
14,100.0	90.42	180.04	6,677.8	-6,974.9	-1,476.2	7,129.3	0.00	0.00	0.00
14,200.0	90.42	180.04	6,677.0	-7,074.9	-1,476.3	7,227.2	0.00	0.00	0.00
14,202.5	90.42	180.04	6,677.0	-7,077.4	-1,476.3	7,229.7	0.00	0.00	0.00
TD at 14202.5									

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 556'FNL & 1080'FE - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,381,166.81	3,259,614.35	40.375960	-104.568160
BHL 2340'FNL & 2602'F - plan hits target center - Point	0.00	0.00	6,677.0	-7,077.4	-1,476.3	1,374,074.59	3,258,212.58	40.356533	-104.573457
LPL 819'FNL & 2553'FEI - plan hits target center - Point	0.00	0.00	6,727.0	-288.5	-1,471.1	1,380,862.89	3,258,146.38	40.375168	-104.573440

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,681.3	3,530.0	Parkman Sandstone		0.00		
4,392.5	4,200.0	Sussex Sandstone		0.00		
6,691.3	6,415.0	Sharon Springs		0.00		
6,892.9	6,560.0	Niobrara A		0.00		
7,061.8	6,650.0	Niobrara B		0.00		

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

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
200.0	200.0	0.0	0.0	KOP - Start Build 1.50
4,964.7	4,739.0	429.5	-1,312.8	Start Drop -2.00
6,207.8	5,963.1	481.1	-1,470.6	Start Build 7.50
7,413.4	6,727.0	-288.4	-1,471.1	Start DLS 0.50 TFO 60.40
7,414.2	6,727.0	-289.2	-1,471.1	Start 6788.3 hold at 7414.2 MD
14,202.5	6,677.0	-7,077.4	-1,476.3	TD at 14202.5





# **PETROLEUM DEVELOPMENT CORP DJ Basin**

**SEC.29-T5N-R64W**

**Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W**

**Ottenhoff 29M-203**

**Wellbore #1**

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

## **Anticollision Report**

**27 January, 2017**



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

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

<b>Survey Tool Program</b>	<b>Date</b>	1/27/2017		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	14,202.1	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
<b>Offset Well - Wellbore - Design</b>						
Bell Pad SEC.29-T5N-R64W						
Bell B29-22D - Bell B29-22D - Bell B29-22D						Out of range
Bell B29-24D - Bell B29-24D - Bell B29-24D	10,730.4	7,019.4	98.3	-25.3	0.795	Level 1, CC, ES, SF
Existing Wells Sec.29-T5N-R64W						
Blake #B 29-10X (Exist.) - Wellbore #1 - Wellbore #1	9,772.8	6,712.6	483.7	250.9	2.078	CC, ES
Blake #B 29-10X (Exist.) - Wellbore #1 - Wellbore #1	9,800.0	6,712.4	484.5	251.1	2.076	SF
Blake #B29-10 (D&A) - Wellbore #1 - Wellbore #1	9,923.9	6,711.5	557.7	321.5	2.362	CC, ES, SF
Blake #B29-15 (Exist.) - Wellbore #1 - Wellbore #1	11,197.2	6,717.1	564.2	299.0	2.128	CC
Blake #B29-15 (Exist.) - Wellbore #1 - Wellbore #1	11,200.0	6,717.1	564.2	298.9	2.127	ES, SF
Carlson 29-1 (Exist.) - Wellbore #1 - Wellbore #1	8,673.5	6,678.8	654.1	594.0	10.879	CC
Carlson 29-1 (Exist.) - Wellbore #1 - Wellbore #1	8,700.0	6,679.1	654.6	594.0	10.790	ES
Carlson 29-1 (Exist.) - Wellbore #1 - Wellbore #1	8,800.0	6,680.2	666.2	603.5	10.617	SF
DIC Cross #31-32 (P&A) - Wellbore #1 - Wellbore #1	12,534.2	6,715.3	652.6	356.7	2.205	CC, ES
DIC Cross #31-32 (P&A) - Wellbore #1 - Wellbore #1	12,600.0	6,714.8	655.9	358.5	2.205	SF
Heldt B #29-21 (Exist.) - Wellbore #1 - Wellbore #1	9,352.5	6,715.7	246.9	23.3	1.104	Level 2, CC, ES, SF
Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W						
Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)	200.0	201.0	30.1	29.3	36.311	CC, ES
Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)	14,202.5	14,188.1	452.1	115.0	1.341	Level 3, SF
Ottenhoff 29M-423 - Wellbore #1 - Plan #2 (1-25-17)	200.0	200.0	15.0	14.2	18.220	CC, ES
Ottenhoff 29M-423 - Wellbore #1 - Plan #2 (1-25-17)	14,202.5	14,295.3	294.7	17.1	1.062	Level 2, SF
Ottenhoff 29R-143 - Wellbore #1 - Plan #2 (1-25-17)	200.0	200.0	60.2	59.4	72.864	CC, ES
Ottenhoff 29R-143 - Wellbore #1 - Plan #2 (1-25-17)	4,500.0	4,479.5	794.0	761.4	24.402	SF
Ottenhoff 29R-203 - Wellbore #1 - Plan #2 (1-25-17)	200.0	200.0	90.0	89.2	108.958	CC, ES
Ottenhoff 29R-203 - Wellbore #1 - Plan #2 (1-25-17)	900.0	896.1	152.2	147.5	31.827	SF
Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)	200.0	200.0	45.1	44.3	54.651	CC, ES
Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)	14,202.5	14,067.2	700.1	360.6	2.062	SF
Ottenhoff 29R-303 - Wellbore #1 - Plan #2 (1-25-17)	200.0	200.0	75.2	74.4	91.077	CC, ES
Ottenhoff 29R-303 - Wellbore #1 - Plan #2 (1-25-17)	800.0	797.5	120.9	116.7	28.718	SF
Ybarra B 29-18 Sec.29-T5N-R64W						
Ybarra B 29-18 - Wellbore #1 - Wellbore #1	7,944.4	6,830.1	141.5	89.2	2.705	CC, ES, SF

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

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 685- Bell Pad SEC.29-T5N-R64W - Bell B29-24D - Bell B29-24D - Bell B29-24D													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
10,000.0	6,708.0	7,020.6	6,714.4	77.8	35.6	-89.87	-3,605.4	-1,375.4	736.9	629.8	107.14	6.878		
10,100.0	6,707.2	7,020.5	6,714.2	80.0	35.6	-89.78	-3,605.4	-1,375.4	638.0	528.6	109.37	5.833		
10,200.0	6,706.5	7,020.3	6,714.0	82.1	35.6	-89.69	-3,605.4	-1,375.4	539.4	427.8	111.61	4.833		
10,300.0	6,705.7	7,020.2	6,713.9	84.2	35.6	-89.59	-3,605.4	-1,375.4	441.4	327.6	113.85	3.877		
10,400.0	6,705.0	7,020.0	6,713.7	86.4	35.6	-89.49	-3,605.4	-1,375.4	344.7	228.6	116.10	2.969		
10,500.0	6,704.3	7,019.8	6,713.5	88.6	35.6	-89.39	-3,605.4	-1,375.4	250.4	132.1	118.35	2.116		
10,600.0	6,703.5	7,019.6	6,713.3	90.7	35.6	-89.29	-3,605.4	-1,375.4	163.3	42.7	120.60	1.354	Level 3	
10,700.0	6,702.8	7,019.5	6,713.2	92.9	35.6	-89.18	-3,605.4	-1,375.4	102.9	-20.0	122.86	0.837	Level 1	
10,730.4	6,702.6	7,019.4	6,713.1	93.6	35.6	-89.15	-3,605.4	-1,375.4	98.3	-25.3	123.55	0.795	Level 1, CC, ES, SF	
10,800.0	6,702.1	7,019.3	6,713.0	95.1	35.6	-89.07	-3,605.4	-1,375.4	120.5	-4.7	125.12	0.963	Level 1	
10,900.0	6,701.3	7,019.1	6,712.8	97.3	35.6	-88.96	-3,605.4	-1,375.4	196.1	68.7	127.39	1.539		
11,000.0	6,700.6	7,018.9	6,712.6	99.5	35.6	-88.84	-3,605.4	-1,375.4	287.0	157.3	129.65	2.214		
11,100.0	6,699.8	7,018.7	6,712.4	101.7	35.6	-88.72	-3,605.4	-1,375.4	382.5	250.6	131.92	2.899		
11,200.0	6,699.1	7,018.5	6,712.2	104.0	35.6	-88.60	-3,605.4	-1,375.4	479.8	345.6	134.19	3.576		
11,300.0	6,698.4	7,018.2	6,712.0	106.2	35.6	-88.47	-3,605.4	-1,375.4	578.1	441.6	136.46	4.236		
11,400.0	6,697.6	7,018.0	6,711.7	108.4	35.6	-88.34	-3,605.4	-1,375.4	676.8	538.1	138.74	4.878		
11,500.0	6,696.9	7,017.8	6,711.5	110.7	35.6	-88.21	-3,605.4	-1,375.4	775.9	634.9	141.01	5.502		

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

Offset Design		Existing Wells Sec.29-T5N-R64W - Blake #B 29-10X (Exist.) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft
Survey Program:		7072-UNKNOWN											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
9,200.0	6,713.8	6,716.8	6,716.8	61.6	164.6	-90.50	-2,648.1	-989.2	749.7	529.3	220.38	3.402			
9,300.0	6,713.1	6,716.1	6,716.1	63.5	164.5	-90.41	-2,648.1	-989.2	676.4	453.9	222.52	3.040			
9,400.0	6,712.4	6,715.4	6,715.4	65.5	164.5	-90.33	-2,648.1	-989.2	610.7	386.0	224.67	2.718			
9,500.0	6,711.6	6,714.6	6,714.6	67.5	164.5	-90.24	-2,648.1	-989.2	555.3	328.5	226.84	2.448			
9,600.0	6,710.9	6,713.9	6,713.9	69.5	164.5	-90.15	-2,648.1	-989.2	513.6	284.6	229.01	2.243			
9,700.0	6,710.2	6,713.2	6,713.2	71.6	164.5	-90.06	-2,648.1	-989.2	489.2	258.0	231.19	2.116			
9,772.8	6,709.6	6,712.6	6,712.6	73.1	164.5	-90.00	-2,648.1	-989.2	483.7	250.9	232.79	2.078 CC, ES			
9,800.0	6,709.4	6,712.4	6,712.4	73.6	164.5	-89.98	-2,648.1	-989.2	484.5	251.1	233.39	2.076 SF			
9,900.0	6,708.7	6,711.7	6,711.7	75.7	164.4	-89.89	-2,648.1	-989.2	500.2	264.6	235.59	2.123			
10,000.0	6,708.0	6,711.0	6,711.0	77.8	164.4	-89.80	-2,648.1	-989.2	534.4	296.6	237.80	2.247			
10,100.0	6,707.2	6,710.2	6,710.2	80.0	164.4	-89.71	-2,648.1	-989.2	584.0	344.0	240.01	2.433			
10,200.0	6,706.5	6,709.5	6,709.5	82.1	164.4	-89.63	-2,648.1	-989.2	645.3	403.1	242.23	2.664			
10,300.0	6,705.7	6,708.7	6,708.7	84.2	164.4	-89.54	-2,648.1	-989.2	715.5	471.0	244.46	2.927			
10,400.0	6,705.0	6,708.0	6,708.0	86.4	164.3	-89.45	-2,648.1	-989.2	792.0	545.4	246.69	3.211			

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

Offset Design		Existing Wells Sec.29-T5N-R64W - Blake #B29-10 (D&A) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft
Survey Program:		7125-UNKNOWN											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
9,400.0	6,712.4	6,715.4	6,715.4	65.5	164.5	-90.40	-2,799.3	-915.4	765.2	540.5	224.68	3.406			
9,500.0	6,711.6	6,714.6	6,714.6	67.5	164.5	-90.32	-2,799.3	-915.4	700.5	473.7	226.84	3.088			
9,600.0	6,710.9	6,713.9	6,713.9	69.5	164.5	-90.25	-2,799.3	-915.4	644.9	415.9	229.02	2.816			
9,700.0	6,710.2	6,713.2	6,713.2	71.6	164.5	-90.17	-2,799.3	-915.4	600.9	369.7	231.21	2.599			
9,800.0	6,709.4	6,712.4	6,712.4	73.6	164.5	-90.09	-2,799.3	-915.4	571.3	337.9	233.40	2.448			
9,900.0	6,708.7	6,711.7	6,711.7	75.7	164.4	-90.02	-2,799.3	-915.4	558.2	322.6	235.60	2.369			
9,923.9	6,708.5	6,711.5	6,711.5	76.2	164.4	-90.00	-2,799.3	-915.4	557.7	321.5	236.13	2.362	CC, ES, SF		
10,000.0	6,708.0	6,711.0	6,711.0	77.8	164.4	-89.94	-2,799.3	-915.4	562.8	325.0	237.82	2.367			
10,100.0	6,707.2	6,710.2	6,710.2	80.0	164.4	-89.87	-2,799.3	-915.4	584.8	344.8	240.03	2.436			
10,200.0	6,706.5	6,709.5	6,709.5	82.1	164.4	-89.79	-2,799.3	-915.4	622.2	380.0	242.26	2.569			
10,300.0	6,705.7	6,708.7	6,708.7	84.2	164.4	-89.72	-2,799.3	-915.4	672.6	428.1	244.49	2.751			
10,400.0	6,705.0	6,708.0	6,708.0	86.4	164.3	-89.64	-2,799.3	-915.4	733.2	486.5	246.72	2.972			

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

Offset Design		Existing Wells Sec.29-T5N-R64W - Blake #B29-15 (Exist.) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft
Survey Program:		7092-UNKNOWN											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
10,700.0	6,702.8	6,720.8	6,720.8	92.9	164.7	-90.37	-4,072.6	-909.8	752.0	498.1	253.93	2.961			
10,800.0	6,702.1	6,720.1	6,720.1	95.1	164.6	-90.30	-4,072.6	-909.8	690.0	433.8	256.18	2.693			
10,900.0	6,701.3	6,719.3	6,719.3	97.3	164.6	-90.22	-4,072.6	-909.8	637.7	379.2	258.44	2.467			
11,000.0	6,700.6	6,718.6	6,718.6	99.5	164.6	-90.15	-4,072.6	-909.8	597.6	336.9	260.70	2.292			
11,100.0	6,699.8	6,717.8	6,717.8	101.7	164.6	-90.07	-4,072.6	-909.8	572.5	309.5	262.96	2.177			
11,197.2	6,699.1	6,717.1	6,717.1	103.9	164.6	-90.00	-4,072.6	-909.8	564.2	299.0	265.17	2.128	CC		
11,200.0	6,699.1	6,717.1	6,717.1	104.0	164.6	-90.00	-4,072.6	-909.8	564.2	298.9	265.23	2.127	ES, SF		
11,300.0	6,698.4	6,716.4	6,716.4	106.2	164.6	-89.92	-4,072.6	-909.8	573.4	305.9	267.50	2.144			
11,400.0	6,697.6	6,715.6	6,715.6	108.4	164.5	-89.85	-4,072.6	-909.8	599.5	329.7	269.77	2.222			
11,500.0	6,696.9	6,714.9	6,714.9	110.7	164.5	-89.77	-4,072.6	-909.8	640.3	368.2	272.04	2.354			
11,600.0	6,696.2	6,714.2	6,714.2	112.9	164.5	-89.70	-4,072.6	-909.8	693.2	418.9	274.32	2.527			
11,700.0	6,695.4	6,713.4	6,713.4	115.1	164.5	-89.62	-4,072.6	-909.8	755.7	479.1	276.59	2.732			

