

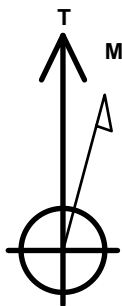
# PETROLEUM DEVELOPMENT CORP DJ Basin

Well Name: **Ottenhoff 29R-323**

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 1381166.60 3259734.43 40.375956 -104.567729  
 RKB - 23' WELL @ 4686.0ft (RKB - 23')

## DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 559'FNL & 960'FEL, Sec.29	1.0	0.0	0.0	Point
BHL 2340'FNL & 763'FEL, Sec.32	6727.0	-7057.4	242.7	Point
LPL 819'FNL & 714'FEL, Sec.29	6772.0	-255.4	247.7	Point



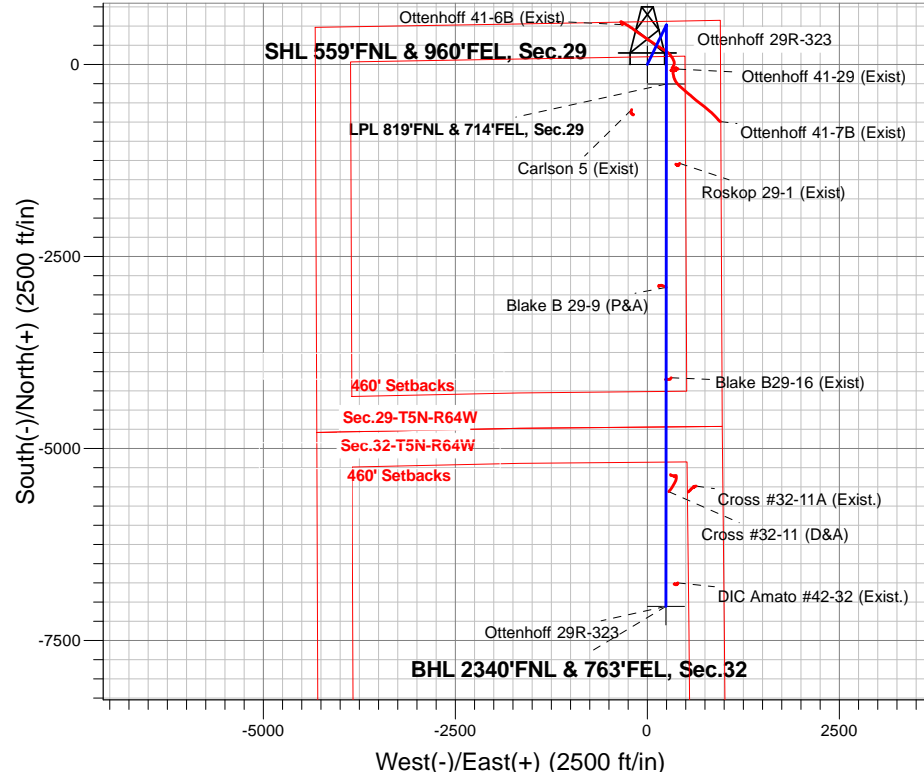
Azimuths to True North  
 Magnetic North: 8.00°

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

Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W  
 Ottenhoff 29R-323  
 Plan #2 (1-25-17)  
 8:14, January 30 2017

## ANNOTATIONS

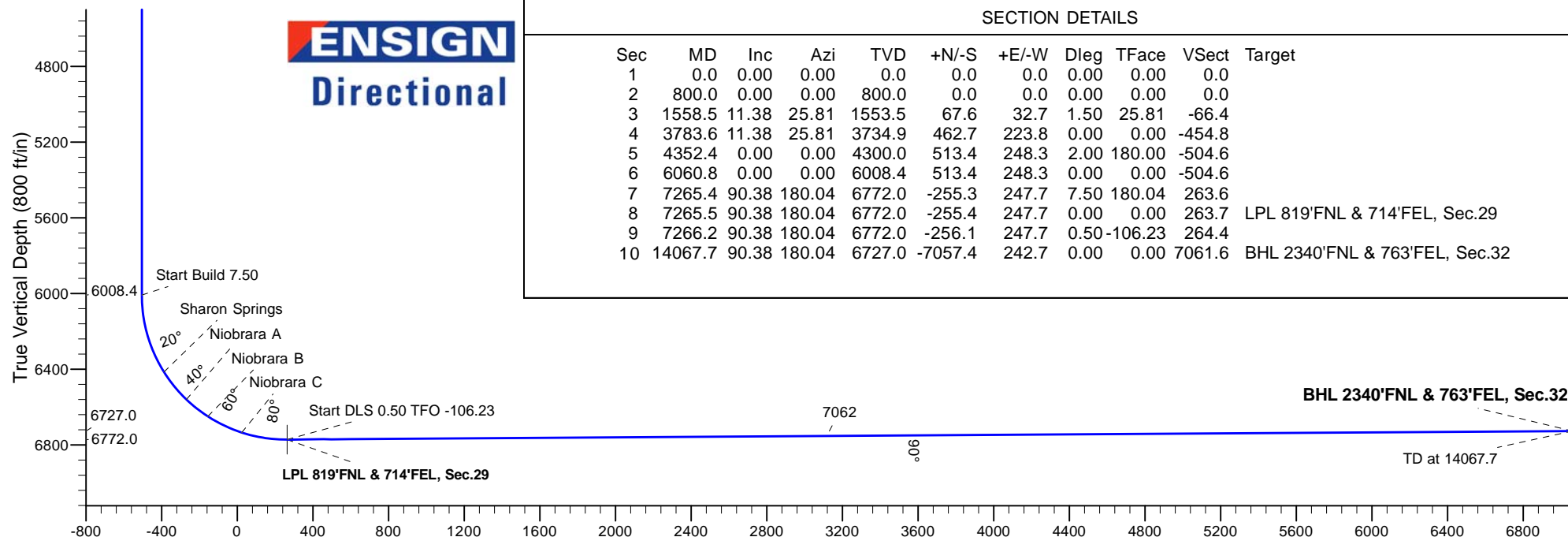
TVD	MD	Annotation
800.0	800.0	KOP - Start Build 1.50
3734.9	3783.6	Start Drop -2.00
6008.4	6060.8	Start Build 7.50
6772.0	7265.5	Start DLS 0.50 TFO -106.23
6772.0	7266.2	Start 6801.5 hold at 7266.2 MD
6727.0	14067.7	TD at 14067.7



## 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	800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.0	
3	1558.5	11.38	25.81	1553.5	67.6	32.7	1.50	25.81	-66.4	
4	3783.6	11.38	25.81	3734.9	462.7	223.8	0.00	0.00	-454.8	
5	4352.4	0.00	0.00	4300.0	513.4	248.3	2.00	180.00	-504.6	
6	6060.8	0.00	0.00	6008.4	513.4	248.3	0.00	0.00	-504.6	
7	7265.4	90.38	180.04	6772.0	-255.3	247.7	7.50	180.04	263.6	
8	7265.5	90.38	180.04	6772.0	-255.4	247.7	0.00	0.00	263.7	LPL 819'FNL & 714'FEL, Sec.29
9	7266.2	90.38	180.04	6772.0	-256.1	247.7	0.50	-106.23	264.4	
10	14067.7	90.38	180.04	6727.0	-7057.4	242.7	0.00	0.00	7061.6	BHL 2340'FNL & 763'FEL, Sec.32

**ENSIGN**  
 Directional



Vertical Section at 178.03° (800 ft/in)



# **PETROLEUM DEVELOPMENT CORP DJ Basin**

**SEC.29-T5N-R64W**

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

**Ottenhoff 29R-323**

**Wellbore #1**

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

## **Standard Planning Report**

**30 January, 2017**

<b>Database:</b>	US_EDM	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Project:</b>	SEC.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Ottenhoff 29R-323	<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 29R-323					
Well Position	+N/-S	0.0 ft	Northing:	1,381,166.60 usft	Latitude:	40.375956
	+E/-W	-15.0 ft	Easting:	3,259,734.43 usft	Longitude:	-104.567729
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,663.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	1/30/2017	8.00	66.87	52,547

<b>Design</b>	Plan #2 (1-25-17)			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	178.03

<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	
800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,558.5	11.38	25.81	1,553.5	67.6	32.7	1.50	1.50	0.00	25.81	
3,783.6	11.38	25.81	3,734.9	462.7	223.8	0.00	0.00	0.00	0.00	
4,352.4	0.00	0.00	4,300.0	513.4	248.3	2.00	-2.00	0.00	180.00	
6,060.8	0.00	0.00	6,008.4	513.4	248.3	0.00	0.00	0.00	0.00	
7,265.4	90.38	180.04	6,772.0	-255.3	247.7	7.50	7.50	0.00	180.04	
7,265.5	90.38	180.04	6,772.0	-255.4	247.7	0.00	0.00	0.00	0.00	LPL 819'FNL & 714'FI
7,266.2	90.38	180.04	6,772.0	-256.1	247.7	0.50	-0.14	-0.48	-106.23	
14,067.7	90.38	180.04	6,727.0	-7,057.4	242.7	0.00	0.00	0.00	0.00	BHL 2340'FNL & 763'

Database:	US_EDM	Local Co-ordinate Reference:	Well Ottenhoff 29R-323
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Project:	SEC.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	North Reference:	True
Well:	Ottenhoff 29R-323	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (1-25-17)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 1.50									
900.0	1.50	25.81	900.0	1.2	0.6	-1.2	1.50	1.50	0.00
1,000.0	3.00	25.81	999.9	4.7	2.3	-4.6	1.50	1.50	0.00
1,100.0	4.50	25.81	1,099.7	10.6	5.1	-10.4	1.50	1.50	0.00
1,200.0	6.00	25.81	1,199.3	18.8	9.1	-18.5	1.50	1.50	0.00
1,300.0	7.50	25.81	1,298.6	29.4	14.2	-28.9	1.50	1.50	0.00
1,400.0	9.00	25.81	1,397.5	42.3	20.5	-41.6	1.50	1.50	0.00
1,500.0	10.50	25.81	1,496.1	57.6	27.8	-56.6	1.50	1.50	0.00
1,558.5	11.38	25.81	1,553.5	67.6	32.7	-66.4	1.50	1.50	0.00
1,600.0	11.38	25.81	1,594.2	74.9	36.2	-73.7	0.00	0.00	0.00
1,700.0	11.38	25.81	1,692.2	92.7	44.8	-91.1	0.00	0.00	0.00
1,800.0	11.38	25.81	1,790.3	110.5	53.4	-108.6	0.00	0.00	0.00
1,900.0	11.38	25.81	1,888.3	128.2	62.0	-126.0	0.00	0.00	0.00
2,000.0	11.38	25.81	1,986.3	146.0	70.6	-143.5	0.00	0.00	0.00
2,100.0	11.38	25.81	2,084.4	163.7	79.2	-160.9	0.00	0.00	0.00
2,200.0	11.38	25.81	2,182.4	181.5	87.8	-178.4	0.00	0.00	0.00
2,300.0	11.38	25.81	2,280.5	199.3	96.4	-195.8	0.00	0.00	0.00
2,400.0	11.38	25.81	2,378.5	217.0	105.0	-213.3	0.00	0.00	0.00
2,500.0	11.38	25.81	2,476.5	234.8	113.5	-230.7	0.00	0.00	0.00
2,600.0	11.38	25.81	2,574.6	252.5	122.1	-248.2	0.00	0.00	0.00
2,700.0	11.38	25.81	2,672.6	270.3	130.7	-265.6	0.00	0.00	0.00
2,800.0	11.38	25.81	2,770.6	288.1	139.3	-283.1	0.00	0.00	0.00
2,900.0	11.38	25.81	2,868.7	305.8	147.9	-300.5	0.00	0.00	0.00
3,000.0	11.38	25.81	2,966.7	323.6	156.5	-318.0	0.00	0.00	0.00
3,100.0	11.38	25.81	3,064.7	341.3	165.1	-335.5	0.00	0.00	0.00
3,200.0	11.38	25.81	3,162.8	359.1	173.7	-352.9	0.00	0.00	0.00
3,300.0	11.38	25.81	3,260.8	376.8	182.3	-370.4	0.00	0.00	0.00
3,400.0	11.38	25.81	3,358.8	394.6	190.8	-387.8	0.00	0.00	0.00
3,500.0	11.38	25.81	3,456.9	412.4	199.4	-405.3	0.00	0.00	0.00
3,574.6	11.38	25.81	3,530.0	425.6	205.8	-418.3	0.00	0.00	0.00
Parkman Sandstone									
3,600.0	11.38	25.81	3,554.9	430.1	208.0	-422.7	0.00	0.00	0.00
3,700.0	11.38	25.81	3,652.9	447.9	216.6	-440.2	0.00	0.00	0.00
3,783.6	11.38	25.81	3,734.9	462.7	223.8	-454.8	0.00	0.00	0.00
Start Drop -2.00									
3,800.0	11.05	25.81	3,751.0	465.6	225.2	-457.6	2.00	-2.00	0.00
3,900.0	9.05	25.81	3,849.4	481.3	232.8	-473.0	2.00	-2.00	0.00
4,000.0	7.05	25.81	3,948.5	493.9	238.9	-485.4	2.00	-2.00	0.00
4,100.0	5.05	25.81	4,047.9	503.4	243.5	-494.7	2.00	-2.00	0.00
4,200.0	3.05	25.81	4,147.6	509.8	246.5	-501.0	2.00	-2.00	0.00
4,252.4	2.00	25.81	4,200.0	511.8	247.5	-503.0	2.00	-2.00	0.00
Sussex Sandstone									
4,300.0	1.05	25.81	4,247.6	513.0	248.1	-504.1	2.00	-2.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Ottenhoff 29R-323
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Project:	SEC.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	North Reference:	True
Well:	Ottenhoff 29R-323	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)
4,352.4	0.00	0.00	4,300.0	513.4	248.3	-504.6	2.00	-2.00	0.00
4,400.0	0.00	0.00	4,347.6	513.4	248.3	-504.6	0.00	0.00	0.00
4,500.0	0.00	0.00	4,447.6	513.4	248.3	-504.6	0.00	0.00	0.00
4,600.0	0.00	0.00	4,547.6	513.4	248.3	-504.6	0.00	0.00	0.00
4,700.0	0.00	0.00	4,647.6	513.4	248.3	-504.6	0.00	0.00	0.00
4,800.0	0.00	0.00	4,747.6	513.4	248.3	-504.6	0.00	0.00	0.00
4,900.0	0.00	0.00	4,847.6	513.4	248.3	-504.6	0.00	0.00	0.00
5,000.0	0.00	0.00	4,947.6	513.4	248.3	-504.6	0.00	0.00	0.00
5,100.0	0.00	0.00	5,047.6	513.4	248.3	-504.6	0.00	0.00	0.00
5,200.0	0.00	0.00	5,147.6	513.4	248.3	-504.6	0.00	0.00	0.00
5,300.0	0.00	0.00	5,247.6	513.4	248.3	-504.6	0.00	0.00	0.00
5,400.0	0.00	0.00	5,347.6	513.4	248.3	-504.6	0.00	0.00	0.00
5,500.0	0.00	0.00	5,447.6	513.4	248.3	-504.6	0.00	0.00	0.00
5,600.0	0.00	0.00	5,547.6	513.4	248.3	-504.6	0.00	0.00	0.00
5,700.0	0.00	0.00	5,647.6	513.4	248.3	-504.6	0.00	0.00	0.00
5,800.0	0.00	0.00	5,747.6	513.4	248.3	-504.6	0.00	0.00	0.00
5,900.0	0.00	0.00	5,847.6	513.4	248.3	-504.6	0.00	0.00	0.00
6,000.0	0.00	0.00	5,947.6	513.4	248.3	-504.6	0.00	0.00	0.00
6,060.8	0.00	0.00	6,008.4	513.4	248.3	-504.6	0.00	0.00	0.00
Start Build 7.50									
6,100.0	2.94	180.04	6,047.6	512.4	248.3	-503.6	7.50	7.50	0.00
6,200.0	10.44	180.04	6,146.8	500.8	248.3	-491.9	7.50	7.50	0.00
6,300.0	17.94	180.04	6,243.7	476.3	248.3	-467.4	7.50	7.50	0.00
6,400.0	25.45	180.04	6,336.5	439.3	248.2	-430.5	7.50	7.50	0.00
6,489.6	32.17	180.04	6,415.0	396.2	248.2	-387.4	7.50	7.50	0.00
Sharon Springs									
6,500.0	32.95	180.04	6,423.8	390.6	248.2	-381.8	7.50	7.50	0.00
6,600.0	40.45	180.04	6,503.9	330.8	248.2	-322.1	7.50	7.50	0.00
6,677.2	46.25	180.04	6,560.0	277.9	248.1	-269.2	7.50	7.50	0.00
Niobrara A									
6,700.0	47.96	180.04	6,575.5	261.2	248.1	-252.5	7.50	7.50	0.00
6,800.0	55.46	180.04	6,637.4	182.7	248.0	-174.1	7.50	7.50	0.00
6,822.7	57.16	180.04	6,650.0	163.9	248.0	-155.2	7.50	7.50	0.00
Niobrara B									
6,900.0	62.96	180.04	6,688.6	96.9	248.0	-88.3	7.50	7.50	0.00
7,000.0	70.47	180.04	6,728.1	5.1	247.9	3.4	7.50	7.50	0.00
7,021.6	72.09	180.04	6,735.0	-15.3	247.9	23.8	7.50	7.50	0.00
Niobrara C									
7,100.0	77.97	180.04	6,755.3	-91.1	247.8	99.5	7.50	7.50	0.00
7,200.0	85.47	180.04	6,769.6	-190.0	247.7	198.4	7.50	7.50	0.00
7,265.4	90.38	180.04	6,772.0	-255.3	247.7	263.6	7.50	7.50	0.00
7,265.5	90.38	180.04	6,772.0	-255.4	247.7	263.8	0.00	0.00	0.00
Start DLS 0.50 TFO -106.23									
7,266.2	90.38	180.04	6,772.0	-256.1	247.7	264.5	0.49	-0.14	-0.47
Start 6801.5 hold at 7266.2 MD									
7,300.0	90.38	180.04	6,771.8	-289.9	247.7	298.2	0.00	0.00	0.00
7,400.0	90.38	180.04	6,771.1	-389.9	247.6	398.2	0.00	0.00	0.00
7,500.0	90.38	180.04	6,770.4	-489.9	247.5	498.1	0.00	0.00	0.00
7,600.0	90.38	180.04	6,769.8	-589.9	247.5	598.0	0.00	0.00	0.00
7,700.0	90.38	180.04	6,769.1	-689.9	247.4	698.0	0.00	0.00	0.00
7,800.0	90.38	180.04	6,768.5	-789.9	247.3	797.9	0.00	0.00	0.00

<b>Database:</b>	US_EDM	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Project:</b>	SEC.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Ottenhoff 29R-323	<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)
7,900.0	90.38	180.04	6,767.8	-889.9	247.2	897.9	0.00	0.00	0.00
8,000.0	90.38	180.04	6,767.1	-989.9	247.2	997.8	0.00	0.00	0.00
8,100.0	90.38	180.04	6,766.5	-1,089.9	247.1	1,097.7	0.00	0.00	0.00
8,200.0	90.38	180.04	6,765.8	-1,189.9	247.0	1,197.7	0.00	0.00	0.00
8,300.0	90.38	180.04	6,765.2	-1,289.9	246.9	1,297.6	0.00	0.00	0.00
8,400.0	90.38	180.04	6,764.5	-1,389.9	246.9	1,397.5	0.00	0.00	0.00
8,500.0	90.38	180.04	6,763.8	-1,489.9	246.8	1,497.5	0.00	0.00	0.00
8,600.0	90.38	180.04	6,763.2	-1,589.9	246.7	1,597.4	0.00	0.00	0.00
8,700.0	90.38	180.04	6,762.5	-1,689.9	246.7	1,697.3	0.00	0.00	0.00
8,800.0	90.38	180.04	6,761.8	-1,789.9	246.6	1,797.3	0.00	0.00	0.00
8,900.0	90.38	180.04	6,761.2	-1,889.9	246.5	1,897.2	0.00	0.00	0.00
9,000.0	90.38	180.04	6,760.5	-1,989.9	246.4	1,997.2	0.00	0.00	0.00
9,100.0	90.38	180.04	6,759.9	-2,089.9	246.4	2,097.1	0.00	0.00	0.00
9,200.0	90.38	180.04	6,759.2	-2,189.9	246.3	2,197.0	0.00	0.00	0.00
9,300.0	90.38	180.04	6,758.5	-2,289.8	246.2	2,297.0	0.00	0.00	0.00
9,400.0	90.38	180.04	6,757.9	-2,389.8	246.1	2,396.9	0.00	0.00	0.00
9,500.0	90.38	180.04	6,757.2	-2,489.8	246.1	2,496.8	0.00	0.00	0.00
9,600.0	90.38	180.04	6,756.6	-2,589.8	246.0	2,596.8	0.00	0.00	0.00
9,700.0	90.38	180.04	6,755.9	-2,689.8	245.9	2,696.7	0.00	0.00	0.00
9,800.0	90.38	180.04	6,755.2	-2,789.8	245.9	2,796.6	0.00	0.00	0.00
9,900.0	90.38	180.04	6,754.6	-2,889.8	245.8	2,896.6	0.00	0.00	0.00
10,000.0	90.38	180.04	6,753.9	-2,989.8	245.7	2,996.5	0.00	0.00	0.00
10,100.0	90.38	180.04	6,753.2	-3,089.8	245.6	3,096.4	0.00	0.00	0.00
10,200.0	90.38	180.04	6,752.6	-3,189.8	245.6	3,196.4	0.00	0.00	0.00
10,300.0	90.38	180.04	6,751.9	-3,289.8	245.5	3,296.3	0.00	0.00	0.00
10,400.0	90.38	180.04	6,751.3	-3,389.8	245.4	3,396.3	0.00	0.00	0.00
10,500.0	90.38	180.04	6,750.6	-3,489.8	245.3	3,496.2	0.00	0.00	0.00
10,600.0	90.38	180.04	6,749.9	-3,589.8	245.3	3,596.1	0.00	0.00	0.00
10,700.0	90.38	180.04	6,749.3	-3,689.8	245.2	3,696.1	0.00	0.00	0.00
10,800.0	90.38	180.04	6,748.6	-3,789.8	245.1	3,796.0	0.00	0.00	0.00
10,900.0	90.38	180.04	6,748.0	-3,889.8	245.1	3,895.9	0.00	0.00	0.00
11,000.0	90.38	180.04	6,747.3	-3,989.8	245.0	3,995.9	0.00	0.00	0.00
11,100.0	90.38	180.04	6,746.6	-4,089.8	244.9	4,095.8	0.00	0.00	0.00
11,200.0	90.38	180.04	6,746.0	-4,189.8	244.8	4,195.7	0.00	0.00	0.00
11,300.0	90.38	180.04	6,745.3	-4,289.8	244.8	4,295.7	0.00	0.00	0.00
11,400.0	90.38	180.04	6,744.6	-4,389.8	244.7	4,395.6	0.00	0.00	0.00
11,500.0	90.38	180.04	6,744.0	-4,489.8	244.6	4,495.6	0.00	0.00	0.00
11,600.0	90.38	180.04	6,743.3	-4,589.8	244.5	4,595.5	0.00	0.00	0.00
11,700.0	90.38	180.04	6,742.7	-4,689.8	244.5	4,695.4	0.00	0.00	0.00
11,800.0	90.38	180.04	6,742.0	-4,789.8	244.4	4,795.4	0.00	0.00	0.00
11,900.0	90.38	180.04	6,741.3	-4,889.8	244.3	4,895.3	0.00	0.00	0.00
12,000.0	90.38	180.04	6,740.7	-4,989.8	244.3	4,995.2	0.00	0.00	0.00
12,100.0	90.38	180.04	6,740.0	-5,089.8	244.2	5,095.2	0.00	0.00	0.00
12,200.0	90.38	180.04	6,739.4	-5,189.8	244.1	5,195.1	0.00	0.00	0.00
12,300.0	90.38	180.04	6,738.7	-5,289.8	244.0	5,295.0	0.00	0.00	0.00
12,400.0	90.38	180.04	6,738.0	-5,389.8	244.0	5,395.0	0.00	0.00	0.00
12,500.0	90.38	180.04	6,737.4	-5,489.8	243.9	5,494.9	0.00	0.00	0.00
12,600.0	90.38	180.04	6,736.7	-5,589.8	243.8	5,594.9	0.00	0.00	0.00
12,700.0	90.38	180.04	6,736.0	-5,689.8	243.7	5,694.8	0.00	0.00	0.00
12,800.0	90.38	180.04	6,735.4	-5,789.8	243.7	5,794.7	0.00	0.00	0.00
12,900.0	90.38	180.04	6,734.7	-5,889.8	243.6	5,894.7	0.00	0.00	0.00
13,000.0	90.38	180.04	6,734.1	-5,989.8	243.5	5,994.6	0.00	0.00	0.00

<b>Database:</b>	US_EDM	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Project:</b>	SEC.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 (1-25-17)		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
13,100.0	90.38	180.04	6,733.4	-6,089.8	243.5	6,094.5	0.00	0.00	0.00	
13,200.0	90.38	180.04	6,732.7	-6,189.8	243.4	6,194.5	0.00	0.00	0.00	
13,300.0	90.38	180.04	6,732.1	-6,289.8	243.3	6,294.4	0.00	0.00	0.00	
13,400.0	90.38	180.04	6,731.4	-6,389.8	243.2	6,394.3	0.00	0.00	0.00	
13,500.0	90.38	180.04	6,730.8	-6,489.8	243.2	6,494.3	0.00	0.00	0.00	
13,600.0	90.38	180.04	6,730.1	-6,589.8	243.1	6,594.2	0.00	0.00	0.00	
13,700.0	90.38	180.04	6,729.4	-6,689.8	243.0	6,694.2	0.00	0.00	0.00	
13,800.0	90.38	180.04	6,728.8	-6,789.7	242.9	6,794.1	0.00	0.00	0.00	
13,900.0	90.38	180.04	6,728.1	-6,889.7	242.9	6,894.0	0.00	0.00	0.00	
14,000.0	90.38	180.04	6,727.4	-6,989.7	242.8	6,994.0	0.00	0.00	0.00	
14,067.7	90.38	180.04	6,727.0	-7,057.4	242.7	7,061.6	0.00	0.00	0.00	
TD at 14067.7										

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 559'FNL & 960'FEL - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,381,166.61	3,259,734.43	40.375956	-104.567729	
BHL 2340'FNL & 763'FE - plan hits target center - Point	0.00	0.00	6,727.0	-7,057.4	242.7	1,374,112.45	3,260,051.35	40.356584	-104.566858	
LPL 819'FNL & 714'FEL - plan hits target center - Point	0.00	0.00	6,772.0	-255.4	247.7	1,380,913.86	3,259,984.79	40.375255	-104.566840	

Formations							
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)		
3,574.6	3,530.0	Parkman Sandstone		0.00			
4,252.4	4,200.0	Sussex Sandstone		0.00			
6,489.6	6,415.0	Sharon Springs		0.00			
6,677.2	6,560.0	Niobrara A		0.00			
6,822.7	6,650.0	Niobrara B		0.00			
7,021.6	6,735.0	Niobrara C		0.00			

<b>Database:</b>	US_EDM	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Project:</b>	SEC.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 (1-25-17)		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
800.0	800.0	0.0	0.0	KOP - Start Build 1.50
3,783.6	3,734.9	67.6	32.7	Start Drop -2.00
6,060.8	6,008.4	462.7	223.8	Start Build 7.50
7,265.5	6,772.0	513.4	248.3	Start DLS 0.50 TFO -106.23
7,266.2	6,772.0	513.4	248.3	Start 6801.5 hold at 7266.2 MD
14,067.7	6,727.0	-255.4	247.7	TD at 14067.7





# **PETROLEUM DEVELOPMENT CORP DJ Basin**

**SEC.29-T5N-R64W**

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

**Ottenhoff 29R-323**

**Wellbore #1**

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

## **Anticollision Report**

**30 January, 2017**



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

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

<b>Survey Tool Program</b>	<b>Date</b>	1/30/2017		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	14,067.7	Plan #2 (1-25-17) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
Existing Wells Sec.29-T5N-R64W						
Carlson 5 (Exist) - Wellbore #1 - Wellbore #1	7,614.8	6,759.9	456.2	415.9	11.318	CC, ES
Carlson 5 (Exist) - Wellbore #1 - Wellbore #1	7,700.0	6,756.5	464.1	422.4	11.141	SF
Cross #32-11 (D&A) - Wellbore #1 - Wellbore #1	12,474.2	6,805.6	106.7	-38.6	0.734	Level 1, CC, ES, SF
Cross #32-11A (Exist.) - Wellbore #1 - Wellbore #1	12,502.6	6,756.8	384.7	233.8	2.549	CC, ES, SF
DIC Amato #42-32 (Exist.) - Wellbore #1 - Wellbore #1	13,765.4	6,757.4	153.0	-26.4	0.853	Level 1, CC, ES, SF
Ottenhoff 41-29 (Exist) - Wellbore #1 - Wellbore #1	7,061.9	6,718.5	142.3	105.1	3.824	CC, ES, SF
Ottenhoff 41-6B (Exist) - Wellbore #1 - Wellbore #1	3,033.5	3,041.2	118.7	101.2	6.784	CC, ES, SF
Ottenhoff 41-7B (Exist) - Wellbore #1 - Wellbore #1	939.8	926.2	349.3	344.9	80.052	CC
Ottenhoff 41-7B (Exist) - Wellbore #1 - Wellbore #1	1,000.0	984.3	349.4	344.7	74.477	ES
Ottenhoff 41-7B (Exist) - Wellbore #1 - Wellbore #1	7,900.0	6,848.9	720.8	667.9	13.642	SF
Roskop 29-1 (Exist) - Wellbore #1 - Wellbore #1	8,301.7	6,747.4	171.1	-33.4	0.837	Level 1, CC, ES, SF
Existing Wells Sec.29-T5N-R64W (GRID)						
Blake B 29-9 (P&A) - Wellbore #1 - Wellbore #1	9,906.0	6,751.9	14.9	-74.2	0.167	Level 1, CC, ES, SF
Blake B29-16 (Exist) - Wellbore #1 - Wellbore #1	11,097.0	6,764.7	61.6	-56.8	0.520	Level 1, CC, ES, SF

