

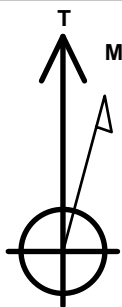
# PETROLEUM DEVELOPMENT CORP DJ Basin

Well Name: **Ottenhoff 29M-423**

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 1381166.59 3259629.39 40.375959 -104.568106  
 RKB - 23' WWWELL @ 4686.0ft (RKB - 23')

## DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 557'FNL & 1065'FEL, Sec.29	1.0	0.0	0.0	Point
BHL 2340'FNL & 2381'FEL, Sec.32	6872.0	-7074.8	-1270.3	Point
LPL 815'FNL & 2332'FEL, Sec.29	6882.0	-280.1	-1265.2	Point



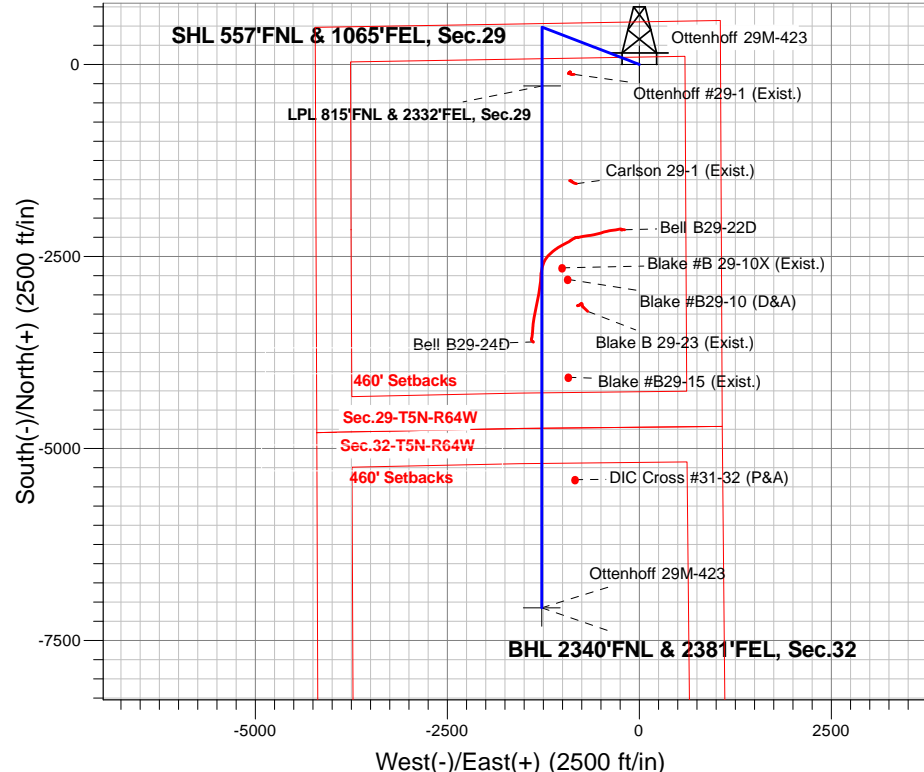
Azimuths to True North  
 Magnetic North: 8.00°

Magnetic Field  
 Strength: 52548.2snT  
 Dip Angle: 66.87°  
 Date: 1/27/2017  
 Model: IGRF2010

Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W  
 Ottenhoff 29M-423  
 Plan #2 (1-25-17)  
 14:02, January 27 2017

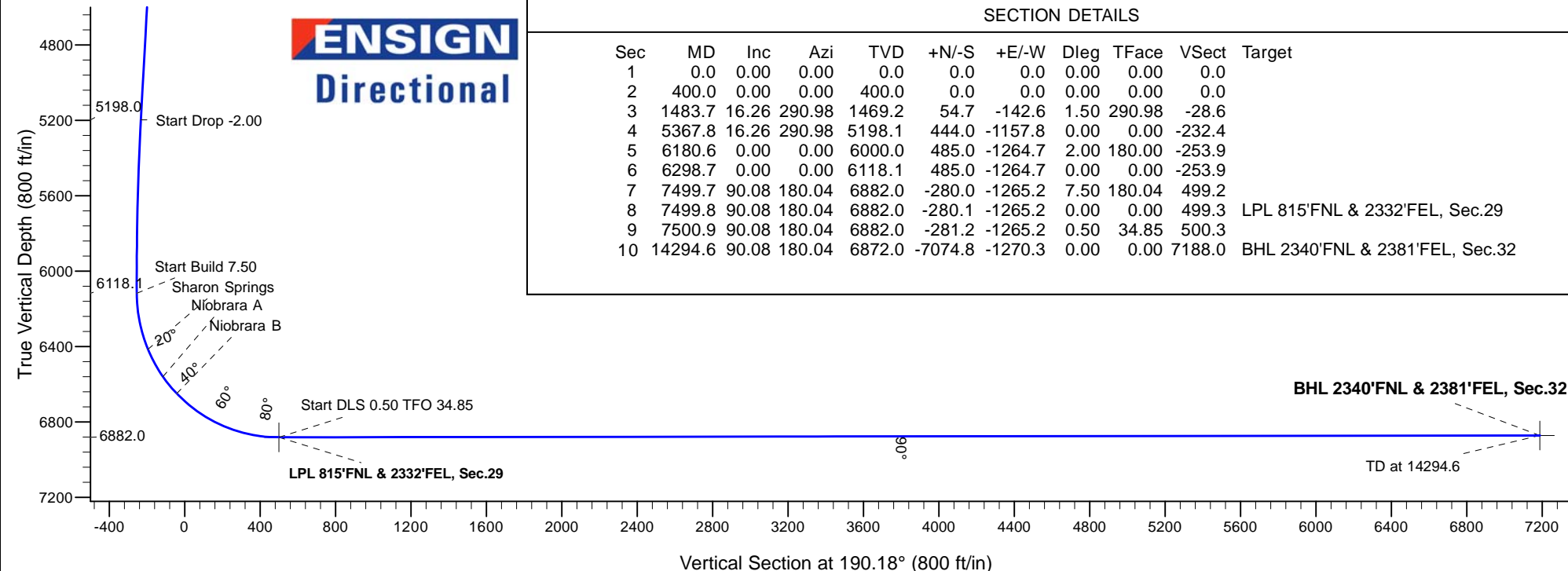
## ANNOTATIONS

TVD	MD	Annotation
400.0	400.0	KOP - Start Build 1.50
5198.1	5367.8	Start Drop -2.00
6118.1	6298.7	Start Build 7.50
6882.0	7499.8	Start DLS 0.50 TFO 34.85
6882.0	7500.9	Start 6793.7 hold at 7500.9 MD
6872.0	14294.6	TD at 14294.6



## 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	1483.7	16.26	290.98	1469.2	54.7	-142.6	1.50	290.98	-28.6	
4	5367.8	16.26	290.98	5198.1	444.0	-1157.8	0.00	0.00	-232.4	
5	6180.6	0.00	0.00	6000.0	485.0	-1264.7	2.00	180.00	-253.9	
6	6298.7	0.00	0.00	6118.1	485.0	-1264.7	0.00	0.00	-253.9	
7	7499.7	90.08	180.04	6882.0	-280.0	-1265.2	7.50	180.04	499.2	
8	7499.8	90.08	180.04	6882.0	-280.1	-1265.2	0.00	0.00	499.3	LPL 815'FNL & 2332'FEL, Sec.29
9	7500.9	90.08	180.04	6882.0	-281.2	-1265.2	0.50	34.85	500.3	
10	14294.6	90.08	180.04	6872.0	-7074.8	-1270.3	0.00	0.00	7188.0	BHL 2340'FNL & 2381'FEL, Sec.32





# **PETROLEUM DEVELOPMENT CORP DJ Basin**

**SEC.29-T5N-R64W**

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

**Ottenhoff 29M-423**

**Wellbore #1**

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

## **Standard Planning Report**

**27 January, 2017**

<b>Database:</b>	US_EDM	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Project:</b>	SEC.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Ottenhoff 29M-423	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 (1-25-17)		

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

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

Well	Ottenhoff 29M-423					
Well Position	+N/-S	1.1 ft	Northing:	1,381,166.59 usft	Latitude:	40.375959
	+E/-W	-120.1 ft	Easting:	3,259,629.39 usft	Longitude:	-104.568106
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	1/27/2017	8.00	66.87	52,548

<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	190.18

<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	
1,483.7	16.26	290.98	1,469.2	54.7	-142.6	1.50	1.50	0.00	290.98	
5,367.8	16.26	290.98	5,198.1	444.0	-1,157.8	0.00	0.00	0.00	0.00	
6,180.6	0.00	0.00	6,000.0	485.0	-1,264.7	2.00	-2.00	0.00	180.00	
6,298.7	0.00	0.00	6,118.1	485.0	-1,264.7	0.00	0.00	0.00	0.00	
7,499.7	90.08	180.04	6,882.0	-280.0	-1,265.2	7.50	7.50	0.00	180.04	
7,499.8	90.08	180.04	6,882.0	-280.1	-1,265.2	0.00	0.00	0.00	0.00	LPL 815'FNL & 2332'I
7,500.9	90.08	180.04	6,882.0	-281.2	-1,265.2	0.50	0.41	0.29	34.85	
14,294.6	90.08	180.04	6,872.0	-7,074.8	-1,270.3	0.00	0.00	0.00	0.00	BHL 2340'FNL & 238'I

Database:	US_EDM	Local Co-ordinate Reference:	Well Ottenhoff 29M-423
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WWWELL @ 4686.0ft (RKB - 23')
Project:	SEC.29-T5N-R64W	MD Reference:	WWWELL @ 4686.0ft (RKB - 23')
Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	North Reference:	True
Well:	Ottenhoff 29M-423	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	290.98	500.0	0.5	-1.2	-0.2	1.50	1.50	0.00
600.0	3.00	290.98	599.9	1.9	-4.9	-1.0	1.50	1.50	0.00
700.0	4.50	290.98	699.7	4.2	-11.0	-2.2	1.50	1.50	0.00
800.0	6.00	290.98	799.3	7.5	-19.5	-3.9	1.50	1.50	0.00
900.0	7.50	290.98	898.6	11.7	-30.5	-6.1	1.50	1.50	0.00
1,000.0	9.00	290.98	997.5	16.8	-43.9	-8.8	1.50	1.50	0.00
1,100.0	10.50	290.98	1,096.1	22.9	-59.7	-12.0	1.50	1.50	0.00
1,200.0	12.00	290.98	1,194.2	29.9	-77.9	-15.6	1.50	1.50	0.00
1,300.0	13.50	290.98	1,291.7	37.8	-98.5	-19.8	1.50	1.50	0.00
1,400.0	15.00	290.98	1,388.6	46.6	-121.5	-24.4	1.50	1.50	0.00
1,483.7	16.26	290.98	1,469.2	54.7	-142.6	-28.6	1.50	1.50	0.00
1,500.0	16.26	290.98	1,484.9	56.3	-146.8	-29.5	0.00	0.00	0.00
1,600.0	16.26	290.98	1,580.9	66.3	-173.0	-34.7	0.00	0.00	0.00
1,700.0	16.26	290.98	1,676.9	76.4	-199.1	-40.0	0.00	0.00	0.00
1,800.0	16.26	290.98	1,772.9	86.4	-225.2	-45.2	0.00	0.00	0.00
1,900.0	16.26	290.98	1,868.9	96.4	-251.4	-50.5	0.00	0.00	0.00
2,000.0	16.26	290.98	1,964.9	106.4	-277.5	-55.7	0.00	0.00	0.00
2,100.0	16.26	290.98	2,060.9	116.4	-303.7	-61.0	0.00	0.00	0.00
2,200.0	16.26	290.98	2,156.9	126.5	-329.8	-66.2	0.00	0.00	0.00
2,300.0	16.26	290.98	2,252.9	136.5	-355.9	-71.5	0.00	0.00	0.00
2,400.0	16.26	290.98	2,348.9	146.5	-382.1	-76.7	0.00	0.00	0.00
2,500.0	16.26	290.98	2,444.9	156.5	-408.2	-81.9	0.00	0.00	0.00
2,600.0	16.26	290.98	2,540.9	166.6	-434.3	-87.2	0.00	0.00	0.00
2,700.0	16.26	290.98	2,636.9	176.6	-460.5	-92.4	0.00	0.00	0.00
2,800.0	16.26	290.98	2,732.9	186.6	-486.6	-97.7	0.00	0.00	0.00
2,900.0	16.26	290.98	2,828.9	196.6	-512.8	-102.9	0.00	0.00	0.00
3,000.0	16.26	290.98	2,924.9	206.7	-538.9	-108.2	0.00	0.00	0.00
3,100.0	16.26	290.98	3,020.9	216.7	-565.0	-113.4	0.00	0.00	0.00
3,200.0	16.26	290.98	3,116.9	226.7	-591.2	-118.7	0.00	0.00	0.00
3,300.0	16.26	290.98	3,212.9	236.7	-617.3	-123.9	0.00	0.00	0.00
3,400.0	16.26	290.98	3,308.9	246.8	-643.4	-129.2	0.00	0.00	0.00
3,500.0	16.26	290.98	3,404.9	256.8	-669.6	-134.4	0.00	0.00	0.00
3,600.0	16.26	290.98	3,500.9	266.8	-695.7	-139.7	0.00	0.00	0.00
3,630.3	16.26	290.98	3,530.0	269.8	-703.6	-141.2	0.00	0.00	0.00
Parkman Sandstone									
3,700.0	16.26	290.98	3,596.9	276.8	-721.8	-144.9	0.00	0.00	0.00
3,800.0	16.26	290.98	3,692.9	286.8	-748.0	-150.2	0.00	0.00	0.00
3,900.0	16.26	290.98	3,788.9	296.9	-774.1	-155.4	0.00	0.00	0.00
4,000.0	16.26	290.98	3,884.9	306.9	-800.3	-160.6	0.00	0.00	0.00
4,100.0	16.26	290.98	3,980.9	316.9	-826.4	-165.9	0.00	0.00	0.00
4,200.0	16.26	290.98	4,076.9	326.9	-852.5	-171.1	0.00	0.00	0.00
4,300.0	16.26	290.98	4,172.9	337.0	-878.7	-176.4	0.00	0.00	0.00
4,328.2	16.26	290.98	4,200.0	339.8	-886.0	-177.9	0.00	0.00	0.00
Sussex Sandstone									
4,400.0	16.26	290.98	4,268.9	347.0	-904.8	-181.6	0.00	0.00	0.00
4,500.0	16.26	290.98	4,364.9	357.0	-930.9	-186.9	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Ottenhoff 29M-423
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WWWELL @ 4686.0ft (RKB - 23')
Project:	SEC.29-T5N-R64W	MD Reference:	WWWELL @ 4686.0ft (RKB - 23')
Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	North Reference:	True
Well:	Ottenhoff 29M-423	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (1-25-17)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,600.0	16.26	290.98	4,460.9	367.0	-957.1	-192.1	0.00	0.00	0.00
4,700.0	16.26	290.98	4,556.9	377.1	-983.2	-197.4	0.00	0.00	0.00
4,800.0	16.26	290.98	4,652.9	387.1	-1,009.4	-202.6	0.00	0.00	0.00
4,900.0	16.26	290.98	4,748.9	397.1	-1,035.5	-207.9	0.00	0.00	0.00
5,000.0	16.26	290.98	4,844.9	407.1	-1,061.6	-213.1	0.00	0.00	0.00
5,100.0	16.26	290.98	4,940.9	417.1	-1,087.8	-218.4	0.00	0.00	0.00
5,200.0	16.26	290.98	5,036.9	427.2	-1,113.9	-223.6	0.00	0.00	0.00
5,300.0	16.26	290.98	5,132.9	437.2	-1,140.0	-228.9	0.00	0.00	0.00
5,367.8	16.26	290.98	5,198.0	444.0	-1,157.8	-232.4	0.00	0.00	0.00
Start Drop -2.00									
5,400.0	15.61	290.98	5,229.0	447.2	-1,166.0	-234.1	2.00	-2.00	0.00
5,500.0	13.61	290.98	5,325.8	456.2	-1,189.6	-238.8	2.00	-2.00	0.00
5,600.0	11.61	290.98	5,423.3	464.0	-1,209.9	-242.9	2.00	-2.00	0.00
5,700.0	9.61	290.98	5,521.6	470.6	-1,227.1	-246.3	2.00	-2.00	0.00
5,800.0	7.61	290.98	5,620.5	476.0	-1,241.1	-249.1	2.00	-2.00	0.00
5,900.0	5.61	290.98	5,719.8	480.1	-1,251.9	-251.3	2.00	-2.00	0.00
6,000.0	3.61	290.98	5,819.5	483.0	-1,259.4	-252.8	2.00	-2.00	0.00
6,100.0	1.61	290.98	5,919.4	484.6	-1,263.6	-253.7	2.00	-2.00	0.00
6,180.6	0.00	0.00	6,000.0	485.0	-1,264.7	-253.9	2.00	-2.00	0.00
6,200.0	0.00	0.00	6,019.4	485.0	-1,264.7	-253.9	0.00	0.00	0.00
6,298.7	0.00	0.00	6,118.1	485.0	-1,264.7	-253.9	0.00	0.00	0.00
Start Build 7.50									
6,300.0	0.10	180.04	6,119.4	485.0	-1,264.7	-253.9	7.60	7.60	0.00
6,400.0	7.60	180.04	6,219.1	478.3	-1,264.7	-247.3	7.50	7.50	0.00
6,500.0	15.10	180.04	6,317.1	458.6	-1,264.7	-227.9	7.50	7.50	0.00
6,600.0	22.60	180.04	6,411.6	426.3	-1,264.7	-196.1	7.50	7.50	0.00
6,603.7	22.87	180.04	6,415.0	424.9	-1,264.7	-194.7	7.50	7.50	0.00
Sharon Springs									
6,700.0	30.10	180.04	6,501.2	382.0	-1,264.8	-152.5	7.50	7.50	0.00
6,770.0	35.35	180.04	6,560.0	344.2	-1,264.8	-115.3	7.50	7.50	0.00
Niobrara A									
6,800.0	37.60	180.04	6,584.2	326.3	-1,264.8	-97.7	7.50	7.50	0.00
6,887.1	44.13	180.04	6,650.0	269.4	-1,264.9	-41.6	7.50	7.50	0.00
Niobrara B									
6,900.0	45.10	180.04	6,659.2	260.3	-1,264.9	-32.7	7.50	7.50	0.00
7,000.0	52.60	180.04	6,724.9	185.1	-1,264.9	41.4	7.50	7.50	0.00
7,016.8	53.86	180.04	6,735.0	171.6	-1,264.9	54.6	7.50	7.50	0.00
Niobrara C									
7,100.0	60.10	180.04	6,780.3	101.9	-1,265.0	123.3	7.50	7.50	0.00
7,200.0	67.60	180.04	6,824.4	12.2	-1,265.0	211.6	7.50	7.50	0.00
7,201.7	67.73	180.04	6,825.0	10.6	-1,265.0	213.1	7.50	7.50	0.00
Ft. Hayes									
7,276.8	73.36	180.04	6,850.0	-60.2	-1,265.1	282.8	7.50	7.50	0.00
Codell									
7,300.0	75.10	180.04	6,856.3	-82.5	-1,265.1	304.8	7.50	7.50	0.00
7,347.0	78.63	180.04	6,867.0	-128.3	-1,265.1	349.8	7.50	7.50	0.00
Carlile									
7,400.0	82.60	180.04	6,875.6	-180.5	-1,265.2	401.3	7.50	7.50	0.00
7,499.7	90.08	180.04	6,882.0	-280.0	-1,265.2	499.2	7.50	7.50	0.00
7,499.8	90.08	180.04	6,882.0	-280.1	-1,265.2	499.2	0.00	0.00	0.00
Start DLS 0.50 TFO 34.85									

Database:	US_EDM	Local Co-ordinate Reference:	Well Ottenhoff 29M-423
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WWWELL @ 4686.0ft (RKB - 23')
Project:	SEC.29-T5N-R64W	MD Reference:	WWWELL @ 4686.0ft (RKB - 23')
Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	North Reference:	True
Well:	Ottenhoff 29M-423	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)
7,500.0	90.08	180.04	6,882.0	-280.3	-1,265.2	499.4	0.00	0.00	0.00
7,500.9	90.08	180.04	6,882.0	-281.2	-1,265.2	500.3	0.59	0.48	0.33
Start 6793.7 hold at 7500.9 MD									
7,600.0	90.08	180.04	6,881.9	-380.3	-1,265.3	597.9	0.00	0.00	0.00
7,700.0	90.08	180.04	6,881.7	-480.3	-1,265.4	696.3	0.00	0.00	0.00
7,800.0	90.08	180.04	6,881.6	-580.3	-1,265.5	794.8	0.00	0.00	0.00
7,900.0	90.08	180.04	6,881.4	-680.3	-1,265.5	893.2	0.00	0.00	0.00
8,000.0	90.08	180.04	6,881.3	-780.3	-1,265.6	991.6	0.00	0.00	0.00
8,100.0	90.08	180.04	6,881.1	-880.3	-1,265.7	1,090.1	0.00	0.00	0.00
8,200.0	90.08	180.04	6,881.0	-980.3	-1,265.8	1,188.5	0.00	0.00	0.00
8,300.0	90.08	180.04	6,880.8	-1,080.3	-1,265.8	1,286.9	0.00	0.00	0.00
8,400.0	90.08	180.04	6,880.7	-1,180.3	-1,265.9	1,385.4	0.00	0.00	0.00
8,500.0	90.08	180.04	6,880.5	-1,280.3	-1,266.0	1,483.8	0.00	0.00	0.00
8,600.0	90.08	180.04	6,880.4	-1,380.3	-1,266.1	1,582.3	0.00	0.00	0.00
8,700.0	90.08	180.04	6,880.2	-1,480.3	-1,266.1	1,680.7	0.00	0.00	0.00
8,800.0	90.08	180.04	6,880.1	-1,580.3	-1,266.2	1,779.1	0.00	0.00	0.00
8,900.0	90.08	180.04	6,879.9	-1,680.3	-1,266.3	1,877.6	0.00	0.00	0.00
9,000.0	90.08	180.04	6,879.8	-1,780.3	-1,266.4	1,976.0	0.00	0.00	0.00
9,100.0	90.08	180.04	6,879.6	-1,880.3	-1,266.4	2,074.5	0.00	0.00	0.00
9,200.0	90.08	180.04	6,879.5	-1,980.3	-1,266.5	2,172.9	0.00	0.00	0.00
9,300.0	90.08	180.04	6,879.4	-2,080.3	-1,266.6	2,271.3	0.00	0.00	0.00
9,400.0	90.08	180.04	6,879.2	-2,180.3	-1,266.7	2,369.8	0.00	0.00	0.00
9,500.0	90.08	180.04	6,879.1	-2,280.3	-1,266.7	2,468.2	0.00	0.00	0.00
9,600.0	90.08	180.04	6,878.9	-2,380.3	-1,266.8	2,566.7	0.00	0.00	0.00
9,700.0	90.08	180.04	6,878.8	-2,480.3	-1,266.9	2,665.1	0.00	0.00	0.00
9,800.0	90.08	180.04	6,878.6	-2,580.3	-1,267.0	2,763.5	0.00	0.00	0.00
9,900.0	90.08	180.04	6,878.5	-2,680.3	-1,267.0	2,862.0	0.00	0.00	0.00
10,000.0	90.08	180.04	6,878.3	-2,780.3	-1,267.1	2,960.4	0.00	0.00	0.00
10,100.0	90.08	180.04	6,878.2	-2,880.3	-1,267.2	3,058.9	0.00	0.00	0.00
10,200.0	90.08	180.04	6,878.0	-2,980.3	-1,267.3	3,157.3	0.00	0.00	0.00
10,300.0	90.08	180.04	6,877.9	-3,080.3	-1,267.3	3,255.7	0.00	0.00	0.00
10,400.0	90.08	180.04	6,877.7	-3,180.3	-1,267.4	3,354.2	0.00	0.00	0.00
10,500.0	90.08	180.04	6,877.6	-3,280.3	-1,267.5	3,452.6	0.00	0.00	0.00
10,600.0	90.08	180.04	6,877.4	-3,380.3	-1,267.6	3,551.1	0.00	0.00	0.00
10,700.0	90.08	180.04	6,877.3	-3,480.3	-1,267.6	3,649.5	0.00	0.00	0.00
10,800.0	90.08	180.04	6,877.1	-3,580.3	-1,267.7	3,747.9	0.00	0.00	0.00
10,900.0	90.08	180.04	6,877.0	-3,680.3	-1,267.8	3,846.4	0.00	0.00	0.00
11,000.0	90.08	180.04	6,876.8	-3,780.3	-1,267.9	3,944.8	0.00	0.00	0.00
11,100.0	90.08	180.04	6,876.7	-3,880.3	-1,267.9	4,043.2	0.00	0.00	0.00
11,200.0	90.08	180.04	6,876.6	-3,980.3	-1,268.0	4,141.7	0.00	0.00	0.00
11,300.0	90.08	180.04	6,876.4	-4,080.3	-1,268.1	4,240.1	0.00	0.00	0.00
11,400.0	90.08	180.04	6,876.3	-4,180.3	-1,268.2	4,338.6	0.00	0.00	0.00
11,500.0	90.08	180.04	6,876.1	-4,280.3	-1,268.2	4,437.0	0.00	0.00	0.00
11,600.0	90.08	180.04	6,876.0	-4,380.3	-1,268.3	4,535.4	0.00	0.00	0.00
11,700.0	90.08	180.04	6,875.8	-4,480.3	-1,268.4	4,633.9	0.00	0.00	0.00
11,800.0	90.08	180.04	6,875.7	-4,580.3	-1,268.5	4,732.3	0.00	0.00	0.00
11,900.0	90.08	180.04	6,875.5	-4,680.3	-1,268.5	4,830.8	0.00	0.00	0.00
12,000.0	90.08	180.04	6,875.4	-4,780.3	-1,268.6	4,929.2	0.00	0.00	0.00
12,100.0	90.08	180.04	6,875.2	-4,880.3	-1,268.7	5,027.6	0.00	0.00	0.00
12,200.0	90.08	180.04	6,875.1	-4,980.3	-1,268.8	5,126.1	0.00	0.00	0.00
12,300.0	90.08	180.04	6,874.9	-5,080.3	-1,268.8	5,224.5	0.00	0.00	0.00
12,400.0	90.08	180.04	6,874.8	-5,180.3	-1,268.9	5,323.0	0.00	0.00	0.00