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

Offset Design Existing Wells Sec.29-T5N-R64W - Carlson 29-1 (Exist.) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft	
Survey Program: 100-NS-GYRO-MS											Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance					Warning		
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
8,300.0	6,720.5	6,674.8	6,673.7	46.3	15.9	-86.49	-1,548.7	-819.2	753.2	700.5	52.67	14.299		
8,400.0	6,719.7	6,675.9	6,674.7	47.7	15.9	-86.58	-1,548.7	-819.2	709.0	654.3	54.61	12.982		
8,500.0	6,719.0	6,677.0	6,675.8	49.2	15.9	-86.68	-1,548.7	-819.1	676.7	620.1	56.59	11.957		
8,600.0	6,718.3	6,678.0	6,676.9	50.8	15.9	-86.77	-1,548.7	-819.0	658.2	599.6	58.61	11.230		
8,673.5	6,717.7	6,678.8	6,677.6	52.0	15.9	-86.84	-1,548.7	-819.0	654.1	594.0	60.12	10.879 CC		
8,700.0	6,717.5	6,679.1	6,677.9	52.4	15.9	-86.86	-1,548.7	-819.0	654.6	594.0	60.67	10.790 ES		
8,800.0	6,716.8	6,680.2	6,679.0	54.2	15.9	-86.96	-1,548.7	-818.9	666.2	603.5	62.75	10.617 SF		
8,900.0	6,716.1	6,681.2	6,680.1	55.9	15.9	-87.05	-1,548.8	-818.9	692.2	627.3	64.86	10.672		
9,000.0	6,715.3	6,682.3	6,681.1	57.8	15.9	-87.14	-1,548.8	-818.8	731.0	664.1	66.99	10.913		
9,100.0	6,714.6	6,683.4	6,682.2	59.6	15.9	-87.24	-1,548.8	-818.7	780.8	711.7	69.14	11.293		

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

Offset Design Existing Wells Sec.29-T5N-R64W - DIC Cross #31-32 (P&A) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7025-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
12,100.0	6,692.5	6,718.5	6,718.5	124.2	164.6	-90.28	-5,409.6	-822.4	783.9	497.9	286.02	2.741		
12,200.0	6,691.7	6,717.7	6,717.7	126.4	164.6	-90.22	-5,409.6	-822.4	733.2	444.9	288.31	2.543		
12,300.0	6,691.0	6,717.0	6,717.0	128.7	164.6	-90.15	-5,409.6	-822.4	693.4	402.8	290.60	2.386		
12,400.0	6,690.3	6,716.3	6,716.3	131.0	164.5	-90.09	-5,409.6	-822.4	666.3	373.4	292.89	2.275		
12,500.0	6,689.5	6,715.5	6,715.5	133.2	164.5	-90.02	-5,409.6	-822.4	653.5	358.3	295.18	2.214		
12,534.2	6,689.3	6,715.3	6,715.3	134.0	164.5	-90.00	-5,409.6	-822.4	652.6	356.7	295.97	2.205 CC, ES		
12,600.0	6,688.8	6,714.8	6,714.8	135.5	164.5	-89.96	-5,409.6	-822.4	655.9	358.5	297.48	2.205 SF		
12,700.0	6,688.1	6,714.1	6,714.1	137.8	164.5	-89.89	-5,409.6	-822.4	673.4	373.6	299.77	2.246		
12,800.0	6,687.3	6,713.3	6,713.3	140.1	164.5	-89.83	-5,409.6	-822.4	704.7	402.6	302.06	2.333		
12,900.0	6,686.6	6,712.6	6,712.6	142.3	164.5	-89.76	-5,409.6	-822.4	748.1	443.8	304.36	2.458		



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

Offset Design		Existing Wells Sec.29-T5N-R64W - Heldt B #29-21 (Exist.) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft
Survey Program:		7107-UNKNOWN											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			
8,600.0	6,718.3	6,721.3	6,721.3	50.8	164.7	91.29	-2,227.3	-1,719.5	792.0	584.3	207.65	3.814			
8,700.0	6,717.5	6,720.5	6,720.5	52.4	164.7	91.11	-2,227.3	-1,719.5	697.7	488.0	209.70	3.327			
8,800.0	6,716.8	6,719.8	6,719.8	54.2	164.6	90.94	-2,227.3	-1,719.5	605.2	393.4	211.77	2.858			
8,900.0	6,716.1	6,719.1	6,719.1	55.9	164.6	90.77	-2,227.3	-1,719.5	515.5	301.6	213.88	2.410			
9,000.0	6,715.3	6,718.3	6,718.3	57.8	164.6	90.60	-2,227.3	-1,719.5	430.4	214.4	216.00	1.993			
9,100.0	6,714.6	6,717.6	6,717.6	59.6	164.6	90.43	-2,227.3	-1,719.5	353.2	135.0	218.14	1.619			
9,200.0	6,713.8	6,716.8	6,716.8	61.6	164.6	90.26	-2,227.3	-1,719.5	290.2	69.9	220.29	1.317	Level 3		
9,300.0	6,713.1	6,716.1	6,716.1	63.5	164.5	90.09	-2,227.3	-1,719.5	252.4	30.0	222.46	1.135	Level 2		
9,352.5	6,712.7	6,715.7	6,715.7	64.5	164.5	90.00	-2,227.3	-1,719.5	246.9	23.3	223.61	1.104	Level 2, CC, ES, SF		
9,400.0	6,712.4	6,715.4	6,715.4	65.5	164.5	89.92	-2,227.3	-1,719.5	251.4	26.8	224.65	1.119	Level 2		
9,500.0	6,711.6	6,714.6	6,714.6	67.5	164.5	89.75	-2,227.3	-1,719.5	287.6	60.8	226.84	1.268	Level 3		
9,600.0	6,710.9	6,713.9	6,713.9	69.5	164.5	89.58	-2,227.3	-1,719.5	349.6	120.6	229.04	1.526			
9,700.0	6,710.2	6,713.2	6,713.2	71.6	164.5	89.41	-2,227.3	-1,719.5	426.3	195.0	231.25	1.843			
9,800.0	6,709.4	6,712.4	6,712.4	73.6	164.5	89.24	-2,227.3	-1,719.5	511.1	277.6	233.46	2.189			
9,900.0	6,708.7	6,711.7	6,711.7	75.7	164.4	89.06	-2,227.3	-1,719.5	600.6	364.9	235.68	2.548			
10,000.0	6,708.0	6,711.0	6,711.0	77.8	164.4	88.89	-2,227.3	-1,719.5	692.9	455.0	237.91	2.913			
10,100.0	6,707.2	6,710.2	6,710.2	80.0	164.4	88.72	-2,227.3	-1,719.5	787.2	547.0	240.14	3.278			