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<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	120.1	119.3	145.390	CC, ES
Ottenhoff 29M-203 - Wellbore #1 - Plan #2 (1-25-17)	1,000.0	966.0	200.0	194.8	38.202	SF
Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)	766.3	767.3	90.0	86.1	22.800	CC
Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)	800.0	800.0	90.0	85.9	21.793	ES
Ottenhoff 29M-323 - Wellbore #1 - Plan #2 (1-25-17)	1,100.0	1,093.8	105.7	100.0	18.442	SF
Ottenhoff 29M-423 - Wellbore #1 - Plan #2 (1-25-17)	400.0	400.0	105.0	103.1	54.502	CC, ES
Ottenhoff 29M-423 - Wellbore #1 - Plan #2 (1-25-17)	1,000.0	980.3	150.5	145.3	29.038	SF
Ottenhoff 29R-143 - Wellbore #1 - Plan #2 (1-25-17)	800.0	800.0	59.9	55.8	14.505	CC, ES
Ottenhoff 29R-143 - Wellbore #1 - Plan #2 (1-25-17)	1,200.0	1,199.3	71.4	65.0	11.268	SF
Ottenhoff 29R-203 - Wellbore #1 - Plan #2 (1-25-17)	800.0	800.0	30.1	26.0	7.286	CC, ES
Ottenhoff 29R-203 - Wellbore #1 - Plan #2 (1-25-17)	14,067.7	13,981.4	437.1	101.2	1.301	Level 3, SF
Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)	800.0	800.0	75.0	70.8	18.148	CC, ES
Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)	1,100.0	1,098.0	81.7	75.9	14.170	SF
Ottenhoff 29R-303 - Wellbore #1 - Plan #2 (1-25-17)	800.0	800.0	44.9	40.7	10.863	CC, ES
Ottenhoff 29R-303 - Wellbore #1 - Plan #2 (1-25-17)	14,067.7	14,067.1	670.7	331.9	1.980	SF
Ottenhoff 29R-423 - Wellbore #1 - Plan #2 (1-25-17)	800.0	799.0	15.0	10.9	3.646	CC
Ottenhoff 29R-423 - Wellbore #1 - Plan #2 (1-25-17)	14,067.7	14,142.9	256.2	-40.7	0.863	Level 1, ES, SF
Ottenhoff 29U-243 - Wellbore #1 - Plan #2 (1-25-17)	400.0	400.0	15.0	13.1	7.806	CC
Ottenhoff 29U-243 - Wellbore #1 - Plan #2 (1-25-17)	14,067.7	14,023.3	249.4	-80.2	0.757	Level 1, ES, SF
Ottenhoff 29U-343 - Wellbore #1 - Plan #2 (1-25-17)	200.0	199.0	30.1	29.3	36.554	CC, ES
Ottenhoff 29U-343 - Wellbore #1 - Plan #2 (1-25-17)	14,067.7	14,123.8	463.1	124.5	1.368	Level 3, SF

<b>Offset Design</b> Existing Wells Sec.29-T5N-R64W - Carlson 5 (Exist) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS												Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Warning					
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-164.27	-651.7	-183.6	677.3				
100.0	100.0	90.4	90.4	0.1	0.1	-164.27	-651.4	-183.5	676.8	676.5	0.28	2,375.610	
200.0	200.0	185.9	185.9	0.4	0.4	-164.27	-650.9	-183.4	676.2	675.4	0.79	851.749	
300.0	300.0	285.9	285.9	0.7	0.6	-164.28	-650.9	-183.2	676.2	674.9	1.27	531.124	
400.0	400.0	386.8	386.8	1.0	0.8	-164.31	-650.8	-182.8	676.0	674.2	1.79	377.589	
441.5	441.5	426.5	426.5	1.1	0.9	-164.32	-650.7	-182.7	675.9	673.9	1.99	340.181	
500.0	500.0	481.0	481.0	1.2	1.0	-164.32	-650.9	-182.7	676.1	673.8	2.25	300.317	
600.0	600.0	581.0	580.9	1.5	1.2	-164.33	-651.6	-182.8	676.8	674.1	2.69	251.249	
700.0	700.0	681.9	681.9	1.8	1.4	-164.36	-652.2	-182.6	677.3	674.1	3.17	213.992	
800.0	800.0	782.6	782.6	2.1	1.6	-164.36	-652.6	-182.7	677.7	674.0	3.66	185.055	
900.0	900.0	881.9	881.9	2.3	1.9	169.83	-653.0	-182.7	679.4	675.2	4.19	162.034	
1,000.0	999.9	979.8	979.8	2.6	2.1	169.85	-653.6	-182.5	683.8	679.1	4.74	144.296	
1,100.0	1,099.7	1,079.5	1,079.5	2.9	2.4	169.89	-654.5	-182.3	691.0	685.7	5.30	130.400	
1,200.0	1,199.3	1,179.3	1,179.3	3.2	2.7	169.97	-655.3	-182.2	700.8	694.9	5.87	119.459	
1,300.0	1,298.6	1,278.6	1,278.6	3.5	3.0	170.08	-656.1	-182.1	713.0	706.6	6.44	110.799	
1,400.0	1,397.5	1,379.1	1,379.0	3.8	3.3	170.21	-656.7	-181.9	727.8	720.8	7.01	103.844	
1,500.0	1,496.1	1,479.3	1,479.3	4.2	3.6	170.36	-657.2	-181.7	744.9	737.3	7.58	98.230	
1,558.5	1,553.5	1,537.3	1,537.3	4.4	3.8	170.48	-657.3	-181.7	755.9	748.0	7.88	95.885	
1,600.0	1,594.2	1,578.2	1,578.2	4.6	3.9	170.59	-657.3	-181.8	764.1	756.0	8.09	94.395	
1,700.0	1,692.2	1,676.9	1,676.9	5.0	4.0	170.89	-657.2	-182.7	783.6	775.1	8.54	91.741	
7,000.0	6,728.1	6,738.3	6,737.3	19.0	15.1	68.33	-605.0	-208.9	762.6	731.1	31.53	24.186	

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 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<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 5 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
7,050.0	6,743.2	6,751.9	6,750.8	19.2	15.1	73.95	-604.6	-208.8	724.5	691.8	32.77	22.108		
7,100.0	6,755.3	6,762.3	6,761.2	19.4	15.1	79.26	-604.3	-208.7	687.2	653.4	33.81	20.326		
7,150.0	6,764.1	6,769.5	6,768.4	19.8	15.1	84.04	-604.0	-208.6	651.0	616.3	34.62	18.804		
7,200.0	6,769.6	6,773.4	6,772.4	20.2	15.1	88.11	-603.9	-208.6	616.4	581.1	35.25	17.487		
7,250.0	6,771.9	6,774.1	6,773.0	20.7	15.2	91.40	-603.9	-208.6	583.9	548.1	35.76	16.328		
7,265.4	6,772.0	6,773.7	6,772.6	20.8	15.1	92.25	-603.9	-208.6	574.4	538.5	35.91	15.997		
7,265.5	6,772.0	6,773.7	6,772.6	20.8	15.1	92.25	-603.9	-208.6	574.4	538.5	35.91	15.995		
7,266.2	6,772.0	6,773.6	6,772.6	20.8	15.1	92.24	-603.9	-208.6	574.0	538.0	35.92	15.981		
7,300.0	6,771.8	6,772.3	6,771.2	21.1	15.1	92.08	-603.9	-208.6	554.1	517.9	36.17	15.320		
7,400.0	6,771.1	6,768.4	6,767.3	22.3	15.1	91.58	-604.1	-208.6	504.1	466.8	37.30	13.515		
7,500.0	6,770.4	6,764.4	6,763.3	23.6	15.1	91.09	-604.2	-208.7	470.4	431.8	38.61	12.182		
7,600.0	6,769.8	6,760.5	6,759.4	25.1	15.1	90.59	-604.3	-208.7	456.4	416.3	40.07	11.390		
7,614.8	6,769.7	6,759.9	6,758.8	25.4	15.1	90.52	-604.3	-208.7	456.2	415.9	40.30	11.318 CC, ES		
7,700.0	6,769.1	6,756.5	6,755.5	26.8	15.1	90.10	-604.5	-208.7	464.1	422.4	41.65	11.141 SF		
7,800.0	6,768.5	6,752.6	6,751.5	28.5	15.1	89.60	-604.6	-208.8	492.3	449.0	43.34	11.359		
7,900.0	6,767.8	6,748.7	6,747.6	30.3	15.1	89.11	-604.7	-208.8	537.9	492.8	45.11	11.924		
8,000.0	6,767.1	6,744.7	6,743.7	32.1	15.1	88.62	-604.8	-208.9	596.9	549.9	46.95	12.714		
8,100.0	6,766.5	6,740.8	6,739.7	34.0	15.1	88.12	-605.0	-208.9	665.7	616.9	48.85	13.629		
8,200.0	6,765.8	6,736.8	6,735.8	36.0	15.1	87.63	-605.1	-208.9	741.7	690.9	50.79	14.603		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - Cross #32-11 (D&A) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 527-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
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)			
11,700.0	6,742.7	6,574.1	6,570.0	114.4	16.8	-35.41	-5,385.7	378.4	734.7	647.5	87.13	8.432		
11,800.0	6,742.0	6,591.6	6,586.7	116.7	16.9	-37.81	-5,390.7	377.6	640.2	548.1	92.10	6.951		
11,900.0	6,741.3	6,616.0	6,610.0	119.0	16.9	-41.60	-5,397.9	376.2	546.7	447.6	99.08	5.517		
12,000.0	6,740.7	6,640.0	6,632.7	121.4	17.0	-45.93	-5,405.5	374.3	454.2	347.5	106.76	4.255		
12,100.0	6,740.0	6,670.4	6,661.2	123.7	17.0	-52.48	-5,415.4	371.1	363.5	246.4	117.04	3.106		
12,200.0	6,739.4	6,703.8	6,692.3	126.0	17.1	-61.54	-5,426.7	366.6	275.3	146.2	129.05	2.133		
12,300.0	6,738.7	6,735.1	6,721.2	128.3	17.2	-72.32	-5,437.8	361.7	193.0	53.0	139.99	1.378	Level 3	
12,400.0	6,738.0	6,777.7	6,759.9	130.6	17.2	-90.66	-5,453.6	353.6	126.8	-20.9	147.78	0.858	Level 1	
12,474.2	6,737.5	6,805.6	6,784.8	132.4	17.3	-104.27	-5,464.2	347.3	106.7	-38.6	145.28	0.734	Level 1, CC, ES, SF	
12,500.0	6,737.4	6,816.2	6,794.3	133.0	17.3	-109.52	-5,468.4	344.9	109.3	-33.1	142.36	0.768	Level 1	
12,600.0	6,736.7	6,859.3	6,832.2	135.3	17.4	-129.14	-5,486.1	334.6	156.6	33.6	122.99	1.273	Level 3	
12,700.0	6,736.0	6,898.3	6,866.4	137.6	17.5	-143.16	-5,502.2	324.9	231.8	128.7	103.10	2.249		
12,800.0	6,735.4	6,928.0	6,892.6	140.0	17.5	-151.34	-5,514.0	317.3	316.3	225.6	90.72	3.487		
12,900.0	6,734.7	6,963.2	6,923.8	142.3	17.6	-158.83	-5,527.3	308.1	404.7	325.2	79.54	5.088		
13,000.0	6,734.1	6,992.0	6,949.7	144.6	17.6	-163.56	-5,537.6	300.4	495.6	422.1	73.44	6.747		
13,100.0	6,733.4	7,018.6	6,973.6	146.9	17.7	-167.09	-5,546.7	293.3	587.7	518.0	69.71	8.431		
13,200.0	6,732.7	7,047.7	6,999.9	149.3	17.7	-170.25	-5,556.5	285.4	680.7	613.7	67.07	10.150		
13,300.0	6,732.1	7,065.0	7,015.5	151.6	17.8	-171.83	-5,562.2	280.8	774.3	707.8	66.50	11.644		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - Cross #32-11A (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
11,900.0	6,741.3	6,762.5	6,760.3	119.0	18.0	-89.85	-5,492.6	628.7	714.9	578.0	136.94	5.221		
12,000.0	6,740.7	6,761.6	6,759.4	121.4	18.0	-89.71	-5,492.6	628.6	632.9	493.7	139.26	4.545		
12,100.0	6,740.0	6,760.6	6,758.4	123.7	18.0	-89.57	-5,492.6	628.6	556.9	415.3	141.58	3.933		
12,200.0	6,739.4	6,759.7	6,757.5	126.0	18.0	-89.42	-5,492.6	628.6	489.5	345.6	143.91	3.401		
12,300.0	6,738.7	6,758.7	6,756.5	128.3	18.0	-89.28	-5,492.6	628.6	434.8	288.6	146.23	2.973		
12,400.0	6,738.0	6,757.8	6,755.6	130.6	18.0	-89.14	-5,492.6	628.6	398.2	249.6	148.55	2.680		
12,500.0	6,737.4	6,756.8	6,754.6	133.0	18.0	-89.00	-5,492.6	628.6	384.7	233.9	150.87	2.550		
12,502.6	6,737.4	6,756.8	6,754.6	133.0	18.0	-88.99	-5,492.6	628.6	384.7	233.8	150.93	2.549	CC, ES, SF	
12,600.0	6,736.7	6,755.9	6,753.7	135.3	18.0	-88.86	-5,492.6	628.5	396.9	243.7	153.19	2.591		
12,700.0	6,736.0	6,754.9	6,752.7	137.6	18.0	-88.71	-5,492.6	628.5	432.4	276.9	155.52	2.781		
12,800.0	6,735.4	6,753.9	6,751.8	140.0	18.0	-88.57	-5,492.6	628.5	486.3	328.4	157.84	3.081		
12,900.0	6,734.7	6,753.0	6,750.8	142.3	18.0	-88.43	-5,492.6	628.5	553.1	393.0	160.16	3.454		
13,000.0	6,734.1	6,752.0	6,749.9	144.6	18.0	-88.29	-5,492.6	628.5	628.8	466.3	162.48	3.870		
13,100.0	6,733.4	6,751.1	6,748.9	146.9	18.0	-88.15	-5,492.6	628.5	710.5	545.7	164.80	4.312		
13,200.0	6,732.7	6,750.1	6,747.9	149.3	18.0	-88.00	-5,492.6	628.4	796.5	629.3	167.12	4.766		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - DIC Amato #42-32 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:		0.0 ft
Survey Program:		100-NS-GYRO-MS											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
13,000.0	6,734.1	6,781.2	6,780.7	144.6	17.0	-99.17	-6,754.7	395.8	780.2	620.6	159.59	4.889			
13,100.0	6,733.4	6,778.1	6,777.6	146.9	17.0	-98.02	-6,754.8	395.8	682.5	520.1	162.33	4.204			
13,200.0	6,732.7	6,775.0	6,774.4	149.3	17.0	-96.87	-6,754.9	395.8	585.5	420.5	165.03	3.548			
13,300.0	6,732.1	6,771.9	6,771.3	151.6	17.0	-95.72	-6,754.9	395.9	489.7	322.0	167.69	2.920			
13,400.0	6,731.4	6,768.8	6,768.2	153.9	17.0	-94.56	-6,755.0	395.9	396.0	225.7	170.30	2.325			
13,500.0	6,730.8	6,765.6	6,765.1	156.3	17.0	-93.40	-6,755.1	395.9	306.2	133.4	172.85	1.772			
13,600.0	6,730.1	6,762.5	6,762.0	158.6	17.0	-92.23	-6,755.2	395.9	225.3	49.9	175.35	1.285 Level 3			
13,700.0	6,729.4	6,759.4	6,758.8	160.9	17.0	-91.07	-6,755.3	395.9	166.4	-11.4	177.80	0.936 Level 1			
13,765.4	6,729.0	6,757.4	6,756.8	162.5	17.0	-90.30	-6,755.3	395.9	153.0	-26.4	179.36	0.853 Level 1, CC, ES, SF			
13,800.0	6,728.8	6,756.3	6,755.7	163.3	17.0	-89.90	-6,755.3	395.9	156.8	-23.4	180.18	0.870 Level 1			
13,900.0	6,728.1	6,753.2	6,752.6	165.6	17.0	-88.73	-6,755.4	396.0	203.7	21.2	182.50	1.116 Level 2			
14,000.0	6,727.4	6,750.0	6,749.5	167.9	17.0	-87.57	-6,755.5	396.0	279.9	95.2	184.75	1.515			
14,067.7	6,727.0	6,747.9	6,747.4	169.5	17.0	-86.78	-6,755.5	396.0	338.6	152.4	186.24	1.818			

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - Ottenhoff 41-29 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error: 0.0 ft	
Survey Program: 100-NS-GYRO-MS													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (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	
0.0	0.0	0.0	0.0	0.0	0.0	103.94	-76.9	309.5	320.1					
100.0	100.0	74.2	74.2	0.1	0.1	103.96	-76.9	309.4	318.8	318.6	0.26	1,233.462		
187.5	187.5	160.5	160.5	0.4	0.3	104.01	-77.1	309.1	318.5	317.9	0.66	481.753		
200.0	200.0	172.7	172.7	0.4	0.3	104.01	-77.1	309.1	318.5	317.8	0.72	442.668		
300.0	300.0	272.2	272.2	0.7	0.5	104.02	-77.2	309.3	318.8	317.6	1.22	261.980		
400.0	400.0	369.9	369.9	1.0	0.8	104.07	-77.6	309.7	319.3	317.5	1.77	180.543		
500.0	500.0	468.7	468.7	1.2	1.1	104.21	-78.7	310.7	320.6	318.2	2.35	136.409		
600.0	600.0	567.3	567.3	1.5	1.4	104.33	-79.7	312.0	322.1	319.1	2.94	109.669		
700.0	700.0	666.2	666.1	1.8	1.7	104.44	-80.8	313.8	324.1	320.6	3.52	92.190		
800.0	800.0	764.5	764.4	2.1	2.0	104.38	-81.1	316.1	326.4	322.3	4.08	79.952		
900.0	900.0	863.6	863.5	2.3	2.3	78.70	-81.4	318.9	329.0	324.3	4.65	70.688		
1,000.0	999.9	964.7	964.6	2.6	2.6	79.31	-81.9	321.6	331.0	325.8	5.24	63.201		
1,100.0	1,099.7	1,064.5	1,064.3	2.9	2.9	80.34	-82.3	324.0	332.3	326.4	5.83	57.021		
1,200.0	1,199.3	1,164.8	1,164.5	3.2	3.3	81.89	-83.0	326.5	333.4	326.9	6.44	51.794		
1,300.0	1,298.6	1,263.7	1,263.5	3.5	3.6	83.84	-83.6	328.6	334.2	327.1	7.06	47.311		
1,400.0	1,397.5	1,364.2	1,363.9	3.8	3.9	86.23	-84.2	330.9	335.3	327.6	7.72	43.423		
1,500.0	1,496.1	1,463.0	1,462.7	4.2	4.2	88.99	-84.5	332.7	336.4	328.0	8.41	40.002		
1,558.5	1,553.5	1,519.8	1,519.5	4.4	4.4	90.77	-84.8	333.9	337.6	328.8	8.83	38.240		
1,600.0	1,594.2	1,560.6	1,560.3	4.6	4.5	92.10	-85.0	334.7	338.7	329.5	9.13	37.079		
1,700.0	1,692.2	1,659.2	1,658.9	5.0	4.8	95.27	-85.4	336.7	342.0	332.1	9.88	34.615		
1,800.0	1,790.3	1,757.5	1,757.1	5.5	5.2	98.29	-85.4	338.8	346.2	335.5	10.63	32.569		
1,900.0	1,888.3	1,855.5	1,855.1	6.0	5.5	101.18	-85.2	341.1	351.4	340.0	11.38	30.876		
2,000.0	1,986.3	1,953.6	1,953.1	6.4	5.8	104.00	-85.1	343.3	357.5	345.4	12.13	29.466		
2,100.0	2,084.4	2,052.8	2,052.4	6.9	6.1	106.69	-84.7	345.9	364.5	351.6	12.88	28.293		
2,200.0	2,182.4	2,151.2	2,150.7	7.4	6.4	109.27	-84.1	348.1	371.9	358.3	13.62	27.304		
2,300.0	2,280.5	2,248.4	2,247.9	7.9	6.7	111.68	-83.5	350.7	380.4	366.0	14.35	26.498		
2,400.0	2,378.5	2,346.1	2,345.6	8.4	7.0	113.97	-83.0	353.5	389.6	374.6	15.09	25.826		
2,500.0	2,476.5	2,445.0	2,444.4	8.9	7.3	116.18	-82.6	356.4	399.7	383.8	15.82	25.270		
2,600.0	2,574.6	2,544.0	2,543.4	9.4	7.6	118.31	-82.0	359.0	409.9	393.3	16.53	24.789		
2,700.0	2,672.6	2,642.6	2,642.0	9.9	7.9	120.34	-81.5	361.5	420.8	403.5	17.24	24.401		
2,800.0	2,770.6	2,742.7	2,742.0	10.4	8.2	122.35	-80.9	363.5	431.7	413.8	17.94	24.059		
2,900.0	2,868.7	2,840.5	2,839.8	10.9	8.5	124.32	-80.6	364.7	443.1	424.4	18.63	23.783		
3,000.0	2,966.7	2,939.2	2,938.5	11.4	8.8	126.26	-80.6	365.7	455.1	435.8	19.30	23.573		
3,100.0	3,064.7	3,039.1	3,038.4	11.9	9.1	128.13	-80.2	366.3	467.1	447.2	19.95	23.409		
3,200.0	3,162.8	3,137.5	3,136.8	12.4	9.4	129.84	-79.6	367.2	479.5	459.0	20.58	23.296		
3,300.0	3,260.8	3,236.4	3,235.7	12.9	9.7	131.49	-79.0	368.0	492.2	471.0	21.20	23.217		
3,400.0	3,358.8	3,335.0	3,334.3	13.5	9.9	133.08	-78.4	368.4	505.3	483.5	21.79	23.190		
3,500.0	3,456.9	3,433.4	3,432.7	14.0	10.1	134.59	-77.5	368.9	518.4	496.0	22.37	23.177		
3,600.0	3,554.9	3,526.9	3,526.2	14.5	10.4	135.98	-77.4	369.1	532.4	509.5	22.94	23.210		
3,700.0	3,652.9	3,622.1	3,621.4	15.0	10.6	137.36	-77.9	369.3	547.5	524.0	23.49	23.306		
3,783.6	3,734.9	3,701.8	3,701.1	15.4	10.8	138.47	-78.7	369.5	560.7	536.8	23.92	23.443		
3,800.0	3,751.0	3,717.5	3,716.8	15.5	10.8	138.71	-78.9	369.6	563.3	539.3	24.00	23.473		
3,900.0	3,849.4	3,813.9	3,813.2	15.9	11.0	140.02	-80.2	369.9	578.1	553.7	24.44	23.653		
4,000.0	3,948.5	3,916.1	3,915.3	16.2	11.2	141.08	-81.8	370.2	590.5	565.6	24.88	23.737		
4,100.0	4,047.9	4,036.3	4,035.6	16.5	11.5	141.85	-80.6	370.9	597.9	572.6	25.32	23.616		
4,200.0	4,147.6	4,150.9	4,150.0	16.8	11.6	142.26	-76.3	370.9	599.8	574.1	25.69	23.343		
4,300.0	4,247.6	4,260.2	4,259.1	17.0	11.8	142.42	-70.0	370.0	596.8	570.8	26.01	22.942		
4,352.4	4,300.0	4,314.3	4,313.1	17.1	11.8	168.24	-66.4	369.1	593.6	567.5	26.16	22.691		
4,400.0	4,347.6	4,360.2	4,358.9	17.1	11.9	168.27	-63.5	368.1	590.5	564.2	26.30	22.448		
4,500.0	4,447.6	4,455.7	4,454.3	17.3	12.0	168.37	-58.0	365.9	584.3	557.7	26.62	21.951		
4,600.0	4,547.6	4,548.1	4,546.5	17.5	12.1	168.47	-53.4	364.0	579.1	552.2	26.94	21.499		

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 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Existing Wells Sec.29-T5N-R64W - Ottenhoff 41-29 (Exist) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft
Survey Program:		100-NS-GYRO-MS											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
4,700.0	4,647.6	4,641.0	4,639.4	17.7	12.2	168.54	-50.2	362.6	575.3	548.1	27.27	21.101			
4,800.0	4,747.6	4,737.2	4,735.5	17.9	12.4	168.58	-47.5	361.6	572.4	544.8	27.62	20.725			
4,900.0	4,847.6	4,831.8	4,830.1	18.0	12.5	168.59	-45.4	361.0	570.2	542.2	28.00	20.367			
5,000.0	4,947.6	4,926.5	4,924.8	18.2	12.7	168.57	-44.4	361.0	569.1	540.7	28.42	20.025			
5,100.0	5,047.6	5,025.6	5,023.9	18.4	13.0	168.51	-43.5	361.5	568.3	539.4	28.91	19.661			
5,155.0	5,102.6	5,077.3	5,075.6	18.5	13.1	168.46	-43.3	362.0	568.2	539.0	29.18	19.469			
5,200.0	5,147.6	5,120.1	5,118.3	18.6	13.2	168.40	-43.3	362.6	568.3	538.9	29.42	19.317			
5,300.0	5,247.6	5,217.5	5,215.7	18.8	13.5	168.20	-43.5	364.7	569.0	539.0	29.97	18.989			
5,400.0	5,347.6	5,320.8	5,319.0	19.0	13.9	167.98	-43.6	366.9	569.5	539.0	30.53	18.652			
5,500.0	5,447.6	5,419.9	5,418.1	19.2	14.2	167.78	-43.4	368.9	569.7	538.6	31.09	18.325			
5,600.0	5,547.6	5,513.3	5,511.5	19.4	14.5	167.59	-44.0	371.0	570.8	539.2	31.62	18.055			
5,700.0	5,647.6	5,614.4	5,612.5	19.6	14.7	167.42	-45.1	372.9	572.3	540.1	32.15	17.800			
5,800.0	5,747.6	5,712.5	5,710.6	19.8	15.0	167.25	-46.2	375.0	573.9	541.2	32.68	17.561			
5,900.0	5,847.6	5,813.0	5,811.1	20.0	15.3	167.09	-47.6	376.9	575.6	542.4	33.21	17.332			
6,000.0	5,947.6	5,916.4	5,914.5	20.3	15.6	166.93	-48.5	378.7	576.9	543.1	33.76	17.089			
6,060.8	6,008.4	5,976.0	5,974.1	20.4	15.8	166.84	-49.0	379.7	577.6	543.5	34.08	16.946			
6,100.0	6,047.6	6,015.2	6,013.3	20.4	15.9	-13.28	-49.4	380.4	577.1	542.9	34.18	16.885			
6,150.0	6,097.4	6,066.9	6,064.9	20.5	16.1	-13.51	-49.8	381.1	573.6	539.4	34.18	16.783			
6,200.0	6,146.8	6,117.5	6,115.6	20.5	16.2	-13.87	-50.1	381.7	566.8	532.7	34.04	16.650			
6,250.0	6,195.6	6,166.5	6,164.5	20.5	16.4	-14.38	-50.3	382.4	556.8	523.0	33.77	16.488			
6,300.0	6,243.7	6,214.3	6,212.4	20.4	16.5	-15.07	-50.5	383.1	543.7	510.3	33.37	16.294			
6,350.0	6,290.7	6,260.6	6,258.6	20.4	16.6	-15.94	-50.7	383.7	527.7	494.9	32.85	16.065			
6,400.0	6,336.5	6,306.0	6,304.1	20.3	16.8	-17.03	-51.1	384.2	508.9	476.7	32.23	15.790			
6,450.0	6,380.9	6,351.7	6,349.7	20.1	16.9	-18.44	-51.4	384.7	487.3	455.7	31.54	15.449			
6,500.0	6,423.8	6,395.6	6,393.6	20.0	17.0	-20.22	-51.6	385.1	462.9	432.1	30.82	15.021			
6,550.0	6,464.8	6,435.8	6,433.8	19.9	17.2	-22.41	-51.8	385.6	436.1	406.0	30.10	14.487			
6,600.0	6,503.9	6,474.1	6,472.1	19.7	17.3	-25.15	-52.1	386.1	407.0	377.5	29.48	13.808			
6,650.0	6,540.8	6,510.5	6,508.5	19.6	17.4	-28.63	-52.4	386.6	376.0	347.0	29.06	12.940			
6,700.0	6,575.5	6,545.0	6,543.0	19.4	17.5	-33.03	-52.7	387.1	343.3	314.3	28.99	11.842			
6,750.0	6,607.8	6,577.2	6,575.2	19.3	17.6	-38.56	-53.1	387.6	309.4	279.9	29.44	10.507			
6,800.0	6,637.4	6,607.0	6,605.0	19.2	17.7	-45.41	-53.5	388.1	274.7	244.1	30.52	8.999			
6,850.0	6,664.4	6,634.5	6,632.5	19.1	17.7	-53.62	-53.8	388.6	240.0	207.8	32.17	7.461			
6,900.0	6,688.6	6,659.2	6,657.2	19.0	17.8	-62.82	-54.1	389.0	206.7	172.6	34.05	6.071			
6,950.0	6,709.8	6,681.0	6,679.0	19.0	17.9	-72.22	-54.4	389.4	176.9	141.2	35.66	4.959			
7,000.0	6,728.1	6,699.8	6,697.8	19.0	17.9	-80.79	-54.6	389.8	154.0	117.3	36.68	4.197			
7,050.0	6,743.2	6,715.3	6,713.2	19.2	18.0	-87.50	-54.8	390.0	142.7	105.6	37.15	3.843			
7,061.9	6,746.4	6,718.5	6,716.5	19.2	18.0	-88.78	-54.9	390.1	142.3	105.1	37.21	3.824	CC, ES, SF		
7,100.0	6,755.3	6,727.7	6,725.6	19.4	18.0	-92.01	-55.0	390.3	147.0	109.6	37.35	3.935			
7,150.0	6,764.1	6,737.0	6,735.0	19.8	18.0	-94.09	-55.1	390.5	166.2	128.6	37.59	4.422			
7,200.0	6,769.6	6,743.2	6,741.2	20.2	18.1	-93.67	-55.2	390.7	196.4	158.4	38.02	5.166			
7,250.0	6,771.9	6,746.2	6,744.1	20.7	18.1	-90.68	-55.3	390.7	233.5	194.9	38.62	6.047			
7,265.4	6,772.0	6,746.5	6,744.4	20.8	18.1	-89.24	-55.3	390.7	245.9	207.1	38.81	6.336			
7,265.5	6,772.0	6,746.5	6,744.4	20.8	18.1	-89.24	-55.3	390.7	246.0	207.2	38.81	6.338			
7,266.2	6,772.0	6,746.5	6,744.4	20.8	18.1	-89.24	-55.3	390.7	246.5	207.7	38.81	6.351			
7,300.0	6,771.8	6,746.7	6,744.7	21.1	18.1	-89.35	-55.3	390.7	274.8	235.7	39.07	7.034			
7,400.0	6,771.1	6,747.5	6,745.5	22.3	18.1	-89.67	-55.3	390.8	363.9	323.7	40.21	9.052			
7,500.0	6,770.4	6,748.4	6,746.3	23.6	18.1	-89.99	-55.3	390.8	457.6	416.1	41.52	11.020			
7,600.0	6,769.8	6,749.2	6,747.1	25.1	18.1	-90.32	-55.3	390.8	553.5	510.5	42.99	12.874			
7,700.0	6,769.1	6,750.0	6,747.9	26.8	18.1	-90.65	-55.3	390.8	650.6	606.0	44.58	14.593			
7,800.0	6,768.5	6,750.8	6,748.8	28.5	18.1	-90.98	-55.3	390.8	748.5	702.2	46.28	16.173			