<b>Database:</b>	US_EDM	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Project:</b>	SEC.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Ottenhoff 29M-423	<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)
12,500.0	90.08	180.04	6,874.6	-5,280.3	-1,269.0	5,421.4	0.00	0.00	0.00
12,600.0	90.08	180.04	6,874.5	-5,380.3	-1,269.0	5,519.8	0.00	0.00	0.00
12,700.0	90.08	180.04	6,874.3	-5,480.3	-1,269.1	5,618.3	0.00	0.00	0.00
12,800.0	90.08	180.04	6,874.2	-5,580.3	-1,269.2	5,716.7	0.00	0.00	0.00
12,900.0	90.08	180.04	6,874.1	-5,680.3	-1,269.3	5,815.2	0.00	0.00	0.00
13,000.0	90.08	180.04	6,873.9	-5,780.3	-1,269.3	5,913.6	0.00	0.00	0.00
13,100.0	90.08	180.04	6,873.8	-5,880.3	-1,269.4	6,012.0	0.00	0.00	0.00
13,200.0	90.08	180.04	6,873.6	-5,980.3	-1,269.5	6,110.5	0.00	0.00	0.00
13,300.0	90.08	180.04	6,873.5	-6,080.3	-1,269.6	6,208.9	0.00	0.00	0.00
13,400.0	90.08	180.04	6,873.3	-6,180.3	-1,269.6	6,307.4	0.00	0.00	0.00
13,500.0	90.08	180.04	6,873.2	-6,280.3	-1,269.7	6,405.8	0.00	0.00	0.00
13,600.0	90.08	180.04	6,873.0	-6,380.3	-1,269.8	6,504.2	0.00	0.00	0.00
13,700.0	90.08	180.04	6,872.9	-6,480.3	-1,269.9	6,602.7	0.00	0.00	0.00
13,800.0	90.08	180.04	6,872.7	-6,580.3	-1,269.9	6,701.1	0.00	0.00	0.00
13,900.0	90.08	180.04	6,872.6	-6,680.3	-1,270.0	6,799.6	0.00	0.00	0.00
14,000.0	90.08	180.04	6,872.4	-6,780.3	-1,270.1	6,898.0	0.00	0.00	0.00
14,100.0	90.08	180.04	6,872.3	-6,880.3	-1,270.2	6,996.4	0.00	0.00	0.00
14,200.0	90.08	180.04	6,872.1	-6,980.3	-1,270.2	7,094.9	0.00	0.00	0.00
14,294.6	90.08	180.04	6,872.0	-7,074.8	-1,270.3	7,188.0	0.00	0.00	0.00
TD at 14294.6									

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SHL 557'FNL & 1065'FE - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,381,166.60	3,259,629.39	40.375959	-104.568106
BHL 2340'FNL & 2381'F - plan hits target center - Point	0.00	0.00	6,872.0	-7,074.8	-1,270.3	1,374,079.08	3,258,433.55	40.356539	-104.572664
LPL 815'FNL & 2332'FEI - plan hits target center - Point	0.00	0.00	6,882.0	-280.1	-1,265.2	1,380,873.21	3,258,367.23	40.375190	-104.572647

<b>Database:</b>	US_EDM	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Project:</b>	SEC.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Ottenhoff 29M-423	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 (1-25-17)		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,630.3	3,530.0	Parkman Sandstone		0.00		
4,328.2	4,200.0	Sussex Sandstone		0.00		
6,603.7	6,415.0	Sharon Springs		0.00		
6,770.0	6,560.0	Niobrara A		0.00		
6,887.1	6,650.0	Niobrara B		0.00		
7,016.8	6,735.0	Niobrara C		0.00		
7,201.7	6,825.0	Ft. Hayes		0.00		
7,276.8	6,850.0	Codell		0.00		
7,347.0	6,867.0	Carlile		0.00		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
400.0	400.0	0.0	0.0	KOP - Start Build 1.50	
5,367.8	5,198.1	54.7	-142.6	Start Drop -2.00	
6,298.7	6,118.1	444.0	-1,157.8	Start Build 7.50	
7,499.8	6,882.0	485.0	-1,264.7	Start DLS 0.50 TFO 34.85	
7,500.9	6,882.0	485.0	-1,264.7	Start 6793.7 hold at 7500.9 MD	
14,294.6	6,872.0	-280.1	-1,265.2	TD at 14294.6	





# **PETROLEUM DEVELOPMENT CORP DJ Basin**

**SEC.29-T5N-R64W**

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

**Ottenhoff 29M-423**

**Wellbore #1**

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

## **Anticollision Report**

**27 January, 2017**



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

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

<b>Survey Tool Program</b>	<b>Date</b>	1/27/2017		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	14,294.5	Plan #2 (1-25-17) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
Bell Pad SEC.29-T5N-R64W						
Bell B29-22D - Bell B29-22D - Bell B29-22D						Out of range
Bell B29-24D - Bell B29-24D - Bell B29-24D	10,828.0	7,198.7	119.0	-4.7	0.962	Level 1, CC, ES, SF
Existing Wells Sec.29-T5N-R64W						
Blake #B 29-10X (Exist.) - Wellbore #1 - Wellbore #1	9,867.3	6,881.5	262.7	26.0	1.110	Level 2, CC, ES, SF
Blake #B29-10 (D&A) - Wellbore #1 - Wellbore #1	10,018.5	6,881.3	336.7	96.6	1.402	Level 3, CC, ES, SF
Blake #B29-15 (Exist.) - Wellbore #1 - Wellbore #1	11,291.7	6,894.4	343.2	73.8	1.274	Level 3, CC
Blake #B29-15 (Exist.) - Wellbore #1 - Wellbore #1	11,300.0	6,894.4	343.3	73.7	1.273	Level 3, ES, SF
Carlson 29-1 (Exist.) - Wellbore #1 - Wellbore #1	8,771.0	6,853.2	442.4	381.9	7.310	CC, ES
Carlson 29-1 (Exist.) - Wellbore #1 - Wellbore #1	8,800.0	6,853.7	443.4	382.3	7.253	SF
DIC Cross #31-32 (P&A) - Wellbore #1 - Wellbore #1	12,628.7	6,900.5	431.6	131.3	1.437	Level 3, CC, ES, SF
Ottenhoff #29-1 (Exist.) - Wellbore #1 - Wellbore #1	7,345.3	6,847.8	412.6	373.9	10.678	CC
Ottenhoff #29-1 (Exist.) - Wellbore #1 - Wellbore #1	7,350.0	6,848.7	412.6	373.9	10.667	ES
Ottenhoff #29-1 (Exist.) - Wellbore #1 - Wellbore #1	7,400.0	6,856.6	416.0	376.9	10.633	SF
Existing Wells Sec.29-T5N-R64W (GRID)						
Blake B 29-23 (Exist.) - Wellbore #1 - Wellbore #1	10,399.2	6,862.1	558.1	462.4	5.833	CC
Blake B 29-23 (Exist.) - Wellbore #1 - Wellbore #1	10,400.0	6,862.2	558.1	462.4	5.832	ES
Blake B 29-23 (Exist.) - Wellbore #1 - Wellbore #1	10,500.0	6,867.0	567.1	469.0	5.784	SF

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<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 29M-203 - Wellbore #1 - Plan #2 (1-25-17)	200.0	200.0	15.0	14.2	18.220	CC, ES
Ottenhoff 29M-203 - Wellbore #1 - Plan #2 (1-25-17)	14,295.3	14,199.4	294.7	17.3	1.062	Level 2, SF
Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)	400.0	401.0	15.0	13.1	7.795	CC
Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)	14,295.3	14,188.1	252.3	-52.4	0.828	Level 1, ES, SF
Ottenhoff 29R-143 - Wellbore #1 - Plan #2 (1-25-17)	400.0	400.0	45.1	43.2	23.420	CC, ES
Ottenhoff 29R-143 - Wellbore #1 - Plan #2 (1-25-17)	14,295.3	13,936.9	761.1	440.0	2.370	SF
Ottenhoff 29R-203 - Wellbore #1 - Plan #2 (1-25-17)	400.0	400.0	75.0	73.0	38.889	CC, ES
Ottenhoff 29R-203 - Wellbore #1 - Plan #2 (1-25-17)	900.0	898.6	106.2	101.5	22.669	SF
Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)	400.0	400.0	30.1	28.2	15.614	CC, ES
Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)	14,295.3	14,067.2	517.3	201.1	1.636	SF
Ottenhoff 29R-303 - Wellbore #1 - Plan #2 (1-25-17)	400.0	400.0	60.2	58.3	31.226	CC, ES
Ottenhoff 29R-303 - Wellbore #1 - Plan #2 (1-25-17)	800.0	799.3	80.1	76.0	19.413	SF
Ottenhoff 29R-323 - Wellbore #1 - Plan #2 (1-25-17)	400.0	400.0	105.0	103.1	54.502	CC, ES
Ottenhoff 29R-323 - Wellbore #1 - Plan #2 (1-25-17)	1,000.0	994.9	151.7	146.5	28.962	SF
Ottenhoff 29R-423 - Wellbore #1 - Plan #2 (1-25-17)	400.0	399.0	90.0	88.1	46.761	CC, ES
Ottenhoff 29R-423 - Wellbore #1 - Plan #2 (1-25-17)	1,000.0	996.5	135.1	129.8	25.766	SF
Ottenhoff 29U-243 - Wellbore #1 - Plan #2 (1-25-17)	400.0	400.0	120.1	118.2	62.308	CC, ES
Ottenhoff 29U-243 - Wellbore #1 - Plan #2 (1-25-17)	900.0	884.2	172.3	167.6	36.585	SF
Ottenhoff 29U-343 - Wellbore #1 - Plan #2 (1-25-17)	200.0	199.0	135.1	134.3	164.151	CC, ES
Ottenhoff 29U-343 - Wellbore #1 - Plan #2 (1-25-17)	900.0	868.8	215.6	210.8	45.173	SF

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 685-													Offset Well Error:	0.0 ft
Bell Pad SEC.29-T5N-R64W - Bell B29-24D - Bell B29-24D - Bell B29-24D														
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (ft)	Separation Factor	Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
10,100.0	6,878.2	7,180.1	6,873.8	76.7	35.8	82.69	-3,607.6	-1,387.2	737.4	629.9	107.48	6.861		
10,200.0	6,878.0	7,182.5	6,876.1	78.8	35.9	83.80	-3,607.7	-1,387.1	638.9	529.1	109.79	5.819		
10,300.0	6,877.9	7,184.9	6,878.6	81.0	35.9	84.95	-3,607.7	-1,387.0	541.0	428.9	112.09	4.827		
10,400.0	6,877.7	7,187.4	6,881.0	83.2	35.9	86.13	-3,607.8	-1,387.0	444.0	329.7	114.36	3.883		
10,500.0	6,877.6	7,189.9	6,883.6	85.3	35.9	87.34	-3,607.9	-1,386.9	348.8	232.2	116.60	2.991		
10,600.0	6,877.4	7,192.5	6,886.2	87.5	35.9	88.59	-3,608.0	-1,386.8	257.1	138.3	118.80	2.164		
10,700.0	6,877.3	7,195.2	6,888.8	89.8	35.9	89.87	-3,608.0	-1,386.8	174.7	53.7	120.96	1.444	Level 3	
10,800.0	6,877.1	7,197.9	6,891.6	92.0	35.9	91.19	-3,608.1	-1,386.7	122.2	-0.9	123.07	0.993	Level 1	
10,828.0	6,877.1	7,198.7	6,892.3	92.6	35.9	91.56	-3,608.1	-1,386.7	119.0	-4.7	123.65	0.962	Level 1, CC, ES, SF	
10,900.0	6,877.0	7,200.7	6,894.4	94.2	35.9	92.54	-3,608.2	-1,386.6	139.1	14.0	125.13	1.111	Level 2	
11,000.0	6,876.8	7,203.6	6,897.3	96.4	35.9	93.92	-3,608.3	-1,386.5	209.1	82.0	127.11	1.645		
11,100.0	6,876.7	7,206.6	6,900.2	98.6	35.9	95.34	-3,608.4	-1,386.4	296.8	167.8	129.03	2.300		
11,200.0	6,876.6	7,209.6	6,903.2	100.9	35.9	96.80	-3,608.5	-1,386.4	390.5	259.6	130.86	2.984		
11,300.0	6,876.4	7,212.7	6,906.4	103.1	35.9	98.29	-3,608.6	-1,386.3	486.6	354.0	132.60	3.670		
11,400.0	6,876.3	7,216.0	6,909.6	105.4	35.9	99.81	-3,608.7	-1,386.2	584.1	449.8	134.24	4.351		
11,500.0	6,876.1	7,219.3	6,912.9	107.6	35.9	101.36	-3,608.8	-1,386.1	682.2	546.4	135.77	5.025		
11,600.0	6,876.0	7,222.7	6,916.3	109.9	35.9	102.94	-3,608.9	-1,386.0	780.8	643.6	137.18	5.692		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - Blake #B 29-10X (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7072-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
9,200.0	6,879.5	6,882.5	6,882.5	57.9	168.6	-90.21	-2,647.8	-1,004.3	717.2	495.0	222.16	3.228		
9,300.0	6,879.4	6,882.4	6,882.4	59.9	168.6	-90.18	-2,647.8	-1,004.3	625.2	400.9	224.31	2.787		
9,400.0	6,879.2	6,882.2	6,882.2	61.9	168.6	-90.15	-2,647.8	-1,004.3	536.1	309.6	226.48	2.367		
9,500.0	6,879.1	6,882.1	6,882.1	64.0	168.6	-90.12	-2,647.8	-1,004.3	451.6	223.0	228.65	1.975		
9,600.0	6,878.9	6,881.9	6,881.9	66.1	168.6	-90.09	-2,647.8	-1,004.3	374.8	144.0	230.84	1.624		
9,700.0	6,878.8	6,881.8	6,881.8	68.1	168.6	-90.05	-2,647.8	-1,004.3	311.5	78.5	233.05	1.337	Level 3	
9,800.0	6,878.6	6,881.6	6,881.6	70.3	168.6	-90.02	-2,647.8	-1,004.3	271.2	36.0	235.26	1.153	Level 2	
9,867.3	6,878.5	6,881.5	6,881.5	71.7	168.6	-90.00	-2,647.8	-1,004.3	262.7	26.0	236.75	1.110	Level 2, CC, ES, SF	
9,900.0	6,878.5	6,881.5	6,881.5	72.4	168.6	-89.99	-2,647.8	-1,004.3	264.8	27.3	237.48	1.115	Level 2	
10,000.0	6,878.3	6,881.3	6,881.3	74.5	168.6	-89.96	-2,647.8	-1,004.3	294.3	54.6	239.70	1.228	Level 2	
10,100.0	6,878.2	6,881.2	6,881.2	76.7	168.6	-89.93	-2,647.8	-1,004.3	351.0	109.0	241.94	1.451	Level 3	
10,200.0	6,878.0	6,881.0	6,881.0	78.8	168.6	-89.89	-2,647.8	-1,004.3	423.9	179.7	244.18	1.736		
10,300.0	6,877.9	6,880.9	6,880.9	81.0	168.6	-89.86	-2,647.8	-1,004.3	506.2	259.8	246.43	2.054		
10,400.0	6,877.7	6,880.7	6,880.7	83.2	168.6	-89.83	-2,647.8	-1,004.3	594.0	345.3	248.68	2.388		
10,500.0	6,877.6	6,880.6	6,880.6	85.3	168.6	-89.80	-2,647.8	-1,004.3	685.1	434.1	250.94	2.730		
10,600.0	6,877.4	6,880.4	6,880.4	87.5	168.6	-89.76	-2,647.8	-1,004.3	778.4	525.2	253.20	3.074		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - Blake #B29-10 (D&A) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7125-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
9,300.0	6,879.4	6,882.4	6,882.4	59.9	168.6	-90.18	-2,799.0	-930.4	793.4	569.1	224.31	3.537		
9,400.0	6,879.2	6,882.2	6,882.2	61.9	168.6	-90.15	-2,799.0	-930.4	704.2	477.7	226.48	3.109		
9,500.0	6,879.1	6,882.1	6,882.1	64.0	168.6	-90.13	-2,799.0	-930.4	618.2	389.5	228.66	2.704		
9,600.0	6,878.9	6,881.9	6,881.9	66.1	168.6	-90.10	-2,799.0	-930.4	537.1	306.3	230.85	2.327		
9,700.0	6,878.8	6,881.8	6,881.8	68.1	168.6	-90.08	-2,799.0	-930.4	463.4	230.4	233.05	1.989		
9,800.0	6,878.6	6,881.6	6,881.6	70.3	168.6	-90.05	-2,799.0	-930.4	401.4	166.1	235.26	1.706		
9,900.0	6,878.5	6,881.5	6,881.5	72.4	168.6	-90.03	-2,799.0	-930.4	356.9	119.4	237.48	1.503		
10,000.0	6,878.3	6,881.3	6,881.3	74.5	168.6	-90.00	-2,799.0	-930.4	337.2	97.5	239.71	1.407 Level 3		
10,018.5	6,878.3	6,881.3	6,881.3	74.9	168.6	-90.00	-2,799.0	-930.4	336.7	96.6	240.12	1.402 Level 3, CC, ES, SF		
10,100.0	6,878.2	6,881.2	6,881.2	76.7	168.6	-89.98	-2,799.0	-930.4	346.4	104.5	241.94	1.432 Level 3		
10,200.0	6,878.0	6,881.0	6,881.0	78.8	168.6	-89.95	-2,799.0	-930.4	382.5	138.3	244.19	1.567		
10,300.0	6,877.9	6,880.9	6,880.9	81.0	168.6	-89.93	-2,799.0	-930.4	438.9	192.5	246.43	1.781		
10,400.0	6,877.7	6,880.7	6,880.7	83.2	168.6	-89.90	-2,799.0	-930.4	508.9	260.2	248.69	2.046		
10,500.0	6,877.6	6,880.6	6,880.6	85.3	168.6	-89.88	-2,799.0	-930.4	587.6	336.6	250.95	2.341		
10,600.0	6,877.4	6,880.4	6,880.4	87.5	168.6	-89.85	-2,799.0	-930.4	672.0	418.8	253.21	2.654		
10,700.0	6,877.3	6,880.3	6,880.3	89.8	168.6	-89.83	-2,799.0	-930.4	760.2	504.7	255.48	2.975		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - Blake #B29-15 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7092-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
10,600.0	6,877.4	6,895.4	6,895.4	87.5	168.9	-90.17	-4,072.2	-924.9	772.2	518.6	253.61	3.045		
10,700.0	6,877.3	6,895.3	6,895.3	89.8	168.9	-90.15	-4,072.2	-924.9	684.0	428.2	255.88	2.673		
10,800.0	6,877.1	6,895.1	6,895.1	92.0	168.9	-90.12	-4,072.2	-924.9	599.6	341.5	258.15	2.323		
10,900.0	6,877.0	6,895.0	6,895.0	94.2	168.9	-90.10	-4,072.2	-924.9	520.8	260.4	260.42	2.000		
11,000.0	6,876.8	6,894.8	6,894.8	96.4	168.9	-90.07	-4,072.2	-924.9	450.4	187.7	262.70	1.715		
11,100.0	6,876.7	6,894.7	6,894.7	98.6	168.9	-90.05	-4,072.2	-924.9	393.1	128.1	264.99	1.483	Level 3	
11,200.0	6,876.6	6,894.6	6,894.6	100.9	168.9	-90.02	-4,072.2	-924.9	355.2	87.9	267.27	1.329	Level 3	
11,291.7	6,876.4	6,894.4	6,894.4	102.9	168.9	-90.00	-4,072.2	-924.9	343.2	73.8	269.37	1.274	Level 3, CC	
11,300.0	6,876.4	6,894.4	6,894.4	103.1	168.9	-90.00	-4,072.2	-924.9	343.3	73.7	269.56	1.273	Level 3, ES, SF	
11,400.0	6,876.3	6,894.3	6,894.3	105.4	168.9	-89.97	-4,072.2	-924.9	359.9	88.0	271.85	1.324	Level 3	
11,500.0	6,876.1	6,894.1	6,894.1	107.6	168.9	-89.95	-4,072.2	-924.9	401.4	127.3	274.14	1.464	Level 3	
11,600.0	6,876.0	6,894.0	6,894.0	109.9	168.9	-89.92	-4,072.2	-924.9	461.3	184.9	276.44	1.669		
11,700.0	6,875.8	6,893.8	6,893.8	112.1	168.9	-89.90	-4,072.2	-924.9	533.3	254.6	278.74	1.913		
11,800.0	6,875.7	6,893.7	6,893.7	114.4	168.9	-89.88	-4,072.2	-924.9	613.3	332.2	281.04	2.182		
11,900.0	6,875.5	6,893.5	6,893.5	116.7	168.9	-89.85	-4,072.2	-924.9	698.4	415.1	283.34	2.465		
12,000.0	6,875.4	6,893.4	6,893.4	118.9	168.9	-89.83	-4,072.2	-924.9	787.0	501.4	285.64	2.755		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - Carlson 29-1 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
8,200.0	6,881.0	6,843.7	6,842.3	40.6	16.4	-85.61	-1,551.3	-824.9	722.3	673.0	49.24	14.669		
8,300.0	6,880.8	6,845.4	6,843.9	42.0	16.4	-85.83	-1,551.4	-824.9	646.1	595.0	51.10	12.646		
8,400.0	6,880.7	6,847.0	6,845.6	43.5	16.4	-86.04	-1,551.4	-824.8	577.3	524.3	53.01	10.890		
8,500.0	6,880.5	6,848.7	6,847.2	45.1	16.4	-86.25	-1,551.4	-824.7	518.8	463.8	54.98	9.435		
8,600.0	6,880.4	6,850.4	6,848.9	46.8	16.4	-86.47	-1,551.5	-824.6	474.3	417.3	57.00	8.321		
8,700.0	6,880.2	6,852.0	6,850.5	48.5	16.5	-86.68	-1,551.5	-824.5	448.1	389.0	59.05	7.588		
8,771.0	6,880.1	6,853.2	6,851.7	49.8	16.5	-86.84	-1,551.5	-824.4	442.4	381.9	60.53	7.310 CC, ES		
8,800.0	6,880.1	6,853.7	6,852.2	50.3	16.5	-86.90	-1,551.5	-824.4	443.4	382.3	61.13	7.253 SF		
8,900.0	6,879.9	6,855.3	6,853.8	52.1	16.5	-87.11	-1,551.6	-824.3	460.9	397.6	63.24	7.287		
9,000.0	6,879.8	6,857.0	6,855.5	54.0	16.5	-87.33	-1,551.6	-824.2	498.2	432.8	65.38	7.620		
9,100.0	6,879.6	6,858.6	6,857.1	56.0	16.5	-87.54	-1,551.6	-824.1	551.3	483.8	67.54	8.164		
9,200.0	6,879.5	6,860.3	6,858.8	57.9	16.5	-87.76	-1,551.6	-824.0	616.3	546.5	69.71	8.840		
9,300.0	6,879.4	6,862.0	6,860.5	59.9	16.5	-87.97	-1,551.7	-823.9	689.6	617.7	71.90	9.591		
9,400.0	6,879.2	6,863.6	6,862.1	61.9	16.5	-88.18	-1,551.7	-823.8	769.0	694.9	74.11	10.377		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - DIC Cross #31-32 (P&A) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7025-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (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		
12,000.0	6,875.4	6,901.4	6,901.4	118.9	169.1	-90.12	-5,409.3	-837.4	762.6	476.7	285.86	2.668		
12,100.0	6,875.2	6,901.2	6,901.2	121.2	169.1	-90.10	-5,409.3	-837.4	682.5	394.3	288.17	2.368		
12,200.0	6,875.1	6,901.1	6,901.1	123.5	169.1	-90.08	-5,409.3	-837.4	608.3	317.9	290.47	2.094		
12,300.0	6,874.9	6,900.9	6,900.9	125.7	169.1	-90.06	-5,409.3	-837.4	542.5	249.7	292.78	1.853		
12,400.0	6,874.8	6,900.8	6,900.8	128.0	169.1	-90.04	-5,409.3	-837.4	488.5	193.4	295.09	1.655		
12,500.0	6,874.6	6,900.6	6,900.6	130.3	169.1	-90.03	-5,409.3	-837.4	450.4	153.0	297.40	1.514		
12,600.0	6,874.5	6,900.5	6,900.5	132.6	169.1	-90.01	-5,409.3	-837.4	432.6	132.9	299.72	1.443	Level 3	
12,628.7	6,874.5	6,900.5	6,900.5	133.2	169.1	-90.00	-5,409.3	-837.4	431.6	131.3	300.38	1.437	Level 3, CC, ES, SF	
12,700.0	6,874.3	6,900.3	6,900.3	134.9	169.1	-89.99	-5,409.3	-837.4	437.5	135.5	302.03	1.448	Level 3	
12,800.0	6,874.2	6,900.2	6,900.2	137.2	169.1	-89.97	-5,409.3	-837.4	464.4	160.0	304.34	1.526		
12,900.0	6,874.1	6,900.1	6,900.1	139.5	169.1	-89.95	-5,409.3	-837.4	509.8	203.2	306.66	1.663		
13,000.0	6,873.9	6,899.9	6,899.9	141.8	169.0	-89.93	-5,409.3	-837.4	569.4	260.4	308.98	1.843		
13,100.0	6,873.8	6,899.8	6,899.8	144.0	169.0	-89.91	-5,409.3	-837.4	639.1	327.8	311.29	2.053		
13,200.0	6,873.6	6,899.6	6,899.6	146.3	169.0	-89.89	-5,409.3	-837.4	716.0	402.4	313.61	2.283		
13,300.0	6,873.5	6,899.5	6,899.5	148.6	169.0	-89.87	-5,409.3	-837.4	798.1	482.2	315.93	2.526		