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

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	1.0	1.0	0.0	0.0	90.69	-0.4	30.1	30.1	30.1	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	90.69	-0.4	30.1	30.1	29.8	0.28	108.213		
200.0	200.0	201.0	201.0	0.4	0.4	90.69	-0.4	30.1	30.1	29.3	0.83	36.311 CC, ES		
300.0	300.0	301.0	301.0	0.7	0.7	163.29	-0.4	30.1	31.3	30.0	1.38	22.704		
400.0	399.9	400.9	400.9	1.0	1.0	165.12	-0.4	30.1	35.1	33.2	1.94	18.116		
500.0	499.7	500.7	500.7	1.2	1.2	167.42	-0.4	30.1	41.5	39.0	2.50	16.566		
600.0	599.3	600.3	600.3	1.6	1.5	169.66	-0.4	30.1	50.4	47.4	3.07	16.423		
700.0	698.6	699.6	699.6	1.9	1.8	171.58	-0.4	30.1	62.0	58.4	3.64	17.041		
800.0	797.5	798.5	798.5	2.3	2.1	173.13	-0.4	30.1	76.3	72.1	4.21	18.111		
900.0	896.1	899.4	899.4	2.7	2.3	174.21	0.2	28.9	91.9	87.1	4.77	19.250		
1,000.0	994.2	1,000.8	1,000.7	3.2	2.6	174.80	1.9	25.3	107.5	102.2	5.33	20.187		
1,100.0	1,091.7	1,102.6	1,102.2	3.8	2.9	175.09	4.7	19.2	123.2	117.3	5.89	20.913		
1,200.0	1,188.6	1,204.8	1,204.0	4.4	3.2	175.18	8.6	10.6	138.8	132.4	6.46	21.474		
1,300.0	1,284.9	1,307.4	1,305.9	5.0	3.5	175.13	13.8	-0.4	154.4	147.4	7.05	21.901		
1,400.0	1,380.4	1,410.5	1,407.9	5.8	3.9	174.97	20.1	-14.1	170.0	162.4	7.65	22.216		
1,506.6	1,481.3	1,520.8	1,516.6	6.6	4.3	174.72	28.1	-31.4	186.6	178.3	8.32	22.444		
1,600.0	1,569.3	1,618.1	1,611.8	7.4	4.7	174.43	36.3	-49.1	200.0	191.1	8.94	22.382		
1,700.0	1,663.5	1,722.9	1,713.9	8.2	5.2	174.00	46.3	-70.6	211.7	202.1	9.63	21.992		
1,800.0	1,757.7	1,828.3	1,815.9	9.1	5.8	173.44	57.5	-94.7	220.8	210.5	10.34	21.358		
1,900.0	1,851.9	1,928.3	1,912.3	9.9	6.4	172.87	68.7	-119.0	228.5	217.4	11.07	20.644		
2,000.0	1,946.1	2,028.0	2,008.3	10.8	7.0	172.33	79.9	-143.2	236.1	224.3	11.81	19.993		
2,100.0	2,040.3	2,127.7	2,104.4	11.6	7.6	171.83	91.1	-167.4	243.7	231.2	12.56	19.400		
2,200.0	2,134.5	2,227.4	2,200.4	12.5	8.3	171.35	102.3	-191.6	251.4	238.1	13.33	18.857		
2,300.0	2,228.7	2,327.1	2,296.5	13.3	8.9	170.91	113.6	-215.9	259.1	245.0	14.11	18.360		
2,400.0	2,322.9	2,426.7	2,392.5	14.2	9.6	170.49	124.8	-240.1	266.8	251.9	14.90	17.903		
2,500.0	2,417.1	2,526.4	2,488.6	15.1	10.2	170.10	136.0	-264.3	274.5	258.8	15.70	17.482		
2,600.0	2,511.3	2,626.1	2,584.6	16.0	10.9	169.72	147.2	-288.5	282.2	265.7	16.51	17.094		
2,700.0	2,605.5	2,725.8	2,680.7	16.8	11.6	169.37	158.4	-312.7	290.0	272.6	17.33	16.735		
2,800.0	2,699.7	2,825.5	2,776.7	17.7	12.2	169.03	169.6	-336.9	297.7	279.5	18.15	16.402		
2,900.0	2,793.9	2,925.2	2,872.8	18.6	12.9	168.72	180.8	-361.1	305.5	286.5	18.98	16.093		
3,000.0	2,888.1	3,024.9	2,968.8	19.4	13.6	168.41	192.0	-385.3	313.2	293.4	19.82	15.805		
3,100.0	2,982.3	3,124.5	3,064.9	20.3	14.3	168.12	203.3	-409.5	321.0	300.3	20.66	15.537		
3,200.0	3,076.6	3,224.2	3,160.9	21.2	14.9	167.85	214.5	-433.7	328.8	307.3	21.51	15.285		
3,300.0	3,170.8	3,323.9	3,257.0	22.0	15.6	167.59	225.7	-457.9	336.6	314.2	22.36	15.050		
3,400.0	3,265.0	3,423.6	3,353.0	22.9	16.3	167.34	236.9	-482.1	344.3	321.1	23.22	14.830		
3,500.0	3,359.2	3,523.3	3,449.1	23.8	17.0	167.10	248.1	-506.3	352.1	328.1	24.08	14.622		
3,600.0	3,453.4	3,623.0	3,545.1	24.7	17.7	166.87	259.3	-530.5	360.0	335.0	24.95	14.427		
3,700.0	3,547.6	3,722.6	3,641.2	25.5	18.4	166.65	270.5	-554.7	367.8	341.9	25.82	14.243		
3,800.0	3,641.8	3,822.3	3,737.2	26.4	19.1	166.44	281.7	-578.9	375.6	348.9	26.69	14.069		
3,900.0	3,736.0	3,922.0	3,833.3	27.3	19.7	166.24	293.0	-603.2	383.4	355.8	27.57	13.905		
4,000.0	3,830.2	4,021.7	3,929.3	28.2	20.4	166.05	304.2	-627.4	391.2	362.8	28.45	13.749		
4,100.0	3,924.4	4,121.4	4,025.4	29.0	21.1	165.86	315.4	-651.6	399.1	369.7	29.34	13.602		
4,200.0	4,018.6	4,221.1	4,121.4	29.9	21.8	165.69	326.6	-675.8	406.9	376.7	30.23	13.462		
4,300.0	4,112.8	4,320.8	4,217.5	30.8	22.5	165.51	337.8	-700.0	414.7	383.6	31.11	13.329		
4,400.0	4,207.0	4,420.4	4,313.5	31.7	23.2	165.35	349.0	-724.2	422.6	390.6	32.01	13.202		
4,500.0	4,301.2	4,520.1	4,409.6	32.5	23.9	165.19	360.2	-748.4	430.4	397.5	32.90	13.082		
4,600.0	4,395.4	4,619.8	4,505.6	33.4	24.6	165.04	371.4	-772.6	438.3	404.5	33.80	12.967		
4,700.0	4,489.6	4,719.5	4,601.7	34.3	25.3	164.89	382.7	-796.8	446.1	411.4	34.70	12.857		
4,800.0	4,583.8	4,819.2	4,697.7	35.2	26.0	164.75	393.9	-821.0	454.0	418.4	35.60	12.752		
4,900.0	4,678.1	4,918.9	4,793.8	36.0	26.7	164.61	405.1	-845.2	461.8	425.3	36.50	12.652		
4,964.7	4,739.0	4,983.4	4,855.9	36.6	27.1	164.52	412.3	-860.9	466.9	429.8	37.09	12.589		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-203
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	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)			
5,000.0	4,772.3	5,018.6	4,889.8	36.9	27.4	164.48	416.3	-869.4	469.5	432.0	37.42	12.544		
5,100.0	4,867.5	5,118.4	4,986.0	37.5	28.1	164.28	427.5	-893.7	474.5	436.1	38.35	12.371		
5,200.0	4,963.7	5,218.4	5,082.3	38.1	28.7	163.95	438.8	-917.9	476.1	436.8	39.28	12.121		
5,300.0	5,060.7	5,312.1	5,172.7	38.6	29.3	163.54	449.2	-940.4	474.7	434.6	40.15	11.826		
5,400.0	5,158.6	5,400.0	5,258.1	39.0	29.8	163.14	458.0	-959.5	472.5	431.6	40.88	11.558		
5,500.0	5,257.1	5,485.6	5,341.8	39.4	30.2	162.76	465.6	-975.8	469.6	428.1	41.51	11.313		
5,600.0	5,356.1	5,572.5	5,427.3	39.7	30.5	162.40	472.1	-990.0	466.3	424.2	42.07	11.082		
5,700.0	5,455.6	5,659.6	5,513.3	40.0	30.8	162.04	477.6	-1,001.8	462.3	419.8	42.55	10.865		
5,800.0	5,555.4	5,746.7	5,599.8	40.2	31.0	161.69	482.0	-1,011.3	457.9	414.9	42.95	10.661		
5,900.0	5,655.3	5,834.0	5,686.8	40.3	31.3	161.36	485.3	-1,018.4	452.9	409.6	43.27	10.468		
5,944.7	5,700.0	5,873.0	5,725.7	40.3	31.3	89.32	486.4	-1,020.8	450.5	407.1	43.40	10.380		
6,000.0	5,755.3	5,921.4	5,774.1	40.4	31.4	89.18	487.5	-1,023.1	447.9	404.2	43.66	10.259		
6,100.0	5,855.3	6,009.1	5,861.7	40.5	31.6	89.04	488.5	-1,025.4	445.3	401.3	44.06	10.107		
6,160.4	5,915.7	6,064.1	5,916.7	40.6	31.6	89.03	488.6	-1,025.6	445.1	400.8	44.26	10.055		
6,207.8	5,963.2	6,111.6	5,964.2	40.6	31.7	89.03	488.6	-1,025.6	445.1	400.6	44.43	10.017		
6,250.0	6,005.3	6,153.7	6,006.3	40.6	31.8	-91.16	488.6	-1,025.6	445.1	400.5	44.63	9.974		
6,300.0	6,055.1	6,203.7	6,056.3	40.7	31.8	-91.70	488.5	-1,025.6	445.2	400.2	45.03	9.886		
6,350.0	6,104.5	6,254.5	6,107.0	40.7	31.9	-92.36	486.0	-1,025.6	445.4	399.9	45.43	9.803		
6,400.0	6,153.3	6,305.7	6,157.8	40.7	31.9	-93.01	480.0	-1,025.6	445.6	399.8	45.76	9.738		
6,450.0	6,201.3	6,357.2	6,208.4	40.6	31.9	-93.64	470.5	-1,025.6	445.9	399.9	46.01	9.691		
6,500.0	6,248.2	6,409.0	6,258.6	40.6	31.9	-94.27	457.6	-1,025.6	446.2	400.1	46.18	9.663		
6,550.0	6,294.0	6,461.2	6,308.2	40.5	31.8	-94.87	441.2	-1,025.6	446.6	400.3	46.26	9.654		
6,600.0	6,338.3	6,513.8	6,356.8	40.5	31.8	-95.46	421.3	-1,025.7	447.0	400.8	46.27	9.662		
6,650.0	6,381.0	6,566.7	6,404.3	40.4	31.7	-96.02	397.9	-1,025.7	447.5	401.3	46.20	9.686		
6,700.0	6,422.0	6,620.0	6,450.3	40.3	31.6	-96.56	371.1	-1,025.7	447.9	401.9	46.06	9.724		
6,750.0	6,460.9	6,673.6	6,494.6	40.3	31.5	-97.06	340.9	-1,025.7	448.4	402.5	45.88	9.774		
6,800.0	6,497.8	6,727.5	6,536.9	40.2	31.4	-97.54	307.6	-1,025.7	448.9	403.2	45.65	9.832		
6,850.0	6,532.3	6,781.7	6,577.0	40.1	31.3	-97.98	271.1	-1,025.8	449.3	403.9	45.42	9.894		
6,900.0	6,564.4	6,836.1	6,614.6	40.0	31.2	-98.39	231.7	-1,025.8	449.8	404.6	45.18	9.955		
6,950.0	6,593.9	6,890.9	6,649.4	39.9	31.1	-98.75	189.5	-1,025.8	450.2	405.3	44.98	10.009		
7,000.0	6,620.8	6,945.8	6,681.2	39.9	30.9	-99.08	144.7	-1,025.9	450.6	405.8	44.84	10.051		
7,050.0	6,644.8	7,001.0	6,709.9	39.8	30.8	-99.36	97.5	-1,025.9	451.0	406.2	44.77	10.073		
7,100.0	6,665.9	7,056.4	6,735.1	39.7	30.8	-99.60	48.3	-1,025.9	451.3	406.5	44.82	10.069		
7,150.0	6,684.0	7,111.9	6,756.8	39.7	30.7	-99.80	-2.8	-1,026.0	451.6	406.6	45.00	10.035		
7,200.0	6,698.9	7,167.5	6,774.7	39.7	30.6	-99.95	-55.5	-1,026.0	451.8	406.4	45.32	9.967		
7,250.0	6,710.8	7,223.2	6,788.8	39.7	30.6	-100.05	-109.4	-1,026.0	451.9	406.1	45.80	9.866		
7,300.0	6,719.4	7,279.0	6,798.9	39.7	30.6	-100.11	-164.2	-1,026.1	452.0	405.5	46.46	9.728		
7,350.0	6,724.8	7,334.8	6,805.0	39.7	30.7	-100.11	-219.6	-1,026.1	452.0	404.7	47.27	9.563		
7,400.0	6,727.0	7,390.6	6,807.0	39.7	30.8	-100.07	-275.4	-1,026.2	451.9	403.7	48.23	9.371		
7,413.3	6,727.0	7,404.5	6,806.9	39.8	30.8	-100.06	-289.3	-1,026.2	451.9	403.4	48.50	9.318		
7,413.4	6,727.0	7,404.6	6,806.9	39.8	30.8	-100.06	-289.4	-1,026.2	451.9	403.4	48.50	9.317		
7,414.0	6,727.0	7,405.2	6,806.9	39.8	30.8	-100.06	-289.9	-1,026.2	451.9	403.4	48.51	9.315		
7,414.2	6,727.0	7,405.4	6,806.9	39.8	30.8	-100.06	-290.2	-1,026.2	451.9	403.4	48.52	9.314		
7,500.0	6,726.4	7,491.2	6,806.3	39.9	31.1	-100.06	-375.9	-1,026.2	451.9	401.7	50.19	9.004		
7,600.0	6,725.6	7,591.2	6,805.6	40.3	31.7	-100.06	-475.9	-1,026.3	451.9	399.4	52.55	8.600		
7,700.0	6,724.9	7,691.2	6,804.8	40.7	32.5	-100.06	-575.9	-1,026.4	451.9	396.7	55.19	8.188		
7,800.0	6,724.2	7,791.2	6,804.1	41.3	33.5	-100.06	-675.9	-1,026.5	451.9	393.8	58.09	7.780		
7,900.0	6,723.4	7,891.2	6,803.4	42.0	34.6	-100.06	-775.9	-1,026.5	451.9	390.7	61.20	7.385		
8,000.0	6,722.7	7,991.2	6,802.6	42.9	36.0	-100.06	-875.9	-1,026.6	451.9	387.4	64.49	7.007		
8,100.0	6,721.9	8,091.2	6,801.9	43.9	37.4	-100.06	-975.9	-1,026.7	451.9	384.0	67.94	6.651		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-203
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	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			
8,200.0	6,721.2	8,191.2	6,801.1	45.0	39.0	-100.06	-1,075.9	-1,026.8	451.9	380.4	71.53	6.318			
8,300.0	6,720.5	8,291.2	6,800.4	46.3	40.7	-100.06	-1,175.9	-1,026.8	451.9	376.7	75.23	6.007			
8,400.0	6,719.7	8,391.2	6,799.7	47.7	42.5	-100.06	-1,275.9	-1,026.9	451.9	372.9	79.03	5.718			
8,500.0	6,719.0	8,491.2	6,798.9	49.2	44.3	-100.06	-1,375.9	-1,027.0	451.9	369.0	82.92	5.450			
8,600.0	6,718.3	8,591.2	6,798.2	50.8	46.1	-100.06	-1,475.9	-1,027.1	451.9	365.0	86.88	5.202			
8,700.0	6,717.5	8,691.2	6,797.5	52.4	48.1	-100.06	-1,575.9	-1,027.1	451.9	361.0	90.90	4.971			
8,800.0	6,716.8	8,791.2	6,796.7	54.2	50.0	-100.06	-1,675.9	-1,027.2	451.9	356.9	94.98	4.758			
8,900.0	6,716.1	8,891.2	6,796.0	55.9	52.0	-100.06	-1,775.9	-1,027.3	451.9	352.8	99.11	4.560			
9,000.0	6,715.3	8,991.2	6,795.3	57.8	54.0	-100.06	-1,875.9	-1,027.4	451.9	348.6	103.29	4.375			
9,100.0	6,714.6	9,091.2	6,794.5	59.6	56.1	-100.06	-1,975.9	-1,027.4	451.9	344.4	107.50	4.204			
9,200.0	6,713.8	9,191.2	6,793.8	61.6	58.1	-100.06	-2,075.9	-1,027.5	451.9	340.2	111.75	4.044			
9,300.0	6,713.1	9,291.2	6,793.0	63.5	60.2	-100.06	-2,175.9	-1,027.6	451.9	335.9	116.02	3.895			
9,400.0	6,712.4	9,391.2	6,792.3	65.5	62.3	-100.06	-2,275.9	-1,027.6	451.9	331.6	120.32	3.756			
9,500.0	6,711.6	9,491.2	6,791.6	67.5	64.5	-100.06	-2,375.9	-1,027.7	451.9	327.3	124.65	3.626			
9,600.0	6,710.9	9,591.2	6,790.8	69.5	66.6	-100.06	-2,475.9	-1,027.8	451.9	322.9	129.00	3.503			
9,700.0	6,710.2	9,691.2	6,790.1	71.6	68.8	-100.06	-2,575.9	-1,027.9	451.9	318.6	133.37	3.389			
9,800.0	6,709.4	9,791.2	6,789.4	73.6	70.9	-100.06	-2,675.9	-1,027.9	451.9	314.2	137.75	3.281			
9,900.0	6,708.7	9,891.2	6,788.6	75.7	73.1	-100.06	-2,775.9	-1,028.0	452.0	309.8	142.16	3.179			
10,000.0	6,708.0	9,991.2	6,787.9	77.8	75.3	-100.06	-2,875.9	-1,028.1	452.0	305.4	146.57	3.083			
10,100.0	6,707.2	10,091.2	6,787.2	80.0	77.5	-100.06	-2,975.9	-1,028.2	452.0	301.0	151.00	2.993			
10,200.0	6,706.5	10,191.2	6,786.4	82.1	79.7	-100.06	-3,075.9	-1,028.2	452.0	296.5	155.45	2.907			
10,300.0	6,705.7	10,291.2	6,785.7	84.2	81.9	-100.06	-3,175.9	-1,028.3	452.0	292.1	159.90	2.827			
10,400.0	6,705.0	10,391.2	6,785.0	86.4	84.1	-100.06	-3,275.9	-1,028.4	452.0	287.6	164.36	2.750			
10,500.0	6,704.3	10,491.2	6,784.2	88.6	86.3	-100.06	-3,375.9	-1,028.5	452.0	283.1	168.84	2.677			
10,600.0	6,703.5	10,591.2	6,783.5	90.7	88.6	-100.06	-3,475.9	-1,028.5	452.0	278.6	173.32	2.608			
10,700.0	6,702.8	10,691.2	6,782.7	92.9	90.8	-100.06	-3,575.9	-1,028.6	452.0	274.2	177.81	2.542			
10,800.0	6,702.1	10,791.2	6,782.0	95.1	93.1	-100.06	-3,675.9	-1,028.7	452.0	269.7	182.31	2.479			
10,900.0	6,701.3	10,891.2	6,781.3	97.3	95.3	-100.06	-3,775.9	-1,028.8	452.0	265.2	186.81	2.419			
11,000.0	6,700.6	10,991.2	6,780.5	99.5	97.6	-100.06	-3,875.8	-1,028.8	452.0	260.6	191.32	2.362			
11,100.0	6,699.8	11,091.2	6,779.8	101.7	99.8	-100.06	-3,975.8	-1,028.9	452.0	256.1	195.84	2.308			
11,200.0	6,699.1	11,191.2	6,779.1	104.0	102.1	-100.06	-4,075.8	-1,029.0	452.0	251.6	200.36	2.256			
11,300.0	6,698.4	11,291.2	6,778.3	106.2	104.4	-100.06	-4,175.8	-1,029.1	452.0	247.1	204.89	2.206			
11,400.0	6,697.6	11,391.2	6,777.6	108.4	106.6	-100.06	-4,275.8	-1,029.1	452.0	242.6	209.43	2.158			
11,500.0	6,696.9	11,491.2	6,776.9	110.7	108.9	-100.06	-4,375.8	-1,029.2	452.0	238.0	213.96	2.112			
11,600.0	6,696.2	11,591.2	6,776.1	112.9	111.2	-100.06	-4,475.8	-1,029.3	452.0	233.5	218.51	2.069			
11,700.0	6,695.4	11,691.2	6,775.4	115.1	113.5	-100.06	-4,575.8	-1,029.3	452.0	228.9	223.05	2.026			
11,800.0	6,694.7	11,791.2	6,774.6	117.4	115.7	-100.06	-4,675.8	-1,029.4	452.0	224.4	227.60	1.986			
11,900.0	6,694.0	11,891.2	6,773.9	119.6	118.0	-100.06	-4,775.8	-1,029.5	452.0	219.8	232.16	1.947			
12,000.0	6,693.2	11,991.2	6,773.2	121.9	120.3	-100.06	-4,875.8	-1,029.6	452.0	215.3	236.71	1.909			
12,100.0	6,692.5	12,091.2	6,772.4	124.2	122.6	-100.06	-4,975.8	-1,029.6	452.0	210.7	241.27	1.873			
12,200.0	6,691.7	12,191.2	6,771.7	126.4	124.9	-100.06	-5,075.8	-1,029.7	452.0	206.2	245.83	1.839			
12,300.0	6,691.0	12,291.2	6,771.0	128.7	127.2	-100.06	-5,175.8	-1,029.8	452.0	201.6	250.40	1.805			
12,400.0	6,690.3	12,391.2	6,770.2	131.0	129.5	-100.06	-5,275.8	-1,029.9	452.0	197.0	254.97	1.773			
12,500.0	6,689.5	12,491.2	6,769.5	133.2	131.8	-100.06	-5,375.8	-1,029.9	452.0	192.5	259.54	1.742			
12,600.0	6,688.8	12,591.2	6,768.8	135.5	134.1	-100.06	-5,475.8	-1,030.0	452.0	187.9	264.11	1.711			
12,700.0	6,688.1	12,691.2	6,768.0	137.8	136.4	-100.06	-5,575.8	-1,030.1	452.0	183.3	268.69	1.682			
12,800.0	6,687.3	12,791.2	6,767.3	140.1	138.7	-100.06	-5,675.8	-1,030.2	452.0	178.7	273.27	1.654			
12,900.0	6,686.6	12,891.2	6,766.5	142.3	141.0	-100.06	-5,775.8	-1,030.2	452.0	174.2	277.85	1.627			
13,000.0	6,685.9	12,991.2	6,765.8	144.6	143.3	-100.06	-5,875.8	-1,030.3	452.0	169.6	282.43	1.600			
13,100.0	6,685.1	13,091.2	6,765.1	146.9	145.6	-100.06	-5,975.8	-1,030.4	452.0	165.0	287.01	1.575			
13,200.0	6,684.4	13,191.2	6,764.3	149.2	147.9	-100.06	-6,075.8	-1,030.5	452.0	160.4	291.60	1.550			

