

PETROLEUM DEVELOPMENT CORP DJ Basin

Well Name: **Ottenhoff 29R-143**

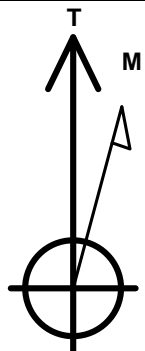
Surface Location: Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W
North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
Ground Elevation: 4663.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1381166.70	3259674.53	40.375958	-104.567944	

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

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 558'FNL & 1020'FEL, Sec.29	1.0	0.0	0.0	Point
BHL 2631'FSL & 1664'FEL, Sec.32	6617.0	-7367.4	-595.6	Point



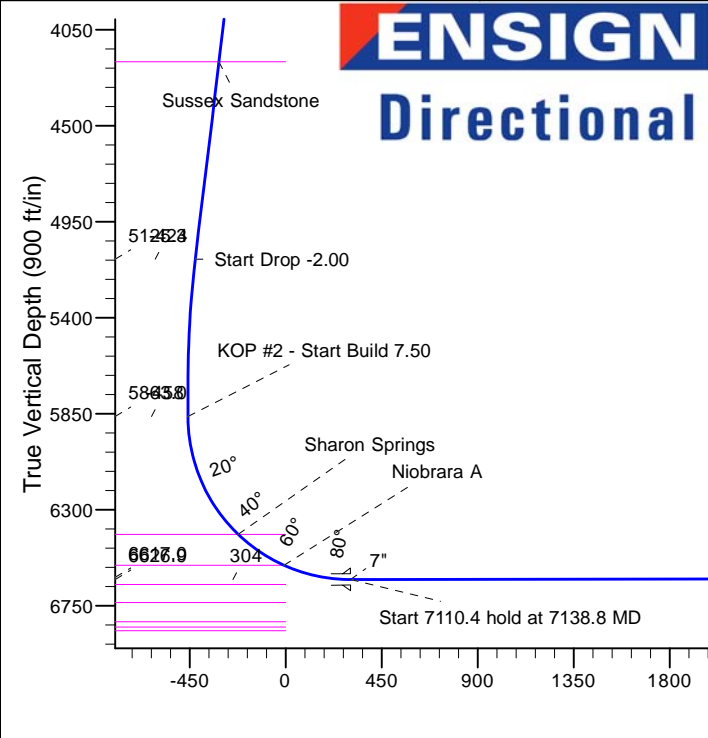
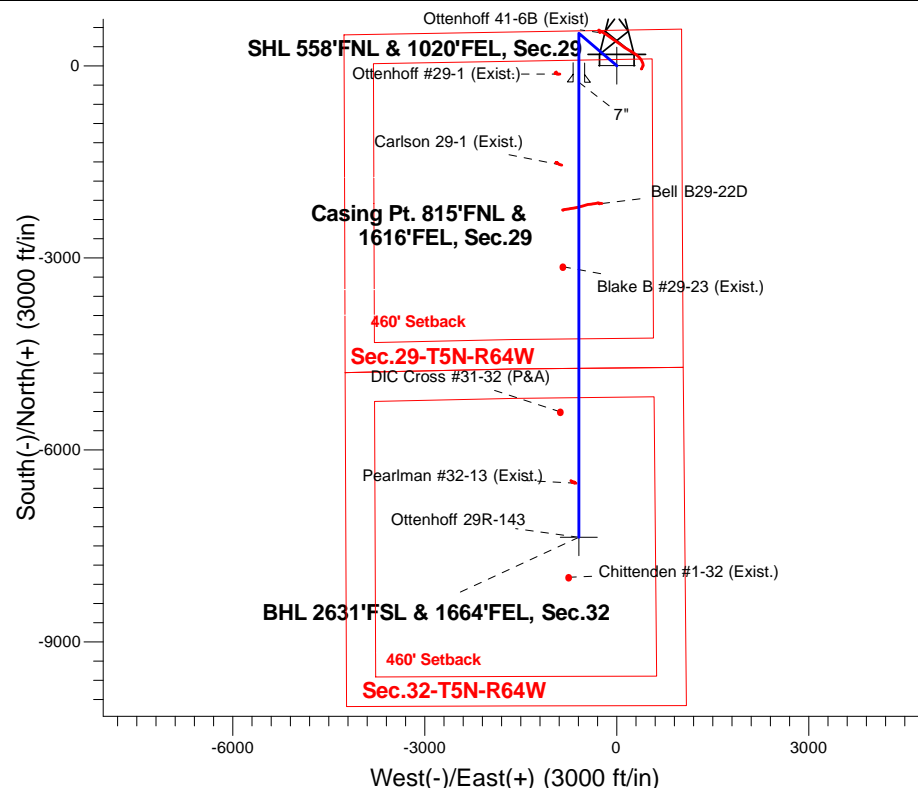
Azimuths to True North
Magnetic North: 8.12°

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

Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W
Ottenhoff 29R-143
Plan #1 (3-14-16)
16:15, March 17 2016

ANNOTATIONS

TVD	MD	Annotation
1200.0	1200.0	KOP - Start Build 1.50
5125.3	5196.1	Start Drop -2.00
5863.0	5937.7	KOP #2 - Start Build 7.50
6626.9	7138.8	Start 7110.4 hold at 7138.8 MD
6617.0	14249.2	TD at 14249.2



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	1200.0	0.00	0.00	1200.0	0.0	0.0	0.00	0.00	0.0	
3	1971.6	11.57	310.46	1966.3	50.4	-59.1	1.50	310.46	-45.5	
4	5196.1	11.57	310.46	5125.3	470.2	-551.3	0.00	0.00	-424.3	
5	5774.7	0.00	0.00	5700.0	508.0	-595.6	2.00	180.00	-458.4	
6	5937.7	0.00	0.00	5863.0	508.0	-595.6	0.00	0.00	-458.4	
7	7138.8	90.08	180.00	6626.9	-257.0	-595.6	7.50	180.00	304.2	
8	14249.2	90.08	180.00	6617.0	-7367.4	-595.6	0.00	0.00	7391.5	BHL 2631'FSL & 1664'FEL, Sec.32

BHL 2631'FSL & 1664'FEL, Sec.32

TD at 14249.2



PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.29-T5N-R64W

Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W

Ottenhoff 29R-143

Wellbore #1

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

Standard Planning Report

17 March, 2016

Database:	US_EDM	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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-143					
Well Position	+N/-S	0.7 ft	Northing:	1,381,166.70 usft	Latitude:	40.375958
	+E/-W	-74.9 ft	Easting:	3,259,674.53 usft	Longitude:	-104.567944
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	184.62

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	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,971.6	11.57	310.46	1,966.3	50.4	-59.1	1.50	1.50	0.00	310.46	
5,196.1	11.57	310.46	5,125.3	470.2	-551.3	0.00	0.00	0.00	0.00	
5,774.7	0.00	0.00	5,700.0	508.0	-595.6	2.00	-2.00	0.00	180.00	
5,937.7	0.00	0.00	5,863.0	508.0	-595.6	0.00	0.00	0.00	0.00	
7,138.8	90.08	180.00	6,626.9	-257.0	-595.6	7.50	7.50	0.00	180.00	
14,249.2	90.08	180.00	6,617.0	-7,367.4	-595.6	0.00	0.00	0.00	0.00	BHL 2631'FSL & 1664

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Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4686.0ft (RKB - 23')
Project:	SEC.29-T5N-R64W	MD Reference:	WELL @ 4686.0ft (RKB - 23')
Site:	Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W	North Reference:	True
Well:	Ottenhoff 29R-143	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 558'FNL & 1020'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
KOP - Start Build 1.50									
1,300.0	1.50	310.46	1,300.0	0.8	-1.0	-0.8	1.50	1.50	0.00
1,400.0	3.00	310.46	1,399.9	3.4	-4.0	-3.1	1.50	1.50	0.00
1,500.0	4.50	310.46	1,499.7	7.6	-9.0	-6.9	1.50	1.50	0.00
1,600.0	6.00	310.46	1,599.3	13.6	-15.9	-12.3	1.50	1.50	0.00
1,700.0	7.50	310.46	1,698.6	21.2	-24.9	-19.1	1.50	1.50	0.00
1,800.0	9.00	310.46	1,797.5	30.5	-35.8	-27.5	1.50	1.50	0.00
1,900.0	10.50	310.46	1,896.1	41.5	-48.7	-37.5	1.50	1.50	0.00
1,971.6	11.57	310.46	1,966.3	50.4	-59.1	-45.5	1.50	1.50	0.00
2,000.0	11.57	310.46	1,994.2	54.1	-63.4	-48.8	0.00	0.00	0.00
2,100.0	11.57	310.46	2,092.2	67.1	-78.7	-60.6	0.00	0.00	0.00
2,200.0	11.57	310.46	2,190.1	80.1	-94.0	-72.3	0.00	0.00	0.00
2,300.0	11.57	310.46	2,288.1	93.2	-109.2	-84.1	0.00	0.00	0.00
2,400.0	11.57	310.46	2,386.1	106.2	-124.5	-95.8	0.00	0.00	0.00
2,500.0	11.57	310.46	2,484.0	119.2	-139.7	-107.5	0.00	0.00	0.00
2,600.0	11.57	310.46	2,582.0	132.2	-155.0	-119.3	0.00	0.00	0.00
2,700.0	11.57	310.46	2,680.0	145.2	-170.3	-131.0	0.00	0.00	0.00
2,800.0	11.57	310.46	2,777.9	158.3	-185.5	-142.8	0.00	0.00	0.00
2,900.0	11.57	310.46	2,875.9	171.3	-200.8	-154.5	0.00	0.00	0.00
3,000.0	11.57	310.46	2,973.9	184.3	-216.1	-166.3	0.00	0.00	0.00
3,100.0	11.57	310.46	3,071.8	197.3	-231.3	-178.0	0.00	0.00	0.00
3,200.0	11.57	310.46	3,169.8	210.3	-246.6	-189.8	0.00	0.00	0.00
3,300.0	11.57	310.46	3,267.8	223.4	-261.9	-201.5	0.00	0.00	0.00
3,400.0	11.57	310.46	3,365.7	236.4	-277.1	-213.3	0.00	0.00	0.00
3,500.0	11.57	310.46	3,463.7	249.4	-292.4	-225.0	0.00	0.00	0.00
3,567.7	11.57	310.46	3,530.0	258.2	-302.7	-233.0	0.00	0.00	0.00
Parkman Sandstone									
3,600.0	11.57	310.46	3,561.7	262.4	-307.7	-236.8	0.00	0.00	0.00
3,700.0	11.57	310.46	3,659.6	275.4	-322.9	-248.5	0.00	0.00	0.00
3,800.0	11.57	310.46	3,757.6	288.4	-338.2	-260.3	0.00	0.00	0.00
3,900.0	11.57	310.46	3,855.6	301.5	-353.4	-272.0	0.00	0.00	0.00
4,000.0	11.57	310.46	3,953.5	314.5	-368.7	-283.8	0.00	0.00	0.00
4,100.0	11.57	310.46	4,051.5	327.5	-384.0	-295.5	0.00	0.00	0.00
4,200.0	11.57	310.46	4,149.5	340.5	-399.2	-307.2	0.00	0.00	0.00
4,251.6	11.57	310.46	4,200.0	347.2	-407.1	-313.3	0.00	0.00	0.00
Sussex Sandstone									
4,300.0	11.57	310.46	4,247.4	353.5	-414.5	-319.0	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-143	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	11.57	310.46	4,345.4	366.6	-429.8	-330.7	0.00	0.00	0.00
4,500.0	11.57	310.46	4,443.4	379.6	-445.0	-342.5	0.00	0.00	0.00
4,600.0	11.57	310.46	4,541.3	392.6	-460.3	-354.2	0.00	0.00	0.00
4,700.0	11.57	310.46	4,639.3	405.6	-475.6	-366.0	0.00	0.00	0.00
4,800.0	11.57	310.46	4,737.3	418.6	-490.8	-377.7	0.00	0.00	0.00
4,900.0	11.57	310.46	4,835.2	431.7	-506.1	-389.5	0.00	0.00	0.00
5,000.0	11.57	310.46	4,933.2	444.7	-521.4	-401.2	0.00	0.00	0.00
5,100.0	11.57	310.46	5,031.2	457.7	-536.6	-413.0	0.00	0.00	0.00
5,196.1	11.57	310.46	5,125.3	470.2	-551.3	-424.3	0.00	0.00	0.00
Start Drop -2.00									
5,200.0	11.49	310.46	5,129.1	470.7	-551.9	-424.7	2.02	-2.02	0.00
5,300.0	9.49	310.46	5,227.4	482.5	-565.7	-435.4	2.00	-2.00	0.00
5,400.0	7.49	310.46	5,326.3	492.1	-577.0	-444.0	2.00	-2.00	0.00
5,500.0	5.49	310.46	5,425.7	499.5	-585.6	-450.6	2.00	-2.00	0.00
5,600.0	3.49	310.46	5,525.4	504.5	-591.5	-455.2	2.00	-2.00	0.00
5,700.0	1.49	310.46	5,625.3	507.4	-594.8	-457.8	2.00	-2.00	0.00
5,774.7	0.00	0.00	5,700.0	508.0	-595.6	-458.4	2.00	-2.00	0.00
5,800.0	0.00	0.00	5,725.3	508.0	-595.6	-458.4	0.00	0.00	0.00
5,900.0	0.00	0.00	5,825.3	508.0	-595.6	-458.4	0.00	0.00	0.00
5,937.7	0.00	0.00	5,863.0	508.0	-595.6	-458.4	0.00	0.00	0.00
KOP #2 - Start Build 7.50									
6,000.0	4.67	180.00	5,925.2	505.5	-595.6	-455.8	7.50	7.50	0.00
6,100.0	12.17	180.00	6,024.1	490.8	-595.6	-441.2	7.50	7.50	0.00
6,200.0	19.67	180.00	6,120.2	463.4	-595.6	-413.9	7.50	7.50	0.00
6,300.0	27.17	180.00	6,211.9	423.7	-595.6	-374.3	7.50	7.50	0.00
6,400.0	34.67	180.00	6,297.6	372.3	-595.6	-323.1	7.50	7.50	0.00
6,500.0	42.17	180.00	6,375.9	310.2	-595.6	-261.2	7.50	7.50	0.00
6,554.6	46.27	180.00	6,415.0	272.2	-595.6	-223.3	7.50	7.50	0.00
Sharon Springs									
6,600.0	49.67	180.00	6,445.4	238.5	-595.6	-189.7	7.50	7.50	0.00
6,700.0	57.17	180.00	6,504.9	158.2	-595.6	-109.7	7.50	7.50	0.00
6,800.0	64.67	180.00	6,553.5	70.9	-595.6	-22.6	7.50	7.50	0.00
6,815.5	65.84	180.00	6,560.0	56.8	-595.6	-8.6	7.50	7.50	0.00
Niobrara A									
6,900.0	72.17	180.00	6,590.2	-22.1	-595.6	70.0	7.50	7.50	0.00
7,000.0	79.67	180.00	6,614.6	-119.0	-595.6	166.6	7.50	7.50	0.00
7,100.0	87.17	180.00	6,626.0	-218.3	-595.6	265.5	7.50	7.50	0.00
7,138.8	90.08	180.00	6,626.9	-257.0	-595.6	304.2	7.49	7.49	0.00
Start 7110.4 hold at 7138.8 MD - 7"									
7,200.0	90.08	180.00	6,626.8	-318.2	-595.6	365.2	0.00	0.00	0.00
7,300.0	90.08	180.00	6,626.7	-418.2	-595.6	464.9	0.00	0.00	0.00
7,400.0	90.08	180.00	6,626.6	-518.2	-595.6	564.5	0.00	0.00	0.00
7,500.0	90.08	180.00	6,626.4	-618.2	-595.6	664.2	0.00	0.00	0.00
7,600.0	90.08	180.00	6,626.3	-718.2	-595.6	763.9	0.00	0.00	0.00
7,700.0	90.08	180.00	6,626.1	-818.2	-595.6	863.6	0.00	0.00	0.00
7,800.0	90.08	180.00	6,626.0	-918.2	-595.6	963.2	0.00	0.00	0.00
7,900.0	90.08	180.00	6,625.9	-1,018.2	-595.6	1,062.9	0.00	0.00	0.00
8,000.0	90.08	180.00	6,625.7	-1,118.2	-595.6	1,162.6	0.00	0.00	0.00
8,100.0	90.08	180.00	6,625.6	-1,218.2	-595.6	1,262.3	0.00	0.00	0.00
8,200.0	90.08	180.00	6,625.4	-1,318.2	-595.6	1,361.9	0.00	0.00	0.00
8,300.0	90.08	180.00	6,625.3	-1,418.2	-595.6	1,461.6	0.00	0.00	0.00
8,400.0	90.08	180.00	6,625.2	-1,518.2	-595.6	1,561.3	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-143	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)
8,500.0	90.08	180.00	6,625.0	-1,618.2	-595.6	1,661.0	0.00	0.00	0.00
8,600.0	90.08	180.00	6,624.9	-1,718.2	-595.6	1,760.6	0.00	0.00	0.00
8,700.0	90.08	180.00	6,624.7	-1,818.2	-595.6	1,860.3	0.00	0.00	0.00
8,800.0	90.08	180.00	6,624.6	-1,918.2	-595.6	1,960.0	0.00	0.00	0.00
8,900.0	90.08	180.00	6,624.5	-2,018.2	-595.6	2,059.7	0.00	0.00	0.00
9,000.0	90.08	180.00	6,624.3	-2,118.2	-595.6	2,159.3	0.00	0.00	0.00
9,100.0	90.08	180.00	6,624.2	-2,218.2	-595.6	2,259.0	0.00	0.00	0.00
9,200.0	90.08	180.00	6,624.0	-2,318.2	-595.6	2,358.7	0.00	0.00	0.00
9,300.0	90.08	180.00	6,623.9	-2,418.2	-595.6	2,458.4	0.00	0.00	0.00
9,400.0	90.08	180.00	6,623.8	-2,518.2	-595.6	2,558.0	0.00	0.00	0.00
9,500.0	90.08	180.00	6,623.6	-2,618.2	-595.6	2,657.7	0.00	0.00	0.00
9,600.0	90.08	180.00	6,623.5	-2,718.2	-595.6	2,757.4	0.00	0.00	0.00
9,700.0	90.08	180.00	6,623.4	-2,818.2	-595.6	2,857.1	0.00	0.00	0.00
9,800.0	90.08	180.00	6,623.2	-2,918.2	-595.6	2,956.7	0.00	0.00	0.00
9,900.0	90.08	180.00	6,623.1	-3,018.2	-595.6	3,056.4	0.00	0.00	0.00
10,000.0	90.08	180.00	6,622.9	-3,118.2	-595.6	3,156.1	0.00	0.00	0.00
10,100.0	90.08	180.00	6,622.8	-3,218.2	-595.6	3,255.8	0.00	0.00	0.00
10,200.0	90.08	180.00	6,622.7	-3,318.2	-595.6	3,355.4	0.00	0.00	0.00
10,300.0	90.08	180.00	6,622.5	-3,418.2	-595.6	3,455.1	0.00	0.00	0.00
10,400.0	90.08	180.00	6,622.4	-3,518.2	-595.6	3,554.8	0.00	0.00	0.00
10,500.0	90.08	180.00	6,622.2	-3,618.2	-595.6	3,654.5	0.00	0.00	0.00
10,600.0	90.08	180.00	6,622.1	-3,718.2	-595.6	3,754.1	0.00	0.00	0.00
10,700.0	90.08	180.00	6,622.0	-3,818.2	-595.6	3,853.8	0.00	0.00	0.00
10,800.0	90.08	180.00	6,621.8	-3,918.2	-595.6	3,953.5	0.00	0.00	0.00
10,900.0	90.08	180.00	6,621.7	-4,018.2	-595.6	4,053.2	0.00	0.00	0.00
11,000.0	90.08	180.00	6,621.5	-4,118.2	-595.6	4,152.8	0.00	0.00	0.00
11,100.0	90.08	180.00	6,621.4	-4,218.2	-595.6	4,252.5	0.00	0.00	0.00
11,200.0	90.08	180.00	6,621.3	-4,318.2	-595.6	4,352.2	0.00	0.00	0.00
11,300.0	90.08	180.00	6,621.1	-4,418.2	-595.6	4,451.9	0.00	0.00	0.00
11,400.0	90.08	180.00	6,621.0	-4,518.2	-595.6	4,551.5	0.00	0.00	0.00
11,500.0	90.08	180.00	6,620.8	-4,618.2	-595.6	4,651.2	0.00	0.00	0.00
11,600.0	90.08	180.00	6,620.7	-4,718.2	-595.6	4,750.9	0.00	0.00	0.00
11,700.0	90.08	180.00	6,620.6	-4,818.2	-595.6	4,850.6	0.00	0.00	0.00
11,800.0	90.08	180.00	6,620.4	-4,918.2	-595.6	4,950.2	0.00	0.00	0.00
11,900.0	90.08	180.00	6,620.3	-5,018.2	-595.6	5,049.9	0.00	0.00	0.00
12,000.0	90.08	180.00	6,620.1	-5,118.2	-595.6	5,149.6	0.00	0.00	0.00
12,100.0	90.08	180.00	6,620.0	-5,218.2	-595.6	5,249.3	0.00	0.00	0.00
12,200.0	90.08	180.00	6,619.9	-5,318.2	-595.6	5,348.9	0.00	0.00	0.00
12,300.0	90.08	180.00	6,619.7	-5,418.2	-595.6	5,448.6	0.00	0.00	0.00
12,400.0	90.08	180.00	6,619.6	-5,518.2	-595.6	5,548.3	0.00	0.00	0.00
12,500.0	90.08	180.00	6,619.4	-5,618.2	-595.6	5,648.0	0.00	0.00	0.00
12,600.0	90.08	180.00	6,619.3	-5,718.2	-595.6	5,747.6	0.00	0.00	0.00
12,700.0	90.08	180.00	6,619.2	-5,818.2	-595.6	5,847.3	0.00	0.00	0.00
12,800.0	90.08	180.00	6,619.0	-5,918.2	-595.6	5,947.0	0.00	0.00	0.00
12,900.0	90.08	180.00	6,618.9	-6,018.2	-595.6	6,046.7	0.00	0.00	0.00
13,000.0	90.08	180.00	6,618.7	-6,118.2	-595.6	6,146.3	0.00	0.00	0.00
13,100.0	90.08	180.00	6,618.6	-6,218.2	-595.6	6,246.0	0.00	0.00	0.00
13,200.0	90.08	180.00	6,618.5	-6,318.2	-595.6	6,345.7	0.00	0.00	0.00
13,300.0	90.08	180.00	6,618.3	-6,418.2	-595.6	6,445.4	0.00	0.00	0.00
13,400.0	90.08	180.00	6,618.2	-6,518.2	-595.6	6,545.0	0.00	0.00	0.00
13,500.0	90.08	180.00	6,618.0	-6,618.2	-595.6	6,644.7	0.00	0.00	0.00
13,600.0	90.08	180.00	6,617.9	-6,718.2	-595.6	6,744.4	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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)
13,700.0	90.08	180.00	6,617.8	-6,818.2	-595.6	6,844.1	0.00	0.00	0.00
13,800.0	90.08	180.00	6,617.6	-6,918.2	-595.6	6,943.7	0.00	0.00	0.00
13,900.0	90.08	180.00	6,617.5	-7,018.2	-595.6	7,043.4	0.00	0.00	0.00
14,000.0	90.08	180.00	6,617.3	-7,118.2	-595.6	7,143.1	0.00	0.00	0.00
14,100.0	90.08	180.00	6,617.2	-7,218.2	-595.6	7,242.8	0.00	0.00	0.00
14,200.0	90.08	180.00	6,617.1	-7,318.2	-595.6	7,342.4	0.00	0.00	0.00
14,249.2	90.08	180.00	6,617.0	-7,367.4	-595.6	7,391.5	0.00	0.00	0.00
TD at 14249.2 - BHL 2631'FSL & 1664'FEL, Sec.32									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
SHL 558'FNL & 1020'FE	0.00	0.00	1.0	0.0	0.0	1,381,166.71	3,259,674.53	40.375958	-104.567944
- plan hits target center									
- Point									
BHL 2631'FSL & 1664'FI	0.00	0.00	6,617.0	-7,367.4	-595.6	1,373,793.75	3,259,156.43	40.355735	-104.570081
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,138.8	6,626.9	7"	7	8-3/4	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,567.7	3,530.0	Parkman Sandstone		0.00	
4,251.6	4,200.0	Sussex Sandstone		0.00	
6,554.6	6,415.0	Sharon Springs		0.00	
6,815.5	6,560.0	Niobrara A		0.00	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
1,200.0	1,200.0	0.0	0.0	KOP - Start Build 1.50	
5,196.1	5,125.3	470.2	-551.3	Start Drop -2.00	
5,937.7	5,863.0	508.0	-595.6	KOP #2 - Start Build 7.50	
7,138.8	6,626.9	-257.0	-595.6	Start 7110.4 hold at 7138.8 MD	
14,249.2	6,617.0	-7,367.4	-595.6	TD at 14249.2	

PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.29-T5N-R64W

Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W

Ottenhoff 29R-143

Wellbore #1

Plan #1 (3-14-16)

Anticollision Report

17 March, 2016

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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	14,249.2	Plan #1 (3-14-16) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Bell Pad SEC.29-T5N-R64W						
Bell B29-22D - Bell B29-22D - Bell B29-22D	9,031.2	6,693.5	340.5	280.4	5.669	CC, ES
Bell B29-22D - Bell B29-22D - Bell B29-22D	9,100.0	6,693.6	347.4	286.1	5.666	SF
Existing Wells Sec.29-T5N-R64W						
Blake B #29-23 (Exist.) - Wellbore #1 - Wellbore #1	10,021.0	6,633.9	248.5	51.5	1.261	Level 3, CC, ES, SF
Carlson 29-1 (Exist.) - Wellbore #1 - Wellbore #1	8,429.0	6,638.0	286.3	238.1	5.945	CC, ES, SF
Chittenden #1-32 (Exist.) - Wellbore #1 - Wellbore #1	14,249.2	6,693.0	646.3	368.0	2.323	CC, ES, SF
DIC Cross #31-32 (P&A) - Wellbore #1 - Wellbore #1	12,290.7	6,645.7	287.0	47.0	1.196	Level 2, CC
DIC Cross #31-32 (P&A) - Wellbore #1 - Wellbore #1	12,300.0	6,645.7	287.1	47.0	1.196	Level 2, ES, SF
Ottenhoff #29-1 (Exist.) - Wellbore #1 - Wellbore #1	7,012.9	6,623.0	310.4	281.3	10.670	CC, ES, SF
Ottenhoff 41-6B (Exist.) - Wellbore #1 - Wellbore #1	6,086.7	6,113.0	324.3	291.7	9.957	CC
Ottenhoff 41-6B (Exist.) - Wellbore #1 - Wellbore #1	6,100.0	6,125.5	324.3	291.7	9.934	ES
Ottenhoff 41-6B (Exist.) - Wellbore #1 - Wellbore #1	6,200.0	6,218.3	328.0	294.8	9.896	SF
Pearlman #32-13 (Exist.) - Wellbore #1 - Wellbore #1	13,398.9	6,660.1	59.0	-82.8	0.416	Level 1, CC, SF
Pearlman #32-13 (Exist.) - Wellbore #1 - Wellbore #1	13,400.0	6,660.1	59.0	-82.8	0.416	Level 1, ES

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W						
Ottenhoff 29M-203 - Wellbore #1 - Plan #1 (3-14-16)	200.0	200.0	60.2	59.5	89.258	CC, ES
Ottenhoff 29M-203 - Wellbore #1 - Plan #1 (3-14-16)	14,249.2	14,412.8	939.8	651.6	3.261	SF
Ottenhoff 29M-323 - Wellbore #1 - Plan #1 (3-14-16)	766.3	767.3	30.1	26.9	9.339	CC
Ottenhoff 29M-323 - Wellbore #1 - Plan #1 (3-14-16)	800.0	801.0	30.1	26.7	8.920	ES
Ottenhoff 29M-323 - Wellbore #1 - Plan #1 (3-14-16)	14,249.2	14,504.8	512.3	233.7	1.839	SF
Ottenhoff 29M-423 - Wellbore #1 - Plan #1 (3-14-16)	400.0	400.0	45.1	43.6	28.689	CC, ES
Ottenhoff 29M-423 - Wellbore #1 - Plan #1 (3-14-16)	14,249.2	14,612.7	760.8	487.6	2.785	SF
Ottenhoff 29R-203 - Wellbore #1 - Plan #1 (3-14-16)	1,200.0	1,200.0	29.8	24.6	5.767	CC, ES
Ottenhoff 29R-203 - Wellbore #1 - Plan #1 (3-14-16)	14,249.2	14,290.7	471.2	183.3	1.637	SF
Ottenhoff 29R-243 - Wellbore #1 - Plan #1 (3-14-16)	1,000.0	1,000.0	15.0	10.8	3.523	CC
Ottenhoff 29R-243 - Wellbore #1 - Plan #1 (3-14-16)	14,249.2	14,380.4	245.5	-35.0	0.875	Level 1, ES, SF
Ottenhoff 29R-303 - Wellbore #1 - Plan #1 (3-15-16)	1,200.0	1,200.0	15.0	9.9	2.910	CC, ES
Ottenhoff 29R-303 - Wellbore #1 - Plan #1 (3-15-16)	14,249.2	14,381.9	270.2	14.6	1.057	Level 2, SF
Ottenhoff 29R-323 - Wellbore #1 - Plan #1 (3-15-16)	800.0	800.0	59.9	56.5	17.769	CC, ES
Ottenhoff 29R-323 - Wellbore #1 - Plan #1 (3-15-16)	14,249.2	14,363.3	907.8	620.9	3.164	SF
Ottenhoff 29R-423 - Wellbore #1 - Plan #1 (3-15-16)	1,200.0	1,199.0	44.9	39.7	8.681	CC, ES
Ottenhoff 29R-423 - Wellbore #1 - Plan #1 (3-15-16)	14,249.2	14,445.8	726.9	451.8	2.643	SF
Ottenhoff 29U-243 - Wellbore #1 - Plan #1 (3-15-16)	400.0	400.0	75.0	73.4	47.638	CC, ES
Ottenhoff 29U-243 - Wellbore #1 - Plan #1 (3-15-16)	1,000.0	987.5	111.4	107.0	25.507	SF
Ottenhoff 29U-343 - Wellbore #1 - Plan #1 (3-15-16)	200.0	199.0	90.0	89.3	133.920	CC, ES
Ottenhoff 29U-343 - Wellbore #1 - Plan #1 (3-15-16)	1,100.0	1,067.3	182.3	177.1	35.144	SF

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		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
8,100.0	6,625.6	6,692.8	6,629.5	30.8	17.2	-88.85	-2,149.5	-255.2	991.5	947.7	43.87	22.603		
8,200.0	6,625.4	6,692.9	6,629.5	32.4	17.2	-88.87	-2,149.5	-255.2	898.3	852.8	45.52	19.734		
8,300.0	6,625.3	6,692.9	6,629.6	34.1	17.2	-88.88	-2,149.5	-255.2	806.6	759.4	47.20	17.090		
8,400.0	6,625.2	6,693.0	6,629.7	35.8	17.2	-88.89	-2,149.5	-255.2	717.2	668.3	48.91	14.665		
8,500.0	6,625.0	6,693.1	6,629.8	37.5	17.2	-88.91	-2,149.5	-255.2	631.0	580.4	50.63	12.462		
8,600.0	6,624.9	6,693.2	6,629.9	39.2	17.2	-88.92	-2,149.5	-255.2	549.5	497.1	52.38	10.490		
8,700.0	6,624.7	6,693.3	6,630.0	40.9	17.2	-88.93	-2,149.5	-255.2	475.0	420.9	54.14	8.774		
8,800.0	6,624.6	6,693.3	6,630.0	42.7	17.2	-88.95	-2,149.5	-255.2	411.6	355.7	55.92	7.361		
8,900.0	6,624.5	6,693.4	6,630.1	44.4	17.2	-88.96	-2,149.5	-255.1	364.9	307.2	57.70	6.324		
9,000.0	6,624.3	6,693.5	6,630.2	46.2	17.2	-88.98	-2,149.5	-255.1	341.9	282.4	59.50	5.747		
9,031.2	6,624.3	6,693.5	6,630.2	46.8	17.2	-88.98	-2,149.5	-255.1	340.5	280.4	60.07	5.669	CC, ES	
9,100.0	6,624.2	6,693.6	6,630.3	48.0	17.2	-88.99	-2,149.5	-255.1	347.4	286.1	61.31	5.666	SF	
9,200.0	6,624.0	6,693.7	6,630.4	49.8	17.2	-89.01	-2,149.5	-255.1	380.0	316.9	63.13	6.020		
9,300.0	6,623.9	6,693.8	6,630.5	51.6	17.2	-89.02	-2,149.5	-255.1	433.8	368.8	64.95	6.679		
9,400.0	6,623.8	6,693.9	6,630.6	53.4	17.2	-89.04	-2,149.5	-255.1	501.9	435.1	66.78	7.516		
9,500.0	6,623.6	6,694.0	6,630.7	55.2	17.2	-89.05	-2,149.5	-255.1	579.4	510.8	68.62	8.443		
9,600.0	6,623.5	6,694.1	6,630.8	57.1	17.2	-89.07	-2,149.5	-255.1	662.9	592.4	70.46	9.408		
9,700.0	6,623.4	6,694.2	6,630.9	58.9	17.2	-89.09	-2,149.5	-255.1	750.4	678.1	72.31	10.378		
9,800.0	6,623.2	6,694.3	6,631.0	60.7	17.2	-89.10	-2,149.5	-255.1	840.8	766.6	74.16	11.337		
9,900.0	6,623.1	6,694.4	6,631.1	62.6	17.2	-89.12	-2,149.5	-255.1	933.1	857.1	76.02	12.275		

