

# PETROLEUM DEVELOPMENT CORP DJ Basin

Well Name: **Ottenhoff 29U-243**

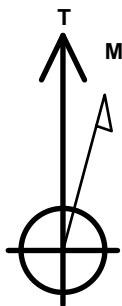
Surface Location: Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W  
North American Datum 1983 , US State Plane 1983 Colorado Northern Zone  
Ground Elevation: 4663.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1381166.76	3259749.48	40.375956	-104.567675	

RKB - 23' WELL @ 4686.0ft (RKB - 23')

## DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 560'FNL & 945'FEL, Sec.29	1.0	0.0	0.0	Point
BHL 2340'FNL & 522'FEL, Sec.32	6662.0	-7054.8	468.5	Point
LPL 819'FNL & 473'FEL, Sec.29	6707.0	-251.0	473.7	Point



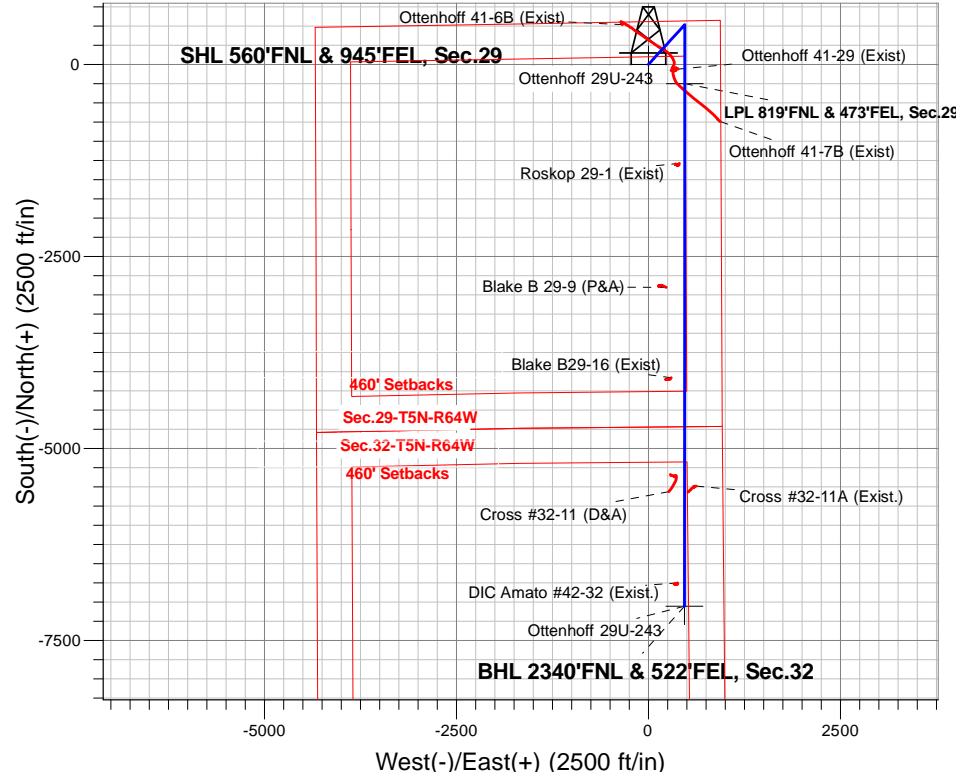
Azimuths to True North  
Magnetic North: 8.00°

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

Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W  
Ottenhoff 29U-243  
Plan #2 (1-25-17)  
13:49, January 31 2017

## ANNOTATIONS

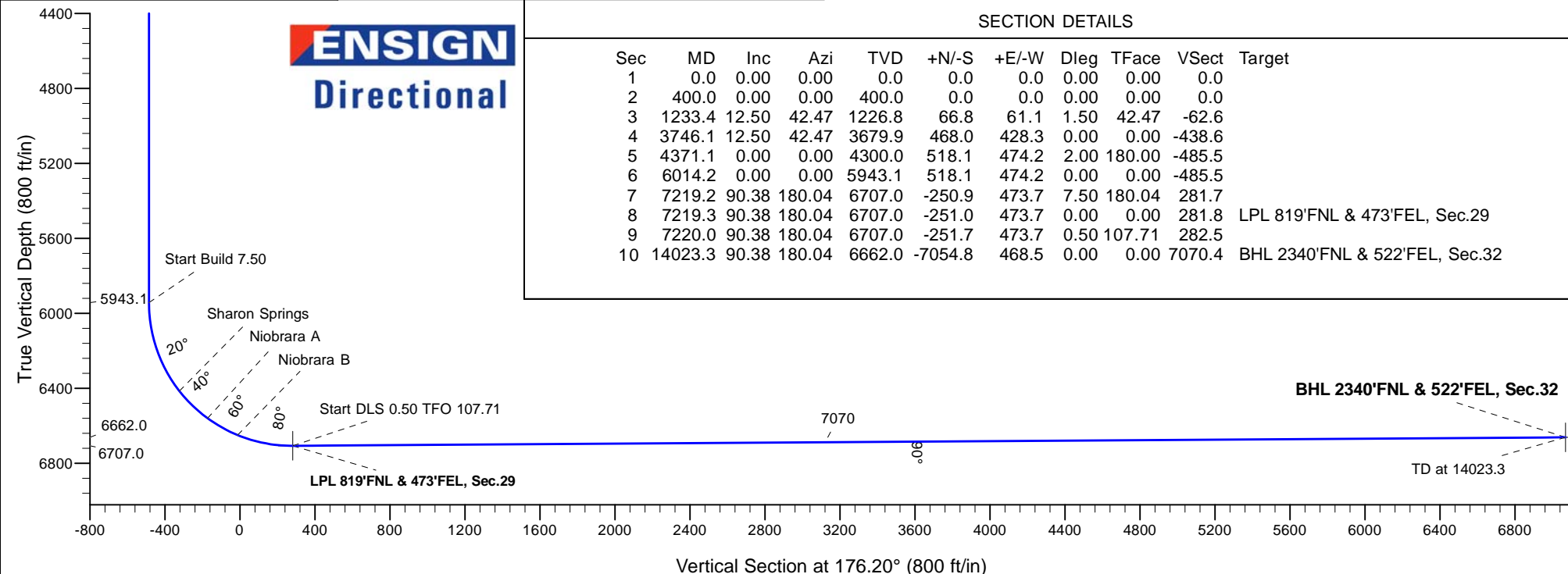
TVD	MD	Annotation
400.0	400.0	KOP - Start Build 1.50
3679.9	3746.1	Start Drop -2.00
5943.1	6014.2	Start Build 7.50
6707.0	7219.3	Start DLS 0.50 TFO 107.71
6707.0	7220.0	Start 6803.3 hold at 7220.0 MD
6662.0	14023.3	TD at 14023.3



**ENSIGN**  
Directional

## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.0	
3	1233.4	12.50	42.47	1226.8	66.8	61.1	1.50	42.47	-62.6	
4	3746.1	12.50	42.47	3679.9	468.0	428.3	0.00	0.00	-438.6	
5	4371.1	0.00	0.00	4300.0	518.1	474.2	2.00	180.00	-485.5	
6	6014.2	0.00	0.00	5943.1	518.1	474.2	0.00	0.00	-485.5	
7	7219.2	90.38	180.04	6707.0	-250.9	473.7	7.50	180.04	281.7	
8	7219.3	90.38	180.04	6707.0	-251.0	473.7	0.00	0.00	281.8	LPL 819'FNL & 473'FEL, Sec.29
9	7220.0	90.38	180.04	6707.0	-251.7	473.7	0.50	107.71	282.5	
10	14023.3	90.38	180.04	6662.0	-7054.8	468.5	0.00	0.00	7070.4	BHL 2340'FNL & 522'FEL, Sec.32





# **PETROLEUM DEVELOPMENT CORP DJ Basin**

**SEC.29-T5N-R64W**

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

**Ottenhoff 29U-243**

**Wellbore #1**

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

## **Standard Planning Report**

**31 January, 2017**

<b>Database:</b>	US_EDM	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29U-243
<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 29U-243	<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 29U-243					
Well Position	+N/-S	0.0 ft	Northing:	1,381,166.76 usft	Latitude:	40.375956
	+E/-W	0.0 ft	Easting:	3,259,749.48 usft	Longitude:	-104.567675
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	1/30/2017	8.00	66.87	52,547

<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	176.20

<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	
400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,233.4	12.50	42.47	1,226.8	66.8	61.1	1.50	1.50	0.00	42.47	
3,746.1	12.50	42.47	3,679.9	468.0	428.3	0.00	0.00	0.00	0.00	
4,371.1	0.00	0.00	4,300.0	518.1	474.2	2.00	-2.00	0.00	180.00	
6,014.2	0.00	0.00	5,943.1	518.1	474.2	0.00	0.00	0.00	0.00	
7,219.2	90.38	180.04	6,707.0	-250.9	473.7	7.50	7.50	0.00	180.04	
7,219.3	90.38	180.04	6,707.0	-251.0	473.7	0.00	0.00	0.00	0.00	LPL 819'FNL & 473'FI
7,220.0	90.38	180.04	6,707.0	-251.7	473.7	0.50	-0.15	0.48	107.71	
14,023.3	90.38	180.04	6,662.0	-7,054.8	468.5	0.00	0.00	0.00	0.00	BHL 2340'FNL & 522'

Database:	US_EDM	Local Co-ordinate Reference:	Well Ottenhoff 29U-243
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 29U-243	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (1-25-17)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 1.50									
500.0	1.50	42.47	500.0	1.0	0.9	-0.9	1.50	1.50	0.00
600.0	3.00	42.47	599.9	3.9	3.5	-3.6	1.50	1.50	0.00
700.0	4.50	42.47	699.7	8.7	7.9	-8.1	1.50	1.50	0.00
800.0	6.00	42.47	799.3	15.4	14.1	-14.5	1.50	1.50	0.00
900.0	7.50	42.47	898.6	24.1	22.1	-22.6	1.50	1.50	0.00
1,000.0	9.00	42.47	997.5	34.7	31.8	-32.5	1.50	1.50	0.00
1,100.0	10.50	42.47	1,096.1	47.2	43.2	-44.2	1.50	1.50	0.00
1,200.0	12.00	42.47	1,194.2	61.6	56.4	-57.7	1.50	1.50	0.00
1,233.4	12.50	42.47	1,226.8	66.8	61.1	-62.6	1.50	1.50	0.00
1,300.0	12.50	42.47	1,291.8	77.4	70.9	-72.6	0.00	0.00	0.00
1,400.0	12.50	42.47	1,389.5	93.4	85.5	-87.5	0.00	0.00	0.00
1,500.0	12.50	42.47	1,487.1	109.4	100.1	-102.5	0.00	0.00	0.00
1,600.0	12.50	42.47	1,584.7	125.3	114.7	-117.5	0.00	0.00	0.00
1,700.0	12.50	42.47	1,682.3	141.3	129.3	-132.4	0.00	0.00	0.00
1,800.0	12.50	42.47	1,780.0	157.3	143.9	-147.4	0.00	0.00	0.00
1,900.0	12.50	42.47	1,877.6	173.2	158.6	-162.4	0.00	0.00	0.00
2,000.0	12.50	42.47	1,975.2	189.2	173.2	-177.3	0.00	0.00	0.00
2,100.0	12.50	42.47	2,072.9	205.2	187.8	-192.3	0.00	0.00	0.00
2,200.0	12.50	42.47	2,170.5	221.1	202.4	-207.2	0.00	0.00	0.00
2,300.0	12.50	42.47	2,268.1	237.1	217.0	-222.2	0.00	0.00	0.00
2,400.0	12.50	42.47	2,365.7	253.1	231.6	-237.2	0.00	0.00	0.00
2,500.0	12.50	42.47	2,463.4	269.0	246.2	-252.1	0.00	0.00	0.00
2,600.0	12.50	42.47	2,561.0	285.0	260.9	-267.1	0.00	0.00	0.00
2,700.0	12.50	42.47	2,658.6	301.0	275.5	-282.1	0.00	0.00	0.00
2,800.0	12.50	42.47	2,756.3	316.9	290.1	-297.0	0.00	0.00	0.00
2,900.0	12.50	42.47	2,853.9	332.9	304.7	-312.0	0.00	0.00	0.00
3,000.0	12.50	42.47	2,951.5	348.9	319.3	-327.0	0.00	0.00	0.00
3,100.0	12.50	42.47	3,049.2	364.8	333.9	-341.9	0.00	0.00	0.00
3,200.0	12.50	42.47	3,146.8	380.8	348.5	-356.9	0.00	0.00	0.00
3,300.0	12.50	42.47	3,244.4	396.8	363.2	-371.8	0.00	0.00	0.00
3,400.0	12.50	42.47	3,342.0	412.7	377.8	-386.8	0.00	0.00	0.00
3,500.0	12.50	42.47	3,439.7	428.7	392.4	-401.8	0.00	0.00	0.00
3,592.5	12.50	42.47	3,530.0	443.5	405.9	-415.6	0.00	0.00	0.00
Parkman Sandstone									
3,600.0	12.50	42.47	3,537.3	444.7	407.0	-416.7	0.00	0.00	0.00
3,700.0	12.50	42.47	3,634.9	460.6	421.6	-431.7	0.00	0.00	0.00
3,746.1	12.50	42.47	3,679.9	468.0	428.4	-438.6	0.00	0.00	0.00
Start Drop -2.00									
3,800.0	11.42	42.47	3,732.7	476.2	435.9	-446.3	2.00	-2.00	0.00
3,900.0	9.42	42.47	3,831.0	489.6	448.1	-458.8	2.00	-2.00	0.00
4,000.0	7.42	42.47	3,929.9	500.4	458.0	-468.9	2.00	-2.00	0.00
4,100.0	5.42	42.47	4,029.3	508.6	465.5	-476.7	2.00	-2.00	0.00
4,200.0	3.42	42.47	4,129.0	514.3	470.8	-482.0	2.00	-2.00	0.00
4,271.1	2.00	42.47	4,200.0	516.8	473.0	-484.3	2.00	-2.00	0.00
Sussex Sandstone									
4,300.0	1.42	42.47	4,228.9	517.4	473.6	-484.9	2.00	-2.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Ottenhoff 29U-243
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 29U-243	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)
4,371.1	0.00	0.00	4,300.0	518.1	474.2	-485.5	2.00	-2.00	0.00
4,400.0	0.00	0.00	4,328.9	518.1	474.2	-485.5	0.00	0.00	0.00
4,500.0	0.00	0.00	4,428.9	518.1	474.2	-485.5	0.00	0.00	0.00
4,600.0	0.00	0.00	4,528.9	518.1	474.2	-485.5	0.00	0.00	0.00
4,700.0	0.00	0.00	4,628.9	518.1	474.2	-485.5	0.00	0.00	0.00
4,800.0	0.00	0.00	4,728.9	518.1	474.2	-485.5	0.00	0.00	0.00
4,900.0	0.00	0.00	4,828.9	518.1	474.2	-485.5	0.00	0.00	0.00
5,000.0	0.00	0.00	4,928.9	518.1	474.2	-485.5	0.00	0.00	0.00
5,100.0	0.00	0.00	5,028.9	518.1	474.2	-485.5	0.00	0.00	0.00
5,200.0	0.00	0.00	5,128.9	518.1	474.2	-485.5	0.00	0.00	0.00
5,300.0	0.00	0.00	5,228.9	518.1	474.2	-485.5	0.00	0.00	0.00
5,400.0	0.00	0.00	5,328.9	518.1	474.2	-485.5	0.00	0.00	0.00
5,500.0	0.00	0.00	5,428.9	518.1	474.2	-485.5	0.00	0.00	0.00
5,600.0	0.00	0.00	5,528.9	518.1	474.2	-485.5	0.00	0.00	0.00
5,700.0	0.00	0.00	5,628.9	518.1	474.2	-485.5	0.00	0.00	0.00
5,800.0	0.00	0.00	5,728.9	518.1	474.2	-485.5	0.00	0.00	0.00
5,900.0	0.00	0.00	5,828.9	518.1	474.2	-485.5	0.00	0.00	0.00
6,000.0	0.00	0.00	5,928.9	518.1	474.2	-485.5	0.00	0.00	0.00
6,014.2	0.00	0.00	5,943.1	518.1	474.2	-485.5	0.00	0.00	0.00
Start Build 7.50									
6,100.0	6.43	180.04	6,028.7	513.3	474.2	-480.7	7.50	7.50	0.00
6,200.0	13.94	180.04	6,127.1	495.6	474.2	-463.1	7.50	7.50	0.00
6,300.0	21.44	180.04	6,222.3	465.3	474.2	-432.8	7.50	7.50	0.00
6,400.0	28.94	180.04	6,312.7	422.7	474.1	-390.4	7.50	7.50	0.00
6,500.0	36.44	180.04	6,396.8	368.8	474.1	-336.5	7.50	7.50	0.00
6,522.9	38.15	180.04	6,415.0	354.9	474.1	-322.7	7.50	7.50	0.00
Sharon Springs									
6,600.0	43.94	180.04	6,473.1	304.3	474.1	-272.2	7.50	7.50	0.00
6,700.0	51.44	180.04	6,540.4	230.4	474.0	-198.5	7.50	7.50	0.00
6,732.3	53.86	180.04	6,560.0	204.7	474.0	-172.9	7.50	7.50	0.00
Niobrara A									
6,800.0	58.94	180.04	6,597.5	148.4	473.9	-116.6	7.50	7.50	0.00
6,900.0	66.44	180.04	6,643.3	59.6	473.9	-28.0	7.50	7.50	0.00
6,917.2	67.72	180.04	6,650.0	43.8	473.9	-12.3	7.50	7.50	0.00
Niobrara B									
7,000.0	73.94	180.04	6,677.2	-34.4	473.8	65.8	7.50	7.50	0.00
7,100.0	81.44	180.04	6,698.5	-132.1	473.7	163.2	7.50	7.50	0.00
7,200.0	88.94	180.04	6,706.9	-231.7	473.7	262.5	7.50	7.50	0.00
7,219.2	90.38	180.04	6,707.0	-250.9	473.7	281.7	7.50	7.50	0.00
7,219.3	90.38	180.04	6,707.0	-251.0	473.7	281.8	0.00	0.00	0.00
Start DLS 0.50 TFO 107.71									
7,220.0	90.38	180.04	6,707.0	-251.7	473.7	282.5	0.47	-0.14	0.45
Start 6803.3 hold at 7220.0 MD									
7,300.0	90.38	180.04	6,706.5	-331.6	473.6	362.3	0.00	0.00	0.00
7,400.0	90.38	180.04	6,705.8	-431.6	473.5	462.1	0.00	0.00	0.00
7,500.0	90.38	180.04	6,705.1	-531.6	473.4	561.8	0.00	0.00	0.00
7,600.0	90.38	180.04	6,704.5	-631.6	473.4	661.6	0.00	0.00	0.00
7,700.0	90.38	180.04	6,703.8	-731.6	473.3	761.4	0.00	0.00	0.00
7,800.0	90.38	180.04	6,703.2	-831.6	473.2	861.2	0.00	0.00	0.00
7,900.0	90.38	180.04	6,702.5	-931.6	473.1	960.9	0.00	0.00	0.00
8,000.0	90.38	180.04	6,701.8	-1,031.6	473.1	1,060.7	0.00	0.00	0.00

<b>Database:</b>	US_EDM	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29U-243
<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 29U-243	<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	90.38	180.04	6,701.2	-1,131.6	473.0	1,160.5	0.00	0.00	0.00
8,200.0	90.38	180.04	6,700.5	-1,231.6	472.9	1,260.3	0.00	0.00	0.00
8,300.0	90.38	180.04	6,699.9	-1,331.6	472.8	1,360.0	0.00	0.00	0.00
8,400.0	90.38	180.04	6,699.2	-1,431.6	472.8	1,459.8	0.00	0.00	0.00
8,500.0	90.38	180.04	6,698.5	-1,531.6	472.7	1,559.6	0.00	0.00	0.00
8,600.0	90.38	180.04	6,697.9	-1,631.6	472.6	1,659.4	0.00	0.00	0.00
8,700.0	90.38	180.04	6,697.2	-1,731.6	472.5	1,759.1	0.00	0.00	0.00
8,800.0	90.38	180.04	6,696.5	-1,831.6	472.5	1,858.9	0.00	0.00	0.00
8,900.0	90.38	180.04	6,695.9	-1,931.6	472.4	1,958.7	0.00	0.00	0.00
9,000.0	90.38	180.04	6,695.2	-2,031.6	472.3	2,058.4	0.00	0.00	0.00
9,100.0	90.38	180.04	6,694.6	-2,131.6	472.2	2,158.2	0.00	0.00	0.00
9,200.0	90.38	180.04	6,693.9	-2,231.6	472.2	2,258.0	0.00	0.00	0.00
9,300.0	90.38	180.04	6,693.2	-2,331.6	472.1	2,357.8	0.00	0.00	0.00
9,400.0	90.38	180.04	6,692.6	-2,431.6	472.0	2,457.5	0.00	0.00	0.00
9,500.0	90.38	180.04	6,691.9	-2,531.6	471.9	2,557.3	0.00	0.00	0.00
9,600.0	90.38	180.04	6,691.3	-2,631.6	471.9	2,657.1	0.00	0.00	0.00
9,700.0	90.38	180.04	6,690.6	-2,731.6	471.8	2,756.9	0.00	0.00	0.00
9,800.0	90.38	180.04	6,689.9	-2,831.6	471.7	2,856.6	0.00	0.00	0.00
9,900.0	90.38	180.04	6,689.3	-2,931.6	471.6	2,956.4	0.00	0.00	0.00
10,000.0	90.38	180.04	6,688.6	-3,031.6	471.5	3,056.2	0.00	0.00	0.00
10,100.0	90.38	180.04	6,687.9	-3,131.6	471.5	3,155.9	0.00	0.00	0.00
10,200.0	90.38	180.04	6,687.3	-3,231.6	471.4	3,255.7	0.00	0.00	0.00
10,300.0	90.38	180.04	6,686.6	-3,331.6	471.3	3,355.5	0.00	0.00	0.00
10,400.0	90.38	180.04	6,686.0	-3,431.6	471.2	3,455.3	0.00	0.00	0.00
10,500.0	90.38	180.04	6,685.3	-3,531.6	471.2	3,555.0	0.00	0.00	0.00
10,600.0	90.38	180.04	6,684.6	-3,631.6	471.1	3,654.8	0.00	0.00	0.00
10,700.0	90.38	180.04	6,684.0	-3,731.6	471.0	3,754.6	0.00	0.00	0.00
10,800.0	90.38	180.04	6,683.3	-3,831.6	470.9	3,854.4	0.00	0.00	0.00
10,900.0	90.38	180.04	6,682.7	-3,931.6	470.9	3,954.1	0.00	0.00	0.00
11,000.0	90.38	180.04	6,682.0	-4,031.6	470.8	4,053.9	0.00	0.00	0.00
11,100.0	90.38	180.04	6,681.3	-4,131.6	470.7	4,153.7	0.00	0.00	0.00
11,200.0	90.38	180.04	6,680.7	-4,231.6	470.6	4,253.4	0.00	0.00	0.00
11,300.0	90.38	180.04	6,680.0	-4,331.6	470.6	4,353.2	0.00	0.00	0.00
11,400.0	90.38	180.04	6,679.4	-4,431.6	470.5	4,453.0	0.00	0.00	0.00
11,500.0	90.38	180.04	6,678.7	-4,531.6	470.4	4,552.8	0.00	0.00	0.00
11,600.0	90.38	180.04	6,678.0	-4,631.6	470.3	4,652.5	0.00	0.00	0.00
11,700.0	90.38	180.04	6,677.4	-4,731.6	470.3	4,752.3	0.00	0.00	0.00
11,800.0	90.38	180.04	6,676.7	-4,831.5	470.2	4,852.1	0.00	0.00	0.00
11,900.0	90.38	180.04	6,676.0	-4,931.5	470.1	4,951.9	0.00	0.00	0.00
12,000.0	90.38	180.04	6,675.4	-5,031.5	470.0	5,051.6	0.00	0.00	0.00
12,100.0	90.38	180.04	6,674.7	-5,131.5	470.0	5,151.4	0.00	0.00	0.00
12,200.0	90.38	180.04	6,674.1	-5,231.5	469.9	5,251.2	0.00	0.00	0.00
12,300.0	90.38	180.04	6,673.4	-5,331.5	469.8	5,351.0	0.00	0.00	0.00
12,400.0	90.38	180.04	6,672.7	-5,431.5	469.7	5,450.7	0.00	0.00	0.00
12,500.0	90.38	180.04	6,672.1	-5,531.5	469.7	5,550.5	0.00	0.00	0.00
12,600.0	90.38	180.04	6,671.4	-5,631.5	469.6	5,650.3	0.00	0.00	0.00
12,700.0	90.38	180.04	6,670.8	-5,731.5	469.5	5,750.0	0.00	0.00	0.00
12,800.0	90.38	180.04	6,670.1	-5,831.5	469.4	5,849.8	0.00	0.00	0.00
12,900.0	90.38	180.04	6,669.4	-5,931.5	469.3	5,949.6	0.00	0.00	0.00
13,000.0	90.38	180.04	6,668.8	-6,031.5	469.3	6,049.4	0.00	0.00	0.00
13,100.0	90.38	180.04	6,668.1	-6,131.5	469.2	6,149.1	0.00	0.00	0.00
13,200.0	90.38	180.04	6,667.4	-6,231.5	469.1	6,248.9	0.00	0.00	0.00

<b>Database:</b>	US_EDM	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29U-243
<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 29U-243	<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	90.38	180.04	6,666.8	-6,331.5	469.0	6,348.7	0.00	0.00	0.00
13,400.0	90.38	180.04	6,666.1	-6,431.5	469.0	6,448.5	0.00	0.00	0.00
13,500.0	90.38	180.04	6,665.5	-6,531.5	468.9	6,548.2	0.00	0.00	0.00
13,600.0	90.38	180.04	6,664.8	-6,631.5	468.8	6,648.0	0.00	0.00	0.00
13,700.0	90.38	180.04	6,664.1	-6,731.5	468.7	6,747.8	0.00	0.00	0.00
13,800.0	90.38	180.04	6,663.5	-6,831.5	468.7	6,847.5	0.00	0.00	0.00
13,900.0	90.38	180.04	6,662.8	-6,931.5	468.6	6,947.3	0.00	0.00	0.00
14,000.0	90.38	180.04	6,662.2	-7,031.5	468.5	7,047.1	0.00	0.00	0.00
14,023.3	90.38	180.04	6,662.0	-7,054.8	468.5	7,070.3	0.00	0.00	0.00
TD at 14023.3									

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 560'FNL & 945'FEL - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,381,166.77	3,259,749.48	40.375956	-104.567675
BHL 2340'FNL & 522'FE - plan hits target center - Point	0.00	0.00	6,662.0	-7,054.8	468.5	1,374,117.53	3,260,292.10	40.356591	-104.565994
LPL 819'FNL & 473'FEL - plan hits target center - Point	0.00	0.00	6,707.0	-251.0	473.7	1,380,920.77	3,260,225.73	40.375267	-104.565975

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,592.5	3,530.0	Parkman Sandstone		0.00	
4,271.1	4,200.0	Sussex Sandstone		0.00	
6,522.9	6,415.0	Sharon Springs		0.00	
6,732.3	6,560.0	Niobrara A		0.00	
6,917.2	6,650.0	Niobrara B		0.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
400.0	400.0	0.0	0.0	KOP - Start Build 1.50
3,746.1	3,679.9	468.0	428.4	Start Drop -2.00
6,014.2	5,943.1	518.1	474.2	Start Build 7.50
7,219.3	6,707.0	-251.0	473.7	Start DLS 0.50 TFO 107.71
7,220.0	6,707.0	-251.7	473.7	Start 6803.3 hold at 7220.0 MD
14,023.3	6,662.0	-7,054.8	468.5	TD at 14023.3