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

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

Offset Design													Offset Site Error:	0.0 ft
Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)													Offset Well Error:	0.0 ft
Survey Program: 0-MWD														
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
13,300.0	6,683.6	13,291.2	6,763.6	151.5	150.2	-100.06	-6,175.8	-1,030.5	452.0	155.8	296.19	1.526		
13,400.0	6,682.9	13,391.2	6,762.9	153.8	152.5	-100.06	-6,275.8	-1,030.6	452.0	151.2	300.78	1.503		
13,500.0	6,682.2	13,491.2	6,762.1	156.1	154.8	-100.06	-6,375.8	-1,030.7	452.0	146.7	305.37	1.480	Level 3	
13,600.0	6,681.4	13,591.2	6,761.4	158.4	157.2	-100.06	-6,475.8	-1,030.8	452.0	142.1	309.96	1.458	Level 3	
13,700.0	6,680.7	13,691.2	6,760.7	160.7	159.5	-100.06	-6,575.8	-1,030.8	452.0	137.5	314.55	1.437	Level 3	
13,800.0	6,680.0	13,791.2	6,759.9	163.0	161.8	-100.06	-6,675.8	-1,030.9	452.0	132.9	319.15	1.416	Level 3	
13,900.0	6,679.2	13,891.2	6,759.2	165.3	164.1	-100.06	-6,775.8	-1,031.0	452.0	128.3	323.74	1.396	Level 3	
14,000.0	6,678.5	13,991.2	6,758.4	167.6	166.4	-100.06	-6,875.8	-1,031.0	452.0	123.7	328.34	1.377	Level 3	
14,100.0	6,677.8	14,091.2	6,757.7	169.9	168.7	-100.06	-6,975.8	-1,031.1	452.0	119.1	332.94	1.358	Level 3	
14,160.7	6,677.3	14,151.9	6,757.3	171.0	170.1	-100.06	-7,036.5	-1,031.2	452.0	116.6	335.46	1.348	Level 3	
14,202.5	6,677.0	14,188.1	6,757.0	171.8	171.0	-100.06	-7,072.7	-1,031.2	452.1	115.0	337.06	1.341	Level 3, SF	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-203
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	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 Depth (ft)	Vertical Depth Depth (ft)	Measured Depth Depth (ft)	Vertical Depth Depth (ft)	Reference  (ft)	Offset  (ft)	Highside Toolface Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
0.0	0.0	0.0	0.0	0.0	0.0	91.36	-0.4	15.0	15.0	15.0	0.00	N/A	CC, ES		
100.0	100.0	100.0	100.0	0.1	0.1	91.36	-0.4	15.0	15.0	14.8	0.28	54.659			
200.0	200.0	200.0	200.0	0.4	0.4	91.36	-0.4	15.0	15.0	14.2	0.83	18.220			
300.0	300.0	300.0	300.0	0.7	0.7	164.56	-0.4	15.0	16.3	14.9	1.38	11.834			
400.0	399.9	399.9	399.9	1.0	1.0	167.53	-0.4	15.0	20.1	18.2	1.94	10.389			
500.0	499.7	500.4	500.3	1.2	1.2	169.94	0.1	13.8	25.3	22.8	2.49	10.153			
600.0	599.3	600.9	600.8	1.6	1.5	171.29	1.5	10.1	30.4	27.4	3.04	10.029			
700.0	698.6	701.6	701.3	1.9	1.8	172.03	3.9	3.9	35.7	32.1	3.59	9.921			
800.0	797.5	802.5	801.8	2.3	2.1	172.40	7.2	-4.7	40.9	36.7	4.16	9.819			
900.0	896.1	903.5	902.0	2.7	2.4	172.51	11.5	-15.9	46.1	41.3	4.74	9.719			
1,000.0	994.2	1,004.6	1,002.1	3.2	2.8	172.45	16.7	-29.5	51.3	45.9	5.33	9.615			
1,100.0	1,091.7	1,105.9	1,101.9	3.8	3.2	172.26	22.9	-45.7	56.4	50.5	5.94	9.506			
1,200.0	1,188.6	1,207.3	1,201.3	4.4	3.7	171.98	30.1	-64.3	61.6	55.0	6.56	9.388			
1,300.0	1,284.9	1,308.8	1,300.3	5.0	4.2	171.62	38.2	-85.4	66.8	59.6	7.21	9.261			
1,400.0	1,380.4	1,410.5	1,398.8	5.8	4.8	171.20	47.2	-109.0	71.9	64.0	7.88	9.124			
1,506.6	1,481.3	1,518.4	1,502.5	6.6	5.5	170.73	57.8	-136.6	77.5	68.9	8.62	8.995			
1,600.0	1,569.3	1,611.6	1,592.0	7.4	6.1	170.45	67.1	-161.0	83.1	73.8	9.31	8.932			
1,700.0	1,663.5	1,711.4	1,687.8	8.2	6.8	170.19	77.1	-187.0	89.2	79.1	10.06	8.865			
1,800.0	1,757.7	1,811.2	1,783.7	9.1	7.5	169.96	87.1	-213.1	95.2	84.4	10.82	8.799			
1,900.0	1,851.9	1,911.0	1,879.5	9.9	8.2	169.76	97.2	-239.2	101.2	89.6	11.59	8.734			
2,000.0	1,946.1	2,010.9	1,975.3	10.8	8.9	169.58	107.2	-265.3	107.2	94.9	12.36	8.672			
2,100.0	2,040.3	2,110.7	2,071.1	11.6	9.6	169.42	117.2	-291.4	113.2	100.1	13.15	8.613			
2,200.0	2,134.5	2,210.5	2,167.0	12.5	10.3	169.28	127.2	-317.5	119.3	105.3	13.94	8.558			
2,300.0	2,228.7	2,310.3	2,262.8	13.3	11.1	169.15	137.2	-343.6	125.3	110.6	14.73	8.505			
2,400.0	2,322.9	2,410.1	2,358.6	14.2	11.8	169.03	147.2	-369.7	131.3	115.8	15.53	8.456			
2,500.0	2,417.1	2,510.0	2,454.4	15.1	12.5	168.92	157.2	-395.8	137.3	121.0	16.33	8.410			
2,600.0	2,511.3	2,609.8	2,550.3	16.0	13.2	168.82	167.2	-421.8	143.4	126.2	17.14	8.367			
2,700.0	2,605.5	2,709.6	2,646.1	16.8	13.9	168.73	177.2	-447.9	149.4	131.4	17.94	8.326			
2,800.0	2,699.7	2,809.4	2,741.9	17.7	14.7	168.65	187.2	-474.0	155.4	136.7	18.75	8.288			
2,900.0	2,793.9	2,909.2	2,837.8	18.6	15.4	168.57	197.2	-500.1	161.4	141.9	19.56	8.252			
3,000.0	2,888.1	3,009.0	2,933.6	19.4	16.1	168.50	207.2	-526.2	167.5	147.1	20.38	8.218			
3,100.0	2,982.3	3,108.9	3,029.4	20.3	16.8	168.43	217.2	-552.3	173.5	152.3	21.19	8.186			
3,200.0	3,076.6	3,208.7	3,125.2	21.2	17.5	168.37	227.2	-578.4	179.5	157.5	22.01	8.156			
3,300.0	3,170.8	3,308.5	3,221.1	22.0	18.3	168.31	237.2	-604.5	185.6	162.7	22.83	8.128			
3,400.0	3,265.0	3,408.3	3,316.9	22.9	19.0	168.26	247.2	-630.6	191.6	167.9	23.65	8.101			
3,500.0	3,359.2	3,508.1	3,412.7	23.8	19.7	168.21	257.2	-656.7	197.6	173.1	24.47	8.076			
3,600.0	3,453.4	3,608.0	3,508.5	24.7	20.4	168.16	267.2	-682.7	203.6	178.3	25.29	8.052			
3,700.0	3,547.6	3,707.8	3,604.4	25.5	21.2	168.11	277.2	-708.8	209.7	183.6	26.11	8.030			
3,800.0	3,641.8	3,807.6	3,700.2	26.4	21.9	168.07	287.2	-734.9	215.7	188.8	26.93	8.008			
3,900.0	3,736.0	3,907.4	3,796.0	27.3	22.6	168.03	297.3	-761.0	221.7	194.0	27.76	7.987			
4,000.0	3,830.2	4,007.2	3,891.9	28.2	23.4	167.99	307.3	-787.1	227.7	199.2	28.58	7.968			
4,100.0	3,924.4	4,107.0	3,987.7	29.0	24.1	167.96	317.3	-813.2	233.8	204.4	29.41	7.949			
4,200.0	4,018.6	4,206.9	4,083.5	29.9	24.8	167.92	327.3	-839.3	239.8	209.6	30.23	7.932			
4,300.0	4,112.8	4,306.7	4,179.3	30.8	25.5	167.89	337.3	-865.4	245.8	214.8	31.06	7.915			
4,400.0	4,207.0	4,406.5	4,275.2	31.7	26.3	167.86	347.3	-891.5	251.9	220.0	31.89	7.899			
4,500.0	4,301.2	4,506.3	4,371.0	32.5	27.0	167.83	357.3	-917.5	257.9	225.2	32.71	7.883			
4,600.0	4,395.4	4,606.1	4,466.8	33.4	27.7	167.80	367.3	-943.6	263.9	230.4	33.54	7.868			
4,700.0	4,489.6	4,705.9	4,562.6	34.3	28.5	167.77	377.3	-969.7	269.9	235.6	34.37	7.854			
4,800.0	4,583.8	4,805.8	4,658.5	35.2	29.2	167.75	387.3	-995.8	276.0	240.8	35.20	7.841			
4,900.0	4,678.1	4,905.6	4,754.3	36.0	29.9	167.72	397.3	-1,021.9	282.0	246.0	36.03	7.828			
4,964.7	4,739.0	4,970.2	4,816.3	36.6	30.4	167.70	403.8	-1,038.8	285.9	249.3	36.56	7.819			

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-203
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	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							
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	4,772.3	5,005.4	4,850.1	36.9	30.6	167.70	407.3	-1,048.0	287.8	250.9	36.87	7.806		
5,100.0	4,867.5	5,105.4	4,946.1	37.5	31.4	167.56	417.3	-1,074.1	290.9	253.2	37.72	7.713		
5,200.0	4,963.7	5,205.3	5,042.1	38.1	32.1	167.26	427.3	-1,100.2	290.7	252.1	38.57	7.536		
5,300.0	5,060.7	5,305.2	5,138.0	38.6	32.8	166.80	437.4	-1,126.4	287.0	247.6	39.43	7.280		
5,400.0	5,158.6	5,400.0	5,229.0	39.0	33.5	166.18	446.8	-1,151.0	280.2	239.9	40.26	6.959		
5,500.0	5,257.1	5,493.0	5,318.9	39.4	34.0	165.51	455.2	-1,173.0	272.4	231.4	41.00	6.644		
5,600.0	5,356.1	5,584.4	5,408.1	39.7	34.4	164.83	462.5	-1,191.9	264.4	222.7	41.68	6.344		
5,700.0	5,455.6	5,676.1	5,498.1	40.0	34.8	164.11	468.8	-1,208.3	256.1	213.8	42.31	6.053		
5,800.0	5,555.4	5,768.1	5,588.9	40.2	35.1	163.37	474.0	-1,222.0	247.5	204.6	42.89	5.771		
5,900.0	5,655.3	5,860.3	5,680.3	40.3	35.4	162.58	478.2	-1,232.9	238.7	195.2	43.42	5.496		
5,944.7	5,700.0	5,900.0	5,719.8	40.3	35.5	90.34	479.7	-1,236.8	234.6	190.9	43.66	5.373		
6,000.0	5,755.3	5,952.8	5,772.4	40.4	35.6	89.93	481.4	-1,241.2	230.0	186.0	44.08	5.219		
6,100.0	5,855.3	6,045.7	5,865.1	40.5	35.8	89.38	483.5	-1,246.7	224.1	179.4	44.71	5.013		
6,207.8	5,963.2	6,146.2	5,965.6	40.6	35.9	89.10	484.6	-1,249.5	221.2	176.0	45.22	4.891		
6,241.8	5,997.1	6,177.9	5,997.3	40.6	36.0	-91.15	484.6	-1,249.7	221.0	175.6	45.42	4.865		
6,250.0	6,005.3	6,185.9	6,005.3	40.6	36.0	-91.26	484.6	-1,249.7	221.0	175.5	45.51	4.857		
6,300.0	6,055.1	6,235.7	6,055.1	40.7	36.0	-92.38	484.6	-1,249.7	221.1	174.9	46.25	4.782		
6,350.0	6,104.5	6,285.1	6,104.5	40.7	36.1	-94.30	484.6	-1,249.7	221.6	174.2	47.42	4.673		
6,400.0	6,153.3	6,335.2	6,154.6	40.7	36.1	-96.80	483.8	-1,249.7	222.6	173.7	48.90	4.551		
6,450.0	6,201.3	6,386.3	6,205.5	40.6	36.2	-99.31	479.6	-1,249.7	224.0	173.7	50.31	4.453		
6,500.0	6,248.2	6,438.2	6,256.8	40.6	36.2	-101.77	471.9	-1,249.7	225.9	174.3	51.53	4.383		
6,550.0	6,294.0	6,490.8	6,308.1	40.5	36.2	-104.16	460.6	-1,249.7	228.1	175.6	52.53	4.343		
6,600.0	6,338.3	6,544.1	6,359.3	40.5	36.1	-106.45	445.6	-1,249.7	230.7	177.5	53.25	4.333		
6,650.0	6,381.0	6,598.3	6,410.0	40.4	36.1	-108.65	426.6	-1,249.7	233.6	179.9	53.68	4.352		
6,700.0	6,422.0	6,653.2	6,460.0	40.3	36.0	-110.74	403.8	-1,249.7	236.7	182.9	53.80	4.401		
6,750.0	6,460.9	6,709.0	6,508.9	40.3	36.0	-112.70	377.1	-1,249.7	240.0	186.4	53.61	4.477		
6,800.0	6,497.8	6,765.5	6,556.4	40.2	35.9	-114.53	346.4	-1,249.8	243.4	190.3	53.16	4.580		
6,850.0	6,532.3	6,822.9	6,602.1	40.1	35.8	-116.22	311.8	-1,249.8	246.9	194.4	52.45	4.706		
6,900.0	6,564.4	6,881.0	6,645.6	40.0	35.7	-117.77	273.3	-1,249.8	250.3	198.7	51.56	4.854		
6,950.0	6,593.9	6,939.8	6,686.5	39.9	35.6	-119.18	231.0	-1,249.8	253.6	203.1	50.53	5.019		
7,000.0	6,620.8	6,999.4	6,724.6	39.9	35.4	-120.43	185.2	-1,249.9	256.7	207.3	49.43	5.194		
7,050.0	6,644.8	7,059.6	6,759.2	39.8	35.3	-121.54	136.0	-1,249.9	259.6	211.3	48.35	5.371		
7,100.0	6,665.9	7,120.4	6,790.2	39.7	35.3	-122.50	83.7	-1,249.9	262.3	214.9	47.36	5.538		
7,150.0	6,684.0	7,181.7	6,817.2	39.7	35.2	-123.30	28.6	-1,250.0	264.6	218.0	46.56	5.683		
7,200.0	6,698.9	7,243.5	6,839.8	39.7	35.1	-123.96	-28.9	-1,250.0	266.5	220.5	46.03	5.791		
7,250.0	6,710.8	7,305.7	6,857.8	39.7	35.1	-124.46	-88.4	-1,250.1	268.1	222.2	45.82	5.850		
7,300.0	6,719.4	7,368.2	6,870.9	39.7	35.1	-124.81	-149.4	-1,250.1	269.1	223.1	46.04	5.845		
7,350.0	6,724.8	7,430.8	6,879.0	39.7	35.1	-125.01	-211.5	-1,250.1	269.8	223.1	46.66	5.782		
7,400.0	6,727.0	7,493.5	6,882.0	39.7	35.2	-125.05	-274.1	-1,250.2	269.9	222.2	47.69	5.660		
7,408.9	6,727.0	7,503.7	6,882.0	39.8	35.2	-125.05	-284.3	-1,250.2	269.9	222.0	47.90	5.634		
7,413.3	6,727.0	7,508.1	6,882.0	39.8	35.3	-125.05	-288.8	-1,250.2	269.9	221.9	48.01	5.621		
7,413.4	6,727.0	7,508.2	6,882.0	39.8	35.3	-125.05	-288.9	-1,250.2	269.9	221.9	48.01	5.621		
7,414.2	6,727.0	7,509.0	6,882.0	39.8	35.3	-125.05	-289.7	-1,250.2	269.9	221.9	48.03	5.619		
7,500.0	6,726.4	7,594.8	6,881.9	39.9	35.5	-125.14	-375.4	-1,250.3	270.2	220.6	49.60	5.447		
7,600.0	6,725.6	7,694.8	6,881.7	40.3	35.9	-125.24	-475.4	-1,250.3	270.5	218.8	51.76	5.227		
7,700.0	6,724.9	7,794.8	6,881.6	40.7	36.5	-125.34	-575.4	-1,250.4	270.9	216.7	54.12	5.005		
7,800.0	6,724.2	7,894.8	6,881.4	41.3	37.3	-125.44	-675.4	-1,250.5	271.2	214.6	56.65	4.787		
7,900.0	6,723.4	7,994.8	6,881.3	42.0	38.2	-125.54	-775.4	-1,250.6	271.5	212.2	59.33	4.577		
8,000.0	6,722.7	8,094.8	6,881.1	42.9	39.3	-125.64	-875.4	-1,250.6	271.9	209.7	62.15	4.375		
8,100.0	6,721.9	8,194.8	6,881.0	43.9	40.6	-125.74	-975.4	-1,250.7	272.2	207.2	65.07	4.184		