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 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<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>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Existing Wells Sec.29-T5N-R64W - Ottenhoff 41-6B (Exist) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft
Survey Program:		488-NS-GYRO-MS											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (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	98.72	-49.6	322.9	326.9						
100.0	100.0	88.3	88.3	0.1	0.1	98.73	-49.6	322.9	326.7	326.4	0.28	1,160.924			
200.0	200.0	188.6	188.6	0.4	0.3	98.74	-49.6	322.7	326.5	325.8	0.72	453.678			
300.0	300.0	288.9	288.9	0.7	0.5	98.76	-49.7	322.5	326.3	325.2	1.16	281.762			
400.0	400.0	389.2	389.2	1.0	0.6	98.80	-49.9	322.2	326.0	324.4	1.60	204.198			
500.0	500.0	489.5	489.5	1.2	0.8	98.84	-50.0	321.7	325.6	323.6	2.04	159.965			
600.0	600.0	588.4	588.4	1.5	1.0	98.80	-49.8	321.5	325.3	322.8	2.51	129.573			
641.9	641.9	629.9	629.9	1.6	1.1	98.74	-49.4	321.5	325.3	322.6	2.71	120.050			
700.0	700.0	686.5	686.5	1.8	1.2	98.61	-48.7	321.7	325.4	322.4	2.95	110.167			
800.0	800.0	783.4	783.4	2.1	1.3	98.36	-47.5	322.8	326.3	323.0	3.35	97.305			
900.0	900.0	881.9	881.9	2.3	1.5	72.41	-45.8	324.8	327.6	323.8	3.81	86.097			
1,000.0	999.9	981.1	981.0	2.6	1.7	72.51	-43.0	327.2	328.5	324.2	4.28	76.683			
1,100.0	1,099.7	1,081.0	1,080.7	2.9	1.9	72.84	-39.1	329.9	328.6	323.8	4.82	68.176			
1,200.0	1,199.3	1,182.2	1,181.8	3.2	2.2	73.46	-34.0	332.7	327.9	322.5	5.39	60.797			
1,300.0	1,298.6	1,283.4	1,282.8	3.5	2.5	74.45	-28.4	335.0	326.0	320.0	6.00	54.345			
1,400.0	1,397.5	1,379.2	1,378.3	3.8	2.8	75.65	-22.2	337.9	324.0	317.4	6.63	48.902			
1,500.0	1,496.1	1,475.8	1,474.5	4.2	3.1	77.07	-14.8	342.2	322.7	315.4	7.29	44.253			
1,558.5	1,553.5	1,536.1	1,534.6	4.4	3.3	78.10	-9.8	344.9	321.8	314.1	7.72	41.701			
1,600.0	1,594.2	1,578.9	1,577.2	4.6	3.4	78.86	-6.1	346.7	320.9	312.9	8.03	39.975			
1,700.0	1,692.2	1,684.9	1,682.7	5.0	3.8	80.70	3.8	350.2	318.0	309.2	8.81	36.112			
1,800.0	1,790.3	1,797.2	1,794.1	5.5	4.2	82.32	17.3	350.8	312.1	302.4	9.63	32.419			
1,900.0	1,888.3	1,905.5	1,901.2	6.0	4.5	83.48	34.0	348.5	302.6	292.1	10.44	28.973			
2,000.0	1,986.3	2,015.9	2,010.0	6.4	4.9	84.82	51.7	342.9	290.3	279.1	11.27	25.755			
2,100.0	2,084.4	2,127.0	2,118.7	6.9	5.2	86.13	71.9	333.0	273.8	261.7	12.11	22.620			
2,200.0	2,182.4	2,224.7	2,214.2	7.4	5.5	87.65	89.6	322.0	255.4	242.5	12.89	19.806			
2,300.0	2,280.5	2,325.0	2,312.2	7.9	5.9	89.59	107.5	310.2	236.7	223.0	13.69	17.289			
2,400.0	2,378.5	2,423.3	2,408.2	8.4	6.2	92.07	124.4	297.7	217.9	203.4	14.48	15.049			
2,500.0	2,476.5	2,524.0	2,506.6	8.9	6.5	95.65	140.4	283.2	198.7	183.4	15.25	13.030			
2,600.0	2,574.6	2,625.0	2,604.9	9.4	6.8	100.69	155.7	266.0	178.5	162.6	15.97	11.181			
2,700.0	2,672.6	2,724.9	2,701.6	9.9	7.2	107.75	170.4	245.9	157.9	141.3	16.59	9.514			
2,800.0	2,770.6	2,820.6	2,793.8	10.4	7.5	116.94	184.7	224.5	138.5	121.4	17.07	8.110			
2,900.0	2,868.7	2,913.6	2,883.7	10.9	7.8	128.06	197.3	204.5	125.3	108.0	17.37	7.217			
3,000.0	2,966.7	3,009.1	2,976.1	11.4	8.1	141.63	209.5	183.5	119.1	101.7	17.48	6.816			
3,033.5	2,999.6	3,041.2	3,007.1	11.6	8.2	146.43	213.6	176.2	118.7	101.2	17.50	6.784 CC, ES, SF			
3,100.0	3,064.7	3,104.3	3,068.0	11.9	8.4	155.76	221.9	162.2	120.5	102.9	17.58	6.853			
3,200.0	3,162.8	3,199.1	3,160.0	12.4	8.7	168.17	233.8	142.3	129.5	111.6	17.88	7.243			
3,300.0	3,260.8	3,294.8	3,253.4	12.9	9.1	177.66	244.8	124.8	144.1	125.7	18.44	7.816			
3,400.0	3,358.8	3,391.0	3,348.0	13.5	9.4	-175.80	254.2	110.0	162.0	142.9	19.12	8.474			
3,500.0	3,456.9	3,489.2	3,444.9	14.0	9.7	-171.04	263.0	96.4	181.4	161.6	19.87	9.133			
3,600.0	3,554.9	3,586.6	3,540.5	14.5	10.1	-166.43	274.0	81.2	201.1	180.5	20.68	9.727			
3,700.0	3,652.9	3,680.6	3,632.2	15.0	10.4	-162.17	285.7	64.4	222.6	201.1	21.53	10.340			
3,783.6	3,734.9	3,759.2	3,708.6	15.4	10.7	-158.95	295.4	49.1	242.3	220.1	22.26	10.885			
3,800.0	3,751.0	3,775.1	3,724.0	15.5	10.7	-158.33	297.5	45.8	246.3	223.9	22.42	10.985			
3,900.0	3,849.4	3,871.6	3,817.1	15.9	11.1	-154.38	312.0	24.8	269.0	245.6	23.35	11.519			
4,000.0	3,948.5	3,968.1	3,909.6	16.2	11.5	-150.38	328.1	2.8	289.8	265.5	24.29	11.929			
4,100.0	4,047.9	4,066.1	4,004.0	16.5	11.9	-146.77	343.7	-18.6	308.6	283.4	25.19	12.251			
4,200.0	4,147.6	4,164.1	4,098.7	16.8	12.3	-143.47	358.6	-38.9	325.1	299.1	26.02	12.492			
4,300.0	4,247.6	4,259.8	4,191.5	17.0	12.6	-140.39	372.3	-58.3	340.0	313.2	26.79	12.690			
4,352.4	4,300.0	4,310.4	4,240.7	17.1	12.8	-113.10	378.4	-68.3	347.4	320.2	27.16	12.789			
4,400.0	4,347.6	4,358.1	4,287.2	17.1	13.0	-111.65	384.0	-77.5	353.9	326.3	27.52	12.859			
4,500.0	4,447.6	4,458.8	4,385.2	17.3	13.4	-108.72	396.6	-96.5	367.6	339.3	28.27	13.001			

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 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Existing Wells Sec.29-T5N-R64W - Ottenhoff 41-6B (Exist) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft
Survey Program:		488-NS-GYRO-MS											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
4,600.0	4,547.6	4,557.0	4,480.8	17.5	13.7	-105.94	409.7	-114.7	381.5	352.5	28.99	13.159			
4,700.0	4,647.6	4,659.1	4,580.4	17.7	14.1	-103.37	422.8	-133.0	395.8	366.1	29.70	13.328			
4,800.0	4,747.6	4,752.7	4,671.9	17.9	14.5	-101.24	434.4	-149.3	410.4	380.0	30.33	13.528			
4,900.0	4,847.6	4,853.8	4,770.5	18.0	14.9	-99.00	447.5	-167.5	425.9	395.0	30.99	13.745			
5,000.0	4,947.6	4,950.4	4,864.8	18.2	15.2	-97.04	460.0	-184.2	441.5	409.9	31.61	13.969			
5,100.0	5,047.6	5,041.9	4,953.9	18.4	15.6	-95.26	472.0	-200.9	458.4	426.2	32.19	14.240			
5,200.0	5,147.6	5,137.9	5,047.3	18.6	16.0	-93.50	484.8	-219.2	476.6	443.9	32.78	14.539			
5,300.0	5,247.6	5,243.6	5,150.3	18.8	16.4	-91.84	497.7	-238.6	494.6	461.2	33.39	14.812			
5,400.0	5,347.6	5,348.3	5,253.0	19.0	16.8	-90.54	508.7	-256.3	511.3	477.4	33.97	15.052			
5,500.0	5,447.6	5,454.1	5,357.1	19.2	17.1	-89.53	517.7	-272.5	526.7	492.2	34.54	15.251			
5,600.0	5,547.6	5,554.3	5,455.9	19.4	17.5	-88.65	526.0	-287.2	541.5	506.4	35.08	15.437			
5,700.0	5,647.6	5,661.5	5,561.6	19.6	17.9	-87.74	535.1	-302.2	555.9	520.3	35.65	15.595			
5,800.0	5,747.6	5,778.9	5,678.0	19.8	18.3	-86.96	543.4	-315.5	567.6	531.3	36.24	15.662			
5,900.0	5,847.6	5,893.7	5,792.2	20.0	18.6	-86.44	549.1	-325.3	576.4	539.5	36.81	15.657			
6,000.0	5,947.6	6,005.8	5,904.1	20.3	19.0	-86.10	553.0	-332.3	582.8	545.4	37.37	15.596			
6,060.8	6,008.4	6,070.7	5,968.9	20.4	19.2	-85.96	554.6	-335.4	585.8	548.1	37.69	15.543			
6,100.0	6,047.6	6,113.0	6,011.1	20.4	19.3	94.02	555.3	-337.3	587.6	549.8	37.87	15.518			
6,150.0	6,097.4	6,167.4	6,065.5	20.5	19.4	94.34	555.9	-339.3	589.8	551.8	38.05	15.504			
6,200.0	6,146.8	6,221.4	6,119.5	20.5	19.6	94.97	556.1	-340.9	592.0	553.8	38.18	15.504			
6,250.0	6,195.6	6,274.4	6,172.5	20.5	19.7	95.87	556.0	-342.1	594.1	555.9	38.24	15.537			
6,300.0	6,243.7	6,326.3	6,224.3	20.4	19.7	97.02	555.6	-342.9	596.6	558.3	38.22	15.607			
6,350.0	6,290.7	6,377.4	6,275.4	20.4	19.8	98.38	554.9	-343.5	599.4	561.3	38.15	15.712			
6,400.0	6,336.5	6,427.1	6,325.2	20.3	19.9	99.90	553.9	-343.8	603.0	565.0	38.00	15.870			
6,450.0	6,380.9	6,475.3	6,373.3	20.1	19.9	101.53	552.8	-343.8	607.6	569.8	37.76	16.093			
6,500.0	6,423.8	6,522.0	6,420.0	20.0	19.9	103.23	551.6	-343.6	613.4	575.9	37.45	16.378			
6,550.0	6,464.8	6,566.8	6,464.8	19.9	19.9	104.93	550.3	-343.2	620.8	583.7	37.09	16.736			
6,600.0	6,503.9	6,608.3	6,506.2	19.7	19.9	106.49	549.0	-342.8	630.1	593.4	36.69	17.173			
6,650.0	6,540.8	6,647.7	6,545.7	19.6	19.9	107.92	547.7	-342.2	641.5	605.3	36.26	17.694			
6,700.0	6,575.5	6,685.1	6,583.0	19.4	19.9	109.17	546.4	-341.7	655.4	619.6	35.83	18.294			
6,750.0	6,607.8	6,720.2	6,618.0	19.3	19.9	110.19	545.0	-341.1	671.9	636.4	35.42	18.966			
6,800.0	6,637.4	6,753.8	6,651.7	19.2	19.9	111.00	543.7	-340.5	690.9	655.9	35.07	19.700			
6,850.0	6,664.4	6,784.9	6,682.7	19.1	19.9	111.48	542.4	-339.9	712.7	677.9	34.82	20.468			
6,900.0	6,688.6	6,813.2	6,710.9	19.0	19.9	111.57	541.2	-339.2	737.1	702.4	34.71	21.240			
6,950.0	6,709.8	6,838.5	6,736.2	19.0	19.9	111.24	540.0	-338.6	764.2	729.4	34.77	21.981			
7,000.0	6,728.1	6,860.8	6,758.5	19.0	19.9	110.42	538.9	-338.0	793.7	758.7	35.03	22.661			

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Existing Wells Sec.29-T5N-R64W - Ottenhoff 41-7B (Exist) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft
Survey Program:		482-MWD											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	104.10	-86.0	342.4	353.3						
100.0	100.0	88.3	88.3	0.1	0.1	104.11	-86.1	342.4	353.0	352.8	0.26	1,356.160			
200.0	200.0	188.7	188.7	0.4	0.3	104.17	-86.4	342.1	352.9	352.2	0.67	522.971			
300.0	300.0	289.1	289.1	0.7	0.4	104.28	-87.0	341.7	352.6	351.5	1.09	323.738			
400.0	400.0	389.5	389.5	1.0	0.5	104.43	-87.8	341.1	352.2	350.7	1.50	234.259			
500.0	500.0	490.0	490.0	1.2	0.7	104.62	-88.8	340.3	351.7	349.8	1.93	182.300			
600.0	600.0	591.6	591.6	1.5	1.0	104.96	-90.6	339.0	350.9	348.5	2.49	140.956			
700.0	700.0	691.1	691.0	1.8	1.3	105.48	-93.4	337.2	349.9	346.8	3.04	115.125			
800.0	800.0	788.6	788.5	2.1	1.5	106.08	-96.7	335.7	349.4	345.8	3.58	97.626			
900.0	900.0	887.1	886.9	2.3	1.8	81.21	-101.1	334.5	349.3	345.1	4.14	84.312			
939.8	939.7	926.2	925.9	2.4	1.9	81.76	-103.2	334.1	349.3	344.9	4.36	80.052 CC			
1,000.0	999.9	984.3	983.9	2.6	2.1	82.75	-106.6	333.4	349.4	344.7	4.69	74.477 ES			
1,100.0	1,099.7	1,079.3	1,078.7	2.9	2.3	84.61	-112.2	333.3	350.5	345.3	5.23	66.972			
1,200.0	1,199.3	1,174.0	1,173.2	3.2	2.6	86.79	-118.0	334.3	353.1	347.3	5.79	60.970			
1,300.0	1,298.6	1,271.0	1,269.9	3.5	2.9	89.50	-125.2	336.1	357.5	351.1	6.38	56.068			
1,400.0	1,397.5	1,365.5	1,364.1	3.8	3.2	92.49	-132.9	338.3	363.5	356.5	7.00	51.931			
1,500.0	1,496.1	1,463.1	1,461.4	4.2	3.5	95.86	-140.9	340.4	370.9	363.3	7.65	48.492			
1,558.5	1,553.5	1,520.6	1,518.6	4.4	3.7	97.92	-145.4	341.6	375.9	367.9	8.03	46.804			
1,600.0	1,594.2	1,561.3	1,559.2	4.6	3.8	99.44	-148.5	342.4	379.7	371.4	8.31	45.707			
1,700.0	1,692.2	1,660.6	1,658.2	5.0	4.0	103.01	-155.8	344.1	389.6	380.7	8.97	43.453			
1,800.0	1,790.3	1,751.4	1,748.7	5.5	4.3	106.20	-163.0	345.3	401.1	391.5	9.63	41.634			
1,900.0	1,888.3	1,839.6	1,836.5	6.0	4.6	109.23	-171.7	347.3	415.8	405.5	10.30	40.359			
2,000.0	1,986.3	1,929.2	1,925.5	6.4	4.9	111.95	-180.9	351.1	433.5	422.5	10.97	39.507			
2,100.0	2,084.4	2,017.6	2,013.3	6.9	5.2	114.50	-191.2	355.4	453.6	442.0	11.64	38.972			
2,200.0	2,182.4	2,100.5	2,095.2	7.4	5.5	116.76	-202.5	359.9	476.6	464.3	12.29	38.772			
2,300.0	2,280.5	2,182.0	2,175.5	7.9	5.9	118.75	-215.3	366.2	503.3	490.4	12.94	38.906			
2,400.0	2,378.5	2,268.5	2,260.3	8.4	6.3	120.57	-229.7	374.5	532.5	518.9	13.58	39.208			
2,500.0	2,476.5	2,355.0	2,344.9	8.9	6.6	122.05	-244.3	384.8	563.4	549.2	14.21	39.636			
2,600.0	2,574.6	2,441.0	2,428.8	9.4	7.0	123.13	-258.7	397.7	596.0	581.1	14.85	40.138			
2,700.0	2,672.6	2,530.0	2,515.2	9.9	7.5	123.94	-273.2	413.3	629.6	614.1	15.49	40.637			
2,800.0	2,770.6	2,616.7	2,599.2	10.4	7.9	124.62	-287.9	429.1	664.2	648.1	16.15	41.127			
2,900.0	2,868.7	2,704.0	2,683.5	10.9	8.4	125.23	-303.5	445.5	699.8	683.0	16.82	41.614			
3,000.0	2,966.7	2,799.8	2,775.9	11.4	8.9	125.77	-320.4	464.3	735.9	718.4	17.51	42.033			
3,100.0	3,064.7	2,911.6	2,884.1	11.9	9.4	126.39	-339.1	485.1	770.6	752.4	18.23	42.273			
7,400.0	6,771.1	6,855.4	6,761.5	22.3	26.0	-90.39	-746.4	953.6	790.9	746.0	44.92	17.608			
7,500.0	6,770.4	6,854.1	6,760.2	23.6	26.0	-90.28	-746.4	953.6	751.2	705.0	46.24	16.245			
7,600.0	6,769.8	6,852.8	6,758.9	25.1	26.0	-90.17	-746.4	953.6	723.3	675.6	47.72	15.156			
7,700.0	6,769.1	6,851.5	6,757.6	26.8	26.0	-90.07	-746.4	953.6	708.5	659.1	49.33	14.363			
7,756.1	6,768.8	6,850.8	6,756.9	27.7	26.0	-90.01	-746.5	953.6	706.2	656.0	50.29	14.045			
7,800.0	6,768.5	6,850.2	6,756.3	28.5	26.0	-89.96	-746.5	953.6	707.6	656.6	51.04	13.865			
7,900.0	6,767.8	6,848.9	6,755.0	30.3	26.0	-89.86	-746.5	953.6	720.8	667.9	52.83	13.642 SF			
8,000.0	6,767.1	6,847.7	6,753.8	32.1	26.0	-89.76	-746.5	953.6	747.2	692.5	54.70	13.659			
8,100.0	6,766.5	6,846.5	6,752.6	34.0	26.0	-89.66	-746.5	953.6	785.5	728.9	56.63	13.871			

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - Roskop 29-1 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:		0.0 ft
Survey Program: 100-UNKNOWN													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
Depth (ft)	(ft)	Depth (ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
7,600.0	6,769.8	6,766.2	6,765.6	25.1	167.1	-95.83	-1,291.3	418.2	722.0	531.6	190.39	3.792			
7,700.0	6,769.1	6,763.5	6,763.0	26.8	167.0	-94.94	-1,291.3	418.2	625.3	433.0	192.29	3.252			
7,800.0	6,768.5	6,760.9	6,760.3	28.5	167.0	-94.05	-1,291.4	418.2	529.9	335.6	194.25	2.728			
7,900.0	6,767.8	6,758.2	6,757.6	30.3	166.9	-93.15	-1,291.5	418.1	436.5	240.2	196.26	2.224			
8,000.0	6,767.1	6,755.5	6,754.9	32.1	166.9	-92.26	-1,291.5	418.1	346.7	148.4	198.30	1.749			
8,100.0	6,766.5	6,752.8	6,752.2	34.0	166.8	-91.36	-1,291.6	418.1	264.4	64.1	200.34	1.320	Level 3		
8,200.0	6,765.8	6,750.1	6,749.5	36.0	166.8	-90.46	-1,291.6	418.1	199.0	-3.4	202.40	0.983	Level 1		
8,300.0	6,765.2	6,747.4	6,746.8	38.0	166.7	-89.56	-1,291.7	418.0	171.1	-33.3	204.44	0.837	Level 1		
8,301.7	6,765.1	6,747.4	6,746.8	38.1	166.7	-89.54	-1,291.7	418.0	171.1	-33.4	204.48	0.837	Level 1, CC, ES, SF		
8,400.0	6,764.5	6,744.7	6,744.1	40.1	166.6	-88.66	-1,291.7	418.0	197.3	-9.2	206.48	0.956	Level 1		
8,500.0	6,763.8	6,742.0	6,741.4	42.2	166.6	-87.76	-1,291.8	418.0	261.9	53.4	208.49	1.256	Level 3		
8,600.0	6,763.2	6,739.3	6,738.7	44.3	166.5	-86.86	-1,291.8	418.0	343.8	133.3	210.48	1.633			
8,700.0	6,762.5	6,736.6	6,736.1	46.4	166.5	-85.96	-1,291.9	418.0	433.4	220.9	212.44	2.040			
8,800.0	6,761.8	6,734.0	6,733.4	48.6	166.4	-85.06	-1,291.9	417.9	526.7	312.3	214.36	2.457			
8,900.0	6,761.2	6,731.3	6,730.7	50.7	166.4	-84.17	-1,292.0	417.9	622.1	405.8	216.25	2.877			
9,000.0	6,760.5	6,728.6	6,728.0	52.9	166.3	-83.28	-1,292.1	417.9	718.7	500.6	218.09	3.296			

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W (GRID) - Blake B 29-9 (P&A) - Wellbore #1 - Wellbore #1													Offset Site Error: 0.0 ft	
Survey Program: 100-NS-GYRO-MS													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (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		
9,200.0	6,759.2	6,741.9	6,740.3	57.3	16.0	58.91	-2,895.5	230.4	705.9	642.4	63.55	11.109		
9,300.0	6,758.5	6,743.3	6,741.7	59.5	16.1	62.83	-2,895.5	230.5	606.0	538.3	67.70	8.950		
9,400.0	6,757.9	6,744.7	6,743.1	61.8	16.1	67.08	-2,895.5	230.6	506.0	434.1	71.89	7.039		
9,500.0	6,757.2	6,746.1	6,744.5	64.0	16.1	71.65	-2,895.6	230.6	406.1	330.1	76.00	5.343		
9,600.0	6,756.6	6,747.6	6,745.9	66.3	16.1	76.53	-2,895.6	230.7	306.2	226.3	79.91	3.832		
9,700.0	6,755.9	6,749.0	6,747.3	68.5	16.1	81.65	-2,895.6	230.8	206.4	122.9	83.46	2.473		
9,800.0	6,755.2	6,750.4	6,748.7	70.8	16.1	86.96	-2,895.7	230.8	106.9	20.4	86.52	1.235 Level 2		
9,900.0	6,754.6	6,751.8	6,750.1	73.0	16.1	92.37	-2,895.7	230.9	16.0	-73.0	88.96	0.180 Level 1		
9,906.0	6,754.5	6,751.9	6,750.2	73.2	16.1	92.70	-2,895.7	230.9	14.9	-74.2	89.09	0.167 Level 1, CC, ES, SF		
10,000.0	6,753.9	6,753.2	6,751.6	75.3	16.1	97.79	-2,895.7	231.0	95.3	4.6	90.71	1.051 Level 2		
10,100.0	6,753.2	6,754.6	6,753.0	77.6	16.1	103.12	-2,895.7	231.0	194.7	102.9	91.75	2.122		
10,200.0	6,752.6	6,756.0	6,754.4	79.9	16.1	108.27	-2,895.8	231.1	294.5	202.4	92.12	3.197		
10,300.0	6,751.9	6,757.4	6,755.8	82.1	16.1	113.17	-2,895.8	231.2	394.4	302.5	91.91	4.291		
10,400.0	6,751.3	6,758.8	6,757.2	84.4	16.1	117.78	-2,895.8	231.2	494.3	403.1	91.21	5.420		
10,500.0	6,750.6	6,760.3	6,758.6	86.7	16.1	122.07	-2,895.9	231.3	594.3	504.1	90.16	6.591		
10,600.0	6,749.9	6,761.7	6,760.0	89.0	16.1	126.03	-2,895.9	231.4	694.2	605.4	88.87	7.812		
10,700.0	6,749.3	6,763.1	6,761.4	91.3	16.1	129.66	-2,895.9	231.4	794.2	706.8	87.44	9.083		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Existing Wells Sec.29-T5N-R64W (GRID) - Blake B29-16 (Exist) - Wellbore #1 - Wellbore #1		Offset Site Error:		0.0 ft
Survey Program:		100-NS-GYRO-MS											Offset Well Error:		0.0 ft		
Reference		Offset		Semi Major Axis			Distance							Warning			
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor					
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)						
10,300.0	6,751.9	6,785.2	6,784.3	82.1	18.1	-107.60	-4,086.5	306.8	799.2	703.4	95.71	8.350					
10,400.0	6,751.3	6,782.6	6,781.7	84.4	18.1	-105.42	-4,086.5	306.7	699.5	600.6	98.89	7.074					
10,500.0	6,750.6	6,780.0	6,779.1	86.7	18.1	-103.20	-4,086.6	306.7	600.0	498.0	102.02	5.881					
10,600.0	6,749.9	6,777.5	6,776.6	89.0	18.1	-100.92	-4,086.6	306.7	500.7	395.6	105.07	4.765					
10,700.0	6,749.3	6,774.9	6,774.0	91.3	18.1	-98.61	-4,086.7	306.6	401.7	293.6	108.02	3.718					
10,800.0	6,748.6	6,772.3	6,771.4	93.6	18.1	-96.27	-4,086.7	306.6	303.3	192.4	110.85	2.736					
10,900.0	6,748.0	6,769.8	6,768.9	95.9	18.1	-93.91	-4,086.8	306.6	206.4	92.8	113.55	1.818					
11,000.0	6,747.3	6,767.2	6,766.3	98.2	18.1	-91.53	-4,086.8	306.5	114.9	-1.2	116.09	0.990 Level 1					
11,097.0	6,746.7	6,764.7	6,763.8	100.5	18.0	-89.21	-4,086.9	306.5	61.6	-56.8	118.41	0.520 Level 1, CC, ES, SF					
11,100.0	6,746.6	6,764.6	6,763.7	100.5	18.0	-89.14	-4,086.9	306.5	61.7	-56.8	118.47	0.520 Level 1					
11,200.0	6,746.0	6,762.1	6,761.2	102.8	18.0	-86.75	-4,086.9	306.5	119.9	-0.7	120.68	0.994 Level 1					
11,300.0	6,745.3	6,759.5	6,758.6	105.1	18.0	-84.37	-4,087.0	306.4	212.0	89.3	122.69	1.728					
11,400.0	6,744.6	6,756.9	6,756.0	107.5	18.0	-82.01	-4,087.0	306.4	309.1	184.5	124.52	2.482					
11,500.0	6,744.0	6,754.3	6,753.5	109.8	18.0	-79.67	-4,087.1	306.4	407.5	281.4	126.15	3.230					
11,600.0	6,743.3	6,751.8	6,750.9	112.1	18.0	-77.36	-4,087.1	306.3	506.6	379.0	127.59	3.970					
11,700.0	6,742.7	6,749.2	6,748.3	114.4	18.0	-75.09	-4,087.2	306.3	605.9	477.1	128.84	4.703					
11,800.0	6,742.0	6,746.6	6,745.7	116.7	18.0	-72.87	-4,087.2	306.2	705.4	575.5	129.91	5.430					