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design		Existing Wells Sec.29-T5N-R64W - Blake B #29-23 (Exist.) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft
Survey Program:		7595-UNKNOWN											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
9,100.0	6,624.2	6,635.2	6,635.2	48.0	132.7	90.30	-3,139.2	-844.1	953.9	773.9	180.03	5.299			
9,200.0	6,624.0	6,635.0	6,635.0	49.8	132.7	90.26	-3,139.2	-844.1	857.8	675.9	181.85	4.717			
9,300.0	6,623.9	6,634.9	6,634.9	51.6	132.7	90.23	-3,139.2	-844.1	762.6	579.0	183.67	4.152			
9,400.0	6,623.8	6,634.8	6,634.8	53.4	132.7	90.20	-3,139.2	-844.1	668.9	483.4	185.50	3.606			
9,500.0	6,623.6	6,634.6	6,634.6	55.2	132.7	90.17	-3,139.2	-844.1	577.2	389.9	187.33	3.081			
9,600.0	6,623.5	6,634.5	6,634.5	57.1	132.7	90.14	-3,139.2	-844.1	488.9	299.7	189.17	2.584			
9,700.0	6,623.4	6,634.4	6,634.4	58.9	132.7	90.10	-3,139.2	-844.1	405.9	214.9	191.02	2.125			
9,800.0	6,623.2	6,634.2	6,634.2	60.7	132.7	90.07	-3,139.2	-844.1	332.5	139.7	192.87	1.724			
9,900.0	6,623.1	6,634.1	6,634.1	62.6	132.7	90.04	-3,139.2	-844.1	276.4	81.6	194.72	1.419	Level 3		
10,000.0	6,622.9	6,633.9	6,633.9	64.4	132.7	90.01	-3,139.2	-844.1	249.3	52.8	196.58	1.268	Level 3		
10,021.0	6,622.9	6,633.9	6,633.9	64.8	132.7	90.00	-3,139.2	-844.1	248.5	51.5	196.97	1.261	Level 3, CC, ES, SF		
10,100.0	6,622.8	6,633.8	6,633.8	66.3	132.7	89.97	-3,139.2	-844.1	260.7	62.3	198.44	1.314	Level 3		
10,200.0	6,622.7	6,633.7	6,633.7	68.1	132.7	89.94	-3,139.2	-844.1	306.2	105.9	200.31	1.529			
10,300.0	6,622.5	6,633.5	6,633.5	70.0	132.7	89.91	-3,139.2	-844.1	373.6	171.4	202.17	1.848			
10,400.0	6,622.4	6,633.4	6,633.4	71.9	132.7	89.88	-3,139.2	-844.1	453.2	249.1	204.04	2.221			
10,500.0	6,622.2	6,633.2	6,633.2	73.7	132.7	89.85	-3,139.2	-844.1	539.6	333.7	205.92	2.620			
10,600.0	6,622.1	6,633.1	6,633.1	75.6	132.7	89.81	-3,139.2	-844.1	630.0	422.3	207.79	3.032			
10,700.0	6,622.0	6,633.0	6,633.0	77.5	132.7	89.78	-3,139.2	-844.1	723.0	513.4	209.67	3.448			
10,800.0	6,621.8	6,632.8	6,632.8	79.3	132.7	89.75	-3,139.2	-844.1	817.7	606.1	211.55	3.865			
10,900.0	6,621.7	6,632.7	6,632.7	81.2	132.7	89.72	-3,139.2	-844.1	913.4	700.0	213.43	4.280			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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 29-1 (Exist.) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft
Survey Program:		100-NS-GYRO-MS											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
7,500.0	6,626.4	6,622.5	6,621.5	22.0	12.9	90.07	-1,547.0	-882.3	972.0	938.2	33.83	28.734			
7,600.0	6,626.3	6,624.2	6,623.1	23.3	12.9	90.40	-1,547.0	-882.2	876.9	841.8	35.14	24.956			
7,700.0	6,626.1	6,625.9	6,624.8	24.7	12.9	90.73	-1,547.0	-882.1	783.1	746.6	36.53	21.435			
7,800.0	6,626.0	6,627.5	6,626.4	26.2	12.9	91.06	-1,547.1	-882.0	691.0	653.0	38.00	18.187			
7,900.0	6,625.9	6,629.2	6,628.1	27.7	12.9	91.40	-1,547.1	-881.9	601.4	561.9	39.51	15.222			
8,000.0	6,625.7	6,630.9	6,629.8	29.2	12.9	91.73	-1,547.1	-881.8	515.7	474.6	41.08	12.555			
8,100.0	6,625.6	6,632.6	6,631.4	30.8	12.9	92.06	-1,547.2	-881.7	436.1	393.4	42.68	10.218			
8,200.0	6,625.4	6,634.2	6,633.1	32.4	12.9	92.40	-1,547.2	-881.6	366.6	322.3	44.31	8.273			
8,300.0	6,625.3	6,635.9	6,634.8	34.1	12.9	92.73	-1,547.2	-881.5	314.0	268.0	45.97	6.830			
8,400.0	6,625.2	6,637.6	6,636.4	35.8	12.9	93.06	-1,547.3	-881.5	287.7	240.1	47.66	6.038			
8,429.0	6,625.1	6,638.0	6,636.9	36.3	12.9	93.16	-1,547.3	-881.4	286.3	238.1	48.15	5.945	CC, ES, SF		
8,500.0	6,625.0	6,639.2	6,638.1	37.5	12.9	93.40	-1,547.3	-881.4	294.9	245.6	49.36	5.975			
8,600.0	6,624.9	6,640.9	6,639.8	39.2	12.9	93.73	-1,547.3	-881.3	333.4	282.4	51.08	6.528			
8,700.0	6,624.7	6,642.6	6,641.4	40.9	12.9	94.07	-1,547.3	-881.2	394.2	341.4	52.81	7.463			
8,800.0	6,624.6	6,644.2	6,643.1	42.7	12.9	94.40	-1,547.4	-881.1	468.6	414.0	54.56	8.588			
8,900.0	6,624.5	6,645.9	6,644.8	44.4	12.9	94.73	-1,547.4	-881.0	551.1	494.8	56.31	9.787			
9,000.0	6,624.3	6,647.6	6,646.4	46.2	12.9	95.07	-1,547.4	-880.9	638.7	580.6	58.07	10.998			
9,100.0	6,624.2	6,649.2	6,648.1	48.0	12.9	95.40	-1,547.5	-880.8	729.4	669.6	59.84	12.189			
9,200.0	6,624.0	6,650.9	6,649.7	49.8	12.9	95.73	-1,547.5	-880.7	822.3	760.7	61.62	13.346			
9,300.0	6,623.9	6,652.6	6,651.4	51.6	12.9	96.06	-1,547.5	-880.6	916.7	853.3	63.39	14.461			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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 - Chittenden #1-32 (Exist.) - Wellbore #1 - Wellbore #1													
Survey Program: 7111-UNKNOWN												Offset Site Error:	0.0 ft
												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
13,900.0	6,617.5	6,693.5	6,693.5	138.0	133.9	90.50	-7,994.4	-752.2	988.7	717.1	271.57	3.641	
14,000.0	6,617.3	6,693.3	6,693.3	139.9	133.9	90.45	-7,994.4	-752.2	890.1	616.6	273.48	3.255	
14,100.0	6,617.2	6,693.2	6,693.2	141.8	133.9	90.40	-7,994.4	-752.2	791.8	516.4	275.38	2.875	
14,200.0	6,617.1	6,693.1	6,693.1	143.7	133.9	90.35	-7,994.4	-752.2	694.1	416.8	277.29	2.503	
14,249.2	6,617.0	6,693.0	6,693.0	144.6	133.9	90.32	-7,994.4	-752.2	646.3	368.0	278.23	2.323 CC, ES, SF	

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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 - DIC Cross #31-32 (P&A) - Wellbore #1 - Wellbore #1													Offset Site Error:		0.0 ft
Survey Program: 7025-UNKNOWN													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
11,400.0	6,621.0	6,647.0	6,647.0	90.6	132.9	90.25	-5,408.9	-882.6	935.8	712.6	223.13	4.194			
11,500.0	6,620.8	6,646.8	6,646.8	92.5	132.9	90.22	-5,408.9	-882.6	841.1	616.1	225.02	3.738			
11,600.0	6,620.7	6,646.7	6,646.7	94.4	132.9	90.19	-5,408.9	-882.6	747.9	521.0	226.91	3.296			
11,700.0	6,620.6	6,646.6	6,646.6	96.2	132.9	90.16	-5,408.9	-882.6	656.7	427.9	228.80	2.870			
11,800.0	6,620.4	6,646.4	6,646.4	98.1	132.9	90.14	-5,408.9	-882.6	568.4	337.7	230.70	2.464			
11,900.0	6,620.3	6,646.3	6,646.3	100.0	132.9	90.11	-5,408.9	-882.6	484.7	252.2	232.59	2.084			
12,000.0	6,620.1	6,646.1	6,646.1	101.9	132.9	90.08	-5,408.9	-882.6	408.5	174.0	234.49	1.742			
12,100.0	6,620.0	6,646.0	6,646.0	103.8	132.9	90.05	-5,408.9	-882.6	344.6	108.2	236.38	1.458	Level 3		
12,200.0	6,619.9	6,645.9	6,645.9	105.7	132.9	90.03	-5,408.9	-882.6	301.0	62.7	238.28	1.263	Level 3		
12,290.7	6,619.7	6,645.7	6,645.7	107.4	132.9	90.00	-5,408.9	-882.6	287.0	47.0	240.00	1.196	Level 2, CC		
12,300.0	6,619.7	6,645.7	6,645.7	107.6	132.9	90.00	-5,408.9	-882.6	287.1	47.0	240.17	1.196	Level 2, ES, SF		
12,400.0	6,619.6	6,645.6	6,645.6	109.5	132.9	89.97	-5,408.9	-882.6	307.1	65.0	242.07	1.269	Level 3		
12,500.0	6,619.4	6,645.4	6,645.4	111.4	132.9	89.94	-5,408.9	-882.6	355.2	111.3	243.97	1.456	Level 3		
12,600.0	6,619.3	6,645.3	6,645.3	113.3	132.9	89.91	-5,408.9	-882.6	422.0	176.1	245.87	1.716			
12,700.0	6,619.2	6,645.2	6,645.2	115.2	132.9	89.89	-5,408.9	-882.6	499.9	252.2	247.77	2.018			
12,800.0	6,619.0	6,645.0	6,645.0	117.1	132.9	89.86	-5,408.9	-882.6	584.6	335.0	249.67	2.342			
12,900.0	6,618.9	6,644.9	6,644.9	119.0	132.9	89.83	-5,408.9	-882.6	673.5	422.0	251.57	2.677			
13,000.0	6,618.7	6,644.7	6,644.7	120.9	132.9	89.80	-5,408.9	-882.6	765.2	511.7	253.47	3.019			
13,100.0	6,618.6	6,644.6	6,644.6	122.8	132.9	89.77	-5,408.9	-882.6	858.7	603.3	255.37	3.363			
13,200.0	6,618.5	6,644.5	6,644.5	124.7	132.9	89.75	-5,408.9	-882.6	953.6	696.3	257.27	3.706			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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 #29-1 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.0	0.0	0.0	0.0	0.0	0.0	-97.14	-120.6	-962.9	970.5					
100.0	100.0	91.0	91.0	0.1	0.1	-97.13	-120.4	-963.1	970.6	970.4	0.23	4,162.416		
200.0	200.0	195.2	195.2	0.3	0.4	-97.11	-120.1	-963.3	970.7	970.0	0.69	1,405.439		
228.6	228.6	222.6	222.6	0.4	0.4	-97.10	-120.0	-963.2	970.7	969.9	0.81	1,191.567		
300.0	300.0	289.7	289.7	0.6	0.6	-97.09	-119.9	-963.4	970.8	969.7	1.12	867.588		
400.0	400.0	389.1	389.1	0.8	0.8	-97.09	-119.8	-963.9	971.4	969.8	1.57	617.384		
500.0	500.0	495.8	495.8	1.0	1.0	-97.06	-119.4	-964.2	971.6	969.5	2.04	476.952		
529.7	529.7	523.7	523.7	1.1	1.1	-97.05	-119.3	-964.2	971.5	969.4	2.17	448.151		
600.0	600.0	588.4	588.4	1.2	1.2	-97.03	-118.9	-964.4	971.7	969.3	2.48	392.594		
700.0	700.0	694.6	694.6	1.5	1.5	-97.00	-118.4	-964.8	972.1	969.1	2.95	329.041		
719.4	719.4	713.5	713.5	1.5	1.5	-96.99	-118.2	-964.8	972.1	969.0	3.04	319.281		
800.0	800.0	788.8	788.8	1.7	1.7	-96.95	-117.6	-965.1	972.3	968.9	3.41	284.916		
900.0	900.0	894.7	894.7	1.9	2.0	-96.89	-116.7	-965.6	972.6	968.7	3.90	249.287		
919.9	919.9	913.9	913.9	2.0	2.0	-96.88	-116.5	-965.6	972.6	968.6	3.99	243.487		
1,000.0	1,000.0	988.1	988.1	2.1	2.2	-96.84	-115.9	-965.9	972.8	968.5	4.36	223.100		
1,100.0	1,100.0	1,089.6	1,089.6	2.4	2.5	-96.79	-115.2	-966.6	973.4	968.5	4.85	200.770		
1,200.0	1,200.0	1,192.5	1,192.4	2.6	2.8	-96.75	-114.4	-967.0	973.7	968.4	5.34	182.426		
1,300.0	1,300.0	1,303.9	1,303.9	2.8	3.0	-47.21	-113.1	-966.6	972.4	966.6	5.80	167.745		
1,400.0	1,399.9	1,400.0	1,400.0	3.0	3.2	-47.36	-112.1	-966.1	969.0	962.8	6.21	156.108		
1,500.0	1,499.7	1,501.3	1,501.2	3.2	3.4	-47.67	-111.4	-965.6	964.0	957.4	6.60	145.961		
1,600.0	1,599.3	1,602.1	1,602.0	3.5	3.5	-48.13	-110.8	-964.8	957.0	950.0	6.99	136.989		
1,700.0	1,698.6	1,702.7	1,702.6	3.7	3.7	-48.73	-110.1	-963.9	948.2	940.8	7.40	128.126		
1,800.0	1,797.5	1,801.8	1,801.7	4.0	3.9	-49.50	-109.8	-962.8	937.7	929.9	7.78	120.553		
1,900.0	1,896.1	1,897.2	1,897.2	4.3	4.0	-50.40	-109.7	-962.0	925.8	917.6	8.17	113.270		
2,000.0	1,994.2	1,997.3	1,997.3	4.6	4.2	-51.47	-109.7	-961.1	912.5	903.9	8.60	106.121		
2,100.0	2,092.2	2,096.7	2,096.6	5.0	4.3	-52.50	-109.9	-960.0	898.9	889.9	9.03	99.505		
2,200.0	2,190.1	2,187.4	2,187.3	5.3	4.4	-53.45	-110.0	-959.2	885.9	876.4	9.47	93.542		
2,300.0	2,288.1	2,290.8	2,290.7	5.7	4.6	-54.57	-110.0	-958.6	873.4	863.4	9.96	87.687		
2,400.0	2,386.1	2,384.2	2,384.1	6.1	4.8	-55.58	-109.7	-957.9	861.0	850.4	10.51	81.924		
2,500.0	2,484.0	2,479.4	2,479.4	6.5	4.9	-56.65	-109.6	-957.7	849.3	838.3	11.04	76.955		
2,600.0	2,582.0	2,577.7	2,577.6	6.8	5.0	-57.80	-109.9	-957.5	838.2	826.6	11.52	72.728		
2,700.0	2,680.0	2,677.7	2,677.6	7.3	5.2	-59.01	-110.2	-957.0	827.2	815.2	12.04	68.719		
2,800.0	2,777.9	2,779.0	2,778.9	7.7	5.4	-60.27	-110.4	-956.3	816.3	803.6	12.61	64.745		
2,900.0	2,875.9	2,876.8	2,876.7	8.1	5.6	-61.50	-110.1	-955.4	805.4	792.2	13.22	60.909		
3,000.0	2,973.9	2,970.6	2,970.5	8.5	5.8	-62.68	-109.7	-955.0	795.2	781.4	13.85	57.435		
3,100.0	3,071.8	3,071.0	3,070.9	8.9	6.0	-63.99	-109.6	-954.6	785.7	771.2	14.49	54.233		
3,200.0	3,169.8	3,169.7	3,169.6	9.3	6.2	-65.32	-109.4	-953.9	776.2	761.1	15.14	51.266		
3,300.0	3,267.8	3,269.4	3,269.3	9.7	6.5	-66.67	-108.9	-953.2	767.1	751.3	15.81	48.509		
3,400.0	3,365.7	3,368.4	3,368.3	10.2	6.7	-67.99	-107.7	-952.6	758.1	741.6	16.49	45.960		
3,500.0	3,463.7	3,466.9	3,466.8	10.6	7.0	-69.33	-106.4	-952.0	749.5	732.3	17.18	43.620		
3,600.0	3,561.7	3,567.0	3,566.9	11.0	7.2	-70.71	-104.9	-951.3	741.2	723.3	17.88	41.451		
3,700.0	3,659.6	3,667.7	3,667.6	11.4	7.5	-72.12	-103.1	-950.4	732.9	714.3	18.59	39.433		
3,800.0	3,757.6	3,767.0	3,766.8	11.9	7.7	-73.56	-101.3	-949.1	724.8	705.5	19.30	37.565		
3,900.0	3,855.6	3,863.8	3,863.5	12.3	8.0	-75.00	-99.7	-947.8	717.2	697.2	20.00	35.856		
4,000.0	3,953.5	3,957.2	3,957.0	12.7	8.2	-76.41	-98.3	-946.8	710.4	689.7	20.70	34.318		
4,100.0	4,051.5	4,051.4	4,051.1	13.2	8.4	-77.87	-97.4	-946.3	704.8	683.4	21.40	32.937		
4,200.0	4,149.5	4,148.1	4,147.9	13.6	8.7	-79.43	-97.0	-945.7	700.1	678.0	22.11	31.671		
4,300.0	4,247.4	4,243.8	4,243.6	14.0	8.9	-80.98	-96.7	-945.4	696.1	673.3	22.78	30.553		
4,400.0	4,345.4	4,337.6	4,337.3	14.5	9.0	-82.51	-96.6	-945.5	693.1	669.7	23.38	29.646		
4,500.0	4,443.4	4,431.8	4,431.6	14.9	9.1	-84.06	-96.9	-945.9	691.3	667.4	23.90	28.921		
4,600.0	4,541.3	4,525.5	4,525.3	15.3	9.1	-85.62	-97.7	-946.6	690.6	666.2	24.41	28.296		

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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 #29-1 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error: 0.0 ft	
Survey Program: 100-NS-GYRO-MS													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
4,605.1	4,546.3	4,530.2	4,529.9	15.3	9.1	-85.70	-97.7	-946.6	690.6	666.2	24.43	28.266		
4,700.0	4,639.3	4,616.0	4,615.8	15.8	9.2	-87.22	-99.8	-946.9	691.3	666.4	24.92	27.747		
4,800.0	4,737.3	4,706.5	4,706.2	16.2	9.3	-88.91	-103.4	-947.1	693.8	668.4	25.43	27.281		
4,900.0	4,835.2	4,805.0	4,804.5	16.6	9.3	-90.76	-107.9	-947.2	697.4	671.5	25.96	26.868		
5,000.0	4,933.2	4,905.4	4,904.9	17.1	9.4	-92.62	-112.2	-947.3	701.4	675.0	26.48	26.487		
5,100.0	5,031.2	5,003.7	5,003.1	17.5	9.5	-94.41	-116.0	-947.3	705.9	678.9	27.00	26.141		
5,200.0	5,129.1	5,109.8	5,109.1	17.9	9.6	-96.33	-119.7	-946.8	710.5	682.9	27.54	25.797		
5,300.0	5,227.4	5,217.2	5,216.5	18.3	9.8	-98.15	-122.2	-945.6	714.2	686.2	27.98	25.523		
5,400.0	5,326.3	5,323.0	5,322.2	18.5	10.0	-99.58	-123.2	-944.2	716.6	688.1	28.42	25.213		
5,500.0	5,425.7	5,422.8	5,422.1	18.8	10.2	-100.70	-124.3	-941.8	718.3	689.5	28.83	24.914		
5,600.0	5,525.4	5,525.1	5,524.2	19.0	10.4	-101.65	-125.7	-938.1	719.3	690.0	29.21	24.620		
5,700.0	5,625.3	5,622.1	5,621.2	19.1	10.6	-102.30	-127.1	-934.5	719.6	690.1	29.56	24.347		
5,800.0	5,725.3	5,716.5	5,715.6	19.3	10.8	-152.19	-128.8	-931.6	720.0	690.2	29.86	24.111		
5,900.0	5,825.3	5,817.4	5,816.4	19.4	11.0	-152.43	-130.7	-929.0	720.5	690.3	30.20	23.859		
6,000.0	5,925.2	5,920.7	5,919.6	19.5	11.2	27.54	-132.1	-926.9	718.5	688.1	30.42	23.621		
6,100.0	6,024.1	6,027.3	6,026.2	19.5	11.4	28.44	-132.5	-924.6	704.9	674.6	30.24	23.307		
6,200.0	6,120.2	6,126.5	6,125.4	19.5	11.7	30.35	-132.4	-921.8	679.4	649.7	29.69	22.885		
6,300.0	6,211.9	6,219.9	6,218.7	19.3	11.9	33.52	-132.0	-919.1	643.1	614.2	28.84	22.296		
6,400.0	6,297.6	6,306.8	6,305.6	19.1	12.1	38.31	-131.3	-916.5	597.4	569.5	27.91	21.403		
6,500.0	6,375.9	6,384.8	6,383.6	18.9	12.3	45.08	-130.7	-914.0	544.1	516.9	27.19	20.013		
6,600.0	6,445.4	6,453.1	6,451.8	18.7	12.5	54.07	-130.3	-911.8	485.9	458.9	27.01	17.987		
6,700.0	6,504.9	6,511.8	6,510.5	18.5	12.6	64.98	-130.1	-909.7	426.5	399.1	27.49	15.519		
6,800.0	6,553.5	6,560.2	6,558.8	18.3	12.7	76.38	-130.0	-908.0	371.6	343.4	28.20	13.179		
6,900.0	6,590.2	6,596.7	6,595.3	18.1	12.8	85.87	-129.9	-906.8	329.5	300.8	28.68	11.489		
7,000.0	6,614.6	6,620.8	6,619.4	18.0	12.9	91.62	-129.9	-905.9	310.7	281.7	29.03	10.704		
7,012.9	6,616.8	6,623.0	6,621.6	18.0	12.9	92.03	-129.9	-905.8	310.4	281.3	29.09	10.670 CC, ES, SF		
7,100.0	6,626.0	6,632.1	6,630.7	18.2	12.9	92.78	-129.9	-905.5	322.5	292.8	29.62	10.886		
7,200.0	6,626.8	6,632.8	6,631.4	18.8	12.9	91.89	-129.9	-905.5	362.8	332.3	30.48	11.905		
7,300.0	6,626.7	6,632.4	6,631.0	19.7	12.9	91.83	-129.9	-905.5	423.5	392.0	31.44	13.467		
7,400.0	6,626.6	6,632.1	6,630.7	20.8	12.9	91.77	-129.9	-905.5	497.0	464.4	32.55	15.267		
7,500.0	6,626.4	6,631.8	6,630.4	22.0	12.9	91.71	-129.9	-905.5	578.5	544.7	33.78	17.125		
7,600.0	6,626.3	6,631.5	6,630.1	23.3	12.9	91.65	-129.9	-905.5	665.1	630.0	35.11	18.945		
7,700.0	6,626.1	6,631.1	6,629.7	24.7	12.9	91.59	-129.9	-905.6	755.0	718.5	36.51	20.677		
7,800.0	6,626.0	6,630.8	6,629.4	26.2	12.9	91.53	-129.9	-905.6	847.2	809.2	37.99	22.300		
7,900.0	6,625.9	6,630.5	6,629.1	27.7	12.9	91.47	-129.9	-905.6	940.9	901.4	39.52	23.808		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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		Offset		Semi Major Axis			Distance						Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.0	0.0	0.0	0.0	0.0	0.0	97.48	-50.3	382.8	386.3					
100.0	100.0	88.3	88.3	0.1	0.1	97.49	-50.3	382.8	386.1	385.8	0.23	1,680.180		
200.0	200.0	188.7	188.7	0.3	0.3	97.50	-50.4	382.6	385.9	385.4	0.59	656.673		
300.0	300.0	289.0	289.0	0.6	0.4	97.51	-50.4	382.4	385.7	384.8	0.95	407.880		
400.0	400.0	389.4	389.4	0.8	0.5	97.54	-50.6	382.1	385.4	384.1	1.30	295.641		
500.0	500.0	489.7	489.7	1.0	0.7	97.58	-50.8	381.6	385.0	383.3	1.66	231.632		
600.0	600.0	588.5	588.5	1.2	0.8	97.54	-50.5	381.4	384.7	382.7	2.05	187.703		
635.0	635.0	623.0	623.0	1.3	0.9	97.50	-50.2	381.4	384.7	382.5	2.19	176.044		
700.0	700.0	686.1	686.1	1.5	0.9	97.38	-49.5	381.6	384.8	382.4	2.41	159.629		
800.0	800.0	782.5	782.4	1.7	1.1	97.18	-48.2	382.7	385.8	383.0	2.74	140.978		
900.0	900.0	880.6	880.6	1.9	1.2	96.90	-46.5	384.6	387.5	384.4	3.11	124.753		
1,000.0	1,000.0	979.4	979.3	2.1	1.4	96.46	-43.8	387.0	389.6	386.1	3.50	111.383		
1,100.0	1,100.0	1,079.0	1,078.7	2.4	1.6	95.84	-39.9	389.8	391.9	388.0	3.93	99.603		
1,200.0	1,200.0	1,180.2	1,179.7	2.6	1.8	95.07	-34.9	392.6	394.2	389.8	4.39	89.757		
1,300.0	1,300.0	1,281.6	1,281.0	2.8	2.1	143.86	-29.2	394.9	397.1	392.3	4.85	81.797		
1,400.0	1,399.9	1,375.9	1,375.1	3.0	2.3	143.22	-23.1	397.7	402.7	397.4	5.30	75.936		
1,500.0	1,499.7	1,470.4	1,469.2	3.2	2.5	142.62	-16.0	401.8	411.9	406.1	5.76	71.551		
1,600.0	1,599.3	1,574.0	1,572.4	3.5	2.8	142.08	-7.3	406.4	423.1	416.9	6.24	67.838		
1,700.0	1,698.6	1,680.5	1,678.3	3.7	3.1	141.66	2.6	410.0	435.3	428.6	6.73	64.649		
1,800.0	1,797.5	1,794.2	1,791.2	4.0	3.4	141.11	16.1	410.7	446.8	439.5	7.26	61.566		
1,900.0	1,896.1	1,905.7	1,901.3	4.3	3.7	140.35	33.3	408.4	457.4	449.6	7.79	58.744		
2,000.0	1,994.2	2,022.7	2,016.6	4.6	4.0	139.76	52.1	402.3	467.0	458.7	8.35	55.943		
2,100.0	2,092.2	2,140.1	2,131.5	5.0	4.3	138.99	73.7	391.5	473.0	464.0	8.94	52.908		
2,200.0	2,190.1	2,243.4	2,232.5	5.3	4.6	138.39	92.1	379.8	477.0	467.5	9.51	50.179		
2,300.0	2,288.1	2,346.7	2,333.4	5.7	4.8	137.78	110.7	367.4	480.4	470.3	10.08	47.633		
2,400.0	2,386.1	2,454.4	2,438.6	6.1	5.1	137.32	128.7	353.4	482.7	472.0	10.68	45.195		
2,500.0	2,484.0	2,568.6	2,550.1	6.5	5.4	136.96	146.5	335.9	482.8	471.5	11.29	42.745		
2,600.0	2,582.0	2,687.0	2,665.0	6.8	5.7	136.67	164.1	313.8	479.4	467.5	11.92	40.222		
2,700.0	2,680.0	2,797.2	2,771.2	7.3	6.0	136.36	180.5	289.6	472.7	460.2	12.53	37.733		
2,800.0	2,777.9	2,888.9	2,859.9	7.7	6.3	136.19	193.4	269.7	466.1	453.0	13.09	35.609		
2,900.0	2,875.9	2,995.6	2,963.0	8.1	6.6	136.15	207.0	246.4	459.4	445.8	13.69	33.560		
3,000.0	2,973.9	3,093.5	3,057.6	8.5	6.8	136.09	219.8	224.4	452.2	437.9	14.27	31.678		
3,100.0	3,071.8	3,184.8	3,146.1	8.9	7.1	136.09	231.3	205.1	446.2	431.3	14.85	30.054		
3,200.0	3,169.8	3,273.0	3,232.1	9.3	7.3	136.20	241.7	188.5	442.5	427.1	15.41	28.721		
3,284.6	3,252.6	3,347.3	3,305.0	9.7	7.5	136.45	249.4	176.3	441.4	425.6	15.87	27.814		
3,300.0	3,267.8	3,361.4	3,318.8	9.7	7.6	136.51	250.7	174.2	441.5	425.5	15.96	27.667		
3,400.0	3,365.7	3,455.6	3,411.7	10.2	7.8	137.02	259.1	161.0	442.5	426.0	16.51	26.806		
3,500.0	3,463.7	3,567.7	3,521.9	10.6	8.2	137.38	271.0	144.3	442.8	425.7	17.12	25.857		
3,600.0	3,561.7	3,678.5	3,630.1	11.0	8.5	137.46	284.7	124.7	440.4	422.6	17.76	24.797		
3,700.0	3,659.6	3,788.5	3,737.1	11.4	8.8	137.48	298.6	102.9	435.7	417.3	18.40	23.681		
3,800.0	3,757.6	3,895.6	3,840.2	11.9	9.1	137.07	315.2	79.2	428.8	409.7	19.07	22.487		
3,900.0	3,855.6	3,992.6	3,933.2	12.3	9.5	136.52	331.4	57.2	421.4	401.6	19.73	21.355		
4,000.0	3,953.5	4,087.0	4,024.2	12.7	9.8	136.12	346.2	36.9	415.1	394.7	20.38	20.368		
4,100.0	4,051.5	4,184.8	4,118.8	13.2	10.1	135.78	360.9	16.8	409.9	388.8	21.04	19.484		
4,200.0	4,149.5	4,282.6	4,213.7	13.6	10.4	135.62	374.4	-2.9	405.0	383.3	21.68	18.685		
4,300.0	4,247.4	4,379.7	4,308.2	14.0	10.7	135.74	385.9	-21.7	400.8	378.5	22.29	17.983		
4,400.0	4,345.4	4,477.5	4,403.4	14.5	11.0	135.74	398.3	-40.1	397.2	374.3	22.91	17.334		
4,500.0	4,443.4	4,576.9	4,500.3	14.9	11.3	135.65	411.6	-58.5	393.9	370.3	23.56	16.722		
4,600.0	4,541.3	4,673.0	4,594.0	15.3	11.6	135.69	423.7	-75.5	391.5	367.3	24.18	16.192		
4,700.0	4,639.3	4,776.4	4,695.0	15.8	11.9	135.72	436.8	-93.8	389.0	364.2	24.82	15.674		
4,800.0	4,737.3	4,872.2	4,788.4	16.2	12.2	135.70	449.2	-110.7	386.5	361.1	25.45	15.189		