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



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

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-423 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error: 0.0 ft		
Survey Program: 0-MWD														Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
8,200.0	6,721.2	8,294.8	6,880.8	45.0	41.9	-125.85	-1,075.4	-1,250.8	272.6	204.5	68.10	4.003			
8,300.0	6,720.5	8,394.8	6,880.7	46.3	43.4	-125.95	-1,175.4	-1,250.9	272.9	201.7	71.20	3.833			
8,400.0	6,719.7	8,494.8	6,880.5	47.7	45.0	-126.05	-1,275.4	-1,250.9	273.3	198.9	74.38	3.674			
8,500.0	6,719.0	8,594.8	6,880.4	49.2	46.7	-126.15	-1,375.4	-1,251.0	273.6	196.0	77.61	3.526			
8,600.0	6,718.3	8,694.8	6,880.2	50.8	48.4	-126.24	-1,475.4	-1,251.1	274.0	193.1	80.90	3.386			
8,700.0	6,717.5	8,794.8	6,880.1	52.4	50.2	-126.34	-1,575.4	-1,251.2	274.3	190.1	84.23	3.257			
8,800.0	6,716.8	8,894.8	6,879.9	54.2	52.0	-126.44	-1,675.4	-1,251.2	274.7	187.1	87.61	3.135			
8,900.0	6,716.1	8,994.8	6,879.8	55.9	53.9	-126.54	-1,775.4	-1,251.3	275.0	184.0	91.01	3.022			
9,000.0	6,715.3	9,094.8	6,879.7	57.8	55.9	-126.64	-1,875.4	-1,251.4	275.4	180.9	94.45	2.916			
9,100.0	6,714.6	9,194.8	6,879.5	59.6	57.8	-126.74	-1,975.4	-1,251.5	275.7	177.8	97.91	2.816			
9,200.0	6,713.8	9,294.8	6,879.4	61.6	59.8	-126.84	-2,075.4	-1,251.5	276.1	174.7	101.39	2.723			
9,300.0	6,713.1	9,394.8	6,879.2	63.5	61.8	-126.93	-2,175.4	-1,251.6	276.4	171.5	104.90	2.635			
9,400.0	6,712.4	9,494.8	6,879.1	65.5	63.9	-127.03	-2,275.4	-1,251.7	276.8	168.4	108.41	2.553			
9,500.0	6,711.6	9,594.8	6,878.9	67.5	66.0	-127.13	-2,375.4	-1,251.8	277.1	165.2	111.94	2.476			
9,600.0	6,710.9	9,694.8	6,878.8	69.5	68.0	-127.22	-2,475.4	-1,251.8	277.5	162.0	115.49	2.403			
9,700.0	6,710.2	9,794.8	6,878.6	71.6	70.1	-127.32	-2,575.4	-1,251.9	277.9	158.8	119.04	2.334			
9,800.0	6,709.4	9,894.8	6,878.5	73.6	72.3	-127.42	-2,675.4	-1,252.0	278.2	155.6	122.60	2.269			
9,900.0	6,708.7	9,994.8	6,878.3	75.7	74.4	-127.51	-2,775.4	-1,252.1	278.6	152.4	126.17	2.208			
10,000.0	6,708.0	10,094.8	6,878.2	77.8	76.5	-127.61	-2,875.4	-1,252.1	278.9	149.2	129.74	2.150			
10,100.0	6,707.2	10,194.8	6,878.0	80.0	78.7	-127.71	-2,975.4	-1,252.2	279.3	146.0	133.32	2.095			
10,200.0	6,706.5	10,294.8	6,877.9	82.1	80.9	-127.80	-3,075.4	-1,252.3	279.7	142.8	136.90	2.043			
10,300.0	6,705.7	10,394.8	6,877.7	84.2	83.0	-127.90	-3,175.4	-1,252.4	280.0	139.5	140.48	1.993			
10,400.0	6,705.0	10,494.8	6,877.6	86.4	85.2	-127.99	-3,275.4	-1,252.4	280.4	136.3	144.07	1.946			
10,500.0	6,704.3	10,594.8	6,877.4	88.6	87.4	-128.09	-3,375.4	-1,252.5	280.7	133.1	147.65	1.901			
10,600.0	6,703.5	10,694.8	6,877.3	90.7	89.6	-128.18	-3,475.4	-1,252.6	281.1	129.9	151.24	1.859			
10,700.0	6,702.8	10,794.8	6,877.2	92.9	91.8	-128.27	-3,575.4	-1,252.7	281.5	126.7	154.83	1.818			
10,800.0	6,702.1	10,894.8	6,877.0	95.1	94.1	-128.37	-3,675.4	-1,252.7	281.8	123.4	158.41	1.779			
10,900.0	6,701.3	10,994.8	6,876.9	97.3	96.3	-128.46	-3,775.4	-1,252.8	282.2	120.2	162.00	1.742			
11,000.0	6,700.6	11,094.7	6,876.7	99.5	98.5	-128.56	-3,875.4	-1,252.9	282.6	117.0	165.58	1.707			
11,100.0	6,699.8	11,194.7	6,876.6	101.7	100.8	-128.65	-3,975.4	-1,253.0	282.9	113.8	169.16	1.673			
11,200.0	6,699.1	11,294.7	6,876.4	104.0	103.0	-128.74	-4,075.4	-1,253.0	283.3	110.6	172.74	1.640			
11,300.0	6,698.4	11,394.7	6,876.3	106.2	105.2	-128.83	-4,175.4	-1,253.1	283.7	107.4	176.32	1.609			
11,400.0	6,697.6	11,494.7	6,876.1	108.4	107.5	-128.93	-4,275.4	-1,253.2	284.1	104.2	179.89	1.579			
11,500.0	6,696.9	11,594.7	6,876.0	110.7	109.7	-129.02	-4,375.4	-1,253.2	284.4	101.0	183.46	1.550			
11,600.0	6,696.2	11,694.7	6,875.8	112.9	112.0	-129.11	-4,475.4	-1,253.3	284.8	97.8	187.03	1.523			
11,700.0	6,695.4	11,794.7	6,875.7	115.1	114.3	-129.20	-4,575.4	-1,253.4	285.2	94.6	190.59	1.496	Level 3		
11,800.0	6,694.7	11,894.7	6,875.5	117.4	116.5	-129.29	-4,675.3	-1,253.5	285.5	91.4	194.15	1.471	Level 3		
11,900.0	6,694.0	11,994.7	6,875.4	119.6	118.8	-129.39	-4,775.3	-1,253.5	285.9	88.2	197.71	1.446	Level 3		
12,000.0	6,693.2	12,094.7	6,875.2	121.9	121.1	-129.48	-4,875.3	-1,253.6	286.3	85.0	201.26	1.423	Level 3		
12,100.0	6,692.5	12,194.7	6,875.1	124.2	123.3	-129.57	-4,975.3	-1,253.7	286.7	81.9	204.80	1.400	Level 3		
12,200.0	6,691.7	12,294.7	6,874.9	126.4	125.6	-129.66	-5,075.3	-1,253.8	287.0	78.7	208.35	1.378	Level 3		
12,300.0	6,691.0	12,394.7	6,874.8	128.7	127.9	-129.75	-5,175.3	-1,253.8	287.4	75.5	211.88	1.357	Level 3		
12,400.0	6,690.3	12,494.7	6,874.6	131.0	130.2	-129.84	-5,275.3	-1,253.9	287.8	72.4	215.41	1.336	Level 3		
12,500.0	6,689.5	12,594.7	6,874.5	133.2	132.5	-129.93	-5,375.3	-1,254.0	288.2	69.2	218.94	1.316	Level 3		
12,600.0	6,688.8	12,694.7	6,874.4	135.5	134.8	-130.02	-5,475.3	-1,254.1	288.6	66.1	222.46	1.297	Level 3		
12,700.0	6,688.1	12,794.7	6,874.2	137.8	137.0	-130.11	-5,575.3	-1,254.1	288.9	63.0	225.98	1.279	Level 3		
12,800.0	6,687.3	12,894.7	6,874.1	140.1	139.3	-130.20	-5,675.3	-1,254.2	289.3	59.8	229.49	1.261	Level 3		
12,900.0	6,686.6	12,994.7	6,873.9	142.3	141.6	-130.28	-5,775.3	-1,254.3	289.7	56.7	233.00	1.243	Level 2		
13,000.0	6,685.9	13,094.7	6,873.8	144.6	143.9	-130.37	-5,875.3	-1,254.4	290.1	53.6	236.50	1.227	Level 2		
13,100.0	6,685.1	13,194.7	6,873.6	146.9	146.2	-130.46	-5,975.3	-1,254.4	290.5	50.5	239.99	1.210	Level 2		
13,200.0	6,684.4	13,294.7	6,873.5	149.2	148.5	-130.55	-6,075.3	-1,254.5	290.9	47.4	243.48	1.195	Level 2		

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



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

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-423 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
13,300.0	6,683.6	13,394.7	6,873.3	151.5	150.8	-130.64	-6,175.3	-1,254.6	291.2	44.3	246.96	1.179	Level 2	
13,400.0	6,682.9	13,494.7	6,873.2	153.8	153.1	-130.73	-6,275.3	-1,254.7	291.6	41.2	250.44	1.164	Level 2	
13,500.0	6,682.2	13,594.7	6,873.0	156.1	155.4	-130.81	-6,375.3	-1,254.7	292.0	38.1	253.91	1.150	Level 2	
13,600.0	6,681.4	13,694.7	6,872.9	158.4	157.7	-130.90	-6,475.3	-1,254.8	292.4	35.0	257.38	1.136	Level 2	
13,700.0	6,680.7	13,794.7	6,872.7	160.7	160.0	-130.99	-6,575.3	-1,254.9	292.8	31.9	260.84	1.122	Level 2	
13,800.0	6,680.0	13,894.7	6,872.6	163.0	162.3	-131.07	-6,675.3	-1,255.0	293.2	28.9	264.29	1.109	Level 2	
13,900.0	6,679.2	13,994.7	6,872.4	165.3	164.7	-131.16	-6,775.3	-1,255.0	293.6	25.8	267.74	1.096	Level 2	
14,000.0	6,678.5	14,094.7	6,872.3	167.6	167.0	-131.25	-6,875.3	-1,255.1	293.9	22.8	271.18	1.084	Level 2	
14,100.0	6,677.8	14,194.7	6,872.1	169.9	169.3	-131.33	-6,975.3	-1,255.2	294.3	19.7	274.61	1.072	Level 2	
14,202.5	6,677.0	14,295.3	6,872.0	171.8	171.6	-131.42	-7,075.9	-1,255.3	294.7	17.1	277.66	1.062	Level 2, SF	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-203
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	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	90.69	-0.7	60.2	60.2					
100.0	100.0	100.0	100.0	0.1	0.1	90.69	-0.7	60.2	60.2	59.9	0.28	218.591		
200.0	200.0	200.0	200.0	0.4	0.4	90.69	-0.7	60.2	60.2	59.4	0.83	72.864 CC, ES		
300.0	300.0	300.0	300.0	0.7	0.7	162.93	-0.7	60.2	61.4	60.1	1.38	44.591		
400.0	399.9	399.9	399.9	1.0	1.0	163.93	-0.7	60.2	65.2	63.3	1.94	33.681		
500.0	499.7	499.7	499.7	1.2	1.2	165.35	-0.7	60.2	71.5	69.0	2.50	28.597		
600.0	599.3	599.3	599.3	1.6	1.5	166.97	-0.7	60.2	80.4	77.3	3.07	26.200		
700.0	698.6	698.6	698.6	1.9	1.8	168.59	-0.7	60.2	91.9	88.2	3.64	25.254		
800.0	797.5	797.5	797.5	2.3	2.1	170.09	-0.7	60.2	106.0	101.8	4.21	25.180		
900.0	896.1	896.1	896.1	2.7	2.3	171.41	-0.7	60.2	122.7	117.9	4.78	25.665		
1,000.0	894.2	894.2	894.2	3.2	2.6	172.55	-0.7	60.2	142.0	136.7	5.35	26.529		
1,100.0	1,091.7	1,091.7	1,091.7	3.8	2.9	173.51	-0.7	60.2	164.0	158.0	5.93	27.659		
1,200.0	1,188.6	1,188.6	1,188.6	4.4	3.1	174.32	-0.7	60.2	188.4	181.9	6.50	28.981		
1,300.0	1,284.9	1,289.3	1,289.3	5.0	3.4	174.90	0.0	59.4	214.6	207.5	7.08	30.313		
1,400.0	1,380.4	1,391.2	1,391.1	5.8	3.7	175.11	2.4	56.5	241.0	233.3	7.65	31.495		
1,506.6	1,481.3	1,500.6	1,500.2	6.6	4.0	175.04	6.9	51.1	269.4	261.1	8.27	32.562		
1,600.0	1,569.3	1,597.2	1,596.4	7.4	4.3	174.81	12.5	44.4	293.3	284.5	8.85	33.140		
1,700.0	1,663.5	1,701.8	1,700.4	8.2	4.6	174.37	20.4	34.9	316.7	307.2	9.49	33.366		
1,800.0	1,757.7	1,807.6	1,805.0	9.1	4.9	173.76	30.2	23.2	337.7	327.5	10.16	33.245		
1,900.0	1,851.9	1,914.3	1,910.1	9.9	5.3	172.99	42.0	9.1	356.3	345.4	10.85	32.833		
2,000.0	1,946.1	2,016.7	2,010.6	10.8	5.7	172.15	54.9	-6.2	372.9	361.3	11.57	32.239		
2,100.0	2,040.3	2,115.2	2,107.2	11.6	6.1	171.39	67.4	-21.2	389.4	377.1	12.29	31.685		
2,200.0	2,134.5	2,213.7	2,203.7	12.5	6.6	170.69	80.0	-36.1	405.9	392.9	13.03	31.146		
2,300.0	2,228.7	2,312.3	2,300.3	13.3	7.0	170.05	92.5	-51.1	422.5	408.7	13.79	30.634		
2,400.0	2,322.9	2,410.8	2,396.8	14.2	7.5	169.45	105.0	-66.1	439.1	424.5	14.56	30.151		
2,500.0	2,417.1	2,509.3	2,493.4	15.1	7.9	168.90	117.6	-81.1	455.8	440.4	15.35	29.694		
2,600.0	2,511.3	2,607.8	2,589.9	16.0	8.4	168.38	130.1	-96.0	472.5	456.3	16.15	29.263		
2,700.0	2,605.5	2,706.3	2,686.5	16.8	8.9	167.91	142.6	-111.0	489.2	472.3	16.95	28.857		
2,800.0	2,699.7	2,804.8	2,783.0	17.7	9.4	167.46	155.2	-126.0	506.0	488.2	17.77	28.474		
2,900.0	2,793.9	2,903.3	2,879.6	18.6	9.9	167.04	167.7	-140.9	522.8	504.2	18.60	28.113		
3,000.0	2,888.1	3,001.8	2,976.1	19.4	10.4	166.65	180.2	-155.9	539.6	520.2	19.43	27.773		
3,100.0	2,982.3	3,100.3	3,072.7	20.3	10.9	166.28	192.8	-170.9	556.5	536.2	20.27	27.453		
3,200.0	3,076.6	3,198.8	3,169.3	21.2	11.4	165.93	205.3	-185.8	573.3	552.2	21.12	27.150		
3,300.0	3,170.8	3,297.3	3,265.8	22.0	11.9	165.61	217.9	-200.8	590.2	568.3	21.97	26.865		
3,400.0	3,265.0	3,395.9	3,362.4	22.9	12.4	165.30	230.4	-215.8	607.1	584.3	22.83	26.595		
3,500.0	3,359.2	3,494.4	3,458.9	23.8	12.9	165.00	242.9	-230.7	624.1	600.4	23.69	26.339		
3,600.0	3,453.4	3,592.9	3,555.5	24.7	13.4	164.73	255.5	-245.7	641.0	616.4	24.56	26.098		
3,700.0	3,547.6	3,691.4	3,652.0	25.5	13.9	164.47	268.0	-260.7	658.0	632.5	25.43	25.869		
3,800.0	3,641.8	3,789.9	3,748.6	26.4	14.4	164.22	280.5	-275.6	674.9	648.6	26.31	25.651		
3,900.0	3,736.0	3,888.4	3,845.1	27.3	14.9	163.98	293.1	-290.6	691.9	664.7	27.19	25.445		
4,000.0	3,830.2	3,986.9	3,941.7	28.2	15.4	163.75	305.6	-305.6	708.9	680.8	28.08	25.249		
4,100.0	3,924.4	4,085.4	4,038.2	29.0	15.9	163.54	318.2	-320.6	725.9	696.9	28.96	25.063		
4,200.0	4,018.6	4,183.9	4,134.8	29.9	16.5	163.33	330.7	-335.5	742.9	713.0	29.85	24.886		
4,300.0	4,112.8	4,282.4	4,231.4	30.8	17.0	163.14	343.2	-350.5	759.9	729.2	30.74	24.717		
4,400.0	4,207.0	4,380.9	4,327.9	31.7	17.5	162.95	355.8	-365.5	776.9	745.3	31.64	24.556		
4,500.0	4,301.2	4,479.5	4,424.5	32.5	18.0	162.77	368.3	-380.4	794.0	761.4	32.54	24.402 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-203
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	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	90.69	-1.1	90.0	90.0					
100.0	100.0	100.0	100.0	0.1	0.1	90.69	-1.1	90.0	90.0	89.7	0.28	326.875		
200.0	200.0	200.0	200.0	0.4	0.4	90.69	-1.1	90.0	90.0	89.2	0.83	108.958	CC, ES	
300.0	300.0	300.0	300.0	0.7	0.7	162.82	-1.1	90.0	91.3	89.9	1.38	66.231		
400.0	399.9	399.9	399.9	1.0	1.0	163.50	-1.1	90.0	95.0	93.1	1.94	49.083		
500.0	499.7	499.7	499.7	1.2	1.2	164.52	-1.1	90.0	101.3	98.8	2.50	40.515		
600.0	599.3	599.3	599.3	1.6	1.5	165.76	-1.1	90.0	110.1	107.1	3.07	35.897		
700.0	698.6	698.6	698.6	1.9	1.8	167.09	-1.1	90.0	121.6	117.9	3.64	33.412		
800.0	797.5	797.5	797.5	2.3	2.1	168.40	-1.1	90.0	135.6	131.4	4.21	32.207		
900.0	896.1	896.1	896.1	2.7	2.3	169.63	-1.1	90.0	152.2	147.5	4.78	31.827	SF	
1,000.0	994.2	994.2	994.2	3.2	2.6	170.76	-1.1	90.0	171.5	166.1	5.36	32.009		
1,100.0	1,091.7	1,091.7	1,091.7	3.8	2.9	171.76	-1.1	90.0	193.3	187.4	5.93	32.588		
1,200.0	1,188.6	1,188.6	1,188.6	4.4	3.1	172.64	-1.1	90.0	217.7	211.2	6.51	33.456		
1,300.0	1,284.9	1,284.9	1,284.9	5.0	3.4	173.41	-1.1	90.0	244.7	237.6	7.08	34.539		
1,400.0	1,380.4	1,380.4	1,380.4	5.8	3.7	174.07	-1.1	90.0	274.1	266.5	7.66	35.786		
1,506.6	1,481.3	1,481.3	1,481.3	6.6	3.9	174.68	-1.1	90.0	308.4	300.1	8.28	37.253		
1,600.0	1,569.3	1,569.3	1,569.3	7.4	4.2	175.17	-1.1	90.0	339.6	330.7	8.84	38.427		
1,700.0	1,663.5	1,663.5	1,663.5	8.2	4.4	175.60	-1.1	90.0	373.0	363.6	9.44	39.506		
1,800.0	1,757.7	1,757.7	1,757.7	9.1	4.7	175.97	-1.1	90.0	406.5	396.4	10.05	40.437		
1,900.0	1,851.9	1,851.9	1,851.9	9.9	5.0	176.27	-1.1	90.0	440.0	429.3	10.67	41.246		
2,000.0	1,946.1	1,946.1	1,946.1	10.8	5.2	176.54	-1.1	90.0	473.4	462.2	11.28	41.954		
2,100.0	2,040.3	2,043.3	2,043.3	11.6	5.5	176.75	-0.8	89.9	506.8	494.9	11.91	42.545		
2,200.0	2,134.5	2,145.4	2,145.3	12.5	5.8	176.73	1.6	89.2	539.1	526.5	12.55	42.948		
2,300.0	2,228.7	2,248.3	2,248.1	13.3	6.1	176.46	6.6	87.7	570.0	556.8	13.20	43.188		
2,400.0	2,322.9	2,352.0	2,351.5	14.2	6.3	175.98	14.4	85.3	599.6	585.7	13.86	43.271		
2,500.0	2,417.1	2,456.4	2,455.3	15.1	6.6	175.32	25.0	82.1	627.9	613.4	14.53	43.206		
2,600.0	2,511.3	2,561.2	2,559.2	16.0	6.9	174.49	38.3	78.0	654.9	639.7	15.23	42.997		
2,700.0	2,605.5	2,660.1	2,656.9	16.8	7.3	173.61	52.8	73.6	681.1	665.1	15.94	42.723		
2,800.0	2,699.7	2,756.1	2,751.8	17.7	7.6	172.82	67.1	69.3	707.3	690.6	16.66	42.453		
2,900.0	2,793.9	2,852.2	2,846.7	18.6	7.9	172.08	81.3	65.0	733.6	716.2	17.40	42.164		
3,000.0	2,888.1	2,948.2	2,941.6	19.4	8.2	171.39	95.6	60.7	760.1	741.9	18.15	41.874		
3,100.0	2,982.3	3,044.3	3,036.4	20.3	8.6	170.75	109.8	56.3	786.6	767.7	18.92	41.582		