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-203 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program:		0-MWD											Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.0	0.0	0.0	0.0	0.0	0.0	-89.31	1.4	-120.1	120.1					
100.0	100.0	100.0	100.0	0.1	0.1	-89.31	1.4	-120.1	120.1	119.8	0.28	436.170		
200.0	200.0	200.0	200.0	0.4	0.4	-89.31	1.4	-120.1	120.1	119.3	0.83	145.390	CC, ES	
300.0	300.0	297.1	297.1	0.7	0.7	-89.14	1.8	-121.3	121.3	119.9	1.36	89.183		
400.0	400.0	394.0	393.9	1.0	0.9	-88.63	3.0	-124.8	125.0	123.1	1.90	65.830		
500.0	500.0	490.7	490.4	1.2	1.2	-87.86	4.9	-130.6	131.0	128.6	2.45	53.558		
600.0	600.0	587.0	586.4	1.5	1.5	-86.89	7.5	-138.7	139.6	136.6	3.01	46.436		
700.0	700.0	682.8	681.6	1.8	1.9	-85.81	10.9	-149.1	150.6	147.0	3.58	42.092		
800.0	800.0	778.1	775.9	2.1	2.2	-84.69	15.0	-161.6	164.1	159.9	4.16	39.418		
900.0	900.0	872.5	869.1	2.3	2.6	-109.54	19.8	-176.2	180.4	175.8	4.67	38.628		
1,000.0	999.9	966.0	960.9	2.6	3.1	-109.21	25.2	-192.8	200.0	194.8	5.24	38.202	SF	
1,100.0	1,099.7	1,058.4	1,051.2	2.9	3.5	-109.34	31.3	-211.4	222.8	217.0	5.81	38.348		
1,200.0	1,199.3	1,149.4	1,139.7	3.2	4.1	-109.77	37.9	-231.7	248.8	242.4	6.40	38.868		
1,300.0	1,298.6	1,239.0	1,226.2	3.5	4.6	-110.39	45.1	-253.6	277.8	270.8	7.01	39.629		
1,400.0	1,397.5	1,326.9	1,310.6	3.8	5.2	-111.09	52.8	-276.9	310.0	302.4	7.65	40.531		
1,500.0	1,496.1	1,413.1	1,392.8	4.2	5.9	-111.82	60.8	-301.6	345.3	337.0	8.32	41.500		
1,558.5	1,553.5	1,462.6	1,439.8	4.4	6.2	-112.24	65.7	-316.6	367.4	358.6	8.73	42.073		
1,600.0	1,594.2	1,497.5	1,472.7	4.6	6.5	-112.75	69.3	-327.5	383.6	374.5	9.03	42.464		
1,700.0	1,692.2	1,588.1	1,558.0	5.0	7.3	-113.86	78.8	-356.4	423.3	413.5	9.80	43.175		
1,800.0	1,790.3	1,679.5	1,644.2	5.5	8.0	-114.80	88.3	-385.5	463.2	452.6	10.60	43.710		
1,900.0	1,888.3	1,771.0	1,730.3	6.0	8.8	-115.58	97.8	-414.7	503.1	491.7	11.41	44.108		
2,000.0	1,986.3	1,862.5	1,816.5	6.4	9.6	-116.26	107.4	-443.9	543.2	530.9	12.23	44.401		
2,100.0	2,084.4	1,953.9	1,902.7	6.9	10.4	-116.84	116.9	-473.0	583.2	570.2	13.07	44.618		
2,200.0	2,182.4	2,045.4	1,988.9	7.4	11.2	-117.34	126.5	-502.2	623.4	609.4	13.92	44.778		
2,300.0	2,280.5	2,136.9	2,075.0	7.9	11.9	-117.78	136.0	-531.4	663.5	648.7	14.78	44.895		
2,400.0	2,378.5	2,228.3	2,161.2	8.4	12.7	-118.18	145.5	-560.5	703.7	688.1	15.64	44.980		
2,500.0	2,476.5	2,319.8	2,247.4	8.9	13.5	-118.53	155.1	-589.7	743.9	727.4	16.52	45.041		
2,600.0	2,574.6	2,411.3	2,333.5	9.4	14.3	-118.85	164.6	-618.8	784.1	766.7	17.39	45.084		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	1.0	1.0	0.0	0.0	-89.31	1.1	-90.0	90.0	90.0	0.00	N/A			
100.0	100.0	101.0	101.0	0.1	0.1	-89.31	1.1	-90.0	90.0	89.7	0.28	323.638			
200.0	200.0	201.0	201.0	0.4	0.4	-89.31	1.1	-90.0	90.0	89.2	0.83	108.596			
300.0	300.0	301.0	301.0	0.7	0.7	-89.31	1.1	-90.0	90.0	88.6	1.38	65.244			
400.0	400.0	401.0	401.0	1.0	1.0	-89.31	1.1	-90.0	90.0	88.1	1.93	46.630			
500.0	500.0	501.0	501.0	1.2	1.2	-89.31	1.1	-90.0	90.0	87.5	2.48	36.279			
600.0	600.0	601.0	601.0	1.5	1.5	-89.31	1.1	-90.0	90.0	87.0	3.03	29.689			
700.0	700.0	701.0	701.0	1.8	1.8	-89.31	1.1	-90.0	90.0	86.4	3.58	25.125			
766.3	766.3	767.3	767.3	2.0	2.0	-89.31	1.1	-90.0	90.0	86.1	3.95	22.800 CC			
800.0	800.0	800.0	800.0	2.1	2.1	-89.31	1.1	-90.0	90.0	85.9	4.13	21.793 ES			
900.0	900.0	898.8	898.8	2.3	2.3	-115.50	1.6	-91.2	91.8	87.1	4.67	19.663			
1,000.0	999.9	996.5	996.4	2.6	2.6	-116.55	3.2	-94.6	97.0	91.8	5.19	18.667			
1,100.0	1,099.7	1,093.8	1,093.5	2.9	2.9	-118.06	5.8	-100.2	105.7	100.0	5.73	18.442 SF			
1,200.0	1,199.3	1,190.4	1,189.8	3.2	3.1	-119.78	9.5	-108.1	118.0	111.8	6.28	18.785			
1,300.0	1,298.6	1,286.3	1,285.0	3.5	3.4	-121.51	14.1	-118.1	134.0	127.1	6.85	19.547			
1,400.0	1,397.5	1,381.3	1,379.1	3.8	3.8	-123.09	19.6	-130.1	153.5	146.0	7.45	20.609			
1,500.0	1,496.1	1,475.1	1,471.6	4.2	4.1	-124.47	26.1	-144.0	176.5	168.5	8.07	21.875			
1,558.5	1,553.5	1,529.4	1,525.0	4.4	4.3	-125.17	30.3	-153.0	191.7	183.2	8.45	22.680			
1,600.0	1,594.2	1,567.7	1,562.5	4.6	4.5	-125.72	33.4	-159.8	203.0	194.3	8.73	23.254			
1,700.0	1,692.2	1,659.3	1,652.0	5.0	4.9	-126.57	41.5	-177.3	231.7	222.2	9.42	24.587			
1,800.0	1,790.3	1,749.8	1,740.1	5.5	5.4	-126.93	50.5	-196.6	262.2	252.0	10.14	25.852			
1,900.0	1,888.3	1,839.6	1,826.8	6.0	5.9	-126.95	60.2	-217.6	294.5	283.6	10.89	27.034			
2,000.0	1,986.3	1,934.0	1,917.7	6.4	6.4	-126.86	70.8	-240.5	327.5	315.9	11.68	28.052			
2,100.0	2,084.4	2,028.3	2,008.7	6.9	7.0	-126.78	81.4	-263.4	360.6	348.1	12.47	28.907			
2,200.0	2,182.4	2,122.7	2,099.6	7.4	7.6	-126.72	92.0	-286.3	393.7	380.4	13.29	29.627			
2,300.0	2,280.5	2,217.1	2,190.5	7.9	8.2	-126.66	102.6	-309.2	426.8	412.6	14.11	30.239			
2,400.0	2,378.5	2,311.4	2,281.4	8.4	8.8	-126.61	113.2	-332.1	459.8	444.9	14.95	30.761			
2,500.0	2,476.5	2,405.8	2,372.4	8.9	9.4	-126.57	123.9	-355.1	492.9	477.1	15.79	31.212			
2,600.0	2,574.6	2,500.2	2,463.3	9.4	10.1	-126.54	134.5	-378.0	526.0	509.3	16.64	31.604			
2,700.0	2,672.6	2,594.6	2,554.2	9.9	10.7	-126.51	145.1	-400.9	559.1	541.6	17.50	31.946			
2,800.0	2,770.6	2,688.9	2,645.2	10.4	11.3	-126.48	155.7	-423.8	592.1	573.8	18.36	32.247			
2,900.0	2,868.7	2,783.3	2,736.1	10.9	11.9	-126.45	166.3	-446.7	625.2	606.0	19.23	32.513			
3,000.0	2,966.7	2,877.7	2,827.0	11.4	12.6	-126.43	176.9	-469.6	658.3	638.2	20.10	32.750			
3,100.0	3,064.7	2,972.0	2,917.9	11.9	13.2	-126.41	187.5	-492.6	691.4	670.4	20.97	32.962			
3,200.0	3,162.8	3,066.4	3,008.9	12.4	13.9	-126.39	198.2	-515.5	724.4	702.6	21.85	33.152			
3,300.0	3,260.8	3,160.8	3,099.8	12.9	14.5	-126.37	208.8	-538.4	757.5	734.8	22.73	33.324			
3,400.0	3,358.8	3,255.2	3,190.7	13.5	15.2	-126.36	219.4	-561.3	790.6	767.0	23.61	33.479			

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-423 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program:		0-MWD											Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.0	0.0	0.0	0.0	0.0	0.0	-89.41	1.1	-105.0	105.0					
100.0	100.0	100.0	100.0	0.1	0.1	-89.41	1.1	-105.0	105.0	104.8	0.28	381.515		
200.0	200.0	200.0	200.0	0.4	0.4	-89.41	1.1	-105.0	105.0	104.2	0.83	127.172		
300.0	300.0	300.0	300.0	0.7	0.7	-89.41	1.1	-105.0	105.0	103.7	1.38	76.303		
400.0	400.0	400.0	400.0	1.0	1.0	-89.41	1.1	-105.0	105.0	103.1	1.93	54.502 CC, ES		
500.0	500.0	497.5	497.5	1.2	1.2	-89.17	1.5	-106.2	106.2	103.8	2.46	43.158		
600.0	600.0	594.8	594.7	1.5	1.5	-88.50	2.9	-109.7	109.8	106.8	2.99	36.678		
700.0	700.0	691.9	691.6	1.8	1.8	-87.48	5.1	-115.4	115.9	112.3	3.54	32.760		
800.0	800.0	788.6	787.9	2.1	2.0	-86.22	8.2	-123.5	124.3	120.2	4.09	30.407		
900.0	900.0	884.8	883.5	2.3	2.4	-110.99	12.1	-133.7	135.7	131.1	4.63	29.324		
1,000.0	999.9	980.3	978.0	2.6	2.7	-110.70	16.8	-146.1	150.5	145.3	5.18	29.038 SF		
1,100.0	1,099.7	1,074.8	1,071.3	2.9	3.1	-110.97	22.4	-160.6	168.5	162.8	5.75	29.329		
1,200.0	1,199.3	1,168.3	1,163.1	3.2	3.5	-111.59	28.7	-176.9	189.8	183.5	6.32	30.008		
1,300.0	1,298.6	1,260.5	1,253.3	3.5	4.0	-112.42	35.6	-195.2	214.3	207.4	6.93	30.944		
1,400.0	1,397.5	1,351.3	1,341.5	3.8	4.5	-113.34	43.3	-215.1	242.1	234.6	7.56	32.039		
1,500.0	1,496.1	1,440.5	1,427.7	4.2	5.0	-114.26	51.5	-236.6	273.2	264.9	8.22	33.220		
1,558.5	1,553.5	1,492.5	1,477.7	4.4	5.4	-114.79	56.7	-249.9	292.8	284.2	8.63	33.911		
1,600.0	1,594.2	1,531.4	1,515.0	4.6	5.6	-115.38	60.5	-260.1	307.1	298.1	8.94	34.330		
1,700.0	1,692.2	1,625.1	1,604.9	5.0	6.2	-116.59	69.9	-284.6	341.5	331.8	9.70	35.227		
1,800.0	1,790.3	1,718.7	1,694.8	5.5	6.9	-117.58	79.3	-309.0	376.1	365.6	10.47	35.919		
1,900.0	1,888.3	1,812.4	1,784.8	6.0	7.5	-118.41	88.7	-333.5	410.8	399.5	11.27	36.460		
2,000.0	1,986.3	1,906.0	1,874.7	6.4	8.2	-119.10	98.1	-358.0	445.5	433.4	12.08	36.889		
2,100.0	2,084.4	1,999.7	1,964.6	6.9	8.8	-119.70	107.5	-382.5	480.3	467.4	12.90	37.233		
2,200.0	2,182.4	2,093.3	2,054.5	7.4	9.5	-120.21	116.9	-407.0	515.1	501.3	13.73	37.510		
2,300.0	2,280.5	2,187.0	2,144.4	7.9	10.2	-120.66	126.3	-431.4	549.9	535.3	14.57	37.736		
2,400.0	2,378.5	2,280.6	2,234.3	8.4	10.8	-121.06	135.6	-455.9	584.8	569.4	15.42	37.922		
2,500.0	2,476.5	2,374.3	2,324.2	8.9	11.5	-121.41	145.0	-480.4	619.7	603.4	16.28	38.076		
2,600.0	2,574.6	2,467.9	2,414.1	9.4	12.2	-121.73	154.4	-504.9	654.6	637.5	17.13	38.204		
2,700.0	2,672.6	2,561.6	2,504.0	9.9	12.9	-122.01	163.8	-529.3	689.5	671.5	18.00	38.313		
2,800.0	2,770.6	2,655.2	2,593.9	10.4	13.5	-122.26	173.2	-553.8	724.5	705.6	18.86	38.404		
2,900.0	2,868.7	2,748.9	2,683.8	10.9	14.2	-122.50	182.6	-578.3	759.4	739.7	19.73	38.482		
3,000.0	2,966.7	2,842.5	2,773.7	11.4	14.9	-122.71	192.0	-602.8	794.4	773.8	20.61	38.548		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-143 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft	
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
0.0	0.0	0.0	0.0	0.0	0.0	-89.31	0.7	-59.9	59.9						
100.0	100.0	100.0	100.0	0.1	0.1	-89.31	0.7	-59.9	59.9	59.6	0.28	217.579			
200.0	200.0	200.0	200.0	0.4	0.4	-89.31	0.7	-59.9	59.9	59.1	0.83	72.526			
300.0	300.0	300.0	300.0	0.7	0.7	-89.31	0.7	-59.9	59.9	58.5	1.38	43.516			
400.0	400.0	400.0	400.0	1.0	1.0	-89.31	0.7	-59.9	59.9	58.0	1.93	31.083			
500.0	500.0	500.0	500.0	1.2	1.2	-89.31	0.7	-59.9	59.9	57.4	2.48	24.175			
600.0	600.0	600.0	600.0	1.5	1.5	-89.31	0.7	-59.9	59.9	56.9	3.03	19.780			
700.0	700.0	700.0	700.0	1.8	1.8	-89.31	0.7	-59.9	59.9	56.3	3.58	16.737			
800.0	800.0	800.0	800.0	2.1	2.1	-89.31	0.7	-59.9	59.9	55.8	4.13	14.505 CC, ES			
900.0	900.0	900.0	900.0	2.3	2.3	-116.23	0.7	-59.9	60.5	55.8	4.68	12.926			
1,000.0	999.9	999.9	999.9	2.6	2.6	-119.45	0.7	-59.9	62.3	57.1	5.23	11.923			
1,100.0	1,099.7	1,099.7	1,099.7	2.9	2.9	-124.36	0.7	-59.9	65.8	60.0	5.78	11.387			
1,200.0	1,199.3	1,199.3	1,199.3	3.2	3.2	-130.36	0.7	-59.9	71.4	65.0	6.33	11.268 SF			
1,300.0	1,298.6	1,297.6	1,297.6	3.5	3.4	-135.88	1.5	-60.9	80.1	73.2	6.88	11.636			
1,400.0	1,397.5	1,395.6	1,395.5	3.8	3.7	-139.84	3.9	-63.7	92.6	85.1	7.44	12.446			
1,500.0	1,496.1	1,493.1	1,492.9	4.2	4.0	-142.40	7.9	-68.5	108.5	100.4	8.00	13.549			
1,558.5	1,553.5	1,550.0	1,549.5	4.4	4.1	-143.38	11.0	-72.2	119.2	110.9	8.34	14.288			
1,600.0	1,594.2	1,590.2	1,589.5	4.6	4.2	-143.90	13.5	-75.2	127.3	118.7	8.59	14.819			
1,700.0	1,692.2	1,686.9	1,685.6	5.0	4.5	-144.26	20.6	-83.7	147.5	138.3	9.21	16.013			
1,800.0	1,790.3	1,783.2	1,780.9	5.5	4.8	-143.75	29.3	-94.0	168.5	158.7	9.86	17.091			
1,900.0	1,888.3	1,879.0	1,875.4	6.0	5.2	-142.66	39.4	-106.0	190.5	180.0	10.55	18.059			
2,000.0	1,986.3	1,974.5	1,969.2	6.4	5.5	-141.20	50.9	-119.9	213.6	202.3	11.28	18.934			
2,100.0	2,084.4	2,071.5	2,064.3	6.9	5.9	-139.79	63.3	-134.6	237.1	225.0	12.04	19.686			
2,200.0	2,182.4	2,168.5	2,159.4	7.4	6.4	-138.63	75.6	-149.4	260.7	247.9	12.83	20.326			
2,300.0	2,280.5	2,265.6	2,254.5	7.9	6.8	-137.67	88.0	-164.1	284.4	270.8	13.62	20.877			
2,400.0	2,378.5	2,362.6	2,349.6	8.4	7.2	-136.86	100.4	-178.9	308.2	293.8	14.43	21.353			
2,500.0	2,476.5	2,459.7	2,444.8	8.9	7.7	-136.16	112.7	-193.6	332.0	316.8	15.25	21.766			
2,600.0	2,574.6	2,556.7	2,539.9	9.4	8.2	-135.55	125.1	-208.3	355.9	339.8	16.08	22.128			
2,700.0	2,672.6	2,653.8	2,635.0	9.9	8.6	-135.02	137.4	-223.1	379.8	362.9	16.92	22.446			
2,800.0	2,770.6	2,750.8	2,730.1	10.4	9.1	-134.56	149.8	-237.8	403.7	386.0	17.77	22.727			
2,900.0	2,868.7	2,847.9	2,825.2	10.9	9.6	-134.15	162.1	-252.6	427.7	409.1	18.61	22.977			
3,000.0	2,966.7	2,944.9	2,920.4	11.4	10.1	-133.78	174.5	-267.3	451.7	432.2	19.47	23.201			
3,100.0	3,064.7	3,041.9	3,015.5	11.9	10.6	-133.44	186.8	-282.1	475.7	455.3	20.33	23.402			
3,200.0	3,162.8	3,139.0	3,110.6	12.4	11.1	-133.14	199.2	-296.8	499.7	478.5	21.19	23.584			
3,300.0	3,260.8	3,236.0	3,205.7	12.9	11.5	-132.87	211.5	-311.6	523.7	501.6	22.05	23.748			
3,400.0	3,358.8	3,333.1	3,300.8	13.5	12.0	-132.62	223.9	-326.3	547.7	524.8	22.92	23.898			
3,500.0	3,456.9	3,430.1	3,396.0	14.0	12.5	-132.39	236.2	-341.1	571.7	547.9	23.79	24.034			
3,600.0	3,554.9	3,527.2	3,491.1	14.5	13.0	-132.18	248.6	-355.8	595.8	571.1	24.66	24.159			
3,700.0	3,652.9	3,624.2	3,586.2	15.0	13.5	-131.99	260.9	-370.6	619.8	594.3	25.53	24.274			
3,783.6	3,734.9	3,705.3	3,665.7	15.4	14.0	-131.84	271.2	-382.9	639.9	613.7	26.27	24.363			
3,800.0	3,751.0	3,721.3	3,681.3	15.5	14.0	-131.87	273.3	-385.3	643.9	617.4	26.41	24.377			
3,900.0	3,849.4	3,818.6	3,776.7	15.9	14.6	-131.89	285.6	-400.1	666.4	639.2	27.24	24.461			
4,000.0	3,948.5	3,916.3	3,872.5	16.2	15.1	-131.68	298.1	-414.9	686.7	658.7	28.04	24.490			
4,100.0	4,047.9	4,014.3	3,968.6	16.5	15.6	-131.25	310.5	-429.8	704.8	676.0	28.80	24.474			
4,200.0	4,147.6	4,112.4	4,064.7	16.8	16.1	-130.62	323.0	-444.7	720.8	691.3	29.51	24.423			
4,300.0	4,247.6	4,210.5	4,160.9	17.0	16.6	-129.78	335.5	-459.7	734.8	704.6	30.18	24.347			
4,352.4	4,300.0	4,262.0	4,211.3	17.1	16.9	-103.46	342.1	-467.5	741.3	710.8	30.51	24.299			
4,400.0	4,347.6	4,308.6	4,257.0	17.1	17.1	-102.89	348.0	-474.5	747.0	716.2	30.81	24.249			
4,500.0	4,447.6	4,406.6	4,353.1	17.3	17.6	-101.71	360.5	-489.4	759.3	727.9	31.44	24.150			
4,600.0	4,547.6	4,504.6	4,449.1	17.5	18.2	-100.57	372.9	-504.3	771.9	739.9	32.07	24.073			
4,700.0	4,647.6	4,602.6	4,545.2	17.7	18.7	-99.47	385.4	-519.2	784.8	752.1	32.68	24.013			

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 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<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-143 - Wellbore #1 - Plan #2 (1-25-17)													<b>Offset Site Error:</b>	0.0 ft
Survey Program: 0-MWD													<b>Offset Well Error:</b>	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
4,800.0	4,747.6	4,700.6	4,641.3	17.9	19.2	-98.40	397.9	-534.1	798.0	764.7	33.29	23.971		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-203 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:		0.0 ft	
Survey Program: 0-MWD														Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance									
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)					
0.0	0.0	0.0	0.0	0.0	0.0	-89.31	0.4	-30.1	30.1							
100.0	100.0	100.0	100.0	0.1	0.1	-89.31	0.4	-30.1	30.1	29.8	0.28	109.295				
200.0	200.0	200.0	200.0	0.4	0.4	-89.31	0.4	-30.1	30.1	29.3	0.83	36.432				
300.0	300.0	300.0	300.0	0.7	0.7	-89.31	0.4	-30.1	30.1	28.7	1.38	21.859				
400.0	400.0	400.0	400.0	1.0	1.0	-89.31	0.4	-30.1	30.1	28.2	1.93	15.614				
500.0	500.0	500.0	500.0	1.2	1.2	-89.31	0.4	-30.1	30.1	27.6	2.48	12.144				
600.0	600.0	600.0	600.0	1.5	1.5	-89.31	0.4	-30.1	30.1	27.1	3.03	9.936				
700.0	700.0	700.0	700.0	1.8	1.8	-89.31	0.4	-30.1	30.1	26.5	3.58	8.407				
800.0	800.0	800.0	800.0	2.1	2.1	-89.31	0.4	-30.1	30.1	26.0	4.13	7.286	CC, ES			
900.0	900.0	900.0	900.0	2.3	2.3	-117.33	0.4	-30.1	30.7	26.0	4.68	6.556				
1,000.0	999.9	999.9	999.9	2.6	2.6	-123.43	0.4	-30.1	32.7	27.4	5.23	6.250				
1,100.0	1,099.7	1,099.7	1,099.7	2.9	2.9	-131.93	0.4	-30.1	36.7	30.9	5.78	6.349				
1,200.0	1,199.3	1,199.3	1,199.3	3.2	3.2	-140.89	0.4	-30.1	43.3	37.0	6.33	6.847				
1,300.0	1,298.6	1,298.6	1,298.6	3.5	3.4	-148.84	0.4	-30.1	53.0	46.1	6.88	7.701				
1,400.0	1,397.5	1,397.5	1,397.5	3.8	3.7	-155.24	0.4	-30.1	65.7	58.3	7.43	8.846				
1,500.0	1,496.1	1,496.1	1,496.1	4.2	4.0	-160.15	0.4	-30.1	81.4	73.5	7.97	10.213				
1,558.5	1,553.5	1,553.5	1,553.5	4.4	4.1	-162.44	0.4	-30.1	92.0	83.7	8.29	11.094				
1,600.0	1,594.2	1,594.2	1,594.2	4.6	4.3	-163.86	0.4	-30.1	99.8	91.3	8.52	11.716				
1,700.0	1,692.2	1,692.2	1,692.2	5.0	4.5	-166.50	0.4	-30.1	118.9	109.8	9.08	13.100				
1,800.0	1,790.3	1,790.3	1,790.3	5.5	4.8	-168.41	0.4	-30.1	138.2	128.6	9.64	14.337				
1,900.0	1,888.3	1,888.3	1,888.3	6.0	5.1	-169.85	0.4	-30.1	157.6	147.4	10.20	15.445				
2,000.0	1,986.3	1,986.3	1,986.3	6.4	5.3	-170.97	0.4	-30.1	177.0	166.3	10.77	16.439				
2,100.0	2,084.4	2,087.2	2,087.2	6.9	5.6	-171.67	1.3	-30.4	195.9	184.6	11.35	17.271				
2,200.0	2,182.4	2,189.2	2,189.1	7.4	5.9	-171.68	4.8	-31.5	213.2	201.3	11.93	17.877				
2,300.0	2,280.5	2,291.6	2,291.4	7.9	6.2	-171.16	11.0	-33.3	228.9	216.3	12.52	18.279				
2,400.0	2,378.5	2,394.5	2,393.8	8.4	6.5	-170.18	19.8	-36.0	242.9	229.7	13.13	18.502				
2,500.0	2,476.5	2,497.6	2,496.2	8.9	6.8	-168.81	31.3	-39.5	255.3	241.6	13.75	18.567				
2,600.0	2,574.6	2,600.6	2,598.1	9.4	7.1	-167.09	45.4	-43.8	266.4	252.0	14.40	18.496				
2,700.0	2,672.6	2,699.7	2,696.0	9.9	7.4	-165.36	60.2	-48.2	277.0	261.9	15.07	18.382				
2,800.0	2,770.6	2,798.8	2,793.9	10.4	7.7	-163.76	74.9	-52.7	287.9	272.1	15.75	18.271				
2,900.0	2,868.7	2,897.9	2,891.8	10.9	8.1	-162.27	89.6	-57.2	298.9	282.4	16.46	18.162				
3,000.0	2,966.7	2,997.0	2,989.7	11.4	8.4	-160.89	104.3	-61.6	310.1	293.0	17.18	18.055				
3,100.0	3,064.7	3,096.1	3,087.6	11.9	8.8	-159.61	119.0	-66.1	321.6	303.6	17.91	17.951				
3,200.0	3,162.8	3,195.2	3,185.5	12.4	9.1	-158.42	133.7	-70.5	333.1	314.4	18.66	17.850				
3,300.0	3,260.8	3,294.3	3,283.4	12.9	9.5	-157.30	148.4	-75.0	344.8	325.4	19.42	17.752				
3,400.0	3,358.8	3,393.4	3,381.3	13.5	9.9	-156.26	163.1	-79.5	356.6	336.4	20.19	17.658				
3,500.0	3,456.9	3,492.5	3,479.2	14.0	10.3	-155.29	177.8	-83.9	368.5	347.5	20.98	17.568				
3,600.0	3,554.9	3,591.6	3,577.1	14.5	10.6	-154.37	192.5	-88.4	380.5	358.8	21.77	17.481				
3,700.0	3,652.9	3,690.7	3,675.0	15.0	11.0	-153.52	207.2	-92.8	392.6	370.1	22.57	17.397				
3,783.6	3,734.9	3,773.5	3,756.8	15.4	11.4	-152.84	219.5	-96.6	402.8	379.6	23.24	17.330				
3,800.0	3,751.0	3,789.8	3,772.9	15.5	11.4	-152.73	221.9	-97.3	404.8	381.4	23.38	17.313				
3,900.0	3,849.4	3,889.0	3,871.0	15.9	11.8	-151.91	236.6	-101.8	415.0	390.9	24.17	17.171				
4,000.0	3,948.5	3,988.4	3,969.2	16.2	12.2	-150.89	251.4	-106.2	422.3	397.4	24.95	16.927				
4,100.0	4,047.9	4,087.9	4,067.4	16.5	12.6	-149.65	266.2	-110.7	426.7	401.0	25.72	16.595				
4,200.0	4,147.6	4,187.2	4,165.5	16.8	13.1	-148.16	280.9	-115.2	428.4	402.0	26.47	16.186				
4,300.0	4,247.6	4,286.3	4,263.5	17.0	13.5	-146.41	295.6	-119.7	427.5	400.3	27.21	15.711				
4,352.4	4,300.0	4,338.2	4,314.7	17.1	13.7	-119.57	303.3	-122.0	426.0	398.4	27.59	15.440				
4,400.0	4,347.6	4,385.2	4,361.1	17.1	13.9	-118.61	310.3	-124.1	424.4	396.5	27.96	15.177				
4,500.0	4,447.6	4,484.0	4,458.7	17.3	14.3	-116.57	324.9	-128.6	421.5	392.7	28.77	14.652				
4,600.0	4,547.6	4,582.8	4,556.3	17.5	14.7	-114.51	339.6	-133.0	419.1	389.6	29.57	14.173				
4,700.0	4,647.6	4,681.5	4,653.9	17.7	15.1	-112.42	354.3	-137.4	417.3	387.0	30.38	13.739				

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 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<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 (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
4,800.0	4,747.6	4,780.3	4,751.5	17.9	15.5	-110.32	368.9	-141.9	416.1	384.9	31.17	13.348		
4,900.0	4,847.6	4,879.1	4,849.1	18.0	15.9	-108.21	383.6	-146.3	415.5	383.5	31.97	12.997		
4,963.2	4,910.7	4,941.5	4,910.7	18.2	16.2	-106.88	392.8	-149.2	415.3	382.9	32.46	12.794		
5,000.0	4,947.6	4,977.9	4,946.7	18.2	16.4	-106.10	398.2	-150.8	415.4	382.6	32.75	12.683		
5,100.0	5,047.6	5,076.7	5,044.3	18.4	16.8	-103.99	412.9	-155.2	415.9	382.4	33.52	12.406		
5,200.0	5,147.6	5,175.5	5,141.9	18.6	17.2	-101.88	427.6	-159.7	417.0	382.7	34.28	12.162		
5,300.0	5,247.6	5,274.3	5,239.5	18.8	17.6	-99.79	442.2	-164.1	418.6	383.6	35.03	11.949		
5,400.0	5,347.6	5,373.1	5,337.1	19.0	18.0	-97.72	456.9	-168.6	420.8	385.1	35.76	11.766		
5,500.0	5,447.6	5,471.9	5,434.7	19.2	18.5	-95.67	471.5	-173.0	423.6	387.1	36.48	11.611		
5,600.0	5,547.6	5,573.8	5,535.5	19.4	18.8	-93.78	485.3	-177.2	426.6	389.5	37.10	11.497		
5,700.0	5,647.6	5,676.9	5,638.1	19.6	19.1	-92.36	495.7	-180.4	429.1	391.5	37.66	11.396		
5,800.0	5,747.6	5,780.7	5,741.6	19.8	19.4	-91.43	502.7	-182.5	430.9	392.8	38.15	11.295		
5,900.0	5,847.6	5,884.9	5,845.7	20.0	19.6	-90.98	506.0	-183.5	431.9	393.3	38.60	11.187		
6,000.0	5,947.6	5,986.7	5,947.5	20.3	19.8	-90.94	506.3	-183.6	431.9	392.9	39.02	11.071		
6,060.8	6,008.4	6,046.8	6,007.6	20.4	19.9	-91.30	503.6	-183.6	432.0	392.8	39.22	11.014		
6,100.0	6,047.6	6,085.2	6,045.8	20.4	19.9	88.23	499.4	-183.6	432.1	392.8	39.30	10.995		
6,150.0	6,097.4	6,134.0	6,093.9	20.5	19.9	87.68	491.3	-183.6	432.2	392.9	39.33	10.989		
6,200.0	6,146.8	6,182.6	6,141.2	20.5	19.9	87.14	480.2	-183.6	432.4	393.1	39.30	11.003		
6,250.0	6,195.6	6,231.0	6,187.5	20.5	19.8	86.62	466.2	-183.6	432.6	393.4	39.21	11.035		
6,300.0	6,243.7	6,279.1	6,232.5	20.4	19.7	86.12	449.4	-183.6	432.9	393.8	39.06	11.082		
6,350.0	6,290.7	6,327.0	6,276.3	20.4	19.6	85.63	429.9	-183.6	433.1	394.3	38.87	11.144		
6,400.0	6,336.5	6,374.7	6,318.5	20.3	19.5	85.16	407.7	-183.7	433.4	394.8	38.64	11.217		
6,450.0	6,380.9	6,422.2	6,359.1	20.1	19.4	84.71	383.1	-183.7	433.7	395.3	38.39	11.298		
6,500.0	6,423.8	6,469.5	6,398.0	20.0	19.3	84.29	356.1	-183.7	434.0	395.9	38.12	11.386		
6,550.0	6,464.8	6,516.7	6,435.0	19.9	19.2	83.89	326.9	-183.7	434.4	396.5	37.85	11.476		
6,600.0	6,503.9	6,563.6	6,470.0	19.7	19.1	83.52	295.6	-183.7	434.7	397.1	37.59	11.563		
6,650.0	6,540.8	6,610.5	6,502.9	19.6	19.0	83.17	262.3	-183.8	435.0	397.6	37.35	11.645		
6,700.0	6,575.5	6,657.2	6,533.6	19.4	18.9	82.85	227.1	-183.8	435.3	398.1	37.16	11.714		
6,750.0	6,607.8	6,703.8	6,562.0	19.3	18.8	82.56	190.2	-183.8	435.5	398.5	37.01	11.768		
6,800.0	6,637.4	6,750.0	6,588.0	19.2	18.8	82.30	151.9	-183.9	435.8	398.9	36.93	11.800		
6,850.0	6,664.4	6,796.6	6,611.7	19.1	18.8	82.07	111.9	-183.9	436.0	399.1	36.94	11.805		
6,900.0	6,688.6	6,842.9	6,632.9	19.0	18.8	81.87	70.7	-183.9	436.3	399.2	37.03	11.780		
6,950.0	6,709.8	6,889.1	6,651.5	19.0	18.9	81.71	28.4	-184.0	436.4	399.2	37.23	11.723		
7,000.0	6,728.1	6,935.2	6,667.4	19.0	19.0	81.58	-14.9	-184.0	436.6	399.0	37.53	11.632		
7,050.0	6,743.2	6,981.4	6,680.8	19.2	19.2	81.48	-59.0	-184.0	436.7	398.7	37.95	11.507		
7,100.0	6,755.3	7,027.4	6,691.4	19.4	19.5	81.42	-103.9	-184.1	436.8	398.3	38.48	11.350		
7,150.0	6,764.1	7,073.5	6,699.3	19.8	19.8	81.38	-149.2	-184.1	436.8	397.7	39.13	11.163		
7,200.0	6,769.6	7,119.6	6,704.4	20.2	20.2	81.39	-195.0	-184.1	436.8	396.9	39.88	10.952		
7,250.0	6,771.9	7,165.6	6,706.8	20.7	20.6	81.42	-241.0	-184.2	436.7	396.0	40.74	10.721		
7,265.4	6,772.0	7,179.8	6,707.0	20.8	20.8	81.44	-255.1	-184.2	436.7	395.7	41.02	10.646		
7,265.5	6,772.0	7,179.9	6,707.0	20.8	20.8	81.44	-255.2	-184.2	436.7	395.7	41.02	10.646		
7,266.2	6,772.0	7,180.5	6,707.0	20.8	20.8	81.44	-255.9	-184.2	436.7	395.7	41.03	10.643		
7,274.1	6,771.9	7,187.8	6,707.0	20.9	20.9	81.45	-263.2	-184.2	436.7	395.6	41.16	10.609		
7,300.0	6,771.8	7,213.8	6,706.8	21.1	21.1	81.45	-289.1	-184.2	436.7	395.1	41.60	10.498		
7,400.0	6,771.1	7,313.8	6,706.2	22.3	22.3	81.45	-389.1	-184.3	436.7	392.8	43.89	9.951		
7,500.0	6,770.4	7,413.8	6,705.5	23.6	23.6	81.45	-489.1	-184.3	436.7	390.2	46.53	9.387		
7,600.0	6,769.8	7,513.8	6,704.8	25.1	25.1	81.45	-589.1	-184.4	436.7	387.3	49.47	8.829		
7,700.0	6,769.1	7,613.8	6,704.2	26.8	26.7	81.45	-689.1	-184.5	436.7	384.1	52.65	8.295		
7,800.0	6,768.5	7,713.8	6,703.5	28.5	28.5	81.45	-789.1	-184.6	436.7	380.7	56.05	7.792		
7,900.0	6,767.8	7,813.8	6,702.9	30.3	30.3	81.45	-889.1	-184.7	436.8	377.1	59.61	7.326		

