PETROLEUM DEVELOPMENT CORP DJ Basin

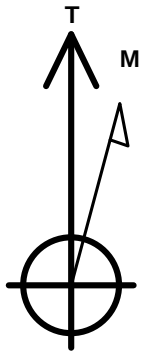
Well Name: **Ottenhoff 29R-203**
Surface Location: Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W
North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
Ground Elevation: 4663.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1381166.65	3259704.34	40.375957	-104.567837	

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

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 559'FNL & 990'FEL, Sec.29	1.0	0.0	0.0	Point
BHL 2634'FSL & 1195'FEL, Sec.32	6662.0	-7363.1	-156.4	Point



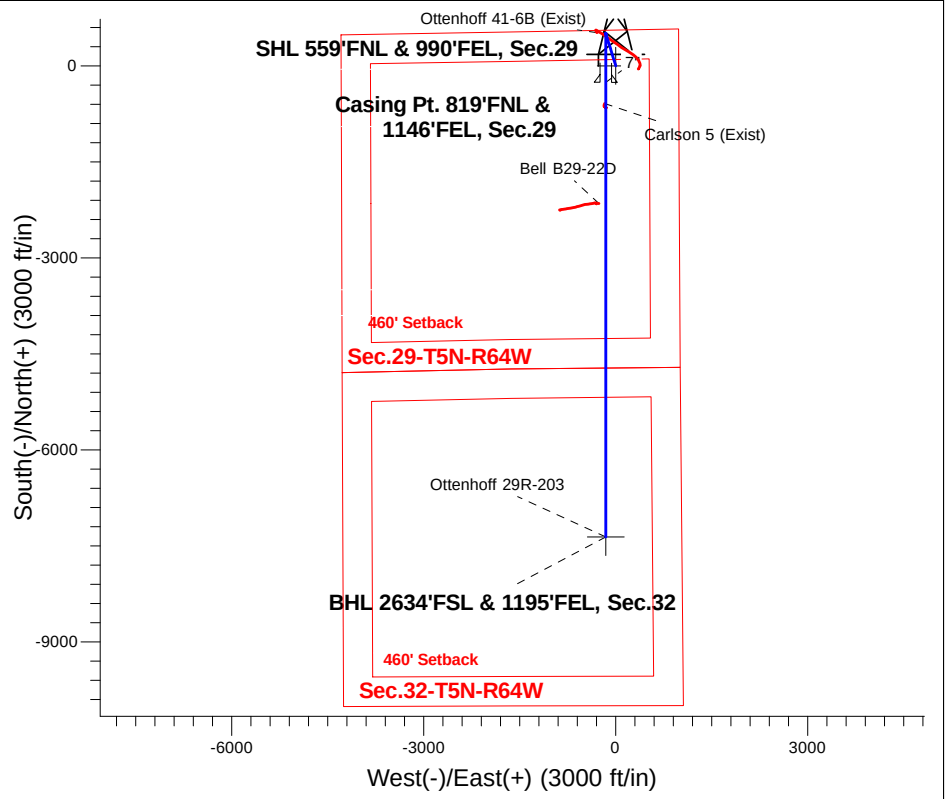
Azimuths to True North
Magnetic North: 8.12°

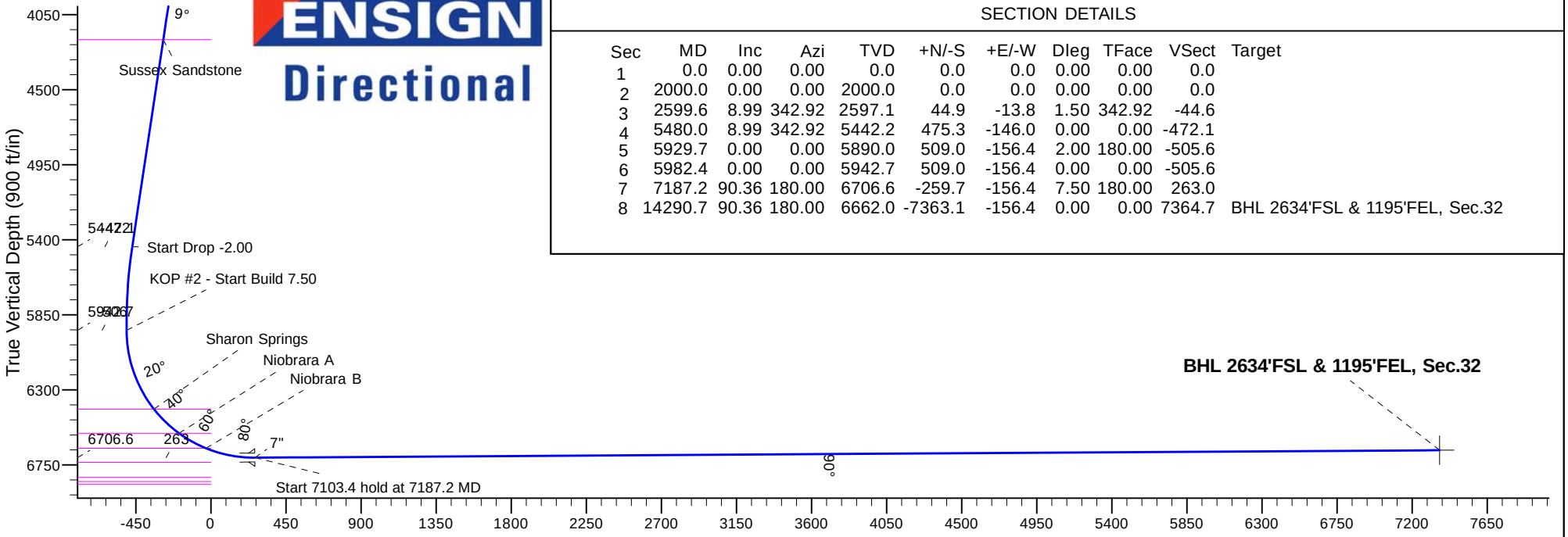
Magnetic Field
Strength: 52645.0snT
Dip Angle: 66.90°
Date: 2/26/2016
Model: IGRF2010

Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W
Ottenhoff 29R-203
Plan #1 (3-14-16)
16:07, March 17 2016

ANNOTATIONS

TVD	MD	Annotation
2000.0	2000.0	KOP - Start Build 1.50
5442.1	5480.0	Start Drop -2.00
5942.7	5982.4	KOP #2 - Start Build 7.50
6706.6	7187.2	Start 7103.4 hold at 7187.2 MD
6662.0	14290.7	TD at 14290.7





SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	2000.0	0.00	0.00	2000.0	0.0	0.0	0.00	0.00	0.0	
3	2599.6	8.99	342.92	2597.1	44.9	-13.8	1.50	342.92	-44.6	
4	5480.0	8.99	342.92	5442.2	475.3	-146.0	0.00	0.00	-472.1	
5	5929.7	0.00	0.00	5890.0	509.0	-156.4	2.00	180.00	-505.6	
6	5982.4	0.00	0.00	5942.7	509.0	-156.4	0.00	0.00	-505.6	
7	7187.2	90.36	180.00	6706.6	-259.7	-156.4	7.50	180.00	263.0	
8	14290.7	90.36	180.00	6662.0	-7363.1	-156.4	0.00	0.00	7364.7	BHL 2634'FSL & 1195'FEL, Sec.32

ENSIGN Directional

PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.29-T5N-R64W
Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W
Ottenhoff 29R-203

Wellbore #1

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

Standard Planning Report

17 March, 2016

PDC ENERGY
Growing E&P Value

Database:	US_EDM	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 29R-203

Well Position	**+N/-S**	0.4 ft	**Northing:**	1,381,166.65 usft	**Latitude:**	40.375957
	+E/-W	-45.1 ft	**Easting:**	3,259,704.34 usft	**Longitude:**	-104.567837
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	181.22

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	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,599.6	8.99	342.92	2,597.1	44.9	-13.8	1.50	1.50	0.00	342.92	
5,480.0	8.99	342.92	5,442.2	475.3	-146.0	0.00	0.00	0.00	0.00	
5,929.7	0.00	0.00	5,890.0	509.0	-156.4	2.00	-2.00	0.00	180.00	
5,982.4	0.00	0.00	5,942.7	509.0	-156.4	0.00	0.00	0.00	0.00	
7,187.2	90.36	180.00	6,706.6	-259.7	-156.4	7.50	7.50	0.00	180.00	
14,290.7	90.36	180.00	6,662.0	-7,363.1	-156.4	0.00	0.00	0.00	0.00	BHL 2634'FSL & 119[illegible]

Database:	US_EDM	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-203
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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 29R-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 559'FNL & 990'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
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 1.50									
2,100.0	1.50	342.92	2,100.0	1.3	-0.4	-1.2	1.50	1.50	0.00
2,200.0	3.00	342.92	2,199.9	5.0	-1.5	-5.0	1.50	1.50	0.00
2,300.0	4.50	342.92	2,299.7	11.3	-3.5	-11.2	1.50	1.50	0.00
2,400.0	6.00	342.92	2,399.3	20.0	-6.1	-19.9	1.50	1.50	0.00
2,500.0	7.50	342.92	2,498.6	31.2	-9.6	-31.0	1.50	1.50	0.00
2,599.6	8.99	342.92	2,597.1	44.9	-13.8	-44.6	1.50	1.50	0.00
2,600.0	8.99	342.92	2,597.5	45.0	-13.8	-44.7	0.00	0.00	0.00
2,700.0	8.99	342.92	2,696.3	59.9	-18.4	-59.5	0.00	0.00	0.00
2,800.0	8.99	342.92	2,795.1	74.8	-23.0	-74.3	0.00	0.00	0.00
2,900.0	8.99	342.92	2,893.8	89.8	-27.6	-89.2	0.00	0.00	0.00
3,000.0	8.99	342.92	2,992.6	104.7	-32.2	-104.0	0.00	0.00	0.00
3,100.0	8.99	342.92	3,091.4	119.7	-36.8	-118.9	0.00	0.00	0.00
3,200.0	8.99	342.92	3,190.2	134.6	-41.4	-133.7	0.00	0.00	0.00
3,300.0	8.99	342.92	3,288.9	149.6	-45.9	-148.5	0.00	0.00	0.00
3,400.0	8.99	342.92	3,387.7	164.5	-50.5	-163.4	0.00	0.00	0.00
3,500.0	8.99	342.92	3,486.5	179.4	-55.1	-178.2	0.00	0.00	0.00
3,544.1	8.99	342.92	3,530.0	186.0	-57.1	-184.8	0.00	0.00	0.00
Parkman Sandstone									
3,600.0	8.99	342.92	3,585.2	194.4	-59.7	-193.1	0.00	0.00	0.00
3,700.0	8.99	342.92	3,684.0	209.3	-64.3	-207.9	0.00	0.00	0.00
3,800.0	8.99	342.92	3,782.8	224.3	-68.9	-222.8	0.00	0.00	0.00
3,900.0	8.99	342.92	3,881.6	239.2	-73.5	-237.6	0.00	0.00	0.00
4,000.0	8.99	342.92	3,980.3	254.2	-78.1	-252.4	0.00	0.00	0.00
4,100.0	8.99	342.92	4,079.1	269.1	-82.7	-267.3	0.00	0.00	0.00
4,200.0	8.99	342.92	4,177.9	284.0	-87.3	-282.1	0.00	0.00	0.00
4,222.4	8.99	342.92	4,200.0	287.4	-88.3	-285.5	0.00	0.00	0.00
Sussex Sandstone									
4,300.0	8.99	342.92	4,276.6	299.0	-91.8	-297.0	0.00	0.00	0.00

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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 29R-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	8.99	342.92	4,375.4	313.9	-96.4	-311.8	0.00	0.00	0.00
4,500.0	8.99	342.92	4,474.2	328.9	-101.0	-326.7	0.00	0.00	0.00
4,600.0	8.99	342.92	4,572.9	343.8	-105.6	-341.5	0.00	0.00	0.00
4,700.0	8.99	342.92	4,671.7	358.8	-110.2	-356.3	0.00	0.00	0.00
4,800.0	8.99	342.92	4,770.5	373.7	-114.8	-371.2	0.00	0.00	0.00
4,900.0	8.99	342.92	4,869.3	388.7	-119.4	-386.0	0.00	0.00	0.00
5,000.0	8.99	342.92	4,968.0	403.6	-124.0	-400.9	0.00	0.00	0.00
5,100.0	8.99	342.92	5,066.8	418.5	-128.6	-415.7	0.00	0.00	0.00
5,200.0	8.99	342.92	5,165.6	433.5	-133.2	-430.6	0.00	0.00	0.00
5,300.0	8.99	342.92	5,264.3	448.4	-137.7	-445.4	0.00	0.00	0.00
5,400.0	8.99	342.92	5,363.1	463.4	-142.3	-460.2	0.00	0.00	0.00
5,480.0	8.99	342.92	5,442.1	475.3	-146.0	-472.1	0.00	0.00	0.00
Start Drop -2.00									
5,500.0	8.59	342.92	5,461.9	478.2	-146.9	-475.0	2.00	-2.00	0.00
5,600.0	6.59	342.92	5,561.0	490.9	-150.8	-487.6	2.00	-2.00	0.00
5,700.0	4.59	342.92	5,660.5	500.2	-153.7	-496.8	2.00	-2.00	0.00
5,800.0	2.59	342.92	5,760.3	506.2	-155.5	-502.8	2.00	-2.00	0.00
5,900.0	0.59	342.92	5,860.3	508.9	-156.3	-505.4	2.00	-2.00	0.00
5,929.7	0.00	0.00	5,890.0	509.0	-156.4	-505.6	2.00	-2.00	0.00
5,982.4	0.00	0.00	5,942.7	509.0	-156.4	-505.6	0.00	0.00	0.00
KOP #2 - Start Build 7.50									
6,000.0	1.32	180.00	5,960.3	508.8	-156.4	-505.4	7.49	7.49	0.00
6,100.0	8.82	180.00	6,059.8	500.0	-156.4	-496.5	7.50	7.50	0.00
6,200.0	16.32	180.00	6,157.4	478.2	-156.4	-474.8	7.50	7.50	0.00
6,300.0	23.82	180.00	6,251.2	443.9	-156.4	-440.5	7.50	7.50	0.00
6,400.0	31.32	180.00	6,339.8	397.7	-156.4	-394.3	7.50	7.50	0.00
6,491.6	38.19	180.00	6,415.0	345.5	-156.4	-342.1	7.50	7.50	0.00
Sharon Springs									
6,500.0	38.82	180.00	6,421.6	340.3	-156.4	-336.9	7.50	7.50	0.00
6,600.0	46.32	180.00	6,495.2	272.7	-156.4	-269.3	7.50	7.50	0.00
6,700.0	53.82	180.00	6,559.3	196.0	-156.4	-192.7	7.50	7.50	0.00
6,701.2	53.90	180.00	6,560.0	195.1	-156.4	-191.8	7.50	7.50	0.00
Niobrara A									
6,800.0	61.32	180.00	6,612.9	111.7	-156.4	-108.4	7.50	7.50	0.00
6,886.4	67.80	180.00	6,650.0	33.7	-156.4	-30.4	7.50	7.50	0.00
Niobrara B									
6,900.0	68.82	180.00	6,655.0	21.1	-156.4	-17.8	7.50	7.50	0.00
7,000.0	76.32	180.00	6,685.0	-74.3	-156.4	77.6	7.50	7.50	0.00
7,100.0	83.82	180.00	6,702.2	-172.7	-156.4	176.0	7.50	7.50	0.00
7,187.2	90.36	180.00	6,706.6	-259.7	-156.4	263.0	7.50	7.50	0.00
Start 7103.4 hold at 7187.2 MD - 7"									
7,200.0	90.36	180.00	6,706.6	-272.5	-156.4	275.8	0.01	0.01	0.00
7,300.0	90.36	180.00	6,705.9	-372.5	-156.4	375.8	0.00	0.00	0.00
7,400.0	90.36	180.00	6,705.3	-472.5	-156.4	475.7	0.00	0.00	0.00
7,500.0	90.36	180.00	6,704.7	-572.5	-156.4	575.7	0.00	0.00	0.00
7,600.0	90.36	180.00	6,704.0	-672.5	-156.4	675.7	0.00	0.00	0.00
7,700.0	90.36	180.00	6,703.4	-772.5	-156.4	775.7	0.00	0.00	0.00
7,800.0	90.36	180.00	6,702.8	-872.5	-156.4	875.6	0.00	0.00	0.00
7,900.0	90.36	180.00	6,702.2	-972.5	-156.4	975.6	0.00	0.00	0.00
8,000.0	90.36	180.00	6,701.5	-1,072.5	-156.4	1,075.6	0.00	0.00	0.00
8,100.0	90.36	180.00	6,700.9	-1,172.5	-156.4	1,175.6	0.00	0.00	0.00

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Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	**North Reference:**	True
Well:	Ottenhoff 29R-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	90.36	180.00	6,700.3	-1,272.5	-156.4	1,275.5	0.00	0.00	0.00
8,300.0	90.36	180.00	6,699.6	-1,372.5	-156.4	1,375.5	0.00	0.00	0.00
8,400.0	90.36	180.00	6,699.0	-1,472.5	-156.4	1,475.5	0.00	0.00	0.00
8,500.0	90.36	180.00	6,698.4	-1,572.5	-156.4	1,575.5	0.00	0.00	0.00
8,600.0	90.36	180.00	6,697.8	-1,672.5	-156.4	1,675.4	0.00	0.00	0.00
8,700.0	90.36	180.00	6,697.1	-1,772.5	-156.4	1,775.4	0.00	0.00	0.00
8,800.0	90.36	180.00	6,696.5	-1,872.5	-156.4	1,875.4	0.00	0.00	0.00
8,900.0	90.36	180.00	6,695.9	-1,972.5	-156.4	1,975.4	0.00	0.00	0.00
9,000.0	90.36	180.00	6,695.2	-2,072.5	-156.4	2,075.3	0.00	0.00	0.00
9,100.0	90.36	180.00	6,694.6	-2,172.5	-156.4	2,175.3	0.00	0.00	0.00
9,200.0	90.36	180.00	6,694.0	-2,272.5	-156.4	2,275.3	0.00	0.00	0.00
9,300.0	90.36	180.00	6,693.4	-2,372.5	-156.4	2,375.3	0.00	0.00	0.00
9,400.0	90.36	180.00	6,692.7	-2,472.5	-156.4	2,475.2	0.00	0.00	0.00
9,500.0	90.36	180.00	6,692.1	-2,572.5	-156.4	2,575.2	0.00	0.00	0.00
9,600.0	90.36	180.00	6,691.5	-2,672.5	-156.4	2,675.2	0.00	0.00	0.00
9,700.0	90.36	180.00	6,690.8	-2,772.5	-156.4	2,775.2	0.00	0.00	0.00
9,800.0	90.36	180.00	6,690.2	-2,872.5	-156.4	2,875.1	0.00	0.00	0.00
9,900.0	90.36	180.00	6,689.6	-2,972.5	-156.4	2,975.1	0.00	0.00	0.00
10,000.0	90.36	180.00	6,689.0	-3,072.5	-156.4	3,075.1	0.00	0.00	0.00
10,100.0	90.36	180.00	6,688.3	-3,172.5	-156.4	3,175.1	0.00	0.00	0.00
10,200.0	90.36	180.00	6,687.7	-3,272.5	-156.4	3,275.0	0.00	0.00	0.00
10,300.0	90.36	180.00	6,687.1	-3,372.5	-156.4	3,375.0	0.00	0.00	0.00
10,400.0	90.36	180.00	6,686.4	-3,472.5	-156.4	3,475.0	0.00	0.00	0.00
10,500.0	90.36	180.00	6,685.8	-3,572.5	-156.4	3,575.0	0.00	0.00	0.00
10,600.0	90.36	180.00	6,685.2	-3,672.5	-156.4	3,674.9	0.00	0.00	0.00
10,700.0	90.36	180.00	6,684.6	-3,772.5	-156.4	3,774.9	0.00	0.00	0.00
10,800.0	90.36	180.00	6,683.9	-3,872.5	-156.4	3,874.9	0.00	0.00	0.00
10,900.0	90.36	180.00	6,683.3	-3,972.5	-156.4	3,974.9	0.00	0.00	0.00
11,000.0	90.36	180.00	6,682.7	-4,072.4	-156.4	4,074.8	0.00	0.00	0.00
11,100.0	90.36	180.00	6,682.0	-4,172.4	-156.4	4,174.8	0.00	0.00	0.00
11,200.0	90.36	180.00	6,681.4	-4,272.4	-156.4	4,274.8	0.00	0.00	0.00
11,300.0	90.36	180.00	6,680.8	-4,372.4	-156.4	4,374.8	0.00	0.00	0.00
11,400.0	90.36	180.00	6,680.2	-4,472.4	-156.4	4,474.8	0.00	0.00	0.00
11,500.0	90.36	180.00	6,679.5	-4,572.4	-156.4	4,574.7	0.00	0.00	0.00
11,600.0	90.36	180.00	6,678.9	-4,672.4	-156.4	4,674.7	0.00	0.00	0.00
11,700.0	90.36	180.00	6,678.3	-4,772.4	-156.4	4,774.7	0.00	0.00	0.00
11,800.0	90.36	180.00	6,677.6	-4,872.4	-156.4	4,874.7	0.00	0.00	0.00
11,900.0	90.36	180.00	6,677.0	-4,972.4	-156.4	4,974.6	0.00	0.00	0.00
12,000.0	90.36	180.00	6,676.4	-5,072.4	-156.4	5,074.6	0.00	0.00	0.00
12,100.0	90.36	180.00	6,675.8	-5,172.4	-156.4	5,174.6	0.00	0.00	0.00
12,200.0	90.36	180.00	6,675.1	-5,272.4	-156.4	5,274.6	0.00	0.00	0.00
12,300.0	90.36	180.00	6,674.5	-5,372.4	-156.4	5,374.5	0.00	0.00	0.00
12,400.0	90.36	180.00	6,673.9	-5,472.4	-156.4	5,474.5	0.00	0.00	0.00
12,500.0	90.36	180.00	6,673.3	-5,572.4	-156.4	5,574.5	0.00	0.00	0.00
12,600.0	90.36	180.00	6,672.6	-5,672.4	-156.4	5,674.5	0.00	0.00	0.00
12,700.0	90.36	180.00	6,672.0	-5,772.4	-156.4	5,774.4	0.00	0.00	0.00
12,800.0	90.36	180.00	6,671.4	-5,872.4	-156.4	5,874.4	0.00	0.00	0.00
12,900.0	90.36	180.00	6,670.7	-5,972.4	-156.4	5,974.4	0.00	0.00	0.00
13,000.0	90.36	180.00	6,670.1	-6,072.4	-156.4	6,074.4	0.00	0.00	0.00
13,100.0	90.36	180.00	6,669.5	-6,172.4	-156.4	6,174.3	0.00	0.00	0.00
13,200.0	90.36	180.00	6,668.9	-6,272.4	-156.4	6,274.3	0.00	0.00	0.00
13,300.0	90.36	180.00	6,668.2	-6,372.4	-156.4	6,374.3	0.00	0.00	0.00

Database:	US_EDM	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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	90.36	180.00	6,667.6	-6,472.4	-156.4	6,474.3	0.00	0.00	0.00
13,500.0	90.36	180.00	6,667.0	-6,572.4	-156.4	6,574.2	0.00	0.00	0.00
13,600.0	90.36	180.00	6,666.3	-6,672.4	-156.4	6,674.2	0.00	0.00	0.00
13,700.0	90.36	180.00	6,665.7	-6,772.4	-156.4	6,774.2	0.00	0.00	0.00
13,800.0	90.36	180.00	6,665.1	-6,872.4	-156.4	6,874.2	0.00	0.00	0.00
13,900.0	90.36	180.00	6,664.5	-6,972.4	-156.4	6,974.1	0.00	0.00	0.00
14,000.0	90.36	180.00	6,663.8	-7,072.4	-156.4	7,074.1	0.00	0.00	0.00
14,100.0	90.36	180.00	6,663.2	-7,172.4	-156.4	7,174.1	0.00	0.00	0.00
14,200.0	90.36	180.00	6,662.6	-7,272.4	-156.4	7,274.1	0.00	0.00	0.00
14,290.7	90.36	180.00	6,662.0	-7,363.1	-156.4	7,364.7	0.00	0.00	0.00
TD at 14290.7 - BHL 2634'FSL & 1195'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 559'FNL & 990'FEL - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,381,166.66	3,259,704.34	40.375957	-104.567837
BHL 2634'FSL & 1195'FI - plan hits target center - Point	0.00	0.00	6,662.0	-7,363.1	-156.4	1,373,802.68	3,259,625.40	40.355746	-104.568398

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,187.2	6,706.6	7"	7	8-3/4

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,544.1	3,530.0	Parkman Sandstone		0.00	
4,222.4	4,200.0	Sussex Sandstone		0.00	
6,491.6	6,415.0	Sharon Springs		0.00	
6,701.2	6,560.0	Niobrara A		0.00	
6,886.4	6,650.0	Niobrara B		0.00	

Database:	US_EDM	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
2,000.0	2,000.0	0.0	0.0	KOP - Start Build 1.50
5,480.0	5,442.1	475.3	-146.0	Start Drop -2.00
5,982.4	5,942.7	509.0	-156.4	KOP #2 - Start Build 7.50
7,187.2	6,706.6	-259.7	-156.4	Start 7103.4 hold at 7187.2 MD
14,290.7	6,662.0	-7,363.1	-156.4	TD at 14290.7

ENSIGN Directional

PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.29-T5N-R64W
Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W
Ottenhoff 29R-203

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

Anticollision Report

17 March, 2016

PDC ENERGY
Growing E&P Value

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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	14,290.5	Plan #1 (3-14-16) (Wellbore #1)	MWD	MWD - Standard

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Bell Pad SEC.29-T5N-R64W						
Bell B29-22D - Bell B29-22D - Bell B29-22D	9,076.9	6,773.3	127.2	66.8	2.108	CC, ES, SF
Existing Wells Sec.29-T5N-R64W						
Carlson 5 (Exist) - Wellbore #1 - Wellbore #1	7,534.5	6,690.7	22.9	-10.0	0.695	Level 1, CC, ES, SF
Ottenhoff 41-6B (Exist) - Wellbore #1 - Wellbore #1	4,730.0	4,759.1	73.0	51.1	3.326	CC, ES, SF
Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W						
Ottenhoff 29M-203 - Wellbore #1 - Plan #1 (3-14-16)	200.0	200.0	90.0	89.3	133.474	CC, ES
Ottenhoff 29M-203 - Wellbore #1 - Plan #1 (3-14-16)	900.0	877.5	150.4	146.5	39.279	SF
Ottenhoff 29M-323 - Wellbore #1 - Plan #1 (3-14-16)	766.3	767.3	59.9	56.7	18.591	CC
Ottenhoff 29M-323 - Wellbore #1 - Plan #1 (3-14-16)	800.0	801.0	59.9	56.5	17.758	ES
Ottenhoff 29M-323 - Wellbore #1 - Plan #1 (3-14-16)	14,290.7	14,500.5	966.7	679.3	3.364	SF
Ottenhoff 29M-423 - Wellbore #1 - Plan #1 (3-14-16)	400.0	400.0	75.0	73.4	47.638	CC, ES
Ottenhoff 29M-423 - Wellbore #1 - Plan #1 (3-14-16)	900.0	888.3	105.4	101.6	27.832	SF
Ottenhoff 29R-143 - Wellbore #1 - Plan #1 (3-14-16)	1,200.0	1,200.0	29.8	24.6	5.767	CC, ES
Ottenhoff 29R-143 - Wellbore #1 - Plan #1 (3-14-16)	14,290.7	14,245.1	471.2	183.4	1.637	SF
Ottenhoff 29R-243 - Wellbore #1 - Plan #1 (3-14-16)	1,000.0	1,000.0	44.9	40.6	10.504	CC, ES
Ottenhoff 29R-243 - Wellbore #1 - Plan #1 (3-14-16)	14,290.7	14,376.1	707.2	418.6	2.450	SF
Ottenhoff 29R-303 - Wellbore #1 - Plan #1 (3-15-16)	1,400.0	1,400.0	14.8	8.7	2.434	CC
Ottenhoff 29R-303 - Wellbore #1 - Plan #1 (3-15-16)	14,290.7	14,380.2	256.3	-14.8	0.946	Level 1, ES, SF
Ottenhoff 29R-323 - Wellbore #1 - Plan #1 (3-15-16)	800.0	800.0	30.1	26.7	8.926	CC, ES
Ottenhoff 29R-323 - Wellbore #1 - Plan #1 (3-15-16)	14,290.7	14,363.3	436.9	151.0	1.528	SF
Ottenhoff 29R-423 - Wellbore #1 - Plan #1 (3-15-16)	2,000.0	1,999.0	15.0	6.3	1.717	CC
Ottenhoff 29R-423 - Wellbore #1 - Plan #1 (3-15-16)	2,100.0	2,099.0	15.5	6.3	1.681	ES
Ottenhoff 29R-423 - Wellbore #1 - Plan #1 (3-15-16)	14,290.7	14,445.8	294.2	69.2	1.307	Level 3, SF
Ottenhoff 29U-243 - Wellbore #1 - Plan #1 (3-15-16)	400.0	400.0	45.1	43.6	28.689	CC, ES
Ottenhoff 29U-243 - Wellbore #1 - Plan #1 (3-15-16)	14,290.7	14,315.2	673.1	384.7	2.334	SF
Ottenhoff 29U-343 - Wellbore #1 - Plan #1 (3-15-16)	200.0	199.0	60.2	59.5	89.557	CC, ES
Ottenhoff 29U-343 - Wellbore #1 - Plan #1 (3-15-16)	14,290.7	14,411.8	897.4	609.9	3.122	SF

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 Bell Pad SEC.29-T5N-R64W - Bell B29-22D - Bell B29-22D - Bell B29-22D