# **PETROLEUM DEVELOPMENT CORP DJ Basin**

**SEC.29-T5N-R64W**

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

**Ottenhoff 29U-243**

**Wellbore #1**

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

## **Anticollision Report**

**31 January, 2017**





<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29U-243
<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 29U-243	<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>	1/30/2017		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	14,023.3	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>						
Existing Wells Sec.29-T5N-R64W						
Cross #32-11 (D&A) - Wellbore #1 - Wellbore #1	12,389.8	6,687.3	117.1	-29.4	0.799	Level 1, CC
Cross #32-11 (D&A) - Wellbore #1 - Wellbore #1	12,400.0	6,690.4	117.5	-29.7	0.798	Level 1, ES, SF
Cross #32-11A (Exist.) - Wellbore #1 - Wellbore #1	12,461.2	6,696.0	142.8	-7.7	0.949	Level 1, CC, ES, SF
DIC Amato #42-32 (Exist.) - Wellbore #1 - Wellbore #1	13,725.5	6,691.0	87.5	-91.6	0.489	Level 1, CC, ES, SF
Ottenhoff 41-29 (Exist.) - Wellbore #1 - Wellbore #1	7,020.9	6,659.5	99.8	62.7	2.688	CC, ES, SF
Ottenhoff 41-6B (Exist.) - Wellbore #1 - Wellbore #1	2,578.8	2,568.4	136.2	120.3	8.564	CC, ES, SF
Ottenhoff 41-7B (Exist.) - Wellbore #1 - Wellbore #1	1,128.4	1,100.7	317.8	312.1	55.692	CC, ES
Ottenhoff 41-7B (Exist.) - Wellbore #1 - Wellbore #1	7,800.0	6,784.3	473.0	421.5	9.183	SF
Roskop 29-1 (Exist.) - Wellbore #1 - Wellbore #1	8,261.4	6,684.2	70.4	-132.7	0.347	Level 1, CC, ES, SF
Existing Wells Sec.29-T5N-R64W (GRID)						
Blake B 29-9 (P&A) - Wellbore #1 - Wellbore #1	9,863.1	6,698.2	258.6	169.9	2.915	CC, ES, SF
Blake B29-16 (Exist.) - Wellbore #1 - Wellbore #1	11,056.6	6,703.0	180.2	62.1	1.527	CC, ES, SF
Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W						
Ottenhoff 29M-203 - Wellbore #1 - Plan #2 (1-25-17)	200.0	200.0	135.1	134.3	163.603	CC, ES
Ottenhoff 29M-203 - Wellbore #1 - Plan #2 (1-25-17)	1,000.0	957.6	242.5	237.1	45.186	SF
Ottenhoff 29M-203 - Wellbore #1 - Spider Plot	200.0	200.0	135.1	134.3	163.603	CC, ES
Ottenhoff 29M-203 - Wellbore #1 - Spider Plot	1,000.0	957.6	242.5	237.1	45.186	SF
Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)	400.0	401.0	105.0	103.1	54.424	CC, ES
Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)	1,000.0	992.8	144.8	139.5	27.436	SF
Ottenhoff 29M-423 - Wellbore #1 - Plan #2 (1-25-17)	400.0	400.0	120.1	118.2	62.308	CC, ES
Ottenhoff 29M-423 - Wellbore #1 - Plan #2 (1-25-17)	900.0	880.3	171.9	167.2	36.598	SF
Ottenhoff 29R-143 - Wellbore #1 - Plan #2 (1-25-17)	400.0	400.0	75.0	73.0	38.889	CC, ES
Ottenhoff 29R-143 - Wellbore #1 - Plan #2 (1-25-17)	900.0	898.6	99.8	95.1	21.145	SF
Ottenhoff 29R-203 - Wellbore #1 - Plan #2 (1-25-17)	400.0	400.0	45.1	43.2	23.420	CC, ES
Ottenhoff 29R-203 - Wellbore #1 - Plan #2 (1-25-17)	14,023.3	13,979.1	673.1	334.3	1.987	SF
Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)	400.0	400.0	90.0	88.1	46.694	CC, ES
Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)	1,000.0	997.5	126.4	121.1	23.862	SF
Ottenhoff 29R-303 - Wellbore #1 - Plan #2 (1-25-17)	400.0	400.0	59.9	58.0	31.083	CC, ES
Ottenhoff 29R-303 - Wellbore #1 - Plan #2 (1-25-17)	900.0	898.6	85.2	80.5	18.067	SF
Ottenhoff 29R-323 - Wellbore #1 - Plan #2 (1-25-17)	400.0	400.0	15.0	13.1	7.806	CC
Ottenhoff 29R-323 - Wellbore #1 - Plan #2 (1-25-17)	14,023.3	14,065.4	249.4	-80.1	0.757	Level 1, ES, SF
Ottenhoff 29R-423 - Wellbore #1 - Plan #2 (1-25-17)	400.0	399.0	30.1	28.2	15.636	CC, ES
Ottenhoff 29R-423 - Wellbore #1 - Plan #2 (1-25-17)	14,023.3	14,140.2	500.1	184.3	1.584	SF

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 29U-243
<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 29U-243	<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

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W						
Ottenhoff 29U-343 - Wellbore #1 - Plan #2 (1-25-17)	200.0	199.0	15.1	14.2	18.281	CC
Ottenhoff 29U-343 - Wellbore #1 - Plan #2 (1-25-17)	14,023.3	14,124.2	231.8	-93.3	0.713	Level 1, ES, SF

Offset Design Existing Wells Sec.29-T5N-R64W - Cross #32-11 (D&A) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 527-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Separation Factor		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		
11,600.0	6,678.0	6,529.4	6,526.7	113.0	16.7	32.29	-5,374.6	364.0	770.1	691.0	79.14	9.731		
11,700.0	6,677.4	6,542.1	6,539.0	115.3	16.8	34.29	-5,377.5	364.0	673.8	590.3	83.47	8.072		
11,800.0	6,676.7	6,554.0	6,550.6	117.7	16.8	36.43	-5,380.4	363.9	578.1	490.1	88.07	6.565		
11,900.0	6,676.0	6,570.5	6,566.5	120.0	16.8	39.81	-5,384.7	363.5	483.5	389.0	94.55	5.114		
12,000.0	6,675.4	6,585.0	6,580.4	122.3	16.9	43.25	-5,388.7	362.9	390.5	289.4	101.15	3.861		
12,100.0	6,674.7	6,610.4	6,604.6	124.6	16.9	50.45	-5,396.2	361.5	300.2	187.4	112.80	2.661		
12,200.0	6,674.1	6,634.3	6,627.3	126.9	17.0	58.78	-5,403.6	359.8	215.2	90.3	124.89	1.723		
12,300.0	6,673.4	6,661.1	6,652.5	129.2	17.0	69.81	-5,412.3	357.1	144.8	7.3	137.56	1.053	Level 2	
12,389.8	6,672.8	6,687.3	6,677.0	131.3	17.1	81.75	-5,421.1	353.9	117.1	-29.4	146.47	0.799	Level 1, CC	
12,400.0	6,672.7	6,690.4	6,679.9	131.6	17.1	83.17	-5,422.2	353.5	117.5	-29.7	147.18	0.798	Level 1, ES, SF	
12,500.0	6,672.1	6,723.1	6,710.2	133.9	17.1	97.72	-5,433.5	348.5	156.8	6.9	149.90	1.046	Level 2	
12,600.0	6,671.4	6,757.3	6,741.5	136.2	17.2	110.65	-5,446.0	342.8	230.0	84.3	145.62	1.579		
12,700.0	6,670.8	6,793.6	6,774.2	138.5	17.3	120.90	-5,459.6	334.9	314.4	176.3	138.12	2.276		
12,800.0	6,670.1	6,842.4	6,817.4	140.9	17.4	130.32	-5,479.1	323.6	401.7	273.6	128.10	3.136		
12,900.0	6,669.4	6,880.6	6,850.9	143.2	17.4	135.39	-5,494.9	314.2	490.3	367.9	122.40	4.006		
13,000.0	6,668.8	6,912.7	6,879.1	145.5	17.5	138.68	-5,507.9	306.2	580.1	461.3	118.87	4.880		
13,100.0	6,668.1	6,939.5	6,902.8	147.8	17.5	140.90	-5,518.4	299.3	671.2	554.3	116.82	5.745		
13,200.0	6,667.4	6,964.2	6,924.7	150.2	17.6	142.63	-5,527.6	292.7	763.1	647.7	115.44	6.611		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29U-243
<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 29U-243	<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 - Cross #32- 11A (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error: 0.0 ft	
Survey Program: 100-NS-GYRO-MS													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
11,700.0	6,677.4	6,703.3	6,701.1	115.3	17.8	-91.90	-5,492.8	612.6	774.4	641.7	132.69	5.836		
11,800.0	6,676.7	6,702.3	6,700.1	117.7	17.8	-91.52	-5,492.8	612.6	676.4	541.3	135.05	5.008		
11,900.0	6,676.0	6,701.3	6,699.2	120.0	17.8	-91.14	-5,492.8	612.5	579.0	441.6	137.40	4.214		
12,000.0	6,675.4	6,700.4	6,698.2	122.3	17.8	-90.76	-5,492.8	612.5	482.7	343.0	139.75	3.454		
12,100.0	6,674.7	6,699.4	6,697.3	124.6	17.8	-90.38	-5,492.8	612.5	388.3	246.3	142.09	2.733		
12,200.0	6,674.1	6,698.5	6,696.3	126.9	17.8	-89.99	-5,492.8	612.5	297.6	153.2	144.43	2.061		
12,300.0	6,673.4	6,697.5	6,695.4	129.2	17.8	-89.61	-5,492.8	612.5	215.3	68.5	146.77	1.467	Level 3	
12,400.0	6,672.7	6,696.6	6,694.4	131.6	17.8	-89.23	-5,492.8	612.5	155.3	6.2	149.10	1.042	Level 2	
12,461.2	6,672.3	6,696.0	6,693.8	133.0	17.8	-88.99	-5,492.8	612.4	142.8	-7.7	150.52	0.949	Level 1, CC, ES, SF	
12,500.0	6,672.1	6,695.6	6,693.5	133.9	17.8	-88.85	-5,492.8	612.4	148.0	-3.5	151.42	0.977	Level 1	
12,600.0	6,671.4	6,694.7	6,692.5	136.2	17.8	-88.46	-5,492.8	612.4	199.2	45.4	153.74	1.295	Level 3	
12,700.0	6,670.8	6,693.7	6,691.5	138.5	17.8	-88.08	-5,492.8	612.4	278.3	122.2	156.05	1.783		
12,800.0	6,670.1	6,692.8	6,690.6	140.9	17.8	-87.70	-5,492.8	612.4	367.7	209.3	158.36	2.322		
12,900.0	6,669.4	6,691.8	6,689.6	143.2	17.8	-87.32	-5,492.8	612.4	461.5	300.8	160.66	2.872		
13,000.0	6,668.8	6,690.9	6,688.7	145.5	17.8	-86.93	-5,492.8	612.4	557.4	394.5	162.96	3.421		
13,100.0	6,668.1	6,689.9	6,687.7	147.8	17.8	-86.55	-5,492.8	612.3	654.6	489.3	165.24	3.961		
13,200.0	6,667.4	6,689.0	6,686.8	150.2	17.8	-86.17	-5,492.8	612.3	752.5	585.0	167.52	4.492		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29U-243
<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 29U-243	<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 Amato #42-32 (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 +N/-S	+E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)			
13,000.0	6,668.8	6,713.7	6,713.1	145.5	16.9	104.19	-6,756.4	381.1	730.4	571.9	158.49	4.609			
13,100.0	6,668.1	6,710.5	6,710.0	147.8	16.9	102.26	-6,756.5	381.1	631.3	469.5	161.76	3.903			
13,200.0	6,667.4	6,707.4	6,706.9	150.2	16.9	100.30	-6,756.5	381.1	532.5	367.6	164.92	3.229			
13,300.0	6,666.8	6,704.3	6,703.8	152.5	16.9	98.32	-6,756.6	381.2	434.2	266.2	167.94	2.585			
13,400.0	6,666.1	6,701.2	6,700.7	154.8	16.9	96.31	-6,756.7	381.2	336.9	166.1	170.83	1.972			
13,500.0	6,665.5	6,698.1	6,697.5	157.2	16.9	94.29	-6,756.8	381.2	241.8	68.2	173.55	1.393	Level 3		
13,600.0	6,664.8	6,695.0	6,694.4	159.5	16.9	92.26	-6,756.8	381.2	152.9	-23.2	176.10	0.868	Level 1		
13,700.0	6,664.1	6,691.8	6,691.3	161.8	16.9	90.22	-6,756.9	381.2	91.1	-87.4	178.47	0.511	Level 1		
13,725.5	6,664.0	6,691.0	6,690.5	162.4	16.9	89.70	-6,756.9	381.2	87.5	-91.6	179.05	0.489	Level 1, CC, ES, SF		
13,800.0	6,663.5	6,688.7	6,688.2	164.2	16.9	88.18	-6,757.0	381.2	114.9	-65.8	180.65	0.636	Level 1		
13,900.0	6,662.8	6,685.6	6,685.1	166.5	16.9	86.14	-6,757.1	381.3	195.1	12.5	182.63	1.068	Level 2		
14,000.0	6,662.2	6,682.5	6,682.0	168.8	16.9	84.11	-6,757.1	381.3	288.0	103.6	184.41	1.562			
14,023.3	6,662.0	6,681.8	6,681.2	169.4	16.9	83.64	-6,757.2	381.3	310.3	125.5	184.79	1.679			

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29U-243
<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 29U-243	<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 - Ottenhoff 41-29 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.0	0.0	0.0	0.0	0.0	0.0	104.63	-76.9	294.5	305.6					
100.0	100.0	74.1	74.1	0.1	0.1	104.65	-76.9	294.3	304.2	304.0	0.26	1,177.538		
187.3	187.3	160.3	160.3	0.4	0.3	104.69	-77.1	294.0	304.0	303.3	0.66	460.420		
200.0	200.0	172.7	172.7	0.4	0.3	104.70	-77.1	294.0	304.0	303.3	0.72	422.402		
300.0	300.0	272.2	272.2	0.7	0.5	104.70	-77.2	294.3	304.2	303.0	1.22	249.989		
400.0	400.0	370.0	370.0	1.0	0.8	104.76	-77.6	294.7	304.7	303.0	1.77	172.273		
500.0	500.0	468.8	468.8	1.2	1.1	62.64	-78.7	295.7	305.4	303.1	2.35	130.157		
600.0	599.9	567.5	567.4	1.5	1.4	63.41	-79.7	297.0	305.2	302.2	2.93	104.179		
700.0	699.7	666.3	666.2	1.8	1.7	64.62	-80.8	298.7	304.3	300.8	3.51	86.629		
800.0	799.3	764.5	764.4	2.1	2.0	66.10	-81.1	301.0	302.8	298.7	4.10	73.831		
900.0	898.6	863.1	863.0	2.4	2.3	68.04	-81.4	303.8	301.0	296.3	4.72	63.756		
1,000.0	997.5	963.4	963.2	2.8	2.6	70.54	-81.9	306.6	298.6	293.2	5.39	55.437		
1,100.0	1,096.1	1,062.0	1,061.9	3.2	2.9	73.52	-82.3	308.9	295.7	289.6	6.10	48.502		
1,200.0	1,194.2	1,160.7	1,160.5	3.7	3.3	77.09	-83.0	311.3	293.2	286.3	6.86	42.704		
1,233.4	1,226.8	1,193.8	1,193.6	3.8	3.4	78.41	-83.2	312.0	292.4	285.2	7.14	40.972		
1,300.0	1,291.8	1,258.4	1,258.2	4.1	3.6	81.04	-83.6	313.4	291.2	283.5	7.68	37.903		
1,400.0	1,389.5	1,357.3	1,357.0	4.7	3.9	85.05	-84.2	315.7	290.8	282.3	8.53	34.109		
1,401.2	1,390.7	1,358.6	1,358.3	4.7	3.9	85.11	-84.2	315.8	290.8	282.3	8.54	34.067		
1,500.0	1,487.1	1,455.5	1,455.2	5.2	4.2	89.07	-84.5	317.5	291.3	281.9	9.38	31.074		
1,600.0	1,584.7	1,552.7	1,552.4	5.7	4.5	92.99	-84.9	319.5	293.5	283.3	10.22	28.715		
1,700.0	1,682.3	1,651.2	1,650.8	6.3	4.8	96.90	-85.4	321.5	297.2	286.2	11.07	26.859		
1,800.0	1,780.0	1,749.7	1,749.3	6.8	5.1	100.63	-85.4	323.6	301.9	290.1	11.89	25.392		
1,900.0	1,877.6	1,847.5	1,847.1	7.4	5.4	104.15	-85.2	325.8	307.9	295.2	12.70	24.250		
2,000.0	1,975.2	1,945.4	1,945.0	7.9	5.7	107.55	-85.1	328.1	315.1	301.6	13.49	23.364		
2,100.0	2,072.9	2,044.3	2,043.9	8.5	6.0	110.77	-84.8	330.6	323.2	309.0	14.25	22.674		
2,200.0	2,170.5	2,142.8	2,142.3	9.0	6.3	113.84	-84.1	332.9	332.0	317.0	15.00	22.135		
2,300.0	2,268.1	2,240.1	2,239.6	9.6	6.6	116.67	-83.6	335.4	341.9	326.1	15.72	21.740		
2,400.0	2,365.7	2,337.8	2,337.3	10.1	6.9	119.30	-83.0	338.2	352.6	336.2	16.44	21.445		
2,500.0	2,463.4	2,436.0	2,435.4	10.7	7.3	121.79	-82.6	341.1	364.2	347.1	17.15	21.241		
2,600.0	2,561.0	2,534.7	2,534.1	11.3	7.6	124.18	-82.0	343.7	376.3	358.4	17.84	21.095		
2,700.0	2,658.6	2,632.5	2,631.8	11.8	7.9	126.40	-81.6	346.2	389.0	370.5	18.51	21.016		
2,800.0	2,756.3	2,731.3	2,730.6	12.4	8.2	128.57	-80.9	348.3	402.1	382.9	19.17	20.977		
2,900.0	2,853.9	2,827.6	2,826.9	12.9	8.5	130.67	-80.6	349.5	415.9	396.1	19.81	21.000		
3,000.0	2,951.5	2,925.2	2,924.5	13.5	8.8	132.70	-80.6	350.5	430.6	410.2	20.44	21.071		
3,100.0	3,049.2	3,025.0	3,024.3	14.1	9.1	134.67	-80.3	351.2	445.5	424.4	21.04	21.174		
3,200.0	3,146.8	3,123.2	3,122.5	14.6	9.3	136.46	-79.7	352.1	460.6	438.9	21.62	21.303		
3,300.0	3,244.4	3,221.5	3,220.8	15.2	9.6	138.15	-79.1	352.8	476.0	453.8	22.19	21.449		
3,400.0	3,342.0	3,318.7	3,318.0	15.8	9.9	139.75	-78.5	353.3	491.9	469.1	22.73	21.635		
3,500.0	3,439.7	3,418.1	3,417.3	16.3	10.1	141.30	-77.6	353.8	507.8	484.6	23.26	21.829		
3,600.0	3,537.3	3,510.3	3,509.6	16.9	10.4	142.65	-77.3	354.1	524.7	500.9	23.80	22.043		
3,700.0	3,634.9	3,604.8	3,604.1	17.5	10.6	143.96	-77.7	354.3	542.6	518.3	24.33	22.303		
3,746.1	3,679.9	3,648.7	3,648.0	17.7	10.7	144.54	-78.1	354.4	551.1	526.6	24.55	22.450		
3,800.0	3,732.7	3,700.0	3,699.3	18.0	10.8	145.27	-78.7	354.5	560.9	536.1	24.80	22.617		
3,900.0	3,831.0	3,796.2	3,795.4	18.4	11.0	146.40	-80.0	354.8	577.2	552.0	25.21	22.897		
4,000.0	3,929.9	3,895.1	3,894.4	18.7	11.2	147.28	-81.5	355.1	591.0	565.4	25.61	23.074		
4,100.0	4,029.3	4,016.6	4,015.9	19.0	11.4	148.03	-81.1	355.7	600.0	574.0	26.03	23.053		
4,200.0	4,129.0	4,129.2	4,128.4	19.3	11.6	148.55	-77.3	355.9	603.2	576.9	26.37	22.879		
4,300.0	4,228.9	4,237.7	4,236.7	19.5	11.8	148.94	-71.4	355.2	601.6	575.0	26.64	22.586		
4,371.1	4,300.0	4,310.3	4,309.1	19.6	11.8	-168.39	-66.7	354.1	598.1	571.3	26.80	22.318		
4,400.0	4,328.9	4,337.7	4,336.5	19.6	11.9	-168.31	-64.9	353.6	596.4	569.5	26.87	22.192		
4,500.0	4,428.9	4,432.9	4,431.5	19.8	12.0	-167.99	-59.2	351.4	591.0	563.8	27.15	21.768		

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 29U-243
<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 29U-243	<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 - Ottenhoff 41-29 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
4,600.0	4,528.9	4,527.2	4,525.6	19.9	12.1	-167.69	-54.4	349.3	586.4	559.0	27.43	21.377		
4,700.0	4,628.9	4,620.1	4,618.5	20.1	12.2	-167.47	-50.8	347.8	583.0	555.3	27.73	21.025		
4,800.0	4,728.9	4,717.5	4,715.8	20.2	12.3	-167.31	-48.0	346.8	580.4	552.3	28.06	20.687		
4,900.0	4,828.9	4,813.5	4,811.8	20.4	12.5	-167.20	-45.8	346.1	578.3	549.9	28.41	20.359		
5,000.0	4,928.9	4,908.3	4,906.5	20.6	12.7	-167.16	-44.6	346.0	577.1	548.3	28.81	20.034		
5,100.0	5,028.9	5,009.3	5,007.6	20.7	12.9	-167.18	-43.7	346.3	576.2	546.9	29.28	19.678		
5,200.0	5,128.9	5,105.6	5,103.8	20.9	13.2	-167.26	-43.3	347.3	575.5	545.7	29.79	19.321		
5,300.0	5,228.9	5,204.2	5,202.5	21.1	13.5	-167.46	-43.5	349.3	575.3	545.0	30.33	18.965		
5,400.0	5,328.9	5,306.7	5,304.9	21.3	13.8	-167.68	-43.7	351.5	575.0	544.1	30.90	18.609		
5,500.0	5,428.9	5,407.4	5,405.6	21.4	14.1	-167.88	-43.4	353.6	574.3	542.9	31.46	18.256		
5,548.5	5,477.4	5,452.2	5,450.4	21.5	14.3	-167.97	-43.5	354.6	574.2	542.5	31.71	18.105		
5,600.0	5,528.9	5,500.0	5,498.2	21.6	14.4	-168.08	-43.9	355.6	574.4	542.4	31.98	17.957		
5,700.0	5,628.9	5,600.0	5,598.2	21.8	14.7	-168.30	-45.0	357.6	575.0	542.5	32.52	17.682		
5,800.0	5,728.9	5,699.2	5,697.4	22.0	15.0	-168.52	-46.1	359.6	575.7	542.7	33.05	17.418		
5,900.0	5,828.9	5,798.0	5,796.1	22.2	15.3	-168.74	-47.4	361.6	576.6	543.0	33.58	17.171		
6,000.0	5,928.9	5,902.2	5,900.2	22.4	15.6	-168.94	-48.4	363.4	577.2	543.1	34.13	16.913		
6,014.2	5,943.1	5,916.1	5,914.1	22.4	15.6	-168.96	-48.5	363.7	577.3	543.1	34.21	16.877		
6,050.0	5,978.9	5,951.0	5,949.1	22.5	15.7	10.96	-48.8	364.3	576.6	542.4	34.26	16.829		
6,100.0	6,028.7	6,000.0	5,998.1	22.5	15.9	11.00	-49.2	365.1	573.0	538.8	34.20	16.755		
6,150.0	6,078.2	6,050.5	6,048.5	22.5	16.0	11.15	-49.7	365.9	566.2	532.2	33.98	16.662		
6,200.0	6,127.1	6,100.5	6,098.6	22.5	16.2	11.45	-50.0	366.5	556.1	522.5	33.60	16.551		
6,250.0	6,175.2	6,149.2	6,147.3	22.4	16.3	11.88	-50.2	367.1	542.9	509.8	33.07	16.416		
6,300.0	6,222.3	6,196.9	6,194.9	22.4	16.5	12.45	-50.4	367.8	526.5	494.1	32.38	16.259		
6,350.0	6,268.2	6,241.7	6,239.7	22.3	16.6	13.19	-50.6	368.4	507.2	475.7	31.54	16.080		
6,400.0	6,312.7	6,285.1	6,283.1	22.2	16.7	14.15	-50.9	368.9	485.2	454.6	30.57	15.871		
6,450.0	6,355.6	6,328.5	6,326.5	22.0	16.8	15.42	-51.3	369.4	460.5	431.0	29.49	15.615		
6,500.0	6,396.8	6,370.7	6,368.8	21.9	17.0	17.06	-51.5	369.8	433.0	404.7	28.33	15.287		
6,550.0	6,436.0	6,410.5	6,408.5	21.7	17.1	19.17	-51.7	370.3	403.1	375.9	27.14	14.851		
6,600.0	6,473.1	6,447.2	6,445.2	21.6	17.2	21.85	-51.9	370.7	370.9	344.8	26.03	14.250		
6,650.0	6,508.0	6,481.8	6,479.8	21.4	17.3	25.35	-52.1	371.1	336.7	311.5	25.14	13.391		
6,700.0	6,540.4	6,514.2	6,512.2	21.3	17.4	29.96	-52.4	371.6	300.8	276.0	24.74	12.156		
6,750.0	6,570.3	6,544.3	6,542.3	21.1	17.5	36.08	-52.7	372.1	263.5	238.3	25.19	10.461		
6,800.0	6,597.5	6,571.8	6,569.8	21.0	17.6	44.10	-53.0	372.5	225.5	198.7	26.82	8.407		
6,850.0	6,621.8	6,596.6	6,594.6	20.8	17.6	54.18	-53.3	372.9	187.5	157.9	29.61	6.334		
6,900.0	6,643.3	6,618.6	6,616.6	20.7	17.7	65.87	-53.6	373.3	151.4	118.6	32.85	4.609		
6,950.0	6,661.8	6,637.7	6,635.7	20.6	17.7	77.67	-53.8	373.6	120.5	85.1	35.45	3.400		
7,000.0	6,677.2	6,653.7	6,651.7	20.5	17.8	87.70	-54.0	373.9	101.8	65.0	36.84	2.764		
7,020.9	6,682.7	6,659.5	6,657.5	20.5	17.8	91.03	-54.1	374.0	99.8	62.7	37.13	2.688 CC, ES, SF		
7,050.0	6,689.4	6,666.6	6,664.6	20.5	17.8	94.68	-54.2	374.1	103.7	66.4	37.35	2.777		
7,100.0	6,698.5	6,676.3	6,674.2	20.5	17.9	98.16	-54.3	374.3	126.3	88.7	37.60	3.358		
7,150.0	6,704.3	6,682.7	6,680.7	20.8	17.9	98.04	-54.4	374.4	161.5	123.5	37.99	4.250		
7,200.0	6,706.9	6,685.9	6,683.9	21.2	17.9	94.20	-54.5	374.5	203.1	164.6	38.51	5.274		
7,219.2	6,707.0	6,686.3	6,684.3	21.4	17.9	91.70	-54.5	374.5	220.1	181.4	38.66	5.693		
7,219.3	6,707.0	6,686.3	6,684.3	21.4	17.9	91.70	-54.5	374.5	220.2	181.5	38.66	5.696		
7,220.0	6,707.0	6,686.3	6,684.3	21.4	17.9	91.71	-54.5	374.5	220.8	182.1	38.66	5.711		
7,300.0	6,706.5	6,686.8	6,684.8	22.2	17.9	91.99	-54.5	374.5	294.4	255.1	39.34	7.485		
7,400.0	6,705.8	6,687.4	6,685.4	23.4	17.9	92.35	-54.5	374.5	390.0	349.5	40.55	9.619		
7,500.0	6,705.1	6,688.0	6,686.0	24.8	17.9	92.71	-54.5	374.5	487.4	445.4	41.93	11.625		
7,600.0	6,704.5	6,688.6	6,686.6	26.4	17.9	93.06	-54.5	374.5	585.6	542.2	43.44	13.480		
7,700.0	6,703.8	6,689.3	6,687.2	28.0	17.9	93.42	-54.5	374.5	684.4	639.3	45.08	15.181		