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 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<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)				
8,000.0	6,767.1	7,913.8	6,702.2	32.1	32.1	81.45	-989.1	-184.7	436.8	373.4	63.32	6.898			
8,100.0	6,766.5	8,013.8	6,701.5	34.0	34.1	81.45	-1,089.1	-184.8	436.8	369.6	67.15	6.505			
8,200.0	6,765.8	8,113.8	6,700.9	36.0	36.1	81.45	-1,189.1	-184.9	436.8	365.7	71.07	6.146			
8,300.0	6,765.2	8,213.8	6,700.2	38.0	38.1	81.45	-1,289.1	-185.0	436.8	361.7	75.08	5.818			
8,400.0	6,764.5	8,313.8	6,699.5	40.1	40.1	81.45	-1,389.1	-185.1	436.8	357.6	79.16	5.518			
8,500.0	6,763.8	8,413.8	6,698.9	42.2	42.2	81.45	-1,489.1	-185.1	436.8	353.5	83.30	5.244			
8,600.0	6,763.2	8,513.8	6,698.2	44.3	44.3	81.45	-1,589.1	-185.2	436.8	349.3	87.49	4.993			
8,700.0	6,762.5	8,613.8	6,697.6	46.4	46.5	81.45	-1,689.1	-185.3	436.8	345.1	91.73	4.762			
8,800.0	6,761.8	8,713.8	6,696.9	48.6	48.6	81.45	-1,789.1	-185.4	436.8	340.8	96.00	4.550			
8,900.0	6,761.2	8,813.8	6,696.2	50.7	50.8	81.45	-1,889.1	-185.4	436.8	336.5	100.31	4.355			
9,000.0	6,760.5	8,913.8	6,695.6	52.9	53.0	81.45	-1,989.1	-185.5	436.8	332.2	104.65	4.174			
9,100.0	6,759.9	9,013.8	6,694.9	55.1	55.2	81.45	-2,089.1	-185.6	436.8	327.8	109.02	4.007			
9,200.0	6,759.2	9,113.8	6,694.2	57.3	57.4	81.45	-2,189.1	-185.7	436.8	323.4	113.41	3.852			
9,300.0	6,758.5	9,213.8	6,693.6	59.5	59.6	81.45	-2,289.1	-185.8	436.8	319.0	117.82	3.708			
9,400.0	6,757.9	9,313.8	6,692.9	61.8	61.9	81.45	-2,389.1	-185.8	436.8	314.6	122.24	3.574			
9,500.0	6,757.2	9,413.8	6,692.3	64.0	64.1	81.45	-2,489.1	-185.9	436.8	310.2	126.69	3.448			
9,600.0	6,756.6	9,513.8	6,691.6	66.3	66.4	81.45	-2,589.1	-186.0	436.9	305.7	131.15	3.331			
9,700.0	6,755.9	9,613.8	6,690.9	68.5	68.6	81.45	-2,689.1	-186.1	436.9	301.2	135.62	3.221			
9,800.0	6,755.2	9,713.8	6,690.3	70.8	70.9	81.45	-2,789.1	-186.2	436.9	296.8	140.10	3.118			
9,900.0	6,754.6	9,813.8	6,689.6	73.0	73.2	81.45	-2,889.1	-186.2	436.9	292.3	144.60	3.021			
10,000.0	6,753.9	9,913.8	6,689.0	75.3	75.4	81.45	-2,989.1	-186.3	436.9	287.8	149.10	2.930			
10,100.0	6,753.2	10,013.8	6,688.3	77.6	77.7	81.45	-3,089.1	-186.4	436.9	283.3	153.62	2.844			
10,200.0	6,752.6	10,113.8	6,687.6	79.9	80.0	81.45	-3,189.1	-186.5	436.9	278.7	158.14	2.763			
10,300.0	6,751.9	10,213.8	6,687.0	82.1	82.3	81.45	-3,289.1	-186.6	436.9	274.2	162.67	2.686			
10,400.0	6,751.3	10,313.8	6,686.3	84.4	84.6	81.45	-3,389.1	-186.6	436.9	269.7	167.21	2.613			
10,500.0	6,750.6	10,413.8	6,685.6	86.7	86.9	81.45	-3,489.1	-186.7	436.9	265.2	171.75	2.544			
10,600.0	6,749.9	10,513.8	6,685.0	89.0	89.2	81.45	-3,589.1	-186.8	436.9	260.6	176.30	2.478			
10,700.0	6,749.3	10,613.8	6,684.3	91.3	91.4	81.45	-3,689.0	-186.9	436.9	256.1	180.86	2.416			
10,800.0	6,748.6	10,713.8	6,683.7	93.6	93.8	81.45	-3,789.0	-186.9	436.9	251.5	185.42	2.356			
10,900.0	6,748.0	10,813.8	6,683.0	95.9	96.1	81.45	-3,889.0	-187.0	436.9	246.9	189.98	2.300			
11,000.0	6,747.3	10,913.8	6,682.3	98.2	98.4	81.45	-3,989.0	-187.1	436.9	242.4	194.55	2.246			
11,100.0	6,746.6	11,013.8	6,681.7	100.5	100.7	81.45	-4,089.0	-187.2	436.9	237.8	199.12	2.194			
11,200.0	6,746.0	11,113.8	6,681.0	102.8	103.0	81.45	-4,189.0	-187.3	436.9	233.2	203.70	2.145			
11,300.0	6,745.3	11,213.8	6,680.4	105.1	105.3	81.45	-4,289.0	-187.3	437.0	228.7	208.28	2.098			
11,400.0	6,744.6	11,313.8	6,679.7	107.5	107.6	81.45	-4,389.0	-187.4	437.0	224.1	212.86	2.053			
11,500.0	6,744.0	11,413.8	6,679.0	109.8	109.9	81.45	-4,489.0	-187.5	437.0	219.5	217.45	2.009			
11,600.0	6,743.3	11,513.8	6,678.4	112.1	112.2	81.45	-4,589.0	-187.6	437.0	214.9	222.04	1.968			
11,700.0	6,742.7	11,613.8	6,677.7	114.4	114.6	81.45	-4,689.0	-187.7	437.0	210.3	226.63	1.928			
11,800.0	6,742.0	11,713.8	6,677.0	116.7	116.9	81.45	-4,789.0	-187.7	437.0	205.8	231.23	1.890			
11,900.0	6,741.3	11,813.8	6,676.4	119.0	119.2	81.45	-4,889.0	-187.8	437.0	201.2	235.83	1.853			
12,000.0	6,740.7	11,913.8	6,675.7	121.4	121.5	81.45	-4,989.0	-187.9	437.0	196.6	240.43	1.818			
12,100.0	6,740.0	12,013.8	6,675.1	123.7	123.8	81.45	-5,089.0	-188.0	437.0	192.0	245.03	1.783			
12,200.0	6,739.4	12,113.8	6,674.4	126.0	126.2	81.45	-5,189.0	-188.0	437.0	187.4	249.63	1.751			
12,300.0	6,738.7	12,213.8	6,673.7	128.3	128.5	81.45	-5,289.0	-188.1	437.0	182.8	254.24	1.719			
12,400.0	6,738.0	12,313.8	6,673.1	130.6	130.8	81.45	-5,389.0	-188.2	437.0	178.2	258.85	1.688			
12,500.0	6,737.4	12,413.8	6,672.4	133.0	133.1	81.45	-5,489.0	-188.3	437.0	173.6	263.45	1.659			
12,600.0	6,736.7	12,513.8	6,671.7	135.3	135.5	81.45	-5,589.0	-188.4	437.0	169.0	268.07	1.630			
12,700.0	6,736.0	12,613.8	6,671.1	137.6	137.8	81.45	-5,689.0	-188.4	437.0	164.4	272.68	1.603			
12,800.0	6,735.4	12,713.8	6,670.4	140.0	140.1	81.45	-5,789.0	-188.5	437.0	159.7	277.29	1.576			
12,900.0	6,734.7	12,813.8	6,669.8	142.3	142.4	81.45	-5,889.0	-188.6	437.0	155.1	281.91	1.550			
13,000.0	6,734.1	12,913.8	6,669.1	144.6	144.8	81.45	-5,989.0	-188.7	437.1	150.5	286.53	1.525			

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 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-203 - Wellbore #1 - Plan #2 (1-25-17)														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance								
Measured Depth (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		
13,100.0	6,733.4	13,013.8	6,668.4	146.9	147.1	81.45	-6,089.0	-188.8	437.1	145.9	291.14	1.501			
13,200.0	6,732.7	13,113.8	6,667.8	149.3	149.4	81.45	-6,189.0	-188.8	437.1	141.3	295.76	1.478 Level 3			
13,300.0	6,732.1	13,213.8	6,667.1	151.6	151.8	81.45	-6,289.0	-188.9	437.1	136.7	300.38	1.455 Level 3			
13,400.0	6,731.4	13,313.8	6,666.5	153.9	154.1	81.45	-6,389.0	-189.0	437.1	132.1	305.01	1.433 Level 3			
13,500.0	6,730.8	13,413.8	6,665.8	156.3	156.4	81.45	-6,489.0	-189.1	437.1	127.5	309.63	1.412 Level 3			
13,600.0	6,730.1	13,513.8	6,665.1	158.6	158.8	81.45	-6,589.0	-189.1	437.1	122.8	314.25	1.391 Level 3			
13,700.0	6,729.4	13,613.8	6,664.5	160.9	161.1	81.45	-6,689.0	-189.2	437.1	118.2	318.88	1.371 Level 3			
13,800.0	6,728.8	13,713.8	6,663.8	163.3	163.4	81.45	-6,789.0	-189.3	437.1	113.6	323.50	1.351 Level 3			
13,900.0	6,728.1	13,813.8	6,663.1	165.6	165.8	81.45	-6,889.0	-189.4	437.1	109.0	328.13	1.332 Level 3			
14,000.0	6,727.4	13,913.8	6,662.5	167.9	168.1	81.45	-6,989.0	-189.5	437.1	104.4	332.76	1.314 Level 3			
14,067.7	6,727.0	13,981.4	6,662.0	169.5	169.7	81.45	-7,056.6	-189.5	437.1	101.2	335.89	1.301 Level 3, SF			

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-243 - Wellbore #1 - Plan #2 (1-25-17)											Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.0	0.0	0.0	0.0	0.0	0.0	-89.45	0.7	-74.9	75.0					
100.0	100.0	100.0	100.0	0.1	0.1	-89.45	0.7	-74.9	75.0	74.7	0.28	272.220		
200.0	200.0	200.0	200.0	0.4	0.4	-89.45	0.7	-74.9	75.0	74.1	0.83	90.740		
300.0	300.0	300.0	300.0	0.7	0.7	-89.45	0.7	-74.9	75.0	73.6	1.38	54.444		
400.0	400.0	400.0	400.0	1.0	1.0	-89.45	0.7	-74.9	75.0	73.0	1.93	38.889		
500.0	500.0	500.0	500.0	1.2	1.2	-89.45	0.7	-74.9	75.0	72.5	2.48	30.247		
600.0	600.0	600.0	600.0	1.5	1.5	-89.45	0.7	-74.9	75.0	71.9	3.03	24.747		
700.0	700.0	700.0	700.0	1.8	1.8	-89.45	0.7	-74.9	75.0	71.4	3.58	20.940		
800.0	800.0	800.0	800.0	2.1	2.1	-89.45	0.7	-74.9	75.0	70.8	4.13	18.148	CC, ES	
900.0	900.0	900.0	900.0	2.3	2.3	-116.15	0.7	-74.9	75.5	70.8	4.68	16.142		
1,000.0	999.9	999.9	999.9	2.6	2.6	-118.74	0.7	-74.9	77.3	72.1	5.23	14.798		
1,100.0	1,099.7	1,098.0	1,098.0	2.9	2.9	-122.14	1.4	-76.0	81.7	75.9	5.76	14.170	SF	
1,200.0	1,199.3	1,195.9	1,195.8	3.2	3.1	-125.43	3.3	-79.2	89.8	83.5	6.31	14.234		
1,300.0	1,298.6	1,293.3	1,293.0	3.5	3.4	-128.28	6.5	-84.6	101.6	94.7	6.86	14.801		
1,400.0	1,397.5	1,390.0	1,389.3	3.8	3.7	-130.54	11.0	-92.0	117.0	109.6	7.44	15.736		
1,500.0	1,496.1	1,486.0	1,484.6	4.2	4.0	-132.23	16.7	-101.4	136.0	128.0	8.03	16.932		
1,558.5	1,553.5	1,541.6	1,539.8	4.4	4.2	-132.98	20.6	-107.8	148.7	140.3	8.40	17.715		
1,600.0	1,594.2	1,581.0	1,578.7	4.6	4.3	-133.47	23.5	-112.7	158.3	149.7	8.66	18.280		
1,700.0	1,692.2	1,675.3	1,671.8	5.0	4.6	-134.03	31.5	-125.9	182.5	173.2	9.32	19.578		
1,800.0	1,790.3	1,768.9	1,763.7	5.5	5.0	-133.95	40.6	-141.0	208.2	198.2	10.02	20.790		
1,900.0	1,888.3	1,861.6	1,854.3	6.0	5.4	-133.44	50.8	-157.8	235.5	224.7	10.74	21.918		
2,000.0	1,986.3	1,956.3	1,946.4	6.4	5.9	-132.73	62.0	-176.4	263.9	252.4	11.51	22.930		
2,100.0	2,084.4	2,052.1	2,039.7	6.9	6.4	-132.13	73.5	-195.3	292.4	280.1	12.29	23.787		
2,200.0	2,182.4	2,147.9	2,132.9	7.4	6.9	-131.63	85.0	-214.3	321.0	307.9	13.09	24.513		
2,300.0	2,280.5	2,243.7	2,226.1	7.9	7.4	-131.22	96.4	-233.3	349.5	335.6	13.91	25.133		
2,400.0	2,378.5	2,339.5	2,319.3	8.4	7.9	-130.87	107.9	-252.2	378.1	363.4	14.73	25.666		
2,500.0	2,476.5	2,435.3	2,412.5	8.9	8.4	-130.57	119.3	-271.2	406.7	391.2	15.57	26.128		
2,600.0	2,574.6	2,531.1	2,505.7	9.4	9.0	-130.30	130.8	-290.1	435.3	418.9	16.41	26.531		
2,700.0	2,672.6	2,626.9	2,598.9	9.9	9.5	-130.07	142.3	-309.1	463.9	446.7	17.26	26.885		
2,800.0	2,770.6	2,722.7	2,692.1	10.4	10.1	-129.87	153.7	-328.0	492.6	474.4	18.11	27.198		
2,900.0	2,868.7	2,818.5	2,785.3	10.9	10.6	-129.69	165.2	-347.0	521.2	502.2	18.97	27.476		
3,000.0	2,966.7	2,914.3	2,878.5	11.4	11.2	-129.53	176.6	-365.9	549.8	530.0	19.83	27.724		
3,100.0	3,064.7	3,010.1	2,971.7	11.9	11.7	-129.38	188.1	-384.9	578.4	557.7	20.70	27.947		
3,200.0	3,162.8	3,105.9	3,064.9	12.4	12.3	-129.25	199.6	-403.8	607.1	585.5	21.57	28.147		
3,300.0	3,260.8	3,201.7	3,158.2	12.9	12.8	-129.13	211.0	-422.8	635.7	613.3	22.44	28.329		
3,400.0	3,358.8	3,297.5	3,251.4	13.5	13.4	-129.02	222.5	-441.7	664.3	641.0	23.32	28.494		
3,500.0	3,456.9	3,393.3	3,344.6	14.0	14.0	-128.92	233.9	-460.7	693.0	668.8	24.19	28.644		
3,600.0	3,554.9	3,489.1	3,437.8	14.5	14.6	-128.82	245.4	-479.7	721.6	696.6	25.07	28.782		
3,700.0	3,652.9	3,584.9	3,531.0	15.0	15.1	-128.74	256.8	-498.6	750.3	724.3	25.95	28.909		
3,783.6	3,734.9	3,665.0	3,608.9	15.4	15.6	-128.67	266.4	-514.4	774.2	747.5	26.69	29.007		
3,800.0	3,751.0	3,680.7	3,624.2	15.5	15.7	-128.73	268.3	-517.6	778.9	752.0	26.84	29.018		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-89.09	0.7	-44.9	44.9						
100.0	100.0	100.0	100.0	0.1	0.1	-89.09	0.7	-44.9	44.9	44.6	0.28	162.940			
200.0	200.0	200.0	200.0	0.4	0.4	-89.09	0.7	-44.9	44.9	44.0	0.83	54.313			
300.0	300.0	300.0	300.0	0.7	0.7	-89.09	0.7	-44.9	44.9	43.5	1.38	32.588			
400.0	400.0	400.0	400.0	1.0	1.0	-89.09	0.7	-44.9	44.9	42.9	1.93	23.277			
500.0	500.0	500.0	500.0	1.2	1.2	-89.09	0.7	-44.9	44.9	42.4	2.48	18.104			
600.0	600.0	600.0	600.0	1.5	1.5	-89.09	0.7	-44.9	44.9	41.8	3.03	14.813			
700.0	700.0	700.0	700.0	1.8	1.8	-89.09	0.7	-44.9	44.9	41.3	3.58	12.534			
800.0	800.0	800.0	800.0	2.1	2.1	-89.09	0.7	-44.9	44.9	40.7	4.13	10.863 CC, ES			
900.0	900.0	900.0	900.0	2.3	2.3	-116.39	0.7	-44.9	45.4	40.8	4.68	9.710			
1,000.0	999.9	999.9	999.9	2.6	2.6	-120.62	0.7	-44.9	47.3	42.1	5.23	9.052			
1,100.0	1,099.7	1,099.7	1,099.7	2.9	2.9	-126.91	0.7	-44.9	51.0	45.2	5.78	8.821			
1,200.0	1,199.3	1,199.3	1,199.3	3.2	3.2	-134.21	0.7	-44.9	56.9	50.6	6.33	8.992			
1,300.0	1,298.6	1,298.6	1,298.6	3.5	3.4	-141.48	0.7	-44.9	65.7	58.8	6.89	9.538			
1,400.0	1,397.5	1,397.5	1,397.5	3.8	3.7	-147.99	0.7	-44.9	77.5	70.0	7.44	10.411			
1,500.0	1,496.1	1,496.1	1,496.1	4.2	4.0	-152.70	1.7	-45.6	92.3	84.3	7.99	11.552			
1,558.5	1,553.5	1,553.7	1,553.7	4.4	4.1	-154.42	3.2	-46.7	102.2	93.9	8.31	12.302			
1,600.0	1,594.2	1,594.6	1,594.5	4.6	4.2	-155.28	4.7	-47.8	109.6	101.0	8.54	12.826			
1,700.0	1,692.2	1,693.2	1,692.9	5.0	4.5	-156.13	9.7	-51.6	127.3	118.1	9.12	13.953			
1,800.0	1,790.3	1,791.8	1,791.1	5.5	4.8	-155.75	16.8	-56.9	144.8	135.1	9.72	14.895			
1,900.0	1,888.3	1,890.4	1,889.1	6.0	5.1	-154.54	25.8	-63.8	162.2	151.9	10.35	15.672			
2,000.0	1,986.3	1,988.9	1,986.5	6.4	5.4	-152.75	36.9	-72.1	179.6	168.6	11.02	16.305			
2,100.0	2,084.4	2,087.1	2,083.5	6.9	5.7	-150.72	49.4	-81.6	197.3	185.5	11.72	16.827			
2,200.0	2,182.4	2,185.3	2,180.4	7.4	6.1	-149.00	62.0	-91.1	215.1	202.6	12.45	17.272			
2,300.0	2,280.5	2,283.5	2,277.4	7.9	6.4	-147.55	74.6	-100.5	233.1	219.9	13.20	17.653			
2,400.0	2,378.5	2,381.7	2,374.3	8.4	6.8	-146.30	87.2	-110.0	251.2	237.2	13.97	17.983			
2,500.0	2,476.5	2,479.9	2,471.2	8.9	7.2	-145.23	99.8	-119.5	269.4	254.6	14.75	18.269			
2,600.0	2,574.6	2,578.1	2,568.2	9.4	7.6	-144.28	112.4	-129.0	287.7	272.1	15.53	18.519			
2,700.0	2,672.6	2,676.3	2,665.1	9.9	8.0	-143.45	125.0	-138.5	306.0	289.7	16.33	18.737			
2,800.0	2,770.6	2,774.6	2,762.0	10.4	8.4	-142.72	137.6	-148.0	324.4	307.3	17.14	18.930			
2,900.0	2,868.7	2,872.8	2,859.0	10.9	8.8	-142.06	150.2	-157.5	342.9	325.0	17.95	19.101			
3,000.0	2,966.7	2,971.0	2,955.9	11.4	9.2	-141.47	162.8	-167.0	361.4	342.6	18.77	19.253			
3,100.0	3,064.7	3,069.2	3,052.8	11.9	9.6	-140.94	175.4	-176.5	379.9	360.3	19.60	19.388			
3,200.0	3,162.8	3,167.4	3,149.8	12.4	10.0	-140.46	188.0	-186.0	398.5	378.1	20.42	19.510			
3,300.0	3,260.8	3,265.6	3,246.7	12.9	10.5	-140.02	200.6	-195.5	417.1	395.8	21.26	19.621			
3,400.0	3,358.8	3,363.8	3,343.7	13.5	10.9	-139.62	213.2	-205.0	435.7	413.6	22.09	19.720			
3,500.0	3,456.9	3,462.0	3,440.6	14.0	11.3	-139.25	225.8	-214.5	454.3	431.4	22.93	19.811			
3,600.0	3,554.9	3,560.2	3,537.5	14.5	11.7	-138.91	238.4	-224.0	472.9	449.2	23.77	19.893			
3,700.0	3,652.9	3,658.4	3,634.5	15.0	12.2	-138.59	251.0	-233.5	491.6	467.0	24.62	19.969			
3,783.6	3,734.9	3,740.5	3,715.5	15.4	12.5	-138.35	261.5	-241.4	507.2	481.9	25.33	20.028			
3,800.0	3,751.0	3,756.7	3,731.4	15.5	12.6	-138.34	263.6	-242.9	510.2	484.8	25.47	20.037			
3,900.0	3,849.4	3,855.1	3,828.6	15.9	13.0	-138.13	276.2	-252.5	527.2	501.0	26.27	20.071			
4,000.0	3,948.5	3,953.9	3,926.1	16.2	13.5	-137.66	288.9	-262.0	541.7	514.6	27.05	20.026			
4,100.0	4,047.9	4,052.8	4,023.7	16.5	13.9	-136.95	301.6	-271.6	553.7	525.9	27.80	19.915			
4,200.0	4,147.6	4,151.8	4,121.4	16.8	14.3	-136.00	314.3	-281.1	563.3	534.8	28.53	19.748			
4,300.0	4,247.6	4,250.7	4,219.0	17.0	14.8	-134.82	326.9	-290.7	570.7	541.5	29.21	19.535			
4,352.4	4,300.0	4,302.4	4,270.1	17.1	15.0	-108.29	333.6	-295.7	573.7	544.2	29.56	19.410			
4,400.0	4,347.6	4,349.4	4,316.4	17.1	15.2	-107.58	339.6	-300.2	576.3	546.4	29.88	19.283			
4,500.0	4,447.6	4,448.1	4,413.9	17.3	15.7	-106.10	352.3	-309.8	581.9	551.3	30.57	19.031			
4,600.0	4,547.6	4,546.8	4,511.3	17.5	16.1	-104.66	364.9	-319.3	587.8	556.6	31.25	18.808			
4,700.0	4,647.6	4,645.5	4,608.7	17.7	16.5	-103.24	377.6	-328.9	594.2	562.3	31.92	18.613			

