

PETROLEUM DEVELOPMENT CORP DJ Basin

Well Name: Ottenhoff 29M-203

Surface Location: Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W

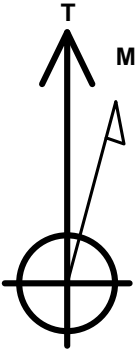
North American Datum 1983 , US State Plane 1983, Colorado Northern Zone

Ground Elevation: 4663.0

+N/-S +E/-W Northing Easting Latitude Longitude Slot
0.0 0.0 1381166.79 3259614.34 40.375960 -104.568160
RKB - 23' WELL @ 4686.0ft (RKB - 23')

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 556'FNL & 1080'FEL, Sec.29	1.0	0.0	0.0	Point
BHL 2624'FSL & 2602'FEL, Sec.32	6677.0	-7376.1	-1473.2	Point



Azimuths to True North
Magnetic North: 8.12°

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

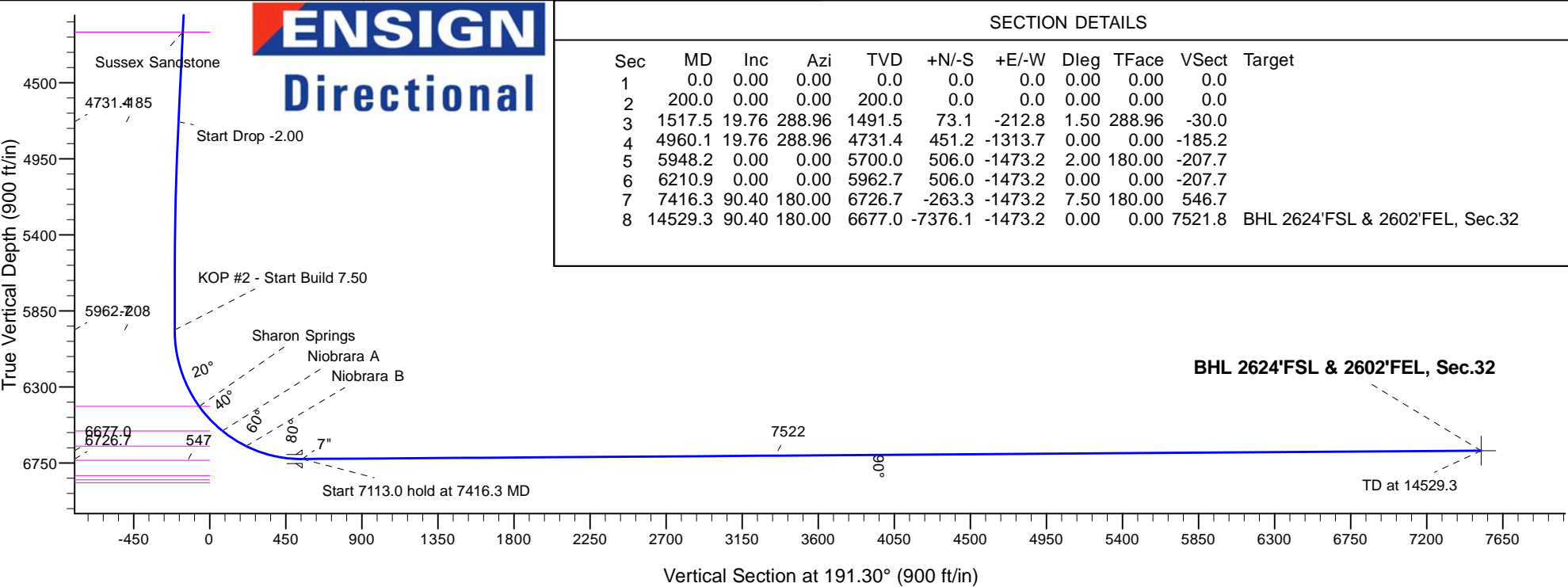
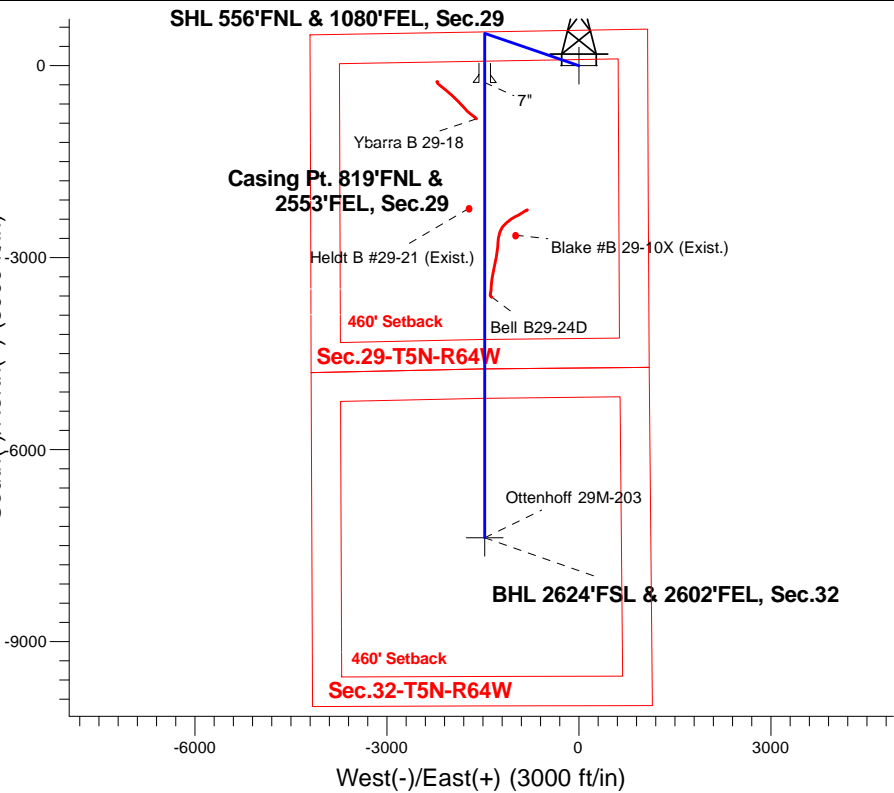
Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W
Ottenhoff 29M-203
Plan #1 (3-14-16)
16:48, March 17 2016

ANNOTATIONS

TVD	MD	Annotation
200.0	200.0	KOP - Start Build 1.50
4731.4	4960.1	Start Drop -2.00
5962.7	6210.9	KOP #2 - Start Build 7.50
6726.7	7416.3	Start 7113.0 hold at 7416.3 MD
6677.0	14529.3	TD at 14529.3

SHL 556'FNL & 1080'FEL, Sec.29

South(-)/North(+) (3000 ft/in)



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	1517.5	19.76	288.96	1491.5	73.1	-212.8	1.50	288.96	-30.0	
4	4960.1	19.76	288.96	4731.4	451.2	-1313.7	0.00	0.00	-185.2	
5	5948.2	0.00	0.00	5700.0	506.0	-1473.2	2.00	180.00	-207.7	
6	6210.9	0.00	0.00	5962.7	506.0	-1473.2	0.00	0.00	-207.7	
7	7416.3	90.40	180.00	6726.7	-263.3	-1473.2	7.50	180.00	546.7	
8	14529.3	90.40	180.00	6677.0	-7376.1	-1473.2	0.00	0.00	7521.8	BHL 2624'FSL & 2602'FEL, Sec.32



PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.29-T5N-R64W

Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W

Ottenhoff 29M-203

Wellbore #1

Plan: Plan #1 (3-14-16)

Standard Planning Report

17 March, 2016

Database:	US_EDM	Local Co-ordinate Reference:	Well Ottenhoff 29M-203
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Project:	SEC.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	North Reference:	True
Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-14-16)		

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

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

Well	Ottenhoff 29M-203					
Well Position	+N/-S	1.4 ft	Northing:	1,381,166.79 usft	Latitude:	40.375960
	+E/-W	-135.1 ft	Easting:	3,259,614.35 usft	Longitude:	-104.568160
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,663.0 ft

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

Design	Plan #1 (3-14-16)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	191.30

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,517.5	19.76	288.96	1,491.5	73.1	-212.8	1.50	1.50	0.00	288.96	
4,960.1	19.76	288.96	4,731.4	451.2	-1,313.7	0.00	0.00	0.00	0.00	
5,948.2	0.00	0.00	5,700.0	506.0	-1,473.2	2.00	-2.00	0.00	180.00	
6,210.9	0.00	0.00	5,962.7	506.0	-1,473.2	0.00	0.00	0.00	0.00	
7,416.3	90.40	180.00	6,726.7	-263.3	-1,473.2	7.50	7.50	0.00	180.00	
14,529.3	90.40	180.00	6,677.0	-7,376.1	-1,473.2	0.00	0.00	0.00	0.00	BHL 2624'FSL & 2602'

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Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Project:	SEC.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	North Reference:	True
Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-14-16)		

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
1.0	0.00	0.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00
SHL 556'FNL & 1080'FEL, Sec.29									
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 1.50									
300.0	1.50	288.96	300.0	0.4	-1.2	-0.2	1.50	1.50	0.00
400.0	3.00	288.96	399.9	1.7	-5.0	-0.7	1.50	1.50	0.00
500.0	4.50	288.96	499.7	3.8	-11.1	-1.6	1.50	1.50	0.00
600.0	6.00	288.96	599.3	6.8	-19.8	-2.8	1.50	1.50	0.00
700.0	7.50	288.96	698.6	10.6	-30.9	-4.4	1.50	1.50	0.00
800.0	9.00	288.96	797.5	15.3	-44.5	-6.3	1.50	1.50	0.00
900.0	10.50	288.96	896.1	20.8	-60.5	-8.5	1.50	1.50	0.00
1,000.0	12.00	288.96	994.2	27.1	-78.9	-11.1	1.50	1.50	0.00
1,100.0	13.50	288.96	1,091.7	34.3	-99.8	-14.1	1.50	1.50	0.00
1,200.0	15.00	288.96	1,188.6	42.3	-123.1	-17.4	1.50	1.50	0.00
1,300.0	16.50	288.96	1,284.9	51.1	-148.8	-21.0	1.50	1.50	0.00
1,400.0	18.00	288.96	1,380.4	60.7	-176.8	-24.9	1.50	1.50	0.00
1,500.0	19.50	288.96	1,475.0	71.2	-207.2	-29.2	1.50	1.50	0.00
1,517.5	19.76	288.96	1,491.5	73.1	-212.8	-30.0	1.50	1.50	0.00
1,600.0	19.76	288.96	1,569.2	82.1	-239.2	-33.7	0.00	0.00	0.00
1,700.0	19.76	288.96	1,663.3	93.1	-271.1	-38.2	0.00	0.00	0.00
1,800.0	19.76	288.96	1,757.4	104.1	-303.1	-42.7	0.00	0.00	0.00
1,900.0	19.76	288.96	1,851.5	115.1	-335.1	-47.2	0.00	0.00	0.00
2,000.0	19.76	288.96	1,945.6	126.1	-367.1	-51.7	0.00	0.00	0.00
2,100.0	19.76	288.96	2,039.7	137.1	-399.0	-56.2	0.00	0.00	0.00
2,200.0	19.76	288.96	2,133.8	148.0	-431.0	-60.8	0.00	0.00	0.00
2,300.0	19.76	288.96	2,227.9	159.0	-463.0	-65.3	0.00	0.00	0.00
2,400.0	19.76	288.96	2,322.1	170.0	-495.0	-69.8	0.00	0.00	0.00
2,500.0	19.76	288.96	2,416.2	181.0	-527.0	-74.3	0.00	0.00	0.00
2,600.0	19.76	288.96	2,510.3	192.0	-558.9	-78.8	0.00	0.00	0.00
2,700.0	19.76	288.96	2,604.4	203.0	-590.9	-83.3	0.00	0.00	0.00
2,800.0	19.76	288.96	2,698.5	213.9	-622.9	-87.8	0.00	0.00	0.00
2,900.0	19.76	288.96	2,792.6	224.9	-654.9	-92.3	0.00	0.00	0.00
3,000.0	19.76	288.96	2,886.7	235.9	-686.9	-96.8	0.00	0.00	0.00
3,100.0	19.76	288.96	2,980.8	246.9	-718.8	-101.3	0.00	0.00	0.00
3,200.0	19.76	288.96	3,074.9	257.9	-750.8	-105.8	0.00	0.00	0.00
3,300.0	19.76	288.96	3,169.0	268.9	-782.8	-110.3	0.00	0.00	0.00
3,400.0	19.76	288.96	3,263.2	279.8	-814.8	-114.8	0.00	0.00	0.00
3,500.0	19.76	288.96	3,357.3	290.8	-846.7	-119.3	0.00	0.00	0.00
3,600.0	19.76	288.96	3,451.4	301.8	-878.7	-123.9	0.00	0.00	0.00
3,683.5	19.76	288.96	3,530.0	311.0	-905.4	-127.6	0.00	0.00	0.00
Parkman Sandstone									
3,700.0	19.76	288.96	3,545.5	312.8	-910.7	-128.4	0.00	0.00	0.00
3,800.0	19.76	288.96	3,639.6	323.8	-942.7	-132.9	0.00	0.00	0.00
3,900.0	19.76	288.96	3,733.7	334.8	-974.7	-137.4	0.00	0.00	0.00
4,000.0	19.76	288.96	3,827.8	345.7	-1,006.6	-141.9	0.00	0.00	0.00
4,100.0	19.76	288.96	3,921.9	356.7	-1,038.6	-146.4	0.00	0.00	0.00
4,200.0	19.76	288.96	4,016.0	367.7	-1,070.6	-150.9	0.00	0.00	0.00
4,300.0	19.76	288.96	4,110.2	378.7	-1,102.6	-155.4	0.00	0.00	0.00
4,395.5	19.76	288.96	4,200.0	389.2	-1,133.1	-159.7	0.00	0.00	0.00
Sussex Sandstone									

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Project:	SEC.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	North Reference:	True
Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-14-16)		

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)
4,400.0	19.76	288.96	4,204.3	389.7	-1,134.5	-159.9	0.00	0.00	0.00
4,500.0	19.76	288.96	4,298.4	400.7	-1,166.5	-164.4	0.00	0.00	0.00
4,600.0	19.76	288.96	4,392.5	411.6	-1,198.5	-168.9	0.00	0.00	0.00
4,700.0	19.76	288.96	4,486.6	422.6	-1,230.5	-173.4	0.00	0.00	0.00
4,800.0	19.76	288.96	4,580.7	433.6	-1,262.5	-177.9	0.00	0.00	0.00
4,900.0	19.76	288.96	4,674.8	444.6	-1,294.4	-182.5	0.00	0.00	0.00
4,960.1	19.76	288.96	4,731.4	451.2	-1,313.7	-185.2	0.00	0.00	0.00
Start Drop -2.00									
5,000.0	18.96	288.96	4,769.0	455.5	-1,326.2	-186.9	2.00	-2.00	0.00
5,100.0	16.96	288.96	4,864.1	465.5	-1,355.3	-191.0	2.00	-2.00	0.00
5,200.0	14.96	288.96	4,960.3	474.4	-1,381.3	-194.7	2.00	-2.00	0.00
5,300.0	12.96	288.96	5,057.3	482.3	-1,404.2	-197.9	2.00	-2.00	0.00
5,400.0	10.96	288.96	5,155.1	489.0	-1,423.8	-200.7	2.00	-2.00	0.00
5,500.0	8.96	288.96	5,253.6	494.6	-1,440.1	-203.0	2.00	-2.00	0.00
5,600.0	6.96	288.96	5,352.7	499.1	-1,453.2	-204.8	2.00	-2.00	0.00
5,700.0	4.96	288.96	5,452.1	502.5	-1,463.1	-206.2	2.00	-2.00	0.00
5,800.0	2.96	288.96	5,551.9	504.8	-1,469.6	-207.1	2.00	-2.00	0.00
5,900.0	0.96	288.96	5,651.8	505.9	-1,472.8	-207.6	2.00	-2.00	0.00
5,948.2	0.00	0.00	5,700.0	506.0	-1,473.2	-207.7	2.00	-2.00	0.00
6,000.0	0.00	0.00	5,751.8	506.0	-1,473.2	-207.7	0.00	0.00	0.00
6,100.0	0.00	0.00	5,851.8	506.0	-1,473.2	-207.7	0.00	0.00	0.00
6,200.0	0.00	0.00	5,951.8	506.0	-1,473.2	-207.7	0.00	0.00	0.00
6,210.9	0.00	0.00	5,962.7	506.0	-1,473.2	-207.7	0.00	0.00	0.00
KOP #2 - Start Build 7.50									
6,300.0	6.68	180.00	6,051.6	500.8	-1,473.2	-202.6	7.50	7.50	0.00
6,400.0	14.18	180.00	6,149.9	482.7	-1,473.2	-184.8	7.50	7.50	0.00
6,500.0	21.68	180.00	6,244.9	452.0	-1,473.2	-154.7	7.50	7.50	0.00
6,600.0	29.18	180.00	6,335.2	409.1	-1,473.2	-112.6	7.50	7.50	0.00
6,694.9	36.30	180.00	6,415.0	357.7	-1,473.2	-62.3	7.50	7.50	0.00
Sharon Springs									
6,700.0	36.68	180.00	6,419.1	354.7	-1,473.2	-59.3	7.50	7.50	0.00
6,800.0	44.18	180.00	6,495.1	289.9	-1,473.2	4.2	7.50	7.50	0.00
6,896.6	51.43	180.00	6,560.0	218.4	-1,473.2	74.4	7.50	7.50	0.00
Niobrara A									
6,900.0	51.68	180.00	6,562.1	215.7	-1,473.2	77.0	7.50	7.50	0.00
7,000.0	59.18	180.00	6,618.8	133.5	-1,473.2	157.7	7.50	7.50	0.00
7,065.7	64.11	180.00	6,650.0	75.6	-1,473.2	214.4	7.50	7.50	0.00
Niobrara B									
7,100.0	66.68	180.00	6,664.3	44.5	-1,473.2	244.9	7.50	7.50	0.00
7,200.0	74.18	180.00	6,697.7	-49.7	-1,473.2	337.3	7.50	7.50	0.00
7,300.0	81.68	180.00	6,718.6	-147.4	-1,473.2	433.1	7.50	7.50	0.00
7,400.0	89.18	180.00	6,726.6	-247.0	-1,473.2	530.8	7.50	7.50	0.00
7,416.3	90.40	180.00	6,726.7	-263.3	-1,473.2	546.8	7.49	7.49	0.00
Start 7113.0 hold at 7416.3 MD - 7"									
7,500.0	90.40	180.00	6,726.1	-347.0	-1,473.2	628.8	0.00	0.00	0.00
7,600.0	90.40	180.00	6,725.4	-447.0	-1,473.2	726.9	0.00	0.00	0.00
7,700.0	90.40	180.00	6,724.7	-547.0	-1,473.2	825.0	0.00	0.00	0.00
7,800.0	90.40	180.00	6,724.0	-647.0	-1,473.2	923.0	0.00	0.00	0.00
7,900.0	90.40	180.00	6,723.3	-747.0	-1,473.2	1,021.1	0.00	0.00	0.00
8,000.0	90.40	180.00	6,722.6	-847.0	-1,473.2	1,119.1	0.00	0.00	0.00
8,100.0	90.40	180.00	6,721.9	-947.0	-1,473.2	1,217.2	0.00	0.00	0.00