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 29U-243
<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 29U-243	<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>Offset Design</b> Existing Wells Sec.29-T5N-R64W - Ottenhoff 41-29 (Exist) - Wellbore #1 - Wellbore #1													
Survey Program: 100-NS-GYRO-MS												Offset Site Error:	0.0 ft
												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,800.0	6,703.2	6,689.9	6,687.8	29.7	17.9	93.77	-54.5	374.5	783.5	736.6	46.81	16.736	



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29U-243
<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 29U-243	<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 - Ottenhoff 41-6B (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error: 0.0 ft	
Survey Program: 488-NS-GYRO-MS													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.0	0.0	0.0	0.0	0.0	0.0	99.14	-49.6	307.9	312.1					
100.0	100.0	88.3	88.3	0.1	0.1	99.15	-49.6	307.8	311.8	311.5	0.28	1,108.186		
200.0	200.0	188.5	188.5	0.4	0.3	99.16	-49.6	307.7	311.7	311.0	0.72	433.056		
300.0	300.0	288.8	288.8	0.7	0.5	99.19	-49.7	307.5	311.5	310.3	1.16	268.946		
400.0	400.0	389.1	389.1	1.0	0.6	99.22	-49.9	307.1	311.1	309.5	1.60	194.902		
500.0	500.0	489.4	489.4	1.2	0.8	57.01	-50.0	306.7	310.0	308.0	2.03	152.585		
600.0	599.9	588.4	588.4	1.5	1.0	57.61	-49.8	306.4	307.6	305.1	2.50	122.867		
700.0	699.7	686.5	686.5	1.8	1.2	58.48	-48.7	306.7	304.2	301.2	2.95	103.054		
800.0	799.3	783.3	783.3	2.1	1.3	59.69	-47.5	307.8	300.3	297.0	3.37	89.095		
900.0	898.6	881.9	881.8	2.4	1.5	61.29	-45.8	309.7	296.0	292.2	3.87	76.563		
1,000.0	997.5	980.9	980.8	2.8	1.7	63.18	-43.0	312.1	291.0	286.6	4.42	65.822		
1,100.0	1,096.1	1,080.5	1,080.3	3.2	1.9	65.39	-39.1	314.8	285.1	280.0	5.07	56.235		
1,200.0	1,194.2	1,180.9	1,180.5	3.7	2.2	68.02	-34.1	317.6	278.3	272.5	5.79	48.045		
1,233.4	1,226.8	1,214.5	1,214.1	3.8	2.3	69.02	-32.3	318.5	275.7	269.7	6.05	45.581		
1,300.0	1,291.8	1,281.1	1,280.6	4.1	2.5	71.04	-28.5	319.9	270.7	264.1	6.58	41.151		
1,400.0	1,389.5	1,377.8	1,376.9	4.7	2.8	73.86	-22.3	322.8	264.0	256.6	7.39	35.716		
1,500.0	1,487.1	1,475.2	1,474.0	5.2	3.1	76.49	-14.9	327.1	258.8	250.5	8.23	31.448		
1,600.0	1,584.7	1,577.5	1,575.8	5.7	3.4	79.18	-6.2	331.6	253.7	244.6	9.10	27.873		
1,700.0	1,682.3	1,682.0	1,679.8	6.3	3.8	82.02	3.5	335.0	247.8	237.8	10.00	24.784		
1,800.0	1,780.0	1,792.1	1,789.1	6.8	4.1	85.03	16.6	335.8	238.9	228.0	10.92	21.878		
1,900.0	1,877.6	1,897.9	1,893.6	7.4	4.5	87.90	32.8	333.7	226.2	214.4	11.82	19.142		
2,000.0	1,975.2	2,003.1	1,997.4	7.9	4.8	91.50	49.5	328.7	211.8	199.1	12.70	16.675		
2,100.0	2,072.9	2,109.1	2,101.3	8.5	5.2	96.07	68.5	319.8	194.3	180.7	13.56	14.332		
2,200.0	2,170.5	2,205.1	2,195.0	9.0	5.5	101.52	86.3	309.2	175.9	161.6	14.32	12.281		
2,300.0	2,268.1	2,303.3	2,291.0	9.6	5.8	108.65	103.5	297.7	159.9	144.9	15.00	10.659		
2,400.0	2,365.7	2,398.1	2,383.6	10.1	6.1	117.07	120.2	285.9	146.6	131.0	15.53	9.440		
2,500.0	2,463.4	2,493.6	2,476.9	10.7	6.4	127.49	135.6	272.8	138.4	122.6	15.83	8.741		
2,578.8	2,540.3	2,568.4	2,549.8	11.1	6.7	136.84	147.2	261.0	136.2	120.3	15.90	8.564	CC, ES, SF	
2,600.0	2,561.0	2,588.3	2,569.2	11.3	6.7	139.47	150.2	257.6	136.4	120.5	15.90	8.575		
2,700.0	2,658.6	2,681.7	2,659.8	11.8	7.0	152.07	164.0	239.9	142.1	126.2	15.85	8.965		
2,800.0	2,756.3	2,774.6	2,749.6	12.4	7.3	164.08	177.8	219.8	155.9	140.0	15.91	9.802		
2,900.0	2,853.9	2,867.0	2,838.6	12.9	7.6	173.99	191.2	199.3	176.6	160.4	16.25	10.870		
3,000.0	2,951.5	2,958.0	2,926.8	13.5	7.9	-178.69	203.0	179.8	202.2	185.4	16.82	12.021		
3,100.0	3,049.2	3,051.2	3,016.7	14.1	8.2	-172.75	214.9	159.0	231.3	213.8	17.54	13.190		
3,200.0	3,146.8	3,146.5	3,108.9	14.6	8.6	-168.05	227.3	138.1	261.8	243.5	18.33	14.282		
3,300.0	3,244.4	3,245.4	3,205.1	15.2	8.9	-164.58	239.2	118.5	292.3	273.1	19.15	15.261		
3,400.0	3,342.0	3,345.6	3,303.3	15.8	9.2	-162.28	249.9	101.6	321.7	301.7	19.95	16.123		
3,500.0	3,439.7	3,444.8	3,401.1	16.3	9.6	-160.85	258.9	87.5	350.0	329.3	20.71	16.903		
3,600.0	3,537.3	3,538.3	3,493.1	16.9	9.9	-159.56	268.3	74.0	378.2	356.7	21.45	17.629		
3,700.0	3,634.9	3,627.2	3,580.1	17.5	10.2	-158.12	279.0	59.2	407.7	385.5	22.22	18.344		
3,746.1	3,679.9	3,667.7	3,619.6	17.7	10.3	-157.47	284.1	51.8	421.9	399.3	22.58	18.681		
3,800.0	3,732.7	3,714.9	3,665.6	18.0	10.5	-156.85	289.9	42.8	438.5	415.5	23.01	19.055		
3,900.0	3,831.0	3,805.1	3,753.1	18.4	10.9	-155.53	301.7	24.4	468.2	444.4	23.79	19.682		
4,000.0	3,929.9	3,897.3	3,841.8	18.7	11.2	-153.85	316.2	3.9	495.9	471.3	24.58	20.176		
4,100.0	4,029.3	3,995.0	3,935.5	19.0	11.6	-151.96	332.5	-18.3	521.4	496.0	25.39	20.536		
4,200.0	4,129.0	4,096.6	4,033.5	19.3	12.0	-150.15	348.4	-40.1	543.6	517.4	26.16	20.776		
4,300.0	4,228.9	4,194.7	4,128.3	19.5	12.4	-148.46	363.1	-60.2	562.7	535.8	26.88	20.936		
4,371.1	4,300.0	4,263.4	4,194.9	19.6	12.6	-104.85	372.7	-74.0	574.8	547.4	27.34	21.023		
4,400.0	4,328.9	4,291.4	4,222.2	19.6	12.7	-104.37	376.2	-79.6	579.5	551.9	27.54	21.042		
4,500.0	4,428.9	4,393.3	4,321.4	19.8	13.1	-102.76	388.3	-99.2	595.7	567.4	28.24	21.094		
4,600.0	4,528.9	4,494.7	4,420.2	19.9	13.5	-101.15	401.4	-118.3	611.5	582.6	28.94	21.132		

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 29U-243
<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 29U-243	<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 - Ottenhoff 41-6B (Exist) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft
Survey Program:		488-NS-GYRO-MS											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
4,700.0	4,628.9	4,593.9	4,516.8	20.1	13.9	-99.62	414.6	-136.6	627.5	597.9	29.62	21.184			
4,800.0	4,728.9	4,697.1	4,617.6	20.2	14.3	-98.21	427.4	-154.5	642.9	612.6	30.30	21.218			
4,900.0	4,828.9	4,788.9	4,707.2	20.4	14.6	-96.98	439.1	-171.0	659.2	628.3	30.92	21.318			
5,000.0	4,928.9	4,892.0	4,807.8	20.6	15.0	-95.65	452.5	-189.1	675.4	643.8	31.59	21.382			
5,100.0	5,028.9	4,984.9	4,898.4	20.7	15.4	-94.51	464.5	-205.4	691.9	659.7	32.20	21.490			
5,200.0	5,128.9	5,074.8	4,986.0	20.9	15.7	-93.42	476.4	-222.2	709.8	677.0	32.79	21.646			
5,300.0	5,228.9	5,175.2	5,083.6	21.1	16.1	-92.28	489.6	-241.4	728.4	695.0	33.42	21.794			
5,400.0	5,328.9	5,285.3	5,191.2	21.3	16.5	-91.23	502.3	-260.9	745.9	711.8	34.07	21.895			
5,500.0	5,428.9	5,395.7	5,299.6	21.4	16.9	-90.39	512.9	-278.8	762.1	727.4	34.69	21.971			
5,600.0	5,528.9	5,500.1	5,402.5	21.6	17.3	-89.75	521.5	-294.3	777.0	741.7	35.27	22.033			
5,700.0	5,628.9	5,601.2	5,502.1	21.8	17.6	-89.12	530.1	-309.0	791.6	755.8	35.83	22.091			

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29U-243
<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 29U-243	<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 - Ottenhoff 41-7B (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 482-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.0	0.0	0.0	0.0	0.0	0.0	104.72	-86.0	327.4	338.7					
100.0	100.0	88.3	88.3	0.1	0.1	104.73	-86.1	327.3	338.4	338.2	0.26	1,301.867		
200.0	200.0	188.7	188.7	0.4	0.3	104.80	-86.4	327.1	338.3	337.6	0.67	501.917		
300.0	300.0	289.1	289.1	0.7	0.4	104.91	-87.0	326.7	338.0	336.9	1.09	310.684		
400.0	400.0	389.4	389.4	1.0	0.5	105.06	-87.8	326.1	337.7	336.2	1.50	224.804		
500.0	500.0	489.8	489.8	1.2	0.7	63.01	-88.8	325.3	336.6	334.7	1.93	174.476		
600.0	599.9	591.1	591.1	1.5	1.0	64.01	-90.6	324.0	334.1	331.6	2.49	134.224		
700.0	699.7	690.1	690.0	1.8	1.3	65.62	-93.3	322.1	330.3	327.3	3.05	108.409		
800.0	799.3	787.0	786.8	2.1	1.5	67.72	-96.7	320.7	326.4	322.8	3.61	90.380		
900.0	898.6	884.2	883.9	2.4	1.8	70.43	-100.9	319.5	322.7	318.5	4.21	76.622		
1,000.0	997.5	980.0	979.6	2.8	2.1	73.76	-106.3	318.4	319.5	314.7	4.84	65.997		
1,100.0	1,096.1	1,074.0	1,073.4	3.2	2.3	77.44	-111.9	318.2	317.9	312.4	5.51	57.747		
1,128.4	1,124.0	1,100.7	1,100.1	3.3	2.4	78.54	-113.5	318.4	317.8	312.1	5.71	55.692 CC, ES		
1,200.0	1,194.2	1,167.2	1,166.5	3.7	2.6	81.41	-117.6	319.2	318.5	312.2	6.22	51.214		
1,233.4	1,226.8	1,198.1	1,197.2	3.8	2.7	82.82	-119.7	319.7	319.2	312.8	6.47	49.362		
1,300.0	1,291.8	1,259.4	1,258.4	4.1	2.9	85.69	-124.3	320.8	321.9	314.9	6.97	46.162		
1,400.0	1,389.5	1,355.1	1,353.7	4.7	3.2	90.11	-132.0	323.0	328.3	320.5	7.77	42.265		
1,500.0	1,487.1	1,451.6	1,449.9	5.2	3.5	94.41	-139.9	325.1	336.8	328.2	8.56	39.356		
1,600.0	1,584.7	1,549.7	1,547.6	5.7	3.7	98.53	-147.7	327.1	346.8	337.5	9.32	37.221		
1,700.0	1,682.3	1,648.4	1,646.0	6.3	4.0	102.43	-154.9	328.9	358.0	348.0	10.05	35.607		
1,800.0	1,780.0	1,739.5	1,736.8	6.8	4.3	105.88	-161.9	330.1	370.8	360.1	10.78	34.406		
1,900.0	1,877.6	1,828.8	1,825.8	7.4	4.6	109.12	-170.7	331.9	387.1	375.6	11.49	33.686		
2,000.0	1,975.2	1,919.5	1,916.0	7.9	4.9	111.92	-179.8	335.6	406.0	393.8	12.20	33.278		
2,100.0	2,072.9	2,008.1	2,003.8	8.5	5.2	114.41	-190.0	339.9	427.3	414.4	12.90	33.133		
2,200.0	2,170.5	2,092.6	2,087.5	9.0	5.5	116.60	-201.3	344.4	451.3	437.7	13.58	33.231		
2,300.0	2,268.1	2,175.9	2,169.5	9.6	5.9	118.42	-214.3	350.6	478.7	464.4	14.26	33.563		
2,400.0	2,365.7	2,265.1	2,257.0	10.1	6.2	120.00	-229.1	359.1	508.1	493.1	14.95	33.980		
2,500.0	2,463.4	2,355.8	2,345.8	10.7	6.7	121.23	-244.5	369.8	538.7	523.0	15.65	34.422		
2,600.0	2,561.0	2,448.0	2,435.6	11.3	7.1	122.03	-259.9	383.8	570.0	553.6	16.37	34.821		
2,700.0	2,658.6	2,540.7	2,525.5	11.8	7.5	122.50	-275.0	400.2	601.6	584.5	17.11	35.152		
2,800.0	2,756.3	2,626.8	2,609.0	12.4	8.0	122.88	-289.7	415.9	634.2	616.3	17.87	35.496		
2,900.0	2,853.9	2,719.0	2,697.9	12.9	8.5	123.18	-306.2	433.4	667.6	648.9	18.65	35.787		
3,000.0	2,951.5	2,816.1	2,791.6	13.5	9.0	123.42	-323.3	452.5	701.0	681.5	19.46	36.021		
3,100.0	3,049.2	2,924.8	2,896.9	14.1	9.5	123.75	-341.2	472.4	733.0	712.7	20.30	36.115		
3,200.0	3,146.8	3,017.5	2,986.9	14.6	10.0	124.01	-355.9	489.4	764.5	743.4	21.10	36.231		
3,300.0	3,244.4	3,121.5	3,087.9	15.2	10.5	124.29	-372.1	508.1	795.7	773.7	21.95	36.248		
7,100.0	6,698.5	6,780.9	6,687.0	20.5	25.9	-78.94	-746.7	938.5	770.6	728.4	42.17	18.272		
7,150.0	6,704.3	6,786.9	6,693.0	20.8	25.9	-84.27	-746.7	938.5	731.6	688.7	42.89	17.056		
7,200.0	6,706.9	6,789.5	6,695.6	21.2	25.9	-88.91	-746.7	938.5	693.8	650.5	43.28	16.032		
7,219.2	6,707.0	6,789.5	6,695.6	21.4	25.9	-90.48	-746.7	938.5	679.6	636.3	43.36	15.676		
7,219.3	6,707.0	6,789.5	6,695.6	21.4	25.9	-90.48	-746.7	938.5	679.6	636.2	43.36	15.674		
7,220.0	6,707.0	6,789.5	6,695.6	21.4	25.9	-90.48	-746.7	938.5	679.1	635.7	43.36	15.661		
7,300.0	6,706.5	6,788.8	6,694.9	22.2	25.9	-90.39	-746.7	938.5	623.2	579.2	44.03	14.155		
7,400.0	6,705.8	6,787.9	6,694.0	23.4	25.9	-90.28	-746.7	938.5	561.7	516.4	45.23	12.418		
7,500.0	6,705.1	6,787.0	6,693.1	24.8	25.9	-90.16	-746.7	938.5	512.4	465.8	46.61	10.993		
7,600.0	6,704.5	6,786.1	6,692.2	26.4	25.9	-90.05	-746.7	938.5	479.2	431.0	48.13	9.956		
7,700.0	6,703.8	6,785.2	6,691.3	28.0	25.9	-89.94	-746.7	938.5	465.4	415.7	49.77	9.353		
7,714.7	6,703.7	6,785.0	6,691.1	28.2	25.9	-89.93	-746.7	938.5	465.2	415.2	50.02	9.300		
7,800.0	6,703.2	6,784.3	6,690.4	29.7	25.9	-89.84	-746.7	938.5	473.0	421.5	51.50	9.183 SF		
7,900.0	6,702.5	6,783.4	6,689.5	31.5	25.9	-89.73	-746.7	938.5	500.7	447.4	53.32	9.391		
8,000.0	6,701.8	6,782.6	6,688.7	33.4	25.9	-89.62	-746.7	938.5	545.7	490.5	55.21	9.884		

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 29U-243
<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 29U-243	<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>Offset Design</b> Existing Wells Sec.29-T5N-R64W - Ottenhoff 41-7B (Exist) - Wellbore #1 - Wellbore #1													
Survey Program: 482-MWD												Offset Site Error:	0.0 ft
												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,100.0	6,701.2	6,781.7	6,687.8	35.3	25.9	-89.52	-746.7	938.5	604.0	546.9	57.16	10.567	
8,200.0	6,700.5	6,780.9	6,687.0	37.2	25.9	-89.41	-746.7	938.5	672.2	613.1	59.15	11.364	
8,300.0	6,699.9	6,780.0	6,686.1	39.2	25.9	-89.31	-746.7	938.5	747.6	686.4	61.19	12.219	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29U-243
<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 29U-243	<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 - Roskop 29-1 (Exist) - Wellbore #1 - Wellbore #1										Offset Site Error:		0.0 ft
Survey Program:		100-UNKNOWN										Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
7,500.0	6,705.1	6,704.7	6,704.2	24.8	165.9	106.68	-1,292.5	402.7	764.3	580.7	183.66	4.162		
7,600.0	6,704.5	6,702.0	6,701.5	26.4	165.8	104.64	-1,292.6	402.6	664.9	478.2	186.66	3.562		
7,700.0	6,703.8	6,699.3	6,698.8	28.0	165.8	102.57	-1,292.6	402.6	565.6	376.0	189.58	2.983		
7,800.0	6,703.2	6,696.7	6,696.1	29.7	165.7	100.46	-1,292.7	402.6	466.5	274.1	192.40	2.425		
7,900.0	6,702.5	6,694.0	6,693.4	31.5	165.7	98.32	-1,292.8	402.6	368.0	173.0	195.07	1.887		
8,000.0	6,701.8	6,691.3	6,690.7	33.4	165.6	96.16	-1,292.8	402.5	270.6	73.0	197.56	1.370	Level 3	
8,100.0	6,701.2	6,688.6	6,688.0	35.3	165.6	93.99	-1,292.9	402.5	176.0	-23.9	199.86	0.881	Level 1	
8,200.0	6,700.5	6,685.9	6,685.3	37.2	165.5	91.80	-1,292.9	402.5	93.4	-108.6	201.93	0.462	Level 1	
8,261.4	6,700.1	6,684.2	6,683.7	38.5	165.5	90.46	-1,293.0	402.5	70.4	-132.7	203.09	0.347	Level 1, CC, ES, SF	
8,300.0	6,699.9	6,683.2	6,682.6	39.2	165.4	89.61	-1,293.0	402.5	80.3	-123.5	203.77	0.394	Level 1	
8,400.0	6,699.2	6,680.5	6,679.9	41.3	165.4	87.43	-1,293.0	402.5	155.4	-49.9	205.35	0.757	Level 1	
8,500.0	6,698.5	6,677.8	6,677.3	43.4	165.3	85.25	-1,293.1	402.4	248.7	42.0	206.68	1.203	Level 2	
8,600.0	6,697.9	6,675.1	6,674.6	45.5	165.3	83.09	-1,293.1	402.4	345.7	138.0	207.74	1.664		
8,700.0	6,697.2	6,672.4	6,671.9	47.6	165.2	80.94	-1,293.2	402.4	444.1	235.5	208.55	2.129		
8,800.0	6,696.5	6,669.8	6,669.2	49.7	165.2	78.83	-1,293.2	402.4	543.0	333.9	209.09	2.597		
8,900.0	6,695.9	6,667.1	6,666.5	51.9	165.1	76.74	-1,293.3	402.4	642.3	432.9	209.39	3.067		
9,000.0	6,695.2	6,664.4	6,663.8	54.0	165.1	74.70	-1,293.4	402.3	741.7	532.3	209.45	3.541		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29U-243
<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 29U-243	<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 (GRID) - Blake B 29-9 (P&A) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft
Survey Program:		100-NS-GYRO-MS											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
9,200.0	6,693.9	6,688.9	6,687.3	58.4	15.9	90.62	-2,894.4	212.9	711.7	637.9	73.77	9.647			
9,300.0	6,693.2	6,690.3	6,688.7	60.6	15.9	90.93	-2,894.4	213.0	619.6	543.6	76.01	8.151			
9,400.0	6,692.6	6,691.7	6,690.1	62.9	15.9	91.24	-2,894.4	213.0	530.4	452.1	78.26	6.777			
9,500.0	6,691.9	6,693.1	6,691.5	65.1	15.9	91.56	-2,894.5	213.1	445.7	365.2	80.51	5.537			
9,600.0	6,691.3	6,694.5	6,692.9	67.3	15.9	91.87	-2,894.5	213.2	368.9	286.1	82.77	4.457			
9,700.0	6,690.6	6,695.9	6,694.4	69.6	15.9	92.18	-2,894.5	213.2	305.7	220.7	85.03	3.596			
9,800.0	6,689.9	6,697.3	6,695.8	71.8	15.9	92.49	-2,894.6	213.3	266.2	178.9	87.29	3.050			
9,863.1	6,689.5	6,698.2	6,696.7	73.2	15.9	92.69	-2,894.6	213.3	258.6	169.9	88.72	2.915	CC, ES, SF		
9,900.0	6,689.3	6,698.7	6,697.2	74.1	15.9	92.81	-2,894.6	213.4	261.2	171.7	89.55	2.917			
10,000.0	6,688.6	6,700.2	6,698.6	76.3	15.9	93.12	-2,894.6	213.4	292.6	200.8	91.82	3.187			
10,100.0	6,687.9	6,701.6	6,700.0	78.6	15.9	93.43	-2,894.6	213.5	350.7	256.6	94.09	3.727			
10,200.0	6,687.3	6,703.0	6,701.4	80.9	15.9	93.74	-2,894.7	213.6	424.7	328.3	96.35	4.407			
10,300.0	6,686.6	6,704.4	6,702.8	83.2	15.9	94.06	-2,894.7	213.6	507.7	409.0	98.62	5.147			
10,400.0	6,686.0	6,705.8	6,704.2	85.4	15.9	94.37	-2,894.7	213.7	595.9	495.0	100.89	5.906			
10,500.0	6,685.3	6,707.2	6,705.6	87.7	16.0	94.68	-2,894.8	213.8	687.3	584.2	103.16	6.663			
10,600.0	6,684.6	6,708.6	6,707.0	90.0	16.0	94.99	-2,894.8	213.8	780.9	675.5	105.42	7.407			

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29U-243
<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 29U-243	<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 (GRID) - Blake B29-16 (Exist) - Wellbore #1 - Wellbore #1		Offset Site Error:		0.0 ft
Survey Program:		100-NS-GYRO-MS											Offset Well Error:		0.0 ft		
Reference		Offset		Semi Major Axis			Distance							Warning			
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor					
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)						
10,300.0	6,686.6	6,722.4	6,721.5	83.2	17.9	96.95	-4,087.7	290.9	777.5	677.2	100.31	7.751					
10,400.0	6,686.0	6,719.9	6,719.0	85.4	17.9	96.14	-4,087.7	290.8	680.7	578.0	102.69	6.629					
10,500.0	6,685.3	6,717.3	6,716.4	87.7	17.9	95.33	-4,087.8	290.8	584.9	479.8	105.06	5.567					
10,600.0	6,684.6	6,714.7	6,713.8	90.0	17.9	94.51	-4,087.8	290.8	490.7	383.3	107.42	4.569					
10,700.0	6,684.0	6,712.1	6,711.3	92.3	17.9	93.70	-4,087.9	290.7	399.4	289.7	109.76	3.639					
10,800.0	6,683.3	6,709.6	6,708.7	94.6	17.9	92.88	-4,087.9	290.7	313.5	201.4	112.10	2.796					
10,900.0	6,682.7	6,707.0	6,706.1	96.9	17.9	92.07	-4,088.0	290.6	238.7	124.3	114.42	2.086					
11,000.0	6,682.0	6,704.4	6,703.6	99.2	17.9	91.25	-4,088.0	290.6	188.9	72.1	116.73	1.618					
11,056.6	6,681.6	6,703.0	6,702.1	100.5	17.9	90.79	-4,088.1	290.6	180.2	62.1	118.03	1.527 CC, ES, SF					
11,100.0	6,681.3	6,701.9	6,701.0	101.5	17.9	90.44	-4,088.1	290.6	185.3	66.3	119.02	1.557					
11,200.0	6,680.7	6,699.3	6,698.4	103.8	17.9	89.62	-4,088.1	290.5	230.2	108.9	121.29	1.898					
11,300.0	6,680.0	6,696.7	6,695.9	106.1	17.9	88.80	-4,088.2	290.5	302.7	179.2	123.54	2.451					
11,400.0	6,679.4	6,694.2	6,693.3	108.4	17.9	87.99	-4,088.2	290.5	387.7	261.9	125.77	3.082					
11,500.0	6,678.7	6,691.6	6,690.7	110.7	17.8	87.17	-4,088.3	290.4	478.5	350.5	127.98	3.738					
11,600.0	6,678.0	6,689.0	6,688.1	113.0	17.8	86.36	-4,088.3	290.4	572.3	442.1	130.17	4.397					
11,700.0	6,677.4	6,686.5	6,685.6	115.3	17.8	85.55	-4,088.4	290.4	667.9	535.6	132.33	5.047					
11,800.0	6,676.7	6,683.9	6,683.0	117.7	17.8	84.74	-4,088.4	290.3	764.7	630.2	134.47	5.686					