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
4,900.0	4,835.2	4,974.5	4,888.3	16.6	12.5	135.69	462.4	-128.6	384.3	358.2	26.09	14.726			
5,000.0	4,933.2	5,079.1	4,990.1	17.1	12.8	135.60	476.3	-148.1	380.9	354.1	26.76	14.234			
5,100.0	5,031.2	5,177.4	5,085.7	17.5	13.2	135.55	489.1	-166.8	377.1	349.7	27.40	13.761			
5,200.0	5,129.1	5,272.1	5,178.3	17.9	13.4	135.71	500.2	-183.7	374.4	346.4	28.00	13.370			
5,300.0	5,227.4	5,367.6	5,272.0	18.3	13.7	135.92	509.7	-199.5	371.6	343.1	28.53	13.025			
5,400.0	5,326.3	5,463.6	5,366.5	18.5	14.0	136.00	517.7	-214.0	367.6	338.5	29.02	12.664			
5,500.0	5,425.7	5,562.2	5,463.7	18.8	14.3	135.69	526.0	-228.4	361.6	332.1	29.53	12.244			
5,600.0	5,525.4	5,657.1	5,557.3	19.0	14.6	134.97	534.0	-241.8	353.8	323.7	30.05	11.773			
5,700.0	5,625.3	5,748.3	5,647.6	19.1	14.8	134.07	540.7	-252.5	345.7	315.1	30.53	11.322			
5,800.0	5,725.3	5,840.9	5,739.7	19.3	15.1	83.52	546.0	-261.3	337.5	306.5	31.01	10.884			
5,900.0	5,825.3	5,934.6	5,833.0	19.4	15.3	82.69	550.0	-268.2	330.6	299.1	31.51	10.493			
6,000.0	5,925.2	6,029.9	5,928.1	19.5	15.5	-98.57	552.9	-273.6	325.8	293.8	32.05	10.166			
6,086.7	6,011.1	6,113.0	6,011.1	19.5	15.7	-101.07	554.6	-277.4	324.3	291.7	32.56	9.957 CC			
6,100.0	6,024.1	6,125.5	6,023.6	19.5	15.8	-101.55	554.7	-277.9	324.3	291.7	32.65	9.934 ES			
6,200.0	6,120.2	6,218.3	6,116.3	19.5	16.0	-105.85	555.4	-280.9	328.0	294.8	33.14	9.896 SF			
6,300.0	6,211.9	6,308.0	6,206.0	19.3	16.1	-110.93	555.0	-282.8	339.3	306.0	33.29	10.192			
6,400.0	6,297.6	6,393.1	6,291.1	19.1	16.2	-116.05	553.9	-283.7	360.9	327.9	32.96	10.950			
6,500.0	6,375.9	6,471.3	6,369.3	18.9	16.2	-120.41	552.1	-283.9	394.6	362.5	32.08	12.300			
6,600.0	6,445.4	6,541.6	6,439.6	18.7	16.2	-123.50	550.3	-283.6	441.2	410.3	30.91	14.275			
6,700.0	6,504.9	6,603.7	6,501.6	18.5	16.2	-124.99	548.4	-282.9	500.1	470.3	29.77	16.797			
6,800.0	6,553.5	6,655.7	6,553.7	18.3	16.2	-124.40	546.7	-282.2	569.9	540.7	29.13	19.565			
6,900.0	6,590.2	6,696.5	6,594.4	18.1	16.2	-121.05	545.2	-281.6	648.6	619.2	29.39	22.067			
7,000.0	6,614.6	6,725.1	6,623.0	18.0	16.2	-113.84	544.1	-281.1	734.2	703.4	30.72	23.899			
7,100.0	6,626.0	6,740.8	6,638.7	18.2	16.2	-101.18	543.5	-280.9	824.6	792.2	32.40	25.452			
7,200.0	6,626.8	6,745.8	6,643.7	18.8	16.2	-95.02	543.3	-280.8	917.7	884.5	33.23	27.620			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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 - Pearlman #32-13 (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error:		0.0 ft
Survey Program: 100-NS-GYRO-MS												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
12,500.0	6,619.4	6,657.6	6,656.5	111.4	13.7	89.37	-6,517.1	-654.6	900.9	776.1	124.74	7.222		
12,600.0	6,619.3	6,657.9	6,656.8	113.3	13.7	89.62	-6,517.1	-654.6	801.1	674.5	126.64	6.326		
12,700.0	6,619.2	6,658.1	6,657.1	115.2	13.7	89.88	-6,517.2	-654.6	701.4	572.9	128.54	5.457		
12,800.0	6,619.0	6,658.4	6,657.3	117.1	13.7	90.14	-6,517.2	-654.6	601.8	471.4	130.43	4.614		
12,900.0	6,618.9	6,658.7	6,657.6	119.0	13.7	90.41	-6,517.2	-654.6	502.4	370.1	132.33	3.797		
13,000.0	6,618.7	6,658.9	6,657.9	120.9	13.7	90.68	-6,517.2	-654.6	403.3	269.0	134.22	3.004		
13,100.0	6,618.6	6,659.2	6,658.2	122.8	13.7	90.96	-6,517.2	-654.5	304.7	168.6	136.11	2.239		
13,200.0	6,618.5	6,659.5	6,658.5	124.7	13.7	91.25	-6,517.2	-654.5	207.5	69.5	137.99	1.504		
13,300.0	6,618.3	6,659.8	6,658.8	126.6	13.7	91.54	-6,517.2	-654.5	115.2	-24.7	139.87	0.823	Level 1	
13,398.9	6,618.2	6,660.1	6,659.1	128.5	13.7	91.84	-6,517.2	-654.5	59.0	-82.8	141.73	0.416	Level 1, CC, SF	
13,400.0	6,618.2	6,660.1	6,659.1	128.5	13.7	91.84	-6,517.2	-654.5	59.0	-82.8	141.75	0.416	Level 1, ES	
13,500.0	6,618.0	6,660.5	6,659.4	130.4	13.7	92.15	-6,517.2	-654.5	117.0	-26.6	143.63	0.815	Level 1	
13,600.0	6,617.9	6,660.8	6,659.7	132.3	13.7	92.46	-6,517.2	-654.5	209.5	64.0	145.50	1.440	Level 3	
13,700.0	6,617.8	6,661.1	6,660.1	134.2	13.7	92.79	-6,517.2	-654.5	306.8	159.4	147.36	2.082		
13,800.0	6,617.6	6,661.5	6,660.4	136.1	13.7	93.12	-6,517.2	-654.5	405.4	256.2	149.22	2.717		
13,900.0	6,617.5	6,661.8	6,660.7	138.0	13.7	93.46	-6,517.2	-654.5	504.5	353.5	151.07	3.340		
14,000.0	6,617.3	6,662.2	6,661.1	139.9	13.7	93.80	-6,517.2	-654.4	604.0	451.0	152.92	3.949		
14,100.0	6,617.2	6,662.5	6,661.5	141.8	13.7	94.16	-6,517.2	-654.4	703.5	548.8	154.76	4.546		
14,200.0	6,617.1	6,662.9	6,661.8	143.7	13.7	94.53	-6,517.2	-654.4	803.2	646.6	156.59	5.130		
14,249.2	6,617.0	6,663.1	6,662.0	144.6	13.7	94.71	-6,517.2	-654.4	852.3	694.8	157.49	5.412		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-89.31	0.7	-60.2	60.2						
100.0	100.0	100.0	100.0	0.1	0.1	-89.31	0.7	-60.2	60.2	60.0	0.22	267.774			
200.0	200.0	200.0	200.0	0.3	0.3	-89.31	0.7	-60.2	60.2	59.5	0.67	89.258	CC, ES		
300.0	300.0	298.5	298.5	0.6	0.6	-88.94	1.1	-61.4	61.4	60.3	1.11	55.115			
400.0	400.0	396.9	396.8	0.8	0.8	-87.91	2.4	-65.0	65.1	63.5	1.56	41.768			
500.0	500.0	495.0	494.7	1.0	1.0	-86.44	4.4	-70.9	71.3	69.3	2.01	35.426			
600.0	600.0	592.7	592.0	1.2	1.3	-84.76	7.3	-79.3	80.0	77.5	2.48	32.302			
700.0	700.0	689.9	688.6	1.5	1.5	-83.08	10.9	-89.9	91.2	88.3	2.95	30.892			
800.0	800.0	786.5	784.2	1.7	1.8	-81.52	15.3	-102.7	105.0	101.6	3.45	30.464			
900.0	900.0	882.3	878.7	1.9	2.2	-80.13	20.5	-117.7	121.3	117.4	3.96	30.630			
1,000.0	1,000.0	977.3	971.9	2.1	2.5	-78.94	26.3	-134.7	140.1	135.6	4.50	31.159			
1,100.0	1,100.0	1,071.3	1,063.8	2.4	3.0	-77.94	32.9	-153.8	161.4	156.3	5.06	31.911			
1,200.0	1,200.0	1,164.2	1,154.0	2.6	3.4	-77.09	40.0	-174.7	185.0	179.4	5.64	32.797			
1,300.0	1,300.0	1,256.3	1,242.9	2.8	3.9	-26.82	47.9	-197.4	209.9	204.2	5.70	36.819			
1,400.0	1,399.9	1,347.9	1,330.7	3.0	4.4	-26.44	56.3	-222.1	234.9	228.7	6.17	38.071			
1,500.0	1,499.7	1,438.8	1,417.2	3.2	4.9	-26.31	65.4	-248.5	259.9	253.2	6.65	39.101			
1,600.0	1,599.3	1,530.1	1,503.4	3.5	5.5	-26.36	75.2	-277.0	284.9	277.7	7.14	39.915			
1,700.0	1,698.6	1,627.2	1,594.8	3.7	6.2	-26.60	85.9	-308.0	308.4	300.8	7.65	40.336			
1,800.0	1,797.5	1,724.9	1,686.7	4.0	6.9	-27.01	96.6	-339.3	329.8	321.6	8.17	40.359			
1,900.0	1,896.1	1,823.0	1,779.0	4.3	7.6	-27.57	107.4	-370.6	348.9	340.2	8.71	40.043			
2,000.0	1,994.2	1,921.4	1,871.6	4.6	8.3	-28.29	118.2	-402.1	365.8	356.6	9.28	39.436			
2,100.0	2,092.2	2,019.9	1,964.3	5.0	8.9	-29.08	129.0	-433.6	382.3	372.4	9.86	38.753			
2,200.0	2,190.1	2,118.4	2,057.0	5.3	9.6	-29.80	139.8	-465.1	398.8	388.3	10.47	38.100			
2,300.0	2,288.1	2,216.9	2,149.7	5.7	10.3	-30.47	150.6	-496.6	415.3	404.3	11.08	37.479			
2,400.0	2,386.1	2,315.4	2,242.5	6.1	11.0	-31.08	161.4	-528.1	432.0	420.3	11.71	36.891			
2,500.0	2,484.0	2,413.9	2,335.2	6.5	11.7	-31.65	172.3	-559.6	448.6	436.3	12.35	36.334			
2,600.0	2,582.0	2,512.4	2,427.9	6.8	12.4	-32.18	183.1	-591.1	465.3	452.3	12.99	35.808			
2,700.0	2,680.0	2,610.9	2,520.6	7.3	13.2	-32.67	193.9	-622.6	482.1	468.4	13.65	35.312			
2,800.0	2,777.9	2,709.4	2,613.3	7.7	13.9	-33.13	204.7	-654.1	498.8	484.5	14.32	34.844			
2,900.0	2,875.9	2,808.0	2,706.0	8.1	14.6	-33.55	215.5	-685.6	515.6	500.6	14.99	34.402			
3,000.0	2,973.9	2,906.5	2,798.7	8.5	15.3	-33.95	226.4	-717.1	532.5	516.8	15.67	33.986			
3,100.0	3,071.8	3,005.0	2,891.4	8.9	16.0	-34.33	237.2	-748.6	549.3	532.9	16.35	33.593			
3,200.0	3,169.8	3,103.5	2,984.1	9.3	16.7	-34.69	248.0	-780.1	566.2	549.1	17.04	33.222			
3,300.0	3,267.8	3,202.0	3,076.8	9.7	17.4	-35.02	258.8	-811.6	583.1	565.3	17.74	32.872			
3,400.0	3,365.7	3,300.5	3,169.5	10.2	18.1	-35.33	269.6	-843.1	600.0	581.5	18.44	32.540			
3,500.0	3,463.7	3,399.0	3,262.2	10.6	18.8	-35.63	280.5	-874.6	616.9	597.8	19.14	32.227			
3,600.0	3,561.7	3,497.5	3,354.9	11.0	19.5	-35.91	291.3	-906.1	633.8	614.0	19.85	31.930			
3,700.0	3,659.6	3,596.0	3,447.6	11.4	20.2	-36.18	302.1	-937.6	650.8	630.2	20.56	31.649			
3,800.0	3,757.6	3,694.5	3,540.3	11.9	20.9	-36.44	312.9	-969.1	667.8	646.5	21.28	31.382			
3,900.0	3,855.6	3,793.0	3,633.0	12.3	21.6	-36.68	323.7	-1,000.6	684.7	662.7	22.00	31.129			
4,000.0	3,953.5	3,891.5	3,725.8	12.7	22.3	-36.91	334.6	-1,032.1	701.7	679.0	22.72	30.889			
4,100.0	4,051.5	3,990.1	3,818.5	13.2	23.1	-37.12	345.4	-1,063.6	718.7	695.3	23.44	30.660			
4,200.0	4,149.5	4,088.6	3,911.2	13.6	23.8	-37.33	356.2	-1,095.1	735.7	711.6	24.17	30.442			
4,300.0	4,247.4	4,187.1	4,003.9	14.0	24.5	-37.53	367.0	-1,126.6	752.8	727.9	24.90	30.234			
4,400.0	4,345.4	4,285.6	4,096.6	14.5	25.2	-37.72	377.8	-1,158.1	769.8	744.2	25.63	30.036			
4,500.0	4,443.4	4,384.1	4,189.3	14.9	25.9	-37.90	388.7	-1,189.6	786.8	760.5	26.36	29.847			
4,600.0	4,541.3	4,482.6	4,282.0	15.3	26.6	-38.08	399.5	-1,221.1	803.9	776.8	27.10	29.667			
4,700.0	4,639.3	4,581.1	4,374.7	15.8	27.3	-38.25	410.3	-1,252.6	820.9	793.1	27.83	29.494			
4,800.0	4,737.3	4,679.6	4,467.4	16.2	28.0	-38.41	421.1	-1,284.1	838.0	809.4	28.57	29.329			
4,900.0	4,835.2	4,778.1	4,560.1	16.6	28.7	-38.56	431.9	-1,315.6	855.0	825.7	29.31	29.170			
5,000.0	4,933.2	4,876.6	4,652.8	17.1	29.4	-38.71	442.7	-1,347.1	872.1	842.0	30.05	29.019			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
5,100.0	5,031.2	4,981.4	4,751.5	17.5	30.2	-38.86	454.2	-1,380.6	889.1	858.3	30.82	28.852			
5,200.0	5,129.1	5,122.2	4,885.4	17.9	30.9	-39.15	468.3	-1,421.6	903.2	871.5	31.68	28.513			
5,300.0	5,227.4	5,264.3	5,022.6	18.3	31.5	-39.60	480.3	-1,456.6	914.1	881.7	32.41	28.200			
5,400.0	5,326.3	5,407.3	5,162.3	18.5	32.1	-39.96	490.2	-1,485.3	923.0	889.9	33.05	27.924			
5,500.0	5,425.7	5,551.1	5,304.1	18.8	32.5	-40.23	497.8	-1,507.4	929.8	896.2	33.58	27.687			
5,600.0	5,525.4	5,695.4	5,447.5	19.0	32.8	-40.41	503.1	-1,522.9	934.6	900.6	34.01	27.480			
5,700.0	5,625.3	5,840.0	5,591.8	19.1	33.0	-40.52	506.1	-1,531.5	937.2	902.9	34.32	27.307			
5,800.0	5,725.3	5,973.5	5,725.3	19.3	33.1	-90.08	506.7	-1,533.4	937.8	903.3	34.56	27.134			
5,900.0	5,825.3	6,073.5	5,825.3	19.4	33.2	-90.08	506.7	-1,533.4	937.8	903.0	34.86	26.901			
6,000.0	5,925.2	6,173.3	5,925.0	19.5	33.3	89.88	503.5	-1,533.4	937.8	902.7	35.11	26.711			
6,100.0	6,024.1	6,273.0	6,023.4	19.5	33.3	89.81	487.9	-1,533.4	937.8	902.7	35.15	26.679			
6,200.0	6,120.2	6,372.5	6,118.8	19.5	33.2	89.75	459.6	-1,533.4	937.8	902.8	35.00	26.793			
6,300.0	6,211.9	6,471.9	6,209.5	19.3	33.2	89.70	419.3	-1,533.4	937.8	903.1	34.71	27.020			
6,400.0	6,297.6	6,571.2	6,294.2	19.1	33.0	89.64	367.6	-1,533.4	937.8	903.5	34.33	27.317			
6,500.0	6,375.9	6,670.4	6,371.4	18.9	32.9	89.60	305.4	-1,533.4	937.8	903.9	33.95	27.624			
6,600.0	6,445.4	6,769.5	6,439.9	18.7	32.7	89.56	233.8	-1,533.4	937.8	904.2	33.65	27.868			
6,700.0	6,504.9	6,868.6	6,498.4	18.5	32.6	89.53	154.1	-1,533.4	937.9	904.3	33.53	27.967			
6,800.0	6,553.5	6,967.5	6,546.2	18.3	32.5	89.51	67.4	-1,533.4	937.9	904.2	33.68	27.847			
6,900.0	6,590.2	7,066.5	6,582.3	18.1	32.4	89.49	-24.6	-1,533.4	937.9	903.7	34.15	27.464			
7,000.0	6,614.6	7,165.4	6,606.2	18.0	32.3	89.48	-120.5	-1,533.4	937.9	902.9	34.98	26.812			
7,100.0	6,626.0	7,264.3	6,617.6	18.2	32.3	89.49	-218.7	-1,533.4	937.9	901.7	36.17	25.932			
7,200.0	6,626.8	7,363.9	6,619.1	18.8	32.4	89.53	-318.3	-1,533.4	937.9	900.2	37.69	24.880			
7,300.0	6,626.7	7,463.9	6,619.9	19.7	32.6	89.59	-418.3	-1,533.4	937.8	898.3	39.52	23.732			
7,400.0	6,626.6	7,563.9	6,620.7	20.8	32.9	89.64	-518.3	-1,533.4	937.8	896.2	41.62	22.535			
7,500.0	6,626.4	7,663.9	6,621.6	22.0	33.3	89.70	-618.3	-1,533.4	937.8	893.9	43.95	21.338			
7,600.0	6,626.3	7,763.9	6,622.4	23.3	33.8	89.76	-718.3	-1,533.4	937.8	891.3	46.48	20.176			
7,700.0	6,626.1	7,863.9	6,623.2	24.7	34.5	89.82	-818.3	-1,533.4	937.8	888.6	49.18	19.068			
7,800.0	6,626.0	7,963.9	6,624.0	26.2	35.2	89.88	-918.3	-1,533.4	937.8	885.8	52.03	18.026			
7,900.0	6,625.9	8,063.9	6,624.9	27.7	36.1	89.94	-1,018.2	-1,533.4	937.8	882.8	54.99	17.054			
7,980.9	6,625.8	8,144.8	6,625.5	28.9	36.9	89.99	-1,099.1	-1,533.4	937.8	880.4	57.47	16.320			
8,000.0	6,625.7	8,163.9	6,625.7	29.2	37.1	90.00	-1,118.2	-1,533.4	937.8	879.8	58.06	16.154			
8,100.0	6,625.6	8,263.9	6,626.5	30.8	38.2	90.06	-1,218.2	-1,533.4	937.8	876.6	61.21	15.322			
8,200.0	6,625.4	8,363.9	6,627.3	32.4	39.4	90.11	-1,318.2	-1,533.4	937.8	873.4	64.43	14.555			
8,300.0	6,625.3	8,463.9	6,628.1	34.1	40.7	90.17	-1,418.2	-1,533.4	937.8	870.1	67.72	13.849			
8,400.0	6,625.2	8,563.9	6,629.0	35.8	42.0	90.23	-1,518.2	-1,533.4	937.8	866.8	71.06	13.197			
8,500.0	6,625.0	8,663.9	6,629.8	37.5	43.4	90.29	-1,618.2	-1,533.4	937.8	863.4	74.45	12.596			
8,600.0	6,624.9	8,763.9	6,630.6	39.2	44.8	90.35	-1,718.2	-1,533.4	937.8	860.0	77.88	12.041			
8,700.0	6,624.7	8,863.9	6,631.4	40.9	46.3	90.41	-1,818.2	-1,533.4	937.9	856.5	81.35	11.528			
8,800.0	6,624.6	8,963.8	6,632.2	42.7	47.8	90.47	-1,918.2	-1,533.4	937.9	853.0	84.85	11.053			
8,900.0	6,624.5	9,063.8	6,633.1	44.4	49.4	90.52	-2,018.2	-1,533.4	937.9	849.5	88.38	10.612			
9,000.0	6,624.3	9,163.8	6,633.9	46.2	51.0	90.58	-2,118.2	-1,533.4	937.9	845.9	91.93	10.202			
9,100.0	6,624.2	9,263.8	6,634.7	48.0	52.6	90.64	-2,218.1	-1,533.4	937.9	842.4	95.50	9.821			
9,200.0	6,624.0	9,363.8	6,635.5	49.8	54.2	90.70	-2,318.1	-1,533.4	937.9	838.8	99.09	9.465			
9,300.0	6,623.9	9,463.8	6,636.3	51.6	55.9	90.76	-2,418.1	-1,533.4	937.9	835.2	102.70	9.133			
9,400.0	6,623.8	9,563.8	6,637.2	53.4	57.6	90.82	-2,518.1	-1,533.4	937.9	831.6	106.32	8.821			
9,500.0	6,623.6	9,663.8	6,638.0	55.2	59.2	90.88	-2,618.1	-1,533.4	937.9	828.0	109.96	8.530			
9,600.0	6,623.5	9,763.8	6,638.8	57.1	60.9	90.93	-2,718.1	-1,533.4	938.0	824.3	113.61	8.256			
9,700.0	6,623.4	9,863.8	6,639.6	58.9	62.7	90.99	-2,818.1	-1,533.4	938.0	820.7	117.27	7.998			
9,800.0	6,623.2	9,963.8	6,640.4	60.7	64.4	91.05	-2,918.1	-1,533.4	938.0	817.0	120.95	7.755			
9,900.0	6,623.1	10,063.8	6,641.3	62.6	66.1	91.11	-3,018.1	-1,533.4	938.0	813.4	124.63	7.526			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
10,000.0	6,622.9	10,163.8	6,642.1	64.4	67.9	91.17	-3,118.1	-1,533.4	938.0	809.7	128.32	7.310		
10,100.0	6,622.8	10,263.8	6,642.9	66.3	69.6	91.23	-3,218.1	-1,533.4	938.0	806.0	132.02	7.105		
10,200.0	6,622.7	10,363.8	6,643.7	68.1	71.4	91.29	-3,318.1	-1,533.4	938.1	802.3	135.72	6.912		
10,300.0	6,622.5	10,463.8	6,644.5	70.0	73.2	91.35	-3,418.1	-1,533.4	938.1	798.7	139.43	6.728		
10,400.0	6,622.4	10,563.8	6,645.4	71.9	75.0	91.40	-3,518.0	-1,533.4	938.1	795.0	143.15	6.553		
10,500.0	6,622.2	10,663.8	6,646.2	73.7	76.8	91.46	-3,618.0	-1,533.4	938.1	791.3	146.88	6.387		
10,600.0	6,622.1	10,763.8	6,647.0	75.6	78.6	91.52	-3,718.0	-1,533.4	938.2	787.6	150.60	6.229		
10,700.0	6,622.0	10,863.8	6,647.8	77.5	80.4	91.58	-3,818.0	-1,533.4	938.2	783.9	154.34	6.079		
10,800.0	6,621.8	10,963.8	6,648.6	79.3	82.2	91.64	-3,918.0	-1,533.4	938.2	780.1	158.08	5.935		
10,900.0	6,621.7	11,063.8	6,649.5	81.2	84.0	91.70	-4,018.0	-1,533.4	938.2	776.4	161.82	5.798		
11,000.0	6,621.5	11,163.7	6,650.3	83.1	85.8	91.76	-4,118.0	-1,533.4	938.3	772.7	165.56	5.667		
11,100.0	6,621.4	11,263.7	6,651.1	84.9	87.6	91.81	-4,218.0	-1,533.4	938.3	769.0	169.31	5.542		
11,200.0	6,621.3	11,363.7	6,651.9	86.8	89.4	91.87	-4,318.0	-1,533.4	938.3	765.3	173.06	5.422		
11,300.0	6,621.1	11,463.7	6,652.7	88.7	91.3	91.93	-4,418.0	-1,533.4	938.4	761.5	176.82	5.307		
11,400.0	6,621.0	11,563.7	6,653.6	90.6	93.1	91.99	-4,518.0	-1,533.4	938.4	757.8	180.57	5.197		
11,500.0	6,620.8	11,663.7	6,654.4	92.5	94.9	92.05	-4,618.0	-1,533.4	938.4	754.1	184.33	5.091		
11,600.0	6,620.7	11,763.7	6,655.2	94.4	96.8	92.11	-4,717.9	-1,533.4	938.5	750.4	188.10	4.989		
11,700.0	6,620.6	11,863.7	6,656.0	96.2	98.6	92.17	-4,817.9	-1,533.4	938.5	746.6	191.86	4.892		
11,800.0	6,620.4	11,963.7	6,656.8	98.1	100.5	92.22	-4,917.9	-1,533.4	938.5	742.9	195.63	4.798		
11,900.0	6,620.3	12,063.7	6,657.7	100.0	102.3	92.28	-5,017.9	-1,533.4	938.6	739.2	199.39	4.707		
12,000.0	6,620.1	12,163.7	6,658.5	101.9	104.2	92.34	-5,117.9	-1,533.4	938.6	735.5	203.16	4.620		
12,100.0	6,620.0	12,263.7	6,659.3	103.8	106.0	92.40	-5,217.9	-1,533.4	938.7	731.7	206.93	4.536		
12,200.0	6,619.9	12,363.7	6,660.1	105.7	107.9	92.46	-5,317.9	-1,533.4	938.7	728.0	210.71	4.455		
12,300.0	6,619.7	12,463.7	6,660.9	107.6	109.7	92.52	-5,417.9	-1,533.4	938.7	724.3	214.48	4.377		
12,400.0	6,619.6	12,563.7	6,661.8	109.5	111.6	92.58	-5,517.9	-1,533.4	938.8	720.5	218.26	4.301		
12,500.0	6,619.4	12,663.7	6,662.6	111.4	113.5	92.63	-5,617.9	-1,533.4	938.8	716.8	222.03	4.228		
12,600.0	6,619.3	12,763.7	6,663.4	113.3	115.3	92.69	-5,717.9	-1,533.4	938.9	713.1	225.81	4.158		
12,700.0	6,619.2	12,863.7	6,664.2	115.2	117.2	92.75	-5,817.9	-1,533.4	938.9	709.3	229.59	4.090		
12,800.0	6,619.0	12,963.7	6,665.0	117.1	119.1	92.81	-5,917.9	-1,533.4	939.0	705.6	233.37	4.024		
12,900.0	6,618.9	13,063.7	6,665.9	119.0	120.9	92.87	-6,017.8	-1,533.4	939.0	701.9	237.15	3.960		
13,000.0	6,618.7	13,163.7	6,666.7	120.9	122.8	92.93	-6,117.8	-1,533.4	939.1	698.1	240.93	3.898		
13,100.0	6,618.6	13,263.7	6,667.5	122.8	124.7	92.98	-6,217.8	-1,533.4	939.1	694.4	244.71	3.838		
13,200.0	6,618.5	13,363.6	6,668.3	124.7	126.5	93.04	-6,317.8	-1,533.4	939.2	690.7	248.49	3.779		
13,300.0	6,618.3	13,463.6	6,669.1	126.6	128.4	93.10	-6,417.8	-1,533.4	939.2	686.9	252.28	3.723		
13,400.0	6,618.2	13,563.6	6,670.0	128.5	130.3	93.16	-6,517.8	-1,533.4	939.3	683.2	256.06	3.668		
13,500.0	6,618.0	13,663.6	6,670.8	130.4	132.2	93.22	-6,617.8	-1,533.4	939.3	679.5	259.84	3.615		
13,600.0	6,617.9	13,763.6	6,671.6	132.3	134.0	93.28	-6,717.8	-1,533.4	939.4	675.7	263.63	3.563		
13,700.0	6,617.8	13,863.6	6,672.4	134.2	135.9	93.34	-6,817.8	-1,533.4	939.4	672.0	267.41	3.513		
13,800.0	6,617.6	13,963.6	6,673.2	136.1	137.8	93.39	-6,917.8	-1,533.4	939.5	668.3	271.20	3.464		
13,900.0	6,617.5	14,063.6	6,674.1	138.0	139.7	93.45	-7,017.8	-1,533.4	939.5	664.6	274.98	3.417		
14,000.0	6,617.3	14,163.6	6,674.9	139.9	141.6	93.51	-7,117.8	-1,533.4	939.6	660.8	278.77	3.371		
14,100.0	6,617.2	14,263.6	6,675.7	141.8	143.4	93.57	-7,217.7	-1,533.4	939.7	657.1	282.55	3.326		
14,200.0	6,617.1	14,363.6	6,676.5	143.7	145.3	93.63	-7,317.7	-1,533.4	939.7	653.4	286.34	3.282		
14,249.2	6,617.0	14,412.8	6,676.9	144.6	146.3	93.66	-7,366.9	-1,533.4	939.8	651.6	288.20	3.261 SF		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-323 - Wellbore #1 - Plan #1 (3-14-16)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	1.0	1.0	0.0	0.0	-89.32	0.4	-30.1	30.1	30.1	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	-89.32	0.4	-30.1	30.1	29.9	0.23	132.561		
200.0	200.0	201.0	201.0	0.3	0.3	-89.32	0.4	-30.1	30.1	29.4	0.68	44.481		
300.0	300.0	301.0	301.0	0.6	0.6	-89.32	0.4	-30.1	30.1	29.0	1.13	26.724		
400.0	400.0	401.0	401.0	0.8	0.8	-89.32	0.4	-30.1	30.1	28.5	1.58	19.099		
500.0	500.0	501.0	501.0	1.0	1.0	-89.32	0.4	-30.1	30.1	28.1	2.03	14.860		
600.0	600.0	601.0	601.0	1.2	1.2	-89.32	0.4	-30.1	30.1	27.6	2.47	12.160		
700.0	700.0	701.0	701.0	1.5	1.5	-89.32	0.4	-30.1	30.1	27.2	2.92	10.291		
766.3	766.3	767.3	767.3	1.6	1.6	-89.32	0.4	-30.1	30.1	26.9	3.22	9.339 CC		
800.0	800.0	801.0	801.0	1.7	1.7	-89.32	0.4	-30.1	30.1	26.7	3.37	8.920 ES		
900.0	900.0	900.0	900.0	1.9	1.9	-88.31	0.9	-31.3	31.3	27.5	3.81	8.207		
1,000.0	1,000.0	999.4	999.3	2.1	2.1	-85.72	2.6	-34.8	34.9	30.7	4.25	8.213		
1,100.0	1,100.0	1,098.3	1,098.0	2.4	2.3	-82.44	5.4	-40.6	41.1	36.4	4.70	8.744		
1,200.0	1,200.0	1,196.7	1,196.0	2.6	2.6	-79.24	9.2	-48.7	49.8	44.6	5.15	9.673		
1,300.0	1,300.0	1,294.8	1,293.4	2.8	2.8	-27.43	14.2	-59.0	60.0	54.4	5.57	10.765		
1,400.0	1,399.9	1,392.6	1,390.3	3.0	3.1	-26.33	20.2	-71.5	70.4	64.3	6.00	11.718		
1,500.0	1,499.7	1,490.2	1,486.4	3.2	3.4	-25.95	27.2	-86.2	80.9	74.5	6.44	12.560		
1,600.0	1,599.3	1,587.4	1,581.9	3.5	3.7	-26.05	35.3	-103.0	91.6	84.8	6.89	13.304		
1,700.0	1,698.6	1,684.4	1,676.6	3.7	4.1	-26.47	44.4	-122.0	102.5	95.2	7.34	13.960		
1,800.0	1,797.5	1,781.1	1,770.4	4.0	4.5	-27.11	54.5	-143.1	113.5	105.7	7.81	14.533		
1,900.0	1,896.1	1,878.6	1,864.3	4.3	5.0	-27.94	65.6	-166.4	124.6	116.3	8.30	15.013		
2,000.0	1,994.2	1,978.1	1,960.1	4.6	5.5	-29.12	77.3	-190.7	134.0	125.2	8.82	15.196		
2,100.0	2,092.2	2,077.7	2,056.0	5.0	6.0	-30.32	88.9	-214.9	142.9	133.5	9.37	15.244		
2,200.0	2,190.1	2,177.2	2,151.9	5.3	6.5	-31.38	100.5	-239.2	151.9	141.9	9.95	15.262		
2,300.0	2,288.1	2,276.8	2,247.7	5.7	7.0	-32.33	112.2	-263.5	160.9	150.3	10.54	15.258		
2,400.0	2,386.1	2,376.3	2,343.6	6.1	7.6	-33.17	123.8	-287.8	169.9	158.7	11.15	15.236		
2,500.0	2,484.0	2,475.9	2,439.4	6.5	8.1	-33.93	135.4	-312.1	179.0	167.2	11.77	15.202		
2,600.0	2,582.0	2,575.5	2,535.3	6.8	8.6	-34.61	147.0	-336.3	188.1	175.7	12.41	15.157		
2,700.0	2,680.0	2,675.0	2,631.1	7.3	9.2	-35.23	158.7	-360.6	197.2	184.2	13.05	15.107		
2,800.0	2,777.9	2,774.6	2,727.0	7.7	9.7	-35.80	170.3	-384.9	206.4	192.6	13.71	15.051		
2,900.0	2,875.9	2,874.1	2,822.8	8.1	10.3	-36.32	181.9	-409.2	215.5	201.1	14.37	14.993		
3,000.0	2,973.9	2,973.7	2,918.7	8.5	10.9	-36.79	193.6	-433.4	224.7	209.7	15.05	14.934		
3,100.0	3,071.8	3,073.3	3,014.5	8.9	11.4	-37.23	205.2	-457.7	233.9	218.2	15.73	14.873		
3,200.0	3,169.8	3,172.8	3,110.4	9.3	12.0	-37.64	216.8	-482.0	243.1	226.7	16.41	14.813		
3,300.0	3,267.8	3,272.4	3,206.2	9.7	12.5	-38.01	228.4	-506.3	252.3	235.2	17.10	14.753		
3,400.0	3,365.7	3,371.9	3,302.1	10.2	13.1	-38.36	240.1	-530.6	261.6	243.8	17.80	14.695		
3,500.0	3,463.7	3,471.5	3,397.9	10.6	13.7	-38.69	251.7	-554.8	270.8	252.3	18.50	14.637		
3,600.0	3,561.7	3,571.1	3,493.8	11.0	14.2	-38.99	263.3	-579.1	280.1	260.9	19.21	14.581		
3,700.0	3,659.6	3,670.6	3,589.6	11.4	14.8	-39.28	274.9	-603.4	289.3	269.4	19.92	14.527		
3,800.0	3,757.6	3,770.2	3,685.5	11.9	15.4	-39.54	286.6	-627.7	298.6	277.9	20.63	14.474		
3,900.0	3,855.6	3,869.7	3,781.3	12.3	15.9	-39.80	298.2	-651.9	307.8	286.5	21.34	14.423		
4,000.0	3,953.5	3,969.3	3,877.2	12.7	16.5	-40.03	309.8	-676.2	317.1	295.1	22.06	14.374		
4,100.0	4,051.5	4,068.9	3,973.1	13.2	17.1	-40.25	321.5	-700.5	326.4	303.6	22.78	14.326		
4,200.0	4,149.5	4,168.4	4,068.9	13.6	17.6	-40.47	333.1	-724.8	335.7	312.2	23.51	14.280		
4,300.0	4,247.4	4,268.0	4,164.8	14.0	18.2	-40.66	344.7	-749.1	345.0	320.7	24.23	14.236		
4,400.0	4,345.4	4,367.6	4,260.6	14.5	18.8	-40.85	356.3	-773.3	354.3	329.3	24.96	14.193		
4,500.0	4,443.4	4,467.1	4,356.5	14.9	19.3	-41.03	368.0	-797.6	363.6	337.9	25.69	14.151		
4,600.0	4,541.3	4,566.7	4,452.3	15.3	19.9	-41.20	379.6	-821.9	372.9	346.4	26.42	14.112		
4,700.0	4,639.3	4,666.2	4,548.2	15.8	20.5	-41.36	391.2	-846.2	382.2	355.0	27.15	14.073		
4,800.0	4,737.3	4,765.8	4,644.0	16.2	21.0	-41.52	402.9	-870.4	391.5	363.6	27.89	14.036		
4,900.0	4,835.2	4,865.4	4,739.9	16.6	21.6	-41.66	414.5	-894.7	400.8	372.1	28.63	14.001		