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<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 #29-1 (Exist.) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft
Survey Program:		100-NS-GYRO-MS											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
1,483.7	1,469.2	1,468.8	1,468.7	5.3	4.1	-34.21	-111.9	-920.7	795.7	787.3	8.42	94.543			
1,500.0	1,484.9	1,484.8	1,484.8	5.4	4.1	-34.39	-111.8	-920.6	791.8	783.3	8.53	92.860			
1,600.0	1,580.9	1,582.2	1,582.1	6.1	4.3	-35.55	-111.3	-919.8	767.7	758.5	9.20	83.450			
1,700.0	1,676.9	1,679.0	1,679.0	6.8	4.5	-36.76	-110.6	-919.0	743.8	733.9	9.92	74.970			
1,800.0	1,772.9	1,774.6	1,774.5	7.4	4.7	-38.06	-110.2	-918.0	720.2	709.5	10.63	67.741			
1,900.0	1,868.9	1,869.0	1,868.9	8.1	4.9	-39.46	-110.2	-917.1	697.0	685.7	11.36	61.355			
2,000.0	1,964.9	1,964.8	1,964.7	8.8	5.0	-40.94	-110.0	-916.3	674.5	662.3	12.12	55.641			
2,100.0	2,060.9	2,061.7	2,061.6	9.6	5.2	-42.60	-110.3	-915.2	652.3	639.4	12.90	50.548			
2,200.0	2,156.9	2,154.8	2,154.7	10.3	5.3	-44.27	-110.3	-914.3	630.6	616.9	13.70	46.040			
2,300.0	2,252.9	2,250.8	2,250.7	11.0	5.5	-46.10	-110.4	-913.8	610.1	595.5	14.54	41.951			
2,400.0	2,348.9	2,347.4	2,347.3	11.7	5.7	-48.04	-110.2	-913.0	589.7	574.3	15.48	38.108			
2,500.0	2,444.9	2,440.5	2,440.4	12.4	6.0	-50.02	-110.0	-912.6	570.5	554.1	16.44	34.702			
2,600.0	2,540.9	2,535.3	2,535.2	13.1	6.1	-52.18	-110.1	-912.4	552.4	535.0	17.38	31.776			
2,700.0	2,636.9	2,632.0	2,631.9	13.9	6.3	-54.55	-110.4	-912.1	535.1	516.8	18.34	29.185			
2,800.0	2,732.9	2,729.5	2,729.4	14.6	6.4	-57.10	-110.7	-911.6	518.6	499.3	19.37	26.780			
2,900.0	2,828.9	2,827.3	2,827.2	15.3	6.7	-59.81	-110.7	-910.7	502.8	482.3	20.48	24.549			
3,000.0	2,924.9	2,922.5	2,922.4	16.0	7.0	-62.55	-110.2	-910.0	488.0	466.4	21.64	22.547			
3,100.0	3,020.9	3,016.0	3,015.9	16.8	7.2	-65.37	-110.0	-909.7	474.9	452.1	22.81	20.818			
3,200.0	3,116.9	3,114.3	3,114.2	17.5	7.5	-68.53	-109.9	-909.2	463.1	439.0	24.02	19.278			
3,300.0	3,212.9	3,210.2	3,210.0	18.2	7.8	-71.75	-109.7	-908.5	452.5	427.3	25.23	17.934			
3,400.0	3,308.9	3,309.2	3,309.1	18.9	8.1	-75.16	-108.8	-907.8	443.1	416.7	26.46	16.746			
3,500.0	3,404.9	3,405.1	3,405.0	19.7	8.3	-78.56	-107.6	-907.2	435.1	407.4	27.66	15.727			
3,600.0	3,500.9	3,501.9	3,501.7	20.4	8.6	-82.09	-106.3	-906.6	428.6	399.8	28.84	14.861			
3,700.0	3,596.9	3,599.5	3,599.3	21.1	8.9	-85.74	-104.7	-905.9	423.7	393.7	29.99	14.130			
3,800.0	3,692.9	3,696.3	3,696.1	21.8	9.2	-89.44	-102.9	-904.9	420.3	389.2	31.08	13.524			
3,900.0	3,788.9	3,791.6	3,791.4	22.6	9.5	-93.17	-101.3	-903.6	418.7	386.6	32.10	13.044			
3,923.7	3,811.6	3,814.1	3,813.9	22.7	9.6	-94.06	-100.9	-903.3	418.7	386.4	32.34	12.948			
4,000.0	3,884.9	3,887.1	3,886.9	23.3	9.8	-96.92	-99.7	-902.3	419.3	386.2	33.06	12.683			
4,100.0	3,980.9	3,980.3	3,980.0	24.0	10.1	-100.50	-98.3	-901.5	422.0	388.1	33.94	12.436			
4,200.0	4,076.9	4,073.3	4,073.1	24.8	10.4	-103.99	-97.6	-901.1	427.3	392.6	34.74	12.301			
4,300.0	4,172.9	4,168.9	4,168.7	25.5	10.7	-107.49	-97.3	-900.5	434.8	399.4	35.47	12.260			
4,400.0	4,268.9	4,264.1	4,263.8	26.2	10.9	-110.82	-97.0	-900.2	444.0	407.9	36.08	12.305			
4,500.0	4,364.9	4,358.3	4,358.1	27.0	11.1	-113.92	-97.0	-900.4	455.0	418.5	36.54	12.451			
4,600.0	4,460.9	4,452.5	4,452.3	27.7	11.2	-116.84	-97.4	-900.9	467.8	430.9	36.89	12.681			
4,700.0	4,556.9	4,543.0	4,542.8	28.4	11.2	-119.48	-98.3	-901.5	482.4	445.2	37.21	12.966			
4,800.0	4,652.9	4,630.4	4,630.1	29.1	11.3	-121.89	-100.7	-901.8	499.8	462.3	37.52	13.321			
4,900.0	4,748.9	4,720.7	4,720.4	29.9	11.3	-124.20	-104.4	-902.0	519.5	481.7	37.81	13.738			
5,000.0	4,844.9	4,816.2	4,815.7	30.6	11.4	-126.47	-108.8	-902.1	540.5	502.5	38.08	14.193			
5,100.0	4,940.9	4,915.1	4,914.6	31.3	11.6	-128.67	-112.9	-902.2	562.0	523.6	38.34	14.658			
5,200.0	5,036.9	5,010.0	5,009.4	32.1	11.7	-130.63	-116.6	-902.2	584.0	545.4	38.61	15.125			
5,300.0	5,132.9	5,109.1	5,108.4	32.8	11.8	-132.60	-120.0	-901.7	606.4	567.5	38.87	15.601			
5,367.8	5,198.1	5,177.6	5,176.8	33.3	11.9	-133.94	-121.8	-901.0	621.5	582.5	39.04	15.919			
5,400.0	5,229.0	5,210.3	5,209.6	33.5	12.0	-134.65	-122.4	-900.6	628.5	589.4	39.10	16.076			
5,500.0	5,325.8	5,312.5	5,311.8	34.0	12.2	-136.66	-123.5	-899.2	648.4	609.2	39.25	16.520			
5,600.0	5,423.3	5,400.0	5,399.2	34.5	12.4	-138.17	-124.4	-897.3	666.5	627.0	39.46	16.892			
5,700.0	5,521.6	5,495.3	5,494.5	34.9	12.7	-139.57	-125.6	-894.2	683.2	643.6	39.65	17.231			
5,800.0	5,620.5	5,593.3	5,592.4	35.2	12.9	-140.77	-127.0	-890.4	697.9	658.1	39.85	17.512			
5,900.0	5,719.8	5,692.4	5,691.4	35.5	13.1	-141.67	-128.7	-887.1	710.1	670.0	40.07	17.719			
6,000.0	5,819.5	5,794.3	5,793.3	35.7	13.4	-142.29	-130.7	-884.4	719.4	679.1	40.32	17.844			
6,100.0	5,919.4	5,900.3	5,899.3	35.9	13.7	-142.69	-132.2	-882.2	725.4	684.8	40.58	17.875			
6,180.6	6,000.0	5,985.4	5,984.3	36.0	13.9	-148.12	-132.8	-880.4	727.6	686.8	40.81	17.830			

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<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 #29-1 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:		0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
6,200.0	6,019.4	6,005.4	6,004.3	36.0	13.9	148.09	-132.8	-880.0	727.9	687.0	40.88	17.804			
6,298.7	6,118.1	6,102.2	6,101.1	36.1	14.2	147.92	-132.8	-877.4	729.2	688.0	41.27	17.672			
6,300.0	6,119.4	6,103.6	6,102.4	36.1	14.2	-32.13	-132.8	-877.4	729.3	688.0	41.28	17.667			
6,350.0	6,169.3	6,155.4	6,154.2	36.2	14.4	-32.34	-132.7	-875.8	728.5	687.3	41.21	17.678			
6,400.0	6,219.1	6,206.7	6,205.5	36.2	14.5	-32.81	-132.4	-874.3	724.8	683.9	40.93	17.711			
6,450.0	6,268.4	6,256.3	6,255.2	36.2	14.7	-33.55	-132.1	-872.9	718.4	678.0	40.43	17.769			
6,500.0	6,317.1	6,305.2	6,303.9	36.2	14.8	-34.56	-131.7	-871.4	709.4	669.6	39.74	17.849			
6,550.0	6,364.9	6,352.1	6,350.9	36.1	15.0	-35.86	-131.3	-869.9	697.8	658.9	38.88	17.949			
6,600.0	6,411.6	6,398.1	6,396.8	36.1	15.1	-37.46	-131.0	-868.5	683.9	646.0	37.87	18.061			
6,650.0	6,457.1	6,441.7	6,440.4	36.0	15.2	-39.38	-130.7	-867.0	667.8	631.0	36.75	18.170			
6,700.0	6,501.2	6,484.0	6,482.7	36.0	15.4	-41.64	-130.5	-865.6	649.8	614.2	35.60	18.254			
6,750.0	6,543.6	6,525.8	6,524.4	35.9	15.5	-44.32	-130.4	-864.1	630.0	595.5	34.47	18.274			
6,800.0	6,584.2	6,566.3	6,564.9	35.8	15.6	-47.43	-130.4	-862.7	608.6	575.1	33.49	18.173			
6,850.0	6,622.8	6,604.8	6,603.4	35.7	15.7	-50.95	-130.3	-861.3	586.1	553.3	32.77	17.886			
6,900.0	6,659.2	6,641.1	6,639.7	35.6	15.8	-54.87	-130.2	-860.1	562.6	530.2	32.41	17.361			
6,950.0	6,693.3	6,675.1	6,673.7	35.5	15.9	-59.12	-130.2	-858.9	538.8	506.3	32.48	16.586			
7,000.0	6,724.9	6,706.7	6,705.3	35.4	16.0	-63.61	-130.1	-857.8	515.1	482.1	32.99	15.615			
7,050.0	6,754.0	6,735.7	6,734.2	35.4	16.1	-68.19	-130.0	-856.8	492.0	458.2	33.81	14.553			
7,100.0	6,780.3	6,761.9	6,760.4	35.3	16.2	-72.70	-130.0	-855.8	470.5	435.7	34.81	13.516			
7,150.0	6,803.8	6,785.3	6,783.8	35.2	16.3	-76.93	-129.9	-855.0	451.1	415.3	35.82	12.593			
7,200.0	6,824.4	6,805.7	6,804.2	35.2	16.3	-80.72	-129.9	-854.3	434.8	398.1	36.74	11.834			
7,250.0	6,841.9	6,823.2	6,821.6	35.1	16.4	-83.91	-129.9	-853.7	422.5	385.0	37.52	11.260			
7,300.0	6,856.3	6,837.5	6,836.0	35.1	16.4	-86.39	-129.9	-853.2	414.9	376.7	38.16	10.873			
7,345.3	6,866.7	6,847.8	6,846.2	35.1	16.4	-87.95	-129.8	-852.8	412.6	373.9	38.63	10.678 CC			
7,350.0	6,867.6	6,848.7	6,847.1	35.1	16.4	-88.07	-129.8	-852.8	412.6	373.9	38.68	10.667 ES			
7,400.0	6,875.6	6,856.6	6,855.1	35.1	16.5	-88.91	-129.8	-852.5	416.0	376.9	39.12	10.633 SF			
7,450.0	6,880.5	6,861.3	6,859.8	35.2	16.5	-88.86	-129.8	-852.4	425.2	385.6	39.50	10.762			
7,499.7	6,882.0	6,862.8	6,861.2	35.2	16.5	-87.92	-129.8	-852.3	439.6	399.8	39.81	11.044			
7,499.8	6,882.0	6,862.8	6,861.2	35.2	16.5	-87.92	-129.8	-852.3	439.7	399.9	39.81	11.045			
7,500.9	6,882.0	6,862.8	6,861.2	35.2	16.5	-87.92	-129.8	-852.3	440.0	400.2	39.82	11.052			
7,600.0	6,881.9	6,862.5	6,860.9	35.5	16.5	-87.88	-129.8	-852.3	483.2	442.5	40.73	11.865			
7,700.0	6,881.7	6,862.1	6,860.6	36.0	16.5	-87.83	-129.8	-852.3	541.9	500.0	41.88	12.938			
7,800.0	6,881.6	6,861.8	6,860.2	36.6	16.5	-87.78	-129.8	-852.3	611.4	568.2	43.20	14.154			
7,900.0	6,881.4	6,861.5	6,859.9	37.3	16.5	-87.74	-129.8	-852.3	688.4	643.8	44.64	15.422			
8,000.0	6,881.3	6,861.1	6,859.6	38.3	16.5	-87.69	-129.8	-852.4	770.8	724.6	46.20	16.683			

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<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 29-23 (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		
9,900.0	6,878.5	6,838.0	6,835.2	72.4	15.9	-84.50	-3,178.6	-711.4	748.3	664.4	83.93	8.916		
10,000.0	6,878.3	6,842.9	6,840.0	74.5	15.9	-84.99	-3,178.8	-711.1	685.9	599.6	86.28	7.949		
10,100.0	6,878.2	6,847.7	6,844.8	76.7	15.9	-85.49	-3,179.1	-710.9	633.0	544.4	88.63	7.143		
10,200.0	6,878.0	6,852.5	6,849.6	78.8	16.0	-85.98	-3,179.3	-710.6	592.5	501.5	90.98	6.512		
10,300.0	6,877.9	6,857.4	6,854.4	81.0	16.0	-86.48	-3,179.6	-710.4	566.8	473.5	93.34	6.073		
10,399.2	6,877.7	6,862.1	6,859.2	83.1	16.0	-86.97	-3,179.8	-710.1	558.1	462.4	95.67	5.833 CC		
10,400.0	6,877.7	6,862.2	6,859.2	83.2	16.0	-86.97	-3,179.8	-710.1	558.1	462.4	95.69	5.832 ES		
10,500.0	6,877.6	6,867.0	6,864.1	85.3	16.0	-87.47	-3,180.0	-709.9	567.1	469.0	98.05	5.784 SF		
10,600.0	6,877.4	6,871.8	6,868.9	87.5	16.0	-87.96	-3,180.3	-709.6	593.0	492.6	100.40	5.906		
10,700.0	6,877.3	6,876.7	6,873.7	89.8	16.0	-88.46	-3,180.5	-709.4	633.8	531.1	102.76	6.168		
10,800.0	6,877.1	6,881.5	6,878.5	92.0	16.0	-88.95	-3,180.8	-709.1	686.8	581.7	105.11	6.534		
10,900.0	6,877.0	6,886.3	6,883.3	94.2	16.0	-89.45	-3,181.0	-708.8	749.5	642.0	107.46	6.974		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
	Sec.29-T5N-R64W		
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<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 (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	-88.64	0.4	-15.0	15.0	15.0	0.00	N/A	CC, ES		
100.0	100.0	100.0	100.0	0.1	0.1	-88.64	0.4	-15.0	15.0	14.8	0.28	54.659			
200.0	200.0	200.0	200.0	0.4	0.4	-88.64	0.4	-15.0	15.0	14.2	0.83	18.220			
300.0	300.0	299.6	299.6	0.7	0.7	-87.33	0.8	-16.3	16.3	14.9	1.37	11.922			
400.0	400.0	399.1	399.0	1.0	1.0	-84.37	2.0	-20.0	20.1	18.2	1.91	10.498			
500.0	500.0	498.4	498.1	1.2	1.2	-12.94	4.0	-26.1	25.2	22.8	2.45	10.282			
600.0	599.9	597.5	596.8	1.5	1.6	-11.58	6.8	-34.7	30.4	27.4	3.00	10.136			
700.0	699.7	696.5	695.1	1.8	1.9	-10.83	10.4	-45.7	35.5	32.0	3.55	10.005			
800.0	799.3	795.4	793.0	2.1	2.3	-10.45	14.8	-59.1	40.7	36.6	4.12	9.882			
900.0	898.6	894.2	890.4	2.4	2.7	-10.32	19.9	-74.8	45.8	41.1	4.69	9.763			
1,000.0	997.5	992.8	987.1	2.8	3.2	-10.36	25.8	-93.0	50.9	45.7	5.28	9.644			
1,100.0	1,096.1	1,091.3	1,083.2	3.2	3.7	-10.53	32.5	-113.4	56.1	50.2	5.89	9.521			
1,200.0	1,194.2	1,189.7	1,178.6	3.7	4.3	-10.79	40.0	-136.2	61.2	54.6	6.51	9.393			
1,300.0	1,291.7	1,287.9	1,273.3	4.2	5.0	-11.11	48.2	-161.3	66.2	59.1	7.15	9.257			
1,400.0	1,388.6	1,386.1	1,367.1	4.8	5.7	-11.50	57.2	-188.7	71.3	63.5	7.82	9.118			
1,483.7	1,469.2	1,468.1	1,445.0	5.3	6.3	-11.85	65.2	-213.3	75.5	67.1	8.40	8.989			
1,500.0	1,484.9	1,484.1	1,460.0	5.4	6.4	-11.92	66.8	-218.3	76.3	67.8	8.52	8.965			
1,600.0	1,580.9	1,583.4	1,553.6	6.1	7.2	-12.24	77.2	-249.9	82.3	73.0	9.25	8.896			
1,700.0	1,676.9	1,683.2	1,647.7	6.8	8.1	-12.50	87.6	-281.7	88.3	78.3	10.00	8.831			
1,800.0	1,772.9	1,783.1	1,741.7	7.4	8.9	-12.74	98.0	-313.5	94.3	83.6	10.76	8.766			
1,900.0	1,868.9	1,882.9	1,835.7	8.1	9.8	-12.94	108.4	-345.3	100.3	88.8	11.53	8.703			
2,000.0	1,964.9	1,982.7	1,929.8	8.8	10.6	-13.12	118.8	-377.2	106.4	94.1	12.31	8.642			
2,100.0	2,060.9	2,082.5	2,023.8	9.6	11.5	-13.28	129.2	-409.0	112.4	99.3	13.09	8.584			
2,200.0	2,156.9	2,182.3	2,117.9	10.3	12.3	-13.43	139.6	-440.8	118.4	104.5	13.88	8.530			
2,300.0	2,252.9	2,282.2	2,211.9	11.0	13.2	-13.56	150.1	-472.6	124.4	109.8	14.68	8.479			
2,400.0	2,348.9	2,382.0	2,305.9	11.7	14.1	-13.68	160.5	-504.5	130.5	115.0	15.48	8.430			
2,500.0	2,444.9	2,481.8	2,400.0	12.4	14.9	-13.79	170.9	-536.3	136.5	120.2	16.28	8.385			
2,600.0	2,540.9	2,581.6	2,494.0	13.1	15.8	-13.89	181.3	-568.1	142.5	125.4	17.08	8.343			
2,700.0	2,636.9	2,681.4	2,588.0	13.9	16.7	-13.98	191.7	-599.9	148.5	130.7	17.89	8.303			
2,800.0	2,732.9	2,781.2	2,682.1	14.6	17.5	-14.07	202.1	-631.8	154.6	135.9	18.70	8.266			
2,900.0	2,828.9	2,881.1	2,776.1	15.3	18.4	-14.14	212.5	-663.6	160.6	141.1	19.51	8.231			
3,000.0	2,924.9	2,980.9	2,870.1	16.0	19.3	-14.22	222.9	-695.4	166.6	146.3	20.33	8.197			
3,100.0	3,020.9	3,080.7	2,964.2	16.8	20.1	-14.28	233.3	-727.2	172.6	151.5	21.14	8.166			
3,200.0	3,116.9	3,180.5	3,058.2	17.5	21.0	-14.35	243.8	-759.1	178.7	156.7	21.96	8.137			
3,300.0	3,212.9	3,280.3	3,152.2	18.2	21.9	-14.41	254.2	-790.9	184.7	161.9	22.78	8.109			
3,400.0	3,308.9	3,380.2	3,246.3	18.9	22.7	-14.46	264.6	-822.7	190.7	167.1	23.60	8.083			
3,500.0	3,404.9	3,480.0	3,340.3	19.7	23.6	-14.51	275.0	-854.5	196.8	172.3	24.42	8.058			
3,600.0	3,500.9	3,579.8	3,434.3	20.4	24.5	-14.56	285.4	-886.3	202.8	177.5	25.24	8.035			
3,700.0	3,596.9	3,679.6	3,528.4	21.1	25.4	-14.61	295.8	-918.2	208.8	182.8	26.06	8.013			
3,800.0	3,692.9	3,779.4	3,622.4	21.8	26.2	-14.65	306.2	-950.0	214.8	188.0	26.88	7.992			
3,900.0	3,788.9	3,879.2	3,716.4	22.6	27.1	-14.69	316.6	-981.8	220.9	193.2	27.71	7.971			
4,000.0	3,884.9	3,979.1	3,810.5	23.3	28.0	-14.73	327.0	-1,013.6	226.9	198.4	28.53	7.952			
4,100.0	3,980.9	4,078.9	3,904.5	24.0	28.9	-14.77	337.5	-1,045.5	232.9	203.6	29.36	7.934			
4,200.0	4,076.9	4,178.7	3,998.5	24.8	29.7	-14.80	347.9	-1,077.3	239.0	208.8	30.18	7.917			
4,300.0	4,172.9	4,278.5	4,092.6	25.5	30.6	-14.84	358.3	-1,109.1	245.0	214.0	31.01	7.900			
4,400.0	4,268.9	4,378.3	4,186.6	26.2	31.5	-14.87	368.7	-1,140.9	251.0	219.2	31.84	7.884			
4,500.0	4,364.9	4,478.2	4,280.6	27.0	32.4	-14.90	379.1	-1,172.8	257.0	224.4	32.66	7.869			
4,600.0	4,460.9	4,578.0	4,374.7	27.7	33.2	-14.93	389.5	-1,204.6	263.1	229.6	33.49	7.855			
4,700.0	4,556.9	4,677.8	4,468.7	28.4	34.1	-14.95	399.9	-1,236.4	269.1	234.8	34.32	7.841			
4,800.0	4,652.9	4,777.6	4,562.8	29.1	35.0	-14.98	410.3	-1,268.2	275.1	240.0	35.15	7.828			
4,900.0	4,748.9	4,877.4	4,656.8	29.9	35.8	-15.00	420.7	-1,300.1	281.2	245.2	35.98	7.815			