Offset Site Error: 0.0 ft

Survey Program: 559- **Offset Well Error:** 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,100.0	6,700.9	6,775.1	6,711.8	29.2	17.3	92.25	-2,149.4	-283.4	985.2	941.8	43.32	22.743	
8,200.0	6,700.3	6,774.9	6,711.6	30.9	17.3	92.17	-2,149.4	-283.4	886.1	841.1	44.96	19.707	
8,300.0	6,699.6	6,774.7	6,711.4	32.5	17.3	92.08	-2,149.4	-283.4	787.3	740.6	46.64	16.879	
8,400.0	6,699.0	6,774.5	6,711.2	34.2	17.3	92.00	-2,149.4	-283.4	688.8	640.4	48.34	14.247	
8,500.0	6,698.4	6,774.3	6,711.0	36.0	17.3	91.92	-2,149.4	-283.4	590.8	540.7	50.07	11.799	
8,600.0	6,697.8	6,774.1	6,710.8	37.7	17.3	91.83	-2,149.4	-283.4	493.6	441.8	51.81	9.526	
8,700.0	6,697.1	6,774.0	6,710.6	39.5	17.3	91.75	-2,149.4	-283.5	397.8	344.2	53.57	7.425	
8,800.0	6,696.5	6,773.8	6,710.4	41.2	17.3	91.66	-2,149.4	-283.5	304.7	249.4	55.35	5.505	
8,900.0	6,695.9	6,773.6	6,710.3	43.0	17.3	91.58	-2,149.4	-283.5	217.9	160.7	57.14	3.813	
9,000.0	6,695.2	6,773.4	6,710.1	44.8	17.3	91.49	-2,149.4	-283.5	148.6	89.7	58.93	2.522	
9,076.9	6,694.8	6,773.3	6,709.9	46.2	17.3	91.43	-2,149.4	-283.5	127.2	66.8	60.32	2.108	CC, ES, SF
9,100.0	6,694.6	6,773.2	6,709.9	46.6	17.3	91.41	-2,149.4	-283.5	129.2	68.5	60.74	2.128	
9,200.0	6,694.0	6,773.0	6,709.7	48.4	17.3	91.32	-2,149.4	-283.5	177.0	114.4	62.56	2.829	
9,300.0	6,693.4	6,772.8	6,709.5	50.3	17.3	91.24	-2,149.4	-283.5	256.8	192.4	64.38	3.988	
9,400.0	6,692.7	6,772.6	6,709.3	52.1	17.3	91.15	-2,149.4	-283.5	347.2	281.0	66.21	5.244	
9,500.0	6,692.1	6,772.5	6,709.1	53.9	17.3	91.07	-2,149.4	-283.5	441.8	373.7	68.05	6.492	
9,600.0	6,691.5	6,772.3	6,708.9	55.8	17.3	90.98	-2,149.4	-283.5	538.3	468.4	69.89	7.702	
9,700.0	6,690.8	6,772.1	6,708.8	57.6	17.3	90.90	-2,149.4	-283.5	635.9	564.2	71.74	8.864	
9,800.0	6,690.2	6,771.9	6,708.6	59.5	17.3	90.81	-2,149.4	-283.5	734.2	660.6	73.59	9.976	
9,900.0	6,689.6	6,771.7	6,708.4	61.3	17.3	90.73	-2,149.4	-283.5	832.8	757.4	75.45	11.038	
10,000.0	6,689.0	6,771.5	6,708.2	63.2	17.3	90.64	-2,149.4	-283.5	931.8	854.5	77.31	12.053	

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 - Carlson 5 (Exist) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 100-NS-GYRO-MS

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-166.75	-652.1	-153.5	670.1				
100.0	100.0	90.3	90.3	0.1	0.1	-166.76	-651.8	-153.4	669.6	669.4	0.23	2,880.331	
200.0	200.0	185.9	185.9	0.3	0.3	-166.76	-651.3	-153.3	669.1	668.4	0.65	1,032.219	
300.0	300.0	285.7	285.7	0.6	0.5	-166.77	-651.2	-153.2	669.0	668.0	1.04	643.892	
400.0	400.0	386.7	386.7	0.8	0.7	-166.80	-651.2	-152.7	668.8	667.4	1.46	457.724	
441.0	441.0	426.0	426.0	0.9	0.7	-166.81	-651.1	-152.6	668.7	667.1	1.62	412.728	
500.0	500.0	481.0	481.0	1.0	0.8	-166.81	-651.3	-152.6	668.9	667.1	1.84	363.982	
600.0	600.0	580.8	580.8	1.2	1.0	-166.82	-652.0	-152.7	669.6	667.4	2.20	304.552	
700.0	700.0	682.0	681.9	1.5	1.1	-166.85	-652.6	-152.5	670.2	667.6	2.58	259.373	
800.0	800.0	782.6	782.6	1.7	1.3	-166.84	-653.0	-152.7	670.6	667.6	2.99	224.304	
900.0	900.0	881.9	881.9	1.9	1.5	-166.86	-653.4	-152.6	671.0	667.5	3.42	195.988	
1,000.0	1,000.0	979.9	979.9	2.1	1.7	-166.88	-654.0	-152.4	671.6	667.7	3.87	173.459	
1,100.0	1,100.0	1,079.8	1,079.8	2.4	2.0	-166.91	-654.9	-152.2	672.4	668.0	4.33	155.182	
1,200.0	1,200.0	1,180.1	1,180.1	2.6	2.2	-166.94	-655.7	-152.1	673.1	668.3	4.80	140.200	
1,300.0	1,300.0	1,280.2	1,280.2	2.8	2.5	-166.96	-656.4	-152.0	673.8	668.5	5.27	127.776	
1,400.0	1,400.0	1,381.7	1,381.6	3.0	2.7	-166.99	-657.1	-151.8	674.4	668.7	5.75	117.280	
1,500.0	1,500.0	1,483.3	1,483.3	3.3	3.0	-167.02	-657.6	-151.6	674.8	668.6	6.23	108.300	
1,600.0	1,600.0	1,584.5	1,584.5	3.5	3.2	-167.00	-657.7	-151.8	675.0	668.3	6.65	101.534	
1,700.0	1,700.0	1,685.2	1,685.1	3.7	3.3	-166.93	-657.5	-152.7	675.0	668.0	6.99	96.522	
1,733.8	1,733.8	1,718.9	1,718.8	3.8	3.3	-166.90	-657.4	-153.0	675.0	667.9	7.11	94.916	
1,800.0	1,800.0	1,784.2	1,784.2	3.9	3.4	-166.86	-657.4	-153.4	675.0	667.7	7.35	91.839	
1,900.0	1,900.0	1,885.2	1,885.1	4.2	3.6	-166.83	-657.4	-153.8	675.1	667.4	7.72	87.447	
2,000.0	2,000.0	1,990.5	1,990.4	4.4	3.7	-166.80	-656.9	-154.1	674.7	666.7	8.07	83.625	
2,031.3	2,031.3	2,021.1	2,021.1	4.5	3.7	-149.71	-656.6	-154.3	674.6	666.4	8.18	82.498	
2,100.0	2,100.0	2,086.1	2,086.0	4.6	3.8	-149.70	-656.2	-154.8	675.3	666.9	8.42	80.251	
2,200.0	2,199.9	2,185.7	2,185.7	4.8	4.0	-149.75	-655.9	-155.8	678.6	669.8	8.80	77.144	
2,300.0	2,299.7	2,284.0	2,283.9	5.1	4.2	-149.90	-655.6	-156.7	684.3	675.1	9.19	74.425	
2,400.0	2,399.3	2,382.5	2,382.4	5.3	4.4	-150.18	-655.7	-157.2	692.4	682.8	9.62	72.004	
2,500.0	2,498.6	2,482.0	2,481.9	5.5	4.6	-150.57	-656.0	-157.3	702.9	692.8	10.05	69.907	
2,600.0	2,597.5	2,586.6	2,586.5	5.8	4.8	-151.06	-655.8	-157.5	715.4	704.9	10.45	68.439	
2,700.0	2,696.3	2,681.8	2,681.8	6.0	5.0	-151.62	-655.4	-157.6	728.7	717.9	10.85	67.154	
2,800.0	2,795.1	2,785.6	2,785.5	6.3	5.1	-152.22	-655.1	-157.6	742.3	731.0	11.26	65.916	
2,900.0	2,893.8	2,883.9	2,883.8	6.6	5.2	-152.76	-654.4	-157.5	755.4	743.8	11.62	65.000	
3,000.0	2,992.6	2,979.5	2,979.5	6.9	5.4	-153.25	-653.9	-157.8	768.9	756.9	12.01	64.012	
3,100.0	3,091.4	3,075.3	3,075.2	7.2	5.6	-153.71	-653.7	-158.3	782.9	770.5	12.45	62.879	
3,200.0	3,190.2	3,171.1	3,171.1	7.5	5.8	-154.18	-654.0	-158.5	797.3	784.4	12.90	61.810	
3,300.0	3,288.9	3,269.4	3,269.3	7.8	6.0	-154.68	-654.7	-158.3	812.0	798.7	13.33	60.909	
3,400.0	3,387.7	3,373.0	3,372.9	8.1	6.1	-155.20	-655.1	-157.8	826.6	812.8	13.74	60.179	
3,500.0	3,486.5	3,471.9	3,471.9	8.4	6.3	-155.67	-655.0	-157.4	840.7	826.6	14.11	59.582	
3,600.0	3,585.2	3,576.0	3,575.9	8.7	6.4	-156.16	-654.8	-156.9	854.8	840.3	14.49	58.984	
3,700.0	3,684.0	3,672.5	3,672.4	9.1	6.5	-156.57	-654.2	-156.7	868.4	853.6	14.86	58.434	
3,800.0	3,782.8	3,772.4	3,772.3	9.4	6.6	-157.00	-653.9	-156.4	882.5	867.3	15.24	57.901	
3,900.0	3,881.6	3,873.6	3,873.6	9.7	6.8	-157.44	-653.3	-155.7	896.3	880.6	15.63	57.338	
4,000.0	3,980.3	3,975.4	3,975.3	10.0	6.9	-157.81	-652.3	-155.8	909.8	893.8	16.04	56.737	
4,100.0	4,079.1	4,076.4	4,076.3	10.4	7.1	-158.11	-651.0	-156.9	923.1	906.7	16.46	56.086	
4,200.0	4,177.9	4,174.0	4,173.9	10.7	7.3	-158.31	-649.5	-159.2	936.4	919.5	16.89	55.428	
4,300.0	4,276.6	4,277.6	4,277.4	11.1	7.5	-158.51	-647.9	-161.9	949.6	932.3	17.35	54.748	
4,400.0	4,375.4	4,381.8	4,381.5	11.4	7.7	-158.67	-645.7	-165.0	962.3	944.5	17.80	54.052	
4,500.0	4,474.2	4,478.2	4,477.8	11.7	7.9	-158.76	-643.4	-168.8	974.8	956.5	18.25	53.404	
4,600.0	4,572.9	4,575.2	4,574.8	12.1	8.1	-158.89	-641.4	-171.9	987.6	968.9	18.71	52.798	
6,500.0	6,421.6	6,439.1	6,438.2	15.7	11.7	1.92	-615.2	-180.7	956.3	936.5	19.74	48.453	

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 - Carlson 5 (Exist) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 100-NS-GYRO-MS

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
6,600.0	6,495.2	6,509.4	6,508.4	15.5	11.8	2.35	-612.9	-180.6	886.3	868.7	17.61	50.327	
6,700.0	6,559.3	6,571.9	6,571.0	15.4	12.0	3.02	-610.9	-180.3	807.7	792.5	15.26	52.935	
6,800.0	6,612.9	6,622.8	6,621.8	15.3	12.1	4.14	-609.2	-179.9	721.7	708.8	12.84	56.204	
6,900.0	6,655.0	6,661.9	6,660.9	15.4	12.1	6.36	-607.9	-179.5	629.8	619.0	10.73	58.679	
7,000.0	6,685.0	6,688.7	6,687.7	15.8	12.2	11.89	-607.0	-179.3	533.6	523.4	10.17	52.489	
7,100.0	6,702.2	6,702.7	6,701.6	16.4	12.2	35.15	-606.6	-179.1	434.7	416.8	17.95	24.224	
7,200.0	6,706.6	6,703.7	6,702.7	17.1	12.2	120.21	-606.5	-179.1	335.0	309.7	25.32	13.232	
7,300.0	6,705.9	6,699.8	6,698.8	18.1	12.2	112.31	-606.7	-179.2	235.4	207.5	27.92	8.432	
7,400.0	6,705.3	6,695.9	6,694.9	19.1	12.2	103.43	-606.8	-179.2	136.3	105.9	30.37	4.487	
7,500.0	6,704.7	6,692.0	6,691.0	20.4	12.2	93.88	-606.9	-179.2	41.4	9.0	32.39	1.277	Level 3
7,534.5	6,704.5	6,690.7	6,689.7	20.8	12.2	90.52	-607.0	-179.3	22.9	-10.0	32.94	0.695	Level 1, CC, ES, SF
7,600.0	6,704.0	6,688.1	6,687.1	21.7	12.2	84.15	-607.1	-179.3	69.4	35.7	33.71	2.058	
7,700.0	6,703.4	6,684.2	6,683.2	23.1	12.2	74.76	-607.2	-179.3	167.0	132.7	34.26	4.874	
7,800.0	6,702.8	6,680.3	6,679.3	24.5	12.2	66.17	-607.3	-179.3	266.3	232.2	34.15	7.798	
7,900.0	6,702.2	6,676.4	6,675.4	26.0	12.2	58.59	-607.4	-179.4	366.0	332.4	33.61	10.890	
8,000.0	6,701.5	6,672.5	6,671.5	27.6	12.2	52.09	-607.6	-179.4	465.8	432.9	32.85	14.179	
8,100.0	6,700.9	6,668.6	6,667.6	29.2	12.2	46.57	-607.7	-179.5	565.6	533.5	32.04	17.649	
8,200.0	6,700.3	6,664.7	6,663.7	30.9	12.1	41.91	-607.8	-179.5	665.4	634.1	31.30	21.262	
8,300.0	6,699.6	6,660.8	6,659.8	32.5	12.1	37.98	-608.0	-179.5	765.3	734.6	30.65	24.966	
8,400.0	6,699.0	6,656.9	6,655.9	34.2	12.1	34.65	-608.1	-179.6	865.2	835.0	30.14	28.709	
8,500.0	6,698.4	6,653.0	6,652.0	36.0	12.1	31.80	-608.2	-179.6	965.1	935.3	29.75	32.443	

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 - Ottenhoff 41-6B (Exist) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 488-NS-GYRO-MS

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	98.05	-49.9	353.0	356.7				
100.0	100.0	88.3	88.3	0.1	0.1	98.05	-49.9	353.0	356.5	356.3	0.23	1,551.684	
200.0	200.0	188.6	188.6	0.3	0.3	98.06	-50.0	352.8	356.4	355.8	0.59	606.419	
300.0	300.0	289.0	289.0	0.6	0.4	98.08	-50.1	352.6	356.1	355.2	0.95	376.646	
400.0	400.0	389.3	389.3	0.8	0.5	98.11	-50.2	352.3	355.8	354.5	1.30	272.984	
500.0	500.0	489.6	489.6	1.0	0.7	98.15	-50.4	351.8	355.4	353.7	1.66	213.867	
600.0	600.0	588.4	588.4	1.2	0.8	98.12	-50.1	351.6	355.1	353.1	2.05	173.274	
638.0	638.0	626.0	626.0	1.3	0.9	98.06	-49.8	351.6	355.1	352.9	2.20	161.636	
700.0	700.0	686.3	686.3	1.5	0.9	97.94	-49.1	351.8	355.2	352.8	2.41	147.342	
800.0	800.0	782.9	782.9	1.7	1.1	97.72	-47.8	352.9	356.2	353.4	2.74	130.132	
900.0	900.0	881.3	881.2	1.9	1.2	97.41	-46.1	354.8	357.9	354.8	3.11	115.172	
1,000.0	1,000.0	980.2	980.1	2.1	1.4	96.93	-43.4	357.2	360.0	356.5	3.50	102.850	
1,100.0	1,100.0	1,079.8	1,079.6	2.4	1.6	96.26	-39.5	360.0	362.2	358.3	3.94	92.010	
1,200.0	1,200.0	1,180.9	1,180.5	2.6	1.8	95.42	-34.4	362.8	364.5	360.1	4.39	82.944	
1,300.0	1,300.0	1,282.2	1,281.6	2.8	2.1	94.52	-28.8	365.1	366.3	361.4	4.86	75.320	
1,400.0	1,400.0	1,376.9	1,376.1	3.0	2.3	93.53	-22.7	367.9	368.8	363.5	5.33	69.253	
1,500.0	1,500.0	1,472.1	1,470.9	3.3	2.5	92.38	-15.5	372.1	372.8	367.0	5.79	64.368	
1,600.0	1,600.0	1,575.4	1,573.7	3.5	2.8	91.03	-6.8	376.7	377.0	370.7	6.28	59.991	
1,700.0	1,700.0	1,681.1	1,678.9	3.7	3.1	89.54	3.0	380.2	380.3	373.5	6.79	56.021	
1,800.0	1,800.0	1,791.6	1,788.6	3.9	3.4	87.58	16.1	381.0	381.3	374.0	7.31	52.177	
1,900.0	1,900.0	1,899.8	1,895.5	4.2	3.7	85.07	32.7	378.7	380.2	372.4	7.82	48.613	
2,000.0	2,000.0	2,010.9	2,005.0	4.4	4.0	82.30	50.5	373.3	377.1	368.8	8.34	45.213	
2,100.0	2,100.0	2,122.4	2,114.3	4.6	4.3	96.38	70.7	363.6	371.4	362.6	8.85	41.976	
2,200.0	2,199.9	2,225.4	2,214.9	4.8	4.5	93.87	89.4	352.0	364.5	355.2	9.34	39.014	
2,300.0	2,299.7	2,325.6	2,312.7	5.1	4.8	91.78	107.2	340.2	357.7	347.8	9.83	36.367	
2,400.0	2,399.3	2,430.9	2,415.7	5.3	5.1	90.02	125.3	326.8	350.3	340.0	10.35	33.855	
2,500.0	2,498.6	2,539.5	2,521.7	5.5	5.4	88.73	142.4	310.9	341.0	330.1	10.87	31.364	
2,600.0	2,597.5	2,650.0	2,629.2	5.8	5.6	87.82	159.0	291.3	328.7	317.3	11.41	28.799	
2,700.0	2,696.3	2,757.3	2,732.9	6.0	5.9	86.73	174.8	268.9	313.2	301.2	11.96	26.188	
2,800.0	2,795.1	2,854.7	2,826.8	6.3	6.2	85.54	189.2	247.1	296.5	284.0	12.49	23.735	
2,900.0	2,893.8	2,956.1	2,924.9	6.6	6.5	84.54	202.4	225.4	280.2	267.2	13.04	21.483	
3,000.0	2,992.6	3,055.0	3,020.4	6.9	6.7	83.42	215.1	203.2	263.0	249.4	13.60	19.338	
3,100.0	3,091.4	3,150.6	3,112.9	7.2	7.0	82.22	227.4	182.3	246.4	232.3	14.16	17.404	
3,200.0	3,190.2	3,244.6	3,204.4	7.5	7.3	81.28	238.8	163.7	231.5	216.8	14.72	15.728	
3,300.0	3,288.9	3,339.6	3,297.4	7.8	7.5	80.85	249.0	147.7	218.6	203.3	15.28	14.304	
3,400.0	3,387.7	3,436.4	3,392.8	8.1	7.8	81.07	257.8	133.8	207.3	191.4	15.85	13.077	
3,500.0	3,486.5	3,536.9	3,491.8	8.4	8.1	81.13	267.8	119.4	196.3	179.9	16.44	11.941	
3,600.0	3,585.2	3,639.6	3,592.2	8.7	8.4	80.18	280.2	102.1	184.1	167.1	17.05	10.796	
3,700.0	3,684.0	3,741.6	3,691.5	9.1	8.7	78.65	292.8	82.7	170.2	152.5	17.67	9.629	
3,800.0	3,782.8	3,840.8	3,787.5	9.4	9.0	75.92	306.8	61.7	155.4	137.1	18.29	8.494	
3,900.0	3,881.6	3,939.0	3,881.8	9.7	9.3	71.50	322.9	39.4	141.1	122.2	18.91	7.460	
4,000.0	3,980.3	4,037.0	3,976.0	10.0	9.6	66.35	338.8	17.7	128.0	108.5	19.50	6.564	
4,100.0	4,079.1	4,135.2	4,070.8	10.4	9.9	60.89	353.9	-2.9	116.4	96.4	20.06	5.806	
4,200.0	4,177.9	4,234.7	4,167.1	10.7	10.2	54.68	368.6	-23.2	106.1	85.5	20.56	5.160	
4,300.0	4,276.6	4,334.8	4,264.4	11.1	10.5	48.27	380.9	-42.9	95.4	74.4	20.99	4.546	
4,400.0	4,375.4	4,432.7	4,359.8	11.4	10.8	41.04	392.8	-61.5	86.3	65.0	21.34	4.045	
4,500.0	4,474.2	4,531.1	4,455.6	11.7	11.1	32.36	405.9	-79.9	80.2	58.6	21.58	3.714	
4,600.0	4,572.9	4,630.7	4,552.7	12.1	11.4	22.73	418.9	-98.0	75.9	54.2	21.74	3.491	
4,700.0	4,671.7	4,729.7	4,649.4	12.4	11.8	13.09	431.1	-115.1	73.2	51.3	21.90	3.341	
4,730.0	4,701.4	4,759.1	4,678.1	12.5	11.8	9.95	434.9	-120.4	73.0	51.1	21.95	3.326	CC, ES, SF
4,800.0	4,770.5	4,828.6	4,745.9	12.8	12.1	2.53	443.9	-133.0	73.6	51.5	22.10	3.331	

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 - Ottenhoff 41-6B (Exist) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 488-NS-GYRO-MS

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,900.0	4,869.3	4,927.8	4,842.8	13.1	12.4	-7.16	456.7	-150.2	76.1	53.6	22.46	3.389	
5,000.0	4,968.0	5,026.1	4,938.6	13.5	12.7	-16.20	469.5	-167.8	81.1	58.1	22.97	3.531	
5,100.0	5,066.8	5,125.0	5,034.7	13.8	13.0	-24.48	482.7	-186.7	88.9	65.2	23.62	3.762	
5,200.0	5,165.6	5,225.8	5,133.0	14.2	13.3	-31.67	495.3	-205.4	97.3	72.9	24.37	3.993	
5,300.0	5,264.3	5,327.2	5,232.3	14.5	13.6	-37.96	506.3	-222.8	104.8	79.6	25.19	4.159	
5,400.0	5,363.1	5,429.0	5,332.4	14.9	13.9	-43.89	515.3	-238.7	111.1	85.0	26.05	4.264	
5,500.0	5,461.9	5,528.3	5,430.3	15.2	14.2	-49.12	523.5	-253.3	117.3	90.4	26.90	4.359	
5,600.0	5,561.0	5,628.4	5,529.0	15.5	14.5	-52.86	532.0	-267.7	125.5	97.9	27.61	4.547	
5,700.0	5,660.5	5,732.3	5,631.7	15.7	14.8	-55.11	540.0	-280.6	134.1	105.9	28.21	4.754	
5,800.0	5,760.3	5,836.0	5,734.8	15.9	15.1	-56.30	546.1	-290.7	141.6	112.9	28.71	4.932	
5,900.0	5,860.3	5,939.3	5,837.7	16.1	15.3	-56.54	550.5	-298.3	148.4	119.3	29.11	5.097	
6,000.0	5,960.3	6,041.8	5,940.0	16.2	15.6	106.81	553.6	-304.0	154.5	125.0	29.46	5.244	
6,100.0	6,059.8	6,143.6	6,041.7	16.3	15.8	109.47	555.3	-308.4	161.9	132.4	29.45	5.497	
6,200.0	6,157.4	6,243.9	6,141.9	16.2	16.0	115.36	555.8	-311.3	173.3	144.4	28.93	5.990	
6,300.0	6,251.2	6,340.7	6,238.7	16.1	16.1	122.92	555.1	-313.0	192.1	164.3	27.81	6.907	
6,400.0	6,339.8	6,432.8	6,330.8	15.9	16.2	130.54	553.4	-313.7	221.4	195.2	26.17	8.459	
6,500.0	6,421.6	6,518.3	6,416.3	15.7	16.2	137.00	551.3	-313.6	263.2	239.1	24.12	10.914	
6,600.0	6,495.2	6,595.8	6,493.8	15.5	16.2	141.76	549.0	-312.8	317.8	295.9	21.88	14.523	
6,700.0	6,559.3	6,664.1	6,562.0	15.4	16.2	144.60	546.7	-311.9	383.9	364.2	19.73	19.457	
6,800.0	6,612.9	6,722.4	6,620.3	15.3	16.2	145.47	544.6	-311.0	460.1	442.0	18.09	25.437	
6,900.0	6,655.0	6,770.4	6,668.2	15.4	16.2	144.04	542.7	-310.1	544.3	526.7	17.60	30.936	
7,000.0	6,685.0	6,806.3	6,704.1	15.8	16.2	138.97	541.1	-309.3	634.8	615.6	19.28	32.935	
7,100.0	6,702.2	6,829.3	6,727.1	16.4	16.2	126.66	540.1	-308.7	729.8	705.5	24.30	30.027	
7,200.0	6,706.6	6,839.0	6,736.7	17.1	16.2	103.68	539.6	-308.5	827.3	796.3	31.02	26.675	
7,300.0	6,705.9	6,843.3	6,741.1	18.1	16.2	105.24	539.4	-308.4	925.7	894.1	31.65	29.249	

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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-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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-89.31	1.1	-90.0	90.0				
100.0	100.0	100.0	100.0	0.1	0.1	-89.31	1.1	-90.0	90.0	89.8	0.22	400.421	
200.0	200.0	200.0	200.0	0.3	0.3	-89.31	1.1	-90.0	90.0	89.3	0.67	133.474	CC, ES
300.0	300.0	297.8	297.8	0.6	0.6	-89.06	1.5	-91.2	91.2	90.1	1.11	81.987	
400.0	400.0	395.5	395.4	0.8	0.8	-88.36	2.7	-94.7	94.9	93.3	1.55	61.028	
500.0	500.0	492.9	492.6	1.0	1.0	-87.31	4.7	-100.6	101.0	99.0	2.00	50.445	
600.0	600.0	589.9	589.2	1.2	1.2	-86.03	7.5	-108.8	109.6	107.1	2.45	44.671	
700.0	700.0	686.4	685.1	1.5	1.5	-84.67	11.1	-119.2	120.7	117.8	2.91	41.507	
800.0	800.0	782.3	780.1	1.7	1.8	-83.31	15.5	-131.9	134.3	130.9	3.37	39.897	
900.0	900.0	877.5	873.9	1.9	2.2	-82.02	20.6	-146.7	150.4	146.5	3.83	39.279	SF
1,000.0	1,000.0	971.8	966.6	2.1	2.5	-80.85	26.3	-163.5	168.9	164.6	4.30	39.325	
1,100.0	1,100.0	1,065.2	1,057.8	2.4	2.9	-79.81	32.8	-182.3	189.9	185.2	4.77	39.826	
1,200.0	1,200.0	1,157.5	1,147.5	2.6	3.4	-78.88	39.9	-202.9	213.3	208.1	5.25	40.648	
1,300.0	1,300.0	1,248.8	1,235.6	2.8	3.8	-78.08	47.6	-225.3	239.1	233.4	5.73	41.697	
1,400.0	1,400.0	1,338.8	1,322.0	3.0	4.3	-77.38	55.8	-249.3	267.2	260.9	6.23	42.908	
1,500.0	1,500.0	1,427.5	1,406.5	3.3	4.9	-76.78	64.6	-274.9	297.5	290.8	6.73	44.236	
1,600.0	1,600.0	1,514.8	1,489.0	3.5	5.4	-76.25	73.9	-301.9	330.0	322.8	7.23	45.628	
1,700.0	1,700.0	1,608.7	1,577.4	3.7	6.1	-75.77	84.2	-331.9	363.7	356.0	7.76	46.869	
1,800.0	1,800.0	1,702.8	1,666.0	3.9	6.7	-75.37	94.5	-362.0	397.5	389.2	8.29	47.928	
1,900.0	1,900.0	1,796.9	1,754.5	4.2	7.4	-75.03	104.9	-392.1	431.2	422.4	8.83	48.831	
2,000.0	2,000.0	1,891.1	1,843.1	4.4	8.0	-74.74	115.2	-422.2	464.9	455.6	9.37	49.607	
2,100.0	2,100.0	1,985.4	1,931.9	4.6	8.7	-57.10	125.6	-452.4	498.0	488.4	9.60	51.864	
2,200.0	2,199.9	2,080.2	2,021.1	4.8	9.4	-56.83	136.0	-482.7	529.8	519.7	10.12	52.371	
2,300.0	2,299.7	2,175.4	2,110.7	5.1	10.1	-56.80	146.4	-513.2	560.2	549.5	10.63	52.674	
2,400.0	2,399.3	2,271.0	2,200.6	5.3	10.7	-56.97	156.9	-543.7	589.2	578.1	11.16	52.792	
2,500.0	2,498.6	2,366.8	2,290.8	5.5	11.4	-57.32	167.4	-574.3	617.0	605.3	11.70	52.742	
2,600.0	2,597.5	2,462.8	2,381.1	5.8	12.1	-57.83	178.0	-605.0	643.5	631.3	12.25	52.529	
2,700.0	2,696.3	2,558.8	2,471.5	6.0	12.8	-58.72	188.5	-635.8	669.5	656.7	12.81	52.244	
2,800.0	2,795.1	2,654.9	2,561.9	6.3	13.5	-59.53	199.1	-666.5	695.6	682.2	13.39	51.936	
2,900.0	2,893.8	2,750.9	2,652.3	6.6	14.2	-60.29	209.6	-697.2	721.9	707.9	13.99	51.614	
3,000.0	2,992.6	2,847.0	2,742.7	6.9	14.8	-61.00	220.2	-727.9	748.2	733.6	14.59	51.281	
3,100.0	3,091.4	2,943.1	2,833.1	7.2	15.5	-61.66	230.7	-758.6	774.7	759.5	15.21	50.944	
3,200.0	3,190.2	3,039.1	2,923.5	7.5	16.2	-62.27	241.3	-789.4	801.2	785.4	15.83	50.606	
3,300.0	3,288.9	3,135.2	3,013.9	7.8	16.9	-62.85	251.8	-820.1	827.9	811.4	16.47	50.270	
3,400.0	3,387.7	3,231.3	3,104.3	8.1	17.6	-63.39	262.4	-850.8	854.6	837.5	17.11	49.937	
3,500.0	3,486.5	3,327.3	3,194.8	8.4	18.3	-63.90	272.9	-881.5	881.3	863.6	17.77	49.611	
3,600.0	3,585.2	3,423.4	3,285.2	8.7	19.0	-64.38	283.5	-912.2	908.2	889.8	18.42	49.291	
3,700.0	3,684.0	3,519.4	3,375.6	9.1	19.7	-64.83	294.0	-943.0	935.1	916.0	19.09	48.980	
3,800.0	3,782.8	3,615.5	3,466.0	9.4	20.4	-65.25	304.6	-973.7	962.0	942.2	19.76	48.677	
3,900.0	3,881.6	3,711.6	3,556.4	9.7	21.0	-65.66	315.1	-1,004.4	989.0	968.5	20.44	48.383	