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-323 - Wellbore #1 - Plan #1 (3-14-16)										Offset Site Error:		0.0 ft
Survey Program: 0-MWD												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
5,000.0	4,933.2	4,964.9	4,835.7	17.1	22.2	-41.81	426.1	-919.0	410.1	380.7	29.36	13.966		
5,100.0	5,031.2	5,064.5	4,931.6	17.5	22.7	-41.94	437.7	-943.3	419.4	389.3	30.10	13.933		
5,200.0	5,129.1	5,164.0	5,027.4	17.9	23.3	-42.07	449.4	-967.6	428.7	397.9	30.84	13.901		
5,300.0	5,227.4	5,263.5	5,123.1	18.3	23.9	-42.17	461.0	-991.8	439.4	407.9	31.48	13.960		
5,400.0	5,326.3	5,378.3	5,234.3	18.5	24.4	-42.07	473.5	-1,017.9	451.0	419.0	32.01	14.089		
5,500.0	5,425.7	5,494.1	5,347.4	18.8	24.8	-41.89	484.1	-1,040.1	461.6	429.2	32.45	14.226		
5,600.0	5,525.4	5,610.5	5,462.1	19.0	25.2	-41.63	492.8	-1,058.2	471.3	438.5	32.80	14.368		
5,700.0	5,625.3	5,727.4	5,578.0	19.1	25.5	-41.31	499.5	-1,072.2	479.9	446.8	33.06	14.517		
5,800.0	5,725.3	5,844.9	5,694.9	19.3	25.7	-90.45	504.2	-1,082.0	487.4	454.2	33.25	14.658		
5,900.0	5,825.3	5,962.9	5,812.8	19.4	25.9	-90.14	506.8	-1,087.4	492.0	458.5	33.53	14.675		
6,000.0	5,925.2	6,076.4	5,926.2	19.5	26.0	90.22	507.4	-1,088.6	493.0	459.3	33.73	14.619		
6,100.0	6,024.1	6,175.2	6,025.1	19.5	26.1	91.88	507.4	-1,088.6	493.3	459.9	33.44	14.751		
6,200.0	6,120.2	6,275.8	6,125.5	19.5	26.2	94.48	502.9	-1,088.6	494.6	461.8	32.79	15.085		
6,300.0	6,211.9	6,380.1	6,228.1	19.3	26.2	97.06	484.5	-1,088.6	497.0	465.0	32.03	15.516		
6,400.0	6,297.6	6,488.0	6,330.6	19.1	26.1	99.55	451.0	-1,088.6	500.3	469.1	31.24	16.017		
6,500.0	6,375.9	6,599.8	6,430.7	18.9	26.0	101.89	401.5	-1,088.6	504.3	473.8	30.47	16.551		
6,600.0	6,445.4	6,715.5	6,525.5	18.7	25.8	104.02	335.5	-1,088.6	508.7	478.9	29.80	17.069		
6,700.0	6,504.9	6,835.0	6,611.8	18.5	25.6	105.90	253.0	-1,088.6	513.1	483.8	29.31	17.504		
6,800.0	6,553.5	6,958.0	6,686.2	18.3	25.4	107.46	155.1	-1,088.6	517.2	488.1	29.10	17.773		
6,900.0	6,590.2	7,084.2	6,745.1	18.1	25.2	108.68	43.7	-1,088.6	520.7	491.4	29.26	17.794		
7,000.0	6,614.6	7,212.8	6,785.5	18.0	25.0	109.49	-78.2	-1,088.6	523.1	493.2	29.86	17.519		
7,100.0	6,626.0	7,342.8	6,805.0	18.2	25.1	109.89	-206.6	-1,088.6	524.3	493.4	30.92	16.959		
7,200.0	6,626.8	7,455.8	6,806.2	18.8	25.3	109.89	-319.5	-1,088.6	524.3	491.9	32.41	16.176		
7,300.0	6,626.7	7,555.8	6,805.5	19.7	25.6	109.83	-419.5	-1,088.6	524.1	489.9	34.20	15.325		
7,400.0	6,626.6	7,655.8	6,804.8	20.8	26.2	109.78	-519.5	-1,088.6	523.9	487.7	36.27	14.445		
7,500.0	6,626.4	7,755.8	6,804.1	22.0	26.9	109.72	-619.5	-1,088.6	523.7	485.2	38.58	13.576		
7,600.0	6,626.3	7,855.8	6,803.4	23.3	27.7	109.66	-719.5	-1,088.6	523.5	482.5	41.08	12.744		
7,700.0	6,626.1	7,955.8	6,802.7	24.7	28.8	109.60	-819.5	-1,088.6	523.4	479.6	43.75	11.962		
7,800.0	6,626.0	8,055.8	6,802.0	26.2	29.9	109.55	-919.5	-1,088.6	523.2	476.6	46.56	11.237		
7,900.0	6,625.9	8,155.8	6,801.3	27.7	31.2	109.49	-1,019.5	-1,088.6	523.0	473.5	49.48	10.570		
8,000.0	6,625.7	8,255.8	6,800.6	29.2	32.5	109.43	-1,119.5	-1,088.6	522.8	470.3	52.50	9.959		
8,100.0	6,625.6	8,355.8	6,799.9	30.8	33.9	109.37	-1,219.4	-1,088.6	522.6	467.0	55.59	9.400		
8,200.0	6,625.4	8,455.8	6,799.3	32.4	35.4	109.32	-1,319.4	-1,088.6	522.4	463.7	58.76	8.891		
8,300.0	6,625.3	8,555.7	6,798.6	34.1	36.9	109.26	-1,419.4	-1,088.6	522.2	460.3	61.98	8.426		
8,400.0	6,625.2	8,655.7	6,797.9	35.8	38.4	109.20	-1,519.4	-1,088.6	522.1	456.8	65.26	8.000		
8,500.0	6,625.0	8,755.7	6,797.2	37.5	40.0	109.14	-1,619.4	-1,088.6	521.9	453.3	68.57	7.611		
8,600.0	6,624.9	8,855.7	6,796.5	39.2	41.6	109.08	-1,719.4	-1,088.6	521.7	449.8	71.92	7.253		
8,700.0	6,624.7	8,955.7	6,795.8	40.9	43.3	109.03	-1,819.4	-1,088.6	521.5	446.2	75.31	6.925		
8,800.0	6,624.6	9,055.7	6,795.1	42.7	44.9	108.97	-1,919.4	-1,088.6	521.3	442.6	78.73	6.622		
8,900.0	6,624.5	9,155.7	6,794.4	44.4	46.6	108.91	-2,019.4	-1,088.6	521.1	439.0	82.17	6.343		
9,000.0	6,624.3	9,255.7	6,793.7	46.2	48.3	108.85	-2,119.4	-1,088.6	521.0	435.3	85.63	6.084		
9,100.0	6,624.2	9,355.7	6,793.0	48.0	50.0	108.79	-2,219.4	-1,088.6	520.8	431.7	89.11	5.844		
9,200.0	6,624.0	9,455.7	6,792.3	49.8	51.8	108.74	-2,319.4	-1,088.6	520.6	428.0	92.61	5.621		
9,300.0	6,623.9	9,555.7	6,791.6	51.6	53.5	108.68	-2,419.4	-1,088.6	520.4	424.3	96.13	5.414		
9,400.0	6,623.8	9,655.7	6,790.9	53.4	55.2	108.62	-2,519.4	-1,088.6	520.3	420.6	99.66	5.220		
9,500.0	6,623.6	9,755.7	6,790.2	55.2	57.0	108.56	-2,619.4	-1,088.6	520.1	416.9	103.21	5.039		
9,600.0	6,623.5	9,855.7	6,789.5	57.1	58.8	108.50	-2,719.4	-1,088.6	519.9	413.1	106.77	4.869		
9,700.0	6,623.4	9,955.7	6,788.8	58.9	60.6	108.44	-2,819.4	-1,088.6	519.7	409.4	110.34	4.710		
9,800.0	6,623.2	10,055.7	6,788.1	60.7	62.4	108.39	-2,919.4	-1,088.6	519.5	405.6	113.92	4.561		
9,900.0	6,623.1	10,155.7	6,787.4	62.6	64.2	108.33	-3,019.4	-1,088.6	519.4	401.9	117.51	4.420		