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Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	North Reference:	True
Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-14-16)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,200.0	90.40	180.00	6,721.2	-1,047.0	-1,473.2	1,315.3	0.00	0.00	0.00
8,300.0	90.40	180.00	6,720.5	-1,147.0	-1,473.2	1,413.3	0.00	0.00	0.00
8,400.0	90.40	180.00	6,719.8	-1,247.0	-1,473.2	1,511.4	0.00	0.00	0.00
8,500.0	90.40	180.00	6,719.1	-1,347.0	-1,473.2	1,609.4	0.00	0.00	0.00
8,600.0	90.40	180.00	6,718.4	-1,447.0	-1,473.2	1,707.5	0.00	0.00	0.00
8,700.0	90.40	180.00	6,717.7	-1,547.0	-1,473.2	1,805.6	0.00	0.00	0.00
8,800.0	90.40	180.00	6,717.0	-1,647.0	-1,473.2	1,903.6	0.00	0.00	0.00
8,900.0	90.40	180.00	6,716.3	-1,747.0	-1,473.2	2,001.7	0.00	0.00	0.00
9,000.0	90.40	180.00	6,715.6	-1,847.0	-1,473.2	2,099.7	0.00	0.00	0.00
9,100.0	90.40	180.00	6,714.9	-1,947.0	-1,473.2	2,197.8	0.00	0.00	0.00
9,200.0	90.40	180.00	6,714.2	-2,047.0	-1,473.2	2,295.9	0.00	0.00	0.00
9,300.0	90.40	180.00	6,713.5	-2,147.0	-1,473.2	2,393.9	0.00	0.00	0.00
9,400.0	90.40	180.00	6,712.8	-2,247.0	-1,473.2	2,492.0	0.00	0.00	0.00
9,500.0	90.40	180.00	6,712.1	-2,347.0	-1,473.2	2,590.1	0.00	0.00	0.00
9,600.0	90.40	180.00	6,711.4	-2,447.0	-1,473.2	2,688.1	0.00	0.00	0.00
9,700.0	90.40	180.00	6,710.7	-2,547.0	-1,473.2	2,786.2	0.00	0.00	0.00
9,800.0	90.40	180.00	6,710.0	-2,647.0	-1,473.2	2,884.2	0.00	0.00	0.00
9,900.0	90.40	180.00	6,709.3	-2,746.9	-1,473.2	2,982.3	0.00	0.00	0.00
10,000.0	90.40	180.00	6,708.6	-2,846.9	-1,473.2	3,080.4	0.00	0.00	0.00
10,100.0	90.40	180.00	6,707.9	-2,946.9	-1,473.2	3,178.4	0.00	0.00	0.00
10,200.0	90.40	180.00	6,707.2	-3,046.9	-1,473.2	3,276.5	0.00	0.00	0.00
10,300.0	90.40	180.00	6,706.5	-3,146.9	-1,473.2	3,374.5	0.00	0.00	0.00
10,400.0	90.40	180.00	6,705.8	-3,246.9	-1,473.2	3,472.6	0.00	0.00	0.00
10,500.0	90.40	180.00	6,705.1	-3,346.9	-1,473.2	3,570.7	0.00	0.00	0.00
10,600.0	90.40	180.00	6,704.4	-3,446.9	-1,473.2	3,668.7	0.00	0.00	0.00
10,700.0	90.40	180.00	6,703.7	-3,546.9	-1,473.2	3,766.8	0.00	0.00	0.00
10,800.0	90.40	180.00	6,703.0	-3,646.9	-1,473.2	3,864.8	0.00	0.00	0.00
10,900.0	90.40	180.00	6,702.3	-3,746.9	-1,473.2	3,962.9	0.00	0.00	0.00
11,000.0	90.40	180.00	6,701.6	-3,846.9	-1,473.2	4,061.0	0.00	0.00	0.00
11,100.0	90.40	180.00	6,700.9	-3,946.9	-1,473.2	4,159.0	0.00	0.00	0.00
11,200.0	90.40	180.00	6,700.2	-4,046.9	-1,473.2	4,257.1	0.00	0.00	0.00
11,300.0	90.40	180.00	6,699.5	-4,146.9	-1,473.2	4,355.1	0.00	0.00	0.00
11,400.0	90.40	180.00	6,698.8	-4,246.9	-1,473.2	4,453.2	0.00	0.00	0.00
11,500.0	90.40	180.00	6,698.1	-4,346.9	-1,473.2	4,551.3	0.00	0.00	0.00
11,600.0	90.40	180.00	6,697.4	-4,446.9	-1,473.2	4,649.3	0.00	0.00	0.00
11,700.0	90.40	180.00	6,696.8	-4,546.9	-1,473.2	4,747.4	0.00	0.00	0.00
11,800.0	90.40	180.00	6,696.1	-4,646.9	-1,473.2	4,845.4	0.00	0.00	0.00
11,900.0	90.40	180.00	6,695.4	-4,746.9	-1,473.2	4,943.5	0.00	0.00	0.00
12,000.0	90.40	180.00	6,694.7	-4,846.9	-1,473.2	5,041.6	0.00	0.00	0.00
12,100.0	90.40	180.00	6,694.0	-4,946.9	-1,473.2	5,139.6	0.00	0.00	0.00
12,200.0	90.40	180.00	6,693.3	-5,046.9	-1,473.2	5,237.7	0.00	0.00	0.00
12,300.0	90.40	180.00	6,692.6	-5,146.9	-1,473.2	5,335.8	0.00	0.00	0.00
12,400.0	90.40	180.00	6,691.9	-5,246.9	-1,473.2	5,433.8	0.00	0.00	0.00
12,500.0	90.40	180.00	6,691.2	-5,346.9	-1,473.2	5,531.9	0.00	0.00	0.00
12,600.0	90.40	180.00	6,690.5	-5,446.9	-1,473.2	5,629.9	0.00	0.00	0.00
12,700.0	90.40	180.00	6,689.8	-5,546.9	-1,473.2	5,728.0	0.00	0.00	0.00
12,800.0	90.40	180.00	6,689.1	-5,646.9	-1,473.2	5,826.1	0.00	0.00	0.00
12,900.0	90.40	180.00	6,688.4	-5,746.9	-1,473.2	5,924.1	0.00	0.00	0.00
13,000.0	90.40	180.00	6,687.7	-5,846.9	-1,473.2	6,022.2	0.00	0.00	0.00
13,100.0	90.40	180.00	6,687.0	-5,946.9	-1,473.2	6,120.2	0.00	0.00	0.00
13,200.0	90.40	180.00	6,686.3	-6,046.9	-1,473.2	6,218.3	0.00	0.00	0.00
13,300.0	90.40	180.00	6,685.6	-6,146.9	-1,473.2	6,316.4	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Ottenhoff 29M-203
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Project:	SEC.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	North Reference:	True
Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-14-16)		

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)	
13,400.0	90.40	180.00	6,684.9	-6,246.9	-1,473.2	6,414.4	0.00	0.00	0.00	
13,500.0	90.40	180.00	6,684.2	-6,346.9	-1,473.2	6,512.5	0.00	0.00	0.00	
13,600.0	90.40	180.00	6,683.5	-6,446.9	-1,473.2	6,610.5	0.00	0.00	0.00	
13,700.0	90.40	180.00	6,682.8	-6,546.9	-1,473.2	6,708.6	0.00	0.00	0.00	
13,800.0	90.40	180.00	6,682.1	-6,646.9	-1,473.2	6,806.7	0.00	0.00	0.00	
13,900.0	90.40	180.00	6,681.4	-6,746.9	-1,473.2	6,904.7	0.00	0.00	0.00	
14,000.0	90.40	180.00	6,680.7	-6,846.8	-1,473.2	7,002.8	0.00	0.00	0.00	
14,100.0	90.40	180.00	6,680.0	-6,946.8	-1,473.2	7,100.8	0.00	0.00	0.00	
14,200.0	90.40	180.00	6,679.3	-7,046.8	-1,473.2	7,198.9	0.00	0.00	0.00	
14,300.0	90.40	180.00	6,678.6	-7,146.8	-1,473.2	7,297.0	0.00	0.00	0.00	
14,400.0	90.40	180.00	6,677.9	-7,246.8	-1,473.2	7,395.0	0.00	0.00	0.00	
14,500.0	90.40	180.00	6,677.2	-7,346.8	-1,473.2	7,493.1	0.00	0.00	0.00	
14,529.3	90.40	180.00	6,677.0	-7,376.1	-1,473.2	7,521.8	0.00	0.00	0.00	
TD at 14529.3 - BHL 2624'FSL & 2602'FEL, Sec.32										

Design Targets										
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude		Longitude
SHL 556'FNL & 1080'FE - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,381,166.81	3,259,614.35	40.375960		-104.568160
BHL 2624'FSL & 2602'FI - plan hits target center - Point	0.00	0.00	6,677.0	-7,376.1	-1,473.2	1,373,775.92	3,258,218.77	40.355713		-104.573446

Casing Points							
Measured Depth (ft)	Vertical Depth (ft)	Name				Casing Diameter (")	Hole Diameter (")
7,416.3	6,726.7	7"				7	8-3/4

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,683.5	3,530.0	Parkman Sandstone		0.00		
4,395.5	4,200.0	Sussex Sandstone		0.00		
6,694.9	6,415.0	Sharon Springs		0.00		
6,896.6	6,560.0	Niobrara A		0.00		
7,065.7	6,650.0	Niobrara B		0.00		

Database:	US_EDM	Local Co-ordinate Reference:	Well Ottenhoff 29M-203
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Project:	SEC.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	North Reference:	True
Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-14-16)		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
200.0	200.0	0.0	0.0	KOP - Start Build 1.50
4,960.1	4,731.4	73.1	-212.8	Start Drop -2.00
6,210.9	5,962.7	451.2	-1,313.7	KOP #2 - Start Build 7.50
7,416.3	6,726.7	506.0	-1,473.2	Start 7113.0 hold at 7416.3 MD
14,529.3	6,677.0	506.0	-1,473.2	TD at 14529.3



PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.29-T5N-R64W

Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W

Ottenhoff 29M-203

Wellbore #1

Plan #1 (3-14-16)

Anticollision Report

17 March, 2016



Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29M-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (3-14-16)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.0 ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date 3/17/2016			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	14,529.3	Plan #1 (3-14-16) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Bell Pad SEC.29-T5N-R64W						
Bell B29-24D - Bell B29-24D - Bell B29-24D	10,758.5	7,020.2	97.9	-3.2	0.968	Level 1, CC, ES, SF
Existing Wells Sec.29-T5N-R64W						
Blake #B 29-10X (Exist.) - Wellbore #1 - Wellbore #1	9,801.2	6,713.0	484.0	293.7	2.544	CC, ES, SF
Heldt B #29-21 (Exist.) - Wellbore #1 - Wellbore #1	9,380.4	6,715.9	246.3	63.5	1.348	Level 3, CC, ES, SF
Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W						
Ottenhoff 29M-323 - Wellbore #1 - Plan #1 (3-14-16)	200.0	201.0	30.1	29.4	44.481	CC, ES
Ottenhoff 29M-323 - Wellbore #1 - Plan #1 (3-14-16)	14,529.3	14,507.9	451.8	164.7	1.574	SF
Ottenhoff 29M-423 - Wellbore #1 - Plan #1 (3-14-16)	200.0	200.0	15.0	14.4	22.319	CC, ES
Ottenhoff 29M-423 - Wellbore #1 - Plan #1 (3-14-16)	14,529.3	14,618.6	294.7	58.4	1.247	Level 2, SF
Ottenhoff 29R-143 - Wellbore #1 - Plan #1 (3-14-16)	200.0	200.0	60.2	59.5	89.258	CC, ES
Ottenhoff 29R-143 - Wellbore #1 - Plan #1 (3-14-16)	14,529.3	14,249.2	939.8	651.4	3.259	SF
Ottenhoff 29R-203 - Wellbore #1 - Plan #1 (3-14-16)	200.0	200.0	90.0	89.3	133.474	CC, ES
Ottenhoff 29R-203 - Wellbore #1 - Plan #1 (3-14-16)	900.0	896.1	152.1	148.2	38.934	SF
Ottenhoff 29R-243 - Wellbore #1 - Plan #1 (3-14-16)	200.0	200.0	45.1	44.5	66.947	CC, ES
Ottenhoff 29R-243 - Wellbore #1 - Plan #1 (3-14-16)	14,529.3	14,381.8	699.9	410.5	2.419	SF
Ottenhoff 29R-303 - Wellbore #1 - Plan #1 (3-15-16)	200.0	200.0	75.2	74.6	111.570	CC, ES
Ottenhoff 29R-303 - Wellbore #1 - Plan #1 (3-15-16)	800.0	797.5	120.8	117.3	35.133	SF
Ybarra B 29-18 Sec.29-T5N-R64W						
Ybarra B 29-18 - Wellbore #1 - Wellbore #1	7,972.3	6,829.7	139.8	96.8	3.255	CC, ES, SF

Offset Design	Bell Pad SEC.29-T5N-R64W - Bell B29-24D - Bell B29-24D - Bell B29-24D												Offset Site Error:	0.0 ft
Survey Program:	685-												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		
9,800.0	6,710.0	7,021.3	6,715.0	59.8	29.1	-89.83	-3,605.4	-1,375.3	963.4	879.9	83.52	11.536		
9,900.0	6,709.3	7,021.2	6,714.9	61.5	29.1	-89.77	-3,605.4	-1,375.4	864.0	778.7	85.33	10.126		
10,000.0	6,708.6	7,021.1	6,714.8	63.2	29.1	-89.70	-3,605.4	-1,375.4	764.7	677.6	87.14	8.776		
10,100.0	6,707.9	7,021.0	6,714.7	64.9	29.1	-89.63	-3,605.4	-1,375.4	665.7	576.7	88.97	7.483		
10,200.0	6,707.2	7,020.9	6,714.6	66.7	29.1	-89.56	-3,605.4	-1,375.4	567.0	476.2	90.79	6.245		