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29U-243
<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 29U-243	<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-203 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program:		0-MWD											Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.0	0.0	0.0	0.0	0.0	0.0	-89.39	1.4	-135.1	135.1					
100.0	100.0	100.0	100.0	0.1	0.1	-89.39	1.4	-135.1	135.1	134.9	0.28	490.810		
200.0	200.0	200.0	200.0	0.4	0.4	-89.39	1.4	-135.1	135.1	134.3	0.83	163.603 CC, ES		
300.0	300.0	296.7	296.7	0.7	0.7	-89.23	1.8	-136.3	136.3	135.0	1.36	100.318		
400.0	400.0	393.3	393.2	1.0	0.9	-88.78	3.0	-139.8	140.0	138.1	1.90	73.825		
500.0	500.0	489.6	489.3	1.2	1.2	-130.85	4.9	-145.6	146.9	144.4	2.45	60.065		
600.0	599.9	585.3	584.7	1.5	1.5	-130.89	7.5	-153.6	157.9	154.9	3.00	52.625		
700.0	699.7	680.2	679.0	1.8	1.8	-131.26	10.8	-163.8	173.0	169.4	3.57	48.501		
800.0	799.3	774.1	771.9	2.1	2.2	-131.85	14.8	-176.1	192.1	188.0	4.15	46.328		
900.0	898.6	866.6	863.2	2.4	2.6	-132.55	19.5	-190.3	215.3	210.6	4.75	45.367		
1,000.0	997.5	957.6	952.7	2.8	3.0	-133.27	24.7	-206.3	242.5	237.1	5.37	45.186 SF		
1,100.0	1,096.1	1,046.9	1,040.0	3.2	3.5	-133.96	30.5	-224.0	273.5	267.5	6.01	45.516		
1,200.0	1,194.2	1,134.3	1,125.0	3.7	4.0	-134.59	36.8	-243.2	308.4	301.7	6.68	46.180		
1,233.4	1,226.8	1,163.0	1,152.9	3.8	4.2	-134.78	39.0	-249.9	320.9	314.0	6.91	46.454		
1,300.0	1,291.8	1,219.8	1,207.7	4.1	4.5	-135.36	43.5	-263.7	346.7	339.3	7.37	47.023		
1,400.0	1,389.5	1,300.0	1,284.9	4.7	5.0	-135.97	50.4	-284.6	387.0	378.9	8.07	47.950		
1,500.0	1,487.1	1,386.4	1,367.4	5.2	5.7	-136.39	58.3	-308.8	429.1	420.3	8.82	48.678		
1,600.0	1,584.7	1,467.5	1,444.4	5.7	6.3	-136.62	66.2	-333.2	473.1	463.5	9.56	49.496		
1,700.0	1,682.3	1,552.1	1,524.1	6.3	7.0	-136.74	75.0	-360.0	518.5	508.2	10.33	50.217		
1,800.0	1,780.0	1,641.0	1,607.9	6.8	7.7	-136.84	84.3	-388.3	564.1	553.0	11.12	50.742		
1,900.0	1,877.6	1,730.0	1,691.7	7.4	8.5	-136.93	93.6	-416.7	609.8	597.8	11.92	51.175		
2,000.0	1,975.2	1,819.0	1,775.6	7.9	9.2	-137.00	102.8	-445.1	655.4	642.7	12.72	51.521		
2,100.0	2,072.9	1,908.0	1,859.4	8.5	10.0	-137.06	112.1	-473.4	701.0	687.5	13.53	51.800		
2,200.0	2,170.5	1,997.0	1,943.2	9.0	10.7	-137.12	121.4	-501.8	746.7	732.3	14.35	52.026		
2,300.0	2,268.1	2,085.9	2,027.0	9.6	11.5	-137.16	130.7	-530.2	792.3	777.1	15.17	52.211		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29U-243
<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 29U-243	<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-203 - Wellbore #1 - Spider Plot													Offset Site Error:	0.0 ft
Survey Program:		0-MWD											Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-89.39	1.4	-135.1	135.1					
100.0	100.0	100.0	100.0	0.1	0.1	-89.39	1.4	-135.1	135.1	134.9	0.28	490.810		
200.0	200.0	200.0	200.0	0.4	0.4	-89.39	1.4	-135.1	135.1	134.3	0.83	163.603 CC, ES		
300.0	300.0	296.7	296.7	0.7	0.7	-89.23	1.8	-136.3	136.3	135.0	1.36	100.318		
400.0	400.0	393.3	393.2	1.0	0.9	-88.78	3.0	-139.8	140.0	138.1	1.90	73.825		
500.0	500.0	489.6	489.3	1.2	1.2	-130.85	4.9	-145.6	146.9	144.4	2.45	60.065		
600.0	599.9	585.3	584.7	1.5	1.5	-130.89	7.5	-153.6	157.9	154.9	3.00	52.625		
700.0	699.7	680.2	679.0	1.8	1.8	-131.26	10.8	-163.8	173.0	169.4	3.57	48.501		
800.0	799.3	774.1	771.9	2.1	2.2	-131.85	14.8	-176.1	192.1	188.0	4.15	46.328		
900.0	898.6	866.6	863.2	2.4	2.6	-132.55	19.5	-190.3	215.3	210.6	4.75	45.367		
1,000.0	997.5	957.6	952.7	2.8	3.0	-133.27	24.7	-206.3	242.5	237.1	5.37	45.186 SF		
1,100.0	1,096.1	1,046.9	1,040.0	3.2	3.5	-133.96	30.5	-224.0	273.5	267.5	6.01	45.516		
1,200.0	1,194.2	1,134.3	1,125.0	3.7	4.0	-134.59	36.8	-243.2	308.4	301.7	6.68	46.180		
1,233.4	1,226.8	1,163.0	1,152.9	3.8	4.2	-134.78	39.0	-249.9	320.9	314.0	6.91	46.454		
1,300.0	1,291.8	1,219.8	1,207.7	4.1	4.5	-135.36	43.5	-263.7	346.7	339.3	7.37	47.023		
1,400.0	1,389.5	1,300.0	1,284.9	4.7	5.0	-135.97	50.4	-284.6	387.0	378.9	8.07	47.950		
1,500.0	1,487.1	1,386.4	1,367.4	5.2	5.7	-136.39	58.3	-308.8	429.1	420.3	8.82	48.678		
1,600.0	1,584.7	1,467.5	1,444.4	5.7	6.3	-136.62	66.2	-333.2	473.1	463.5	9.56	49.496		
1,700.0	1,682.3	1,552.1	1,524.1	6.3	7.0	-136.74	75.0	-360.0	518.5	508.2	10.33	50.217		
1,800.0	1,780.0	1,641.0	1,607.9	6.8	7.7	-136.84	84.3	-388.3	564.1	553.0	11.12	50.742		
1,900.0	1,877.6	1,730.0	1,691.7	7.4	8.5	-136.93	93.6	-416.7	609.8	597.8	11.92	51.175		
2,000.0	1,975.2	1,819.0	1,775.6	7.9	9.2	-137.00	102.8	-445.1	655.4	642.7	12.72	51.521		
2,100.0	2,072.9	1,908.0	1,859.4	8.5	10.0	-137.06	112.1	-473.4	701.0	687.5	13.53	51.800		
2,200.0	2,170.5	1,997.0	1,943.2	9.0	10.7	-137.12	121.4	-501.8	746.7	732.3	14.35	52.026		
2,300.0	2,268.1	2,085.9	2,027.0	9.6	11.5	-137.16	130.7	-530.2	792.3	777.1	15.17	52.211		



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29U-243
<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 29U-243	<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	-89.41	1.1	-105.0	105.0	105.0	0.00	N/A			
100.0	100.0	101.0	101.0	0.1	0.1	-89.41	1.1	-105.0	105.0	104.8	0.28	377.738			
200.0	200.0	201.0	201.0	0.4	0.4	-89.41	1.1	-105.0	105.0	104.2	0.83	126.749			
300.0	300.0	301.0	301.0	0.7	0.7	-89.41	1.1	-105.0	105.0	103.7	1.38	76.151			
400.0	400.0	401.0	401.0	1.0	1.0	-89.41	1.1	-105.0	105.0	103.1	1.93	54.424	CC, ES		
500.0	500.0	501.0	501.0	1.2	1.2	-132.39	1.1	-105.0	105.9	103.4	2.48	42.733			
600.0	599.9	600.9	600.9	1.5	1.5	-133.89	1.1	-105.0	108.6	105.6	3.03	35.858			
700.0	699.7	700.7	700.7	1.8	1.8	-136.23	1.1	-105.0	113.2	109.7	3.59	31.580			
800.0	799.3	800.0	800.0	2.1	2.1	-139.17	1.1	-105.0	120.0	115.9	4.15	28.919			
900.0	898.6	896.9	896.9	2.4	2.3	-142.09	1.6	-106.2	130.2	125.5	4.71	27.637			
1,000.0	997.5	992.8	992.7	2.8	2.6	-144.52	3.1	-109.5	144.8	139.5	5.28	27.436	SF		
1,100.0	1,096.1	1,087.9	1,087.6	3.2	2.8	-146.41	5.6	-114.9	163.7	157.8	5.86	27.952			
1,200.0	1,194.2	1,181.8	1,181.1	3.7	3.1	-147.78	9.1	-122.3	186.8	180.3	6.45	28.955			
1,233.4	1,226.8	1,212.8	1,212.0	3.8	3.2	-148.14	10.4	-125.3	195.4	188.7	6.65	29.369			
1,300.0	1,291.8	1,274.4	1,273.2	4.1	3.4	-148.79	13.4	-131.7	213.4	206.3	7.06	30.234			
1,400.0	1,389.5	1,366.2	1,364.2	4.7	3.7	-149.27	18.7	-143.1	241.9	234.2	7.68	31.485			
1,500.0	1,487.1	1,457.1	1,453.9	5.2	4.0	-149.33	24.8	-156.2	272.1	263.7	8.33	32.668			
1,600.0	1,584.7	1,546.9	1,542.1	5.7	4.4	-149.08	31.7	-171.1	303.9	294.9	9.00	33.782			
1,700.0	1,682.3	1,635.6	1,628.9	6.3	4.8	-148.63	39.3	-187.6	337.4	327.7	9.69	34.830			
1,800.0	1,780.0	1,723.1	1,714.1	6.8	5.2	-148.04	47.7	-205.8	372.5	362.1	10.40	35.828			
1,900.0	1,877.6	1,809.3	1,797.6	7.4	5.7	-147.36	56.8	-225.3	409.3	398.1	11.13	36.757			
2,000.0	1,975.2	1,899.5	1,884.6	7.9	6.2	-146.62	66.9	-247.2	447.3	435.4	11.91	37.567			
2,100.0	2,072.9	1,991.9	1,973.5	8.5	6.8	-145.97	77.3	-269.6	485.4	472.7	12.69	38.245			
2,200.0	2,170.5	2,084.2	2,062.5	9.0	7.4	-145.42	87.7	-292.0	523.6	510.1	13.49	38.820			
2,300.0	2,268.1	2,176.5	2,151.4	9.6	7.9	-144.95	98.1	-314.4	561.8	547.5	14.29	39.312			
2,400.0	2,365.7	2,268.8	2,240.4	10.1	8.5	-144.53	108.5	-336.8	600.0	584.9	15.10	39.738			
2,500.0	2,463.4	2,361.1	2,329.3	10.7	9.1	-144.16	118.8	-359.3	638.3	622.4	15.91	40.108			
2,600.0	2,561.0	2,453.4	2,418.3	11.3	9.7	-143.84	129.2	-381.7	676.6	659.9	16.73	40.433			
2,700.0	2,658.6	2,545.8	2,507.2	11.8	10.4	-143.55	139.6	-404.1	714.9	697.3	17.56	40.719			
2,800.0	2,756.3	2,638.1	2,596.2	12.4	11.0	-143.29	150.0	-426.5	753.2	734.8	18.38	40.974			
2,900.0	2,853.9	2,730.4	2,685.1	12.9	11.6	-143.05	160.4	-448.9	791.5	772.3	19.21	41.201			

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29U-243
<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 29U-243	<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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-89.48	1.1	-120.1	120.1						
100.0	100.0	100.0	100.0	0.1	0.1	-89.48	1.1	-120.1	120.1	119.8	0.28	436.156			
200.0	200.0	200.0	200.0	0.4	0.4	-89.48	1.1	-120.1	120.1	119.3	0.83	145.385			
300.0	300.0	300.0	300.0	0.7	0.7	-89.48	1.1	-120.1	120.1	118.7	1.38	87.231			
400.0	400.0	400.0	400.0	1.0	1.0	-89.48	1.1	-120.1	120.1	118.2	1.93	62.308	CC, ES		
500.0	500.0	497.1	497.1	1.2	1.2	-132.17	1.5	-121.2	122.2	119.7	2.46	49.658			
600.0	599.9	593.9	593.8	1.5	1.5	-132.77	2.9	-124.7	128.4	125.4	3.00	42.841			
700.0	699.7	690.2	690.0	1.8	1.8	-133.66	5.0	-130.4	138.7	135.2	3.55	39.109			
800.0	799.3	785.8	785.1	2.1	2.0	-134.68	8.1	-138.3	153.2	149.1	4.11	37.256			
900.0	898.6	880.3	879.0	2.4	2.4	-135.72	11.9	-148.2	171.9	167.2	4.70	36.598	SF		
1,000.0	997.5	973.6	971.4	2.8	2.7	-136.69	16.5	-160.2	194.6	189.3	5.30	36.721			
1,100.0	1,096.1	1,065.4	1,062.0	3.2	3.1	-137.55	21.8	-174.1	221.4	215.4	5.93	37.358			
1,200.0	1,194.2	1,155.5	1,150.6	3.7	3.5	-138.26	27.8	-189.6	252.1	245.5	6.58	38.329			
1,233.4	1,226.8	1,185.2	1,179.7	3.8	3.6	-138.47	29.9	-195.2	263.2	256.4	6.80	38.710			
1,300.0	1,291.8	1,243.9	1,237.1	4.1	3.9	-139.01	34.3	-206.8	286.3	279.0	7.25	39.478			
1,400.0	1,389.5	1,331.1	1,321.9	4.7	4.4	-139.52	41.5	-225.5	322.5	314.5	7.94	40.587			
1,500.0	1,487.1	1,416.9	1,404.9	5.2	4.9	-139.75	49.3	-245.7	360.5	351.8	8.66	41.643			
1,600.0	1,584.7	1,502.9	1,487.7	5.7	5.4	-139.80	57.7	-267.7	400.3	390.9	9.40	42.593			
1,700.0	1,682.3	1,594.4	1,575.5	6.3	6.0	-139.80	66.9	-291.6	440.6	430.4	10.16	43.373			
1,800.0	1,780.0	1,685.9	1,663.4	6.8	6.7	-139.80	76.0	-315.5	480.9	470.0	10.93	44.002			
1,900.0	1,877.6	1,777.4	1,751.2	7.4	7.3	-139.79	85.2	-339.4	521.3	509.6	11.71	44.507			
2,000.0	1,975.2	1,868.9	1,839.1	7.9	7.9	-139.79	94.4	-363.4	561.6	549.1	12.50	44.920			
2,100.0	2,072.9	1,960.4	1,926.9	8.5	8.6	-139.79	103.6	-387.3	601.9	588.6	13.30	45.261			
2,200.0	2,170.5	2,052.0	2,014.8	9.0	9.2	-139.79	112.7	-411.2	642.3	628.2	14.10	45.546			
2,300.0	2,268.1	2,143.5	2,102.6	9.6	9.9	-139.79	121.9	-435.1	682.6	667.7	14.91	45.785			
2,400.0	2,365.7	2,235.0	2,190.5	10.1	10.5	-139.79	131.1	-459.0	722.9	707.2	15.72	45.989			
2,500.0	2,463.4	2,326.5	2,278.3	10.7	11.2	-139.79	140.2	-482.9	763.2	746.7	16.53	46.163			

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29U-243
<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 29U-243	<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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-89.45	0.7	-74.9	75.0						
100.0	100.0	100.0	100.0	0.1	0.1	-89.45	0.7	-74.9	75.0	74.7	0.28	272.220			
200.0	200.0	200.0	200.0	0.4	0.4	-89.45	0.7	-74.9	75.0	74.1	0.83	90.740			
300.0	300.0	300.0	300.0	0.7	0.7	-89.45	0.7	-74.9	75.0	73.6	1.38	54.444			
400.0	400.0	400.0	400.0	1.0	1.0	-89.45	0.7	-74.9	75.0	73.0	1.93	38.889 CC, ES			
500.0	500.0	500.0	500.0	1.2	1.2	-132.64	0.7	-74.9	75.8	73.4	2.48	30.627			
600.0	599.9	599.9	599.9	1.5	1.5	-134.72	0.7	-74.9	78.5	75.5	3.03	25.954			
700.0	699.7	699.7	699.7	1.8	1.8	-137.86	0.7	-74.9	83.3	79.7	3.58	23.239			
800.0	799.3	799.3	799.3	2.1	2.1	-141.69	0.7	-74.9	90.3	86.1	4.15	21.763			
900.0	898.6	898.6	898.6	2.4	2.3	-145.79	0.7	-74.9	99.8	95.1	4.72	21.145 SF			
1,000.0	997.5	997.5	997.5	2.8	2.6	-149.82	0.7	-74.9	112.0	106.7	5.29	21.154			
1,100.0	1,096.1	1,096.1	1,096.1	3.2	2.9	-153.55	0.7	-74.9	126.9	121.1	5.87	21.633			
1,200.0	1,194.2	1,194.2	1,194.2	3.7	3.2	-156.88	0.7	-74.9	144.7	138.3	6.44	22.468			
1,233.4	1,226.8	1,226.4	1,226.4	3.8	3.2	-157.84	0.8	-75.0	151.3	144.7	6.63	22.825			
1,300.0	1,291.8	1,290.3	1,290.3	4.1	3.4	-159.38	1.4	-75.8	165.2	158.2	7.01	23.575			
1,400.0	1,389.5	1,386.2	1,386.1	4.7	3.7	-160.67	3.6	-78.4	186.9	179.3	7.58	24.669			
1,500.0	1,487.1	1,481.8	1,481.6	5.2	3.9	-161.07	7.4	-82.9	209.6	201.4	8.16	25.686			
1,600.0	1,584.7	1,577.0	1,576.4	5.7	4.2	-160.82	12.7	-89.2	233.1	224.4	8.76	26.613			
1,700.0	1,682.3	1,671.7	1,670.5	6.3	4.5	-160.12	19.4	-97.2	257.6	248.2	9.38	27.451			
1,800.0	1,780.0	1,765.8	1,763.7	6.8	4.8	-159.09	27.6	-107.0	283.0	272.9	10.03	28.204			
1,900.0	1,877.6	1,859.1	1,855.8	7.4	5.1	-157.83	37.1	-118.4	309.4	298.7	10.71	28.878			
2,000.0	1,975.2	1,951.6	1,946.7	7.9	5.5	-156.41	48.0	-131.5	336.9	325.5	11.43	29.486			
2,100.0	2,072.9	2,046.7	2,040.0	8.5	5.8	-154.96	60.1	-145.9	365.3	353.1	12.18	29.995			
2,200.0	2,170.5	2,142.2	2,133.6	9.0	6.2	-153.71	72.3	-160.4	393.9	380.9	12.95	30.408			
2,300.0	2,268.1	2,237.7	2,227.2	9.6	6.7	-152.63	84.5	-174.9	422.6	408.9	13.74	30.765			
2,400.0	2,365.7	2,333.2	2,320.8	10.1	7.1	-151.69	96.6	-189.4	451.4	436.9	14.53	31.069			
2,500.0	2,463.4	2,428.7	2,414.4	10.7	7.6	-150.86	108.8	-203.9	480.4	465.0	15.33	31.330			
2,600.0	2,561.0	2,524.2	2,508.0	11.3	8.0	-150.13	120.9	-218.5	509.4	493.2	16.14	31.557			
2,700.0	2,658.6	2,619.7	2,601.6	11.8	8.5	-149.47	133.1	-233.0	538.5	521.5	16.96	31.755			
2,800.0	2,756.3	2,715.2	2,695.2	12.4	8.9	-148.88	145.2	-247.5	567.6	549.8	17.78	31.930			
2,900.0	2,853.9	2,810.7	2,788.8	12.9	9.4	-148.35	157.4	-262.0	596.8	578.2	18.60	32.085			
3,000.0	2,951.5	2,906.2	2,882.4	13.5	9.9	-147.87	169.5	-276.5	626.0	606.6	19.43	32.223			
3,100.0	3,049.2	3,001.7	2,976.0	14.1	10.4	-147.43	181.7	-291.0	655.3	635.1	20.26	32.347			
3,200.0	3,146.8	3,097.2	3,069.7	14.6	10.8	-147.02	193.8	-305.5	684.6	663.5	21.09	32.459			
3,300.0	3,244.4	3,192.7	3,163.3	15.2	11.3	-146.66	206.0	-320.0	714.0	692.0	21.93	32.560			
3,400.0	3,342.0	3,288.2	3,256.9	15.8	11.8	-146.32	218.1	-334.5	743.3	720.6	22.76	32.652			
3,500.0	3,439.7	3,383.7	3,350.5	16.3	12.3	-146.00	230.3	-349.1	772.7	749.1	23.60	32.736			

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29U-243
<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 29U-243	<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	-89.54	0.4	-45.1	45.1						
100.0	100.0	100.0	100.0	0.1	0.1	-89.54	0.4	-45.1	45.1	44.9	0.28	163.937			
200.0	200.0	200.0	200.0	0.4	0.4	-89.54	0.4	-45.1	45.1	44.3	0.83	54.646			
300.0	300.0	300.0	300.0	0.7	0.7	-89.54	0.4	-45.1	45.1	43.8	1.38	32.787			
400.0	400.0	400.0	400.0	1.0	1.0	-89.54	0.4	-45.1	45.1	43.2	1.93	23.420	CC, ES		
500.0	500.0	500.0	500.0	1.2	1.2	-133.21	0.4	-45.1	46.0	43.5	2.48	18.588			
600.0	599.9	599.9	599.9	1.5	1.5	-136.54	0.4	-45.1	48.8	45.8	3.03	16.122			
700.0	699.7	699.7	699.7	1.8	1.8	-141.29	0.4	-45.1	53.7	50.2	3.58	14.990			
800.0	799.3	799.3	799.3	2.1	2.1	-146.59	0.4	-45.1	61.2	57.0	4.15	14.740			
900.0	898.6	898.6	898.6	2.4	2.3	-151.72	0.4	-45.1	71.3	66.6	4.72	15.113			
1,000.0	997.5	997.5	997.5	2.8	2.6	-156.27	0.4	-45.1	84.2	78.9	5.28	15.936			
1,100.0	1,096.1	1,096.1	1,096.1	3.2	2.9	-160.09	0.4	-45.1	100.0	94.1	5.85	17.087			
1,200.0	1,194.2	1,194.2	1,194.2	3.7	3.2	-163.22	0.4	-45.1	118.5	112.1	6.41	18.476			
1,233.4	1,226.8	1,226.8	1,226.8	3.8	3.2	-164.12	0.4	-45.1	125.3	118.7	6.60	18.982			
1,300.0	1,291.8	1,291.8	1,291.8	4.1	3.4	-165.74	0.4	-45.1	139.3	132.3	6.98	19.959			
1,400.0	1,389.5	1,389.5	1,389.5	4.7	3.7	-167.64	0.4	-45.1	160.4	152.8	7.54	21.256			
1,500.0	1,487.1	1,487.1	1,487.1	5.2	4.0	-169.10	0.4	-45.1	181.6	173.5	8.11	22.379			
1,600.0	1,584.7	1,584.7	1,584.7	5.7	4.2	-170.26	0.4	-45.1	202.9	194.2	8.69	23.356			
1,700.0	1,682.3	1,682.3	1,682.3	6.3	4.5	-171.19	0.4	-45.1	224.3	215.0	9.26	24.212			
1,800.0	1,780.0	1,780.0	1,780.0	6.8	4.8	-171.97	0.4	-45.1	245.7	235.9	9.84	24.967			
1,900.0	1,877.6	1,877.6	1,877.6	7.4	5.0	-172.62	0.4	-45.1	267.2	256.7	10.42	25.637			
2,000.0	1,975.2	1,975.2	1,975.2	7.9	5.3	-173.17	0.4	-45.1	288.7	277.7	11.00	26.235			
2,100.0	2,072.9	2,075.4	2,075.4	8.5	5.6	-173.53	1.1	-45.4	309.9	298.3	11.59	26.732			
2,200.0	2,170.5	2,176.8	2,176.8	9.0	5.9	-173.42	4.3	-46.3	330.1	317.9	12.19	27.081			
2,300.0	2,268.1	2,278.6	2,278.4	9.6	6.1	-172.92	10.1	-48.1	349.2	336.4	12.79	27.296			
2,400.0	2,365.7	2,380.6	2,380.0	10.1	6.4	-172.08	18.5	-50.6	367.3	353.9	13.41	27.388			
2,500.0	2,463.4	2,482.7	2,481.4	10.7	6.7	-170.93	29.5	-54.0	384.5	370.4	14.05	27.369			
2,600.0	2,561.0	2,584.7	2,582.4	11.3	7.0	-169.52	43.1	-58.1	400.9	386.2	14.71	27.246			
2,700.0	2,658.6	2,683.2	2,679.8	11.8	7.3	-168.06	57.7	-62.5	417.0	401.6	15.40	27.082			
2,800.0	2,756.3	2,781.4	2,776.7	12.4	7.7	-166.72	72.3	-67.0	433.3	417.2	16.10	26.914			
2,900.0	2,853.9	2,879.6	2,873.7	12.9	8.0	-165.47	86.8	-71.4	449.9	433.0	16.82	26.746			
3,000.0	2,951.5	2,977.7	2,970.7	13.5	8.3	-164.31	101.4	-75.8	466.6	449.0	17.56	26.579			
3,100.0	3,049.2	3,075.9	3,067.7	14.1	8.7	-163.23	116.0	-80.2	483.5	465.2	18.30	26.415			
3,200.0	3,146.8	3,174.0	3,164.6	14.6	9.1	-162.22	130.5	-84.6	500.6	481.5	19.07	26.254			
3,300.0	3,244.4	3,272.2	3,261.6	15.2	9.4	-161.28	145.1	-89.0	517.8	498.0	19.84	26.098			
3,400.0	3,342.0	3,370.4	3,358.6	15.8	9.8	-160.40	159.7	-93.5	535.1	514.5	20.62	25.947			
3,500.0	3,439.7	3,468.5	3,455.6	16.3	10.2	-159.58	174.2	-97.9	552.6	531.2	21.42	25.802			
3,600.0	3,537.3	3,566.7	3,552.5	16.9	10.6	-158.80	188.8	-102.3	570.2	547.9	22.22	25.663			
3,700.0	3,634.9	3,664.8	3,649.5	17.5	10.9	-158.07	203.4	-106.7	587.8	564.8	23.03	25.529			
3,746.1	3,679.9	3,710.1	3,694.2	17.7	11.1	-157.75	210.1	-108.8	596.0	572.6	23.40	25.470			
3,800.0	3,732.7	3,763.1	3,746.5	18.0	11.3	-157.44	218.0	-111.1	605.1	581.3	23.85	25.368			
3,900.0	3,831.0	3,861.7	3,843.9	18.4	11.7	-156.77	232.6	-115.6	619.6	595.0	24.65	25.139			
4,000.0	3,929.9	3,960.5	3,941.6	18.7	12.1	-155.99	247.3	-120.0	631.1	605.7	25.42	24.825			
4,100.0	4,029.3	4,059.6	4,039.5	19.0	12.5	-155.09	262.0	-124.5	639.6	613.4	26.18	24.435			
4,200.0	4,129.0	4,158.7	4,137.4	19.3	12.9	-154.07	276.7	-129.0	645.1	618.2	26.91	23.977			
4,300.0	4,228.9	4,257.7	4,235.2	19.5	13.3	-152.89	291.4	-133.4	647.8	620.2	27.61	23.461			
4,371.1	4,300.0	4,328.0	4,304.7	19.6	13.6	-109.50	301.8	-136.6	648.0	619.9	28.10	23.063			
4,400.0	4,328.9	4,356.6	4,332.9	19.6	13.8	-109.11	306.0	-137.9	647.8	619.5	28.31	22.880			
4,500.0	4,428.9	4,455.4	4,430.4	19.8	14.2	-107.76	320.7	-142.3	647.3	618.3	29.07	22.267			
4,564.9	4,493.8	4,519.5	4,493.8	19.9	14.4	-106.88	330.2	-145.2	647.3	617.7	29.57	21.893			
4,600.0	4,528.9	4,554.1	4,528.0	19.9	14.6	-106.40	335.3	-146.8	647.3	617.5	29.83	21.698			