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	-89.31	0.7	-59.9	59.9	59.9	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	-89.31	0.7	-59.9	59.9	59.7	0.23	263.895	
200.0	200.0	201.0	201.0	0.3	0.3	-89.31	0.7	-59.9	59.9	59.2	0.68	88.550	
300.0	300.0	301.0	301.0	0.6	0.6	-89.31	0.7	-59.9	59.9	58.8	1.13	53.200	
400.0	400.0	401.0	401.0	0.8	0.8	-89.31	0.7	-59.9	59.9	58.3	1.58	38.022	
500.0	500.0	501.0	501.0	1.0	1.0	-89.31	0.7	-59.9	59.9	57.9	2.03	29.582	
600.0	600.0	601.0	601.0	1.2	1.2	-89.31	0.7	-59.9	59.9	57.4	2.47	24.208	
700.0	700.0	701.0	701.0	1.5	1.5	-89.31	0.7	-59.9	59.9	57.0	2.92	20.487	
766.3	766.3	767.3	767.3	1.6	1.6	-89.31	0.7	-59.9	59.9	56.7	3.22	18.591	CC
800.0	800.0	801.0	801.0	1.7	1.7	-89.31	0.7	-59.9	59.9	56.5	3.37	17.758	ES
900.0	900.0	900.0	900.0	1.9	1.9	-88.79	1.3	-61.1	61.1	57.3	3.81	16.024	
1,000.0	1,000.0	998.0	997.9	2.1	2.1	-87.39	2.9	-64.5	64.7	60.4	4.25	15.225	
1,100.0	1,100.0	1,096.2	1,095.9	2.4	2.3	-85.38	5.7	-70.3	70.7	66.0	4.69	15.081	
1,200.0	1,200.0	1,194.0	1,193.3	2.6	2.6	-83.08	9.5	-78.2	79.2	74.0	5.13	15.440	
1,300.0	1,300.0	1,291.2	1,289.9	2.8	2.8	-80.78	14.3	-88.4	90.2	84.6	5.57	16.190	
1,400.0	1,400.0	1,387.9	1,385.6	3.0	3.1	-78.64	20.2	-100.6	103.8	97.8	6.02	17.246	
1,500.0	1,500.0	1,483.8	1,480.1	3.3	3.4	-76.74	27.1	-115.0	119.9	113.5	6.47	18.540	
1,600.0	1,600.0	1,578.8	1,573.4	3.5	3.7	-75.11	34.9	-131.3	138.6	131.7	6.92	20.018	
1,700.0	1,700.0	1,672.8	1,665.3	3.7	4.1	-73.73	43.6	-149.5	159.7	152.4	7.38	21.637	
1,800.0	1,800.0	1,765.8	1,755.6	3.9	4.5	-72.57	53.2	-169.4	183.3	175.5	7.85	23.361	
1,900.0	1,900.0	1,858.3	1,844.8	4.2	4.9	-71.60	63.6	-191.3	209.3	200.9	8.32	25.154	
2,000.0	2,000.0	1,954.6	1,937.5	4.4	5.4	-70.78	74.9	-214.7	236.1	227.3	8.80	26.823	
2,100.0	2,100.0	2,051.1	2,030.4	4.6	5.8	-52.96	86.2	-238.3	262.3	253.0	9.22	28.450	
2,200.0	2,199.9	2,148.0	2,123.7	4.8	6.3	-52.74	97.5	-261.9	286.9	277.2	9.69	29.599	
2,300.0	2,299.7	2,245.3	2,217.4	5.1	6.9	-52.93	108.8	-285.6	310.0	299.8	10.17	30.471	
2,400.0	2,399.3	2,342.8	2,311.3	5.3	7.4	-53.44	120.2	-309.4	331.6	320.9	10.66	31.099	
2,500.0	2,498.6	2,440.6	2,405.4	5.5	7.9	-54.23	131.6	-333.3	351.7	340.6	11.16	31.508	
2,600.0	2,597.5	2,538.5	2,499.7	5.8	8.4	-55.25	143.1	-357.1	370.5	358.8	11.68	31.717	
2,700.0	2,696.3	2,636.4	2,594.0	6.0	9.0	-56.55	154.5	-381.0	388.7	376.5	12.22	31.803	
2,800.0	2,795.1	2,734.4	2,688.3	6.3	9.5	-57.73	166.0	-404.9	407.2	394.4	12.78	31.854	
2,900.0	2,893.8	2,832.4	2,782.6	6.6	10.1	-58.81	177.4	-428.8	425.7	412.4	13.36	31.877	
3,000.0	2,992.6	2,930.3	2,876.9	6.9	10.6	-59.79	188.8	-452.7	444.4	430.5	13.94	31.876	
3,100.0	3,091.4	3,028.3	2,971.2	7.2	11.2	-60.70	200.3	-476.6	463.3	448.7	14.54	31.856	
3,200.0	3,190.2	3,126.2	3,065.5	7.5	11.7	-61.54	211.7	-500.4	482.2	467.0	15.15	31.820	
3,300.0	3,288.9	3,224.2	3,159.8	7.8	12.3	-62.32	223.2	-524.3	501.2	485.4	15.78	31.772	
3,400.0	3,387.7	3,322.1	3,254.1	8.1	12.8	-63.03	234.6	-548.2	520.3	503.9	16.41	31.714	
3,500.0	3,486.5	3,420.1	3,348.4	8.4	13.4	-63.70	246.1	-572.1	539.5	522.4	17.05	31.648	
3,600.0	3,585.2	3,518.1	3,442.8	8.7	13.9	-64.32	257.5	-596.0	558.7	541.0	17.69	31.577	
3,700.0	3,684.0	3,616.0	3,537.1	9.1	14.5	-64.90	268.9	-619.9	578.0	559.7	18.35	31.501	
3,800.0	3,782.8	3,714.0	3,631.4	9.4	15.0	-65.45	280.4	-643.8	597.4	578.4	19.01	31.423	
3,900.0	3,881.6	3,811.9	3,725.7	9.7	15.6	-65.96	291.8	-667.7	616.8	597.1	19.68	31.343	
4,000.0	3,980.3	3,909.9	3,820.0	10.0	16.1	-66.43	303.3	-691.5	636.2	615.9	20.35	31.262	
4,100.0	4,079.1	4,007.8	3,914.3	10.4	16.7	-66.88	314.7	-715.4	655.7	634.7	21.03	31.181	
4,200.0	4,177.9	4,105.8	4,008.6	10.7	17.3	-67.31	326.1	-739.3	675.2	653.5	21.71	31.099	
4,300.0	4,276.6	4,203.7	4,102.9	11.1	17.8	-67.71	337.6	-763.2	694.8	672.4	22.40	31.019	
4,400.0	4,375.4	4,301.7	4,197.2	11.4	18.4	-68.09	349.0	-787.1	714.4	691.3	23.09	30.940	
4,500.0	4,474.2	4,399.7	4,291.5	11.7	18.9	-68.44	360.5	-811.0	734.0	710.2	23.78	30.861	
4,600.0	4,572.9	4,497.6	4,385.8	12.1	19.5	-68.78	371.9	-834.9	753.6	729.2	24.48	30.785	
4,700.0	4,671.7	4,595.6	4,480.1	12.4	20.1	-69.11	383.3	-858.7	773.3	748.1	25.18	30.709	
4,800.0	4,770.5	4,693.5	4,574.4	12.8	20.6	-69.41	394.8	-882.6	793.0	767.1	25.88	30.636	
4,900.0	4,869.3	4,791.5	4,668.8	13.1	21.2	-69.70	406.2	-906.5	812.7	786.1	26.59	30.564	

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.0	4,968.0	4,889.4	4,763.1	13.5	21.7	-69.98	417.7	-930.4	832.4	805.1	27.30	30.494	
5,100.0	5,066.8	4,987.4	4,857.4	13.8	22.3	-70.25	429.1	-954.3	852.2	824.2	28.01	30.425	
5,200.0	5,165.6	5,085.4	4,951.7	14.2	22.9	-70.50	440.6	-978.2	871.9	843.2	28.72	30.359	
5,300.0	5,264.3	5,183.3	5,046.0	14.5	23.4	-70.74	452.0	-1,002.1	891.7	862.3	29.44	30.294	
5,400.0	5,363.1	5,287.5	5,146.4	14.9	24.0	-70.99	464.1	-1,027.4	911.5	881.3	30.17	30.211	
5,500.0	5,461.9	5,426.4	5,281.2	15.2	24.6	-71.47	478.5	-1,057.4	928.5	897.5	30.97	29.979	
5,600.0	5,561.0	5,567.0	5,419.1	15.5	25.0	-72.11	490.2	-1,081.8	941.9	910.2	31.67	29.743	
5,700.0	5,660.5	5,708.7	5,559.4	15.7	25.4	-72.58	498.9	-1,100.1	951.9	919.7	32.27	29.501	
5,800.0	5,760.3	5,851.4	5,701.4	15.9	25.7	-72.87	504.7	-1,112.2	958.6	925.8	32.77	29.256	
5,900.0	5,860.3	5,994.6	5,844.5	16.1	25.9	-73.00	507.5	-1,117.9	961.8	928.6	33.16	29.003	
6,000.0	5,960.3	6,111.4	5,961.3	16.2	26.1	89.94	507.7	-1,118.4	962.1	928.6	33.48	28.739	
6,026.6	5,986.9	6,138.0	5,987.9	16.2	26.1	90.00	507.7	-1,118.4	962.1	928.5	33.52	28.699	
6,100.0	6,059.8	6,211.2	6,061.0	16.3	26.2	90.45	507.5	-1,118.4	962.1	928.5	33.59	28.643	
6,200.0	6,157.4	6,312.2	6,161.5	16.2	26.2	91.21	498.4	-1,118.4	962.3	928.8	33.47	28.755	
6,300.0	6,251.2	6,415.0	6,261.7	16.1	26.2	91.96	475.7	-1,118.4	962.6	929.5	33.16	29.026	
6,400.0	6,339.8	6,519.6	6,359.6	15.9	26.1	92.68	438.9	-1,118.4	963.1	930.4	32.74	29.415	
6,500.0	6,421.6	6,626.1	6,453.1	15.7	25.9	93.36	388.1	-1,118.4	963.7	931.5	32.27	29.862	
6,600.0	6,495.2	6,734.3	6,540.0	15.5	25.8	93.98	323.7	-1,118.4	964.4	932.6	31.84	30.286	
6,700.0	6,559.3	6,844.3	6,618.0	15.4	25.6	94.53	246.4	-1,118.4	965.1	933.6	31.55	30.586	
6,800.0	6,612.9	6,955.7	6,685.0	15.3	25.4	95.01	157.5	-1,118.4	965.8	934.3	31.51	30.652	
6,900.0	6,655.0	7,068.5	6,738.8	15.4	25.2	95.39	58.5	-1,118.4	966.3	934.6	31.80	30.392	
7,000.0	6,685.0	7,182.3	6,777.8	15.8	25.1	95.66	-48.3	-1,118.4	966.8	934.3	32.47	29.772	
7,100.0	6,702.2	7,296.8	6,800.6	16.4	25.0	95.83	-160.4	-1,118.4	967.1	933.5	33.56	28.820	
7,200.0	6,706.6	7,409.9	6,806.6	17.1	25.2	95.88	-273.2	-1,118.4	967.2	932.1	35.03	27.612	
7,300.0	6,705.9	7,509.9	6,805.9	18.1	25.4	95.87	-373.2	-1,118.4	967.1	930.4	36.77	26.304	
7,400.0	6,705.3	7,609.9	6,805.2	19.1	25.9	95.87	-473.2	-1,118.4	967.1	928.3	38.81	24.921	
7,500.0	6,704.7	7,709.9	6,804.5	20.4	26.5	95.86	-573.2	-1,118.4	967.1	926.0	41.10	23.529	
7,600.0	6,704.0	7,809.9	6,803.8	21.7	27.3	95.86	-673.2	-1,118.4	967.1	923.5	43.61	22.175	
7,700.0	6,703.4	7,909.9	6,803.1	23.1	28.3	95.85	-773.2	-1,118.4	967.1	920.8	46.30	20.887	
7,800.0	6,702.8	8,009.9	6,802.4	24.5	29.4	95.85	-873.2	-1,118.4	967.1	918.0	49.14	19.679	
7,900.0	6,702.2	8,109.9	6,801.7	26.0	30.6	95.85	-973.2	-1,118.4	967.1	915.0	52.11	18.559	
8,000.0	6,701.5	8,209.9	6,801.0	27.6	31.9	95.84	-1,073.2	-1,118.4	967.1	911.9	55.18	17.526	
8,100.0	6,700.9	8,309.9	6,800.3	29.2	33.3	95.84	-1,173.2	-1,118.4	967.1	908.7	58.34	16.577	
8,200.0	6,700.3	8,409.9	6,799.6	30.9	34.7	95.83	-1,273.2	-1,118.4	967.1	905.5	61.58	15.705	
8,300.0	6,699.6	8,509.9	6,798.9	32.5	36.2	95.83	-1,373.2	-1,118.4	967.1	902.2	64.88	14.907	
8,400.0	6,699.0	8,609.9	6,798.2	34.2	37.7	95.83	-1,473.2	-1,118.4	967.1	898.8	68.23	14.174	
8,500.0	6,698.4	8,709.9	6,797.5	36.0	39.3	95.82	-1,573.2	-1,118.4	967.1	895.4	71.63	13.501	
8,600.0	6,697.8	8,809.9	6,796.8	37.7	40.9	95.82	-1,673.2	-1,118.4	967.1	892.0	75.07	12.881	
8,700.0	6,697.1	8,909.9	6,796.1	39.5	42.5	95.81	-1,773.2	-1,118.4	967.0	888.5	78.55	12.311	
8,800.0	6,696.5	9,009.9	6,795.4	41.2	44.2	95.81	-1,873.2	-1,118.4	967.0	885.0	82.06	11.785	
8,900.0	6,695.9	9,109.9	6,794.7	43.0	45.8	95.81	-1,973.2	-1,118.4	967.0	881.4	85.59	11.298	
9,000.0	6,695.2	9,209.9	6,794.0	44.8	47.5	95.80	-2,073.2	-1,118.4	967.0	877.9	89.15	10.847	
9,100.0	6,694.6	9,309.9	6,793.3	46.6	49.2	95.80	-2,173.2	-1,118.4	967.0	874.3	92.73	10.428	
9,200.0	6,694.0	9,409.9	6,792.6	48.4	51.0	95.79	-2,273.2	-1,118.4	967.0	870.7	96.33	10.038	
9,300.0	6,693.4	9,509.9	6,791.9	50.3	52.7	95.79	-2,373.2	-1,118.4	967.0	867.1	99.95	9.675	
9,400.0	6,692.7	9,609.9	6,791.2	52.1	54.4	95.78	-2,473.2	-1,118.4	967.0	863.4	103.58	9.336	
9,500.0	6,692.1	9,709.9	6,790.5	53.9	56.2	95.78	-2,573.2	-1,118.4	967.0	859.8	107.22	9.019	
9,600.0	6,691.5	9,809.9	6,789.8	55.8	58.0	95.78	-2,673.2	-1,118.4	967.0	856.1	110.88	8.721	
9,700.0	6,690.8	9,909.9	6,789.1	57.6	59.7	95.77	-2,773.2	-1,118.4	967.0	852.4	114.55	8.442	
9,800.0	6,690.2	10,009.9	6,788.4	59.5	61.5	95.77	-2,873.1	-1,118.4	967.0	848.7	118.22	8.179	

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
9,900.0	6,689.6	10,109.9	6,787.7	61.3	63.3	95.76	-2,973.1	-1,118.4	967.0	845.1	121.91	7.932	
10,000.0	6,689.0	10,209.9	6,787.0	63.2	65.1	95.76	-3,073.1	-1,118.4	967.0	841.4	125.61	7.698	
10,100.0	6,688.3	10,309.9	6,786.3	65.0	66.9	95.76	-3,173.1	-1,118.4	967.0	837.6	129.31	7.478	
10,200.0	6,687.7	10,409.9	6,785.6	66.9	68.8	95.75	-3,273.1	-1,118.4	966.9	833.9	133.02	7.269	
10,300.0	6,687.1	10,509.9	6,784.9	68.8	70.6	95.75	-3,373.1	-1,118.4	966.9	830.2	136.73	7.072	
10,400.0	6,686.4	10,609.9	6,784.2	70.7	72.4	95.74	-3,473.1	-1,118.4	966.9	826.5	140.45	6.884	
10,500.0	6,685.8	10,709.9	6,783.5	72.5	74.2	95.74	-3,573.1	-1,118.4	966.9	822.7	144.18	6.706	
10,600.0	6,685.2	10,809.9	6,782.8	74.4	76.1	95.74	-3,673.1	-1,118.4	966.9	819.0	147.91	6.537	
10,700.0	6,684.6	10,909.9	6,782.1	76.3	77.9	95.73	-3,773.1	-1,118.4	966.9	815.3	151.65	6.376	
10,800.0	6,683.9	11,009.9	6,781.4	78.2	79.7	95.73	-3,873.1	-1,118.4	966.9	811.5	155.39	6.222	
10,900.0	6,683.3	11,109.9	6,780.7	80.0	81.6	95.72	-3,973.1	-1,118.4	966.9	807.8	159.14	6.076	
11,000.0	6,682.7	11,209.9	6,780.0	81.9	83.4	95.72	-4,073.1	-1,118.4	966.9	804.0	162.88	5.936	
11,100.0	6,682.0	11,309.9	6,779.3	83.8	85.3	95.71	-4,173.1	-1,118.4	966.9	800.2	166.64	5.802	
11,200.0	6,681.4	11,409.9	6,778.6	85.7	87.1	95.71	-4,273.1	-1,118.4	966.9	796.5	170.39	5.674	
11,300.0	6,680.8	11,509.9	6,777.9	87.6	89.0	95.71	-4,373.1	-1,118.4	966.9	792.7	174.15	5.552	
11,400.0	6,680.2	11,609.9	6,777.2	89.5	90.8	95.70	-4,473.1	-1,118.4	966.9	789.0	177.91	5.435	
11,500.0	6,679.5	11,709.9	6,776.5	91.4	92.7	95.70	-4,573.1	-1,118.4	966.9	785.2	181.68	5.322	
11,600.0	6,678.9	11,809.9	6,775.8	93.3	94.6	95.69	-4,673.1	-1,118.4	966.9	781.4	185.44	5.214	
11,700.0	6,678.3	11,909.9	6,775.1	95.2	96.4	95.69	-4,773.1	-1,118.4	966.8	777.6	189.21	5.110	
11,800.0	6,677.6	12,009.9	6,774.4	97.1	98.3	95.69	-4,873.1	-1,118.4	966.8	773.9	192.98	5.010	
11,900.0	6,677.0	12,109.9	6,773.7	99.0	100.2	95.68	-4,973.1	-1,118.4	966.8	770.1	196.76	4.914	
12,000.0	6,676.4	12,209.9	6,773.0	100.9	102.1	95.68	-5,073.1	-1,118.4	966.8	766.3	200.53	4.821	
12,100.0	6,675.8	12,309.9	6,772.3	102.7	103.9	95.67	-5,173.1	-1,118.4	966.8	762.5	204.31	4.732	
12,200.0	6,675.1	12,409.9	6,771.6	104.6	105.8	95.67	-5,273.1	-1,118.4	966.8	758.7	208.09	4.646	
12,300.0	6,674.5	12,509.9	6,770.9	106.5	107.7	95.67	-5,373.1	-1,118.4	966.8	754.9	211.87	4.563	
12,400.0	6,673.9	12,609.9	6,770.3	108.4	109.6	95.66	-5,473.1	-1,118.4	966.8	751.1	215.65	4.483	
12,500.0	6,673.3	12,709.9	6,769.6	110.3	111.4	95.66	-5,573.1	-1,118.4	966.8	747.4	219.43	4.406	
12,600.0	6,672.6	12,809.9	6,768.9	112.2	113.3	95.65	-5,673.1	-1,118.4	966.8	743.6	223.22	4.331	
12,700.0	6,672.0	12,909.9	6,768.2	114.1	115.2	95.65	-5,773.1	-1,118.4	966.8	739.8	227.01	4.259	
12,800.0	6,671.4	13,009.9	6,767.5	116.0	117.1	95.64	-5,873.1	-1,118.4	966.8	736.0	230.80	4.189	
12,900.0	6,670.7	13,109.9	6,766.8	118.0	119.0	95.64	-5,973.1	-1,118.4	966.8	732.2	234.58	4.121	
13,000.0	6,670.1	13,209.9	6,766.1	119.9	120.8	95.64	-6,073.1	-1,118.4	966.8	728.4	238.37	4.056	
13,100.0	6,669.5	13,309.9	6,765.4	121.8	122.7	95.63	-6,173.1	-1,118.4	966.8	724.6	242.17	3.992	
13,200.0	6,668.9	13,409.9	6,764.7	123.7	124.6	95.63	-6,273.1	-1,118.4	966.7	720.8	245.96	3.931	
13,300.0	6,668.2	13,509.9	6,764.0	125.6	126.5	95.62	-6,373.1	-1,118.4	966.7	717.0	249.75	3.871	
13,400.0	6,667.6	13,609.9	6,763.3	127.5	128.4	95.62	-6,473.1	-1,118.4	966.7	713.2	253.55	3.813	
13,500.0	6,667.0	13,709.9	6,762.6	129.4	130.3	95.62	-6,573.1	-1,118.4	966.7	709.4	257.34	3.757	
13,600.0	6,666.3	13,809.9	6,761.9	131.3	132.2	95.61	-6,673.1	-1,118.4	966.7	705.6	261.14	3.702	
13,700.0	6,665.7	13,909.9	6,761.2	133.2	134.1	95.61	-6,773.1	-1,118.4	966.7	701.8	264.94	3.649	
13,800.0	6,665.1	14,009.9	6,760.5	135.1	136.0	95.60	-6,873.0	-1,118.4	966.7	698.0	268.74	3.597	
13,900.0	6,664.5	14,109.9	6,759.8	137.0	137.9	95.60	-6,973.0	-1,118.4	966.7	694.2	272.54	3.547	
14,000.0	6,663.8	14,209.9	6,759.1	138.9	139.8	95.60	-7,073.0	-1,118.4	966.7	690.4	276.34	3.498	
14,100.0	6,663.2	14,309.9	6,758.4	140.8	141.6	95.59	-7,173.0	-1,118.4	966.7	686.5	280.14	3.451	
14,200.0	6,662.6	14,409.9	6,757.7	142.7	143.5	95.59	-7,273.0	-1,118.4	966.7	682.7	283.94	3.405	
14,290.7	6,662.0	14,500.5	6,757.1	144.5	145.3	95.58	-7,363.7	-1,118.4	966.7	679.3	287.39	3.364	SF

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-89.44	0.7	-74.9	75.0				
100.0	100.0	100.0	100.0	0.1	0.1	-89.44	0.7	-74.9	75.0	74.7	0.22	333.469	
200.0	200.0	200.0	200.0	0.3	0.3	-89.44	0.7	-74.9	75.0	74.3	0.67	111.156	
300.0	300.0	300.0	300.0	0.6	0.6	-89.44	0.7	-74.9	75.0	73.8	1.12	66.694	
400.0	400.0	400.0	400.0	0.8	0.8	-89.44	0.7	-74.9	75.0	73.4	1.57	47.638	CC, ES
500.0	500.0	498.2	498.2	1.0	1.0	-89.10	1.2	-76.1	76.2	74.1	2.01	37.859	
600.0	600.0	596.2	596.1	1.2	1.2	-88.13	2.6	-79.6	79.8	77.3	2.45	32.569	
700.0	700.0	694.0	693.7	1.5	1.4	-86.70	4.9	-85.5	85.8	82.9	2.89	29.680	
800.0	800.0	791.4	790.8	1.7	1.7	-85.01	8.2	-93.6	94.4	91.0	3.34	28.270	
900.0	900.0	888.3	887.0	1.9	1.9	-83.24	12.3	-103.9	105.4	101.6	3.79	27.832	SF
1,000.0	1,000.0	984.6	982.3	2.1	2.2	-81.54	17.3	-116.4	119.0	114.8	4.24	28.058	
1,100.0	1,100.0	1,080.1	1,076.6	2.4	2.6	-79.97	23.2	-131.0	135.1	130.4	4.70	28.752	
1,200.0	1,200.0	1,174.8	1,169.5	2.6	2.9	-78.58	29.8	-147.7	153.7	148.5	5.16	29.777	
1,300.0	1,300.0	1,268.6	1,261.1	2.8	3.3	-77.37	37.3	-166.2	174.7	169.1	5.63	31.042	
1,400.0	1,400.0	1,361.2	1,351.1	3.0	3.7	-76.32	45.4	-186.6	198.2	192.1	6.10	32.477	
1,500.0	1,500.0	1,452.8	1,439.5	3.3	4.2	-75.43	54.3	-208.8	224.1	217.5	6.58	34.034	
1,600.0	1,600.0	1,546.3	1,529.3	3.5	4.7	-74.65	64.0	-233.1	251.9	244.8	7.08	35.587	
1,700.0	1,700.0	1,642.2	1,621.3	3.7	5.2	-74.00	74.1	-258.3	280.0	272.4	7.58	36.951	
1,800.0	1,800.0	1,738.2	1,713.3	3.9	5.7	-73.47	84.1	-283.4	308.1	300.0	8.08	38.121	
1,900.0	1,900.0	1,834.1	1,805.4	4.2	6.3	-73.02	94.2	-308.6	336.2	327.6	8.59	39.134	
2,000.0	2,000.0	1,930.0	1,897.4	4.4	6.8	-72.65	104.3	-333.7	364.4	355.3	9.11	40.016	
2,100.0	2,100.0	2,026.2	1,989.6	4.6	7.4	-55.07	114.4	-358.9	391.8	382.4	9.43	41.539	
2,200.0	2,199.9	2,122.7	2,082.2	4.8	8.0	-54.90	124.5	-384.3	417.9	407.9	9.93	42.084	
2,300.0	2,299.7	2,219.6	2,175.2	5.1	8.5	-55.03	134.6	-409.7	442.4	432.0	10.43	42.418	
2,400.0	2,399.3	2,316.8	2,268.4	5.3	9.1	-55.40	144.8	-435.1	465.6	454.6	10.94	42.564	
2,500.0	2,498.6	2,414.1	2,361.7	5.5	9.7	-55.98	155.0	-460.7	487.3	475.9	11.46	42.538	
2,600.0	2,597.5	2,511.6	2,455.3	5.8	10.2	-56.76	165.3	-486.2	507.8	495.8	11.99	42.351	
2,700.0	2,696.3	2,609.1	2,548.8	6.0	10.8	-57.83	175.5	-511.8	527.8	515.2	12.54	42.079	
2,800.0	2,795.1	2,706.6	2,642.4	6.3	11.4	-58.83	185.7	-537.4	547.9	534.8	13.11	41.796	
2,900.0	2,893.8	2,804.1	2,735.9	6.6	12.0	-59.76	196.0	-562.9	568.2	554.5	13.69	41.505	
3,000.0	2,992.6	2,901.7	2,829.5	6.9	12.6	-60.62	206.2	-588.5	588.6	574.3	14.28	41.210	
3,100.0	3,091.4	2,999.2	2,923.0	7.2	13.1	-61.42	216.4	-614.1	609.1	594.2	14.89	40.914	
3,200.0	3,190.2	3,096.7	3,016.6	7.5	13.7	-62.18	226.6	-639.6	629.7	614.2	15.50	40.620	
3,300.0	3,288.9	3,194.2	3,110.1	7.8	14.3	-62.88	236.9	-665.2	650.5	634.3	16.13	40.330	
3,400.0	3,387.7	3,291.7	3,203.7	8.1	14.9	-63.55	247.1	-690.8	671.3	654.5	16.76	40.046	
3,500.0	3,486.5	3,389.3	3,297.2	8.4	15.5	-64.17	257.3	-716.3	692.2	674.8	17.41	39.767	
3,600.0	3,585.2	3,486.8	3,390.8	8.7	16.1	-64.76	267.6	-741.9	713.1	695.1	18.06	39.496	
3,700.0	3,684.0	3,584.3	3,484.3	9.1	16.6	-65.31	277.8	-767.5	734.2	715.5	18.71	39.233	
3,800.0	3,782.8	3,681.8	3,577.9	9.4	17.2	-65.83	288.0	-793.1	755.3	735.9	19.38	38.979	
3,900.0	3,881.6	3,779.4	3,671.4	9.7	17.8	-66.33	298.3	-818.6	776.4	756.4	20.05	38.733	
4,000.0	3,980.3	3,876.9	3,765.0	10.0	18.4	-66.79	308.5	-844.2	797.7	776.9	20.72	38.495	
4,100.0	4,079.1	3,974.4	3,858.5	10.4	19.0	-67.24	318.7	-869.8	818.9	797.5	21.40	38.266	
4,200.0	4,177.9	4,071.9	3,952.1	10.7	19.6	-67.66	328.9	-895.3	840.2	818.1	22.09	38.045	
4,300.0	4,276.6	4,169.4	4,045.6	11.1	20.2	-68.06	339.2	-920.9	861.6	838.8	22.77	37.832	
4,400.0	4,375.4	4,267.0	4,139.2	11.4	20.7	-68.44	349.4	-946.5	883.0	859.5	23.47	37.628	
4,500.0	4,474.2	4,364.5	4,232.7	11.7	21.3	-68.80	359.6	-972.0	904.4	880.2	24.16	37.431	
4,600.0	4,572.9	4,462.0	4,326.3	12.1	21.9	-69.15	369.9	-997.6	925.8	901.0	24.86	37.241	
4,700.0	4,671.7	4,559.5	4,419.8	12.4	22.5	-69.48	380.1	-1,023.2	947.3	921.8	25.56	37.059	
4,800.0	4,770.5	4,657.0	4,513.4	12.8	23.1	-69.80	390.3	-1,048.8	968.8	942.6	26.27	36.883	
4,900.0	4,869.3	4,754.6	4,607.0	13.1	23.7	-70.10	400.6	-1,074.3	990.4	963.4	26.98	36.715	