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29M-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 685- Bell Pad SEC.29-T5N-R64W - Bell B29-24D - Bell B29-24D - Bell B29-24D													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis 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	
10,300.0	6,706.5	7,020.7	6,714.5	68.4	29.1	-89.49	-3,605.4	-1,375.4	468.8	376.2	92.62	5.061		
10,400.0	6,705.8	7,020.6	6,714.3	70.2	29.1	-89.42	-3,605.4	-1,375.4	371.6	277.1	94.46	3.934		
10,500.0	6,705.1	7,020.5	6,714.2	72.0	29.1	-89.35	-3,605.4	-1,375.4	276.4	180.1	96.30	2.870		
10,600.0	6,704.4	7,020.4	6,714.1	73.7	29.1	-89.27	-3,605.4	-1,375.4	186.2	88.1	98.14	1.898		
10,700.0	6,703.7	7,020.2	6,713.9	75.5	29.1	-89.19	-3,605.4	-1,375.4	114.0	14.0	99.99	1.140	Level 2	
10,758.5	6,703.3	7,020.2	6,713.9	76.6	29.1	-89.14	-3,605.4	-1,375.4	97.9	-3.2	101.07	0.968	Level 1, CC, ES, SF	
10,800.0	6,703.0	7,020.1	6,713.8	77.3	29.1	-89.11	-3,605.4	-1,375.4	106.3	4.5	101.84	1.044	Level 2	
10,900.0	6,702.3	7,020.0	6,713.7	79.1	29.1	-89.03	-3,605.4	-1,375.4	172.1	68.4	103.69	1.660		
11,000.0	6,701.6	7,019.8	6,713.5	80.9	29.1	-88.94	-3,605.4	-1,375.4	260.6	155.1	105.54	2.469		
11,100.0	6,700.9	7,019.7	6,713.4	82.7	29.1	-88.85	-3,605.4	-1,375.4	355.3	247.9	107.40	3.308		
11,200.0	6,700.2	7,019.5	6,713.2	84.5	29.1	-88.76	-3,605.4	-1,375.4	452.3	343.0	109.25	4.140		
11,300.0	6,699.5	7,019.3	6,713.1	86.3	29.1	-88.67	-3,605.4	-1,375.4	550.3	439.2	111.11	4.953		
11,400.0	6,698.8	7,019.2	6,712.9	88.2	29.1	-88.58	-3,605.4	-1,375.4	649.0	536.0	112.97	5.744		
11,500.0	6,698.1	7,019.0	6,712.7	90.0	29.1	-88.48	-3,605.4	-1,375.4	748.0	633.1	114.83	6.514		
11,600.0	6,697.4	7,018.8	6,712.6	91.8	29.1	-88.38	-3,605.4	-1,375.4	847.2	730.5	116.70	7.260		
11,700.0	6,696.8	7,018.7	6,712.4	93.7	29.1	-88.27	-3,605.4	-1,375.4	946.6	828.1	118.56	7.984		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29M-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - Blake #B 29-10X (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7072-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
9,000.0	6,715.6	6,718.6	6,718.6	46.8	134.4	-90.66	-2,648.1	-989.2	936.0	759.8	176.21	5.312		
9,100.0	6,714.9	6,717.9	6,717.9	48.4	134.4	-90.58	-2,648.1	-989.2	852.0	674.1	177.92	4.789		
9,200.0	6,714.2	6,717.2	6,717.2	49.9	134.3	-90.50	-2,648.1	-989.2	771.8	592.2	179.65	4.296		
9,300.0	6,713.5	6,716.5	6,716.5	51.5	134.3	-90.41	-2,648.1	-989.2	696.7	515.4	181.39	3.841		
9,400.0	6,712.8	6,715.8	6,715.8	53.1	134.3	-90.33	-2,648.1	-989.2	628.7	445.5	183.14	3.433		
9,500.0	6,712.1	6,715.1	6,715.1	54.8	134.3	-90.25	-2,648.1	-989.2	570.1	385.2	184.91	3.083		
9,600.0	6,711.4	6,714.4	6,714.4	56.4	134.3	-90.17	-2,648.1	-989.2	524.2	337.5	186.68	2.808		
9,700.0	6,710.7	6,713.7	6,713.7	58.1	134.3	-90.08	-2,648.1	-989.2	494.5	306.0	188.46	2.624		
9,800.0	6,710.0	6,713.0	6,713.0	59.8	134.3	-90.00	-2,648.1	-989.2	484.0	293.8	190.25	2.544		
9,801.2	6,710.0	6,713.0	6,713.0	59.8	134.3	-90.00	-2,648.1	-989.2	484.0	293.7	190.27	2.544	CC, ES, SF	
9,900.0	6,709.3	6,712.3	6,712.3	61.5	134.2	-89.92	-2,648.1	-989.2	494.0	302.0	192.05	2.572		
10,000.0	6,708.6	6,711.6	6,711.6	63.2	134.2	-89.84	-2,648.1	-989.2	523.3	329.4	193.85	2.699		
10,100.0	6,707.9	6,710.9	6,710.9	64.9	134.2	-89.75	-2,648.1	-989.2	568.8	373.2	195.65	2.907		
10,200.0	6,707.2	6,710.2	6,710.2	66.7	134.2	-89.67	-2,648.1	-989.2	627.2	429.7	197.47	3.176		
10,300.0	6,706.5	6,709.5	6,709.5	68.4	134.2	-89.59	-2,648.1	-989.2	695.0	495.8	199.28	3.488		
10,400.0	6,705.8	6,708.8	6,708.8	70.2	134.2	-89.51	-2,648.1	-989.2	770.0	568.9	201.10	3.829		
10,500.0	6,705.1	6,708.1	6,708.1	72.0	134.2	-89.42	-2,648.1	-989.2	850.1	647.1	202.93	4.189		
10,600.0	6,704.4	6,707.4	6,707.4	73.7	134.1	-89.34	-2,648.1	-989.2	934.0	729.2	204.76	4.561		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29M-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.29-T5N-R64W - Heldt B #29-21 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7107-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
8,500.0	6,719.1	6,722.1	6,722.1	39.9	134.4	91.43	-2,227.3	-1,719.5	914.1	746.5	167.65	5.453		
8,600.0	6,718.4	6,721.4	6,721.4	41.1	134.4	91.27	-2,227.3	-1,719.5	818.3	649.0	169.29	4.834		
8,700.0	6,717.7	6,720.7	6,720.7	42.5	134.4	91.10	-2,227.3	-1,719.5	723.6	552.6	170.96	4.232		
8,800.0	6,717.0	6,720.0	6,720.0	43.9	134.4	90.94	-2,227.3	-1,719.5	630.4	457.8	172.64	3.652		
8,900.0	6,716.3	6,719.3	6,719.3	45.3	134.4	90.78	-2,227.3	-1,719.5	539.8	365.5	174.35	3.096		
9,000.0	6,715.6	6,718.6	6,718.6	46.8	134.4	90.62	-2,227.3	-1,719.5	453.1	277.1	176.08	2.573		
9,100.0	6,714.9	6,717.9	6,717.9	48.4	134.4	90.46	-2,227.3	-1,719.5	373.2	195.4	177.82	2.099		
9,200.0	6,714.2	6,717.2	6,717.2	49.9	134.3	90.29	-2,227.3	-1,719.5	305.3	125.7	179.57	1.700		
9,300.0	6,713.5	6,716.5	6,716.5	51.5	134.3	90.13	-2,227.3	-1,719.5	259.1	77.7	181.34	1.429	Level 3	
9,380.4	6,712.9	6,715.9	6,715.9	52.8	134.3	90.00	-2,227.3	-1,719.5	246.3	63.5	182.77	1.348	Level 3, CC, ES, SF	
9,400.0	6,712.8	6,715.8	6,715.8	53.1	134.3	89.97	-2,227.3	-1,719.5	247.1	64.0	183.12	1.349	Level 3	
9,500.0	6,712.1	6,715.1	6,715.1	54.8	134.3	89.81	-2,227.3	-1,719.5	273.8	88.9	184.90	1.481	Level 3	
9,600.0	6,711.4	6,714.4	6,714.4	56.4	134.3	89.64	-2,227.3	-1,719.5	330.0	143.3	186.70	1.768		
9,700.0	6,710.7	6,713.7	6,713.7	58.1	134.3	89.48	-2,227.3	-1,719.5	403.5	215.0	188.50	2.141		
9,800.0	6,710.0	6,713.0	6,713.0	59.8	134.3	89.32	-2,227.3	-1,719.5	486.6	296.3	190.30	2.557		
9,900.0	6,709.3	6,712.3	6,712.3	61.5	134.2	89.16	-2,227.3	-1,719.5	575.0	382.9	192.11	2.993		
10,000.0	6,708.6	6,711.6	6,711.6	63.2	134.2	88.99	-2,227.3	-1,719.5	666.8	472.9	193.93	3.438		
10,100.0	6,707.9	6,710.9	6,710.9	64.9	134.2	88.83	-2,227.3	-1,719.5	760.6	564.9	195.75	3.886		
10,200.0	6,707.2	6,710.2	6,710.2	66.7	134.2	88.67	-2,227.3	-1,719.5	855.8	658.3	197.57	4.332		
10,300.0	6,706.5	6,709.5	6,709.5	68.4	134.2	88.51	-2,227.3	-1,719.5	952.0	752.6	199.40	4.774		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29M-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-323 - Wellbore #1 - Plan #1 (3-14-16)													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	1.0	1.0	0.0	0.0	90.69	-0.4	30.1	30.1	30.1	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	90.69	-0.4	30.1	30.1	29.9	0.23	132.562	CC, ES	
200.0	200.0	201.0	201.0	0.3	0.3	90.69	-0.4	30.1	30.1	29.4	0.68	44.481		
300.0	300.0	301.0	301.0	0.6	0.6	162.48	-0.4	30.1	31.3	30.2	1.13	27.806		
400.0	399.9	400.9	400.9	0.8	0.8	164.40	-0.4	30.1	35.1	33.5	1.58	22.177		
500.0	499.7	500.7	500.7	1.0	1.0	166.81	-0.4	30.1	41.4	39.4	2.04	20.272		
600.0	599.3	600.3	600.3	1.3	1.2	169.16	-0.4	30.1	50.4	47.9	2.51	20.093		
700.0	698.6	699.6	699.6	1.6	1.5	171.17	-0.4	30.1	62.0	59.0	2.97	20.848		
800.0	797.5	798.5	798.5	1.9	1.7	172.80	-0.4	30.1	76.2	72.8	3.44	22.158		
900.0	896.1	899.4	899.4	2.2	1.9	173.93	0.2	28.9	91.8	87.9	3.90	23.553		
1,000.0	994.2	1,000.8	1,000.7	2.6	2.1	174.57	1.9	25.3	107.4	103.1	4.35	24.700		
1,100.0	1,091.7	1,102.5	1,102.2	3.1	2.3	174.90	4.8	19.3	123.1	118.3	4.81	25.589		
1,200.0	1,188.6	1,204.7	1,204.0	3.6	2.6	175.01	8.9	10.8	138.7	133.4	5.28	26.278		
1,300.0	1,284.9	1,307.4	1,305.9	4.1	2.9	174.99	14.2	-0.3	154.3	148.6	5.76	26.802		
1,400.0	1,380.4	1,410.4	1,407.8	4.7	3.2	174.85	20.7	-13.8	169.9	163.7	6.25	27.188		
1,500.0	1,475.0	1,513.9	1,509.8	5.3	3.5	174.64	28.4	-29.9	185.5	178.7	6.76	27.456		
1,600.0	1,569.2	1,618.0	1,611.8	6.0	3.8	174.35	37.3	-48.6	200.1	192.8	7.29	27.434		
1,700.0	1,663.3	1,722.8	1,713.8	6.7	4.3	173.94	47.6	-70.0	212.1	204.3	7.86	26.988		
1,800.0	1,757.4	1,828.2	1,815.8	7.4	4.7	173.41	59.1	-94.0	221.5	213.1	8.44	26.240		
1,900.0	1,851.5	1,928.9	1,912.7	8.1	5.2	172.84	70.8	-118.5	229.2	220.1	9.04	25.356		
2,000.0	1,945.6	2,028.5	2,008.7	8.8	5.7	172.31	82.4	-142.8	236.8	227.1	9.65	24.549		
2,100.0	2,039.7	2,128.2	2,104.7	9.5	6.2	171.81	94.1	-167.1	244.4	234.2	10.26	23.813		
2,200.0	2,133.8	2,227.9	2,200.7	10.2	6.8	171.35	105.7	-191.4	252.1	241.2	10.89	23.141		
2,300.0	2,227.9	2,327.6	2,296.6	10.9	7.3	170.91	117.4	-215.7	259.8	248.2	11.53	22.525		
2,400.0	2,322.1	2,427.3	2,392.6	11.6	7.8	170.49	129.0	-240.0	267.4	255.3	12.18	21.960		
2,500.0	2,416.2	2,527.0	2,488.6	12.4	8.4	170.10	140.7	-264.3	275.1	262.3	12.83	21.439		
2,600.0	2,510.3	2,626.7	2,584.6	13.1	8.9	169.73	152.3	-288.6	282.9	269.4	13.50	20.959		
2,700.0	2,604.4	2,726.3	2,680.5	13.8	9.5	169.38	163.9	-312.9	290.6	276.4	14.16	20.514		
2,800.0	2,698.5	2,826.0	2,776.5	14.5	10.0	169.05	175.6	-337.3	298.3	283.5	14.84	20.103		
2,900.0	2,792.6	2,925.7	2,872.5	15.2	10.6	168.73	187.2	-361.6	306.1	290.5	15.52	19.720		
3,000.0	2,886.7	3,025.4	2,968.4	15.9	11.1	168.43	198.9	-385.9	313.8	297.6	16.21	19.364		
3,100.0	2,980.8	3,125.1	3,064.4	16.7	11.7	168.15	210.5	-410.2	321.6	304.7	16.90	19.032		
3,200.0	3,074.9	3,224.8	3,160.4	17.4	12.3	167.87	222.2	-434.5	329.3	311.8	17.59	18.721		
3,300.0	3,169.0	3,324.5	3,256.4	18.1	12.8	167.62	233.8	-458.8	337.1	318.8	18.29	18.430		
3,400.0	3,263.2	3,424.1	3,352.3	18.8	13.4	167.37	245.4	-483.1	344.9	325.9	19.00	18.157		
3,500.0	3,357.3	3,523.8	3,448.3	19.5	14.0	167.13	257.1	-507.4	352.7	333.0	19.70	17.901		
3,600.0	3,451.4	3,623.5	3,544.3	20.2	14.5	166.90	268.7	-531.7	360.5	340.1	20.41	17.660		
3,700.0	3,545.5	3,723.2	3,640.3	21.0	15.1	166.69	280.4	-556.0	368.3	347.2	21.13	17.433		
3,800.0	3,639.6	3,822.9	3,736.2	21.7	15.7	166.48	292.0	-580.3	376.1	354.3	21.84	17.218		
3,900.0	3,733.7	3,922.6	3,832.2	22.4	16.2	166.28	303.7	-604.6	383.9	361.3	22.56	17.015		
4,000.0	3,827.8	4,022.3	3,928.2	23.1	16.8	166.09	315.3	-629.0	391.7	368.4	23.29	16.823		
4,100.0	3,921.9	4,121.9	4,024.1	23.8	17.4	165.90	326.9	-653.3	399.5	375.5	24.01	16.641		
4,200.0	4,016.0	4,221.6	4,120.1	24.6	17.9	165.73	338.6	-677.6	407.4	382.6	24.74	16.468		
4,300.0	4,110.2	4,321.3	4,216.1	25.3	18.5	165.56	350.2	-701.9	415.2	389.7	25.47	16.303		
4,400.0	4,204.3	4,421.0	4,312.1	26.0	19.1	165.39	361.9	-726.2	423.0	396.8	26.20	16.147		
4,500.0	4,298.4	4,520.7	4,408.0	26.7	19.6	165.23	373.5	-750.5	430.8	403.9	26.93	15.998		
4,600.0	4,392.5	4,620.4	4,504.0	27.4	20.2	165.08	385.2	-774.8	438.7	411.0	27.67	15.856		
4,700.0	4,486.6	4,720.1	4,600.0	28.2	20.8	164.94	396.8	-799.1	446.5	418.1	28.40	15.721		
4,800.0	4,580.7	4,819.7	4,696.0	28.9	21.3	164.79	408.4	-823.4	454.4	425.2	29.14	15.591		
4,900.0	4,674.8	4,919.4	4,791.9	29.6	21.9	164.66	420.1	-847.7	462.2	432.3	29.88	15.467		
5,000.0	4,769.0	5,019.1	4,887.9	30.3	22.5	164.53	431.7	-872.0	469.8	439.1	30.64	15.332		

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29M-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design				Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-323 - Wellbore #1 - Plan #1 (3-14-16)										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)					
5,100.0	4,864.1	5,119.0	4,984.1	30.8	23.1	164.33	443.4	-896.4	474.6	443.2	31.40	15.114				
5,200.0	4,960.3	5,218.9	5,080.3	31.3	23.6	163.99	455.1	-920.8	476.1	443.9	32.16	14.803				
5,300.0	5,057.3	5,311.8	5,169.8	31.7	24.1	163.58	465.8	-943.1	474.7	441.8	32.87	14.442				
5,400.0	5,155.1	5,400.0	5,255.4	32.0	24.5	163.18	474.9	-962.2	472.4	438.9	33.46	14.115				
5,500.0	5,253.6	5,485.4	5,338.8	32.4	24.8	162.81	482.7	-978.4	469.5	435.6	33.98	13.817				
5,600.0	5,352.7	5,572.3	5,424.3	32.6	25.1	162.45	489.5	-992.6	466.2	431.7	34.44	13.535				
5,700.0	5,452.1	5,659.3	5,510.3	32.8	25.3	162.09	495.1	-1,004.4	462.3	427.4	34.83	13.271				
5,800.0	5,551.9	5,746.4	5,596.8	33.0	25.5	161.75	499.7	-1,013.9	457.8	422.7	35.16	13.022				
5,900.0	5,651.8	5,833.7	5,683.7	33.1	25.7	161.41	503.1	-1,021.1	452.9	417.4	35.42	12.787				
6,000.0	5,751.8	5,921.1	5,771.0	33.2	25.8	90.08	505.4	-1,025.8	447.8	412.1	35.71	12.539				
6,100.0	5,851.8	6,008.8	5,858.6	33.3	26.0	89.93	506.5	-1,028.2	445.1	409.1	36.04	12.350				
6,163.1	5,914.9	6,066.1	5,915.9	33.3	26.0	89.92	506.6	-1,028.4	444.8	408.6	36.21	12.282				
6,200.0	5,951.8	6,103.0	5,952.8	33.3	26.0	89.92	506.6	-1,028.4	444.8	408.5	36.32	12.247				
6,220.3	5,972.1	6,123.3	5,973.1	33.3	26.1	-90.11	506.6	-1,028.4	444.8	408.4	36.38	12.226				
6,300.0	6,051.6	6,202.8	6,052.7	33.4	26.2	-90.74	506.6	-1,028.4	444.8	408.0	36.83	12.078				
6,400.0	6,149.9	6,303.7	6,153.2	33.4	26.2	-92.06	498.6	-1,028.4	445.1	407.7	37.44	11.888				
6,500.0	6,244.9	6,406.1	6,253.1	33.3	26.2	-93.35	477.1	-1,028.4	445.6	407.8	37.81	11.784				
6,600.0	6,335.2	6,509.8	6,350.6	33.2	26.1	-94.58	441.8	-1,028.4	446.2	408.3	37.92	11.767				
6,700.0	6,419.1	6,615.0	6,443.6	33.1	26.0	-95.75	393.0	-1,028.4	447.1	409.3	37.80	11.827				
6,800.0	6,495.1	6,721.5	6,530.1	33.0	25.8	-96.81	330.9	-1,028.4	448.0	410.5	37.50	11.946				
6,900.0	6,562.1	6,829.2	6,608.0	32.8	25.6	-97.75	256.6	-1,028.4	448.9	411.8	37.13	12.091				
7,000.0	6,618.8	6,938.2	6,675.3	32.7	25.4	-98.55	171.0	-1,028.4	449.8	413.0	36.83	12.214				
7,100.0	6,664.3	7,048.0	6,730.1	32.5	25.2	-99.20	75.9	-1,028.4	450.6	413.8	36.76	12.258				
7,200.0	6,697.7	7,158.7	6,771.0	32.5	25.1	-99.67	-26.8	-1,028.4	451.2	414.1	37.08	12.168				
7,300.0	6,718.6	7,269.9	6,796.8	32.4	25.0	-99.96	-134.9	-1,028.4	451.6	413.7	37.90	11.915				
7,400.0	6,726.6	7,381.4	6,806.6	32.5	25.1	-100.07	-245.8	-1,028.4	451.8	412.5	39.24	11.514				
7,500.0	6,727.0	7,483.1	6,806.0	32.6	25.4	-99.96	-347.5	-1,028.4	451.6	410.8	40.84	11.058				
7,500.0	6,726.1	7,483.1	6,806.0	32.6	25.4	-100.07	-347.6	-1,028.4	451.8	410.9	40.85	11.059				
7,600.0	6,725.4	7,583.1	6,805.3	32.8	25.8	-100.07	-447.6	-1,028.4	451.8	409.1	42.70	10.579				
7,700.0	6,724.7	7,683.1	6,804.6	33.1	26.3	-100.07	-547.6	-1,028.4	451.8	407.0	44.80	10.083				
7,800.0	6,724.0	7,783.1	6,803.9	33.6	27.1	-100.07	-647.6	-1,028.4	451.8	404.6	47.12	9.588				
7,900.0	6,723.3	7,883.1	6,803.2	34.1	28.0	-100.07	-747.5	-1,028.4	451.8	402.1	49.61	9.106				
8,000.0	6,722.6	7,983.1	6,802.6	34.8	29.1	-100.07	-847.5	-1,028.4	451.8	399.5	52.26	8.645				
8,100.0	6,721.9	8,083.1	6,801.9	35.6	30.3	-100.07	-947.5	-1,028.4	451.8	396.7	55.04	8.207				
8,200.0	6,721.2	8,183.1	6,801.2	36.5	31.5	-100.07	-1,047.5	-1,028.4	451.8	393.8	57.94	7.797				
8,300.0	6,720.5	8,283.1	6,800.5	37.5	32.9	-100.07	-1,147.5	-1,028.4	451.8	390.8	60.93	7.414				
8,400.0	6,719.8	8,383.1	6,799.8	38.6	34.3	-100.07	-1,247.5	-1,028.4	451.8	387.7	64.01	7.057				
8,500.0	6,719.1	8,483.1	6,799.1	39.9	35.8	-100.07	-1,347.5	-1,028.4	451.8	384.6	67.17	6.726				
8,600.0	6,718.4	8,583.1	6,798.4	41.1	37.3	-100.07	-1,447.5	-1,028.4	451.8	381.4	70.38	6.419				
8,700.0	6,717.7	8,683.1	6,797.7	42.5	38.9	-100.07	-1,547.5	-1,028.4	451.8	378.1	73.65	6.134				
8,800.0	6,717.0	8,783.1	6,797.0	43.9	40.5	-100.07	-1,647.5	-1,028.4	451.8	374.8	76.97	5.870				
8,900.0	6,716.3	8,883.1	6,796.3	45.3	42.1	-100.07	-1,747.5	-1,028.4	451.8	371.4	80.33	5.624				
9,000.0	6,715.6	8,983.1	6,795.6	46.8	43.7	-100.07	-1,847.5	-1,028.4	451.8	368.0	83.72	5.396				
9,100.0	6,714.9	9,083.1	6,794.9	48.4	45.4	-100.07	-1,947.5	-1,028.4	451.8	364.6	87.15	5.184				
9,200.0	6,714.2	9,183.1	6,794.2	49.9	47.1	-100.07	-2,047.5	-1,028.4	451.8	361.2	90.60	4.986				
9,300.0	6,713.5	9,283.1	6,793.5	51.5	48.8	-100.07	-2,147.5	-1,028.4	451.8	357.7	94.09	4.802				
9,400.0	6,712.8	9,383.1	6,792.8	53.1	50.5	-100.07	-2,247.5	-1,028.4	451.8	354.2	97.59	4.629				
9,500.0	6,712.1	9,483.1	6,792.1	54.8	52.2	-100.07	-2,347.5	-1,028.4	451.8	350.6	101.12	4.468				
9,600.0	6,711.4	9,583.1	6,791.4	56.4	54.0	-100.07	-2,447.5	-1,028.4	451.8	347.1	104.66	4.316				
9,700.0	6,710.7	9,683.1	6,790.7	58.1	55.7	-100.07	-2,547.5	-1,028.4	451.8	343.5	108.22	4.174				