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 29U-243
<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 29U-243	<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							
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)			
4,700.0	4,628.9	4,652.9	4,625.6	20.1	15.0	-105.04	350.0	-151.2	647.6	617.0	30.59	21.168		
4,800.0	4,728.9	4,751.7	4,723.2	20.2	15.4	-103.69	364.7	-155.7	648.3	616.9	31.35	20.677		
4,900.0	4,828.9	4,850.5	4,820.8	20.4	15.8	-102.34	379.3	-160.1	649.4	617.2	32.11	20.222		
5,000.0	4,928.9	4,949.3	4,918.4	20.6	16.2	-101.00	394.0	-164.5	650.8	617.9	32.87	19.801		
5,100.0	5,028.9	5,048.1	5,016.0	20.7	16.7	-99.66	408.6	-169.0	652.6	618.9	33.62	19.412		
5,200.0	5,128.9	5,146.9	5,113.6	20.9	17.1	-98.33	423.3	-173.4	654.7	620.4	34.36	19.052		
5,300.0	5,228.9	5,245.7	5,211.2	21.1	17.5	-97.01	438.0	-177.9	657.2	622.1	35.11	18.721		
5,400.0	5,328.9	5,344.5	5,308.8	21.3	17.9	-95.69	452.6	-182.3	660.1	624.3	35.84	18.417		
5,500.0	5,428.9	5,443.3	5,406.4	21.4	18.3	-94.40	467.3	-186.8	663.3	626.7	36.57	18.137		
5,600.0	5,528.9	5,545.5	5,507.5	21.6	18.7	-93.12	481.8	-191.2	666.7	629.5	37.25	17.897		
5,700.0	5,628.9	5,651.0	5,612.3	21.8	19.0	-92.11	493.4	-194.7	669.6	631.7	37.85	17.691		
5,800.0	5,728.9	5,757.2	5,718.1	22.0	19.3	-91.42	501.4	-197.1	671.6	633.3	38.38	17.500		
5,900.0	5,828.9	5,863.8	5,824.7	22.2	19.6	-91.06	505.6	-198.4	672.7	633.9	38.85	17.317		
6,000.0	5,928.9	5,968.0	5,928.9	22.4	19.8	-91.00	506.4	-198.6	672.9	633.7	39.27	17.137		
6,004.5	5,933.4	5,972.5	5,933.4	22.4	19.8	-91.00	506.4	-198.6	672.9	633.7	39.29	17.129		
6,014.2	5,943.1	5,982.2	5,943.1	22.4	19.8	-91.00	506.4	-198.6	672.9	633.6	39.33	17.112		
6,050.0	5,978.9	6,017.5	5,978.3	22.5	19.8	88.96	505.5	-198.6	672.9	633.5	39.44	17.062		
6,100.0	6,028.7	6,066.7	6,027.4	22.5	19.9	88.97	501.7	-198.6	672.9	633.4	39.53	17.022		
6,150.0	6,078.2	6,115.9	6,076.1	22.5	19.9	88.98	494.7	-198.6	672.9	633.4	39.56	17.012		
6,200.0	6,127.1	6,165.1	6,124.2	22.5	19.9	88.99	484.6	-198.7	672.9	633.4	39.52	17.029		
6,250.0	6,175.2	6,214.4	6,171.7	22.4	19.8	89.01	471.4	-198.7	672.9	633.5	39.42	17.071		
6,300.0	6,222.3	6,263.6	6,218.2	22.4	19.8	89.03	455.1	-198.7	672.9	633.7	39.27	17.136		
6,350.0	6,268.2	6,312.9	6,263.5	22.3	19.7	89.06	435.9	-198.7	672.9	633.8	39.08	17.221		
6,400.0	6,312.7	6,362.2	6,307.6	22.2	19.6	89.09	413.8	-198.7	672.9	634.1	38.85	17.321		
6,450.0	6,355.6	6,411.5	6,350.1	22.0	19.5	89.12	388.9	-198.7	672.9	634.3	38.60	17.433		
6,500.0	6,396.8	6,460.8	6,391.0	21.9	19.3	89.16	361.3	-198.7	672.9	634.6	38.34	17.552		
6,550.0	6,436.0	6,510.2	6,430.0	21.7	19.2	89.20	331.0	-198.8	672.9	634.8	38.08	17.670		
6,600.0	6,473.1	6,559.6	6,467.1	21.6	19.1	89.25	298.3	-198.8	672.9	635.1	37.84	17.782		
6,650.0	6,508.0	6,609.1	6,501.9	21.4	19.0	89.29	263.3	-198.8	672.9	635.3	37.63	17.880		
6,700.0	6,540.4	6,658.5	6,534.5	21.3	18.9	89.35	226.0	-198.8	672.9	635.4	37.47	17.957		
6,750.0	6,570.3	6,708.1	6,564.5	21.1	18.8	89.40	186.7	-198.9	672.9	635.5	37.38	18.003		
6,800.0	6,597.5	6,757.6	6,592.0	21.0	18.8	89.46	145.5	-198.9	672.9	635.5	37.36	18.013		
6,850.0	6,621.8	6,807.2	6,616.8	20.8	18.8	89.52	102.5	-198.9	672.9	635.4	37.43	17.978		
6,900.0	6,643.3	6,856.9	6,638.8	20.7	18.8	89.58	58.0	-199.0	672.9	635.3	37.60	17.895		
6,950.0	6,661.8	6,906.6	6,657.8	20.6	18.9	89.64	12.1	-199.0	672.9	635.0	37.88	17.761		
7,000.0	6,677.2	6,956.3	6,673.9	20.5	19.1	89.70	-35.0	-199.0	672.9	634.6	38.29	17.574		
7,050.0	6,689.4	7,006.1	6,686.8	20.5	19.4	89.77	-83.0	-199.1	672.9	634.1	38.81	17.338		
7,079.3	6,695.1	7,035.3	6,692.9	20.5	19.6	89.81	-111.6	-199.1	672.9	633.7	39.18	17.173		
7,100.0	6,698.5	7,055.9	6,696.6	20.5	19.7	89.84	-131.9	-199.1	672.9	633.4	39.45	17.055		
7,150.0	6,704.3	7,105.8	6,703.2	20.8	20.1	89.90	-181.3	-199.2	672.9	632.7	40.21	16.733		
7,200.0	6,706.9	7,155.8	6,706.6	21.2	20.5	89.97	-231.2	-199.2	672.9	631.8	41.08	16.379		
7,219.2	6,707.0	7,175.0	6,707.0	21.4	20.7	90.00	-250.4	-199.2	672.9	631.4	41.44	16.235		
7,219.3	6,707.0	7,175.1	6,707.0	21.4	20.7	90.00	-250.5	-199.2	672.9	631.4	41.45	16.235		
7,220.0	6,707.0	7,175.8	6,707.0	21.4	20.7	90.00	-251.2	-199.2	672.9	631.4	41.46	16.230		
7,228.7	6,706.9	7,184.4	6,707.0	21.5	20.8	90.01	-259.8	-199.2	672.9	631.3	41.61	16.169		
7,300.0	6,706.5	7,255.8	6,706.5	22.2	21.6	90.01	-331.1	-199.3	672.9	629.9	42.96	15.664		
7,400.0	6,705.8	7,355.8	6,705.9	23.4	22.8	90.01	-431.1	-199.3	672.9	627.5	45.39	14.824		
7,500.0	6,705.1	7,455.8	6,705.2	24.8	24.3	90.01	-531.1	-199.4	672.9	624.7	48.16	13.971		
7,600.0	6,704.5	7,555.8	6,704.6	26.4	25.8	90.01	-631.1	-199.5	672.9	621.7	51.22	13.138		
7,700.0	6,703.8	7,655.8	6,703.9	28.0	27.5	90.01	-731.1	-199.6	672.9	618.4	54.51	12.345		

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 29U-243
<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 29U-243	<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							
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)			
7,800.0	6,703.2	7,755.8	6,703.2	29.7	29.2	90.01	-831.1	-199.7	672.9	614.9	57.99	11.603		
7,900.0	6,702.5	7,855.8	6,702.6	31.5	31.1	90.01	-931.1	-199.7	672.9	611.2	61.64	10.917		
8,000.0	6,701.8	7,955.8	6,701.9	33.4	33.0	90.01	-1,031.1	-199.8	672.9	607.5	65.42	10.286		
8,100.0	6,701.2	8,055.8	6,701.3	35.3	34.9	90.01	-1,131.1	-199.9	672.9	603.6	69.31	9.708		
8,200.0	6,700.5	8,155.8	6,700.6	37.2	36.9	90.01	-1,231.1	-200.0	672.9	599.6	73.30	9.180		
8,300.0	6,699.9	8,255.8	6,699.9	39.2	38.9	90.01	-1,331.1	-200.1	672.9	595.5	77.37	8.697		
8,400.0	6,699.2	8,355.8	6,699.3	41.3	41.0	90.01	-1,431.1	-200.1	672.9	591.4	81.51	8.255		
8,500.0	6,698.5	8,455.8	6,698.6	43.4	43.1	90.01	-1,531.1	-200.2	672.9	587.2	85.71	7.851		
8,600.0	6,697.9	8,555.8	6,697.9	45.5	45.2	90.01	-1,631.1	-200.3	672.9	583.0	89.95	7.481		
8,700.0	6,697.2	8,655.8	6,697.3	47.6	47.4	90.01	-1,731.1	-200.4	672.9	578.7	94.24	7.140		
8,800.0	6,696.5	8,755.8	6,696.6	49.7	49.5	90.01	-1,831.1	-200.5	672.9	574.3	98.57	6.827		
8,900.0	6,695.9	8,855.8	6,696.0	51.9	51.7	90.01	-1,931.1	-200.5	672.9	570.0	102.93	6.538		
9,000.0	6,695.2	8,955.8	6,695.3	54.0	53.9	90.01	-2,031.1	-200.6	672.9	565.6	107.32	6.270		
9,100.0	6,694.6	9,055.8	6,694.6	56.2	56.1	90.01	-2,131.1	-200.7	672.9	561.2	111.73	6.023		
9,200.0	6,693.9	9,155.8	6,694.0	58.4	58.3	90.01	-2,231.1	-200.8	672.9	556.8	116.17	5.793		
9,300.0	6,693.2	9,255.8	6,693.3	60.6	60.6	90.01	-2,331.1	-200.8	672.9	552.3	120.63	5.579		
9,400.0	6,692.6	9,355.8	6,692.6	62.9	62.8	90.01	-2,431.1	-200.9	672.9	547.8	125.10	5.379		
9,500.0	6,691.9	9,455.8	6,692.0	65.1	65.1	90.01	-2,531.1	-201.0	672.9	543.3	129.59	5.193		
9,600.0	6,691.3	9,555.8	6,691.3	67.3	67.3	90.01	-2,631.1	-201.1	672.9	538.8	134.10	5.018		
9,700.0	6,690.6	9,655.8	6,690.7	69.6	69.6	90.01	-2,731.1	-201.2	672.9	534.3	138.62	4.855		
9,800.0	6,689.9	9,755.8	6,690.0	71.8	71.8	90.01	-2,831.1	-201.2	672.9	529.8	143.15	4.701		
9,900.0	6,689.3	9,855.8	6,689.3	74.1	74.1	90.01	-2,931.1	-201.3	672.9	525.3	147.69	4.557		
10,000.0	6,688.6	9,955.8	6,688.7	76.3	76.4	90.01	-3,031.1	-201.4	672.9	520.7	152.24	4.420		
10,100.0	6,687.9	10,055.8	6,688.0	78.6	78.7	90.01	-3,131.1	-201.5	672.9	516.2	156.80	4.292		
10,200.0	6,687.3	10,155.8	6,687.4	80.9	80.9	90.01	-3,231.1	-201.6	673.0	511.6	161.36	4.170		
10,300.0	6,686.6	10,255.8	6,686.7	83.2	83.2	90.01	-3,331.1	-201.6	673.0	507.0	165.94	4.055		
10,400.0	6,686.0	10,355.8	6,686.0	85.4	85.5	90.01	-3,431.1	-201.7	673.0	502.4	170.52	3.946		
10,500.0	6,685.3	10,455.8	6,685.4	87.7	87.8	90.01	-3,531.0	-201.8	673.0	497.8	175.11	3.843		
10,600.0	6,684.6	10,555.8	6,684.7	90.0	90.1	90.01	-3,631.0	-201.9	673.0	493.3	179.71	3.745		
10,700.0	6,684.0	10,655.8	6,684.0	92.3	92.4	90.01	-3,731.0	-201.9	673.0	488.7	184.30	3.651		
10,800.0	6,683.3	10,755.8	6,683.4	94.6	94.7	90.01	-3,831.0	-202.0	673.0	484.1	188.91	3.562		
10,900.0	6,682.7	10,855.8	6,682.7	96.9	97.0	90.01	-3,931.0	-202.1	673.0	479.5	193.52	3.478		
11,000.0	6,682.0	10,955.8	6,682.1	99.2	99.3	90.01	-4,031.0	-202.2	673.0	474.8	198.13	3.397		
11,100.0	6,681.3	11,055.8	6,681.4	101.5	101.6	90.01	-4,131.0	-202.3	673.0	470.2	202.75	3.319		
11,200.0	6,680.7	11,155.8	6,680.7	103.8	103.9	90.01	-4,231.0	-202.3	673.0	465.6	207.37	3.245		
11,300.0	6,680.0	11,255.8	6,680.1	106.1	106.3	90.01	-4,331.0	-202.4	673.0	461.0	212.00	3.174		
11,400.0	6,679.4	11,355.8	6,679.4	108.4	108.6	90.01	-4,431.0	-202.5	673.0	456.4	216.63	3.107		
11,500.0	6,678.7	11,455.8	6,678.7	110.7	110.9	90.01	-4,531.0	-202.6	673.0	451.7	221.26	3.042		
11,600.0	6,678.0	11,555.8	6,678.1	113.0	113.2	90.01	-4,631.0	-202.7	673.0	447.1	225.89	2.979		
11,700.0	6,677.4	11,655.8	6,677.4	115.3	115.5	90.01	-4,731.0	-202.7	673.0	442.5	230.53	2.919		
11,800.0	6,676.7	11,755.8	6,676.8	117.7	117.8	90.01	-4,831.0	-202.8	673.0	437.8	235.17	2.862		
11,900.0	6,676.0	11,855.8	6,676.1	120.0	120.2	90.01	-4,931.0	-202.9	673.0	433.2	239.81	2.806		
12,000.0	6,675.4	11,955.8	6,675.4	122.3	122.5	90.00	-5,031.0	-203.0	673.0	428.5	244.46	2.753		
12,100.0	6,674.7	12,055.8	6,674.8	124.6	124.8	90.00	-5,131.0	-203.0	673.0	423.9	249.10	2.702		
12,200.0	6,674.1	12,155.8	6,674.1	126.9	127.1	90.00	-5,231.0	-203.1	673.0	419.3	253.75	2.652		
12,300.0	6,673.4	12,255.8	6,673.5	129.2	129.5	90.00	-5,331.0	-203.2	673.0	414.6	258.40	2.605		
12,400.0	6,672.7	12,355.8	6,672.8	131.6	131.8	90.00	-5,431.0	-203.3	673.0	410.0	263.05	2.558		
12,500.0	6,672.1	12,455.8	6,672.1	133.9	134.1	90.00	-5,531.0	-203.4	673.0	405.3	267.71	2.514		
12,600.0	6,671.4	12,555.8	6,671.5	136.2	136.4	90.00	-5,631.0	-203.4	673.0	400.7	272.36	2.471		
12,700.0	6,670.8	12,655.8	6,670.8	138.5	138.8	90.00	-5,731.0	-203.5	673.0	396.0	277.02	2.429		
12,800.0	6,670.1	12,755.8	6,670.1	140.9	141.1	90.00	-5,831.0	-203.6	673.0	391.3	281.68	2.389		

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 29U-243
<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 29U-243	<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)				
12,900.0	6,669.4	12,855.8	6,669.5	143.2	143.4	90.00	-5,931.0	-203.7	673.0	386.7	286.34	2.350			
13,000.0	6,668.8	12,955.8	6,668.8	145.5	145.8	90.00	-6,031.0	-203.8	673.0	382.0	291.00	2.313			
13,100.0	6,668.1	13,055.8	6,668.2	147.8	148.1	90.00	-6,131.0	-203.8	673.0	377.4	295.66	2.276			
13,200.0	6,667.4	13,155.8	6,667.5	150.2	150.4	90.00	-6,231.0	-203.9	673.0	372.7	300.33	2.241			
13,300.0	6,666.8	13,255.8	6,666.8	152.5	152.8	90.00	-6,331.0	-204.0	673.0	368.0	304.99	2.207			
13,400.0	6,666.1	13,355.8	6,666.2	154.8	155.1	90.00	-6,431.0	-204.1	673.0	363.4	309.66	2.173			
13,500.0	6,665.5	13,455.8	6,665.5	157.2	157.4	90.00	-6,531.0	-204.1	673.0	358.7	314.33	2.141			
13,600.0	6,664.8	13,555.8	6,664.9	159.5	159.8	90.00	-6,631.0	-204.2	673.0	354.0	319.00	2.110			
13,700.0	6,664.1	13,655.8	6,664.2	161.8	162.1	90.00	-6,731.0	-204.3	673.0	349.4	323.67	2.079			
13,800.0	6,663.5	13,755.8	6,663.5	164.2	164.4	90.00	-6,831.0	-204.4	673.1	344.7	328.34	2.050			
13,900.0	6,662.8	13,855.8	6,662.9	166.5	166.8	90.00	-6,931.0	-204.5	673.1	340.0	333.01	2.021			
14,000.0	6,662.2	13,955.8	6,662.2	168.8	169.1	90.00	-7,031.0	-204.5	673.1	335.4	337.68	1.993			
14,023.3	6,662.0	13,979.1	6,662.0	169.4	169.6	90.00	-7,054.3	-204.6	673.1	334.3	338.77	1.987 SF			



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29U-243
<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 29U-243	<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)					
0.0	0.0	0.0	0.0	0.0	0.0	-89.54	0.7	-90.0	90.0							
100.0	100.0	100.0	100.0	0.1	0.1	-89.54	0.7	-90.0	90.0	89.7	0.28	326.861				
200.0	200.0	200.0	200.0	0.4	0.4	-89.54	0.7	-90.0	90.0	89.2	0.83	108.954				
300.0	300.0	300.0	300.0	0.7	0.7	-89.54	0.7	-90.0	90.0	88.6	1.38	65.372				
400.0	400.0	400.0	400.0	1.0	1.0	-89.54	0.7	-90.0	90.0	88.1	1.93	46.694 CC, ES				
500.0	500.0	500.0	500.0	1.2	1.2	-132.61	0.7	-90.0	90.9	88.4	2.48	36.704				
600.0	599.9	599.9	599.9	1.5	1.5	-134.35	0.7	-90.0	93.6	90.6	3.03	30.923				
700.0	699.7	699.7	699.7	1.8	1.8	-137.03	0.7	-90.0	98.3	94.7	3.58	27.422				
800.0	799.3	799.3	799.3	2.1	2.1	-140.36	0.7	-90.0	105.2	101.0	4.15	25.348				
900.0	898.6	898.6	898.6	2.4	2.3	-144.02	0.7	-90.0	114.5	109.8	4.72	24.250				
1,000.0	997.5	997.5	997.5	2.8	2.6	-147.74	0.7	-90.0	126.4	121.1	5.30	23.862 SF				
1,100.0	1,096.1	1,093.9	1,093.8	3.2	2.9	-150.85	1.3	-91.0	141.8	135.9	5.87	24.173				
1,200.0	1,194.2	1,189.4	1,189.3	3.7	3.1	-153.03	3.1	-94.0	161.4	155.0	6.44	25.068				
1,233.4	1,226.8	1,221.0	1,220.9	3.8	3.2	-153.57	4.0	-95.5	168.8	162.2	6.63	25.458				
1,300.0	1,291.8	1,284.0	1,283.7	4.1	3.4	-154.45	6.2	-99.0	184.4	177.4	7.02	26.279				
1,400.0	1,389.5	1,378.1	1,377.4	4.7	3.6	-155.08	10.4	-106.0	209.0	201.4	7.61	27.466				
1,500.0	1,487.1	1,471.5	1,470.3	5.2	3.9	-155.10	15.8	-114.9	235.1	226.8	8.22	28.585				
1,600.0	1,584.7	1,564.1	1,562.1	5.7	4.2	-154.70	22.2	-125.6	262.5	253.6	8.86	29.627				
1,700.0	1,682.3	1,655.9	1,652.7	6.3	4.6	-154.01	29.8	-138.1	291.2	281.7	9.52	30.593				
1,800.0	1,780.0	1,746.7	1,742.0	6.8	4.9	-153.12	38.4	-152.3	321.4	311.2	10.21	31.489				
1,900.0	1,877.6	1,836.5	1,829.8	7.4	5.3	-152.10	47.9	-168.1	353.1	342.2	10.92	32.323				
2,000.0	1,975.2	1,927.4	1,918.3	7.9	5.7	-150.98	58.6	-185.7	386.1	374.5	11.67	33.079				
2,100.0	2,072.9	2,021.4	2,009.8	8.5	6.2	-149.97	69.8	-204.3	419.6	407.1	12.45	33.698				
2,200.0	2,170.5	2,115.4	2,101.2	9.0	6.7	-149.10	81.1	-222.9	453.1	439.9	13.24	34.229				
2,300.0	2,268.1	2,209.4	2,192.7	9.6	7.2	-148.35	92.3	-241.5	486.7	472.7	14.03	34.682				
2,400.0	2,365.7	2,303.4	2,284.1	10.1	7.7	-147.70	103.6	-260.1	520.4	505.6	14.84	35.072				
2,500.0	2,463.4	2,397.4	2,375.6	10.7	8.2	-147.13	114.8	-278.7	554.1	538.5	15.65	35.411				
2,600.0	2,561.0	2,491.4	2,467.0	11.3	8.7	-146.62	126.0	-297.3	587.9	571.4	16.46	35.707				
2,700.0	2,658.6	2,585.4	2,558.5	11.8	9.3	-146.17	137.3	-315.9	621.7	604.4	17.29	35.968				
2,800.0	2,756.3	2,679.4	2,650.0	12.4	9.8	-145.76	148.5	-334.5	655.6	637.5	18.11	36.201				
2,900.0	2,853.9	2,773.4	2,741.4	12.9	10.3	-145.40	159.8	-353.1	689.4	670.5	18.94	36.408				
3,000.0	2,951.5	2,867.4	2,832.9	13.5	10.9	-145.07	171.0	-371.7	723.3	703.6	19.77	36.594				
3,100.0	3,049.2	2,961.4	2,924.3	14.1	11.4	-144.77	182.3	-390.3	757.2	736.6	20.60	36.762				
3,200.0	3,146.8	3,055.4	3,015.8	14.6	12.0	-144.49	193.5	-408.9	791.2	769.7	21.43	36.914				