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<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)				
5,000.0	4,844.9	4,978.6	4,752.1	30.6	36.7	-15.03	431.3	-1,332.3	287.2	250.3	36.81	7.801			
5,100.0	4,940.9	5,089.5	4,857.4	31.3	37.5	-15.17	442.1	-1,365.2	290.8	253.2	37.66	7.722			
5,200.0	5,036.9	5,200.5	4,964.1	32.1	38.1	-15.49	451.6	-1,394.3	290.7	252.2	38.55	7.541			
5,300.0	5,132.9	5,311.2	5,071.7	32.8	38.6	-16.00	459.8	-1,419.4	286.8	247.4	39.49	7.265			
5,367.8	5,198.1	5,386.1	5,144.9	33.3	39.0	-16.47	464.6	-1,434.0	282.1	241.9	40.16	7.025			
5,400.0	5,229.0	5,421.5	5,179.7	33.5	39.1	-16.70	466.6	-1,440.4	279.4	239.0	40.47	6.905			
5,500.0	5,325.8	5,531.3	5,288.1	34.0	39.5	-17.45	472.2	-1,457.3	270.9	229.5	41.37	6.549			
5,600.0	5,423.3	5,640.7	5,396.6	34.5	39.8	-18.22	476.4	-1,470.3	262.0	219.8	42.20	6.209			
5,700.0	5,521.6	5,749.6	5,505.1	34.9	40.1	-19.03	479.4	-1,479.3	252.9	209.9	42.98	5.884			
5,800.0	5,620.5	5,858.1	5,613.5	35.2	40.2	-19.87	481.1	-1,484.4	243.4	199.7	43.70	5.570			
5,900.0	5,719.8	5,964.5	5,719.8	35.5	40.4	-20.74	481.5	-1,485.6	233.8	189.4	44.37	5.268			
6,000.0	5,819.5	6,064.2	5,819.5	35.7	40.5	-21.40	481.5	-1,485.6	226.3	181.4	44.89	5.041			
6,100.0	5,919.4	6,164.1	5,919.4	35.9	40.6	-21.80	481.5	-1,485.6	222.0	176.8	45.22	4.910			
6,177.9	5,997.2	6,241.7	5,997.0	36.0	40.6	-22.09	480.7	-1,485.6	221.0	175.6	45.42	4.865			
6,180.6	6,000.0	6,244.5	5,999.8	36.0	40.6	-91.15	480.6	-1,485.6	221.0	175.5	45.46	4.861			
6,200.0	6,019.4	6,263.7	6,019.0	36.0	40.6	-91.45	479.4	-1,485.6	221.0	175.3	45.67	4.839			
6,298.7	6,118.1	6,360.0	6,114.3	36.1	40.7	-94.82	466.4	-1,485.7	221.8	174.1	47.72	4.648			
6,300.0	6,119.4	6,361.2	6,115.5	36.1	40.7	85.07	466.1	-1,485.7	221.8	174.1	47.73	4.647			
6,350.0	6,169.3	6,408.7	6,161.7	36.2	40.7	82.60	455.2	-1,485.7	222.9	173.6	49.24	4.527			
6,400.0	6,219.1	6,455.7	6,206.7	36.2	40.6	80.20	441.6	-1,485.7	224.3	173.7	50.66	4.428			
6,450.0	6,268.4	6,502.2	6,250.2	36.2	40.6	77.88	425.5	-1,485.7	226.2	174.2	51.95	4.353			
6,500.0	6,317.1	6,548.1	6,292.3	36.2	40.6	75.65	406.9	-1,485.7	228.3	175.2	53.06	4.302			
6,550.0	6,364.9	6,593.6	6,332.7	36.1	40.5	73.52	386.1	-1,485.7	230.7	176.7	53.95	4.276			
6,600.0	6,411.6	6,638.7	6,371.5	36.1	40.4	71.50	363.1	-1,485.7	233.3	178.7	54.59	4.274			
6,650.0	6,457.1	6,683.4	6,408.6	36.0	40.4	69.60	338.1	-1,485.7	236.1	181.1	54.97	4.295			
6,700.0	6,501.2	6,727.7	6,443.8	36.0	40.3	67.82	311.3	-1,485.8	239.0	183.9	55.08	4.340			
6,750.0	6,543.6	6,771.7	6,477.2	35.9	40.2	66.16	282.7	-1,485.8	242.0	187.1	54.93	4.405			
6,800.0	6,584.2	6,815.3	6,508.6	35.8	40.2	64.62	252.4	-1,485.8	245.0	190.5	54.54	4.492			
6,850.0	6,622.8	6,858.7	6,538.0	35.7	40.1	63.20	220.6	-1,485.8	248.0	194.0	53.93	4.598			
6,900.0	6,659.2	6,900.0	6,564.4	35.6	40.0	61.94	188.8	-1,485.8	250.9	197.8	53.13	4.722			
6,950.0	6,693.3	6,944.6	6,590.9	35.5	39.9	60.72	152.9	-1,485.9	253.7	201.5	52.20	4.860			
7,000.0	6,724.9	6,987.2	6,614.1	35.4	39.9	59.66	117.2	-1,485.9	256.4	205.2	51.16	5.011			
7,050.0	6,754.0	7,029.6	6,635.3	35.4	39.8	58.71	80.5	-1,485.9	258.8	208.8	50.08	5.168			
7,100.0	6,780.3	7,071.8	6,654.3	35.3	39.8	57.87	42.8	-1,486.0	261.1	212.1	49.02	5.327			
7,150.0	6,803.8	7,113.9	6,671.2	35.2	39.7	57.15	4.2	-1,486.0	263.2	215.2	48.03	5.480			
7,200.0	6,824.4	7,155.8	6,685.9	35.2	39.7	56.52	-35.1	-1,486.0	265.0	217.8	47.19	5.617			
7,250.0	6,841.9	7,200.0	6,698.9	35.1	39.7	55.99	-77.2	-1,486.0	266.6	220.1	46.54	5.728			
7,300.0	6,856.3	7,239.4	6,708.5	35.1	39.7	55.60	-115.4	-1,486.1	267.9	221.7	46.15	5.804			
7,350.0	6,867.6	7,281.1	6,716.5	35.1	39.7	55.29	-156.3	-1,486.1	268.8	222.7	46.09	5.833			
7,400.0	6,875.6	7,322.7	6,722.3	35.1	39.7	55.07	-197.5	-1,486.1	269.5	223.2	46.32	5.818			
7,450.0	6,880.5	7,364.3	6,725.8	35.2	39.7	54.96	-239.0	-1,486.1	269.8	222.9	46.91	5.752			
7,499.7	6,882.0	7,405.6	6,727.0	35.2	39.7	54.95	-280.3	-1,486.2	269.9	222.0	47.84	5.642			
7,499.8	6,882.0	7,405.7	6,727.0	35.2	39.7	54.95	-280.4	-1,486.2	269.9	222.0	47.84	5.641			
7,500.9	6,882.0	7,406.6	6,727.0	35.2	39.7	54.95	-281.2	-1,486.2	269.9	222.0	47.86	5.639			
7,505.1	6,882.0	7,410.0	6,727.0	35.3	39.8	54.95	-284.7	-1,486.2	269.9	221.9	47.93	5.631			
7,600.0	6,881.9	7,504.3	6,726.3	35.5	39.9	54.86	-378.9	-1,486.3	270.2	220.5	49.66	5.441			
7,700.0	6,881.7	7,604.3	6,725.6	36.0	40.3	54.76	-478.9	-1,486.3	270.5	218.7	51.82	5.221			
7,800.0	6,881.6	7,704.3	6,724.9	36.6	40.7	54.65	-578.9	-1,486.4	270.9	216.7	54.17	5.000			
7,900.0	6,881.4	7,804.3	6,724.1	37.3	41.3	54.55	-678.9	-1,486.5	271.2	214.5	56.70	4.783			
8,000.0	6,881.3	7,904.3	6,723.4	38.3	42.0	54.45	-778.9	-1,486.6	271.6	212.2	59.39	4.573			

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<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)			
8,100.0	6,881.1	8,004.3	6,722.6	39.4	42.9	54.35	-878.9	-1,486.6	271.9	209.7	62.20	4.372		
8,200.0	6,881.0	8,104.3	6,721.9	40.6	43.9	54.25	-978.9	-1,486.7	272.2	207.1	65.12	4.180		
8,300.0	6,880.8	8,204.3	6,721.2	42.0	45.1	54.15	-1,078.9	-1,486.8	272.6	204.5	68.14	4.000		
8,400.0	6,880.7	8,304.3	6,720.4	43.5	46.4	54.05	-1,178.9	-1,486.9	272.9	201.7	71.25	3.831		
8,500.0	6,880.5	8,404.3	6,719.7	45.1	47.8	53.95	-1,278.9	-1,486.9	273.3	198.9	74.42	3.672		
8,600.0	6,880.4	8,504.3	6,719.0	46.8	49.3	53.85	-1,378.9	-1,487.0	273.6	196.0	77.66	3.524		
8,700.0	6,880.2	8,604.3	6,718.2	48.5	50.8	53.75	-1,478.9	-1,487.1	274.0	193.0	80.94	3.385		
8,800.0	6,880.1	8,704.2	6,717.5	50.3	52.5	53.65	-1,578.9	-1,487.2	274.3	190.1	84.28	3.255		
8,900.0	6,879.9	8,804.2	6,716.8	52.1	54.2	53.55	-1,678.9	-1,487.2	274.7	187.0	87.65	3.134		
9,000.0	6,879.8	8,904.2	6,716.0	54.0	56.0	53.45	-1,778.9	-1,487.3	275.0	184.0	91.05	3.021		
9,100.0	6,879.6	9,004.2	6,715.3	56.0	57.8	53.36	-1,878.9	-1,487.4	275.4	180.9	94.49	2.915		
9,200.0	6,879.5	9,104.2	6,714.5	57.9	59.7	53.26	-1,978.9	-1,487.5	275.7	177.8	97.95	2.815		
9,300.0	6,879.4	9,204.2	6,713.8	59.9	61.6	53.16	-2,078.9	-1,487.5	276.1	174.7	101.43	2.722		
9,400.0	6,879.2	9,304.2	6,713.1	61.9	63.6	53.06	-2,178.9	-1,487.6	276.4	171.5	104.93	2.635		
9,500.0	6,879.1	9,404.2	6,712.3	64.0	65.6	52.96	-2,278.9	-1,487.7	276.8	168.4	108.44	2.553		
9,600.0	6,878.9	9,504.2	6,711.6	66.1	67.6	52.87	-2,378.9	-1,487.8	277.2	165.2	111.97	2.475		
9,700.0	6,878.8	9,604.2	6,710.9	68.1	69.6	52.77	-2,478.9	-1,487.8	277.5	162.0	115.51	2.402		
9,800.0	6,878.6	9,704.2	6,710.1	70.3	71.7	52.67	-2,578.9	-1,487.9	277.9	158.8	119.07	2.334		
9,900.0	6,878.5	9,804.2	6,709.4	72.4	73.7	52.58	-2,678.8	-1,488.0	278.2	155.6	122.62	2.269		
10,000.0	6,878.3	9,904.2	6,708.7	74.5	75.8	52.48	-2,778.8	-1,488.1	278.6	152.4	126.19	2.208		
10,100.0	6,878.2	10,004.2	6,707.9	76.7	77.9	52.39	-2,878.8	-1,488.1	279.0	149.2	129.76	2.150		
10,200.0	6,878.0	10,104.2	6,707.2	78.8	80.0	52.29	-2,978.8	-1,488.2	279.3	146.0	133.34	2.095		
10,300.0	6,877.9	10,204.2	6,706.4	81.0	82.2	52.19	-3,078.8	-1,488.3	279.7	142.8	136.92	2.043		
10,400.0	6,877.7	10,304.2	6,705.7	83.2	84.3	52.10	-3,178.8	-1,488.4	280.0	139.5	140.50	1.993		
10,500.0	6,877.6	10,404.2	6,705.0	85.3	86.5	52.00	-3,278.8	-1,488.4	280.4	136.3	144.09	1.946		
10,600.0	6,877.4	10,504.2	6,704.2	87.5	88.7	51.91	-3,378.8	-1,488.5	280.8	133.1	147.67	1.901		
10,700.0	6,877.3	10,604.2	6,703.5	89.8	90.8	51.82	-3,478.8	-1,488.6	281.1	129.9	151.26	1.859		
10,800.0	6,877.1	10,704.2	6,702.8	92.0	93.0	51.72	-3,578.8	-1,488.7	281.5	126.7	154.84	1.818		
10,900.0	6,877.0	10,804.2	6,702.0	94.2	95.2	51.63	-3,678.8	-1,488.8	281.9	123.4	158.43	1.779		
11,000.0	6,876.8	10,904.2	6,701.3	96.4	97.4	51.53	-3,778.8	-1,488.8	282.2	120.2	162.01	1.742		
11,100.0	6,876.7	11,004.2	6,700.6	98.6	99.6	51.44	-3,878.8	-1,488.9	282.6	117.0	165.59	1.707		
11,200.0	6,876.6	11,104.2	6,699.8	100.9	101.8	51.35	-3,978.8	-1,489.0	283.0	113.8	169.17	1.673		
11,300.0	6,876.4	11,204.2	6,699.1	103.1	104.1	51.25	-4,078.8	-1,489.1	283.3	110.6	172.75	1.640		
11,400.0	6,876.3	11,304.2	6,698.3	105.4	106.3	51.16	-4,178.8	-1,489.1	283.7	107.4	176.33	1.609		
11,500.0	6,876.1	11,404.2	6,697.6	107.6	108.5	51.07	-4,278.8	-1,489.2	284.1	104.2	179.90	1.579		
11,600.0	6,876.0	11,504.2	6,696.9	109.9	110.7	50.98	-4,378.8	-1,489.3	284.4	101.0	183.47	1.550		
11,700.0	6,875.8	11,604.2	6,696.1	112.1	113.0	50.89	-4,478.8	-1,489.4	284.8	97.8	187.04	1.523		
11,800.0	6,875.7	11,704.2	6,695.4	114.4	115.2	50.79	-4,578.8	-1,489.4	285.2	94.6	190.60	1.496 Level 3		
11,900.0	6,875.5	11,804.2	6,694.7	116.7	117.5	50.70	-4,678.8	-1,489.5	285.6	91.4	194.16	1.471 Level 3		
12,000.0	6,875.4	11,904.2	6,693.9	118.9	119.7	50.61	-4,778.8	-1,489.6	285.9	88.2	197.71	1.446 Level 3		
12,100.0	6,875.2	12,004.2	6,693.2	121.2	122.0	50.52	-4,878.7	-1,489.7	286.3	85.1	201.26	1.423 Level 3		
12,200.0	6,875.1	12,104.2	6,692.5	123.5	124.3	50.43	-4,978.7	-1,489.7	286.7	81.9	204.81	1.400 Level 3		
12,300.0	6,874.9	12,204.2	6,691.7	125.7	126.5	50.34	-5,078.7	-1,489.8	287.1	78.7	208.35	1.378 Level 3		
12,400.0	6,874.8	12,304.2	6,691.0	128.0	128.8	50.25	-5,178.7	-1,489.9	287.4	75.6	211.88	1.357 Level 3		
12,500.0	6,874.6	12,404.2	6,690.2	130.3	131.1	50.16	-5,278.7	-1,490.0	287.8	72.4	215.41	1.336 Level 3		
12,600.0	6,874.5	12,504.2	6,689.5	132.6	133.3	50.07	-5,378.7	-1,490.0	288.2	69.3	218.94	1.316 Level 3		
12,700.0	6,874.3	12,604.2	6,688.8	134.9	135.6	49.98	-5,478.7	-1,490.1	288.6	66.1	222.46	1.297 Level 3		
12,800.0	6,874.2	12,704.2	6,688.0	137.2	137.9	49.89	-5,578.7	-1,490.2	289.0	63.0	225.98	1.279 Level 3		
12,900.0	6,874.1	12,804.2	6,687.3	139.5	140.2	49.80	-5,678.7	-1,490.3	289.3	59.9	229.49	1.261 Level 3		
13,000.0	6,873.9	12,904.2	6,686.6	141.8	142.4	49.71	-5,778.7	-1,490.3	289.7	56.7	232.99	1.243 Level 2		
13,100.0	6,873.8	13,004.2	6,685.8	144.0	144.7	49.62	-5,878.7	-1,490.4	290.1	53.6	236.49	1.227 Level 2		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<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								
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	6,873.6	13,104.2	6,685.1	146.3	147.0	49.53	-5,978.7	-1,490.5	290.5	50.5	239.98	1.210	Level 2		
13,300.0	6,873.5	13,204.2	6,684.4	148.6	149.3	49.45	-6,078.7	-1,490.6	290.9	47.4	243.47	1.195	Level 2		
13,400.0	6,873.3	13,304.2	6,683.6	150.9	151.6	49.36	-6,178.7	-1,490.6	291.3	44.3	246.95	1.179	Level 2		
13,500.0	6,873.2	13,404.2	6,682.9	153.2	153.9	49.27	-6,278.7	-1,490.7	291.6	41.2	250.43	1.165	Level 2		
13,600.0	6,873.0	13,504.2	6,682.1	155.5	156.2	49.18	-6,378.7	-1,490.8	292.0	38.1	253.90	1.150	Level 2		
13,700.0	6,872.9	13,604.2	6,681.4	157.9	158.5	49.10	-6,478.7	-1,490.9	292.4	35.0	257.37	1.136	Level 2		
13,800.0	6,872.7	13,704.2	6,680.7	160.2	160.8	49.01	-6,578.7	-1,491.0	292.8	32.0	260.83	1.123	Level 2		
13,900.0	6,872.6	13,804.2	6,679.9	162.5	163.1	48.92	-6,678.7	-1,491.0	293.2	28.9	264.28	1.109	Level 2		
14,000.0	6,872.4	13,904.2	6,679.2	164.8	165.4	48.83	-6,778.7	-1,491.1	293.6	25.8	267.73	1.097	Level 2		
14,100.0	6,872.3	14,004.2	6,678.5	167.1	167.7	48.75	-6,878.7	-1,491.2	294.0	22.8	271.17	1.084	Level 2		
14,200.0	6,872.1	14,104.2	6,677.7	169.4	170.0	48.66	-6,978.7	-1,491.3	294.4	19.8	274.58	1.072	Level 2		
14,294.6	6,872.0	14,198.8	6,677.0	171.6	171.7	48.58	-7,073.2	-1,491.3	294.7	17.3	277.42	1.062	Level 2		
14,295.3	6,872.0	14,199.4	6,677.0	171.6	171.8	48.58	-7,073.9	-1,491.3	294.7	17.3	277.44	1.062	Level 2, SF		



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<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 Depth (ft)	Vertical Depth Depth (ft)	Measured Depth Depth (ft)	Vertical Depth Depth (ft)	Reference  (ft)	Offset  (ft)	Highside Toolface Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres Centres (ft)	Between Ellipses Ellipses (ft)	Minimum Separation Separation (ft)	Separation Factor			
0.0	0.0	1.0	1.0	0.0	0.0	90.03	0.0	15.0	15.0	15.0	0.00	9,291.717			
100.0	100.0	101.0	101.0	0.1	0.1	90.03	0.0	15.0	15.0	14.8	0.28	54.103			
200.0	200.0	201.0	201.0	0.4	0.4	90.03	0.0	15.0	15.0	14.2	0.83	18.154			
300.0	300.0	301.0	301.0	0.7	0.7	90.03	0.0	15.0	15.0	13.7	1.38	10.907			
400.0	400.0	401.0	401.0	1.0	1.0	90.03	0.0	15.0	15.0	13.1	1.93	7.795 CC			
500.0	500.0	501.0	501.0	1.2	1.2	160.69	0.0	15.0	16.3	13.8	2.48	6.574			
600.0	599.9	600.9	600.9	1.5	1.5	164.39	0.0	15.0	20.0	17.0	3.02	6.626			
700.0	699.7	700.7	700.7	1.8	1.8	168.20	0.0	15.0	26.4	22.8	3.57	7.381			
800.0	799.3	800.3	800.3	2.1	2.1	171.21	0.0	15.0	35.4	31.3	4.13	8.569			
900.0	898.6	900.8	900.8	2.4	2.3	173.10	0.6	13.8	45.7	41.1	4.68	9.785			
1,000.0	997.5	1,001.5	1,001.5	2.8	2.6	174.10	2.2	10.2	56.1	50.9	5.21	10.770			
1,100.0	1,096.1	1,102.6	1,102.3	3.2	2.9	174.64	5.0	4.2	66.6	60.8	5.76	11.557			
1,200.0	1,194.2	1,203.9	1,203.2	3.7	3.2	174.89	9.0	-4.3	77.0	70.6	6.31	12.191			
1,300.0	1,291.7	1,305.6	1,304.1	4.2	3.5	174.96	14.0	-15.3	87.3	80.5	6.88	12.702			
1,400.0	1,388.6	1,407.5	1,404.9	4.8	3.8	174.90	20.3	-28.7	97.7	90.3	7.45	13.111			
1,483.7	1,469.2	1,493.0	1,489.2	5.3	4.2	174.79	26.3	-41.8	106.4	98.4	7.94	13.388			
1,500.0	1,484.9	1,509.6	1,505.6	5.4	4.2	174.76	27.6	-44.6	108.0	100.0	8.04	13.426			
1,600.0	1,580.9	1,612.3	1,606.2	6.1	4.7	174.48	36.2	-63.0	116.6	107.9	8.67	13.443			
1,700.0	1,676.9	1,715.3	1,706.5	6.8	5.2	174.02	45.9	-84.0	122.5	113.2	9.32	13.140			
1,800.0	1,772.9	1,818.5	1,806.5	7.4	5.7	173.38	56.7	-107.4	125.8	115.8	9.99	12.589			
1,900.0	1,868.9	1,919.0	1,903.3	8.1	6.3	172.64	68.0	-131.8	127.4	116.7	10.68	11.928			
2,000.0	1,964.9	2,019.0	1,999.7	8.8	6.9	171.92	79.3	-156.1	128.9	117.6	11.38	11.332			
2,100.0	2,060.9	2,119.0	2,096.0	9.6	7.6	171.22	90.5	-180.4	130.5	118.4	12.09	10.793			
2,200.0	2,156.9	2,218.9	2,192.3	10.3	8.2	170.53	101.8	-204.6	132.1	119.3	12.82	10.304			
2,300.0	2,252.9	2,318.9	2,288.6	11.0	8.9	169.86	113.0	-228.9	133.8	120.2	13.57	9.859			
2,400.0	2,348.9	2,418.9	2,385.0	11.7	9.5	169.21	124.2	-253.2	135.4	121.1	14.32	9.453			
2,500.0	2,444.9	2,518.9	2,481.3	12.4	10.2	168.57	135.5	-277.5	137.1	122.0	15.09	9.080			
2,600.0	2,540.9	2,618.8	2,577.6	13.1	10.8	167.95	146.7	-301.7	138.7	122.9	15.88	8.738			
2,700.0	2,636.9	2,718.8	2,674.0	13.9	11.5	167.34	158.0	-326.0	140.4	123.8	16.67	8.423			
2,800.0	2,732.9	2,818.8	2,770.3	14.6	12.2	166.75	169.2	-350.3	142.2	124.7	17.48	8.131			
2,900.0	2,828.9	2,918.8	2,866.6	15.3	12.9	166.17	180.5	-374.6	143.9	125.6	18.30	7.861			
3,000.0	2,924.9	3,018.7	2,962.9	16.0	13.5	165.61	191.7	-398.9	145.6	126.5	19.14	7.610			
3,100.0	3,020.9	3,118.7	3,059.3	16.8	14.2	165.06	203.0	-423.1	147.4	127.4	19.98	7.376			
3,200.0	3,116.9	3,218.7	3,155.6	17.5	14.9	164.52	214.2	-447.4	149.1	128.3	20.83	7.158			
3,300.0	3,212.9	3,318.7	3,251.9	18.2	15.6	163.99	225.4	-471.7	150.9	129.2	21.70	6.955			
3,400.0	3,308.9	3,418.6	3,348.2	18.9	16.3	163.48	236.7	-496.0	152.7	130.1	22.58	6.764			
3,500.0	3,404.9	3,518.6	3,444.6	19.7	17.0	162.98	247.9	-520.2	154.5	131.0	23.46	6.585			
3,600.0	3,500.9	3,618.6	3,540.9	20.4	17.7	162.49	259.2	-544.5	156.3	132.0	24.36	6.417			
3,700.0	3,596.9	3,718.6	3,637.2	21.1	18.3	162.01	270.4	-568.8	158.2	132.9	25.27	6.259			
3,800.0	3,692.9	3,818.5	3,733.6	21.8	19.0	161.54	281.7	-593.1	160.0	133.8	26.18	6.110			
3,900.0	3,788.9	3,918.5	3,829.9	22.6	19.7	161.09	292.9	-617.3	161.8	134.7	27.11	5.970			
4,000.0	3,884.9	4,018.5	3,926.2	23.3	20.4	160.64	304.2	-641.6	163.7	135.6	28.05	5.837			
4,100.0	3,980.9	4,118.5	4,022.5	24.0	21.1	160.21	315.4	-665.9	165.6	136.6	28.99	5.711			
4,200.0	4,076.9	4,218.4	4,118.9	24.8	21.8	159.78	326.6	-690.2	167.4	137.5	29.94	5.592			
4,300.0	4,172.9	4,318.4	4,215.2	25.5	22.5	159.36	337.9	-714.5	169.3	138.4	30.90	5.479			
4,400.0	4,268.9	4,418.4	4,311.5	26.2	23.2	158.95	349.1	-738.7	171.2	139.3	31.87	5.372			
4,500.0	4,364.9	4,518.3	4,407.9	27.0	23.9	158.55	360.4	-763.0	173.1	140.3	32.85	5.271			
4,600.0	4,460.9	4,618.3	4,504.2	27.7	24.6	158.16	371.6	-787.3	175.0	141.2	33.83	5.174			
4,700.0	4,556.9	4,718.3	4,600.5	28.4	25.3	157.78	382.9	-811.6	177.0	142.1	34.82	5.082			
4,800.0	4,652.9	4,818.3	4,696.8	29.1	26.0	157.41	394.1	-835.8	178.9	143.1	35.82	4.994			
4,900.0	4,748.9	4,918.2	4,793.2	29.9	26.7	157.04	405.4	-860.1	180.8	144.0	36.82	4.910			