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-89.30	0.4	-29.8	29.8				
100.0	100.0	100.0	100.0	0.1	0.1	-89.30	0.4	-29.8	29.8	29.6	0.22	132.648	
200.0	200.0	200.0	200.0	0.3	0.3	-89.30	0.4	-29.8	29.8	29.1	0.67	44.216	
300.0	300.0	300.0	300.0	0.6	0.6	-89.30	0.4	-29.8	29.8	28.7	1.12	26.530	
400.0	400.0	400.0	400.0	0.8	0.8	-89.30	0.4	-29.8	29.8	28.2	1.57	18.950	
500.0	500.0	500.0	500.0	1.0	1.0	-89.30	0.4	-29.8	29.8	27.8	2.02	14.739	
600.0	600.0	600.0	600.0	1.2	1.2	-89.30	0.4	-29.8	29.8	27.3	2.47	12.059	
700.0	700.0	700.0	700.0	1.5	1.5	-89.30	0.4	-29.8	29.8	26.9	2.92	10.204	
800.0	800.0	800.0	800.0	1.7	1.7	-89.30	0.4	-29.8	29.8	26.4	3.37	8.843	
900.0	900.0	900.0	900.0	1.9	1.9	-89.30	0.4	-29.8	29.8	26.0	3.82	7.803	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-89.30	0.4	-29.8	29.8	25.5	4.27	6.981	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-89.30	0.4	-29.8	29.8	25.1	4.72	6.317	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-89.30	0.4	-29.8	29.8	24.6	5.17	5.767	CC, ES
1,300.0	1,300.0	1,299.4	1,299.4	2.8	2.8	-87.76	1.2	-30.8	30.8	25.2	5.61	5.492	
1,400.0	1,400.0	1,398.6	1,398.5	3.0	3.0	-83.72	3.7	-33.7	34.0	27.9	6.05	5.613	
1,500.0	1,500.0	1,497.6	1,497.3	3.3	3.2	-78.46	7.9	-38.6	39.5	33.0	6.49	6.085	
1,600.0	1,600.0	1,596.2	1,595.5	3.5	3.5	-73.24	13.7	-45.4	47.7	40.7	6.94	6.870	
1,700.0	1,700.0	1,694.2	1,692.9	3.7	3.7	-68.71	21.1	-54.1	58.5	51.1	7.38	7.924	
1,800.0	1,800.0	1,791.6	1,789.3	3.9	4.0	-65.06	30.0	-64.6	72.0	64.2	7.83	9.201	
1,900.0	1,900.0	1,888.3	1,884.6	4.2	4.3	-62.22	40.5	-76.9	88.2	80.0	8.28	10.657	
2,000.0	2,000.0	1,984.4	1,978.9	4.4	4.6	-60.01	52.4	-90.9	107.0	98.3	8.73	12.250	
2,100.0	2,100.0	2,082.6	2,075.1	4.6	4.9	-41.50	65.2	-105.8	125.8	116.7	9.18	13.714	
2,200.0	2,199.9	2,181.1	2,171.6	4.8	5.2	-41.10	78.0	-120.9	142.8	133.1	9.63	14.830	
2,300.0	2,299.7	2,280.0	2,268.5	5.1	5.6	-41.40	90.9	-136.0	157.7	147.7	10.08	15.646	
2,400.0	2,399.3	2,379.1	2,365.5	5.3	6.0	-42.23	103.8	-151.1	170.8	160.3	10.54	16.203	
2,500.0	2,498.6	2,478.3	2,462.8	5.5	6.4	-43.51	116.7	-166.3	182.0	171.0	11.01	16.530	
2,600.0	2,597.5	2,577.7	2,560.2	5.8	6.8	-45.19	129.7	-181.4	191.5	180.0	11.50	16.658	
2,700.0	2,696.3	2,677.1	2,657.5	6.0	7.2	-47.07	142.6	-196.6	200.3	188.2	12.01	16.672	
2,800.0	2,795.1	2,776.5	2,754.9	6.3	7.6	-48.80	155.6	-211.8	209.2	196.7	12.54	16.680	
2,900.0	2,893.8	2,875.9	2,852.3	6.6	8.0	-50.38	168.5	-226.9	218.3	205.2	13.09	16.682	
3,000.0	2,992.6	2,975.4	2,949.7	6.9	8.4	-51.83	181.4	-242.1	227.6	214.0	13.65	16.676	
3,100.0	3,091.4	3,074.8	3,047.1	7.2	8.8	-53.17	194.4	-257.3	237.0	222.8	14.22	16.665	
3,200.0	3,190.2	3,174.2	3,144.5	7.5	9.2	-54.41	207.3	-272.5	246.6	231.7	14.81	16.649	
3,300.0	3,288.9	3,273.6	3,241.9	7.8	9.6	-55.56	220.3	-287.6	256.2	240.8	15.41	16.628	
3,400.0	3,387.7	3,373.0	3,339.3	8.1	10.0	-56.62	233.2	-302.8	265.9	249.9	16.02	16.604	
3,500.0	3,486.5	3,472.4	3,436.6	8.4	10.5	-57.60	246.2	-318.0	275.7	259.1	16.63	16.577	
3,600.0	3,585.2	3,571.8	3,534.0	8.7	10.9	-58.52	259.1	-333.2	285.6	268.4	17.26	16.548	
3,700.0	3,684.0	3,671.2	3,631.4	9.1	11.3	-59.38	272.0	-348.3	295.6	277.7	17.90	16.517	
3,800.0	3,782.8	3,770.6	3,728.8	9.4	11.7	-60.18	285.0	-363.5	305.6	287.1	18.54	16.485	
3,900.0	3,881.6	3,870.0	3,826.2	9.7	12.2	-60.93	297.9	-378.7	315.7	296.5	19.19	16.453	
4,000.0	3,980.3	3,969.4	3,923.6	10.0	12.6	-61.63	310.9	-393.9	325.8	306.0	19.84	16.419	
4,100.0	4,079.1	4,068.8	4,021.0	10.4	13.0	-62.29	323.8	-409.0	336.0	315.5	20.50	16.386	
4,200.0	4,177.9	4,168.3	4,118.4	10.7	13.4	-62.92	336.8	-424.2	346.2	325.0	21.17	16.353	
4,300.0	4,276.6	4,267.7	4,215.7	11.1	13.9	-63.50	349.7	-439.4	356.5	334.6	21.84	16.320	
4,400.0	4,375.4	4,367.1	4,313.1	11.4	14.3	-64.06	362.6	-454.6	366.7	344.2	22.52	16.287	
4,500.0	4,474.2	4,466.5	4,410.5	11.7	14.7	-64.58	375.6	-469.7	377.1	353.9	23.20	16.255	
4,600.0	4,572.9	4,565.9	4,507.9	12.1	15.2	-65.08	388.5	-484.9	387.4	363.5	23.88	16.224	
4,700.0	4,671.7	4,665.3	4,605.3	12.4	15.6	-65.55	401.5	-500.1	397.8	373.2	24.56	16.193	
4,800.0	4,770.5	4,764.7	4,702.7	12.8	16.0	-65.99	414.4	-515.2	408.2	382.9	25.25	16.163	
4,900.0	4,869.3	4,864.1	4,800.1	13.1	16.5	-66.42	427.4	-530.4	418.6	392.7	25.95	16.134	
5,000.0	4,968.0	4,963.5	4,897.5	13.5	16.9	-66.82	440.3	-545.6	429.1	402.4	26.64	16.106	

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,066.8	5,062.9	4,994.8	13.8	17.3	-67.20	453.2	-560.8	439.5	412.2	27.34	16.078	
5,200.0	5,165.6	5,162.3	5,092.2	14.2	17.8	-67.57	466.2	-575.9	450.0	422.0	28.04	16.051	
5,300.0	5,264.3	5,271.6	5,199.4	14.5	18.2	-68.03	479.8	-591.9	459.8	431.1	28.73	16.003	
5,400.0	5,363.1	5,386.1	5,312.6	14.9	18.5	-68.79	491.3	-605.4	466.6	437.2	29.44	15.848	
5,500.0	5,461.9	5,500.6	5,426.3	15.2	18.8	-69.88	499.9	-615.4	470.4	440.2	30.16	15.595	
5,600.0	5,561.0	5,615.1	5,540.5	15.5	19.0	-70.99	505.5	-622.0	471.9	441.1	30.76	15.340	
5,700.0	5,660.5	5,729.5	5,654.8	15.7	19.2	-71.96	508.1	-625.1	471.6	440.3	31.29	15.072	
5,800.0	5,760.3	5,835.0	5,760.3	15.9	19.3	-72.68	508.4	-625.4	469.9	438.2	31.73	14.811	
5,900.0	5,860.3	5,935.0	5,860.3	16.1	19.5	-72.98	508.4	-625.4	469.1	437.0	32.09	14.619	
5,946.7	5,907.0	5,981.6	5,906.9	16.1	19.5	73.19	507.1	-625.4	469.0	436.8	32.23	14.550	
6,000.0	5,960.3	6,034.4	5,959.4	16.2	19.5	89.20	502.3	-625.4	469.1	436.7	32.42	14.470	
6,100.0	6,059.8	6,132.4	6,055.6	16.3	19.5	87.96	483.7	-625.4	469.4	436.7	32.62	14.390	
6,200.0	6,157.4	6,229.2	6,147.4	16.2	19.4	86.76	453.4	-625.4	469.8	437.2	32.60	14.412	
6,300.0	6,251.2	6,324.8	6,233.7	16.1	19.3	85.62	412.4	-625.4	470.4	438.0	32.39	14.523	
6,400.0	6,339.8	6,419.4	6,313.4	15.9	19.1	84.56	361.5	-625.4	471.2	439.1	32.05	14.701	
6,500.0	6,421.6	6,513.1	6,385.5	15.7	18.9	83.60	301.8	-625.4	472.0	440.4	31.65	14.915	
6,600.0	6,495.2	6,606.0	6,449.2	15.5	18.7	82.74	234.3	-625.4	472.9	441.6	31.27	15.124	
6,700.0	6,559.3	6,700.0	6,504.9	15.4	18.5	81.99	158.6	-625.4	473.7	442.7	31.01	15.275	
6,800.0	6,612.9	6,789.8	6,549.1	15.3	18.3	81.39	80.4	-625.4	474.4	443.4	30.99	15.310	
6,900.0	6,655.0	6,881.0	6,584.2	15.4	18.1	80.92	-3.7	-625.4	475.0	443.7	31.28	15.186	
7,000.0	6,685.0	6,971.8	6,609.0	15.8	18.0	80.58	-91.0	-625.4	475.5	443.5	31.95	14.883	
7,100.0	6,702.2	7,062.5	6,623.2	16.4	18.1	80.40	-180.5	-625.4	475.7	442.7	33.02	14.406	
7,200.0	6,706.6	7,154.5	6,626.9	17.1	18.5	80.36	-272.4	-625.4	475.8	441.3	34.48	13.799	
7,300.0	6,705.9	7,254.5	6,626.8	18.1	19.3	80.42	-372.4	-625.4	475.7	439.4	36.31	13.101	
7,400.0	6,705.3	7,354.5	6,626.6	19.1	20.3	80.48	-472.4	-625.4	475.6	437.2	38.42	12.380	
7,500.0	6,704.7	7,454.5	6,626.5	20.4	21.5	80.54	-572.4	-625.4	475.5	434.8	40.77	11.664	
7,600.0	6,704.0	7,554.5	6,626.3	21.7	22.7	80.60	-672.4	-625.4	475.4	432.1	43.33	10.973	
7,700.0	6,703.4	7,654.5	6,626.2	23.1	24.1	80.65	-772.4	-625.4	475.4	429.3	46.06	10.321	
7,800.0	6,702.8	7,754.5	6,626.1	24.5	25.5	80.71	-872.4	-625.4	475.3	426.4	48.93	9.713	
7,900.0	6,702.2	7,854.5	6,625.9	26.0	27.0	80.77	-972.4	-625.4	475.2	423.3	51.93	9.152	
8,000.0	6,701.5	7,954.5	6,625.8	27.6	28.5	80.83	-1,072.4	-625.4	475.1	420.1	55.02	8.636	
8,100.0	6,700.9	8,054.5	6,625.6	29.2	30.1	80.89	-1,172.4	-625.4	475.0	416.9	58.20	8.163	
8,200.0	6,700.3	8,154.5	6,625.5	30.9	31.7	80.94	-1,272.4	-625.4	475.0	413.5	61.45	7.730	
8,300.0	6,699.6	8,254.5	6,625.4	32.5	33.3	81.00	-1,372.4	-625.4	474.9	410.1	64.76	7.333	
8,400.0	6,699.0	8,354.5	6,625.2	34.2	35.0	81.06	-1,472.4	-625.4	474.8	406.7	68.12	6.970	
8,500.0	6,698.4	8,454.5	6,625.1	36.0	36.7	81.12	-1,572.4	-625.4	474.7	403.2	71.53	6.637	
8,600.0	6,697.8	8,554.5	6,625.0	37.7	38.4	81.18	-1,672.4	-625.4	474.7	399.7	74.98	6.331	
8,700.0	6,697.1	8,654.5	6,624.8	39.5	40.1	81.24	-1,772.4	-625.4	474.6	396.1	78.46	6.049	
8,800.0	6,696.5	8,754.5	6,624.7	41.2	41.9	81.29	-1,872.4	-625.4	474.5	392.5	81.98	5.789	
8,900.0	6,695.9	8,854.5	6,624.5	43.0	43.6	81.35	-1,972.4	-625.4	474.4	388.9	85.51	5.548	
9,000.0	6,695.2	8,954.5	6,624.4	44.8	45.4	81.41	-2,072.4	-625.4	474.4	385.3	89.07	5.326	
9,100.0	6,694.6	9,054.5	6,624.3	46.6	47.2	81.47	-2,172.4	-625.4	474.3	381.6	92.66	5.119	
9,200.0	6,694.0	9,154.5	6,624.1	48.4	49.0	81.53	-2,272.4	-625.4	474.2	378.0	96.26	4.927	
9,300.0	6,693.4	9,254.5	6,624.0	50.3	50.8	81.59	-2,372.4	-625.4	474.2	374.3	99.87	4.748	
9,400.0	6,692.7	9,354.5	6,623.8	52.1	52.6	81.64	-2,472.4	-625.4	474.1	370.6	103.51	4.580	
9,500.0	6,692.1	9,454.5	6,623.7	53.9	54.4	81.70	-2,572.4	-625.4	474.0	366.9	107.15	4.424	
9,600.0	6,691.5	9,554.5	6,623.6	55.8	56.2	81.76	-2,672.4	-625.4	473.9	363.1	110.81	4.277	
9,700.0	6,690.8	9,654.5	6,623.4	57.6	58.1	81.82	-2,772.4	-625.4	473.9	359.4	114.48	4.139	
9,800.0	6,690.2	9,754.5	6,623.3	59.5	59.9	81.88	-2,872.4	-625.4	473.8	355.6	118.16	4.010	
9,900.0	6,689.6	9,854.5	6,623.1	61.3	61.7	81.94	-2,972.4	-625.4	473.7	351.9	121.85	3.888	

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.0	6,689.0	9,954.5	6,623.0	63.2	63.6	82.00	-3,072.4	-625.4	473.7	348.1	125.54	3.773	
10,100.0	6,688.3	10,054.5	6,622.9	65.0	65.4	82.05	-3,172.4	-625.4	473.6	344.4	129.25	3.664	
10,200.0	6,687.7	10,154.5	6,622.7	66.9	67.3	82.11	-3,272.4	-625.4	473.5	340.6	132.96	3.561	
10,300.0	6,687.1	10,254.5	6,622.6	68.8	69.1	82.17	-3,372.4	-625.4	473.5	336.8	136.68	3.464	
10,400.0	6,686.4	10,354.5	6,622.4	70.7	71.0	82.23	-3,472.4	-625.4	473.4	333.0	140.41	3.372	
10,500.0	6,685.8	10,454.5	6,622.3	72.5	72.9	82.29	-3,572.4	-625.4	473.3	329.2	144.14	3.284	
10,600.0	6,685.2	10,554.5	6,622.2	74.4	74.7	82.35	-3,672.4	-625.4	473.3	325.4	147.87	3.200	
10,700.0	6,684.6	10,654.5	6,622.0	76.3	76.6	82.41	-3,772.4	-625.4	473.2	321.6	151.62	3.121	
10,800.0	6,683.9	10,754.5	6,621.9	78.2	78.5	82.46	-3,872.4	-625.4	473.1	317.8	155.36	3.045	
10,900.0	6,683.3	10,854.5	6,621.7	80.0	80.3	82.52	-3,972.4	-625.4	473.1	314.0	159.11	2.973	
11,000.0	6,682.7	10,954.5	6,621.6	81.9	82.2	82.58	-4,072.4	-625.4	473.0	310.1	162.87	2.904	
11,100.0	6,682.0	11,054.5	6,621.5	83.8	84.1	82.64	-4,172.4	-625.4	473.0	306.3	166.63	2.838	
11,200.0	6,681.4	11,154.5	6,621.3	85.7	86.0	82.70	-4,272.4	-625.4	472.9	302.5	170.39	2.775	
11,300.0	6,680.8	11,254.5	6,621.2	87.6	87.9	82.76	-4,372.4	-625.4	472.8	298.7	174.16	2.715	
11,400.0	6,680.2	11,354.5	6,621.0	89.5	89.7	82.82	-4,472.4	-625.4	472.8	294.8	177.93	2.657	
11,500.0	6,679.5	11,454.5	6,620.9	91.4	91.6	82.88	-4,572.4	-625.4	472.7	291.0	181.70	2.602	
11,600.0	6,678.9	11,554.5	6,620.8	93.3	93.5	82.93	-4,672.4	-625.4	472.6	287.2	185.48	2.548	
11,700.0	6,678.3	11,654.5	6,620.6	95.2	95.4	82.99	-4,772.4	-625.4	472.6	283.3	189.26	2.497	
11,800.0	6,677.6	11,754.5	6,620.5	97.1	97.3	83.05	-4,872.4	-625.4	472.5	279.5	193.04	2.448	
11,900.0	6,677.0	11,854.5	6,620.3	99.0	99.2	83.11	-4,972.4	-625.4	472.5	275.6	196.82	2.400	
12,000.0	6,676.4	11,954.5	6,620.2	100.9	101.1	83.17	-5,072.3	-625.4	472.4	271.8	200.61	2.355	
12,100.0	6,675.8	12,054.5	6,620.1	102.7	102.9	83.23	-5,172.3	-625.4	472.4	268.0	204.40	2.311	
12,200.0	6,675.1	12,154.5	6,619.9	104.6	104.8	83.29	-5,272.3	-625.4	472.3	264.1	208.19	2.269	
12,300.0	6,674.5	12,254.5	6,619.8	106.5	106.7	83.35	-5,372.3	-625.4	472.2	260.3	211.98	2.228	
12,400.0	6,673.9	12,354.5	6,619.6	108.4	108.6	83.40	-5,472.3	-625.4	472.2	256.4	215.78	2.188	
12,500.0	6,673.3	12,454.5	6,619.5	110.3	110.5	83.46	-5,572.3	-625.4	472.1	252.5	219.58	2.150	
12,600.0	6,672.6	12,554.5	6,619.4	112.2	112.4	83.52	-5,672.3	-625.4	472.1	248.7	223.38	2.113	
12,700.0	6,672.0	12,654.5	6,619.2	114.1	114.3	83.58	-5,772.3	-625.4	472.0	244.8	227.18	2.078	
12,800.0	6,671.4	12,754.5	6,619.1	116.0	116.2	83.64	-5,872.3	-625.4	472.0	241.0	230.98	2.043	
12,900.0	6,670.7	12,854.5	6,618.9	118.0	118.1	83.70	-5,972.3	-625.4	471.9	237.1	234.79	2.010	
13,000.0	6,670.1	12,954.5	6,618.8	119.9	120.0	83.76	-6,072.3	-625.4	471.9	233.3	238.60	1.978	
13,100.0	6,669.5	13,054.5	6,618.7	121.8	121.9	83.82	-6,172.3	-625.4	471.8	229.4	242.40	1.946	
13,200.0	6,668.9	13,154.5	6,618.5	123.7	123.8	83.88	-6,272.3	-625.4	471.7	225.5	246.21	1.916	
13,300.0	6,668.2	13,254.5	6,618.4	125.6	125.7	83.94	-6,372.3	-625.4	471.7	221.7	250.02	1.887	
13,400.0	6,667.6	13,354.5	6,618.2	127.5	127.6	83.99	-6,472.3	-625.4	471.6	217.8	253.84	1.858	
13,500.0	6,667.0	13,454.5	6,618.1	129.4	129.5	84.05	-6,572.3	-625.4	471.6	213.9	257.65	1.830	
13,600.0	6,666.3	13,554.5	6,618.0	131.3	131.4	84.11	-6,672.3	-625.4	471.5	210.1	261.47	1.803	
13,700.0	6,665.7	13,654.5	6,617.8	133.2	133.3	84.17	-6,772.3	-625.4	471.5	206.2	265.28	1.777	
13,800.0	6,665.1	13,754.5	6,617.7	135.1	135.2	84.23	-6,872.3	-625.4	471.4	202.3	269.10	1.752	
13,900.0	6,664.5	13,854.5	6,617.6	137.0	137.1	84.29	-6,972.3	-625.4	471.4	198.5	272.92	1.727	
14,000.0	6,663.8	13,954.5	6,617.4	138.9	139.0	84.35	-7,072.3	-625.4	471.3	194.6	276.74	1.703	
14,100.0	6,663.2	14,054.5	6,617.3	140.8	140.9	84.41	-7,172.3	-625.4	471.3	190.7	280.56	1.680	
14,200.0	6,662.6	14,154.5	6,617.1	142.7	142.8	84.47	-7,272.3	-625.4	471.3	186.9	284.38	1.657	
14,290.7	6,662.0	14,245.1	6,617.0	144.5	144.6	84.52	-7,363.0	-625.4	471.2	183.4	287.85	1.637	SF

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-89.54	0.4	-44.9	44.9				
100.0	100.0	100.0	100.0	0.1	0.1	-89.54	0.4	-44.9	44.9	44.6	0.22	199.583	
200.0	200.0	200.0	200.0	0.3	0.3	-89.54	0.4	-44.9	44.9	44.2	0.67	66.528	
300.0	300.0	300.0	300.0	0.6	0.6	-89.54	0.4	-44.9	44.9	43.7	1.12	39.917	
400.0	400.0	400.0	400.0	0.8	0.8	-89.54	0.4	-44.9	44.9	43.3	1.57	28.512	
500.0	500.0	500.0	500.0	1.0	1.0	-89.54	0.4	-44.9	44.9	42.8	2.02	22.176	
600.0	600.0	600.0	600.0	1.2	1.2	-89.54	0.4	-44.9	44.9	42.4	2.47	18.144	
700.0	700.0	700.0	700.0	1.5	1.5	-89.54	0.4	-44.9	44.9	41.9	2.92	15.353	
800.0	800.0	800.0	800.0	1.7	1.7	-89.54	0.4	-44.9	44.9	41.5	3.37	13.306	
900.0	900.0	900.0	900.0	1.9	1.9	-89.54	0.4	-44.9	44.9	41.0	3.82	11.740	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-89.54	0.4	-44.9	44.9	40.6	4.27	10.504	CC, ES
1,100.0	1,100.0	1,099.0	1,099.0	2.4	2.4	-88.71	1.0	-45.9	46.0	41.3	4.71	9.758	
1,200.0	1,200.0	1,197.8	1,197.7	2.6	2.6	-86.44	3.1	-49.2	49.4	44.2	5.15	9.587	
1,300.0	1,300.0	1,296.4	1,296.1	2.8	2.8	-83.30	6.4	-54.6	55.1	49.6	5.59	9.868	
1,400.0	1,400.0	1,394.6	1,393.9	3.0	3.0	-79.89	11.1	-62.2	63.4	57.4	6.03	10.522	
1,500.0	1,500.0	1,492.3	1,490.9	3.3	3.3	-76.65	17.0	-71.8	74.3	67.9	6.47	11.484	
1,600.0	1,600.0	1,589.3	1,587.0	3.5	3.5	-73.79	24.3	-83.4	87.9	80.9	6.92	12.696	
1,700.0	1,700.0	1,685.6	1,681.9	3.7	3.8	-71.39	32.7	-97.0	104.0	96.6	7.37	14.108	
1,800.0	1,800.0	1,781.0	1,775.6	3.9	4.1	-69.41	42.3	-112.5	122.6	114.8	7.82	15.677	
1,900.0	1,900.0	1,875.4	1,867.8	4.2	4.5	-67.80	53.0	-129.8	143.8	135.5	8.28	17.370	
2,000.0	2,000.0	1,971.7	1,961.4	4.4	4.9	-66.49	64.8	-148.8	166.8	158.1	8.75	19.075	
2,100.0	2,100.0	2,069.2	2,056.2	4.6	5.3	-48.44	76.7	-168.2	189.1	179.9	9.18	20.600	
2,200.0	2,199.9	2,167.0	2,151.3	4.8	5.7	-48.19	88.8	-187.6	209.8	200.1	9.64	21.753	
2,300.0	2,299.7	2,265.2	2,246.8	5.1	6.1	-48.46	100.8	-207.1	228.7	218.6	10.11	22.620	
2,400.0	2,399.3	2,363.6	2,342.5	5.3	6.6	-49.14	113.0	-226.6	245.9	235.3	10.58	23.236	
2,500.0	2,498.6	2,462.2	2,438.4	5.5	7.0	-50.17	125.1	-246.2	261.6	250.5	11.07	23.629	
2,600.0	2,597.5	2,561.0	2,534.4	5.8	7.5	-51.50	137.2	-265.8	275.7	264.1	11.57	23.824	
2,700.0	2,696.3	2,659.8	2,630.5	6.0	7.9	-53.05	149.4	-285.4	289.2	277.1	12.10	23.898	
2,800.0	2,795.1	2,758.6	2,726.5	6.3	8.4	-54.47	161.5	-305.1	302.9	290.3	12.65	23.951	
2,900.0	2,893.8	2,857.4	2,822.6	6.6	8.9	-55.76	173.7	-324.7	316.8	303.6	13.21	23.985	
3,000.0	2,992.6	2,956.1	2,918.6	6.9	9.3	-56.95	185.8	-344.3	330.9	317.1	13.79	24.001	
3,100.0	3,091.4	3,054.9	3,014.7	7.2	9.8	-58.03	198.0	-363.9	345.0	330.6	14.37	24.004	
3,200.0	3,190.2	3,153.7	3,110.7	7.5	10.3	-59.04	210.1	-383.5	359.3	344.3	14.97	23.994	
3,300.0	3,288.9	3,252.5	3,206.8	7.8	10.8	-59.96	222.3	-403.1	373.7	358.1	15.59	23.975	
3,400.0	3,387.7	3,351.3	3,302.8	8.1	11.3	-60.82	234.4	-422.7	388.1	371.9	16.21	23.949	
3,500.0	3,486.5	3,450.1	3,398.9	8.4	11.7	-61.61	246.6	-442.4	402.7	385.8	16.84	23.915	
3,600.0	3,585.2	3,548.9	3,495.0	8.7	12.2	-62.35	258.7	-462.0	417.3	399.8	17.48	23.878	
3,700.0	3,684.0	3,647.7	3,591.0	9.1	12.7	-63.05	270.9	-481.6	431.9	413.8	18.12	23.836	
3,800.0	3,782.8	3,746.4	3,687.1	9.4	13.2	-63.69	283.0	-501.2	446.7	427.9	18.77	23.791	
3,900.0	3,881.6	3,845.2	3,783.1	9.7	13.7	-64.29	295.2	-520.8	461.4	442.0	19.43	23.745	
4,000.0	3,980.3	3,944.0	3,879.2	10.0	14.2	-64.86	307.3	-540.4	476.3	456.2	20.10	23.697	
4,100.0	4,079.1	4,042.8	3,975.2	10.4	14.7	-65.39	319.5	-560.1	491.1	470.4	20.77	23.649	
4,200.0	4,177.9	4,141.6	4,071.3	10.7	15.2	-65.89	331.6	-579.7	506.1	484.6	21.44	23.600	
4,300.0	4,276.6	4,240.4	4,167.3	11.1	15.6	-66.36	343.8	-599.3	521.0	498.9	22.12	23.551	
4,400.0	4,375.4	4,339.2	4,263.4	11.4	16.1	-66.81	355.9	-618.9	536.0	513.2	22.81	23.502	
4,500.0	4,474.2	4,438.0	4,359.5	11.7	16.6	-67.23	368.1	-638.5	551.0	527.5	23.49	23.454	
4,600.0	4,572.9	4,536.7	4,455.5	12.1	17.1	-67.63	380.2	-658.1	566.0	541.8	24.18	23.406	
4,700.0	4,671.7	4,635.5	4,551.6	12.4	17.6	-68.01	392.4	-677.7	581.1	556.2	24.88	23.360	
4,800.0	4,770.5	4,734.3	4,647.6	12.8	18.1	-68.37	404.5	-697.4	596.2	570.6	25.57	23.314	
4,900.0	4,869.3	4,833.1	4,743.7	13.1	18.6	-68.71	416.7	-717.0	611.3	585.0	26.27	23.269	
5,000.0	4,968.0	4,931.9	4,839.7	13.5	19.1	-69.04	428.8	-736.6	626.4	599.4	26.97	23.225	

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,066.8	5,030.7	4,935.8	13.8	19.6	-69.35	441.0	-756.2	641.6	613.9	27.68	23.181	
5,200.0	5,165.6	5,129.5	5,031.8	14.2	20.1	-69.64	453.1	-775.8	656.7	628.3	28.38	23.139	
5,300.0	5,264.3	5,228.3	5,127.9	14.5	20.6	-69.92	465.3	-795.4	671.9	642.8	29.09	23.099	
5,400.0	5,363.1	5,352.1	5,248.9	14.9	21.0	-70.37	479.2	-817.9	685.4	655.5	29.84	22.964	
5,500.0	5,461.9	5,477.6	5,372.5	15.2	21.4	-71.05	490.5	-836.1	695.1	664.5	30.59	22.727	
5,600.0	5,561.0	5,603.6	5,497.4	15.5	21.8	-71.81	498.9	-849.8	701.9	670.7	31.21	22.487	
5,700.0	5,660.5	5,729.9	5,623.4	15.7	22.0	-72.40	504.5	-858.8	706.1	674.4	31.75	22.237	
5,800.0	5,760.3	5,856.4	5,749.8	15.9	22.2	-72.83	507.1	-863.0	707.6	675.4	32.21	21.972	
5,900.0	5,860.3	5,967.0	5,860.3	16.1	22.3	-73.05	507.4	-863.4	707.1	674.5	32.56	21.720	
5,952.3	5,912.6	6,019.2	5,912.6	16.1	22.4	78.61	507.4	-863.4	707.0	674.3	32.71	21.611	
6,000.0	5,960.3	6,067.0	5,960.3	16.2	22.4	89.88	507.4	-863.4	707.1	674.2	32.86	21.516	
6,054.8	6,015.0	6,121.7	6,015.0	16.3	22.5	90.00	505.6	-863.4	707.1	674.1	32.94	21.464	
6,100.0	6,059.8	6,166.9	6,060.0	16.3	22.5	90.10	501.1	-863.4	707.1	674.1	32.98	21.437	
6,200.0	6,157.4	6,267.2	6,158.3	16.2	22.5	90.31	481.9	-863.4	707.1	674.2	32.89	21.497	
6,300.0	6,251.2	6,367.8	6,253.6	16.1	22.4	90.51	449.8	-863.4	707.1	674.5	32.63	21.673	
6,400.0	6,339.8	6,468.8	6,344.2	15.9	22.3	90.71	405.3	-863.4	707.1	674.9	32.24	21.931	
6,500.0	6,421.6	6,570.1	6,428.3	15.7	22.1	90.90	349.0	-863.4	707.1	675.3	31.82	22.224	
6,600.0	6,495.2	6,671.7	6,504.5	15.5	21.9	91.07	282.0	-863.4	707.2	675.7	31.45	22.489	
6,700.0	6,559.3	6,773.6	6,571.3	15.4	21.7	91.22	205.1	-863.4	707.2	676.0	31.22	22.653	
6,800.0	6,612.9	6,875.7	6,627.4	15.3	21.5	91.35	119.9	-863.4	707.3	676.0	31.24	22.640	
6,900.0	6,655.0	6,978.0	6,671.7	15.4	21.3	91.46	27.8	-863.4	707.3	675.7	31.58	22.394	
7,000.0	6,685.0	7,080.5	6,703.4	15.8	21.2	91.54	-69.6	-863.4	707.3	675.0	32.30	21.897	
7,100.0	6,702.2	7,183.1	6,721.8	16.4	21.2	91.59	-170.5	-863.4	707.3	673.9	33.41	21.174	
7,200.0	6,706.6	7,285.5	6,726.5	17.1	21.4	91.62	-272.7	-863.4	707.3	672.5	34.86	20.289	
7,300.0	6,705.9	7,385.5	6,725.8	18.1	21.8	91.61	-372.7	-863.4	707.3	670.7	36.66	19.295	
7,400.0	6,705.3	7,485.5	6,725.1	19.1	22.5	91.61	-472.7	-863.4	707.3	668.6	38.74	18.257	
7,500.0	6,704.7	7,585.5	6,724.4	20.4	23.4	91.60	-572.7	-863.4	707.3	666.3	41.08	17.217	
7,600.0	6,704.0	7,685.5	6,723.7	21.7	24.5	91.60	-672.7	-863.4	707.3	663.7	43.63	16.211	
7,700.0	6,703.4	7,785.5	6,723.1	23.1	25.7	91.59	-772.6	-863.4	707.3	661.0	46.36	15.256	
7,800.0	6,702.8	7,885.5	6,722.4	24.5	27.0	91.59	-872.6	-863.4	707.3	658.1	49.24	14.365	
7,900.0	6,702.2	7,985.5	6,721.7	26.0	28.4	91.58	-972.6	-863.4	707.3	655.1	52.24	13.540	
8,000.0	6,701.5	8,085.5	6,721.0	27.6	29.9	91.57	-1,072.6	-863.4	707.3	652.0	55.35	12.780	
8,100.0	6,700.9	8,185.5	6,720.3	29.2	31.4	91.57	-1,172.6	-863.4	707.3	648.8	58.54	12.083	
8,200.0	6,700.3	8,285.5	6,719.6	30.9	32.9	91.56	-1,272.6	-863.4	707.3	645.5	61.80	11.445	
8,300.0	6,699.6	8,385.5	6,718.9	32.5	34.5	91.56	-1,372.6	-863.4	707.3	642.2	65.13	10.860	
8,400.0	6,699.0	8,485.5	6,718.2	34.2	36.1	91.55	-1,472.6	-863.4	707.3	638.8	68.51	10.324	
8,500.0	6,698.4	8,585.5	6,717.5	36.0	37.8	91.55	-1,572.6	-863.4	707.3	635.4	71.94	9.832	
8,600.0	6,697.8	8,685.5	6,716.8	37.7	39.4	91.54	-1,672.6	-863.4	707.3	631.9	75.41	9.380	
8,700.0	6,697.1	8,785.5	6,716.1	39.5	41.1	91.53	-1,772.6	-863.4	707.3	628.4	78.91	8.964	
8,800.0	6,696.5	8,885.5	6,715.4	41.2	42.8	91.53	-1,872.6	-863.4	707.3	624.9	82.44	8.580	
8,900.0	6,695.9	8,985.5	6,714.7	43.0	44.5	91.52	-1,972.6	-863.4	707.3	621.3	86.00	8.225	
9,000.0	6,695.2	9,085.5	6,714.0	44.8	46.3	91.52	-2,072.6	-863.4	707.3	617.7	89.58	7.896	
9,100.0	6,694.6	9,185.5	6,713.3	46.6	48.0	91.51	-2,172.6	-863.4	707.3	614.1	93.18	7.591	
9,200.0	6,694.0	9,285.5	6,712.6	48.4	49.8	91.51	-2,272.6	-863.4	707.3	610.5	96.80	7.307	
9,300.0	6,693.4	9,385.5	6,711.9	50.3	51.6	91.50	-2,372.6	-863.4	707.3	606.9	100.44	7.042	
9,400.0	6,692.7	9,485.5	6,711.2	52.1	53.4	91.50	-2,472.6	-863.4	707.3	603.2	104.09	6.795	
9,500.0	6,692.1	9,585.5	6,710.5	53.9	55.1	91.49	-2,572.6	-863.4	707.3	599.5	107.75	6.564	
9,600.0	6,691.5	9,685.5	6,709.8	55.8	56.9	91.48	-2,672.6	-863.4	707.3	595.9	111.43	6.348	
9,700.0	6,690.8	9,785.5	6,709.1	57.6	58.8	91.48	-2,772.6	-863.4	707.3	592.2	115.12	6.144	
9,800.0	6,690.2	9,885.5	6,708.4	59.5	60.6	91.47	-2,872.6	-863.4	707.3	588.5	118.81	5.953	