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 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
4,800.0	4,747.6	4,744.2	4,706.1	17.9	17.0	-101.85	390.3	-338.4	600.9	568.3	32.58	18.442			
4,900.0	4,847.6	4,842.9	4,803.5	18.0	17.4	-100.50	402.9	-347.9	608.0	574.8	33.23	18.294			
5,000.0	4,947.6	4,941.6	4,901.0	18.2	17.9	-99.17	415.6	-357.5	615.4	581.5	33.87	18.167			
5,100.0	5,047.6	5,040.3	4,998.4	18.4	18.3	-97.88	428.2	-367.0	623.1	588.6	34.51	18.059			
5,200.0	5,147.6	5,139.0	5,095.8	18.6	18.8	-96.62	440.9	-376.6	631.2	596.1	35.13	17.969			
5,300.0	5,247.6	5,237.7	5,193.2	18.8	19.2	-95.39	453.6	-386.1	639.5	603.8	35.74	17.894			
5,400.0	5,347.6	5,336.4	5,290.6	19.0	19.7	-94.19	466.2	-395.7	648.2	611.8	36.35	17.834			
5,500.0	5,447.6	5,442.4	5,395.3	19.2	20.1	-92.98	479.4	-405.6	656.8	619.9	36.92	17.789			
5,600.0	5,547.6	5,556.6	5,508.7	19.4	20.4	-91.98	490.5	-413.9	663.8	626.3	37.45	17.724			
5,700.0	5,647.6	5,671.8	5,623.5	19.6	20.7	-91.32	498.0	-419.6	668.5	630.6	37.94	17.620			
5,800.0	5,747.6	5,787.6	5,739.2	19.8	21.0	-90.99	501.8	-422.5	670.9	632.5	38.39	17.474			
5,900.0	5,847.6	5,896.0	5,847.6	20.0	21.2	-90.95	502.3	-422.9	671.2	632.4	38.82	17.293			
6,000.0	5,947.6	5,996.0	5,947.6	20.3	21.4	-90.95	502.3	-422.9	671.2	632.0	39.24	17.104			
6,060.8	6,008.4	6,056.8	6,008.4	20.4	21.5	-90.95	502.3	-422.9	671.2	631.7	39.51	16.991			
6,100.0	6,047.6	6,095.6	6,047.2	20.4	21.6	89.06	501.9	-422.9	671.2	631.6	39.65	16.931			
6,150.0	6,097.4	6,145.0	6,096.4	20.5	21.6	89.15	498.8	-422.9	671.2	631.5	39.74	16.889			
6,200.0	6,146.8	6,194.4	6,145.4	20.5	21.6	89.24	492.5	-422.9	671.2	631.4	39.77	16.877			
6,250.0	6,195.6	6,243.8	6,193.9	20.5	21.6	89.33	483.0	-422.9	671.2	631.5	39.74	16.892			
6,300.0	6,243.7	6,293.3	6,241.8	20.4	21.6	89.43	470.4	-422.9	671.2	631.5	39.64	16.932			
6,350.0	6,290.7	6,342.9	6,288.9	20.4	21.5	89.53	454.6	-422.9	671.2	631.7	39.49	16.994			
6,400.0	6,336.5	6,392.6	6,334.8	20.3	21.4	89.63	435.8	-422.9	671.1	631.8	39.30	17.077			
6,450.0	6,380.9	6,442.4	6,379.6	20.1	21.4	89.73	414.1	-422.9	671.1	632.1	39.08	17.175			
6,500.0	6,423.8	6,492.2	6,422.9	20.0	21.2	89.84	389.4	-422.9	671.1	632.3	38.83	17.284			
6,550.0	6,464.8	6,542.1	6,464.5	19.9	21.1	89.94	361.9	-422.9	671.1	632.5	38.57	17.400			
6,600.0	6,503.9	6,592.1	6,504.3	19.7	21.0	90.05	331.7	-422.9	671.1	632.8	38.31	17.516			
6,650.0	6,540.8	6,642.2	6,542.2	19.6	20.8	90.15	298.9	-423.0	671.1	633.0	38.08	17.625			
6,700.0	6,575.5	6,692.3	6,577.8	19.4	20.7	90.26	263.7	-423.0	671.1	633.2	37.87	17.719			
6,750.0	6,607.8	6,742.6	6,611.1	19.3	20.6	90.36	226.1	-423.0	671.1	633.4	37.72	17.792			
6,800.0	6,637.4	6,792.9	6,641.9	19.2	20.4	90.47	186.3	-423.0	671.1	633.4	37.63	17.834			
6,850.0	6,664.4	6,843.3	6,670.1	19.1	20.3	90.57	144.6	-423.0	671.1	633.5	37.62	17.839			
6,900.0	6,688.6	6,893.8	6,695.5	19.0	20.2	90.67	101.0	-423.1	671.1	633.4	37.70	17.801			
6,900.8	6,688.9	6,894.6	6,695.9	19.0	20.2	90.67	100.2	-423.1	671.1	633.4	37.70	17.800			
6,950.0	6,709.8	6,944.3	6,718.0	19.0	20.1	90.76	55.7	-423.1	671.1	633.2	37.89	17.713			
7,000.0	6,728.1	6,994.9	6,737.5	19.0	20.0	90.86	9.0	-423.1	671.1	632.9	38.18	17.574			
7,050.0	6,743.2	7,045.6	6,753.9	19.2	19.9	90.94	-39.0	-423.1	671.1	632.5	38.60	17.384			
7,100.0	6,755.3	7,096.4	6,767.0	19.4	19.8	91.03	-88.0	-423.1	671.1	631.9	39.14	17.144			
7,150.0	6,764.1	7,147.2	6,776.9	19.8	20.1	91.11	-137.8	-423.2	671.1	631.3	39.80	16.860			
7,200.0	6,769.6	7,198.1	6,783.5	20.2	20.5	91.19	-188.3	-423.2	671.1	630.5	40.58	16.536			
7,250.0	6,771.9	7,249.0	6,786.7	20.7	21.1	91.26	-239.1	-423.2	671.1	629.6	41.47	16.182			
7,265.4	6,772.0	7,264.7	6,787.0	20.8	21.2	91.28	-254.8	-423.2	671.1	629.3	41.77	16.067			
7,265.5	6,772.0	7,264.8	6,787.0	20.8	21.2	91.28	-254.9	-423.2	671.1	629.3	41.77	16.067			
7,266.2	6,772.0	7,265.5	6,787.0	20.8	21.2	91.28	-255.6	-423.2	671.1	629.3	41.78	16.062			
7,300.0	6,771.8	7,299.5	6,786.9	21.1	21.6	91.29	-289.6	-423.2	671.1	628.7	42.34	15.850			
7,400.0	6,771.1	7,399.5	6,786.4	22.3	22.8	91.31	-389.6	-423.3	671.1	626.5	44.62	15.042			
7,500.0	6,770.4	7,499.5	6,786.0	23.6	24.2	91.33	-489.6	-423.4	671.1	623.8	47.25	14.202			
7,600.0	6,769.8	7,599.5	6,785.6	25.1	25.7	91.35	-589.6	-423.4	671.1	620.9	50.19	13.371			
7,700.0	6,769.1	7,699.5	6,785.1	26.8	27.3	91.37	-689.6	-423.5	671.1	617.7	53.38	12.572			
7,800.0	6,768.5	7,799.5	6,784.7	28.5	29.0	91.39	-789.6	-423.5	671.0	614.3	56.78	11.818			
7,900.0	6,767.8	7,899.5	6,784.2	30.3	30.8	91.40	-889.6	-423.6	671.0	610.7	60.36	11.118			
8,000.0	6,767.1	7,999.5	6,783.8	32.1	32.6	91.42	-989.6	-423.7	671.0	607.0	64.08	10.472			

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 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<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		
8,100.0	6,766.5	8,099.5	6,783.4	34.0	34.5	91.44	-1,089.6	-423.7	671.0	603.1	67.92	9.880		
8,200.0	6,765.8	8,199.5	6,782.9	36.0	36.5	91.46	-1,189.6	-423.8	671.0	599.1	71.86	9.337		
8,300.0	6,765.2	8,299.5	6,782.5	38.0	38.5	91.48	-1,289.6	-423.8	671.0	595.1	75.89	8.841		
8,400.0	6,764.5	8,399.5	6,782.0	40.1	40.5	91.50	-1,389.6	-423.9	671.0	591.0	80.00	8.388		
8,500.0	6,763.8	8,499.5	6,781.6	42.2	42.6	91.52	-1,489.5	-424.0	671.0	586.8	84.16	7.972		
8,600.0	6,763.2	8,599.5	6,781.2	44.3	44.7	91.54	-1,589.5	-424.0	671.0	582.6	88.38	7.592		
8,700.0	6,762.5	8,699.5	6,780.7	46.4	46.8	91.55	-1,689.5	-424.1	671.0	578.3	92.65	7.242		
8,800.0	6,761.8	8,799.5	6,780.3	48.6	49.0	91.57	-1,789.5	-424.1	671.0	574.0	96.95	6.920		
8,900.0	6,761.2	8,899.5	6,779.8	50.7	51.1	91.59	-1,889.5	-424.2	671.0	569.7	101.29	6.624		
9,000.0	6,760.5	8,999.5	6,779.4	52.9	53.3	91.61	-1,989.5	-424.2	670.9	565.3	105.67	6.350		
9,100.0	6,759.9	9,099.5	6,778.9	55.1	55.5	91.63	-2,089.5	-424.3	670.9	560.9	110.06	6.096		
9,200.0	6,759.2	9,199.5	6,778.5	57.3	57.7	91.65	-2,189.5	-424.4	670.9	556.4	114.49	5.860		
9,300.0	6,758.5	9,299.5	6,778.1	59.5	59.9	91.67	-2,289.5	-424.4	670.9	552.0	118.93	5.641		
9,400.0	6,757.9	9,399.5	6,777.6	61.8	62.1	91.69	-2,389.5	-424.5	670.9	547.5	123.39	5.437		
9,500.0	6,757.2	9,499.5	6,777.2	64.0	64.4	91.71	-2,489.5	-424.5	670.9	543.0	127.87	5.247		
9,600.0	6,756.6	9,599.5	6,776.7	66.3	66.6	91.72	-2,589.5	-424.6	670.9	538.5	132.36	5.069		
9,700.0	6,755.9	9,699.5	6,776.3	68.5	68.8	91.74	-2,689.5	-424.7	670.9	534.0	136.87	4.902		
9,800.0	6,755.2	9,799.5	6,775.9	70.8	71.1	91.76	-2,789.5	-424.7	670.9	529.5	141.39	4.745		
9,900.0	6,754.6	9,899.5	6,775.4	73.0	73.4	91.78	-2,889.5	-424.8	670.9	525.0	145.92	4.597		
10,000.0	6,753.9	9,999.5	6,775.0	75.3	75.6	91.80	-2,989.5	-424.8	670.9	520.4	150.47	4.459		
10,100.0	6,753.2	10,099.5	6,774.5	77.6	77.9	91.82	-3,089.5	-424.9	670.9	515.9	155.02	4.328		
10,200.0	6,752.6	10,199.5	6,774.1	79.9	80.2	91.84	-3,189.5	-425.0	670.9	511.3	159.58	4.204		
10,300.0	6,751.9	10,299.5	6,773.7	82.1	82.4	91.86	-3,289.5	-425.0	670.9	506.7	164.14	4.087		
10,400.0	6,751.3	10,399.5	6,773.2	84.4	84.7	91.88	-3,389.5	-425.1	670.9	502.1	168.72	3.976		
10,500.0	6,750.6	10,499.5	6,772.8	86.7	87.0	91.89	-3,489.5	-425.1	670.8	497.5	173.30	3.871		
10,600.0	6,749.9	10,599.5	6,772.3	89.0	89.3	91.91	-3,589.5	-425.2	670.8	493.0	177.89	3.771		
10,700.0	6,749.3	10,699.5	6,771.9	91.3	91.6	91.93	-3,689.5	-425.3	670.8	488.4	182.48	3.676		
10,800.0	6,748.6	10,799.5	6,771.4	93.6	93.9	91.95	-3,789.5	-425.3	670.8	483.8	187.08	3.586		
10,900.0	6,748.0	10,899.5	6,771.0	95.9	96.2	91.97	-3,889.5	-425.4	670.8	479.1	191.68	3.500		
11,000.0	6,747.3	10,999.5	6,770.6	98.2	98.5	91.99	-3,989.5	-425.4	670.8	474.5	196.28	3.418		
11,100.0	6,746.6	11,099.5	6,770.1	100.5	100.8	92.01	-4,089.5	-425.5	670.8	469.9	200.90	3.339		
11,200.0	6,746.0	11,199.5	6,769.7	102.8	103.1	92.03	-4,189.5	-425.5	670.8	465.3	205.51	3.264		
11,300.0	6,745.3	11,299.5	6,769.2	105.1	105.4	92.04	-4,289.5	-425.6	670.8	460.7	210.13	3.192		
11,400.0	6,744.6	11,399.5	6,768.8	107.5	107.7	92.06	-4,389.5	-425.7	670.8	456.0	214.75	3.124		
11,500.0	6,744.0	11,499.5	6,768.4	109.8	110.0	92.08	-4,489.5	-425.7	670.8	451.4	219.37	3.058		
11,600.0	6,743.3	11,599.5	6,767.9	112.1	112.3	92.10	-4,589.5	-425.8	670.8	446.8	224.00	2.995		
11,700.0	6,742.7	11,699.5	6,767.5	114.4	114.6	92.12	-4,689.5	-425.8	670.8	442.1	228.63	2.934		
11,800.0	6,742.0	11,799.5	6,767.0	116.7	117.0	92.14	-4,789.5	-425.9	670.8	437.5	233.27	2.876		
11,900.0	6,741.3	11,899.5	6,766.6	119.0	119.3	92.16	-4,889.5	-426.0	670.8	432.9	237.90	2.820		
12,000.0	6,740.7	11,999.5	6,766.2	121.4	121.6	92.18	-4,989.5	-426.0	670.8	428.2	242.54	2.766		
12,100.0	6,740.0	12,099.5	6,765.7	123.7	123.9	92.20	-5,089.5	-426.1	670.8	423.6	247.18	2.714		
12,200.0	6,739.4	12,199.5	6,765.3	126.0	126.2	92.21	-5,189.5	-426.1	670.7	418.9	251.82	2.664		
12,300.0	6,738.7	12,299.5	6,764.8	128.3	128.6	92.23	-5,289.5	-426.2	670.7	414.3	256.46	2.615		
12,400.0	6,738.0	12,399.5	6,764.4	130.6	130.9	92.25	-5,389.5	-426.3	670.7	409.6	261.11	2.569		
12,500.0	6,737.4	12,499.5	6,763.9	133.0	133.2	92.27	-5,489.5	-426.3	670.7	405.0	265.76	2.524		
12,600.0	6,736.7	12,599.5	6,763.5	135.3	135.5	92.29	-5,589.5	-426.4	670.7	400.3	270.40	2.480		
12,700.0	6,736.0	12,699.5	6,763.1	137.6	137.8	92.31	-5,689.5	-426.4	670.7	395.7	275.05	2.439		
12,800.0	6,735.4	12,799.5	6,762.6	140.0	140.2	92.33	-5,789.5	-426.5	670.7	391.0	279.70	2.398		
12,900.0	6,734.7	12,899.5	6,762.2	142.3	142.5	92.35	-5,889.5	-426.6	670.7	386.4	284.36	2.359		
13,000.0	6,734.1	12,999.5	6,761.7	144.6	144.8	92.37	-5,989.5	-426.6	670.7	381.7	289.01	2.321		
13,100.0	6,733.4	13,099.5	6,761.3	146.9	147.2	92.38	-6,089.5	-426.7	670.7	377.0	293.67	2.284		

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 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
13,200.0	6,732.7	13,199.5	6,760.9	149.3	149.5	92.40	-6,189.5	-426.7	670.7	372.4	298.32	2.248			
13,300.0	6,732.1	13,299.5	6,760.4	151.6	151.8	92.42	-6,289.5	-426.8	670.7	367.7	302.98	2.214			
13,400.0	6,731.4	13,399.5	6,760.0	153.9	154.1	92.44	-6,389.5	-426.8	670.7	363.1	307.64	2.180			
13,500.0	6,730.8	13,499.5	6,759.5	156.3	156.5	92.46	-6,489.5	-426.9	670.7	358.4	312.30	2.148			
13,600.0	6,730.1	13,599.5	6,759.1	158.6	158.8	92.48	-6,589.5	-427.0	670.7	353.7	316.96	2.116			
13,700.0	6,729.4	13,699.5	6,758.7	160.9	161.1	92.50	-6,689.5	-427.0	670.7	349.1	321.62	2.085			
13,800.0	6,728.8	13,799.5	6,758.2	163.3	163.5	92.52	-6,789.5	-427.1	670.7	344.4	326.28	2.056			
13,900.0	6,728.1	13,899.5	6,757.8	165.6	165.8	92.53	-6,889.5	-427.1	670.7	339.7	330.94	2.027			
14,000.0	6,727.4	13,999.5	6,757.3	167.9	168.1	92.55	-6,989.5	-427.2	670.7	335.1	335.61	1.998			
14,067.7	6,727.0	14,067.1	6,757.0	169.5	169.7	92.57	-7,057.1	-427.2	670.7	331.9	338.76	1.980 SF			

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-423 - Wellbore #1 - Plan #2 (1-25-17)											Offset Site Error:		0.0 ft
Survey Program:		0-MWD											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-88.66	0.4	-15.0	15.1	15.1	0.00	N/A			
100.0	100.0	99.0	99.0	0.1	0.1	-88.66	0.4	-15.0	15.0	14.8	0.27	54.933			
200.0	200.0	199.0	199.0	0.4	0.4	-88.66	0.4	-15.0	15.0	14.2	0.82	18.281			
300.0	300.0	299.0	299.0	0.7	0.7	-88.66	0.4	-15.0	15.0	13.7	1.37	10.954			
400.0	400.0	399.0	399.0	1.0	1.0	-88.66	0.4	-15.0	15.0	13.1	1.92	7.820			
500.0	500.0	499.0	499.0	1.2	1.2	-88.66	0.4	-15.0	15.0	12.6	2.48	6.080			
600.0	600.0	599.0	599.0	1.5	1.5	-88.66	0.4	-15.0	15.0	12.0	3.03	4.973			
700.0	700.0	699.0	699.0	1.8	1.8	-88.66	0.4	-15.0	15.0	11.5	3.58	4.208			
800.0	800.0	799.0	799.0	2.1	2.1	-88.66	0.4	-15.0	15.0	10.9	4.13	3.646 CC			
900.0	900.0	899.0	899.0	2.3	2.3	-118.83	0.4	-15.0	15.6	11.0	4.68	3.344			
1,000.0	999.9	998.9	998.9	2.6	2.6	-129.90	0.4	-15.0	17.9	12.6	5.22	3.420			
1,100.0	1,099.7	1,098.7	1,098.7	2.9	2.9	-142.66	0.4	-15.0	22.6	16.9	5.77	3.918			
1,200.0	1,199.3	1,198.3	1,198.3	3.2	3.2	-153.11	0.4	-15.0	30.4	24.1	6.32	4.809			
1,300.0	1,298.6	1,297.6	1,297.6	3.5	3.4	-160.45	0.4	-15.0	41.3	34.4	6.87	6.003			
1,400.0	1,397.5	1,396.5	1,396.5	3.8	3.7	-165.40	0.4	-15.0	55.0	47.6	7.42	7.415			
1,500.0	1,496.1	1,495.1	1,495.1	4.2	4.0	-168.77	0.4	-15.0	71.5	63.6	7.96	8.988			
1,558.5	1,553.5	1,552.5	1,552.5	4.4	4.1	-170.25	0.4	-15.0	82.4	74.2	8.27	9.967			
1,600.0	1,594.2	1,593.2	1,593.2	4.6	4.2	-171.13	0.4	-15.0	90.5	82.0	8.50	10.648			
1,700.0	1,692.2	1,691.2	1,691.2	5.0	4.5	-172.71	0.4	-15.0	110.1	101.0	9.06	12.150			
1,800.0	1,790.3	1,789.3	1,789.3	5.5	4.8	-173.82	0.4	-15.0	129.7	120.0	9.62	13.478			
1,900.0	1,888.3	1,887.3	1,887.3	6.0	5.1	-174.63	0.4	-15.0	149.3	139.1	10.19	14.658			
2,000.0	1,986.3	1,985.3	1,985.3	6.4	5.3	-175.26	0.4	-15.0	168.9	158.2	10.75	15.712			
2,100.0	2,084.4	2,083.4	2,083.4	6.9	5.6	-175.75	0.4	-15.0	188.6	177.3	11.32	16.659			
2,200.0	2,182.4	2,181.4	2,181.4	7.4	5.9	-176.15	0.4	-15.0	208.3	196.4	11.89	17.513			
2,300.0	2,280.5	2,279.5	2,279.5	7.9	6.1	-176.49	0.4	-15.0	228.0	215.5	12.47	18.286			
2,400.0	2,378.5	2,377.5	2,377.5	8.4	6.4	-176.77	0.4	-15.0	247.7	234.6	13.04	18.990			
2,500.0	2,476.5	2,475.5	2,475.5	8.9	6.7	-177.00	0.4	-15.0	267.4	253.8	13.62	19.633			
2,600.0	2,574.6	2,579.0	2,579.0	9.4	7.0	-177.16	1.2	-15.0	286.4	272.2	14.21	20.154			
2,700.0	2,672.6	2,685.1	2,685.1	9.9	7.3	-177.07	4.8	-14.6	303.0	288.2	14.81	20.461			
2,800.0	2,770.6	2,792.1	2,791.8	10.4	7.6	-176.79	11.5	-14.0	317.0	301.6	15.41	20.573			
2,900.0	2,868.7	2,899.7	2,899.0	10.9	7.8	-176.31	21.2	-13.2	328.6	312.5	16.02	20.509			
3,000.0	2,966.7	3,007.8	3,006.3	11.4	8.1	-175.64	33.9	-12.0	337.5	320.9	16.64	20.287			
3,100.0	3,064.7	3,116.2	3,113.6	11.9	8.5	-174.79	49.8	-10.6	344.0	326.8	17.27	19.924			
3,200.0	3,162.8	3,219.8	3,215.6	12.4	8.8	-173.84	67.3	-9.0	348.4	330.5	17.89	19.473			
3,300.0	3,260.8	3,319.5	3,313.9	12.9	9.1	-172.92	84.4	-7.4	352.7	334.2	18.52	19.046			
3,400.0	3,358.8	3,419.3	3,412.1	13.5	9.5	-172.02	101.6	-5.9	357.1	337.9	19.15	18.641			
3,500.0	3,456.9	3,519.0	3,510.4	14.0	9.8	-171.15	118.7	-4.3	361.5	341.7	19.80	18.259			
3,600.0	3,554.9	3,618.8	3,608.6	14.5	10.2	-170.29	135.9	-2.8	366.1	345.6	20.45	17.896			
3,700.0	3,652.9	3,718.5	3,706.9	15.0	10.6	-169.46	153.0	-1.2	370.7	349.5	21.12	17.552			
3,783.6	3,734.9	3,801.9	3,789.0	15.4	10.9	-168.78	167.4	0.1	374.6	352.9	21.68	17.277			
3,800.0	3,751.0	3,818.3	3,805.1	15.5	10.9	-168.65	170.2	0.4	375.3	353.5	21.80	17.217			
3,900.0	3,849.4	3,918.1	3,903.4	15.9	11.3	-167.80	187.3	1.9	377.8	355.3	22.47	16.814			
4,000.0	3,948.5	4,017.9	4,001.7	16.2	11.7	-166.82	204.5	3.5	377.0	353.9	23.12	16.304			
4,100.0	4,047.9	4,117.5	4,099.9	16.5	12.1	-165.70	221.6	5.0	372.9	349.1	23.75	15.698			
4,200.0	4,147.6	4,216.9	4,197.8	16.8	12.5	-164.38	238.7	6.6	365.6	341.2	24.37	15.002			
4,300.0	4,247.6	4,315.9	4,295.3	17.0	12.9	-162.84	255.8	8.1	355.1	330.2	24.97	14.222			
4,352.4	4,300.0	4,367.6	4,346.2	17.1	13.1	-136.10	264.6	8.9	348.4	323.2	25.28	13.782			
4,400.0	4,347.6	4,414.5	4,392.4	17.1	13.3	-135.24	272.7	9.7	342.0	316.4	25.61	13.356			
4,500.0	4,447.6	4,513.0	4,489.4	17.3	13.7	-133.34	289.6	11.2	328.8	302.5	26.34	12.485			
4,600.0	4,547.6	4,611.5	4,586.4	17.5	14.2	-131.28	306.6	12.7	316.0	288.9	27.10	11.662			
4,700.0	4,647.6	4,710.0	4,683.4	17.7	14.6	-129.05	323.5	14.3	303.6	275.7	27.89	10.888			

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 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-423 - Wellbore #1 - Plan #2 (1-25-17)											Offset Site Error:		0.0 ft	
Survey Program: 0-MWD													Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor				
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)					
4,800.0	4,747.6	4,808.5	4,780.4	17.9	15.0	-126.64	340.5	15.8	291.7	263.0	28.71	10.162				
4,900.0	4,847.6	4,907.0	4,877.5	18.0	15.4	-124.04	357.4	17.3	280.4	250.9	29.57	9.484				
5,000.0	4,947.6	5,005.5	4,974.5	18.2	15.8	-121.22	374.3	18.9	269.7	239.3	30.46	8.854				
5,100.0	5,047.6	5,104.0	5,071.5	18.4	16.3	-118.19	391.3	20.4	259.8	228.4	31.40	8.274				
5,200.0	5,147.6	5,202.5	5,168.5	18.6	16.7	-114.93	408.2	21.9	250.6	218.2	32.36	7.743				
5,300.0	5,247.6	5,301.0	5,265.5	18.8	17.1	-111.43	425.1	23.5	242.3	208.9	33.35	7.264				
5,400.0	5,347.6	5,399.5	5,362.6	19.0	17.6	-107.72	442.1	25.0	235.0	200.6	34.37	6.837				
5,500.0	5,447.6	5,498.0	5,459.6	19.2	18.0	-103.78	459.0	26.5	228.7	193.3	35.39	6.462				
5,600.0	5,547.6	5,595.4	5,555.6	19.4	18.4	-99.81	475.3	28.0	223.7	187.4	36.36	6.153				
5,700.0	5,647.6	5,692.7	5,652.0	19.6	18.7	-96.43	488.7	29.2	220.5	183.3	37.17	5.933				
5,800.0	5,747.6	5,790.8	5,749.6	19.8	19.0	-93.80	498.9	30.2	218.6	180.8	37.86	5.775				
5,900.0	5,847.6	5,889.5	5,848.0	20.0	19.3	-91.99	505.8	30.8	217.6	179.2	38.45	5.661				
6,000.0	5,947.6	5,988.6	5,947.0	20.3	19.5	-91.06	509.4	31.1	217.2	178.3	38.94	5.579				
6,060.8	6,008.4	6,049.0	6,007.4	20.4	19.6	-90.94	509.9	31.2	217.2	178.0	39.20	5.541				
6,100.0	6,047.6	6,088.1	6,046.6	20.4	19.7	89.28	509.9	31.2	217.2	177.8	39.36	5.517				
6,136.2	6,083.6	6,124.2	6,082.6	20.5	19.8	90.00	509.9	31.2	217.1	177.6	39.51	5.496				
6,150.0	6,097.4	6,137.9	6,096.4	20.5	19.8	90.39	509.9	31.2	217.1	177.6	39.58	5.487				
6,200.0	6,146.8	6,187.9	6,146.3	20.5	19.9	91.95	508.3	31.2	217.3	177.5	39.74	5.467				
6,250.0	6,195.6	6,238.2	6,196.4	20.5	19.9	93.50	503.5	31.2	217.6	177.7	39.83	5.462				
6,300.0	6,243.7	6,289.0	6,246.4	20.4	19.9	95.04	495.4	31.1	218.0	178.2	39.84	5.472				
6,350.0	6,290.7	6,340.1	6,296.2	20.4	19.9	96.56	483.8	31.1	218.6	178.8	39.76	5.497				
6,400.0	6,336.5	6,391.7	6,345.5	20.3	19.8	98.05	468.7	31.1	219.3	179.7	39.61	5.537				
6,450.0	6,380.9	6,443.6	6,394.1	20.1	19.7	99.50	450.2	31.1	220.2	180.8	39.39	5.591				
6,500.0	6,423.8	6,496.0	6,441.7	20.0	19.6	100.90	428.3	31.1	221.2	182.1	39.10	5.657				
6,550.0	6,464.8	6,548.8	6,488.0	19.9	19.5	102.25	403.0	31.1	222.2	183.5	38.75	5.735				
6,600.0	6,503.9	6,602.1	6,532.8	19.7	19.4	103.54	374.2	31.1	223.4	185.0	38.37	5.823				
6,650.0	6,540.8	6,655.7	6,575.8	19.6	19.3	104.76	342.2	31.0	224.6	186.6	37.96	5.917				
6,700.0	6,575.5	6,709.7	6,616.7	19.4	19.1	105.91	307.0	31.0	225.8	188.3	37.55	6.015				
6,750.0	6,607.8	6,764.1	6,655.3	19.3	19.0	106.98	268.6	31.0	227.1	189.9	37.15	6.112				
6,800.0	6,637.4	6,818.9	6,691.3	19.2	18.9	107.97	227.4	31.0	228.3	191.5	36.80	6.204				
6,850.0	6,664.4	6,873.9	6,724.4	19.1	18.9	108.88	183.4	30.9	229.5	193.0	36.52	6.285				
6,900.0	6,688.6	6,929.4	6,754.5	19.0	18.9	109.69	136.9	30.9	230.6	194.3	36.33	6.349				
6,950.0	6,709.8	6,985.1	6,781.2	19.0	19.0	110.42	88.0	30.9	231.7	195.4	36.25	6.391				
7,000.0	6,728.1	7,041.0	6,804.4	19.0	19.1	111.05	37.1	30.8	232.6	196.3	36.32	6.405				
7,050.0	6,743.2	7,097.2	6,823.9	19.2	19.3	111.58	-15.6	30.8	233.5	196.9	36.54	6.389				
7,100.0	6,755.3	7,153.6	6,839.5	19.4	19.6	112.02	-69.8	30.8	234.2	197.2	36.93	6.340				
7,150.0	6,764.1	7,210.1	6,851.1	19.8	19.9	112.35	-125.1	30.7	234.7	197.2	37.50	6.259				
7,200.0	6,769.6	7,266.8	6,858.5	20.2	20.4	112.59	-181.2	30.7	235.1	196.9	38.24	6.147				
7,250.0	6,771.9	7,323.5	6,861.8	20.7	20.9	112.72	-237.9	30.7	235.3	196.2	39.15	6.010				
7,265.4	6,772.0	7,340.8	6,862.0	20.8	21.0	112.75	-255.1	30.6	235.4	195.9	39.46	5.965				
7,265.5	6,772.0	7,340.9	6,862.0	20.8	21.0	112.75	-255.2	30.6	235.4	195.9	39.46	5.965				
7,266.2	6,772.0	7,341.6	6,862.0	20.8	21.0	112.75	-255.9	30.6	235.4	195.9	39.47	5.963				
7,300.0	6,771.8	7,375.4	6,862.0	21.1	21.3	112.80	-289.7	30.6	235.4	195.5	39.99	5.888				
7,400.0	6,771.1	7,475.4	6,862.0	22.3	22.4	112.95	-389.7	30.5	235.7	193.6	42.11	5.597				
7,500.0	6,770.4	7,575.4	6,862.0	23.6	23.8	113.09	-489.7	30.5	236.0	191.4	44.59	5.292				
7,600.0	6,769.8	7,675.4	6,862.0	25.1	25.2	113.24	-589.7	30.4	236.2	188.9	47.34	4.990				
7,700.0	6,769.1	7,775.4	6,862.0	26.8	26.8	113.39	-689.7	30.3	236.5	186.2	50.31	4.701				
7,800.0	6,768.5	7,875.4	6,862.0	28.5	28.5	113.53	-789.7	30.3	236.7	183.3	53.46	4.428				
7,900.0	6,767.8	7,975.4	6,862.0	30.3	30.3	113.68	-889.7	30.2	237.0	180.2	56.77	4.175				
8,000.0	6,767.1	8,075.4	6,862.0	32.1	32.2	113.83	-989.7	30.1	237.3	177.1	60.20	3.942				