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



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<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		
5,000.0	4,844.9	5,018.2	4,889.5	30.6	27.4	156.68	416.6	-884.4	182.8	144.9	37.84	4.830		
5,100.0	4,940.9	5,118.2	4,985.8	31.3	28.0	156.33	427.9	-908.7	184.7	145.9	38.85	4.754		
5,200.0	5,036.9	5,218.2	5,082.2	32.1	28.7	155.99	439.1	-932.9	186.7	146.8	39.88	4.681		
5,300.0	5,132.9	5,315.6	5,176.1	32.8	29.4	155.71	449.9	-956.3	188.9	148.1	40.85	4.626		
5,367.8	5,198.1	5,379.6	5,238.2	33.3	29.7	155.74	456.4	-970.3	191.9	150.5	41.36	4.639		
5,400.0	5,229.0	5,409.9	5,267.7	33.5	29.8	155.82	459.3	-976.6	193.6	152.0	41.58	4.655		
5,500.0	5,325.8	5,504.1	5,359.9	34.0	30.2	156.07	467.4	-994.0	198.6	156.5	42.17	4.711		
5,600.0	5,423.3	5,600.0	5,454.4	34.5	30.6	156.34	474.3	-1,009.0	203.4	160.8	42.66	4.769		
5,700.0	5,521.6	5,692.0	5,545.5	34.9	30.9	156.61	479.7	-1,020.7	207.9	164.9	43.05	4.830		
5,800.0	5,620.5	5,785.8	5,638.7	35.2	31.2	156.91	484.0	-1,029.8	212.2	168.8	43.35	4.894		
5,900.0	5,719.8	5,879.5	5,732.1	35.5	31.4	157.22	486.9	-1,036.2	216.1	172.5	43.56	4.960		
6,000.0	5,819.5	5,973.0	5,825.6	35.7	31.5	157.54	488.6	-1,039.8	219.7	176.1	43.68	5.031		
6,100.0	5,919.4	6,067.8	5,920.4	35.9	31.7	157.88	489.0	-1,040.7	223.0	179.3	43.72	5.102		
6,180.6	6,000.0	6,148.4	6,001.0	36.0	31.8	88.98	489.0	-1,040.7	224.1	180.3	43.81	5.115		
6,200.0	6,019.4	6,167.8	6,020.4	36.0	31.8	88.98	489.0	-1,040.7	224.1	180.2	43.87	5.107		
6,298.7	6,118.1	6,266.6	6,119.1	36.1	31.9	89.95	485.2	-1,040.7	224.0	180.3	43.76	5.120		
6,300.0	6,119.4	6,267.9	6,120.4	36.1	31.9	-90.06	485.1	-1,040.7	224.0	180.3	43.73	5.123		
6,302.4	6,121.8	6,270.4	6,122.8	36.1	31.9	-90.00	484.8	-1,040.7	224.0	180.3	43.71	5.126		
6,350.0	6,169.3	6,317.6	6,169.6	36.2	31.9	-88.80	478.5	-1,040.7	224.1	180.8	43.28	5.178		
6,400.0	6,219.1	6,366.8	6,217.9	36.2	31.9	-87.55	468.7	-1,040.7	224.2	181.5	42.79	5.241		
6,450.0	6,268.4	6,415.8	6,265.2	36.2	31.9	-86.31	456.0	-1,040.7	224.5	182.2	42.28	5.311		
6,500.0	6,317.1	6,464.5	6,311.3	36.2	31.8	-85.10	440.4	-1,040.7	224.9	183.1	41.76	5.385		
6,550.0	6,364.9	6,512.9	6,356.0	36.1	31.8	-83.91	422.0	-1,040.7	225.3	184.1	41.25	5.463		
6,600.0	6,411.6	6,561.1	6,399.3	36.1	31.7	-82.76	400.9	-1,040.7	225.9	185.1	40.75	5.542		
6,650.0	6,457.1	6,608.9	6,440.9	36.0	31.6	-81.64	377.3	-1,040.7	226.5	186.2	40.28	5.622		
6,700.0	6,501.2	6,656.6	6,480.8	36.0	31.5	-80.57	351.2	-1,040.8	227.1	187.3	39.85	5.700		
6,750.0	6,543.6	6,703.9	6,518.7	35.9	31.4	-79.54	322.9	-1,040.8	227.8	188.4	39.45	5.776		
6,800.0	6,584.2	6,750.0	6,553.9	35.8	31.3	-78.58	293.1	-1,040.8	228.6	189.5	39.09	5.848		
6,850.0	6,622.8	6,798.0	6,588.6	35.7	31.2	-77.63	259.9	-1,040.8	229.4	190.6	38.77	5.916		
6,900.0	6,659.2	6,844.8	6,620.3	35.6	31.1	-76.76	225.5	-1,040.8	230.2	191.7	38.51	5.978		
6,950.0	6,693.3	6,891.3	6,649.7	35.5	31.0	-75.95	189.5	-1,040.9	231.0	192.7	38.29	6.032		
7,000.0	6,724.9	6,937.7	6,676.8	35.4	31.0	-75.20	151.8	-1,040.9	231.7	193.6	38.12	6.079		
7,050.0	6,754.0	6,984.0	6,701.4	35.4	30.9	-74.51	112.7	-1,040.9	232.5	194.5	38.01	6.116		
7,100.0	6,780.3	7,030.1	6,723.6	35.3	30.8	-73.88	72.3	-1,041.0	233.2	195.2	37.97	6.143		
7,150.0	6,803.8	7,076.0	6,743.2	35.2	30.7	-73.32	30.7	-1,041.0	233.9	195.9	37.99	6.157		
7,200.0	6,824.4	7,121.9	6,760.3	35.2	30.7	-72.83	-11.8	-1,041.0	234.5	196.4	38.08	6.159		
7,250.0	6,841.9	7,167.7	6,774.8	35.1	30.6	-72.40	-55.2	-1,041.1	235.0	196.8	38.24	6.146		
7,300.0	6,856.3	7,213.3	6,786.6	35.1	30.6	-72.03	-99.4	-1,041.1	235.5	197.0	38.50	6.117		
7,350.0	6,867.6	7,258.9	6,795.7	35.1	30.6	-71.74	-144.0	-1,041.1	235.9	197.1	38.81	6.078		
7,400.0	6,875.6	7,304.5	6,802.2	35.1	30.7	-71.51	-189.1	-1,041.2	236.2	197.0	39.23	6.021		
7,450.0	6,880.5	7,350.0	6,805.9	35.2	30.7	-71.35	-234.5	-1,041.2	236.4	196.7	39.73	5.950		
7,499.7	6,882.0	7,396.0	6,807.0	35.2	30.8	-71.26	-280.5	-1,041.2	236.6	196.2	40.33	5.866		
7,499.8	6,882.0	7,396.0	6,807.0	35.2	30.8	-71.26	-280.5	-1,041.2	236.6	196.2	40.33	5.865		
7,500.2	6,882.0	7,396.0	6,807.0	35.2	30.8	-71.26	-280.5	-1,041.2	236.6	196.2	40.33	5.865		
7,500.9	6,882.0	7,396.3	6,807.0	35.2	30.8	-71.26	-280.8	-1,041.2	236.6	196.2	40.34	5.864		
7,600.0	6,881.9	7,495.4	6,806.3	35.5	31.2	-71.13	-379.9	-1,041.3	236.7	194.6	42.10	5.624		
7,700.0	6,881.7	7,595.4	6,805.5	36.0	31.7	-70.99	-479.9	-1,041.4	236.9	192.6	44.30	5.349		
7,800.0	6,881.6	7,695.4	6,804.8	36.6	32.5	-70.86	-579.9	-1,041.4	237.1	190.3	46.81	5.065		
7,900.0	6,881.4	7,795.4	6,804.1	37.3	33.5	-70.72	-679.9	-1,041.5	237.3	187.7	49.60	4.785		
8,000.0	6,881.3	7,895.4	6,803.3	38.3	34.7	-70.59	-779.8	-1,041.6	237.5	184.9	52.61	4.515		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
	Sec.29-T5N-R64W		
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft	
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
8,100.0	6,881.1	7,995.4	6,802.6	39.4	36.0	-70.45	-879.8	-1,041.7	237.7	181.9	55.81	4.259			
8,200.0	6,881.0	8,095.4	6,801.9	40.6	37.5	-70.32	-979.8	-1,041.7	237.9	178.8	59.16	4.021			
8,300.0	6,880.8	8,195.4	6,801.1	42.0	39.1	-70.19	-1,079.8	-1,041.8	238.1	175.5	62.64	3.801			
8,400.0	6,880.7	8,295.4	6,800.4	43.5	40.8	-70.05	-1,179.8	-1,041.9	238.3	172.1	66.23	3.598			
8,500.0	6,880.5	8,395.4	6,799.6	45.1	42.5	-69.92	-1,279.8	-1,042.0	238.5	168.6	69.91	3.412			
8,600.0	6,880.4	8,495.4	6,798.9	46.8	44.4	-69.79	-1,379.8	-1,042.0	238.7	165.1	73.66	3.241			
8,700.0	6,880.2	8,595.4	6,798.2	48.5	46.2	-69.66	-1,479.8	-1,042.1	238.9	161.5	77.48	3.084			
8,800.0	6,880.1	8,695.4	6,797.4	50.3	48.1	-69.52	-1,579.8	-1,042.2	239.1	157.8	81.34	2.940			
8,900.0	6,879.9	8,795.4	6,796.7	52.1	50.1	-69.39	-1,679.8	-1,042.3	239.3	154.1	85.26	2.807			
9,000.0	6,879.8	8,895.4	6,796.0	54.0	52.1	-69.26	-1,779.8	-1,042.3	239.6	150.3	89.21	2.685			
9,100.0	6,879.6	8,995.4	6,795.2	56.0	54.1	-69.13	-1,879.8	-1,042.4	239.8	146.6	93.19	2.573			
9,200.0	6,879.5	9,095.4	6,794.5	57.9	56.2	-69.00	-1,979.8	-1,042.5	240.0	142.8	97.20	2.469			
9,300.0	6,879.4	9,195.4	6,793.8	59.9	58.2	-68.87	-2,079.8	-1,042.5	240.2	139.0	101.23	2.373			
9,400.0	6,879.2	9,295.4	6,793.0	61.9	60.3	-68.74	-2,179.8	-1,042.6	240.4	135.1	105.28	2.283			
9,500.0	6,879.1	9,395.4	6,792.3	64.0	62.4	-68.60	-2,279.8	-1,042.7	240.6	131.3	109.35	2.200			
9,600.0	6,878.9	9,495.4	6,791.5	66.1	64.5	-68.47	-2,379.8	-1,042.8	240.8	127.4	113.44	2.123			
9,700.0	6,878.8	9,595.4	6,790.8	68.1	66.7	-68.34	-2,479.8	-1,042.8	241.0	123.5	117.53	2.051			
9,800.0	6,878.6	9,695.4	6,790.1	70.3	68.8	-68.21	-2,579.8	-1,042.9	241.3	119.6	121.63	1.984			
9,900.0	6,878.5	9,795.4	6,789.3	72.4	71.0	-68.08	-2,679.8	-1,043.0	241.5	115.7	125.75	1.920			
10,000.0	6,878.3	9,895.4	6,788.6	74.5	73.2	-67.96	-2,779.8	-1,043.1	241.7	111.8	129.87	1.861			
10,100.0	6,878.2	9,995.4	6,787.9	76.7	75.4	-67.83	-2,879.8	-1,043.1	241.9	107.9	133.99	1.806			
10,200.0	6,878.0	10,095.4	6,787.1	78.8	77.6	-67.70	-2,979.7	-1,043.2	242.2	104.0	138.12	1.753			
10,300.0	6,877.9	10,195.4	6,786.4	81.0	79.8	-67.57	-3,079.7	-1,043.3	242.4	100.1	142.25	1.704			
10,400.0	6,877.7	10,295.4	6,785.7	83.2	82.0	-67.44	-3,179.7	-1,043.4	242.6	96.2	146.38	1.657			
10,500.0	6,877.6	10,395.4	6,784.9	85.3	84.2	-67.31	-3,279.7	-1,043.4	242.8	92.3	150.52	1.613			
10,600.0	6,877.4	10,495.4	6,784.2	87.5	86.4	-67.18	-3,379.7	-1,043.5	243.1	88.4	154.65	1.572			
10,700.0	6,877.3	10,595.4	6,783.4	89.8	88.7	-67.06	-3,479.7	-1,043.6	243.3	84.5	158.79	1.532			
10,800.0	6,877.1	10,695.4	6,782.7	92.0	90.9	-66.93	-3,579.7	-1,043.7	243.5	80.6	162.92	1.495 Level 3			
10,900.0	6,877.0	10,795.4	6,782.0	94.2	93.2	-66.80	-3,679.7	-1,043.7	243.8	76.7	167.05	1.459 Level 3			
11,000.0	6,876.8	10,895.4	6,781.2	96.4	95.4	-66.67	-3,779.7	-1,043.8	244.0	72.8	171.19	1.425 Level 3			
11,100.0	6,876.7	10,995.4	6,780.5	98.6	97.7	-66.55	-3,879.7	-1,043.9	244.2	68.9	175.32	1.393 Level 3			
11,200.0	6,876.6	11,095.4	6,779.8	100.9	99.9	-66.42	-3,979.7	-1,044.0	244.5	65.0	179.44	1.362 Level 3			
11,300.0	6,876.4	11,195.4	6,779.0	103.1	102.2	-66.29	-4,079.7	-1,044.0	244.7	61.1	183.57	1.333 Level 3			
11,400.0	6,876.3	11,295.4	6,778.3	105.4	104.5	-66.17	-4,179.7	-1,044.1	244.9	57.2	187.69	1.305 Level 3			
11,500.0	6,876.1	11,395.4	6,777.6	107.6	106.7	-66.04	-4,279.7	-1,044.2	245.2	53.4	191.81	1.278 Level 3			
11,600.0	6,876.0	11,495.4	6,776.8	109.9	109.0	-65.92	-4,379.7	-1,044.3	245.4	49.5	195.92	1.253 Level 3			
11,700.0	6,875.8	11,595.4	6,776.1	112.1	111.3	-65.79	-4,479.7	-1,044.3	245.7	45.6	200.03	1.228 Level 2			
11,800.0	6,875.7	11,695.4	6,775.4	114.4	113.6	-65.67	-4,579.7	-1,044.4	245.9	41.8	204.14	1.205 Level 2			
11,900.0	6,875.5	11,795.4	6,774.6	116.7	115.8	-65.54	-4,679.7	-1,044.5	246.1	37.9	208.24	1.182 Level 2			
12,000.0	6,875.4	11,895.4	6,773.9	118.9	118.1	-65.42	-4,779.7	-1,044.5	246.4	34.1	212.34	1.160 Level 2			
12,100.0	6,875.2	11,995.4	6,773.1	121.2	120.4	-65.29	-4,879.7	-1,044.6	246.6	30.2	216.43	1.140 Level 2			
12,200.0	6,875.1	12,095.4	6,772.4	123.5	122.7	-65.17	-4,979.7	-1,044.7	246.9	26.4	220.52	1.120 Level 2			
12,300.0	6,874.9	12,195.4	6,771.7	125.7	125.0	-65.04	-5,079.7	-1,044.8	247.1	22.5	224.60	1.100 Level 2			
12,400.0	6,874.8	12,295.3	6,770.9	128.0	127.3	-64.92	-5,179.6	-1,044.8	247.4	18.7	228.67	1.082 Level 2			
12,500.0	6,874.6	12,395.3	6,770.2	130.3	129.6	-64.80	-5,279.6	-1,044.9	247.6	14.9	232.74	1.064 Level 2			
12,600.0	6,874.5	12,495.3	6,769.5	132.6	131.9	-64.67	-5,379.6	-1,045.0	247.9	11.1	236.81	1.047 Level 2			
12,700.0	6,874.3	12,595.3	6,768.7	134.9	134.2	-64.55	-5,479.6	-1,045.1	248.1	7.3	240.87	1.030 Level 2			
12,800.0	6,874.2	12,695.3	6,768.0	137.2	136.5	-64.43	-5,579.6	-1,045.1	248.4	3.5	244.92	1.014 Level 2			
12,900.0	6,874.1	12,795.3	6,767.3	139.5	138.8	-64.31	-5,679.6	-1,045.2	248.6	-0.3	248.97	0.999 Level 1			
13,000.0	6,873.9	12,895.3	6,766.5	141.8	141.1	-64.18	-5,779.6	-1,045.3	248.9	-4.1	253.01	0.984 Level 1			
13,100.0	6,873.8	12,995.3	6,765.8	144.0	143.4	-64.06	-5,879.6	-1,045.4	249.2	-7.9	257.05	0.969 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 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance								
Measured Depth (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	6,873.6	13,095.3	6,765.0	146.3	145.7	-63.94	-5,979.6	-1,045.4	249.4	-11.7	261.08	0.955	Level 1		
13,300.0	6,873.5	13,195.3	6,764.3	148.6	148.0	-63.82	-6,079.6	-1,045.5	249.7	-15.4	265.10	0.942	Level 1		
13,400.0	6,873.3	13,295.3	6,763.6	150.9	150.3	-63.70	-6,179.6	-1,045.6	249.9	-19.2	269.12	0.929	Level 1		
13,500.0	6,873.2	13,395.3	6,762.8	153.2	152.6	-63.58	-6,279.6	-1,045.7	250.2	-22.9	273.13	0.916	Level 1		
13,600.0	6,873.0	13,495.3	6,762.1	155.5	154.9	-63.46	-6,379.6	-1,045.7	250.5	-26.7	277.13	0.904	Level 1		
13,700.0	6,872.9	13,595.3	6,761.4	157.9	157.3	-63.34	-6,479.6	-1,045.8	250.7	-30.4	281.13	0.892	Level 1		
13,800.0	6,872.7	13,695.3	6,760.6	160.2	159.6	-63.22	-6,579.6	-1,045.9	251.0	-34.1	285.12	0.880	Level 1		
13,900.0	6,872.6	13,795.3	6,759.9	162.5	161.9	-63.10	-6,679.6	-1,046.0	251.3	-37.8	289.10	0.869	Level 1		
14,000.0	6,872.4	13,895.3	6,759.2	164.8	164.2	-62.98	-6,779.6	-1,046.0	251.5	-41.5	293.08	0.858	Level 1		
14,100.0	6,872.3	13,995.3	6,758.4	167.1	166.5	-62.86	-6,879.6	-1,046.1	251.8	-45.2	297.05	0.848	Level 1		
14,200.0	6,872.1	14,095.3	6,757.7	169.4	168.8	-62.74	-6,979.6	-1,046.2	252.1	-48.9	301.01	0.837	Level 1		
14,294.6	6,872.0	14,188.1	6,757.0	171.6	171.0	-62.63	-7,072.3	-1,046.2	252.3	-52.4	304.72	0.828	Level 1		
14,295.3	6,872.0	14,188.1	6,757.0	171.6	171.0	-62.63	-7,072.3	-1,046.2	252.3	-52.4	304.73	0.828	Level 1, ES, SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<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				
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)					
0.0	0.0	0.0	0.0	0.0	0.0	90.46	-0.4	45.1	45.1							
100.0	100.0	100.0	100.0	0.1	0.1	90.46	-0.4	45.1	45.1	44.9	0.28	163.937	CC, ES			
200.0	200.0	200.0	200.0	0.4	0.4	90.46	-0.4	45.1	45.1	44.3	0.83	54.646				
300.0	300.0	300.0	300.0	0.7	0.7	90.46	-0.4	45.1	45.1	43.8	1.38	32.787				
400.0	400.0	400.0	400.0	1.0	1.0	90.46	-0.4	45.1	45.1	43.2	1.93	23.420				
500.0	500.0	500.0	500.0	1.2	1.2	160.04	-0.4	45.1	46.4	43.9	2.47	18.750				
600.0	599.9	599.9	599.9	1.5	1.5	161.56	-0.4	45.1	50.1	47.1	3.02	16.589				
700.0	699.7	699.7	699.7	1.8	1.8	163.64	-0.4	45.1	56.3	52.7	3.57	15.772				
800.0	799.3	799.3	799.3	2.1	2.1	165.87	-0.4	45.1	65.1	61.0	4.13	15.788				
900.0	898.6	898.6	898.6	2.4	2.3	167.98	-0.4	45.1	76.6	71.9	4.68	16.355				
1,000.0	997.5	997.5	997.5	2.8	2.6	169.83	-0.4	45.1	90.7	85.5	5.24	17.301				
1,100.0	1,096.1	1,096.1	1,096.1	3.2	2.9	171.39	-0.4	45.1	107.4	101.6	5.80	18.517				
1,200.0	1,194.2	1,194.2	1,194.2	3.7	3.2	172.67	-0.4	45.1	126.7	120.4	6.36	19.931				
1,300.0	1,291.7	1,295.0	1,295.0	4.2	3.4	173.55	0.4	44.2	147.6	140.7	6.92	21.346				
1,400.0	1,388.6	1,396.6	1,396.5	4.8	3.7	173.92	2.9	41.3	168.7	161.3	7.47	22.596				
1,483.7	1,469.2	1,482.0	1,481.7	5.3	3.9	173.95	6.3	37.2	186.6	178.6	7.94	23.507				
1,500.0	1,484.9	1,498.6	1,498.3	5.4	4.0	173.94	7.1	36.2	190.0	182.0	8.03	23.660				
1,600.0	1,580.9	1,601.5	1,600.8	6.1	4.3	173.68	13.2	29.0	209.8	201.1	8.62	24.327				
1,700.0	1,676.9	1,705.4	1,703.9	6.8	4.6	173.17	21.1	19.5	227.1	217.9	9.24	24.594				
1,800.0	1,772.9	1,810.0	1,807.4	7.4	4.9	172.42	30.8	7.9	242.1	232.2	9.87	24.527				
1,900.0	1,868.9	1,915.2	1,911.1	8.1	5.3	171.47	42.5	-6.1	254.7	244.2	10.53	24.180				
2,000.0	1,964.9	2,017.4	2,011.2	8.8	5.7	170.40	55.3	-21.4	265.3	254.1	11.22	23.646				
2,100.0	2,060.9	2,116.7	2,108.6	9.6	6.1	169.41	68.0	-36.4	275.7	263.8	11.91	23.143				
2,200.0	2,156.9	2,216.1	2,206.0	10.3	6.6	168.49	80.6	-51.5	286.2	273.6	12.63	22.660				
2,300.0	2,252.9	2,315.4	2,303.3	11.0	7.0	167.63	93.3	-66.6	296.8	283.5	13.37	22.206				
2,400.0	2,348.9	2,414.7	2,400.7	11.7	7.5	166.84	105.9	-81.7	307.5	293.3	14.12	21.778				
2,500.0	2,444.9	2,514.1	2,498.1	12.4	8.0	166.10	118.5	-96.8	318.2	303.3	14.88	21.377				
2,600.0	2,540.9	2,613.4	2,595.5	13.1	8.4	165.40	131.2	-111.9	328.9	313.2	15.66	20.999				
2,700.0	2,636.9	2,712.8	2,692.8	13.9	8.9	164.75	143.8	-127.0	339.7	323.2	16.45	20.644				
2,800.0	2,732.9	2,812.1	2,790.2	14.6	9.4	164.14	156.5	-142.1	350.5	333.3	17.26	20.311				
2,900.0	2,828.9	2,911.5	2,887.6	15.3	9.9	163.57	169.1	-157.2	361.4	343.3	18.07	19.998				
3,000.0	2,924.9	3,010.8	2,985.0	16.0	10.4	163.03	181.8	-172.3	372.3	353.4	18.90	19.703				
3,100.0	3,020.9	3,110.2	3,082.3	16.8	10.9	162.52	194.4	-187.4	383.2	363.5	19.73	19.426				
3,200.0	3,116.9	3,209.5	3,179.7	17.5	11.4	162.04	207.0	-202.5	394.2	373.6	20.57	19.165				
3,300.0	3,212.9	3,308.9	3,277.1	18.2	11.9	161.59	219.7	-217.6	405.2	383.8	21.42	18.919				
3,400.0	3,308.9	3,408.2	3,374.5	18.9	12.4	161.16	232.3	-232.7	416.2	393.9	22.27	18.688				
3,500.0	3,404.9	3,507.5	3,471.8	19.7	12.9	160.75	245.0	-247.8	427.2	404.1	23.13	18.469				
3,600.0	3,500.9	3,606.9	3,569.2	20.4	13.5	160.36	257.6	-262.9	438.3	414.3	24.00	18.262				
3,700.0	3,596.9	3,706.2	3,666.6	21.1	14.0	159.99	270.3	-278.0	449.3	424.5	24.87	18.067				
3,800.0	3,692.9	3,805.6	3,764.0	21.8	14.5	159.64	282.9	-293.1	460.4	434.7	25.75	17.882				
3,900.0	3,788.9	3,904.9	3,861.3	22.6	15.0	159.31	295.5	-308.2	471.5	444.9	26.63	17.707				
4,000.0	3,884.9	4,004.3	3,958.7	23.3	15.5	158.99	308.2	-323.3	482.7	455.1	27.52	17.540				
4,100.0	3,980.9	4,103.6	4,056.1	24.0	16.0	158.68	320.8	-338.4	493.8	465.4	28.41	17.382				
4,200.0	4,076.9	4,203.0	4,153.4	24.8	16.6	158.39	333.5	-353.5	504.9	475.6	29.30	17.233				
4,300.0	4,172.9	4,302.3	4,250.8	25.5	17.1	158.11	346.1	-368.6	516.1	485.9	30.20	17.090				
4,400.0	4,268.9	4,401.6	4,348.2	26.2	17.6	157.85	358.8	-383.7	527.3	496.2	31.10	16.954				
4,500.0	4,364.9	4,501.0	4,445.6	27.0	18.1	157.59	371.4	-398.7	538.5	506.5	32.00	16.825				
4,600.0	4,460.9	4,600.3	4,542.9	27.7	18.7	157.34	384.0	-413.8	549.7	516.7	32.91	16.701				
4,700.0	4,556.9	4,699.7	4,640.3	28.4	19.2	157.11	396.7	-428.9	560.9	527.0	33.82	16.583				
4,800.0	4,652.9	4,799.0	4,737.7	29.1	19.7	156.88	409.3	-444.0	572.1	537.3	34.73	16.471				
4,900.0	4,748.9	4,898.4	4,835.1	29.9	20.2	156.66	422.0	-459.1	583.3	547.6	35.65	16.363				