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
9,900.0	6,689.6	9,985.5	6,707.7	61.3	62.4	91.47	-2,972.6	-863.4	707.3	584.8	122.52	5.773	
10,000.0	6,689.0	10,085.5	6,707.0	63.2	64.2	91.46	-3,072.6	-863.4	707.3	581.1	126.23	5.603	
10,100.0	6,688.3	10,185.5	6,706.3	65.0	66.1	91.46	-3,172.6	-863.4	707.3	577.3	129.95	5.443	
10,200.0	6,687.7	10,285.5	6,705.6	66.9	67.9	91.45	-3,272.6	-863.4	707.3	573.6	133.68	5.291	
10,300.0	6,687.1	10,385.5	6,704.9	68.8	69.7	91.44	-3,372.6	-863.4	707.3	569.9	137.41	5.147	
10,400.0	6,686.4	10,485.5	6,704.2	70.7	71.6	91.44	-3,472.6	-863.4	707.3	566.1	141.15	5.011	
10,500.0	6,685.8	10,585.5	6,703.5	72.5	73.4	91.43	-3,572.6	-863.4	707.3	562.4	144.89	4.881	
10,600.0	6,685.2	10,685.5	6,702.8	74.4	75.3	91.43	-3,672.6	-863.4	707.3	558.6	148.64	4.758	
10,700.0	6,684.6	10,785.5	6,702.1	76.3	77.1	91.42	-3,772.6	-863.4	707.3	554.9	152.40	4.641	
10,800.0	6,683.9	10,885.5	6,701.4	78.2	79.0	91.42	-3,872.6	-863.4	707.3	551.1	156.15	4.529	
10,900.0	6,683.3	10,985.5	6,700.7	80.0	80.8	91.41	-3,972.6	-863.4	707.3	547.4	159.92	4.423	
11,000.0	6,682.7	11,085.5	6,700.0	81.9	82.7	91.40	-4,072.6	-863.4	707.3	543.6	163.68	4.321	
11,100.0	6,682.0	11,185.5	6,699.3	83.8	84.6	91.40	-4,172.6	-863.4	707.3	539.8	167.45	4.224	
11,200.0	6,681.4	11,285.5	6,698.6	85.7	86.4	91.39	-4,272.6	-863.4	707.3	536.1	171.22	4.131	
11,300.0	6,680.8	11,385.5	6,697.9	87.6	88.3	91.39	-4,372.6	-863.4	707.3	532.3	175.00	4.042	
11,400.0	6,680.2	11,485.5	6,697.2	89.5	90.2	91.38	-4,472.6	-863.4	707.3	528.5	178.77	3.956	
11,500.0	6,679.5	11,585.5	6,696.5	91.4	92.1	91.38	-4,572.6	-863.4	707.3	524.7	182.55	3.874	
11,600.0	6,678.9	11,685.5	6,695.8	93.3	93.9	91.37	-4,672.6	-863.4	707.3	520.9	186.34	3.796	
11,700.0	6,678.3	11,785.5	6,695.1	95.2	95.8	91.37	-4,772.6	-863.4	707.3	517.1	190.12	3.720	
11,800.0	6,677.6	11,885.5	6,694.4	97.1	97.7	91.36	-4,872.5	-863.4	707.3	513.4	193.91	3.647	
11,900.0	6,677.0	11,985.5	6,693.7	99.0	99.6	91.35	-4,972.5	-863.4	707.3	509.6	197.70	3.578	
12,000.0	6,676.4	12,085.5	6,693.0	100.9	101.5	91.35	-5,072.5	-863.4	707.3	505.8	201.49	3.510	
12,100.0	6,675.8	12,185.5	6,692.3	102.7	103.3	91.34	-5,172.5	-863.4	707.3	502.0	205.28	3.445	
12,200.0	6,675.1	12,285.5	6,691.6	104.6	105.2	91.34	-5,272.5	-863.4	707.3	498.2	209.08	3.383	
12,300.0	6,674.5	12,385.5	6,690.9	106.5	107.1	91.33	-5,372.5	-863.4	707.3	494.4	212.87	3.322	
12,400.0	6,673.9	12,485.5	6,690.2	108.4	109.0	91.33	-5,472.5	-863.4	707.3	490.6	216.67	3.264	
12,500.0	6,673.3	12,585.5	6,689.5	110.3	110.9	91.32	-5,572.5	-863.4	707.3	486.8	220.47	3.208	
12,600.0	6,672.6	12,685.5	6,688.8	112.2	112.8	91.31	-5,672.5	-863.4	707.3	483.0	224.27	3.154	
12,700.0	6,672.0	12,785.5	6,688.1	114.1	114.7	91.31	-5,772.5	-863.4	707.3	479.2	228.07	3.101	
12,800.0	6,671.4	12,885.5	6,687.4	116.0	116.6	91.30	-5,872.5	-863.4	707.3	475.4	231.87	3.050	
12,900.0	6,670.7	12,985.5	6,686.7	118.0	118.4	91.30	-5,972.5	-863.4	707.3	471.6	235.68	3.001	
13,000.0	6,670.1	13,085.5	6,686.1	119.9	120.3	91.29	-6,072.5	-863.4	707.2	467.8	239.48	2.953	
13,100.0	6,669.5	13,185.5	6,685.4	121.8	122.2	91.29	-6,172.5	-863.4	707.2	464.0	243.29	2.907	
13,200.0	6,668.9	13,285.5	6,684.7	123.7	124.1	91.28	-6,272.5	-863.4	707.2	460.1	247.10	2.862	
13,300.0	6,668.2	13,385.5	6,684.0	125.6	126.0	91.27	-6,372.5	-863.4	707.2	456.3	250.91	2.819	
13,400.0	6,667.6	13,485.5	6,683.3	127.5	127.9	91.27	-6,472.5	-863.4	707.2	452.5	254.72	2.777	
13,500.0	6,667.0	13,585.5	6,682.6	129.4	129.8	91.26	-6,572.5	-863.4	707.2	448.7	258.53	2.736	
13,600.0	6,666.3	13,685.5	6,681.9	131.3	131.7	91.26	-6,672.5	-863.4	707.2	444.9	262.34	2.696	
13,700.0	6,665.7	13,785.5	6,681.2	133.2	133.6	91.25	-6,772.5	-863.4	707.2	441.1	266.15	2.657	
13,800.0	6,665.1	13,885.5	6,680.5	135.1	135.5	91.25	-6,872.5	-863.4	707.2	437.3	269.96	2.620	
13,900.0	6,664.5	13,985.5	6,679.8	137.0	137.4	91.24	-6,972.5	-863.4	707.2	433.5	273.78	2.583	
14,000.0	6,663.8	14,085.5	6,679.1	138.9	139.3	91.24	-7,072.5	-863.4	707.2	429.6	277.59	2.548	
14,100.0	6,663.2	14,185.5	6,678.4	140.8	141.2	91.23	-7,172.5	-863.4	707.2	425.8	281.40	2.513	
14,200.0	6,662.6	14,285.5	6,677.7	142.7	143.1	91.22	-7,272.5	-863.4	707.2	422.0	285.22	2.480	
14,290.7	6,662.0	14,376.1	6,677.0	144.5	144.8	91.22	-7,363.2	-863.4	707.2	418.6	288.68	2.450	SF

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-88.62	0.4	-14.8	14.8	14.8	0.00	N/A	
100.0	100.0	100.0	100.0	0.1	0.1	-88.62	0.4	-14.8	14.8	14.5	0.22	65.718	
200.0	200.0	200.0	200.0	0.3	0.3	-88.62	0.4	-14.8	14.8	14.1	0.67	21.906	
300.0	300.0	300.0	300.0	0.6	0.6	-88.62	0.4	-14.8	14.8	13.6	1.12	13.144	
400.0	400.0	400.0	400.0	0.8	0.8	-88.62	0.4	-14.8	14.8	13.2	1.57	9.388	
500.0	500.0	500.0	500.0	1.0	1.0	-88.62	0.4	-14.8	14.8	12.7	2.02	7.302	
600.0	600.0	600.0	600.0	1.2	1.2	-88.62	0.4	-14.8	14.8	12.3	2.47	5.974	
700.0	700.0	700.0	700.0	1.5	1.5	-88.62	0.4	-14.8	14.8	11.8	2.92	5.055	
800.0	800.0	800.0	800.0	1.7	1.7	-88.62	0.4	-14.8	14.8	11.4	3.37	4.381	
900.0	900.0	900.0	900.0	1.9	1.9	-88.62	0.4	-14.8	14.8	11.0	3.82	3.866	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-88.62	0.4	-14.8	14.8	10.5	4.27	3.459	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-88.62	0.4	-14.8	14.8	10.1	4.72	3.129	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-88.62	0.4	-14.8	14.8	9.6	5.17	2.857	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-88.62	0.4	-14.8	14.8	9.2	5.62	2.629	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-88.62	0.4	-14.8	14.8	8.7	6.07	2.434	CC
1,500.0	1,500.0	1,499.7	1,499.7	3.3	3.3	-84.86	1.4	-15.5	15.6	9.1	6.51	2.396	
1,600.0	1,600.0	1,599.3	1,599.3	3.5	3.5	-75.81	4.5	-17.9	18.5	11.5	6.96	2.653	
1,700.0	1,700.0	1,698.7	1,698.4	3.7	3.7	-65.96	9.7	-21.8	23.9	16.5	7.40	3.225	
1,800.0	1,800.0	1,797.6	1,796.9	3.9	3.9	-58.06	16.9	-27.1	32.1	24.3	7.85	4.093	
1,900.0	1,900.0	1,896.0	1,894.6	4.2	4.2	-52.48	26.1	-34.0	43.2	34.9	8.30	5.208	
2,000.0	2,000.0	1,993.7	1,991.4	4.4	4.4	-48.66	37.2	-42.3	57.0	48.3	8.75	6.520	
2,100.0	2,100.0	2,092.2	2,088.5	4.6	4.7	-29.38	50.0	-51.8	71.8	62.6	9.19	7.811	
2,200.0	2,199.9	2,191.4	2,186.4	4.8	5.0	-28.73	62.9	-61.5	84.4	74.8	9.63	8.762	
2,300.0	2,299.7	2,290.8	2,284.5	5.1	5.3	-29.01	75.8	-71.1	94.8	84.7	10.08	9.402	
2,400.0	2,399.3	2,390.5	2,382.8	5.3	5.6	-29.94	88.8	-80.8	102.8	92.3	10.52	9.773	
2,500.0	2,498.6	2,490.3	2,481.3	5.5	5.9	-31.45	101.7	-90.5	108.7	97.7	10.97	9.908	
2,600.0	2,597.5	2,590.1	2,579.8	5.8	6.2	-33.54	114.7	-100.2	112.5	101.0	11.43	9.840	
2,700.0	2,696.3	2,690.0	2,678.3	6.0	6.6	-35.89	127.7	-109.9	115.3	103.4	11.92	9.672	
2,800.0	2,795.1	2,789.8	2,776.9	6.3	6.9	-38.13	140.7	-119.6	118.4	105.9	12.43	9.521	
2,900.0	2,893.8	2,889.7	2,875.4	6.6	7.3	-40.25	153.7	-129.3	121.6	108.6	12.95	9.385	
3,000.0	2,992.6	2,989.5	2,973.9	6.9	7.6	-42.26	166.7	-139.1	124.9	111.5	13.49	9.262	
3,100.0	3,091.4	3,089.4	3,072.4	7.2	7.9	-44.16	179.7	-148.8	128.5	114.4	14.04	9.148	
3,200.0	3,190.2	3,189.2	3,171.0	7.5	8.3	-45.96	192.7	-158.5	132.1	117.5	14.61	9.044	
3,300.0	3,288.9	3,289.1	3,269.5	7.8	8.6	-47.66	205.6	-168.2	135.9	120.7	15.19	8.948	
3,400.0	3,387.7	3,388.9	3,368.0	8.1	9.0	-49.27	218.6	-177.9	139.8	124.0	15.78	8.858	
3,500.0	3,486.5	3,488.8	3,466.5	8.4	9.4	-50.79	231.6	-187.6	143.7	127.4	16.38	8.775	
3,600.0	3,585.2	3,588.6	3,565.1	8.7	9.7	-52.23	244.6	-197.3	147.8	130.8	17.00	8.698	
3,700.0	3,684.0	3,688.5	3,663.6	9.1	10.1	-53.59	257.6	-207.0	152.0	134.4	17.62	8.626	
3,800.0	3,782.8	3,788.3	3,762.1	9.4	10.4	-54.88	270.6	-216.7	156.3	138.0	18.25	8.560	
3,900.0	3,881.6	3,888.2	3,860.6	9.7	10.8	-56.09	283.6	-226.4	160.6	141.7	18.90	8.497	
4,000.0	3,980.3	3,988.0	3,959.2	10.0	11.2	-57.25	296.6	-236.1	165.0	145.4	19.55	8.439	
4,100.0	4,079.1	4,087.9	4,057.7	10.4	11.5	-58.34	309.5	-245.8	169.4	149.2	20.21	8.385	
4,200.0	4,177.9	4,187.7	4,156.2	10.7	11.9	-59.38	322.5	-255.5	174.0	153.1	20.87	8.334	
4,300.0	4,276.6	4,287.6	4,254.7	11.1	12.2	-60.36	335.5	-265.2	178.5	157.0	21.54	8.287	
4,400.0	4,375.4	4,387.4	4,353.3	11.4	12.6	-61.30	348.5	-274.9	183.1	160.9	22.22	8.242	
4,500.0	4,474.2	4,487.3	4,451.8	11.7	13.0	-62.18	361.5	-284.6	187.8	164.9	22.90	8.201	
4,600.0	4,572.9	4,587.1	4,550.3	12.1	13.3	-63.03	374.5	-294.3	192.5	168.9	23.59	8.162	
4,700.0	4,671.7	4,687.0	4,648.8	12.4	13.7	-63.83	387.5	-304.0	197.3	173.0	24.28	8.126	
4,800.0	4,770.5	4,786.8	4,747.4	12.8	14.1	-64.60	400.5	-313.7	202.1	177.1	24.97	8.092	
4,900.0	4,869.3	4,886.7	4,845.9	13.1	14.5	-65.33	413.4	-323.4	206.9	181.2	25.67	8.060	
5,000.0	4,968.0	4,986.5	4,944.4	13.5	14.8	-66.03	426.4	-333.1	211.7	185.4	26.37	8.030	

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,066.8	5,086.4	5,042.9	13.8	15.2	-66.70	439.4	-342.9	216.6	189.5	27.07	8.002	
5,200.0	5,165.6	5,186.2	5,141.5	14.2	15.6	-67.33	452.4	-352.6	221.5	193.8	27.78	7.976	
5,300.0	5,264.3	5,286.1	5,240.0	14.5	15.9	-67.94	465.4	-362.3	226.5	198.0	28.48	7.951	
5,400.0	5,363.1	5,386.1	5,338.7	14.9	16.3	-68.53	478.4	-372.0	231.4	202.2	29.19	7.928	
5,500.0	5,461.9	5,491.5	5,443.1	15.2	16.6	-69.50	490.5	-381.0	235.2	205.3	29.88	7.871	
5,600.0	5,561.0	5,597.0	5,547.9	15.5	16.8	-70.63	499.5	-387.7	237.4	207.0	30.47	7.793	
5,700.0	5,660.5	5,702.3	5,653.0	15.7	17.1	-71.61	505.3	-392.1	238.6	207.6	30.99	7.701	
5,800.0	5,760.3	5,807.6	5,758.2	15.9	17.2	-72.46	508.1	-394.2	238.7	207.3	31.43	7.595	
5,900.0	5,860.3	5,909.7	5,860.3	16.1	17.4	-73.04	508.4	-394.4	238.1	206.3	31.80	7.485	
5,952.3	5,912.6	5,962.0	5,912.6	16.1	17.5	78.62	508.4	-394.4	237.9	206.0	31.98	7.441	
6,000.0	5,960.3	6,009.7	5,960.3	16.2	17.5	89.89	508.4	-394.4	238.0	205.9	32.13	7.408	
6,010.6	5,970.9	6,020.3	5,970.9	16.2	17.6	89.97	508.4	-394.4	238.0	205.9	32.15	7.403	
6,100.0	6,059.8	6,109.6	6,060.2	16.3	17.7	91.79	507.4	-394.4	238.1	205.9	32.18	7.400	
6,200.0	6,157.4	6,210.7	6,160.6	16.2	17.7	94.28	495.8	-394.4	238.7	206.7	31.95	7.470	
6,300.0	6,251.2	6,313.3	6,259.9	16.1	17.7	96.70	470.6	-394.4	239.7	208.1	31.53	7.601	
6,400.0	6,339.8	6,417.3	6,356.3	15.9	17.5	98.99	431.7	-394.4	241.0	210.0	30.98	7.780	
6,500.0	6,421.6	6,522.8	6,447.7	15.7	17.3	101.12	379.3	-394.4	242.6	212.2	30.36	7.992	
6,600.0	6,495.2	6,629.6	6,532.0	15.5	17.1	103.04	313.9	-394.4	244.3	214.6	29.76	8.210	
6,700.0	6,559.3	6,737.7	6,607.3	15.4	16.9	104.72	236.4	-394.4	246.1	216.8	29.30	8.400	
6,800.0	6,612.9	6,846.9	6,671.4	15.3	16.6	106.12	148.1	-394.4	247.8	218.7	29.08	8.521	
6,900.0	6,655.0	6,957.1	6,722.7	15.4	16.4	107.22	50.7	-394.4	249.2	220.0	29.21	8.531	
7,000.0	6,685.0	7,068.0	6,759.6	15.8	16.2	108.01	-53.8	-394.4	250.3	220.5	29.77	8.408	
7,100.0	6,702.2	7,179.5	6,781.1	16.4	16.6	108.48	-163.0	-394.4	250.9	220.2	30.78	8.154	
7,200.0	6,706.6	7,289.5	6,786.7	17.1	17.5	108.61	-272.9	-394.4	251.1	218.9	32.21	7.796	
7,300.0	6,705.9	7,389.5	6,786.3	18.1	18.5	108.66	-372.9	-394.4	251.2	217.3	33.96	7.397	
7,400.0	6,705.3	7,489.5	6,785.9	19.1	19.6	108.70	-472.9	-394.4	251.3	215.3	35.99	6.982	
7,500.0	6,704.7	7,589.5	6,785.5	20.4	20.8	108.75	-572.9	-394.4	251.3	213.1	38.26	6.569	
7,600.0	6,704.0	7,689.5	6,785.0	21.7	22.1	108.79	-672.9	-394.4	251.4	210.7	40.74	6.172	
7,700.0	6,703.4	7,789.5	6,784.6	23.1	23.5	108.84	-772.9	-394.4	251.5	208.1	43.38	5.798	
7,800.0	6,702.8	7,889.5	6,784.2	24.5	25.0	108.88	-872.9	-394.4	251.5	205.4	46.15	5.450	
7,900.0	6,702.2	7,989.5	6,783.8	26.0	26.5	108.93	-972.9	-394.4	251.6	202.6	49.05	5.130	
8,000.0	6,701.5	8,089.5	6,783.4	27.6	28.0	108.97	-1,072.9	-394.4	251.7	199.6	52.04	4.837	
8,100.0	6,700.9	8,189.5	6,782.9	29.2	29.6	109.02	-1,172.8	-394.4	251.8	196.7	55.10	4.569	
8,200.0	6,700.3	8,289.5	6,782.5	30.9	31.2	109.06	-1,272.8	-394.4	251.8	193.6	58.23	4.324	
8,300.0	6,699.6	8,389.5	6,782.1	32.5	32.9	109.11	-1,372.8	-394.4	251.9	190.5	61.42	4.101	
8,400.0	6,699.0	8,489.5	6,781.7	34.2	34.6	109.15	-1,472.8	-394.4	252.0	187.3	64.66	3.897	
8,500.0	6,698.4	8,589.5	6,781.3	36.0	36.3	109.20	-1,572.8	-394.4	252.0	184.1	67.93	3.710	
8,600.0	6,697.8	8,689.5	6,780.8	37.7	38.0	109.24	-1,672.8	-394.4	252.1	180.9	71.24	3.538	
8,700.0	6,697.1	8,789.5	6,780.4	39.5	39.8	109.29	-1,772.8	-394.4	252.2	177.6	74.58	3.381	
8,800.0	6,696.5	8,889.5	6,780.0	41.2	41.5	109.33	-1,872.8	-394.4	252.2	174.3	77.95	3.236	
8,900.0	6,695.9	8,989.5	6,779.6	43.0	43.3	109.38	-1,972.8	-394.4	252.3	171.0	81.34	3.102	
9,000.0	6,695.2	9,089.5	6,779.2	44.8	45.1	109.42	-2,072.8	-394.4	252.4	167.6	84.74	2.978	
9,100.0	6,694.6	9,189.5	6,778.7	46.6	46.9	109.47	-2,172.8	-394.4	252.4	164.3	88.17	2.863	
9,200.0	6,694.0	9,289.5	6,778.3	48.4	48.7	109.51	-2,272.8	-394.4	252.5	160.9	91.60	2.757	
9,300.0	6,693.4	9,389.5	6,777.9	50.3	50.5	109.56	-2,372.8	-394.4	252.6	157.5	95.06	2.657	
9,400.0	6,692.7	9,489.5	6,777.5	52.1	52.3	109.60	-2,472.8	-394.4	252.7	154.1	98.52	2.565	
9,500.0	6,692.1	9,589.5	6,777.1	53.9	54.1	109.65	-2,572.8	-394.4	252.7	150.7	101.99	2.478	
9,600.0	6,691.5	9,689.5	6,776.7	55.8	56.0	109.69	-2,672.8	-394.4	252.8	147.3	105.47	2.397	
9,700.0	6,690.8	9,789.5	6,776.2	57.6	57.8	109.74	-2,772.8	-394.4	252.9	143.9	108.96	2.321	
9,800.0	6,690.2	9,889.5	6,775.8	59.5	59.7	109.78	-2,872.8	-394.4	252.9	140.5	112.46	2.249	

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
9,900.0	6,689.6	9,989.5	6,775.4	61.3	61.5	109.83	-2,972.8	-394.4	253.0	137.1	115.96	2.182	
10,000.0	6,689.0	10,089.5	6,775.0	63.2	63.4	109.87	-3,072.8	-394.4	253.1	133.6	119.46	2.118	
10,100.0	6,688.3	10,189.5	6,774.6	65.0	65.2	109.92	-3,172.8	-394.4	253.2	130.2	122.98	2.059	
10,200.0	6,687.7	10,289.5	6,774.1	66.9	67.1	109.96	-3,272.8	-394.4	253.2	126.7	126.49	2.002	
10,300.0	6,687.1	10,389.5	6,773.7	68.8	68.9	110.00	-3,372.8	-394.4	253.3	123.3	130.01	1.948	
10,400.0	6,686.4	10,489.5	6,773.3	70.7	70.8	110.05	-3,472.8	-394.4	253.4	119.8	133.54	1.897	
10,500.0	6,685.8	10,589.5	6,772.9	72.5	72.7	110.09	-3,572.8	-394.4	253.4	116.4	137.06	1.849	
10,600.0	6,685.2	10,689.5	6,772.5	74.4	74.5	110.14	-3,672.8	-394.4	253.5	112.9	140.59	1.803	
10,700.0	6,684.6	10,789.5	6,772.0	76.3	76.4	110.18	-3,772.8	-394.4	253.6	109.5	144.12	1.759	
10,800.0	6,683.9	10,889.5	6,771.6	78.2	78.3	110.23	-3,872.8	-394.4	253.7	106.0	147.66	1.718	
10,900.0	6,683.3	10,989.5	6,771.2	80.0	80.2	110.27	-3,972.8	-394.4	253.7	102.5	151.19	1.678	
11,000.0	6,682.7	11,089.5	6,770.8	81.9	82.0	110.32	-4,072.8	-394.4	253.8	99.1	154.73	1.640	
11,100.0	6,682.0	11,189.5	6,770.4	83.8	83.9	110.36	-4,172.8	-394.4	253.9	95.6	158.26	1.604	
11,200.0	6,681.4	11,289.5	6,770.0	85.7	85.8	110.40	-4,272.8	-394.4	253.9	92.1	161.80	1.569	
11,300.0	6,680.8	11,389.5	6,769.5	87.6	87.7	110.45	-4,372.8	-394.4	254.0	88.7	165.34	1.536	
11,400.0	6,680.2	11,489.5	6,769.1	89.5	89.6	110.49	-4,472.8	-394.4	254.1	85.2	168.88	1.505	
11,500.0	6,679.5	11,589.5	6,768.7	91.4	91.5	110.54	-4,572.8	-394.4	254.2	81.7	172.42	1.474	Level 3
11,600.0	6,678.9	11,689.5	6,768.3	93.3	93.4	110.58	-4,672.8	-394.4	254.2	78.3	175.96	1.445	Level 3
11,700.0	6,678.3	11,789.5	6,767.9	95.2	95.2	110.63	-4,772.8	-394.4	254.3	74.8	179.50	1.417	Level 3
11,800.0	6,677.6	11,889.5	6,767.4	97.1	97.1	110.67	-4,872.8	-394.4	254.4	71.3	183.04	1.390	Level 3
11,900.0	6,677.0	11,989.5	6,767.0	99.0	99.0	110.71	-4,972.8	-394.4	254.5	67.9	186.58	1.364	Level 3
12,000.0	6,676.4	12,089.5	6,766.6	100.9	100.9	110.76	-5,072.8	-394.4	254.5	64.4	190.13	1.339	Level 3
12,100.0	6,675.8	12,189.5	6,766.2	102.7	102.8	110.80	-5,172.8	-394.4	254.6	60.9	193.67	1.315	Level 3
12,200.0	6,675.1	12,289.5	6,765.8	104.6	104.7	110.85	-5,272.8	-394.4	254.7	57.5	197.21	1.291	Level 3
12,300.0	6,674.5	12,389.5	6,765.3	106.5	106.6	110.89	-5,372.8	-394.4	254.8	54.0	200.75	1.269	Level 3
12,400.0	6,673.9	12,489.5	6,764.9	108.4	108.5	110.93	-5,472.8	-394.4	254.8	50.5	204.29	1.247	Level 2
12,500.0	6,673.3	12,589.5	6,764.5	110.3	110.4	110.98	-5,572.8	-394.4	254.9	47.1	207.82	1.227	Level 2
12,600.0	6,672.6	12,689.5	6,764.1	112.2	112.3	111.02	-5,672.8	-394.4	255.0	43.6	211.36	1.206	Level 2
12,700.0	6,672.0	12,789.5	6,763.7	114.1	114.2	111.07	-5,772.8	-394.4	255.1	40.2	214.90	1.187	Level 2
12,800.0	6,671.4	12,889.5	6,763.3	116.0	116.1	111.11	-5,872.8	-394.4	255.1	36.7	218.44	1.168	Level 2
12,900.0	6,670.7	12,989.5	6,762.8	118.0	118.0	111.15	-5,972.8	-394.4	255.2	33.2	221.97	1.150	Level 2
13,000.0	6,670.1	13,089.5	6,762.4	119.9	119.9	111.20	-6,072.8	-394.4	255.3	29.8	225.51	1.132	Level 2
13,100.0	6,669.5	13,189.5	6,762.0	121.8	121.8	111.24	-6,172.8	-394.4	255.4	26.3	229.04	1.115	Level 2
13,200.0	6,668.9	13,289.5	6,761.6	123.7	123.7	111.28	-6,272.8	-394.4	255.4	22.9	232.57	1.098	Level 2
13,300.0	6,668.2	13,389.5	6,761.2	125.6	125.6	111.33	-6,372.8	-394.4	255.5	19.4	236.11	1.082	Level 2
13,400.0	6,667.6	13,489.5	6,760.7	127.5	127.5	111.37	-6,472.8	-394.4	255.6	16.0	239.64	1.067	Level 2
13,500.0	6,667.0	13,589.5	6,760.3	129.4	129.4	111.42	-6,572.8	-394.4	255.7	12.5	243.17	1.051	Level 2
13,600.0	6,666.3	13,689.5	6,759.9	131.3	131.3	111.46	-6,672.8	-394.4	255.7	9.0	246.70	1.037	Level 2
13,700.0	6,665.7	13,789.5	6,759.5	133.2	133.2	111.50	-6,772.8	-394.4	255.8	5.6	250.22	1.022	Level 2
13,800.0	6,665.1	13,889.5	6,759.1	135.1	135.1	111.55	-6,872.8	-394.4	255.9	2.1	253.75	1.008	Level 2
13,900.0	6,664.5	13,989.5	6,758.6	137.0	137.0	111.59	-6,972.8	-394.4	256.0	-1.3	257.28	0.995	Level 1
14,000.0	6,663.8	14,089.5	6,758.2	138.9	138.9	111.63	-7,072.8	-394.4	256.0	-4.8	260.80	0.982	Level 1
14,100.0	6,663.2	14,189.5	6,757.8	140.8	140.9	111.68	-7,172.8	-394.4	256.1	-8.2	264.32	0.969	Level 1
14,200.0	6,662.6	14,289.5	6,757.4	142.7	142.8	111.72	-7,272.8	-394.4	256.2	-11.6	267.84	0.957	Level 1
14,290.7	6,662.0	14,380.2	6,757.0	144.5	144.5	111.76	-7,363.5	-394.4	256.3	-14.8	271.04	0.946	Level 1, ES, SF