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29M-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-323 - Wellbore #1 - Plan #1 (3-14-16)													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	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Minimum	Separation	Warning		
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor			
9,800.0	6,710.0	9,783.1	6,790.0	59.8	57.5	-100.07	-2,647.5	-1,028.4	451.8	340.0	111.80	4.041			
9,900.0	6,709.3	9,883.1	6,789.3	61.5	59.3	-100.07	-2,747.5	-1,028.4	451.8	336.4	115.39	3.915			
10,000.0	6,708.6	9,983.1	6,788.6	63.2	61.1	-100.07	-2,847.5	-1,028.4	451.8	332.8	118.99	3.797			
10,100.0	6,707.9	10,083.1	6,787.9	64.9	62.8	-100.07	-2,947.5	-1,028.4	451.8	329.2	122.60	3.685			
10,200.0	6,707.2	10,183.1	6,787.2	66.7	64.6	-100.07	-3,047.5	-1,028.4	451.8	325.5	126.22	3.579			
10,300.0	6,706.5	10,283.1	6,786.5	68.4	66.5	-100.07	-3,147.5	-1,028.4	451.8	321.9	129.86	3.479			
10,400.0	6,705.8	10,383.1	6,785.8	70.2	68.3	-100.07	-3,247.5	-1,028.4	451.8	318.3	133.50	3.384			
10,500.0	6,705.1	10,483.1	6,785.1	72.0	70.1	-100.07	-3,347.5	-1,028.4	451.8	314.6	137.15	3.294			
10,600.0	6,704.4	10,583.1	6,784.4	73.7	71.9	-100.07	-3,447.5	-1,028.4	451.8	311.0	140.80	3.208			
10,700.0	6,703.7	10,683.1	6,783.7	75.5	73.7	-100.07	-3,547.5	-1,028.4	451.8	307.3	144.47	3.127			
10,800.0	6,703.0	10,783.1	6,783.0	77.3	75.6	-100.07	-3,647.5	-1,028.4	451.8	303.6	148.13	3.050			
10,900.0	6,702.3	10,883.1	6,782.3	79.1	77.4	-100.07	-3,747.5	-1,028.4	451.8	300.0	151.81	2.976			
11,000.0	6,701.6	10,983.1	6,781.6	80.9	79.2	-100.07	-3,847.5	-1,028.4	451.8	296.3	155.49	2.905			
11,100.0	6,700.9	11,083.1	6,780.9	82.7	81.1	-100.07	-3,947.5	-1,028.4	451.8	292.6	159.18	2.838			
11,200.0	6,700.2	11,183.1	6,780.2	84.5	82.9	-100.07	-4,047.5	-1,028.4	451.8	288.9	162.87	2.774			
11,300.0	6,699.5	11,283.1	6,779.5	86.3	84.8	-100.07	-4,147.5	-1,028.4	451.8	285.2	166.56	2.712			
11,400.0	6,698.8	11,383.1	6,778.8	88.2	86.6	-100.07	-4,247.5	-1,028.4	451.8	281.5	170.26	2.653			
11,500.0	6,698.1	11,483.1	6,778.1	90.0	88.5	-100.07	-4,347.5	-1,028.4	451.8	277.8	173.97	2.597			
11,600.0	6,697.4	11,583.1	6,777.4	91.8	90.4	-100.07	-4,447.5	-1,028.4	451.8	274.1	177.67	2.543			
11,700.0	6,696.8	11,683.1	6,776.7	93.7	92.2	-100.07	-4,547.5	-1,028.4	451.8	270.4	181.38	2.491			
11,800.0	6,696.1	11,783.1	6,776.0	95.5	94.1	-100.07	-4,647.5	-1,028.4	451.8	266.7	185.10	2.441			
11,900.0	6,695.4	11,883.1	6,775.3	97.3	95.9	-100.07	-4,747.5	-1,028.4	451.8	263.0	188.81	2.393			
12,000.0	6,694.7	11,983.1	6,774.6	99.2	97.8	-100.07	-4,847.4	-1,028.4	451.8	259.2	192.53	2.346			
12,100.0	6,694.0	12,083.1	6,773.9	101.0	99.7	-100.07	-4,947.4	-1,028.4	451.8	255.5	196.25	2.302			
12,200.0	6,693.3	12,183.1	6,773.2	102.9	101.5	-100.07	-5,047.4	-1,028.4	451.8	251.8	199.98	2.259			
12,300.0	6,692.6	12,283.1	6,772.5	104.7	103.4	-100.07	-5,147.4	-1,028.4	451.8	248.1	203.70	2.218			
12,400.0	6,691.9	12,383.1	6,771.8	106.6	105.3	-100.07	-5,247.4	-1,028.4	451.8	244.3	207.43	2.178			
12,500.0	6,691.2	12,483.1	6,771.1	108.4	107.2	-100.07	-5,347.4	-1,028.4	451.8	240.6	211.16	2.139			
12,600.0	6,690.5	12,583.1	6,770.4	110.3	109.1	-100.07	-5,447.4	-1,028.4	451.8	236.9	214.90	2.102			
12,700.0	6,689.8	12,683.1	6,769.7	112.1	110.9	-100.07	-5,547.4	-1,028.4	451.8	233.1	218.63	2.066			
12,800.0	6,689.1	12,783.1	6,769.0	114.0	112.8	-100.07	-5,647.4	-1,028.4	451.8	229.4	222.37	2.032			
12,900.0	6,688.4	12,883.1	6,768.3	115.9	114.7	-100.07	-5,747.4	-1,028.4	451.8	225.7	226.11	1.998			
13,000.0	6,687.7	12,983.1	6,767.6	117.7	116.6	-100.07	-5,847.4	-1,028.4	451.8	221.9	229.85	1.966			
13,100.0	6,687.0	13,083.1	6,766.9	119.6	118.5	-100.07	-5,947.4	-1,028.4	451.8	218.2	233.59	1.934			
13,200.0	6,686.3	13,183.1	6,766.2	121.5	120.3	-100.07	-6,047.4	-1,028.4	451.8	214.4	237.33	1.904			
13,300.0	6,685.6	13,283.1	6,765.6	123.3	122.2	-100.07	-6,147.4	-1,028.4	451.8	210.7	241.08	1.874			
13,400.0	6,684.9	13,383.1	6,764.9	125.2	124.1	-100.07	-6,247.4	-1,028.4	451.8	206.9	244.82	1.845			
13,500.0	6,684.2	13,483.1	6,764.2	127.1	126.0	-100.07	-6,347.4	-1,028.4	451.8	203.2	248.57	1.817			
13,600.0	6,683.5	13,583.1	6,763.5	129.0	127.9	-100.07	-6,447.4	-1,028.4	451.8	199.4	252.32	1.790			
13,700.0	6,682.8	13,683.1	6,762.8	130.8	129.8	-100.07	-6,547.4	-1,028.4	451.8	195.7	256.07	1.764			
13,800.0	6,682.1	13,783.1	6,762.1	132.7	131.7	-100.07	-6,647.4	-1,028.4	451.8	191.9	259.82	1.739			
13,900.0	6,681.4	13,883.1	6,761.4	134.6	133.6	-100.07	-6,747.4	-1,028.4	451.8	188.2	263.57	1.714			
14,000.0	6,680.7	13,983.1	6,760.7	136.5	135.5	-100.07	-6,847.4	-1,028.4	451.8	184.4	267.32	1.690			
14,100.0	6,680.0	14,083.1	6,760.0	138.3	137.4	-100.07	-6,947.4	-1,028.4	451.8	180.7	271.08	1.667			
14,200.0	6,679.3	14,183.1	6,759.3	140.2	139.2	-100.07	-7,047.4	-1,028.4	451.8	176.9	274.83	1.644			
14,300.0	6,678.6	14,283.1	6,758.6	142.1	141.1	-100.07	-7,147.4	-1,028.4	451.8	173.2	278.59	1.622			
14,400.0	6,677.9	14,383.1	6,757.9	144.0	143.0	-100.07	-7,247.4	-1,028.4	451.8	169.4	282.35	1.600			
14,500.0	6,677.2	14,483.1	6,757.2	145.9	144.9	-100.07	-7,347.4	-1,028.4	451.8	165.7	286.10	1.579			
14,512.2	6,677.1	14,495.3	6,757.1	146.1	145.2	-100.07	-7,359.6	-1,028.4	451.8	165.2	286.56	1.577			
14,529.3	6,677.0	14,507.9	6,757.0	146.4	145.4	-100.07	-7,372.1	-1,028.4	451.8	164.7	287.12	1.574 SF			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29M-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design				Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-423 - Wellbore #1 - Plan #1 (3-14-16)									Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	91.36	-0.4	15.0	15.0	15.0	0.00	N/A			
100.0	100.0	100.0	100.0	0.1	0.1	91.36	-0.4	15.0	15.0	14.8	0.22	66.957			
200.0	200.0	200.0	200.0	0.3	0.3	91.36	-0.4	15.0	15.0	14.4	0.67	22.319	CC, ES		
300.0	300.0	300.0	300.0	0.6	0.6	163.79	-0.4	15.0	16.3	15.2	1.12	14.491			
400.0	399.9	399.9	399.9	0.8	0.8	166.90	-0.4	15.0	20.1	18.5	1.58	12.713			
500.0	499.7	500.3	500.3	1.0	1.0	169.45	0.1	13.8	25.2	23.2	2.03	12.421			
600.0	599.3	600.9	600.8	1.3	1.2	170.88	1.6	10.1	30.4	27.9	2.48	12.268			
700.0	698.6	701.6	701.3	1.6	1.5	171.69	4.1	4.0	35.6	32.7	2.93	12.136			
800.0	797.5	802.5	801.8	1.9	1.7	172.10	7.5	-4.6	40.8	37.4	3.40	12.013			
900.0	896.1	903.5	902.0	2.2	2.0	172.25	12.0	-15.7	46.0	42.2	3.87	11.891			
1,000.0	994.2	1,004.6	1,002.1	2.6	2.3	172.22	17.4	-29.3	51.2	46.9	4.35	11.765			
1,100.0	1,091.7	1,105.9	1,101.9	3.1	2.6	172.06	23.8	-45.3	56.4	51.6	4.85	11.632			
1,200.0	1,188.6	1,207.3	1,201.3	3.6	3.0	171.80	31.2	-63.9	61.6	56.2	5.36	11.489			
1,300.0	1,284.9	1,308.8	1,300.3	4.1	3.5	171.46	39.6	-84.9	66.7	60.8	5.89	11.334			
1,400.0	1,380.4	1,410.5	1,398.8	4.7	3.9	171.06	49.0	-108.3	71.9	65.4	6.44	11.165			
1,500.0	1,475.0	1,511.9	1,496.3	5.3	4.5	170.62	59.3	-134.1	77.0	70.0	7.00	11.000			
1,600.0	1,569.2	1,611.8	1,592.1	6.0	5.0	170.32	69.8	-160.3	83.0	75.4	7.60	10.922			
1,700.0	1,663.3	1,711.6	1,687.8	6.7	5.6	170.07	80.3	-186.5	89.1	80.9	8.22	10.842			
1,800.0	1,757.4	1,811.4	1,783.6	7.4	6.2	169.85	90.7	-212.6	95.1	86.3	8.84	10.762			
1,900.0	1,851.5	1,911.2	1,879.3	8.1	6.7	169.65	101.2	-238.8	101.2	91.7	9.47	10.684			
2,000.0	1,945.6	2,011.0	1,975.1	8.8	7.3	169.48	111.7	-265.0	107.2	97.1	10.11	10.609			
2,100.0	2,039.7	2,110.8	2,070.8	9.5	7.9	169.33	122.1	-291.2	113.3	102.5	10.75	10.538			
2,200.0	2,133.8	2,210.7	2,166.6	10.2	8.5	169.19	132.6	-317.3	119.3	107.9	11.40	10.470			
2,300.0	2,227.9	2,310.5	2,262.4	10.9	9.1	169.06	143.1	-343.5	125.4	113.3	12.05	10.406			
2,400.0	2,322.1	2,410.3	2,358.1	11.6	9.6	168.95	153.6	-369.7	131.4	118.7	12.70	10.347			
2,500.0	2,416.2	2,510.1	2,453.9	12.4	10.2	168.84	164.0	-395.8	137.5	124.1	13.36	10.291			
2,600.0	2,510.3	2,609.9	2,549.6	13.1	10.8	168.75	174.5	-422.0	143.5	129.5	14.02	10.238			
2,700.0	2,604.4	2,709.7	2,645.4	13.8	11.4	168.66	185.0	-448.2	149.6	134.9	14.68	10.188			
2,800.0	2,698.5	2,809.6	2,741.1	14.5	12.0	168.58	195.4	-474.4	155.6	140.3	15.35	10.142			
2,900.0	2,792.6	2,909.4	2,836.9	15.2	12.6	168.51	205.9	-500.5	161.7	145.7	16.01	10.098			
3,000.0	2,886.7	3,009.2	2,932.6	15.9	13.2	168.44	216.4	-526.7	167.7	151.1	16.68	10.057			
3,100.0	2,980.8	3,109.0	3,028.4	16.7	13.8	168.37	226.9	-552.9	173.8	156.4	17.35	10.018			
3,200.0	3,074.9	3,208.8	3,124.1	17.4	14.4	168.32	237.3	-579.0	179.8	161.8	18.02	9.982			
3,300.0	3,169.0	3,308.6	3,219.9	18.1	15.0	168.26	247.8	-605.2	185.9	167.2	18.69	9.948			
3,400.0	3,263.2	3,408.5	3,315.6	18.8	15.6	168.21	258.3	-631.4	192.0	172.6	19.36	9.915			
3,500.0	3,357.3	3,508.3	3,411.4	19.5	16.2	168.16	268.7	-657.6	198.0	178.0	20.03	9.884			
3,600.0	3,451.4	3,608.1	3,507.1	20.2	16.8	168.11	279.2	-683.7	204.1	183.4	20.71	9.855			
3,700.0	3,545.5	3,707.9	3,602.9	21.0	17.4	168.07	289.7	-709.9	210.1	188.7	21.38	9.827			
3,800.0	3,639.6	3,807.7	3,698.7	21.7	18.0	168.03	300.1	-736.1	216.2	194.1	22.06	9.801			
3,900.0	3,733.7	3,907.5	3,794.4	22.4	18.6	167.99	310.6	-762.2	222.2	199.5	22.73	9.776			
4,000.0	3,827.8	4,007.4	3,890.2	23.1	19.2	167.95	321.1	-788.4	228.3	204.9	23.41	9.752			
4,100.0	3,921.9	4,107.2	3,985.9	23.8	19.8	167.92	331.6	-814.6	234.3	210.3	24.08	9.730			
4,200.0	4,016.0	4,207.0	4,081.7	24.6	20.4	167.88	342.0	-840.8	240.4	215.6	24.76	9.708			
4,300.0	4,110.2	4,306.8	4,177.4	25.3	21.0	167.85	352.5	-866.9	246.4	221.0	25.44	9.688			
4,400.0	4,204.3	4,406.6	4,273.2	26.0	21.6	167.82	363.0	-893.1	252.5	226.4	26.12	9.668			
4,500.0	4,298.4	4,506.4	4,368.9	26.7	22.2	167.79	373.4	-919.3	258.6	231.8	26.80	9.649			
4,600.0	4,392.5	4,606.3	4,464.7	27.4	22.8	167.76	383.9	-945.4	264.6	237.1	27.48	9.631			
4,700.0	4,486.6	4,706.1	4,560.4	28.2	23.4	167.74	394.4	-971.6	270.7	242.5	28.15	9.614			
4,800.0	4,580.7	4,805.9	4,656.2	28.9	24.0	167.71	404.9	-997.8	276.7	247.9	28.83	9.597			
4,900.0	4,674.8	4,905.7	4,751.9	29.6	24.6	167.69	415.3	-1,024.0	282.8	253.3	29.51	9.581			
5,000.0	4,769.0	5,005.5	4,847.7	30.3	25.2	167.66	425.8	-1,050.1	288.6	258.4	30.21	9.553			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29M-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-423 - Wellbore #1 - Plan #1 (3-14-16)													Offset Site Error: 0.0 ft		
Survey Program: 0-MWD														Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
5,100.0	4,864.1	5,105.5	4,943.6	30.8	25.8	167.52	436.3	-1,076.3	291.6	260.7	30.90	9.434			
5,200.0	4,960.3	5,205.5	5,039.5	31.3	26.4	167.22	446.8	-1,102.6	291.1	259.5	31.60	9.213			
5,300.0	5,057.3	5,305.4	5,135.3	31.7	27.0	166.74	457.2	-1,128.7	287.4	255.0	32.31	8.894			
5,400.0	5,155.1	5,400.0	5,226.2	32.0	27.5	166.12	467.1	-1,153.4	280.5	247.5	32.99	8.501			
5,500.0	5,253.6	5,492.7	5,315.8	32.4	27.9	165.46	475.9	-1,175.3	272.7	239.1	33.60	8.117			
5,600.0	5,352.7	5,584.1	5,405.0	32.6	28.3	164.77	483.4	-1,194.2	264.7	230.6	34.16	7.750			
5,700.0	5,452.1	5,675.8	5,494.9	32.8	28.6	164.06	490.0	-1,210.6	256.4	221.7	34.68	7.395			
5,800.0	5,551.9	5,767.8	5,585.7	33.0	28.8	163.31	495.5	-1,224.3	247.8	212.7	35.15	7.051			
5,900.0	5,651.8	5,859.9	5,677.1	33.1	29.1	162.52	499.9	-1,235.3	239.0	203.4	35.59	6.715			
6,000.0	5,751.8	5,952.4	5,769.1	33.2	29.2	90.70	503.2	-1,243.6	230.3	194.2	36.11	6.379			
6,100.0	5,851.8	6,045.4	5,861.9	33.3	29.4	90.15	505.4	-1,249.1	224.3	187.7	36.63	6.123			
6,200.0	5,951.8	6,138.6	5,955.0	33.3	29.5	89.87	506.5	-1,251.9	221.4	184.3	37.03	5.977			
6,252.1	6,003.9	6,187.5	6,003.9	33.4	29.6	-90.58	506.6	-1,252.2	221.0	183.7	37.34	5.919			
6,300.0	6,051.6	6,235.1	6,051.6	33.4	29.6	-91.50	506.6	-1,252.2	221.1	183.2	37.87	5.838			
6,400.0	6,149.9	6,334.4	6,150.9	33.4	29.7	-95.88	505.9	-1,252.2	222.2	182.2	40.05	5.548			
6,500.0	6,244.9	6,436.9	6,252.6	33.3	29.7	-100.89	494.7	-1,252.2	225.2	183.0	42.28	5.327			
6,600.0	6,335.2	6,542.3	6,354.7	33.2	29.7	-105.65	469.0	-1,252.2	229.8	186.1	43.77	5.250			
6,700.0	6,419.1	6,650.8	6,455.2	33.1	29.6	-110.01	428.2	-1,252.2	235.7	191.4	44.32	5.318			
6,800.0	6,495.1	6,762.5	6,551.5	33.0	29.4	-113.90	371.7	-1,252.2	242.3	198.4	43.87	5.524			
6,900.0	6,562.1	6,877.4	6,640.9	32.8	29.3	-117.25	299.7	-1,252.2	249.2	206.6	42.60	5.849			
7,000.0	6,618.8	6,995.4	6,720.3	32.7	29.1	-120.03	212.7	-1,252.2	255.8	214.9	40.85	6.261			
7,100.0	6,664.3	7,116.0	6,786.7	32.5	28.9	-122.20	112.1	-1,252.2	261.5	222.5	39.09	6.691			
7,200.0	6,697.7	7,238.8	6,837.2	32.5	28.8	-123.77	0.3	-1,252.2	266.1	228.2	37.87	7.027			
7,300.0	6,718.6	7,363.3	6,869.5	32.4	28.7	-124.73	-119.8	-1,252.2	269.0	231.3	37.68	7.138			
7,400.0	6,726.6	7,488.6	6,881.8	32.5	28.8	-125.09	-244.4	-1,252.2	270.1	231.2	38.85	6.952			
7,500.0	6,726.1	7,591.5	6,881.8	32.6	28.9	-125.17	-347.2	-1,252.2	270.4	229.9	40.44	6.685			
7,600.0	6,725.4	7,691.5	6,881.7	32.8	29.2	-125.27	-447.2	-1,252.2	270.7	228.5	42.16	6.421			
7,700.0	6,724.7	7,791.5	6,881.5	33.1	29.7	-125.36	-547.2	-1,252.2	271.0	227.0	44.04	6.153			
7,800.0	6,724.0	7,891.5	6,881.4	33.6	30.3	-125.46	-647.2	-1,252.2	271.3	225.3	46.07	5.889			
7,900.0	6,723.3	7,991.5	6,881.3	34.1	31.0	-125.56	-747.2	-1,252.2	271.7	223.4	48.23	5.632			
8,000.0	6,722.6	8,091.5	6,881.1	34.8	31.8	-125.65	-847.2	-1,252.2	272.0	221.5	50.50	5.386			
8,100.0	6,721.9	8,191.5	6,881.0	35.6	32.8	-125.75	-947.2	-1,252.2	272.3	219.4	52.87	5.151			
8,200.0	6,721.2	8,291.5	6,880.8	36.5	33.9	-125.84	-1,047.2	-1,252.2	272.6	217.3	55.31	4.929			
8,300.0	6,720.5	8,391.5	6,880.7	37.5	35.1	-125.94	-1,147.2	-1,252.2	273.0	215.1	57.83	4.720			
8,400.0	6,719.8	8,491.5	6,880.6	38.6	36.4	-126.03	-1,247.2	-1,252.2	273.3	212.9	60.40	4.524			
8,500.0	6,719.1	8,591.5	6,880.4	39.9	37.8	-126.13	-1,347.2	-1,252.2	273.6	210.6	63.03	4.341			
8,600.0	6,718.4	8,691.5	6,880.3	41.1	39.2	-126.22	-1,447.2	-1,252.2	274.0	208.2	65.70	4.169			
8,700.0	6,717.7	8,791.4	6,880.1	42.5	40.6	-126.32	-1,547.2	-1,252.2	274.3	205.9	68.42	4.009			
8,800.0	6,717.0	8,891.4	6,880.0	43.9	42.1	-126.41	-1,647.2	-1,252.2	274.6	203.5	71.16	3.859			
8,900.0	6,716.3	8,991.4	6,879.9	45.3	43.7	-126.50	-1,747.2	-1,252.2	274.9	201.0	73.94	3.719			
9,000.0	6,715.6	9,091.4	6,879.7	46.8	45.2	-126.60	-1,847.2	-1,252.2	275.3	198.5	76.73	3.587			
9,100.0	6,714.9	9,191.4	6,879.6	48.4	46.8	-126.69	-1,947.2	-1,252.2	275.6	196.1	79.56	3.464			
9,200.0	6,714.2	9,291.4	6,879.4	49.9	48.5	-126.78	-2,047.2	-1,252.2	275.9	193.6	82.40	3.349			
9,300.0	6,713.5	9,391.4	6,879.3	51.5	50.1	-126.88	-2,147.2	-1,252.2	276.3	191.0	85.25	3.241			
9,400.0	6,712.8	9,491.4	6,879.2	53.1	51.8	-126.97	-2,247.2	-1,252.2	276.6	188.5	88.12	3.139			
9,500.0	6,712.1	9,591.4	6,879.0	54.8	53.5	-127.06	-2,347.2	-1,252.2	277.0	186.0	91.00	3.043			
9,600.0	6,711.4	9,691.4	6,878.9	56.4	55.2	-127.15	-2,447.2	-1,252.2	277.3	183.4	93.90	2.953			
9,700.0	6,710.7	9,791.4	6,878.7	58.1	56.9	-127.24	-2,547.2	-1,252.2	277.6	180.8	96.80	2.868			
9,800.0	6,710.0	9,891.4	6,878.6	59.8	58.6	-127.34	-2,647.2	-1,252.2	278.0	178.3	99.71	2.788			
9,900.0	6,709.3	9,991.4	6,878.5	61.5	60.4	-127.43	-2,747.2	-1,252.2	278.3	175.7	102.62	2.712			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29M-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-423 - Wellbore #1 - Plan #1 (3-14-16)										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)			
10,000.0	6,708.6	10,091.4	6,878.3	63.2	62.1	-127.52	-2,847.2	-1,252.2	278.6	173.1	105.54	2.640		
10,100.0	6,707.9	10,191.4	6,878.2	64.9	63.9	-127.61	-2,947.2	-1,252.2	279.0	170.5	108.47	2.572		
10,200.0	6,707.2	10,291.4	6,878.0	66.7	65.7	-127.70	-3,047.2	-1,252.2	279.3	167.9	111.39	2.508		
10,300.0	6,706.5	10,391.4	6,877.9	68.4	67.4	-127.79	-3,147.2	-1,252.2	279.7	165.3	114.33	2.446		
10,400.0	6,705.8	10,491.4	6,877.8	70.2	69.2	-127.88	-3,247.2	-1,252.2	280.0	162.8	117.26	2.388		
10,500.0	6,705.1	10,591.4	6,877.6	72.0	71.0	-127.97	-3,347.2	-1,252.2	280.4	160.2	120.19	2.333		
10,600.0	6,704.4	10,691.4	6,877.5	73.7	72.8	-128.06	-3,447.2	-1,252.2	280.7	157.6	123.13	2.280		
10,700.0	6,703.7	10,791.4	6,877.3	75.5	74.6	-128.15	-3,547.2	-1,252.2	281.0	155.0	126.06	2.229		
10,800.0	6,703.0	10,891.4	6,877.2	77.3	76.4	-128.24	-3,647.2	-1,252.2	281.4	152.4	129.00	2.181		
10,900.0	6,702.3	10,991.4	6,877.1	79.1	78.2	-128.33	-3,747.2	-1,252.2	281.7	149.8	131.93	2.135		
11,000.0	6,701.6	11,091.4	6,876.9	80.9	80.1	-128.42	-3,847.2	-1,252.2	282.1	147.2	134.87	2.092		
11,100.0	6,700.9	11,191.4	6,876.8	82.7	81.9	-128.51	-3,947.2	-1,252.2	282.4	144.6	137.80	2.050		
11,200.0	6,700.2	11,291.4	6,876.6	84.5	83.7	-128.60	-4,047.2	-1,252.2	282.8	142.0	140.73	2.009		
11,300.0	6,699.5	11,391.4	6,876.5	86.3	85.5	-128.68	-4,147.2	-1,252.2	283.1	139.5	143.66	1.971		
11,400.0	6,698.8	11,491.4	6,876.4	88.2	87.4	-128.77	-4,247.2	-1,252.2	283.5	136.9	146.59	1.934		
11,500.0	6,698.1	11,591.4	6,876.2	90.0	89.2	-128.86	-4,347.2	-1,252.2	283.8	134.3	149.52	1.898		
11,600.0	6,697.4	11,691.4	6,876.1	91.8	91.1	-128.95	-4,447.2	-1,252.2	284.2	131.7	152.44	1.864		
11,700.0	6,696.8	11,791.4	6,875.9	93.7	92.9	-129.03	-4,547.2	-1,252.2	284.5	129.2	155.36	1.831		
11,800.0	6,696.1	11,891.4	6,875.8	95.5	94.8	-129.12	-4,647.2	-1,252.2	284.9	126.6	158.28	1.800		
11,900.0	6,695.4	11,991.4	6,875.7	97.3	96.6	-129.21	-4,747.2	-1,252.2	285.2	124.0	161.19	1.770		
12,000.0	6,694.7	12,091.4	6,875.5	99.2	98.5	-129.30	-4,847.1	-1,252.2	285.6	121.5	164.10	1.740		
12,100.0	6,694.0	12,191.4	6,875.4	101.0	100.3	-129.38	-4,947.1	-1,252.2	285.9	118.9	167.01	1.712		
12,200.0	6,693.3	12,291.4	6,875.2	102.9	102.2	-129.47	-5,047.1	-1,252.2	286.3	116.4	169.92	1.685		
12,300.0	6,692.6	12,391.4	6,875.1	104.7	104.1	-129.55	-5,147.1	-1,252.2	286.7	113.8	172.82	1.659		
12,400.0	6,691.9	12,491.4	6,875.0	106.6	105.9	-129.64	-5,247.1	-1,252.2	287.0	111.3	175.71	1.633		
12,500.0	6,691.2	12,591.4	6,874.8	108.4	107.8	-129.73	-5,347.1	-1,252.2	287.4	108.8	178.61	1.609		
12,600.0	6,690.5	12,691.4	6,874.7	110.3	109.6	-129.81	-5,447.1	-1,252.2	287.7	106.2	181.50	1.585		
12,700.0	6,689.8	12,791.4	6,874.6	112.1	111.5	-129.90	-5,547.1	-1,252.2	288.1	103.7	184.38	1.562		
12,800.0	6,689.1	12,891.4	6,874.4	114.0	113.4	-129.98	-5,647.1	-1,252.2	288.4	101.2	187.27	1.540		
12,900.0	6,688.4	12,991.4	6,874.3	115.9	115.3	-130.07	-5,747.1	-1,252.2	288.8	98.7	190.14	1.519		
13,000.0	6,687.7	13,091.4	6,874.1	117.7	117.1	-130.15	-5,847.1	-1,252.2	289.2	96.1	193.02	1.498	Level 3	
13,100.0	6,687.0	13,191.4	6,874.0	119.6	119.0	-130.24	-5,947.1	-1,252.2	289.5	93.6	195.89	1.478	Level 3	
13,200.0	6,686.3	13,291.4	6,873.9	121.5	120.9	-130.32	-6,047.1	-1,252.2	289.9	91.1	198.75	1.459	Level 3	
13,300.0	6,685.6	13,391.4	6,873.7	123.3	122.8	-130.40	-6,147.1	-1,252.2	290.2	88.6	201.61	1.440	Level 3	
13,400.0	6,684.9	13,491.4	6,873.6	125.2	124.6	-130.49	-6,247.1	-1,252.2	290.6	86.1	204.47	1.421	Level 3	
13,500.0	6,684.2	13,591.4	6,873.4	127.1	126.5	-130.57	-6,347.1	-1,252.2	291.0	83.6	207.32	1.403	Level 3	
13,600.0	6,683.5	13,691.4	6,873.3	129.0	128.4	-130.66	-6,447.1	-1,252.2	291.3	81.2	210.17	1.386	Level 3	
13,700.0	6,682.8	13,791.4	6,873.2	130.8	130.3	-130.74	-6,547.1	-1,252.2	291.7	78.7	213.01	1.369	Level 3	
13,800.0	6,682.1	13,891.4	6,873.0	132.7	132.2	-130.82	-6,647.1	-1,252.2	292.1	76.2	215.85	1.353	Level 3	
13,900.0	6,681.4	13,991.4	6,872.9	134.6	134.1	-130.90	-6,747.1	-1,252.2	292.4	73.7	218.68	1.337	Level 3	
14,000.0	6,680.7	14,091.4	6,872.7	136.5	135.9	-130.99	-6,847.1	-1,252.2	292.8	71.3	221.51	1.322	Level 3	
14,100.0	6,680.0	14,191.4	6,872.6	138.3	137.8	-131.07	-6,947.1	-1,252.2	293.2	68.8	224.33	1.307	Level 3	
14,200.0	6,679.3	14,291.4	6,872.5	140.2	139.7	-131.15	-7,047.1	-1,252.2	293.5	66.4	227.15	1.292	Level 3	
14,300.0	6,678.6	14,391.4	6,872.3	142.1	141.6	-131.23	-7,147.1	-1,252.2	293.9	63.9	229.97	1.278	Level 3	
14,400.0	6,677.9	14,491.4	6,872.2	144.0	143.5	-131.32	-7,247.1	-1,252.2	294.3	61.5	232.78	1.264	Level 3	
14,500.0	6,677.2	14,591.4	6,872.0	145.9	145.4	-131.40	-7,347.1	-1,252.2	294.6	59.0	235.58	1.251	Level 3	
14,529.3	6,677.0	14,618.6	6,872.0	146.4	145.9	-131.42	-7,374.3	-1,252.2	294.7	58.4	236.38	1.247	Level 2, SF	