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<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							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
5,000.0	4,844.9	4,997.7	4,932.4	30.6	20.8	156.45	434.6	-474.2	594.5	558.0	36.56	16.260		
5,100.0	4,940.9	5,097.1	5,029.8	31.3	21.3	156.25	447.3	-489.3	605.8	568.3	37.48	16.161		
5,200.0	5,036.9	5,196.4	5,127.2	32.1	21.8	156.06	459.9	-504.4	617.0	578.6	38.40	16.067		
5,300.0	5,132.9	5,282.6	5,211.9	32.8	22.2	155.97	470.1	-516.7	629.2	590.0	39.19	16.054		
5,367.8	5,198.1	5,340.4	5,268.9	33.3	22.4	156.00	476.1	-523.8	638.8	599.1	39.67	16.103		
5,400.0	5,229.0	5,367.7	5,295.9	33.5	22.5	156.07	478.6	-526.8	643.5	603.6	39.89	16.133		
5,500.0	5,325.8	5,452.5	5,380.0	34.0	22.8	156.31	485.5	-535.0	657.4	617.0	40.47	16.244		
5,600.0	5,423.3	5,537.1	5,464.2	34.5	23.0	156.58	490.8	-541.3	670.4	629.5	40.97	16.365		
5,700.0	5,521.6	5,621.5	5,548.5	34.9	23.2	156.87	494.5	-545.7	682.4	641.0	41.37	16.495		
5,800.0	5,620.5	5,705.8	5,632.7	35.2	23.4	157.19	496.5	-548.2	693.4	651.7	41.68	16.635		
5,900.0	5,719.8	5,792.9	5,719.8	35.5	23.5	157.54	497.0	-548.8	703.3	661.4	41.91	16.782		
6,000.0	5,819.5	5,892.6	5,819.5	35.7	23.7	157.84	497.0	-548.8	710.8	668.6	42.13	16.870		
6,100.0	5,919.4	5,993.3	5,920.2	35.9	23.8	158.18	494.9	-548.8	715.0	672.7	42.24	16.925		
6,180.6	6,000.0	6,073.9	6,000.0	36.0	23.9	90.02	484.7	-548.8	715.9	673.9	42.00	17.048		
6,181.0	6,000.4	6,074.3	6,000.4	36.0	23.9	90.03	484.6	-548.8	715.9	673.9	41.99	17.048		
6,200.0	6,019.4	6,092.8	6,018.6	36.0	23.9	90.31	481.1	-548.8	715.9	674.0	41.93	17.076		
6,298.7	6,118.1	6,186.1	6,108.5	36.1	23.8	92.27	456.6	-548.8	716.5	675.2	41.37	17.321		
6,300.0	6,119.4	6,187.3	6,109.7	36.1	23.8	-87.73	456.2	-548.8	716.6	675.2	41.35	17.331		
6,350.0	6,169.3	6,232.4	6,152.0	36.2	23.7	-86.52	440.4	-548.8	717.4	676.5	40.95	17.520		
6,400.0	6,219.1	6,276.8	6,192.6	36.2	23.6	-85.34	422.4	-548.8	718.6	678.0	40.53	17.730		
6,450.0	6,268.4	6,320.5	6,231.4	36.2	23.6	-84.17	402.5	-548.8	720.0	679.9	40.10	17.954		
6,500.0	6,317.1	6,363.5	6,268.5	36.2	23.5	-83.04	380.7	-548.8	721.8	682.1	39.68	18.189		
6,550.0	6,364.9	6,405.9	6,303.8	36.1	23.4	-81.93	357.2	-548.8	723.7	684.5	39.27	18.430		
6,600.0	6,411.6	6,450.0	6,339.1	36.1	23.3	-80.82	330.7	-548.9	725.9	687.0	38.86	18.680		
6,650.0	6,457.1	6,489.1	6,369.0	36.0	23.2	-79.84	305.6	-548.9	728.2	689.7	38.50	18.912		
6,700.0	6,501.2	6,530.0	6,398.9	36.0	23.0	-78.85	277.7	-548.9	730.6	692.5	38.16	19.145		
6,750.0	6,543.6	6,570.5	6,427.0	35.9	22.9	-77.91	248.6	-548.9	733.2	695.3	37.85	19.368		
6,800.0	6,584.2	6,610.5	6,453.2	35.8	22.8	-77.02	218.3	-548.9	735.7	698.2	37.58	19.579		
6,850.0	6,622.8	6,650.0	6,477.5	35.7	22.7	-76.18	187.2	-548.9	738.3	701.0	37.34	19.775		
6,900.0	6,659.2	6,689.6	6,500.2	35.6	22.6	-75.38	154.7	-548.9	740.9	703.8	37.14	19.949		
6,950.0	6,693.3	6,728.7	6,520.9	35.5	22.5	-74.64	121.6	-549.0	743.4	706.4	36.99	20.099		
7,000.0	6,724.9	6,767.5	6,539.8	35.4	22.4	-73.96	87.7	-549.0	745.9	709.0	36.88	20.224		
7,050.0	6,754.0	6,806.1	6,556.8	35.4	22.3	-73.33	53.1	-549.0	748.2	711.4	36.82	20.320		
7,100.0	6,780.3	6,850.0	6,574.1	35.3	22.2	-72.70	12.7	-549.0	750.4	713.6	36.82	20.377		
7,150.0	6,803.8	6,882.6	6,585.3	35.2	22.2	-72.25	-17.9	-549.0	752.4	715.5	36.88	20.398		
7,200.0	6,824.4	6,920.6	6,596.8	35.2	22.1	-71.80	-54.1	-549.1	754.2	717.2	37.01	20.377		
7,250.0	6,841.9	6,958.5	6,606.5	35.1	22.1	-71.41	-90.7	-549.1	755.8	718.6	37.21	20.311		
7,300.0	6,856.3	7,000.0	6,614.9	35.1	22.1	-71.06	-131.4	-549.1	757.2	719.7	37.49	20.199		
7,350.0	6,867.6	7,033.9	6,620.2	35.1	22.1	-70.82	-164.9	-549.1	758.3	720.5	37.82	20.051		
7,400.0	6,875.6	7,071.5	6,624.3	35.1	22.2	-70.61	-202.2	-549.1	759.2	720.9	38.25	19.849		
7,450.0	6,880.5	7,109.0	6,626.5	35.2	22.4	-70.47	-239.7	-549.2	759.8	721.0	38.75	19.607		
7,499.7	6,882.0	7,149.4	6,627.0	35.2	22.7	-70.40	-280.1	-549.2	760.1	720.8	39.36	19.312		
7,499.8	6,882.0	7,149.5	6,627.0	35.2	22.7	-70.40	-280.2	-549.2	760.1	720.8	39.36	19.312		
7,500.9	6,882.0	7,150.6	6,627.0	35.2	22.7	-70.40	-281.2	-549.2	760.1	720.7	39.38	19.303		
7,600.0	6,881.9	7,249.7	6,626.8	35.5	23.7	-70.40	-380.3	-549.2	760.1	718.9	41.25	18.429		
7,700.0	6,881.7	7,349.7	6,626.7	36.0	24.9	-70.40	-480.3	-549.3	760.1	716.6	43.58	17.442		
7,800.0	6,881.6	7,449.7	6,626.5	36.6	26.3	-70.40	-580.3	-549.4	760.2	713.9	46.23	16.443		
7,900.0	6,881.4	7,549.7	6,626.4	37.3	27.9	-70.40	-680.3	-549.4	760.2	711.0	49.14	15.469		
8,000.0	6,881.3	7,649.7	6,626.2	38.3	29.5	-70.40	-780.3	-549.5	760.2	707.9	52.28	14.542		
8,100.0	6,881.1	7,749.7	6,626.1	39.4	31.3	-70.40	-880.3	-549.5	760.2	704.6	55.59	13.674		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
	Sec.29-T5N-R64W		
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-143 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program:		0-MWD											Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
8,200.0	6,881.0	7,849.7	6,626.0	40.6	33.1	-70.40	-980.3	-549.6	760.2	701.2	59.06	12.871		
8,300.0	6,880.8	7,949.7	6,625.8	42.0	35.0	-70.40	-1,080.3	-549.7	760.2	697.6	62.66	12.133		
8,400.0	6,880.7	8,049.7	6,625.7	43.5	36.9	-70.40	-1,180.3	-549.7	760.2	693.9	66.36	11.456		
8,500.0	6,880.5	8,149.7	6,625.5	45.1	38.9	-70.40	-1,280.3	-549.8	760.3	690.1	70.15	10.837		
8,600.0	6,880.4	8,249.7	6,625.4	46.8	40.9	-70.40	-1,380.3	-549.8	760.3	686.2	74.02	10.271		
8,700.0	6,880.2	8,349.7	6,625.2	48.5	42.9	-70.40	-1,480.3	-549.9	760.3	682.3	77.96	9.753		
8,800.0	6,880.1	8,449.7	6,625.1	50.3	45.0	-70.40	-1,580.3	-550.0	760.3	678.4	81.94	9.278		
8,900.0	6,879.9	8,549.7	6,624.9	52.1	47.1	-70.40	-1,680.3	-550.0	760.3	674.3	85.98	8.843		
9,000.0	6,879.8	8,649.7	6,624.8	54.0	49.2	-70.40	-1,780.3	-550.1	760.3	670.3	90.06	8.443		
9,100.0	6,879.6	8,749.7	6,624.6	56.0	51.4	-70.40	-1,880.3	-550.1	760.3	666.2	94.17	8.074		
9,200.0	6,879.5	8,849.7	6,624.5	57.9	53.5	-70.40	-1,980.3	-550.2	760.4	662.0	98.32	7.734		
9,300.0	6,879.4	8,949.7	6,624.3	59.9	55.7	-70.40	-2,080.3	-550.2	760.4	657.9	102.49	7.419		
9,400.0	6,879.2	9,049.7	6,624.2	61.9	57.9	-70.40	-2,180.3	-550.3	760.4	653.7	106.68	7.127		
9,500.0	6,879.1	9,149.7	6,624.0	64.0	60.1	-70.40	-2,280.3	-550.4	760.4	649.5	110.90	6.857		
9,600.0	6,878.9	9,249.7	6,623.9	66.1	62.3	-70.41	-2,380.3	-550.4	760.4	645.3	115.14	6.604		
9,700.0	6,878.8	9,349.7	6,623.7	68.1	64.5	-70.41	-2,480.3	-550.5	760.4	641.0	119.39	6.369		
9,800.0	6,878.6	9,449.7	6,623.6	70.3	66.7	-70.41	-2,580.3	-550.5	760.4	636.8	123.66	6.149		
9,900.0	6,878.5	9,549.7	6,623.5	72.4	68.9	-70.41	-2,680.3	-550.6	760.5	632.5	127.95	5.944		
10,000.0	6,878.3	9,649.7	6,623.3	74.5	71.2	-70.41	-2,780.3	-550.7	760.5	628.2	132.24	5.751		
10,100.0	6,878.2	9,749.7	6,623.2	76.7	73.4	-70.41	-2,880.3	-550.7	760.5	623.9	136.55	5.569		
10,200.0	6,878.0	9,849.7	6,623.0	78.8	75.7	-70.41	-2,980.3	-550.8	760.5	619.6	140.87	5.399		
10,300.0	6,877.9	9,949.7	6,622.9	81.0	77.9	-70.41	-3,080.3	-550.8	760.5	615.3	145.19	5.238		
10,400.0	6,877.7	10,049.7	6,622.7	83.2	80.2	-70.41	-3,180.3	-550.9	760.5	611.0	149.53	5.086		
10,500.0	6,877.6	10,149.7	6,622.6	85.3	82.5	-70.41	-3,280.3	-551.0	760.5	606.7	153.87	4.943		
10,600.0	6,877.4	10,249.7	6,622.4	87.5	84.7	-70.41	-3,380.3	-551.0	760.6	602.3	158.22	4.807		
10,700.0	6,877.3	10,349.7	6,622.3	89.8	87.0	-70.41	-3,480.3	-551.1	760.6	598.0	162.58	4.678		
10,800.0	6,877.1	10,449.7	6,622.1	92.0	89.3	-70.41	-3,580.3	-551.1	760.6	593.6	166.94	4.556		
10,900.0	6,877.0	10,549.7	6,622.0	94.2	91.6	-70.41	-3,680.3	-551.2	760.6	589.3	171.31	4.440		
11,000.0	6,876.8	10,649.7	6,621.8	96.4	93.9	-70.41	-3,780.3	-551.3	760.6	584.9	175.68	4.329		
11,100.0	6,876.7	10,749.7	6,621.7	98.6	96.2	-70.41	-3,880.3	-551.3	760.6	580.6	180.06	4.224		
11,200.0	6,876.6	10,849.7	6,621.5	100.9	98.5	-70.41	-3,980.3	-551.4	760.6	576.2	184.45	4.124		
11,300.0	6,876.4	10,949.7	6,621.4	103.1	100.8	-70.41	-4,080.3	-551.4	760.7	571.8	188.83	4.028		
11,400.0	6,876.3	11,049.7	6,621.2	105.4	103.1	-70.41	-4,180.3	-551.5	760.7	567.4	193.22	3.937		
11,500.0	6,876.1	11,149.7	6,621.1	107.6	105.4	-70.41	-4,280.3	-551.6	760.7	563.1	197.62	3.849		
11,600.0	6,876.0	11,249.7	6,621.0	109.9	107.7	-70.41	-4,380.3	-551.6	760.7	558.7	202.02	3.766		
11,700.0	6,875.8	11,349.7	6,620.8	112.1	110.0	-70.41	-4,480.3	-551.7	760.7	554.3	206.42	3.685		
11,800.0	6,875.7	11,449.7	6,620.7	114.4	112.3	-70.41	-4,580.3	-551.7	760.7	549.9	210.82	3.608		
11,900.0	6,875.5	11,549.7	6,620.5	116.7	114.6	-70.41	-4,680.3	-551.8	760.7	545.5	215.23	3.535		
12,000.0	6,875.4	11,649.7	6,620.4	118.9	116.9	-70.41	-4,780.3	-551.9	760.8	541.1	219.64	3.464		
12,100.0	6,875.2	11,749.7	6,620.2	121.2	119.2	-70.42	-4,880.3	-551.9	760.8	536.7	224.05	3.395		
12,200.0	6,875.1	11,849.7	6,620.1	123.5	121.5	-70.42	-4,980.3	-552.0	760.8	532.3	228.47	3.330		
12,300.0	6,874.9	11,949.7	6,619.9	125.7	123.8	-70.42	-5,080.3	-552.0	760.8	527.9	232.89	3.267		
12,400.0	6,874.8	12,049.7	6,619.8	128.0	126.1	-70.42	-5,180.3	-552.1	760.8	523.5	237.31	3.206		
12,500.0	6,874.6	12,149.7	6,619.6	130.3	128.5	-70.42	-5,280.3	-552.2	760.8	519.1	241.73	3.147		
12,600.0	6,874.5	12,249.7	6,619.5	132.6	130.8	-70.42	-5,380.3	-552.2	760.8	514.7	246.15	3.091		
12,700.0	6,874.3	12,349.7	6,619.3	134.9	133.1	-70.42	-5,480.3	-552.3	760.9	510.3	250.57	3.036		
12,800.0	6,874.2	12,449.7	6,619.2	137.2	135.4	-70.42	-5,580.3	-552.3	760.9	505.9	255.00	2.984		
12,900.0	6,874.1	12,549.7	6,619.0	139.5	137.7	-70.42	-5,680.3	-552.4	760.9	501.5	259.43	2.933		
13,000.0	6,873.9	12,649.7	6,618.9	141.8	140.1	-70.42	-5,780.3	-552.5	760.9	497.0	263.86	2.884		
13,100.0	6,873.8	12,749.7	6,618.7	144.0	142.4	-70.42	-5,880.3	-552.5	760.9	492.6	268.29	2.836		
13,200.0	6,873.6	12,849.7	6,618.6	146.3	144.7	-70.42	-5,980.3	-552.6	760.9	488.2	272.72	2.790		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<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)			
13,300.0	6,873.5	12,949.7	6,618.5	148.6	147.0	-70.42	-6,080.3	-552.6	760.9	483.8	277.16	2.746		
13,400.0	6,873.3	13,049.7	6,618.3	150.9	149.4	-70.42	-6,180.3	-552.7	761.0	479.4	281.59	2.702		
13,500.0	6,873.2	13,149.7	6,618.2	153.2	151.7	-70.42	-6,280.3	-552.8	761.0	474.9	286.03	2.661		
13,600.0	6,873.0	13,249.7	6,618.0	155.5	154.0	-70.42	-6,380.3	-552.8	761.0	470.5	290.46	2.620		
13,700.0	6,872.9	13,349.7	6,617.9	157.9	156.3	-70.42	-6,480.3	-552.9	761.0	466.1	294.90	2.581		
13,800.0	6,872.7	13,449.7	6,617.7	160.2	158.7	-70.42	-6,580.3	-552.9	761.0	461.7	299.34	2.542		
13,900.0	6,872.6	13,549.7	6,617.6	162.5	161.0	-70.42	-6,680.3	-553.0	761.0	457.2	303.78	2.505		
14,000.0	6,872.4	13,649.7	6,617.4	164.8	163.3	-70.42	-6,780.3	-553.0	761.0	452.8	308.22	2.469		
14,100.0	6,872.3	13,749.7	6,617.3	167.1	165.7	-70.42	-6,880.3	-553.1	761.1	448.4	312.66	2.434		
14,200.0	6,872.1	13,849.7	6,617.1	169.4	168.0	-70.42	-6,980.3	-553.2	761.1	444.0	317.11	2.400		
14,254.1	6,872.1	13,903.7	6,617.0	170.6	169.3	-70.42	-7,034.4	-553.2	761.1	441.6	319.51	2.382		
14,294.6	6,872.0	13,936.9	6,617.0	171.6	170.0	-70.42	-7,067.6	-553.2	761.1	440.0	321.15	2.370		
14,295.3	6,872.0	13,936.9	6,617.0	171.6	170.0	-70.42	-7,067.6	-553.2	761.1	440.0	321.16	2.370 SF		



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-203 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft	
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	90.56	-0.7	74.9	75.0						
100.0	100.0	100.0	100.0	0.1	0.1	90.56	-0.7	74.9	75.0	74.7	0.28	272.220			
200.0	200.0	200.0	200.0	0.4	0.4	90.56	-0.7	74.9	75.0	74.1	0.83	90.740			
300.0	300.0	300.0	300.0	0.7	0.7	90.56	-0.7	74.9	75.0	73.6	1.38	54.444			
400.0	400.0	400.0	400.0	1.0	1.0	90.56	-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	159.91	-0.7	74.9	76.2	73.7	2.47	30.807			
600.0	599.9	599.9	599.9	1.5	1.5	160.86	-0.7	74.9	79.9	76.9	3.02	26.463			
700.0	699.7	699.7	699.7	1.8	1.8	162.26	-0.7	74.9	86.1	82.5	3.57	24.110			
800.0	799.3	799.3	799.3	2.1	2.1	163.91	-0.7	74.9	94.8	90.7	4.13	22.985			
900.0	898.6	898.6	898.6	2.4	2.3	165.62	-0.7	74.9	106.2	101.5	4.68	22.669 SF			
1,000.0	997.5	997.5	997.5	2.8	2.6	167.27	-0.7	74.9	120.1	114.9	5.24	22.914			
1,100.0	1,096.1	1,096.1	1,096.1	3.2	2.9	168.79	-0.7	74.9	136.7	130.9	5.80	23.561			
1,200.0	1,194.2	1,194.2	1,194.2	3.7	3.2	170.13	-0.7	74.9	155.9	149.6	6.36	24.505			
1,300.0	1,291.7	1,291.7	1,291.7	4.2	3.4	171.30	-0.7	74.9	177.7	170.8	6.92	25.672			
1,400.0	1,388.6	1,388.6	1,388.6	4.8	3.7	172.30	-0.7	74.9	202.1	194.6	7.48	27.009			
1,483.7	1,469.2	1,469.2	1,469.2	5.3	3.9	173.03	-0.7	74.9	224.5	216.5	7.95	28.232			
1,500.0	1,484.9	1,484.9	1,484.9	5.4	4.0	173.17	-0.7	74.9	229.0	221.0	8.04	28.466			
1,600.0	1,580.9	1,580.9	1,580.9	6.1	4.2	173.91	-0.7	74.9	256.8	248.2	8.62	29.783			
1,700.0	1,676.9	1,676.9	1,676.9	6.8	4.5	174.51	-0.7	74.9	284.7	275.5	9.21	30.919			
1,800.0	1,772.9	1,772.9	1,772.9	7.4	4.7	175.00	-0.7	74.9	312.6	302.8	9.80	31.907			
1,900.0	1,868.9	1,868.9	1,868.9	8.1	5.0	175.41	-0.7	74.9	340.5	330.1	10.39	32.772			
2,000.0	1,964.9	1,964.9	1,964.9	8.8	5.3	175.76	-0.7	74.9	368.4	357.4	10.99	33.535			
2,100.0	2,060.9	2,064.6	2,064.6	9.6	5.5	176.00	-0.2	74.8	396.0	384.4	11.59	34.163			
2,200.0	2,156.9	2,167.3	2,167.2	10.3	5.8	175.92	2.8	73.9	422.3	410.1	12.21	34.597			
2,300.0	2,252.9	2,270.6	2,270.4	11.0	6.1	175.54	8.4	72.2	447.2	434.4	12.83	34.856			
2,400.0	2,348.9	2,374.6	2,374.0	11.7	6.4	174.91	16.8	69.6	470.6	457.1	13.46	34.953			
2,500.0	2,444.9	2,479.0	2,477.8	12.4	6.7	174.06	28.0	66.2	492.7	478.5	14.12	34.901			
2,600.0	2,540.9	2,583.7	2,581.5	13.1	7.0	173.00	41.9	62.0	513.4	498.6	14.79	34.707			
2,700.0	2,636.9	2,682.0	2,678.6	13.9	7.3	171.93	56.4	57.6	533.5	518.0	15.48	34.469			
2,800.0	2,732.9	2,779.5	2,774.9	14.6	7.6	170.95	70.9	53.2	553.7	537.5	16.18	34.227			
2,900.0	2,828.9	2,877.0	2,871.2	15.3	8.0	170.04	85.4	48.8	574.1	557.2	16.90	33.977			
3,000.0	2,924.9	2,974.5	2,967.5	16.0	8.3	169.19	99.8	44.4	594.6	576.9	17.63	33.726			
3,100.0	3,020.9	3,072.0	3,063.9	16.8	8.7	168.40	114.3	40.0	615.2	596.8	18.38	33.476			
3,200.0	3,116.9	3,169.5	3,160.2	17.5	9.0	167.65	128.8	35.7	635.9	616.8	19.14	33.229			
3,300.0	3,212.9	3,267.0	3,256.5	18.2	9.4	166.96	143.3	31.3	656.7	636.8	19.91	32.986			
3,400.0	3,308.9	3,364.5	3,352.8	18.9	9.8	166.30	157.7	26.9	677.6	656.9	20.69	32.748			
3,500.0	3,404.9	3,462.0	3,449.2	19.7	10.1	165.69	172.2	22.5	698.6	677.1	21.48	32.517			
3,600.0	3,500.9	3,559.5	3,545.5	20.4	10.5	165.11	186.7	18.1	719.7	697.4	22.29	32.292			
3,700.0	3,596.9	3,657.1	3,641.8	21.1	10.9	164.56	201.1	13.7	740.8	717.7	23.10	32.075			
3,800.0	3,692.9	3,754.6	3,738.1	21.8	11.3	164.05	215.6	9.3	762.0	738.1	23.91	31.865			
3,900.0	3,788.9	3,852.1	3,834.5	22.6	11.7	163.56	230.1	4.9	783.2	758.5	24.74	31.662			



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<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	90.70	-0.4	30.1	30.1						
100.0	100.0	100.0	100.0	0.1	0.1	90.70	-0.4	30.1	30.1	29.8	0.28	109.296			
200.0	200.0	200.0	200.0	0.4	0.4	90.70	-0.4	30.1	30.1	29.3	0.83	36.432			
300.0	300.0	300.0	300.0	0.7	0.7	90.70	-0.4	30.1	30.1	28.7	1.38	21.859			
400.0	400.0	400.0	400.0	1.0	1.0	90.70	-0.4	30.1	30.1	28.2	1.93	15.614	CC, ES		
500.0	500.0	500.0	500.0	1.2	1.2	160.54	-0.4	30.1	31.3	28.9	2.47	12.667			
600.0	599.9	599.9	599.9	1.5	1.5	162.67	-0.4	30.1	35.1	32.0	3.02	11.611			
700.0	699.7	699.7	699.7	1.8	1.8	165.34	-0.4	30.1	41.3	37.8	3.57	11.576			
800.0	799.3	799.3	799.3	2.1	2.1	167.96	-0.4	30.1	50.2	46.1	4.13	12.176			
900.0	898.6	898.6	898.6	2.4	2.3	170.20	-0.4	30.1	61.8	57.1	4.68	13.193			
1,000.0	997.5	997.5	997.5	2.8	2.6	172.01	-0.4	30.1	76.0	70.7	5.24	14.495			
1,100.0	1,096.1	1,098.4	1,098.3	3.2	2.9	173.24	0.3	29.0	91.6	85.8	5.79	15.813			
1,200.0	1,194.2	1,199.6	1,199.5	3.7	3.1	173.85	2.3	25.6	107.3	101.0	6.34	16.936			
1,300.0	1,291.7	1,301.3	1,301.0	4.2	3.4	174.08	5.8	19.9	123.1	116.2	6.89	17.869			
1,400.0	1,388.6	1,403.4	1,402.7	4.8	3.7	174.06	10.6	11.9	138.9	131.4	7.45	18.644			
1,483.7	1,469.2	1,489.3	1,487.9	5.3	4.0	173.90	15.8	3.3	152.1	144.2	7.93	19.189			
1,500.0	1,484.9	1,506.0	1,504.5	5.4	4.0	173.86	16.9	1.5	154.7	146.7	8.03	19.274			
1,600.0	1,580.9	1,609.2	1,606.6	6.1	4.4	173.49	24.7	-11.4	168.8	160.2	8.64	19.551			
1,700.0	1,676.9	1,713.0	1,708.9	6.8	4.8	172.91	34.0	-26.7	180.4	171.1	9.27	19.467			
1,800.0	1,772.9	1,817.4	1,811.2	7.4	5.2	172.14	44.7	-44.5	189.4	179.5	9.93	19.085			
1,900.0	1,868.9	1,920.7	1,911.8	8.1	5.7	171.21	56.7	-64.3	196.0	185.4	10.61	18.476			
2,000.0	1,964.9	2,020.4	2,008.9	8.8	6.2	170.29	68.6	-84.0	202.0	190.7	11.30	17.874			
2,100.0	2,060.9	2,120.2	2,105.9	9.6	6.7	169.44	80.6	-103.8	208.0	196.0	12.01	17.314			
2,200.0	2,156.9	2,220.0	2,203.0	10.3	7.2	168.63	92.5	-123.5	214.1	201.3	12.74	16.798			
2,300.0	2,252.9	2,319.7	2,300.1	11.0	7.8	167.86	104.4	-143.3	220.2	206.7	13.49	16.321			
2,400.0	2,348.9	2,419.5	2,397.1	11.7	8.3	167.14	116.4	-163.0	226.3	212.1	14.25	15.880			
2,500.0	2,444.9	2,519.3	2,494.2	12.4	8.9	166.45	128.3	-182.7	232.5	217.5	15.03	15.471			
2,600.0	2,540.9	2,619.1	2,591.3	13.1	9.5	165.80	140.2	-202.5	238.7	222.9	15.82	15.092			
2,700.0	2,636.9	2,718.8	2,688.3	13.9	10.0	165.19	152.2	-222.2	245.0	228.4	16.62	14.740			
2,800.0	2,732.9	2,818.6	2,785.4	14.6	10.6	164.60	164.1	-242.0	251.2	233.8	17.43	14.412			
2,900.0	2,828.9	2,918.4	2,882.5	15.3	11.2	164.04	176.0	-261.7	257.5	239.3	18.26	14.106			
3,000.0	2,924.9	3,018.1	2,979.6	16.0	11.8	163.51	188.0	-281.4	263.9	244.8	19.09	13.820			
3,100.0	3,020.9	3,117.9	3,076.6	16.8	12.4	163.01	199.9	-301.2	270.2	250.3	19.94	13.553			
3,200.0	3,116.9	3,217.7	3,173.7	17.5	12.9	162.52	211.8	-320.9	276.6	255.8	20.79	13.303			
3,300.0	3,212.9	3,317.5	3,270.8	18.2	13.5	162.06	223.8	-340.7	282.9	261.3	21.65	13.069			
3,400.0	3,308.9	3,417.2	3,367.8	18.9	14.1	161.62	235.7	-360.4	289.3	266.8	22.52	12.849			
3,500.0	3,404.9	3,517.0	3,464.9	19.7	14.7	161.20	247.6	-380.1	295.7	272.3	23.39	12.642			
3,600.0	3,500.9	3,616.8	3,562.0	20.4	15.3	160.80	259.6	-399.9	302.2	277.9	24.28	12.447			
3,700.0	3,596.9	3,716.5	3,659.0	21.1	15.9	160.41	271.5	-419.6	308.6	283.4	25.17	12.263			
3,800.0	3,692.9	3,816.3	3,756.1	21.8	16.5	160.04	283.4	-439.3	315.1	289.0	26.06	12.090			
3,900.0	3,788.9	3,916.1	3,853.2	22.6	17.1	159.68	295.4	-459.1	321.5	294.6	26.96	11.926			
4,000.0	3,884.9	4,015.9	3,950.2	23.3	17.7	159.34	307.3	-478.8	328.0	300.1	27.87	11.770			
4,100.0	3,980.9	4,115.6	4,047.3	24.0	18.3	159.01	319.2	-498.6	334.5	305.7	28.78	11.623			
4,200.0	4,076.9	4,215.4	4,144.4	24.8	18.9	158.70	331.2	-518.3	341.0	311.3	29.69	11.484			
4,300.0	4,172.9	4,315.2	4,241.4	25.5	19.5	158.39	343.1	-538.0	347.5	316.9	30.61	11.352			
4,400.0	4,268.9	4,414.9	4,338.5	26.2	20.1	158.10	355.0	-557.8	354.0	322.5	31.54	11.226			
4,500.0	4,364.9	4,514.7	4,435.6	27.0	20.7	157.82	367.0	-577.5	360.6	328.1	32.46	11.106			
4,600.0	4,460.9	4,614.5	4,532.6	27.7	21.3	157.54	378.9	-597.3	367.1	333.7	33.40	10.992			
4,700.0	4,556.9	4,714.3	4,629.7	28.4	21.9	157.28	390.8	-617.0	373.6	339.3	34.33	10.883			
4,800.0	4,652.9	4,814.0	4,726.8	29.1	22.5	157.03	402.8	-636.7	380.2	344.9	35.27	10.779			
4,900.0	4,748.9	4,913.8	4,823.8	29.9	23.1	156.78	414.7	-656.5	386.7	350.5	36.21	10.680			