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

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft	
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	90.92	-0.7	45.1	45.1						
100.0	100.0	100.0	100.0	0.1	0.1	90.92	-0.7	45.1	45.1	44.9	0.28	163.953	CC, ES		
200.0	200.0	200.0	200.0	0.4	0.4	90.92	-0.7	45.1	45.1	44.3	0.83	54.651			
300.0	300.0	300.0	300.0	0.7	0.7	163.28	-0.7	45.1	46.4	45.0	1.38	33.672			
400.0	399.9	399.9	399.9	1.0	1.0	164.55	-0.7	45.1	50.2	48.2	1.94	25.914			
500.0	499.7	499.7	499.7	1.2	1.2	166.30	-0.7	45.1	56.5	54.0	2.50	22.592			
600.0	599.3	599.3	599.3	1.6	1.5	168.17	-0.7	45.1	65.4	62.4	3.07	21.319			
700.0	698.6	698.6	698.6	1.9	1.8	169.93	-0.7	45.1	77.0	73.3	3.64	21.154			
800.0	797.5	797.5	797.5	2.3	2.1	171.48	-0.7	45.1	91.1	86.9	4.21	21.652			
900.0	896.1	896.1	896.1	2.7	2.3	172.78	-0.7	45.1	107.9	103.1	4.78	22.574			
1,000.0	994.2	994.2	994.2	3.2	2.6	173.85	-0.7	45.1	127.3	121.9	5.35	23.782			
1,100.0	1,091.7	1,095.2	1,095.2	3.8	2.9	174.61	-0.1	44.1	148.2	142.3	5.92	25.023			
1,200.0	1,188.6	1,197.0	1,196.9	4.4	3.1	174.97	1.9	40.8	169.2	162.7	6.48	26.090			
1,300.0	1,284.9	1,299.3	1,299.0	5.0	3.4	175.07	5.3	35.1	190.2	183.1	7.06	26.958			
1,400.0	1,380.4	1,402.2	1,401.5	5.8	3.7	174.97	10.2	27.0	211.3	203.7	7.64	27.659			
1,506.6	1,481.3	1,512.6	1,511.0	6.6	4.1	174.70	17.0	15.7	233.8	225.6	8.28	28.245			
1,600.0	1,569.3	1,609.9	1,607.3	7.4	4.4	174.37	24.4	3.6	252.5	243.6	8.88	28.444			
1,700.0	1,663.5	1,715.2	1,711.0	8.2	4.8	173.88	33.8	-12.0	270.0	260.5	9.54	28.295			
1,800.0	1,757.7	1,821.3	1,815.0	9.1	5.2	173.25	44.8	-30.1	285.0	274.7	10.24	27.836			
1,900.0	1,851.9	1,925.4	1,916.4	9.9	5.7	172.51	56.9	-50.2	297.5	286.6	10.95	27.157			
2,000.0	1,946.1	2,024.6	2,013.0	10.8	6.2	171.83	68.8	-69.8	309.5	297.9	11.68	26.506			
2,100.0	2,040.3	2,123.9	2,109.5	11.6	6.7	171.20	80.6	-89.5	321.6	309.2	12.42	25.889			
2,200.0	2,134.5	2,223.1	2,206.0	12.5	7.3	170.62	92.5	-109.1	333.7	320.5	13.18	25.317			
2,300.0	2,228.7	2,322.3	2,302.5	13.3	7.8	170.07	104.4	-128.7	345.9	331.9	13.95	24.786			
2,400.0	2,322.9	2,421.5	2,399.1	14.2	8.3	169.57	116.2	-148.3	358.0	343.3	14.74	24.291			
2,500.0	2,417.1	2,520.7	2,495.6	15.1	8.9	169.09	128.1	-168.0	370.2	354.7	15.53	23.831			
2,600.0	2,511.3	2,619.9	2,592.1	16.0	9.5	168.65	140.0	-187.6	382.4	366.1	16.34	23.403			
2,700.0	2,605.5	2,719.1	2,688.6	16.8	10.0	168.23	151.8	-207.2	394.7	377.5	17.16	23.004			
2,800.0	2,699.7	2,818.3	2,785.1	17.7	10.6	167.84	163.7	-226.9	406.9	388.9	17.98	22.631			
2,900.0	2,793.9	2,917.5	2,881.7	18.6	11.2	167.47	175.6	-246.5	419.2	400.4	18.81	22.282			
3,000.0	2,888.1	3,016.7	2,978.2	19.4	11.8	167.13	187.4	-266.1	431.5	411.8	19.65	21.956			
3,100.0	2,982.3	3,115.9	3,074.7	20.3	12.3	166.80	199.3	-285.7	443.8	423.3	20.50	21.650			
3,200.0	3,076.6	3,215.2	3,171.2	21.2	12.9	166.49	211.2	-305.4	456.1	434.8	21.35	21.363			
3,300.0	3,170.8	3,314.4	3,267.7	22.0	13.5	166.19	223.0	-325.0	468.4	446.2	22.21	21.094			
3,400.0	3,265.0	3,413.6	3,364.3	22.9	14.1	165.91	234.9	-344.6	480.8	457.7	23.07	20.840			
3,500.0	3,359.2	3,512.8	3,460.8	23.8	14.7	165.65	246.8	-364.2	493.1	469.2	23.94	20.601			
3,600.0	3,453.4	3,612.0	3,557.3	24.7	15.3	165.40	258.6	-383.9	505.5	480.7	24.81	20.375			
3,700.0	3,547.6	3,711.2	3,653.8	25.5	15.9	165.16	270.5	-403.5	517.9	492.2	25.69	20.162			
3,800.0	3,641.8	3,810.4	3,750.4	26.4	16.5	164.93	282.4	-423.1	530.2	503.7	26.57	19.960			
3,900.0	3,736.0	3,909.6	3,846.9	27.3	17.1	164.71	294.2	-442.8	542.6	515.2	27.45	19.769			
4,000.0	3,830.2	4,008.8	3,943.4	28.2	17.7	164.50	306.1	-462.4	555.0	526.7	28.34	19.588			
4,100.0	3,924.4	4,108.0	4,039.9	29.0	18.3	164.30	318.0	-482.0	567.4	538.2	29.22	19.416			
4,200.0	4,018.6	4,207.2	4,136.4	29.9	18.9	164.11	329.8	-501.6	579.8	549.7	30.12	19.253			
4,300.0	4,112.8	4,306.5	4,233.0	30.8	19.5	163.93	341.7	-521.3	592.3	561.2	31.01	19.097			
4,400.0	4,207.0	4,405.7	4,329.5	31.7	20.1	163.75	353.6	-540.9	604.7	572.8	31.91	18.949			
4,500.0	4,301.2	4,504.9	4,426.0	32.5	20.7	163.59	365.4	-560.5	617.1	584.3	32.81	18.808			
4,600.0	4,395.4	4,604.1	4,522.5	33.4	21.3	163.42	377.3	-580.2	629.5	595.8	33.71	18.673			
4,700.0	4,489.6	4,703.3	4,619.0	34.3	21.9	163.27	389.2	-599.8	642.0	607.4	34.62	18.544			
4,800.0	4,583.8	4,802.5	4,715.6	35.2	22.5	163.12	401.0	-619.4	654.4	618.9	35.52	18.421			
4,900.0	4,678.1	4,901.7	4,812.1	36.0	23.1	162.97	412.9	-639.0	666.9	630.4	36.43	18.304			
4,964.7	4,739.0	4,965.9	4,874.6	36.6	23.4	162.88	420.6	-651.7	674.9	637.9	37.02	18.230			