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29U-243
<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 29U-243	<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	-89.31	0.7	-59.9	59.9					
100.0	100.0	100.0	100.0	0.1	0.1	-89.31	0.7	-59.9	59.9	59.6	0.28	217.579		
200.0	200.0	200.0	200.0	0.4	0.4	-89.31	0.7	-59.9	59.9	59.1	0.83	72.526		
300.0	300.0	300.0	300.0	0.7	0.7	-89.31	0.7	-59.9	59.9	58.5	1.38	43.516		
400.0	400.0	400.0	400.0	1.0	1.0	-89.31	0.7	-59.9	59.9	58.0	1.93	31.083 CC, ES		
500.0	500.0	500.0	500.0	1.2	1.2	-132.69	0.7	-59.9	60.8	58.3	2.48	24.551		
600.0	599.9	599.9	599.9	1.5	1.5	-135.27	0.7	-59.9	63.5	60.5	3.03	20.987		
700.0	699.7	699.7	699.7	1.8	1.8	-139.08	0.7	-59.9	68.3	64.7	3.58	19.062		
800.0	799.3	799.3	799.3	2.1	2.1	-143.56	0.7	-59.9	75.5	71.3	4.15	18.194		
900.0	898.6	898.6	898.6	2.4	2.3	-148.17	0.7	-59.9	85.2	80.5	4.72	18.067 SF		
1,000.0	997.5	997.5	997.5	2.8	2.6	-152.52	0.7	-59.9	97.7	92.5	5.29	18.481		
1,100.0	1,096.1	1,096.1	1,096.1	3.2	2.9	-156.38	0.7	-59.9	113.1	107.2	5.86	19.297		
1,200.0	1,194.2	1,194.2	1,194.2	3.7	3.2	-159.69	0.7	-59.9	131.2	124.8	6.43	20.413		
1,233.4	1,226.8	1,226.8	1,226.8	3.8	3.2	-160.67	0.7	-59.9	137.9	131.3	6.62	20.839		
1,300.0	1,291.8	1,291.8	1,291.8	4.1	3.4	-162.47	0.7	-59.9	151.6	144.6	6.99	21.675		
1,400.0	1,389.5	1,389.5	1,389.5	4.7	3.7	-164.64	0.7	-59.9	172.4	164.9	7.56	22.797		
1,500.0	1,487.1	1,486.9	1,486.8	5.2	4.0	-166.03	1.5	-60.5	193.5	185.3	8.13	23.785		
1,600.0	1,584.7	1,584.3	1,584.2	5.7	4.2	-166.48	4.3	-62.6	214.7	206.0	8.71	24.646		
1,700.0	1,682.3	1,681.7	1,681.5	6.3	4.5	-166.23	9.0	-66.2	236.0	226.7	9.30	25.378		
1,800.0	1,780.0	1,779.0	1,778.3	6.8	4.8	-165.46	15.7	-71.2	257.5	247.6	9.91	25.987		
1,900.0	1,877.6	1,875.9	1,874.7	7.4	5.0	-164.29	24.4	-77.7	279.3	268.7	10.54	26.486		
2,000.0	1,975.2	1,972.5	1,970.3	7.9	5.3	-162.82	34.9	-85.7	301.4	290.2	11.21	26.884		
2,100.0	2,072.9	2,069.1	2,065.7	8.5	5.7	-161.18	47.1	-94.9	323.9	312.0	11.91	27.194		
2,200.0	2,170.5	2,166.1	2,161.5	9.0	6.0	-159.70	59.5	-104.2	346.7	334.1	12.64	27.441		
2,300.0	2,268.1	2,263.1	2,257.2	9.6	6.4	-158.40	72.0	-113.6	369.7	356.3	13.38	27.632		
2,400.0	2,365.7	2,360.1	2,352.9	10.1	6.7	-157.26	84.4	-123.0	392.9	378.7	14.14	27.794		
2,500.0	2,463.4	2,457.1	2,448.7	10.7	7.1	-156.24	96.9	-132.4	416.2	401.3	14.90	27.925		
2,600.0	2,561.0	2,554.1	2,544.4	11.3	7.5	-155.33	109.3	-141.7	439.6	423.9	15.68	28.033		
2,700.0	2,658.6	2,651.1	2,640.1	11.8	7.9	-154.51	121.8	-151.1	463.1	446.6	16.47	28.123		
2,800.0	2,756.3	2,748.1	2,735.9	12.4	8.3	-153.77	134.2	-160.5	486.7	469.4	17.26	28.198		
2,900.0	2,853.9	2,845.1	2,831.6	12.9	8.7	-153.10	146.6	-169.9	510.3	492.2	18.06	28.261		
3,000.0	2,951.5	2,942.1	2,927.4	13.5	9.1	-152.49	159.1	-179.2	534.0	515.2	18.86	28.315		
3,100.0	3,049.2	3,039.0	3,023.1	14.1	9.5	-151.93	171.5	-188.6	557.8	538.1	19.67	28.361		
3,200.0	3,146.8	3,136.0	3,118.8	14.6	9.9	-151.41	184.0	-198.0	581.6	561.1	20.48	28.400		
3,300.0	3,244.4	3,233.0	3,214.6	15.2	10.3	-150.94	196.4	-207.4	605.4	584.1	21.29	28.434		
3,400.0	3,342.0	3,330.0	3,310.3	15.8	10.7	-150.50	208.9	-216.8	629.3	607.2	22.11	28.464		
3,500.0	3,439.7	3,427.0	3,406.1	16.3	11.2	-150.09	221.3	-226.1	653.2	630.3	22.93	28.489		
3,600.0	3,537.3	3,524.0	3,501.8	16.9	11.6	-149.72	233.7	-235.5	677.2	653.4	23.75	28.512		
3,700.0	3,634.9	3,621.0	3,597.5	17.5	12.0	-149.37	246.2	-244.9	701.1	676.6	24.57	28.531		
3,746.1	3,679.9	3,665.7	3,641.6	17.7	12.2	-149.21	251.9	-249.2	712.2	687.2	24.95	28.540		
3,800.0	3,732.7	3,718.1	3,693.4	18.0	12.4	-149.15	258.6	-254.3	724.7	699.3	25.41	28.520		
3,900.0	3,831.0	3,815.7	3,789.7	18.4	12.9	-148.91	271.2	-263.7	745.7	719.5	26.21	28.456		
4,000.0	3,929.9	3,913.8	3,886.5	18.7	13.3	-148.54	283.7	-273.2	763.8	736.9	26.97	28.317		
4,100.0	4,029.3	4,012.2	3,983.6	19.0	13.7	-148.02	296.4	-282.7	779.1	751.4	27.71	28.113		
4,200.0	4,129.0	4,110.8	4,081.0	19.3	14.2	-147.37	309.0	-292.2	791.6	763.2	28.42	27.853		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29U-243
<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 29U-243	<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-323 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-15.0	15.0	15.0	0.00	N/A		
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-15.0	15.0	14.8	0.28	54.644		
200.0	200.0	200.0	200.0	0.4	0.4	-90.00	0.0	-15.0	15.0	14.2	0.83	18.215		
300.0	300.0	300.0	300.0	0.7	0.7	-90.00	0.0	-15.0	15.0	13.7	1.38	10.929		
400.0	400.0	400.0	400.0	1.0	1.0	-90.00	0.0	-15.0	15.0	13.1	1.93	7.806 CC		
500.0	500.0	500.0	500.0	1.2	1.2	-135.93	0.0	-15.0	16.0	13.5	2.48	6.444		
600.0	599.9	599.9	599.9	1.5	1.5	-144.17	0.0	-15.0	19.0	15.9	3.03	6.265		
700.0	699.7	699.7	699.7	1.8	1.8	-153.09	0.0	-15.0	24.6	21.0	3.59	6.851		
800.0	799.3	799.3	799.3	2.1	2.1	-160.25	0.0	-15.0	33.0	28.9	4.15	7.953		
900.0	898.6	899.5	899.5	2.4	2.3	-164.50	1.2	-14.5	43.2	38.4	4.71	9.165		
1,000.0	997.5	1,000.1	1,000.0	2.8	2.6	-166.36	4.7	-12.8	53.7	48.5	5.26	10.205		
1,100.0	1,096.1	1,100.8	1,100.5	3.2	2.9	-166.95	10.7	-9.9	64.6	58.8	5.83	11.084		
1,200.0	1,194.2	1,201.8	1,201.1	3.7	3.2	-166.82	19.0	-5.9	75.7	69.3	6.40	11.829		
1,233.4	1,226.8	1,235.6	1,234.6	3.8	3.3	-166.66	22.3	-4.2	79.5	72.9	6.59	12.049		
1,300.0	1,291.8	1,303.1	1,301.6	4.1	3.5	-166.17	29.8	-0.6	86.5	79.5	6.99	12.372		
1,400.0	1,389.5	1,404.8	1,402.2	4.7	3.8	-164.86	43.0	5.8	95.2	87.6	7.61	12.502		
1,500.0	1,487.1	1,506.7	1,502.7	5.2	4.2	-162.94	58.7	13.3	101.7	93.4	8.27	12.290		
1,600.0	1,584.7	1,607.7	1,601.7	5.7	4.6	-160.55	76.3	21.9	106.4	97.4	8.98	11.844		
1,700.0	1,682.3	1,707.5	1,699.6	6.3	5.1	-158.27	94.0	30.4	111.0	101.2	9.73	11.409		
1,800.0	1,780.0	1,807.3	1,797.4	6.8	5.5	-156.18	111.8	39.0	115.7	105.2	10.50	11.015		
1,900.0	1,877.6	1,907.1	1,895.3	7.4	6.0	-154.25	129.5	47.6	120.6	109.3	11.32	10.658		
2,000.0	1,975.2	2,006.9	1,993.1	7.9	6.5	-152.48	147.2	56.1	125.6	113.5	12.15	10.335		
2,100.0	2,072.9	2,106.7	2,090.9	8.5	6.9	-150.84	164.9	64.7	130.7	117.7	13.02	10.043		
2,200.0	2,170.5	2,206.5	2,188.8	9.0	7.4	-149.33	182.6	73.3	136.0	122.1	13.90	9.779		
2,300.0	2,268.1	2,306.3	2,286.6	9.6	7.9	-147.93	200.4	81.9	141.3	126.5	14.81	9.540		
2,400.0	2,365.7	2,406.1	2,384.5	10.1	8.4	-146.64	218.1	90.4	146.7	130.9	15.73	9.324		
2,500.0	2,463.4	2,505.9	2,482.3	10.7	8.9	-145.43	235.8	99.0	152.1	135.5	16.67	9.128		
2,600.0	2,561.0	2,605.7	2,580.1	11.3	9.4	-144.31	253.5	107.6	157.6	140.0	17.61	8.949		
2,700.0	2,658.6	2,705.5	2,678.0	11.8	9.9	-143.27	271.3	116.1	163.2	144.6	18.57	8.787		
2,800.0	2,756.3	2,805.3	2,775.8	12.4	10.4	-142.29	289.0	124.7	168.8	149.3	19.54	8.639		
2,900.0	2,853.9	2,905.1	2,873.7	12.9	10.9	-141.38	306.7	133.3	174.5	154.0	20.52	8.504		
3,000.0	2,951.5	3,004.9	2,971.5	13.5	11.4	-140.52	324.4	141.9	180.2	158.7	21.51	8.380		
3,100.0	3,049.2	3,104.7	3,069.3	14.1	11.9	-139.72	342.2	150.4	186.0	163.5	22.50	8.266		
3,200.0	3,146.8	3,204.5	3,167.2	14.6	12.4	-138.97	359.9	159.0	191.8	168.3	23.50	8.161		
3,300.0	3,244.4	3,304.3	3,265.0	15.2	13.0	-138.26	377.6	167.6	197.6	173.1	24.50	8.065		
3,400.0	3,342.0	3,404.1	3,362.9	15.8	13.5	-137.59	395.3	176.2	203.4	177.9	25.51	7.975		
3,500.0	3,439.7	3,503.9	3,460.7	16.3	14.0	-136.96	413.1	184.7	209.3	182.8	26.52	7.893		
3,600.0	3,537.3	3,603.7	3,558.5	16.9	14.5	-136.36	430.8	193.3	215.2	187.7	27.53	7.816		
3,700.0	3,634.9	3,703.5	3,656.4	17.5	15.0	-135.80	448.5	201.9	221.1	192.6	28.55	7.745		
3,746.1	3,679.9	3,749.5	3,701.5	17.7	15.3	-135.54	456.7	205.8	223.9	194.8	29.02	7.714		
3,800.0	3,732.7	3,802.6	3,753.5	18.0	15.5	-135.23	466.0	210.4	226.7	197.2	29.55	7.673		
3,900.0	3,831.0	3,900.0	3,849.4	18.4	15.9	-134.67	481.3	217.7	231.3	200.9	30.35	7.618		
4,000.0	3,929.9	3,995.0	3,943.5	18.7	16.2	-134.25	493.4	223.6	234.9	203.9	31.05	7.566		
4,100.0	4,029.3	4,091.3	4,039.2	19.0	16.5	-133.94	502.7	228.1	237.8	206.1	31.65	7.513		
4,200.0	4,129.0	4,187.6	4,135.3	19.3	16.7	-133.72	509.1	231.2	239.7	207.6	32.14	7.457		
4,300.0	4,228.9	4,283.9	4,231.5	19.5	16.9	-133.61	512.7	232.9	240.8	208.2	32.53	7.401		
4,371.1	4,300.0	4,352.4	4,300.0	19.6	17.1	-91.12	513.4	233.3	241.0	208.2	32.75	7.359		
4,380.7	4,309.6	4,362.1	4,309.6	19.6	17.1	-91.12	513.4	233.3	241.0	208.2	32.78	7.352		
4,400.0	4,328.9	4,381.3	4,328.9	19.6	17.1	-91.12	513.4	233.3	241.0	208.1	32.85	7.337		
4,500.0	4,428.9	4,481.3	4,428.9	19.8	17.3	-91.12	513.4	233.3	241.0	207.8	33.21	7.257		
4,600.0	4,528.9	4,581.3	4,528.9	19.9	17.5	-91.12	513.4	233.3	241.0	207.4	33.58	7.177		

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 29U-243
<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 29U-243	<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-323 - Wellbore #1 - Plan #2 (1-25-17)											Offset Site Error:		0.0 ft
Survey Program:		0-MWD											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
4,700.0	4,628.9	4,681.3	4,628.9	20.1	17.6	-91.12	513.4	233.3	241.0	207.0	33.95	7.098			
4,800.0	4,728.9	4,781.3	4,728.9	20.2	17.8	-91.12	513.4	233.3	241.0	206.7	34.33	7.019			
4,900.0	4,828.9	4,881.3	4,828.9	20.4	18.0	-91.12	513.4	233.3	241.0	206.3	34.72	6.941			
5,000.0	4,928.9	4,981.3	4,928.9	20.6	18.2	-91.12	513.4	233.3	241.0	205.9	35.11	6.864			
5,100.0	5,028.9	5,081.3	5,028.9	20.7	18.4	-91.12	513.4	233.3	241.0	205.5	35.50	6.788			
5,200.0	5,128.9	5,181.3	5,128.9	20.9	18.6	-91.12	513.4	233.3	241.0	205.1	35.90	6.713			
5,300.0	5,228.9	5,281.3	5,228.9	21.1	18.8	-91.12	513.4	233.3	241.0	204.7	36.30	6.639			
5,400.0	5,328.9	5,381.3	5,328.9	21.3	19.0	-91.12	513.4	233.3	241.0	204.3	36.70	6.566			
5,500.0	5,428.9	5,481.3	5,428.9	21.4	19.2	-91.12	513.4	233.3	241.0	203.9	37.11	6.493			
5,600.0	5,528.9	5,581.3	5,528.9	21.6	19.4	-91.12	513.4	233.3	241.0	203.5	37.53	6.422			
5,700.0	5,628.9	5,681.3	5,628.9	21.8	19.6	-91.12	513.4	233.3	241.0	203.0	37.94	6.352			
5,800.0	5,728.9	5,781.3	5,728.9	22.0	19.8	-91.12	513.4	233.3	241.0	202.6	38.36	6.282			
5,900.0	5,828.9	5,881.3	5,828.9	22.2	20.0	-91.12	513.4	233.3	241.0	202.2	38.78	6.214			
6,000.0	5,928.9	5,981.3	5,928.9	22.4	20.2	-91.12	513.4	233.3	241.0	201.8	39.21	6.146			
6,014.2	5,943.1	5,995.5	5,943.1	22.4	20.2	-91.12	513.4	233.3	241.0	201.7	39.27	6.137			
6,050.0	5,978.9	6,031.3	5,978.9	22.5	20.3	89.04	513.4	233.3	241.0	201.5	39.44	6.110			
6,100.0	6,028.7	6,081.1	6,028.7	22.5	20.4	89.92	513.1	233.3	240.9	201.2	39.72	6.067			
6,103.7	6,032.4	6,084.8	6,032.4	22.5	20.4	90.00	513.0	233.3	240.9	201.2	39.73	6.064			
6,150.0	6,078.2	6,131.1	6,078.5	22.5	20.5	90.94	510.2	233.3	241.0	201.0	39.93	6.034			
6,200.0	6,127.1	6,181.3	6,128.4	22.5	20.5	91.95	503.9	233.2	241.1	201.0	40.07	6.016			
6,250.0	6,175.2	6,231.8	6,177.9	22.4	20.5	92.96	494.3	233.2	241.3	201.1	40.14	6.011			
6,300.0	6,222.3	6,282.6	6,227.0	22.4	20.4	93.95	481.4	233.2	241.5	201.4	40.12	6.020			
6,350.0	6,268.2	6,333.7	6,275.5	22.3	20.4	94.93	465.2	233.2	241.8	201.8	40.04	6.040			
6,400.0	6,312.7	6,385.0	6,323.0	22.2	20.3	95.88	445.6	233.2	242.2	202.3	39.89	6.073			
6,450.0	6,355.6	6,436.7	6,369.3	22.0	20.2	96.81	422.8	233.2	242.7	203.0	39.68	6.117			
6,500.0	6,396.8	6,488.6	6,414.2	21.9	20.0	97.71	396.7	233.2	243.2	203.7	39.41	6.169			
6,550.0	6,436.0	6,540.9	6,457.4	21.7	19.9	98.58	367.4	233.1	243.7	204.6	39.12	6.230			
6,600.0	6,473.1	6,593.4	6,498.8	21.6	19.7	99.40	335.1	233.1	244.3	205.5	38.80	6.295			
6,650.0	6,508.0	6,646.1	6,538.1	21.4	19.6	100.18	299.9	233.1	244.8	206.3	38.48	6.362			
6,700.0	6,540.4	6,699.2	6,574.9	21.3	19.4	100.91	261.8	233.1	245.4	207.2	38.18	6.428			
6,750.0	6,570.3	6,752.4	6,609.2	21.1	19.3	101.60	221.1	233.0	246.0	208.1	37.92	6.487			
6,800.0	6,597.5	6,805.9	6,640.8	21.0	19.2	102.23	177.9	233.0	246.6	208.9	37.73	6.536			
6,850.0	6,621.8	6,859.6	6,669.3	20.8	19.1	102.80	132.4	233.0	247.1	209.5	37.62	6.569			
6,900.0	6,643.3	6,913.5	6,694.6	20.7	19.0	103.32	84.8	232.9	247.6	210.0	37.62	6.582			
6,950.0	6,661.8	6,967.6	6,716.6	20.6	19.0	103.77	35.4	232.9	248.1	210.4	37.76	6.572			
7,000.0	6,677.2	7,021.8	6,735.1	20.5	19.1	104.16	-15.6	232.8	248.5	210.5	38.03	6.535			
7,050.0	6,689.4	7,076.2	6,749.9	20.5	19.3	104.49	-67.8	232.8	248.9	210.4	38.46	6.472			
7,100.0	6,698.5	7,130.6	6,761.0	20.5	19.6	104.75	-121.2	232.8	249.2	210.1	39.06	6.380			
7,150.0	6,704.3	7,185.2	6,768.3	20.8	20.1	104.94	-175.2	232.7	249.4	209.6	39.81	6.266			
7,200.0	6,706.9	7,239.8	6,771.7	21.2	20.6	105.07	-229.7	232.7	249.6	208.9	40.72	6.130			
7,219.2	6,707.0	7,260.9	6,772.0	21.4	20.8	105.10	-250.8	232.7	249.6	208.5	41.10	6.074			
7,219.3	6,707.0	7,261.0	6,772.0	21.4	20.8	105.10	-250.9	232.7	249.6	208.5	41.10	6.073			
7,220.0	6,707.0	7,261.7	6,772.0	21.4	20.8	105.10	-251.6	232.7	249.6	208.5	41.11	6.072			
7,300.0	6,706.5	7,342.0	6,771.5	22.2	21.6	105.10	-331.9	232.6	249.6	207.1	42.55	5.866			
7,400.0	6,705.8	7,442.0	6,770.8	23.4	22.9	105.10	-431.9	232.5	249.6	204.7	44.94	5.555			
7,500.0	6,705.1	7,542.0	6,770.2	24.8	24.3	105.10	-531.9	232.4	249.6	202.0	47.64	5.240			
7,600.0	6,704.5	7,642.0	6,769.5	26.4	25.8	105.10	-631.9	232.4	249.6	199.0	50.61	4.932			
7,700.0	6,703.8	7,742.0	6,768.8	28.0	27.5	105.10	-731.9	232.3	249.6	195.8	53.80	4.639			
7,800.0	6,703.2	7,842.0	6,768.2	29.7	29.2	105.10	-831.9	232.2	249.6	192.4	57.18	4.365			
7,900.0	6,702.5	7,942.0	6,767.5	31.5	31.0	105.10	-931.9	232.2	249.6	188.9	60.72	4.111			

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 29U-243
<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 29U-243	<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-323 - Wellbore #1 - Plan #2 (1-25-17)														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance								Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
8,000.0	6,701.8	8,042.0	6,766.9	33.4	32.9	105.10	-1,031.9	232.1	249.6	185.2	64.38	3.877			
8,100.0	6,701.2	8,142.0	6,766.2	35.3	34.9	105.10	-1,131.9	232.0	249.6	181.4	68.16	3.662			
8,200.0	6,700.5	8,242.0	6,765.5	37.2	36.9	105.10	-1,231.9	231.9	249.6	177.6	72.02	3.466			
8,300.0	6,699.9	8,342.0	6,764.9	39.2	38.9	105.10	-1,331.9	231.9	249.6	173.6	75.97	3.286			
8,400.0	6,699.2	8,442.0	6,764.2	41.3	41.0	105.10	-1,431.9	231.8	249.6	169.6	79.97	3.121			
8,500.0	6,698.5	8,542.0	6,763.6	43.4	43.1	105.10	-1,531.9	231.7	249.6	165.5	84.04	2.970			
8,600.0	6,697.9	8,642.0	6,762.9	45.5	45.2	105.10	-1,631.9	231.6	249.6	161.4	88.16	2.831			
8,700.0	6,697.2	8,742.0	6,762.2	47.6	47.3	105.10	-1,731.9	231.6	249.6	157.3	92.31	2.704			
8,800.0	6,696.5	8,842.0	6,761.6	49.7	49.5	105.10	-1,831.9	231.5	249.6	153.1	96.51	2.586			
8,900.0	6,695.9	8,942.0	6,760.9	51.9	51.6	105.10	-1,931.9	231.4	249.6	148.8	100.73	2.478			
9,000.0	6,695.2	9,042.0	6,760.2	54.0	53.8	105.10	-2,031.9	231.4	249.6	144.6	104.99	2.377			
9,100.0	6,694.6	9,142.0	6,759.6	56.2	56.0	105.10	-2,131.9	231.3	249.6	140.3	109.27	2.284			
9,200.0	6,693.9	9,242.0	6,758.9	58.4	58.2	105.10	-2,231.9	231.2	249.6	136.0	113.57	2.197			
9,300.0	6,693.2	9,342.0	6,758.3	60.6	60.5	105.10	-2,331.9	231.1	249.6	131.7	117.89	2.117			
9,400.0	6,692.6	9,442.0	6,757.6	62.9	62.7	105.10	-2,431.9	231.1	249.6	127.3	122.23	2.042			
9,500.0	6,691.9	9,542.0	6,756.9	65.1	65.0	105.10	-2,531.9	231.0	249.6	123.0	126.58	1.971			
9,600.0	6,691.3	9,642.0	6,756.3	67.3	67.2	105.10	-2,631.9	230.9	249.6	118.6	130.95	1.906			
9,700.0	6,690.6	9,742.0	6,755.6	69.6	69.5	105.10	-2,731.9	230.8	249.5	114.2	135.33	1.844			
9,800.0	6,689.9	9,842.0	6,755.0	71.8	71.7	105.10	-2,831.8	230.8	249.5	109.8	139.73	1.786			
9,900.0	6,689.3	9,942.0	6,754.3	74.1	74.0	105.10	-2,931.8	230.7	249.5	105.4	144.13	1.731			
10,000.0	6,688.6	10,042.0	6,753.6	76.3	76.3	105.10	-3,031.8	230.6	249.5	101.0	148.55	1.680			
10,100.0	6,687.9	10,142.0	6,753.0	78.6	78.5	105.10	-3,131.8	230.6	249.5	96.6	152.97	1.631			
10,200.0	6,687.3	10,242.0	6,752.3	80.9	80.8	105.10	-3,231.8	230.5	249.5	92.1	157.40	1.585			
10,300.0	6,686.6	10,342.0	6,751.6	83.2	83.1	105.10	-3,331.8	230.4	249.5	87.7	161.84	1.542			
10,400.0	6,686.0	10,442.0	6,751.0	85.4	85.4	105.10	-3,431.8	230.3	249.5	83.2	166.28	1.501			
10,500.0	6,685.3	10,542.0	6,750.3	87.7	87.7	105.10	-3,531.8	230.3	249.5	78.8	170.73	1.461 Level 3			
10,600.0	6,684.6	10,642.0	6,749.7	90.0	90.0	105.10	-3,631.8	230.2	249.5	74.3	175.19	1.424 Level 3			
10,700.0	6,684.0	10,742.0	6,749.0	92.3	92.3	105.11	-3,731.8	230.1	249.5	69.9	179.65	1.389 Level 3			
10,800.0	6,683.3	10,842.0	6,748.3	94.6	94.6	105.11	-3,831.8	230.0	249.5	65.4	184.12	1.355 Level 3			
10,900.0	6,682.7	10,942.0	6,747.7	96.9	96.9	105.11	-3,931.8	230.0	249.5	60.9	188.59	1.323 Level 3			
11,000.0	6,682.0	11,042.0	6,747.0	99.2	99.2	105.11	-4,031.8	229.9	249.5	56.4	193.07	1.292 Level 3			
11,100.0	6,681.3	11,142.0	6,746.4	101.5	101.5	105.11	-4,131.8	229.8	249.5	52.0	197.55	1.263 Level 3			
11,200.0	6,680.7	11,242.0	6,745.7	103.8	103.8	105.11	-4,231.8	229.8	249.5	47.5	202.03	1.235 Level 2			
11,300.0	6,680.0	11,342.0	6,745.0	106.1	106.1	105.11	-4,331.8	229.7	249.5	43.0	206.52	1.208 Level 2			
11,400.0	6,679.4	11,442.0	6,744.4	108.4	108.4	105.11	-4,431.8	229.6	249.5	38.5	211.01	1.182 Level 2			
11,500.0	6,678.7	11,542.0	6,743.7	110.7	110.7	105.11	-4,531.8	229.5	249.5	34.0	215.51	1.158 Level 2			
11,600.0	6,678.0	11,642.0	6,743.0	113.0	113.1	105.11	-4,631.8	229.5	249.5	29.5	220.00	1.134 Level 2			
11,700.0	6,677.4	11,742.0	6,742.4	115.3	115.4	105.11	-4,731.8	229.4	249.5	25.0	224.50	1.111 Level 2			
11,800.0	6,676.7	11,842.0	6,741.7	117.7	117.7	105.11	-4,831.8	229.3	249.5	20.5	229.01	1.089 Level 2			
11,900.0	6,676.0	11,942.0	6,741.1	120.0	120.0	105.11	-4,931.8	229.2	249.5	16.0	233.51	1.068 Level 2			
12,000.0	6,675.4	12,042.0	6,740.4	122.3	122.3	105.11	-5,031.8	229.2	249.5	11.5	238.02	1.048 Level 2			
12,100.0	6,674.7	12,142.0	6,739.7	124.6	124.7	105.11	-5,131.8	229.1	249.5	7.0	242.53	1.029 Level 2			
12,200.0	6,674.1	12,242.0	6,739.1	126.9	127.0	105.11	-5,231.8	229.0	249.5	2.4	247.04	1.010 Level 2			
12,300.0	6,673.4	12,342.0	6,738.4	129.2	129.3	105.11	-5,331.8	229.0	249.5	-2.1	251.55	0.992 Level 1			
12,400.0	6,672.7	12,442.0	6,737.8	131.6	131.6	105.11	-5,431.8	228.9	249.5	-6.6	256.06	0.974 Level 1			
12,500.0	6,672.1	12,542.0	6,737.1	133.9	134.0	105.11	-5,531.8	228.8	249.5	-11.1	260.58	0.957 Level 1			
12,600.0	6,671.4	12,642.0	6,736.4	136.2	136.3	105.11	-5,631.8	228.7	249.5	-15.6	265.10	0.941 Level 1			
12,700.0	6,670.8	12,742.0	6,735.8	138.5	138.6	105.11	-5,731.8	228.7	249.5	-20.2	269.62	0.925 Level 1			
12,800.0	6,670.1	12,842.0	6,735.1	140.9	140.9	105.11	-5,831.8	228.6	249.5	-24.7	274.14	0.910 Level 1			
12,900.0	6,669.4	12,942.0	6,734.4	143.2	143.3	105.11	-5,931.8	228.5	249.5	-29.2	278.66	0.895 Level 1			
13,000.0	6,668.8	13,042.0	6,733.8	145.5	145.6	105.11	-6,031.8	228.4	249.4	-33.7	283.18	0.881 Level 1			