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
5,000.0	4,844.9	5,013.6	4,920.9	30.6	23.7	156.54	426.6	-676.2	393.3	356.2	37.16	10.585		
5,100.0	4,940.9	5,113.3	5,018.0	31.3	24.3	156.32	438.6	-696.0	399.9	361.8	38.10	10.495		
5,200.0	5,036.9	5,213.1	5,115.1	32.1	24.9	156.09	450.5	-715.7	406.5	367.4	39.05	10.408		
5,300.0	5,132.9	5,300.0	5,199.7	32.8	25.4	155.96	460.5	-732.3	413.8	373.9	39.89	10.374		
5,367.8	5,198.1	5,364.9	5,263.4	33.3	25.7	155.99	467.2	-743.3	420.2	379.8	40.39	10.403		
5,400.0	5,229.0	5,393.5	5,291.4	33.5	25.8	156.06	469.9	-747.8	423.5	382.9	40.61	10.427		
5,500.0	5,325.8	5,482.0	5,378.8	34.0	26.1	156.28	477.3	-760.1	433.3	392.1	41.20	10.516		
5,600.0	5,423.3	5,570.3	5,466.3	34.5	26.4	156.52	483.3	-770.0	442.4	400.7	41.70	10.611		
5,700.0	5,521.6	5,658.4	5,554.0	34.9	26.6	156.79	488.0	-777.7	451.0	408.9	42.10	10.712		
5,800.0	5,620.5	5,746.4	5,641.8	35.2	26.8	157.07	491.2	-783.0	458.9	416.5	42.41	10.819		
5,900.0	5,719.8	5,834.2	5,729.5	35.5	27.0	157.38	493.0	-786.0	466.2	423.6	42.64	10.934		
6,000.0	5,819.5	5,924.2	5,819.5	35.7	27.1	157.71	493.4	-786.7	472.8	430.0	42.78	11.053		
6,100.0	5,919.4	6,024.1	5,919.4	35.9	27.3	157.95	493.4	-786.7	477.0	434.1	42.91	11.116		
6,180.6	6,000.0	6,105.1	6,000.4	36.0	27.4	89.10	492.5	-786.7	478.0	435.0	43.00	11.117		
6,200.0	6,019.4	6,124.7	6,019.9	36.0	27.4	89.24	491.3	-786.7	478.0	435.0	42.99	11.118		
6,258.5	6,077.9	6,183.1	6,077.9	36.1	27.4	90.03	484.7	-786.7	478.0	435.2	42.82	11.162		
6,298.7	6,118.1	6,222.4	6,116.6	36.1	27.4	90.86	477.8	-786.7	478.0	435.5	42.58	11.228		
6,300.0	6,119.4	6,223.7	6,117.9	36.1	27.4	-89.15	477.6	-786.7	478.0	435.5	42.55	11.235		
6,350.0	6,169.3	6,271.9	6,164.8	36.2	27.4	-87.98	466.3	-786.7	478.3	436.2	42.15	11.348		
6,400.0	6,219.1	6,319.5	6,210.3	36.2	27.4	-86.82	452.3	-786.7	478.8	437.0	41.71	11.478		
6,450.0	6,268.4	6,366.6	6,254.3	36.2	27.3	-85.68	435.7	-786.7	479.4	438.1	41.26	11.620		
6,500.0	6,317.1	6,413.2	6,296.8	36.2	27.2	-84.57	416.7	-786.7	480.2	439.4	40.80	11.771		
6,550.0	6,364.9	6,459.2	6,337.6	36.1	27.2	-83.48	395.3	-786.8	481.2	440.9	40.35	11.927		
6,600.0	6,411.6	6,504.8	6,376.7	36.1	27.1	-82.43	371.8	-786.8	482.3	442.4	39.91	12.086		
6,650.0	6,457.1	6,550.0	6,413.9	36.0	27.0	-81.42	346.2	-786.8	483.6	444.1	39.49	12.244		
6,700.0	6,501.2	6,594.8	6,449.2	36.0	26.9	-80.45	318.8	-786.8	484.9	445.8	39.11	12.399		
6,750.0	6,543.6	6,639.1	6,482.6	35.9	26.8	-79.52	289.6	-786.8	486.3	447.6	38.76	12.547		
6,800.0	6,584.2	6,683.2	6,514.0	35.8	26.7	-78.63	258.7	-786.8	487.8	449.4	38.45	12.686		
6,850.0	6,622.8	6,726.9	6,543.4	35.7	26.5	-77.80	226.3	-786.8	489.3	451.1	38.18	12.814		
6,900.0	6,659.2	6,770.3	6,570.7	35.6	26.4	-77.01	192.6	-786.9	490.8	452.9	37.96	12.929		
6,950.0	6,693.3	6,813.4	6,595.8	35.5	26.3	-76.28	157.6	-786.9	492.3	454.5	37.79	13.028		
7,000.0	6,724.9	6,856.3	6,618.8	35.4	26.2	-75.60	121.4	-786.9	493.8	456.1	37.67	13.108		
7,050.0	6,754.0	6,900.0	6,640.2	35.4	26.2	-74.96	83.2	-786.9	495.2	457.6	37.60	13.168		
7,100.0	6,780.3	6,941.4	6,658.3	35.3	26.1	-74.41	46.1	-786.9	496.5	458.9	37.61	13.202		
7,150.0	6,803.8	6,983.6	6,674.8	35.2	26.0	-73.90	7.2	-787.0	497.7	460.0	37.67	13.211		
7,200.0	6,824.4	7,025.7	6,689.0	35.2	26.0	-73.45	-32.5	-787.0	498.8	461.0	37.81	13.193		
7,250.0	6,841.9	7,067.7	6,701.0	35.1	25.9	-73.06	-72.7	-787.0	499.8	461.8	38.02	13.146		
7,300.0	6,856.3	7,109.5	6,710.7	35.1	25.9	-72.74	-113.4	-787.0	500.7	462.4	38.30	13.074		
7,350.0	6,867.6	7,150.0	6,718.0	35.1	25.9	-72.47	-153.2	-787.0	501.4	462.8	38.65	12.973		
7,400.0	6,875.6	7,192.9	6,723.4	35.1	26.0	-72.26	-195.8	-787.1	502.0	462.9	39.11	12.836		
7,450.0	6,880.5	7,234.5	6,726.3	35.2	26.1	-72.12	-237.3	-787.1	502.4	462.8	39.63	12.675		
7,499.7	6,882.0	7,276.5	6,727.0	35.2	26.2	-72.04	-279.2	-787.1	502.6	462.4	40.23	12.493		
7,499.8	6,882.0	7,276.6	6,727.0	35.2	26.2	-72.04	-279.3	-787.1	502.6	462.4	40.23	12.492		
7,500.9	6,882.0	7,277.6	6,727.0	35.2	26.2	-72.03	-280.3	-787.1	502.6	462.4	40.25	12.487		
7,600.0	6,881.9	7,376.7	6,726.2	35.5	26.8	-71.97	-379.4	-787.2	502.8	460.7	42.07	11.952		
7,700.0	6,881.7	7,476.7	6,725.5	36.0	27.6	-71.91	-479.4	-787.2	503.0	458.7	44.35	11.342		
7,800.0	6,881.6	7,576.7	6,724.8	36.6	28.7	-71.85	-579.4	-787.3	503.2	456.3	46.95	10.718		
7,900.0	6,881.4	7,676.7	6,724.0	37.3	30.1	-71.78	-679.4	-787.4	503.4	453.6	49.82	10.105		
8,000.0	6,881.3	7,776.7	6,723.3	38.3	31.5	-71.72	-779.4	-787.4	503.6	450.7	52.91	9.518		
8,100.0	6,881.1	7,876.7	6,722.6	39.4	33.1	-71.66	-879.4	-787.5	503.8	447.6	56.19	8.967		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
8,200.0	6,881.0	7,976.7	6,721.8	40.6	34.8	-71.59	-979.4	-787.5	504.0	444.4	59.62	8.454		
8,300.0	6,880.8	8,076.7	6,721.1	42.0	36.6	-71.53	-1,079.4	-787.6	504.2	441.0	63.18	7.980		
8,400.0	6,880.7	8,176.7	6,720.4	43.5	38.4	-71.47	-1,179.4	-787.7	504.4	437.6	66.85	7.545		
8,500.0	6,880.5	8,276.7	6,719.6	45.1	40.3	-71.40	-1,279.4	-787.7	504.6	434.0	70.61	7.146		
8,600.0	6,880.4	8,376.7	6,718.9	46.8	42.3	-71.34	-1,379.4	-787.8	504.8	430.4	74.45	6.781		
8,700.0	6,880.2	8,476.7	6,718.1	48.5	44.2	-71.28	-1,479.4	-787.8	505.0	426.7	78.35	6.446		
8,800.0	6,880.1	8,576.7	6,717.4	50.3	46.2	-71.22	-1,579.4	-787.9	505.2	422.9	82.30	6.138		
8,900.0	6,879.9	8,676.7	6,716.7	52.1	48.3	-71.15	-1,679.3	-788.0	505.4	419.1	86.31	5.856		
9,000.0	6,879.8	8,776.7	6,715.9	54.0	50.4	-71.09	-1,779.3	-788.0	505.6	415.3	90.35	5.596		
9,100.0	6,879.6	8,876.7	6,715.2	56.0	52.4	-71.03	-1,879.3	-788.1	505.8	411.4	94.43	5.357		
9,200.0	6,879.5	8,976.7	6,714.5	57.9	54.6	-70.97	-1,979.3	-788.1	506.0	407.5	98.54	5.136		
9,300.0	6,879.4	9,076.7	6,713.7	59.9	56.7	-70.90	-2,079.3	-788.2	506.2	403.6	102.67	4.931		
9,400.0	6,879.2	9,176.7	6,713.0	61.9	58.8	-70.84	-2,179.3	-788.3	506.4	399.6	106.83	4.741		
9,500.0	6,879.1	9,276.7	6,712.3	64.0	61.0	-70.78	-2,279.3	-788.3	506.6	395.6	111.00	4.564		
9,600.0	6,878.9	9,376.7	6,711.5	66.1	63.2	-70.72	-2,379.3	-788.4	506.9	391.7	115.19	4.400		
9,700.0	6,878.8	9,476.7	6,710.8	68.1	65.4	-70.65	-2,479.3	-788.4	507.1	387.7	119.40	4.247		
9,800.0	6,878.6	9,576.7	6,710.0	70.3	67.5	-70.59	-2,579.3	-788.5	507.3	383.6	123.63	4.103		
9,900.0	6,878.5	9,676.7	6,709.3	72.4	69.8	-70.53	-2,679.3	-788.6	507.5	379.6	127.86	3.969		
10,000.0	6,878.3	9,776.7	6,708.6	74.5	72.0	-70.47	-2,779.3	-788.6	507.7	375.6	132.10	3.843		
10,100.0	6,878.2	9,876.7	6,707.8	76.7	74.2	-70.41	-2,879.3	-788.7	507.9	371.5	136.35	3.725		
10,200.0	6,878.0	9,976.7	6,707.1	78.8	76.4	-70.34	-2,979.3	-788.8	508.1	367.5	140.61	3.614		
10,300.0	6,877.9	10,076.7	6,706.4	81.0	78.7	-70.28	-3,079.3	-788.8	508.3	363.4	144.88	3.509		
10,400.0	6,877.7	10,176.7	6,705.6	83.2	80.9	-70.22	-3,179.3	-788.9	508.5	359.4	149.15	3.409		
10,500.0	6,877.6	10,276.7	6,704.9	85.3	83.1	-70.16	-3,279.3	-788.9	508.8	355.3	153.43	3.316		
10,600.0	6,877.4	10,376.7	6,704.2	87.5	85.4	-70.10	-3,379.3	-789.0	509.0	351.2	157.72	3.227		
10,700.0	6,877.3	10,476.7	6,703.4	89.8	87.7	-70.03	-3,479.3	-789.1	509.2	347.2	162.00	3.143		
10,800.0	6,877.1	10,576.6	6,702.7	92.0	89.9	-69.97	-3,579.3	-789.1	509.4	343.1	166.29	3.063		
10,900.0	6,877.0	10,676.6	6,702.0	94.2	92.2	-69.91	-3,679.3	-789.2	509.6	339.0	170.59	2.987		
11,000.0	6,876.8	10,776.6	6,701.2	96.4	94.5	-69.85	-3,779.3	-789.2	509.8	334.9	174.88	2.915		
11,100.0	6,876.7	10,876.6	6,700.5	98.6	96.7	-69.79	-3,879.2	-789.3	510.0	330.9	179.18	2.847		
11,200.0	6,876.6	10,976.6	6,699.7	100.9	99.0	-69.73	-3,979.2	-789.4	510.3	326.8	183.48	2.781		
11,300.0	6,876.4	11,076.6	6,699.0	103.1	101.3	-69.66	-4,079.2	-789.4	510.5	322.7	187.78	2.718		
11,400.0	6,876.3	11,176.6	6,698.3	105.4	103.6	-69.60	-4,179.2	-789.5	510.7	318.6	192.08	2.659		
11,500.0	6,876.1	11,276.6	6,697.5	107.6	105.9	-69.54	-4,279.2	-789.5	510.9	314.5	196.38	2.602		
11,600.0	6,876.0	11,376.6	6,696.8	109.9	108.2	-69.48	-4,379.2	-789.6	511.1	310.4	200.68	2.547		
11,700.0	6,875.8	11,476.6	6,696.1	112.1	110.5	-69.42	-4,479.2	-789.7	511.4	306.4	204.99	2.495		
11,800.0	6,875.7	11,576.6	6,695.3	114.4	112.8	-69.36	-4,579.2	-789.7	511.6	302.3	209.29	2.444		
11,900.0	6,875.5	11,676.6	6,694.6	116.7	115.0	-69.30	-4,679.2	-789.8	511.8	298.2	213.59	2.396		
12,000.0	6,875.4	11,776.6	6,693.9	118.9	117.3	-69.24	-4,779.2	-789.8	512.0	294.1	217.90	2.350		
12,100.0	6,875.2	11,876.6	6,693.1	121.2	119.6	-69.17	-4,879.2	-789.9	512.2	290.0	222.20	2.305		
12,200.0	6,875.1	11,976.6	6,692.4	123.5	122.0	-69.11	-4,979.2	-790.0	512.5	286.0	226.50	2.263		
12,300.0	6,874.9	12,076.6	6,691.7	125.7	124.3	-69.05	-5,079.2	-790.0	512.7	281.9	230.80	2.221		
12,400.0	6,874.8	12,176.6	6,690.9	128.0	126.6	-68.99	-5,179.2	-790.1	512.9	277.8	235.10	2.182		
12,500.0	6,874.6	12,276.6	6,690.2	130.3	128.9	-68.93	-5,279.2	-790.1	513.1	273.7	239.40	2.143		
12,600.0	6,874.5	12,376.6	6,689.4	132.6	131.2	-68.87	-5,379.2	-790.2	513.4	269.7	243.69	2.107		
12,700.0	6,874.3	12,476.6	6,688.7	134.9	133.5	-68.81	-5,479.2	-790.3	513.6	265.6	247.99	2.071		
12,800.0	6,874.2	12,576.6	6,688.0	137.2	135.8	-68.75	-5,579.2	-790.3	513.8	261.5	252.29	2.037		
12,900.0	6,874.1	12,676.6	6,687.2	139.5	138.1	-68.69	-5,679.2	-790.4	514.0	257.5	256.58	2.003		
13,000.0	6,873.9	12,776.6	6,686.5	141.8	140.4	-68.63	-5,779.2	-790.4	514.3	253.4	260.87	1.971		
13,100.0	6,873.8	12,876.6	6,685.8	144.0	142.8	-68.57	-5,879.2	-790.5	514.5	249.3	265.16	1.940		
13,200.0	6,873.6	12,976.6	6,685.0	146.3	145.1	-68.51	-5,979.2	-790.6	514.7	245.3	269.45	1.910		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
13,300.0	6,873.5	13,076.6	6,684.3	148.6	147.4	-68.45	-6,079.2	-790.6	515.0	241.2	273.73	1.881		
13,400.0	6,873.3	13,176.6	6,683.6	150.9	149.7	-68.39	-6,179.1	-790.7	515.2	237.2	278.02	1.853		
13,500.0	6,873.2	13,276.6	6,682.8	153.2	152.0	-68.33	-6,279.1	-790.8	515.4	233.1	282.30	1.826		
13,600.0	6,873.0	13,376.6	6,682.1	155.5	154.3	-68.27	-6,379.1	-790.8	515.6	229.1	286.58	1.799		
13,700.0	6,872.9	13,476.6	6,681.3	157.9	156.7	-68.21	-6,479.1	-790.9	515.9	225.0	290.86	1.774		
13,800.0	6,872.7	13,576.6	6,680.6	160.2	159.0	-68.15	-6,579.1	-790.9	516.1	221.0	295.13	1.749		
13,900.0	6,872.6	13,676.6	6,679.9	162.5	161.3	-68.09	-6,679.1	-791.0	516.3	216.9	299.41	1.725		
14,000.0	6,872.4	13,776.6	6,679.1	164.8	163.6	-68.03	-6,779.1	-791.1	516.6	212.9	303.68	1.701		
14,100.0	6,872.3	13,876.6	6,678.4	167.1	166.0	-67.97	-6,879.1	-791.1	516.8	208.9	307.95	1.678		
14,200.0	6,872.1	13,976.6	6,677.7	169.4	168.3	-67.91	-6,979.1	-791.2	517.0	204.8	312.21	1.656		
14,294.6	6,872.0	14,067.2	6,677.0	171.6	170.4	-67.85	-7,069.8	-791.2	517.3	201.1	316.17	1.636		
14,295.3	6,872.0	14,067.2	6,677.0	171.6	170.4	-67.85	-7,069.8	-791.2	517.3	201.1	316.18	1.636 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-303 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft	
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
0.0	0.0	0.0	0.0	0.0	0.0	90.35	-0.4	60.2	60.2						
100.0	100.0	100.0	100.0	0.1	0.1	90.35	-0.4	60.2	60.2	59.9	0.28	218.579			
200.0	200.0	200.0	200.0	0.4	0.4	90.35	-0.4	60.2	60.2	59.4	0.83	72.860			
300.0	300.0	300.0	300.0	0.7	0.7	90.35	-0.4	60.2	60.2	58.8	1.38	43.716			
400.0	400.0	400.0	400.0	1.0	1.0	90.35	-0.4	60.2	60.2	58.3	1.93	31.226	CC, ES		
500.0	500.0	500.0	500.0	1.2	1.2	159.80	-0.4	60.2	61.4	58.9	2.47	24.834			
600.0	599.9	599.9	599.9	1.5	1.5	160.97	-0.4	60.2	65.1	62.1	3.02	21.570			
700.0	699.7	699.7	699.7	1.8	1.8	162.66	-0.4	60.2	71.3	67.8	3.57	19.975			
800.0	799.3	799.3	799.3	2.1	2.1	164.57	-0.4	60.2	80.1	76.0	4.13	19.413	SF		
900.0	898.6	898.6	898.6	2.4	2.3	166.49	-0.4	60.2	91.5	86.8	4.68	19.533			
1,000.0	997.5	997.5	997.5	2.8	2.6	168.27	-0.4	60.2	105.5	100.3	5.24	20.124			
1,100.0	1,096.1	1,096.1	1,096.1	3.2	2.9	169.84	-0.4	60.2	122.1	116.3	5.80	21.052			
1,200.0	1,194.2	1,194.2	1,194.2	3.7	3.2	171.19	-0.4	60.2	141.4	135.0	6.36	22.229			
1,300.0	1,291.7	1,291.7	1,291.7	4.2	3.4	172.33	-0.4	60.2	163.2	156.3	6.92	23.590			
1,400.0	1,388.6	1,388.6	1,388.6	4.8	3.7	173.29	-0.4	60.2	187.7	180.2	7.48	25.093			
1,483.7	1,469.2	1,472.4	1,472.4	5.3	3.9	173.88	0.2	59.8	209.6	201.6	7.95	26.361			
1,500.0	1,484.9	1,488.8	1,488.8	5.4	4.0	173.95	0.5	59.6	213.9	205.8	8.04	26.584			
1,600.0	1,580.9	1,590.4	1,590.3	6.1	4.2	174.13	3.4	57.3	238.9	230.3	8.63	27.700			
1,700.0	1,676.9	1,693.0	1,692.7	6.8	4.5	173.90	8.6	53.4	261.9	252.7	9.22	28.407			
1,800.0	1,772.9	1,796.6	1,795.8	7.4	4.8	173.35	16.1	47.8	282.9	273.1	9.83	28.767			
1,900.0	1,868.9	1,900.9	1,899.5	8.1	5.1	172.53	25.8	40.4	301.8	291.3	10.47	28.830			
2,000.0	1,964.9	2,005.9	2,003.4	8.8	5.5	171.48	37.9	31.3	318.7	307.6	11.13	28.636			
2,100.0	2,060.9	2,105.1	2,101.3	9.6	5.8	170.40	50.6	21.7	334.4	322.6	11.80	28.337			
2,200.0	2,156.9	2,203.7	2,198.6	10.3	6.2	169.43	63.3	12.2	350.3	337.8	12.49	28.040			
2,300.0	2,252.9	2,302.3	2,295.9	11.0	6.5	168.54	75.9	2.7	366.2	353.0	13.20	27.745			
2,400.0	2,348.9	2,400.8	2,393.2	11.7	6.9	167.72	88.6	-6.8	382.2	368.3	13.92	27.455			
2,500.0	2,444.9	2,499.4	2,490.5	12.4	7.3	166.97	101.2	-16.4	398.3	383.7	14.66	27.174			
2,600.0	2,540.9	2,598.0	2,587.7	13.1	7.7	166.28	113.9	-25.9	414.5	399.1	15.41	26.901			
2,700.0	2,636.9	2,696.5	2,685.0	13.9	8.1	165.64	126.5	-35.4	430.7	414.5	16.17	26.639			
2,800.0	2,732.9	2,795.1	2,782.3	14.6	8.5	165.04	139.1	-45.0	446.9	430.0	16.94	26.387			
2,900.0	2,828.9	2,893.7	2,879.6	15.3	8.9	164.49	151.8	-54.5	463.2	445.5	17.72	26.146			
3,000.0	2,924.9	2,992.2	2,976.9	16.0	9.3	163.97	164.4	-64.0	479.6	461.1	18.50	25.916			
3,100.0	3,020.9	3,090.8	3,074.2	16.8	9.7	163.49	177.1	-73.5	495.9	476.6	19.30	25.697			
3,200.0	3,116.9	3,189.4	3,171.5	17.5	10.1	163.04	189.7	-83.1	512.4	492.2	20.10	25.487			
3,300.0	3,212.9	3,287.9	3,268.8	18.2	10.6	162.62	202.4	-92.6	528.8	507.9	20.91	25.288			
3,400.0	3,308.9	3,386.5	3,366.0	18.9	11.0	162.22	215.0	-102.1	545.2	523.5	21.72	25.098			
3,500.0	3,404.9	3,485.1	3,463.3	19.7	11.4	161.85	227.7	-111.7	561.7	539.2	22.54	24.917			
3,600.0	3,500.9	3,583.6	3,560.6	20.4	11.8	161.50	240.3	-121.2	578.2	554.9	23.37	24.745			
3,700.0	3,596.9	3,682.2	3,657.9	21.1	12.3	161.17	252.9	-130.7	594.8	570.6	24.20	24.581			
3,800.0	3,692.9	3,780.8	3,755.2	21.8	12.7	160.85	265.6	-140.2	611.3	586.3	25.03	24.425			
3,900.0	3,788.9	3,879.3	3,852.5	22.6	13.1	160.55	278.2	-149.8	627.9	602.0	25.86	24.276			
4,000.0	3,884.9	3,977.9	3,949.8	23.3	13.6	160.27	290.9	-159.3	644.4	617.7	26.70	24.134			
4,100.0	3,980.9	4,076.5	4,047.1	24.0	14.0	160.00	303.5	-168.8	661.0	633.5	27.54	23.998			
4,200.0	4,076.9	4,175.1	4,144.4	24.8	14.4	159.75	316.2	-178.4	677.6	649.2	28.39	23.869			
4,300.0	4,172.9	4,273.6	4,241.6	25.5	14.9	159.50	328.8	-187.9	694.2	665.0	29.24	23.745			
4,400.0	4,268.9	4,372.2	4,338.9	26.2	15.3	159.27	341.4	-197.4	710.9	680.8	30.09	23.626			
4,500.0	4,364.9	4,470.8	4,436.2	27.0	15.8	159.05	354.1	-206.9	727.5	696.6	30.94	23.513			
4,600.0	4,460.9	4,569.3	4,533.5	27.7	16.2	158.84	366.7	-216.5	744.2	712.4	31.80	23.405			
4,700.0	4,556.9	4,667.9	4,630.8	28.4	16.6	158.63	379.4	-226.0	760.8	728.2	32.65	23.301			
4,800.0	4,652.9	4,766.5	4,728.1	29.1	17.1	158.44	392.0	-235.5	777.5	744.0	33.51	23.201			
4,900.0	4,748.9	4,865.0	4,825.4	29.9	17.5	158.26	404.7	-245.0	794.2	759.8	34.37	23.106			