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 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-423 - Wellbore #1 - Plan #2 (1-25-17)										Offset Site Error:		0.0 ft		
Survey Program:		0-MWD												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor				
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)					
8,100.0	6,766.5	8,175.4	6,862.0	34.0	34.1	113.97	-1,089.7	30.0	237.5	173.8	63.73	3.727				
8,200.0	6,765.8	8,275.4	6,862.0	36.0	36.1	114.12	-1,189.7	30.0	237.8	170.5	67.35	3.531				
8,300.0	6,765.2	8,375.4	6,862.0	38.0	38.1	114.26	-1,289.7	29.9	238.1	167.1	71.04	3.352				
8,400.0	6,764.5	8,475.4	6,862.0	40.1	40.1	114.41	-1,389.7	29.8	238.4	163.6	74.79	3.187				
8,500.0	6,763.8	8,575.4	6,862.0	42.2	42.2	114.55	-1,489.7	29.7	238.6	160.1	78.58	3.037				
8,600.0	6,763.2	8,675.4	6,862.0	44.3	44.3	114.70	-1,589.7	29.7	238.9	156.5	82.42	2.899				
8,700.0	6,762.5	8,775.4	6,862.0	46.4	46.5	114.84	-1,689.7	29.6	239.2	152.9	86.29	2.772				
8,800.0	6,761.8	8,875.4	6,862.0	48.6	48.6	114.99	-1,789.7	29.5	239.5	149.3	90.19	2.655				
8,900.0	6,761.2	8,975.4	6,862.0	50.7	50.8	115.13	-1,889.7	29.4	239.8	145.6	94.11	2.548				
9,000.0	6,760.5	9,075.4	6,862.0	52.9	53.0	115.27	-1,989.7	29.4	240.0	142.0	98.05	2.448				
9,100.0	6,759.9	9,175.4	6,862.0	55.1	55.2	115.41	-2,089.7	29.3	240.3	138.3	102.01	2.356				
9,200.0	6,759.2	9,275.4	6,862.0	57.3	57.4	115.56	-2,189.7	29.2	240.6	134.6	105.98	2.270				
9,300.0	6,758.5	9,375.4	6,862.0	59.5	59.6	115.70	-2,289.7	29.2	240.9	130.9	109.97	2.191				
9,400.0	6,757.9	9,475.4	6,862.0	61.8	61.9	115.84	-2,389.7	29.1	241.2	127.2	113.96	2.116				
9,500.0	6,757.2	9,575.3	6,862.0	64.0	64.1	115.98	-2,489.7	29.0	241.5	123.5	117.96	2.047				
9,600.0	6,756.6	9,675.3	6,862.0	66.3	66.3	116.12	-2,589.7	28.9	241.8	119.8	121.96	1.982				
9,700.0	6,755.9	9,775.3	6,862.0	68.5	68.6	116.26	-2,689.7	28.9	242.1	116.1	125.97	1.922				
9,800.0	6,755.2	9,875.3	6,862.0	70.8	70.9	116.40	-2,789.7	28.8	242.3	112.4	129.98	1.865				
9,900.0	6,754.6	9,975.3	6,862.0	73.0	73.1	116.54	-2,889.7	28.7	242.6	108.7	133.99	1.811				
10,000.0	6,753.9	10,075.3	6,862.0	75.3	75.4	116.68	-2,989.7	28.6	242.9	104.9	138.00	1.760				
10,100.0	6,753.2	10,175.3	6,862.0	77.6	77.7	116.82	-3,089.7	28.6	243.2	101.2	142.01	1.713				
10,200.0	6,752.6	10,275.3	6,862.0	79.9	80.0	116.96	-3,189.7	28.5	243.5	97.5	146.03	1.668				
10,300.0	6,751.9	10,375.3	6,862.0	82.1	82.2	117.10	-3,289.7	28.4	243.8	93.8	150.03	1.625				
10,400.0	6,751.3	10,475.3	6,862.0	84.4	84.5	117.24	-3,389.7	28.3	244.1	90.1	154.04	1.585				
10,500.0	6,750.6	10,575.3	6,862.0	86.7	86.8	117.37	-3,489.7	28.3	244.4	86.4	158.05	1.547				
10,600.0	6,749.9	10,675.3	6,862.0	89.0	89.1	117.51	-3,589.7	28.2	244.8	82.7	162.05	1.510				
10,700.0	6,749.3	10,775.3	6,862.0	91.3	91.4	117.65	-3,689.7	28.1	245.1	79.0	166.04	1.476 Level 3				
10,800.0	6,748.6	10,875.3	6,862.0	93.6	93.7	117.79	-3,789.7	28.0	245.4	75.3	170.04	1.443 Level 3				
10,900.0	6,748.0	10,975.3	6,862.0	95.9	96.0	117.92	-3,889.7	28.0	245.7	71.7	174.03	1.412 Level 3				
11,000.0	6,747.3	11,075.3	6,862.0	98.2	98.3	118.06	-3,989.7	27.9	246.0	68.0	178.01	1.382 Level 3				
11,100.0	6,746.6	11,175.3	6,862.0	100.5	100.6	118.19	-4,089.6	27.8	246.3	64.3	181.99	1.353 Level 3				
11,200.0	6,746.0	11,275.3	6,862.0	102.8	103.0	118.33	-4,189.6	27.8	246.6	60.7	185.96	1.326 Level 3				
11,300.0	6,745.3	11,375.3	6,862.0	105.1	105.3	118.46	-4,289.6	27.7	246.9	57.0	189.93	1.300 Level 3				
11,400.0	6,744.6	11,475.3	6,862.0	107.5	107.6	118.60	-4,389.6	27.6	247.2	53.4	193.89	1.275 Level 3				
11,500.0	6,744.0	11,575.3	6,862.0	109.8	109.9	118.73	-4,489.6	27.5	247.6	49.7	197.85	1.251 Level 3				
11,600.0	6,743.3	11,675.3	6,862.0	112.1	112.2	118.87	-4,589.6	27.5	247.9	46.1	201.80	1.228 Level 2				
11,700.0	6,742.7	11,775.3	6,862.0	114.4	114.5	119.00	-4,689.6	27.4	248.2	42.5	205.74	1.206 Level 2				
11,800.0	6,742.0	11,875.3	6,862.0	116.7	116.8	119.13	-4,789.6	27.3	248.5	38.9	209.67	1.185 Level 2				
11,900.0	6,741.3	11,975.3	6,862.0	119.0	119.2	119.27	-4,889.6	27.2	248.9	35.3	213.60	1.165 Level 2				
12,000.0	6,740.7	12,075.3	6,862.0	121.4	121.5	119.40	-4,989.6	27.2	249.2	31.7	217.53	1.146 Level 2				
12,100.0	6,740.0	12,175.3	6,862.0	123.7	123.8	119.53	-5,089.6	27.1	249.5	28.1	221.44	1.127 Level 2				
12,200.0	6,739.4	12,275.3	6,862.0	126.0	126.1	119.66	-5,189.6	27.0	249.8	24.5	225.35	1.109 Level 2				
12,300.0	6,738.7	12,375.3	6,862.0	128.3	128.5	119.79	-5,289.6	26.9	250.2	20.9	229.25	1.091 Level 2				
12,400.0	6,738.0	12,475.3	6,862.0	130.6	130.8	119.93	-5,389.6	26.9	250.5	17.3	233.14	1.074 Level 2				
12,500.0	6,737.4	12,575.3	6,862.0	133.0	133.1	120.06	-5,489.6	26.8	250.8	13.8	237.03	1.058 Level 2				
12,600.0	6,736.7	12,675.3	6,862.0	135.3	135.4	120.19	-5,589.6	26.7	251.2	10.2	240.91	1.043 Level 2				
12,700.0	6,736.0	12,775.3	6,862.0	137.6	137.8	120.32	-5,689.6	26.6	251.5	6.7	244.78	1.027 Level 2				
12,800.0	6,735.4	12,875.3	6,862.0	140.0	140.1	120.45	-5,789.6	26.6	251.8	3.2	248.64	1.013 Level 2				
12,900.0	6,734.7	12,975.3	6,862.0	142.3	142.4	120.58	-5,889.6	26.5	252.2	-0.3	252.49	0.999 Level 1				
13,000.0	6,734.1	13,075.3	6,862.0	144.6	144.8	120.71	-5,989.6	26.4	252.5	-3.8	256.34	0.985 Level 1				
13,100.0	6,733.4	13,175.3	6,862.0	146.9	147.1	120.83	-6,089.6	26.4	252.8	-7.3	260.18	0.972 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 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<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								
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	6,732.7	13,275.3	6,862.0	149.3	149.4	120.96	-6,189.6	26.3	253.2	-10.8	264.01	0.959	Level 1		
13,300.0	6,732.1	13,375.3	6,862.0	151.6	151.8	121.09	-6,289.6	26.2	253.5	-14.3	267.83	0.947	Level 1		
13,400.0	6,731.4	13,475.3	6,862.0	153.9	154.1	121.22	-6,389.6	26.1	253.9	-17.8	271.64	0.935	Level 1		
13,500.0	6,730.8	13,575.3	6,862.0	156.3	156.4	121.35	-6,489.6	26.1	254.2	-21.2	275.45	0.923	Level 1		
13,600.0	6,730.1	13,675.3	6,862.0	158.6	158.8	121.47	-6,589.6	26.0	254.6	-24.7	279.25	0.912	Level 1		
13,700.0	6,729.4	13,775.3	6,862.0	160.9	161.1	121.60	-6,689.6	25.9	254.9	-28.1	283.04	0.901	Level 1		
13,800.0	6,728.8	13,875.3	6,862.0	163.3	163.4	121.73	-6,789.6	25.8	255.2	-31.6	286.82	0.890	Level 1		
13,900.0	6,728.1	13,975.3	6,862.0	165.6	165.8	121.85	-6,889.6	25.8	255.6	-35.0	290.59	0.880	Level 1		
14,000.0	6,727.4	14,075.3	6,862.0	167.9	168.1	121.98	-6,989.6	25.7	255.9	-38.4	294.36	0.870	Level 1		
14,067.7	6,727.0	14,142.9	6,862.0	169.5	169.7	122.06	-7,057.2	25.6	256.2	-40.7	296.90	0.863	Level 1, ES, SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<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	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	90.00	0.0	15.0	15.0	15.0	0.00	N/A				
100.0	100.0	100.0	100.0	0.1	0.1	90.00	0.0	15.0	15.0	14.8	0.28	54.644				
200.0	200.0	200.0	200.0	0.4	0.4	90.00	0.0	15.0	15.0	14.2	0.83	18.215				
300.0	300.0	300.0	300.0	0.7	0.7	90.00	0.0	15.0	15.0	13.7	1.38	10.929				
400.0	400.0	400.0	400.0	1.0	1.0	90.00	0.0	15.0	15.0	13.1	1.93	7.806 CC				
500.0	500.0	499.7	499.7	1.2	1.2	86.55	1.0	15.9	16.0	13.5	2.47	6.450				
600.0	600.0	599.3	599.2	1.5	1.5	78.32	3.8	18.6	19.0	15.9	3.02	6.275				
700.0	700.0	698.6	698.3	1.8	1.8	69.42	8.6	22.9	24.5	21.0	3.58	6.865				
800.0	800.0	797.5	796.8	2.1	2.1	62.27	15.2	29.0	32.9	28.8	4.13	7.966				
900.0	900.0	896.0	894.6	2.3	2.4	32.18	23.7	36.8	43.0	38.3	4.68	9.181				
1,000.0	999.9	994.3	991.9	2.6	2.8	30.27	34.0	46.2	53.4	48.2	5.24	10.198				
1,100.0	1,099.7	1,092.2	1,088.4	2.9	3.2	29.59	46.1	57.3	64.1	58.3	5.80	11.050				
1,200.0	1,199.3	1,189.9	1,184.3	3.2	3.6	29.64	60.0	70.0	75.0	68.6	6.38	11.764				
1,300.0	1,298.6	1,288.4	1,280.5	3.5	4.1	30.19	75.6	84.2	85.8	78.8	6.97	12.303				
1,400.0	1,397.5	1,388.0	1,377.8	3.8	4.6	31.39	91.5	98.8	94.5	87.0	7.59	12.461				
1,500.0	1,496.1	1,487.8	1,475.1	4.2	5.1	33.18	107.4	113.4	101.2	92.9	8.23	12.288				
1,558.5	1,553.5	1,546.1	1,532.1	4.4	5.4	34.51	116.7	121.9	104.1	95.4	8.63	12.055				
1,600.0	1,594.2	1,587.6	1,572.6	4.6	5.7	35.52	123.3	127.9	105.9	97.0	8.93	11.860				
1,700.0	1,692.2	1,687.4	1,670.0	5.0	6.2	37.81	139.3	142.5	110.5	100.8	9.67	11.422				
1,800.0	1,790.3	1,787.2	1,767.4	5.5	6.7	39.92	155.2	157.1	115.2	104.8	10.45	11.026				
1,900.0	1,888.3	1,887.0	1,864.9	6.0	7.3	41.86	171.2	171.7	120.1	108.8	11.26	10.668				
2,000.0	1,986.3	1,986.8	1,962.3	6.4	7.8	43.65	187.1	186.3	125.1	113.0	12.09	10.343				
2,100.0	2,084.4	2,086.6	2,059.7	6.9	8.4	45.30	203.0	200.9	130.2	117.3	12.96	10.050				
2,200.0	2,182.4	2,186.4	2,157.2	7.4	8.9	46.82	219.0	215.5	135.4	121.6	13.84	9.785				
2,300.0	2,280.5	2,286.2	2,254.6	7.9	9.5	48.23	234.9	230.0	140.7	126.0	14.74	9.546				
2,400.0	2,378.5	2,386.0	2,352.1	8.4	10.1	49.54	250.8	244.6	146.1	130.5	15.66	9.329				
2,500.0	2,476.5	2,485.8	2,449.5	8.9	10.6	50.75	266.8	259.2	151.6	135.0	16.60	9.132				
2,600.0	2,574.6	2,585.6	2,546.9	9.4	11.2	51.88	282.7	273.8	157.1	139.5	17.55	8.953				
2,700.0	2,672.6	2,685.4	2,644.4	9.9	11.7	52.93	298.6	288.4	162.7	144.1	18.50	8.790				
2,800.0	2,770.6	2,785.2	2,741.8	10.4	12.3	53.92	314.6	303.0	168.3	148.8	19.47	8.642				
2,900.0	2,868.7	2,885.0	2,839.2	10.9	12.9	54.84	330.5	317.6	173.9	153.5	20.45	8.506				
3,000.0	2,966.7	2,984.8	2,936.7	11.4	13.4	55.70	346.4	332.1	179.7	158.2	21.43	8.382				
3,100.0	3,064.7	3,084.6	3,034.1	11.9	14.0	56.50	362.4	346.7	185.4	163.0	22.43	8.267				
3,200.0	3,162.8	3,184.4	3,131.5	12.4	14.5	57.26	378.3	361.3	191.2	167.8	23.42	8.162				
3,300.0	3,260.8	3,284.2	3,229.0	12.9	15.1	57.97	394.3	375.9	197.0	172.6	24.42	8.066				
3,400.0	3,358.8	3,384.0	3,326.4	13.5	15.7	58.65	410.2	390.5	202.8	177.4	25.43	7.976				
3,500.0	3,456.9	3,483.8	3,423.8	14.0	16.2	59.28	426.1	405.1	208.7	182.3	26.44	7.893				
3,600.0	3,554.9	3,583.6	3,521.3	14.5	16.8	59.88	442.1	419.6	214.6	187.2	27.46	7.817				
3,700.0	3,652.9	3,683.4	3,618.7	15.0	17.4	60.45	458.0	434.2	220.5	192.1	28.47	7.745				
3,783.6	3,734.9	3,768.0	3,701.4	15.4	17.8	60.92	471.4	446.5	225.4	196.1	29.32	7.688				
3,800.0	3,751.0	3,785.4	3,718.4	15.5	17.9	61.05	474.1	449.0	226.3	196.8	29.48	7.676				
3,900.0	3,849.4	3,891.2	3,822.4	15.9	18.3	61.74	488.5	462.2	231.1	200.8	30.32	7.623				
4,000.0	3,948.5	3,997.2	3,927.1	16.2	18.7	62.28	500.1	472.8	235.0	203.9	31.04	7.569				
4,100.0	4,047.9	4,103.2	4,032.5	16.5	19.0	62.67	508.9	480.8	237.9	206.2	31.66	7.514				
4,200.0	4,147.6	4,209.3	4,138.3	16.8	19.3	62.93	514.7	486.2	239.9	207.7	32.17	7.455				
4,300.0	4,247.6	4,315.5	4,244.3	17.0	19.5	63.05	517.7	488.9	240.9	208.3	32.58	7.393				
4,352.4	4,300.0	4,371.1	4,300.0	17.1	19.6	88.88	518.1	489.2	241.0	208.2	32.75	7.359				
4,400.0	4,347.6	4,418.7	4,347.6	17.1	19.6	88.88	518.1	489.2	241.0	208.1	32.91	7.323				
4,500.0	4,447.6	4,518.7	4,447.6	17.3	19.8	88.88	518.1	489.2	241.0	207.7	33.28	7.242				
4,600.0	4,547.6	4,618.7	4,547.6	17.5	19.9	88.88	518.1	489.2	241.0	207.3	33.65	7.162				
4,700.0	4,647.6	4,718.7	4,647.6	17.7	20.1	88.88	518.1	489.2	241.0	207.0	34.02	7.083				

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 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
4,800.0	4,747.6	4,818.7	4,747.6	17.9	20.3	88.88	518.1	489.2	241.0	206.6	34.40	7.005			
4,900.0	4,847.6	4,918.7	4,847.6	18.0	20.4	88.88	518.1	489.2	241.0	206.2	34.79	6.927			
5,000.0	4,947.6	5,018.7	4,947.6	18.2	20.6	88.88	518.1	489.2	241.0	205.8	35.18	6.850			
5,100.0	5,047.6	5,118.7	5,047.6	18.4	20.8	88.88	518.1	489.2	241.0	205.4	35.57	6.775			
5,200.0	5,147.6	5,218.7	5,147.6	18.6	21.0	88.88	518.1	489.2	241.0	205.0	35.97	6.700			
5,300.0	5,247.6	5,318.7	5,247.6	18.8	21.1	88.88	518.1	489.2	241.0	204.6	36.37	6.625			
5,400.0	5,347.6	5,418.7	5,347.6	19.0	21.3	88.88	518.1	489.2	241.0	204.2	36.78	6.552			
5,500.0	5,447.6	5,518.7	5,447.6	19.2	21.5	88.88	518.1	489.2	241.0	203.8	37.19	6.480			
5,600.0	5,547.6	5,618.7	5,547.6	19.4	21.7	88.88	518.1	489.2	241.0	203.4	37.60	6.409			
5,700.0	5,647.6	5,718.7	5,647.6	19.6	21.8	88.88	518.1	489.2	241.0	203.0	38.02	6.339			
5,800.0	5,747.6	5,818.7	5,747.6	19.8	22.0	88.88	518.1	489.2	241.0	202.6	38.44	6.269			
5,900.0	5,847.6	5,918.7	5,847.6	20.0	22.2	88.88	518.1	489.2	241.0	202.1	38.86	6.201			
6,000.0	5,947.6	6,018.7	5,947.6	20.3	22.4	88.89	518.1	489.2	241.0	201.7	39.29	6.134			
6,060.8	6,008.4	6,079.8	6,008.6	20.4	22.5	89.55	515.3	489.2	241.0	201.4	39.60	6.085			
6,084.8	6,032.4	6,103.7	6,032.4	20.4	22.5	-90.01	512.9	489.2	240.9	201.2	39.73	6.064			
6,100.0	6,047.6	6,118.8	6,047.4	20.4	22.5	-89.70	510.9	489.2	240.9	201.1	39.81	6.053			
6,150.0	6,097.4	6,168.4	6,096.3	20.5	22.5	-88.69	502.6	489.2	241.0	201.0	39.99	6.026			
6,200.0	6,146.8	6,217.7	6,144.2	20.5	22.5	-87.69	491.1	489.2	241.1	201.0	40.11	6.013			
6,250.0	6,195.6	6,266.8	6,191.1	20.5	22.4	-86.70	476.7	489.2	241.3	201.2	40.15	6.012			
6,300.0	6,243.7	6,315.6	6,236.7	20.4	22.3	-85.73	459.4	489.2	241.6	201.5	40.12	6.023			
6,350.0	6,290.7	6,364.2	6,280.9	20.4	22.2	-84.78	439.3	489.2	242.0	201.9	40.02	6.046			
6,400.0	6,336.5	6,412.5	6,323.6	20.3	22.1	-83.86	416.6	489.2	242.3	202.5	39.86	6.079			
6,450.0	6,380.9	6,460.6	6,364.5	20.1	22.0	-82.98	391.3	489.2	242.8	203.1	39.66	6.122			
6,500.0	6,423.8	6,508.5	6,403.6	20.0	21.9	-82.12	363.7	489.1	243.3	203.9	39.41	6.173			
6,550.0	6,464.8	6,556.2	6,440.7	19.9	21.7	-81.30	333.8	489.1	243.8	204.6	39.12	6.231			
6,600.0	6,503.9	6,603.6	6,475.8	19.7	21.6	-80.52	301.8	489.1	244.3	205.5	38.83	6.292			
6,650.0	6,540.8	6,650.0	6,508.0	19.6	21.4	-79.80	268.4	489.1	244.9	206.3	38.53	6.355			
6,700.0	6,575.5	6,698.1	6,539.2	19.4	21.3	-79.10	231.9	489.0	245.4	207.2	38.25	6.417			
6,750.0	6,607.8	6,745.0	6,567.4	19.3	21.1	-78.45	194.4	489.0	246.0	208.0	38.00	6.473			
6,800.0	6,637.4	6,791.9	6,593.2	19.2	21.0	-77.86	155.3	489.0	246.5	208.7	37.81	6.520			
6,850.0	6,664.4	6,838.6	6,616.5	19.1	20.9	-77.31	114.8	489.0	247.0	209.3	37.68	6.555			
6,900.0	6,688.6	6,885.1	6,637.2	19.0	20.7	-76.82	73.1	488.9	247.5	209.9	37.65	6.574			
6,950.0	6,709.8	6,931.6	6,655.4	19.0	20.6	-76.38	30.3	488.9	248.0	210.2	37.72	6.573			
7,000.0	6,728.1	6,978.0	6,670.8	19.0	20.5	-76.00	-13.4	488.9	248.4	210.5	37.92	6.550			
7,050.0	6,743.2	7,024.3	6,683.5	19.2	20.5	-75.67	-57.9	488.8	248.7	210.5	38.23	6.506			
7,100.0	6,755.3	7,070.5	6,693.5	19.4	20.5	-75.40	-103.0	488.8	249.0	210.3	38.71	6.434			
7,150.0	6,764.1	7,116.7	6,700.8	19.8	20.6	-75.18	-148.6	488.8	249.3	210.0	39.30	6.344			
7,200.0	6,769.6	7,162.8	6,705.3	20.2	20.9	-75.02	-194.5	488.7	249.5	209.5	40.03	6.233			
7,250.0	6,771.9	7,208.9	6,707.0	20.7	21.3	-74.92	-240.5	488.7	249.6	208.7	40.89	6.105			
7,265.4	6,772.0	7,223.4	6,707.0	20.8	21.4	-74.90	-255.0	488.7	249.6	208.4	41.18	6.062			
7,265.5	6,772.0	7,223.5	6,707.0	20.8	21.5	-74.90	-255.1	488.7	249.6	208.4	41.18	6.062			
7,266.2	6,772.0	7,224.2	6,707.0	20.8	21.5	-74.90	-255.8	488.7	249.6	208.4	41.19	6.061			
7,300.0	6,771.8	7,258.0	6,706.7	21.1	21.8	-74.90	-289.6	488.7	249.6	207.9	41.73	5.982			
7,400.0	6,771.1	7,358.0	6,706.1	22.3	22.9	-74.90	-389.6	488.6	249.6	205.7	43.89	5.687			
7,500.0	6,770.4	7,458.0	6,705.4	23.6	24.2	-74.90	-489.6	488.5	249.6	203.2	46.47	5.372			
7,600.0	6,769.8	7,558.0	6,704.8	25.1	25.7	-74.90	-589.6	488.4	249.6	200.3	49.33	5.060			
7,700.0	6,769.1	7,658.0	6,704.1	26.8	27.3	-74.90	-689.6	488.4	249.6	197.2	52.44	4.760			
7,800.0	6,768.5	7,758.0	6,703.4	28.5	29.0	-74.90	-789.6	488.3	249.6	193.9	55.74	4.478			
7,900.0	6,767.8	7,858.0	6,702.8	30.3	30.7	-74.90	-889.6	488.2	249.6	190.4	59.22	4.215			
8,000.0	6,767.1	7,958.0	6,702.1	32.1	32.6	-74.90	-989.6	488.1	249.6	186.8	62.83	3.973			