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29M-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-143 - Wellbore #1 - Plan #1 (3-14-16)													Offset Site Error:	0.0 ft	
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	90.69	-0.7	60.2	60.2						
100.0	100.0	100.0	100.0	0.1	0.1	90.69	-0.7	60.2	60.2	60.0	0.22	267.774	CC, ES		
200.0	200.0	200.0	200.0	0.3	0.3	90.69	-0.7	60.2	60.2	59.5	0.67	89.258			
300.0	300.0	300.0	300.0	0.6	0.6	162.11	-0.7	60.2	61.4	60.3	1.12	54.615			
400.0	399.9	399.9	399.9	0.8	0.8	163.15	-0.7	60.2	65.2	63.6	1.58	41.242			
500.0	499.7	499.7	499.7	1.0	1.0	164.65	-0.7	60.2	71.5	69.4	2.04	35.006			
600.0	599.3	599.3	599.3	1.3	1.2	166.34	-0.7	60.2	80.3	77.8	2.51	32.062			
700.0	698.6	698.6	698.6	1.6	1.5	168.04	-0.7	60.2	91.8	88.8	2.97	30.898			
800.0	797.5	797.5	797.5	1.9	1.7	169.61	-0.7	60.2	105.9	102.4	3.44	30.804			
900.0	896.1	896.1	896.1	2.2	1.9	171.00	-0.7	60.2	122.6	118.7	3.90	31.397			
1,000.0	994.2	994.2	994.2	2.6	2.1	172.19	-0.7	60.2	141.9	137.5	4.37	32.455			
1,100.0	1,091.7	1,091.7	1,091.7	3.1	2.3	173.20	-0.7	60.2	163.8	158.9	4.84	33.839			
1,200.0	1,188.6	1,188.6	1,188.6	3.6	2.6	174.05	-0.7	60.2	188.3	182.9	5.31	35.459			
1,300.0	1,284.9	1,289.3	1,289.3	4.1	2.8	174.66	0.0	59.4	214.4	208.6	5.78	37.092			
1,400.0	1,380.4	1,391.2	1,391.2	4.7	3.0	174.90	2.4	56.5	240.8	234.5	6.25	38.539			
1,500.0	1,475.0	1,493.7	1,493.4	5.3	3.2	174.88	6.6	51.6	267.4	260.6	6.72	39.769			
1,600.0	1,569.2	1,597.1	1,596.4	6.0	3.5	174.66	12.7	44.5	293.3	286.1	7.23	40.594			
1,700.0	1,663.3	1,701.7	1,700.3	6.7	3.7	174.25	20.6	35.1	316.9	309.2	7.75	40.901			
1,800.0	1,757.4	1,807.5	1,804.9	7.4	4.0	173.67	30.6	23.5	338.2	329.9	8.29	40.778			
1,900.0	1,851.5	1,914.2	1,910.0	8.1	4.3	172.93	42.5	9.5	357.0	348.2	8.86	40.294			
2,000.0	1,945.6	2,017.4	2,011.2	8.8	4.7	172.09	55.6	-5.9	373.8	364.3	9.45	39.564			
2,100.0	2,039.7	2,115.9	2,107.8	9.5	5.0	171.34	68.5	-20.9	390.3	380.2	10.04	38.878			
2,200.0	2,133.8	2,214.4	2,204.3	10.2	5.4	170.65	81.3	-36.0	406.8	396.1	10.65	38.208			
2,300.0	2,227.9	2,312.9	2,300.8	10.9	5.7	170.01	94.1	-51.0	423.4	412.1	11.27	37.574			
2,400.0	2,322.1	2,411.4	2,397.3	11.6	6.1	169.42	106.9	-66.0	440.0	428.1	11.90	36.974			
2,500.0	2,416.2	2,510.0	2,493.8	12.4	6.5	168.87	119.8	-81.1	456.7	444.2	12.54	36.407			
2,600.0	2,510.3	2,608.5	2,590.3	13.1	6.9	168.36	132.6	-96.1	473.4	460.2	13.20	35.873			
2,700.0	2,604.4	2,707.0	2,686.8	13.8	7.3	167.88	145.4	-111.2	490.2	476.3	13.86	35.369			
2,800.0	2,698.5	2,805.5	2,783.3	14.5	7.7	167.44	158.2	-126.2	507.0	492.4	14.53	34.895			
2,900.0	2,792.6	2,904.0	2,879.8	15.2	8.1	167.03	171.1	-141.2	523.8	508.6	15.20	34.448			
3,000.0	2,886.7	3,002.5	2,976.3	15.9	8.5	166.64	183.9	-156.3	540.6	524.7	15.89	34.026			
3,100.0	2,980.8	3,101.0	3,072.8	16.7	8.9	166.27	196.7	-171.3	557.5	540.9	16.58	33.629			
3,200.0	3,074.9	3,199.5	3,169.3	17.4	9.3	165.93	209.5	-186.3	574.3	557.1	17.27	33.254			
3,300.0	3,169.0	3,298.0	3,265.8	18.1	9.7	165.60	222.4	-201.4	591.2	573.3	17.97	32.900			
3,400.0	3,263.2	3,396.5	3,362.3	18.8	10.1	165.30	235.2	-216.4	608.2	589.5	18.67	32.566			
3,500.0	3,357.3	3,495.0	3,458.8	19.5	10.6	165.01	248.0	-231.4	625.1	605.7	19.38	32.250			
3,600.0	3,451.4	3,593.5	3,555.3	20.2	11.0	164.73	260.8	-246.5	642.0	621.9	20.09	31.950			
3,700.0	3,545.5	3,692.1	3,651.8	21.0	11.4	164.47	273.7	-261.5	659.0	638.2	20.81	31.667			
3,800.0	3,639.6	3,790.6	3,748.3	21.7	11.8	164.22	286.5	-276.6	676.0	654.4	21.53	31.398			
3,900.0	3,733.7	3,889.1	3,844.8	22.4	12.2	163.99	299.3	-291.6	692.9	670.7	22.25	31.143			
4,000.0	3,827.8	3,987.6	3,941.4	23.1	12.7	163.76	312.1	-306.6	709.9	687.0	22.98	30.901			
4,100.0	3,921.9	4,086.1	4,037.9	23.8	13.1	163.55	325.0	-321.7	727.0	703.2	23.70	30.670			
4,200.0	4,016.0	4,184.6	4,134.4	24.6	13.5	163.35	337.8	-336.7	744.0	719.5	24.43	30.451			
4,300.0	4,110.2	4,283.1	4,230.9	25.3	13.9	163.15	350.6	-351.7	761.0	735.8	25.16	30.242			
4,400.0	4,204.3	4,381.6	4,327.4	26.0	14.4	162.97	363.4	-366.8	778.0	752.1	25.90	30.042			
4,500.0	4,298.4	4,480.1	4,423.9	26.7	14.8	162.79	376.3	-381.8	795.1	768.4	26.63	29.852			
4,600.0	4,392.5	4,578.6	4,520.4	27.4	15.2	162.62	389.1	-396.8	812.1	784.7	27.37	29.670			
4,700.0	4,486.6	4,677.1	4,616.9	28.2	15.7	162.45	401.9	-411.9	829.2	801.0	28.11	29.496			
4,800.0	4,580.7	4,775.6	4,713.4	28.9	16.1	162.30	414.7	-426.9	846.2	817.4	28.85	29.330			
4,900.0	4,674.8	4,874.1	4,809.9	29.6	16.5	162.14	427.6	-442.0	863.3	833.7	29.59	29.171			
5,000.0	4,769.0	4,972.7	4,906.4	30.3	16.9	162.03	440.4	-457.0	880.1	849.7	30.36	28.989			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29M-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-143 - Wellbore #1 - Plan #1 (3-14-16)													Offset Site Error: 0.0 ft		
Survey Program: 0-MWD														Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
5,100.0	4,864.1	5,071.6	5,003.4	30.8	17.4	161.92	453.3	-472.1	894.2	863.1	31.12	28.731			
5,200.0	4,960.3	5,171.0	5,100.7	31.3	17.8	161.72	466.2	-487.3	905.1	873.2	31.87	28.398			
5,300.0	5,057.3	5,255.9	5,184.0	31.7	18.1	161.52	476.9	-499.8	913.3	880.8	32.49	28.112			
5,400.0	5,155.1	5,335.9	5,262.8	32.0	18.4	161.36	485.5	-509.9	920.2	887.2	33.00	27.885			
5,500.0	5,253.6	5,415.9	5,342.1	32.4	18.6	161.23	492.7	-518.3	926.0	892.6	33.44	27.692			
5,600.0	5,352.7	5,500.0	5,425.7	32.6	18.8	161.12	498.7	-525.4	930.7	896.9	33.82	27.522			
5,700.0	5,452.1	5,576.0	5,501.4	32.8	18.9	161.05	502.8	-530.2	934.2	900.1	34.09	27.401			
5,800.0	5,551.9	5,656.0	5,581.4	33.0	19.1	160.99	505.7	-533.5	936.5	902.2	34.31	27.298			
5,900.0	5,651.8	5,736.1	5,661.4	33.1	19.2	160.97	507.1	-535.2	937.7	903.2	34.45	27.221			
6,000.0	5,751.8	5,826.5	5,751.8	33.2	19.3	89.92	507.3	-535.4	937.8	903.2	34.64	27.073			
6,100.0	5,851.8	5,926.5	5,851.8	33.3	19.5	89.92	507.3	-535.4	937.8	902.9	34.94	26.839			
6,155.3	5,907.1	5,981.9	5,907.1	33.3	19.5	90.00	506.0	-535.4	937.8	902.8	35.06	26.749			
6,200.0	5,951.8	6,026.3	5,951.3	33.3	19.5	90.24	502.2	-535.4	937.8	902.8	35.07	26.739			
6,300.0	6,051.6	6,124.1	6,047.6	33.4	19.5	-88.99	484.6	-535.4	938.0	903.1	34.90	26.878			
6,400.0	6,149.9	6,220.5	6,139.3	33.4	19.4	-88.23	455.5	-535.4	938.3	903.7	34.55	27.158			
6,500.0	6,244.9	6,315.4	6,225.5	33.3	19.3	-87.51	415.8	-535.4	938.7	904.6	34.10	27.532			
6,600.0	6,335.2	6,409.0	6,305.0	33.2	19.1	-86.83	366.4	-535.4	939.3	905.7	33.60	27.951			
6,700.0	6,419.1	6,500.0	6,375.9	33.1	18.9	-86.21	309.5	-535.4	939.9	906.8	33.15	28.354			
6,800.0	6,495.1	6,593.1	6,440.9	33.0	18.7	-85.64	243.0	-535.4	940.6	907.8	32.79	28.687			
6,900.0	6,562.1	6,683.7	6,496.0	32.8	18.5	-85.15	171.1	-535.4	941.2	908.6	32.60	28.871			
7,000.0	6,618.8	6,773.7	6,541.8	32.7	18.3	-84.73	93.7	-535.4	941.8	909.2	32.64	28.858			
7,100.0	6,664.3	6,863.1	6,578.1	32.5	18.1	-84.40	12.1	-535.4	942.3	909.4	32.94	28.611			
7,200.0	6,697.7	6,950.0	6,604.0	32.5	18.0	-84.16	-70.8	-535.4	942.7	909.2	33.51	28.132			
7,300.0	6,718.6	7,040.7	6,620.8	32.4	18.0	-84.00	-159.9	-535.4	943.0	908.6	34.40	27.412			
7,400.0	6,726.6	7,129.2	6,626.9	32.5	18.3	-83.93	-248.1	-535.4	943.1	907.6	35.55	26.527			
7,500.0	6,726.1	7,227.9	6,626.8	32.6	19.0	-83.96	-346.9	-535.4	943.1	905.9	37.13	25.398			
7,600.0	6,725.4	7,327.9	6,626.7	32.8	20.0	-83.99	-446.9	-535.4	943.0	904.0	39.02	24.165			
7,700.0	6,724.7	7,427.9	6,626.5	33.1	21.1	-84.03	-546.9	-535.4	942.9	901.8	41.19	22.895			
7,800.0	6,724.0	7,527.9	6,626.4	33.6	22.4	-84.06	-646.9	-535.4	942.9	899.3	43.58	21.637			
7,900.0	6,723.3	7,627.9	6,626.2	34.1	23.7	-84.09	-746.9	-535.4	942.8	896.7	46.16	20.424			
8,000.0	6,722.6	7,727.9	6,626.1	34.8	25.1	-84.13	-846.9	-535.4	942.8	893.9	48.91	19.275			
8,100.0	6,721.9	7,827.9	6,626.0	35.6	26.6	-84.16	-946.9	-535.4	942.7	890.9	51.80	18.200			
8,200.0	6,721.2	7,927.9	6,625.8	36.5	28.1	-84.19	-1,046.9	-535.4	942.7	887.9	54.80	17.202			
8,300.0	6,720.5	8,027.9	6,625.7	37.5	29.7	-84.23	-1,146.9	-535.4	942.6	884.7	57.90	16.281			
8,400.0	6,719.8	8,127.9	6,625.5	38.6	31.3	-84.26	-1,246.9	-535.4	942.5	881.5	61.08	15.432			
8,500.0	6,719.1	8,227.9	6,625.4	39.9	32.9	-84.30	-1,346.8	-535.4	942.5	878.2	64.33	14.651			
8,600.0	6,718.4	8,327.9	6,625.3	41.1	34.6	-84.33	-1,446.8	-535.4	942.4	874.8	67.64	13.932			
8,700.0	6,717.7	8,427.9	6,625.1	42.5	36.2	-84.36	-1,546.8	-535.4	942.4	871.4	71.01	13.271			
8,800.0	6,717.0	8,527.9	6,625.0	43.9	38.0	-84.40	-1,646.8	-535.4	942.3	867.9	74.42	12.662			
8,900.0	6,716.3	8,627.9	6,624.8	45.3	39.7	-84.43	-1,746.8	-535.4	942.3	864.4	77.87	12.101			
9,000.0	6,715.6	8,727.9	6,624.7	46.8	41.4	-84.46	-1,846.8	-535.4	942.2	860.9	81.35	11.582			
9,100.0	6,714.9	8,827.9	6,624.6	48.4	43.2	-84.50	-1,946.8	-535.4	942.2	857.3	84.87	11.101			
9,200.0	6,714.2	8,927.9	6,624.4	49.9	44.9	-84.53	-2,046.8	-535.4	942.1	853.7	88.41	10.656			
9,300.0	6,713.5	9,027.9	6,624.3	51.5	46.7	-84.57	-2,146.8	-535.4	942.1	850.1	91.97	10.243			
9,400.0	6,712.8	9,127.9	6,624.2	53.1	48.5	-84.60	-2,246.8	-535.4	942.0	846.4	95.56	9.858			
9,500.0	6,712.1	9,227.9	6,624.0	54.8	50.3	-84.63	-2,346.8	-535.4	942.0	842.8	99.16	9.499			
9,600.0	6,711.4	9,327.9	6,623.9	56.4	52.1	-84.67	-2,446.8	-535.4	941.9	839.1	102.79	9.164			
9,700.0	6,710.7	9,427.9	6,623.7	58.1	53.9	-84.70	-2,546.8	-535.4	941.9	835.4	106.42	8.850			
9,800.0	6,710.0	9,527.9	6,623.6	59.8	55.8	-84.73	-2,646.8	-535.4	941.8	831.7	110.07	8.556			
9,900.0	6,709.3	9,627.9	6,623.5	61.5	57.6	-84.77	-2,746.8	-535.4	941.8	828.0	113.73	8.280			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29M-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-143 - Wellbore #1 - Plan #1 (3-14-16)													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)			
10,000.0	6,708.6	9,727.9	6,623.3	63.2	59.4	-84.80	-2,846.8	-535.4	941.7	824.3	117.41	8.021		
10,100.0	6,707.9	9,827.9	6,623.2	64.9	61.3	-84.84	-2,946.8	-535.4	941.7	820.6	121.09	7.776		
10,200.0	6,707.2	9,927.9	6,623.0	66.7	63.1	-84.87	-3,046.8	-535.4	941.6	816.8	124.79	7.546		
10,300.0	6,706.5	10,027.9	6,622.9	68.4	64.9	-84.90	-3,146.8	-535.4	941.6	813.1	128.49	7.328		
10,400.0	6,705.8	10,127.9	6,622.8	70.2	66.8	-84.94	-3,246.8	-535.4	941.5	809.3	132.20	7.122		
10,500.0	6,705.1	10,227.9	6,622.6	72.0	68.7	-84.97	-3,346.8	-535.4	941.5	805.5	135.91	6.927		
10,600.0	6,704.4	10,327.9	6,622.5	73.7	70.5	-85.01	-3,446.8	-535.4	941.4	801.8	139.64	6.742		
10,700.0	6,703.7	10,427.9	6,622.3	75.5	72.4	-85.04	-3,546.8	-535.4	941.4	798.0	143.37	6.566		
10,800.0	6,703.0	10,527.9	6,622.2	77.3	74.2	-85.07	-3,646.8	-535.4	941.3	794.2	147.10	6.399		
10,900.0	6,702.3	10,627.9	6,622.1	79.1	76.1	-85.11	-3,746.8	-535.4	941.3	790.4	150.85	6.240		
11,000.0	6,701.6	10,727.9	6,621.9	80.9	78.0	-85.14	-3,846.8	-535.4	941.2	786.6	154.59	6.088		
11,100.0	6,700.9	10,827.9	6,621.8	82.7	79.8	-85.18	-3,946.8	-535.4	941.2	782.8	158.34	5.944		
11,200.0	6,700.2	10,927.8	6,621.6	84.5	81.7	-85.21	-4,046.8	-535.4	941.1	779.0	162.10	5.806		
11,300.0	6,699.5	11,027.8	6,621.5	86.3	83.6	-85.24	-4,146.8	-535.4	941.1	775.2	165.86	5.674		
11,400.0	6,698.8	11,127.8	6,621.4	88.2	85.5	-85.28	-4,246.8	-535.4	941.0	771.4	169.62	5.548		
11,500.0	6,698.1	11,227.8	6,621.2	90.0	87.4	-85.31	-4,346.8	-535.4	941.0	767.6	173.39	5.427		
11,600.0	6,697.4	11,327.8	6,621.1	91.8	89.2	-85.34	-4,446.8	-535.4	940.9	763.8	177.16	5.311		
11,700.0	6,696.8	11,427.8	6,620.9	93.7	91.1	-85.38	-4,546.8	-535.4	940.9	760.0	180.93	5.200		
11,800.0	6,696.1	11,527.8	6,620.8	95.5	93.0	-85.41	-4,646.8	-535.4	940.8	756.1	184.71	5.094		
11,900.0	6,695.4	11,627.8	6,620.7	97.3	94.9	-85.45	-4,746.8	-535.4	940.8	752.3	188.48	4.991		
12,000.0	6,694.7	11,727.8	6,620.5	99.2	96.8	-85.48	-4,846.8	-535.4	940.8	748.5	192.27	4.893		
12,100.0	6,694.0	11,827.8	6,620.4	101.0	98.7	-85.51	-4,946.8	-535.4	940.7	744.7	196.05	4.798		
12,200.0	6,693.3	11,927.8	6,620.2	102.9	100.6	-85.55	-5,046.8	-535.4	940.7	740.8	199.84	4.707		
12,300.0	6,692.6	12,027.8	6,620.1	104.7	102.4	-85.58	-5,146.8	-535.4	940.6	737.0	203.63	4.619		
12,400.0	6,691.9	12,127.8	6,620.0	106.6	104.3	-85.62	-5,246.8	-535.4	940.6	733.2	207.42	4.535		
12,500.0	6,691.2	12,227.8	6,619.8	108.4	106.2	-85.65	-5,346.8	-535.4	940.5	729.3	211.21	4.453		
12,600.0	6,690.5	12,327.8	6,619.7	110.3	108.1	-85.68	-5,446.8	-535.4	940.5	725.5	215.00	4.374		
12,700.0	6,689.8	12,427.8	6,619.5	112.1	110.0	-85.72	-5,546.8	-535.4	940.5	721.7	218.80	4.298		
12,800.0	6,689.1	12,527.8	6,619.4	114.0	111.9	-85.75	-5,646.8	-535.4	940.4	717.8	222.60	4.225		
12,900.0	6,688.4	12,627.8	6,619.3	115.9	113.8	-85.79	-5,746.8	-535.4	940.4	714.0	226.40	4.154		
13,000.0	6,687.7	12,727.8	6,619.1	117.7	115.7	-85.82	-5,846.8	-535.4	940.3	710.1	230.20	4.085		
13,100.0	6,687.0	12,827.8	6,619.0	119.6	117.6	-85.85	-5,946.8	-535.4	940.3	706.3	234.00	4.018		
13,200.0	6,686.3	12,927.8	6,618.8	121.5	119.5	-85.89	-6,046.8	-535.4	940.3	702.4	237.81	3.954		
13,300.0	6,685.6	13,027.8	6,618.7	123.3	121.4	-85.92	-6,146.8	-535.4	940.2	698.6	241.62	3.891		
13,400.0	6,684.9	13,127.8	6,618.6	125.2	123.3	-85.96	-6,246.8	-535.4	940.2	694.8	245.42	3.831		
13,500.0	6,684.2	13,227.8	6,618.4	127.1	125.2	-85.99	-6,346.8	-535.4	940.1	690.9	249.23	3.772		
13,600.0	6,683.5	13,327.8	6,618.3	129.0	127.1	-86.02	-6,446.8	-535.4	940.1	687.1	253.04	3.715		
13,700.0	6,682.8	13,427.8	6,618.1	130.8	129.0	-86.06	-6,546.8	-535.4	940.1	683.2	256.85	3.660		
13,800.0	6,682.1	13,527.8	6,618.0	132.7	130.9	-86.09	-6,646.8	-535.4	940.0	679.4	260.67	3.606		
13,900.0	6,681.4	13,627.8	6,617.9	134.6	132.8	-86.12	-6,746.8	-535.4	940.0	675.5	264.48	3.554		
14,000.0	6,680.7	13,727.8	6,617.7	136.5	134.7	-86.16	-6,846.8	-535.4	940.0	671.7	268.29	3.503		
14,100.0	6,680.0	13,827.8	6,617.6	138.3	136.6	-86.19	-6,946.8	-535.4	939.9	667.8	272.11	3.454		
14,200.0	6,679.3	13,927.8	6,617.4	140.2	138.5	-86.23	-7,046.8	-535.4	939.9	664.0	275.93	3.406		
14,300.0	6,678.6	14,027.8	6,617.3	142.1	140.4	-86.26	-7,146.8	-535.4	939.8	660.1	279.74	3.360		
14,400.0	6,677.9	14,127.8	6,617.2	144.0	142.3	-86.29	-7,246.8	-535.4	939.8	656.2	283.56	3.314		
14,500.0	6,677.2	14,227.8	6,617.0	145.9	144.2	-86.33	-7,346.8	-535.4	939.8	652.4	287.38	3.270		
14,521.8	6,677.1	14,249.2	6,617.0	146.3	144.6	-86.34	-7,368.1	-535.4	939.8	651.6	288.21	3.261		
14,529.3	6,677.0	14,249.2	6,617.0	146.4	144.6	-86.34	-7,368.1	-535.4	939.8	651.4	288.35	3.259 SF		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29M-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-203 - Wellbore #1 - Plan #1 (3-14-16)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	90.69	-1.1	90.0	90.0					
100.0	100.0	100.0	100.0	0.1	0.1	90.69	-1.1	90.0	90.0	89.8	0.22	400.421		
200.0	200.0	200.0	200.0	0.3	0.3	90.69	-1.1	90.0	90.0	89.3	0.67	133.474 CC, ES		
300.0	300.0	300.0	300.0	0.6	0.6	161.99	-1.1	90.0	91.2	90.1	1.12	81.122		
400.0	399.9	399.9	399.9	0.8	0.8	162.70	-1.1	90.0	95.0	93.4	1.58	60.107		
500.0	499.7	499.7	499.7	1.0	1.0	163.78	-1.1	90.0	101.3	99.2	2.04	49.602		
600.0	599.3	599.3	599.3	1.3	1.2	165.07	-1.1	90.0	110.1	107.6	2.51	43.937		
700.0	698.6	698.6	698.6	1.6	1.5	166.46	-1.1	90.0	121.5	118.5	2.97	40.886		
800.0	797.5	797.5	797.5	1.9	1.7	167.84	-1.1	90.0	135.5	132.0	3.44	39.403		
900.0	896.1	896.1	896.1	2.2	1.9	169.13	-1.1	90.0	152.1	148.2	3.91	38.934 SF		
1,000.0	994.2	994.2	994.2	2.6	2.1	170.31	-1.1	90.0	171.3	166.9	4.37	39.155		
1,100.0	1,091.7	1,091.7	1,091.7	3.1	2.3	171.36	-1.1	90.0	193.1	188.2	4.84	39.862		
1,200.0	1,188.6	1,188.6	1,188.6	3.6	2.6	172.29	-1.1	90.0	217.5	212.1	5.31	40.925		
1,300.0	1,284.9	1,284.9	1,284.9	4.1	2.8	173.09	-1.1	90.0	244.4	238.6	5.78	42.252		
1,400.0	1,380.4	1,380.4	1,380.4	4.7	3.0	173.79	-1.1	90.0	273.9	267.6	6.26	43.781		
1,500.0	1,475.0	1,475.0	1,475.0	5.3	3.2	174.39	-1.1	90.0	305.9	299.1	6.73	45.463		
1,600.0	1,569.2	1,569.2	1,569.2	6.0	3.4	174.94	-1.1	90.0	339.5	332.3	7.21	47.061		
1,700.0	1,663.3	1,663.3	1,663.3	6.7	3.6	175.40	-1.1	90.0	373.2	365.5	7.71	48.416		
1,800.0	1,757.4	1,757.4	1,757.4	7.4	3.8	175.78	-1.1	90.0	406.9	398.7	8.21	49.584		
1,900.0	1,851.5	1,851.5	1,851.5	8.1	4.0	176.10	-1.1	90.0	440.7	432.0	8.71	50.599		
2,000.0	1,945.6	1,945.6	1,945.6	8.8	4.3	176.38	-1.1	90.0	474.4	465.2	9.21	51.488		
2,100.0	2,039.7	2,042.8	2,042.8	9.5	4.5	176.60	-0.9	89.9	508.1	498.3	9.73	52.231		
2,200.0	2,133.8	2,145.0	2,145.0	10.2	4.7	176.60	1.5	89.2	540.6	530.3	10.25	52.737		
2,300.0	2,227.9	2,248.1	2,247.9	10.9	4.9	176.34	6.6	87.6	571.7	560.9	10.78	53.037		
2,400.0	2,322.1	2,352.0	2,351.5	11.6	5.2	175.88	14.4	85.2	601.4	590.1	11.32	53.140		
2,500.0	2,416.2	2,456.6	2,455.6	12.4	5.4	175.24	25.0	82.0	629.8	618.0	11.87	53.057		
2,600.0	2,510.3	2,561.8	2,559.7	13.1	5.7	174.42	38.3	77.9	657.0	644.5	12.44	52.793		
2,700.0	2,604.4	2,661.2	2,657.9	13.8	5.9	173.56	53.0	73.4	683.1	670.1	13.03	52.444		
2,800.0	2,698.5	2,757.2	2,752.8	14.5	6.2	172.77	67.4	69.0	709.3	695.7	13.61	52.102		
2,900.0	2,792.6	2,853.3	2,847.7	15.2	6.5	172.04	81.7	64.6	735.6	721.4	14.22	51.737		
3,000.0	2,886.7	2,949.3	2,942.6	15.9	6.7	171.36	96.1	60.1	762.0	747.2	14.83	51.371		
3,100.0	2,980.8	3,045.4	3,037.5	16.7	7.0	170.72	110.4	55.7	788.5	773.1	15.46	51.004		
3,200.0	3,074.9	3,141.5	3,132.4	17.4	7.3	170.13	124.8	51.3	815.1	799.0	16.10	50.639		
3,300.0	3,169.0	3,237.5	3,227.2	18.1	7.6	169.57	139.1	46.9	841.8	825.1	16.74	50.278		
3,400.0	3,263.2	3,333.6	3,322.1	18.8	7.9	169.05	153.5	42.5	868.5	851.1	17.40	49.925		
3,500.0	3,357.3	3,429.7	3,417.0	19.5	8.2	168.56	167.8	38.1	895.3	877.3	18.06	49.580		
3,600.0	3,451.4	3,525.7	3,511.9	20.2	8.5	168.09	182.2	33.7	922.2	903.5	18.73	49.243		
3,700.0	3,545.5	3,621.8	3,606.8	21.0	8.8	167.66	196.6	29.3	949.1	929.7	19.40	48.917		
3,800.0	3,639.6	3,717.8	3,701.6	21.7	9.1	167.24	210.9	24.9	976.1	956.0	20.08	48.601		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29M-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-243 - Wellbore #1 - Plan #1 (3-14-16)													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	90.92	-0.7	45.1	45.1						
100.0	100.0	100.0	100.0	0.1	0.1	90.92	-0.7	45.1	45.1	44.9	0.22	200.842			
200.0	200.0	200.0	200.0	0.3	0.3	90.92	-0.7	45.1	45.1	44.5	0.67	66.947	CC, ES		
300.0	300.0	300.0	300.0	0.6	0.6	162.46	-0.7	45.1	46.4	45.3	1.12	41.241			
400.0	399.9	399.9	399.9	0.8	0.8	163.80	-0.7	45.1	50.1	48.6	1.58	31.727			
500.0	499.7	499.7	499.7	1.0	1.0	165.62	-0.7	45.1	56.5	54.4	2.04	27.651			
600.0	599.3	599.3	599.3	1.3	1.2	167.59	-0.7	45.1	65.4	62.9	2.51	26.087			
700.0	698.6	698.6	698.6	1.6	1.5	169.44	-0.7	45.1	76.9	73.9	2.97	25.881			
800.0	797.5	797.5	797.5	1.9	1.7	171.06	-0.7	45.1	91.0	87.6	3.44	26.488			
900.0	896.1	896.1	896.1	2.2	1.9	172.42	-0.7	45.1	107.8	103.9	3.90	27.617			
1,000.0	994.2	994.2	994.2	2.6	2.1	173.55	-0.7	45.1	127.2	122.8	4.37	29.097			
1,100.0	1,091.7	1,095.2	1,095.2	3.1	2.3	174.35	-0.1	44.1	148.0	143.2	4.83	30.618			
1,200.0	1,188.6	1,197.0	1,196.9	3.6	2.6	174.76	1.9	40.8	169.0	163.7	5.29	31.924			
1,300.0	1,284.9	1,299.3	1,299.0	4.1	2.8	174.88	5.4	35.2	190.0	184.3	5.76	32.988			
1,400.0	1,380.4	1,402.2	1,401.5	4.7	3.0	174.81	10.4	27.1	211.1	204.9	6.24	33.846			
1,500.0	1,475.0	1,505.7	1,504.2	5.3	3.3	174.59	16.9	16.7	232.3	225.5	6.73	34.526			
1,600.0	1,569.2	1,609.9	1,607.3	6.0	3.6	174.27	24.9	3.8	252.5	245.3	7.25	34.849			
1,700.0	1,663.3	1,715.1	1,710.9	6.7	3.9	173.80	34.4	-11.6	270.3	262.5	7.79	34.698			
1,800.0	1,757.4	1,821.2	1,814.9	7.4	4.3	173.20	45.6	-29.6	285.5	277.2	8.36	34.162			
1,900.0	1,851.5	1,926.0	1,917.0	8.1	4.7	172.48	58.0	-49.8	298.3	289.3	8.95	33.340			
2,000.0	1,945.6	2,025.2	2,013.5	8.8	5.1	171.81	70.2	-69.4	310.3	300.8	9.54	32.537			
2,100.0	2,039.7	2,124.4	2,109.9	9.5	5.5	171.19	82.4	-89.1	322.4	312.3	10.15	31.776			
2,200.0	2,133.8	2,223.6	2,206.4	10.2	5.9	170.61	94.7	-108.8	334.5	323.8	10.77	31.069			
2,300.0	2,227.9	2,322.8	2,302.8	10.9	6.4	170.08	106.9	-128.5	346.7	335.3	11.40	30.413			
2,400.0	2,322.1	2,422.0	2,399.3	11.6	6.8	169.58	119.1	-148.2	358.9	346.8	12.04	29.803			
2,500.0	2,416.2	2,521.3	2,495.8	12.4	7.3	169.11	131.3	-167.9	371.1	358.4	12.69	29.235			
2,600.0	2,510.3	2,620.5	2,592.2	13.1	7.7	168.67	143.5	-187.6	383.3	370.0	13.35	28.706			
2,700.0	2,604.4	2,719.7	2,688.7	13.8	8.2	168.26	155.7	-207.3	395.6	381.5	14.02	28.213			
2,800.0	2,698.5	2,818.9	2,785.2	14.5	8.7	167.88	167.9	-227.0	407.8	393.1	14.70	27.753			
2,900.0	2,792.6	2,918.1	2,881.6	15.2	9.2	167.51	180.1	-246.7	420.1	404.8	15.38	27.323			
3,000.0	2,886.7	3,017.3	2,978.1	15.9	9.6	167.17	192.3	-266.4	432.4	416.4	16.06	26.921			
3,100.0	2,980.8	3,116.5	3,074.6	16.7	10.1	166.85	204.5	-286.1	444.8	428.0	16.76	26.544			
3,200.0	3,074.9	3,215.7	3,171.0	17.4	10.6	166.54	216.7	-305.8	457.1	439.6	17.45	26.190			
3,300.0	3,169.0	3,314.9	3,267.5	18.1	11.1	166.25	228.9	-325.5	469.4	451.3	18.15	25.857			
3,400.0	3,263.2	3,414.1	3,363.9	18.8	11.6	165.98	241.1	-345.2	481.8	462.9	18.86	25.545			
3,500.0	3,357.3	3,513.3	3,460.4	19.5	12.1	165.72	253.3	-364.9	494.2	474.6	19.57	25.250			
3,600.0	3,451.4	3,612.5	3,556.9	20.2	12.5	165.47	265.5	-384.6	506.5	486.2	20.28	24.971			
3,700.0	3,545.5	3,711.8	3,653.3	21.0	13.0	165.23	277.7	-404.3	518.9	497.9	21.00	24.709			
3,800.0	3,639.6	3,811.0	3,749.8	21.7	13.5	165.01	289.9	-424.0	531.3	509.6	21.72	24.460			
3,900.0	3,733.7	3,910.2	3,846.3	22.4	14.0	164.79	302.1	-443.7	543.7	521.3	22.44	24.225			
4,000.0	3,827.8	4,009.4	3,942.7	23.1	14.5	164.58	314.3	-463.4	556.1	533.0	23.17	24.001			
4,100.0	3,921.9	4,108.6	4,039.2	23.8	15.0	164.39	326.5	-483.1	568.5	544.6	23.90	23.790			
4,200.0	4,016.0	4,207.8	4,135.7	24.6	15.5	164.20	338.7	-502.8	581.0	556.3	24.63	23.588			
4,300.0	4,110.2	4,307.0	4,232.1	25.3	16.0	164.02	350.9	-522.5	593.4	568.0	25.36	23.397			
4,400.0	4,204.3	4,406.2	4,328.6	26.0	16.5	163.85	363.1	-542.2	605.8	579.7	26.10	23.214			
4,500.0	4,298.4	4,505.4	4,425.0	26.7	17.0	163.68	375.3	-561.9	618.3	591.4	26.83	23.040			
4,600.0	4,392.5	4,604.6	4,521.5	27.4	17.5	163.52	387.5	-581.6	630.7	603.1	27.57	22.874			
4,700.0	4,486.6	4,703.8	4,618.0	28.2	17.9	163.37	399.7	-601.3	643.1	614.8	28.31	22.716			
4,800.0	4,580.7	4,803.0	4,714.4	28.9	18.4	163.22	411.9	-621.0	655.6	626.5	29.06	22.564			
4,900.0	4,674.8	4,902.2	4,810.9	29.6	18.9	163.08	424.1	-640.7	668.1	638.3	29.80	22.419			
5,000.0	4,769.0	5,001.5	4,907.4	30.3	19.4	162.96	436.3	-660.4	680.3	649.7	30.56	22.258			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29M-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-243 - Wellbore #1 - Plan #1 (3-14-16)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
5,100.0	4,864.1	5,101.0	5,004.2	30.8	19.9	162.81	448.5	-680.2	689.7	658.4	31.33	22.018		
5,200.0	4,960.3	5,200.7	5,101.1	31.3	20.4	162.55	460.8	-700.0	695.9	663.8	32.08	21.693		
5,300.0	5,057.3	5,288.5	5,186.6	31.7	20.8	162.27	471.3	-716.9	699.4	666.6	32.74	21.363		
5,400.0	5,155.1	5,371.0	5,267.5	32.0	21.1	162.03	480.0	-731.0	701.9	668.6	33.28	21.092		
5,500.0	5,253.6	5,453.6	5,348.8	32.4	21.4	161.81	487.4	-743.0	703.6	669.9	33.75	20.851		
5,600.0	5,352.7	5,536.1	5,430.5	32.6	21.6	161.61	493.7	-753.1	704.5	670.4	34.14	20.635		
5,700.0	5,452.1	5,618.7	5,512.5	32.8	21.8	161.43	498.7	-761.1	704.5	670.1	34.47	20.442		
5,800.0	5,551.9	5,700.0	5,593.5	33.0	22.0	161.27	502.3	-767.1	703.8	669.0	34.72	20.272		
5,900.0	5,651.8	5,784.0	5,677.4	33.1	22.1	161.13	504.9	-771.2	702.1	667.2	34.90	20.121		
6,000.0	5,751.8	5,866.8	5,760.1	33.2	22.2	89.99	506.1	-773.2	700.1	665.0	35.10	19.944		
6,064.3	5,816.1	5,922.8	5,816.1	33.2	22.3	89.98	506.3	-773.4	699.8	664.5	35.28	19.837		
6,100.0	5,851.8	5,958.5	5,851.8	33.3	22.3	89.98	506.3	-773.4	699.8	664.4	35.38	19.780		
6,200.0	5,951.8	6,058.5	5,951.8	33.3	22.4	89.98	506.3	-773.4	699.8	664.1	35.67	19.617		
6,300.0	6,051.6	6,158.5	6,051.6	33.4	22.5	-90.02	501.1	-773.4	699.8	663.9	35.86	19.514		
6,400.0	6,149.9	6,258.5	6,149.9	33.4	22.5	-90.02	483.0	-773.4	699.8	664.0	35.84	19.526		
6,500.0	6,244.9	6,358.6	6,245.0	33.3	22.4	-90.02	452.2	-773.4	699.8	664.2	35.64	19.634		
6,600.0	6,335.2	6,458.6	6,335.3	33.2	22.3	-90.02	409.2	-773.4	699.8	664.5	35.32	19.814		
6,700.0	6,419.1	6,558.6	6,419.2	33.1	22.1	-90.02	354.9	-773.4	699.8	664.9	34.94	20.030		
6,800.0	6,495.1	6,658.7	6,495.3	33.0	21.9	-90.01	290.0	-773.4	699.8	665.2	34.58	20.239		
6,900.0	6,562.1	6,758.7	6,562.2	32.8	21.7	-90.01	215.8	-773.4	699.8	665.5	34.33	20.387		
7,000.0	6,618.8	6,858.7	6,618.9	32.7	21.5	-90.01	133.5	-773.4	699.8	665.5	34.28	20.417		
7,100.0	6,664.3	6,958.7	6,664.3	32.5	21.3	-90.01	44.5	-773.4	699.8	665.3	34.50	20.284		
7,200.0	6,697.7	7,058.7	6,697.8	32.5	21.2	-90.00	-49.7	-773.4	699.8	664.8	35.06	19.962		
7,300.0	6,718.6	7,158.7	6,718.6	32.4	21.2	-90.00	-147.4	-773.4	699.8	663.8	35.97	19.457		
7,400.0	6,726.6	7,258.7	6,726.6	32.5	21.3	-90.00	-247.0	-773.4	699.8	662.6	37.22	18.803		
7,500.0	6,726.1	7,358.7	6,726.0	32.6	21.7	-90.00	-347.0	-773.4	699.8	661.0	38.81	18.032		
7,600.0	6,725.4	7,458.7	6,725.3	32.8	22.3	-90.00	-447.0	-773.4	699.8	659.1	40.68	17.202		
7,700.0	6,724.7	7,558.7	6,724.6	33.1	23.2	-90.00	-547.0	-773.4	699.8	657.0	42.82	16.343		
7,800.0	6,724.0	7,658.7	6,723.9	33.6	24.2	-90.00	-647.0	-773.4	699.8	654.6	45.18	15.489		
7,900.0	6,723.3	7,758.7	6,723.2	34.1	25.4	-90.00	-747.0	-773.4	699.8	652.1	47.74	14.660		
8,000.0	6,722.6	7,858.7	6,722.5	34.8	26.7	-90.00	-847.0	-773.4	699.8	649.4	50.46	13.870		
8,100.0	6,721.9	7,958.7	6,721.8	35.6	28.0	-90.00	-947.0	-773.4	699.8	646.5	53.31	13.127		
8,200.0	6,721.2	8,058.7	6,721.1	36.5	29.5	-90.00	-1,047.0	-773.4	699.8	643.5	56.28	12.434		
8,300.0	6,720.5	8,158.7	6,720.4	37.5	31.0	-90.00	-1,147.0	-773.4	699.8	640.5	59.36	11.790		
8,400.0	6,719.8	8,258.7	6,719.7	38.6	32.5	-90.00	-1,247.0	-773.4	699.8	637.3	62.51	11.195		
8,500.0	6,719.1	8,358.7	6,719.0	39.9	34.1	-90.00	-1,347.0	-773.4	699.8	634.1	65.74	10.645		
8,600.0	6,718.4	8,458.7	6,718.4	41.1	35.7	-90.00	-1,447.0	-773.4	699.8	630.8	69.04	10.137		
8,700.0	6,717.7	8,558.7	6,717.7	42.5	37.3	-90.00	-1,547.0	-773.4	699.8	627.4	72.38	9.668		
8,800.0	6,717.0	8,658.7	6,717.0	43.9	39.0	-90.00	-1,647.0	-773.4	699.8	624.0	75.78	9.235		
8,900.0	6,716.3	8,758.7	6,716.3	45.3	40.7	-90.00	-1,747.0	-773.4	699.8	620.6	79.21	8.835		
9,000.0	6,715.6	8,858.7	6,715.6	46.8	42.4	-90.00	-1,847.0	-773.4	699.8	617.1	82.68	8.464		
9,100.0	6,714.9	8,958.7	6,714.9	48.4	44.1	-90.00	-1,947.0	-773.4	699.8	613.6	86.18	8.121		
9,200.0	6,714.2	9,058.7	6,714.2	49.9	45.8	-90.00	-2,047.0	-773.4	699.8	610.1	89.71	7.801		
9,300.0	6,713.5	9,158.7	6,713.5	51.5	47.6	-90.00	-2,147.0	-773.4	699.8	606.6	93.26	7.504		
9,400.0	6,712.8	9,258.7	6,712.8	53.1	49.3	-90.00	-2,247.0	-773.4	699.8	603.0	96.84	7.227		
9,500.0	6,712.1	9,358.7	6,712.1	54.8	51.1	-90.00	-2,347.0	-773.4	699.8	599.4	100.43	6.968		
9,600.0	6,711.4	9,458.7	6,711.4	56.4	52.9	-90.00	-2,447.0	-773.4	699.8	595.8	104.04	6.726		
9,700.0	6,710.7	9,558.7	6,710.7	58.1	54.7	-90.00	-2,547.0	-773.4	699.8	592.1	107.67	6.500		
9,800.0	6,710.0	9,658.7	6,710.0	59.8	56.5	-90.00	-2,646.9	-773.4	699.8	588.5	111.31	6.287		
9,900.0	6,709.3	9,758.7	6,709.3	61.5	58.3	-90.00	-2,746.9	-773.4	699.8	584.9	114.97	6.087		