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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-323 - Wellbore #1 - Plan #1 (3-15-16)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.69	-0.4	30.1	30.1				
100.0	100.0	100.0	100.0	0.1	0.1	90.69	-0.4	30.1	30.1	29.9	0.22	133.887	
200.0	200.0	200.0	200.0	0.3	0.3	90.69	-0.4	30.1	30.1	29.4	0.67	44.629	
300.0	300.0	300.0	300.0	0.6	0.6	90.69	-0.4	30.1	30.1	29.0	1.12	26.777	
400.0	400.0	400.0	400.0	0.8	0.8	90.69	-0.4	30.1	30.1	28.5	1.57	19.127	
500.0	500.0	500.0	500.0	1.0	1.0	90.69	-0.4	30.1	30.1	28.1	2.02	14.876	
600.0	600.0	600.0	600.0	1.2	1.2	90.69	-0.4	30.1	30.1	27.6	2.47	12.172	
700.0	700.0	700.0	700.0	1.5	1.5	90.69	-0.4	30.1	30.1	27.2	2.92	10.299	
800.0	800.0	800.0	800.0	1.7	1.7	90.69	-0.4	30.1	30.1	26.7	3.37	8.926	CC, ES
900.0	900.0	899.6	899.6	1.9	1.9	88.49	0.8	30.7	30.7	26.9	3.82	8.032	
1,000.0	1,000.0	999.2	999.1	2.1	2.1	82.40	4.3	32.3	32.6	28.4	4.26	7.656	
1,100.0	1,100.0	1,098.4	1,098.1	2.4	2.4	73.92	10.1	35.2	36.6	31.9	4.71	7.773	
1,200.0	1,200.0	1,197.2	1,196.5	2.6	2.6	64.98	18.2	39.1	43.2	38.1	5.17	8.367	
1,300.0	1,300.0	1,295.5	1,294.1	2.8	2.8	57.04	28.6	44.0	52.8	47.2	5.63	9.382	
1,400.0	1,400.0	1,393.2	1,390.8	3.0	3.1	50.66	41.0	50.1	65.4	59.3	6.09	10.729	
1,500.0	1,500.0	1,490.1	1,486.3	3.3	3.4	45.75	55.6	57.1	80.9	74.3	6.56	12.322	
1,600.0	1,600.0	1,587.0	1,581.4	3.5	3.7	42.03	72.2	65.1	99.0	92.0	7.04	14.065	
1,700.0	1,700.0	1,685.0	1,677.6	3.7	4.1	39.37	89.5	73.4	117.9	110.4	7.52	15.683	
1,800.0	1,800.0	1,783.1	1,773.8	3.9	4.4	37.45	106.7	81.7	136.9	128.9	7.99	17.128	
1,900.0	1,900.0	1,881.2	1,870.0	4.2	4.8	36.00	123.9	90.0	156.1	147.6	8.47	18.420	
2,000.0	2,000.0	1,979.3	1,966.2	4.4	5.2	34.87	141.2	98.4	175.3	166.4	8.96	19.578	
2,100.0	2,100.0	2,077.5	2,062.6	4.6	5.5	51.12	158.4	106.7	193.8	184.5	9.31	20.825	
2,200.0	2,199.9	2,176.1	2,159.3	4.8	5.9	50.98	175.7	115.0	210.7	200.9	9.78	21.546	
2,300.0	2,299.7	2,274.9	2,256.2	5.1	6.3	51.38	193.1	123.4	225.9	215.7	10.26	22.032	
2,400.0	2,399.3	2,373.9	2,353.2	5.3	6.7	52.21	210.5	131.8	239.6	228.9	10.74	22.311	
2,500.0	2,498.6	2,472.9	2,450.4	5.5	7.1	53.43	227.9	140.2	251.8	240.6	11.24	22.409	
2,600.0	2,597.5	2,572.1	2,547.6	5.8	7.5	55.01	245.3	148.6	262.7	250.9	11.76	22.346	
2,700.0	2,696.3	2,671.2	2,644.8	6.0	7.9	56.80	262.7	157.0	273.0	260.7	12.30	22.202	
2,800.0	2,795.1	2,770.3	2,742.0	6.3	8.3	58.47	280.1	165.4	283.6	270.8	12.86	22.063	
2,900.0	2,893.8	2,869.4	2,839.2	6.6	8.7	60.01	297.5	173.8	294.4	281.0	13.43	21.927	
3,000.0	2,992.6	2,968.5	2,936.4	6.9	9.1	61.45	314.9	182.2	305.4	291.4	14.01	21.795	
3,100.0	3,091.4	3,067.6	3,033.7	7.2	9.5	62.78	332.3	190.6	316.6	302.0	14.61	21.667	
3,200.0	3,190.2	3,166.7	3,130.9	7.5	10.0	64.03	349.8	199.0	328.0	312.7	15.22	21.544	
3,300.0	3,288.9	3,265.8	3,228.1	7.8	10.4	65.19	367.2	207.4	339.5	323.6	15.84	21.425	
3,400.0	3,387.7	3,364.9	3,325.3	8.1	10.8	66.27	384.6	215.8	351.1	334.6	16.47	21.310	
3,500.0	3,486.5	3,464.0	3,422.5	8.4	11.2	67.29	402.0	224.2	362.8	345.7	17.11	21.200	
3,600.0	3,585.2	3,563.2	3,519.7	8.7	11.6	68.24	419.4	232.6	374.7	356.9	17.76	21.094	
3,700.0	3,684.0	3,662.3	3,616.9	9.1	12.0	69.13	436.8	241.0	386.6	368.2	18.41	20.994	
3,800.0	3,782.8	3,761.4	3,714.1	9.4	12.4	69.97	454.2	249.4	398.6	379.5	19.07	20.897	
3,900.0	3,881.6	3,870.7	3,821.6	9.7	12.8	70.92	472.4	258.1	409.8	390.1	19.73	20.770	
4,000.0	3,980.3	3,984.4	3,934.0	10.0	13.1	72.14	487.5	265.4	417.8	397.4	20.39	20.493	
4,100.0	4,079.1	4,098.3	4,047.2	10.4	13.4	73.62	498.6	270.8	422.6	401.5	21.05	20.074	
4,200.0	4,177.9	4,211.8	4,160.5	10.7	13.6	75.38	505.6	274.2	424.3	402.5	21.72	19.536	
4,300.0	4,276.6	4,324.8	4,273.4	11.1	13.8	77.46	508.5	275.6	423.0	400.6	22.38	18.898	
4,400.0	4,375.4	4,426.8	4,375.4	11.4	14.0	79.58	508.6	275.6	419.9	396.9	23.03	18.232	
4,500.0	4,474.2	4,525.6	4,474.2	11.7	14.1	81.66	508.6	275.6	417.4	393.7	23.69	17.620	
4,600.0	4,572.9	4,624.4	4,572.9	12.1	14.2	83.77	508.6	275.6	415.3	391.0	24.34	17.065	
4,700.0	4,671.7	4,723.1	4,671.7	12.4	14.4	85.90	508.6	275.6	413.9	388.9	24.99	16.564	
4,800.0	4,770.5	4,821.9	4,770.5	12.8	14.5	88.04	508.6	275.6	413.1	387.4	25.64	16.114	
4,891.7	4,861.1	4,912.5	4,861.1	13.1	14.7	90.00	508.6	275.6	412.8	386.6	26.22	15.744	
4,900.0	4,869.3	4,920.7	4,869.3	13.1	14.7	90.18	508.6	275.6	412.8	386.6	26.27	15.713	

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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-323 - Wellbore #1 - Plan #1 (3-15-16)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.0	4,968.0	5,019.4	4,968.0	13.5	14.9	92.32	508.6	275.6	413.2	386.3	26.91	15.357	
5,100.0	5,066.8	5,118.2	5,066.8	13.8	15.0	94.45	508.6	275.6	414.1	386.6	27.53	15.044	
5,200.0	5,165.6	5,217.0	5,165.6	14.2	15.2	96.58	508.6	275.6	415.6	387.5	28.14	14.771	
5,300.0	5,264.3	5,315.8	5,264.3	14.5	15.3	98.68	508.6	275.6	417.7	389.0	28.74	14.536	
5,400.0	5,363.1	5,414.5	5,363.1	14.9	15.5	100.76	508.6	275.6	420.4	391.1	29.32	14.336	
5,500.0	5,461.9	5,513.3	5,461.9	15.2	15.7	102.82	508.6	275.6	423.6	393.7	29.89	14.171	
5,600.0	5,561.0	5,612.4	5,561.0	15.5	15.8	104.60	508.6	275.6	426.8	396.4	30.37	14.051	
5,700.0	5,660.5	5,711.9	5,660.5	15.7	16.0	105.90	508.6	275.6	429.4	398.6	30.81	13.936	
5,800.0	5,760.3	5,811.7	5,760.3	15.9	16.2	106.73	508.6	275.6	431.1	399.9	31.20	13.817	
5,900.0	5,860.3	5,911.7	5,860.3	16.1	16.3	107.10	508.6	275.6	431.9	400.4	31.56	13.687	
6,000.0	5,960.3	6,011.7	5,960.3	16.2	16.5	-89.98	508.6	275.6	432.0	400.1	31.89	13.545	
6,006.3	5,966.6	6,018.0	5,966.6	16.2	16.5	-90.00	508.6	275.6	432.0	400.1	31.91	13.539	
6,100.0	6,059.8	6,111.8	6,060.3	16.3	16.6	-90.91	506.8	275.6	432.0	399.9	32.10	13.461	
6,200.0	6,157.4	6,212.9	6,160.4	16.2	16.7	-92.02	493.2	275.6	432.3	400.2	32.07	13.480	
6,300.0	6,251.2	6,315.1	6,258.9	16.1	16.6	-93.10	466.1	275.6	432.6	400.8	31.84	13.588	
6,400.0	6,339.8	6,418.5	6,354.0	15.9	16.4	-94.14	425.6	275.6	433.1	401.7	31.46	13.767	
6,500.0	6,421.6	6,523.1	6,443.6	15.7	16.2	-95.10	372.0	275.6	433.7	402.7	31.01	13.987	
6,600.0	6,495.2	6,628.7	6,525.9	15.5	16.0	-95.98	306.0	275.6	434.4	403.8	30.57	14.209	
6,700.0	6,559.3	6,735.2	6,598.9	15.4	15.8	-96.75	228.5	275.6	435.0	404.7	30.25	14.378	
6,800.0	6,612.9	6,842.7	6,660.9	15.3	15.6	-97.40	140.8	275.6	435.6	405.4	30.18	14.435	
6,900.0	6,655.0	6,950.8	6,710.3	15.4	15.5	-97.91	44.7	275.6	436.1	405.7	30.44	14.326	
7,000.0	6,685.0	7,059.5	6,745.7	15.8	15.7	-98.28	-58.0	275.6	436.5	405.4	31.13	14.024	
7,100.0	6,702.2	7,168.6	6,766.3	16.4	16.3	-98.49	-165.1	275.6	436.8	404.5	32.25	13.544	
7,200.0	6,706.6	7,276.7	6,771.5	17.1	17.1	-98.55	-272.9	275.6	436.8	403.1	33.77	12.936	
7,300.0	6,705.9	7,376.7	6,770.9	18.1	18.1	-98.55	-372.9	275.6	436.8	401.2	35.60	12.272	
7,400.0	6,705.3	7,476.7	6,770.3	19.1	19.2	-98.55	-472.9	275.6	436.8	399.1	37.71	11.584	
7,500.0	6,704.7	7,576.7	6,769.6	20.4	20.4	-98.55	-572.9	275.6	436.8	396.8	40.07	10.901	
7,600.0	6,704.0	7,676.7	6,769.0	21.7	21.7	-98.55	-672.9	275.6	436.8	394.2	42.64	10.244	
7,700.0	6,703.4	7,776.7	6,768.4	23.1	23.0	-98.55	-772.9	275.6	436.8	391.5	45.39	9.624	
7,800.0	6,702.8	7,876.7	6,767.8	24.5	24.5	-98.55	-872.9	275.6	436.8	388.6	48.28	9.048	
7,900.0	6,702.2	7,976.7	6,767.1	26.0	26.0	-98.55	-972.9	275.6	436.8	385.6	51.29	8.518	
8,000.0	6,701.5	8,076.7	6,766.5	27.6	27.6	-98.55	-1,072.9	275.6	436.8	382.4	54.39	8.031	
8,100.0	6,700.9	8,176.7	6,765.9	29.2	29.2	-98.55	-1,172.9	275.6	436.8	379.3	57.59	7.586	
8,200.0	6,700.3	8,276.7	6,765.2	30.9	30.8	-98.55	-1,272.9	275.6	436.8	376.0	60.85	7.179	
8,300.0	6,699.6	8,376.7	6,764.6	32.5	32.5	-98.55	-1,372.9	275.6	436.8	372.7	64.17	6.808	
8,400.0	6,699.0	8,476.7	6,764.0	34.2	34.2	-98.55	-1,472.9	275.6	436.8	369.3	67.54	6.468	
8,500.0	6,698.4	8,576.7	6,763.4	36.0	35.9	-98.55	-1,572.9	275.6	436.8	365.9	70.96	6.156	
8,600.0	6,697.8	8,676.7	6,762.7	37.7	37.6	-98.55	-1,672.9	275.6	436.8	362.4	74.41	5.871	
8,700.0	6,697.1	8,776.7	6,762.1	39.5	39.4	-98.55	-1,772.9	275.6	436.8	358.9	77.90	5.608	
8,800.0	6,696.5	8,876.7	6,761.5	41.2	41.2	-98.55	-1,872.9	275.6	436.8	355.4	81.41	5.366	
8,900.0	6,695.9	8,976.7	6,760.8	43.0	42.9	-98.55	-1,972.9	275.6	436.8	351.9	84.95	5.142	
9,000.0	6,695.2	9,076.7	6,760.2	44.8	44.7	-98.55	-2,072.9	275.6	436.8	348.3	88.51	4.935	
9,100.0	6,694.6	9,176.7	6,759.6	46.6	46.5	-98.55	-2,172.9	275.6	436.8	344.8	92.09	4.744	
9,200.0	6,694.0	9,276.7	6,759.0	48.4	48.4	-98.55	-2,272.9	275.6	436.8	341.2	95.69	4.565	
9,300.0	6,693.4	9,376.7	6,758.3	50.3	50.2	-98.55	-2,372.9	275.6	436.8	337.5	99.30	4.399	
9,400.0	6,692.7	9,476.7	6,757.7	52.1	52.0	-98.55	-2,472.9	275.6	436.8	333.9	102.93	4.244	
9,500.0	6,692.1	9,576.7	6,757.1	53.9	53.8	-98.55	-2,572.9	275.6	436.8	330.3	106.57	4.099	
9,600.0	6,691.5	9,676.7	6,756.4	55.8	55.7	-98.55	-2,672.9	275.6	436.8	326.6	110.22	3.963	
9,700.0	6,690.8	9,776.7	6,755.8	57.6	57.5	-98.55	-2,772.9	275.6	436.8	323.0	113.88	3.836	
9,800.0	6,690.2	9,876.7	6,755.2	59.5	59.4	-98.55	-2,872.9	275.6	436.8	319.3	117.55	3.716	

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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-323 - Wellbore #1 - Plan #1 (3-15-16)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
9,900.0	6,689.6	9,976.7	6,754.6	61.3	61.2	-98.55	-2,972.9	275.6	436.8	315.6	121.23	3.604	
10,000.0	6,689.0	10,076.7	6,753.9	63.2	63.1	-98.55	-3,072.9	275.6	436.8	311.9	124.91	3.497	
10,100.0	6,688.3	10,176.7	6,753.3	65.0	64.9	-98.55	-3,172.9	275.6	436.8	308.2	128.60	3.397	
10,200.0	6,687.7	10,276.7	6,752.7	66.9	66.8	-98.55	-3,272.9	275.6	436.8	304.5	132.30	3.302	
10,300.0	6,687.1	10,376.7	6,752.0	68.8	68.7	-98.55	-3,372.9	275.6	436.8	300.8	136.00	3.212	
10,400.0	6,686.4	10,476.7	6,751.4	70.7	70.5	-98.55	-3,472.9	275.6	436.8	297.1	139.71	3.127	
10,500.0	6,685.8	10,576.7	6,750.8	72.5	72.4	-98.55	-3,572.9	275.6	436.8	293.4	143.43	3.046	
10,600.0	6,685.2	10,676.7	6,750.2	74.4	74.3	-98.55	-3,672.9	275.6	436.8	289.7	147.15	2.969	
10,700.0	6,684.6	10,776.7	6,749.5	76.3	76.2	-98.55	-3,772.9	275.6	436.8	286.0	150.87	2.896	
10,800.0	6,683.9	10,876.7	6,748.9	78.2	78.0	-98.55	-3,872.9	275.6	436.8	282.3	154.60	2.826	
10,900.0	6,683.3	10,976.7	6,748.3	80.0	79.9	-98.55	-3,972.9	275.6	436.8	278.5	158.33	2.759	
11,000.0	6,682.7	11,076.7	6,747.7	81.9	81.8	-98.55	-4,072.9	275.6	436.8	274.8	162.06	2.696	
11,100.0	6,682.0	11,176.7	6,747.0	83.8	83.7	-98.55	-4,172.9	275.6	436.8	271.1	165.80	2.635	
11,200.0	6,681.4	11,276.7	6,746.4	85.7	85.6	-98.55	-4,272.9	275.6	436.8	267.3	169.54	2.577	
11,300.0	6,680.8	11,376.7	6,745.8	87.6	87.5	-98.55	-4,372.9	275.6	436.8	263.6	173.28	2.521	
11,400.0	6,680.2	11,476.7	6,745.1	89.5	89.4	-98.55	-4,472.8	275.6	436.8	259.8	177.02	2.468	
11,500.0	6,679.5	11,576.7	6,744.5	91.4	91.2	-98.55	-4,572.8	275.6	436.8	256.1	180.77	2.417	
11,600.0	6,678.9	11,676.7	6,743.9	93.3	93.1	-98.55	-4,672.8	275.6	436.8	252.3	184.52	2.367	
11,700.0	6,678.3	11,776.7	6,743.3	95.2	95.0	-98.55	-4,772.8	275.6	436.8	248.6	188.27	2.320	
11,800.0	6,677.6	11,876.7	6,742.6	97.1	96.9	-98.55	-4,872.8	275.6	436.8	244.8	192.03	2.275	
11,900.0	6,677.0	11,976.7	6,742.0	99.0	98.8	-98.55	-4,972.8	275.6	436.8	241.1	195.78	2.231	
12,000.0	6,676.4	12,076.7	6,741.4	100.9	100.7	-98.55	-5,072.8	275.6	436.8	237.3	199.54	2.189	
12,100.0	6,675.8	12,176.7	6,740.7	102.7	102.6	-98.55	-5,172.8	275.6	436.8	233.5	203.30	2.149	
12,200.0	6,675.1	12,276.7	6,740.1	104.6	104.5	-98.55	-5,272.8	275.6	436.8	229.8	207.06	2.110	
12,300.0	6,674.5	12,376.7	6,739.5	106.5	106.4	-98.55	-5,372.8	275.6	436.8	226.0	210.82	2.072	
12,400.0	6,673.9	12,476.7	6,738.9	108.4	108.3	-98.55	-5,472.8	275.6	436.8	222.3	214.59	2.036	
12,500.0	6,673.3	12,576.7	6,738.2	110.3	110.2	-98.55	-5,572.8	275.6	436.8	218.5	218.35	2.001	
12,600.0	6,672.6	12,676.7	6,737.6	112.2	112.1	-98.55	-5,672.8	275.6	436.8	214.7	222.12	1.967	
12,700.0	6,672.0	12,776.7	6,737.0	114.1	114.0	-98.55	-5,772.8	275.6	436.8	211.0	225.88	1.934	
12,800.0	6,671.4	12,876.7	6,736.3	116.0	115.9	-98.55	-5,872.8	275.6	436.8	207.2	229.65	1.902	
12,900.0	6,670.7	12,976.7	6,735.7	118.0	117.8	-98.55	-5,972.8	275.6	436.8	203.4	233.42	1.871	
13,000.0	6,670.1	13,076.7	6,735.1	119.9	119.7	-98.55	-6,072.8	275.6	436.8	199.7	237.19	1.842	
13,100.0	6,669.5	13,176.7	6,734.5	121.8	121.6	-98.55	-6,172.8	275.6	436.8	195.9	240.97	1.813	
13,200.0	6,668.9	13,276.7	6,733.8	123.7	123.5	-98.55	-6,272.8	275.6	436.8	192.1	244.74	1.785	
13,300.0	6,668.2	13,376.7	6,733.2	125.6	125.4	-98.55	-6,372.8	275.6	436.8	188.3	248.51	1.758	
13,400.0	6,667.6	13,476.7	6,732.6	127.5	127.3	-98.55	-6,472.8	275.6	436.8	184.6	252.29	1.732	
13,500.0	6,667.0	13,576.7	6,731.9	129.4	129.2	-98.55	-6,572.8	275.6	436.8	180.8	256.06	1.706	
13,600.0	6,666.3	13,676.7	6,731.3	131.3	131.1	-98.55	-6,672.8	275.6	436.8	177.0	259.84	1.681	
13,700.0	6,665.7	13,776.7	6,730.7	133.2	133.0	-98.55	-6,772.8	275.6	436.8	173.2	263.62	1.657	
13,800.0	6,665.1	13,876.7	6,730.1	135.1	135.0	-98.55	-6,872.8	275.6	436.8	169.5	267.39	1.634	
13,900.0	6,664.5	13,976.7	6,729.4	137.0	136.9	-98.55	-6,972.8	275.6	436.8	165.7	271.17	1.611	
14,000.0	6,663.8	14,076.7	6,728.8	138.9	138.8	-98.55	-7,072.8	275.6	436.9	161.9	274.95	1.589	
14,100.0	6,663.2	14,176.7	6,728.2	140.8	140.7	-98.55	-7,172.8	275.6	436.9	158.1	278.73	1.567	
14,200.0	6,662.6	14,276.7	6,727.5	142.7	142.6	-98.55	-7,272.8	275.6	436.9	154.3	282.51	1.546	
14,253.5	6,662.2	14,330.2	6,727.2	143.8	143.6	-98.55	-7,326.3	275.6	436.9	152.3	284.53	1.535	
14,290.7	6,662.0	14,363.3	6,727.0	144.5	144.2	-98.55	-7,359.4	275.6	436.9	151.0	285.86	1.528	SF

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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-423 - Wellbore #1 - Plan #1 (3-15-16)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.03	0.0	15.0	15.1	15.1	0.00	N/A	
100.0	100.0	99.0	99.0	0.1	0.1	90.03	0.0	15.0	15.0	14.8	0.22	67.274	
200.0	200.0	199.0	199.0	0.3	0.3	90.03	0.0	15.0	15.0	14.4	0.67	22.388	
300.0	300.0	299.0	299.0	0.6	0.6	90.03	0.0	15.0	15.0	13.9	1.12	13.415	
400.0	400.0	399.0	399.0	0.8	0.8	90.03	0.0	15.0	15.0	13.5	1.57	9.576	
500.0	500.0	499.0	499.0	1.0	1.0	90.03	0.0	15.0	15.0	13.0	2.02	7.446	
600.0	600.0	599.0	599.0	1.2	1.2	90.03	0.0	15.0	15.0	12.6	2.47	6.091	
700.0	700.0	699.0	699.0	1.5	1.5	90.03	0.0	15.0	15.0	12.1	2.92	5.153	
800.0	800.0	799.0	799.0	1.7	1.7	90.03	0.0	15.0	15.0	11.7	3.37	4.466	
900.0	900.0	899.0	899.0	1.9	1.9	90.03	0.0	15.0	15.0	11.2	3.82	3.940	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	90.03	0.0	15.0	15.0	10.8	4.27	3.525	
1,100.0	1,100.0	1,099.0	1,099.0	2.4	2.4	90.03	0.0	15.0	15.0	10.3	4.72	3.189	
1,200.0	1,200.0	1,199.0	1,199.0	2.6	2.6	90.03	0.0	15.0	15.0	9.9	5.17	2.912	
1,300.0	1,300.0	1,299.0	1,299.0	2.8	2.8	90.03	0.0	15.0	15.0	9.4	5.62	2.679	
1,400.0	1,400.0	1,399.0	1,399.0	3.0	3.0	90.03	0.0	15.0	15.0	9.0	6.07	2.480	
1,500.0	1,500.0	1,499.0	1,499.0	3.3	3.3	90.03	0.0	15.0	15.0	8.5	6.52	2.309	
1,600.0	1,600.0	1,599.0	1,599.0	3.5	3.5	90.03	0.0	15.0	15.0	8.1	6.97	2.160	
1,700.0	1,700.0	1,699.0	1,699.0	3.7	3.7	90.03	0.0	15.0	15.0	7.6	7.42	2.029	
1,800.0	1,800.0	1,799.0	1,799.0	3.9	3.9	90.03	0.0	15.0	15.0	7.2	7.86	1.913	
1,900.0	1,900.0	1,899.0	1,899.0	4.2	4.2	90.03	0.0	15.0	15.0	6.7	8.31	1.810	
2,000.0	2,000.0	1,999.0	1,999.0	4.4	4.4	90.03	0.0	15.0	15.0	6.3	8.76	1.717	CC
2,100.0	2,100.0	2,099.0	2,099.0	4.6	4.6	111.74	0.0	15.0	15.5	6.3	9.21	1.681	ES
2,200.0	2,199.9	2,198.9	2,198.9	4.8	4.8	123.86	0.0	15.0	17.3	7.7	9.66	1.794	
2,300.0	2,299.7	2,298.7	2,298.7	5.1	5.1	138.32	0.0	15.0	21.7	11.6	10.09	2.146	
2,400.0	2,399.3	2,398.3	2,398.3	5.3	5.3	150.30	0.0	15.0	29.1	18.6	10.52	2.770	
2,500.0	2,498.6	2,497.6	2,497.6	5.5	5.5	158.65	0.0	15.0	39.8	28.9	10.94	3.638	
2,600.0	2,597.5	2,597.6	2,597.6	5.8	5.7	163.41	1.2	15.2	52.5	41.1	11.35	4.620	
2,700.0	2,696.3	2,698.1	2,698.0	6.0	6.0	165.26	5.1	15.5	64.5	52.7	11.80	5.464	
2,800.0	2,795.1	2,799.1	2,798.8	6.3	6.2	165.34	11.7	16.0	74.4	62.2	12.25	6.073	
2,900.0	2,893.8	2,900.4	2,899.7	6.6	6.4	164.29	20.9	16.8	82.3	69.5	12.72	6.469	
3,000.0	2,992.6	3,002.0	3,000.5	6.9	6.6	162.33	32.8	17.8	88.1	74.9	13.19	6.677	
3,100.0	3,091.4	3,103.6	3,101.1	7.2	6.9	159.51	47.4	19.1	92.0	78.3	13.67	6.725	
3,200.0	3,190.2	3,204.4	3,200.5	7.5	7.1	155.91	64.3	20.5	94.4	80.2	14.18	6.655	
3,300.0	3,288.9	3,304.2	3,298.8	7.8	7.4	152.33	81.4	22.0	96.8	82.1	14.70	6.585	
3,400.0	3,387.7	3,404.0	3,397.1	8.1	7.7	148.95	98.6	23.5	99.7	84.4	15.25	6.534	
3,500.0	3,486.5	3,503.8	3,495.4	8.4	8.0	145.77	115.7	24.9	102.8	87.0	15.82	6.499	
3,600.0	3,585.2	3,603.6	3,593.7	8.7	8.3	142.78	132.8	26.4	106.3	89.9	16.41	6.476	
3,700.0	3,684.0	3,703.4	3,692.0	9.1	8.6	139.98	150.0	27.9	110.0	93.0	17.02	6.464	
3,800.0	3,782.8	3,803.2	3,790.3	9.4	8.9	137.38	167.1	29.3	114.0	96.3	17.64	6.460	
3,900.0	3,881.6	3,903.0	3,888.6	9.7	9.2	134.95	184.3	30.8	118.1	99.9	18.28	6.463	
4,000.0	3,980.3	4,002.8	3,986.9	10.0	9.5	132.70	201.4	32.2	122.5	103.6	18.93	6.472	
4,100.0	4,079.1	4,102.6	4,085.2	10.4	9.8	130.60	218.5	33.7	127.1	107.5	19.60	6.485	
4,200.0	4,177.9	4,202.4	4,183.5	10.7	10.2	128.65	235.7	35.2	131.8	111.5	20.27	6.502	
4,300.0	4,276.6	4,302.1	4,281.8	11.1	10.5	126.83	252.8	36.6	136.7	115.7	20.96	6.522	
4,400.0	4,375.4	4,401.9	4,380.1	11.4	10.8	125.15	269.9	38.1	141.7	120.0	21.65	6.545	
4,500.0	4,474.2	4,501.7	4,478.4	11.7	11.2	123.57	287.1	39.6	146.8	124.4	22.34	6.569	
4,600.0	4,572.9	4,601.5	4,576.7	12.1	11.5	122.11	304.2	41.0	152.0	128.9	23.04	6.595	
4,700.0	4,671.7	4,701.3	4,675.0	12.4	11.9	120.74	321.4	42.5	157.3	133.5	23.75	6.622	
4,800.0	4,770.5	4,801.1	4,773.3	12.8	12.2	119.46	338.5	44.0	162.7	138.2	24.46	6.650	
4,900.0	4,869.3	4,900.9	4,871.6	13.1	12.6	118.27	355.6	45.4	168.1	142.9	25.17	6.679	
5,000.0	4,968.0	5,000.7	4,969.9	13.5	12.9	117.15	372.8	46.9	173.6	147.8	25.89	6.708	