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-323 - Wellbore #1 - Plan #1 (3-14-16)													Offset Site Error:	0.0 ft	
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
10,000.0	6,622.9	10,255.7	6,786.7	64.4	66.0	108.27	-3,119.4	-1,088.6	519.2	398.1	121.11	4.287			
10,100.0	6,622.8	10,355.7	6,786.0	66.3	67.8	108.21	-3,219.4	-1,088.6	519.0	394.3	124.72	4.162			
10,200.0	6,622.7	10,455.7	6,785.3	68.1	69.6	108.15	-3,319.4	-1,088.6	518.8	390.5	128.33	4.043			
10,300.0	6,622.5	10,555.7	6,784.6	70.0	71.4	108.09	-3,419.4	-1,088.6	518.7	386.7	131.96	3.931			
10,400.0	6,622.4	10,655.7	6,783.9	71.9	73.2	108.03	-3,519.4	-1,088.6	518.5	382.9	135.59	3.824			
10,500.0	6,622.2	10,755.7	6,783.2	73.7	75.1	107.98	-3,619.4	-1,088.6	518.3	379.1	139.22	3.723			
10,600.0	6,622.1	10,855.7	6,782.5	75.6	76.9	107.92	-3,719.3	-1,088.6	518.2	375.3	142.87	3.627			
10,700.0	6,622.0	10,955.7	6,781.8	77.5	78.7	107.86	-3,819.3	-1,088.6	518.0	371.5	146.51	3.535			
10,800.0	6,621.8	11,055.7	6,781.1	79.3	80.6	107.80	-3,919.3	-1,088.6	517.8	367.6	150.17	3.448			
10,900.0	6,621.7	11,155.7	6,780.4	81.2	82.4	107.74	-4,019.3	-1,088.6	517.6	363.8	153.83	3.365			
11,000.0	6,621.5	11,255.7	6,779.7	83.1	84.3	107.68	-4,119.3	-1,088.6	517.5	360.0	157.50	3.286			
11,100.0	6,621.4	11,355.7	6,779.0	84.9	86.1	107.62	-4,219.3	-1,088.6	517.3	356.1	161.17	3.210			
11,200.0	6,621.3	11,455.7	6,778.3	86.8	88.0	107.56	-4,319.3	-1,088.6	517.1	352.3	164.84	3.137			
11,300.0	6,621.1	11,555.7	6,777.6	88.7	89.8	107.50	-4,419.3	-1,088.6	517.0	348.4	168.52	3.068			
11,400.0	6,621.0	11,655.7	6,776.9	90.6	91.7	107.45	-4,519.3	-1,088.6	516.8	344.6	172.20	3.001			
11,500.0	6,620.8	11,755.7	6,776.2	92.5	93.6	107.39	-4,619.3	-1,088.6	516.6	340.7	175.89	2.937			
11,600.0	6,620.7	11,855.7	6,775.5	94.4	95.4	107.33	-4,719.3	-1,088.6	516.5	336.9	179.58	2.876			
11,700.0	6,620.6	11,955.7	6,774.8	96.2	97.3	107.27	-4,819.3	-1,088.6	516.3	333.0	183.28	2.817			
11,800.0	6,620.4	12,055.7	6,774.1	98.1	99.2	107.21	-4,919.3	-1,088.6	516.1	329.2	186.98	2.760			
11,900.0	6,620.3	12,155.7	6,773.4	100.0	101.0	107.15	-5,019.3	-1,088.6	516.0	325.3	190.68	2.706			
12,000.0	6,620.1	12,255.7	6,772.7	101.9	102.9	107.09	-5,119.3	-1,088.6	515.8	321.4	194.39	2.653			
12,100.0	6,620.0	12,355.7	6,772.0	103.8	104.8	107.03	-5,219.3	-1,088.6	515.6	317.5	198.10	2.603			
12,200.0	6,619.9	12,455.7	6,771.3	105.7	106.7	106.97	-5,319.3	-1,088.6	515.5	313.7	201.81	2.554			
12,300.0	6,619.7	12,555.7	6,770.6	107.6	108.5	106.91	-5,419.3	-1,088.6	515.3	309.8	205.53	2.507			
12,400.0	6,619.6	12,655.7	6,769.9	109.5	110.4	106.85	-5,519.3	-1,088.6	515.2	305.9	209.25	2.462			
12,500.0	6,619.4	12,755.7	6,769.2	111.4	112.3	106.79	-5,619.3	-1,088.6	515.0	302.0	212.97	2.418			
12,600.0	6,619.3	12,855.7	6,768.5	113.3	114.2	106.73	-5,719.3	-1,088.6	514.8	298.1	216.70	2.376			
12,700.0	6,619.2	12,955.7	6,767.8	115.2	116.1	106.67	-5,819.3	-1,088.6	514.7	294.2	220.43	2.335			
12,800.0	6,619.0	13,055.7	6,767.1	117.1	117.9	106.61	-5,919.3	-1,088.6	514.5	290.4	224.16	2.295			
12,900.0	6,618.9	13,155.7	6,766.4	119.0	119.8	106.56	-6,019.3	-1,088.6	514.3	286.5	227.89	2.257			
13,000.0	6,618.7	13,255.7	6,765.7	120.9	121.7	106.50	-6,119.3	-1,088.6	514.2	282.6	231.63	2.220			
13,100.0	6,618.6	13,355.7	6,765.0	122.8	123.6	106.44	-6,219.2	-1,088.6	514.0	278.7	235.37	2.184			
13,200.0	6,618.5	13,455.7	6,764.3	124.7	125.5	106.38	-6,319.2	-1,088.6	513.9	274.8	239.11	2.149			
13,300.0	6,618.3	13,555.7	6,763.6	126.6	127.4	106.32	-6,419.2	-1,088.6	513.7	270.9	242.86	2.115			
13,400.0	6,618.2	13,655.7	6,762.9	128.5	129.3	106.26	-6,519.2	-1,088.6	513.6	267.0	246.61	2.083			
13,500.0	6,618.0	13,755.7	6,762.3	130.4	131.2	106.20	-6,619.2	-1,088.6	513.4	263.0	250.36	2.051			
13,600.0	6,617.9	13,855.7	6,761.6	132.3	133.0	106.14	-6,719.2	-1,088.6	513.2	259.1	254.11	2.020			
13,700.0	6,617.8	13,955.7	6,760.9	134.2	134.9	106.08	-6,819.2	-1,088.6	513.1	255.2	257.86	1.990			
13,800.0	6,617.6	14,055.7	6,760.2	136.1	136.8	106.02	-6,919.2	-1,088.6	512.9	251.3	261.62	1.961			
13,900.0	6,617.5	14,155.7	6,759.5	138.0	138.7	105.96	-7,019.2	-1,088.6	512.8	247.4	265.38	1.932			
14,000.0	6,617.3	14,255.7	6,758.8	139.9	140.6	105.90	-7,119.2	-1,088.6	512.6	243.5	269.14	1.905			
14,100.0	6,617.2	14,355.7	6,758.1	141.8	142.5	105.84	-7,219.2	-1,088.6	512.5	239.6	272.91	1.878			
14,200.0	6,617.1	14,455.7	6,757.4	143.7	144.4	105.78	-7,319.2	-1,088.6	512.3	235.7	276.68	1.852			
14,249.2	6,617.0	14,504.8	6,757.0	144.6	145.3	105.75	-7,368.4	-1,088.6	512.3	233.7	278.53	1.839 SF			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-423 - Wellbore #1 - Plan #1 (3-14-16)													Offset Site Error:	0.0 ft	
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
0.0	0.0	0.0	0.0	0.0	0.0	-89.54	0.4	-45.1	45.1						
100.0	100.0	100.0	100.0	0.1	0.1	-89.54	0.4	-45.1	45.1	44.9	0.22	200.823			
200.0	200.0	200.0	200.0	0.3	0.3	-89.54	0.4	-45.1	45.1	44.5	0.67	66.941			
300.0	300.0	300.0	300.0	0.6	0.6	-89.54	0.4	-45.1	45.1	44.0	1.12	40.165			
400.0	400.0	400.0	400.0	0.8	0.8	-89.54	0.4	-45.1	45.1	43.6	1.57	28.689	CC, ES		
500.0	500.0	498.9	498.9	1.0	1.0	-88.96	0.8	-46.3	46.3	44.3	2.01	23.020			
600.0	600.0	597.6	597.6	1.2	1.2	-87.40	2.3	-49.9	50.0	47.5	2.45	20.378			
700.0	700.0	696.1	695.8	1.5	1.4	-85.26	4.6	-55.8	56.1	53.2	2.90	19.348			
800.0	800.0	794.2	793.5	1.7	1.7	-82.95	7.9	-64.0	64.8	61.5	3.36	19.300			
900.0	900.0	891.8	890.5	1.9	2.0	-80.77	12.1	-74.5	76.1	72.2	3.83	19.872			
1,000.0	1,000.0	988.8	986.4	2.1	2.2	-78.85	17.2	-87.2	89.9	85.6	4.31	20.840			
1,100.0	1,100.0	1,084.9	1,081.3	2.4	2.6	-77.23	23.1	-102.0	106.2	101.4	4.82	22.055			
1,200.0	1,200.0	1,180.3	1,174.8	2.6	2.9	-75.90	29.9	-118.9	125.1	119.8	5.34	23.416			
1,300.0	1,300.0	1,274.9	1,267.2	2.8	3.3	-25.35	37.4	-137.7	145.3	139.7	5.62	25.857			
1,400.0	1,399.9	1,369.0	1,358.6	3.0	3.7	-24.84	45.8	-158.6	165.6	159.5	6.08	27.255			
1,500.0	1,499.7	1,462.6	1,448.9	3.2	4.2	-24.67	54.9	-181.5	185.9	179.4	6.54	28.435			
1,600.0	1,599.3	1,559.1	1,541.5	3.5	4.7	-24.76	65.0	-206.7	205.8	198.8	7.01	29.342			
1,700.0	1,698.6	1,657.5	1,635.9	3.7	5.3	-25.12	75.3	-232.5	223.5	216.0	7.50	29.781			
1,800.0	1,797.5	1,756.2	1,730.7	4.0	5.8	-25.69	85.7	-258.4	238.9	230.9	8.01	29.836			
1,900.0	1,896.1	1,855.3	1,825.7	4.3	6.4	-26.45	96.1	-284.3	251.9	243.4	8.52	29.560			
2,000.0	1,994.2	1,954.6	1,921.0	4.6	7.0	-27.42	106.5	-310.4	262.8	253.8	9.06	29.002			
2,100.0	2,092.2	2,054.0	2,016.3	5.0	7.6	-28.43	116.9	-336.4	273.2	263.6	9.63	28.373			
2,200.0	2,190.1	2,153.3	2,111.6	5.3	8.1	-29.36	127.3	-362.5	283.7	273.5	10.21	27.778			
2,300.0	2,288.1	2,252.6	2,206.9	5.7	8.7	-30.23	137.7	-388.5	294.3	283.5	10.81	27.218			
2,400.0	2,386.1	2,352.0	2,302.2	6.1	9.3	-31.04	148.2	-414.6	304.9	293.4	11.42	26.691			
2,500.0	2,484.0	2,451.3	2,397.5	6.5	9.9	-31.79	158.6	-440.6	315.5	303.5	12.05	26.195			
2,600.0	2,582.0	2,550.7	2,492.8	6.8	10.5	-32.49	169.0	-466.7	326.2	313.6	12.68	25.729			
2,700.0	2,680.0	2,650.0	2,588.1	7.3	11.1	-33.15	179.4	-492.7	337.0	323.7	13.33	25.290			
2,800.0	2,777.9	2,749.4	2,683.4	7.7	11.7	-33.77	189.8	-518.8	347.8	333.8	13.98	24.878			
2,900.0	2,875.9	2,848.7	2,778.7	8.1	12.3	-34.35	200.3	-544.8	358.6	344.0	14.64	24.491			
3,000.0	2,973.9	2,948.1	2,874.0	8.5	12.8	-34.90	210.7	-570.9	369.5	354.2	15.32	24.126			
3,100.0	3,071.8	3,047.4	2,969.3	8.9	13.4	-35.41	221.1	-596.9	380.4	364.4	16.00	23.784			
3,200.0	3,169.8	3,146.8	3,064.6	9.3	14.0	-35.90	231.5	-623.0	391.4	374.7	16.68	23.461			
3,300.0	3,267.8	3,246.1	3,159.9	9.7	14.6	-36.36	242.0	-649.0	402.3	384.9	17.37	23.157			
3,400.0	3,365.7	3,345.5	3,255.2	10.2	15.2	-36.80	252.4	-675.1	413.3	395.2	18.07	22.870			
3,500.0	3,463.7	3,444.8	3,350.5	10.6	15.8	-37.21	262.8	-701.1	424.3	405.5	18.78	22.599			
3,600.0	3,561.7	3,544.2	3,445.8	11.0	16.4	-37.60	273.2	-727.1	435.3	415.8	19.48	22.343			
3,700.0	3,659.6	3,643.5	3,541.1	11.4	17.0	-37.97	283.6	-753.2	446.4	426.2	20.20	22.101			
3,800.0	3,757.6	3,742.9	3,636.4	11.9	17.6	-38.33	294.1	-779.2	457.4	436.5	20.91	21.872			
3,900.0	3,855.6	3,842.2	3,731.7	12.3	18.2	-38.67	304.5	-805.3	468.5	446.9	21.64	21.654			
4,000.0	3,953.5	3,941.5	3,827.0	12.7	18.8	-38.99	314.9	-831.3	479.6	457.3	22.36	21.448			
4,100.0	4,051.5	4,040.9	3,922.3	13.2	19.4	-39.30	325.3	-857.4	490.7	467.6	23.09	21.253			
4,200.0	4,149.5	4,140.2	4,017.6	13.6	20.0	-39.59	335.7	-883.4	501.8	478.0	23.82	21.067			
4,300.0	4,247.4	4,239.6	4,112.9	14.0	20.6	-39.87	346.2	-909.5	513.0	488.4	24.56	20.891			
4,400.0	4,345.4	4,338.9	4,208.2	14.5	21.2	-40.14	356.6	-935.5	524.1	498.8	25.29	20.722			
4,500.0	4,443.4	4,438.3	4,303.5	14.9	21.8	-40.40	367.0	-961.6	535.3	509.3	26.03	20.562			
4,600.0	4,541.3	4,537.6	4,398.8	15.3	22.4	-40.65	377.4	-987.6	546.5	519.7	26.78	20.409			
4,700.0	4,639.3	4,637.0	4,494.2	15.8	23.0	-40.89	387.9	-1,013.7	557.6	530.1	27.52	20.263			
4,800.0	4,737.3	4,736.3	4,589.5	16.2	23.6	-41.12	398.3	-1,039.7	568.8	540.6	28.27	20.124			
4,900.0	4,835.2	4,835.7	4,684.8	16.6	24.2	-41.34	408.7	-1,065.8	580.0	551.0	29.01	19.990			
5,000.0	4,933.2	4,935.0	4,780.1	17.1	24.7	-41.55	419.1	-1,091.8	591.2	561.5	29.77	19.863			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-423 - Wellbore #1 - Plan #1 (3-14-16)											Offset Site Error:		0.0 ft
Survey Program:		0-MWD											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
5,100.0	5,031.2	5,034.4	4,875.4	17.5	25.3	-41.75	429.5	-1,117.9	602.4	571.9	30.52	19.741			
5,200.0	5,129.1	5,133.7	4,970.7	17.9	25.9	-41.95	440.0	-1,143.9	613.7	582.4	31.27	19.624			
5,300.0	5,227.4	5,232.9	5,065.8	18.3	26.5	-42.20	450.4	-1,169.9	626.3	594.3	31.93	19.615			
5,400.0	5,326.3	5,331.7	5,160.6	18.5	27.1	-42.26	460.7	-1,195.8	641.4	608.9	32.50	19.738			
5,500.0	5,425.7	5,447.9	5,272.4	18.8	27.7	-42.13	472.5	-1,225.2	658.3	625.3	32.99	19.955			
5,600.0	5,525.4	5,573.4	5,394.4	19.0	28.2	-41.89	483.3	-1,252.3	673.9	640.6	33.38	20.189			
5,700.0	5,625.3	5,699.9	5,518.7	19.1	28.6	-41.59	492.2	-1,274.6	688.2	654.5	33.68	20.432			
5,800.0	5,725.3	5,827.6	5,644.9	19.3	29.0	-90.73	499.2	-1,291.9	701.0	667.1	33.91	20.673			
5,900.0	5,825.3	5,956.5	5,773.1	19.4	29.2	-90.32	504.0	-1,304.1	710.4	676.2	34.19	20.776			
6,000.0	5,925.2	6,086.1	5,902.6	19.5	29.4	89.96	506.8	-1,310.9	715.6	681.2	34.45	20.772			
6,100.0	6,024.1	6,207.6	6,024.1	19.5	29.6	91.29	507.4	-1,312.4	717.0	682.8	34.24	20.942			
6,200.0	6,120.2	6,303.8	6,120.3	19.5	29.7	93.31	507.4	-1,312.4	718.2	684.4	33.72	21.301			
6,300.0	6,211.9	6,406.3	6,222.4	19.3	29.7	95.81	500.2	-1,312.4	721.0	688.0	32.98	21.858			
6,400.0	6,297.6	6,514.0	6,327.7	19.1	29.7	98.26	478.0	-1,312.4	725.2	693.0	32.20	22.522			
6,500.0	6,375.9	6,627.7	6,434.3	18.9	29.6	100.63	438.8	-1,312.4	730.6	699.2	31.42	23.252			
6,600.0	6,445.4	6,747.9	6,539.4	18.7	29.5	102.86	380.6	-1,312.4	736.8	706.1	30.71	23.995			
6,700.0	6,504.9	6,875.0	6,639.1	18.5	29.3	104.90	302.0	-1,312.4	743.3	713.2	30.14	24.663			
6,800.0	6,553.5	7,009.0	6,728.6	18.3	29.1	106.67	202.5	-1,312.4	749.5	719.7	29.81	25.143			
6,900.0	6,590.2	7,149.4	6,802.2	18.1	28.8	108.08	83.2	-1,312.4	754.9	725.0	29.85	25.292			
7,000.0	6,614.6	7,295.0	6,854.2	18.0	28.7	109.06	-52.6	-1,312.4	758.7	728.4	30.36	24.989			
7,100.0	6,626.0	7,444.0	6,879.8	18.2	28.7	109.54	-199.1	-1,312.4	760.7	729.2	31.42	24.211			
7,200.0	6,626.8	7,563.6	6,881.9	18.8	28.9	109.58	-318.6	-1,312.4	760.8	727.9	32.89	23.129			
7,300.0	6,626.7	7,663.6	6,881.7	19.7	29.1	109.58	-418.6	-1,312.4	760.8	726.2	34.63	21.970			
7,400.0	6,626.6	7,763.6	6,881.6	20.8	29.5	109.58	-518.6	-1,312.4	760.8	724.2	36.65	20.761			
7,500.0	6,626.4	7,863.6	6,881.4	22.0	30.1	109.58	-618.6	-1,312.4	760.8	721.9	38.90	19.557			
7,600.0	6,626.3	7,963.6	6,881.3	23.3	30.8	109.58	-718.6	-1,312.4	760.8	719.5	41.36	18.396			
7,700.0	6,626.1	8,063.6	6,881.2	24.7	31.6	109.58	-818.6	-1,312.4	760.8	716.8	43.98	17.300			
7,800.0	6,626.0	8,163.6	6,881.0	26.2	32.5	109.58	-918.6	-1,312.4	760.8	714.1	46.74	16.278			
7,900.0	6,625.9	8,263.6	6,880.9	27.7	33.6	109.58	-1,018.6	-1,312.4	760.8	711.2	49.61	15.335			
8,000.0	6,625.7	8,363.6	6,880.7	29.2	34.8	109.58	-1,118.6	-1,312.4	760.8	708.2	52.59	14.468			
8,100.0	6,625.6	8,463.6	6,880.6	30.8	36.0	109.58	-1,218.6	-1,312.4	760.8	705.2	55.64	13.675			
8,200.0	6,625.4	8,563.6	6,880.5	32.4	37.4	109.58	-1,318.6	-1,312.4	760.8	702.1	58.76	12.948			
8,300.0	6,625.3	8,663.6	6,880.3	34.1	38.8	109.58	-1,418.6	-1,312.4	760.8	698.9	61.94	12.284			
8,400.0	6,625.2	8,763.6	6,880.2	35.8	40.2	109.58	-1,518.6	-1,312.4	760.8	695.7	65.17	11.675			
8,500.0	6,625.0	8,863.6	6,880.0	37.5	41.7	109.58	-1,618.6	-1,312.4	760.8	692.4	68.44	11.117			
8,600.0	6,624.9	8,963.6	6,879.9	39.2	43.2	109.58	-1,718.6	-1,312.4	760.8	689.1	71.75	10.605			
8,700.0	6,624.7	9,063.6	6,879.8	40.9	44.8	109.58	-1,818.6	-1,312.4	760.8	685.7	75.08	10.133			
8,800.0	6,624.6	9,163.6	6,879.6	42.7	46.4	109.58	-1,918.6	-1,312.4	760.8	682.4	78.45	9.698			
8,900.0	6,624.5	9,263.6	6,879.5	44.4	48.0	109.58	-2,018.6	-1,312.4	760.8	679.0	81.84	9.296			
9,000.0	6,624.3	9,363.6	6,879.3	46.2	49.7	109.58	-2,118.6	-1,312.4	760.8	675.6	85.26	8.924			
9,100.0	6,624.2	9,463.6	6,879.2	48.0	51.3	109.58	-2,218.6	-1,312.4	760.8	672.1	88.69	8.578			
9,200.0	6,624.0	9,563.6	6,879.1	49.8	53.0	109.58	-2,318.6	-1,312.4	760.8	668.7	92.14	8.257			
9,300.0	6,623.9	9,663.6	6,878.9	51.6	54.7	109.58	-2,418.6	-1,312.4	760.8	665.2	95.60	7.958			
9,400.0	6,623.8	9,763.6	6,878.8	53.4	56.4	109.58	-2,518.6	-1,312.4	760.8	661.7	99.08	7.679			
9,500.0	6,623.6	9,863.6	6,878.6	55.2	58.1	109.58	-2,618.6	-1,312.4	760.8	658.3	102.57	7.418			
9,600.0	6,623.5	9,963.6	6,878.5	57.1	59.9	109.58	-2,718.6	-1,312.4	760.8	654.8	106.07	7.173			
9,700.0	6,623.4	10,063.6	6,878.4	58.9	61.6	109.58	-2,818.6	-1,312.4	760.8	651.2	109.58	6.943			
9,800.0	6,623.2	10,163.6	6,878.2	60.7	63.4	109.58	-2,918.6	-1,312.4	760.8	647.7	113.10	6.727			
9,900.0	6,623.1	10,263.6	6,878.1	62.6	65.2	109.58	-3,018.6	-1,312.4	760.8	644.2	116.63	6.523			
10,000.0	6,622.9	10,363.6	6,877.9	64.4	66.9	109.58	-3,118.6	-1,312.4	760.8	640.7	120.16	6.332			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29M-423 - Wellbore #1 - Plan #1 (3-14-16)													Offset Site Error: 0.0 ft	
Survey Program: 0-MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
10,100.0	6,622.8	10,463.6	6,877.8	66.3	68.7	109.58	-3,218.6	-1,312.4	760.8	637.1	123.71	6.150		
10,200.0	6,622.7	10,563.6	6,877.7	68.1	70.5	109.58	-3,318.6	-1,312.4	760.8	633.6	127.25	5.979		
10,300.0	6,622.5	10,663.6	6,877.5	70.0	72.3	109.58	-3,418.6	-1,312.4	760.8	630.0	130.81	5.816		
10,400.0	6,622.4	10,763.6	6,877.4	71.9	74.1	109.58	-3,518.6	-1,312.4	760.8	626.5	134.37	5.662		
10,500.0	6,622.2	10,863.6	6,877.2	73.7	75.9	109.58	-3,618.6	-1,312.4	760.8	622.9	137.93	5.516		
10,600.0	6,622.1	10,963.6	6,877.1	75.6	77.7	109.58	-3,718.6	-1,312.4	760.8	619.3	141.50	5.377		
10,700.0	6,622.0	11,063.6	6,877.0	77.5	79.6	109.58	-3,818.6	-1,312.4	760.8	615.8	145.07	5.244		
10,800.0	6,621.8	11,163.6	6,876.8	79.3	81.4	109.58	-3,918.6	-1,312.4	760.8	612.2	148.65	5.118		
10,900.0	6,621.7	11,263.6	6,876.7	81.2	83.2	109.58	-4,018.6	-1,312.4	760.8	608.6	152.23	4.998		
11,000.0	6,621.5	11,363.6	6,876.5	83.1	85.0	109.58	-4,118.6	-1,312.4	760.8	605.0	155.81	4.883		
11,100.0	6,621.4	11,463.6	6,876.4	84.9	86.9	109.58	-4,218.6	-1,312.4	760.8	601.4	159.40	4.773		
11,200.0	6,621.3	11,563.6	6,876.3	86.8	88.7	109.58	-4,318.6	-1,312.4	760.8	597.8	162.99	4.668		
11,300.0	6,621.1	11,663.6	6,876.1	88.7	90.6	109.58	-4,418.6	-1,312.4	760.8	594.3	166.58	4.567		
11,400.0	6,621.0	11,763.6	6,876.0	90.6	92.4	109.58	-4,518.6	-1,312.4	760.8	590.7	170.17	4.471		
11,500.0	6,620.8	11,863.6	6,875.8	92.5	94.3	109.58	-4,618.6	-1,312.4	760.8	587.1	173.77	4.378		
11,600.0	6,620.7	11,963.6	6,875.7	94.4	96.1	109.58	-4,718.6	-1,312.4	760.8	583.5	177.37	4.290		
11,700.0	6,620.6	12,063.6	6,875.6	96.2	98.0	109.58	-4,818.6	-1,312.4	760.8	579.9	180.97	4.204		
11,800.0	6,620.4	12,163.6	6,875.4	98.1	99.8	109.58	-4,918.6	-1,312.4	760.8	576.3	184.57	4.122		
11,900.0	6,620.3	12,263.6	6,875.3	100.0	101.7	109.58	-5,018.6	-1,312.4	760.8	572.7	188.18	4.043		
12,000.0	6,620.1	12,363.6	6,875.1	101.9	103.5	109.58	-5,118.6	-1,312.4	760.8	569.0	191.79	3.967		
12,100.0	6,620.0	12,463.6	6,875.0	103.8	105.4	109.58	-5,218.6	-1,312.4	760.8	565.4	195.40	3.894		
12,200.0	6,619.9	12,563.6	6,874.9	105.7	107.3	109.58	-5,318.6	-1,312.4	760.8	561.8	199.01	3.823		
12,300.0	6,619.7	12,663.6	6,874.7	107.6	109.1	109.58	-5,418.6	-1,312.4	760.8	558.2	202.62	3.755		
12,400.0	6,619.6	12,763.6	6,874.6	109.5	111.0	109.58	-5,518.6	-1,312.4	760.8	554.6	206.23	3.689		
12,500.0	6,619.4	12,863.6	6,874.5	111.4	112.9	109.58	-5,618.6	-1,312.4	760.8	551.0	209.84	3.626		
12,600.0	6,619.3	12,963.6	6,874.3	113.3	114.7	109.58	-5,718.6	-1,312.4	760.8	547.4	213.46	3.564		
12,700.0	6,619.2	13,063.6	6,874.2	115.2	116.6	109.58	-5,818.6	-1,312.4	760.8	543.8	217.08	3.505		
12,800.0	6,619.0	13,163.6	6,874.0	117.1	118.5	109.58	-5,918.6	-1,312.4	760.8	540.1	220.69	3.447		
12,900.0	6,618.9	13,263.6	6,873.9	119.0	120.4	109.58	-6,018.6	-1,312.4	760.8	536.5	224.31	3.392		
13,000.0	6,618.7	13,363.6	6,873.8	120.9	122.2	109.58	-6,118.6	-1,312.4	760.8	532.9	227.93	3.338		
13,100.0	6,618.6	13,463.6	6,873.6	122.8	124.1	109.58	-6,218.6	-1,312.4	760.8	529.3	231.56	3.286		
13,200.0	6,618.5	13,563.6	6,873.5	124.7	126.0	109.58	-6,318.6	-1,312.4	760.8	525.7	235.18	3.235		
13,300.0	6,618.3	13,663.6	6,873.3	126.6	127.9	109.58	-6,418.6	-1,312.4	760.8	522.0	238.80	3.186		
13,400.0	6,618.2	13,763.6	6,873.2	128.5	129.8	109.58	-6,518.6	-1,312.4	760.8	518.4	242.42	3.138		
13,500.0	6,618.0	13,863.6	6,873.1	130.4	131.6	109.58	-6,618.6	-1,312.4	760.8	514.8	246.05	3.092		
13,600.0	6,617.9	13,963.6	6,872.9	132.3	133.5	109.58	-6,718.6	-1,312.4	760.8	511.2	249.67	3.047		
13,700.0	6,617.8	14,063.6	6,872.8	134.2	135.4	109.58	-6,818.6	-1,312.4	760.8	507.5	253.30	3.004		
13,800.0	6,617.6	14,163.6	6,872.6	136.1	137.3	109.58	-6,918.6	-1,312.4	760.8	503.9	256.93	2.961		
13,900.0	6,617.5	14,263.6	6,872.5	138.0	139.2	109.58	-7,018.6	-1,312.4	760.8	500.3	260.55	2.920		
14,000.0	6,617.3	14,363.6	6,872.4	139.9	141.1	109.58	-7,118.6	-1,312.4	760.8	496.7	264.18	2.880		
14,100.0	6,617.2	14,463.6	6,872.2	141.8	143.0	109.58	-7,218.6	-1,312.4	760.8	493.0	267.81	2.841		
14,200.0	6,617.1	14,563.6	6,872.1	143.7	144.9	109.58	-7,318.6	-1,312.4	760.8	489.4	271.44	2.803		
14,249.2	6,617.0	14,612.7	6,872.0	144.6	145.8	109.58	-7,367.8	-1,312.4	760.8	487.6	273.23	2.785 SF		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-203 - Wellbore #1 - Plan #1 (3-14-16)													Offset Site Error:	0.0 ft	
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	90.70	-0.4	29.8	29.8						
100.0	100.0	100.0	100.0	0.1	0.1	90.70	-0.4	29.8	29.8	29.6	0.22	132.648			
200.0	200.0	200.0	200.0	0.3	0.3	90.70	-0.4	29.8	29.8	29.1	0.67	44.216			
300.0	300.0	300.0	300.0	0.6	0.6	90.70	-0.4	29.8	29.8	28.7	1.12	26.530			
400.0	400.0	400.0	400.0	0.8	0.8	90.70	-0.4	29.8	29.8	28.2	1.57	18.950			
500.0	500.0	500.0	500.0	1.0	1.0	90.70	-0.4	29.8	29.8	27.8	2.02	14.739			
600.0	600.0	600.0	600.0	1.2	1.2	90.70	-0.4	29.8	29.8	27.3	2.47	12.059			
700.0	700.0	700.0	700.0	1.5	1.5	90.70	-0.4	29.8	29.8	26.9	2.92	10.204			
800.0	800.0	800.0	800.0	1.7	1.7	90.70	-0.4	29.8	29.8	26.4	3.37	8.843			
900.0	900.0	900.0	900.0	1.9	1.9	90.70	-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	90.70	-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	90.70	-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	90.70	-0.4	29.8	29.8	24.6	5.17	5.767 CC, ES			
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	141.78	-0.4	29.8	30.8	25.2	5.61	5.492			
1,400.0	1,399.9	1,399.9	1,399.9	3.0	3.0	145.85	-0.4	29.8	34.0	28.0	6.05	5.618			
1,500.0	1,499.7	1,499.7	1,499.7	3.2	3.3	151.13	-0.4	29.8	39.6	33.1	6.49	6.100			
1,600.0	1,599.3	1,599.3	1,599.3	3.5	3.5	156.38	-0.4	29.8	47.8	40.9	6.92	6.905			
1,700.0	1,698.6	1,698.6	1,698.6	3.7	3.7	160.92	-0.4	29.8	58.8	51.4	7.36	7.990			
1,800.0	1,797.5	1,797.5	1,797.5	4.0	3.9	164.57	-0.4	29.8	72.5	64.7	7.78	9.314			
1,900.0	1,896.1	1,896.1	1,896.1	4.3	4.1	167.42	-0.4	29.8	88.9	80.7	8.21	10.837			
2,000.0	1,994.2	1,994.2	1,994.2	4.6	4.4	169.62	-0.4	29.8	108.0	99.3	8.64	12.504			
2,100.0	2,092.2	2,094.5	2,094.5	5.0	4.6	170.92	0.8	29.5	126.9	117.8	9.09	13.966			
2,200.0	2,190.1	2,195.8	2,195.7	5.3	4.8	171.19	4.4	28.3	143.9	134.4	9.54	15.081			
2,300.0	2,288.1	2,297.7	2,297.3	5.7	5.1	170.75	10.7	26.4	159.0	149.0	10.01	15.885			
2,400.0	2,386.1	2,400.1	2,399.3	6.1	5.3	169.78	19.6	23.7	172.1	161.6	10.48	16.416			
2,500.0	2,484.0	2,502.8	2,501.4	6.5	5.5	168.35	31.2	20.1	183.3	172.3	10.97	16.709			
2,600.0	2,582.0	2,605.6	2,603.1	6.8	5.8	166.51	45.4	15.7	192.7	181.2	11.47	16.794			
2,700.0	2,680.0	2,705.0	2,701.2	7.3	6.0	164.65	60.3	11.2	201.5	189.5	11.99	16.804			
2,800.0	2,777.9	2,804.4	2,799.4	7.7	6.3	162.95	75.1	6.6	210.5	197.9	12.52	16.805			
2,900.0	2,875.9	2,903.8	2,897.6	8.1	6.6	161.39	90.0	2.1	219.6	206.5	13.07	16.800			
3,000.0	2,973.9	3,003.2	2,995.8	8.5	6.9	159.95	104.8	-2.5	228.9	215.3	13.64	16.788			
3,100.0	3,071.8	3,102.6	3,094.0	8.9	7.2	158.62	119.7	-7.1	238.3	224.1	14.21	16.770			
3,200.0	3,169.8	3,202.0	3,192.2	9.3	7.5	157.40	134.6	-11.6	247.9	233.1	14.80	16.748			
3,300.0	3,267.8	3,301.4	3,290.4	9.7	7.8	156.27	149.4	-16.2	257.5	242.1	15.40	16.721			
3,400.0	3,365.7	3,400.9	3,388.5	10.2	8.1	155.22	164.3	-20.8	267.3	251.3	16.01	16.692			
3,500.0	3,463.7	3,500.3	3,486.7	10.6	8.4	154.24	179.1	-25.3	277.1	260.5	16.63	16.660			
3,600.0	3,561.7	3,599.7	3,584.9	11.0	8.7	153.33	194.0	-29.9	287.0	269.8	17.26	16.626			
3,700.0	3,659.6	3,699.1	3,683.1	11.4	9.1	152.48	208.8	-34.4	297.0	279.1	17.90	16.590			
3,800.0	3,757.6	3,798.5	3,781.3	11.9	9.4	151.69	223.7	-39.0	307.0	288.5	18.55	16.554			
3,900.0	3,855.6	3,897.9	3,879.5	12.3	9.7	150.94	238.5	-43.6	317.1	297.9	19.20	16.518			
4,000.0	3,953.5	3,997.3	3,977.7	12.7	10.0	150.25	253.4	-48.1	327.2	307.4	19.85	16.481			
4,100.0	4,051.5	4,096.7	4,075.9	13.2	10.4	149.59	268.3	-52.7	337.4	316.9	20.52	16.445			
4,200.0	4,149.5	4,196.1	4,174.0	13.6	10.7	148.97	283.1	-57.3	347.6	326.4	21.19	16.408			
4,300.0	4,247.4	4,295.5	4,272.2	14.0	11.0	148.39	298.0	-61.8	357.9	336.0	21.86	16.373			
4,400.0	4,345.4	4,394.9	4,370.4	14.5	11.4	147.84	312.8	-66.4	368.2	345.6	22.54	16.338			
4,500.0	4,443.4	4,494.4	4,468.6	14.9	11.7	147.32	327.7	-71.0	378.5	355.3	23.22	16.303			
4,600.0	4,541.3	4,593.8	4,566.8	15.3	12.1	146.83	342.5	-75.5	388.9	365.0	23.90	16.270			
4,700.0	4,639.3	4,693.2	4,665.0	15.8	12.4	146.36	357.4	-80.1	399.2	374.6	24.59	16.237			
4,800.0	4,737.3	4,792.6	4,763.2	16.2	12.7	145.92	372.2	-84.6	409.6	384.4	25.28	16.205			
4,900.0	4,835.2	4,892.0	4,861.3	16.6	13.1	145.50	387.1	-89.2	420.1	394.1	25.97	16.174			
5,000.0	4,933.2	4,991.4	4,959.5	17.1	13.4	145.10	401.9	-93.8	430.5	403.8	26.67	16.144			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-203 - Wellbore #1 - Plan #1 (3-14-16)													Offset Site Error:	0.0 ft	
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
5,100.0	5,031.2	5,090.8	5,057.7	17.5	13.8	144.72	416.8	-98.3	441.0	413.6	27.37	16.114			
5,200.0	5,129.1	5,190.2	5,155.9	17.9	14.1	144.36	431.7	-102.9	451.5	423.4	28.07	16.086			
5,300.0	5,227.4	5,289.7	5,254.2	18.3	14.5	143.98	446.5	-107.5	460.5	431.7	28.76	16.011			
5,400.0	5,326.3	5,389.4	5,352.6	18.5	14.8	143.33	461.4	-112.0	466.7	437.2	29.45	15.848			
5,500.0	5,425.7	5,488.5	5,450.5	18.8	15.2	142.42	476.2	-116.6	470.2	440.1	30.13	15.607			
5,600.0	5,525.4	5,582.9	5,544.1	19.0	15.4	141.51	488.6	-120.4	471.8	441.1	30.68	15.376			
5,700.0	5,625.3	5,677.7	5,638.3	19.1	15.6	140.69	498.0	-123.3	471.8	440.7	31.16	15.142			
5,800.0	5,725.3	5,772.7	5,733.0	19.3	15.8	90.42	504.5	-125.3	470.4	438.8	31.57	14.898			
5,900.0	5,825.3	5,868.0	5,828.2	19.4	16.0	90.00	508.0	-126.3	469.3	437.3	31.96	14.681			
5,972.1	5,897.3	5,937.0	5,897.3	19.5	16.1	-90.34	508.6	-126.5	469.1	436.8	32.21	14.562			
6,000.0	5,925.2	5,964.9	5,925.2	19.5	16.2	-90.39	508.6	-126.5	469.1	436.8	32.30	14.523			
6,100.0	6,024.1	6,065.4	6,025.5	19.5	16.3	-91.63	504.1	-126.5	469.2	436.7	32.58	14.405			
6,200.0	6,120.2	6,167.3	6,125.8	19.5	16.3	-92.87	486.4	-126.5	469.6	437.0	32.62	14.398			
6,300.0	6,211.9	6,270.7	6,224.2	19.3	16.2	-94.07	454.9	-126.5	470.2	437.8	32.45	14.492			
6,400.0	6,297.6	6,375.5	6,318.7	19.1	16.0	-95.21	409.7	-126.5	471.0	438.9	32.11	14.668			
6,500.0	6,375.9	6,481.7	6,407.2	18.9	15.8	-96.25	351.2	-126.5	471.9	440.2	31.68	14.895			
6,600.0	6,445.4	6,589.3	6,487.7	18.7	15.6	-97.19	280.0	-126.5	472.8	441.5	31.26	15.124			
6,700.0	6,504.9	6,698.0	6,558.1	18.5	15.4	-98.00	197.3	-126.5	473.7	442.7	30.98	15.289			
6,800.0	6,553.5	6,807.7	6,616.6	18.3	15.3	-98.66	104.6	-126.5	474.5	443.5	30.98	15.316			
6,900.0	6,590.2	6,918.3	6,661.4	18.1	15.5	-99.16	3.6	-126.5	475.1	443.7	31.37	15.144			
7,000.0	6,614.6	7,029.5	6,691.4	18.0	15.9	-99.49	-103.4	-126.5	475.6	443.3	32.23	14.753			
7,100.0	6,626.0	7,141.0	6,705.5	18.2	16.7	-99.64	-213.9	-126.5	475.8	442.2	33.58	14.170			
7,200.0	6,626.8	7,245.8	6,706.3	18.8	17.6	-99.61	-318.7	-126.5	475.7	440.4	35.28	13.484			
7,300.0	6,626.7	7,345.8	6,705.6	19.7	18.6	-99.55	-418.7	-126.5	475.6	438.4	37.24	12.774			
7,400.0	6,626.6	7,445.8	6,705.0	20.8	19.7	-99.49	-518.7	-126.5	475.6	436.1	39.46	12.052			
7,500.0	6,626.4	7,545.8	6,704.4	22.0	21.0	-99.44	-618.7	-126.5	475.5	433.6	41.91	11.346			
7,600.0	6,626.3	7,645.8	6,703.8	23.3	22.3	-99.38	-718.7	-126.5	475.4	430.9	44.55	10.671			
7,700.0	6,626.1	7,745.8	6,703.1	24.7	23.7	-99.32	-818.7	-126.5	475.3	428.0	47.35	10.039			
7,800.0	6,626.0	7,845.8	6,702.5	26.2	25.2	-99.26	-918.7	-126.5	475.2	425.0	50.28	9.452			
7,900.0	6,625.9	7,945.8	6,701.9	27.7	26.8	-99.20	-1,018.7	-126.5	475.2	421.8	53.32	8.912			
8,000.0	6,625.7	8,045.8	6,701.2	29.2	28.3	-99.15	-1,118.7	-126.5	475.1	418.6	56.45	8.415			
8,100.0	6,625.6	8,145.8	6,700.6	30.8	30.0	-99.09	-1,218.7	-126.5	475.0	415.3	59.67	7.961			
8,200.0	6,625.4	8,245.8	6,700.0	32.4	31.6	-99.03	-1,318.7	-126.5	474.9	412.0	62.95	7.545			
8,300.0	6,625.3	8,345.8	6,699.4	34.1	33.3	-98.97	-1,418.7	-126.5	474.9	408.6	66.28	7.164			
8,400.0	6,625.2	8,445.8	6,698.7	35.8	35.0	-98.91	-1,518.7	-126.5	474.8	405.1	69.67	6.815			
8,500.0	6,625.0	8,545.8	6,698.1	37.5	36.8	-98.85	-1,618.7	-126.5	474.7	401.6	73.10	6.494			
8,600.0	6,624.9	8,645.8	6,697.5	39.2	38.5	-98.80	-1,718.7	-126.5	474.6	398.1	76.56	6.199			
8,700.0	6,624.7	8,745.8	6,696.8	40.9	40.3	-98.74	-1,818.7	-126.5	474.6	394.5	80.06	5.928			
8,800.0	6,624.6	8,845.8	6,696.2	42.7	42.1	-98.68	-1,918.7	-126.5	474.5	390.9	83.58	5.677			
8,900.0	6,624.5	8,945.8	6,695.6	44.4	43.8	-98.62	-2,018.7	-126.5	474.4	387.3	87.13	5.445			
9,000.0	6,624.3	9,045.8	6,695.0	46.2	45.6	-98.56	-2,118.7	-126.5	474.3	383.6	90.70	5.230			
9,100.0	6,624.2	9,145.8	6,694.3	48.0	47.5	-98.50	-2,218.7	-126.5	474.3	380.0	94.29	5.030			
9,200.0	6,624.0	9,245.8	6,693.7	49.8	49.3	-98.45	-2,318.7	-126.5	474.2	376.3	97.90	4.844			
9,300.0	6,623.9	9,345.8	6,693.1	51.6	51.1	-98.39	-2,418.7	-126.5	474.1	372.6	101.52	4.670			
9,400.0	6,623.8	9,445.8	6,692.4	53.4	52.9	-98.33	-2,518.7	-126.5	474.1	368.9	105.16	4.508			
9,500.0	6,623.6	9,545.8	6,691.8	55.2	54.8	-98.27	-2,618.7	-126.5	474.0	365.2	108.81	4.356			
9,600.0	6,623.5	9,645.8	6,691.2	57.1	56.6	-98.21	-2,718.7	-126.5	473.9	361.4	112.48	4.213			
9,700.0	6,623.4	9,745.8	6,690.6	58.9	58.5	-98.15	-2,818.7	-126.5	473.8	357.7	116.15	4.080			
9,800.0	6,623.2	9,845.8	6,689.9	60.7	60.3	-98.10	-2,918.7	-126.5	473.8	353.9	119.83	3.954			
9,900.0	6,623.1	9,945.8	6,689.3	62.6	62.2	-98.04	-3,018.7	-126.5	473.7	350.2	123.53	3.835			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-203 - Wellbore #1 - Plan #1 (3-14-16)													Offset Site Error:	0.0 ft	
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
10,000.0	6,622.9	10,045.8	6,688.7	64.4	64.0	-97.98	-3,118.6	-126.5	473.6	346.4	127.23	3.723			
10,100.0	6,622.8	10,145.8	6,688.0	66.3	65.9	-97.92	-3,218.6	-126.5	473.6	342.6	130.94	3.617			
10,200.0	6,622.7	10,245.8	6,687.4	68.1	67.8	-97.86	-3,318.6	-126.5	473.5	338.9	134.65	3.516			
10,300.0	6,622.5	10,345.8	6,686.8	70.0	69.6	-97.80	-3,418.6	-126.5	473.4	335.1	138.37	3.421			
10,400.0	6,622.4	10,445.8	6,686.2	71.9	71.5	-97.74	-3,518.6	-126.5	473.4	331.3	142.10	3.331			
10,500.0	6,622.2	10,545.8	6,685.5	73.7	73.4	-97.69	-3,618.6	-126.5	473.3	327.5	145.84	3.245			
10,600.0	6,622.1	10,645.8	6,684.9	75.6	75.3	-97.63	-3,718.6	-126.5	473.2	323.7	149.58	3.164			
10,700.0	6,622.0	10,745.8	6,684.3	77.5	77.1	-97.57	-3,818.6	-126.5	473.2	319.9	153.32	3.086			
10,800.0	6,621.8	10,845.8	6,683.6	79.3	79.0	-97.51	-3,918.6	-126.5	473.1	316.0	157.07	3.012			
10,900.0	6,621.7	10,945.8	6,683.0	81.2	80.9	-97.45	-4,018.6	-126.5	473.0	312.2	160.82	2.941			
11,000.0	6,621.5	11,045.8	6,682.4	83.1	82.8	-97.39	-4,118.6	-126.5	473.0	308.4	164.58	2.874			
11,100.0	6,621.4	11,145.8	6,681.8	84.9	84.7	-97.33	-4,218.6	-126.5	472.9	304.6	168.34	2.809			
11,200.0	6,621.3	11,245.8	6,681.1	86.8	86.6	-97.27	-4,318.6	-126.5	472.9	300.8	172.10	2.748			
11,300.0	6,621.1	11,345.8	6,680.5	88.7	88.5	-97.22	-4,418.6	-126.5	472.8	296.9	175.87	2.688			
11,400.0	6,621.0	11,445.8	6,679.9	90.6	90.4	-97.16	-4,518.6	-126.5	472.7	293.1	179.64	2.632			
11,500.0	6,620.8	11,545.8	6,679.2	92.5	92.2	-97.10	-4,618.6	-126.5	472.7	289.3	183.42	2.577			
11,600.0	6,620.7	11,645.8	6,678.6	94.4	94.1	-97.04	-4,718.6	-126.5	472.6	285.4	187.20	2.525			
11,700.0	6,620.6	11,745.8	6,678.0	96.2	96.0	-96.98	-4,818.6	-126.5	472.6	281.6	190.98	2.474			
11,800.0	6,620.4	11,845.8	6,677.4	98.1	97.9	-96.92	-4,918.6	-126.5	472.5	277.7	194.76	2.426			
11,900.0	6,620.3	11,945.8	6,676.7	100.0	99.8	-96.86	-5,018.6	-126.5	472.4	273.9	198.55	2.380			
12,000.0	6,620.1	12,045.8	6,676.1	101.9	101.7	-96.80	-5,118.6	-126.5	472.4	270.0	202.33	2.335			
12,100.0	6,620.0	12,145.8	6,675.5	103.8	103.6	-96.75	-5,218.6	-126.5	472.3	266.2	206.12	2.291			
12,200.0	6,619.9	12,245.8	6,674.8	105.7	105.5	-96.69	-5,318.6	-126.5	472.3	262.4	209.92	2.250			
12,300.0	6,619.7	12,345.8	6,674.2	107.6	107.4	-96.63	-5,418.6	-126.5	472.2	258.5	213.71	2.210			
12,400.0	6,619.6	12,445.8	6,673.6	109.5	109.3	-96.57	-5,518.6	-126.5	472.2	254.6	217.51	2.171			
12,500.0	6,619.4	12,545.8	6,673.0	111.4	111.2	-96.51	-5,618.6	-126.5	472.1	250.8	221.31	2.133			
12,600.0	6,619.3	12,645.8	6,672.3	113.3	113.1	-96.45	-5,718.6	-126.5	472.0	246.9	225.11	2.097			
12,700.0	6,619.2	12,745.8	6,671.7	115.2	115.0	-96.39	-5,818.6	-126.5	472.0	243.1	228.91	2.062			
12,800.0	6,619.0	12,845.8	6,671.1	117.1	116.9	-96.33	-5,918.6	-126.5	471.9	239.2	232.71	2.028			
12,900.0	6,618.9	12,945.8	6,670.5	119.0	118.8	-96.27	-6,018.6	-126.5	471.9	235.4	236.52	1.995			
13,000.0	6,618.7	13,045.8	6,669.8	120.9	120.7	-96.21	-6,118.6	-126.5	471.8	231.5	240.33	1.963			
13,100.0	6,618.6	13,145.8	6,669.2	122.8	122.6	-96.16	-6,218.5	-126.5	471.8	227.6	244.14	1.932			
13,200.0	6,618.5	13,245.8	6,668.6	124.7	124.5	-96.10	-6,318.5	-126.5	471.7	223.8	247.95	1.903			
13,300.0	6,618.3	13,345.8	6,667.9	126.6	126.4	-96.04	-6,418.5	-126.5	471.7	219.9	251.76	1.874			
13,400.0	6,618.2	13,445.8	6,667.3	128.5	128.3	-95.98	-6,518.5	-126.5	471.6	216.1	255.57	1.845			
13,500.0	6,618.0	13,545.8	6,666.7	130.4	130.3	-95.92	-6,618.5	-126.5	471.6	212.2	259.39	1.818			
13,600.0	6,617.9	13,645.8	6,666.1	132.3	132.2	-95.86	-6,718.5	-126.5	471.5	208.3	263.20	1.791			
13,700.0	6,617.8	13,745.8	6,665.4	134.2	134.1	-95.80	-6,818.5	-126.5	471.5	204.5	267.02	1.766			
13,800.0	6,617.6	13,845.8	6,664.8	136.1	136.0	-95.74	-6,918.5	-126.5	471.4	200.6	270.84	1.741			
13,900.0	6,617.5	13,945.8	6,664.2	138.0	137.9	-95.68	-7,018.5	-126.5	471.4	196.7	274.66	1.716			
14,000.0	6,617.3	14,045.8	6,663.5	139.9	139.8	-95.62	-7,118.5	-126.5	471.3	192.8	278.48	1.693			
14,100.0	6,617.2	14,145.8	6,662.9	141.8	141.7	-95.57	-7,218.5	-126.5	471.3	189.0	282.30	1.669			
14,200.0	6,617.1	14,245.8	6,662.3	143.7	143.6	-95.51	-7,318.5	-126.5	471.2	185.1	286.12	1.647			
14,237.7	6,617.0	14,283.4	6,662.0	144.4	144.3	-95.48	-7,356.2	-126.5	471.2	183.7	287.56	1.639			
14,249.2	6,617.0	14,290.7	6,662.0	144.6	144.5	-95.48	-7,363.4	-126.5	471.2	183.3	287.92	1.637 SF			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-243 - Wellbore #1 - Plan #1 (3-14-16)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-90.02	0.0	-15.0	15.0	15.0	0.00	N/A		
100.0	100.0	100.0	100.0	0.1	0.1	-90.02	0.0	-15.0	15.0	14.8	0.22	66.939		
200.0	200.0	200.0	200.0	0.3	0.3	-90.02	0.0	-15.0	15.0	14.4	0.67	22.313		
300.0	300.0	300.0	300.0	0.6	0.6	-90.02	0.0	-15.0	15.0	13.9	1.12	13.388		
400.0	400.0	400.0	400.0	0.8	0.8	-90.02	0.0	-15.0	15.0	13.5	1.57	9.563		
500.0	500.0	500.0	500.0	1.0	1.0	-90.02	0.0	-15.0	15.0	13.0	2.02	7.438		
600.0	600.0	600.0	600.0	1.2	1.2	-90.02	0.0	-15.0	15.0	12.6	2.47	6.085		
700.0	700.0	700.0	700.0	1.5	1.5	-90.02	0.0	-15.0	15.0	12.1	2.92	5.149		
800.0	800.0	800.0	800.0	1.7	1.7	-90.02	0.0	-15.0	15.0	11.7	3.37	4.463		
900.0	900.0	900.0	900.0	1.9	1.9	-90.02	0.0	-15.0	15.0	11.2	3.82	3.938		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-90.02	0.0	-15.0	15.0	10.8	4.27	3.523 CC		
1,100.0	1,100.0	1,099.6	1,099.6	2.4	2.4	-87.59	0.7	-16.2	16.2	11.5	4.71	3.431		
1,200.0	1,200.0	1,199.2	1,199.1	2.6	2.6	-82.02	2.7	-19.5	19.7	14.5	5.15	3.817		
1,300.0	1,300.0	1,298.5	1,298.2	2.8	2.8	-27.98	6.1	-25.0	24.6	19.0	5.58	4.406		
1,400.0	1,399.9	1,397.7	1,397.0	3.0	3.0	-25.71	10.9	-32.6	29.8	23.7	6.01	4.948		
1,500.0	1,499.7	1,496.7	1,495.3	3.2	3.3	-24.72	17.0	-42.5	35.1	28.6	6.45	5.438		
1,600.0	1,599.3	1,595.6	1,593.2	3.5	3.5	-24.52	24.4	-54.4	40.5	33.6	6.88	5.881		
1,700.0	1,698.6	1,694.4	1,690.6	3.7	3.8	-24.82	33.1	-68.6	46.0	38.7	7.32	6.279		
1,800.0	1,797.5	1,793.0	1,787.4	4.0	4.2	-25.46	43.2	-84.8	51.6	43.8	7.78	6.638		
1,900.0	1,896.1	1,891.5	1,883.5	4.3	4.5	-26.34	54.5	-103.1	57.4	49.1	8.25	6.957		
2,000.0	1,994.2	1,991.3	1,980.4	4.6	4.9	-27.68	66.8	-122.9	62.3	53.6	8.75	7.127		
2,100.0	2,092.2	2,091.2	2,077.6	5.0	5.4	-29.12	79.1	-142.7	66.8	57.5	9.29	7.188		
2,200.0	2,190.1	2,191.0	2,174.7	5.3	5.8	-30.38	91.4	-162.6	71.2	61.4	9.85	7.231		
2,300.0	2,288.1	2,290.9	2,271.8	5.7	6.2	-31.50	103.6	-182.4	75.7	65.3	10.42	7.260		
2,400.0	2,386.1	2,390.8	2,368.9	6.1	6.7	-32.48	115.9	-202.2	80.2	69.2	11.02	7.278		
2,500.0	2,484.0	2,490.7	2,466.1	6.5	7.1	-33.37	128.2	-222.1	84.7	73.1	11.63	7.286		
2,600.0	2,582.0	2,590.6	2,563.2	6.8	7.6	-34.16	140.5	-241.9	89.3	77.0	12.25	7.287		
2,700.0	2,680.0	2,690.5	2,660.3	7.3	8.1	-34.88	152.8	-261.7	93.8	81.0	12.89	7.282		
2,800.0	2,777.9	2,790.4	2,757.4	7.7	8.6	-35.52	165.1	-281.6	98.4	84.9	13.53	7.273		
2,900.0	2,875.9	2,890.3	2,854.6	8.1	9.0	-36.12	177.4	-301.4	103.0	88.8	14.19	7.261		
3,000.0	2,973.9	2,990.2	2,951.7	8.5	9.5	-36.66	189.6	-321.2	107.6	92.8	14.85	7.247		
3,100.0	3,071.8	3,090.0	3,048.8	8.9	10.0	-37.15	201.9	-341.1	112.2	96.7	15.52	7.231		
3,200.0	3,169.8	3,189.9	3,146.0	9.3	10.5	-37.61	214.2	-360.9	116.8	100.6	16.19	7.214		
3,300.0	3,267.8	3,289.8	3,243.1	9.7	11.0	-38.03	226.5	-380.7	121.4	104.6	16.88	7.196		
3,400.0	3,365.7	3,389.7	3,340.2	10.2	11.4	-38.43	238.8	-400.6	126.1	108.5	17.56	7.178		
3,500.0	3,463.7	3,489.6	3,437.3	10.6	11.9	-38.79	251.1	-420.4	130.7	112.4	18.26	7.159		
3,600.0	3,561.7	3,589.5	3,534.5	11.0	12.4	-39.13	263.4	-440.2	135.3	116.4	18.95	7.141		
3,700.0	3,659.6	3,689.4	3,631.6	11.4	12.9	-39.45	275.6	-460.1	140.0	120.3	19.66	7.122		
3,800.0	3,757.6	3,789.3	3,728.7	11.9	13.4	-39.74	287.9	-479.9	144.6	124.3	20.36	7.104		
3,900.0	3,855.6	3,889.2	3,825.8	12.3	13.9	-40.02	300.2	-499.7	149.3	128.2	21.07	7.086		
4,000.0	3,953.5	3,989.1	3,923.0	12.7	14.4	-40.28	312.5	-519.6	153.9	132.2	21.78	7.069		
4,100.0	4,051.5	4,088.9	4,020.1	13.2	14.9	-40.53	324.8	-539.4	158.6	136.1	22.49	7.051		
4,200.0	4,149.5	4,188.8	4,117.2	13.6	15.4	-40.76	337.1	-559.2	163.3	140.0	23.21	7.035		
4,300.0	4,247.4	4,288.7	4,214.3	14.0	15.9	-40.98	349.3	-579.1	167.9	144.0	23.93	7.018		
4,400.0	4,345.4	4,388.6	4,311.5	14.5	16.4	-41.18	361.6	-598.9	172.6	147.9	24.65	7.002		
4,500.0	4,443.4	4,488.5	4,408.6	14.9	16.9	-41.38	373.9	-618.7	177.2	151.9	25.37	6.987		
4,600.0	4,541.3	4,588.4	4,505.7	15.3	17.4	-41.57	386.2	-638.6	181.9	155.8	26.09	6.972		
4,700.0	4,639.3	4,688.3	4,602.9	15.8	17.9	-41.74	398.5	-658.4	186.6	159.8	26.82	6.958		
4,800.0	4,737.3	4,788.2	4,700.0	16.2	18.4	-41.91	410.8	-678.2	191.3	163.7	27.54	6.944		
4,900.0	4,835.2	4,888.1	4,797.1	16.6	18.9	-42.07	423.1	-698.1	195.9	167.7	28.27	6.930		
5,000.0	4,933.2	4,987.9	4,894.2	17.1	19.4	-42.22	435.3	-717.9	200.6	171.6	29.00	6.917		