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29M-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-243 - Wellbore #1 - Plan #1 (3-14-16)													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)			
10,000.0	6,708.6	9,858.7	6,708.6	63.2	60.1	-90.00	-2,846.9	-773.4	699.8	581.2	118.63	5.899		
10,100.0	6,707.9	9,958.7	6,707.9	64.9	61.9	-90.00	-2,946.9	-773.4	699.8	577.5	122.31	5.722		
10,200.0	6,707.2	10,058.7	6,707.2	66.7	63.7	-90.00	-3,046.9	-773.4	699.8	573.8	126.00	5.554		
10,300.0	6,706.5	10,158.7	6,706.5	68.4	65.6	-90.00	-3,146.9	-773.4	699.8	570.1	129.69	5.396		
10,400.0	6,705.8	10,258.7	6,705.8	70.2	67.4	-90.00	-3,246.9	-773.4	699.8	566.4	133.40	5.246		
10,500.0	6,705.1	10,358.7	6,705.1	72.0	69.2	-90.00	-3,346.9	-773.4	699.8	562.7	137.11	5.104		
10,600.0	6,704.4	10,458.7	6,704.4	73.7	71.1	-90.00	-3,446.9	-773.4	699.8	559.0	140.83	4.969		
10,700.0	6,703.7	10,558.7	6,703.7	75.5	72.9	-90.00	-3,546.9	-773.4	699.8	555.3	144.55	4.841		
10,800.0	6,703.0	10,658.7	6,703.0	77.3	74.8	-90.00	-3,646.9	-773.4	699.8	551.5	148.28	4.720		
10,900.0	6,702.3	10,758.7	6,702.3	79.1	76.6	-90.00	-3,746.9	-773.4	699.8	547.8	152.02	4.604		
11,000.0	6,701.6	10,858.7	6,701.6	80.9	78.5	-90.00	-3,846.9	-773.4	699.8	544.1	155.76	4.493		
11,100.0	6,700.9	10,958.7	6,700.9	82.7	80.3	-90.00	-3,946.9	-773.4	699.8	540.3	159.50	4.388		
11,200.0	6,700.2	11,058.7	6,700.2	84.5	82.2	-90.00	-4,046.9	-773.4	699.8	536.6	163.25	4.287		
11,300.0	6,699.5	11,158.7	6,699.5	86.3	84.1	-90.00	-4,146.9	-773.4	699.8	532.8	167.01	4.190		
11,400.0	6,698.8	11,258.7	6,698.8	88.2	85.9	-90.00	-4,246.9	-773.4	699.8	529.1	170.76	4.098		
11,500.0	6,698.1	11,358.7	6,698.1	90.0	87.8	-90.00	-4,346.9	-773.4	699.8	525.3	174.53	4.010		
11,600.0	6,697.4	11,458.7	6,697.4	91.8	89.7	-90.00	-4,446.9	-773.4	699.8	521.5	178.29	3.925		
11,700.0	6,696.8	11,558.7	6,696.7	93.7	91.6	-90.00	-4,546.9	-773.4	699.8	517.8	182.06	3.844		
11,800.0	6,696.1	11,658.7	6,696.0	95.5	93.4	-90.00	-4,646.9	-773.4	699.8	514.0	185.83	3.766		
11,900.0	6,695.4	11,758.7	6,695.3	97.3	95.3	-90.00	-4,746.9	-773.4	699.8	510.2	189.60	3.691		
12,000.0	6,694.7	11,858.7	6,694.6	99.2	97.2	-90.00	-4,846.9	-773.4	699.8	506.4	193.38	3.619		
12,100.0	6,694.0	11,958.7	6,693.9	101.0	99.1	-90.00	-4,946.9	-773.4	699.8	502.7	197.16	3.550		
12,200.0	6,693.3	12,058.7	6,693.2	102.9	101.0	-90.00	-5,046.9	-773.4	699.8	498.9	200.94	3.483		
12,300.0	6,692.6	12,158.7	6,692.5	104.7	102.8	-90.00	-5,146.9	-773.4	699.8	495.1	204.72	3.418		
12,400.0	6,691.9	12,258.7	6,691.8	106.6	104.7	-90.00	-5,246.9	-773.4	699.8	491.3	208.51	3.356		
12,500.0	6,691.2	12,358.7	6,691.1	108.4	106.6	-90.00	-5,346.9	-773.4	699.8	487.5	212.29	3.296		
12,600.0	6,690.5	12,458.7	6,690.4	110.3	108.5	-90.00	-5,446.9	-773.4	699.8	483.7	216.08	3.239		
12,700.0	6,689.8	12,558.7	6,689.7	112.1	110.4	-90.00	-5,546.9	-773.4	699.8	480.0	219.87	3.183		
12,800.0	6,689.1	12,658.7	6,689.0	114.0	112.3	-90.00	-5,646.9	-773.4	699.8	476.2	223.66	3.129		
12,900.0	6,688.4	12,758.7	6,688.3	115.9	114.2	-90.00	-5,746.9	-773.4	699.8	472.4	227.46	3.077		
13,000.0	6,687.7	12,858.7	6,687.6	117.7	116.1	-90.00	-5,846.9	-773.4	699.8	468.6	231.25	3.026		
13,100.0	6,687.0	12,958.7	6,686.9	119.6	117.9	-90.00	-5,946.9	-773.4	699.8	464.8	235.05	2.977		
13,200.0	6,686.3	13,058.7	6,686.2	121.5	119.8	-90.00	-6,046.9	-773.4	699.8	461.0	238.85	2.930		
13,300.0	6,685.6	13,158.7	6,685.5	123.3	121.7	-90.00	-6,146.9	-773.4	699.8	457.2	242.65	2.884		
13,400.0	6,684.9	13,258.7	6,684.8	125.2	123.6	-90.00	-6,246.9	-773.4	699.8	453.4	246.45	2.840		
13,500.0	6,684.2	13,358.7	6,684.1	127.1	125.5	-90.00	-6,346.9	-773.4	699.8	449.6	250.25	2.796		
13,600.0	6,683.5	13,458.7	6,683.4	129.0	127.4	-90.00	-6,446.9	-773.4	699.8	445.8	254.05	2.755		
13,700.0	6,682.8	13,558.7	6,682.7	130.8	129.3	-90.00	-6,546.9	-773.4	699.8	442.0	257.86	2.714		
13,800.0	6,682.1	13,658.7	6,682.0	132.7	131.2	-90.00	-6,646.9	-773.4	699.8	438.2	261.66	2.675		
13,900.0	6,681.4	13,758.7	6,681.4	134.6	133.1	-90.00	-6,746.8	-773.4	699.8	434.4	265.47	2.636		
14,000.0	6,680.7	13,858.7	6,680.7	136.5	135.0	-90.00	-6,846.8	-773.4	699.8	430.5	269.28	2.599		
14,100.0	6,680.0	13,958.7	6,680.0	138.3	136.9	-90.00	-6,946.8	-773.4	699.8	426.7	273.09	2.563		
14,200.0	6,679.3	14,058.7	6,679.3	140.2	138.8	-90.00	-7,046.8	-773.4	699.8	422.9	276.89	2.527		
14,300.0	6,678.6	14,158.7	6,678.6	142.1	140.7	-90.00	-7,146.8	-773.4	699.8	419.1	280.70	2.493		
14,400.0	6,677.9	14,258.7	6,677.9	144.0	142.6	-90.00	-7,246.8	-773.4	699.8	415.3	284.51	2.460		
14,500.0	6,677.2	14,358.7	6,677.2	145.9	144.5	-90.00	-7,346.8	-773.4	699.8	411.5	288.33	2.427		
14,511.4	6,677.1	14,370.1	6,677.1	146.1	144.7	-90.00	-7,358.2	-773.4	699.8	411.1	288.76	2.424		
14,529.3	6,677.0	14,381.8	6,677.0	146.4	144.9	-90.00	-7,370.0	-773.4	699.9	410.5	289.32	2.419 SF		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29M-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-303 - Wellbore #1 - Plan #1 (3-15-16)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	90.55	-0.7	75.2	75.2					
100.0	100.0	100.0	100.0	0.1	0.1	90.55	-0.7	75.2	75.2	75.0	0.22	334.709		
200.0	200.0	200.0	200.0	0.3	0.3	90.55	-0.7	75.2	75.2	74.6	0.67	111.570 CC, ES		
300.0	300.0	300.0	300.0	0.6	0.6	161.90	-0.7	75.2	76.5	75.3	1.12	67.991		
400.0	399.9	399.9	399.9	0.8	0.8	162.76	-0.7	75.2	80.2	78.6	1.58	50.759		
500.0	499.7	499.7	499.7	1.0	1.0	164.02	-0.7	75.2	86.5	84.4	2.04	42.367		
600.0	599.3	599.3	599.3	1.3	1.2	165.50	-0.7	75.2	95.3	92.8	2.51	38.047		
700.0	698.6	698.6	698.6	1.6	1.5	167.04	-0.7	75.2	106.7	103.8	2.97	35.929		
800.0	797.5	797.5	797.5	1.9	1.7	168.52	-0.7	75.2	120.8	117.3	3.44	35.133 SF		
900.0	896.1	896.1	896.1	2.2	1.9	169.88	-0.7	75.2	137.4	133.5	3.91	35.189		
1,000.0	994.2	994.2	994.2	2.6	2.1	171.09	-0.7	75.2	156.7	152.3	4.37	35.824		
1,100.0	1,091.7	1,091.7	1,091.7	3.1	2.3	172.14	-0.7	75.2	178.5	173.7	4.84	36.868		
1,200.0	1,188.6	1,188.6	1,188.6	3.6	2.6	173.04	-0.7	75.2	202.9	197.6	5.31	38.207		
1,300.0	1,284.9	1,284.9	1,284.9	4.1	2.8	173.82	-0.7	75.2	229.9	224.1	5.78	39.766		
1,400.0	1,380.4	1,380.4	1,380.4	4.7	3.0	174.48	-0.7	75.2	259.4	253.2	6.25	41.490		
1,500.0	1,475.0	1,479.8	1,479.8	5.3	3.2	174.96	-0.1	74.7	290.8	284.1	6.73	43.221		
1,600.0	1,569.2	1,581.1	1,581.0	6.0	3.4	175.11	2.7	72.7	322.0	314.8	7.22	44.597		
1,700.0	1,663.3	1,683.8	1,683.5	6.7	3.7	174.95	7.7	68.9	351.2	343.5	7.73	45.455		
1,800.0	1,757.4	1,787.7	1,787.0	7.4	3.9	174.53	15.0	63.5	378.4	370.2	8.25	45.878		
1,900.0	1,851.5	1,892.6	1,891.3	8.1	4.2	173.90	24.7	56.2	403.6	394.8	8.79	45.925		
2,000.0	1,945.6	1,998.5	1,996.1	8.8	4.4	173.08	36.8	47.2	426.8	417.4	9.35	45.640		
2,100.0	2,039.7	2,098.0	2,094.3	9.5	4.7	172.23	49.6	37.6	448.6	438.7	9.92	45.212		
2,200.0	2,133.8	2,195.4	2,190.4	10.2	5.0	171.47	62.3	28.1	470.5	460.0	10.51	44.775		
2,300.0	2,227.9	2,292.8	2,286.5	10.9	5.3	170.78	75.0	18.7	492.4	481.3	11.11	44.343		
2,400.0	2,322.1	2,390.2	2,382.6	11.6	5.6	170.15	87.6	9.2	514.4	502.7	11.71	43.913		
2,500.0	2,416.2	2,487.6	2,478.7	12.4	5.9	169.56	100.3	-0.3	536.5	524.1	12.33	43.495		
2,600.0	2,510.3	2,585.0	2,574.8	13.1	6.2	169.03	113.0	-9.7	558.6	545.6	12.96	43.090		
2,700.0	2,604.4	2,682.4	2,670.9	13.8	6.6	168.53	125.6	-19.2	580.7	567.1	13.60	42.699		
2,800.0	2,698.5	2,779.8	2,767.0	14.5	6.9	168.07	138.3	-28.7	602.9	588.7	14.25	42.323		
2,900.0	2,792.6	2,877.2	2,863.1	15.2	7.2	167.65	151.0	-38.1	625.1	610.2	14.90	41.963		
3,000.0	2,886.7	2,974.6	2,959.2	15.9	7.5	167.25	163.7	-47.6	647.4	631.8	15.56	41.619		
3,100.0	2,980.8	3,072.0	3,055.3	16.7	7.9	166.88	176.3	-57.1	669.7	653.4	16.22	41.290		
3,200.0	3,074.9	3,169.4	3,151.4	17.4	8.2	166.53	189.0	-66.5	692.0	675.1	16.89	40.976		
3,300.0	3,169.0	3,266.8	3,247.5	18.1	8.6	166.20	201.7	-76.0	714.3	696.7	17.56	40.677		
3,400.0	3,263.2	3,364.2	3,343.6	18.8	8.9	165.90	214.3	-85.5	736.6	718.4	18.24	40.392		
3,500.0	3,357.3	3,461.6	3,439.7	19.5	9.3	165.61	227.0	-94.9	759.0	740.1	18.92	40.120		
3,600.0	3,451.4	3,559.0	3,535.8	20.2	9.6	165.34	239.7	-104.4	781.4	761.8	19.60	39.860		
3,700.0	3,545.5	3,656.4	3,631.9	21.0	10.0	165.08	252.3	-113.9	803.8	783.5	20.29	39.613		
3,800.0	3,639.6	3,753.8	3,728.1	21.7	10.3	164.84	265.0	-123.3	826.2	805.2	20.98	39.377		
3,900.0	3,733.7	3,851.2	3,824.2	22.4	10.7	164.61	277.7	-132.8	848.6	826.9	21.67	39.152		
4,000.0	3,827.8	3,948.6	3,920.3	23.1	11.0	164.39	290.3	-142.3	871.1	848.7	22.37	38.937		
4,100.0	3,921.9	4,046.0	4,016.4	23.8	11.4	164.18	303.0	-151.7	893.5	870.4	23.07	38.732		
4,200.0	4,016.0	4,143.4	4,112.5	24.6	11.7	163.99	315.7	-161.2	916.0	892.2	23.77	38.535		
4,300.0	4,110.2	4,240.8	4,208.6	25.3	12.1	163.80	328.4	-170.7	938.4	914.0	24.47	38.348		
4,400.0	4,204.3	4,338.2	4,304.7	26.0	12.4	163.62	341.0	-180.1	960.9	935.7	25.18	38.168		
4,500.0	4,298.4	4,435.6	4,400.8	26.7	12.8	163.45	353.7	-189.6	983.4	957.5	25.88	37.996		