CC - Min centre to center distance or covergent 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 29U-243
<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 29U-243	<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-323 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
13,100.0	6,668.1	13,142.0	6,733.1	147.8	147.9	105.11	-6,131.8	228.4	249.4	-38.3	287.71	0.867	Level 1	
13,200.0	6,667.4	13,242.0	6,732.5	150.2	150.3	105.11	-6,231.8	228.3	249.4	-42.8	292.24	0.854	Level 1	
13,300.0	6,666.8	13,342.0	6,731.8	152.5	152.6	105.11	-6,331.8	228.2	249.4	-47.3	296.76	0.841	Level 1	
13,400.0	6,666.1	13,442.0	6,731.1	154.8	154.9	105.11	-6,431.8	228.2	249.4	-51.9	301.29	0.828	Level 1	
13,500.0	6,665.5	13,542.0	6,730.5	157.2	157.3	105.11	-6,531.8	228.1	249.4	-56.4	305.82	0.816	Level 1	
13,600.0	6,664.8	13,642.0	6,729.8	159.5	159.6	105.11	-6,631.8	228.0	249.4	-60.9	310.35	0.804	Level 1	
13,700.0	6,664.1	13,742.0	6,729.2	161.8	161.9	105.11	-6,731.8	227.9	249.4	-65.5	314.88	0.792	Level 1	
13,800.0	6,663.5	13,842.0	6,728.5	164.2	164.3	105.11	-6,831.8	227.9	249.4	-70.0	319.42	0.781	Level 1	
13,900.0	6,662.8	13,942.0	6,727.8	166.5	166.6	105.11	-6,931.8	227.8	249.4	-74.5	323.95	0.770	Level 1	
14,000.0	6,662.2	14,042.0	6,727.2	168.8	168.9	105.11	-7,031.8	227.7	249.4	-79.1	328.48	0.759	Level 1	
14,023.3	6,662.0	14,065.4	6,727.0	169.4	169.5	105.11	-7,055.1	227.7	249.4	-80.1	329.54	0.757	Level 1, ES, SF	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29U-243
<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 29U-243	<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-423 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft	
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-89.33	0.4	-30.1	30.1						
100.0	100.0	99.0	99.0	0.1	0.1	-89.33	0.4	-30.1	30.1	29.8	0.27	109.843	CC, ES		
200.0	200.0	199.0	199.0	0.4	0.4	-89.33	0.4	-30.1	30.1	29.3	0.82	36.554			
300.0	300.0	299.0	299.0	0.7	0.7	-89.33	0.4	-30.1	30.1	28.7	1.37	21.903			
400.0	400.0	399.0	399.0	1.0	1.0	-89.33	0.4	-30.1	30.1	28.2	1.92	15.636			
500.0	500.0	499.0	499.0	1.2	1.2	-133.59	0.4	-30.1	31.0	28.5	2.47	12.526			
600.0	599.9	598.9	598.9	1.5	1.5	-138.39	0.4	-30.1	33.8	30.8	3.02	11.178			
700.0	699.7	698.7	698.7	1.8	1.8	-144.74	0.4	-30.1	38.9	35.4	3.58	10.869			
800.0	799.3	798.3	798.3	2.1	2.1	-151.17	0.4	-30.1	46.7	42.6	4.15	11.268			
900.0	898.6	897.6	897.6	2.4	2.3	-156.78	0.4	-30.1	57.3	52.6	4.71	12.164			
1,000.0	997.5	996.5	996.5	2.8	2.6	-161.29	0.4	-30.1	70.7	65.5	5.28	13.409			
1,100.0	1,096.1	1,095.1	1,095.1	3.2	2.9	-164.81	0.4	-30.1	87.0	81.1	5.84	14.895			
1,200.0	1,194.2	1,193.2	1,193.2	3.7	3.1	-167.51	0.4	-30.1	105.9	99.5	6.40	16.552			
1,233.4	1,226.8	1,225.8	1,225.8	3.8	3.2	-168.26	0.4	-30.1	112.9	106.3	6.59	17.135			
1,300.0	1,291.8	1,290.8	1,290.8	4.1	3.4	-169.59	0.4	-30.1	127.0	120.1	6.96	18.249			
1,400.0	1,389.5	1,388.5	1,388.5	4.7	3.7	-171.10	0.4	-30.1	148.4	140.9	7.53	19.715			
1,500.0	1,487.1	1,486.1	1,486.1	5.2	4.0	-172.23	0.4	-30.1	169.8	161.7	8.10	20.975			
1,600.0	1,584.7	1,583.7	1,583.7	5.7	4.2	-173.10	0.4	-30.1	191.3	182.6	8.67	22.066			
1,700.0	1,682.3	1,681.3	1,681.3	6.3	4.5	-173.80	0.4	-30.1	212.8	203.6	9.24	23.018			
1,800.0	1,780.0	1,779.0	1,779.0	6.8	4.8	-174.37	0.4	-30.1	234.3	224.5	9.82	23.855			
1,900.0	1,877.6	1,876.6	1,876.6	7.4	5.0	-174.85	0.4	-30.1	255.9	245.5	10.40	24.596			
2,000.0	1,975.2	1,974.2	1,974.2	7.9	5.3	-175.25	0.4	-30.1	277.5	266.5	10.99	25.256			
2,100.0	2,072.9	2,071.9	2,071.9	8.5	5.6	-175.59	0.4	-30.1	299.0	287.5	11.57	25.847			
2,200.0	2,170.5	2,169.5	2,169.5	9.0	5.8	-175.89	0.4	-30.1	320.6	308.5	12.15	26.380			
2,300.0	2,268.1	2,267.1	2,267.1	9.6	6.1	-176.15	0.4	-30.1	342.2	329.5	12.74	26.862			
2,400.0	2,365.7	2,364.7	2,364.7	10.1	6.4	-176.38	0.4	-30.1	363.8	350.5	13.33	27.300			
2,500.0	2,463.4	2,462.4	2,462.4	10.7	6.6	-176.58	0.4	-30.1	385.4	371.5	13.91	27.700			
2,600.0	2,561.0	2,565.3	2,565.3	11.3	6.9	-176.72	0.9	-30.0	406.6	392.1	14.52	28.014			
2,700.0	2,658.6	2,672.3	2,672.2	11.8	7.2	-176.61	4.2	-29.7	425.9	410.8	15.13	28.157			
2,800.0	2,756.3	2,780.0	2,779.8	12.4	7.5	-176.24	10.6	-29.2	443.2	427.4	15.75	28.145			
2,900.0	2,853.9	2,888.4	2,887.8	12.9	7.8	-175.65	20.0	-28.3	458.3	441.9	16.37	27.992			
3,000.0	2,951.5	2,997.3	2,995.9	13.5	8.1	-174.85	32.5	-27.2	471.4	454.3	17.01	27.711			
3,100.0	3,049.2	3,106.4	3,103.8	14.1	8.4	-173.84	48.2	-25.8	482.4	464.8	17.67	27.309			
3,200.0	3,146.8	3,210.7	3,206.7	14.6	8.8	-172.70	65.7	-24.2	491.8	473.5	18.33	26.834			
3,300.0	3,244.4	3,309.9	3,304.3	15.2	9.1	-171.64	82.8	-22.6	501.1	482.1	18.99	26.384			
3,400.0	3,342.0	3,409.0	3,402.0	15.8	9.4	-170.61	99.8	-21.1	510.6	490.9	19.67	25.953			
3,500.0	3,439.7	3,508.1	3,499.6	16.3	9.8	-169.62	116.9	-19.5	520.2	499.9	20.37	25.540			
3,600.0	3,537.3	3,607.3	3,597.3	16.9	10.1	-168.66	133.9	-18.0	530.0	508.9	21.08	25.144			
3,700.0	3,634.9	3,706.4	3,694.9	17.5	10.5	-167.74	151.0	-16.4	539.9	518.1	21.80	24.765			
3,746.1	3,679.9	3,752.1	3,739.9	17.7	10.7	-167.33	158.8	-15.7	544.5	522.4	22.14	24.596			
3,800.0	3,732.7	3,805.6	3,792.6	18.0	10.9	-166.87	168.0	-14.9	549.5	526.9	22.56	24.360			
3,900.0	3,831.0	3,904.9	3,890.5	18.4	11.3	-165.95	185.1	-13.3	556.2	532.9	23.29	23.882			
4,000.0	3,929.9	4,004.4	3,988.4	18.7	11.7	-164.96	202.2	-11.8	559.6	535.6	24.00	23.317			
4,100.0	4,029.3	4,103.8	4,086.3	19.0	12.1	-163.86	219.3	-10.2	559.9	535.2	24.69	22.673			
4,200.0	4,129.0	4,203.1	4,184.1	19.3	12.5	-162.65	236.3	-8.7	557.0	531.7	25.37	21.956			
4,300.0	4,228.9	4,302.0	4,281.6	19.5	12.9	-161.29	253.4	-7.1	551.1	525.1	26.03	21.173			
4,371.1	4,300.0	4,372.2	4,350.7	19.6	13.2	-117.75	265.4	-6.1	545.1	518.6	26.49	20.578			
4,400.0	4,328.9	4,400.6	4,378.7	19.6	13.3	-117.31	270.3	-5.6	542.4	515.7	26.70	20.313			
4,500.0	4,428.9	4,499.1	4,475.8	19.8	13.7	-115.76	287.3	-4.1	533.2	505.8	27.46	19.415			
4,600.0	4,528.9	4,597.6	4,572.8	19.9	14.1	-114.16	304.2	-2.5	524.5	496.2	28.24	18.569			
4,700.0	4,628.9	4,696.1	4,669.8	20.1	14.5	-112.51	321.1	-1.0	516.1	487.1	29.04	17.772			

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 29U-243
<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 29U-243	<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-423 - Wellbore #1 - Plan #2 (1-25-17)											Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
4,800.0	4,728.9	4,794.6	4,766.8	20.2	14.9	-110.81	338.1	0.5	508.2	478.4	29.86	17.023			
4,900.0	4,828.9	4,893.1	4,863.8	20.4	15.4	-109.06	355.0	2.1	500.8	470.1	30.69	16.321			
5,000.0	4,928.9	4,991.6	4,960.9	20.6	15.8	-107.25	371.9	3.6	493.9	462.3	31.53	15.664			
5,100.0	5,028.9	5,090.1	5,057.9	20.7	16.2	-105.40	388.9	5.1	487.5	455.1	32.39	15.051			
5,200.0	5,128.9	5,188.6	5,154.9	20.9	16.7	-103.50	405.8	6.7	481.6	448.3	33.25	14.481			
5,300.0	5,228.9	5,287.1	5,251.9	21.1	17.1	-101.56	422.8	8.2	476.2	442.1	34.13	13.953			
5,400.0	5,328.9	5,385.6	5,348.9	21.3	17.5	-99.58	439.7	9.7	471.5	436.5	35.02	13.465			
5,500.0	5,428.9	5,484.1	5,445.9	21.4	18.0	-97.56	456.6	11.3	467.3	431.4	35.90	13.016			
5,600.0	5,528.9	5,581.5	5,541.9	21.6	18.4	-95.57	473.1	12.8	463.8	427.1	36.76	12.617			
5,700.0	5,628.9	5,677.8	5,637.2	21.8	18.7	-93.88	486.9	14.0	461.3	423.8	37.49	12.306			
5,800.0	5,728.9	5,774.9	5,733.7	22.0	19.0	-92.57	497.5	15.0	459.7	421.6	38.13	12.056			
5,900.0	5,828.9	5,872.6	5,831.1	22.2	19.2	-91.65	504.9	15.7	458.7	420.0	38.69	11.855			
6,000.0	5,928.9	5,970.7	5,929.1	22.4	19.4	-91.14	509.0	16.0	458.3	419.1	39.18	11.696			
6,014.2	5,943.1	5,984.7	5,943.1	22.4	19.5	-91.10	509.3	16.1	458.2	419.0	39.24	11.677			
6,050.0	5,978.9	6,019.8	5,978.2	22.5	19.5	89.03	509.8	16.1	458.2	418.8	39.39	11.630			
6,100.0	6,028.7	6,069.3	6,027.7	22.5	19.6	89.53	509.9	16.1	458.1	418.5	39.59	11.571			
6,128.7	6,057.2	6,097.8	6,056.2	22.5	19.7	90.00	509.9	16.1	458.1	418.4	39.70	11.538			
6,150.0	6,078.2	6,118.8	6,077.2	22.5	19.7	90.43	509.9	16.1	458.1	418.3	39.80	11.511			
6,200.0	6,127.1	6,168.1	6,126.6	22.5	19.8	91.64	509.3	16.1	458.3	418.3	39.99	11.461			
6,250.0	6,175.2	6,218.3	6,176.6	22.4	19.9	92.89	505.8	16.1	458.7	418.6	40.10	11.439			
6,300.0	6,222.3	6,269.2	6,227.0	22.4	19.9	94.14	498.9	16.1	459.3	419.2	40.13	11.445			
6,350.0	6,268.2	6,320.8	6,277.5	22.3	19.9	95.37	488.5	16.1	460.2	420.1	40.09	11.479			
6,400.0	6,312.7	6,373.1	6,327.9	22.2	19.9	96.59	474.5	16.1	461.3	421.3	39.97	11.540			
6,450.0	6,355.6	6,426.2	6,378.0	22.0	19.8	97.78	456.8	16.1	462.5	422.7	39.78	11.627			
6,500.0	6,396.8	6,480.2	6,427.4	21.9	19.7	98.94	435.3	16.1	463.9	424.4	39.53	11.737			
6,550.0	6,436.0	6,534.9	6,475.9	21.7	19.6	100.06	410.0	16.0	465.5	426.3	39.22	11.868			
6,600.0	6,473.1	6,590.4	6,523.1	21.6	19.4	101.15	380.8	16.0	467.2	428.3	38.88	12.016			
6,650.0	6,508.0	6,646.7	6,568.8	21.4	19.3	102.18	347.7	16.0	468.9	430.4	38.51	12.176			
6,700.0	6,540.4	6,703.9	6,612.4	21.3	19.1	103.16	310.9	16.0	470.7	432.6	38.15	12.339			
6,750.0	6,570.3	6,761.8	6,653.7	21.1	19.0	104.07	270.3	16.0	472.6	434.7	37.82	12.496			
6,800.0	6,597.5	6,820.5	6,692.3	21.0	18.9	104.92	226.1	15.9	474.4	436.8	37.54	12.638			
6,850.0	6,621.8	6,879.9	6,727.9	20.8	18.9	105.70	178.5	15.9	476.1	438.8	37.34	12.752			
6,900.0	6,643.3	6,940.0	6,759.9	20.7	18.9	106.41	127.7	15.9	477.8	440.5	37.24	12.827			
6,950.0	6,661.8	7,000.8	6,788.1	20.6	19.0	107.03	73.9	15.8	479.3	442.0	37.29	12.853			
7,000.0	6,677.2	7,062.1	6,812.2	20.5	19.2	107.56	17.5	15.8	480.6	443.1	37.50	12.816			
7,050.0	6,689.4	7,123.8	6,831.8	20.5	19.4	108.01	-41.0	15.7	481.8	443.9	37.89	12.715			
7,100.0	6,698.5	7,186.0	6,846.6	20.5	19.8	108.36	-101.4	15.7	482.7	444.2	38.46	12.551			
7,150.0	6,704.3	7,248.5	6,856.6	20.8	20.2	108.61	-163.1	15.7	483.4	444.2	39.22	12.326			
7,200.0	6,706.9	7,311.3	6,861.5	21.2	20.8	108.77	-225.6	15.6	483.8	443.6	40.16	12.045			
7,219.2	6,707.0	7,335.4	6,862.0	21.4	21.0	108.81	-249.8	15.6	483.9	443.3	40.57	11.926			
7,219.3	6,707.0	7,335.6	6,862.0	21.4	21.0	108.81	-249.9	15.6	483.9	443.3	40.58	11.926			
7,220.0	6,707.0	7,336.4	6,862.0	21.4	21.0	108.81	-250.8	15.6	483.9	443.3	40.59	11.922			
7,300.0	6,706.5	7,417.0	6,862.0	22.2	21.7	108.87	-331.3	15.5	484.1	442.1	41.97	11.534			
7,400.0	6,705.8	7,517.0	6,862.0	23.4	23.0	108.94	-431.3	15.5	484.3	440.0	44.31	10.930			
7,500.0	6,705.1	7,617.0	6,862.0	24.8	24.3	109.01	-531.3	15.4	484.5	437.5	46.96	10.318			
7,600.0	6,704.5	7,717.0	6,862.0	26.4	25.9	109.09	-631.3	15.3	484.7	434.8	49.87	9.720			
7,700.0	6,703.8	7,817.0	6,862.0	28.0	27.5	109.16	-731.3	15.3	484.9	431.9	53.00	9.150			
7,800.0	6,703.2	7,917.0	6,862.0	29.7	29.3	109.24	-831.3	15.2	485.1	428.8	56.30	8.617			
7,900.0	6,702.5	8,017.0	6,862.0	31.5	31.1	109.31	-931.3	15.1	485.3	425.6	59.76	8.122			
8,000.0	6,701.8	8,117.0	6,862.0	33.4	33.0	109.38	-1,031.3	15.0	485.6	422.2	63.34	7.666			

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 29U-243
<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 29U-243	<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-423 - Wellbore #1 - Plan #2 (1-25-17)											Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
8,100.0	6,701.2	8,217.0	6,862.0	35.3	34.9	109.46	-1,131.3	15.0	485.8	418.8	67.02	7.248			
8,200.0	6,700.5	8,317.0	6,862.0	37.2	36.9	109.53	-1,231.3	14.9	486.0	415.2	70.79	6.866			
8,300.0	6,699.9	8,417.0	6,862.0	39.2	38.9	109.61	-1,331.3	14.8	486.2	411.6	74.63	6.515			
8,400.0	6,699.2	8,517.0	6,862.0	41.3	41.0	109.68	-1,431.3	14.7	486.4	407.9	78.53	6.194			
8,500.0	6,698.5	8,616.9	6,862.0	43.4	43.1	109.75	-1,531.3	14.7	486.7	404.2	82.49	5.900			
8,600.0	6,697.9	8,716.9	6,862.0	45.5	45.2	109.83	-1,631.3	14.6	486.9	400.4	86.49	5.629			
8,700.0	6,697.2	8,816.9	6,862.0	47.6	47.4	109.90	-1,731.3	14.5	487.1	396.6	90.53	5.381			
8,800.0	6,696.5	8,916.9	6,862.0	49.7	49.5	109.97	-1,831.3	14.4	487.3	392.7	94.60	5.152			
8,900.0	6,695.9	9,016.9	6,862.0	51.9	51.7	110.04	-1,931.3	14.4	487.6	388.9	98.70	4.940			
9,000.0	6,695.2	9,116.9	6,862.0	54.0	53.9	110.12	-2,031.3	14.3	487.8	385.0	102.82	4.744			
9,100.0	6,694.6	9,216.9	6,862.0	56.2	56.1	110.19	-2,131.3	14.2	488.0	381.0	106.96	4.562			
9,200.0	6,693.9	9,316.9	6,862.0	58.4	58.3	110.26	-2,231.3	14.1	488.2	377.1	111.13	4.394			
9,300.0	6,693.2	9,416.9	6,862.0	60.6	60.5	110.34	-2,331.3	14.1	488.5	373.2	115.30	4.236			
9,400.0	6,692.6	9,516.9	6,862.0	62.9	62.8	110.41	-2,431.3	14.0	488.7	369.2	119.50	4.090			
9,500.0	6,691.9	9,616.9	6,862.0	65.1	65.0	110.48	-2,531.3	13.9	488.9	365.2	123.70	3.952			
9,600.0	6,691.3	9,716.9	6,862.0	67.3	67.3	110.56	-2,631.3	13.9	489.1	361.2	127.91	3.824			
9,700.0	6,690.6	9,816.9	6,862.0	69.6	69.5	110.63	-2,731.3	13.8	489.4	357.2	132.14	3.704			
9,800.0	6,689.9	9,916.9	6,862.0	71.8	71.8	110.70	-2,831.3	13.7	489.6	353.2	136.37	3.590			
9,900.0	6,689.3	10,016.9	6,862.0	74.1	74.1	110.77	-2,931.3	13.6	489.8	349.2	140.60	3.484			
10,000.0	6,688.6	10,116.9	6,862.0	76.3	76.3	110.85	-3,031.3	13.6	490.1	345.2	144.85	3.383			
10,100.0	6,687.9	10,216.9	6,862.0	78.6	78.6	110.92	-3,131.2	13.5	490.3	341.2	149.10	3.288			
10,200.0	6,687.3	10,316.9	6,862.0	80.9	80.9	110.99	-3,231.2	13.4	490.5	337.2	153.35	3.199			
10,300.0	6,686.6	10,416.9	6,862.0	83.2	83.2	111.06	-3,331.2	13.3	490.8	333.2	157.61	3.114			
10,400.0	6,686.0	10,516.9	6,862.0	85.4	85.5	111.13	-3,431.2	13.3	491.0	329.1	161.87	3.033			
10,500.0	6,685.3	10,616.9	6,862.0	87.7	87.8	111.21	-3,531.2	13.2	491.2	325.1	166.13	2.957			
10,600.0	6,684.6	10,716.9	6,862.0	90.0	90.1	111.28	-3,631.2	13.1	491.5	321.1	170.39	2.884			
10,700.0	6,684.0	10,816.9	6,862.0	92.3	92.4	111.35	-3,731.2	13.0	491.7	317.1	174.66	2.815			
10,800.0	6,683.3	10,916.9	6,862.0	94.6	94.7	111.42	-3,831.2	13.0	492.0	313.0	178.92	2.750			
10,900.0	6,682.7	11,016.9	6,862.0	96.9	97.0	111.49	-3,931.2	12.9	492.2	309.0	183.19	2.687			
11,000.0	6,682.0	11,116.9	6,862.0	99.2	99.3	111.57	-4,031.2	12.8	492.4	305.0	187.46	2.627			
11,100.0	6,681.3	11,216.9	6,862.0	101.5	101.6	111.64	-4,131.2	12.7	492.7	301.0	191.73	2.570			
11,200.0	6,680.7	11,316.9	6,862.0	103.8	103.9	111.71	-4,231.2	12.7	492.9	296.9	195.99	2.515			
11,300.0	6,680.0	11,416.9	6,862.0	106.1	106.2	111.78	-4,331.2	12.6	493.2	292.9	200.26	2.463			
11,400.0	6,679.4	11,516.9	6,862.0	108.4	108.5	111.85	-4,431.2	12.5	493.4	288.9	204.53	2.412			
11,500.0	6,678.7	11,616.9	6,862.0	110.7	110.8	111.92	-4,531.2	12.5	493.7	284.9	208.79	2.364			
11,600.0	6,678.0	11,716.9	6,862.0	113.0	113.1	111.99	-4,631.2	12.4	493.9	280.8	213.06	2.318			
11,700.0	6,677.4	11,816.9	6,862.0	115.3	115.5	112.06	-4,731.2	12.3	494.1	276.8	217.32	2.274			
11,800.0	6,676.7	11,916.9	6,862.0	117.7	117.8	112.14	-4,831.2	12.2	494.4	272.8	221.59	2.231			
11,900.0	6,676.0	12,016.9	6,862.0	120.0	120.1	112.21	-4,931.2	12.2	494.6	268.8	225.85	2.190			
12,000.0	6,675.4	12,116.9	6,862.0	122.3	122.4	112.28	-5,031.2	12.1	494.9	264.8	230.11	2.151			
12,100.0	6,674.7	12,216.9	6,862.0	124.6	124.7	112.35	-5,131.2	12.0	495.1	260.8	234.36	2.113			
12,200.0	6,674.1	12,316.9	6,862.0	126.9	127.1	112.42	-5,231.2	11.9	495.4	256.8	238.62	2.076			
12,300.0	6,673.4	12,416.9	6,862.0	129.2	129.4	112.49	-5,331.2	11.9	495.6	252.8	242.87	2.041			
12,400.0	6,672.7	12,516.9	6,862.0	131.6	131.7	112.56	-5,431.2	11.8	495.9	248.8	247.12	2.007			
12,500.0	6,672.1	12,616.9	6,862.0	133.9	134.1	112.63	-5,531.2	11.7	496.1	244.8	251.37	1.974			
12,600.0	6,671.4	12,716.9	6,862.0	136.2	136.4	112.70	-5,631.2	11.6	496.4	240.8	255.62	1.942			
12,700.0	6,670.8	12,816.9	6,862.0	138.5	138.7	112.77	-5,731.2	11.6	496.6	236.8	259.86	1.911			
12,800.0	6,670.1	12,916.9	6,862.0	140.9	141.0	112.84	-5,831.2	11.5	496.9	232.8	264.11	1.881			
12,900.0	6,669.4	13,016.9	6,862.0	143.2	143.4	112.91	-5,931.2	11.4	497.2	228.8	268.35	1.853			
13,000.0	6,668.8	13,116.9	6,862.0	145.5	145.7	112.98	-6,031.2	11.3	497.4	224.8	272.58	1.825			
13,100.0	6,668.1	13,216.8	6,862.0	147.8	148.0	113.05	-6,131.2	11.3	497.7	220.9	276.82	1.798			