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 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<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	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	6,766.5	8,058.0	6,701.5	34.0	34.5	-74.90	-1,089.6	488.1	249.6	183.0	66.56	3.750			
8,200.0	6,765.8	8,158.0	6,700.8	36.0	36.4	-74.90	-1,189.6	488.0	249.6	179.2	70.39	3.546			
8,300.0	6,765.2	8,258.0	6,700.1	38.0	38.4	-74.90	-1,289.6	487.9	249.6	175.3	74.30	3.359			
8,400.0	6,764.5	8,358.0	6,699.5	40.1	40.4	-74.90	-1,389.6	487.8	249.6	171.3	78.28	3.188			
8,500.0	6,763.8	8,458.0	6,698.8	42.2	42.5	-74.90	-1,489.6	487.8	249.6	167.3	82.33	3.032			
8,600.0	6,763.2	8,558.0	6,698.1	44.3	44.6	-74.90	-1,589.6	487.7	249.6	163.2	86.42	2.888			
8,700.0	6,762.5	8,658.0	6,697.5	46.4	46.7	-74.90	-1,689.6	487.6	249.6	159.0	90.56	2.756			
8,800.0	6,761.8	8,758.0	6,696.8	48.6	48.8	-74.90	-1,789.6	487.5	249.6	154.8	94.74	2.634			
8,900.0	6,761.2	8,858.0	6,696.2	50.7	51.0	-74.90	-1,889.6	487.5	249.6	150.6	98.95	2.522			
9,000.0	6,760.5	8,958.0	6,695.5	52.9	53.1	-74.90	-1,989.6	487.4	249.6	146.4	103.20	2.418			
9,100.0	6,759.9	9,058.0	6,694.8	55.1	55.3	-74.90	-2,089.6	487.3	249.6	142.1	107.47	2.322			
9,200.0	6,759.2	9,158.0	6,694.2	57.3	57.5	-74.90	-2,189.6	487.2	249.6	137.8	111.76	2.233			
9,300.0	6,758.5	9,258.0	6,693.5	59.5	59.7	-74.90	-2,289.6	487.2	249.6	133.5	116.07	2.150			
9,400.0	6,757.9	9,358.0	6,692.9	61.8	61.9	-74.90	-2,389.6	487.1	249.6	129.2	120.40	2.073			
9,500.0	6,757.2	9,458.0	6,692.2	64.0	64.2	-74.90	-2,489.6	487.0	249.6	124.8	124.75	2.000			
9,600.0	6,756.6	9,558.0	6,691.5	66.3	66.4	-74.90	-2,589.6	486.9	249.6	120.4	129.12	1.933			
9,700.0	6,755.9	9,658.0	6,690.9	68.5	68.6	-74.90	-2,689.6	486.9	249.6	116.1	133.49	1.869			
9,800.0	6,755.2	9,758.0	6,690.2	70.8	70.9	-74.90	-2,789.6	486.8	249.5	111.7	137.88	1.810			
9,900.0	6,754.6	9,858.0	6,689.5	73.0	73.1	-74.90	-2,889.6	486.7	249.5	107.3	142.28	1.754			
10,000.0	6,753.9	9,958.0	6,688.9	75.3	75.4	-74.90	-2,989.6	486.6	249.5	102.9	146.69	1.701			
10,100.0	6,753.2	10,058.0	6,688.2	77.6	77.7	-74.90	-3,089.6	486.6	249.5	98.4	151.11	1.651			
10,200.0	6,752.6	10,158.0	6,687.6	79.9	79.9	-74.90	-3,189.6	486.5	249.5	94.0	155.54	1.604			
10,300.0	6,751.9	10,258.0	6,686.9	82.1	82.2	-74.90	-3,289.6	486.4	249.5	89.6	159.97	1.560			
10,400.0	6,751.3	10,358.0	6,686.2	84.4	84.5	-74.90	-3,389.6	486.3	249.5	85.1	164.42	1.518			
10,500.0	6,750.6	10,458.0	6,685.6	86.7	86.8	-74.90	-3,489.6	486.2	249.5	80.7	168.86	1.478 Level 3			
10,600.0	6,749.9	10,558.0	6,684.9	89.0	89.0	-74.90	-3,589.6	486.2	249.5	76.2	173.32	1.440 Level 3			
10,700.0	6,749.3	10,658.0	6,684.3	91.3	91.3	-74.89	-3,689.6	486.1	249.5	71.7	177.78	1.404 Level 3			
10,800.0	6,748.6	10,758.0	6,683.6	93.6	93.6	-74.89	-3,789.6	486.0	249.5	67.3	182.24	1.369 Level 3			
10,900.0	6,748.0	10,858.0	6,682.9	95.9	95.9	-74.89	-3,889.6	485.9	249.5	62.8	186.71	1.336 Level 3			
11,000.0	6,747.3	10,958.0	6,682.3	98.2	98.2	-74.89	-3,989.6	485.9	249.5	58.3	191.19	1.305 Level 3			
11,100.0	6,746.6	11,058.0	6,681.6	100.5	100.5	-74.89	-4,089.6	485.8	249.5	53.8	195.67	1.275 Level 3			
11,200.0	6,746.0	11,158.0	6,681.0	102.8	102.8	-74.89	-4,189.6	485.7	249.5	49.4	200.15	1.247 Level 2			
11,300.0	6,745.3	11,258.0	6,680.3	105.1	105.1	-74.89	-4,289.6	485.6	249.5	44.9	204.64	1.219 Level 2			
11,400.0	6,744.6	11,358.0	6,679.6	107.5	107.4	-74.89	-4,389.6	485.6	249.5	40.4	209.13	1.193 Level 2			
11,500.0	6,744.0	11,458.0	6,679.0	109.8	109.7	-74.89	-4,489.6	485.5	249.5	35.9	213.62	1.168 Level 2			
11,600.0	6,743.3	11,558.0	6,678.3	112.1	112.1	-74.89	-4,589.6	485.4	249.5	31.4	218.11	1.144 Level 2			
11,700.0	6,742.7	11,658.0	6,677.6	114.4	114.4	-74.89	-4,689.5	485.3	249.5	26.9	222.61	1.121 Level 2			
11,800.0	6,742.0	11,758.0	6,677.0	116.7	116.7	-74.89	-4,789.5	485.3	249.5	22.4	227.11	1.099 Level 2			
11,900.0	6,741.3	11,858.0	6,676.3	119.0	119.0	-74.89	-4,889.5	485.2	249.5	17.9	231.62	1.077 Level 2			
12,000.0	6,740.7	11,958.0	6,675.7	121.4	121.3	-74.89	-4,989.5	485.1	249.5	13.4	236.12	1.057 Level 2			
12,100.0	6,740.0	12,058.0	6,675.0	123.7	123.6	-74.89	-5,089.5	485.0	249.5	8.8	240.63	1.037 Level 2			
12,200.0	6,739.4	12,158.0	6,674.3	126.0	126.0	-74.89	-5,189.5	485.0	249.5	4.3	245.14	1.018 Level 2			
12,300.0	6,738.7	12,258.0	6,673.7	128.3	128.3	-74.89	-5,289.5	484.9	249.5	-0.2	249.65	0.999 Level 1			
12,400.0	6,738.0	12,358.0	6,673.0	130.6	130.6	-74.89	-5,389.5	484.8	249.5	-4.7	254.17	0.982 Level 1			
12,500.0	6,737.4	12,458.0	6,672.4	133.0	132.9	-74.89	-5,489.5	484.7	249.5	-9.2	258.68	0.964 Level 1			
12,600.0	6,736.7	12,558.0	6,671.7	135.3	135.2	-74.89	-5,589.5	484.7	249.5	-13.7	263.20	0.948 Level 1			
12,700.0	6,736.0	12,658.0	6,671.0	137.6	137.6	-74.89	-5,689.5	484.6	249.5	-18.3	267.72	0.932 Level 1			
12,800.0	6,735.4	12,758.0	6,670.4	140.0	139.9	-74.89	-5,789.5	484.5	249.5	-22.8	272.24	0.916 Level 1			
12,900.0	6,734.7	12,858.0	6,669.7	142.3	142.2	-74.89	-5,889.5	484.4	249.5	-27.3	276.76	0.901 Level 1			
13,000.0	6,734.1	12,958.0	6,669.0	144.6	144.5	-74.89	-5,989.5	484.4	249.5	-31.8	281.28	0.887 Level 1			
13,100.0	6,733.4	13,058.0	6,668.4	146.9	146.9	-74.89	-6,089.5	484.3	249.4	-36.4	285.81	0.873 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 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<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								
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	6,732.7	13,158.0	6,667.7	149.3	149.2	-74.89	-6,189.5	484.2	249.4	-40.9	290.34	0.859	Level 1		
13,300.0	6,732.1	13,258.0	6,667.1	151.6	151.5	-74.89	-6,289.5	484.1	249.4	-45.4	294.86	0.846	Level 1		
13,400.0	6,731.4	13,358.0	6,666.4	153.9	153.9	-74.89	-6,389.5	484.1	249.4	-50.0	299.39	0.833	Level 1		
13,500.0	6,730.8	13,458.0	6,665.7	156.3	156.2	-74.89	-6,489.5	484.0	249.4	-54.5	303.92	0.821	Level 1		
13,600.0	6,730.1	13,558.0	6,665.1	158.6	158.5	-74.89	-6,589.5	483.9	249.4	-59.0	308.45	0.809	Level 1		
13,700.0	6,729.4	13,658.0	6,664.4	160.9	160.8	-74.89	-6,689.5	483.8	249.4	-63.6	312.98	0.797	Level 1		
13,800.0	6,728.8	13,758.0	6,663.8	163.3	163.2	-74.89	-6,789.5	483.7	249.4	-68.1	317.51	0.786	Level 1		
13,900.0	6,728.1	13,858.0	6,663.1	165.6	165.5	-74.89	-6,889.5	483.7	249.4	-72.6	322.05	0.774	Level 1		
14,000.0	6,727.4	13,958.0	6,662.4	167.9	167.8	-74.89	-6,989.5	483.6	249.4	-77.2	326.58	0.764	Level 1		
14,049.5	6,727.1	14,007.5	6,662.1	169.1	169.0	-74.89	-7,039.0	483.6	249.4	-79.4	328.82	0.759	Level 1		
14,067.7	6,727.0	14,023.3	6,662.0	169.5	169.4	-74.89	-7,054.8	483.5	249.4	-80.2	329.59	0.757	Level 1, ES, SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29U-343 - Wellbore #1 - Plan #2 (1-25-17)											Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
0.0	0.0	0.0	0.0	0.0	0.0	90.70	-0.4	30.1	30.1						
100.0	100.0	99.0	99.0	0.1	0.1	90.70	-0.4	30.1	30.1	29.8	0.27	109.844			
200.0	200.0	199.0	199.0	0.4	0.4	90.70	-0.4	30.1	30.1	29.3	0.82	36.554	CC, ES		
300.0	300.0	298.4	298.4	0.7	0.7	89.26	0.4	31.1	31.1	29.7	1.37	22.732			
400.0	400.0	397.6	397.5	1.0	1.0	85.41	2.7	34.1	34.3	32.4	1.92	17.872			
500.0	500.0	496.6	496.3	1.2	1.2	80.39	6.6	39.2	39.9	37.4	2.47	16.117			
600.0	600.0	595.1	594.4	1.5	1.6	75.39	12.1	46.3	48.1	45.0	3.03	15.841			
700.0	700.0	693.2	691.8	1.8	1.9	71.05	19.0	55.3	58.9	55.3	3.60	16.377			
800.0	800.0	790.6	788.2	2.1	2.3	67.54	27.4	66.2	72.5	68.3	4.17	17.381			
900.0	900.0	887.4	883.7	2.3	2.7	39.37	37.2	79.0	87.7	82.9	4.72	18.555			
1,000.0	999.9	983.8	978.3	2.6	3.1	38.28	48.4	93.7	103.4	98.1	5.29	19.525			
1,100.0	1,099.7	1,079.7	1,072.0	2.9	3.6	37.97	61.0	110.1	119.5	113.6	5.88	20.337			
1,200.0	1,199.3	1,175.2	1,164.7	3.2	4.2	38.16	75.0	128.3	136.0	129.5	6.47	21.010			
1,300.0	1,298.6	1,271.7	1,257.7	3.5	4.8	38.70	90.5	148.4	152.7	145.6	7.10	21.518			
1,400.0	1,397.5	1,370.5	1,352.9	3.8	5.4	39.66	106.5	169.4	167.9	160.2	7.75	21.676			
1,500.0	1,496.1	1,469.5	1,448.3	4.2	6.1	41.00	122.7	190.4	181.2	172.8	8.44	21.466			
1,558.5	1,553.5	1,527.5	1,504.2	4.4	6.4	41.94	132.1	202.7	188.1	179.3	8.87	21.211			
1,600.0	1,594.2	1,568.6	1,543.9	4.6	6.7	42.68	138.8	211.4	192.8	183.7	9.19	20.994			
1,700.0	1,692.2	1,667.8	1,639.4	5.0	7.4	44.31	155.0	232.4	204.3	194.4	9.97	20.493			
1,800.0	1,790.3	1,767.0	1,735.0	5.5	8.0	45.77	171.1	253.5	215.9	205.2	10.79	20.022			
1,900.0	1,888.3	1,866.2	1,830.6	6.0	8.7	47.08	187.2	274.5	227.7	216.1	11.63	19.585			
2,000.0	1,986.3	1,965.4	1,926.2	6.4	9.4	48.26	203.4	295.5	239.6	227.1	12.49	19.181			
2,100.0	2,084.4	2,064.5	2,021.7	6.9	10.0	49.33	219.5	316.6	251.5	238.1	13.37	18.810			
2,200.0	2,182.4	2,163.7	2,117.3	7.4	10.7	50.30	235.7	337.6	263.5	249.3	14.27	18.468			
2,300.0	2,280.5	2,262.9	2,212.9	7.9	11.4	51.19	251.8	358.6	275.6	260.4	15.18	18.155			
2,400.0	2,378.5	2,362.1	2,308.4	8.4	12.0	52.00	268.0	379.6	287.8	271.7	16.11	17.867			
2,500.0	2,476.5	2,461.2	2,404.0	8.9	12.7	52.75	284.1	400.7	300.0	282.9	17.04	17.602			
2,600.0	2,574.6	2,560.4	2,499.6	9.4	13.4	53.44	300.3	421.7	312.2	294.3	17.99	17.359			
2,700.0	2,672.6	2,659.6	2,595.1	9.9	14.1	54.08	316.4	442.7	324.5	305.6	18.94	17.135			
2,800.0	2,770.6	2,758.8	2,690.7	10.4	14.7	54.67	332.5	463.8	336.9	317.0	19.90	16.928			
2,900.0	2,868.7	2,858.0	2,786.3	10.9	15.4	55.22	348.7	484.8	349.2	328.4	20.87	16.737			
3,000.0	2,966.7	2,957.1	2,881.8	11.4	16.1	55.73	364.8	505.8	361.6	339.8	21.84	16.559			
3,100.0	3,064.7	3,056.3	2,977.4	11.9	16.8	56.20	381.0	526.9	374.1	351.2	22.82	16.395			
3,200.0	3,162.8	3,155.5	3,073.0	12.4	17.4	56.65	397.1	547.9	386.5	362.7	23.80	16.242			
3,300.0	3,260.8	3,254.7	3,168.6	12.9	18.1	57.07	413.3	568.9	399.0	374.2	24.78	16.100			
3,400.0	3,358.8	3,353.9	3,264.1	13.5	18.8	57.46	429.4	590.0	411.5	385.7	25.77	15.967			
3,500.0	3,456.9	3,453.0	3,359.7	14.0	19.5	57.83	445.6	611.0	424.0	397.2	26.76	15.842			
3,600.0	3,554.9	3,555.5	3,458.4	14.5	20.1	58.20	462.2	632.6	436.4	408.6	27.76	15.719			
3,700.0	3,652.9	3,669.7	3,569.3	15.0	20.7	58.80	478.8	654.3	446.5	417.7	28.79	15.511			
3,783.6	3,734.9	3,765.5	3,663.1	15.4	21.1	59.53	490.7	669.8	452.5	422.8	29.66	15.257			
3,800.0	3,751.0	3,784.4	3,681.6	15.5	21.2	59.71	492.8	672.6	453.4	423.6	29.82	15.204			
3,900.0	3,849.4	3,899.2	3,795.0	15.9	21.7	60.69	504.1	687.3	458.2	427.5	30.71	14.921			
4,000.0	3,948.5	4,014.2	3,909.1	16.2	22.0	61.52	512.6	698.3	461.4	430.0	31.48	14.658			
4,100.0	4,047.9	4,129.2	4,023.7	16.5	22.3	62.21	518.3	705.8	463.1	431.0	32.14	14.409			
4,200.0	4,147.6	4,244.2	4,138.6	16.8	22.5	62.76	521.2	709.6	463.2	430.6	32.69	14.171			
4,300.0	4,247.6	4,352.2	4,246.6	17.0	22.6	63.12	521.6	710.1	462.1	429.0	33.12	13.954			
4,352.4	4,300.0	4,404.6	4,299.0	17.1	22.7	88.98	521.6	710.1	461.9	428.6	33.27	13.882			
4,400.0	4,347.6	4,452.2	4,346.6	17.1	22.7	88.98	521.6	710.1	461.9	428.4	33.43	13.815			
4,500.0	4,447.6	4,552.2	4,446.6	17.3	22.9	88.98	521.6	710.1	461.9	428.1	33.79	13.669			
4,600.0	4,547.6	4,652.2	4,546.6	17.5	23.0	88.98	521.6	710.1	461.9	427.7	34.15	13.524			
4,700.0	4,647.6	4,752.2	4,646.6	17.7	23.2	88.98	521.6	710.1	461.9	427.3	34.52	13.380			

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 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<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			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
4,800.0	4,747.6	4,852.2	4,746.6	17.9	23.3	88.98	521.6	710.1	461.9	427.0	34.89	13.238			
4,900.0	4,847.6	4,952.2	4,846.6	18.0	23.4	88.98	521.6	710.1	461.9	426.6	35.27	13.097			
5,000.0	4,947.6	5,052.2	4,946.6	18.2	23.6	88.98	521.6	710.1	461.9	426.2	35.65	12.957			
5,100.0	5,047.6	5,152.2	5,046.6	18.4	23.7	88.98	521.6	710.1	461.9	425.8	36.03	12.818			
5,200.0	5,147.6	5,252.2	5,146.6	18.6	23.9	88.98	521.6	710.1	461.9	425.4	36.42	12.681			
5,300.0	5,247.6	5,352.2	5,246.6	18.8	24.0	88.98	521.6	710.1	461.9	425.0	36.82	12.545			
5,400.0	5,347.6	5,452.2	5,346.6	19.0	24.2	88.98	521.6	710.1	461.9	424.7	37.21	12.411			
5,500.0	5,447.6	5,552.2	5,446.6	19.2	24.4	88.98	521.6	710.1	461.9	424.2	37.61	12.279			
5,600.0	5,547.6	5,652.2	5,546.6	19.4	24.5	88.98	521.6	710.1	461.9	423.8	38.02	12.148			
5,700.0	5,647.6	5,752.2	5,646.6	19.6	24.7	88.98	521.6	710.1	461.9	423.4	38.43	12.019			
5,800.0	5,747.6	5,852.2	5,746.6	19.8	24.8	88.98	521.6	710.1	461.9	423.0	38.84	11.891			
5,900.0	5,847.6	5,952.2	5,846.6	20.0	25.0	88.98	521.6	710.1	461.9	422.6	39.26	11.765			
6,000.0	5,947.6	6,052.2	5,946.6	20.3	25.2	88.98	521.6	710.1	461.9	422.2	39.67	11.641			
6,060.8	6,008.4	6,113.0	6,007.4	20.4	25.3	88.98	521.6	710.1	461.9	421.9	39.93	11.567			
6,100.0	6,047.6	6,152.6	6,047.0	20.4	25.3	-91.07	520.6	710.1	461.9	421.8	40.07	11.527			
6,150.0	6,097.4	6,203.2	6,097.4	20.5	25.4	-91.07	516.4	710.1	461.9	421.7	40.15	11.503			
6,200.0	6,146.8	6,253.7	6,147.3	20.5	25.4	-91.06	508.8	710.1	461.9	421.7	40.17	11.498			
6,250.0	6,195.6	6,304.3	6,196.7	20.5	25.3	-91.06	498.0	710.1	461.9	421.7	40.12	11.511			
6,300.0	6,243.7	6,354.8	6,245.3	20.4	25.3	-91.04	483.9	710.1	461.9	421.9	40.02	11.542			
6,350.0	6,290.7	6,405.4	6,292.8	20.4	25.2	-91.02	466.6	710.1	461.9	422.0	39.86	11.588			
6,400.0	6,336.5	6,455.9	6,339.0	20.3	25.1	-91.00	446.3	710.0	461.9	422.2	39.66	11.647			
6,450.0	6,380.9	6,506.4	6,383.8	20.1	25.0	-90.98	422.9	710.0	461.9	422.5	39.42	11.717			
6,500.0	6,423.8	6,556.9	6,426.9	20.0	24.9	-90.95	396.6	710.0	461.9	422.7	39.16	11.795			
6,550.0	6,464.8	6,607.4	6,468.2	19.9	24.8	-90.91	367.6	710.0	461.9	423.0	38.89	11.877			
6,600.0	6,503.9	6,657.9	6,507.4	19.7	24.6	-90.87	335.9	710.0	461.9	423.3	38.62	11.959			
6,650.0	6,540.8	6,708.3	6,544.5	19.6	24.5	-90.83	301.6	710.0	461.9	423.5	38.37	12.037			
6,700.0	6,575.5	6,758.8	6,579.2	19.4	24.3	-90.79	265.1	709.9	461.9	423.7	38.15	12.105			
6,750.0	6,607.8	6,809.2	6,611.4	19.3	24.1	-90.74	226.3	709.9	461.9	423.9	37.99	12.159			
6,800.0	6,637.4	6,859.5	6,641.0	19.2	24.0	-90.69	185.5	709.9	461.9	424.0	37.88	12.193			
6,850.0	6,664.4	6,909.9	6,667.8	19.1	23.9	-90.63	142.9	709.9	461.9	424.0	37.86	12.201			
6,900.0	6,688.6	6,960.2	6,691.7	19.0	23.7	-90.58	98.7	709.9	461.9	424.0	37.92	12.180			
6,950.0	6,709.8	7,010.5	6,712.7	19.0	23.6	-90.52	53.0	709.8	461.9	423.8	38.09	12.127			
7,000.0	6,728.1	7,060.8	6,730.5	19.0	23.5	-90.46	6.0	709.8	461.9	423.5	38.37	12.039			
7,050.0	6,743.2	7,111.0	6,745.3	19.2	23.5	-90.40	-42.0	709.8	461.9	423.2	38.76	11.917			
7,100.0	6,755.3	7,161.2	6,756.8	19.4	23.5	-90.33	-90.8	709.7	461.9	422.6	39.28	11.760			
7,150.0	6,764.1	7,211.3	6,765.2	19.8	23.5	-90.27	-140.3	709.7	461.9	422.0	39.91	11.574			
7,200.0	6,769.6	7,261.4	6,770.2	20.2	23.6	-90.20	-190.1	709.7	461.9	421.3	40.66	11.360			
7,250.0	6,771.9	7,311.5	6,772.0	20.7	23.9	-90.13	-240.2	709.7	462.0	420.4	41.52	11.126			
7,265.4	6,772.0	7,326.9	6,771.9	20.8	23.9	-90.12	-255.5	709.7	462.0	420.1	41.81	11.049			
7,265.5	6,772.0	7,327.0	6,771.9	20.8	23.9	-90.12	-255.6	709.7	462.0	420.1	41.81	11.049			
7,266.2	6,772.0	7,327.7	6,771.9	20.8	23.9	-90.12	-256.3	709.6	462.0	420.1	41.82	11.045			
7,300.0	6,771.8	7,361.5	6,771.7	21.1	24.1	-90.12	-290.2	709.6	462.0	419.6	42.41	10.893			
7,400.0	6,771.1	7,461.5	6,771.1	22.3	25.0	-90.12	-390.2	709.6	462.0	417.3	44.64	10.348			
7,500.0	6,770.4	7,561.5	6,770.4	23.6	26.1	-90.12	-490.2	709.5	462.0	414.8	47.24	9.781			
7,600.0	6,769.8	7,661.5	6,769.7	25.1	27.4	-90.12	-590.2	709.5	462.0	411.9	50.13	9.215			
7,700.0	6,769.1	7,761.5	6,769.1	26.8	28.9	-90.12	-690.2	709.4	462.0	408.7	53.29	8.670			
7,800.0	6,768.5	7,861.5	6,768.4	28.5	30.5	-90.12	-790.2	709.3	462.0	405.4	56.66	8.154			
7,900.0	6,767.8	7,961.5	6,767.7	30.3	32.2	-90.12	-890.1	709.3	462.1	401.8	60.21	7.674			
8,000.0	6,767.1	8,061.5	6,767.1	32.1	33.9	-90.12	-990.1	709.2	462.1	398.2	63.91	7.230			
8,100.0	6,766.5	8,161.5	6,766.4	34.0	35.8	-90.12	-1,090.1	709.2	462.1	394.4	67.74	6.822			

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 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29U-343 - Wellbore #1 - Plan #2 (1-25-17)										Offset Site Error:		0.0 ft
Survey Program: 0-MWD												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
8,200.0	6,765.8	8,261.5	6,765.7	36.0	37.6	-90.12	-1,190.1	709.1	462.1	390.4	71.67	6.448		
8,300.0	6,765.2	8,361.5	6,765.1	38.0	39.6	-90.11	-1,290.1	709.1	462.1	386.4	75.68	6.106		
8,400.0	6,764.5	8,461.5	6,764.4	40.1	41.5	-90.11	-1,390.1	709.0	462.1	382.4	79.78	5.793		
8,500.0	6,763.8	8,561.5	6,763.8	42.2	43.6	-90.11	-1,490.1	709.0	462.2	378.2	83.93	5.506		
8,600.0	6,763.2	8,661.5	6,763.1	44.3	45.6	-90.11	-1,590.1	708.9	462.2	374.0	88.14	5.243		
8,700.0	6,762.5	8,761.5	6,762.4	46.4	47.7	-90.11	-1,690.1	708.8	462.2	369.8	92.40	5.002		
8,800.0	6,761.8	8,861.5	6,761.8	48.6	49.7	-90.11	-1,790.1	708.8	462.2	365.5	96.70	4.780		
8,900.0	6,761.2	8,961.5	6,761.1	50.7	51.9	-90.11	-1,890.1	708.7	462.2	361.2	101.04	4.575		
9,000.0	6,760.5	9,061.5	6,760.4	52.9	54.0	-90.11	-1,990.1	708.7	462.2	356.8	105.41	4.385		
9,100.0	6,759.9	9,161.5	6,759.8	55.1	56.1	-90.11	-2,090.1	708.6	462.3	352.5	109.80	4.210		
9,200.0	6,759.2	9,261.5	6,759.1	57.3	58.3	-90.11	-2,190.1	708.6	462.3	348.0	114.22	4.047		
9,300.0	6,758.5	9,361.5	6,758.5	59.5	60.5	-90.11	-2,290.1	708.5	462.3	343.6	118.66	3.896		
9,400.0	6,757.9	9,461.5	6,757.8	61.8	62.7	-90.11	-2,390.1	708.4	462.3	339.2	123.12	3.755		
9,500.0	6,757.2	9,561.5	6,757.1	64.0	64.9	-90.11	-2,490.1	708.4	462.3	334.7	127.60	3.623		
9,600.0	6,756.6	9,661.5	6,756.5	66.3	67.1	-90.11	-2,590.1	708.3	462.3	330.2	132.09	3.500		
9,700.0	6,755.9	9,761.5	6,755.8	68.5	69.3	-90.11	-2,690.1	708.3	462.3	325.7	136.60	3.385		
9,800.0	6,755.2	9,861.5	6,755.1	70.8	71.5	-90.11	-2,790.1	708.2	462.4	321.2	141.12	3.276		
9,900.0	6,754.6	9,961.5	6,754.5	73.0	73.8	-90.11	-2,890.1	708.2	462.4	316.7	145.65	3.175		
10,000.0	6,753.9	10,061.5	6,753.8	75.3	76.0	-90.11	-2,990.1	708.1	462.4	312.2	150.20	3.079		
10,100.0	6,753.2	10,161.5	6,753.1	77.6	78.3	-90.11	-3,090.1	708.0	462.4	307.7	154.75	2.988		
10,200.0	6,752.6	10,261.5	6,752.5	79.9	80.5	-90.11	-3,190.1	708.0	462.4	303.1	159.31	2.903		
10,300.0	6,751.9	10,361.5	6,751.8	82.1	82.8	-90.11	-3,290.1	707.9	462.4	298.6	163.88	2.822		
10,400.0	6,751.3	10,461.5	6,751.2	84.4	85.0	-90.11	-3,390.1	707.9	462.5	294.0	168.45	2.745		
10,500.0	6,750.6	10,561.5	6,750.5	86.7	87.3	-90.11	-3,490.1	707.8	462.5	289.4	173.04	2.673		
10,600.0	6,749.9	10,661.5	6,749.8	89.0	89.6	-90.11	-3,590.1	707.8	462.5	284.9	177.62	2.604		
10,700.0	6,749.3	10,761.5	6,749.2	91.3	91.9	-90.11	-3,690.1	707.7	462.5	280.3	182.22	2.538		
10,800.0	6,748.6	10,861.5	6,748.5	93.6	94.1	-90.11	-3,790.1	707.6	462.5	275.7	186.82	2.476		
10,900.0	6,748.0	10,961.5	6,747.8	95.9	96.4	-90.11	-3,890.1	707.6	462.5	271.1	191.42	2.416		
11,000.0	6,747.3	11,061.5	6,747.2	98.2	98.7	-90.11	-3,990.1	707.5	462.6	266.5	196.03	2.360		
11,100.0	6,746.6	11,161.5	6,746.5	100.5	101.0	-90.11	-4,090.1	707.5	462.6	261.9	200.65	2.305		
11,200.0	6,746.0	11,261.5	6,745.9	102.8	103.3	-90.11	-4,190.1	707.4	462.6	257.3	205.27	2.254		
11,300.0	6,745.3	11,361.5	6,745.2	105.1	105.6	-90.11	-4,290.1	707.4	462.6	252.7	209.89	2.204		
11,400.0	6,744.6	11,461.5	6,744.5	107.5	107.9	-90.11	-4,390.1	707.3	462.6	248.1	214.51	2.157		
11,500.0	6,744.0	11,561.5	6,743.9	109.8	110.2	-90.11	-4,490.1	707.3	462.6	243.5	219.14	2.111		
11,600.0	6,743.3	11,661.5	6,743.2	112.1	112.5	-90.11	-4,590.1	707.2	462.7	238.9	223.77	2.067		
11,700.0	6,742.7	11,761.5	6,742.5	114.4	114.8	-90.11	-4,690.1	707.1	462.7	234.3	228.41	2.026		
11,800.0	6,742.0	11,861.5	6,741.9	116.7	117.1	-90.11	-4,790.1	707.1	462.7	229.6	233.05	1.985		
11,900.0	6,741.3	11,961.5	6,741.2	119.0	119.4	-90.11	-4,890.1	707.0	462.7	225.0	237.69	1.947		
12,000.0	6,740.7	12,061.5	6,740.5	121.4	121.7	-90.11	-4,990.1	707.0	462.7	220.4	242.33	1.909		
12,100.0	6,740.0	12,161.5	6,739.9	123.7	124.0	-90.11	-5,090.1	706.9	462.7	215.8	246.97	1.874		
12,200.0	6,739.4	12,261.5	6,739.2	126.0	126.3	-90.11	-5,190.1	706.9	462.7	211.1	251.62	1.839		
12,300.0	6,738.7	12,361.5	6,738.6	128.3	128.6	-90.11	-5,290.1	706.8	462.8	206.5	256.27	1.806		
12,400.0	6,738.0	12,461.5	6,737.9	130.6	131.0	-90.11	-5,390.0	706.7	462.8	201.9	260.92	1.774		
12,500.0	6,737.4	12,561.5	6,737.2	133.0	133.3	-90.11	-5,490.0	706.7	462.8	197.2	265.57	1.743		
12,600.0	6,736.7	12,661.5	6,736.6	135.3	135.6	-90.11	-5,590.0	706.6	462.8	192.6	270.23	1.713		
12,700.0	6,736.0	12,761.5	6,735.9	137.6	137.9	-90.11	-5,690.0	706.6	462.8	187.9	274.88	1.684		
12,800.0	6,735.4	12,861.5	6,735.2	140.0	140.2	-90.11	-5,790.0	706.5	462.8	183.3	279.54	1.656		
12,900.0	6,734.7	12,961.5	6,734.6	142.3	142.5	-90.11	-5,890.0	706.5	462.9	178.7	284.20	1.629		
13,000.0	6,734.1	13,061.5	6,733.9	144.6	144.9	-90.11	-5,990.0	706.4	462.9	174.0	288.86	1.602		
13,100.0	6,733.4	13,161.5	6,733.2	146.9	147.2	-90.10	-6,090.0	706.3	462.9	169.4	293.52	1.577		
13,200.0	6,732.7	13,261.5	6,732.6	149.3	149.5	-90.10	-6,190.0	706.3	462.9	164.7	298.18	1.552		

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

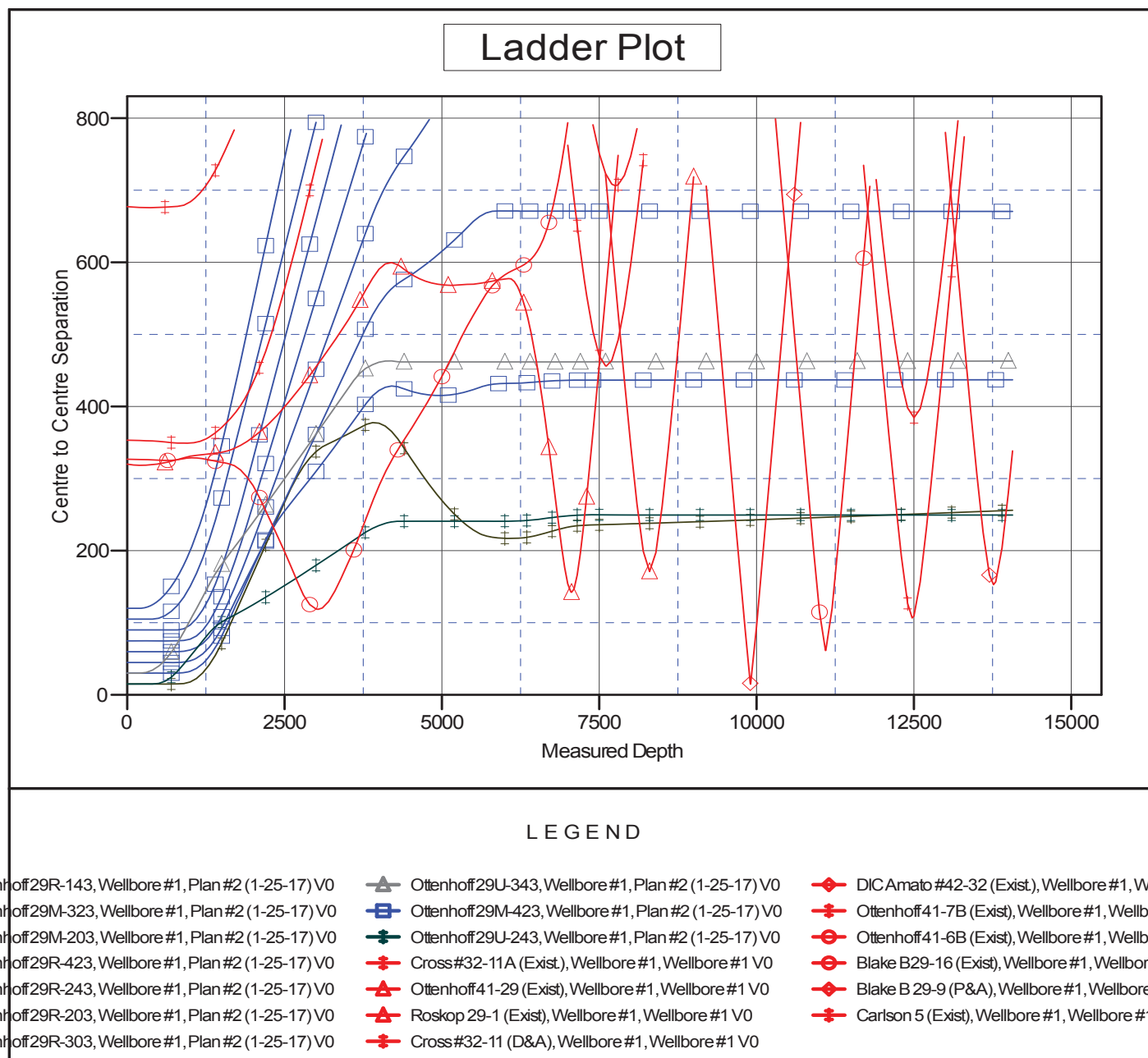
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29U-343 - Wellbore #1 - Plan #2 (1-25-17)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
13,300.0	6,732.1	13,361.5	6,731.9	151.6	151.8	-90.10	-6,290.0	706.2	462.9	160.1	302.85	1.529		
13,400.0	6,731.4	13,461.5	6,731.3	153.9	154.2	-90.10	-6,390.0	706.2	462.9	155.4	307.51	1.505		
13,500.0	6,730.8	13,561.5	6,730.6	156.3	156.5	-90.10	-6,490.0	706.1	463.0	150.8	312.18	1.483 Level 3		
13,600.0	6,730.1	13,661.5	6,729.9	158.6	158.8	-90.10	-6,590.0	706.1	463.0	146.1	316.85	1.461 Level 3		
13,700.0	6,729.4	13,761.5	6,729.3	160.9	161.1	-90.10	-6,690.0	706.0	463.0	141.5	321.52	1.440 Level 3		
13,800.0	6,728.8	13,861.5	6,728.6	163.3	163.5	-90.10	-6,790.0	705.9	463.0	136.8	326.19	1.419 Level 3		
13,900.0	6,728.1	13,961.5	6,727.9	165.6	165.8	-90.10	-6,890.0	705.9	463.0	132.2	330.86	1.399 Level 3		
14,000.0	6,727.4	14,061.5	6,727.3	167.9	168.1	-90.10	-6,990.0	705.8	463.0	127.5	335.53	1.380 Level 3		
14,037.1	6,727.2	14,098.6	6,727.0	168.8	169.0	-90.10	-7,027.1	705.8	463.0	125.8	337.26	1.373 Level 3		
14,067.7	6,727.0	14,123.8	6,726.9	169.5	169.6	-90.10	-7,052.3	705.8	463.1	124.5	338.56	1.368 Level 3, SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Ottenhoff 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

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

Coordinates are relative to: Ottenhoff 29R-323  
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 29R-323
<b>Project:</b>	SEC.29-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Reference Site:</b>	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ottenhoff 29R-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #2 (1-25-17)	<b>Offset TVD Reference:</b>	Offset Datum

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

Coordinates are relative to: Ottenhoff 29R-323  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.60°