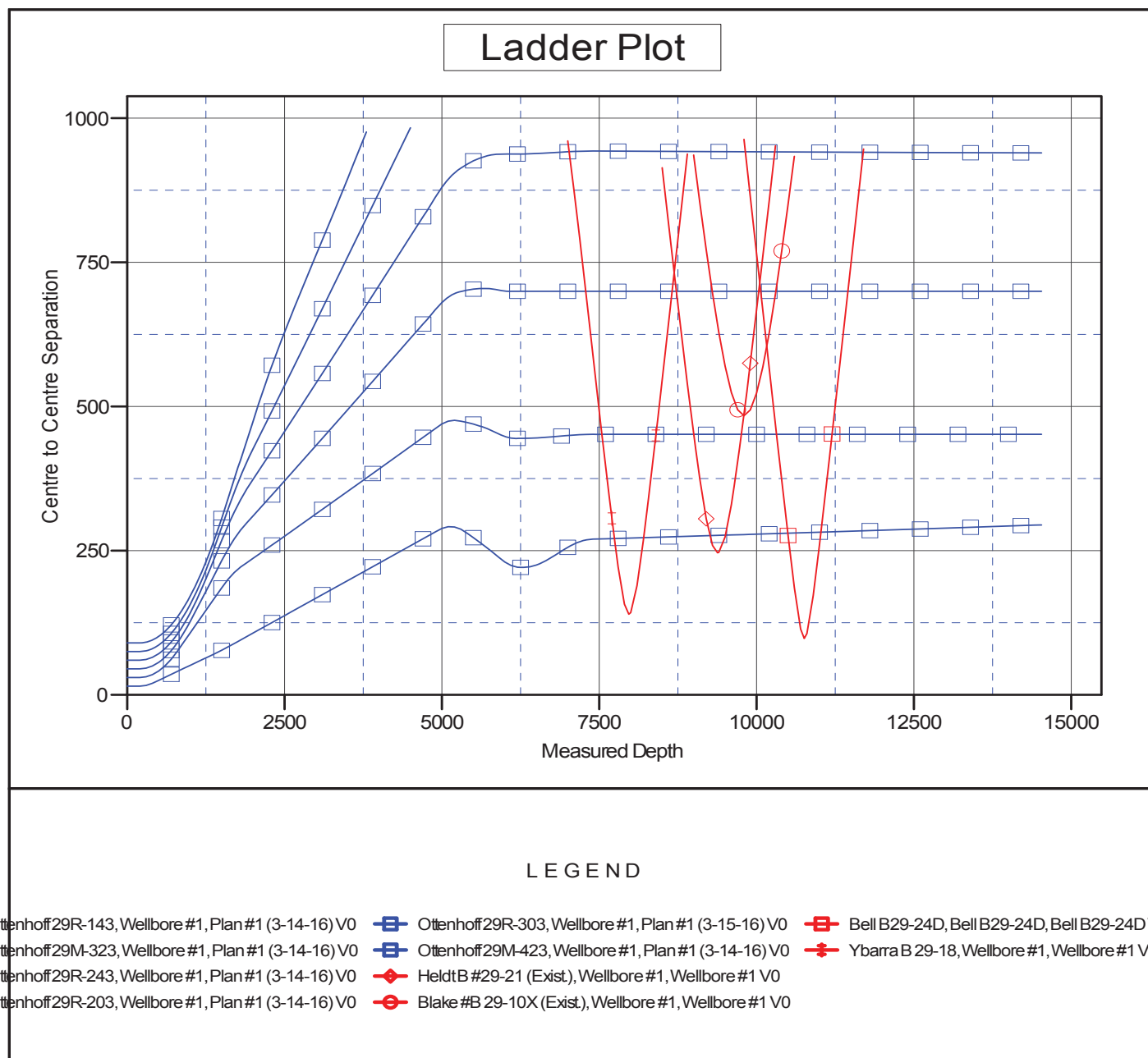
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29M-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design													Ybarra B 29-18 Sec.29-T5N-R64W - Ybarra B 29-18 - Wellbore #1 - Wellbore #1		Offset Site Error:		0.0 ft
Survey Program: 515-														Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning			
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Minimum Separation	Separation Factor						
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)						
7,000.0	6,618.8	6,705.4	6,622.4	32.7	20.0	15.93	-816.3	-1,616.2	960.6	928.6	31.98	30.036					
7,100.0	6,664.3	6,750.5	6,667.4	32.5	20.0	21.69	-817.3	-1,615.1	873.5	844.1	29.44	29.675					
7,200.0	6,697.7	6,784.8	6,701.7	32.5	20.1	32.08	-818.1	-1,614.2	781.4	752.0	29.41	26.573					
7,300.0	6,718.6	6,807.4	6,724.3	32.4	20.1	51.59	-818.7	-1,613.6	686.0	652.4	33.59	20.426					
7,400.0	6,726.6	6,817.8	6,734.7	32.5	20.2	81.83	-819.0	-1,613.3	589.0	551.5	37.50	15.706					
7,500.0	6,726.1	6,820.0	6,736.9	32.6	20.2	87.58	-819.1	-1,613.2	492.5	454.5	38.03	12.951					
7,600.0	6,725.4	6,822.0	6,738.9	32.8	20.2	88.41	-819.1	-1,613.2	397.6	358.8	38.87	10.230					
7,700.0	6,724.7	6,824.0	6,740.9	33.1	20.2	89.24	-819.2	-1,613.1	306.1	266.2	39.83	7.684					
7,800.0	6,724.0	6,826.1	6,743.0	33.6	20.2	90.09	-819.2	-1,613.1	221.9	181.0	40.90	5.425					
7,900.0	6,723.3	6,828.2	6,745.1	34.1	20.2	90.94	-819.3	-1,613.0	157.4	115.3	42.05	3.743					
7,972.3	6,722.8	6,829.7	6,746.6	34.6	20.2	91.57	-819.3	-1,613.0	139.8	96.8	42.94	3.255 CC, ES, SF					
8,000.0	6,722.6	6,830.3	6,747.2	34.8	20.2	91.81	-819.4	-1,613.0	142.5	99.2	43.28	3.292					
8,100.0	6,721.9	6,832.4	6,749.3	35.6	20.2	92.68	-819.4	-1,612.9	189.3	144.7	44.58	4.247					
8,200.0	6,721.2	6,834.6	6,751.5	36.5	20.2	93.56	-819.5	-1,612.8	267.1	221.2	45.92	5.817					
8,300.0	6,720.5	6,836.7	6,753.6	37.5	20.2	94.45	-819.5	-1,612.8	356.2	308.9	47.31	7.529					
8,400.0	6,719.8	6,838.9	6,755.8	38.6	20.2	95.34	-819.6	-1,612.7	449.8	401.1	48.73	9.231					
8,500.0	6,719.1	6,841.2	6,758.0	39.9	20.2	96.25	-819.7	-1,612.7	545.8	495.6	50.18	10.876					
8,600.0	6,718.4	6,843.4	6,760.3	41.1	20.2	97.16	-819.7	-1,612.6	642.9	591.3	51.65	12.448					
8,700.0	6,717.7	6,845.7	6,762.5	42.5	20.2	98.08	-819.8	-1,612.5	740.8	687.7	53.13	13.944					
8,800.0	6,717.0	6,848.0	6,764.8	43.9	20.2	99.00	-819.9	-1,612.5	839.2	784.6	54.62	15.365					
8,900.0	6,716.3	6,850.3	6,767.1	45.3	20.2	99.93	-819.9	-1,612.4	937.9	881.8	56.11	16.715					