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-243 - Wellbore #1 - Plan #1 (3-14-16)											Offset Site Error:		0.0 ft
Survey Program:		0-MWD											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
5,100.0	5,031.2	5,087.8	4,991.4	17.5	19.9	-42.37	447.6	-737.7	205.3	175.5	29.73	6.904			
5,200.0	5,129.1	5,187.7	5,088.5	17.9	20.4	-42.51	459.9	-757.6	210.0	179.5	30.46	6.892			
5,300.0	5,227.4	5,291.3	5,189.3	18.3	20.8	-42.46	472.3	-777.6	215.5	184.5	31.07	6.937			
5,400.0	5,326.3	5,397.9	5,293.9	18.5	21.2	-42.28	483.3	-795.3	220.9	189.3	31.55	7.002			
5,500.0	5,425.7	5,504.7	5,399.3	18.8	21.5	-42.02	492.2	-809.7	225.7	193.8	31.94	7.068			
5,600.0	5,525.4	5,611.7	5,505.6	19.0	21.8	-41.70	499.0	-820.7	230.1	197.8	32.25	7.134			
5,700.0	5,625.3	5,718.9	5,612.4	19.1	22.0	-41.30	503.8	-828.4	233.9	201.4	32.47	7.203			
5,800.0	5,725.3	5,826.3	5,719.6	19.3	22.2	-90.39	506.4	-832.6	237.1	204.5	32.64	7.264			
5,900.0	5,825.3	5,932.0	5,825.3	19.4	22.3	-90.24	507.0	-833.6	238.0	205.1	32.93	7.227			
5,957.1	5,882.3	5,989.0	5,882.3	19.5	22.4	90.08	507.0	-833.6	238.0	205.0	33.02	7.208			
6,000.0	5,925.2	6,031.9	5,925.2	19.5	22.4	90.37	507.0	-833.6	238.0	204.9	33.07	7.197			
6,100.0	6,024.1	6,131.9	6,025.2	19.5	22.5	93.26	504.4	-833.6	238.4	205.9	32.54	7.326			
6,200.0	6,120.2	6,233.8	6,125.8	19.5	22.5	96.32	489.4	-833.6	239.5	207.7	31.80	7.530			
6,300.0	6,211.9	6,337.5	6,225.3	19.3	22.5	99.27	460.4	-833.6	241.2	210.2	30.99	7.784			
6,400.0	6,297.6	6,443.0	6,321.6	19.1	22.3	102.04	417.4	-833.6	243.4	213.3	30.15	8.073			
6,500.0	6,375.9	6,550.3	6,412.5	18.9	22.1	104.57	360.5	-833.6	246.0	216.6	29.37	8.376			
6,600.0	6,445.4	6,659.4	6,495.8	18.7	21.9	106.82	290.2	-833.6	248.7	220.0	28.71	8.663			
6,700.0	6,504.9	6,770.2	6,569.3	18.5	21.7	108.74	207.5	-833.6	251.4	223.2	28.25	8.900			
6,800.0	6,553.5	6,882.4	6,630.7	18.3	21.5	110.31	113.7	-833.6	253.9	225.8	28.06	9.046			
6,900.0	6,590.2	6,995.8	6,678.2	18.1	21.3	111.50	10.9	-833.6	255.9	227.6	28.23	9.063			
7,000.0	6,614.6	7,110.0	6,710.1	18.0	21.2	112.30	-98.8	-833.6	257.3	228.4	28.82	8.926			
7,100.0	6,626.0	7,224.9	6,725.3	18.2	21.3	112.69	-212.5	-833.6	258.0	228.1	29.82	8.650			
7,200.0	6,626.8	7,331.4	6,726.2	18.8	21.6	112.66	-318.9	-833.6	257.9	226.6	31.30	8.240			
7,300.0	6,626.7	7,431.4	6,725.5	19.7	22.1	112.55	-418.9	-833.6	257.7	224.6	33.12	7.782			
7,400.0	6,626.6	7,531.4	6,724.8	20.8	22.9	112.43	-518.9	-833.6	257.5	222.3	35.21	7.312			
7,500.0	6,626.4	7,631.4	6,724.1	22.0	23.9	112.32	-618.9	-833.6	257.3	219.7	37.55	6.853			
7,600.0	6,626.3	7,731.4	6,723.4	23.3	25.1	112.20	-718.9	-833.6	257.1	217.0	40.07	6.415			
7,700.0	6,626.1	7,831.3	6,722.7	24.7	26.3	112.09	-818.9	-833.6	256.9	214.1	42.76	6.007			
7,800.0	6,626.0	7,931.3	6,722.0	26.2	27.7	111.97	-918.9	-833.6	256.7	211.1	45.58	5.631			
7,900.0	6,625.9	8,031.3	6,721.3	27.7	29.1	111.86	-1,018.9	-833.6	256.4	207.9	48.51	5.286			
8,000.0	6,625.7	8,131.3	6,720.6	29.2	30.6	111.74	-1,118.9	-833.6	256.2	204.7	51.54	4.972			
8,100.0	6,625.6	8,231.3	6,719.9	30.8	32.1	111.62	-1,218.9	-833.6	256.0	201.4	54.64	4.686			
8,200.0	6,625.4	8,331.3	6,719.2	32.4	33.6	111.51	-1,318.9	-833.6	255.8	198.0	57.81	4.425			
8,300.0	6,625.3	8,431.3	6,718.5	34.1	35.2	111.39	-1,418.9	-833.6	255.6	194.6	61.04	4.187			
8,400.0	6,625.2	8,531.3	6,717.8	35.8	36.9	111.28	-1,518.9	-833.6	255.4	191.1	64.32	3.971			
8,500.0	6,625.0	8,631.3	6,717.1	37.5	38.5	111.16	-1,618.9	-833.6	255.2	187.6	67.65	3.773			
8,600.0	6,624.9	8,731.3	6,716.4	39.2	40.2	111.04	-1,718.9	-833.6	255.0	184.0	71.01	3.591			
8,700.0	6,624.7	8,831.3	6,715.7	40.9	41.9	110.92	-1,818.9	-833.6	254.8	180.4	74.40	3.425			
8,800.0	6,624.6	8,931.3	6,715.1	42.7	43.6	110.81	-1,918.9	-833.6	254.6	176.8	77.82	3.272			
8,900.0	6,624.5	9,031.3	6,714.4	44.4	45.3	110.69	-2,018.9	-833.6	254.4	173.1	81.27	3.130			
9,000.0	6,624.3	9,131.3	6,713.7	46.2	47.1	110.57	-2,118.9	-833.6	254.2	169.5	84.75	3.000			
9,100.0	6,624.2	9,231.3	6,713.0	48.0	48.8	110.45	-2,218.9	-833.6	254.0	165.8	88.24	2.879			
9,200.0	6,624.0	9,331.3	6,712.3	49.8	50.6	110.34	-2,318.9	-833.6	253.8	162.1	91.76	2.766			
9,300.0	6,623.9	9,431.3	6,711.6	51.6	52.4	110.22	-2,418.8	-833.6	253.6	158.3	95.29	2.662			
9,400.0	6,623.8	9,531.3	6,710.9	53.4	54.2	110.10	-2,518.8	-833.6	253.4	154.6	98.84	2.564			
9,500.0	6,623.6	9,631.3	6,710.2	55.2	56.0	109.98	-2,618.8	-833.6	253.3	150.9	102.40	2.473			
9,600.0	6,623.5	9,731.3	6,709.5	57.1	57.8	109.86	-2,718.8	-833.6	253.1	147.1	105.98	2.388			
9,700.0	6,623.4	9,831.3	6,708.8	58.9	59.6	109.74	-2,818.8	-833.6	252.9	143.3	109.57	2.308			
9,800.0	6,623.2	9,931.3	6,708.1	60.7	61.4	109.62	-2,918.8	-833.6	252.7	139.5	113.18	2.233			
9,900.0	6,623.1	10,031.3	6,707.4	62.6	63.2	109.50	-3,018.8	-833.6	252.5	135.7	116.79	2.162			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-243 - Wellbore #1 - Plan #1 (3-14-16)										Offset Site Error:		0.0 ft
Survey Program: 0-MWD												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
10,000.0	6,622.9	10,131.3	6,706.7	64.4	65.1	109.38	-3,118.8	-833.6	252.3	131.9	120.42	2.095		
10,100.0	6,622.8	10,231.3	6,706.0	66.3	66.9	109.26	-3,218.8	-833.6	252.1	128.1	124.05	2.032		
10,200.0	6,622.7	10,331.3	6,705.3	68.1	68.7	109.14	-3,318.8	-833.6	251.9	124.2	127.70	1.973		
10,300.0	6,622.5	10,431.3	6,704.6	70.0	70.6	109.02	-3,418.8	-833.6	251.8	120.4	131.35	1.917		
10,400.0	6,622.4	10,531.3	6,703.9	71.9	72.4	108.90	-3,518.8	-833.6	251.6	116.6	135.02	1.863		
10,500.0	6,622.2	10,631.3	6,703.2	73.7	74.3	108.78	-3,618.8	-833.6	251.4	112.7	138.69	1.813		
10,600.0	6,622.1	10,731.3	6,702.5	75.6	76.1	108.66	-3,718.8	-833.6	251.2	108.9	142.37	1.765		
10,700.0	6,622.0	10,831.3	6,701.8	77.5	78.0	108.54	-3,818.8	-833.6	251.0	105.0	146.06	1.719		
10,800.0	6,621.8	10,931.3	6,701.1	79.3	79.8	108.42	-3,918.8	-833.6	250.9	101.1	149.75	1.675		
10,900.0	6,621.7	11,031.3	6,700.4	81.2	81.7	108.30	-4,018.8	-833.6	250.7	97.2	153.46	1.634		
11,000.0	6,621.5	11,131.3	6,699.7	83.1	83.6	108.18	-4,118.8	-833.6	250.5	93.3	157.17	1.594		
11,100.0	6,621.4	11,231.3	6,699.0	84.9	85.4	108.06	-4,218.8	-833.6	250.3	89.5	160.88	1.556		
11,200.0	6,621.3	11,331.3	6,698.3	86.8	87.3	107.94	-4,318.8	-833.6	250.2	85.6	164.61	1.520		
11,300.0	6,621.1	11,431.3	6,697.6	88.7	89.2	107.81	-4,418.8	-833.6	250.0	81.7	168.33	1.485 Level 3		
11,400.0	6,621.0	11,531.3	6,696.9	90.6	91.0	107.69	-4,518.8	-833.6	249.8	77.8	172.07	1.452 Level 3		
11,500.0	6,620.8	11,631.3	6,696.2	92.5	92.9	107.57	-4,618.8	-833.6	249.7	73.8	175.81	1.420 Level 3		
11,600.0	6,620.7	11,731.3	6,695.5	94.4	94.8	107.45	-4,718.8	-833.6	249.5	69.9	179.56	1.389 Level 3		
11,700.0	6,620.6	11,831.3	6,694.8	96.2	96.7	107.33	-4,818.8	-833.6	249.3	66.0	183.31	1.360 Level 3		
11,800.0	6,620.4	11,931.3	6,694.1	98.1	98.6	107.20	-4,918.7	-833.6	249.2	62.1	187.06	1.332 Level 3		
11,900.0	6,620.3	12,031.3	6,693.4	100.0	100.4	107.08	-5,018.7	-833.6	249.0	58.2	190.83	1.305 Level 3		
12,000.0	6,620.1	12,131.3	6,692.7	101.9	102.3	106.96	-5,118.7	-833.6	248.8	54.2	194.60	1.279 Level 3		
12,100.0	6,620.0	12,231.3	6,692.0	103.8	104.2	106.83	-5,218.7	-833.6	248.7	50.3	198.37	1.254 Level 3		
12,200.0	6,619.9	12,331.3	6,691.3	105.7	106.1	106.71	-5,318.7	-833.6	248.5	46.4	202.15	1.229 Level 2		
12,300.0	6,619.7	12,431.3	6,690.6	107.6	108.0	106.59	-5,418.7	-833.6	248.3	42.4	205.93	1.206 Level 2		
12,400.0	6,619.6	12,531.3	6,689.9	109.5	109.9	106.46	-5,518.7	-833.6	248.2	38.5	209.71	1.183 Level 2		
12,500.0	6,619.4	12,631.3	6,689.2	111.4	111.8	106.34	-5,618.7	-833.6	248.0	34.5	213.51	1.162 Level 2		
12,600.0	6,619.3	12,731.3	6,688.5	113.3	113.6	106.22	-5,718.7	-833.6	247.9	30.6	217.30	1.141 Level 2		
12,700.0	6,619.2	12,831.3	6,687.8	115.2	115.5	106.09	-5,818.7	-833.6	247.7	26.6	221.10	1.120 Level 2		
12,800.0	6,619.0	12,931.3	6,687.1	117.1	117.4	105.97	-5,918.7	-833.6	247.6	22.7	224.91	1.101 Level 2		
12,900.0	6,618.9	13,031.3	6,686.4	119.0	119.3	105.84	-6,018.7	-833.6	247.4	18.7	228.71	1.082 Level 2		
13,000.0	6,618.7	13,131.3	6,685.7	120.9	121.2	105.72	-6,118.7	-833.6	247.3	14.7	232.53	1.063 Level 2		
13,100.0	6,618.6	13,231.3	6,685.0	122.8	123.1	105.59	-6,218.7	-833.6	247.1	10.8	236.34	1.046 Level 2		
13,200.0	6,618.5	13,331.3	6,684.3	124.7	125.0	105.47	-6,318.7	-833.6	247.0	6.8	240.16	1.028 Level 2		
13,300.0	6,618.3	13,431.3	6,683.6	126.6	126.9	105.34	-6,418.7	-833.6	246.8	2.8	243.99	1.012 Level 2		
13,400.0	6,618.2	13,531.3	6,682.9	128.5	128.8	105.22	-6,518.7	-833.6	246.7	-1.2	247.82	0.995 Level 1		
13,500.0	6,618.0	13,631.3	6,682.2	130.4	130.7	105.09	-6,618.7	-833.6	246.5	-5.1	251.65	0.980 Level 1		
13,600.0	6,617.9	13,731.3	6,681.5	132.3	132.6	104.97	-6,718.7	-833.6	246.4	-9.1	255.48	0.964 Level 1		
13,700.0	6,617.8	13,831.3	6,680.8	134.2	134.5	104.84	-6,818.7	-833.6	246.2	-13.1	259.32	0.950 Level 1		
13,800.0	6,617.6	13,931.3	6,680.1	136.1	136.4	104.72	-6,918.7	-833.6	246.1	-17.1	263.17	0.935 Level 1		
13,900.0	6,617.5	14,031.3	6,679.4	138.0	138.3	104.59	-7,018.7	-833.6	245.9	-21.1	267.01	0.921 Level 1		
14,000.0	6,617.3	14,131.3	6,678.7	139.9	140.2	104.47	-7,118.7	-833.6	245.8	-25.1	270.86	0.908 Level 1		
14,100.0	6,617.2	14,231.2	6,678.1	141.8	142.1	104.34	-7,218.7	-833.6	245.7	-29.0	274.71	0.894 Level 1		
14,200.0	6,617.1	14,331.2	6,677.4	143.7	144.0	104.21	-7,318.7	-833.6	245.5	-33.0	278.57	0.881 Level 1		
14,249.2	6,617.0	14,380.4	6,677.0	144.6	144.9	104.15	-7,367.8	-833.6	245.5	-35.0	280.46	0.875 Level 1, ES, SF		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-303 - Wellbore #1 - Plan #1 (3-15-16)											Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
0.0	0.0	0.0	0.0	0.0	0.0	90.03	0.0	15.0	15.0	15.0	0.00	N/A			
100.0	100.0	100.0	100.0	0.1	0.1	90.03	0.0	15.0	15.0	14.8	0.22	66.939			
200.0	200.0	200.0	200.0	0.3	0.3	90.03	0.0	15.0	15.0	14.4	0.67	22.313			
300.0	300.0	300.0	300.0	0.6	0.6	90.03	0.0	15.0	15.0	13.9	1.12	13.388			
400.0	400.0	400.0	400.0	0.8	0.8	90.03	0.0	15.0	15.0	13.5	1.57	9.563			
500.0	500.0	500.0	500.0	1.0	1.0	90.03	0.0	15.0	15.0	13.0	2.02	7.438			
600.0	600.0	600.0	600.0	1.2	1.2	90.03	0.0	15.0	15.0	12.6	2.47	6.085			
700.0	700.0	700.0	700.0	1.5	1.5	90.03	0.0	15.0	15.0	12.1	2.92	5.149			
800.0	800.0	800.0	800.0	1.7	1.7	90.03	0.0	15.0	15.0	11.7	3.37	4.463			
900.0	900.0	900.0	900.0	1.9	1.9	90.03	0.0	15.0	15.0	11.2	3.82	3.938			
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	90.03	0.0	15.0	15.0	10.8	4.27	3.523			
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	90.03	0.0	15.0	15.0	10.3	4.72	3.188			
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	90.03	0.0	15.0	15.0	9.9	5.17	2.910 CC, ES			
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	142.59	0.0	15.0	16.1	10.5	5.61	2.862			
1,400.0	1,399.9	1,399.9	1,399.9	3.0	3.0	149.65	0.0	15.0	19.3	13.3	6.05	3.194			
1,500.0	1,499.7	1,500.2	1,500.2	3.2	3.3	155.37	1.0	14.3	24.1	17.7	6.49	3.722			
1,600.0	1,599.3	1,600.6	1,600.5	3.5	3.5	158.14	4.2	11.9	29.4	22.5	6.91	4.248			
1,700.0	1,698.6	1,701.2	1,700.9	3.7	3.7	159.19	9.5	7.9	34.9	27.6	7.34	4.753			
1,800.0	1,797.5	1,801.8	1,801.1	4.0	3.9	159.20	16.9	2.4	40.7	32.9	7.78	5.233			
1,900.0	1,896.1	1,902.6	1,901.2	4.3	4.2	158.55	26.4	-4.7	46.7	38.5	8.22	5.687			
2,000.0	1,994.2	2,003.5	2,001.0	4.6	4.4	157.44	38.1	-13.4	52.9	44.3	8.68	6.099			
2,100.0	2,092.2	2,103.6	2,099.7	5.0	4.7	155.82	51.1	-23.1	58.3	49.1	9.18	6.354			
2,200.0	2,190.1	2,203.4	2,198.3	5.3	5.0	154.46	64.1	-32.8	63.7	54.0	9.70	6.571			
2,300.0	2,288.1	2,303.3	2,296.8	5.7	5.3	153.30	77.1	-42.5	69.1	58.9	10.23	6.758			
2,400.0	2,386.1	2,403.1	2,395.3	6.1	5.6	152.32	90.0	-52.2	74.6	63.8	10.78	6.920			
2,500.0	2,484.0	2,502.9	2,493.8	6.5	6.0	151.47	103.0	-61.9	80.1	68.7	11.34	7.060			
2,600.0	2,582.0	2,602.8	2,592.3	6.8	6.3	150.72	116.0	-71.7	85.5	73.6	11.91	7.181			
2,700.0	2,680.0	2,702.6	2,690.9	7.3	6.6	150.07	129.0	-81.4	91.0	78.5	12.50	7.286			
2,800.0	2,777.9	2,802.5	2,789.4	7.7	7.0	149.49	142.0	-91.1	96.6	83.5	13.09	7.378			
2,900.0	2,875.9	2,902.3	2,887.9	8.1	7.3	148.98	155.0	-100.8	102.1	88.4	13.68	7.458			
3,000.0	2,973.9	3,002.2	2,986.4	8.5	7.6	148.52	168.0	-110.5	107.6	93.3	14.29	7.529			
3,100.0	3,071.8	3,102.0	3,084.9	8.9	8.0	148.10	180.9	-120.2	113.1	98.2	14.90	7.591			
3,200.0	3,169.8	3,201.8	3,183.4	9.3	8.3	147.72	193.9	-129.9	118.7	103.1	15.52	7.646			
3,300.0	3,267.8	3,301.7	3,282.0	9.7	8.7	147.38	206.9	-139.6	124.2	108.1	16.14	7.695			
3,400.0	3,365.7	3,401.5	3,380.5	10.2	9.0	147.06	219.9	-149.3	129.7	113.0	16.77	7.738			
3,500.0	3,463.7	3,501.4	3,479.0	10.6	9.4	146.77	232.9	-159.0	135.3	117.9	17.40	7.777			
3,600.0	3,561.7	3,601.2	3,577.5	11.0	9.8	146.50	245.9	-168.7	140.8	122.8	18.03	7.812			
3,700.0	3,659.6	3,701.1	3,676.0	11.4	10.1	146.26	258.9	-178.4	146.4	127.7	18.66	7.843			
3,800.0	3,757.6	3,800.9	3,774.6	11.9	10.5	146.03	271.9	-188.1	151.9	132.6	19.30	7.871			
3,900.0	3,855.6	3,900.8	3,873.1	12.3	10.8	145.82	284.8	-197.8	157.5	137.6	19.95	7.897			
4,000.0	3,953.5	4,000.6	3,971.6	12.7	11.2	145.62	297.8	-207.5	163.1	142.5	20.59	7.920			
4,100.0	4,051.5	4,100.4	4,070.1	13.2	11.6	145.43	310.8	-217.2	168.6	147.4	21.24	7.940			
4,200.0	4,149.5	4,200.3	4,168.6	13.6	11.9	145.26	323.8	-226.9	174.2	152.3	21.88	7.959			
4,300.0	4,247.4	4,300.1	4,267.2	14.0	12.3	145.10	336.8	-236.6	179.8	157.2	22.53	7.977			
4,400.0	4,345.4	4,400.0	4,365.7	14.5	12.7	144.95	349.8	-246.3	185.3	162.1	23.19	7.993			
4,500.0	4,443.4	4,499.8	4,464.2	14.9	13.0	144.80	362.8	-256.0	190.9	167.0	23.84	8.007			
4,600.0	4,541.3	4,599.7	4,562.7	15.3	13.4	144.67	375.8	-265.7	196.5	172.0	24.49	8.021			
4,700.0	4,639.3	4,699.5	4,661.2	15.8	13.8	144.54	388.7	-275.4	202.0	176.9	25.15	8.033			
4,800.0	4,737.3	4,799.4	4,759.7	16.2	14.1	144.42	401.7	-285.1	207.6	181.8	25.81	8.044			
4,900.0	4,835.2	4,899.2	4,858.3	16.6	14.5	144.30	414.7	-294.9	213.2	186.7	26.46	8.055			
5,000.0	4,933.2	4,999.0	4,956.8	17.1	14.9	144.19	427.7	-304.6	218.7	191.6	27.12	8.064			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-303 - Wellbore #1 - Plan #1 (3-15-16)											Offset Site Error:		0.0 ft			
Survey Program: 0-MWD															Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning				
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor						
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)	(ft)						
5,100.0	5,031.2	5,098.9	5,055.3	17.5	15.2	144.09	440.7	-314.3	224.3	196.5	27.78	8.073						
5,200.0	5,129.1	5,198.7	5,153.8	17.9	15.6	143.99	453.7	-324.0	229.9	201.4	28.45	8.081						
5,300.0	5,227.4	5,298.6	5,252.4	18.3	16.0	143.68	466.7	-333.7	233.9	204.8	29.11	8.036						
5,400.0	5,326.3	5,397.7	5,350.2	18.5	16.3	142.85	479.5	-343.3	235.2	205.4	29.81	7.890						
5,500.0	5,425.7	5,492.7	5,444.2	18.8	16.6	141.93	490.2	-351.3	235.2	204.8	30.42	7.733						
5,600.0	5,525.4	5,587.7	5,538.7	19.0	16.8	141.11	498.4	-357.4	234.6	203.7	30.94	7.582						
5,700.0	5,625.3	5,682.9	5,633.6	19.1	17.0	140.36	504.1	-361.7	233.4	202.0	31.39	7.433						
5,800.0	5,725.3	5,778.1	5,728.7	19.3	17.2	90.18	507.3	-364.0	231.6	199.8	31.78	7.286						
5,900.0	5,825.3	5,874.7	5,825.3	19.4	17.3	90.00	508.0	-364.5	231.0	198.9	32.13	7.190						
5,946.1	5,871.4	5,920.8	5,871.4	19.5	17.4	-90.21	508.0	-364.5	231.0	198.7	32.30	7.152						
6,000.0	5,925.2	5,974.6	5,925.2	19.5	17.5	-90.63	508.0	-364.5	231.1	198.5	32.54	7.102						
6,100.0	6,024.1	6,073.5	6,024.1	19.5	17.6	-94.16	508.0	-364.5	231.7	198.4	33.28	6.961						
6,200.0	6,120.2	6,175.0	6,125.3	19.5	17.7	-99.15	501.1	-364.5	234.1	200.2	33.96	6.894						
6,300.0	6,211.9	6,279.5	6,227.5	19.3	17.7	-103.93	480.1	-364.5	238.3	204.2	34.18	6.973						
6,400.0	6,297.6	6,387.2	6,328.9	19.1	17.6	-108.38	444.0	-364.5	243.9	210.0	33.88	7.200						
6,500.0	6,375.9	6,498.2	6,427.0	18.9	17.4	-112.39	392.3	-364.5	250.5	217.4	33.11	7.566						
6,600.0	6,445.4	6,612.5	6,519.2	18.7	17.1	-115.89	324.8	-364.5	257.4	225.5	31.99	8.047						
6,700.0	6,504.9	6,730.0	6,602.3	18.5	16.9	-118.83	241.9	-364.5	264.3	233.6	30.76	8.593						
6,800.0	6,553.5	6,850.5	6,673.3	18.3	16.6	-121.19	144.7	-364.5	270.5	240.8	29.70	9.109						
6,900.0	6,590.2	6,973.5	6,729.1	18.1	16.4	-122.95	35.2	-364.5	275.6	246.4	29.14	9.458						
7,000.0	6,614.6	7,098.5	6,767.1	18.0	16.2	-124.10	-83.7	-364.5	279.1	249.8	29.34	9.512						
7,100.0	6,626.0	7,224.6	6,785.3	18.2	17.0	-124.63	-208.3	-364.5	280.8	250.3	30.46	9.218						
7,200.0	6,626.8	7,335.2	6,786.5	18.8	18.0	-124.65	-318.9	-364.5	280.8	248.7	32.12	8.743						
7,300.0	6,626.7	7,435.2	6,786.1	19.7	19.0	-124.60	-418.9	-364.5	280.7	246.8	33.90	8.279						
7,400.0	6,626.6	7,535.2	6,785.7	20.8	20.2	-124.55	-518.9	-364.5	280.5	244.6	35.89	7.816						
7,500.0	6,626.4	7,635.2	6,785.3	22.0	21.4	-124.51	-618.9	-364.5	280.4	242.3	38.07	7.365						
7,600.0	6,626.3	7,735.2	6,784.8	23.3	22.8	-124.46	-718.9	-364.5	280.2	239.8	40.39	6.938						
7,700.0	6,626.1	7,835.2	6,784.4	24.7	24.2	-124.41	-818.9	-364.5	280.1	237.2	42.84	6.537						
7,800.0	6,626.0	7,935.2	6,784.0	26.2	25.6	-124.37	-918.9	-364.5	279.9	234.5	45.40	6.165						
7,900.0	6,625.9	8,035.2	6,783.6	27.7	27.2	-124.32	-1,018.9	-364.5	279.7	231.7	48.05	5.822						
8,000.0	6,625.7	8,135.2	6,783.2	29.2	28.7	-124.27	-1,118.9	-364.5	279.6	228.8	50.77	5.506						
8,100.0	6,625.6	8,235.2	6,782.7	30.8	30.3	-124.22	-1,218.9	-364.5	279.4	225.9	53.57	5.216						
8,200.0	6,625.4	8,335.2	6,782.3	32.4	32.0	-124.18	-1,318.9	-364.5	279.3	222.9	56.42	4.950						
8,300.0	6,625.3	8,435.2	6,781.9	34.1	33.7	-124.13	-1,418.9	-364.5	279.1	219.8	59.31	4.706						
8,400.0	6,625.2	8,535.2	6,781.5	35.8	35.4	-124.08	-1,518.9	-364.5	279.0	216.7	62.25	4.481						
8,500.0	6,625.0	8,635.2	6,781.1	37.5	37.1	-124.03	-1,618.9	-364.5	278.8	213.6	65.23	4.274						
8,600.0	6,624.9	8,735.2	6,780.7	39.2	38.8	-123.99	-1,718.9	-364.5	278.6	210.4	68.24	4.083						
8,700.0	6,624.7	8,835.2	6,780.2	40.9	40.6	-123.94	-1,818.9	-364.5	278.5	207.2	71.28	3.907						
8,800.0	6,624.6	8,935.2	6,779.8	42.7	42.3	-123.89	-1,918.9	-364.5	278.3	204.0	74.35	3.744						
8,900.0	6,624.5	9,035.2	6,779.4	44.4	44.1	-123.84	-2,018.9	-364.5	278.2	200.7	77.44	3.592						
9,000.0	6,624.3	9,135.2	6,779.0	46.2	45.9	-123.80	-2,118.9	-364.5	278.0	197.5	80.55	3.452						
9,100.0	6,624.2	9,235.2	6,778.6	48.0	47.7	-123.75	-2,218.9	-364.5	277.9	194.2	83.68	3.321						
9,200.0	6,624.0	9,335.2	6,778.1	49.8	49.5	-123.70	-2,318.9	-364.5	277.7	190.9	86.82	3.199						
9,300.0	6,623.9	9,435.2	6,777.7	51.6	51.3	-123.65	-2,418.9	-364.5	277.6	187.6	89.98	3.085						
9,400.0	6,623.8	9,535.2	6,777.3	53.4	53.1	-123.60	-2,518.9	-364.5	277.4	184.2	93.16	2.978						
9,500.0	6,623.6	9,635.2	6,776.9	55.2	55.0	-123.56	-2,618.9	-364.5	277.2	180.9	96.35	2.878						
9,600.0	6,623.5	9,735.2	6,776.5	57.1	56.8	-123.51	-2,718.9	-364.5	277.1	177.5	99.55	2.783						
9,700.0	6,623.4	9,835.2	6,776.0	58.9	58.6	-123.46	-2,818.9	-364.5	276.9	174.2	102.77	2.695						
9,800.0	6,623.2	9,935.2	6,775.6	60.7	60.5	-123.41	-2,918.9	-364.5	276.8	170.8	105.99	2.611						
9,900.0	6,623.1	10,035.2	6,775.2	62.6	62.3	-123.36	-3,018.9	-364.5	276.6	167.4	109.22	2.533						

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (3-14-16)	Offset TVD Reference:	Offset Datum

Offset Design Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29R-303 - Wellbore #1 - Plan #1 (3-15-16)												Offset Site Error: 0.0 ft	
Survey Program: 0-MWD												Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance					Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation		Separation Factor
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)		
10,000.0	6,622.9	10,135.2	6,774.8	64.4	64.2	-123.32	-3,118.9	-364.5	276.5	164.0	112.47	2.458	
10,100.0	6,622.8	10,235.2	6,774.4	66.3	66.1	-123.27	-3,218.9	-364.5	276.3	160.6	115.72	2.388	
10,200.0	6,622.7	10,335.2	6,774.0	68.1	67.9	-123.22	-3,318.9	-364.5	276.2	157.2	118.98	2.321	
10,300.0	6,622.5	10,435.2	6,773.5	70.0	69.8	-123.17	-3,418.9	-364.5	276.0	153.8	122.25	2.258	
10,400.0	6,622.4	10,535.2	6,773.1	71.9	71.7	-123.12	-3,518.9	-364.5	275.9	150.3	125.53	2.198	
10,500.0	6,622.2	10,635.2	6,772.7	73.7	73.5	-123.07	-3,618.9	-364.5	275.7	146.9	128.81	2.140	
10,600.0	6,622.1	10,735.2	6,772.3	75.6	75.4	-123.02	-3,718.9	-364.5	275.6	143.5	132.10	2.086	
10,700.0	6,622.0	10,835.2	6,771.9	77.5	77.3	-122.98	-3,818.9	-364.5	275.4	140.0	135.40	2.034	
10,800.0	6,621.8	10,935.2	6,771.4	79.3	79.1	-122.93	-3,918.9	-364.5	275.3	136.6	138.70	1.985	
10,900.0	6,621.7	11,035.2	6,771.0	81.2	81.0	-122.88	-4,018.9	-364.5	275.1	133.1	142.01	1.937	
11,000.0	6,621.5	11,135.2	6,770.6	83.1	82.9	-122.83	-4,118.9	-364.5	275.0	129.6	145.33	1.892	
11,100.0	6,621.4	11,235.2	6,770.2	84.9	84.8	-122.78	-4,218.9	-364.5	274.8	126.2	148.65	1.849	
11,200.0	6,621.3	11,335.2	6,769.8	86.8	86.7	-122.73	-4,318.9	-364.5	274.7	122.7	151.98	1.807	
11,300.0	6,621.1	11,435.2	6,769.3	88.7	88.6	-122.68	-4,418.9	-364.5	274.5	119.2	155.31	1.767	
11,400.0	6,621.0	11,535.2	6,768.9	90.6	90.4	-122.63	-4,518.9	-364.5	274.4	115.7	158.65	1.729	
11,500.0	6,620.8	11,635.2	6,768.5	92.5	92.3	-122.58	-4,618.9	-364.5	274.2	112.2	161.99	1.693	
11,600.0	6,620.7	11,735.2	6,768.1	94.4	94.2	-122.53	-4,718.9	-364.5	274.1	108.7	165.34	1.658	
11,700.0	6,620.6	11,835.2	6,767.7	96.2	96.1	-122.49	-4,818.8	-364.5	273.9	105.2	168.69	1.624	
11,800.0	6,620.4	11,935.2	6,767.2	98.1	98.0	-122.44	-4,918.8	-364.5	273.8	101.7	172.05	1.591	
11,900.0	6,620.3	12,035.2	6,766.8	100.0	99.9	-122.39	-5,018.8	-364.5	273.6	98.2	175.41	1.560	
12,000.0	6,620.1	12,135.2	6,766.4	101.9	101.8	-122.34	-5,118.8	-364.5	273.5	94.7	178.78	1.530	
12,100.0	6,620.0	12,235.2	6,766.0	103.8	103.7	-122.29	-5,218.8	-364.5	273.3	91.2	182.15	1.500	
12,200.0	6,619.9	12,335.2	6,765.6	105.7	105.6	-122.24	-5,318.8	-364.5	273.2	87.6	185.52	1.472 Level 3	
12,300.0	6,619.7	12,435.2	6,765.2	107.6	107.5	-122.19	-5,418.8	-364.5	273.0	84.1	188.90	1.445 Level 3	
12,400.0	6,619.6	12,535.2	6,764.7	109.5	109.4	-122.14	-5,518.8	-364.5	272.9	80.6	192.29	1.419 Level 3	
12,500.0	6,619.4	12,635.2	6,764.3	111.4	111.3	-122.09	-5,618.8	-364.5	272.7	77.0	195.67	1.394 Level 3	
12,600.0	6,619.3	12,735.2	6,763.9	113.3	113.2	-122.04	-5,718.8	-364.5	272.6	73.5	199.07	1.369 Level 3	
12,700.0	6,619.2	12,835.2	6,763.5	115.2	115.1	-121.99	-5,818.8	-364.5	272.4	70.0	202.46	1.346 Level 3	
12,800.0	6,619.0	12,935.2	6,763.1	117.1	117.0	-121.94	-5,918.8	-364.5	272.3	66.4	205.86	1.323 Level 3	
12,900.0	6,618.9	13,035.2	6,762.6	119.0	118.9	-121.89	-6,018.8	-364.5	272.1	62.9	209.27	1.300 Level 3	
13,000.0	6,618.7	13,135.2	6,762.2	120.9	120.8	-121.84	-6,118.8	-364.5	272.0	59.3	212.67	1.279 Level 3	
13,100.0	6,618.6	13,235.2	6,761.8	122.8	122.7	-121.79	-6,218.8	-364.5	271.8	55.7	216.08	1.258 Level 3	
13,200.0	6,618.5	13,335.2	6,761.4	124.7	124.6	-121.74	-6,318.8	-364.5	271.7	52.2	219.50	1.238 Level 2	
13,300.0	6,618.3	13,435.2	6,761.0	126.6	126.5	-121.69	-6,418.8	-364.5	271.5	48.6	222.92	1.218 Level 2	
13,400.0	6,618.2	13,535.2	6,760.5	128.5	128.4	-121.64	-6,518.8	-364.5	271.4	45.0	226.34	1.199 Level 2	
13,500.0	6,618.0	13,635.2	6,760.1	130.4	130.3	-121.59	-6,618.8	-364.5	271.2	41.5	229.77	1.180 Level 2	
13,600.0	6,617.9	13,735.2	6,759.7	132.3	132.2	-121.54	-6,718.8	-364.5	271.1	37.9	233.20	1.162 Level 2	
13,700.0	6,617.8	13,835.2	6,759.3	134.2	134.1	-121.49	-6,818.8	-364.5	270.9	34.3	236.63	1.145 Level 2	
13,800.0	6,617.6	13,935.2	6,758.9	136.1	136.0	-121.44	-6,918.8	-364.5	270.8	30.7	240.07	1.128 Level 2	
13,900.0	6,617.5	14,035.2	6,758.5	138.0	137.9	-121.39	-7,018.8	-364.5	270.7	27.1	243.51	1.111 Level 2	
14,000.0	6,617.3	14,135.2	6,758.0	139.9	139.8	-121.34	-7,118.8	-364.5	270.5	23.6	246.96	1.095 Level 2	
14,100.0	6,617.2	14,235.2	6,757.6	141.8	141.7	-121.29	-7,218.8	-364.5	270.4	20.0	250.40	1.080 Level 2	
14,200.0	6,617.1	14,335.2	6,757.2	143.7	143.6	-121.24	-7,318.8	-364.5	270.2	16.4	253.86	1.064 Level 2	
14,235.8	6,617.0	14,371.0	6,757.0	144.4	144.3	-121.22	-7,354.6	-364.5	270.2	15.1	255.09	1.059 Level 2	
14,249.2	6,617.0	14,381.9	6,757.0	144.6	144.5	-121.21	-7,365.6	-364.5	270.2	14.6	255.51	1.057 Level 2, SF	