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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-423 - Wellbore #1 - Plan #1 (3-15-16)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,066.8	5,100.5	5,068.2	13.8	13.3	116.10	389.9	48.4	179.2	152.6	26.61	6.737	
5,200.0	5,165.6	5,200.3	5,166.5	14.2	13.6	115.11	407.0	49.8	184.9	157.6	27.33	6.766	
5,300.0	5,264.3	5,300.1	5,264.8	14.5	14.0	114.18	424.2	51.3	190.6	162.5	28.05	6.795	
5,400.0	5,363.1	5,399.9	5,363.1	14.9	14.3	113.31	441.3	52.7	196.3	167.6	28.77	6.824	
5,500.0	5,461.9	5,499.6	5,461.3	15.2	14.7	112.49	458.4	54.2	202.1	172.6	29.49	6.853	
5,600.0	5,561.0	5,599.4	5,559.7	15.5	15.0	111.32	475.1	55.6	207.0	176.9	30.13	6.871	
5,700.0	5,660.5	5,699.4	5,658.8	15.7	15.3	110.14	488.7	56.8	210.8	180.1	30.66	6.874	
5,800.0	5,760.3	5,799.6	5,758.4	15.9	15.5	109.03	498.8	57.7	213.3	182.2	31.12	6.853	
5,900.0	5,860.3	5,899.9	5,858.5	16.1	15.7	107.97	505.5	58.2	214.6	183.0	31.52	6.807	
6,000.0	5,960.3	6,000.5	5,959.0	16.2	15.9	-89.97	508.7	58.5	214.9	183.0	31.87	6.742	
6,100.0	6,059.8	6,100.3	6,058.8	16.3	16.1	-92.38	509.0	58.5	215.1	182.9	32.14	6.692	
6,200.0	6,157.4	6,200.1	6,158.6	16.2	16.2	-97.39	506.6	58.5	216.8	184.5	32.25	6.722	
6,300.0	6,251.2	6,303.3	6,260.6	16.1	16.2	-102.52	491.5	58.5	220.3	188.3	32.01	6.883	
6,400.0	6,339.8	6,409.5	6,362.4	15.9	16.2	-107.33	461.8	58.5	225.5	194.1	31.42	7.176	
6,500.0	6,421.6	6,518.9	6,462.0	15.7	16.0	-111.71	416.7	58.5	231.8	201.3	30.53	7.593	
6,600.0	6,495.2	6,631.5	6,556.7	15.5	15.8	-115.56	356.0	58.5	238.8	209.4	29.43	8.114	
6,700.0	6,559.3	6,747.3	6,643.7	15.4	15.5	-118.84	279.7	58.5	245.9	217.6	28.28	8.695	
6,800.0	6,612.9	6,866.1	6,719.9	15.3	15.4	-121.51	188.8	58.5	252.5	225.3	27.29	9.254	
6,900.0	6,655.0	6,987.5	6,782.3	15.4	15.5	-123.57	84.8	58.5	258.2	231.5	26.68	9.677	
7,000.0	6,685.0	7,111.0	6,828.1	15.8	15.8	-125.01	-29.8	58.5	262.5	235.8	26.68	9.839	
7,100.0	6,702.2	7,235.9	6,855.0	16.4	16.4	-125.83	-151.7	58.5	265.1	237.7	27.41	9.669	
7,200.0	6,706.6	7,357.1	6,862.0	17.1	17.3	-126.06	-272.5	58.5	265.8	236.9	28.85	9.214	
7,300.0	6,705.9	7,457.1	6,862.0	18.1	18.2	-126.17	-372.5	58.5	266.2	235.7	30.46	8.739	
7,400.0	6,705.3	7,557.1	6,862.0	19.1	19.3	-126.28	-472.5	58.5	266.5	234.2	32.29	8.254	
7,500.0	6,704.7	7,657.1	6,862.0	20.4	20.5	-126.38	-572.5	58.5	266.9	232.6	34.32	7.777	
7,600.0	6,704.0	7,757.1	6,862.0	21.7	21.8	-126.49	-672.5	58.5	267.3	230.8	36.51	7.320	
7,700.0	6,703.4	7,857.1	6,862.0	23.1	23.1	-126.60	-772.5	58.5	267.7	228.8	38.84	6.892	
7,800.0	6,702.8	7,957.1	6,862.0	24.5	24.6	-126.71	-872.5	58.5	268.0	226.8	41.27	6.494	
7,900.0	6,702.2	8,057.1	6,862.0	26.0	26.1	-126.82	-972.5	58.5	268.4	224.6	43.79	6.129	
8,000.0	6,701.5	8,157.1	6,862.0	27.6	27.7	-126.92	-1,072.5	58.5	268.8	222.4	46.39	5.794	
8,100.0	6,700.9	8,257.1	6,862.0	29.2	29.3	-127.03	-1,172.5	58.5	269.2	220.1	49.05	5.488	
8,200.0	6,700.3	8,357.1	6,862.0	30.9	30.9	-127.14	-1,272.5	58.5	269.5	217.8	51.75	5.208	
8,300.0	6,699.6	8,457.1	6,862.0	32.5	32.6	-127.24	-1,372.5	58.5	269.9	215.4	54.50	4.953	
8,400.0	6,699.0	8,557.1	6,862.0	34.2	34.3	-127.35	-1,472.5	58.5	270.3	213.0	57.28	4.719	
8,500.0	6,698.4	8,657.1	6,862.0	36.0	36.0	-127.45	-1,572.5	58.5	270.7	210.6	60.09	4.505	
8,600.0	6,697.8	8,757.1	6,862.0	37.7	37.7	-127.56	-1,672.5	58.5	271.1	208.1	62.92	4.308	
8,700.0	6,697.1	8,857.0	6,862.0	39.5	39.5	-127.67	-1,772.5	58.5	271.5	205.7	65.77	4.127	
8,800.0	6,696.5	8,957.0	6,862.0	41.2	41.3	-127.77	-1,872.5	58.5	271.8	203.2	68.64	3.960	
8,900.0	6,695.9	9,057.0	6,862.0	43.0	43.0	-127.87	-1,972.5	58.5	272.2	200.7	71.52	3.806	
9,000.0	6,695.2	9,157.0	6,862.0	44.8	44.8	-127.98	-2,072.5	58.5	272.6	198.2	74.41	3.664	
9,100.0	6,694.6	9,257.0	6,862.0	46.6	46.6	-128.08	-2,172.5	58.5	273.0	195.7	77.31	3.531	
9,200.0	6,694.0	9,357.0	6,862.0	48.4	48.5	-128.19	-2,272.5	58.5	273.4	193.2	80.22	3.408	
9,300.0	6,693.4	9,457.0	6,862.0	50.3	50.3	-128.29	-2,372.5	58.5	273.8	190.6	83.13	3.293	
9,400.0	6,692.7	9,557.0	6,862.0	52.1	52.1	-128.39	-2,472.5	58.5	274.2	188.1	86.04	3.186	
9,500.0	6,692.1	9,657.0	6,862.0	53.9	53.9	-128.50	-2,572.5	58.5	274.6	185.6	88.96	3.086	
9,600.0	6,691.5	9,757.0	6,862.0	55.8	55.8	-128.60	-2,672.5	58.5	274.9	183.1	91.88	2.992	
9,700.0	6,690.8	9,857.0	6,862.0	57.6	57.6	-128.70	-2,772.5	58.5	275.3	180.5	94.81	2.904	
9,800.0	6,690.2	9,957.0	6,862.0	59.5	59.5	-128.80	-2,872.5	58.5	275.7	178.0	97.73	2.821	
9,900.0	6,689.6	10,057.0	6,862.0	61.3	61.3	-128.90	-2,972.5	58.5	276.1	175.5	100.65	2.743	
10,000.0	6,689.0	10,157.0	6,862.0	63.2	63.2	-129.01	-3,072.5	58.5	276.5	172.9	103.58	2.670	

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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-423 - Wellbore #1 - Plan #1 (3-15-16)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,100.0	6,688.3	10,257.0	6,862.0	65.0	65.0	-129.11	-3,172.5	58.5	276.9	170.4	106.50	2.600	
10,200.0	6,687.7	10,357.0	6,862.0	66.9	66.9	-129.21	-3,272.5	58.5	277.3	167.9	109.42	2.534	
10,300.0	6,687.1	10,457.0	6,862.0	68.8	68.8	-129.31	-3,372.5	58.5	277.7	165.4	112.33	2.472	
10,400.0	6,686.4	10,557.0	6,862.0	70.7	70.7	-129.41	-3,472.5	58.5	278.1	162.9	115.25	2.413	
10,500.0	6,685.8	10,657.0	6,862.0	72.5	72.5	-129.51	-3,572.5	58.5	278.5	160.3	118.16	2.357	
10,600.0	6,685.2	10,757.0	6,862.0	74.4	74.4	-129.61	-3,672.5	58.5	278.9	157.8	121.07	2.304	
10,700.0	6,684.6	10,857.0	6,862.0	76.3	76.3	-129.71	-3,772.5	58.5	279.3	155.3	123.97	2.253	
10,800.0	6,683.9	10,957.0	6,862.0	78.2	78.2	-129.81	-3,872.5	58.5	279.7	152.8	126.88	2.205	
10,900.0	6,683.3	11,057.0	6,862.0	80.0	80.0	-129.90	-3,972.5	58.5	280.1	150.3	129.77	2.158	
11,000.0	6,682.7	11,157.0	6,862.0	81.9	81.9	-130.00	-4,072.4	58.5	280.5	147.8	132.67	2.114	
11,100.0	6,682.0	11,257.0	6,862.0	83.8	83.8	-130.10	-4,172.4	58.5	280.9	145.4	135.56	2.072	
11,200.0	6,681.4	11,357.0	6,862.0	85.7	85.7	-130.20	-4,272.4	58.5	281.3	142.9	138.44	2.032	
11,300.0	6,680.8	11,457.0	6,862.0	87.6	87.6	-130.30	-4,372.4	58.5	281.7	140.4	141.33	1.993	
11,400.0	6,680.2	11,557.0	6,862.0	89.5	89.5	-130.39	-4,472.4	58.5	282.1	137.9	144.20	1.957	
11,500.0	6,679.5	11,657.0	6,862.0	91.4	91.4	-130.49	-4,572.4	58.5	282.5	135.5	147.08	1.921	
11,600.0	6,678.9	11,757.0	6,862.0	93.3	93.3	-130.59	-4,672.4	58.5	283.0	133.0	149.94	1.887	
11,700.0	6,678.3	11,857.0	6,862.0	95.2	95.2	-130.68	-4,772.4	58.5	283.4	130.6	152.80	1.854	
11,800.0	6,677.6	11,957.0	6,862.0	97.1	97.0	-130.78	-4,872.4	58.5	283.8	128.1	155.66	1.823	
11,900.0	6,677.0	12,057.0	6,862.0	99.0	98.9	-130.88	-4,972.4	58.5	284.2	125.7	158.51	1.793	
12,000.0	6,676.4	12,157.0	6,862.0	100.9	100.8	-130.97	-5,072.4	58.5	284.6	123.2	161.36	1.764	
12,100.0	6,675.8	12,257.0	6,862.0	102.7	102.7	-131.07	-5,172.4	58.5	285.0	120.8	164.20	1.736	
12,200.0	6,675.1	12,357.0	6,862.0	104.6	104.6	-131.16	-5,272.4	58.5	285.4	118.4	167.04	1.709	
12,300.0	6,674.5	12,457.0	6,862.0	106.5	106.5	-131.26	-5,372.4	58.5	285.8	116.0	169.87	1.683	
12,400.0	6,673.9	12,557.0	6,862.0	108.4	108.4	-131.35	-5,472.4	58.5	286.3	113.6	172.70	1.658	
12,500.0	6,673.3	12,657.0	6,862.0	110.3	110.3	-131.45	-5,572.4	58.5	286.7	111.1	175.52	1.633	
12,600.0	6,672.6	12,757.0	6,862.0	112.2	112.2	-131.54	-5,672.4	58.5	287.1	108.7	178.33	1.610	
12,700.0	6,672.0	12,857.0	6,862.0	114.1	114.1	-131.63	-5,772.4	58.5	287.5	106.4	181.14	1.587	
12,800.0	6,671.4	12,957.0	6,862.0	116.0	116.0	-131.73	-5,872.4	58.5	287.9	104.0	183.95	1.565	
12,900.0	6,670.7	13,057.0	6,862.0	118.0	117.9	-131.82	-5,972.4	58.5	288.3	101.6	186.75	1.544	
13,000.0	6,670.1	13,157.0	6,862.0	119.9	119.8	-131.91	-6,072.4	58.5	288.8	99.2	189.54	1.523	
13,100.0	6,669.5	13,257.0	6,862.0	121.8	121.7	-132.01	-6,172.4	58.5	289.2	96.8	192.33	1.504	
13,200.0	6,668.9	13,357.0	6,862.0	123.7	123.6	-132.10	-6,272.4	58.5	289.6	94.5	195.11	1.484	Level 3
13,300.0	6,668.2	13,457.0	6,862.0	125.6	125.6	-132.19	-6,372.4	58.5	290.0	92.1	197.89	1.466	Level 3
13,400.0	6,667.6	13,557.0	6,862.0	127.5	127.5	-132.28	-6,472.4	58.5	290.4	89.8	200.66	1.447	Level 3
13,500.0	6,667.0	13,657.0	6,862.0	129.4	129.4	-132.37	-6,572.4	58.5	290.9	87.4	203.42	1.430	Level 3
13,600.0	6,666.3	13,757.0	6,862.0	131.3	131.3	-132.46	-6,672.4	58.5	291.3	85.1	206.18	1.413	Level 3
13,700.0	6,665.7	13,857.0	6,862.0	133.2	133.2	-132.56	-6,772.4	58.5	291.7	82.8	208.94	1.396	Level 3
13,800.0	6,665.1	13,956.9	6,862.0	135.1	135.1	-132.65	-6,872.4	58.5	292.1	80.5	211.68	1.380	Level 3
13,900.0	6,664.5	14,056.9	6,862.0	137.0	137.0	-132.74	-6,972.4	58.5	292.6	78.1	214.43	1.364	Level 3
14,000.0	6,663.8	14,156.9	6,862.0	138.9	138.9	-132.83	-7,072.4	58.5	293.0	75.8	217.16	1.349	Level 3
14,100.0	6,663.2	14,256.9	6,862.0	140.8	140.8	-132.92	-7,172.4	58.5	293.4	73.5	219.89	1.334	Level 3
14,200.0	6,662.6	14,356.9	6,862.0	142.7	142.7	-133.01	-7,272.4	58.5	293.8	71.2	222.62	1.320	Level 3
14,290.7	6,662.0	14,445.8	6,862.0	144.5	144.4	-133.09	-7,361.2	58.5	294.2	69.2	225.06	1.307	Level 3, SF

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 29U-243 - Wellbore #1 - Plan #1 (3-15-16)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.46	-0.4	45.1	45.1				
100.0	100.0	100.0	100.0	0.1	0.1	90.46	-0.4	45.1	45.1	44.9	0.22	200.822	
200.0	200.0	200.0	200.0	0.3	0.3	90.46	-0.4	45.1	45.1	44.5	0.67	66.941	
300.0	300.0	300.0	300.0	0.6	0.6	90.46	-0.4	45.1	45.1	44.0	1.12	40.164	
400.0	400.0	400.0	400.0	0.8	0.8	90.46	-0.4	45.1	45.1	43.6	1.57	28.689	CC, ES
500.0	500.0	499.2	499.2	1.0	1.0	89.27	0.6	46.0	46.0	44.0	2.02	22.812	
600.0	600.0	598.2	598.2	1.2	1.2	85.98	3.4	48.6	48.8	46.3	2.46	19.817	
700.0	700.0	697.0	696.7	1.5	1.5	81.29	8.1	53.0	53.7	50.8	2.91	18.435	
800.0	800.0	795.4	794.7	1.7	1.7	76.06	14.7	59.0	61.0	57.7	3.37	18.106	
900.0	900.0	893.3	891.9	1.9	2.0	70.99	23.0	66.7	71.0	67.2	3.84	18.509	
1,000.0	1,000.0	990.5	988.2	2.1	2.2	66.49	33.1	76.1	83.8	79.5	4.31	19.430	
1,100.0	1,100.0	1,087.0	1,083.3	2.4	2.6	62.71	44.9	87.0	99.3	94.5	4.79	20.717	
1,200.0	1,200.0	1,182.6	1,177.1	2.6	2.9	59.60	58.3	99.4	117.5	112.2	5.28	22.257	
1,300.0	1,300.0	1,279.1	1,271.4	2.8	3.3	57.09	73.3	113.2	137.9	132.1	5.77	23.892	
1,400.0	1,400.0	1,376.8	1,366.9	3.0	3.7	55.18	88.6	127.4	158.7	152.4	6.26	25.334	
1,500.0	1,500.0	1,474.5	1,462.3	3.3	4.1	53.72	103.9	141.6	179.6	172.8	6.76	26.581	
1,600.0	1,600.0	1,572.2	1,557.8	3.5	4.5	52.56	119.2	155.7	200.6	193.4	7.25	27.667	
1,700.0	1,700.0	1,669.9	1,653.2	3.7	5.0	51.62	134.5	169.9	221.7	214.0	7.75	28.619	
1,800.0	1,800.0	1,767.6	1,748.6	3.9	5.4	50.84	149.9	184.0	242.8	234.6	8.24	29.460	
1,900.0	1,900.0	1,865.2	1,844.1	4.2	5.8	50.19	165.2	198.2	264.0	255.3	8.74	30.206	
2,000.0	2,000.0	1,962.9	1,939.5	4.4	6.3	49.64	180.5	212.4	285.2	275.9	9.24	30.873	
2,100.0	2,100.0	2,060.8	2,035.1	4.6	6.7	66.17	195.8	226.5	305.9	296.4	9.45	32.359	
2,200.0	2,199.9	2,158.8	2,130.9	4.8	7.1	66.11	211.2	240.8	325.6	315.6	9.94	32.766	
2,300.0	2,299.7	2,257.0	2,226.8	5.1	7.6	66.44	226.6	255.0	344.2	333.8	10.43	33.017	
2,400.0	2,399.3	2,355.2	2,322.8	5.3	8.0	67.12	242.0	269.2	361.9	351.0	10.92	33.129	
2,500.0	2,498.6	2,453.5	2,418.8	5.5	8.5	68.08	257.4	283.5	378.7	367.3	11.44	33.114	
2,600.0	2,597.5	2,551.7	2,514.7	5.8	8.9	69.31	272.8	297.7	394.7	382.8	11.97	32.982	
2,700.0	2,696.3	2,649.9	2,610.7	6.0	9.4	70.82	288.2	311.9	410.6	398.1	12.52	32.790	
2,800.0	2,795.1	2,748.1	2,706.6	6.3	9.8	72.22	303.6	326.2	426.7	413.6	13.09	32.595	
2,900.0	2,893.8	2,846.3	2,802.5	6.6	10.2	73.52	319.0	340.4	443.0	429.4	13.68	32.398	
3,000.0	2,992.6	2,944.4	2,898.4	6.9	10.7	74.73	334.4	354.6	459.6	445.3	14.27	32.201	
3,100.0	3,091.4	3,042.6	2,994.3	7.2	11.1	75.85	349.8	368.9	476.3	461.5	14.88	32.008	
3,200.0	3,190.2	3,140.8	3,090.2	7.5	11.6	76.90	365.1	383.1	493.3	477.7	15.50	31.818	
3,300.0	3,288.9	3,238.9	3,186.1	7.8	12.0	77.88	380.5	397.3	510.3	494.2	16.13	31.634	
3,400.0	3,387.7	3,337.1	3,282.0	8.1	12.5	78.79	395.9	411.6	527.5	510.7	16.77	31.456	
3,500.0	3,486.5	3,435.3	3,377.9	8.4	12.9	79.65	411.3	425.8	544.8	527.4	17.42	31.284	
3,600.0	3,585.2	3,533.4	3,473.8	8.7	13.4	80.45	426.7	440.0	562.2	544.2	18.07	31.119	
3,700.0	3,684.0	3,631.6	3,569.7	9.1	13.8	81.21	442.1	454.3	579.8	561.1	18.73	30.961	
3,800.0	3,782.8	3,729.8	3,665.6	9.4	14.3	81.92	457.5	468.5	597.4	578.0	19.39	30.810	
3,900.0	3,881.6	3,846.2	3,779.7	9.7	14.7	82.77	474.7	484.4	614.0	593.9	20.08	30.576	
4,000.0	3,980.3	3,969.2	3,901.1	10.0	15.1	83.80	489.1	497.8	627.0	606.2	20.77	30.192	
4,100.0	4,079.1	4,092.9	4,023.9	10.4	15.4	85.00	499.8	507.6	636.2	614.8	21.45	29.663	
4,200.0	4,177.9	4,216.7	4,147.4	10.7	15.6	86.37	506.7	513.9	641.8	619.7	22.12	29.014	
4,300.0	4,276.6	4,340.3	4,270.9	11.1	15.8	87.93	509.5	516.6	643.9	621.1	22.79	28.257	
4,400.0	4,375.4	4,444.9	4,375.4	11.4	15.9	89.38	509.6	516.7	643.6	620.2	23.41	27.492	
4,445.0	4,419.9	4,489.3	4,419.9	11.5	16.0	90.00	509.6	516.7	643.6	619.9	23.69	27.168	
4,500.0	4,474.2	4,543.6	4,474.2	11.7	16.1	90.76	509.6	516.7	643.6	619.6	24.03	26.787	
4,600.0	4,572.9	4,642.4	4,572.9	12.1	16.2	92.13	509.6	516.7	644.0	619.4	24.65	26.132	
4,700.0	4,671.7	4,741.2	4,671.7	12.4	16.3	93.50	509.6	516.7	644.8	619.5	25.26	25.525	
4,800.0	4,770.5	4,839.9	4,770.5	12.8	16.5	94.87	509.6	516.7	646.0	620.1	25.88	24.963	
4,900.0	4,869.3	4,938.7	4,869.3	13.1	16.6	96.23	509.6	516.7	647.5	621.0	26.49	24.444	

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 29U-243 - Wellbore #1 - Plan #1 (3-15-16)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.0	4,968.0	5,037.5	4,968.0	13.5	16.7	97.58	509.6	516.7	649.4	622.3	27.10	23.964	
5,100.0	5,066.8	5,136.2	5,066.8	13.8	16.9	98.93	509.6	516.7	651.7	624.0	27.71	23.522	
5,200.0	5,165.6	5,235.0	5,165.6	14.2	17.0	100.27	509.6	516.7	654.3	626.0	28.31	23.115	
5,300.0	5,264.3	5,333.8	5,264.3	14.5	17.2	101.59	509.6	516.7	657.3	628.4	28.90	22.740	
5,400.0	5,363.1	5,432.6	5,363.1	14.9	17.3	102.90	509.6	516.7	660.7	631.2	29.50	22.397	
5,500.0	5,461.9	5,531.3	5,461.9	15.2	17.4	104.21	509.6	516.7	664.4	634.3	30.08	22.085	
5,600.0	5,561.0	5,630.5	5,561.0	15.5	17.6	105.37	509.6	516.7	667.8	637.2	30.59	21.830	
5,700.0	5,660.5	5,730.0	5,660.5	15.7	17.7	106.22	509.6	516.7	670.4	639.4	31.05	21.593	
5,800.0	5,760.3	5,829.8	5,760.3	15.9	17.9	106.77	509.6	516.7	672.2	640.7	31.46	21.367	
5,900.0	5,860.3	5,929.7	5,860.3	16.1	18.1	107.01	509.6	516.7	673.0	641.2	31.82	21.150	
6,000.0	5,960.3	6,029.7	5,960.3	16.2	18.2	-90.05	509.4	516.7	673.1	640.9	32.15	20.938	
6,012.4	5,972.6	6,042.1	5,972.7	16.2	18.2	-90.05	509.1	516.7	673.1	640.9	32.17	20.921	
6,100.0	6,059.8	6,129.8	6,059.9	16.3	18.3	-90.05	500.6	516.7	673.1	640.8	32.28	20.849	
6,200.0	6,157.4	6,229.9	6,157.5	16.2	18.2	-90.05	478.8	516.7	673.1	640.9	32.20	20.902	
6,300.0	6,251.2	6,330.0	6,251.4	16.1	18.1	-90.05	444.5	516.7	673.1	641.1	31.94	21.072	
6,400.0	6,339.8	6,430.1	6,340.1	15.9	17.9	-90.05	398.1	516.7	673.1	641.5	31.56	21.327	
6,500.0	6,421.6	6,530.1	6,421.9	15.7	17.7	-90.04	340.6	516.7	673.1	641.9	31.13	21.620	
6,600.0	6,495.2	6,630.2	6,495.5	15.5	17.5	-90.04	273.0	516.7	673.1	642.3	30.75	21.889	
6,700.0	6,559.3	6,730.2	6,559.6	15.4	17.2	-90.03	196.3	516.7	673.1	642.5	30.51	22.058	
6,800.0	6,612.9	6,830.3	6,613.2	15.3	17.0	-90.02	111.8	516.7	673.1	642.5	30.52	22.051	
6,900.0	6,655.0	6,930.3	6,655.2	15.4	16.8	-90.02	21.2	516.7	673.1	642.2	30.86	21.810	
7,000.0	6,685.0	7,030.3	6,685.1	15.8	16.7	-90.01	-74.2	516.7	673.1	641.5	31.58	21.315	
7,100.0	6,702.2	7,130.3	6,702.2	16.4	16.9	-90.00	-172.7	516.7	673.1	640.4	32.68	20.592	
7,200.0	6,706.6	7,230.3	6,706.5	17.1	17.6	-90.00	-272.5	516.7	673.1	638.9	34.16	19.702	
7,300.0	6,705.9	7,330.3	6,705.9	18.1	18.6	-90.00	-372.5	516.7	673.1	637.1	35.98	18.705	
7,400.0	6,705.3	7,430.3	6,705.3	19.1	19.7	-90.00	-472.5	516.7	673.1	635.0	38.10	17.667	
7,500.0	6,704.7	7,530.3	6,704.6	20.4	20.8	-90.00	-572.5	516.7	673.1	632.6	40.46	16.633	
7,600.0	6,704.0	7,630.3	6,704.0	21.7	22.1	-90.00	-672.5	516.7	673.1	630.0	43.05	15.636	
7,700.0	6,703.4	7,730.3	6,703.4	23.1	23.5	-90.00	-772.5	516.7	673.1	627.3	45.80	14.694	
7,800.0	6,702.8	7,830.3	6,702.7	24.5	24.9	-90.00	-872.5	516.7	673.1	624.3	48.71	13.818	
7,900.0	6,702.2	7,930.3	6,702.1	26.0	26.4	-90.00	-972.5	516.7	673.1	621.3	51.74	13.009	
8,000.0	6,701.5	8,030.3	6,701.5	27.6	28.0	-90.00	-1,072.5	516.7	673.1	618.2	54.86	12.268	
8,100.0	6,700.9	8,130.3	6,700.9	29.2	29.6	-90.00	-1,172.5	516.7	673.1	615.0	58.08	11.589	
8,200.0	6,700.3	8,230.3	6,700.2	30.9	31.2	-90.00	-1,272.5	516.7	673.1	611.7	61.37	10.968	
8,300.0	6,699.6	8,330.3	6,699.6	32.5	32.8	-90.00	-1,372.5	516.7	673.1	608.3	64.71	10.401	
8,400.0	6,699.0	8,430.3	6,699.0	34.2	34.5	-90.00	-1,472.5	516.7	673.1	604.9	68.11	9.882	
8,500.0	6,698.4	8,530.3	6,698.3	36.0	36.2	-90.00	-1,572.5	516.7	673.1	601.5	71.56	9.406	
8,600.0	6,697.8	8,630.3	6,697.7	37.7	37.9	-90.00	-1,672.5	516.7	673.1	598.0	75.04	8.970	
8,700.0	6,697.1	8,730.3	6,697.1	39.5	39.7	-90.00	-1,772.5	516.7	673.1	594.5	78.55	8.568	
8,800.0	6,696.5	8,830.3	6,696.5	41.2	41.4	-90.00	-1,872.5	516.7	673.1	591.0	82.10	8.198	
8,900.0	6,695.9	8,930.3	6,695.8	43.0	43.2	-90.00	-1,972.5	516.7	673.1	587.4	85.67	7.857	
9,000.0	6,695.2	9,030.3	6,695.2	44.8	45.0	-90.00	-2,072.5	516.7	673.1	583.8	89.26	7.540	
9,100.0	6,694.6	9,130.3	6,694.6	46.6	46.7	-90.00	-2,172.5	516.7	673.1	580.2	92.87	7.247	
9,200.0	6,694.0	9,230.3	6,693.9	48.4	48.5	-90.00	-2,272.5	516.7	673.1	576.6	96.50	6.974	
9,300.0	6,693.4	9,330.3	6,693.3	50.3	50.4	-90.00	-2,372.5	516.7	673.1	572.9	100.15	6.721	
9,400.0	6,692.7	9,430.3	6,692.7	52.1	52.2	-90.00	-2,472.5	516.7	673.1	569.3	103.81	6.484	
9,500.0	6,692.1	9,530.3	6,692.1	53.9	54.0	-90.00	-2,572.5	516.7	673.1	565.6	107.48	6.262	
9,600.0	6,691.5	9,630.3	6,691.4	55.8	55.8	-90.00	-2,672.5	516.7	673.1	561.9	111.16	6.055	
9,700.0	6,690.8	9,730.3	6,690.8	57.6	57.7	-90.00	-2,772.5	516.7	673.1	558.2	114.86	5.860	
9,800.0	6,690.2	9,830.3	6,690.2	59.5	59.5	-90.00	-2,872.5	516.7	673.1	554.5	118.56	5.677	