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-203
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	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)				
5,000.0	4,772.3	5,000.9	4,908.6	36.9	23.7	162.86	424.8	-658.7	679.1	641.7	37.36	18.175			
5,100.0	4,867.5	5,100.4	5,005.4	37.5	24.3	162.71	436.7	-678.4	688.7	650.4	38.30	17.984			
5,200.0	4,963.7	5,200.2	5,102.5	38.1	24.9	162.45	448.6	-698.1	695.0	655.8	39.22	17.723			
5,300.0	5,060.7	5,289.0	5,189.0	38.6	25.4	162.17	459.0	-715.3	698.6	658.5	40.03	17.451			
5,400.0	5,158.6	5,371.5	5,269.9	39.0	25.7	161.92	467.5	-729.3	701.1	660.4	40.69	17.229			
5,500.0	5,257.1	5,454.1	5,351.3	39.4	26.0	161.69	474.8	-741.4	702.8	661.5	41.27	17.030			
5,600.0	5,356.1	5,536.8	5,433.0	39.7	26.3	161.49	480.9	-751.5	703.7	661.9	41.75	16.853			
5,700.0	5,455.6	5,619.4	5,515.2	40.0	26.5	161.31	485.7	-759.5	703.7	661.6	42.15	16.694			
5,800.0	5,555.4	5,700.0	5,595.4	40.2	26.7	161.15	489.3	-765.4	702.9	660.5	42.46	16.556			
5,900.0	5,655.3	5,784.9	5,680.2	40.3	26.9	161.01	491.8	-769.5	701.3	658.6	42.68	16.430			
5,944.7	5,700.0	5,821.9	5,717.2	40.3	27.0	89.07	492.5	-770.6	700.3	657.5	42.77	16.373			
6,000.0	5,755.3	5,867.7	5,763.0	40.4	27.0	89.03	493.0	-771.5	699.3	656.3	42.96	16.277			
6,060.3	5,815.6	5,920.3	5,815.6	40.5	27.1	89.02	493.1	-771.7	699.0	655.9	43.16	16.195			
6,100.0	5,855.3	5,960.0	5,855.3	40.5	27.2	89.02	493.1	-771.7	699.0	655.7	43.30	16.143			
6,207.8	5,963.2	6,067.9	5,963.2	40.6	27.3	89.02	493.1	-771.7	699.0	655.3	43.69	16.000			
6,250.0	6,005.3	6,110.7	6,006.0	40.6	27.4	-91.02	491.9	-771.7	699.0	655.2	43.80	15.960			
6,300.0	6,055.1	6,161.5	6,056.6	40.7	27.4	-91.01	487.3	-771.7	699.0	655.2	43.88	15.932			
6,350.0	6,104.5	6,212.4	6,106.8	40.7	27.4	-91.00	479.4	-771.7	699.0	655.1	43.89	15.928			
6,400.0	6,153.3	6,263.2	6,156.3	40.7	27.4	-90.99	468.2	-771.7	699.0	655.2	43.84	15.947			
6,450.0	6,201.3	6,313.9	6,205.0	40.6	27.4	-90.97	453.8	-771.7	699.0	655.3	43.73	15.987			
6,500.0	6,248.2	6,364.7	6,252.6	40.6	27.3	-90.94	436.1	-771.7	699.0	655.5	43.57	16.045			
6,550.0	6,294.0	6,415.5	6,298.8	40.5	27.2	-90.92	415.3	-771.7	699.0	655.7	43.37	16.118			
6,600.0	6,338.3	6,466.2	6,343.6	40.5	27.2	-90.89	391.5	-771.7	699.0	655.9	43.14	16.203			
6,650.0	6,381.0	6,516.9	6,386.7	40.4	27.0	-90.85	364.8	-771.7	699.0	656.1	42.90	16.295			
6,700.0	6,422.0	6,567.5	6,427.9	40.3	26.9	-90.81	335.4	-771.7	699.0	656.4	42.65	16.390			
6,750.0	6,460.9	6,618.2	6,467.0	40.3	26.8	-90.77	303.3	-771.8	699.0	656.6	42.41	16.482			
6,800.0	6,497.8	6,668.8	6,503.9	40.2	26.7	-90.72	268.6	-771.8	699.0	656.8	42.20	16.565			
6,850.0	6,532.3	6,719.3	6,538.4	40.1	26.6	-90.67	231.7	-771.8	699.0	657.0	42.03	16.633			
6,900.0	6,564.4	6,769.8	6,570.4	40.0	26.4	-90.62	192.6	-771.8	699.0	657.1	41.91	16.681			
6,907.9	6,569.3	6,777.8	6,575.2	40.0	26.4	-90.61	186.2	-771.8	699.0	657.1	41.89	16.685			
6,950.0	6,593.9	6,820.3	6,599.7	39.9	26.3	-90.57	151.5	-771.8	699.0	657.2	41.85	16.701			
7,000.0	6,620.8	6,870.7	6,626.1	39.9	26.2	-90.51	108.6	-771.9	699.0	657.1	41.88	16.690			
7,050.0	6,644.8	6,921.1	6,649.7	39.8	26.1	-90.45	64.1	-771.9	699.0	657.0	42.00	16.642			
7,100.0	6,665.9	6,971.4	6,670.2	39.7	26.0	-90.39	18.1	-771.9	699.0	656.8	42.22	16.555			
7,150.0	6,684.0	7,021.7	6,687.7	39.7	26.0	-90.33	-29.0	-771.9	699.0	656.5	42.55	16.428			
7,200.0	6,698.9	7,071.9	6,702.0	39.7	25.9	-90.27	-77.1	-772.0	699.0	656.0	42.99	16.261			
7,250.0	6,710.8	7,122.1	6,713.2	39.7	25.9	-90.20	-126.1	-772.0	699.0	655.5	43.53	16.057			
7,300.0	6,719.4	7,172.2	6,721.1	39.7	26.0	-90.13	-175.6	-772.0	699.0	654.9	44.19	15.819			
7,350.0	6,724.8	7,222.3	6,725.7	39.7	26.1	-90.07	-225.4	-772.0	699.1	654.1	44.95	15.552			
7,400.0	6,727.0	7,272.3	6,727.0	39.7	26.2	-90.00	-275.4	-772.1	699.1	653.3	45.80	15.263			
7,413.3	6,727.0	7,285.7	6,726.9	39.8	26.3	-89.99	-288.8	-772.1	699.1	653.0	46.03	15.187			
7,413.4	6,727.0	7,285.8	6,726.9	39.8	26.3	-89.99	-288.9	-772.1	699.1	653.0	46.03	15.187			
7,414.2	6,727.0	7,286.6	6,726.9	39.8	26.3	-89.99	-289.7	-772.1	699.1	653.0	46.04	15.182			
7,500.0	6,726.4	7,372.4	6,726.3	39.9	26.7	-89.99	-375.5	-772.1	699.1	651.4	47.71	14.653			
7,600.0	6,725.6	7,472.4	6,725.5	40.3	27.6	-89.99	-475.5	-772.2	699.1	649.0	50.09	13.957			
7,700.0	6,724.9	7,572.4	6,724.8	40.7	28.7	-89.99	-575.5	-772.2	699.1	646.3	52.78	13.245			
7,800.0	6,724.2	7,672.4	6,724.1	41.3	30.0	-89.99	-675.4	-772.3	699.1	643.4	55.75	12.541			
7,900.0	6,723.4	7,772.4	6,723.3	42.0	31.5	-89.99	-775.4	-772.4	699.1	640.2	58.93	11.863			
8,000.0	6,722.7	7,872.4	6,722.6	42.9	33.1	-89.99	-875.4	-772.4	699.2	636.8	62.31	11.220			
8,100.0	6,721.9	7,972.4	6,721.9	43.9	34.8	-89.99	-975.4	-772.5	699.2	633.3	65.86	10.617			

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-203
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	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)			
8,200.0	6,721.2	8,072.4	6,721.1	45.0	36.5	-89.99	-1,075.4	-772.6	699.2	629.6	69.53	10.055		
8,300.0	6,720.5	8,172.4	6,720.4	46.3	38.4	-89.99	-1,175.4	-772.6	699.2	625.9	73.33	9.535		
8,400.0	6,719.7	8,272.4	6,719.6	47.7	40.2	-89.99	-1,275.4	-772.7	699.2	622.0	77.23	9.054		
8,500.0	6,719.0	8,372.4	6,718.9	49.2	42.2	-89.99	-1,375.4	-772.7	699.2	618.0	81.21	8.610		
8,600.0	6,718.3	8,472.4	6,718.2	50.8	44.2	-89.99	-1,475.4	-772.8	699.2	614.0	85.26	8.201		
8,700.0	6,717.5	8,572.4	6,717.4	52.4	46.2	-89.99	-1,575.4	-772.9	699.3	609.9	89.38	7.823		
8,800.0	6,716.8	8,672.4	6,716.7	54.2	48.2	-89.99	-1,675.4	-772.9	699.3	605.7	93.56	7.474		
8,900.0	6,716.1	8,772.4	6,716.0	55.9	50.3	-89.99	-1,775.4	-773.0	699.3	601.5	97.78	7.152		
9,000.0	6,715.3	8,872.4	6,715.2	57.8	52.4	-89.99	-1,875.4	-773.0	699.3	597.3	102.04	6.853		
9,100.0	6,714.6	8,972.4	6,714.5	59.6	54.5	-89.99	-1,975.4	-773.1	699.3	593.0	106.34	6.576		
9,200.0	6,713.8	9,072.4	6,713.8	61.6	56.6	-89.99	-2,075.4	-773.2	699.3	588.7	110.68	6.319		
9,300.0	6,713.1	9,172.4	6,713.0	63.5	58.7	-89.99	-2,175.4	-773.2	699.3	584.3	115.04	6.079		
9,400.0	6,712.4	9,272.4	6,712.3	65.5	60.9	-89.99	-2,275.4	-773.3	699.4	579.9	119.43	5.856		
9,500.0	6,711.6	9,372.4	6,711.6	67.5	63.1	-89.99	-2,375.4	-773.3	699.4	575.5	123.84	5.648		
9,600.0	6,710.9	9,472.4	6,710.8	69.5	65.3	-89.99	-2,475.4	-773.4	699.4	571.1	128.27	5.453		
9,700.0	6,710.2	9,572.4	6,710.1	71.6	67.5	-89.99	-2,575.4	-773.5	699.4	566.7	132.72	5.270		
9,800.0	6,709.4	9,672.4	6,709.3	73.6	69.7	-89.99	-2,675.4	-773.5	699.4	562.2	137.19	5.098		
9,900.0	6,708.7	9,772.4	6,708.6	75.7	71.9	-89.99	-2,775.4	-773.6	699.4	557.8	141.67	4.937		
10,000.0	6,708.0	9,872.4	6,707.9	77.8	74.1	-89.99	-2,875.4	-773.6	699.5	553.3	146.16	4.785		
10,100.0	6,707.2	9,972.4	6,707.1	80.0	76.3	-89.99	-2,975.4	-773.7	699.5	548.8	150.67	4.642		
10,200.0	6,706.5	10,072.4	6,706.4	82.1	78.6	-89.99	-3,075.4	-773.8	699.5	544.3	155.19	4.507		
10,300.0	6,705.7	10,172.4	6,705.7	84.2	80.8	-89.99	-3,175.4	-773.8	699.5	539.8	159.72	4.379		
10,400.0	6,705.0	10,272.4	6,704.9	86.4	83.1	-89.99	-3,275.4	-773.9	699.5	535.3	164.26	4.258		
10,500.0	6,704.3	10,372.4	6,704.2	88.6	85.3	-89.99	-3,375.4	-773.9	699.5	530.7	168.81	4.144		
10,600.0	6,703.5	10,472.4	6,703.5	90.7	87.6	-89.99	-3,475.4	-774.0	699.5	526.2	173.37	4.035		
10,700.0	6,702.8	10,572.4	6,702.7	92.9	89.8	-89.99	-3,575.4	-774.1	699.6	521.6	177.94	3.932		
10,800.0	6,702.1	10,672.4	6,702.0	95.1	92.1	-89.99	-3,675.4	-774.1	699.6	517.1	182.51	3.833		
10,900.0	6,701.3	10,772.4	6,701.2	97.3	94.4	-89.99	-3,775.4	-774.2	699.6	512.5	187.09	3.739		
11,000.0	6,700.6	10,872.4	6,700.5	99.5	96.6	-89.99	-3,875.4	-774.2	699.6	507.9	191.67	3.650		
11,100.0	6,699.8	10,972.4	6,699.8	101.7	98.9	-89.99	-3,975.4	-774.3	699.6	503.4	196.26	3.565		
11,200.0	6,699.1	11,072.4	6,699.0	104.0	101.2	-89.99	-4,075.4	-774.4	699.6	498.8	200.86	3.483		
11,300.0	6,698.4	11,172.4	6,698.3	106.2	103.5	-89.99	-4,175.4	-774.4	699.7	494.2	205.46	3.405		
11,400.0	6,697.6	11,272.4	6,697.6	108.4	105.8	-89.99	-4,275.4	-774.5	699.7	489.6	210.06	3.331		
11,500.0	6,696.9	11,372.4	6,696.8	110.7	108.1	-89.99	-4,375.3	-774.5	699.7	485.0	214.67	3.259		
11,600.0	6,696.2	11,472.4	6,696.1	112.9	110.4	-89.99	-4,475.3	-774.6	699.7	480.4	219.28	3.191		
11,700.0	6,695.4	11,572.4	6,695.4	115.1	112.7	-89.99	-4,575.3	-774.7	699.7	475.8	223.90	3.125		
11,800.0	6,694.7	11,672.4	6,694.6	117.4	115.0	-89.99	-4,675.3	-774.7	699.7	471.2	228.52	3.062		
11,900.0	6,694.0	11,772.4	6,693.9	119.6	117.3	-89.99	-4,775.3	-774.8	699.7	466.6	233.14	3.001		
12,000.0	6,693.2	11,872.4	6,693.2	121.9	119.6	-89.99	-4,875.3	-774.9	699.8	462.0	237.77	2.943		
12,100.0	6,692.5	11,972.4	6,692.4	124.2	121.9	-89.99	-4,975.3	-774.9	699.8	457.4	242.40	2.887		
12,200.0	6,691.7	12,072.4	6,691.7	126.4	124.2	-89.99	-5,075.3	-775.0	699.8	452.8	247.03	2.833		
12,300.0	6,691.0	12,172.4	6,690.9	128.7	126.5	-89.99	-5,175.3	-775.0	699.8	448.1	251.67	2.781		
12,400.0	6,690.3	12,272.4	6,690.2	131.0	128.8	-89.99	-5,275.3	-775.1	699.8	443.5	256.30	2.730		
12,500.0	6,689.5	12,372.4	6,689.5	133.2	131.1	-89.99	-5,375.3	-775.2	699.8	438.9	260.94	2.682		
12,600.0	6,688.8	12,472.4	6,688.7	135.5	133.4	-89.99	-5,475.3	-775.2	699.8	434.3	265.58	2.635		
12,700.0	6,688.1	12,572.4	6,688.0	137.8	135.7	-89.99	-5,575.3	-775.3	699.9	429.6	270.23	2.590		
12,800.0	6,687.3	12,672.4	6,687.3	140.1	138.0	-89.99	-5,675.3	-775.3	699.9	425.0	274.87	2.546		
12,900.0	6,686.6	12,772.4	6,686.5	142.3	140.3	-89.99	-5,775.3	-775.4	699.9	420.4	279.52	2.504		
13,000.0	6,685.9	12,872.4	6,685.8	144.6	142.7	-89.99	-5,875.3	-775.5	699.9	415.7	284.17	2.463		
13,100.0	6,685.1	12,972.4	6,685.1	146.9	145.0	-89.99	-5,975.3	-775.5	699.9	411.1	288.82	2.423		
13,200.0	6,684.4	13,072.4	6,684.3	149.2	147.3	-89.99	-6,075.3	-775.6	699.9	406.5	293.47	2.385		

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

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

Offset Design													Offset Site Error:	0.0 ft
Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)													Offset Well Error:	0.0 ft
Survey Program: 0-MWD														
Reference		Offset		Semi Major Axis			Distance							
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	
13,300.0	6,683.6	13,172.4	6,683.6	151.5	149.6	-89.99	-6,175.3	-775.6	700.0	401.8	298.13	2.348		
13,400.0	6,682.9	13,272.4	6,682.8	153.8	151.9	-89.99	-6,275.3	-775.7	700.0	397.2	302.79	2.312		
13,500.0	6,682.2	13,372.4	6,682.1	156.1	154.2	-90.00	-6,375.3	-775.8	700.0	392.5	307.44	2.277		
13,600.0	6,681.4	13,472.4	6,681.4	158.4	156.6	-90.00	-6,475.3	-775.8	700.0	387.9	312.10	2.243		
13,700.0	6,680.7	13,572.4	6,680.6	160.7	158.9	-90.00	-6,575.3	-775.9	700.0	383.3	316.76	2.210		
13,800.0	6,680.0	13,672.4	6,679.9	163.0	161.2	-90.00	-6,675.3	-775.9	700.0	378.6	321.42	2.178		
13,900.0	6,679.2	13,772.4	6,679.2	165.3	163.5	-90.00	-6,775.3	-776.0	700.0	374.0	326.08	2.147		
14,000.0	6,678.5	13,872.4	6,678.4	167.6	165.9	-90.00	-6,875.3	-776.1	700.1	369.3	330.75	2.117		
14,100.0	6,677.8	13,972.4	6,677.7	169.9	168.2	-90.00	-6,975.3	-776.1	700.1	364.7	335.41	2.087		
14,159.2	6,677.3	14,031.6	6,677.3	171.0	169.6	-90.00	-7,034.5	-776.2	700.1	362.2	337.91	2.072		
14,202.5	6,677.0	14,067.2	6,677.0	171.8	170.4	-90.00	-7,070.1	-776.2	700.1	360.6	339.56	2.062 SF		