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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		Offset		Semi Major Axis			Distance						Warning		
Measured Depth Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
0.0	0.0	0.0	0.0	0.0	0.0	90.69	-0.7	59.9	59.9						
100.0	100.0	100.0	100.0	0.1	0.1	90.69	-0.7	59.9	59.9	59.7	0.22	266.535			
200.0	200.0	200.0	200.0	0.3	0.3	90.69	-0.7	59.9	59.9	59.2	0.67	88.845			
300.0	300.0	300.0	300.0	0.6	0.6	90.69	-0.7	59.9	59.9	58.8	1.12	53.307			
400.0	400.0	400.0	400.0	0.8	0.8	90.69	-0.7	59.9	59.9	58.3	1.57	38.076			
500.0	500.0	500.0	500.0	1.0	1.0	90.69	-0.7	59.9	59.9	57.9	2.02	29.615			
600.0	600.0	600.0	600.0	1.2	1.2	90.69	-0.7	59.9	59.9	57.4	2.47	24.230			
700.0	700.0	700.0	700.0	1.5	1.5	90.69	-0.7	59.9	59.9	57.0	2.92	20.503			
800.0	800.0	800.0	800.0	1.7	1.7	90.69	-0.7	59.9	59.9	56.5	3.37	17.769	CC, ES		
900.0	900.0	899.3	899.3	1.9	1.9	89.58	0.4	60.5	60.5	56.7	3.82	15.838			
1,000.0	1,000.0	998.5	998.4	2.1	2.1	86.39	3.9	62.1	62.3	58.0	4.26	14.608			
1,100.0	1,100.0	1,097.4	1,097.1	2.4	2.4	81.50	9.7	64.9	65.7	61.0	4.71	13.942			
1,200.0	1,200.0	1,195.9	1,195.2	2.6	2.6	75.54	17.7	68.8	71.2	66.1	5.17	13.773			
1,300.0	1,300.0	1,294.0	1,292.6	2.8	2.8	119.45	28.0	73.8	79.9	74.3	5.62	14.215			
1,400.0	1,399.9	1,391.4	1,389.0	3.0	3.1	115.33	40.4	79.8	92.2	86.1	6.08	15.174			
1,500.0	1,499.7	1,488.1	1,484.4	3.2	3.4	112.58	54.9	86.8	107.9	101.3	6.54	16.483			
1,600.0	1,599.3	1,584.8	1,579.3	3.5	3.7	110.91	71.5	94.7	126.5	119.5	7.03	17.995			
1,700.0	1,698.6	1,682.8	1,675.4	3.7	4.1	110.42	88.7	103.0	146.5	138.9	7.53	19.444			
1,800.0	1,797.5	1,780.6	1,771.3	4.0	4.4	110.83	105.9	111.3	167.4	159.3	8.06	20.759			
1,900.0	1,896.1	1,878.1	1,867.0	4.3	4.8	111.82	123.0	119.6	189.2	180.6	8.62	21.952			
2,000.0	1,994.2	1,975.2	1,962.3	4.6	5.1	113.26	140.1	127.8	212.1	202.9	9.21	23.027			
2,100.0	2,092.2	2,072.3	2,057.5	5.0	5.5	114.76	157.1	136.1	235.4	225.6	9.83	23.942			
2,200.0	2,190.1	2,169.4	2,152.7	5.3	5.9	115.99	174.2	144.3	258.9	248.4	10.47	24.721			
2,300.0	2,288.1	2,266.5	2,247.9	5.7	6.3	117.02	191.2	152.5	282.4	271.3	11.12	25.389			
2,400.0	2,386.1	2,363.6	2,343.1	6.1	6.7	117.89	208.3	160.7	306.0	294.2	11.78	25.965			
2,500.0	2,484.0	2,460.6	2,438.3	6.5	7.1	118.63	225.4	169.0	329.6	317.2	12.46	26.465			
2,600.0	2,582.0	2,557.7	2,533.5	6.8	7.5	119.27	242.4	177.2	353.3	340.2	13.13	26.902			
2,700.0	2,680.0	2,654.8	2,628.8	7.3	7.8	119.84	259.5	185.4	377.1	363.3	13.82	27.286			
2,800.0	2,777.9	2,751.9	2,724.0	7.7	8.2	120.33	276.5	193.6	400.8	386.3	14.51	27.626			
2,900.0	2,875.9	2,848.9	2,819.2	8.1	8.6	120.77	293.6	201.9	424.6	409.4	15.20	27.929			
3,000.0	2,973.9	2,946.0	2,914.4	8.5	9.0	121.17	310.6	210.1	448.5	432.5	15.90	28.199			
3,100.0	3,071.8	3,043.1	3,009.6	8.9	9.4	121.52	327.7	218.3	472.3	455.7	16.61	28.442			
3,200.0	3,169.8	3,140.2	3,104.8	9.3	9.8	121.84	344.7	226.5	496.1	478.8	17.31	28.661			
3,300.0	3,267.8	3,237.3	3,200.0	9.7	10.2	122.13	361.8	234.8	520.0	502.0	18.02	28.860			
3,400.0	3,365.7	3,334.3	3,295.3	10.2	10.7	122.40	378.8	243.0	543.9	525.1	18.73	29.041			
3,500.0	3,463.7	3,431.4	3,390.5	10.6	11.1	122.64	395.9	251.2	567.8	548.3	19.44	29.205			
3,600.0	3,561.7	3,528.5	3,485.7	11.0	11.5	122.86	412.9	259.5	591.6	571.5	20.15	29.357			
3,700.0	3,659.6	3,625.6	3,580.9	11.4	11.9	123.07	430.0	267.7	615.5	594.7	20.87	29.495			
3,800.0	3,757.6	3,722.7	3,676.1	11.9	12.3	123.26	447.1	275.9	639.5	617.9	21.59	29.623			
3,900.0	3,855.6	3,825.2	3,776.7	12.3	12.7	123.46	464.9	284.5	663.2	640.9	22.30	29.743			
4,000.0	3,953.5	3,940.2	3,890.2	12.7	13.0	123.90	481.7	292.6	685.1	662.1	22.98	29.817			
4,100.0	4,051.5	4,056.1	4,005.2	13.2	13.3	124.61	494.6	298.8	704.5	680.8	23.63	29.818			
4,200.0	4,149.5	4,172.5	4,121.2	13.6	13.6	125.56	503.2	303.0	721.4	697.2	24.24	29.764			
4,300.0	4,247.4	4,289.0	4,237.6	14.0	13.8	126.76	507.7	305.1	736.0	711.2	24.81	29.669			
4,400.0	4,345.4	4,396.8	4,345.4	14.5	13.9	128.06	508.3	305.4	748.7	723.4	25.33	29.560			
4,500.0	4,443.4	4,494.8	4,443.4	14.9	14.1	129.23	508.3	305.4	761.4	735.6	25.84	29.466			
4,600.0	4,541.3	4,592.7	4,541.3	15.3	14.2	130.37	508.3	305.4	774.4	748.1	26.35	29.395			
4,700.0	4,639.3	4,690.7	4,639.3	15.8	14.3	131.47	508.3	305.4	787.7	760.9	26.84	29.345			
4,800.0	4,737.3	4,788.7	4,737.3	16.2	14.5	132.53	508.3	305.4	801.3	774.0	27.33	29.315			
4,900.0	4,835.2	4,886.6	4,835.2	16.6	14.6	133.56	508.3	305.4	815.1	787.3	27.82	29.302			
5,000.0	4,933.2	4,984.6	4,933.2	17.1	14.8	134.55	508.3	305.4	829.2	800.9	28.30	29.303			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
5,100.0	5,031.2	5,082.6	5,031.2	17.5	15.0	135.51	508.3	305.4	843.6	814.8	28.77	29.319			
5,200.0	5,129.1	5,180.5	5,129.1	17.9	15.1	136.45	508.3	305.4	858.1	828.9	29.24	29.344			
5,300.0	5,227.4	5,278.9	5,227.4	18.3	15.3	137.45	508.3	305.4	871.6	841.8	29.71	29.339			
5,400.0	5,326.3	5,377.8	5,326.3	18.5	15.4	138.24	508.3	305.4	882.6	852.4	30.14	29.283			
5,500.0	5,425.7	5,477.1	5,425.7	18.8	15.6	138.84	508.3	305.4	891.1	860.5	30.54	29.178			
5,600.0	5,525.4	5,576.8	5,525.4	19.0	15.8	139.25	508.3	305.4	897.0	866.1	30.91	29.023			
5,700.0	5,625.3	5,676.7	5,625.3	19.1	15.9	139.47	508.3	305.4	900.3	869.0	31.24	28.817			
5,800.0	5,725.3	5,776.7	5,725.3	19.3	16.1	89.98	508.3	305.4	901.0	869.5	31.56	28.554			
5,900.0	5,825.3	5,876.7	5,825.3	19.4	16.3	89.98	508.3	305.4	901.0	869.1	31.90	28.248			
5,943.8	5,869.0	5,920.5	5,869.0	19.5	16.3	-90.07	508.3	305.4	901.0	869.0	32.03	28.127			
6,000.0	5,925.2	5,976.6	5,925.2	19.5	16.4	-90.18	508.3	305.4	901.0	868.8	32.21	27.970			
6,100.0	6,024.1	6,075.9	6,024.4	19.5	16.6	-91.08	508.1	305.4	901.2	868.7	32.45	27.772			
6,200.0	6,120.2	6,177.6	6,125.7	19.5	16.7	-92.26	499.1	305.4	901.8	869.3	32.49	27.751			
6,300.0	6,211.9	6,282.1	6,227.6	19.3	16.6	-93.41	475.9	305.4	902.7	870.4	32.33	27.924			
6,400.0	6,297.6	6,389.5	6,327.9	19.1	16.5	-94.52	437.9	305.4	903.9	871.9	31.99	28.258			
6,500.0	6,375.9	6,499.7	6,424.3	18.9	16.3	-95.56	384.7	305.4	905.4	873.8	31.55	28.699			
6,600.0	6,445.4	6,612.9	6,514.2	18.7	16.0	-96.51	316.2	305.4	907.0	875.9	31.10	29.161			
6,700.0	6,504.9	6,728.8	6,594.8	18.5	15.8	-97.34	233.0	305.4	908.6	877.8	30.78	29.516			
6,800.0	6,553.5	6,847.2	6,663.3	18.3	15.6	-98.04	136.5	305.4	910.1	879.3	30.73	29.619			
6,900.0	6,590.2	6,967.7	6,716.7	18.1	15.5	-98.58	28.7	305.4	911.3	880.2	31.08	29.324			
7,000.0	6,614.6	7,089.9	6,753.0	18.0	15.8	-98.94	-87.8	305.4	912.1	880.2	31.91	28.581			
7,100.0	6,626.0	7,212.9	6,770.2	18.2	16.6	-99.11	-209.5	305.4	912.5	879.3	33.27	27.428			
7,200.0	6,626.8	7,322.6	6,771.2	18.8	17.5	-99.10	-319.1	305.4	912.5	877.6	34.97	26.094			
7,300.0	6,626.7	7,422.6	6,770.6	19.7	18.6	-99.07	-419.1	305.4	912.5	875.5	36.91	24.723			
7,400.0	6,626.6	7,522.6	6,770.0	20.8	19.7	-99.04	-519.1	305.4	912.4	873.3	39.12	23.324			
7,500.0	6,626.4	7,622.6	6,769.4	22.0	20.9	-99.01	-619.1	305.4	912.3	870.7	41.56	21.952			
7,600.0	6,626.3	7,722.6	6,768.7	23.3	22.3	-98.98	-719.1	305.4	912.2	868.0	44.19	20.641			
7,700.0	6,626.1	7,822.6	6,768.1	24.7	23.7	-98.95	-819.1	305.4	912.1	865.2	46.99	19.412			
7,800.0	6,626.0	7,922.6	6,767.5	26.2	25.2	-98.92	-919.1	305.4	912.1	862.2	49.92	18.272			
7,900.0	6,625.9	8,022.6	6,766.8	27.7	26.7	-98.89	-1,019.1	305.4	912.0	859.0	52.96	17.221			
8,000.0	6,625.7	8,122.6	6,766.2	29.2	28.3	-98.86	-1,119.1	305.4	911.9	855.8	56.09	16.258			
8,100.0	6,625.6	8,222.6	6,765.6	30.8	29.9	-98.83	-1,219.1	305.4	911.8	852.5	59.30	15.376			
8,200.0	6,625.4	8,322.6	6,765.0	32.4	31.6	-98.80	-1,319.1	305.4	911.8	849.2	62.58	14.569			
8,300.0	6,625.3	8,422.6	6,764.3	34.1	33.3	-98.77	-1,419.1	305.4	911.7	845.8	65.92	13.831			
8,400.0	6,625.2	8,522.6	6,763.7	35.8	35.0	-98.74	-1,519.1	305.4	911.6	842.3	69.30	13.154			
8,500.0	6,625.0	8,622.6	6,763.1	37.5	36.7	-98.71	-1,619.1	305.4	911.5	838.8	72.73	12.534			
8,600.0	6,624.9	8,722.6	6,762.4	39.2	38.4	-98.68	-1,719.1	305.4	911.5	835.3	76.19	11.963			
8,700.0	6,624.7	8,822.6	6,761.8	40.9	40.2	-98.65	-1,819.1	305.4	911.4	831.7	79.69	11.437			
8,800.0	6,624.6	8,922.6	6,761.2	42.7	42.0	-98.62	-1,919.1	305.4	911.3	828.1	83.21	10.952			
8,900.0	6,624.5	9,022.6	6,760.6	44.4	43.8	-98.59	-2,019.1	305.4	911.3	824.5	86.76	10.504			
9,000.0	6,624.3	9,122.5	6,759.9	46.2	45.6	-98.56	-2,119.1	305.4	911.2	820.9	90.32	10.088			
9,100.0	6,624.2	9,222.5	6,759.3	48.0	47.4	-98.53	-2,219.1	305.4	911.1	817.2	93.91	9.702			
9,200.0	6,624.0	9,322.5	6,758.7	49.8	49.2	-98.50	-2,319.1	305.4	911.0	813.5	97.52	9.342			
9,300.0	6,623.9	9,422.5	6,758.0	51.6	51.0	-98.47	-2,419.1	305.4	911.0	809.8	101.14	9.007			
9,400.0	6,623.8	9,522.5	6,757.4	53.4	52.8	-98.44	-2,519.1	305.4	910.9	806.1	104.77	8.694			
9,500.0	6,623.6	9,622.5	6,756.8	55.2	54.7	-98.41	-2,619.1	305.4	910.8	802.4	108.42	8.401			
9,600.0	6,623.5	9,722.5	6,756.2	57.1	56.5	-98.38	-2,719.1	305.4	910.8	798.7	112.08	8.126			
9,700.0	6,623.4	9,822.5	6,755.5	58.9	58.4	-98.35	-2,819.1	305.4	910.7	794.9	115.75	7.868			
9,800.0	6,623.2	9,922.5	6,754.9	60.7	60.2	-98.32	-2,919.1	305.4	910.6	791.2	119.42	7.625			
9,900.0	6,623.1	10,022.5	6,754.3	62.6	62.1	-98.28	-3,019.1	305.4	910.5	787.4	123.11	7.396			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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		Offset		Semi Major Axis			Distance						
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)		
10,000.0	6,622.9	10,122.5	6,753.6	64.4	63.9	-98.25	-3,119.1	305.4	910.5	783.7	126.80	7.180	
10,100.0	6,622.8	10,222.5	6,753.0	66.3	65.8	-98.22	-3,219.1	305.4	910.4	779.9	130.51	6.976	
10,200.0	6,622.7	10,322.5	6,752.4	68.1	67.7	-98.19	-3,319.0	305.4	910.3	776.1	134.21	6.783	
10,300.0	6,622.5	10,422.5	6,751.8	70.0	69.5	-98.16	-3,419.0	305.5	910.3	772.3	137.93	6.600	
10,400.0	6,622.4	10,522.5	6,751.1	71.9	71.4	-98.13	-3,519.0	305.5	910.2	768.5	141.65	6.426	
10,500.0	6,622.2	10,622.5	6,750.5	73.7	73.3	-98.10	-3,619.0	305.5	910.1	764.8	145.37	6.261	
10,600.0	6,622.1	10,722.5	6,749.9	75.6	75.1	-98.07	-3,719.0	305.5	910.1	761.0	149.10	6.103	
10,700.0	6,622.0	10,822.5	6,749.2	77.5	77.0	-98.04	-3,819.0	305.5	910.0	757.1	152.84	5.954	
10,800.0	6,621.8	10,922.5	6,748.6	79.3	78.9	-98.01	-3,919.0	305.5	909.9	753.3	156.58	5.811	
10,900.0	6,621.7	11,022.5	6,748.0	81.2	80.8	-97.98	-4,019.0	305.5	909.9	749.5	160.32	5.675	
11,000.0	6,621.5	11,122.5	6,747.4	83.1	82.7	-97.95	-4,119.0	305.5	909.8	745.7	164.07	5.545	
11,100.0	6,621.4	11,222.5	6,746.7	84.9	84.6	-97.92	-4,219.0	305.5	909.7	741.9	167.82	5.421	
11,200.0	6,621.3	11,322.5	6,746.1	86.8	86.4	-97.89	-4,319.0	305.5	909.7	738.1	171.57	5.302	
11,300.0	6,621.1	11,422.5	6,745.5	88.7	88.3	-97.86	-4,419.0	305.5	909.6	734.3	175.33	5.188	
11,400.0	6,621.0	11,522.5	6,744.8	90.6	90.2	-97.83	-4,519.0	305.5	909.5	730.4	179.09	5.078	
11,500.0	6,620.8	11,622.5	6,744.2	92.5	92.1	-97.80	-4,619.0	305.5	909.5	726.6	182.86	4.974	
11,600.0	6,620.7	11,722.5	6,743.6	94.4	94.0	-97.77	-4,719.0	305.5	909.4	722.8	186.62	4.873	
11,700.0	6,620.6	11,822.5	6,743.0	96.2	95.9	-97.74	-4,819.0	305.5	909.3	718.9	190.39	4.776	
11,800.0	6,620.4	11,922.5	6,742.3	98.1	97.8	-97.71	-4,919.0	305.5	909.3	715.1	194.16	4.683	
11,900.0	6,620.3	12,022.5	6,741.7	100.0	99.7	-97.68	-5,019.0	305.5	909.2	711.3	197.93	4.593	
12,000.0	6,620.1	12,122.5	6,741.1	101.9	101.6	-97.64	-5,119.0	305.5	909.1	707.4	201.71	4.507	
12,100.0	6,620.0	12,222.5	6,740.5	103.8	103.5	-97.61	-5,219.0	305.5	909.1	703.6	205.49	4.424	
12,200.0	6,619.9	12,322.5	6,739.8	105.7	105.4	-97.58	-5,319.0	305.5	909.0	699.7	209.27	4.344	
12,300.0	6,619.7	12,422.5	6,739.2	107.6	107.3	-97.55	-5,419.0	305.5	908.9	695.9	213.05	4.266	
12,400.0	6,619.6	12,522.5	6,738.6	109.5	109.2	-97.52	-5,519.0	305.5	908.9	692.0	216.83	4.192	
12,500.0	6,619.4	12,622.5	6,737.9	111.4	111.1	-97.49	-5,619.0	305.5	908.8	688.2	220.62	4.119	
12,600.0	6,619.3	12,722.5	6,737.3	113.3	113.0	-97.46	-5,719.0	305.5	908.7	684.3	224.41	4.050	
12,700.0	6,619.2	12,822.5	6,736.7	115.2	114.9	-97.43	-5,819.0	305.5	908.7	680.5	228.19	3.982	
12,800.0	6,619.0	12,922.5	6,736.1	117.1	116.8	-97.40	-5,919.0	305.5	908.6	676.6	231.98	3.917	
12,900.0	6,618.9	13,022.5	6,735.4	119.0	118.7	-97.37	-6,019.0	305.5	908.6	672.8	235.78	3.853	
13,000.0	6,618.7	13,122.5	6,734.8	120.9	120.6	-97.34	-6,119.0	305.5	908.5	668.9	239.57	3.792	
13,100.0	6,618.6	13,222.5	6,734.2	122.8	122.5	-97.31	-6,219.0	305.5	908.4	665.1	243.36	3.733	
13,200.0	6,618.5	13,322.5	6,733.5	124.7	124.4	-97.28	-6,319.0	305.5	908.4	661.2	247.16	3.675	
13,300.0	6,618.3	13,422.5	6,732.9	126.6	126.3	-97.25	-6,418.9	305.5	908.3	657.3	250.96	3.619	
13,400.0	6,618.2	13,522.5	6,732.3	128.5	128.2	-97.22	-6,518.9	305.5	908.2	653.5	254.75	3.565	
13,500.0	6,618.0	13,622.5	6,731.7	130.4	130.1	-97.19	-6,618.9	305.5	908.2	649.6	258.55	3.513	
13,600.0	6,617.9	13,722.5	6,731.0	132.3	132.0	-97.16	-6,718.9	305.5	908.1	645.8	262.36	3.461	
13,700.0	6,617.8	13,822.5	6,730.4	134.2	133.9	-97.13	-6,818.9	305.5	908.1	641.9	266.16	3.412	
13,800.0	6,617.6	13,922.5	6,729.8	136.1	135.8	-97.09	-6,918.9	305.5	908.0	638.0	269.96	3.363	
13,900.0	6,617.5	14,022.5	6,729.1	138.0	137.7	-97.06	-7,018.9	305.5	907.9	634.2	273.76	3.317	
14,000.0	6,617.3	14,122.5	6,728.5	139.9	139.6	-97.03	-7,118.9	305.5	907.9	630.3	277.57	3.271	
14,100.0	6,617.2	14,222.5	6,727.9	141.8	141.5	-97.00	-7,218.9	305.5	907.8	626.4	281.38	3.226	
14,200.0	6,617.1	14,322.5	6,727.3	143.7	143.5	-96.97	-7,318.9	305.5	907.8	622.6	285.18	3.183	
14,236.5	6,617.0	14,359.0	6,727.0	144.4	144.2	-96.96	-7,355.4	305.5	907.7	621.2	286.57	3.168	
14,249.2	6,617.0	14,363.3	6,727.0	144.6	144.2	-96.96	-7,359.8	305.5	907.8	620.9	286.90	3.164 SF	

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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		Offset		Semi Major Axis			Distance						Warning		
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	90.48	-0.4	44.9	44.9						
100.0	100.0	99.0	99.0	0.1	0.1	90.48	-0.4	44.9	44.9	44.6	0.22	200.584			
200.0	200.0	199.0	199.0	0.3	0.3	90.48	-0.4	44.9	44.9	44.2	0.67	66.750			
300.0	300.0	299.0	299.0	0.6	0.6	90.48	-0.4	44.9	44.9	43.7	1.12	39.997			
400.0	400.0	399.0	399.0	0.8	0.8	90.48	-0.4	44.9	44.9	43.3	1.57	28.553			
500.0	500.0	499.0	499.0	1.0	1.0	90.48	-0.4	44.9	44.9	42.8	2.02	22.201			
600.0	600.0	599.0	599.0	1.2	1.2	90.48	-0.4	44.9	44.9	42.4	2.47	18.160			
700.0	700.0	699.0	699.0	1.5	1.5	90.48	-0.4	44.9	44.9	41.9	2.92	15.364			
800.0	800.0	799.0	799.0	1.7	1.7	90.48	-0.4	44.9	44.9	41.5	3.37	13.314			
900.0	900.0	899.0	899.0	1.9	1.9	90.48	-0.4	44.9	44.9	41.0	3.82	11.747			
1,000.0	1,000.0	999.0	999.0	2.1	2.1	90.48	-0.4	44.9	44.9	40.6	4.27	10.510			
1,100.0	1,100.0	1,099.0	1,099.0	2.4	2.4	90.48	-0.4	44.9	44.9	40.1	4.72	9.508			
1,200.0	1,200.0	1,199.0	1,199.0	2.6	2.6	90.48	-0.4	44.9	44.9	39.7	5.17	8.681 CC, ES			
1,300.0	1,300.0	1,299.0	1,299.0	2.8	2.8	141.05	-0.4	44.9	45.9	40.3	5.61	8.174			
1,400.0	1,399.9	1,398.9	1,398.9	3.0	3.0	143.91	-0.4	44.9	49.0	42.9	6.05	8.097			
1,500.0	1,499.7	1,498.7	1,498.7	3.2	3.3	147.93	-0.4	44.9	54.4	47.9	6.49	8.386			
1,600.0	1,599.3	1,598.3	1,598.3	3.5	3.5	152.34	-0.4	44.9	62.4	55.4	6.92	9.007			
1,700.0	1,698.6	1,697.6	1,697.6	3.7	3.7	156.56	-0.4	44.9	73.0	65.6	7.36	9.921			
1,800.0	1,797.5	1,796.5	1,796.5	4.0	3.9	160.27	-0.4	44.9	86.4	78.6	7.79	11.091			
1,900.0	1,896.1	1,895.1	1,895.1	4.3	4.1	163.40	-0.4	44.9	102.5	94.3	8.21	12.480			
2,000.0	1,994.2	1,993.2	1,993.2	4.6	4.4	165.97	-0.4	44.9	121.2	112.6	8.64	14.030			
2,100.0	2,092.2	2,091.2	2,091.2	5.0	4.6	167.95	-0.4	44.9	140.8	131.7	9.09	15.489			
2,200.0	2,190.1	2,189.1	2,189.1	5.3	4.8	169.44	-0.4	44.9	160.5	150.9	9.54	16.818			
2,300.0	2,288.1	2,287.1	2,287.1	5.7	5.0	170.61	-0.4	44.9	180.2	170.2	10.00	18.030			
2,400.0	2,386.1	2,385.1	2,385.1	6.1	5.2	171.55	-0.4	44.9	200.1	189.6	10.46	19.137			
2,500.0	2,484.0	2,483.0	2,483.0	6.5	5.5	172.31	-0.4	44.9	219.9	209.0	10.92	20.150			
2,600.0	2,582.0	2,583.5	2,583.5	6.8	5.7	172.78	0.5	44.9	239.4	228.0	11.38	21.035			
2,700.0	2,680.0	2,685.0	2,684.9	7.3	5.9	172.65	4.1	45.2	257.7	245.8	11.85	21.740			
2,800.0	2,777.9	2,786.8	2,786.5	7.7	6.2	172.03	10.4	45.8	274.7	262.4	12.33	22.281			
2,900.0	2,875.9	2,888.9	2,888.2	8.1	6.4	171.00	19.3	46.5	290.6	277.8	12.82	22.675			
3,000.0	2,973.9	2,991.0	2,989.7	8.5	6.6	169.62	31.0	47.5	305.4	292.1	13.31	22.937			
3,100.0	3,071.8	3,093.2	3,090.8	8.9	6.9	167.92	45.4	48.8	319.3	305.4	13.83	23.082			
3,200.0	3,169.8	3,194.0	3,190.2	9.3	7.1	165.98	62.1	50.2	332.4	318.1	14.37	23.131			
3,300.0	3,267.8	3,292.5	3,287.2	9.7	7.4	164.13	79.1	51.6	345.7	330.8	14.93	23.159			
3,400.0	3,365.7	3,391.0	3,384.3	10.2	7.6	162.43	96.0	53.1	359.4	343.8	15.50	23.179			
3,500.0	3,463.7	3,489.5	3,481.3	10.6	7.9	160.84	112.9	54.5	373.3	357.2	16.09	23.192			
3,600.0	3,561.7	3,588.0	3,578.4	11.0	8.2	159.37	129.8	56.0	387.5	370.8	16.70	23.198			
3,700.0	3,659.6	3,686.6	3,675.4	11.4	8.5	158.01	146.7	57.4	401.9	384.6	17.32	23.199			
3,800.0	3,757.6	3,785.1	3,772.4	11.9	8.8	156.74	163.6	58.9	416.5	398.5	17.96	23.195			
3,900.0	3,855.6	3,883.6	3,869.5	12.3	9.1	155.55	180.6	60.3	431.3	412.7	18.60	23.187			
4,000.0	3,953.5	3,982.1	3,966.5	12.7	9.4	154.45	197.5	61.8	446.3	427.0	19.26	23.176			
4,100.0	4,051.5	4,080.6	4,063.6	13.2	9.8	153.41	214.4	63.2	461.4	441.5	19.92	23.163			
4,200.0	4,149.5	4,179.1	4,160.6	13.6	10.1	152.44	231.3	64.6	476.7	456.1	20.59	23.149			
4,300.0	4,247.4	4,277.6	4,257.6	14.0	10.4	151.53	248.2	66.1	492.1	470.9	21.27	23.133			
4,400.0	4,345.4	4,376.1	4,354.7	14.5	10.7	150.68	265.1	67.5	507.6	485.7	21.96	23.116			
4,500.0	4,443.4	4,474.7	4,451.7	14.9	11.1	149.88	282.1	69.0	523.3	500.6	22.65	23.100			
4,600.0	4,541.3	4,573.2	4,548.7	15.3	11.4	149.12	299.0	70.4	539.0	515.6	23.35	23.082			
4,700.0	4,639.3	4,671.7	4,645.8	15.8	11.8	148.40	315.9	71.9	554.8	530.7	24.05	23.065			
4,800.0	4,737.3	4,770.2	4,742.8	16.2	12.1	147.73	332.8	73.3	570.7	545.9	24.76	23.049			
4,900.0	4,835.2	4,868.7	4,839.9	16.6	12.5	147.09	349.7	74.8	586.6	561.2	25.47	23.032			
5,000.0	4,933.2	4,967.2	4,936.9	17.1	12.8	146.49	366.7	76.2	602.6	576.5	26.18	23.016			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
5,100.0	5,031.2	5,065.7	5,033.9	17.5	13.1	145.91	383.6	77.7	618.7	591.8	26.90	23.000		
5,200.0	5,129.1	5,164.2	5,131.0	17.9	13.5	145.38	400.5	79.1	634.9	607.3	27.62	22.984		
5,300.0	5,227.4	5,262.9	5,228.2	18.3	13.9	144.93	417.4	80.5	649.6	621.2	28.34	22.922		
5,400.0	5,326.3	5,361.8	5,325.6	18.5	14.2	144.31	434.4	82.0	661.5	632.5	29.04	22.782		
5,500.0	5,425.7	5,460.8	5,423.1	18.8	14.6	143.51	451.4	83.4	670.7	641.0	29.71	22.574		
5,600.0	5,525.4	5,559.9	5,520.7	19.0	14.9	142.53	468.4	84.9	677.4	647.0	30.36	22.311		
5,700.0	5,625.3	5,660.1	5,619.7	19.1	15.2	141.54	483.4	86.2	681.5	650.6	30.90	22.050		
5,800.0	5,725.3	5,760.9	5,719.8	19.3	15.4	91.10	494.9	87.2	682.9	651.5	31.37	21.768		
5,900.0	5,825.3	5,862.3	5,820.9	19.4	15.7	90.42	503.0	87.9	683.5	651.7	31.82	21.478		
6,000.0	5,925.2	5,964.0	5,922.6	19.5	15.9	-90.17	507.6	88.2	683.8	651.6	32.20	21.240		
6,100.0	6,024.1	6,064.5	6,023.1	19.5	16.0	-91.46	508.6	88.3	684.2	651.7	32.49	21.057		
6,200.0	6,120.2	6,161.9	6,120.5	19.5	16.2	-93.57	508.3	88.3	685.4	652.7	32.73	20.940		
6,300.0	6,211.9	6,265.3	6,223.2	19.3	16.2	-96.01	498.3	88.3	688.1	655.3	32.77	20.997		
6,400.0	6,297.6	6,373.5	6,328.4	19.1	16.2	-98.40	473.1	88.3	692.0	659.5	32.56	21.255		
6,500.0	6,375.9	6,487.2	6,433.9	18.9	16.0	-100.68	430.8	88.3	697.0	664.9	32.13	21.692		
6,600.0	6,445.4	6,606.8	6,536.7	18.7	15.8	-102.82	370.1	88.3	702.6	671.0	31.56	22.259		
6,700.0	6,504.9	6,732.4	6,633.2	18.5	15.6	-104.75	289.9	88.3	708.4	677.4	30.99	22.855		
6,800.0	6,553.5	6,863.9	6,718.7	18.3	15.4	-106.40	190.2	88.3	713.9	683.2	30.61	23.319		
6,900.0	6,590.2	7,000.8	6,788.1	18.1	15.5	-107.70	72.4	88.3	718.5	687.9	30.64	23.447		
7,000.0	6,614.6	7,142.0	6,836.6	18.0	15.9	-108.59	-60.0	88.3	721.8	690.5	31.30	23.062		
7,100.0	6,626.0	7,285.9	6,860.1	18.2	16.8	-109.01	-201.7	88.3	723.4	690.7	32.67	22.143		
7,200.0	6,626.8	7,402.4	6,862.0	18.8	17.7	-109.05	-318.2	88.3	723.6	689.2	34.39	21.037		
7,300.0	6,626.7	7,502.4	6,862.0	19.7	18.7	-109.06	-418.2	88.3	723.6	687.3	36.29	19.941		
7,400.0	6,626.6	7,602.4	6,862.0	20.8	19.8	-109.07	-518.2	88.3	723.6	685.2	38.44	18.827		
7,500.0	6,626.4	7,702.4	6,862.0	22.0	21.0	-109.08	-618.2	88.3	723.7	682.9	40.80	17.737		
7,600.0	6,626.3	7,802.4	6,862.0	23.3	22.4	-109.09	-718.2	88.3	723.7	680.4	43.35	16.697		
7,700.0	6,626.1	7,902.4	6,862.0	24.7	23.8	-109.10	-818.2	88.3	723.8	677.7	46.04	15.721		
7,800.0	6,626.0	8,002.4	6,862.0	26.2	25.3	-109.11	-918.2	88.3	723.8	675.0	48.86	14.814		
7,900.0	6,625.9	8,102.4	6,862.0	27.7	26.8	-109.12	-1,018.2	88.3	723.9	672.1	51.78	13.979		
8,000.0	6,625.7	8,202.4	6,862.0	29.2	28.4	-109.13	-1,118.2	88.3	723.9	669.1	54.80	13.211		
8,100.0	6,625.6	8,302.4	6,862.0	30.8	30.0	-109.14	-1,218.2	88.3	724.0	666.1	57.88	12.508		
8,200.0	6,625.4	8,402.4	6,862.0	32.4	31.7	-109.15	-1,318.2	88.3	724.0	663.0	61.03	11.863		
8,300.0	6,625.3	8,502.4	6,862.0	34.1	33.3	-109.16	-1,418.2	88.3	724.1	659.8	64.23	11.272		
8,400.0	6,625.2	8,602.4	6,862.0	35.8	35.1	-109.17	-1,518.2	88.3	724.1	656.6	67.48	10.730		
8,500.0	6,625.0	8,702.4	6,862.0	37.5	36.8	-109.19	-1,618.2	88.3	724.1	653.4	70.77	10.233		
8,600.0	6,624.9	8,802.4	6,862.0	39.2	38.5	-109.20	-1,718.2	88.3	724.2	650.1	74.09	9.774		
8,700.0	6,624.7	8,902.4	6,862.0	40.9	40.3	-109.21	-1,818.2	88.3	724.2	646.8	77.44	9.352		
8,800.0	6,624.6	9,002.4	6,862.0	42.7	42.1	-109.22	-1,918.2	88.3	724.3	643.5	80.82	8.962		
8,900.0	6,624.5	9,102.4	6,862.0	44.4	43.9	-109.23	-2,018.2	88.3	724.3	640.1	84.22	8.601		
9,000.0	6,624.3	9,202.4	6,862.0	46.2	45.7	-109.24	-2,118.2	88.3	724.4	636.7	87.64	8.266		
9,100.0	6,624.2	9,302.4	6,862.0	48.0	47.5	-109.25	-2,218.2	88.3	724.4	633.3	91.08	7.954		
9,200.0	6,624.0	9,402.4	6,862.0	49.8	49.3	-109.26	-2,318.2	88.3	724.5	629.9	94.53	7.664		
9,300.0	6,623.9	9,502.4	6,862.0	51.6	51.1	-109.27	-2,418.2	88.3	724.5	626.5	98.00	7.393		
9,400.0	6,623.8	9,602.4	6,862.0	53.4	52.9	-109.28	-2,518.2	88.3	724.6	623.1	101.48	7.140		
9,500.0	6,623.6	9,702.4	6,862.0	55.2	54.8	-109.29	-2,618.2	88.3	724.6	619.6	104.97	6.903		
9,600.0	6,623.5	9,802.4	6,862.0	57.1	56.6	-109.30	-2,718.2	88.3	724.7	616.2	108.47	6.681		
9,700.0	6,623.4	9,902.4	6,862.0	58.9	58.5	-109.31	-2,818.2	88.3	724.7	612.7	111.98	6.472		
9,800.0	6,623.2	10,002.4	6,862.0	60.7	60.3	-109.32	-2,918.2	88.3	724.7	609.3	115.50	6.275		
9,900.0	6,623.1	10,102.4	6,862.0	62.6	62.2	-109.33	-3,018.2	88.3	724.8	605.8	119.02	6.089		
10,000.0	6,622.9	10,202.4	6,862.0	64.4	64.0	-109.34	-3,118.2	88.3	724.8	602.3	122.56	5.914		