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<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>													
Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-303 - Wellbore #1 - Plan #2 (1-25-17)													
Survey Program: 0-MWD												Offset Site Error:	0.0 ft
Reference												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 +N/-S	+E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<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 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	90.59	-1.1	105.0	105.0						
100.0	100.0	100.0	100.0	0.1	0.1	90.59	-1.1	105.0	105.0	104.8	0.28	381.515			
200.0	200.0	200.0	200.0	0.4	0.4	90.59	-1.1	105.0	105.0	104.2	0.83	127.172			
300.0	300.0	300.0	300.0	0.7	0.7	90.59	-1.1	105.0	105.0	103.7	1.38	76.303			
400.0	400.0	400.0	400.0	1.0	1.0	90.59	-1.1	105.0	105.0	103.1	1.93	54.502 CC, ES			
500.0	500.0	500.0	500.0	1.2	1.2	159.85	-1.1	105.0	106.3	103.8	2.47	42.977			
600.0	599.9	599.9	599.9	1.5	1.5	160.54	-1.1	105.0	110.0	106.9	3.02	36.432			
700.0	699.7	699.7	699.7	1.8	1.8	161.58	-1.1	105.0	116.2	112.6	3.57	32.532			
800.0	799.3	799.3	799.3	2.1	2.1	162.87	-1.1	105.0	124.9	120.7	4.13	30.262			
900.0	898.6	897.3	897.3	2.4	2.3	163.77	0.0	105.6	136.6	131.9	4.68	29.181			
1,000.0	997.5	994.9	994.8	2.8	2.6	163.87	3.4	107.2	151.7	146.5	5.24	28.962 SF			
1,100.0	1,096.1	1,091.7	1,091.4	3.2	2.9	163.38	8.9	109.9	170.2	164.4	5.81	29.325			
1,200.0	1,194.2	1,187.6	1,186.9	3.7	3.1	162.49	16.6	113.6	192.1	185.7	6.39	30.082			
1,300.0	1,291.7	1,282.3	1,281.0	4.2	3.4	161.36	26.3	118.3	217.4	210.4	6.99	31.101			
1,400.0	1,388.6	1,375.8	1,373.6	4.8	3.7	160.11	37.9	123.9	246.0	238.4	7.62	32.280			
1,483.7	1,469.2	1,452.9	1,449.7	5.3	4.0	159.03	49.0	129.3	272.6	264.4	8.18	33.334			
1,500.0	1,484.9	1,467.7	1,464.3	5.4	4.1	158.84	51.3	130.4	278.0	269.7	8.29	33.535			
1,600.0	1,580.9	1,558.6	1,553.6	6.1	4.4	157.64	66.5	137.7	311.9	302.9	9.01	34.631			
1,700.0	1,676.9	1,652.2	1,645.4	6.8	4.8	156.46	83.1	145.8	346.4	336.6	9.77	35.460			
1,800.0	1,772.9	1,745.9	1,737.2	7.4	5.2	155.50	99.8	153.8	381.0	370.4	10.55	36.103			
1,900.0	1,868.9	1,839.5	1,829.1	8.1	5.7	154.69	116.4	161.9	415.6	404.3	11.35	36.610			
2,000.0	1,964.9	1,933.2	1,920.9	8.8	6.1	154.01	133.0	169.9	450.4	438.2	12.17	37.009			
2,100.0	2,060.9	2,026.9	2,012.7	9.6	6.6	153.43	149.7	177.9	485.1	472.2	13.00	37.326			
2,200.0	2,156.9	2,120.5	2,104.5	10.3	7.0	152.92	166.3	186.0	520.0	506.1	13.84	37.580			
2,300.0	2,252.9	2,214.2	2,196.3	11.0	7.5	152.48	182.9	194.0	554.8	540.1	14.68	37.785			
2,400.0	2,348.9	2,307.8	2,288.1	11.7	7.9	152.09	199.6	202.1	589.7	574.2	15.54	37.953			
2,500.0	2,444.9	2,401.5	2,379.9	12.4	8.4	151.74	216.2	210.1	624.6	608.2	16.40	38.091			
2,600.0	2,540.9	2,495.1	2,471.7	13.1	8.9	151.43	232.8	218.2	659.5	642.2	17.26	38.205			
2,700.0	2,636.9	2,588.8	2,563.5	13.9	9.3	151.16	249.4	226.2	694.4	676.3	18.13	38.300			
2,800.0	2,732.9	2,682.4	2,655.3	14.6	9.8	150.90	266.1	234.3	729.4	710.4	19.00	38.379			
2,900.0	2,828.9	2,776.1	2,747.2	15.3	10.3	150.67	282.7	242.3	764.3	744.4	19.88	38.446			
3,000.0	2,924.9	2,869.7	2,839.0	16.0	10.7	150.47	299.3	250.3	799.3	778.5	20.76	38.503			



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<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		
0.0	0.0	0.0	0.0	0.0	0.0	90.47	-0.7	90.0	90.0					
100.0	100.0	99.0	99.0	0.1	0.1	90.47	-0.7	90.0	90.0	89.7	0.27	328.501		
200.0	200.0	199.0	199.0	0.4	0.4	90.47	-0.7	90.0	90.0	89.2	0.82	109.318		
300.0	300.0	299.0	299.0	0.7	0.7	90.47	-0.7	90.0	90.0	88.6	1.37	65.503		
400.0	400.0	399.0	399.0	1.0	1.0	90.47	-0.7	90.0	90.0	88.1	1.92	46.761 CC, ES		
500.0	500.0	499.0	499.0	1.2	1.2	159.77	-0.7	90.0	91.2	88.8	2.47	36.932		
600.0	599.9	598.9	598.9	1.5	1.5	160.57	-0.7	90.0	94.9	91.9	3.02	31.475		
700.0	699.7	698.7	698.7	1.8	1.8	161.77	-0.7	90.0	101.1	97.5	3.57	28.340		
800.0	799.3	798.3	798.3	2.1	2.1	163.23	-0.7	90.0	109.8	105.7	4.12	26.637		
900.0	898.6	897.6	897.6	2.4	2.3	164.79	-0.7	90.0	121.1	116.5	4.68	25.876		
1,000.0	997.5	996.5	996.5	2.8	2.6	166.33	-0.7	90.0	135.1	129.8	5.24	25.766 SF		
1,100.0	1,096.1	1,095.1	1,095.1	3.2	2.9	167.79	-0.7	90.0	151.6	145.8	5.80	26.125		
1,200.0	1,194.2	1,193.2	1,193.2	3.7	3.1	169.12	-0.7	90.0	170.7	164.3	6.36	26.830		
1,300.0	1,291.7	1,290.7	1,290.7	4.2	3.4	170.30	-0.7	90.0	192.4	185.5	6.92	27.797		
1,400.0	1,388.6	1,387.6	1,387.6	4.8	3.7	171.34	-0.7	90.0	216.8	209.3	7.48	28.964		
1,483.7	1,469.2	1,468.2	1,468.2	5.3	3.9	172.11	-0.7	90.0	239.1	231.1	7.95	30.064		
1,500.0	1,484.9	1,483.9	1,483.9	5.4	3.9	172.26	-0.7	90.0	243.6	235.6	8.05	30.275		
1,600.0	1,580.9	1,579.9	1,579.9	6.1	4.2	173.05	-0.7	90.0	271.4	262.8	8.63	31.464		
1,700.0	1,676.9	1,675.9	1,675.9	6.8	4.5	173.70	-0.7	90.0	299.2	290.0	9.21	32.488		
1,800.0	1,772.9	1,771.9	1,771.9	7.4	4.7	174.24	-0.7	90.0	327.1	317.3	9.80	33.377		
1,900.0	1,868.9	1,867.9	1,867.9	8.1	5.0	174.69	-0.7	90.0	354.9	344.5	10.39	34.155		
2,000.0	1,964.9	1,963.9	1,963.9	8.8	5.3	175.08	-0.7	90.0	382.8	371.8	10.99	34.841		
2,100.0	2,060.9	2,059.9	2,059.9	9.6	5.5	175.41	-0.7	90.0	410.7	399.1	11.59	35.449		
2,200.0	2,156.9	2,155.9	2,155.9	10.3	5.8	175.71	-0.7	90.0	438.6	426.5	12.19	35.991		
2,300.0	2,252.9	2,251.9	2,251.9	11.0	6.1	175.96	-0.7	90.0	466.6	453.8	12.79	36.478		
2,400.0	2,348.9	2,347.9	2,347.9	11.7	6.3	176.19	-0.7	90.0	494.5	481.1	13.39	36.917		
2,500.0	2,444.9	2,443.9	2,443.9	12.4	6.6	176.40	-0.7	90.0	522.4	508.4	14.00	37.314		
2,600.0	2,540.9	2,541.2	2,541.2	13.1	6.9	176.56	-0.5	90.0	550.3	535.7	14.61	37.664		
2,700.0	2,636.9	2,640.5	2,640.5	13.9	7.1	176.49	1.8	90.2	577.8	562.6	15.23	37.941		
2,800.0	2,732.9	2,740.0	2,739.9	14.6	7.4	176.18	6.8	90.7	604.7	588.9	15.85	38.154		
2,900.0	2,828.9	2,839.7	2,839.2	15.3	7.7	175.66	14.3	91.4	631.1	614.7	16.48	38.303		
3,000.0	2,924.9	2,939.3	2,938.3	16.0	8.0	174.96	24.4	92.3	657.1	640.0	17.12	38.388		
3,100.0	3,020.9	3,038.6	3,036.9	16.8	8.2	174.09	37.0	93.4	682.7	664.9	17.78	38.408		
3,200.0	3,116.9	3,137.7	3,134.8	17.5	8.5	173.07	52.2	94.8	708.1	689.6	18.46	38.363		
3,300.0	3,212.9	3,234.3	3,229.9	18.2	8.8	172.01	68.7	96.3	733.3	714.2	19.16	38.271		
3,400.0	3,308.9	3,330.2	3,324.4	18.9	9.2	171.02	85.2	97.8	758.8	738.9	19.88	38.161		
3,500.0	3,404.9	3,426.1	3,418.8	19.7	9.5	170.09	101.7	99.3	784.5	763.9	20.63	38.034		



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<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-243 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft	
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
0.0	0.0	0.0	0.0	0.0	0.0	90.52	-1.1	120.1	120.1						
100.0	100.0	100.0	100.0	0.1	0.1	90.52	-1.1	120.1	120.1	119.8	0.28	436.156			
200.0	200.0	200.0	200.0	0.4	0.4	90.52	-1.1	120.1	120.1	119.3	0.83	145.385			
300.0	300.0	300.0	300.0	0.7	0.7	90.52	-1.1	120.1	120.1	118.7	1.38	87.231			
400.0	400.0	400.0	400.0	1.0	1.0	90.52	-1.1	120.1	120.1	118.2	1.93	62.308	CC, ES		
500.0	500.0	497.9	497.9	1.2	1.2	159.30	-0.2	120.9	122.2	119.7	2.46	49.582			
600.0	599.9	595.5	595.4	1.5	1.5	158.63	2.6	123.5	128.4	125.4	3.00	42.744			
700.0	699.7	692.6	692.3	1.8	1.8	157.64	7.2	127.6	138.9	135.3	3.56	39.020			
800.0	799.3	788.9	788.3	2.1	2.1	156.48	13.5	133.4	153.5	149.4	4.13	37.197			
900.0	898.6	884.2	882.9	2.4	2.4	155.27	21.5	140.8	172.3	167.6	4.71	36.585	SF		
1,000.0	997.5	978.2	976.0	2.8	2.7	154.08	31.1	149.6	195.2	189.9	5.31	36.763			
1,100.0	1,096.1	1,070.7	1,067.3	3.2	3.1	152.97	42.2	159.7	222.2	216.3	5.93	37.462			
1,200.0	1,194.2	1,161.5	1,156.5	3.7	3.5	151.96	54.7	171.2	253.2	246.6	6.58	38.500			
1,300.0	1,291.7	1,251.4	1,244.4	4.2	3.9	151.03	68.6	183.9	288.0	280.7	7.25	39.729			
1,400.0	1,388.6	1,344.1	1,334.9	4.8	4.4	150.36	83.4	197.4	325.5	317.6	7.95	40.961			
1,483.7	1,469.2	1,421.0	1,410.0	5.3	4.8	150.00	95.7	208.6	358.5	350.0	8.55	41.954			
1,500.0	1,484.9	1,435.9	1,424.5	5.4	4.8	150.00	98.0	210.8	365.1	356.4	8.67	42.121			
1,600.0	1,580.9	1,527.4	1,513.8	6.1	5.3	150.01	112.7	224.2	405.4	396.0	9.42	43.040			
1,700.0	1,676.9	1,618.9	1,603.2	6.8	5.8	150.01	127.3	237.6	445.8	435.6	10.19	43.761			
1,800.0	1,772.9	1,710.4	1,692.5	7.4	6.3	150.01	141.9	250.9	486.1	475.1	10.97	44.330			
1,900.0	1,868.9	1,801.9	1,781.9	8.1	6.8	150.01	156.5	264.3	526.4	514.7	11.75	44.785			
2,000.0	1,964.9	1,893.4	1,871.2	8.8	7.3	150.02	171.1	277.7	566.8	554.2	12.55	45.154			
2,100.0	2,060.9	1,984.9	1,960.5	9.6	7.8	150.02	185.7	291.1	607.1	593.7	13.36	45.456			
2,200.0	2,156.9	2,076.5	2,049.9	10.3	8.3	150.02	200.3	304.4	647.4	633.3	14.16	45.707			
2,300.0	2,252.9	2,168.0	2,139.2	11.0	8.8	150.02	214.9	317.8	687.7	672.8	14.98	45.917			
2,400.0	2,348.9	2,259.5	2,228.5	11.7	9.3	150.02	229.5	331.2	728.1	712.3	15.80	46.094			
2,500.0	2,444.9	2,351.0	2,317.9	12.4	9.9	150.02	244.2	344.5	768.4	751.8	16.62	46.245			

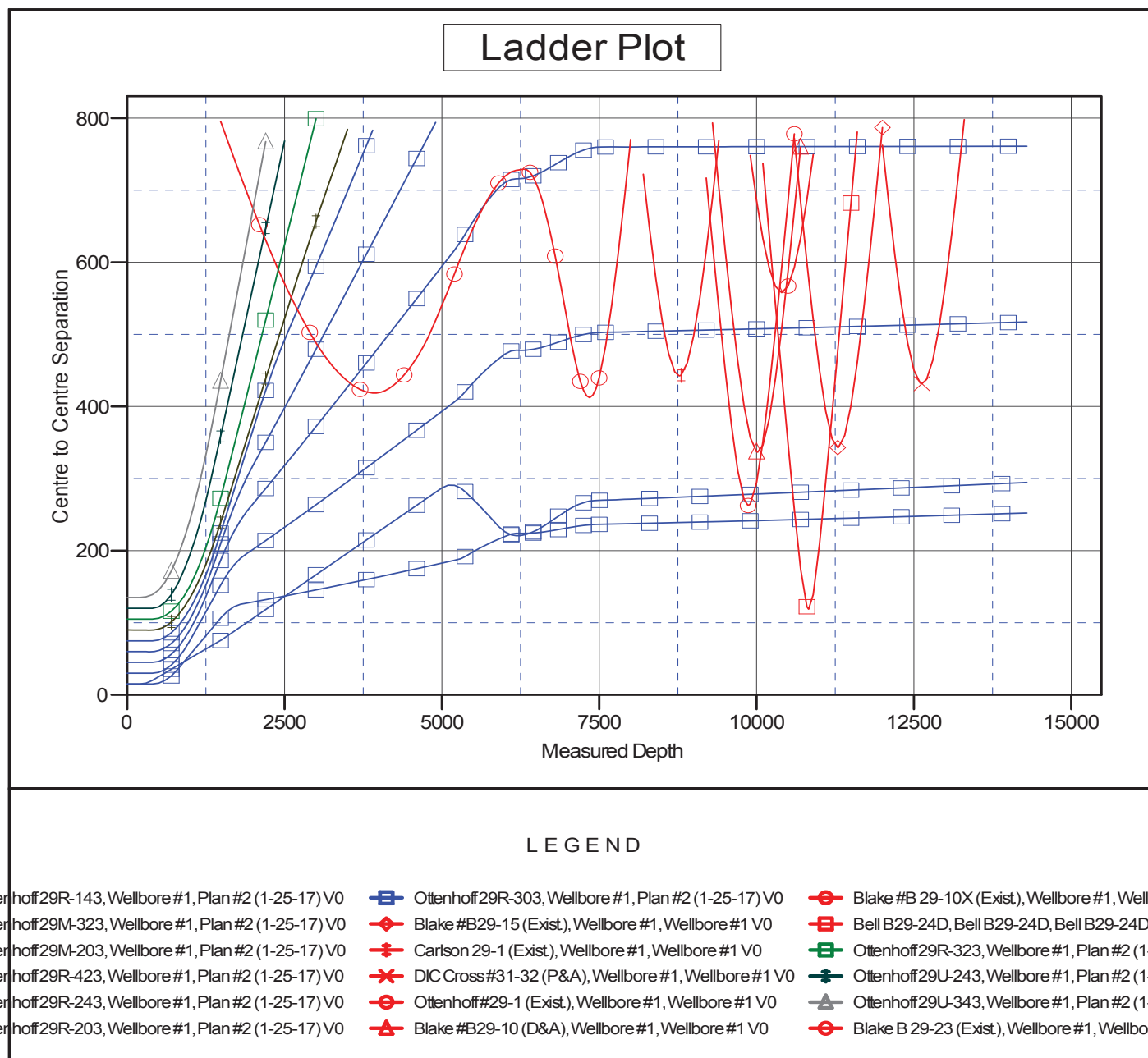
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<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	90.62	-1.5	135.1	135.1							
100.0	100.0	99.0	99.0	0.1	0.1	90.62	-1.5	135.1	135.1	134.9	0.27	493.273				
200.0	200.0	199.0	199.0	0.4	0.4	90.62	-1.5	135.1	135.1	134.3	0.82	164.151	CC, ES			
300.0	300.0	296.3	296.3	0.7	0.7	90.30	-0.7	136.1	136.1	134.8	1.36	99.945				
400.0	400.0	393.4	393.4	1.0	0.9	89.37	1.5	139.0	139.1	137.2	1.90	73.043				
500.0	500.0	490.3	490.0	1.2	1.2	157.09	5.3	143.9	145.5	143.0	2.46	59.231				
600.0	599.9	586.5	585.9	1.5	1.5	155.73	10.4	150.6	156.3	153.3	3.02	51.832				
700.0	699.7	681.9	680.6	1.8	1.9	154.44	17.0	159.2	171.6	168.1	3.59	47.827				
800.0	799.3	776.0	773.9	2.1	2.2	153.27	24.9	169.5	191.4	187.2	4.17	45.859				
900.0	898.6	868.8	865.4	2.4	2.6	152.26	34.1	181.5	215.6	210.8	4.77	45.173	SF			
1,000.0	997.5	960.0	955.0	2.8	3.0	151.39	44.4	194.9	244.0	238.6	5.38	45.317				
1,100.0	1,096.1	1,049.2	1,042.2	3.2	3.5	150.65	55.8	209.7	276.5	270.5	6.01	46.007				
1,200.0	1,194.2	1,136.4	1,127.1	3.7	4.0	150.01	68.1	225.7	313.1	306.5	6.65	47.055				
1,300.0	1,291.7	1,221.4	1,209.3	4.2	4.5	149.45	81.2	242.8	353.6	346.3	7.32	48.315				
1,400.0	1,388.6	1,310.4	1,295.0	4.8	5.0	149.00	95.7	261.7	397.3	389.2	8.01	49.582				
1,483.7	1,469.2	1,384.9	1,366.8	5.3	5.5	148.77	107.8	277.5	435.4	426.8	8.61	50.571				
1,500.0	1,484.9	1,399.3	1,380.7	5.4	5.6	148.80	110.2	280.5	442.9	434.2	8.72	50.765				
1,600.0	1,580.9	1,487.9	1,466.1	6.1	6.2	148.97	124.6	299.3	489.3	479.8	9.47	51.652				
1,700.0	1,676.9	1,576.5	1,551.5	6.8	6.8	149.11	139.0	318.1	535.6	525.4	10.23	52.338				
1,800.0	1,772.9	1,665.1	1,636.8	7.4	7.4	149.22	153.4	336.9	582.0	571.0	11.01	52.875				
1,900.0	1,868.9	1,753.7	1,722.2	8.1	7.9	149.32	167.8	355.7	628.4	616.6	11.79	53.301				
2,000.0	1,964.9	1,842.3	1,807.6	8.8	8.5	149.41	182.3	374.5	674.7	662.2	12.58	53.642				
2,100.0	2,060.9	1,930.9	1,893.0	9.6	9.1	149.48	196.7	393.3	721.1	707.7	13.37	53.918				
2,200.0	2,156.9	2,019.5	1,978.3	10.3	9.7	149.55	211.1	412.0	767.5	753.3	14.17	54.144				

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<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 WWWELL @ 4686.0ft (RKB - 23')  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000

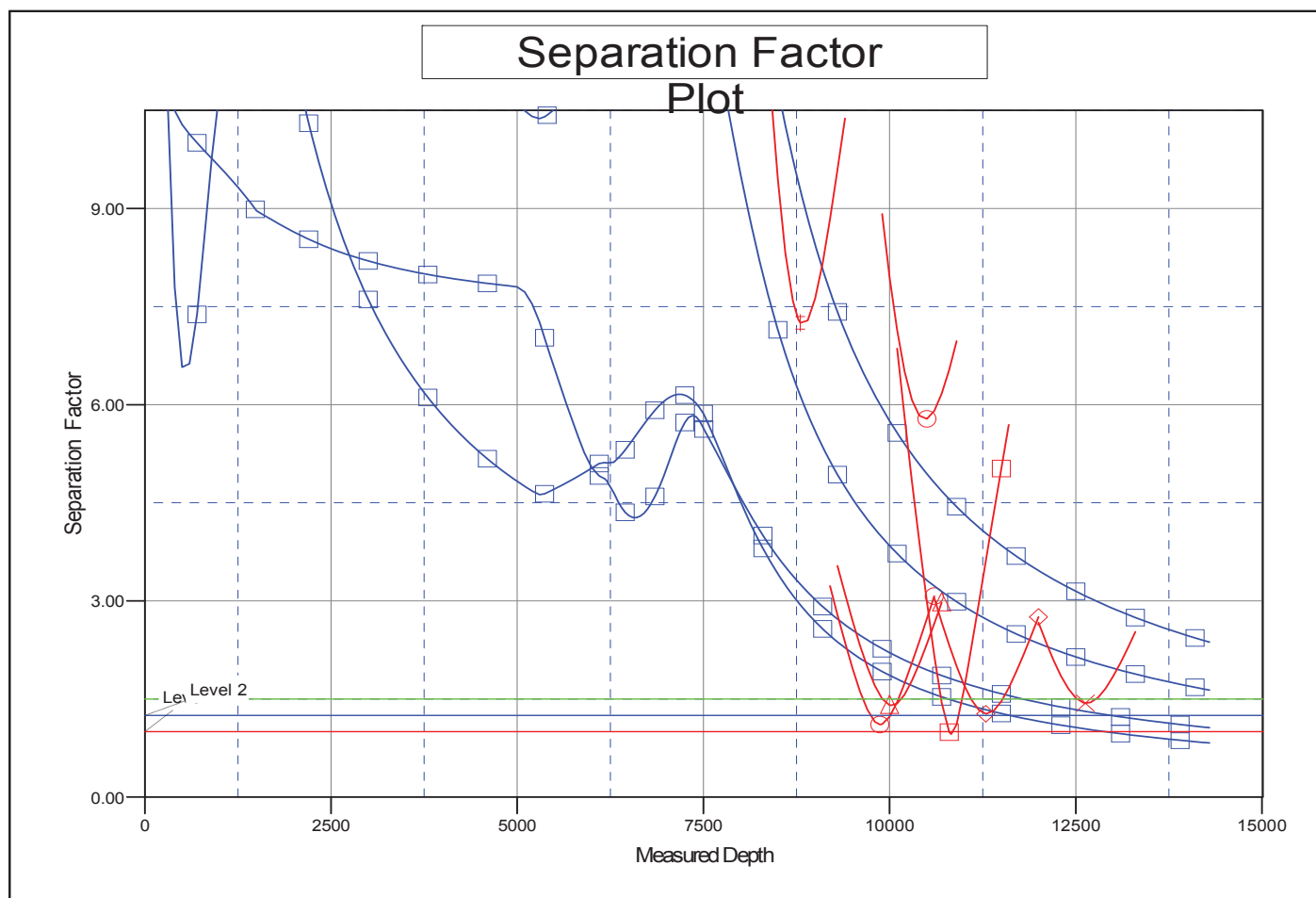
Coordinates are relative to: Ottenhoff 29M-423  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.60°



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29M-423
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WWWELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29M-423	<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 WWWELL @ 4686.0ft (RKB - 23')  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000

Coordinates are relative to: Ottenhoff 29M-423  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.60°



### LEGEND

Ottenhoff 29R-143, Wellbore #1, Plan #2 (1-25-17) V0	Ottenhoff 29R-303, Wellbore #1, Plan #2 (1-25-17) V0	Blake #B 29-10X (Exist), Wellbore #1, Wellbore #1 V0
Ottenhoff 29M-323, Wellbore #1, Plan #2 (1-25-17) V0	Blake #B29-15 (Exist), Wellbore #1, Wellbore #1 V0	Bell B29-24D, Bell B29-24D, Bell B29-24D V0
Ottenhoff 29M-203, Wellbore #1, Plan #2 (1-25-17) V0	Carlson 29-1 (Exist), Wellbore #1, Wellbore #1 V0	Ottenhoff 29R-323, Wellbore #1, Plan #2 (1-25-17) V0
Ottenhoff 29R-423, Wellbore #1, Plan #2 (1-25-17) V0	DIC Cross#31-32 (P&A), Wellbore #1, Wellbore #1 V0	Ottenhoff 29U-243, Wellbore #1, Plan #2 (1-25-17) V0
Ottenhoff 29R-243, Wellbore #1, Plan #2 (1-25-17) V0	Ottenhoff #29-1 (Exist), Wellbore #1, Wellbore #1 V0	Ottenhoff 29U-343, Wellbore #1, Plan #2 (1-25-17) V0
Ottenhoff 29R-203, Wellbore #1, Plan #2 (1-25-17) V0	Blake #B29-10 (D&A), Wellbore #1, Wellbore #1 V0	Blake B 29-23 (Exist), Wellbore #1, Wellbore #1 V0