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 29U-243
<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 29U-243	<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-423 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program:		0-MWD											Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
13,200.0	6,667.4	13,316.8	6,862.0	150.2	150.4	113.12	-6,231.2	11.2	497.9	216.9	281.05	1.772		
13,300.0	6,666.8	13,416.8	6,862.0	152.5	152.7	113.19	-6,331.2	11.1	498.2	212.9	285.28	1.746		
13,400.0	6,666.1	13,516.8	6,862.0	154.8	155.0	113.26	-6,431.2	11.1	498.4	208.9	289.50	1.722		
13,500.0	6,665.5	13,616.8	6,862.0	157.2	157.4	113.33	-6,531.2	11.0	498.7	205.0	293.72	1.698		
13,600.0	6,664.8	13,716.8	6,862.0	159.5	159.7	113.40	-6,631.2	10.9	499.0	201.0	297.94	1.675		
13,700.0	6,664.1	13,816.8	6,862.0	161.8	162.0	113.47	-6,731.2	10.8	499.2	197.1	302.16	1.652		
13,800.0	6,663.5	13,916.8	6,862.0	164.2	164.4	113.54	-6,831.2	10.8	499.5	193.1	306.37	1.630		
13,900.0	6,662.8	14,016.8	6,862.0	166.5	166.7	113.61	-6,931.2	10.7	499.7	189.2	310.58	1.609		
14,000.0	6,662.2	14,116.8	6,862.0	168.8	169.0	113.68	-7,031.2	10.6	500.0	185.2	314.79	1.588		
14,023.3	6,662.0	14,140.2	6,862.0	169.4	169.6	113.70	-7,054.5	10.6	500.1	184.3	315.77	1.584 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29U-243
<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 29U-243	<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 29U-343 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:		0.0 ft	
Survey Program: 0-MWD														Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth	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	91.40	-0.4	15.0	15.1	15.1	0.00	N/A				
100.0	100.0	99.0	99.0	0.1	0.1	91.40	-0.4	15.0	15.1	14.8	0.27	54.934	CC			
200.0	200.0	199.0	199.0	0.4	0.4	91.40	-0.4	15.0	15.1	14.2	0.82	18.281				
300.0	300.0	298.7	298.7	0.7	0.7	88.55	0.4	16.1	16.1	14.7	1.37	11.731				
400.0	400.0	398.2	398.1	1.0	1.0	81.78	2.8	19.1	19.3	17.4	1.92	10.067				
500.0	500.0	497.6	497.3	1.2	1.2	33.72	6.7	24.2	24.1	21.6	2.47	9.771				
600.0	599.9	596.8	596.1	1.5	1.6	30.80	12.2	31.4	29.2	26.2	3.02	9.662				
700.0	699.7	695.9	694.5	1.8	1.9	29.45	19.2	40.5	34.5	30.9	3.59	9.617				
800.0	799.3	794.8	792.4	2.1	2.3	29.06	27.8	51.7	40.0	35.8	4.17	9.593				
900.0	898.6	893.6	889.8	2.4	2.7	29.28	37.9	64.9	45.6	40.9	4.77	9.567				
1,000.0	997.5	992.3	986.6	2.8	3.2	29.91	49.5	80.0	51.4	46.0	5.40	9.529				
1,100.0	1,096.1	1,090.8	1,082.7	3.2	3.7	30.81	62.6	97.1	57.4	51.3	6.06	9.470				
1,200.0	1,194.2	1,189.1	1,178.1	3.7	4.3	31.90	77.2	116.1	63.5	56.8	6.77	9.386				
1,233.4	1,226.8	1,221.9	1,209.8	3.8	4.5	32.30	82.4	122.8	65.6	58.6	7.02	9.351				
1,300.0	1,291.8	1,288.2	1,273.6	4.1	4.9	33.04	93.2	136.9	70.0	62.5	7.53	9.292				
1,400.0	1,389.5	1,388.0	1,369.8	4.7	5.5	33.98	109.4	158.0	76.6	68.3	8.32	9.202				
1,500.0	1,487.1	1,487.7	1,465.9	5.2	6.2	34.77	125.6	179.2	83.2	74.1	9.14	9.102				
1,600.0	1,584.7	1,587.5	1,562.1	5.7	6.8	35.45	141.9	200.4	89.9	79.9	9.98	9.006				
1,700.0	1,682.3	1,687.3	1,658.2	6.3	7.5	36.03	158.1	221.5	96.5	85.7	10.83	8.913				
1,800.0	1,780.0	1,787.1	1,754.4	6.8	8.2	36.54	174.4	242.7	103.2	91.5	11.69	8.826				
1,900.0	1,877.6	1,886.8	1,850.5	7.4	8.8	36.98	190.6	263.8	109.8	97.3	12.56	8.744				
2,000.0	1,975.2	1,986.6	1,946.6	7.9	9.5	37.38	206.8	285.0	116.5	103.1	13.44	8.669				
2,100.0	2,072.9	2,086.4	2,042.8	8.5	10.2	37.73	223.1	306.1	123.2	108.9	14.33	8.599				
2,200.0	2,170.5	2,186.2	2,138.9	9.0	10.9	38.04	239.3	327.3	129.9	114.6	15.22	8.534				
2,300.0	2,268.1	2,285.9	2,235.1	9.6	11.5	38.33	255.6	348.5	136.5	120.4	16.11	8.474				
2,400.0	2,365.7	2,385.7	2,331.2	10.1	12.2	38.59	271.8	369.6	143.2	126.2	17.01	8.419				
2,500.0	2,463.4	2,485.5	2,427.4	10.7	12.9	38.82	288.1	390.8	149.9	132.0	17.92	8.367				
2,600.0	2,561.0	2,585.3	2,523.5	11.3	13.6	39.04	304.3	411.9	156.6	137.8	18.82	8.320				
2,700.0	2,658.6	2,685.0	2,619.6	11.8	14.2	39.23	320.5	433.1	163.3	143.6	19.73	8.275				
2,800.0	2,756.3	2,784.8	2,715.8	12.4	14.9	39.42	336.8	454.2	170.0	149.4	20.65	8.234				
2,900.0	2,853.9	2,884.6	2,811.9	12.9	15.6	39.58	353.0	475.4	176.7	155.1	21.56	8.196				
3,000.0	2,951.5	2,984.4	2,908.1	13.5	16.3	39.74	369.3	496.6	183.4	160.9	22.48	8.160				
3,100.0	3,049.2	3,084.1	3,004.2	14.1	17.0	39.88	385.5	517.7	190.1	166.7	23.39	8.126				
3,200.0	3,146.8	3,183.9	3,100.4	14.6	17.6	40.02	401.8	538.9	196.8	172.5	24.31	8.095				
3,300.0	3,244.4	3,283.7	3,196.5	15.2	18.3	40.14	418.0	560.0	203.5	178.3	25.23	8.065				
3,400.0	3,342.0	3,383.5	3,292.6	15.8	19.0	40.26	434.2	581.2	210.2	184.1	26.15	8.037				
3,500.0	3,439.7	3,483.2	3,388.8	16.3	19.7	40.37	450.5	602.4	216.9	189.8	27.08	8.011				
3,600.0	3,537.3	3,586.8	3,488.7	16.9	20.3	40.55	467.0	623.9	223.2	195.2	28.01	7.968				
3,700.0	3,634.9	3,693.9	3,593.0	17.5	20.9	41.19	482.0	643.4	226.6	197.6	29.00	7.814				
3,746.1	3,679.9	3,743.3	3,641.3	17.7	21.1	41.66	488.1	651.4	227.1	197.6	29.48	7.703				
3,800.0	3,732.7	3,801.0	3,698.0	18.0	21.3	42.26	494.6	659.9	227.3	197.2	30.04	7.566				
3,900.0	3,831.0	3,908.1	3,803.8	18.4	21.7	43.29	504.9	673.2	227.1	196.2	30.94	7.342				
4,000.0	3,929.9	4,015.1	3,910.0	18.7	22.0	44.22	512.7	683.4	226.5	194.8	31.74	7.136				
4,100.0	4,029.3	4,121.9	4,016.5	19.0	22.3	45.06	518.0	690.4	225.3	192.9	32.44	6.946				
4,200.0	4,129.0	4,228.7	4,123.1	19.3	22.5	45.82	521.0	694.2	223.6	190.6	33.04	6.769				
4,300.0	4,228.9	4,333.5	4,227.9	19.5	22.6	46.46	521.6	695.0	221.5	188.0	33.53	6.606				
4,371.1	4,300.0	4,404.6	4,299.0	19.6	22.7	89.08	521.6	695.0	220.9	187.1	33.75	6.545				
4,400.0	4,328.9	4,433.5	4,327.9	19.6	22.7	89.08	521.6	695.0	220.9	187.0	33.85	6.526				
4,500.0	4,428.9	4,533.5	4,427.9	19.8	22.9	89.08	521.6	695.0	220.9	186.7	34.19	6.460				
4,600.0	4,528.9	4,633.5	4,527.9	19.9	23.0	89.08	521.6	695.0	220.9	186.3	34.54	6.394				
4,700.0	4,628.9	4,733.5	4,627.9	20.1	23.1	89.08	521.6	695.0	220.9	186.0	34.90	6.328				

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 29U-243
<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 29U-243	<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 29U-343 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
4,800.0	4,728.9	4,833.5	4,727.9	20.2	23.3	89.08	521.6	695.0	220.9	185.6	35.26	6.263		
4,900.0	4,828.9	4,933.5	4,827.9	20.4	23.4	89.08	521.6	695.0	220.9	185.2	35.63	6.199		
5,000.0	4,928.9	5,033.5	4,927.9	20.6	23.6	89.08	521.6	695.0	220.9	184.9	36.00	6.135		
5,100.0	5,028.9	5,133.5	5,027.9	20.7	23.7	89.08	521.6	695.0	220.9	184.5	36.38	6.071		
5,200.0	5,128.9	5,233.5	5,127.9	20.9	23.9	89.08	521.6	695.0	220.9	184.1	36.76	6.008		
5,300.0	5,228.9	5,333.5	5,227.9	21.1	24.0	89.08	521.6	695.0	220.9	183.7	37.15	5.946		
5,400.0	5,328.9	5,433.5	5,327.9	21.3	24.2	89.08	521.6	695.0	220.9	183.3	37.54	5.884		
5,500.0	5,428.9	5,533.5	5,427.9	21.4	24.3	89.08	521.6	695.0	220.9	182.9	37.93	5.823		
5,600.0	5,528.9	5,633.5	5,527.9	21.6	24.5	89.08	521.6	695.0	220.9	182.5	38.33	5.763		
5,700.0	5,628.9	5,733.5	5,627.9	21.8	24.6	89.08	521.6	695.0	220.9	182.1	38.73	5.703		
5,800.0	5,728.9	5,833.5	5,727.9	22.0	24.8	89.08	521.6	695.0	220.9	181.7	39.13	5.644		
5,900.0	5,828.9	5,933.5	5,827.9	22.2	25.0	89.08	521.6	695.0	220.9	181.3	39.54	5.586		
6,000.0	5,928.9	6,033.5	5,927.9	22.4	25.1	89.08	521.6	695.0	220.9	180.9	39.95	5.529		
6,014.2	5,943.1	6,047.7	5,942.1	22.4	25.2	89.08	521.6	695.0	220.9	180.9	40.01	5.521		
6,050.0	5,978.9	6,083.5	5,977.9	22.5	25.2	-91.17	521.6	695.0	220.9	180.8	40.10	5.509		
6,100.0	6,028.7	6,133.5	6,027.9	22.5	25.3	-92.13	521.4	695.0	221.0	181.0	40.01	5.524		
6,150.0	6,078.2	6,184.0	6,078.3	22.5	25.3	-93.24	518.4	695.0	221.2	181.4	39.81	5.556		
6,200.0	6,127.1	6,234.8	6,128.7	22.5	25.4	-94.33	512.1	695.0	221.5	181.9	39.55	5.600		
6,250.0	6,175.2	6,285.9	6,178.8	22.4	25.4	-95.41	502.3	695.0	221.8	182.6	39.24	5.653		
6,300.0	6,222.3	6,337.3	6,228.5	22.4	25.3	-96.46	489.1	695.0	222.3	183.4	38.89	5.715		
6,350.0	6,268.2	6,388.9	6,277.4	22.3	25.3	-97.49	472.6	695.0	222.8	184.3	38.50	5.785		
6,400.0	6,312.7	6,440.9	6,325.4	22.2	25.2	-98.48	452.6	695.0	223.3	185.2	38.09	5.862		
6,450.0	6,355.6	6,493.1	6,372.1	22.0	25.1	-99.43	429.3	695.0	223.9	186.2	37.67	5.943		
6,500.0	6,396.8	6,545.7	6,417.4	21.9	24.9	-100.34	402.7	695.0	224.5	187.3	37.25	6.027		
6,550.0	6,436.0	6,598.5	6,461.0	21.7	24.8	-101.19	372.9	695.0	225.2	188.3	36.84	6.112		
6,600.0	6,473.1	6,651.5	6,502.6	21.6	24.6	-102.00	340.0	694.9	225.8	189.4	36.46	6.194		
6,650.0	6,508.0	6,704.8	6,542.0	21.4	24.5	-102.75	304.1	694.9	226.5	190.4	36.11	6.271		
6,700.0	6,540.4	6,758.3	6,578.9	21.3	24.3	-103.44	265.4	694.9	227.1	191.3	35.82	6.341		
6,750.0	6,570.3	6,812.1	6,613.2	21.1	24.1	-104.08	224.0	694.9	227.7	192.1	35.59	6.398		
6,800.0	6,597.5	6,866.0	6,644.6	21.0	24.0	-104.64	180.2	694.9	228.3	192.9	35.45	6.441		
6,850.0	6,621.8	6,920.1	6,672.9	20.8	23.8	-105.14	134.0	694.8	228.9	193.5	35.39	6.466		
6,900.0	6,643.3	6,974.4	6,697.9	20.7	23.7	-105.57	85.9	694.8	229.3	193.9	35.44	6.471		
6,950.0	6,661.8	7,028.8	6,719.5	20.6	23.6	-105.93	36.0	694.8	229.7	194.1	35.60	6.454		
7,000.0	6,677.2	7,083.4	6,737.6	20.5	23.5	-106.22	-15.5	694.7	230.1	194.2	35.88	6.413		
7,050.0	6,689.4	7,138.0	6,751.9	20.5	23.5	-106.44	-68.2	694.7	230.3	194.1	36.28	6.348		
7,100.0	6,698.5	7,192.7	6,762.5	20.5	23.5	-106.58	-121.8	694.7	230.5	193.7	36.79	6.265		
7,150.0	6,704.3	7,247.4	6,769.1	20.8	23.6	-106.65	-176.1	694.6	230.6	193.2	37.44	6.159		
7,200.0	6,706.9	7,302.1	6,771.9	21.2	23.8	-106.64	-230.8	694.6	230.6	192.4	38.21	6.035		
7,218.9	6,707.0	7,322.5	6,772.0	21.4	23.9	-106.63	-251.1	694.6	230.6	192.1	38.53	5.984		
7,219.2	6,707.0	7,322.8	6,772.0	21.4	23.9	-106.63	-251.5	694.6	230.6	192.0	38.54	5.984		
7,219.3	6,707.0	7,322.9	6,772.0	21.4	23.9	-106.63	-251.6	694.6	230.6	192.0	38.54	5.983		
7,220.0	6,707.0	7,323.6	6,772.0	21.4	23.9	-106.63	-252.3	694.6	230.6	192.0	38.55	5.982		
7,300.0	6,706.5	7,403.6	6,771.4	22.2	24.5	-106.62	-332.2	694.6	230.6	190.7	39.93	5.775		
7,400.0	6,705.8	7,503.6	6,770.8	23.4	25.4	-106.62	-432.2	694.5	230.6	188.4	42.21	5.463		
7,500.0	6,705.1	7,603.6	6,770.1	24.8	26.7	-106.62	-532.2	694.4	230.6	185.8	44.84	5.144		
7,600.0	6,704.5	7,703.6	6,769.4	26.4	28.0	-106.62	-632.2	694.4	230.7	182.9	47.75	4.831		
7,700.0	6,703.8	7,803.6	6,768.8	28.0	29.6	-106.62	-732.2	694.3	230.7	179.8	50.90	4.532		
7,800.0	6,703.2	7,903.6	6,768.1	29.7	31.2	-106.61	-832.2	694.3	230.7	176.4	54.24	4.253		
7,900.0	6,702.5	8,003.6	6,767.5	31.5	32.9	-106.61	-932.2	694.2	230.7	173.0	57.75	3.995		
8,000.0	6,701.8	8,103.6	6,766.8	33.4	34.7	-106.61	-1,032.2	694.2	230.7	169.3	61.39	3.758		

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 29U-243
<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 29U-243	<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 29U-343 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error: 0.0 ft		
Survey Program: 0-MWD														Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
8,100.0	6,701.2	8,203.6	6,766.1	35.3	36.5	-106.61	-1,132.2	694.1	230.7	165.6	65.15	3.542			
8,200.0	6,700.5	8,303.6	6,765.5	37.2	38.4	-106.61	-1,232.2	694.1	230.8	161.8	69.00	3.344			
8,300.0	6,699.9	8,403.6	6,764.8	39.2	40.4	-106.61	-1,332.2	694.0	230.8	157.9	72.93	3.165			
8,400.0	6,699.2	8,503.6	6,764.1	41.3	42.4	-106.60	-1,432.2	693.9	230.8	153.9	76.92	3.000			
8,500.0	6,698.5	8,603.6	6,763.5	43.4	44.4	-106.60	-1,532.2	693.9	230.8	149.8	80.97	2.851			
8,600.0	6,697.9	8,703.6	6,762.8	45.5	46.4	-106.60	-1,632.2	693.8	230.8	145.8	85.07	2.713			
8,700.0	6,697.2	8,803.6	6,762.2	47.6	48.5	-106.60	-1,732.2	693.8	230.9	141.6	89.22	2.588			
8,800.0	6,696.5	8,903.6	6,761.5	49.7	50.6	-106.60	-1,832.2	693.7	230.9	137.5	93.39	2.472			
8,900.0	6,695.9	9,003.6	6,760.8	51.9	52.7	-106.59	-1,932.2	693.7	230.9	133.3	97.61	2.366			
9,000.0	6,695.2	9,103.6	6,760.2	54.0	54.9	-106.59	-2,032.2	693.6	230.9	129.1	101.84	2.267			
9,100.0	6,694.6	9,203.6	6,759.5	56.2	57.0	-106.59	-2,132.2	693.5	230.9	124.8	106.11	2.176			
9,200.0	6,693.9	9,303.6	6,758.8	58.4	59.2	-106.59	-2,232.2	693.5	230.9	120.5	110.39	2.092			
9,300.0	6,693.2	9,403.6	6,758.2	60.6	61.4	-106.59	-2,332.2	693.4	231.0	116.3	114.70	2.014			
9,400.0	6,692.6	9,503.6	6,757.5	62.9	63.6	-106.59	-2,432.2	693.4	231.0	112.0	119.02	1.941			
9,500.0	6,691.9	9,603.6	6,756.8	65.1	65.8	-106.58	-2,532.2	693.3	231.0	107.6	123.36	1.873			
9,600.0	6,691.3	9,703.6	6,756.2	67.3	68.0	-106.58	-2,632.2	693.3	231.0	103.3	127.71	1.809			
9,700.0	6,690.6	9,803.6	6,755.5	69.6	70.2	-106.58	-2,732.2	693.2	231.0	99.0	132.07	1.749			
9,800.0	6,689.9	9,903.6	6,754.9	71.8	72.5	-106.58	-2,832.2	693.1	231.0	94.6	136.45	1.693			
9,900.0	6,689.3	10,003.6	6,754.2	74.1	74.7	-106.58	-2,932.2	693.1	231.1	90.2	140.83	1.641			
10,000.0	6,688.6	10,103.6	6,753.5	76.3	76.9	-106.58	-3,032.2	693.0	231.1	85.9	145.23	1.591			
10,100.0	6,687.9	10,203.6	6,752.9	78.6	79.2	-106.57	-3,132.1	693.0	231.1	81.5	149.63	1.544			
10,200.0	6,687.3	10,303.6	6,752.2	80.9	81.4	-106.57	-3,232.1	692.9	231.1	77.1	154.04	1.500			
10,300.0	6,686.6	10,403.6	6,751.5	83.2	83.7	-106.57	-3,332.1	692.9	231.1	72.7	158.46	1.459 Level 3			
10,400.0	6,686.0	10,503.6	6,750.9	85.4	86.0	-106.57	-3,432.1	692.8	231.2	68.3	162.88	1.419 Level 3			
10,500.0	6,685.3	10,603.6	6,750.2	87.7	88.2	-106.57	-3,532.1	692.7	231.2	63.9	167.31	1.382 Level 3			
10,600.0	6,684.6	10,703.6	6,749.6	90.0	90.5	-106.56	-3,632.1	692.7	231.2	59.4	171.75	1.346 Level 3			
10,700.0	6,684.0	10,803.6	6,748.9	92.3	92.8	-106.56	-3,732.1	692.6	231.2	55.0	176.19	1.312 Level 3			
10,800.0	6,683.3	10,903.6	6,748.2	94.6	95.1	-106.56	-3,832.1	692.6	231.2	50.6	180.64	1.280 Level 3			
10,900.0	6,682.7	11,003.6	6,747.6	96.9	97.4	-106.56	-3,932.1	692.5	231.2	46.2	185.09	1.249 Level 2			
11,000.0	6,682.0	11,103.6	6,746.9	99.2	99.6	-106.56	-4,032.1	692.5	231.3	41.7	189.54	1.220 Level 2			
11,100.0	6,681.3	11,203.6	6,746.2	101.5	101.9	-106.56	-4,132.1	692.4	231.3	37.3	194.00	1.192 Level 2			
11,200.0	6,680.7	11,303.6	6,745.6	103.8	104.2	-106.55	-4,232.1	692.3	231.3	32.8	198.46	1.165 Level 2			
11,300.0	6,680.0	11,403.6	6,744.9	106.1	106.5	-106.55	-4,332.1	692.3	231.3	28.4	202.93	1.140 Level 2			
11,400.0	6,679.4	11,503.6	6,744.2	108.4	108.8	-106.55	-4,432.1	692.2	231.3	23.9	207.40	1.115 Level 2			
11,500.0	6,678.7	11,603.6	6,743.6	110.7	111.1	-106.55	-4,532.1	692.2	231.4	19.5	211.87	1.092 Level 2			
11,600.0	6,678.0	11,703.6	6,742.9	113.0	113.4	-106.55	-4,632.1	692.1	231.4	15.0	216.34	1.069 Level 2			
11,700.0	6,677.4	11,803.6	6,742.3	115.3	115.7	-106.54	-4,732.1	692.1	231.4	10.6	220.82	1.048 Level 2			
11,800.0	6,676.7	11,903.6	6,741.6	117.7	118.0	-106.54	-4,832.1	692.0	231.4	6.1	225.30	1.027 Level 2			
11,900.0	6,676.0	12,003.6	6,740.9	120.0	120.3	-106.54	-4,932.1	692.0	231.4	1.6	229.78	1.007 Level 2			
12,000.0	6,675.4	12,103.6	6,740.3	122.3	122.6	-106.54	-5,032.1	691.9	231.4	-2.8	234.26	0.988 Level 1			
12,100.0	6,674.7	12,203.6	6,739.6	124.6	125.0	-106.54	-5,132.1	691.8	231.5	-7.3	238.75	0.969 Level 1			
12,200.0	6,674.1	12,303.6	6,738.9	126.9	127.3	-106.54	-5,232.1	691.8	231.5	-11.8	243.24	0.952 Level 1			
12,300.0	6,673.4	12,403.6	6,738.3	129.2	129.6	-106.53	-5,332.1	691.7	231.5	-16.2	247.73	0.934 Level 1			
12,400.0	6,672.7	12,503.6	6,737.6	131.6	131.9	-106.53	-5,432.1	691.7	231.5	-20.7	252.22	0.918 Level 1			
12,500.0	6,672.1	12,603.6	6,736.9	133.9	134.2	-106.53	-5,532.1	691.6	231.5	-25.2	256.71	0.902 Level 1			
12,600.0	6,671.4	12,703.6	6,736.3	136.2	136.5	-106.53	-5,632.1	691.6	231.5	-29.7	261.21	0.886 Level 1			
12,700.0	6,670.8	12,803.6	6,735.6	138.5	138.8	-106.53	-5,732.1	691.5	231.6	-34.1	265.71	0.872 Level 1			
12,800.0	6,670.1	12,903.6	6,735.0	140.9	141.2	-106.52	-5,832.1	691.4	231.6	-38.6	270.20	0.857 Level 1			
12,900.0	6,669.4	13,003.6	6,734.3	143.2	143.5	-106.52	-5,932.1	691.4	231.6	-43.1	274.70	0.843 Level 1			
13,000.0	6,668.8	13,103.6	6,733.6	145.5	145.8	-106.52	-6,032.1	691.3	231.6	-47.6	279.20	0.830 Level 1			
13,100.0	6,668.1	13,203.6	6,733.0	147.8	148.1	-106.52	-6,132.1	691.3	231.6	-52.1	283.71	0.816 Level 1			

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 29U-243
<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 29U-243	<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 29U-343 - Wellbore #1 - Plan #2 (1-25-17)														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance								
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning		
13,200.0	6,667.4	13,303.6	6,732.3	150.2	150.5	-106.52	-6,232.1	691.2	231.7	-56.6	288.21	0.804	Level 1		
13,300.0	6,666.8	13,403.6	6,731.6	152.5	152.8	-106.52	-6,332.1	691.2	231.7	-61.0	292.71	0.791	Level 1		
13,400.0	6,666.1	13,503.6	6,731.0	154.8	155.1	-106.51	-6,432.1	691.1	231.7	-65.5	297.22	0.780	Level 1		
13,500.0	6,665.5	13,603.6	6,730.3	157.2	157.4	-106.51	-6,532.1	691.0	231.7	-70.0	301.73	0.768	Level 1		
13,600.0	6,664.8	13,703.6	6,729.7	159.5	159.8	-106.51	-6,632.1	691.0	231.7	-74.5	306.23	0.757	Level 1		
13,700.0	6,664.1	13,803.6	6,729.0	161.8	162.1	-106.51	-6,732.1	690.9	231.7	-79.0	310.74	0.746	Level 1		
13,800.0	6,663.5	13,903.6	6,728.3	164.2	164.4	-106.51	-6,832.1	690.9	231.8	-83.5	315.25	0.735	Level 1		
13,900.0	6,662.8	14,003.6	6,727.7	166.5	166.7	-106.51	-6,932.1	690.8	231.8	-88.0	319.76	0.725	Level 1		
14,000.0	6,662.2	14,103.6	6,727.0	168.8	169.0	-106.50	-7,032.1	690.8	231.8	-92.5	324.26	0.715	Level 1		
14,008.7	6,662.1	14,112.3	6,726.9	169.0	169.2	-106.50	-7,040.8	690.8	231.8	-92.8	324.61	0.714	Level 1		
14,023.3	6,662.0	14,124.2	6,726.9	169.4	169.4	-106.50	-7,052.6	690.8	231.8	-93.3	325.16	0.713	Level 1, ES, SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29U-243
<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 29U-243	<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')

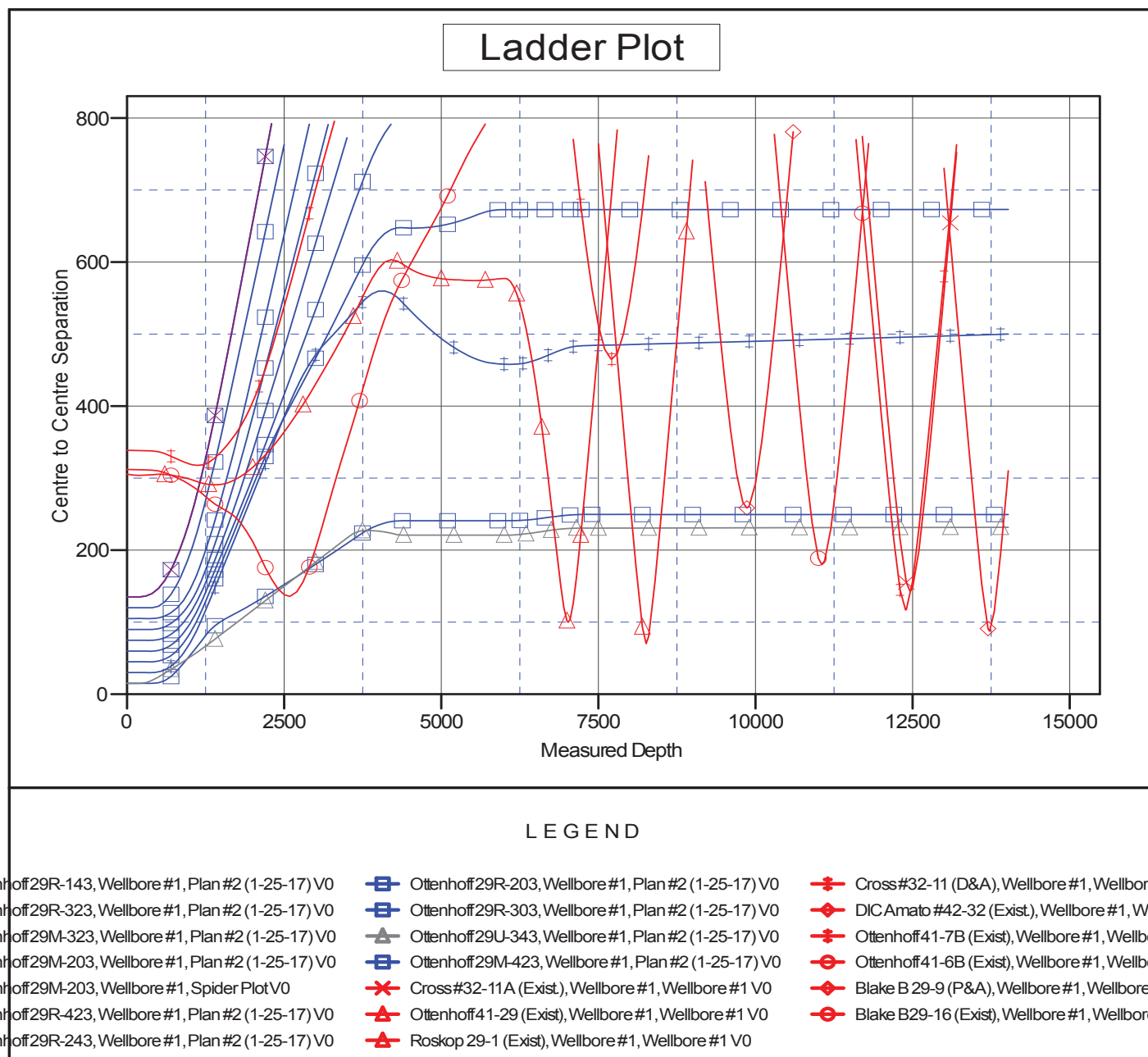
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000

Coordinates are relative to: Ottenhoff 29U-243

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 29U-243
<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 29U-243	<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 29U-243  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.60°