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
10,100.0	6,622.8	10,302.4	6,862.0	66.3	65.9	-109.35	-3,218.2	88.3	724.9	598.8	126.10	5.749			
10,200.0	6,622.7	10,402.4	6,862.0	68.1	67.8	-109.36	-3,318.2	88.3	724.9	595.3	129.64	5.592			
10,300.0	6,622.5	10,502.4	6,862.0	70.0	69.6	-109.37	-3,418.2	88.3	725.0	591.8	133.19	5.443			
10,400.0	6,622.4	10,602.4	6,862.0	71.9	71.5	-109.38	-3,518.2	88.3	725.0	588.3	136.75	5.302			
10,500.0	6,622.2	10,702.4	6,862.0	73.7	73.4	-109.39	-3,618.2	88.3	725.1	584.8	140.31	5.168			
10,600.0	6,622.1	10,802.4	6,862.0	75.6	75.3	-109.40	-3,718.2	88.3	725.1	581.3	143.87	5.040			
10,700.0	6,622.0	10,902.4	6,862.0	77.5	77.1	-109.41	-3,818.2	88.3	725.2	577.7	147.44	4.918			
10,800.0	6,621.8	11,002.4	6,862.0	79.3	79.0	-109.42	-3,918.2	88.3	725.2	574.2	151.01	4.803			
10,900.0	6,621.7	11,102.4	6,862.0	81.2	80.9	-109.44	-4,018.2	88.3	725.3	570.7	154.58	4.692			
11,000.0	6,621.5	11,202.4	6,862.0	83.1	82.8	-109.45	-4,118.2	88.3	725.3	567.1	158.16	4.586			
11,100.0	6,621.4	11,302.4	6,862.0	84.9	84.7	-109.46	-4,218.2	88.3	725.4	563.6	161.74	4.485			
11,200.0	6,621.3	11,402.4	6,862.0	86.8	86.6	-109.47	-4,318.2	88.3	725.4	560.1	165.32	4.388			
11,300.0	6,621.1	11,502.4	6,862.0	88.7	88.4	-109.48	-4,418.2	88.3	725.4	556.5	168.90	4.295			
11,400.0	6,621.0	11,602.4	6,862.0	90.6	90.3	-109.49	-4,518.2	88.3	725.5	553.0	172.49	4.206			
11,500.0	6,620.8	11,702.4	6,862.0	92.5	92.2	-109.50	-4,618.2	88.3	725.5	549.5	176.08	4.121			
11,600.0	6,620.7	11,802.4	6,862.0	94.4	94.1	-109.51	-4,718.2	88.3	725.6	545.9	179.67	4.039			
11,700.0	6,620.6	11,902.4	6,862.0	96.2	96.0	-109.52	-4,818.2	88.3	725.6	542.4	183.26	3.960			
11,800.0	6,620.4	12,002.4	6,862.0	98.1	97.9	-109.53	-4,918.2	88.3	725.7	538.8	186.85	3.884			
11,900.0	6,620.3	12,102.4	6,862.0	100.0	99.8	-109.54	-5,018.2	88.3	725.7	535.3	190.45	3.811			
12,000.0	6,620.1	12,202.4	6,862.0	101.9	101.7	-109.55	-5,118.2	88.3	725.8	531.7	194.04	3.740			
12,100.0	6,620.0	12,302.4	6,862.0	103.8	103.6	-109.56	-5,218.2	88.3	725.8	528.2	197.64	3.672			
12,200.0	6,619.9	12,402.4	6,862.0	105.7	105.5	-109.57	-5,318.2	88.3	725.9	524.6	201.24	3.607			
12,300.0	6,619.7	12,502.4	6,862.0	107.6	107.4	-109.58	-5,418.2	88.3	725.9	521.1	204.84	3.544			
12,400.0	6,619.6	12,602.4	6,862.0	109.5	109.3	-109.59	-5,518.2	88.3	726.0	517.5	208.44	3.483			
12,500.0	6,619.4	12,702.4	6,862.0	111.4	111.2	-109.60	-5,618.2	88.3	726.0	514.0	212.04	3.424			
12,600.0	6,619.3	12,802.4	6,862.0	113.3	113.1	-109.61	-5,718.2	88.3	726.1	510.4	215.64	3.367			
12,700.0	6,619.2	12,902.4	6,862.0	115.2	115.0	-109.62	-5,818.2	88.3	726.1	506.9	219.24	3.312			
12,800.0	6,619.0	13,002.4	6,862.0	117.1	116.9	-109.63	-5,918.2	88.3	726.2	503.3	222.85	3.259			
12,900.0	6,618.9	13,102.4	6,862.0	119.0	118.8	-109.64	-6,018.2	88.3	726.2	499.7	226.45	3.207			
13,000.0	6,618.7	13,202.4	6,862.0	120.9	120.7	-109.65	-6,118.2	88.3	726.2	496.2	230.06	3.157			
13,100.0	6,618.6	13,302.4	6,862.0	122.8	122.6	-109.66	-6,218.2	88.3	726.3	492.6	233.66	3.108			
13,200.0	6,618.5	13,402.4	6,862.0	124.7	124.5	-109.67	-6,318.2	88.3	726.3	489.1	237.27	3.061			
13,300.0	6,618.3	13,502.4	6,862.0	126.6	126.4	-109.68	-6,418.2	88.3	726.4	485.5	240.88	3.016			
13,400.0	6,618.2	13,602.4	6,862.0	128.5	128.3	-109.69	-6,518.2	88.3	726.4	482.0	244.48	2.971			
13,500.0	6,618.0	13,702.4	6,862.0	130.4	130.2	-109.71	-6,618.2	88.3	726.5	478.4	248.09	2.928			
13,600.0	6,617.9	13,802.4	6,862.0	132.3	132.1	-109.72	-6,718.2	88.3	726.5	474.8	251.70	2.886			
13,700.0	6,617.8	13,902.4	6,862.0	134.2	134.0	-109.73	-6,818.2	88.3	726.6	471.3	255.31	2.846			
13,800.0	6,617.6	14,002.4	6,862.0	136.1	136.0	-109.74	-6,918.2	88.3	726.6	467.7	258.92	2.806			
13,900.0	6,617.5	14,102.4	6,862.0	138.0	137.9	-109.75	-7,018.2	88.3	726.7	464.1	262.53	2.768			
14,000.0	6,617.3	14,202.4	6,862.0	139.9	139.8	-109.76	-7,118.2	88.3	726.7	460.6	266.13	2.731			
14,100.0	6,617.2	14,302.4	6,862.0	141.8	141.7	-109.77	-7,218.2	88.3	726.8	457.0	269.74	2.694			
14,200.0	6,617.1	14,402.4	6,862.0	143.7	143.6	-109.78	-7,318.2	88.3	726.8	453.5	273.35	2.659			
14,223.1	6,617.0	14,425.6	6,862.0	144.1	144.0	-109.78	-7,341.4	88.3	726.8	452.6	274.19	2.651			
14,249.2	6,617.0	14,445.8	6,862.0	144.6	144.4	-109.78	-7,361.6	88.3	726.9	451.8	275.03	2.643 SF			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	90.55	-0.7	74.9	75.0						
100.0	100.0	100.0	100.0	0.1	0.1	90.55	-0.7	74.9	75.0	74.7	0.22	333.469			
200.0	200.0	200.0	200.0	0.3	0.3	90.55	-0.7	74.9	75.0	74.3	0.67	111.156			
300.0	300.0	300.0	300.0	0.6	0.6	90.55	-0.7	74.9	75.0	73.8	1.12	66.694			
400.0	400.0	400.0	400.0	0.8	0.8	90.55	-0.7	74.9	75.0	73.4	1.57	47.638	CC, ES		
500.0	500.0	498.7	498.7	1.0	1.0	89.84	0.2	75.8	75.8	73.8	2.02	37.601			
600.0	600.0	597.2	597.1	1.2	1.2	87.80	3.0	78.4	78.5	76.1	2.46	31.912			
700.0	700.0	695.5	695.2	1.5	1.5	84.71	7.7	82.7	83.2	80.3	2.91	28.567			
800.0	800.0	793.4	792.7	1.7	1.7	80.94	14.1	88.7	90.1	86.7	3.38	26.675			
900.0	900.0	890.8	889.4	1.9	2.0	76.91	22.4	96.3	99.5	95.6	3.86	25.753			
1,000.0	1,000.0	987.5	985.2	2.1	2.2	72.94	32.4	105.6	111.4	107.0	4.37	25.507	SF		
1,100.0	1,100.0	1,083.5	1,079.9	2.4	2.6	69.26	44.1	116.4	126.0	121.1	4.90	25.739			
1,200.0	1,200.0	1,178.6	1,173.2	2.6	2.9	65.97	57.3	128.6	143.4	137.9	5.45	26.308			
1,300.0	1,300.0	1,274.8	1,267.3	2.8	3.3	112.78	72.2	142.4	163.5	157.8	5.69	28.730			
1,400.0	1,399.9	1,372.4	1,362.6	3.0	3.7	111.28	87.5	156.6	185.1	178.9	6.16	30.059			
1,500.0	1,499.7	1,469.8	1,457.8	3.2	4.1	110.70	102.8	170.7	207.6	200.9	6.63	31.306			
1,600.0	1,599.3	1,567.0	1,552.7	3.5	4.5	110.78	118.1	184.8	231.0	223.9	7.12	32.459			
1,700.0	1,698.6	1,663.9	1,647.4	3.7	4.9	111.33	133.2	198.8	255.4	247.7	7.62	33.512			
1,800.0	1,797.5	1,760.5	1,741.7	4.0	5.4	112.22	148.4	212.8	280.7	272.6	8.14	34.467			
1,900.0	1,896.1	1,856.6	1,835.6	4.3	5.8	113.35	163.5	226.8	307.2	298.5	8.69	35.333			
2,000.0	1,994.2	1,952.3	1,929.1	4.6	6.2	114.74	178.5	240.6	334.9	325.6	9.28	36.096			
2,100.0	2,092.2	2,047.8	2,022.4	5.0	6.6	116.25	193.4	254.5	363.1	353.2	9.89	36.701			
2,200.0	2,190.1	2,143.4	2,115.8	5.3	7.1	117.55	208.4	268.3	391.4	380.9	10.52	37.204			
2,300.0	2,288.1	2,238.9	2,209.1	5.7	7.5	118.67	223.4	282.2	420.0	408.8	11.16	37.628			
2,400.0	2,386.1	2,334.4	2,302.4	6.1	7.9	119.65	238.4	296.0	448.7	436.8	11.81	37.989			
2,500.0	2,484.0	2,430.0	2,395.8	6.5	8.4	120.52	253.3	309.9	477.4	465.0	12.47	38.299			
2,600.0	2,582.0	2,525.5	2,489.1	6.8	8.8	121.28	268.3	323.7	506.3	493.2	13.13	38.567			
2,700.0	2,680.0	2,621.0	2,582.4	7.3	9.2	121.96	283.3	337.6	535.2	521.4	13.79	38.802			
2,800.0	2,777.9	2,716.6	2,675.8	7.7	9.7	122.58	298.3	351.4	564.2	549.8	14.46	39.009			
2,900.0	2,875.9	2,812.1	2,769.1	8.1	10.1	123.13	313.3	365.3	593.3	578.2	15.14	39.192			
3,000.0	2,973.9	2,907.6	2,862.4	8.5	10.5	123.63	328.2	379.1	622.4	606.6	15.81	39.355			
3,100.0	3,071.8	3,003.2	2,955.8	8.9	11.0	124.09	343.2	393.0	651.5	635.0	16.49	39.502			
3,200.0	3,169.8	3,098.7	3,049.1	9.3	11.4	124.51	358.2	406.8	680.7	663.5	17.17	39.634			
3,300.0	3,267.8	3,194.3	3,142.4	9.7	11.8	124.89	373.2	420.7	709.9	692.1	17.86	39.754			
3,400.0	3,365.7	3,289.8	3,235.8	10.2	12.3	125.24	388.1	434.5	739.2	720.6	18.54	39.863			
3,500.0	3,463.7	3,385.3	3,329.1	10.6	12.7	125.57	403.1	448.4	768.4	749.2	19.23	39.963			
3,600.0	3,561.7	3,480.9	3,422.4	11.0	13.1	125.87	418.1	462.2	797.7	777.8	19.92	40.055			
3,700.0	3,659.6	3,576.4	3,515.8	11.4	13.6	126.15	433.1	476.1	827.0	806.4	20.60	40.139			
3,800.0	3,757.6	3,671.9	3,609.1	11.9	14.0	126.41	448.1	489.9	856.3	835.0	21.29	40.217			
3,900.0	3,855.6	3,772.3	3,707.2	12.3	14.5	126.67	463.7	504.4	885.6	863.6	21.99	40.270			
4,000.0	3,953.5	3,901.1	3,833.7	12.7	14.9	127.12	481.2	520.6	912.7	890.0	22.71	40.193			
4,100.0	4,051.5	4,031.9	3,963.3	13.2	15.2	127.76	494.7	533.0	936.3	912.9	23.39	40.034			
4,200.0	4,149.5	4,164.3	4,095.0	13.6	15.5	128.59	503.9	541.5	956.4	932.4	24.04	39.785			
4,300.0	4,247.4	4,297.7	4,228.2	14.0	15.8	129.61	508.6	545.9	973.0	948.4	24.66	39.465			
4,400.0	4,345.4	4,414.8	4,345.4	14.5	15.9	130.64	509.3	546.5	986.7	961.4	25.21	39.132			
4,500.0	4,443.4	4,512.8	4,443.4	14.9	16.0	131.50	509.3	546.5	1,000.0	974.2	25.74	38.844			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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

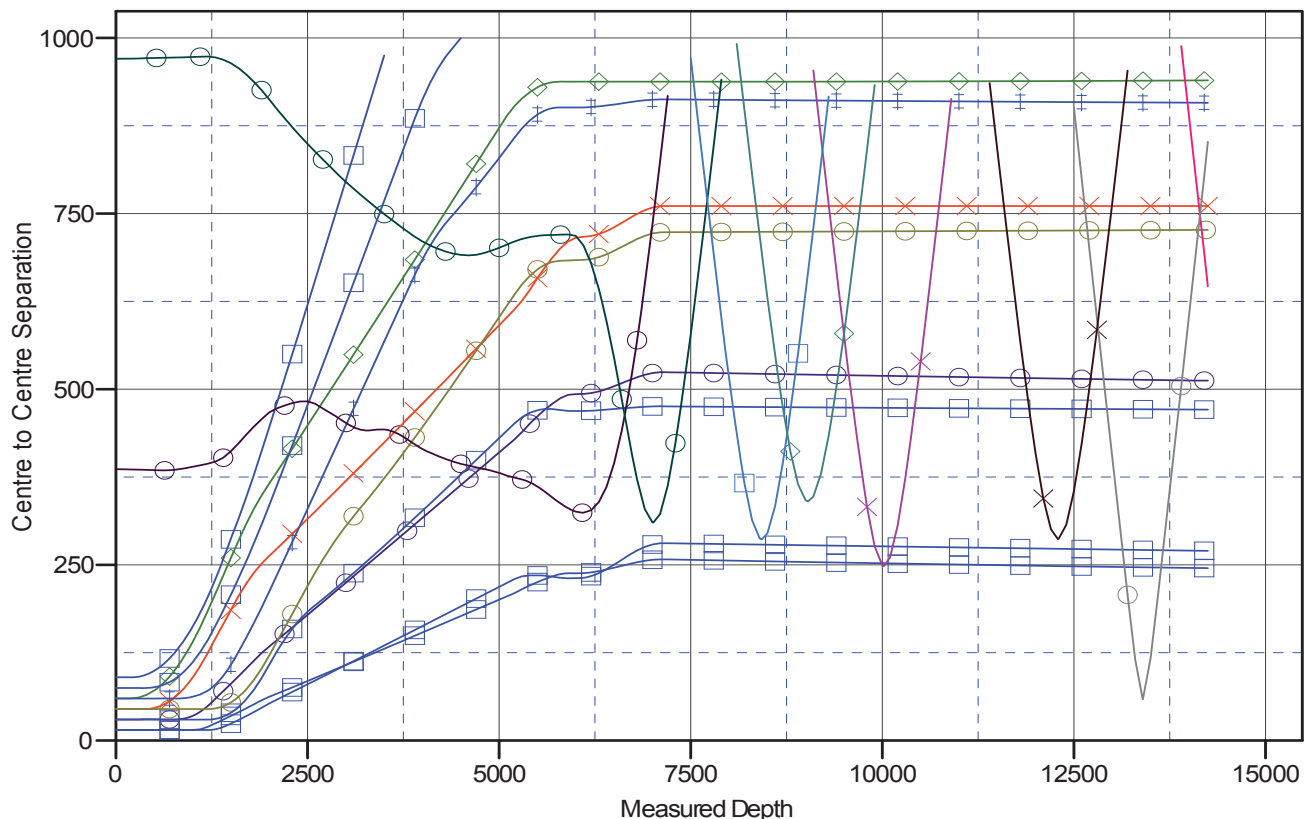
Offset Design		Ottenhoff 5N64W29CR Pad Sec.29-T5N-R64W - Ottenhoff 29U-343 - Wellbore #1 - Plan #1 (3-15-16)											Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	90.70	-1.1	90.0	90.0						
100.0	100.0	99.0	99.0	0.1	0.1	90.70	-1.1	90.0	90.0	89.8	0.22	402.430			
200.0	200.0	199.0	199.0	0.3	0.3	90.70	-1.1	90.0	90.0	89.3	0.67	133.920	CC, ES		
300.0	300.0	297.2	297.2	0.6	0.6	90.22	-0.4	91.0	91.0	89.9	1.11	81.741			
400.0	400.0	395.2	395.1	0.8	0.8	88.84	1.9	94.0	94.1	92.5	1.56	60.404			
500.0	500.0	492.9	492.7	1.0	1.0	86.73	5.7	99.0	99.3	97.3	2.01	49.330			
600.0	600.0	590.3	589.6	1.2	1.3	84.13	10.9	105.9	106.9	104.4	2.49	42.995			
700.0	700.0	687.2	685.9	1.5	1.5	81.31	17.6	114.8	116.9	113.9	2.98	39.227			
800.0	800.0	783.4	781.2	1.7	1.8	78.46	25.6	125.5	129.4	125.9	3.50	37.011			
900.0	900.0	879.0	875.4	1.9	2.2	75.75	35.1	138.1	144.4	140.4	4.04	35.792			
1,000.0	1,000.0	973.6	968.3	2.1	2.5	73.27	45.8	152.4	162.1	157.5	4.60	35.240			
1,100.0	1,100.0	1,067.3	1,059.9	2.4	2.9	71.04	57.8	168.4	182.3	177.1	5.19	35.144	SF		
1,200.0	1,200.0	1,160.0	1,149.9	2.6	3.3	69.09	71.0	185.9	205.0	199.2	5.80	35.365			
1,300.0	1,300.0	1,253.2	1,240.0	2.8	3.8	116.85	85.5	205.2	230.6	224.8	5.75	40.092			
1,400.0	1,399.9	1,349.4	1,332.7	3.0	4.3	115.80	100.8	225.5	257.9	251.7	6.22	41.440			
1,500.0	1,499.7	1,445.3	1,425.2	3.2	4.8	115.34	116.0	245.7	286.4	279.7	6.70	42.733			
1,600.0	1,599.3	1,540.8	1,517.3	3.5	5.3	115.33	131.1	265.9	315.9	308.7	7.19	43.942			
1,700.0	1,698.6	1,635.9	1,609.1	3.7	5.8	115.64	146.2	285.9	346.5	338.8	7.69	45.059			
1,800.0	1,797.5	1,730.5	1,700.3	4.0	6.3	116.19	161.2	305.9	378.2	370.0	8.21	46.080			
1,900.0	1,896.1	1,824.6	1,791.1	4.3	6.8	116.90	176.1	325.7	411.2	402.5	8.75	47.006			
2,000.0	1,994.2	1,918.1	1,881.3	4.6	7.3	117.86	191.0	345.5	445.5	436.1	9.32	47.798			
2,100.0	2,092.2	2,011.4	1,971.3	5.0	7.9	119.06	205.8	365.1	480.2	470.3	9.93	48.365			
2,200.0	2,190.1	2,104.8	2,061.3	5.3	8.4	120.09	220.6	384.8	515.1	504.5	10.55	48.816			
2,300.0	2,288.1	2,198.1	2,151.4	5.7	8.9	121.00	235.4	404.5	550.1	538.9	11.19	49.178			
2,400.0	2,386.1	2,291.5	2,241.4	6.1	9.4	121.79	250.2	424.2	585.2	573.3	11.83	49.471			
2,500.0	2,484.0	2,384.8	2,331.4	6.5	9.9	122.50	265.0	443.9	620.4	607.9	12.48	49.712			
2,600.0	2,582.0	2,478.1	2,421.5	6.8	10.4	123.13	279.8	463.6	655.7	642.5	13.14	49.911			
2,700.0	2,680.0	2,571.5	2,511.5	7.3	10.9	123.70	294.6	483.3	691.0	677.2	13.80	50.077			
2,800.0	2,777.9	2,664.8	2,601.5	7.7	11.4	124.21	309.4	503.0	726.4	711.9	14.46	50.217			
2,900.0	2,875.9	2,758.1	2,691.5	8.1	11.9	124.67	324.2	522.6	761.8	746.7	15.13	50.336			
3,000.0	2,973.9	2,851.5	2,781.6	8.5	12.5	125.10	339.0	542.3	797.3	781.5	15.81	50.437			
3,100.0	3,071.8	2,944.8	2,871.6	8.9	13.0	125.48	353.8	562.0	832.8	816.3	16.48	50.524			
3,200.0	3,169.8	3,038.2	2,961.6	9.3	13.5	125.84	368.6	581.7	868.4	851.2	17.16	50.599			
3,300.0	3,267.8	3,131.5	3,051.7	9.7	14.0	126.17	383.4	601.4	903.9	886.1	17.84	50.665			
3,400.0	3,365.7	3,224.8	3,141.7	10.2	14.5	126.47	398.2	621.1	939.5	921.0	18.52	50.722			
3,500.0	3,463.7	3,318.2	3,231.7	10.6	15.0	126.75	413.0	640.8	975.1	955.9	19.21	50.772			

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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-143
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.60°

Ladder Plot



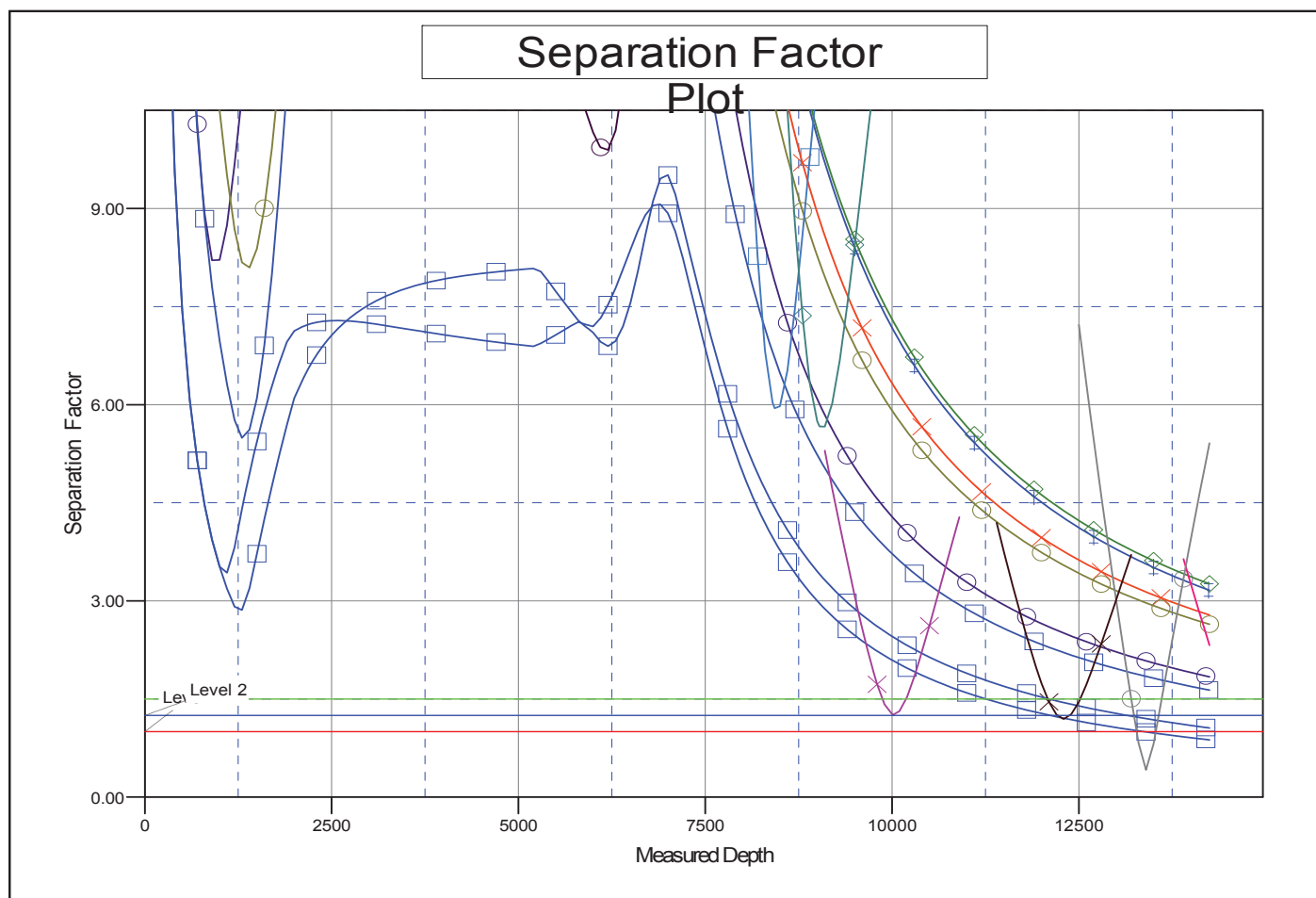
LEGEND

Ottenhoff 29M-203, Wellbore #1, Plan #1 (3-14-16) V0	Ottenhoff 29R-323, Wellbore #1, Plan #1 (3-15-16) V0	DIC Cross #31-32 (P&A), Wellbore #1, Wellbore #1 V0
Ottenhoff 29M-323, Wellbore #1, Plan #1 (3-14-16) V0	Ottenhoff 29R-423, Wellbore #1, Plan #1 (3-15-16) V0	Blake B #29-23 (Exist), Wellbore #1, Wellbore #1 V0
Ottenhoff 29M-423, Wellbore #1, Plan #1 (3-14-16) V0	Ottenhoff 29U-243, Wellbore #1, Plan #1 (3-15-16) V0	Ottenhoff 41-6B (Exist), Wellbore #1, Wellbore #1 V0
Ottenhoff 29R-203, Wellbore #1, Plan #1 (3-14-16) V0	Ottenhoff 29U-343, Wellbore #1, Plan #1 (3-15-16) V0	Ottenhoff #29-1 (Exist), Wellbore #1, Wellbore #1 V0
Ottenhoff 29R-243, Wellbore #1, Plan #1 (3-14-16) V0	Chittenden #1-32 (Exist), Wellbore #1, Wellbore #1 V0	Carlson 29-1 (Exist), Wellbore #1, Wellbore #1 V0
Ottenhoff 29R-303, Wellbore #1, Plan #1 (3-15-16) V0	Pearlman #32-13 (Exist), Wellbore #1, Wellbore #1 V0	Bell B29-22D, Bell B29-22D, Bell B29-22D V0

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Ottenhoff 29R-143
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-143	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-143
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.60°



LEGEND

Ottenhoff 29M-203, Wellbore #1, Plan #1 (3-14-16) V0	Ottenhoff 29R-323, Wellbore #1, Plan #1 (3-15-16) V0	DIC Cross #31-32 (P&A), Wellbore #1, Wellbore #1 V0
Ottenhoff 29M-323, Wellbore #1, Plan #1 (3-14-16) V0	Ottenhoff 29R-423, Wellbore #1, Plan #1 (3-15-16) V0	Blake B #29-23 (Exist), Wellbore #1, Wellbore #1 V0
Ottenhoff 29M-423, Wellbore #1, Plan #1 (3-14-16) V0	Ottenhoff 29U-243, Wellbore #1, Plan #1 (3-15-16) V0	Ottenhoff 41-6B (Exist), Wellbore #1, Wellbore #1 V0
Ottenhoff 29R-203, Wellbore #1, Plan #1 (3-14-16) V0	Ottenhoff 29U-343, Wellbore #1, Plan #1 (3-15-16) V0	Ottenhoff #29-1 (Exist), Wellbore #1, Wellbore #1 V0
Ottenhoff 29R-243, Wellbore #1, Plan #1 (3-14-16) V0	Chittenden #1-32 (Exist), Wellbore #1, Wellbore #1 V0	Carlson 29-1 (Exist), Wellbore #1, Wellbore #1 V0
Ottenhoff 29R-303, Wellbore #1, Plan #1 (3-15-16) V0	Pearlman #32-13 (Exist), Wellbore #1, Wellbore #1 V0	Bell B29-22D, Bell B29-22D, Bell B29-22D V0