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29M-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

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

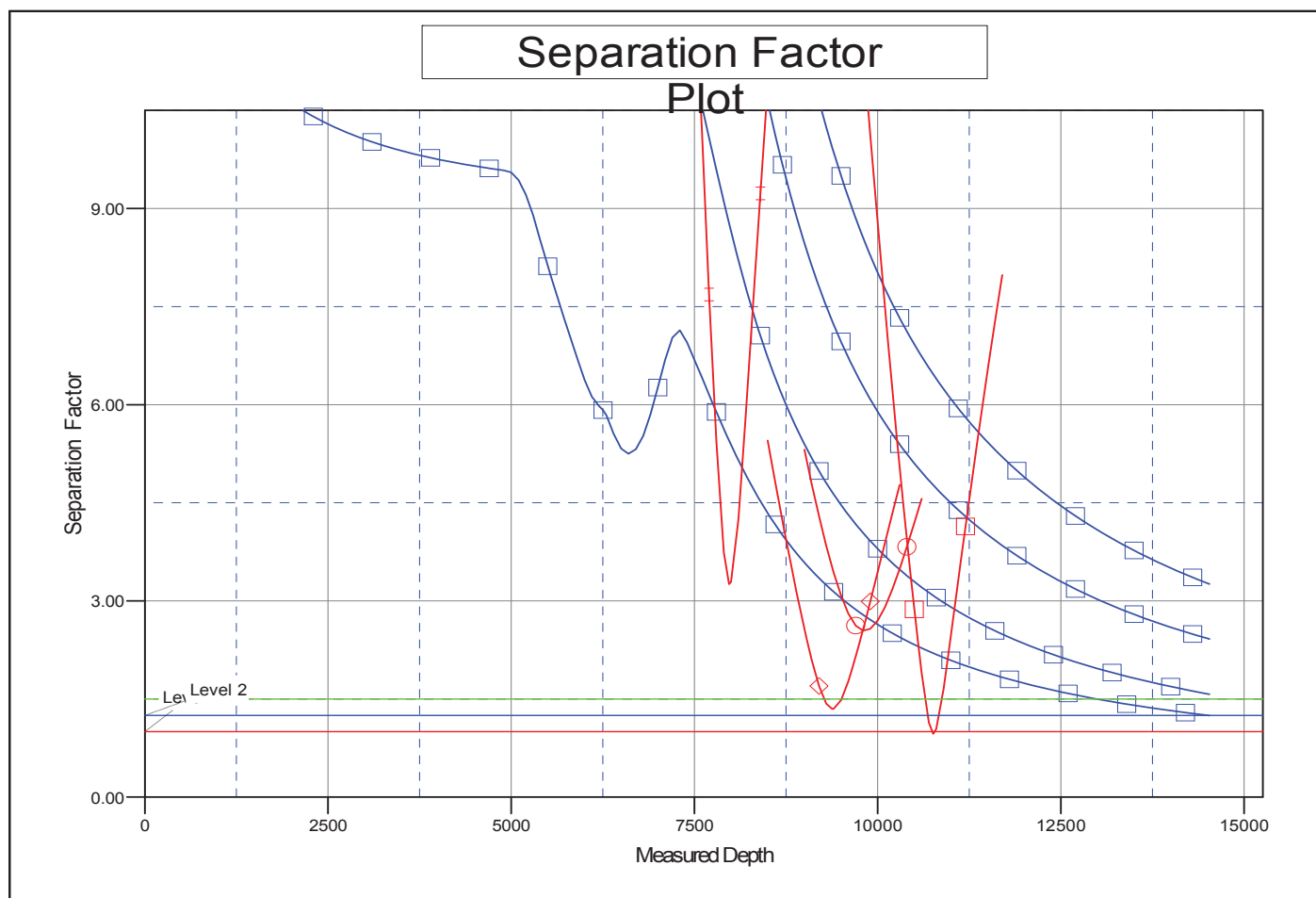
Coordinates are relative to: Ottenhoff 29M-203
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.60°



Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29M-203
Project:	SEC.29-T5N-R64W	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Reference Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Ottenhoff 29M-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

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

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



LEGEND

Ottenhoff29R-143, Wellbore #1, Plan #1 (3-14-16) V0	Ottenhoff29R-303, Wellbore #1, Plan #1 (3-15-16) V0	Bell B29-24D, Bell B29-24D, Bell B29-24D V0
Ottenhoff29M-323, Wellbore #1, Plan #1 (3-14-16) V0	Ottenhoff29M-423, Wellbore #1, Plan #1 (3-14-16) V0	Ybarra B 29-18, Wellbore #1, Wellbore #1 V0
Ottenhoff29R-243, Wellbore #1, Plan #1 (3-14-16) V0	Heldt B #29-21 (Exist.), Wellbore #1, Wellbore #1 V0	
Ottenhoff29R-203, Wellbore #1, Plan #1 (3-14-16) V0	Blake #B 29-10X (Exist.), Wellbore #1, Wellbore #1 V0	