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 29U-243 - Wellbore #1 - Plan #1 (3-15-16)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
9,900.0	6,689.6	9,930.3	6,689.6	61.3	61.3	-90.00	-2,972.5	516.7	673.1	550.8	122.27	5.505	
10,000.0	6,689.0	10,030.3	6,688.9	63.2	63.2	-90.00	-3,072.5	516.7	673.1	547.1	125.99	5.342	
10,100.0	6,688.3	10,130.3	6,688.3	65.0	65.0	-90.00	-3,172.5	516.7	673.1	543.3	129.72	5.189	
10,200.0	6,687.7	10,230.3	6,687.7	66.9	66.9	-90.00	-3,272.5	516.7	673.1	539.6	133.45	5.044	
10,300.0	6,687.1	10,330.3	6,687.0	68.8	68.8	-90.00	-3,372.5	516.7	673.1	535.9	137.19	4.906	
10,400.0	6,686.4	10,430.3	6,686.4	70.7	70.6	-90.00	-3,472.5	516.7	673.1	532.1	140.93	4.776	
10,500.0	6,685.8	10,530.3	6,685.8	72.5	72.5	-90.00	-3,572.5	516.7	673.1	528.4	144.68	4.652	
10,600.0	6,685.2	10,630.3	6,685.2	74.4	74.4	-90.00	-3,672.5	516.7	673.1	524.6	148.44	4.534	
10,700.0	6,684.6	10,730.3	6,684.5	76.3	76.2	-90.00	-3,772.5	516.7	673.1	520.9	152.19	4.422	
10,800.0	6,683.9	10,830.3	6,683.9	78.2	78.1	-90.00	-3,872.5	516.7	673.1	517.1	155.95	4.316	
10,900.0	6,683.3	10,930.3	6,683.3	80.0	80.0	-90.00	-3,972.4	516.7	673.1	513.3	159.72	4.214	
11,000.0	6,682.7	11,030.3	6,682.6	81.9	81.9	-90.00	-4,072.4	516.7	673.1	509.6	163.49	4.117	
11,100.0	6,682.0	11,130.3	6,682.0	83.8	83.7	-90.00	-4,172.4	516.7	673.1	505.8	167.26	4.024	
11,200.0	6,681.4	11,230.3	6,681.4	85.7	85.6	-90.00	-4,272.4	516.7	673.1	502.0	171.04	3.935	
11,300.0	6,680.8	11,330.3	6,680.8	87.6	87.5	-90.00	-4,372.4	516.7	673.1	498.2	174.81	3.850	
11,400.0	6,680.2	11,430.3	6,680.1	89.5	89.4	-90.00	-4,472.4	516.7	673.1	494.5	178.60	3.769	
11,500.0	6,679.5	11,530.3	6,679.5	91.4	91.3	-90.00	-4,572.4	516.7	673.1	490.7	182.38	3.690	
11,600.0	6,678.9	11,630.3	6,678.9	93.3	93.2	-90.00	-4,672.4	516.7	673.1	486.9	186.16	3.615	
11,700.0	6,678.3	11,730.3	6,678.2	95.2	95.1	-90.00	-4,772.4	516.7	673.1	483.1	189.95	3.543	
11,800.0	6,677.6	11,830.3	6,677.6	97.1	96.9	-90.00	-4,872.4	516.7	673.1	479.3	193.74	3.474	
11,900.0	6,677.0	11,930.3	6,677.0	99.0	98.8	-90.00	-4,972.4	516.7	673.1	475.5	197.53	3.407	
12,000.0	6,676.4	12,030.3	6,676.4	100.9	100.7	-90.00	-5,072.4	516.7	673.1	471.7	201.33	3.343	
12,100.0	6,675.8	12,130.3	6,675.7	102.7	102.6	-90.00	-5,172.4	516.7	673.1	467.9	205.12	3.281	
12,200.0	6,675.1	12,230.3	6,675.1	104.6	104.5	-90.00	-5,272.4	516.7	673.1	464.1	208.92	3.222	
12,300.0	6,674.5	12,330.3	6,674.5	106.5	106.4	-90.00	-5,372.4	516.7	673.1	460.4	212.72	3.164	
12,400.0	6,673.9	12,430.3	6,673.8	108.4	108.3	-90.00	-5,472.4	516.7	673.1	456.6	216.52	3.109	
12,500.0	6,673.3	12,530.3	6,673.2	110.3	110.2	-90.00	-5,572.4	516.7	673.1	452.7	220.32	3.055	
12,600.0	6,672.6	12,630.3	6,672.6	112.2	112.1	-90.00	-5,672.4	516.7	673.1	448.9	224.12	3.003	
12,700.0	6,672.0	12,730.3	6,672.0	114.1	114.0	-90.00	-5,772.4	516.7	673.1	445.1	227.92	2.953	
12,800.0	6,671.4	12,830.3	6,671.3	116.0	115.9	-90.00	-5,872.4	516.7	673.1	441.3	231.73	2.905	
12,900.0	6,670.7	12,930.3	6,670.7	118.0	117.8	-90.00	-5,972.4	516.7	673.1	437.5	235.53	2.858	
13,000.0	6,670.1	13,030.3	6,670.1	119.9	119.7	-90.00	-6,072.4	516.7	673.1	433.7	239.34	2.812	
13,100.0	6,669.5	13,130.3	6,669.4	121.8	121.6	-90.00	-6,172.4	516.7	673.1	429.9	243.15	2.768	
13,200.0	6,668.9	13,230.3	6,668.8	123.7	123.5	-90.00	-6,272.4	516.7	673.1	426.1	246.96	2.725	
13,300.0	6,668.2	13,330.3	6,668.2	125.6	125.4	-90.00	-6,372.4	516.7	673.1	422.3	250.77	2.684	
13,400.0	6,667.6	13,430.3	6,667.6	127.5	127.3	-90.00	-6,472.4	516.7	673.1	418.5	254.58	2.644	
13,500.0	6,667.0	13,530.3	6,666.9	129.4	129.2	-90.00	-6,572.4	516.7	673.1	414.7	258.39	2.605	
13,600.0	6,666.3	13,630.3	6,666.3	131.3	131.1	-90.00	-6,672.4	516.7	673.1	410.9	262.20	2.567	
13,700.0	6,665.7	13,730.3	6,665.7	133.2	133.0	-90.00	-6,772.4	516.7	673.1	407.1	266.02	2.530	
13,800.0	6,665.1	13,830.3	6,665.0	135.1	134.9	-90.00	-6,872.4	516.7	673.1	403.2	269.83	2.494	
13,900.0	6,664.5	13,930.3	6,664.4	137.0	136.8	-90.00	-6,972.4	516.7	673.1	399.4	273.65	2.460	
14,000.0	6,663.8	14,030.3	6,663.8	138.9	138.7	-90.00	-7,072.4	516.7	673.1	395.6	277.46	2.426	
14,100.0	6,663.2	14,130.3	6,663.2	140.8	140.6	-90.00	-7,172.4	516.7	673.1	391.8	281.28	2.393	
14,200.0	6,662.6	14,230.3	6,662.5	142.7	142.5	-90.00	-7,272.4	516.7	673.1	388.0	285.09	2.361	
14,252.8	6,662.2	14,283.1	6,662.2	143.7	143.6	-90.00	-7,325.2	516.7	673.1	386.0	287.11	2.344	
14,290.7	6,662.0	14,315.2	6,662.0	144.5	144.2	-90.00	-7,357.2	516.7	673.1	384.7	288.44	2.334	SF

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 29U-343 - Wellbore #1 - Plan #1 (3-15-16)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.69	-0.7	60.2	60.2				
100.0	100.0	99.0	99.0	0.1	0.1	90.69	-0.7	60.2	60.2	60.0	0.22	269.117	
200.0	200.0	199.0	199.0	0.3	0.3	90.69	-0.7	60.2	60.2	59.5	0.67	89.557	CC, ES
300.0	300.0	297.8	297.7	0.6	0.6	89.98	0.0	61.2	61.2	60.1	1.11	54.901	
400.0	400.0	396.4	396.3	0.8	0.8	87.95	2.3	64.2	64.3	62.8	1.56	41.224	
500.0	500.0	494.7	494.4	1.0	1.0	84.97	6.1	69.3	69.7	67.7	2.01	34.601	
600.0	600.0	592.7	592.0	1.2	1.3	81.51	11.4	76.3	77.5	75.0	2.48	31.276	
700.0	700.0	690.1	688.8	1.5	1.5	77.99	18.1	85.3	87.8	84.8	2.95	29.773	
800.0	800.0	787.0	784.6	1.7	1.8	74.69	26.3	96.2	100.7	97.3	3.43	29.381	
900.0	900.0	883.0	879.4	1.9	2.2	71.76	35.9	108.9	116.3	112.4	3.91	29.707	
1,000.0	1,000.0	978.2	972.8	2.1	2.5	69.24	46.7	123.3	134.5	130.1	4.41	30.512	
1,100.0	1,100.0	1,072.4	1,064.9	2.4	2.9	67.11	58.9	139.5	155.2	150.3	4.90	31.641	
1,200.0	1,200.0	1,165.6	1,155.3	2.6	3.4	65.33	72.2	157.2	178.4	173.0	5.41	32.992	
1,300.0	1,300.0	1,259.5	1,246.1	2.8	3.8	63.82	86.9	176.7	203.9	198.0	5.92	34.439	
1,400.0	1,400.0	1,356.0	1,339.1	3.0	4.3	62.59	102.2	197.1	229.9	223.5	6.44	35.716	
1,500.0	1,500.0	1,452.5	1,432.1	3.3	4.8	61.61	117.5	217.4	256.0	249.1	6.95	36.812	
1,600.0	1,600.0	1,548.9	1,525.2	3.5	5.4	60.82	132.8	237.8	282.2	274.7	7.47	37.758	
1,700.0	1,700.0	1,645.4	1,618.2	3.7	5.9	60.16	148.1	258.1	308.3	300.4	7.99	38.582	
1,800.0	1,800.0	1,741.8	1,711.2	3.9	6.4	59.60	163.4	278.5	334.6	326.0	8.51	39.306	
1,900.0	1,900.0	1,838.3	1,804.3	4.2	6.9	59.12	178.7	298.8	360.8	351.8	9.03	39.946	
2,000.0	2,000.0	1,934.7	1,897.3	4.4	7.4	58.71	194.0	319.1	387.1	377.5	9.55	40.516	
2,100.0	2,100.0	2,031.3	1,990.5	4.6	8.0	75.22	209.3	339.5	413.0	403.4	9.62	42.938	
2,200.0	2,199.9	2,128.0	2,083.8	4.8	8.5	75.02	224.6	359.9	438.3	428.2	10.11	43.341	
2,300.0	2,299.7	2,224.9	2,177.2	5.1	9.0	75.14	240.0	380.3	463.0	452.4	10.61	43.622	
2,400.0	2,399.3	2,321.7	2,270.6	5.3	9.5	75.53	255.3	400.8	487.1	476.0	11.12	43.789	
2,500.0	2,498.6	2,418.6	2,364.0	5.5	10.1	76.14	270.7	421.2	510.7	499.0	11.65	43.846	
2,600.0	2,597.5	2,515.3	2,457.3	5.8	10.6	76.95	286.0	441.6	533.8	521.6	12.19	43.795	
2,700.0	2,696.3	2,612.0	2,550.6	6.0	11.1	78.14	301.4	462.0	556.8	544.1	12.75	43.673	
2,800.0	2,795.1	2,708.6	2,643.8	6.3	11.7	79.24	316.7	482.4	580.1	566.7	13.33	43.525	
2,900.0	2,893.8	2,805.3	2,737.0	6.6	12.2	80.26	332.0	502.8	603.5	589.6	13.92	43.358	
3,000.0	2,992.6	2,902.0	2,830.3	6.9	12.7	81.20	347.4	523.2	627.1	612.6	14.52	43.178	
3,100.0	3,091.4	2,998.7	2,923.5	7.2	13.3	82.07	362.7	543.6	650.9	635.8	15.14	42.990	
3,200.0	3,190.2	3,095.3	3,016.8	7.5	13.8	82.88	378.0	564.0	674.8	659.0	15.77	42.797	
3,300.0	3,288.9	3,192.0	3,110.0	7.8	14.3	83.64	393.3	584.3	698.8	682.4	16.40	42.603	
3,400.0	3,387.7	3,288.7	3,203.3	8.1	14.9	84.34	408.7	604.7	722.9	705.9	17.05	42.410	
3,500.0	3,486.5	3,385.3	3,296.5	8.4	15.4	85.00	424.0	625.1	747.2	729.5	17.70	42.219	
3,600.0	3,585.2	3,482.0	3,389.8	8.7	15.9	85.62	439.3	645.5	771.5	753.1	18.35	42.032	
3,700.0	3,684.0	3,593.2	3,497.2	9.1	16.5	86.30	456.7	668.6	795.5	776.4	19.05	41.751	
3,800.0	3,782.8	3,726.3	3,626.9	9.4	17.0	87.16	474.5	692.3	816.1	796.3	19.77	41.268	
3,900.0	3,881.6	3,861.2	3,759.6	9.7	17.4	88.13	488.8	711.3	832.4	811.9	20.49	40.624	
4,000.0	3,980.3	3,997.4	3,894.7	10.0	17.8	89.20	499.5	725.5	844.4	823.2	21.20	39.834	
4,100.0	4,079.1	4,134.3	4,031.1	10.4	18.1	90.39	506.3	734.6	852.2	830.4	21.89	38.929	
4,200.0	4,177.9	4,271.3	4,168.0	10.7	18.2	91.71	509.2	738.4	855.8	833.3	22.57	37.914	
4,300.0	4,276.6	4,379.0	4,275.6	11.1	18.4	92.83	509.3	738.5	856.6	833.4	23.18	36.949	
4,400.0	4,375.4	4,477.7	4,374.4	11.4	18.5	93.86	509.3	738.5	857.5	833.7	23.78	36.063	
4,500.0	4,474.2	4,576.5	4,473.2	11.7	18.6	94.89	509.3	738.5	858.7	834.4	24.38	35.228	
4,600.0	4,572.9	4,675.3	4,571.9	12.1	18.7	95.91	509.3	738.5	860.2	835.2	24.98	34.442	
4,700.0	4,671.7	4,774.0	4,670.7	12.4	18.8	96.93	509.3	738.5	862.0	836.4	25.58	33.702	
4,800.0	4,770.5	4,872.8	4,769.5	12.8	18.9	97.95	509.3	738.5	864.0	837.9	26.18	33.007	
4,900.0	4,869.3	4,971.6	4,868.3	13.1	19.0	98.96	509.3	738.5	866.4	839.6	26.78	32.354	
5,000.0	4,968.0	5,070.3	4,967.0	13.5	19.1	99.97	509.3	738.5	869.0	841.6	27.38	31.740	

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 29U-343 - Wellbore #1 - Plan #1 (3-15-16)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,066.8	5,169.1	5,065.8	13.8	19.3	100.97	509.3	738.5	871.8	843.9	27.98	31.164	
5,200.0	5,165.6	5,267.9	5,164.6	14.2	19.4	101.96	509.3	738.5	875.0	846.4	28.57	30.623	
5,300.0	5,264.3	5,366.7	5,263.3	14.5	19.5	102.95	509.3	738.5	878.4	849.2	29.17	30.116	
5,400.0	5,363.1	5,465.4	5,362.1	14.9	19.6	103.93	509.3	738.5	882.1	852.3	29.76	29.639	
5,500.0	5,461.9	5,564.2	5,460.9	15.2	19.8	104.91	509.3	738.5	886.0	855.6	30.35	29.193	
5,600.0	5,561.0	5,663.3	5,560.0	15.5	19.9	105.79	509.3	738.5	889.5	858.7	30.87	28.814	
5,700.0	5,660.5	5,762.8	5,659.5	15.7	20.0	106.44	509.3	738.5	892.2	860.9	31.34	28.467	
5,800.0	5,760.3	5,862.6	5,759.3	15.9	20.2	106.86	509.3	738.5	894.0	862.3	31.76	28.149	
5,900.0	5,860.3	5,962.6	5,859.3	16.1	20.3	107.05	509.3	738.5	894.9	862.7	32.13	27.854	
6,000.0	5,960.3	6,062.6	5,959.3	16.2	20.4	-90.03	509.3	738.5	894.9	862.4	32.45	27.576	
6,100.0	6,059.8	6,162.7	6,059.3	16.3	20.6	-90.48	507.5	738.5	894.9	862.3	32.62	27.434	
6,200.0	6,157.4	6,263.9	6,159.6	16.2	20.6	-91.03	494.0	738.5	895.0	862.5	32.56	27.486	
6,300.0	6,251.2	6,366.3	6,258.2	16.1	20.5	-91.56	467.0	738.5	895.2	862.9	32.31	27.704	
6,400.0	6,339.8	6,469.8	6,353.4	15.9	20.4	-92.06	426.5	738.5	895.5	863.6	31.93	28.049	
6,500.0	6,421.6	6,574.5	6,443.2	15.7	20.2	-92.54	372.9	738.5	895.8	864.3	31.47	28.465	
6,600.0	6,495.2	6,680.2	6,525.7	15.5	19.9	-92.97	306.8	738.5	896.1	865.1	31.04	28.871	
6,700.0	6,559.3	6,787.0	6,598.8	15.4	19.7	-93.34	229.2	738.5	896.4	865.7	30.73	29.168	
6,800.0	6,612.9	6,894.6	6,660.9	15.3	19.4	-93.66	141.4	738.5	896.7	866.1	30.66	29.244	
6,900.0	6,655.0	7,002.9	6,710.3	15.4	19.2	-93.91	45.1	738.5	897.0	866.1	30.93	29.004	
7,000.0	6,685.0	7,111.8	6,745.8	15.8	19.1	-94.09	-57.8	738.5	897.2	865.6	31.59	28.400	
7,100.0	6,702.2	7,221.1	6,766.3	16.4	19.2	-94.19	-165.0	738.5	897.3	864.6	32.67	27.465	
7,200.0	6,706.6	7,329.2	6,771.5	17.1	19.6	-94.21	-272.9	738.5	897.3	863.2	34.14	26.283	
7,300.0	6,705.9	7,429.2	6,770.9	18.1	20.2	-94.21	-372.9	738.5	897.3	861.4	35.92	24.980	
7,400.0	6,705.3	7,529.2	6,770.2	19.1	21.1	-94.21	-472.9	738.5	897.3	859.3	38.00	23.615	
7,500.0	6,704.7	7,629.2	6,769.6	20.4	22.2	-94.21	-572.9	738.5	897.3	857.0	40.33	22.249	
7,600.0	6,704.0	7,729.2	6,769.0	21.7	23.3	-94.21	-672.9	738.5	897.3	854.4	42.88	20.926	
7,700.0	6,703.4	7,829.2	6,768.4	23.1	24.6	-94.21	-772.9	738.5	897.3	851.7	45.61	19.674	
7,800.0	6,702.8	7,929.2	6,767.7	24.5	26.0	-94.21	-872.9	738.5	897.3	848.8	48.49	18.506	
7,900.0	6,702.2	8,029.2	6,767.1	26.0	27.4	-94.21	-972.9	738.6	897.3	845.8	51.49	17.427	
8,000.0	6,701.5	8,129.2	6,766.5	27.6	28.9	-94.21	-1,072.9	738.6	897.3	842.7	54.60	16.435	
8,100.0	6,700.9	8,229.2	6,765.8	29.2	30.4	-94.21	-1,172.9	738.6	897.3	839.5	57.79	15.527	
8,200.0	6,700.3	8,329.2	6,765.2	30.9	32.0	-94.21	-1,272.9	738.6	897.3	836.3	61.06	14.696	
8,300.0	6,699.6	8,429.2	6,764.6	32.5	33.6	-94.21	-1,372.9	738.6	897.3	832.9	64.39	13.936	
8,400.0	6,699.0	8,529.2	6,764.0	34.2	35.2	-94.21	-1,472.9	738.6	897.3	829.6	67.77	13.241	
8,500.0	6,698.4	8,629.2	6,763.3	36.0	36.9	-94.21	-1,572.9	738.6	897.3	826.1	71.20	12.603	
8,600.0	6,697.8	8,729.2	6,762.7	37.7	38.6	-94.21	-1,672.9	738.6	897.3	822.7	74.67	12.018	
8,700.0	6,697.1	8,829.2	6,762.1	39.5	40.3	-94.21	-1,772.9	738.6	897.3	819.2	78.17	11.480	
8,800.0	6,696.5	8,929.2	6,761.4	41.2	42.0	-94.21	-1,872.9	738.6	897.3	815.6	81.70	10.984	
8,900.0	6,695.9	9,029.2	6,760.8	43.0	43.7	-94.21	-1,972.9	738.6	897.3	812.1	85.25	10.525	
9,000.0	6,695.2	9,129.2	6,760.2	44.8	45.5	-94.21	-2,072.9	738.6	897.3	808.5	88.83	10.101	
9,100.0	6,694.6	9,229.2	6,759.6	46.6	47.2	-94.21	-2,172.9	738.6	897.3	804.9	92.43	9.708	
9,200.0	6,694.0	9,329.2	6,758.9	48.4	49.0	-94.21	-2,272.9	738.6	897.3	801.3	96.05	9.342	
9,300.0	6,693.4	9,429.2	6,758.3	50.3	50.8	-94.21	-2,372.9	738.6	897.3	797.6	99.68	9.002	
9,400.0	6,692.7	9,529.2	6,757.7	52.1	52.6	-94.21	-2,472.9	738.6	897.3	794.0	103.33	8.684	
9,500.0	6,692.1	9,629.2	6,757.0	53.9	54.4	-94.21	-2,572.9	738.6	897.3	790.3	106.99	8.387	
9,600.0	6,691.5	9,729.2	6,756.4	55.8	56.2	-94.21	-2,672.9	738.6	897.3	786.7	110.66	8.109	
9,700.0	6,690.8	9,829.2	6,755.8	57.6	58.0	-94.21	-2,772.9	738.6	897.3	783.0	114.35	7.848	
9,800.0	6,690.2	9,929.2	6,755.2	59.5	59.8	-94.21	-2,872.9	738.6	897.3	779.3	118.04	7.602	
9,900.0	6,689.6	10,029.2	6,754.5	61.3	61.7	-94.21	-2,972.9	738.6	897.3	775.6	121.74	7.371	
10,000.0	6,689.0	10,129.2	6,753.9	63.2	63.5	-94.21	-3,072.9	738.6	897.3	771.9	125.45	7.153	

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 29U-343 - Wellbore #1 - Plan #1 (3-15-16)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

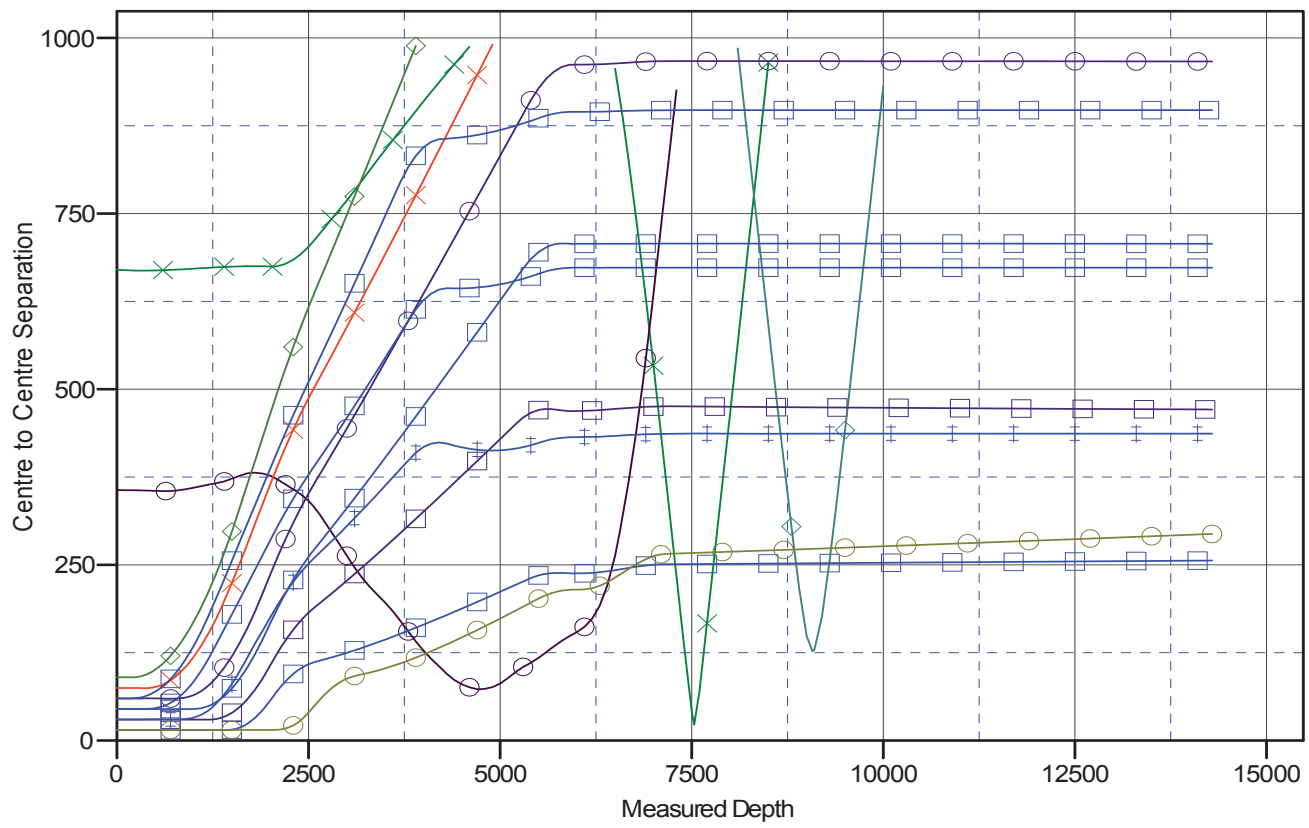
Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,100.0	6,688.3	10,229.2	6,753.3	65.0	65.4	-94.21	-3,172.9	738.6	897.3	768.2	129.16	6.947	
10,200.0	6,687.7	10,329.2	6,752.7	66.9	67.2	-94.21	-3,272.9	738.6	897.3	764.5	132.88	6.753	
10,300.0	6,687.1	10,429.2	6,752.0	68.8	69.0	-94.21	-3,372.9	738.6	897.3	760.7	136.61	6.569	
10,400.0	6,686.4	10,529.2	6,751.4	70.7	70.9	-94.21	-3,472.9	738.6	897.3	757.0	140.34	6.394	
10,500.0	6,685.8	10,629.2	6,750.8	72.5	72.7	-94.21	-3,572.9	738.6	897.3	753.3	144.08	6.228	
10,600.0	6,685.2	10,729.2	6,750.1	74.4	74.6	-94.21	-3,672.9	738.6	897.3	749.5	147.83	6.070	
10,700.0	6,684.6	10,829.2	6,749.5	76.3	76.5	-94.21	-3,772.9	738.6	897.3	745.8	151.57	5.920	
10,800.0	6,683.9	10,929.2	6,748.9	78.2	78.3	-94.21	-3,872.9	738.6	897.3	742.0	155.33	5.777	
10,900.0	6,683.3	11,029.2	6,748.3	80.0	80.2	-94.21	-3,972.9	738.6	897.3	738.3	159.08	5.641	
11,000.0	6,682.7	11,129.2	6,747.6	81.9	82.1	-94.21	-4,072.9	738.6	897.3	734.5	162.84	5.511	
11,100.0	6,682.0	11,229.2	6,747.0	83.8	83.9	-94.21	-4,172.9	738.6	897.3	730.7	166.60	5.386	
11,200.0	6,681.4	11,329.2	6,746.4	85.7	85.8	-94.21	-4,272.9	738.6	897.3	727.0	170.37	5.267	
11,300.0	6,680.8	11,429.2	6,745.7	87.6	87.7	-94.21	-4,372.9	738.6	897.3	723.2	174.14	5.153	
11,400.0	6,680.2	11,529.2	6,745.1	89.5	89.6	-94.21	-4,472.9	738.6	897.3	719.4	177.91	5.044	
11,500.0	6,679.5	11,629.2	6,744.5	91.4	91.4	-94.21	-4,572.9	738.6	897.3	715.7	181.68	4.939	
11,600.0	6,678.9	11,729.2	6,743.9	93.3	93.3	-94.21	-4,672.8	738.6	897.3	711.9	185.46	4.839	
11,700.0	6,678.3	11,829.2	6,743.2	95.2	95.2	-94.21	-4,772.8	738.6	897.3	708.1	189.23	4.742	
11,800.0	6,677.6	11,929.2	6,742.6	97.1	97.1	-94.21	-4,872.8	738.6	897.3	704.3	193.01	4.649	
11,900.0	6,677.0	12,029.2	6,742.0	99.0	99.0	-94.21	-4,972.8	738.6	897.3	700.5	196.80	4.560	
12,000.0	6,676.4	12,129.2	6,741.3	100.9	100.9	-94.21	-5,072.8	738.6	897.3	696.8	200.58	4.474	
12,100.0	6,675.8	12,229.2	6,740.7	102.7	102.7	-94.21	-5,172.8	738.6	897.3	693.0	204.36	4.391	
12,200.0	6,675.1	12,329.2	6,740.1	104.6	104.6	-94.21	-5,272.8	738.6	897.3	689.2	208.15	4.311	
12,300.0	6,674.5	12,429.2	6,739.5	106.5	106.5	-94.21	-5,372.8	738.6	897.3	685.4	211.94	4.234	
12,400.0	6,673.9	12,529.2	6,738.8	108.4	108.4	-94.21	-5,472.8	738.6	897.3	681.6	215.73	4.160	
12,500.0	6,673.3	12,629.2	6,738.2	110.3	110.3	-94.21	-5,572.8	738.6	897.3	677.8	219.52	4.088	
12,600.0	6,672.6	12,729.2	6,737.6	112.2	112.2	-94.21	-5,672.8	738.6	897.3	674.0	223.31	4.018	
12,700.0	6,672.0	12,829.2	6,736.9	114.1	114.1	-94.21	-5,772.8	738.6	897.3	670.2	227.11	3.951	
12,800.0	6,671.4	12,929.2	6,736.3	116.0	116.0	-94.21	-5,872.8	738.6	897.3	666.4	230.90	3.886	
12,900.0	6,670.7	13,029.2	6,735.7	118.0	117.9	-94.21	-5,972.8	738.6	897.3	662.6	234.70	3.823	
13,000.0	6,670.1	13,129.2	6,735.1	119.9	119.8	-94.21	-6,072.8	738.6	897.3	658.8	238.50	3.762	
13,100.0	6,669.5	13,229.2	6,734.4	121.8	121.7	-94.21	-6,172.8	738.6	897.3	655.0	242.30	3.703	
13,200.0	6,668.9	13,329.2	6,733.8	123.7	123.6	-94.21	-6,272.8	738.6	897.3	651.2	246.10	3.646	
13,300.0	6,668.2	13,429.2	6,733.2	125.6	125.5	-94.21	-6,372.8	738.6	897.3	647.4	249.90	3.591	
13,400.0	6,667.6	13,529.2	6,732.5	127.5	127.4	-94.21	-6,472.8	738.6	897.3	643.6	253.70	3.537	
13,500.0	6,667.0	13,629.2	6,731.9	129.4	129.3	-94.21	-6,572.8	738.6	897.3	639.8	257.50	3.485	
13,600.0	6,666.3	13,729.2	6,731.3	131.3	131.2	-94.21	-6,672.8	738.6	897.3	636.0	261.30	3.434	
13,700.0	6,665.7	13,829.2	6,730.7	133.2	133.1	-94.21	-6,772.8	738.6	897.3	632.2	265.11	3.385	
13,800.0	6,665.1	13,929.2	6,730.0	135.1	135.0	-94.21	-6,872.8	738.6	897.3	628.4	268.91	3.337	
13,900.0	6,664.5	14,029.2	6,729.4	137.0	136.9	-94.21	-6,972.8	738.6	897.3	624.6	272.72	3.290	
14,000.0	6,663.8	14,129.2	6,728.8	138.9	138.8	-94.21	-7,072.8	738.6	897.3	620.8	276.52	3.245	
14,100.0	6,663.2	14,229.2	6,728.1	140.8	140.7	-94.21	-7,172.8	738.6	897.3	617.0	280.33	3.201	
14,200.0	6,662.6	14,329.2	6,727.5	142.7	142.6	-94.21	-7,272.8	738.6	897.3	613.2	284.14	3.158	
14,251.9	6,662.2	14,381.2	6,727.2	143.7	143.6	-94.21	-7,324.7	738.6	897.3	611.2	286.12	3.136	
14,290.7	6,662.0	14,411.8	6,727.0	144.5	144.2	-94.21	-7,355.4	738.6	897.4	609.9	287.44	3.122	SF

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 29R-203
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.60°

Ladder Plot



LEGEND

Carlson 5 (Exist), Wellbore #1, Wellbore #1 V0
Ottenhoff 41-6B (Exist), Wellbore #1, Wellbore #1 V0
Bell B29-22D, Bell B29-22D, Bell B29-22D V0
Ottenhoff 29M-203, Wellbore #1, Plan #1 (3-14-16) V0
Ottenhoff 29M-323, Wellbore #1, Plan #1 (3-14-16) V0
Ottenhoff 29M-423, Wellbore #1, Plan #1 (3-14-16) V0
Ottenhoff 29R-143, Wellbore #1, Plan #1 (3-14-16) V0
Ottenhoff 29R-243, Wellbore #1, Plan #1 (3-14-16) V0
Ottenhoff 29R-303, Wellbore #1, Plan #1 (3-15-16) V0
Ottenhoff 29R-323, Wellbore #1, Plan #1 (3-15-16) V0
Ottenhoff 29R-423, Wellbore #1, Plan #1 (3-15-
Ottenhoff 29U-243, Wellbore #1, Plan #1 (3-15-
Ottenhoff 29U-343, Wellbore #1, Plan #1 (3-15-

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Ottenhoff 29R-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 29R-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 29R-203
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.60°