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

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-303 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (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	90.55	-0.7	75.2	75.2					
100.0	100.0	100.0	100.0	0.1	0.1	90.55	-0.7	75.2	75.2	75.0	0.28	273.232		
200.0	200.0	200.0	200.0	0.4	0.4	90.55	-0.7	75.2	75.2	74.4	0.83	91.077 CC, ES		
300.0	300.0	300.0	300.0	0.7	0.7	162.73	-0.7	75.2	76.5	75.1	1.38	55.511		
400.0	399.9	399.9	399.9	1.0	1.0	163.55	-0.7	75.2	80.2	78.3	1.94	41.452		
500.0	499.7	499.7	499.7	1.2	1.2	164.75	-0.7	75.2	86.5	84.0	2.50	34.608		
600.0	599.3	599.3	599.3	1.6	1.5	166.16	-0.7	75.2	95.4	92.3	3.07	31.088		
700.0	698.6	698.6	698.6	1.9	1.8	167.63	-0.7	75.2	106.8	103.2	3.64	29.364		
800.0	797.5	797.5	797.5	2.3	2.1	169.05	-0.7	75.2	120.9	116.7	4.21	28.718 SF		
900.0	896.1	896.1	896.1	2.7	2.3	170.34	-0.7	75.2	137.6	132.8	4.78	28.766		
1,000.0	994.2	994.2	994.2	3.2	2.6	171.50	-0.7	75.2	156.8	151.5	5.36	29.286		
1,100.0	1,091.7	1,091.7	1,091.7	3.8	2.9	172.50	-0.7	75.2	178.7	172.8	5.93	30.138		
1,200.0	1,188.6	1,188.6	1,188.6	4.4	3.1	173.36	-0.7	75.2	203.2	196.6	6.50	31.231		
1,300.0	1,284.9	1,284.9	1,284.9	5.0	3.4	174.10	-0.7	75.2	230.1	223.1	7.08	32.503		
1,400.0	1,380.4	1,380.4	1,380.4	5.8	3.7	174.73	-0.7	75.2	259.7	252.0	7.66	33.909		
1,506.6	1,481.3	1,486.4	1,486.4	6.6	4.0	175.20	0.1	74.6	293.2	284.9	8.28	35.412		
1,600.0	1,569.3	1,581.1	1,581.1	7.4	4.2	175.30	2.7	72.6	322.0	313.2	8.84	36.412		
1,700.0	1,663.5	1,683.8	1,683.6	8.2	4.5	175.11	7.7	68.9	351.0	341.5	9.46	37.090		
1,800.0	1,757.7	1,787.7	1,787.0	9.1	4.8	174.66	15.0	63.4	378.0	367.9	10.10	37.417		
1,900.0	1,851.9	1,892.7	1,891.3	9.9	5.1	174.01	24.6	56.1	403.0	392.2	10.76	37.442		
2,000.0	1,946.1	1,998.5	1,996.1	10.8	5.4	173.16	36.6	47.1	426.0	414.5	11.45	37.199		
2,100.0	2,040.3	2,097.4	2,093.7	11.6	5.8	172.30	49.3	37.5	447.8	435.6	12.15	36.854		
2,200.0	2,134.5	2,194.8	2,189.8	12.5	6.1	171.53	61.8	28.1	469.6	456.7	12.86	36.503		
2,300.0	2,228.7	2,292.2	2,285.9	13.3	6.5	170.83	74.3	18.7	491.5	477.9	13.59	36.154		
2,400.0	2,322.9	2,389.6	2,382.1	14.2	6.9	170.19	86.8	9.3	513.4	499.1	14.34	35.808		
2,500.0	2,417.1	2,487.0	2,478.2	15.1	7.2	169.60	99.3	-0.1	535.5	520.4	15.10	35.470		
2,600.0	2,511.3	2,584.4	2,574.4	16.0	7.6	169.05	111.8	-9.5	557.5	541.7	15.86	35.143		
2,700.0	2,605.5	2,681.8	2,670.5	16.8	8.0	168.55	124.3	-19.0	579.7	563.0	16.64	34.828		
2,800.0	2,699.7	2,779.2	2,766.6	17.7	8.4	168.09	136.8	-28.4	601.8	584.4	17.43	34.525		
2,900.0	2,793.9	2,876.6	2,862.8	18.6	8.8	167.65	149.2	-37.8	624.0	605.8	18.23	34.234		
3,000.0	2,888.1	2,974.0	2,958.9	19.4	9.2	167.25	161.7	-47.2	646.2	627.2	19.03	33.956		
3,100.0	2,982.3	3,071.4	3,055.0	20.3	9.6	166.87	174.2	-56.6	668.5	648.6	19.84	33.690		
3,200.0	3,076.6	3,168.8	3,151.2	21.2	10.0	166.52	186.7	-66.0	690.7	670.1	20.66	33.437		
3,300.0	3,170.8	3,266.2	3,247.3	22.0	10.5	166.19	199.2	-75.5	713.0	691.6	21.48	33.195		
3,400.0	3,265.0	3,363.6	3,343.5	22.9	10.9	165.88	211.7	-84.9	735.4	713.0	22.31	32.964		
3,500.0	3,359.2	3,461.0	3,439.6	23.8	11.3	165.59	224.2	-94.3	757.7	734.6	23.14	32.744		
3,600.0	3,453.4	3,558.4	3,535.7	24.7	11.7	165.32	236.7	-103.7	780.0	756.1	23.98	32.535		



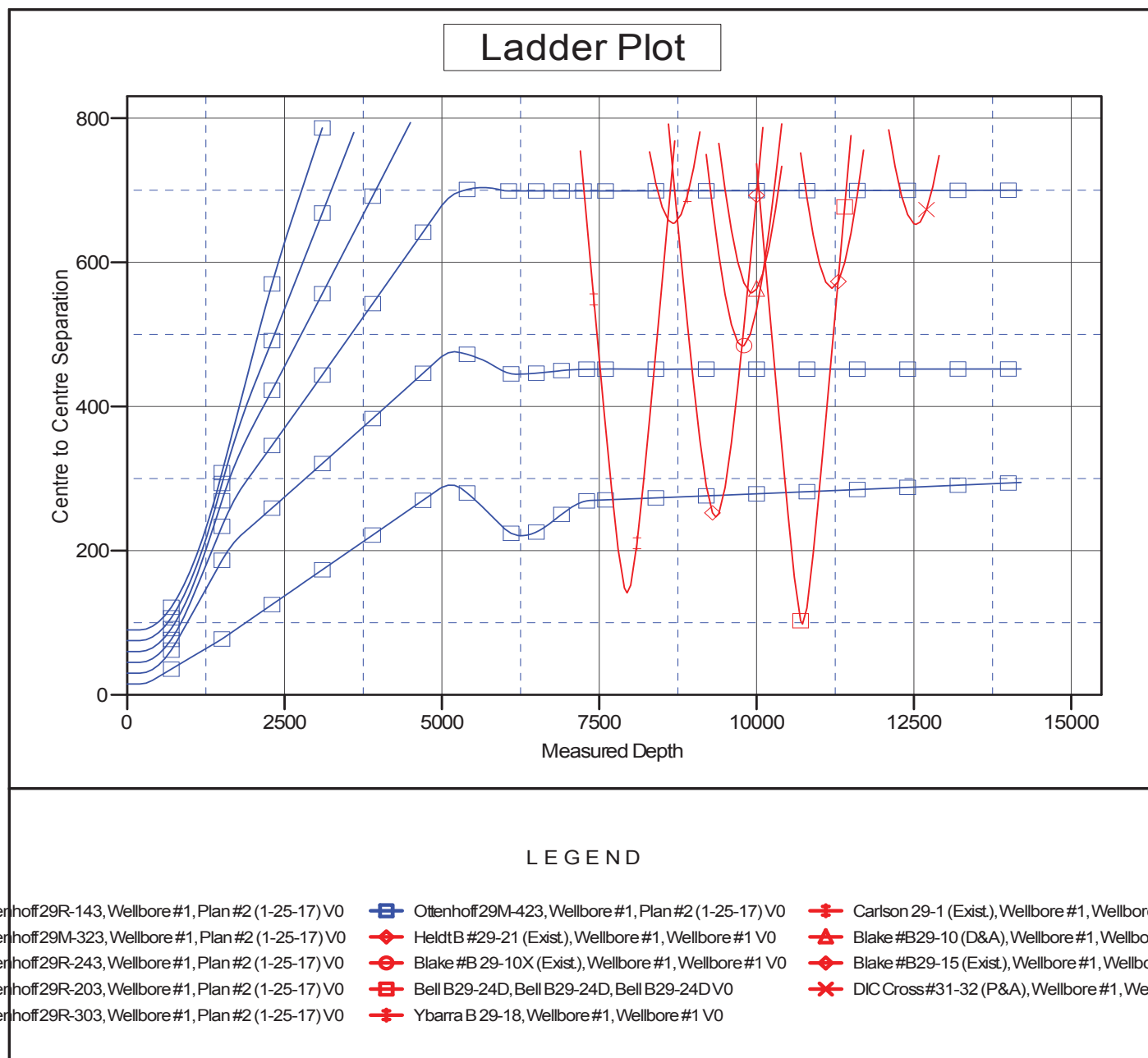
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-203
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')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

Offset Design		Ybarra B 29-18    Sec.29-T5N-R64W -    Ybarra B 29-18 - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft
Survey Program:    515-													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)				
7,200.0	6,698.9	6,786.7	6,703.6	39.7	24.6	33.72	-818.2	-1,614.1	754.5	718.1	36.38	20.739			
7,250.0	6,710.8	6,799.4	6,716.3	39.7	24.7	42.34	-818.5	-1,613.8	707.1	668.6	38.47	18.380			
7,300.0	6,719.4	6,809.0	6,725.9	39.7	24.7	53.83	-818.8	-1,613.5	659.1	617.4	41.67	15.815			
7,350.0	6,724.8	6,815.6	6,732.5	39.7	24.7	68.04	-819.0	-1,613.4	610.8	566.0	44.75	13.650			
7,400.0	6,727.0	6,819.0	6,735.9	39.7	24.7	83.31	-819.0	-1,613.3	562.4	516.4	45.95	12.239			
7,413.3	6,727.0	6,819.3	6,736.2	39.8	24.7	87.23	-819.1	-1,613.3	549.5	503.6	45.85	11.985			
7,413.4	6,727.0	6,819.3	6,736.2	39.8	24.7	87.23	-819.1	-1,613.3	549.4	503.6	45.85	11.983			
7,414.2	6,727.0	6,819.4	6,736.3	39.8	24.7	87.24	-819.1	-1,613.3	548.6	502.8	45.85	11.965			
7,500.0	6,726.4	6,821.1	6,738.0	39.9	24.7	87.92	-819.1	-1,613.2	466.3	419.7	46.55	10.017			
7,600.0	6,725.6	6,823.0	6,739.9	40.3	24.7	88.73	-819.2	-1,613.2	372.3	324.6	47.62	7.817			
7,700.0	6,724.9	6,825.1	6,742.0	40.7	24.7	89.54	-819.2	-1,613.1	282.4	233.5	48.84	5.781			
7,800.0	6,724.2	6,827.1	6,744.0	41.3	24.7	90.36	-819.3	-1,613.0	202.1	152.0	50.18	4.028			
7,900.0	6,723.4	6,829.1	6,746.0	42.0	24.7	91.19	-819.3	-1,613.0	148.3	96.7	51.62	2.872			
7,944.4	6,723.1	6,830.1	6,747.0	42.4	24.7	91.57	-819.4	-1,613.0	141.5	89.2	52.31	2.705 CC, ES, SF			
8,000.0	6,722.7	6,831.2	6,748.1	42.9	24.7	92.03	-819.4	-1,612.9	152.0	98.8	53.16	2.859			
8,100.0	6,721.9	6,833.3	6,750.2	43.9	24.7	92.88	-819.4	-1,612.9	210.3	155.5	54.77	3.839			
8,200.0	6,721.2	6,835.4	6,752.3	45.0	24.7	93.74	-819.5	-1,612.8	292.1	235.6	56.44	5.176			
8,300.0	6,720.5	6,837.6	6,754.5	46.3	24.7	94.60	-819.6	-1,612.8	382.6	324.5	58.16	6.579			
8,400.0	6,719.7	6,839.7	6,756.6	47.7	24.7	95.48	-819.6	-1,612.7	477.0	417.0	59.91	7.961			
8,500.0	6,719.0	6,841.9	6,758.8	49.2	24.8	96.36	-819.7	-1,612.6	573.2	511.5	61.70	9.289			
8,600.0	6,718.3	6,844.1	6,761.0	50.8	24.8	97.24	-819.8	-1,612.6	670.5	607.0	63.52	10.557			
8,700.0	6,717.5	6,846.4	6,763.2	52.4	24.8	98.13	-819.8	-1,612.5	768.6	703.2	65.35	11.761			

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

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

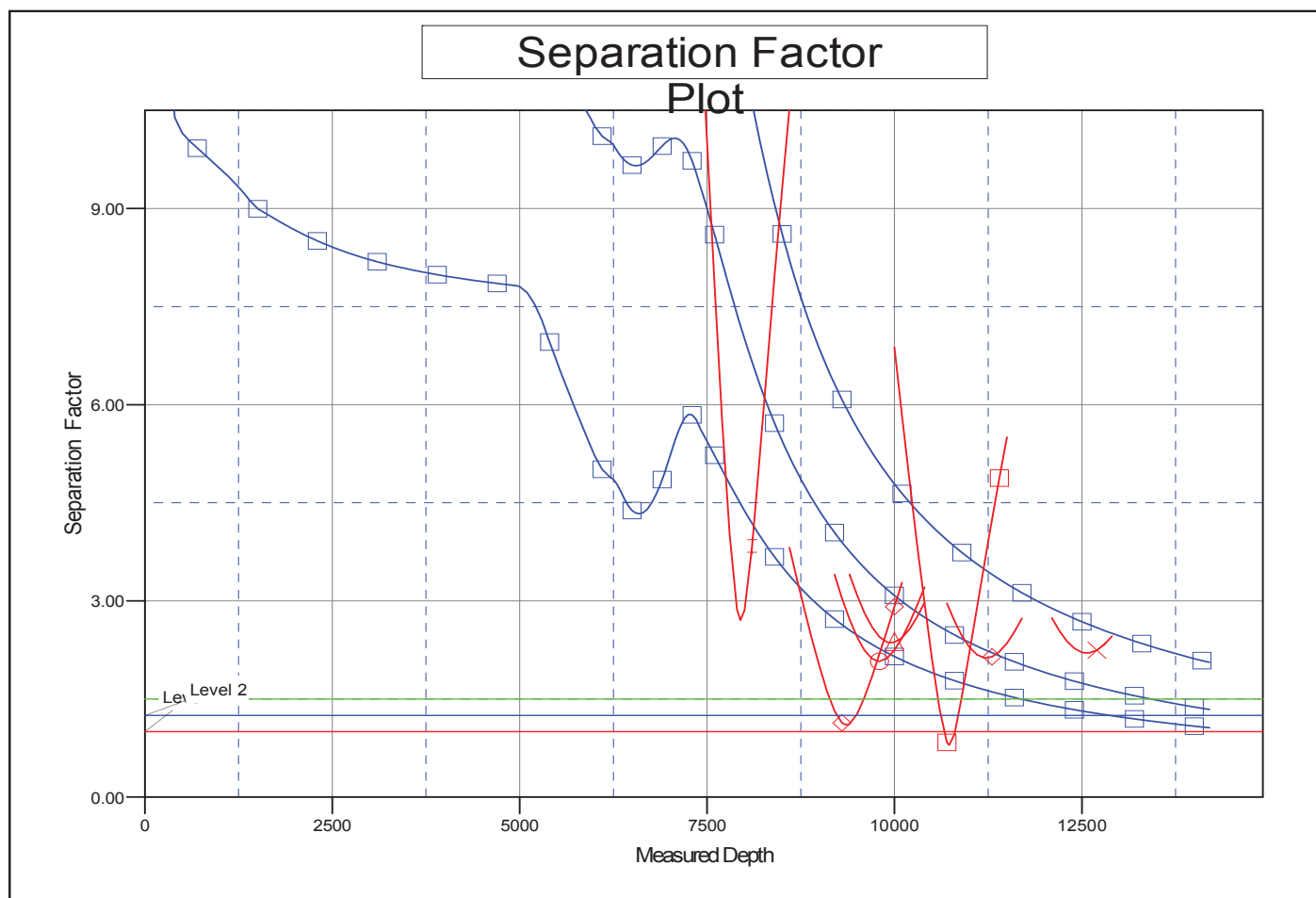
Coordinates are relative to: Ottenhoff 29M-203  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.60°



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-203
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	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 29M-203  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.60°



### LEGEND

Ottenhoff 29R-143, Wellbore #1, Plan #2 (1-25-17) V0	Ottenhoff 29M-423, Wellbore #1, Plan #2 (1-25-17) V0	Carlson 29-1 (Exist), Wellbore #1, Wellbore #1
Ottenhoff 29M-323, Wellbore #1, Plan #2 (1-25-17) V0	Heldt B #29-21 (Exist), Wellbore #1, Wellbore #1 V0	Blake #B29-10 (D&A), Wellbore #1, Wellbore #1
Ottenhoff 29R-243, Wellbore #1, Plan #2 (1-25-17) V0	Blake #B 29-10X (Exist), Wellbore #1, Wellbore #1 V0	Blake #B29-15 (Exist), Wellbore #1, Wellbore #1
Ottenhoff 29R-203, Wellbore #1, Plan #2 (1-25-17) V0	Bell B29-24D, Bell B29-24D, Bell B29-24D V0	DIC Cross #31-32 (P&A), Wellbore #1, Wellbore #1
Ottenhoff 29R-303, Wellbore #1, Plan #2 (1-25-17) V0	Ybarra B 29-18, Wellbore #1, Wellbore #1 V0	